Committee of the Whole
Wednesday, May 2, 2018 - 4:15 PM
City Council Chambers

1. **BUILDING RELOCATION REQUEST- 6111 37TH AVENUE SE**

   The building to be moved is a 2013 year built 1408 square foot garage. The structure is a 3 stall garage, 32 ft. x 44 ft., with asphalt shingled roof, wood frame construction, and exterior vinyl siding.

   It is recommended the Committee and Council approve relocation of the 32' x 44' detached accessory building from 4231 71st Ave NW, Parshall ND, 58770 also known as Township 153N89W-Sec 31, to 6111 37th Ave SE, Minot, ND 58701, also known as E2SESESW S34-155-82 Nedrose-S4 A5, subject to conditions.

   Documents:

   Memo to City Council- Schultz.pdf
   Schultz move request.pdf
   Owner - Property Owners letter - Schult.pdf
   Inspectors Report - Schultz.pdf
   Assessors Report - Schultz.pdf

2. **BUILDING RELOCATION REQUEST- 605 17TH ST NW**

   The residence to be moved is a 1040 sf house with a 624 sf detached garage. The structure is wood frame construction, with asphalt shingles, and vinyl siding on the exterior.

   It is recommended the Committee and Council approve the relocation of the single family residence, and garage from 1430 1st Ave SE, Minot ND, 58701 also known as Lenox Park Addition Lot 42, to 605 17th St NW, Minot, ND 58701, also known as Blaisdell Bird Addition Lot 7 Block 9, subject to conditions.

   Documents:

   Memo to City Council.pdf
   Burns move request.pdf
   Clay Burns neighboring owners .pdf
   Clay Burns ltr.pdf
   605 17TH ST NW.pdf
   Inspectors report - House.pdf
   Inspectors report - Garage.pdf
   Assessors Report- Burns.pdf

3. **BUILDING RELOCATION REQUEST- 110 4TH AVE NW**

   The building to be moved is a two-story with a partial basement residential style building with stairway access to a third story over a portion of the structure for approximately 2,608 square feet above ground with an approximate year built in 1899.

   It is recommended the Committee and Council approve the relocation of the single family residence, from 103 4th Ave NW, Minot ND, 58703 also known as Oakland Park Addition Lot 8, Block 2, to 110 4th Ave NW, Minot, ND 58703, also known as Ramstad's Third Addition Lot 3, Block 1, subject to conditions.

Documents:

Memo to City Council HSH.pdf
Owen move request.pdf
Owners-Property owners letters.pdf
Inspectors Report.pdf
Assessors Report.pdf

4. **2018 ND DES SHSP GRANT APPLICATION (PD0150)**

The Police Department has filed a letter of intent to apply for $66,000 in grant funding through this program for replacement of 28 electronic door locks at the police department. There is no local match requirement for this grant.

The current door locks have been in use since 2005 and are wearing out at a replacement cost of $1,500 per lock. The replacement system will enhance security and improve operational issues through the management software included. This will make the process of changing and updating door security codes more efficient. It will allow door monitoring and management to take place from a computer thus eliminating the need to physically manage each lock every time a change is made.

1. **Recommend approval for the Minot Police Department to apply for the 2018 North Dakota Department of Emergency Services State Homeland Security Program; and**
2. **Authorize the Mayor to sign the grant agreement, if awarded; and**
3. **Authorize the Mayor to sign the budget amendment, if awarded**

Documents:

2018 ND DES SHSP Memo PD0150.pdf
2018 BA - SHSG Locks PD0150.pdf

5. **GAMING SITE AUTHORIZATIONS- ANNUAL GAMING ORGANIZATION RENEWALS**

Site approval by the City Council is required as a precondition to obtain a state games of chance license. Each organization submits documentation annually in order to conduct games of chance at locations throughout the City of Minot.

It is recommended the Committee and Council approve the gaming site authorizations for the license year of July 1, 2018 through June 30, 2019, subject to receipt of proper documentation and fee.

Documents:

Gaming Site Authorizations.pdf
Gaming Organizations.pdf

6. **HOTEL-MOTEL RETAIL LIQUOR AND BEER LICENSE TRANSFER- HOLIDAY INN RIVERSIDE**

The City received a request to transfer ownership of the Hotel-Motel Retail Liquor and Beer license for Holiday Inn Riverside from Heartland Hospitality Fund, LLC, to ADB Investments Minot, LLC All documentation has been submitted and is being reviewed by the appropriate departments.

It is recommended the Committee and Council approve the request to transfer ownership of the Hotel-Motel Retail Liquor and Beer license for Holiday Inn Riverside from Heartland Hospitality Fund, LLC, to ADB Investments Minot, LLC subject to receipt of all documentation and approval by the Police Chief, Building Official and Fire Marshal.

Documents:

Memo- Holiday Inn Riverside.pdf

7. **RETAIL BEER LICENSE TRANSFER- LOAF 'N' JUG**

The City received a request to transfer ownership of the Beer license for Loaf 'N' Jug from Mini-Mart, Inc. to EG Retail (America), LLC. All documentation has been submitted and is being reviewed by the appropriate departments.

It is recommended the Committee and Council approve the request to transfer ownership of the Beer license for Loaf 'N' Jug, from Mini-Mart, Inc. to EG Retail (America), LLC subject to receipt of all documentation and approval by the Police Chief, Building Official and Fire Marshal.

Documents:

Memo- Mini Mart.pdf

8. **SCBA AIR COMPRESSOR BIDS (FD0068)**

The fire department advertised for bids on a new SCBA air compressor. The bids received were over budget and/or did not meet the specifications as spelled out within the bid package.

It is recommended the City Council reject all bids and authorize the Fire Chief to move forward with a new bidding process.

Documents:

4-24-2018 Memo - SCBA Air Compressor Bid Recommendation.pdf

9. **GOETTLE LEGAL SERVICES**

The City of Minot has previously retained Shane Goettle to provide legal services for the purpose of handling state government affairs; and to advise and consult, as needed and requested, on the interface of local, state, and federal resources associated with flood recovery and protection, and city growth associated with energy impacts. The Agreement before the City Council also includes managing other projects, as assigned.

It is recommended the City Council:

1. **Move to approve and authorize the Mayor to sign the Consulting and Legal Services Agreement between the City of Minot and Shane Goettle.**
2. **Move to continue the appointments of Shane Goettle and Lacee Anderson as Special Assistant City Attorneys.**

Documents:

Goettle_legal services memo.pdf
MINOT SERVICE AGREEMENT 2018-2020.pdf

10. **PROPOSAL TO ADD TWO ADDITIONAL SCHOOL RESOURCE OFFICERS**

Minot Public Schools has requested to expand the School Resource Officer Program to add two additional SROs. The Minot Police Department is agreeable to this as long as two additional police officer positions are added to maintain the current level of staff in the field.

Recommend the Committee and Council approve the proposal of adding two

SROs in accordance with the existing MOU and authorize Minot Police Department to hire two additional Police Officers to backfill the SRO positions.

Documents:

SRO Memo.docx
2018 MPS MPD SRO MOU.pdf

11. CLEAN WATER SRF AND DRINKING WATER SRF

The utility and resulting street improvements related to the flood control work are eligible costs for a loan with the ND Department of Health. This program has a favorable interest rate and will result in considerable savings in interest costs.

The Hydraulic Improvements project at the City Wastewater Treatment Facility is also eligible costs for a loan with the ND Department of Health. This program has a favorable interest rate and will result in considerable savings in interest costs.

It is recommended the City Council:

1. **Approve the attached Resolution and Loan Agreement (Bond Resolution Minot 2018 A CW SRF & Loan Agreement Minot 2018 A CW SRF) authorizing issuance of bonds through the State Revolving Fund programs for Clean Water.**
2. **Approve the attached Resolution and Loan Agreement (Bond Resolution Minot 2018 B CW SRF & Loan Agreement Minot 2018 B CW SRF) authorizing issuance of bonds through the State Revolving Fund programs for Clean Water.**
3. **Approve the attached Resolution and Loan Agreement (Bond Resolution Minot 2018 C DW SRF & Loan Agreement Minot 2018 C DW SRF) authorizing issuance of bonds through the State Revolving Fund programs for Drinking Water.**

Documents:

COW April COW CWSRF.pdf
Loan Agreement Minot 2018A CW SRF-v1.pdf
Loan Agreement Minot 2018B CW SRF-v2.pdf
Loan Agreement Minot 2018C DW SRF-v2.pdf
Bond Resolution, Minot 2018A CW SRF - Bond Resolution, Minot 2018A CW SRF.pdf
Bond Resolution, Minot 2018B Sales Tax Water and Sewer Res Rev Bonds CWSRF.pdf
Bond Resolution, Minot 2018C Sales Tax Water and Sewer Res Rev Bonds DWSRF.pdf
SRF Application Revised Increased Amt.pdf
CWSRF Application MI-1 p3529.1 1-22-18.pdf
dw-app_10-2-17r3 3529.1 mrefpp phase 1 1-22-18.pdf

12. BEL AIR COMMONS ADDITION DEVELOPMENT (PLAT) AGREEMENT PROJECT (4352)

The development of Bel Air Commons Addition was previously approved by the Planning Commission and City Council in February/March 2018.

1. **Recommend approval of the Development (Plat) Agreement by the Council.**
2. **Authorize the Mayor to sign the Development (Plat) Agreement.**

Documents:

4352 - Bel Air Commons Developer Agreement Memo.pdf

13. **GALUSHA RANCH ADDITION (PLAT) AGREEMENT PROJECT (4353)**

The development of Galusha Ranch Addition was previously approved by the Planning Commission and City Council in February/March 2018.

The Developer wishes the portion of the property to be rezoned from AG, Agricultural District to RA, Agricultural Residential District with other portions of the property to remain in Zone AG. This item was also approved by the Planning Commission and City Council in February/March of 2018.

1. **Recommend approval of the Development (Plat) Agreement by the Council.**
2. **Authorize the Mayor to sign the Development (Plat) Agreement.**

Documents:

4353 - Galusha Ranch Addition Developer Agreement Memo.pdf

14. **WEST ACRES BUSINESS CENTER ADDITION (PLAT) AGREEMENT PROJECT (4354)**

The development of West Acres Business Center Lots 1, 2, and 3 was previously approved by the Planning Commission and City Council in September/October 2017. Staff and the Developer, Bruce Bentz, LLLP, wish to execute and agreement relating to the obligations for development and conditions outlined by City Staff and approved by the Planning Commission and City Council.

1. **Recommend approval of the Development (Plat) Agreement by the Council.**
2. **Authorize the Mayor to sign the Development (Plat) Agreement.**

Documents:

4354 - West Acres Business Center Developer Agreement Memo.pdf

15. **URIJAH'S SECOND ADDITION (PLAT) AGREEMENT PROJECT (4355)**

The development of Urijah's Second Addition was previously approved by the Planning Commission and City Council in February/March 2018 for the purposes of the construction of a residential lots within the re-platted property known as Urijah's First Addition, Lots 1 and 2 within Ward County.

Additionally, the Developer wishes the property to be rezoned from RA, Agricultural Residential District to R1, Single Family Residential District. This item was also approved by the Planning Commission and City Council in February/March of 2018.

The Development agreement must be approved and signed before the plat will be recorded.

1. **Recommend approval of the Development (Plat) Agreement by the Council.**
2. **Authorize the Mayor to sign the Development (Plat) Agreement.**

Documents:

4355 - Urijahs 2nd Addition Developer Agreement Memo.pdf

16. **RIGHT OF WAY ENCROACHMENT AGREEMENT APPLICATION**

The applicant is applying for the encroachment permit to access the doorways on the east side of the building of subject property and have them comply with ADA standards for accessibility. In order to comply with ADA Standards, the applicant will construct an ADA accessible ramp and walkway to allow ingress/egress to the east side of the building. The proposed ramp/walkway will encroach on the City's right-of-way. Applicant is responsible for all existing walkways to comply with City Standard Specifications and ADA requirements

1. **Recommend approval of the Right of Way Encroachment Agreement Application submitted by Aksal Group, LLC for the future construction of ADA accessibility to the subject property's building.**

Documents:

Memo-Aksal_ROW encroahment permit application 2018.04.24.pdf

17. **US 2 AND BURDICK EXPRESSWAY MICROSURFACING COST PARTICIPATION AND MAINTENANCE (CPM) AGREEMENT (PROJECT #4362)**

The North Dakota Department of Transportation (NDDOT) will bid the work in May of 2018 to resurface by microsurfacing, East Burdick Expressway from 42nd St SE to US Highway 2 and 42nd St SE from 10th Ave SE to East Burdick Expressway. The City's cost share of the project will come from annual street maintenance funds.

The project stems from a need to extend the service life of the roadways by way of a protective thin coat of polymer-modified emulsified asphalt mixed with finely crushed aggregate to create a durable, cost effective road surface, thereby improving rideability, safety and extending the pavement's serviceable life.

1. **Recommend approval of the Cost Participation and Maintenance (CPM) Agreements with the NDDOT and authorize the Mayor and staff to execute the agreements**

Documents:

4362 - US 2 and East Burdick Microsurfacing CPM Agreement Memo.pdf

18. **P3135.2D SWIF ACTION D OUTFALL PIPE REHABILITATION PROJECT**

The project will correct deficiencies noted in outfall pipes that intersect the flood protection line. This will repair approximately 25 pipes and work ranges from new pipes to correct crushed or deficient pipes, flap gates and erosion protection to bring the outfalls into USACE standards.

Recommend approval of the Plans and specifications and authorize bidding of SWIF Action D outfall pipe rehabilitation project.

Documents:

Memo approve plans and specs 3135.2d.docx
Minot SWIF Action D 90 Plans.pdf
Minot SWIF Action D 90 Technical Specifications.pdf

19. **ENGINEERING SERVICES – MINOT SWIF P3135.2E**

Public Works prepared a Request for Qualifications for engineering services and advertised in accordance with State law. Houston Engineering was the only firm that responded to the RFQ and their qualifications show they are qualified to perform the

design and construction management work. Houston engineering has done all of the previous SWIF work for the City and is qualified to perform these services.

It is recommended the City Council approve Houston Engineering for future design and construction engineering on the Minot SWIF Improvements

Documents:

Memo approve engineering selection swif 3135.2e.pdf
Complete RFQ_City of Minot swif 3135.2e.pdf
HEI_Project 3135.2E Request for Qualifications.pdf

20. **INFORMATIONAL UPDATE ON THE MAPLE DIVERSION AND FEASIBILITY STUDY FOR THE MREFPP.**

The SRJB, design engineers and Public Works staff have been working with the USACE on the feasibility study, which has determined that the Maple Diversion has potential for a federal interest. As the designed has progressed to a 20% level of design, modifications have been made to the Maple Diversion. Ryan Ackerman, Administrator for the SRJB will provide a presentation on this.

Documents:

Memo p3529.9 maple diversion.pdf

21. **MI-5 – P3529 MREFPP – ALTERNATIVES FOR CONSIDERATION**

The SRJB, design engineers and Public Works staff have been working since the 2011 flood on designing and permitting various stages of flood protection in Minot, as well as the rural reaches. Phases 1,2 and 3 are currently under construction and the HMGP project to protect the water treatment plant is complete. In addition Perkitt ditch storm water detention has been completed and Burlington flood protection is 90% complete in design. A feasibility study is underway to determine what federal interest there may be in the MREFPP, currently the Maple Diversion looks like the only likely candidate for federal funding.

Information will be provided for Council to make a recommendation of preferred alternative for MI-5 (East Tieback Levee)

Documents:

2018-04-17 - MREFPP Phase MI-5 - 4th Avenue NE Tieback - City Council Presentation - FINAL.pdf
Memo p3529 mi-5 alternatives.pdf

22. **PARKING RAMPS 2018 BUDGET (RAMP01 & RAMP02)**

The City of Minot has taken control of the downtown Parking Ramps requiring the need to establish a budget to allow for the smooth operation and maintenance of the ramps.

It is recommended the City Council approve the budget amendment for the City to manage the downtown parking ramps.

Documents:

Parking Ramp Memo for COW.pdf
2018 BA - BA for Fund 150.pdf
Operations and Maintenance Transition Plan.pdf

23. **APPROVAL OF 2019 BUDGET SCHEDULE**

Minot's budgeting process begins in March of the year prior to the budget to be adopted.

The attached budget schedule is an estimated timeline that is developed to ensure the budget is completed in a timely manner to meet county and state guidelines.

It is recommended the City Council approve the 2019 Budget Schedule.

Documents:

2019 Budget Schedule Memo for COW - FINAL.pdf
2019 Budget Schedule - REVISED DRAFT.pdf

24. 2019 BUDGET PRINCIPLES AND PRIORITIES

Development of the Fiscal Year Budget is an involved and laborious process. It is best guided by first establishing goals promulgated by the City Council. In this way, staff are provided guidance on the development of the City's Budget and can align their Department budget requests with the budget goals established by the Council.

It is recommended the City Council discuss, refine, and approve the FY19 Budget Principles and Priorities Document.

Documents:

2019 Budget Priorities Memo - 04-24-18 - FINAL.pdf
2019 Budget Priorities - 04-24-18 - DRAFT.pdf

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Mitch Flanagan

DATE: *May 7, 2018*

SUBJECT: **Building relocation request to 6111 37th Avenue SE**

I. RECOMMENDED ACTION

It is recommended the Committee and Council approve the relocation of the 32' x 44' detached accessory building from 4231 71st Ave NW, Parshall ND, 58770 also known as Township 153N-89W-Sec 31, to 6111 37th Ave SE, Minot, ND 58701, also known as E2SESESW S34-155-82 Nedrose-S4 A5, subject to the following conditions:

1. A ten-thousand dollar completion bond must be posted with the City of Minot prior to issuance of any permits for this work.

2. An approved approach permit assigned to 6111 37th Ave SE, issued by Nedrose Township.

3. Application and approval of building permits for all proposed construction.

4. An approved foundation design in compliance with City of Minot building codes.

5. If required: plumbing, electrical and HVAC systems must be brought into compliance with current code requirements of the City of Minot.

6. All work at the new location must be in compliance with City of Minot building codes and zoning ordinances.

7. The exterior of the structure must be one consistent color arrangement of colors after relocation.

8. Applicant must obtain all necessary permits, and coordinate all relocation activities with public utilities and traffic authorities.

9. The property must be provided with proper site drainage, and must be landscaped in a manner similar to surrounding properties.

II. DEPARTMENT CONTACT PERSONS

Mitch Flanagan, Building Official	857-4102
Mike Murphy, Residential Inspector	857-4102
Dusty Schlect, Senior Property Appraiser	857-4160

III. DESCRIPTION

The building to be moved is a 2013 year built 1408 square foot garage. The structure is a 3 stall garage, 32 ft. x 44 ft., with asphalt shingled roof, wood frame construction, and exterior vinyl siding.

IV. IMPACT:

None.

V. TIME CONSTRAINTS

All work must begin within 30 days of issuance of moving and building permits and completed within ten months of start date and generally in accordance with the following schedule:

1. Foundation complete within two months.
2. Structure relocated within four months
3. Work required for code compliance completed within six months
4. All proposed construction and final clean up completed within ten months.
5. City of Minot Zoning Ordinance, Section 23-1 states:

"All off-street parking spaces and all driveways on private property leading to such parking areas shall be all-weather hard surface material. Acceptable surfacing materials include asphalt, concrete, brick, cement pavers or similar materials installed and maintained according to industry standards."

VI. LIST OF ATTACHMENTS

A. Application for Moving a Residential Building, pictures, and site plan.
B. Letter to homeowners within 150 feet.
C. Letter to applicant.
D. Map showing properties affected
E. Inspectors reports
F. Assessors report

Approved for Council Agenda: _____ Date: _____

City of Minot

INSPECTIONS DEPARTMENT

RECEIVED
APR 0 2 2018
BY: ...

Permit No:	
Receipt No:	60438

APPLICATION FOR MOVING A RESIDENTIAL BUILDING

I, Nicholas E. Schultz, owner and/or agent hereby make application to the City Building Official to move a(n) Detached Accessory 32×44' structure(s) **from**:

LOT _____ BLOCK _____

ADDITION Township 153N-89W-Sec 31

ADDRESS 4231 71st Ave. NW Parshall, ND 58770

To the location within the City of Minot, North Dakota, legally described as:

LOT _____ BLOCK _____

ADDITION E2SESESW S34-155-82-NEDROSE-SH A5

ADDRESS 6111 SE 37th Avenue Minot, ND 58701 ZONING RA

I understand that this relocation request shall be posted by the City of Minot for a Notice of Public Hearing and that such Notice shall be published in the Official Newspaper designating the date of said hearing. Separate notices shall be sent by certified mail to affected property owners.

Moving Fee:

Residential Use: City Council approval fee: $450.00

It is further understood that a completion bond in the amount of $10,000.00 shall be provided to the City upon the approval of this application.

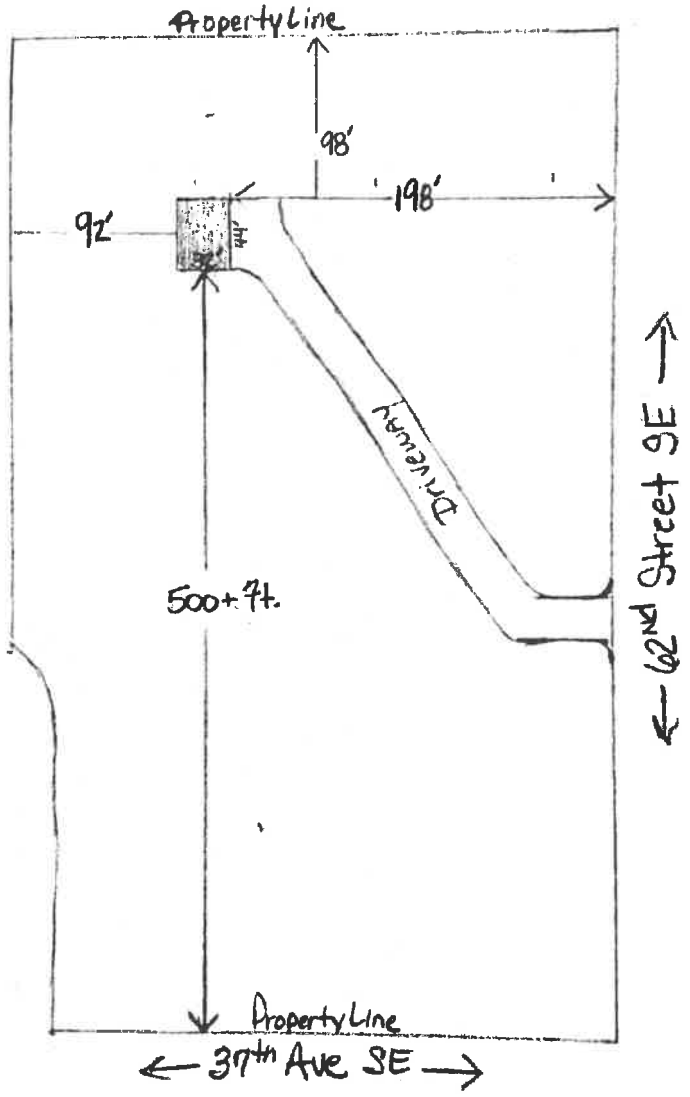
Nicholas E Schultz 04/01/18
Signature of owner/agent Date

528 12th St SE Minot, ND 58701
Mailing Address

(605) 450-0274
Phone

Plot Plan For Accessory Struct.

N



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S

Nicholas E. Schultz
6111 SE 37th Ave
Minot, ND 58701

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Nicholas Schultz: You or your representative should appear on behalf of your request at the Committee of the Whole will be meeting on Wednesday May 2, 2018, at 4:15 p.m. in the City Council Chambers. The Committee of the Whole will be considering your request at that time.

NOTICE OF INTENT TO MOVE A BUILDING

1. Nicholas Schultz, owner of a detached accessory building, is requesting to relocate this structure from 4231 71st Ave NW, Parshall, ND to **6111 37th Ave SE** (E2SESESW S34-155-82 Nedrose S4 A5).

Application has been made to the City Council for a moving permit to move these structures, and a public hearing will be held on May 7, 2018, at 6:30 p.m. in City Council Chambers at City Hall (515 2nd Avenue SW).

Anyone objecting to the granting of the permits to move these structure should make their protest known and appear in opposition to the granting of these permits. Further information can be obtained from Mitch Flanagan, Building Official, at 857-4102.

Publish Legal Ad: April 22, 2018
April 28, 2018
May 5, 2018

Bill to: Inspection Department
City of Minot
515 2nd Avenue SW
Minot, ND 58701

City of Minot

Inspection Department

April 16, 2018,

Re: Building relocation request

Dear Property Owner:

Please be advised that this office has received a request from Nicholas Schultz to relocate a 32' x 44' detached accessory building from 4231 71st Ave NW, Parshall, ND to **6111 37th Ave SE, Minot, ND** (E2SESESW S34-155-82 Nedrose-S4 A5). This property is zoned RA, Agricultural Residential District.

The Committee of the Whole will be reviewing the request on Wednesday, May 2, 2018, at 4:15 p.m. in the City Council Chambers at City Hall. A public hearing regarding the request will be held on May 7, 2018, at 6:30 p.m., also in the City Council Chambers. If you wish to appear or give comments concerning the request, you may attend these meetings, or you may present comments to this office at 1025 31st Street SE during normal working hours.

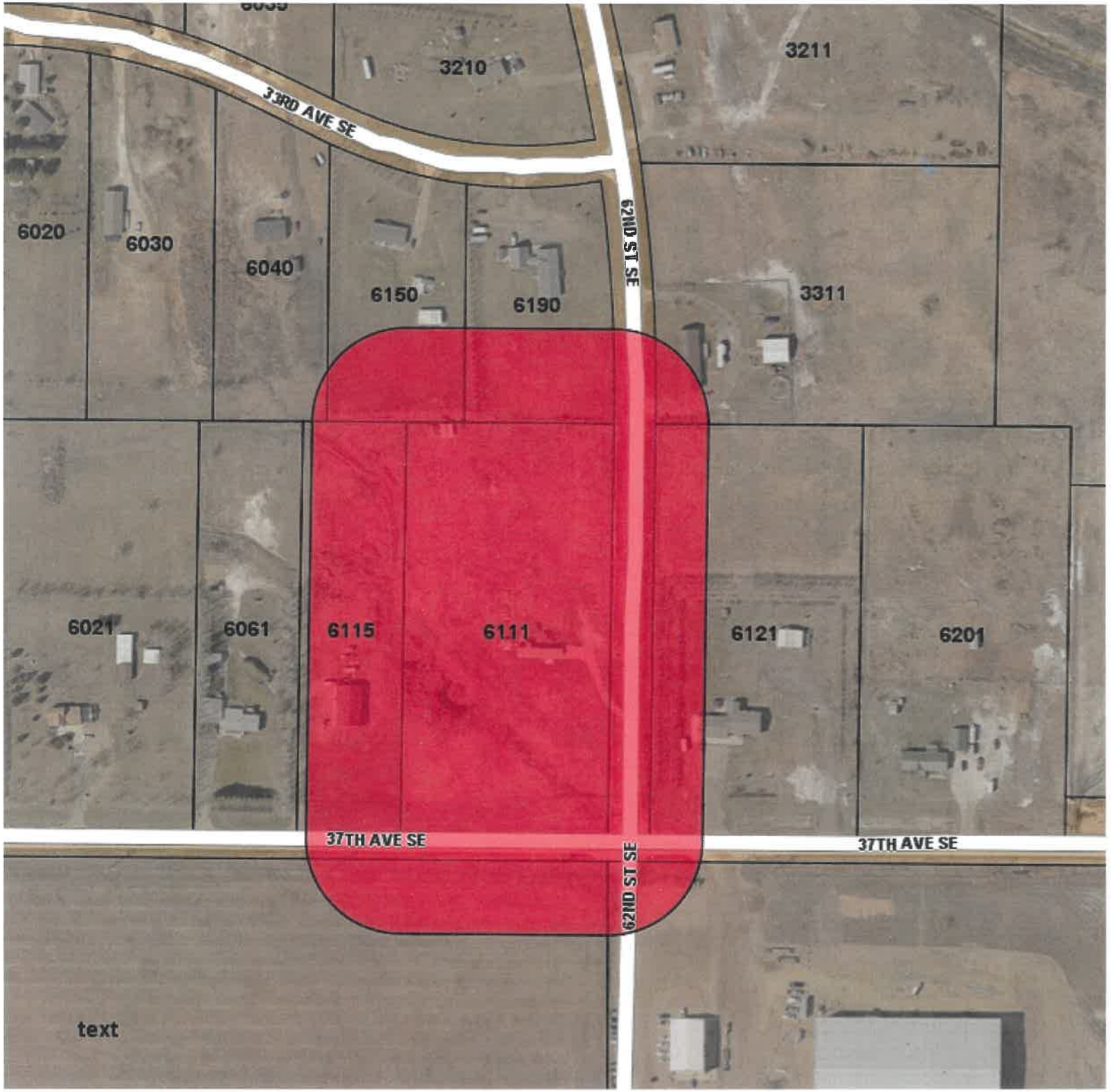
Sincerely,

M. T. Flanagan

M. T. Flanagan
Building Official

Enclosures

Certified Mail


3210
3211
33RD AVE SE
62ND ST SE
6020
6030
6040
6150
6190
3311
6021
6061
6115
6111
6121
6201
37TH AVE SE
37TH AVE SE
62ND ST SE
text



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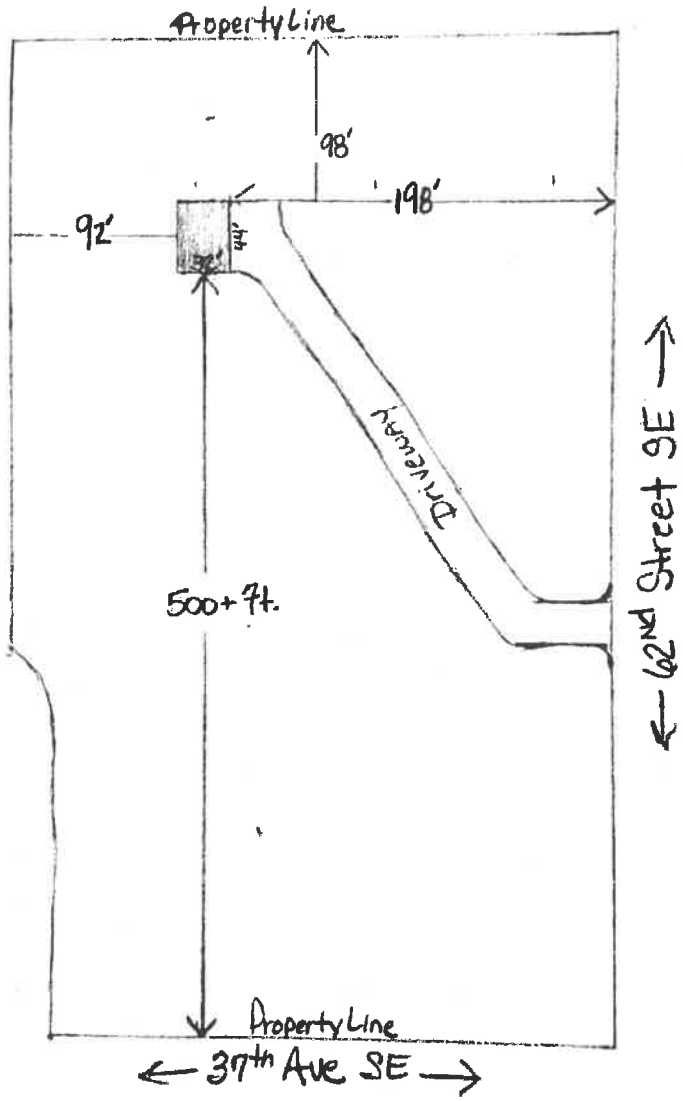
Plot Plan For Accessory Struct.

N



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Nicholas E. Schultz
6111 SE 37th Ave
Minot, ND 58701

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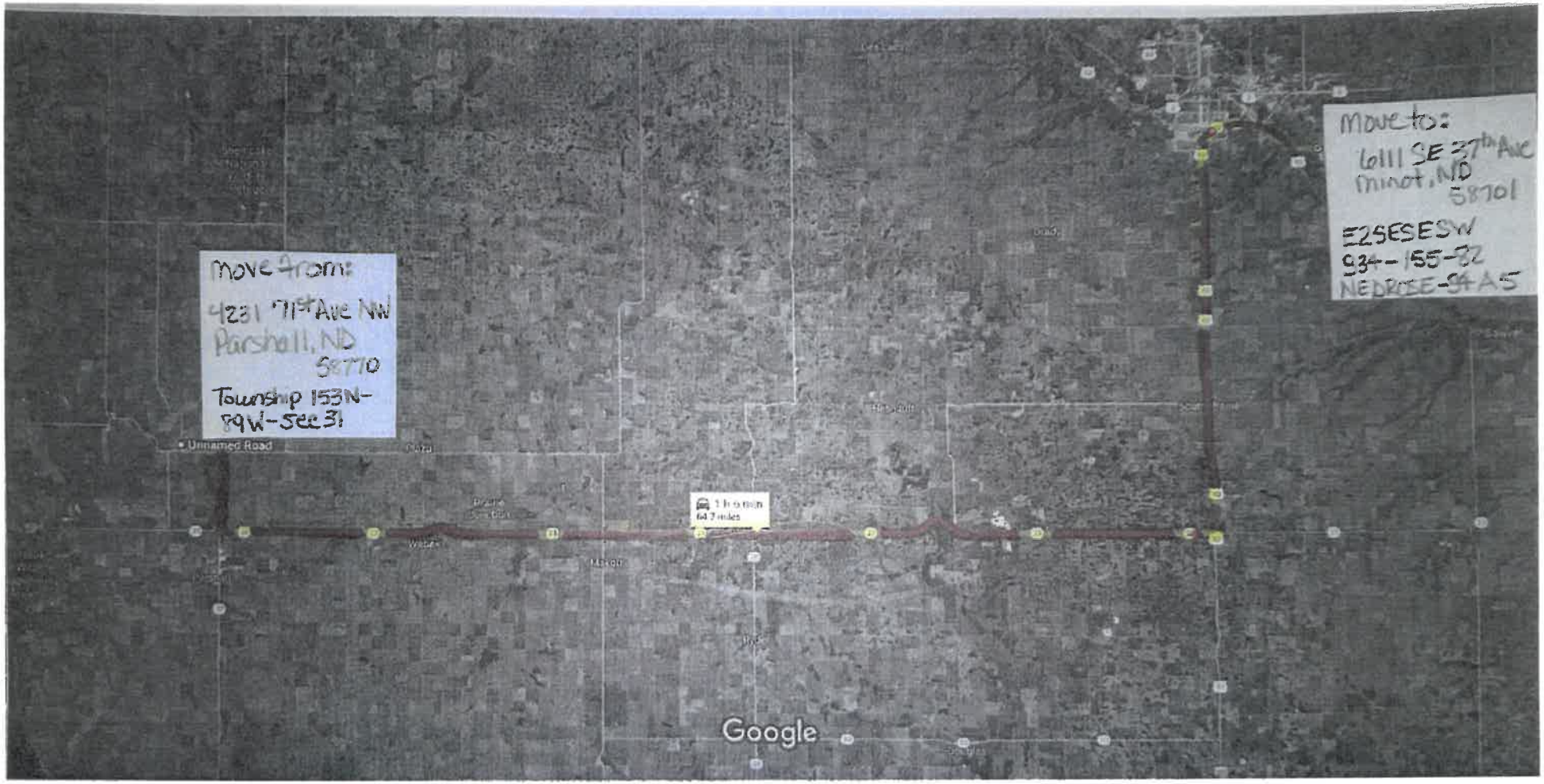

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City of Minot
Inspections Department

BUILDING RELOCATION INSPECTION CHECKLIST

1025 31st Street SE Minot, ND 58701, Phone: 701-857-4102

PROPERTY LOCATION: 4231 71st Ave NW Parshall ND 58770

PROJECT NAME: Nick Schultz move

EXTERIOR:

1. Are there signs of roof, foundation, wall and structural support failure? no
2. What is the current condition of shingles and roof vents? roof is asphalt shingles good condition
3. Current condition of windows, facia, and trim? vinyl windows, metal facia and soffit all in good condition
4. Current condition of siding, need repair, replacement, or paint? vinyl siding in good condition

INTERIOR:

1. Are windows in all sleeping rooms egress type (820 Sq. In. Net openable area)? n/a
2. Are smoke detectors installed and in correct location? n/a
3. What is the size and condition of floor supports? n/a
4. Does the building have fuses or circuit breakers and what size is the electrical panel? n/a
5. What is the type and current condition of wiring? copper good condition
6. What is the type and current condition of HVAC? n/a

COMMENTS: the garage was built new in 2013 one wall next to the existing house will need siding ,soffit and facia. I was unable to determine if the sole plate was treated , if not one will need to be installed

INSPECTOR'S SIGNATURE: Michael J Murphy Digitally signed by Michael J Murphy Date: 2018.04.12 15:39:38 -05'00' DATE: 4/12/2018

City of Minot

Assessor's Office

DATE: April 13, 2018

TO: Tom Barry, City Manager

FROM: Dusty Schlecht, Senior Property Appraiser

SUBJECT: Application from Nicholas E. Schutz to move a 2013 year built, 1408 square foot garage from 4231 71st Ave. NW Parshall, ND also known as Township 153N-89W-Sec 31 to 6111 37th Ave SE Minot, ND 58701 also known as E2SESESW S34-155-82-NEDROSE-S4 A5.

DESCRIPTION

The building to be moved is a 2013 year built 1408 square foot garage. The structure is a 3 stall garage, 32 ft. x 44 ft., with asphalt shingled roof, wood frame construction, and exterior vinyl siding.

RECOMMENDATION

The area that is under consideration for the moving application is 6111 37th Ave SE which lies within the two-mile extraterritorial area. The area where the home is proposed to be moved to is a low density housing and agricultural setting. The new location is zoned RA. The neighboring parcels are zoned RA.

On a building relocation move, ordinance requires the assessor to determine if the structure would currently meet 60% of its replacement cost and whether it is compatible with the neighborhood.

Due to the fact that this garage was built in 2013 and is only five years old, it is our opinion this structure would currently meet 60% of its replacement cost as per Sec 9-47 (b) (c) of the Minot Code of Ordinances once it has been placed at the new location and will be compatible with the existing properties.

In summary, the City of Minot Assessor's Office believes that the garage would be compatible with the rest of the neighborhood. Pictures have been provided below that show the subject garage as well as the other properties in the immediate area.

Therefore, the Assessor's Office recommends the move be approved to the proposed site.

515 2nd Av SW · Minot, North Dakota 58701 · (701) 857-4160 · Fax (701) 857-4130

Subject Proposed to be moved:



Proposed moving location:



Property directly to the North:



Property directly to the West:



Second property to the West:



Second Property to the North:



Property across street to the East:



Property across street to the East:



Property across street to the Northeast:



Second property to the Northeast (across the street):



City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Mitch Flanagan

DATE: April 25, 2018

SUBJECT: **Building relocation request to 605 17th St NW**

I. RECOMMENDED ACTION

It is recommended the Committee and Council approve the relocation of the single family residence, and garage from 1430 1st Ave SE, Minot ND, 58701 also known as Lenox Park Addition Lot 42, to 605 17th St NW, Minot, ND 58701, also known as Blaisdell Bird Addition Lot 7 Block 9, subject to the following conditions:

1. A ten-thousand dollar completion bond must be posted with the City of Minot prior to issuance of any permits for this work.

2. Application and approval of building permits for all proposed construction.

3. An approved foundation design in compliance with City of Minot building codes.

4. If required: plumbing, electrical and HVAC systems must be brought into compliance with current code requirements of the City of Minot.

5. All work at the new location must be in compliance with City of Minot building codes and zoning ordinances.

6. The exterior of the structure must be one consistent color arrangement of colors after relocation.

7. Applicant must obtain all necessary permits, and coordinate all relocation activities with public utilities and traffic authorities.

8. The property must be provided with proper site drainage, and must be landscaped in a manner similar to surrounding properties.

II. DEPARTMENT CONTACT PERSONS

Mitch Flanagan, Building Official	857-4102
Mike Murphy, Residential Inspector	857-4102
Dan Lovelace, Senior Property Appraiser	857-4160

III. DESCRIPTION

A. Background:

The residence to be moved is a 1040 sf house with a 624 sf detached garage. The structure is wood frame construction, with asphalt shingles, and vinyl siding on the exterior. The house is currently located at 1430 1st St SE in Minot and photos are provided by the property appraiser.

IV. IMPACT:

These structures were purchased from the City and are located in the flood buy out area.

V. TIME CONSTRAINTS

All work must begin within 30 days of issuance of moving and building permits and completed within ten months of start date and generally in accordance with the following schedule:

1. Foundation complete within two months.
2. Structure relocated within four months
3. Work required for code compliance completed within six months
4. All proposed construction and final clean up completed within ten months.
5. City of Minot Zoning Ordinance, Section 23-1 states:

"All off-street parking spaces and all driveways on private property leading to such parking areas shall be all-weather hard surface material. Acceptable surfacing materials include asphalt, concrete, brick, cement pavers or similar materials installed and maintained according to industry standards."

VI. LIST OF ATTACHMENTS

A. Application for Moving a Residential Building, pictures, and site plan.
B. Letter to homeowners within 150 feet.
C. Letter to applicant.
D. Map showing properties affected
E. Inspectors reports
F. Assessors report

Approved for Council Agenda: _____ Date: _____

City of Minot

INSPECTIONS DEPARTMENT

RECEIVED
MAR 0 9 2018
BY:

Permit No:	
Receipt No:	60433

APPLICATION FOR MOVING A RESIDENTIAL BUILDING

I, Clay Burns, owner and/or agent hereby make application to the City Building Official to move a(n) House & Garage structure(s) **from:**

LOT 42 BLOCK _____

ADDITION Henry Park add

ADDRESS 1430 - 1st Ave SE

To the location within the City of Minot, North Dakota, legally described as:

LOT 7 BLOCK 9

ADDITION Blaisdell Bird Add

ADDRESS 605 17th St NW ZONING R-1

I understand that this relocation request shall be posted by the City of Minot for a Notice of Public Hearing and that such Notice shall be published in the Official Newspaper designating the date of said hearing. Separate notices shall be sent by certified mail to affected property owners.

Moving Fee:

Residential Use: City Council approval fee: $450.00

It is further understood that a completion bond in the amount of $10,000.00 shall be provided to the City upon the approval of this application.

Clay Burns 3-9-18
Signature of owner/agent Date

3000 Sunset Ridge Rd SE
Mailing Address Minot N.D 58701

701-721-5009
Phone

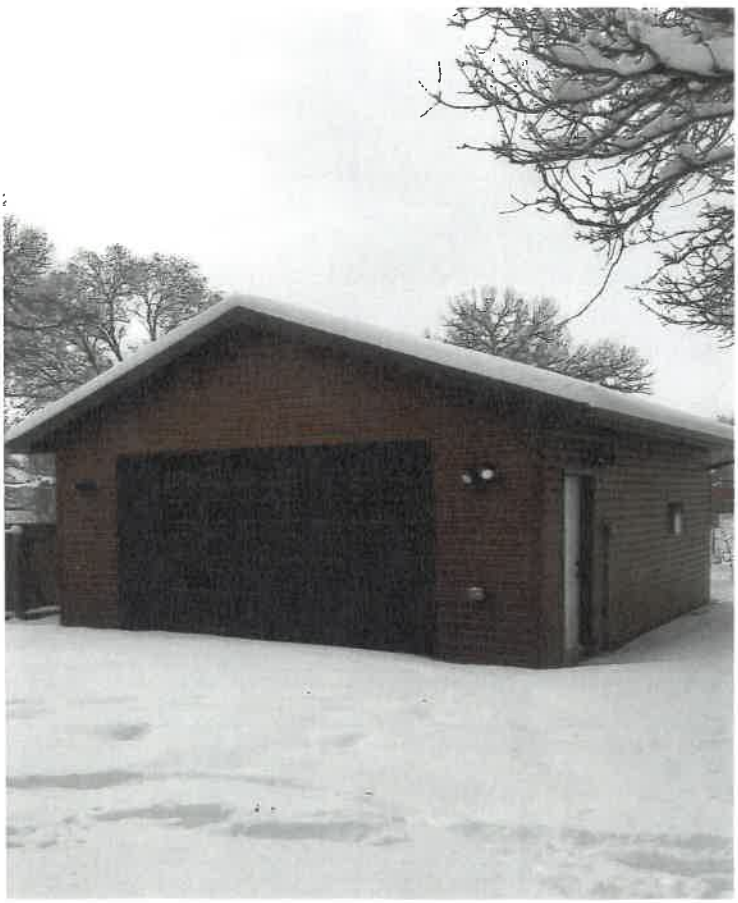
House





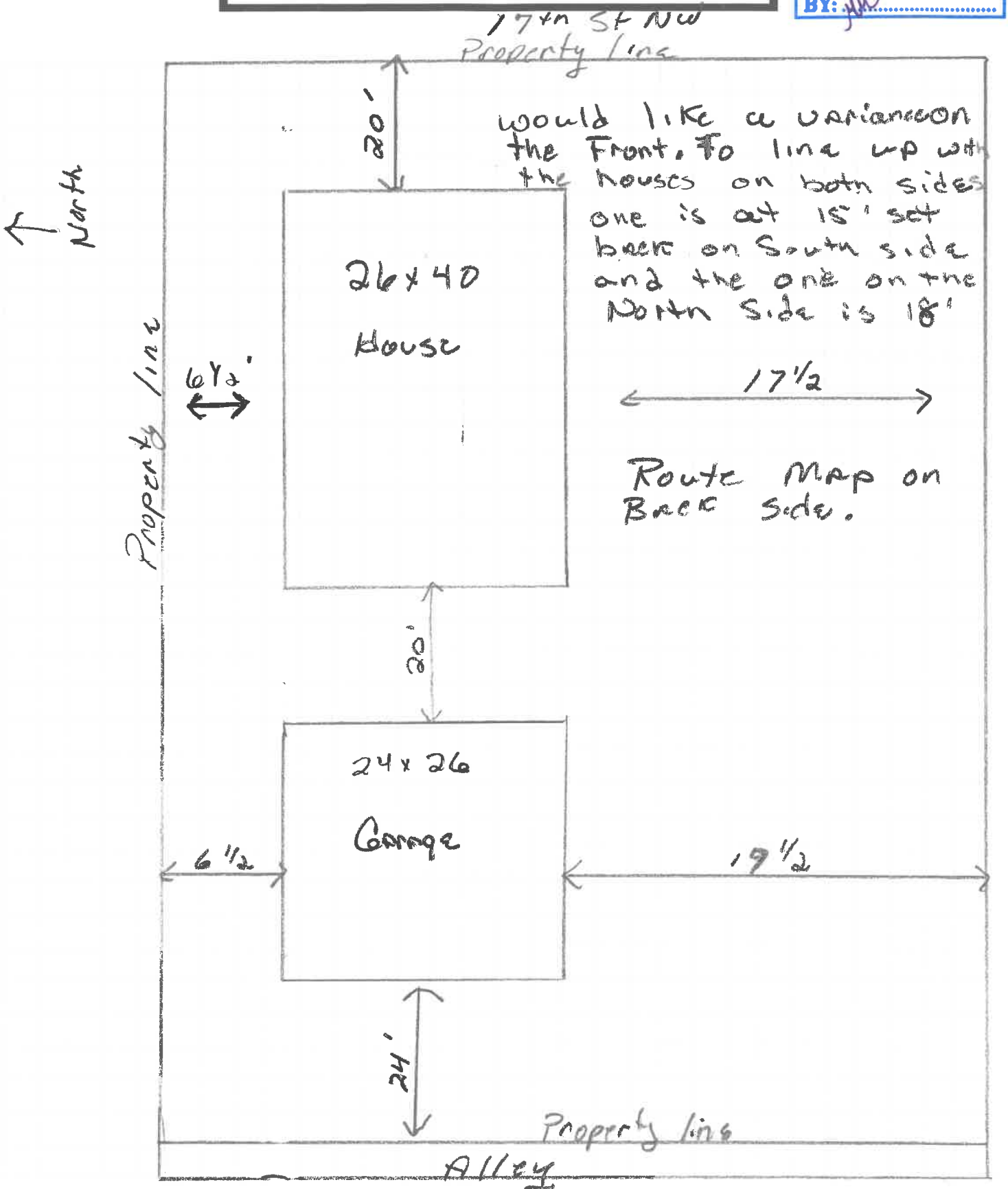
Detached Garage





HD SUPPLY WATERWORKS SM

RECEIVED
MAR 0 9 2018
BY: JH



The Route that the House mover will take is 1st Ave SE to 16 St SE up to Burdick Expy E to Old Rd 19 North to 10th Ave E to 83 By Pass South to 4 Ave NW down to 17th St NW. up to 605 1st. NW

City of Minot

Inspection Department

April 16, 2018

Re: Building relocation request

Dear Property Owner:

Please be advised that this office has received a request from Clay Burns to relocate a single-family dwelling and garage from 1430 1st Ave SE to **605 17th St NW** (Blaisdell Bird Addition Lot 7 Block 9). This property is zoned R1, Single-Family Residential District.

The Committee of the Whole will be reviewing the request on Wednesday, May 2, 2018, at 4:15 p.m. in the City Council Chambers at City Hall. A public hearing regarding the request will be held on May 7, 2018, at 6:30 p.m., also in the City Council Chambers. If you wish to appear or give comments concerning the request, you may attend these meetings, or you may present comments to this office at 1025 31st Street SE during normal working hours.

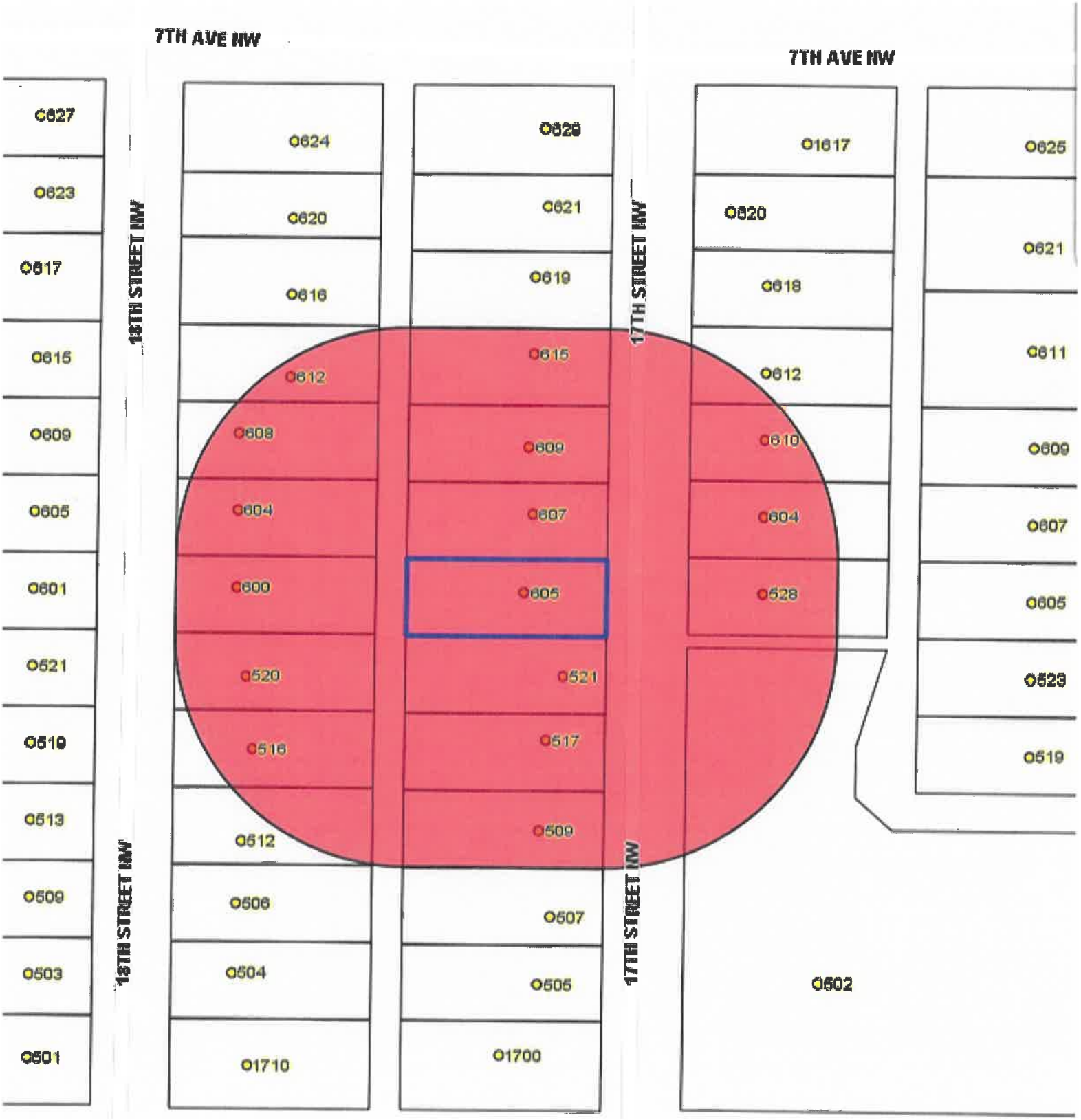
Sincerely,

M. T. Flanagan

M. T. Flanagan
Building Official

Enclosures

Certified Mail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House





Detached Garage





HD SUPPLY WATERWORKS SM

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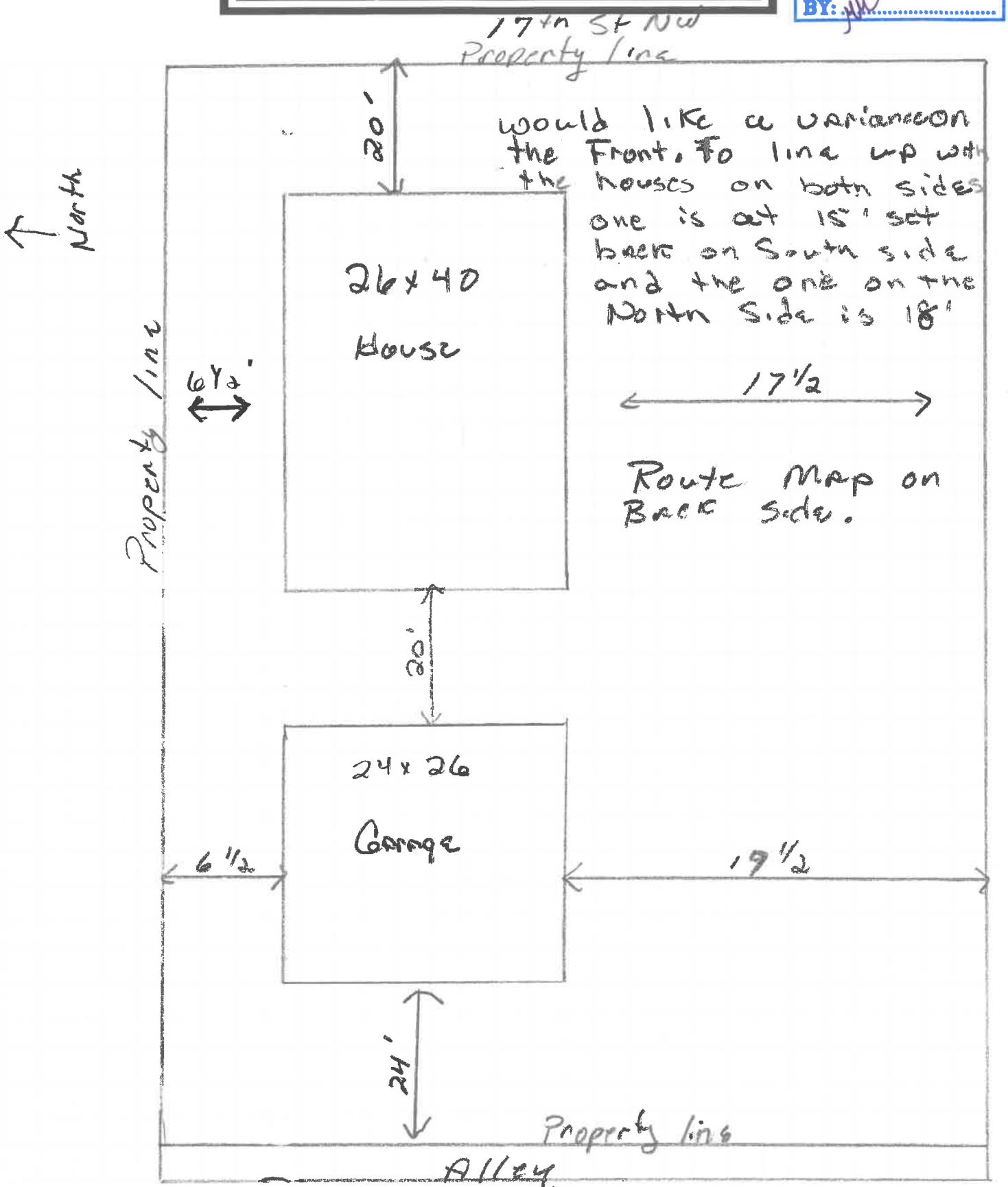
BY: JW



Clay Burns: You or your representative should appear on behalf of your request at the Committee of the Whole meeting on Wednesday May 2, 2018, at 4:15 p.m. in the City Council Chambers. The Committee of the Whole will be considering your request at that time.

NOTICE OF INTENT TO MOVE BUILDINGS

Clay Burns, owner of a single-family dwelling and garage, is requesting to relocate these structures from 1430 1st Ave SE to **605 17th St NW** (Blaisdell Bird Addition Lot 7 Block 9).

Application has been made to the City Council for a moving permit to move these structures, and a public hearing will be held on May 7, 2018, at 6:30 p.m. in City Council Chambers at City Hall (515 2nd Avenue SW).

Anyone objecting to the granting of the permits to move these structure should make their protest known and appear in opposition to the granting of these permits. Further information can be obtained from Mitch Flanagan, Building Official, at 857-4102.

Publish Legal Ad: April 22, 2018
April 28, 2018
May 5, 2018

Bill to: Inspection Department
City of Minot
515 2nd Avenue SW
Minot, ND 58701

City of Minot

Inspection Department

April 16, 2018

Re: Building relocation request

Dear Property Owner:

Please be advised that this office has received a request from Clay Burns to relocate a single-family dwelling and garage from 1430 1st Ave SE to **605 17th St NW** (Blaisdell Bird Addition Lot 7 Block 9). This property is zoned R1, Single-Family Residential District.

The Committee of the Whole will be reviewing the request on Wednesday, May 2, 2018, at 4:15 p.m. in the City Council Chambers at City Hall. A public hearing regarding the request will be held on May 7, 2018, at 6:30 p.m., also in the City Council Chambers. If you wish to appear or give comments concerning the request, you may attend these meetings, or you may present comments to this office at 1025 31st Street SE during normal working hours.

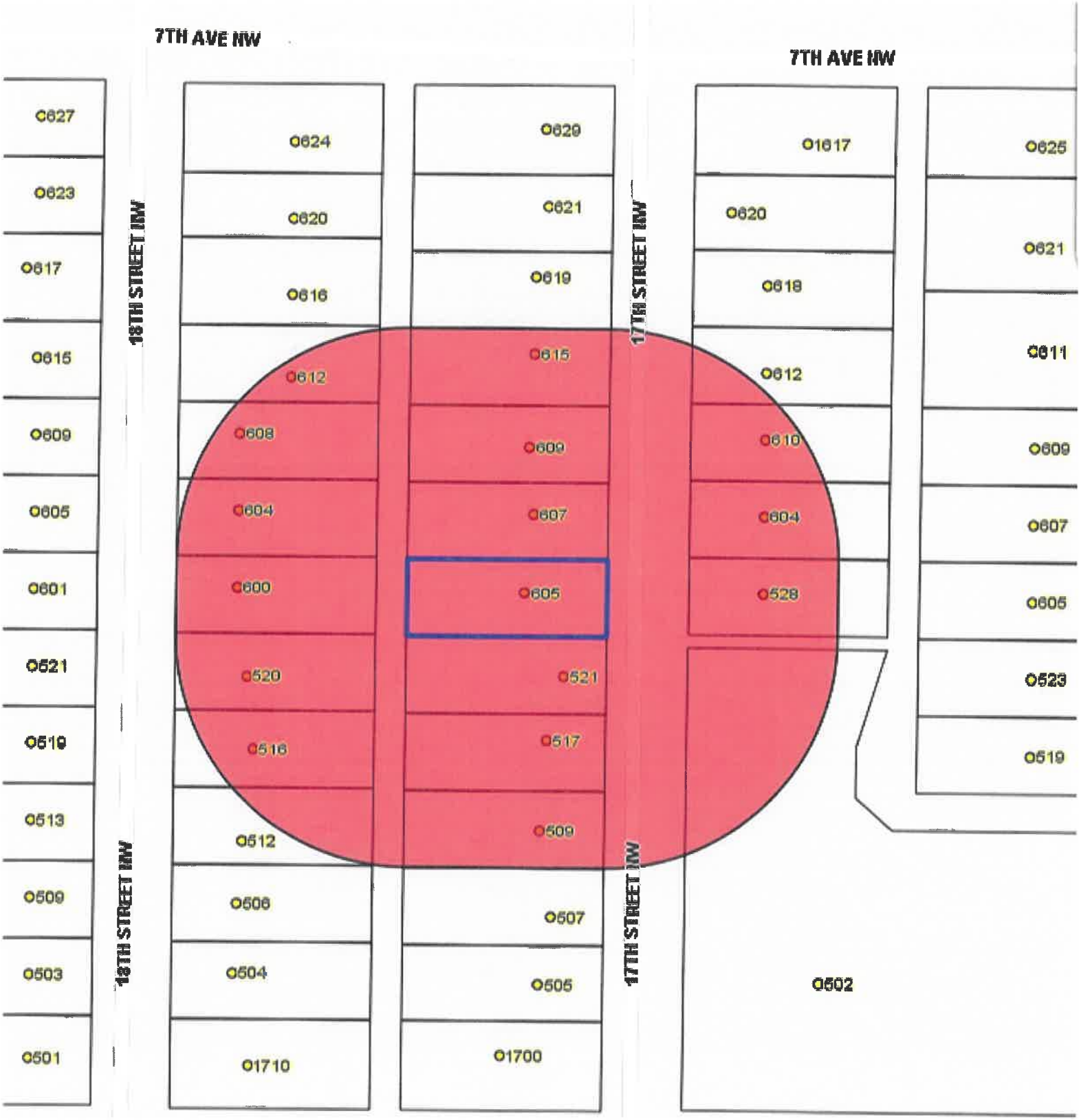
Sincerely,

M. T. Flanagan

M. T. Flanagan
Building Official

Enclosures

Certified Mail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House





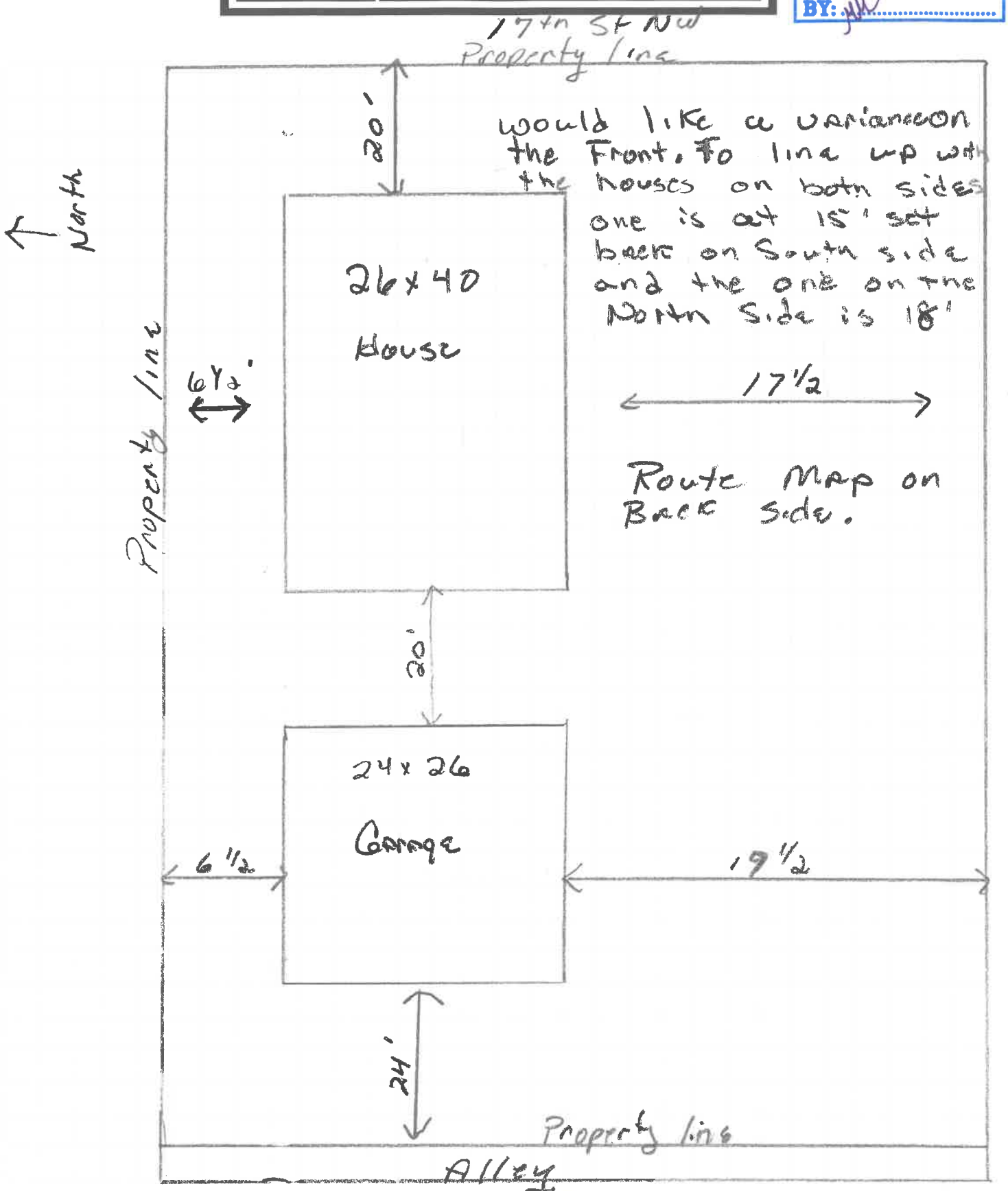
Detached Garage

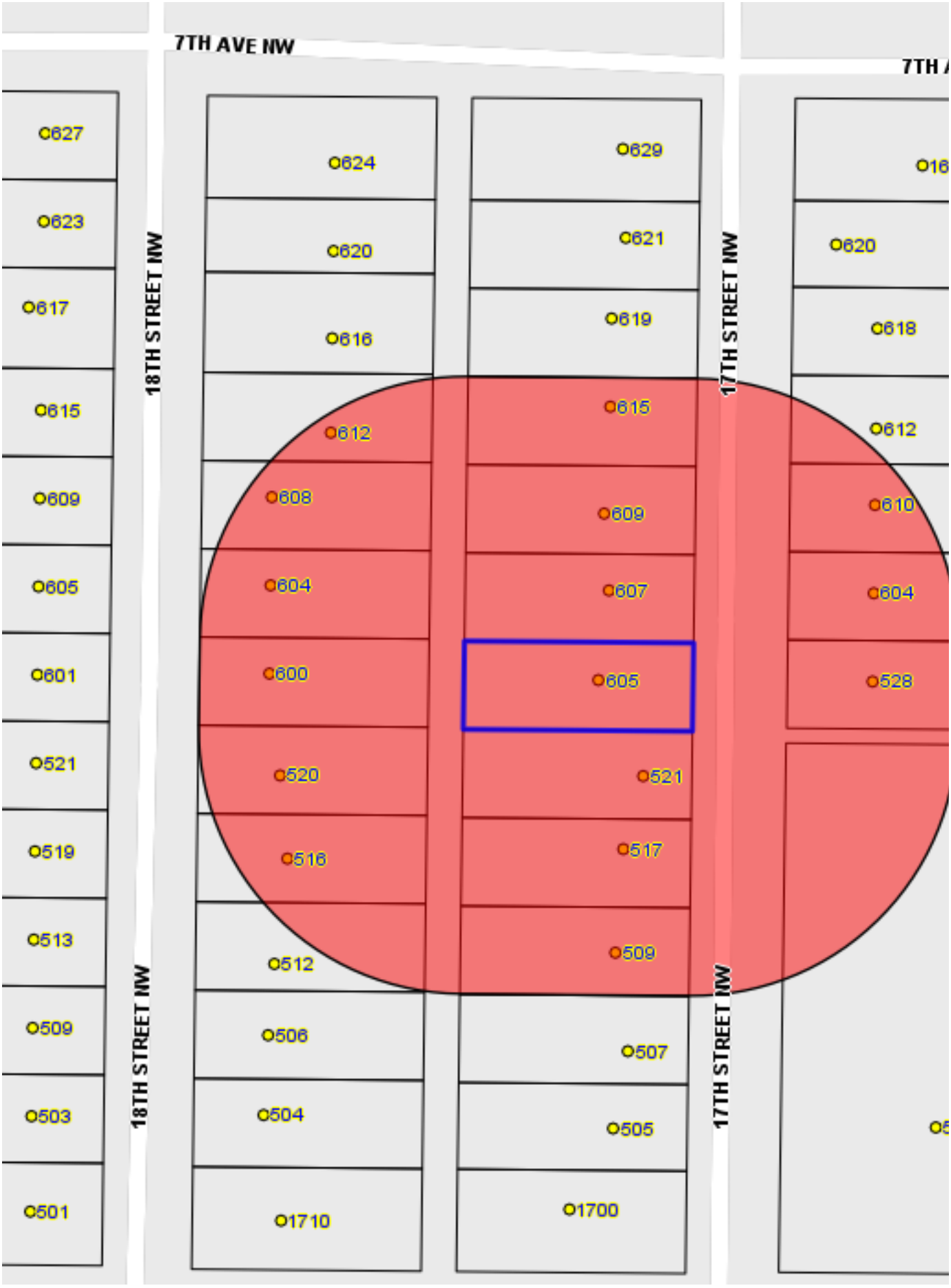




HD SUPPLY WATERWORKS SM

RECEIVED
MAR 0 9 2018
BY: JW

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BUILDING RELOCATION INSPECTION CHECKLIST

City of Minot Inspections Department

1025 31st Street SE Minot, ND 58701, Phone: 701-857-4102

PROPERTY LOCATION: 1430 1st Ave SE

PROJECT NAME: Clay Burns

EXTERIOR:

1. Are there signs of roof, foundation, wall and structural support failure? No
2. What is the current condition of shingles and roof vents? new condition
3. Current condition of windows, facia, and trim? new condition
4. Current condition of siding, need repair, replacement, or paint? new condition no need of repair or paint

INTERIOR:

1. Are windows in all sleeping rooms egress type (820 Sq. In. Net openable area)? yes
2. Are smoke detectors installed and in correct location? yes
3. What is the size and condition of floor supports? trusses some modifications were made with an approved fix from the truss company
4. Does the building have fuses or circuit breakers and what size is the electrical panel? circuit breakers 200 amp
5. What is the type and current condition of wiring? copper new condition
6. What is the type and current condition of HVAC? new forced air natural gas

COMMENTS: The house was built new after the 2011 never lived in

INSPECTOR'S SIGNATURE: Michael J Murphy Digitally signed by Michael J Murphy Date: 2018.03.15 09:19:35 -05'00' DATE: 03/15/2018

BUILDING RELOCATION INSPECTION CHECKLIST

City of Minot Inspections Department

1025 31st Street SE Minot, ND 58701, Phone: 701-857-4102

PROPERTY LOCATION: 1430 1st Ave SE

PROJECT NAME: Clay Burns garage move

EXTERIOR:

1. Are there signs of roof, foundation, wall and structural support failure? No
2. What is the current condition of shingles and roof vents? new condition
3. Current condition of windows, facia, and trim? new condition
4. Current condition of siding, need repair, replacement, or paint? new condition no need of repair or paint

INTERIOR:

1. Are windows in all sleeping rooms egress type (820 Sq. In. Net openable area)? n/a
2. Are smoke detectors installed and in correct location? n/a
3. What is the size and condition of floor supports? n/a
4. Does the building have fuses or circuit breakers and what size is the electrical panel? n/a
5. What is the type and current condition of wiring? n/a
6. What is the type and current condition of HVAC? n/a

COMMENTS: This garage was built new after 2011

INSPECTOR'S SIGNATURE: Michael J Murphy Digitally signed by Michael J Murphy Date: 2018.03.15 09:19:35 -05'00' DATE: 03/15/2018

City of Minot

Assessor's Office

DATE: March 26th, 2018

TO: Tom Barry, City Manager

FROM: Dan Lovelace, Senior Property Appraiser

SUBJECT: Application from Clay Burns to move a 2014 year built, 1040 sf house located at 1430 1st Ave SE Minot, ND 58701 also known as Lenox Park addition, Lot 42 to Blaisdell Bird Addition, Block 9, Lot 7 also known as 605 17th St NW Minot, ND 58701.

DESCRIPTION

The residence to be moved is a 1040 sf house with a 624 sf detached garage. The structure is wood frame construction, with asphalt shingles, and vinyl siding on the exterior. The house is currently located at 1430 1st St SE in Minot and photos are provided by the property appraiser.

RECOMMENDATION

The area that is under consideration for the moving application is 605 17th St NW Minot, ND 58701, also known as Blaisdell Bird Addition, Block 9, Lot 7. The proposed moving location is at the middle of an established neighborhood. The property is a vacant lot in the middle of a block comprised of a mixture of single story ranch style homes and 1 ½ story, single family homes. The homeowner stated that the 1040 sf house to be moved is to be placed on an insulated concrete form basement foundation.

On a building relocation move, ordinance requires the assessor to determine if the home would currently meet 60% of its replacement cost and whether it is compatible with the neighborhood.

The subject property has a 2017 improvement value of $182,000 according to the City of Minot Assessor's office. Houses just adjacent to the proposed moving location have a valuation ranging from $217,000 to $95,000. After moving in the house and 2 stall detached garage, the property would fit in with homes in the vicinity, both in terms of value as well as appearance.

This structure was constructed in 2014 and therefore is estimated to meet 60% of its replacement cost as per Sec 9-47(b) (c) of the Minot Code of Ordinances and appears to be compatible with the existing properties in the immediate neighborhood.

It is our opinion that this structure will be compatible with the existing properties in the neighborhood, therefore the City of Minot Assessor's Office recommends the move be approved to the proposed site.

515 2nd Av SW · Minot, North Dakota 58701 · (701) 857-4160 · Fax (701) 857-4130

Subject:



Subject:



Subject:



Proposed moving location:



Property to the South of Proposed moving location:



2nd Property to the South of Proposed moving location:



3rd Property to the South of Proposed moving location:



1st Property to the North of Proposed moving location:



2nd Property to the North of Proposed moving location:



3rd Property to the North of Proposed moving location:



Property directly across street from Proposed moving location:



Property directly across street and 1 house to the North:



Property directly across street and 1 house to the South:



City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Mitch Flanagan, John Zakian

DATE: *May 7, 2018*

SUBJECT: **Building relocation request to 110 4th Ave NW**

I. RECOMMENDED ACTION

It is recommended the Committee and Council approve the relocation of the single family residence, from 103 4th Ave NW, Minot ND, 58703 also known as Oakland Park Addition Lot 8, Block 2, to 110 4th Ave NW, Minot, ND 58703, also known as Ramstad's Third Addition Lot 3, Block 1, subject to the following conditions:

1. A ten-thousand dollar completion bond must be posted with the City of Minot prior to issuance of any permits for this work.

2. Application and approval of building permits for all proposed construction.

3. An approved foundation design in compliance with City of Minot building codes.

4. If required: plumbing, electrical and HVAC systems must be brought into compliance with current code requirements of the City of Minot.

5. All work at the new location must be in compliance with City of Minot building codes and zoning ordinances.

6. The exterior of the structure must be one consistent color arrangement of colors after relocation.

7. Applicant must obtain all necessary permits, and coordinate all relocation activities with public utilities and traffic authorities.

8. The property must be provided with proper site drainage, and must be landscaped in a manner similar to surrounding properties.

II. DEPARTMENT CONTACT PERSONS

Mitch Flanagan, Building Official	857-4102
Mike Murphy, Residential Inspector	857-4102
Damon Druse, Assistant Property Appraiser	857-4160

III. DESCRIPTION

A. Background:

The structure to be moved is a 2 story with a partial basement residential style building with stairway access to a 3rd story over a portion of the structure for approximately 2,608 square feet above ground with an approximate year built in 1899. The structure has 3 bedrooms, ½ bathroom, living room, family room, kitchen with dining area. The structure has a wood shingled roof which appears to be in below average condition and masonry veneer siding and wood lap siding which needs paint/general maintenance and is considered in below average condition. The structure has a boiler for hot water radiant heat. The exterior and interior of the structure is in below average overall condition. According to information provided to this office, the structure will be placed on a basement foundation at the proposed relocation site. The 12' x 18' garage will also be moved to the new location. The proposed moving location is a level vacant lot zoned R3B located across the street from its current location.

IV. IMPACT:

This structure was purchased by the City and is located in the flood buyout area. With the property acquired through HUD CDBG-DR funds, HUD requirements included an environmental assessment which also involved providing opportunity for review and clearance by the State Housing Preservation Officer (SHPO). In the case of this structure, SHPO found it to have historic significance and would not provide necessary clearance to permit the city to acquire necessary properties and structures for flood control measures. SHPO insisted on the preservation of this structure through a Memorandum of Understanding (MOU) stipulating that the city would move the structure outside the flood construction zone placed on a new foundation. The city had to sign the MOU and agree to its terms to secure SHPO clearance to use the CDBG-DR and CDBG-NDR funds to acquire properties needed for the flood mitigation projects.

V. TIME CONSTRAINTS

All work must begin within 30 days of issuance of moving and building permits and completed within ten months of start date and generally in accordance with the following schedule:

1. Foundation complete within two months.
2. Structure relocated within four months
3. Work required for code compliance completed within six months
4. All proposed construction and final clean up completed within ten months.
5. City of Minot Zoning Ordinance, Section 23-1 states:

"All off-street parking spaces and all driveways on private property leading to such parking areas shall be all-weather hard surface material. Acceptable surfacing materials include asphalt, concrete, brick, cement pavers or similar materials installed and maintained according to industry standards."

VI. LIST OF ATTACHMENTS

A. Application for Moving a Residential Building, pictures, and site plan.
B. Letter to homeowners within 150 feet.
C. Letter to applicant.
D. Map showing properties affected
E. Inspectors reports
F. Assessors report

Approved for Council Agenda: _____ Date: _____

City of Minot

INSPECTIONS DEPARTMENT

RECEIVED
MAR 2 8 2018
BY:

Permit No:
Receipt No:

APPLICATION FOR MOVING A RESIDENTIAL BUILDING

I, Christopher Owen, owner and/or agent hereby make application to the City Building Official to move a(n) residential structure(s) **from**:

LOT 8 BLOCK 2

ADDITION Oakland Park Addition

ADDRESS 103 4th Ave NW

To the location within the City of Minot, North Dakota, legally described as:

LOT 3 BLOCK 1

ADDITION Ramstad's Third Addition

ADDRESS 110 4th Ave NW ZONING R3B

I understand that this relocation request shall be posted by the City of Minot for a Notice of Public Hearing and that such Notice shall be published in the Official Newspaper designating the date of said hearing. Separate notices shall be sent by certified mail to affected property owners.

Moving Fee:

Residential Use: City Council approval fee: $450.00

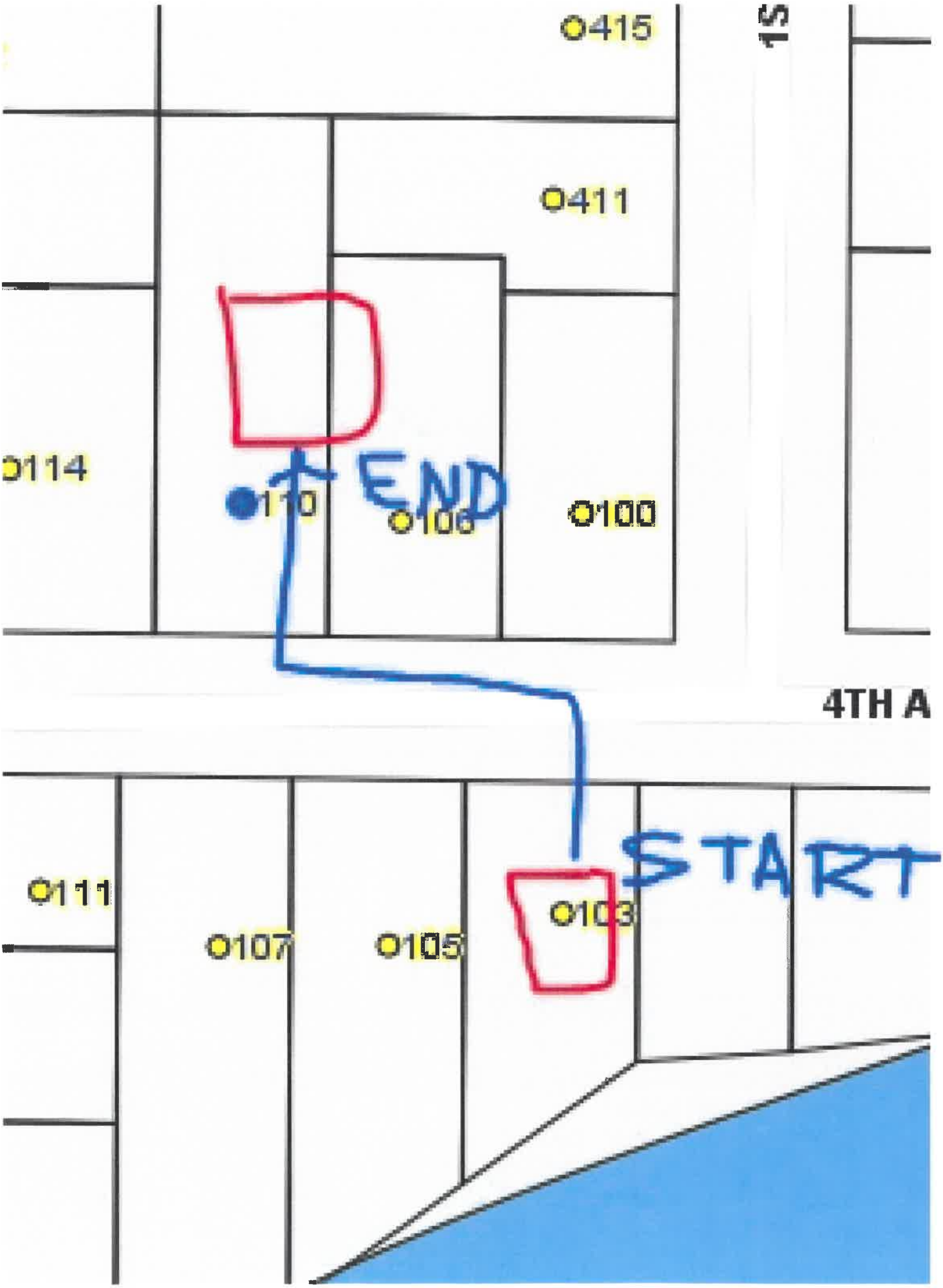
It is further understood that a completion bond in the amount of $10,000.00 shall be provided to the City upon the approval of this application.

Signature of owner/agent — Date: 28 Mar 18

PO Box 5006, Minot ND 58702
Mailing Address

701 857-1553
Phone


HOME SWEET HOME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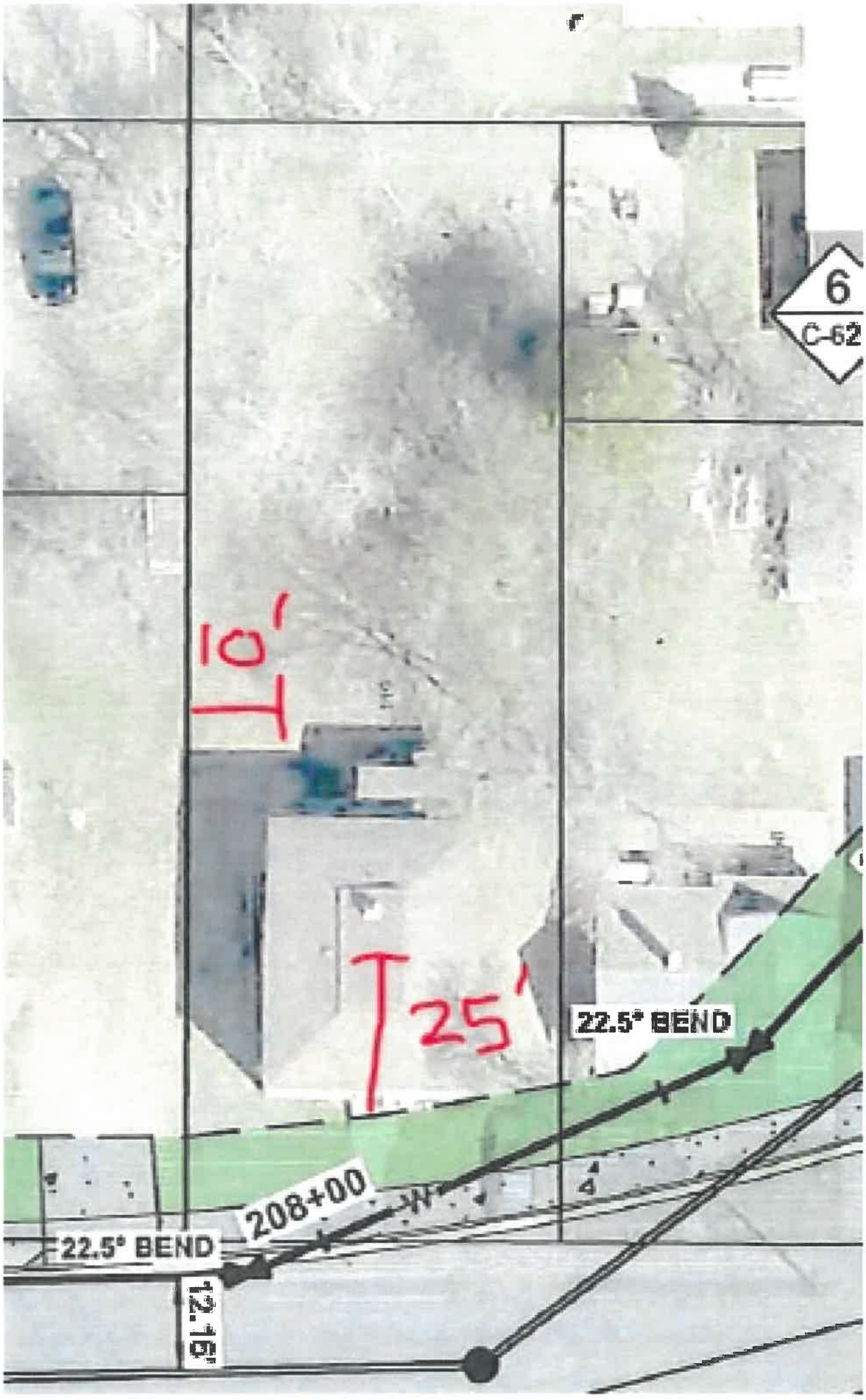
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Christopher Owen: You or your representative should appear on behalf of your request at the Committee of the Whole meeting on Wednesday May 2, 2018, at 4:15 p.m. in the City Council Chambers. The Committee of the Whole will be considering your request at that time.

NOTICE OF INTENT TO MOVE A BUILDING

Christopher Owen, owner of a single-family dwelling, is requesting to relocate this structure from 103 4th Ave NW to **110 4th Ave NW** (Ramstad's Third Addition, Lot 3 Block 1).

Application has been made to the City Council for a moving permit to move this structure, and a public hearing will be held on May 7, 2018, at 6:30 p.m. in City Council Chambers at City Hall (515 2nd Avenue SW).

Anyone objecting to the granting of the permit to move this structure should make their protest known and appear in opposition to the granting of this permit. Further information can be obtained from Mitch Flanagan, Building Official, at 857-4102.

Publish Legal Ad: April 22, 2018
April 28, 2018
May 5, 2018

Bill to: Inspection Department
City of Minot
515 2nd Avenue SW
Minot, ND 58701

City of Minot

Inspection Department

April 16, 2018,

Re: Building relocation request

Dear Property Owner:

Please be advised that this office has received a request from Christopher Owen to relocate a single-family dwelling from 103 4th Ave NW to **110 4th Ave NW** (RAMSTAD'S THIRD ADDITION LOT 3, BLOCK 1). This property is zoned R3B, "RM" Medium Density Residential District.

The Committee of the Whole will be reviewing the request on Wednesday, May 2, 2018, at 4:15 p.m. in the City Council Chambers at City Hall. A public hearing regarding the request will be held on May 7, 2018, at 6:30 p.m., also in the City Council Chambers. If you wish to appear or give comments concerning the request, you may attend these meetings, or you may present comments to this office at 1025 31st Street SE during normal working hours.

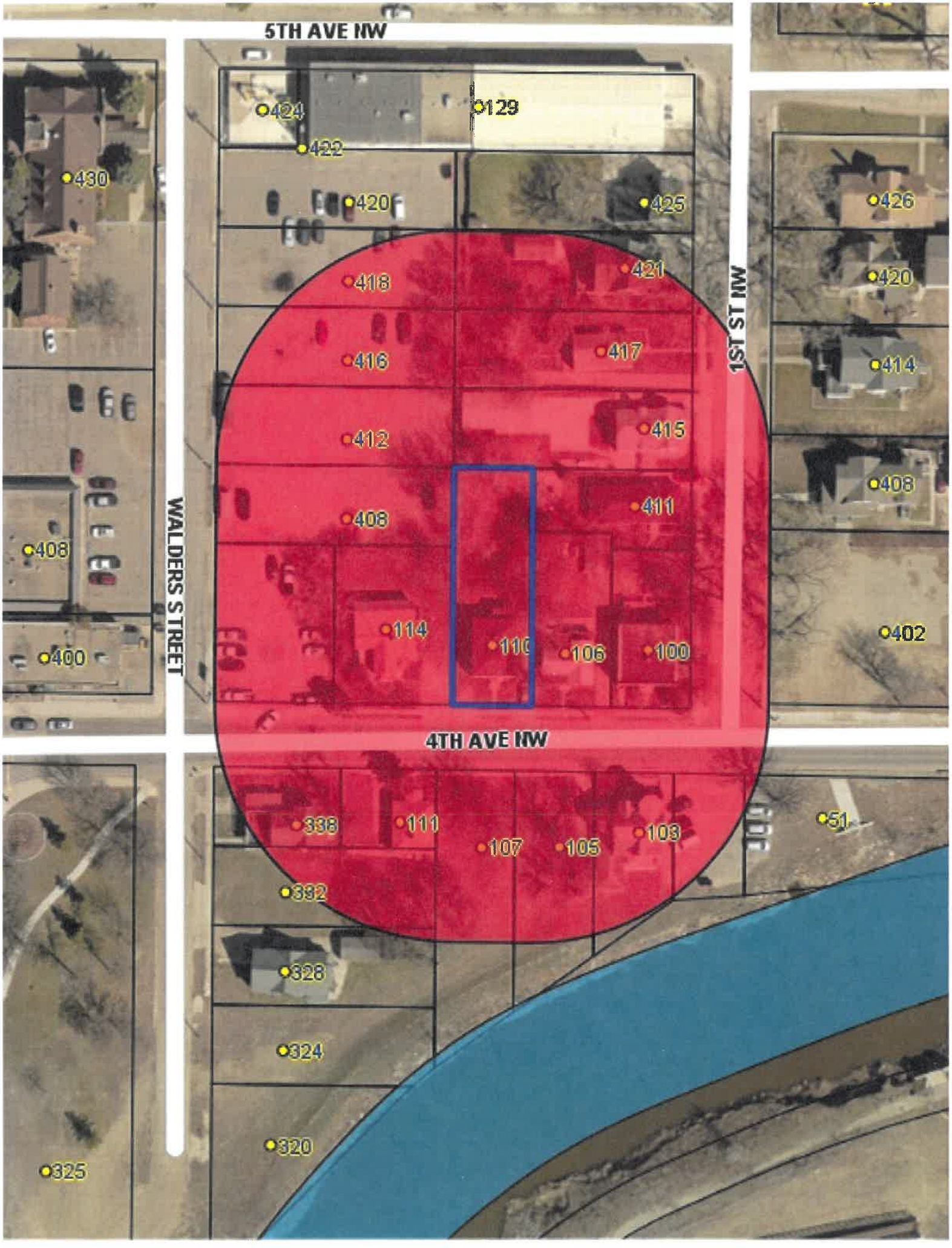
Sincerely,

M. T. Flanagan

M. T. Flanagan
Building Official

Enclosures

Certified Mail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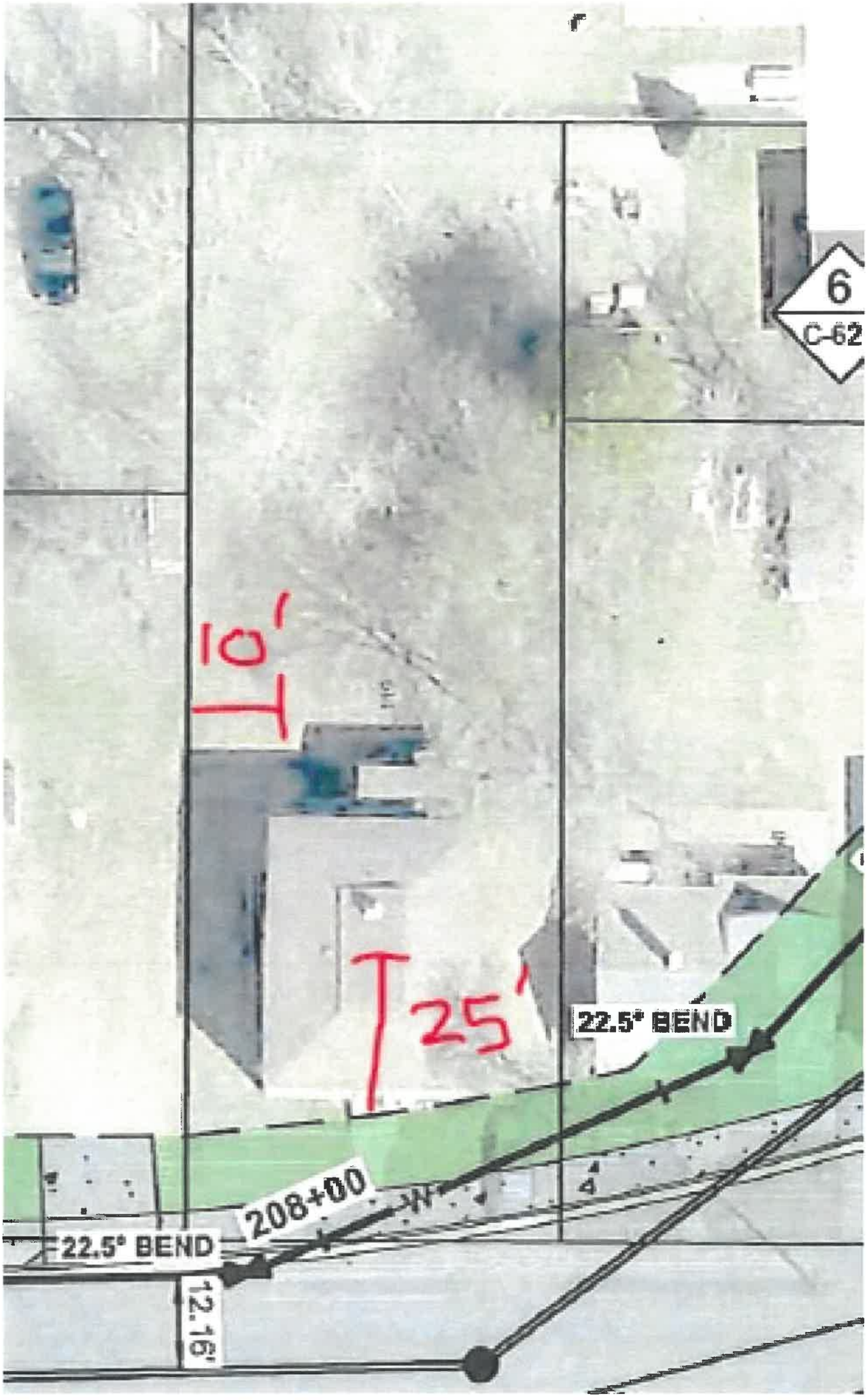
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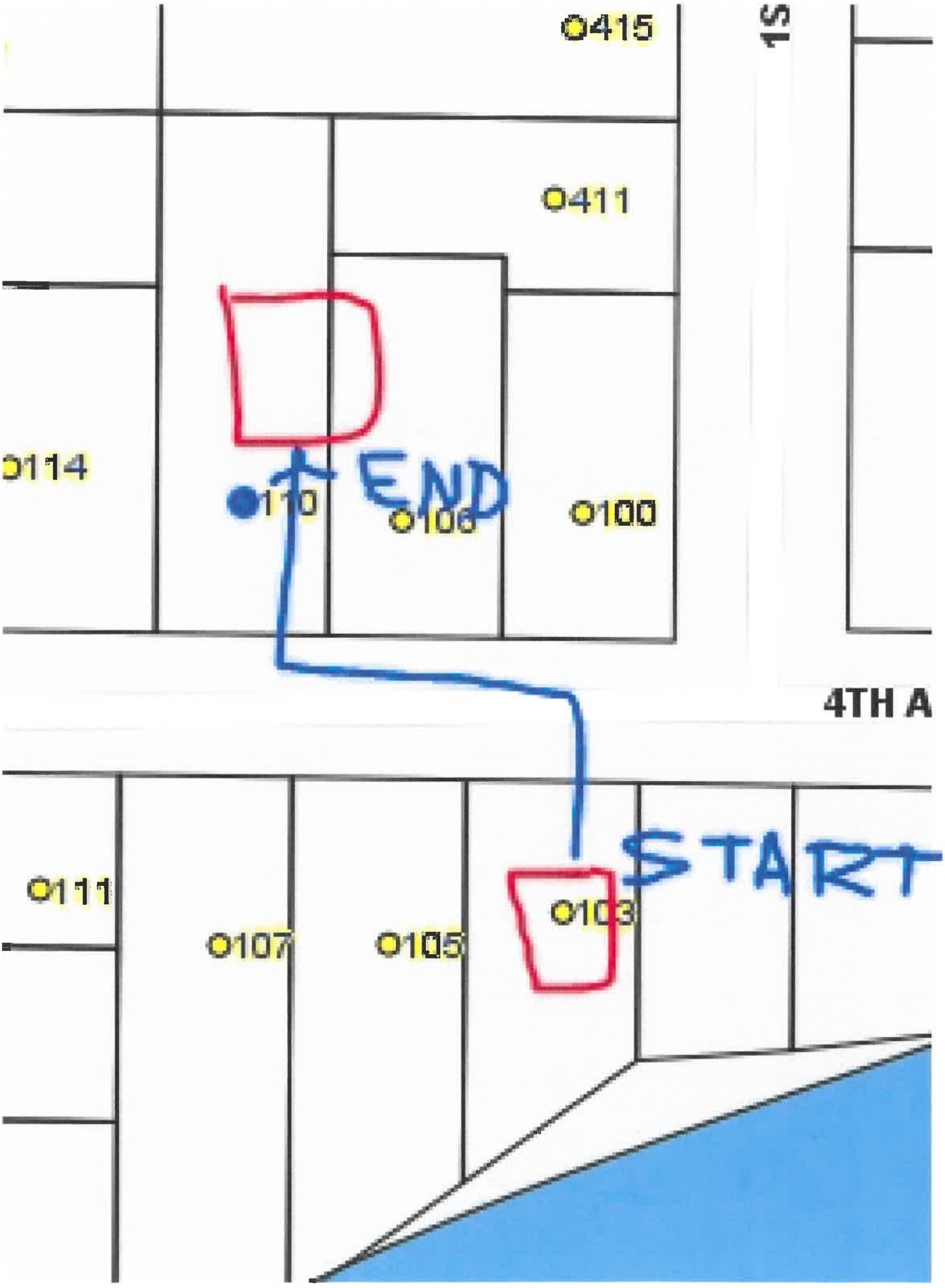
HOME SWEET HOME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BUILDING RELOCATION INSPECTION CHECKLIST

City of Minot Inspections Department

1025 31st Street SE Minot, ND 58701, Phone: 701-857-4102

PROPERTY LOCATION: 103 4th Ave NW

PROJECT NAME: Home Sweet Home

EXTERIOR:

1. Are there signs of roof, foundation, wall and structural support failure? old stone foundation poor condition
2. What is the current condition of shingles and roof vents? wood shingles poor condition
3. Current condition of windows, facia, and trim? single pane wood windows,poor condition wood facia and trim poor condition
4. Current condition of siding, need repair, replacement, or paint? wood and stucco siding , poor condition needs repair and paint

INTERIOR:

1. Are windows in all sleeping rooms egress type (820 Sq. In. Net openable area)? there are no egress windows
2. Are smoke detectors installed and in correct location? no
3. What is the size and condition of floor supports? floor joists are under sized
4. Does the building have fuses or circuit breakers and what size is the electrical panel? 200 amp breaker
5. What is the type and current condition of wiring? some new wiring ,copper not sure how much old wiring is still in use behind the old plaster
6. What is the type and current condition of HVAC? gas fired boiler old radiators

COMMENTS: very old house stair ways not up to code floor joist and supports in basement have been compromised from renovations over the years

INSPECTOR'S SIGNATURE: Michael J Murphy Digitally signed by Michael J Murphy Date: 2018.04.02 10:08:46 -05'00' DATE: 4/2/2018

City of Minot

Assessor's Office

DATE: March 29, 2018

TO: Lance Meyer, City Engineer

FROM: Damon Druse, Asst City Assessor

SUBJECT: Application from Chris Owen(City of Minot) to move a single family structure(used as a retail store) from Oakland Park Addition Block 2 Lot 8 also known as 103 4th Ave NW Minot, ND to Ramstads Third Addition Block 1 Lot 3 also known as 110 4th Ave NW Minot, ND.

DESCRIPTION

The structure to be moved is a 2 story with a partial basement residential style building with stairway access to a 3rd story over a portion of the structure for approximately 2,608 square feet above ground with an approximate year built in 1899. The structure has 3 bedrooms, ½ bathroom, living room, family room, kitchen with dining area. The structure has a wood shingled roof which appears to be in below average condition and masonry veneer siding and wood lap siding which needs paint/general maintenance and is considered in below average condition. The structure has a boiler for hot water radiant heat. The exterior and interior of the structure is in below average overall condition. According to information from the City of Minot Building Official, the structure will be placed on a basement foundation at the proposed relocation site. The 12' x 18' garage will also be moved to the new location per the Building Official. The proposed moving location is a level vacant lot zoned R3B located across the street from its current location.

RECOMMENDATION

The proposed site for relocation consists a mixture of single family and multi-family properties. The immediate area consists of 1 story (1887-1925 yr blt), 1½ story (1890-1926 yr blt) and some 2 story (1906-1914 yr blt) buildings.

It is the opinion of the assessors' office that this structure is compatible with the area based on year built and style of structures located in the surrounding neighborhoods.

The structure currently does not meet 60% of its replacement cost, as per Sec 9-47(b) (c) of the Minot Code of Ordinances. The Building Official for the City of Minot has stated the home will be placed on a basement foundation.

Subject:



110 4th Ave NW (proposed site for relocation)



408 1st St NW (east of proposed moving location):



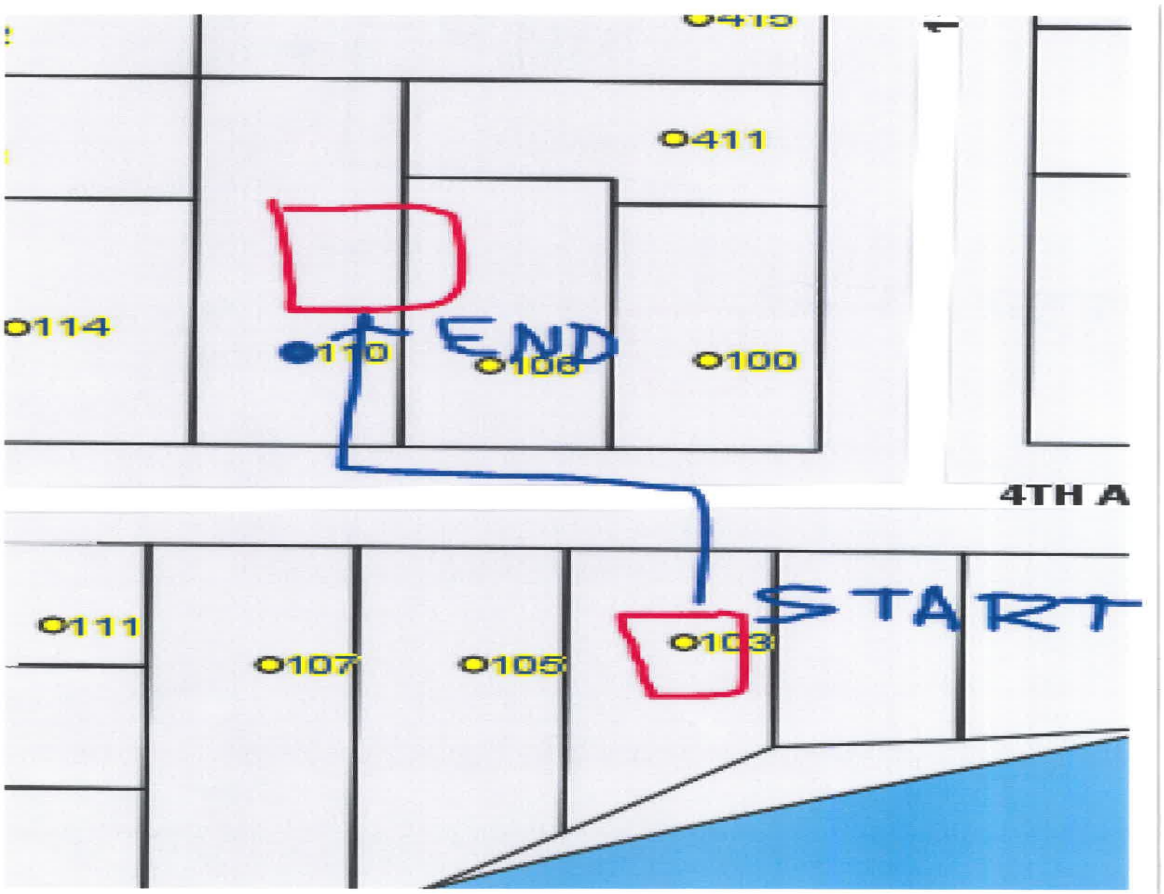
414 1st St NW (east of proposed moving location):



411 1st St NW (east of proposed moving location):



Site map:



City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Chief Jason Olson

DATE: April 17, 2018

SUBJECT: **2018 ND DES SHSP GRANT APPLICATION (PD0150)**

I. RECOMMENDED ACTION

1. Recommend approval for the Minot Police Department to apply for the 2018 North Dakota Department of Emergency Services State Homeland Security Program; and
2. Authorize the Mayor to sign the grant agreement, if awarded; and
3. Authorize the Mayor to sign the budget amendment, if awarded

II. DEPARTMENT CONTACT PERSONS

Jason Olson, Chief of Police	857-4715
John Klug, Captain, Grants Administrator	857-9800
Shane Haug, Lieutenant, Door Lock System Administrator	857-9869

III. DESCRIPTION

A. Background

The Police Department has filed a letter of intent to apply for $66,000 in grant funding through this program for replacement of 28 electronic door locks at the police department. There is no local match requirement for this grant.

The current door locks have been in use since 2005 and are wearing out at a replacement cost of $1,500 per lock. The replacement system will enhance security and improve operational issues through the management software included. This will make the process of changing and updating door security codes more efficient. It will allow door monitoring and management to take place from a computer thus eliminating the need to physically manage each lock every time a change is made.

B. Proposed Project

Purchase a replacement door lock system which includes software for lock management. It also includes a printer and software system to create proximity ID cards that can be used to access doors. The system has the capability to be managed from one computer which is an improvement over the current system which requires reprogramming of each lock every time an update is made. This is a time consuming chore for our door lock administrator. The new system will also log which code was used to access or attempted to access a door. This can be a valuable tool for managing facility security.

C. Consultant Selection

If the grant is awarded the standard acquisition process will be followed to acquire the system.

IV. IMPACT:

A. Strategic Impact:
Improved security for the Police Department building.

B. Service/Delivery Impact:
Improved efficiency in electronic door lock management practices.

C. Fiscal Impact:

Project Costs	
Electronic Door Lock system	$64,000
Proximity Key/ID printer/software	2,000
Total	$66,000

Project Funding
ND DES SHSP Grant – 001-0000-331.10-15

V. ALTERNATIVES

A. The electronic door lock system has been considered for funding through the last two budget cycles but ultimately cut due to budget constraints. The alternatives to funding this project with this grant are:
   1. Funding through the normal budget process.
   2. Continue using the current door lock system and replace the locks as they wear out.

V. TIME CONSTRAINTS

A. The grant deadline will be known once the application is released by ND DES. It will likely be a short turnaround for the application to be submitted.

VI. LIST OF ATTACHMENTS

A. Budget Amendment

ORDINANCE NO:

AN ORDINANCE AMENDING THE 2018 ANNUAL BUDGET TO INCREASE THE POLICE PATROL REVENUES AND EXPENDITURES FOR A STATE HOMELAND SECURITY PROGRAM GRANT FOR THE PURCHASE OF REPLACEMENT ELECTRONIC DOOR LOCKS AT THE POLICE DEPARTMENT.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MINOT:

§1: Amend the 2018 annual budget to increase the police patrol revenues and expenditures for a State Homeland Security Program Grant.

001-0000-331.10-15	PD0150	$66,000
001-2100-421.06-50	PD0150	66,000

§2: This ordinance shall be in effect from and after its passage and approval.

PASSED FIRST READING:

PASSED SECOND READING:

APPROVED:

ATTEST:

_____
Chuck Barney, Mayor

_____
Kelly Matalka, City Clerk

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Kelly Matalka, City Clerk

DATE: April 26, 2018

SUBJECT: **GAMING SITE AUTHORIZATIONS- ANNUAL GAMING ORGANIZATION RENEWALS**

I. RECOMMENDED ACTION

1. Recommend approval of the gaming site authorizations for the license year of July 30, 2018 through June 30, 2019, subject to receipt of proper documentation and fee.

II. DEPARTMENT CONTACT PERSONS

Kelly Matalka, City Clerk 857-4752

III. DESCRIPTION

Site approval by the City Council is required as a precondition to obtain a state games of chance license. Each organization submits documentation annually in order to conduct games of chance at locations throughout the City of Minot.

IV. IMPACT:

Fiscal Impact:
The City receives $100 per site authorization, which is deposited into the appropriate general fund revenue account.

V. ALTERNATIVES

The Committee of the Whole and City Council could deny an application and the establishment would not be permitted to conduct games of chance.

VI. TIME CONSTRAINTS

Site authorizations must be approved in a timely manner in order for organizations to submit their approved gaming form to the Attorney General's Office by the deadline.

VII. LIST OF ATTACHMENTS

A. List of Organizations and Gaming Sites

Organization Name	Site Owner	Dba	Site Address
American Fdn for Wildlife	VennMitchell, Inc.	The Landing Bar & Bottle Shop	2015 N Broadway
Bishop Ryan Catholic School	Bishop Ryan Catholic School	Bishop Ryan High School	316 11th Ave NW
Fraternal Order of Eagles #2376	Columbian Club Association	Knights of Columbus Club	2601 N Broadway
Magic City Lions	Tonite We Ride Inc	Ben's Tavern	220 6th St NE
Magic City Lions	Bev Naps, Inc.	Elevation	1912 Valley Bluff
Magic City Lions	Spicy Pie MSU, LLC	Spicy Pie	1100 North Broadway
Magic City Lions	WWW, Inc.	Ebeneezer's	300 & 304 E Central Avenue
Minot Hockey Boosters, Inc.	Barley Pop Bar, Inc.	Barley Pop Bar	437 N Broadway
Minot Hockey Boosters, Inc.	Rose's Blind Duck, LLC	Rose's Blind Duck Lounge	1524 S Broadway, Ste 8
Minot Hockey Boosters, Inc.	Lovelace, Inc.	Nola's Lounge	919 Burdick Expy W
Minot Hockey Boosters, Inc.	EBP, Inc.	Roosters Nightclub	101 South Main St
Minot Hockey Boosters, Inc.	H O Entertainment, LLP	Dae Udder Place Lounge & Casino	1015 S Broadway
Minot Hockey Boosters, Inc.	Don & Dawn VerBruggen	The Ice Box	100 3rd St NE
Minot Hockey Boosters, Inc.	AV Vintreet, Inc.	Off The Vine	15 South Main St
Minot Hockey Boosters, Inc.	The "O"riginal, Inc.	The "O"riginal Bar and Nightclub	720 North Broadway
Minot Junior Golf Assn, Inc.	Shedars, Inc.	Capri Bar	2030 Burdick Expy E
Minot Junior Golf Assn, Inc.	Hanuman, LLC	Dakota Inn Trappers Lounge	2401 W 2 & 52 Bypass
Minot Junior Golf Assn, Inc.	TEN, Inc.	Dakota Lounge	2400 10th St SW
Minot Junior Golf Assn, Inc.	North Hill Bowl, Inc.	Lucky Strike Lounge & Casino	1901 N Broadway
Minot Junior Golf Assn, Inc.	Bricks, Inc.	Ranger Lounge	1218 S Broadway
Minot Junior Golf Assn, Inc.	5 Guys Bar, LLC	Bootlegrz	515 20th Ave SE Ste 2B
Minot Lodge 822 Loyal Order of Moose	Moose Lodge	Moose Lodge	400 9th St SW
MSU Alumni Association, Inc.	FinDin, LLC	Sevens Bar & Restaurant	2315 North Broadway
MSU Alumni Association, Inc.	Arny's Inc.	Arny's Bottle Shop & Lounge	12 3rd Street SE
MSU Alumni Association, Inc.	Pour House, LLC	Pour House	400 E Central Ave, Ste 102
MSU Alumni Association, Inc.	International Inn, Inc.	Grand International	1505 N. Broadway
MSU Beaver Boosters, Inc.	Poor, Inc.	The Pour Farm	201 37th Ave SW
MSU Beaver Boosters, Inc.	Lamplighter Lounge, Inc.	Lamplighter Lounge	200 16th St. SW
MSU Beaver Boosters, Inc.	Sports on Tap, Inc.	Sports on Tap	220 S Broadway
MSU Beaver Boosters, Inc.	KPZ, Inc.	The Spot	215 E. Central
MSU Beaver Boosters, Inc.	Holiday Inn Riverside	Holiday Inn Riverside	2200 Burdick Expy E
ND Assn for the Disabled, Inc.	Friday's, Inc.	Rockin' Horse Saloon	2625 Burdick Expy E
ND Assn for the Disabled, Inc.	Saturdays Club	Fireside Lounge	2605 Burdick Expy W

Chapter 18, Article III, Division 10, Section 18-186

(b) No organization shall be allowed authorization for more than five (5) sites at the same time within the city during one (1) license period, except:

(1) Special authorization may be granted by the city council for a one-day gaming operation that is a special event; and

(2) The numerical limitation on-sites imposed herein as to organizations shall not apply to sites for unattended games of chance, but even then, no site shall have more than three (3) unattended games of chance.

(c) No organization may conduct more than six (6) blackjack or twenty-one (21) games simultaneously at the same site within the city.

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Kelly Matalka, City Clerk

DATE: April 26, 2018

SUBJECT: **HOTEL-MOTEL RETAIL LIQUOR AND BEER LICENSE TRANSFER- HOLIDAY INN RIVERSIDE**

I. RECOMMENDED ACTION

It is recommended the Committee and Council approve the request to transfer ownership of the Hotel-Motel Retail Liquor and Beer license for Holiday Inn Riverside from Heartland Hospitality Fund, LLC, to ADB Investments Minot, LLC subject to receipt of all documentation and approval by the Police Chief, Building Official and Fire Marshal.

II. DEPARTMENT CONTACT PERSONS

Kelly Matalka, City Clerk 857-4752

III. DESCRIPTION

Under the City of Minot Code of Ordinances, Sec. 5-25. - City clerk to submit application to the committee of the whole; approval.

a. The city clerk shall submit the application to the committee of the whole for its recommendation.
b. Upon receiving the recommendation of the committee of the whole, the city clerk shall then submit the application to the city council for its consideration.
c. Every application for a license required by this article shall be approved by the city council before the license shall be issued.

The City received a request to transfer ownership of the Hotel-Motel Retail Liquor and Beer license for Holiday Inn Riverside from Heartland Hospitality Fund, LLC, to ADB Investments Minot, LLC All documentation has been submitted and is being reviewed by the appropriate departments.

IV. IMPACT:

Alcoholic beverage license applications are processed by the City Clerk. The transfer fee is $250 and is deposited into the appropriate general fund revenue account.

V. ALTERNATIVES

The Committee of the Whole and City Council could deny this application and the establishment would not be permitted to sell alcohol.

VI. TIME CONSTRAINTS

Once the City license is approved, the organization must also apply for a State license. A timely approval is necessary if their business wishes to proceed with the sale of alcohol.

VII. LIST OF ATTACHMENTS

N/A

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Kelly Matalka, City Clerk

DATE: April 26, 2018

SUBJECT: **RETAIL BEER LICENSE TRANSFER- LOAF 'N' JUG**

I. RECOMMENDED ACTION

It is recommended the Committee and Council approve the request to transfer ownership of the Beer license for Loaf 'N' Jug from Mini-Mart, Inc. to EG Retail (America), LLC subject to receipt of all documentation and approval by the Police Chief, Building Official and Fire Marshal.

II. DEPARTMENT CONTACT PERSONS

Kelly Matalka, City Clerk 857-4752

III. DESCRIPTION

Under the City of Minot Code of Ordinances, Sec. 5-25. - City clerk to submit application to the committee of the whole; approval.

a. The city clerk shall submit the application to the committee of the whole for its recommendation.
b. Upon receiving the recommendation of the committee of the whole, the city clerk shall then submit the application to the city council for its consideration.
c. Every application for a license required by this article shall be approved by the city council before the license shall be issued.

The City received a request to transfer ownership of the Beer license for Loaf 'N' Jug from Mini-Mart, Inc. to EG Retail (America), LLC. All documentation has been submitted and is being reviewed by the appropriate departments.

IV. IMPACT:

Alcoholic beverage license applications are processed by the City Clerk. The transfer fee is $250 and is deposited into the appropriate general fund revenue account.

V. ALTERNATIVES

The Committee of the Whole and City Council could deny this application and the establishment would not be permitted to sell alcohol.

VI. TIME CONSTRAINTS

Once the City license is approved, the organization must also apply for a State license. A timely approval is necessary if their business wishes to proceed with the sale of alcohol.

VII. LIST OF ATTACHMENTS

N/A

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: *Kelli Flermoen, Fire Chief*

DATE: *April 24, 2018*

SUBJECT: **SCBA AIR COMPRESSOR BIDS**

I. RECOMMENDED ACTION

1. We recommend the Committee and Council reject all bids and allow the fire chief to move forward with a new bidding process.

II. DEPARTMENT CONTACT PERSONS

Kelli Flermoen, Fire Chief 857-4740

III. DESCRIPTION

A. Background
The fire department advertised for bids on a new SCBA air compressor. The bids received were over budget and/or did not meet the specifications as spelled out within the bid package.

B. Proposed Project
We will be advertising for a SCBA compressor that will meet our needs and within budget.

C. Consultant Selection
N/A

IV. IMPACT:

A. Strategic Impact:
This project will allow us to purchase a new SCBA compressor that meets the National Fire Protection Association standards which is part of our guiding budgetary principles as well as the department goal of priding exceptional public safety and emergency service.

B. Service/Delivery Impact:
Our current compressor has pressure restrictions on it that do not allow us to fill to capacity. This compressor will allow us to fill the air tanks with certified breathing air that is necessary for our firefighters to perform their duties.

C. Fiscal Impact:

Project Funding	
Rural Community Grant	$20,000
Fire Capital Purchase	$20,500

Operational Supplies	$4,195

V. ALTERNATIVES

The Committee of the Whole and City Council could deny this application if there is reasonable cause to do so and we can deny the grant. The city will have to fund the project when funding comes available.

VI. TIME CONSTRAINTS

The grant managers have been notified of this delay and we will get it purchased following approval of the bids.

VII. LIST OF ATTACHMENTS

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Kelly Hendershot

DATE: April 26, 2017

SUBJECT: **GOETTLE LEGAL SERVICES**

I. RECOMMENDED ACTION

1. Move to approve and authorize the Mayor to sign the Consulting and Legal Services Agreement between the City of Minot and Shane Goettle.
2. Move to continue the appointments of Shane Goettle and Lacee Anderson as Special Assistant City Attorneys.

II. DEPARTMENT CONTACT PERSONS

Tom Barry – (701) 857-4750
Kelly Hendershot – (701) 857-4755

III. DESCRIPTION

The City of Minot has previously retained Shane Goettle to provide legal services for the purpose of handling state government affairs; and to advise and consult, as needed and requested, on the interface of local, state, and federal resources associated with flood recovery and protection, and city growth associated with energy impacts. The Agreement before the City Council also includes managing other projects, as assigned.

Attorney Goettle's responsibilities pursuant to the Agreement include, among other things: representing the City of Minot before, during, and after the legislative session; coordinating and/or providing testimony on behalf of the City of Minot; communicating with state officials and departments on behalf of the City of Minot. Attorney Goettle also provides a monthly activity report to the City.

IV. IMPACT:

There is no increase in the fees proposed under the new contract. Attorney Goettle's contract maintains the existing cost structure of $3,500 per month from June 1, 2018 through December 31, 2018; $7,500 per month during 2019 North Dakota legislative session (January-April 2019); and $3,500 per month from May 1, 2019 through May 31, 2020.

This expense and service has been budgeted for 2018 under 011-0400-415.03-22. There is a 10-day notice by either party which allows for termination of the contract. Therefore, should future funding become unavailable to sustain the contract, the City could terminate the agreement.

V. ALTERNATIVES

1) The City could chose not to enter into the Agreement with Attorney Goettle. However, without a replacement, there is no one on the staff qualified or with sufficient time to accommodate the workload Attorney Goettle covers.
2) The City could consider other Attorneys to provide this service. However, Attorney Goettle has extensive and in-depth knowledge of Minot and Statewide legislative issues as well as excellent working relationships with the staff and area legislators. He is also providing a significant discount in his fees to the City for his services.

VI. TIME CONSTRAINTS

Attorney Goettle's current Agreement expires May 31, 2018.

VII. LIST OF ATTACHMENTS

1. Consulting and Legal Services Agreement

CONSULTING AND LEGAL SERVICES AGREEMENT

This Agreement is made between the City of Minot, North Dakota (hereafter "Minot") and Shane Goettle, Attorney-at-Law (hereafter "Goettle").

In consideration for the covenants herein, the parties have entered into this Agreement under the terms and conditions set forth below.

1. Agreement. Minot hereby contracts with Goettle on an availability retainer to be designated Special Assistant City Attorney for the purpose of: handling state government affairs; to advise and consult, as needed and requested, on the interface of local, state and federal resources associated with flood recovery and protection, and city growth associated with energy impacts; and managing other projects as assigned.

2. Qualifications. During the term of this Agreement, Goettle shall remain licensed to practice law and meet any other requirements established by the State of North Dakota for Goettle to: represent the City of Minot's state government affairs needs; to advise and consult on flood related and city growth matters; and to manage other projects as assigned.

3. Minot's Responsibilities. Minot will share strategies and develop a work plan for Goettle to utilize. Minot will inform Goettle of its wishes in accordance with its state government affairs agenda, as well as flood and/or growth related issues, and other projects as assigned. Minot agrees to maintain regular and ongoing contact with Goettle.

4. Goettle's Responsibilities. Goettle agrees to provide state governmental affairs and consulting support within the state of North Dakota. The services to be provided shall include the following when requested by Minot:

a. Legislative representation of Minot during the 2019 Legislative Session.
b. Coordinating and providing committee testimony on a limited basis when a Minot representative is unavailable.
c. Maintaining legislative contacts as well as contacts with other appropriate government offices as needed, including the Governor's Office, the Attorney's General Office, Department of Trust Lands, Aeronautics Commission, Treasurer's Office, Tax Department, Water Commission, State Engineer's Office, and other relevant departments of state government.
d. Maintaining regular and ongoing contact with the designated representative of Minot.
e. Tracking and monitoring the progress of interim initiatives, studies and legislative committees, and state legislative bills that are identified as being of special interest to Minot.
f. Providing a monthly activity report.

5. Term. The term of this Agreement shall commence June 1, 2018 and shall remain in full force and effect for two (2) years through the 2019 Legislative Session and until

May 31, 2020. This Agreement may be renewed in writing by Minot and Goettle on or before the expiration of the Agreement. This Agreement may be terminated by either party at any time without cause upon ten (10) days written notice to the other party. Goettle may terminate this Agreement on ten (10) days written notice if Minot fails to make payments to Goettle for services provided under the terms of this Agreement as outlined herein, provided Minot shall have the opportunity to fully cure such non-payment within the ten (10) day notice period. After the effective date of termination by either party, no further payments under this Agreement will be payable or paid.

6. Compensation. In consideration for two years of retained Services provided under this Agreement, Minot shall pay to Goettle: three thousand five hundred dollars ($3,500) per month from June 1, 2018, through December 31, 2018; seven thousand seven hundred dollars ($7,500) per month during the North Dakota legislative session of 2019 (January February, March and April 2019); and three thousand five hundred dollars ($3,500) per month from May 1, 2019 through May 31, 2020.

The first payment shall be made on or before on or before June 1, 2018, and thereafter on or before the first (1st) of each month, with the last payment due on or before May 1, 2020.

In addition, Minot will also reimburse Goettle's expenses. Expenses would need to be approved by a representative of Minot prior to incurring those costs and would need to be supported by appropriate documentation. Minot will provide the necessary reimbursement to Goettle for the approved expenses. Goettle should send billing invoices either by mail or email to:

	City of Minot
Attention:	Kelly Hendershot
Address:	515 2nd Ave SW
	Minot, ND 58702
Email:	kelly.hendershot@minotnd.org

7. Notice. Any notice required by this Agreement shall be deemed to be duly given when mailed by certified mail, postage prepaid, addressed to the recipient thereof at the address given below or such other address as may be subsequently designated in writing by either party to the other party:

If to Goettle: Shane Goettle
P.O. Box 572
Mandan, ND 58554

If to Minot: Tom Barry
515 2nd Ave SW
Minot, ND 58702

8. Miscellaneous.

a, This Agreement shall be governed and interpreted under the laws of the State of North Dakota.

b. No waiver by either party or any term or provision of this Agreement shall be deemed to be a waiver of any other term or provision.

c. This Agreement contains the entire understanding of all prior negotiations and understandings, which are superseded hereby and merged into this Agreement.

d. This Agreement is not assignable by either party without the prior written consent of the other party, except that Goettle may assign the agreement to a professional corporation (such as Goettle Law, PC) or other professional organization (such as Goettle Law, PLLC), established and controlled by Goettle, in which he case he shall notify Minot of such assignment. In addition, Goettle may assign duties to any licensed associate under his supervision.

e. This Agreement may not be amended or modified orally at any time, but only by written Agreement of the parties.

f. This Agreement confirms any earlier oral agreements for which services have been provided by Goettle.

City of Minot

By: _____

Date: _____

Shane Goettle

By: _____
Shane Goettle

Date: _____

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Chief Jason Olson

DATE: April 24, 2018

SUBJECT: **PROPOSAL TO ADD TWO SCHOOL RESOURCE OFFICERS (Project# PD0145)**

I. RECOMMENDED ACTION

1. Recommend approval of adding two Police Officer positions to the 2018 City of Minot budget to backfill for two experienced officers who will be assigned as School Resource Officers at Minot Public Schools; and
2. Authorize the Finance department to make the necessary 2018 budget amendments.

II. DEPARTMENT CONTACT PERSONS

Jason Olson, Police Chief	857-4715
David Lakefield, Finance Director	857-4784
Darren Dyke, Sergeant, SRO Coordinator	857-4715

III. DESCRIPTION

A. Background

The Minot Police Department (MPD) has a cooperative arrangement with Minot Public Schools (MPS) to have two School Resource Officers (SRO) at the MPS high schools. This program has been in place for several years. It has been mutually beneficial to both parties in a number of ways. SROs can provide security and deterrence while engaging with students in ways that build better relationships with law enforcement and the community. SROs can assist with advising students and MPS staff on a variety of issues. They also provide law enforcement services at the schools which helps alleviate the burden on the Patrol Division.

The costs of the SROs are split with MPS picking up 75% of the annual salary and benefit costs for the officers assigned to the schools. MPD pays 25% of salary and benefits cost in addition to costs for equipping the officers. The SROs return to regular assignment to the Patrol Division during the summer months. Overtime costs are paid by MPS when they are the entity requesting the additional hours such as school events. Equipment, training and any other costs are paid for by MPD.

B. Proposed Project

MPS has requested to partner with MPD for two additional SROs. MPS would like to implement the additional SROs beginning in the fall of 2018.

The costs would be split in a manner identical to the existing SROs in accordance with the MOU currently in place (75/25).

The Police Department only supports this proposal if the two Police Officer positions are added to MPD authorized staffing. The ability to adequately staff the Patrol and

Investigations divisions are a higher priority than adding staff to the SRO program. The pending 2019 budget planning may make it more prudent to wait on this decision until the 2019 budget is approved.

IV. IMPACT:

A. Strategic Impact:
This would enhance security for students and staff at MPS. It would also provide all the benefits mentioned above of having SROs present especially in the middle schools.

B. Service/Delivery Impact:
The additional SROs would double the amount of SRO presence in MPS. It would also increase the manpower for the Patrol Division during the summer months when patrol officers tend to be busier.

C. Fiscal Impact:
There would be no need for additional funding in the 2018 Police budget to implement the two additional officers. This is due to the problems experienced in filling of open police officer positions which has resulted in unspent funds in salaries and benefits. There will be some costs of equipping the new officers which will be accomplished by utilizing spare equipment and budget management so as not to exceed appropriated funds. MPS would begin compensating the City when the two new SROs begin their assignments. There will be a fiscal impact to the 2019 City of Minot budget of adding two Police Officer FTEs but 75% of the cost would be offset by MPS. The net effect on the 2019 City budget would be equivalent to adding two ¼ FTE Police Officers.

Project Costs
None for 2018 Budget

Project Funding
Additional potential revenue of up to $9,099.98 to be paid by MPS from September – December depending on SRO start date.

V. ALTERNATIVES

Alt 1. The Council could approve to add one additional police officer to backfill for one additional SRO.

Alt 2. The City Council could deny the request by MPS to add any additional SROs.

VI. TIME CONSTRAINTS

Council's approval of the recommendation will allow the hiring of two additional officers to minimize the manpower impact of starting with the additional SROs. The two additional officers would be hired in early July to begin their training process with anticipated field deployment sometime in December 2018.

VII. LIST OF ATTACHMENTS

A. Copy of existing 2018 City of Minot/Minot Public Schools SRO MOU

Memorandum of Understanding (MOU)

This Memorandum of Understanding (MOU) is being executed by the below listed entities:

Minot Public Schools District No. 1

City of Minot Police Department

Nothing in this MOU should be construed as limiting or impeding the basis spirit of cooperation, which exists between the participating entities, listed above.

I. Purpose

This MOU establishes and delineates the mission of the Minot Police Department School Resource Officer Program (SRO) as a joint cooperative effort. Additionally, the MOU formalizes relationships between the participating entities in order to foster an efficient and cohesive program that will build a positive relationship between police officers and the youth of our community. Further, the desired net effect is to reduce crime committed by juveniles and young adults.

II. Mission

The mission of the Minot Police Department is to promote and support the organizational strategies necessary to address the causes and reduce the fear of crime and social disorder through problem-solving tactics and police-community partnerships. Through the SRO Program, the Department will enhance the services provided to those persons within the School District and the community with an emphasis in the reduction and prevention of school-related violence and crimes committed by juveniles and young adults. The SRO Program will accomplish this mission by creating and maintaining a safe, secure, and orderly learning environment for students, teachers, and staff.

III. Description of General Duties

The SRO will serve in a variety of roles, including law enforcement officer, law-related educator, problem-solver, and community liaison. The SRO will address crime and disorder problems, gangs, and drug activities affecting or occurring in or around the School District. The SRO may teach classes in crime prevention, substance abuse awareness, and gang resistance. The SRO will train students in conflict resolution, restorative justice, and crime awareness. The SRO will monitor and assist troubled students through mentoring programs and promote personal and social responsibility by encouraging participation in community service activities. The SRO will continue to build upon the respect and understanding between law enforcement and the school communities. The SRO will identify physical changes in the environment that could reduce crime in and around the School District. The SRO will help develop school policies that address criminal activity and school safety. The SRO will become a trusted channel of communications with the students, parents, and teachers. The SRO will serve as a positive role model to instill in students high moral standards, good judgment and discretion, respect for other students, and a sincere concern for the school community. The SRO will promote citizen awareness to enable students to become better informed and effective citizens. The SRO will empower students with the knowledge of the law, the obligations regarding enforcement, and the consequences for violations. The SRO will serve as a source of counseling for students and parents in addition to providing information on community resources available to them.

IV. Desired Outcomes

The goals and objectives of the SRO Program are designed to develop and enhance the rapport between youth, police officers, school administrators, parents, and the community.

The goals of the SRO Program are:

1. Improve public safety through better police work.
2. Increase the public's interaction and satisfaction with police services.
3. Reduce incidents of school violence.
4. Reduce criminal offenses committed by juvenile offenders.
5. Develop rapport with students, parents, faculty, staff, administrators, and other adults involved or affected by schools in their community.
6. Implement or expand programs which will benefit the students, school district, and their community.
7. Provide for a safe environment for students, faculty, staff, and all persons involved with the school district.

V. Parties Responsibilities

The Minot Police Department will provide:

1. The law enforcement related equipment and uniforms necessary for the SRO to fulfill their responsibility as a police officer.
2. Payment of overtime unless the overtime period is requested by the School District.
3. Payment of twenty-five percent (25%) of the cost of salary and benefits during the contract period.

4. Payment of costs associated with training, certification, and licensing relating to the SRO's law enforcement duties.
5. Payment of any expenses that are strictly police related.

The Minot School District will provide:

1. Payment of seventy-five percent (75%) of the cost of salary and benefits during the contract period.
2. Payment of overtime requested by the School District.
3. Payment of costs associated with materials, supplies, office equipment, and other immediate costs associated with the SRO program.
4. Payment of any expenses that are strictly school related.

VI. Programmatic Reporting

The Minot Police Department will be responsible for completing and submitting progress reports as required on a periodic basis. Such reports shall include information relating to officer hiring, training, and school related community policing activities performed by the SRO.

VII. Financial Reporting

The Minot Police Department will be responsible for completing and submitting financial reports on a monthly basis.

VIII. Information Sharing

The Minot School District will share student information with the SRO and other Minot Police Department employees in compliance with 34 Code of Federal Regulations (CFR) Part 99 Family Education Rights and Privacy Act (FERPA).

The SRO and other employees of the Minot Police Department shall provide information to the District as required under:

1. North Dakota Century Code (NDCC) 15.1-24-05 Law Enforcement Agencies – Duty to Inform Team relating to violations of law pertaining to alcohol, tobacco, drugs, imitation drugs, drug paraphernalia, driving under the influence, and open container of alcohol.
2. NDCC 12.1-32-15 Offenders against Children and sexual offenders relating to those persons required by law to register as an offender.

The SRO and other employees of the Minot Police Department may provide information to the District as provided under:

1. NDCC 27-20-51.1 Disclosure of Information Needed to Apprehend Juvenile relating to the apprehension of violent offenders.
2. NDCC 27-20-52 Law Enforcement and Correctional Facility Records relating to the inspection of files and records of juveniles adjudicated or alleged to be delinquent, unruly, or deprived.
3. NDCC 44-04-18.7 Criminal Intelligence Information relating to active investigations or intelligence gathering.

IX. Supervision Responsibility and Chain of Command for the SRO

The SRO program will consist of a full time Police Officer sworn to duty by the City of Minot Police Department and certified by the North Dakota Peace Officers Standards and Training Board. Further, the SRO shall meet all requirements as set forth by the City of Minot Police Department's Policy Manual.

The day-to-day operation and administrative control of the SRO Program will be the responsibility of the Minot Police Department. Responsibility for the conduct of the SRO, both personally and professionally, shall remain with the Department. The Chief of Police shall appoint supervisory personnel to oversee the program consistent with the current chain of command.

When a SRO position becomes available, notice will be given to all sworn employees through regular postings. Interested persons will submit a memorandum of interest to the office of the Chief of Police. The officer candidates will be interviewed by a board consisting of Department and School District personnel. The final selection decision will be made by the Chief of Police. The SRO assignment will be for a school year and subject to annual review.

Selection criteria may include but will not be limited to:

1. Oral presentation
2. Past performance report
3. Experience
4. Interpersonal skills
5. Education

The duties and responsibilities of the SRO will include but not be limited to:

1. Coordinate with the school administrator in charge of the SRO Program to develop activities and assignments for the officer in and around the assigned school.
2. Address crime and disorder problems, gangs, and drug activities effecting, or occurring in or around, the SRO's assigned schools by working with students, staff, community-based organizations, and the local community.
3. Act as a law-related educator to students and staff providing formal courses of instruction and informal information sharing sessions in subjects relating to crime prevention, substance abuse awareness, and gang resistance.
4. Act as a community liaison between the school, the community, and local law enforcement to build respect and understanding between all parties.
5. Develop or expand crime-prevention efforts for students.
6. Monitor and assist troubled students through mentoring programs.
7. Promote personal and social responsibility by encouraging participation in community services activities.
8. Educate likely school-age victims in crime prevention and safety.
9. Develop or expand community justice initiatives for students.

10. Train students in conflict resolution, restorative justice, and crime awareness.
11. Assist in the identification of physical changes in the environment that may reduce crime in or around schools.
12. Assist in developing school policy that addresses crime and recommend procedural changes.

The responsibilities of the Police Department's SRO supervisor will include but not be limited to:

1. Coordinate work assignments of the SRO with school administrators and the police department.
2. Coordinate scheduling and work hours between the police department, the school district, and the SRO to include vacations, sick leave, rescheduled time, and training periods.
3. Approve police reports generated by the SRO relating to criminal offenses occurring on or near the school campus and referrals made by the SRO to outside agencies.
4. Ensure SRO remains in compliance of the Police Department Manual.

The responsibilities of the Minot School District will be to provide the SRO the following materials and facilities which are deemed necessary to the performance of the SRO duties:

1. Access to climate controlled and properly lighted private office space which may be used for general business.

2. A filing cabinet for files and records which may be locked and secured.
3. A desk with drawers, chairs, worktable, and office supplies.
4. Access to a telephone, computer system and printer, fax, copier.

The Minot School District will allow the SRO the following opportunities and access to the students, parents, facility, and staff which are deemed necessary to the performance of the SRO duties:

1. Opportunity for classroom participation and formal programs conducted by the SRO.
2. Opportunity to address students, parents, facility, and staff about the SRO Program's goals and objectives.
3. Opportunity to provide input regarding criminal justice problems relating to students.
4. Opportunity to address teachers and school administrators about criminal justice problems relating to students during in-service workdays as agreed to in cooperation with the Minot School District and the City of Minot Police Department.

X. Decision-Making Authority Regarding Enforcement of Applicable Law and Procedures by the SRO.

Although the SRO has been placed into a formal educational environment, they are not relieved of the official duties as a law enforcement officer. Decisions to intervene normally will be made when it is necessary to prevent or terminate any criminal

act or if there is a safety concern. Citations should be issued, juvenile referrals made, and arrests executed when appropriate and in accordance with department policy.

The SRO Program shall utilize the SRO Triad Concept as set forth by the National Association of School Resource Officers (NASRO). The SRO Triad Concept generally means that the officer assigned to the program is a (1) law enforcement officer, (2) counselor, and (3) teacher. The SRO is first and foremost a law enforcement officer for the City of Minot Police Department. The SRO shall be responsible for carrying out all the duties and responsibilities of a police officer and shall remain at all times under the control, through the established chain of command, of the Minot Police Department. All acts of commission or omission shall conform to the guidelines of the Minot Police Department Manual and be according to law. The SRO will report directly to the SRO supervisor in matters pertaining to teaching assignments and normal law enforcement duties.

SRO's must realize they are enforcement officers in regards to criminal matters and safety concerns only. SRO's will not enforce any "school or house rule". SRO's are not school disciplinarians and should not assume this role. SRO's will not involve themselves in administrative matters of the Minot School District which are not criminal offenses.

SRO's are to be used as a resource to assist students, faculty, staff, and all persons involved with the school district.

SRO's may use teaching to build positive relationships between the students and the staff. SRO's may act as teachers on a variety of subjects to students and staff ranging from alcohol and drug education to formalized academy classes.

XI. Annual Review

The goals, objectives, expectations and other details of the School Resource Officer program shall be reviewed at least annually between the members of the City and members of the District. Following such review, the City and the District may reduce to writing their understanding of the Program. The failure to follow the guidelines prepared under this paragraph XI shall not give rise to any claim for relief by one party against the other, other than the ability to terminate this contract as provided in paragraph XIII below.

XII. Amendments

This contract may be amended or modified at any time, but only by the written agreement of both parties.

XIII. Term of Contract

The term of this contract shall be twelve months, beginning January 1, 2018 and ending December 31, 2018. The contract may be renewed on an annual basis thereafter upon the consent of all parties, provided that the contract fee shall be adjusted annually to reflect merit or cost of living salary adjustments and/or other increased costs. Any party may cancel this contract without cause upon giving a 90 day written notice to each party.

IVX. Liability

Now therefore, the City of Minot Police Department and the Minot Public School District agree as follows:

Each party to this Agreement will be responsible for its own action in providing services under this agreement and shall not be liable for any civil liability that may arise from the furnishing of the services by the other party.

By entering in to this Agreement, the parties do not intend to create any obligations express or implied other than those set out herein; further, the Agreement shall not create any rights in any party not a signatory hereto.

As agreed to and in partnership with:

Jason Olson
Chief of Police Chief Jason Olson Date 2-13-18
City of Minot

Mark Vollmer
Superintendent of Schools Mark Vollmer Date 2/5/18
Minot Public Schools District #~~6~~

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Lakefield, Finance Director

DATE: May 2, 2018

SUBJECT: **CWSRF and DWSRF Funding**

I. RECOMMENDED ACTION

A. Approve the attached Resolution and Loan Agreement (Bond Resolution Minot 2018 A CW SRF & Loan Agreement Minot 2018 A CW SRF) authorizing issuance of bonds through the State Revolving Fund programs for Clean Water.

B. Approve the attached Resolution and Loan Agreement (Bond Resolution Minot 2018 B CW SRF & Loan Agreement Minot 2018 B CW SRF) authorizing issuance of bonds through the State Revolving Fund programs for Clean Water.

C. Approve the attached Resolution and Loan Agreement (Bond Resolution Minot 2018 C DW SRF & Loan Agreement Minot 2018 C DW SRF) authorizing issuance of bonds through the State Revolving Fund programs for Drinking Water.

II. DEPARTMENT CONTACT PERSONS

David Lakefield, Finance Director 701-857-4784

III. DESCRIPTION

A. Background
The utility and resulting street improvements related to the flood control work are eligible costs for a loan with the ND Department of Health. This program has a favorable interest rate and will result in considerable savings in interest costs.

The Hydraulic Improvements project at the City Wastewater Treatment Facility is also eligible costs for a loan with the ND Department of Health. . This program has a favorable interest rate and will result in considerable savings in interest costs.

B. Proposed Project
Approve CWSRF/DWSRF Loan Applications and Bond Resolutions for the eligible portion of Project MI-1.

Approve CWSRF Loan Application and Bond Resolution for Hydraulic Improvement project.

C. Consultant Selection
N/A

IV. IMPACT:

A. Strategic Impact:
The combined rate/fee of the CWSRF is ≈ 2% for up to 20 years. It is estimated that 20 year bonds would have a rate of ≈ 3.58%.

B. Service/Delivery Impact:
Passing this resolution and authorizing this source of financing allows us to have the financing for at least a portion of this project secured and at a favorable rate. This will allow us time/flexibility to examine additional funding/financing sources.

C. Fiscal Impact:
Potential interest cost savings using the CWSRF/DWSRF funding for 20 year term is ≈ $3.8 million.

V. ALTERNATIVES

Finance the projects using Sales Tax Revenue Bonds.

VI. TIME CONSTRAINTS

ASAP

VII. LIST OF ATTACHMENTS

A. Loan Agreement Minot 2018 A CW SRF
B. Loan Agreement Minot 2018 B CW SRF
C. Loan Agreement Minot 2018 C DW SRF
D. Bond Resolution Minot 2018 A CW SRF
E. Bond Resolution Minot 2018 B CW SRF
F. Bond Resolution Minot 2018 C DW SRF
G. SRF Application Revise Amount
H. CWSRF Application MI 1
I. DWSRF Application MI 1

NORTH DAKOTA
STATE REVOLVING FUND PROGRAM

LOAN AGREEMENT

NORTH DAKOTA PUBLIC FINANCE AUTHORITY
(Lender)

and

CITY OF MINOT, NORTH DAKOTA
(Municipality)

(To be completed by Authority)

Dated Date of Loan Agreement: _____, 2018

SRF Program (circle one): **Clean Water SRF**
Drinking Water SRF

State Act (circle one): **N.D.C.C. ch. 61-28.2 (Clean Water)**
N.D.C.C. ch. 61-28.1 (Drinking Water)

Summary Description of Project: Construction of improvements to the Municipality's water and sewer utility

Approved Loan amount: $6,678,000

Construction period: Spring, 2018 – Fall, 2018

Form of municipal securities: Water and Sewer Reserve Revenue Bonds, Series 2018A

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EXHIBIT B: Municipal Securities Payment Schedule

EXHIBIT C: Form of North Dakota State Revolving Fund Program Certificate Relating to Lobbying and Litigation

LOAN AGREEMENT

THIS LOAN AGREEMENT is made and entered into as of _____, 2018, by and between the NORTH DAKOTA PUBLIC FINANCE AUTHORITY (the "Authority"), an agency and instrumentality of the State of North Dakota (the "State"), and the CITY OF MINOT, NORTH DAKOTA (the "Municipality"), a political subdivision of the State.

ARTICLE I DEFINITIONS

SECTION .01. Definitions . The following terms as used in this Loan Agreement shall, unless the context clearly requires otherwise, have the following meanings:

"Administrative Fee" means an annual fee of 1/2 of one percent (.50%) of the outstanding principal amount of the Loan or such lesser amount, if any, as the Authority may approve from time to time.

"Authority Act" means N.D.C.C. ch. 6-09.4.

"Authority Bonds" or "Bonds" mean bonds of the Authority authorized, authenticated, and delivered in order to finance or refinance the Project pursuant to this Loan Agreement and to enable the Department, through the Authority, to draw EPA capitalization grant funds for deposit in the SRF.

"Code" means the Internal Revenue Code of 1986 as the same may from time to time be amended and supplemented, including any regulations promulgated thereunder and any administrative or judicial interpretations thereof.

"Costs" means those costs associated with the Project and the Loan that are eligible to be funded from the SRF, as determined by the Department and the Authority.

"Department" means the North Dakota Department of Health.

"EPA" means the United State Environmental Protection Agency.

"Event of Default" means any occurrence or event specified in Section 5.01 of this Loan Agreement.

"General Records" shall have the same meaning given in Section 3.01(f) of this Loan Agreement.

"Loan" means the loan evidenced by the Municipal Securities, made by the Authority to the Municipality pursuant to this Loan Agreement to finance or refinance all or a portion of the Costs of the Project. For all purposes of this Loan Agreement, the amount of the Loan at any time shall be the amount of the Loan less any principal amount which has been repaid to the Authority by the Municipality.

"Loan Agreement" means this Loan Agreement, including the Exhibits attached to, and hereby made a part hereof, as it may be supplemented, modified or amended from time to time in accordance with the terms hereof.

"Loan Closing" means the date upon which the Municipality shall issue and deliver the documents listed in Section 2.05 and shall be eligible to receive the Loan.

"Loan Commitment" means the offer by the Department to provide financial assistance to the Municipality from the SRF, subject to approval by the Authority. The Loan Commitment, when accepted by the Municipality through appropriate action of its governing body, shall be a "binding commitment" within the meaning of that term in the SRF Act.

"Loan Repayments" means the payments payable by the Municipality to the Authority, including payments payable under the Municipal Bond Resolution and the Municipal Securities.

"Municipal Bond Resolution" means the resolution(s) or ordinance(s) of the governing body of the Municipality authorizing the issuance of the Municipal Securities.

"Municipality" means the borrower under this Loan Agreement, which must be a "political subdivision," as defined in section 6-09.4-03(5) of the Authority Act.

"Municipal Securities" means municipal securities, as such term is defined in the Authority Act, executed and delivered by the Municipality to the Authority to evidence the Loan in accordance with the Municipal Bond Resolution.

"Project" means the improvement or undertaking of the Municipality described in Exhibit A attached hereto, for purposes of the State Water Pollution Control Revolving Loan Fund and the Federal Clean Water Act, or to the public water and sewer system of the Municipality for purposes of the State Safe Drinking Water Act and the Federal Safe Drinking Water Act, all or a portion of the Costs of which are financed or refinanced by the Authority from the SRF through the making of the Loan under this Loan Agreement.

"SRF" means the revolving loan fund(s) created by the State Act.

"SRF Act" means, for purposes of the State Water Pollution Control Revolving Loan Fund Act, the Federal Clean Water Act, and for purposes of the State Safe Drinking Water Act, the Federal Safe Drinking Water Act, including any regulations and guidelines promulgated thereunder.

"State Act" means, for purposes of the Federal Clean Water Act, N.D.C.C. ch. 61-28.2 (the State Water Pollution Control Revolving Loan Fund Act), and, for purposes of the Federal Safe Drinking Water Act, N.D.C.C. ch. 61-28.1 (the State Safe Drinking Water Act).

"System Records" shall have the same meaning given in Section 3.01(f) of this Loan Agreement.

"Trustee" means the Trustee appointed by the Authority pursuant to the State Revolving Fund Program Master Trust Indenture and its successor or successors and any other trustee which may at any time be substituted in its place as Trustee pursuant to the Indenture.

SECTION .02. Additional Terms . Except where the context otherwise requires, words importing the singular number shall include the plural number and vice versa, and words importing persons shall include firms, associations, corporations, agencies and districts. Words importing one gender shall include the other gender.

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ARTICLE II LOAN; OBLIGATIONS; DISCLAIMER; DELIVERY OF DOCUMENTS

SECTION .01. The Loan . The Authority hereby agrees to loan and disburse to the Municipality, and the Municipality agrees to borrow and accept from the Authority, the Loan in the principal amount of the Municipal Securities, plus accrued interest, if any. The Municipality shall use the proceeds of the Loan to pay the Costs of the Project in accordance with the Municipal Bond Resolution and this Loan Agreement.

SECTION .02. Disbursement of Loan Proceeds . The Authority will disburse the Loan upon (a) execution and delivery by the Municipality of the documents described in Section 2.06 and (b) issuance and delivery by the Municipality of the Municipal Securities to the Authority and (c) submission to and approval by the Department and the Authority of Requisitions for Payment in the form approved by the Department.

SECTION .03. Draws of Municipal Securities Proceeds . The proceeds of the Municipal Securities are appropriated by the Municipality to pay expenses necessarily incurred in the construction and completion of the Project and the issuance of the Municipal Securities. Requests for draws on the Loan, in the form of Requisitions for Payment, shall be submitted by the Municipality to the Department from time to time in accordance with procedures established by the Department. Requisitions for Payment approved by the Department shall be forwarded to the Authority and the Trustee for approval and funding. After all claims and expenses with respect to the Project and the issuance of the Municipal Securities have been duly paid and satisfied, the amortization schedule for the Municipal Securities shall be adjusted to reflect the total principal amount drawn under this Loan Agreement.

SECTION .04. Unconditional Obligations . The Municipality shall not be obligated to make any payments required to be made by any other political subdivision with respect to the lending of funds by the Authority from the SRF.

SECTION .05. Disclaimer of Warranties and Indemnification . The Municipality acknowledges and agrees that (i) neither the Authority nor the Department has made or makes any warranty or representation, either express or implied as to the value, design, condition, merchantability or fitness for a particular purpose or fitness for any use of the Project or any portions thereof or any other warranty or representation with respect thereto; and (ii) in no event shall the Authority, nor the Department or their respective officers, directors, employees, or agents be liable or responsible for any direct, incidental, indirect, special or consequential damages in connection with or arising out of this Loan Agreement or the Project or the existence, furnishing, functioning or use of the Project.

SECTION .06. Delivery of Documents . Concurrently with the execution and delivery of this Loan Agreement, the Municipality will cause each of the following items to be delivered to the Authority:

(a) Executed counterparts of this Loan Agreement.

(b) Copies of the Municipal Bond Resolution adopted May 7, 2018 by the governing body of the Municipality authorizing the execution and delivery of this Loan

Agreement and the Municipal Securities, certified by an authorized officer of the Municipality.

(c) An arbitrage certificate and a closing certificate covering such matters as may be agreed upon by the Municipality and the Authority.

(d) An opinion or opinions of the Municipality's counsel, which may be given by one or more counsel, covering such matters concerning the validity and tax status of the Municipal Securities as may be agreed upon by the Municipality and the Authority.

(e) Such other certificates, documents, opinions and information as the Authority may require.

Items 2.06(b), (c), and (d) must be prepared and provided by the Municipality to the Authority prior to the Loan Closing for review and approval.

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ARTICLE III COVENANTS AND REPRESENTATIONS

SECTION .01. Covenants and Representations of Municipality .

(a) Performance Under Loan Agreement. The Municipality covenants and agrees (i) to maintain the Project in good repair and operating condition and (ii) to cooperate with the Authority and the Department in the observance and performance of the respective duties, covenants, obligations and agreements of the Municipality and the Authority under this Loan Agreement.

(b) Completion of Project and Provision of Moneys Therefor. The Municipality covenants and agrees (i) to exercise its best efforts in accordance with prudent utility practice to complete the Project and to so accomplish such completion on or before the estimated Project completion date; and (ii) to provide from its own fiscal resources all moneys in excess of the total amount of the Loan required to complete the Project.

(c) Disposition of Project. The Municipality covenants and agrees that it will not sell, lease, abandon or otherwise dispose of all or substantially all or any substantial portion of the Project or any other system which provides revenues for upkeep and maintenance of the Project except on ninety (90) days prior written notice to the Authority and, in any event, shall not sell, lease, abandon or otherwise dispose of the Project unless the following conditions are met: (i) the Municipality, with the approval of the Authority, shall assign this Loan Agreement and its rights and interests hereunder in accordance with Section 4.02 to the purchaser or lessee of the Project, which must be a political subdivision as defined in the Authority Act, and such purchaser or lessee shall assume all duties, covenants, obligations and agreements of the Municipality under this Loan Agreement; and (ii) the Authority, in its sole discretion, by appropriate action determines that such sale, lease, abandonment or other disposition will not adversely affect (A) the ability of the Municipality or its assignees to meet its duties, covenants, obligations and agreements under the Municipal Bond Resolution, (B) the value of this Loan Agreement as security for the payment of Authority Bonds and interest thereon, (C) the eligibility of interest on Authority Bonds then outstanding or which could be issued in the future for exclusion from gross income for purposes of federal income taxation, or (D) any agreement entered into by the Authority or the State through the Department with, or any condition of any grant received by the Authority or the State through the Department from, the United States of America, which is related to any SRF capitalization grant received by the Authority or the State through the Department.

(d) Operation and Maintenance of Project. The Municipality covenants and agrees that it will, in accordance with prudent wastewater or drinking water treatment utility practice, as the case may be, (i) at all times operate the Project and the properties associated with and operated in conjunction with the Project and any business in connection therewith in an efficient manner, (ii) maintain the Project

in good repair, working order and operating condition, (iii) from time to time make all necessary and proper repairs, renewals, replacements, additions, betterments and improvements with respect to the Project so that at all times the enterprise or business carried on in connection therewith shall be properly and advantageously conducted; provided that this covenant shall not be construed as requiring the Municipality to expend any funds which are derived from sources other than the operation of the Project or other receipts of such Project which are not pledged under the Municipal Bond Resolution for such purpose, and provided further that nothing herein shall be construed as preventing the Municipality from doing so.

(e) The Municipality covenants and agrees that the proceeds of the Loan shall be used and expended in a manner consistent with the State Act and the SRF Act, all regulations and guidelines promulgated thereunder, and this Loan Agreement. The Authority affirms that expenditure for the Project as described in the loan application is consistent with the foregoing laws and documents.

(f) Records; Accounts.

(i) The Municipality will, to the extent required by generally accepted government accounting principles, keep accurate records and accounts for the utility (the "System Records") separate from its other records and accounts (the "General Records"). The System Records will be maintained in accordance with generally accepted government accounting principles and will be audited annually or biennially by an independent accountant, which audit may be part of the annual or biennial audit of the General Records of the Municipality. The System Records and General Records will be made available for inspection by the Authority and the Department at any reasonable time. A copy of the Municipality's audited financial statements, including all written comments and recommendations of the auditor, will be furnished to the Authority within 150 days of the close of the fiscal year or years being audited. The Municipality agrees that its financial reports for the year or years which it receives draws under this Agreement shall be prepared in accordance with the Federal Single Audit Act and the Federal Office of Management and Budget's Circular A-128.

(ii) The Municipality will keep, or cause to be kept, accurate records, if such records must be kept for compliance with the requirements of Section 148 of the Code, of each investment it makes in investment property (as that term is defined in Section 148(b) of the Code) acquired, directly or indirectly, with proceeds of the Authority Bonds. The Authority will advise the Municipality if the loan is not being funded with the proceeds of Authority Bonds. Further, with respect to such investments made by the Municipality which are not excepted from the computation of rebate under Section 148(f)(4) of the Code, the Municipality (A) will calculate, or cause to be calculated, the amount (the "rebate amount") that is to be

rebated to the United States Treasury pursuant to Section 148(f) of the Code, and (B) will for each computation date under Section 148(f) of the Code (or on any further periodic basis requested in writing by the Authority) remit the following to the Authority: (1) the calculations supporting the determination of the rebate amount and (2) an amount of money equal to the rebate installment then owed. To the extent any such rebate amounts (or the investment income thereon) are in excess of the Authority's rebate requirement allocable to the Municipal Securities, such amounts will be promptly returned by the Authority to the Municipality.

(g) Inspections; Information. The Municipality will permit the Authority, the Department, and the Trustee, and any designated party to examine, visit and inspect, at any and all reasonable times, the property constituting the Project, and to inspect and make copies of any accounts, books and records, including (without limitation) its Systems Records, General Records, and any other records regarding receipts, disbursements, contracts, investments and any other matters relating thereto and to its financial standing, and will supply such reports and information as the Authority, the Department and the Trustee may reasonably require in connection therewith.

(h) Insurance. The Municipality shall maintain or cause to be maintained, in force, insurance policies with responsible insurers or self insurance programs providing against risk of direct physical loss, damage or destruction of the Project, at least to the extent that similar insurance is usually carried by utilities constructing, operating and maintaining, works of the nature of the Project, including liability coverage, all to the extent available at reasonable cost but in no case less than will satisfy all applicable regulatory requirements. The Authority, the Department and the Trustee may require the Municipality to provide them with evidence of insurance on the Project.

(i) Costs of Project. The Municipality certifies that the Costs of the Project provided to the Authority are a reasonable and accurate estimation, and upon direction of the Authority will provide a certificate from its engineer stating that such Costs are a reasonable and accurate estimation.

(j) Continuing Disclosure.

(i) So long as the Municipality shall constitute an obligated person within the meaning, of S.E.C. Rule 15c2-12 (the "Rule") as in effect from time to time, the Municipality agrees to furnish to the Authority such financial information and operating data with respect to the Municipality at such time and in such forms as the Authority shall reasonably request in order to comply with the provisions of the Rule and to provide notice to the Authority in a timely manner, not in excess of ten (10) business days after any of the following events with respect to the Municipal Securities:

(A) principal and interest payment delinquencies;

(B) non-payment related defaults, if material;

(C) unscheduled draws on debt service reserves reflecting financial difficulties;

(D) unscheduled draws on credit enhancements reflecting financial difficulties;

(E) substitution of credit or liquidity providers, or their failure to perform;

(F) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the security, or other material events affecting the tax status of the security;

(G) modifications to rights of security holders, if material;

(H) bond calls, if material, and tender officers;

(I) defeasances;

(J) release, substitution, or sale of property securing repayment of the securities, if material;

(K) rating changes;

(L) bankruptcy, insolvency, receivership or similar event of the Municipality;

(M) the consummation of a merger, consolidation, or acquisition involving the Municipality or the sale of all or substantially all of the assets of the municipality, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; and

(N) appointment of a successor or additional trustee or the change of name of a trustee, if material.

(ii) The Municipality agrees that from time to time it will also provide notice to the Authority of the occurrence of other events, in addition to those listed above, if such other events are material with respect to the Municipal Securities.

(iii) The Municipality will provide, in a timely manner, to the Authority, notice of a failure to satisfy the requirements of this paragraph (j).

(iv) The intent of the Municipality's undertaking pursuant to this paragraph (j) is to facilitate the Authority's ability to comply with the requirements of the Rule. Accordingly, the Municipality agrees to provide the Authority with any information the Authority may reasonably require in order to comply with the requirements of the Rule, as in effect from time to time.

(v) To the extent the Rule no longer requires issuers of municipal securities to provide all or any portion of the information the Municipality has agreed to provide pursuant to this paragraph (j), the obligation of the Municipality to provide such information pursuant to this paragraph also shall cease immediately.

(vi) The Municipality will promptly notify the Authority of any material adverse change in the activities, prospects or condition (financial or otherwise) of the Municipality, or in the ability to make all Loan Repayments and otherwise observe and perform its duties, covenants, obligations, and agreements under this Loan Agreement and the Municipal Securities.

(vii) The sole remedy available to the Authority or to any other person for the failure of the Municipality to comply with any provision of this paragraph (j) shall be an action for specific performance of the Municipality's obligations under this paragraph.

(k) No Free Service. The Municipality will not furnish or supply, or cause to be furnished or supplied, any use, output, capacity or service of the Project free of charge to any person, firm, corporation (public or private), public agency or instrumentality other than the Municipality itself.

(l) Commencement of Construction. The Municipality shall initiate construction of the Project within twelve (12) months after the Loan Closing.

(m) Archeological Artifacts. In the event that archaeological artifacts or historical resources are unearthed during construction excavation, the Municipality shall stop, or cause to be stopped, construction activities and will notify the superintendent of the State Historical Board of North Dakota and the Authority or the Department of such unearthing and follow all applicable state and federal laws and regulations governing such occurrence.

(n) Additional Covenants and Requirements. If necessary in connection with the Authority's issuance of the Authority Bonds or the making of the Loan, additional covenants and requirements will be evidenced by certificates or other documents in the form or forms as may be agreed upon by the Municipality and the Authority.

(o) Continuing Representations. The covenants and representations of the Municipality contained herein shall be true at the time of the execution of this Loan Agreement and the Municipality agrees that such covenants and

representations will be binding and enforceable at all times during the term of this Loan Agreement.

(p) No Lobbying. No portion of the Loan may be used for lobbying or propaganda as prohibited by 18 U.S.C. §1913 or Section 607(a) of Public Law 96-74 or other federal restriction or regulation referenced in the form of North Dakota State Revolving Fund Program Certificate Relating to Lobbying and Litigation which is attached as Exhibit C to this Loan Agreement and shall be executed by the Municipality.

(q) Buy American Requirements. The Municipality covenants and agrees that it will comply with the requirements described as follows:

(i) The Municipality will comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Municipality understands includes, among other requirements, that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (a) the Municipality has requested and obtained a waiver from the Department's Municipal Facilities Division ("Department") pertaining to the Project or (b) the Department or Authority has otherwise advised the Municipality writing that the American Iron and Steel Requirement is not applicable to the Project.

(ii) The Municipality will comply with all record keeping requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a federal agency, the Department or the Authority such as performance of program deliverables, information on costs and Project progress. The Municipality understands that (a) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (b) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Loan Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Municipal Securities and/or other remedial actions.

(r) Compliance with Davis Bacon Act. The Municipality shall, to the extent applicable to the Loan or any related grant, comply with the Davis Bacon and Related Acts requirements. 40 U.S.C. 3141, et seq.

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ARTICLE IV ASSIGNMENT

SECTION .01. Assignment and Transfer by Authority .

(a) The Municipality acknowledges that, other than the Administrative Fees payable pursuant to the Municipal Bond Resolution, all interests of the Authority in and under this Loan Agreement and the Municipal Securities have been pledged as security for the Authority Bonds, and that if any Event of Default shall occur, the Authority or the Trustee shall be entitled to act hereunder. The Municipality hereby acknowledges and consents that the Authority or the Trustee may compel or enforce the right to receive payments required to be made by the Municipality hereunder and may compel or otherwise enforce observance and performance by the Municipality of its other duties, covenants, obligations and agreements hereunder, and that the right and authority to enforce such requirements may be further transferred, assigned, and reassigned in whole or in part to one or more assignees or subassignees without the necessity of obtaining the consent of, but after giving prior written notice to, the Municipality.

(b) In the event of any assignment or transfer of this Loan Agreement and the Municipal Securities, the Authority shall retain the right to compel or otherwise enforce observance and performance by the Municipality of its obligations and agreement to pay Administrative Fees.

SECTION .02. Assignment by Municipality .

(a) This Loan Agreement may not be assigned by the Municipality unless the following conditions shall be satisfied: (i) the Authority shall have approved the assignment in writing; (ii) the assignee shall be a governmental unit within the meaning of Section 141(c) of the Code, shall be a political subdivision as defined in the Authority Act and shall have expressly assumed in writing the full and faithful observance and performance of the Municipality's duties, covenants, agreements and obligations under this Loan Agreement; (iii) immediately after such assignment, the assignee shall not be in default in the performance or observance of any duties, covenants, obligations or agreements of the Municipality under this Loan Agreement; (iv) the Authority shall have received an opinion of bond counsel to the effect that the assignment will not adversely affect the exclusion of interest on the Authority Bonds from gross income for purposes of Federal income taxation under Section 103(a) of the Code; and (v) the Authority shall have received an opinion of its counsel to the effect that such assignment will not violate the provisions of any agreement entered into by the Authority or the State through the Department with, or any condition of any grant received by the Authority or the State through the Department from, the United States of America, which is related to any SRF capitalization grant received by the Authority or the State through the Department.

(b) No assignment under this Section shall relieve the Municipality from primary liability for any of its obligations under this Loan Agreement and in the event of

such assignment, the Municipality shall continue to remain primarily liable for the performance and observance of its obligations to be performed and observed under this Loan Agreement.

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ARTICLE V DEFAULTS AND REMEDIES

SECTION .01. Events of Default . If any of the following events occur, it is hereby defined and declared to be and to constitute an Event of Default:

(a) Failure by the Municipality to pay, or cause to be paid, any payment, including the payment of principal and interest on the Municipal Securities, required to be paid hereunder when due.

(b) Failure by the Municipality to make, or cause to be made, any required payments of principal, redemption premium, if any, and interest on any bonds, notes or other obligations of the Municipality for borrowed money (other than the Loan and the Municipal Securities and after giving effect to any applicable grace period), the payments of which are secured by any revenues derived or to be derived from the Project.

(c) Failure by the Municipality to pay, or cause to be paid, the Administrative Fee or any portion thereof when due or to perform or observe any other covenant, agreement or condition on its part to be observed or performed under this Loan Agreement, other than as referred to in paragraph (a) of this section, which failure shall continue for a period of thirty (30) days after written notice, specifying such failure and requesting that it be remedied, is given to the Municipality by the Authority, unless the Authority shall agree in writing to an extension of the time prior to its expiration; however, if the failure stated in such notice is correctable but cannot be corrected within the applicable period, the Authority may not unreasonably withhold its consent to an extension of time up to 120 days from the delivery of the written notice referred to above if corrective action is instituted by the Municipality within the applicable period and diligently pursued until the Event of Default is corrected.

(d) Any representation made by or on behalf of the Municipality contained in this Loan Agreement or in any instrument furnished in compliance with or with reference to this Loan Agreement or the Loan or in connection with the Municipal Securities, is false or misleading in any material respect.

(e) A petition is filed by or against the Municipality under any federal or state bankruptcy or insolvency law or other similar law in effect on the date of this Loan Agreement or thereafter enacted, unless in the case of any such petition filed against the Municipality such petition shall be dismissed within thirty (30) days after such filing and such dismissal shall be final and not subject to appeal; or the Municipality shall become insolvent or bankrupt or make an assignment for the benefit of its creditors; or a custodian (including, without limitation, a receiver, liquidator or trustee of the Municipality or any of its property) shall be appointed by court order or take possession of the Municipality or its property or assets if such order remains in effect or such possession continues for more than thirty (30) days.

SECTION .02. Notice of Default . The Municipality shall give the Authority prompt telephonic notice of the occurrence of any Event of Default at such time as any senior administrative or financial officer of the Municipality becomes aware of the existence thereof. Any telephone notice pursuant to this Section 5.02 shall be confirmed in writing as soon as practicable by the Municipality.

SECTION .03. Remedies on Default . Whenever an Event of Default referred to in Section 5.01 shall have occurred and be continuing, the Authority shall have the right to take, or to direct the Trustee or its authorized agent to take, any action permitted or required to be taken under the Municipal Bond Resolution or this Loan Agreement and to take whatever other action at law or in equity may appear necessary or desirable to collect the amounts then due and thereafter to become due hereunder or to enforce the performance and observance of any duty, covenant, obligation or agreement of the Municipality hereunder.

SECTION .04. Application of Moneys . Any moneys collected by the Authority pursuant to Section 5.03 shall be applied (a) first, to pay interest due and payable on the Municipal Securities, (b) second, to pay principal due and payable on the Municipal Securities, (c) third, to pay any other amounts due and payable under this Loan Agreement.

SECTION .05. No Remedy Exclusive; Waiver: Notice . No remedy herein conferred upon or reserved to the Authority or the Trustee, is intended to be exclusive and every remedy shall be cumulative and shall be in addition to every other remedy given under this Loan Agreement or now or hereafter existing at law or in equity. No delay or omission to exercise any right, remedy or power accruing upon any Event of Default shall impair any such right, remedy or power or shall be construed to be a waiver thereof, but any such remedy or power may be exercised from time to time and as often as may be deemed expedient. In order to entitle the Authority or the Trustee, to exercise any remedy reserved to it in this Article, it shall not be necessary to give any notice, other than such notice as may be required in this Article V.

SECTION .06. Retention of Authority's Rights . Notwithstanding any assignment or transfer of this Loan Agreement pursuant to the provisions hereof or of the Municipal Bond Resolution, or anything else to the contrary contained herein, the Authority shall have the right upon the occurrence of an Event of Default to take any action, including (without limitation) bringing an action against the Municipality at law or in equity, as the Authority may, in its discretion, deem necessary to enforce the obligations of the Municipality to the Authority pursuant to this Loan Agreement and the Municipal Bond Resolution.

SECTION .07. Default by Authority . In the event of any default by the Authority under any covenant, agreement or obligation of this Loan Agreement, the Municipality may pursue any available remedy at law or in equity, including without limitation suit for damages or injunction, special action, action for specific performance or any other available equitable remedy designed to enforce the performance or observance of any duty, covenant, obligation or agreement of the Authority hereunder as may be necessary or appropriate.

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ARTICLE VI MISCELLANEOUS

SECTION .01. Notices . All notices, certificates or other communications under this Loan Agreement shall be sufficiently given and shall be deemed given when hand delivered or mailed by registered or certified mail, postage prepaid, to the Municipality, the Authority and the Department at the following addresses:

(a) Authority:

North Dakota Public Finance Authority
1200 Memorial Highway
P.O. Box 5509
Bismarck, North Dakota 58506-5509
Attention: Executive Director

(b) Department:

North Dakota State Department of Health
Municipal Facilities
918 East Divide Avenue, 3rd Floor
P.O. Box 5520
Bismarck, ND 58501-1947

(c) Municipality:

City of Minot
515 2nd Avenue SW
Minot, ND 58702

Any of the foregoing parties may designate any further or different addresses to which subsequent notices, certificates or other communications shall be sent, by notice in writing given to the others.

SECTION .02. Binding Effect . This Loan Agreement shall inure to the benefit of and shall be binding upon the Department, the Authority and the Municipality and their respective successors and assigns.

SECTION .03. Severability . In the event any provision of this Loan Agreement shall be held illegal, invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate, render unenforceable or otherwise affect any other provision.

SECTION .04. Amendments, Supplements and Modifications . This Loan Agreement may not be amended, supplemented or modified without the prior written consent of the Authority and the Municipality.

SECTION .05. Execution in Counterparts . This Loan Agreement may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

SECTION .06. Applicable Law . This Loan Agreement shall be governed by and construed in accordance with the laws of the State of North Dakota.

SECTION .07. Consents and Approvals . Whenever the written consent or approval of the Authority is required under the provisions of this Loan Agreement, such consent or approval may only be given by the Authority unless otherwise provided by law or by rules, regulations or resolutions of the Authority or unless expressly delegated to the Authority's agent.

SECTION .08. Captions . The captions or headings in this Loan Agreement are for convenience only and shall not in any way define, limit or describe the scope or intent of any provisions or Sections of this Loan Agreement.

SECTION .09. Further Assurances . The Municipality will, at the request of the Authority, authorize, execute, acknowledge and deliver such further resolutions, conveyances, transfers, assurances, financing statements and other instruments as may be necessary or desirable for better assuring, conveying, granting, assigning and confirming the rights, security interests and agreements granted or intended to be granted by this Loan Agreement and the Municipal Securities.

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NORTH DAKOTA PUBLIC FINANCE AUTHORITY

By: _____
DeAnn Ament, Executive Director

[Signature Page – Loan Agreement (Series 2018A)]

CITY OF MINOT, NORTH DAKOTA

By: _____
Chuck Barney, Mayor

ATTEST:

_____
Kelly Matalka, City Clerk

[Signature Page – Loan Agreement (Series 2018A)]

EXHIBIT A

DESCRIPTION OF PROJECT

Construct improvements to the Municipality's water and sewer utility, including upsizing approximately two miles of piping from wastewater aeration ponds to the lagoon cells and addition of manholes and control structures in connection therewith.

EXHIBIT B

MUNICIPAL SECURITIES PAYMENT SCHEDULE

EXHIBIT C

NORTH DAKOTA STATE REVOLVING FUND PROGRAM
CERTIFICATE RELATING TO LOBBYING AND LITIGATION

The undersigned hereby certify that they are, respectively, the duly elected or appointed, qualified and acting Mayor and Director of Finance and Administrative Services of the Municipality (as defined in the North Dakota State Revolving Fund Program Loan Agreement of even date (the "Loan Agreement")), and as such officials, they are familiar with the Municipality's property, affairs, and records, and the undersigned, as such officials, hereby further acknowledge, agree, and certify as follows:

1. No grant or loan funds awarded under this State Revolving Fund Program will be used to engage in lobbying of the Federal Government or in litigation against the U.S. unless authorized under existing law. The Municipality shall abide by OMB Circulars A-21, A-87, and A-122, which generally prohibit the use of federal grant funds for litigation against the U.S. or for lobbying or other political activities.

2. The Municipality will comply with Title 40 CFR Part 34, New Restrictions on Lobbying. The Municipality shall incorporate or refer to the language of this provision in the Loan Agreement for all loans exceeding $100,000.

3. In accordance with the Byrd Anti-Lobbying Amendment, any Municipality which makes a prohibited expenditure under Title 40 CFR Part 34 or fails to file the required certification or lobbying forms shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure.

Dated: [_____], 2018.

CITY OF MINOT, NORTH DAKOTA

By _____
Mayor

By _____
City Clerk

NORTH DAKOTA
STATE REVOLVING FUND PROGRAM

LOAN AGREEMENT

NORTH DAKOTA PUBLIC FINANCE AUTHORITY
(Lender)

and

CITY OF MINOT, NORTH DAKOTA
(Municipality)

(To be completed by Authority)

Dated Date of Loan Agreement: _____, 2018

SRF Program (circle one): **Clean Water SRF**
Drinking Water SRF

State Act (circle one): **N.D.C.C. ch. 61-28.2 (Clean Water)**
N.D.C.C. ch. 61-28.1 (Drinking Water)

Summary Description of Project: Construction of improvements to the Municipality's water and sewer utility

Approved Loan amount: $12,282,000

Construction period: Spring, 2018 – Summer, 2020

Form of municipal securities: Sales Tax and Water and Sewer Reserve Revenue Bonds, Series 2018B

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EXHIBIT A: Description of Project
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LOAN AGREEMENT

THIS LOAN AGREEMENT is made and entered into as of _____, 2018, by and between the NORTH DAKOTA PUBLIC FINANCE AUTHORITY (the "Authority"), an agency and instrumentality of the State of North Dakota (the "State"), and the CITY OF MINOT, NORTH DAKOTA (the "Municipality"), a political subdivision of the State.

ARTICLE I DEFINITIONS

SECTION .01. Definitions . The following terms as used in this Loan Agreement shall, unless the context clearly requires otherwise, have the following meanings:

"Administrative Fee" means an annual fee of 1/2 of one percent (.50%) of the outstanding principal amount of the Loan or such lesser amount, if any, as the Authority may approve from time to time.

"Authority Act" means N.D.C.C. ch. 6-09.4.

"Authority Bonds" or "Bonds" mean bonds of the Authority authorized, authenticated, and delivered in order to finance or refinance the Project pursuant to this Loan Agreement and to enable the Department, through the Authority, to draw EPA capitalization grant funds for deposit in the SRF.

"Code" means the Internal Revenue Code of 1986 as the same may from time to time be amended and supplemented, including any regulations promulgated thereunder and any administrative or judicial interpretations thereof.

"Costs" means those costs associated with the Project and the Loan that are eligible to be funded from the SRF, as determined by the Department and the Authority.

"Department" means the North Dakota Department of Health.

"EPA" means the United State Environmental Protection Agency.

"Event of Default" means any occurrence or event specified in Section 5.01 of this Loan Agreement.

"General Records" shall have the same meaning given in Section 3.01(f) of this Loan Agreement.

"Loan" means the loan evidenced by the Municipal Securities, made by the Authority to the Municipality pursuant to this Loan Agreement to finance or refinance all or a portion of the Costs of the Project. For all purposes of this Loan Agreement, the amount of the Loan at any time shall be the amount of the Loan less any principal amount which has been repaid to the Authority by the Municipality.

"Loan Agreement" means this Loan Agreement, including the Exhibits attached to, and hereby made a part hereof, as it may be supplemented, modified or amended from time to time in accordance with the terms hereof.

"Loan Closing" means the date upon which the Municipality shall issue and deliver the documents listed in Section 2.05 and shall be eligible to receive the Loan.

"Loan Commitment" means the offer by the Department to provide financial assistance to the Municipality from the SRF, subject to approval by the Authority. The Loan Commitment, when accepted by the Municipality through appropriate action of its governing body, shall be a "binding commitment" within the meaning of that term in the SRF Act.

"Loan Repayments" means the payments payable by the Municipality to the Authority, including payments payable under the Municipal Bond Resolution and the Municipal Securities.

"Municipal Bond Resolution" means the resolution(s) or ordinance(s) of the governing body of the Municipality authorizing the issuance of the Municipal Securities.

"Municipality" means the borrower under this Loan Agreement, which must be a "political subdivision," as defined in section 6-09.4-03(5) of the Authority Act.

"Municipal Securities" means municipal securities, as such term is defined in the Authority Act, executed and delivered by the Municipality to the Authority to evidence the Loan in accordance with the Municipal Bond Resolution.

"Project" means the improvement or undertaking of the Municipality described in Exhibit A attached hereto, for purposes of the State Water Pollution Control Revolving Loan Fund and the Federal Clean Water Act, or to the public water and sewer system of the Municipality for purposes of the State Safe Drinking Water Act and the Federal Safe Drinking Water Act, all or a portion of the Costs of which are financed or refinanced by the Authority from the SRF through the making of the Loan under this Loan Agreement.

"SRF" means the revolving loan fund(s) created by the State Act.

"SRF Act" means, for purposes of the State Water Pollution Control Revolving Loan Fund Act, the Federal Clean Water Act, and for purposes of the State Safe Drinking Water Act, the Federal Safe Drinking Water Act, including any regulations and guidelines promulgated thereunder.

"State Act" means, for purposes of the Federal Clean Water Act, N.D.C.C. ch. 61-28.2 (the State Water Pollution Control Revolving Loan Fund Act), and, for purposes of the Federal Safe Drinking Water Act, N.D.C.C. ch. 61-28.1 (the State Safe Drinking Water Act).

"System Records" shall have the same meaning given in Section 3.01(f) of this Loan Agreement.

"Trustee" means the Trustee appointed by the Authority pursuant to the State Revolving Fund Program Master Trust Indenture and its successor or successors and any other trustee which may at any time be substituted in its place as Trustee pursuant to the Indenture.

SECTION .02. Additional Terms . Except where the context otherwise requires, words importing the singular number shall include the plural number and vice versa, and words importing persons shall include firms, associations, corporations, agencies and districts. Words importing one gender shall include the other gender.

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ARTICLE II LOAN; OBLIGATIONS; DISCLAIMER; DELIVERY OF DOCUMENTS

SECTION .01. The Loan . The Authority hereby agrees to loan and disburse to the Municipality, and the Municipality agrees to borrow and accept from the Authority, the Loan in the principal amount of the Municipal Securities, plus accrued interest, if any. The Municipality shall use the proceeds of the Loan to pay the Costs of the Project in accordance with the Municipal Bond Resolution and this Loan Agreement.

SECTION .02. Disbursement of Loan Proceeds . The Authority will disburse the Loan upon (a) execution and delivery by the Municipality of the documents described in Section 2.06 and (b) issuance and delivery by the Municipality of the Municipal Securities to the Authority and (c) submission to and approval by the Department and the Authority of Requisitions for Payment in the form approved by the Department.

SECTION .03. Draws of Municipal Securities Proceeds . The proceeds of the Municipal Securities are appropriated by the Municipality to pay expenses necessarily incurred in the construction and completion of the Project and the issuance of the Municipal Securities. Requests for draws on the Loan, in the form of Requisitions for Payment, shall be submitted by the Municipality to the Department from time to time in accordance with procedures established by the Department. Requisitions for Payment approved by the Department shall be forwarded to the Authority and the Trustee for approval and funding. After all claims and expenses with respect to the Project and the issuance of the Municipal Securities have been duly paid and satisfied, the amortization schedule for the Municipal Securities shall be adjusted to reflect the total principal amount drawn under this Loan Agreement.

SECTION .04. Unconditional Obligations . The Municipality shall not be obligated to make any payments required to be made by any other political subdivision with respect to the lending of funds by the Authority from the SRF.

SECTION .05. Disclaimer of Warranties and Indemnification . The Municipality acknowledges and agrees that (i) neither the Authority nor the Department has made or makes any warranty or representation, either express or implied as to the value, design, condition, merchantability or fitness for a particular purpose or fitness for any use of the Project or any portions thereof or any other warranty or representation with respect thereto; and (ii) in no event shall the Authority, nor the Department or their respective officers, directors, employees, or agents be liable or responsible for any direct, incidental, indirect, special or consequential damages in connection with or arising out of this Loan Agreement or the Project or the existence, furnishing, functioning or use of the Project.

SECTION .06. Delivery of Documents . Concurrently with the execution and delivery of this Loan Agreement, the Municipality will cause each of the following items to be delivered to the Authority:

(a) Executed counterparts of this Loan Agreement.

(b) Copies of the Municipal Bond Resolution adopted May 7, 2018 by the governing body of the Municipality authorizing the execution and delivery of this Loan

Agreement and the Municipal Securities, certified by an authorized officer of the Municipality.

(c) An arbitrage certificate and a closing certificate covering such matters as may be agreed upon by the Municipality and the Authority.

(d) An opinion or opinions of the Municipality's counsel, which may be given by one or more counsel, covering such matters concerning the validity and tax status of the Municipal Securities as may be agreed upon by the Municipality and the Authority.

(e) Such other certificates, documents, opinions and information as the Authority may require.

Items 2.06(b), (c), and (d) must be prepared and provided by the Municipality to the Authority prior to the Loan Closing for review and approval.

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ARTICLE III COVENANTS AND REPRESENTATIONS

SECTION .01. Covenants and Representations of Municipality .

(a) Performance Under Loan Agreement. The Municipality covenants and agrees (i) to maintain the Project in good repair and operating condition and (ii) to cooperate with the Authority and the Department in the observance and performance of the respective duties, covenants, obligations and agreements of the Municipality and the Authority under this Loan Agreement.

(b) Completion of Project and Provision of Moneys Therefor. The Municipality covenants and agrees (i) to exercise its best efforts in accordance with prudent utility practice to complete the Project and to so accomplish such completion on or before the estimated Project completion date; and (ii) to provide from its own fiscal resources all moneys in excess of the total amount of the Loan required to complete the Project.

(c) Disposition of Project. The Municipality covenants and agrees that it will not sell, lease, abandon or otherwise dispose of all or substantially all or any substantial portion of the Project or any other system which provides revenues for upkeep and maintenance of the Project except on ninety (90) days prior written notice to the Authority and, in any event, shall not sell, lease, abandon or otherwise dispose of the Project unless the following conditions are met: (i) the Municipality, with the approval of the Authority, shall assign this Loan Agreement and its rights and interests hereunder in accordance with Section 4.02 to the purchaser or lessee of the Project, which must be a political subdivision as defined in the Authority Act, and such purchaser or lessee shall assume all duties, covenants, obligations and agreements of the Municipality under this Loan Agreement; and (ii) the Authority, in its sole discretion, by appropriate action determines that such sale, lease, abandonment or other disposition will not adversely affect (A) the ability of the Municipality or its assignees to meet its duties, covenants, obligations and agreements under the Municipal Bond Resolution, (B) the value of this Loan Agreement as security for the payment of Authority Bonds and interest thereon, (C) the eligibility of interest on Authority Bonds then outstanding or which could be issued in the future for exclusion from gross income for purposes of federal income taxation, or (D) any agreement entered into by the Authority or the State through the Department with, or any condition of any grant received by the Authority or the State through the Department from, the United States of America, which is related to any SRF capitalization grant received by the Authority or the State through the Department.

(d) Operation and Maintenance of Project. The Municipality covenants and agrees that it will, in accordance with prudent wastewater or drinking water treatment utility practice, as the case may be, (i) at all times operate the Project and the properties associated with and operated in conjunction with the Project and any business in connection therewith in an efficient manner, (ii) maintain the Project

in good repair, working order and operating condition, (iii) from time to time make all necessary and proper repairs, renewals, replacements, additions, betterments and improvements with respect to the Project so that at all times the enterprise or business carried on in connection therewith shall be properly and advantageously conducted; provided that this covenant shall not be construed as requiring the Municipality to expend any funds which are derived from sources other than the operation of the Project or other receipts of such Project which are not pledged under the Municipal Bond Resolution for such purpose, and provided further that nothing herein shall be construed as preventing the Municipality from doing so.

(e) The Municipality covenants and agrees that the proceeds of the Loan shall be used and expended in a manner consistent with the State Act and the SRF Act, all regulations and guidelines promulgated thereunder, and this Loan Agreement. The Authority affirms that expenditure for the Project as described in the loan application is consistent with the foregoing laws and documents.

(f) Records; Accounts.

(i) The Municipality will, to the extent required by generally accepted government accounting principles, keep accurate records and accounts for the utility (the "System Records") separate from its other records and accounts (the "General Records"). The System Records will be maintained in accordance with generally accepted government accounting principles and will be audited annually or biennially by an independent accountant, which audit may be part of the annual or biennial audit of the General Records of the Municipality. The System Records and General Records will be made available for inspection by the Authority and the Department at any reasonable time. A copy of the Municipality's audited financial statements, including all written comments and recommendations of the auditor, will be furnished to the Authority within 150 days of the close of the fiscal year or years being audited. The Municipality agrees that its financial reports for the year or years which it receives draws under this Agreement shall be prepared in accordance with the Federal Single Audit Act and the Federal Office of Management and Budget's Circular A-128.

(ii) The Municipality will keep, or cause to be kept, accurate records, if such records must be kept for compliance with the requirements of Section 148 of the Code, of each investment it makes in investment property (as that term is defined in Section 148(b) of the Code) acquired, directly or indirectly, with proceeds of the Authority Bonds. The Authority will advise the Municipality if the loan is not being funded with the proceeds of Authority Bonds. Further, with respect to such investments made by the Municipality which are not excepted from the computation of rebate under Section 148(f)(4) of the Code, the Municipality (A) will calculate, or cause to be calculated, the amount (the "rebate amount") that is to be

rebated to the United States Treasury pursuant to Section 148(f) of the Code, and (B) will for each computation date under Section 148(f) of the Code (or on any further periodic basis requested in writing by the Authority) remit the following to the Authority: (1) the calculations supporting the determination of the rebate amount and (2) an amount of money equal to the rebate installment then owed. To the extent any such rebate amounts (or the investment income thereon) are in excess of the Authority's rebate requirement allocable to the Municipal Securities, such amounts will be promptly returned by the Authority to the Municipality.

(g) Inspections; Information. The Municipality will permit the Authority, the Department, and the Trustee, and any designated party to examine, visit and inspect, at any and all reasonable times, the property constituting the Project, and to inspect and make copies of any accounts, books and records, including (without limitation) its Systems Records, General Records, and any other records regarding receipts, disbursements, contracts, investments and any other matters relating thereto and to its financial standing, and will supply such reports and information as the Authority, the Department and the Trustee may reasonably require in connection therewith.

(h) Insurance. The Municipality shall maintain or cause to be maintained, in force, insurance policies with responsible insurers or self insurance programs providing against risk of direct physical loss, damage or destruction of the Project, at least to the extent that similar insurance is usually carried by utilities constructing, operating and maintaining, works of the nature of the Project, including liability coverage, all to the extent available at reasonable cost but in no case less than will satisfy all applicable regulatory requirements. The Authority, the Department and the Trustee may require the Municipality to provide them with evidence of insurance on the Project.

(i) Costs of Project. The Municipality certifies that the Costs of the Project provided to the Authority are a reasonable and accurate estimation, and upon direction of the Authority will provide a certificate from its engineer stating that such Costs are a reasonable and accurate estimation.

(j) Continuing Disclosure.

(i) So long as the Municipality shall constitute an obligated person within the meaning, of S.E.C. Rule 15c2-12 (the "Rule") as in effect from time to time, the Municipality agrees to furnish to the Authority such financial information and operating data with respect to the Municipality at such time and in such forms as the Authority shall reasonably request in order to comply with the provisions of the Rule and to provide notice to the Authority in a timely manner, not in excess of ten (10) business days after any of the following events with respect to the Municipal Securities:

(A) principal and interest payment delinquencies;

(B) non-payment related defaults, if material;

(C) unscheduled draws on debt service reserves reflecting financial difficulties;

(D) unscheduled draws on credit enhancements reflecting financial difficulties;

(E) substitution of credit or liquidity providers, or their failure to perform;

(F) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the security, or other material events affecting the tax status of the security;

(G) modifications to rights of security holders, if material;

(H) bond calls, if material, and tender officers;

(I) defeasances;

(J) release, substitution, or sale of property securing repayment of the securities, if material;

(K) rating changes;

(L) bankruptcy, insolvency, receivership or similar event of the Municipality;

(M) the consummation of a merger, consolidation, or acquisition involving the Municipality or the sale of all or substantially all of the assets of the municipality, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; and

(N) appointment of a successor or additional trustee or the change of name of a trustee, if material.

(ii) The Municipality agrees that from time to time it will also provide notice to the Authority of the occurrence of other events, in addition to those listed above, if such other events are material with respect to the Municipal Securities.

(iii) The Municipality will provide, in a timely manner, to the Authority, notice of a failure to satisfy the requirements of this paragraph (j).

(iv) The intent of the Municipality's undertaking pursuant to this paragraph (j) is to facilitate the Authority's ability to comply with the requirements of the Rule. Accordingly, the Municipality agrees to provide the Authority with any information the Authority may reasonably require in order to comply with the requirements of the Rule, as in effect from time to time.

(v) To the extent the Rule no longer requires issuers of municipal securities to provide all or any portion of the information the Municipality has agreed to provide pursuant to this paragraph (j), the obligation of the Municipality to provide such information pursuant to this paragraph also shall cease immediately.

(vi) The Municipality will promptly notify the Authority of any material adverse change in the activities, prospects or condition (financial or otherwise) of the Municipality, or in the ability to make all Loan Repayments and otherwise observe and perform its duties, covenants, obligations, and agreements under this Loan Agreement and the Municipal Securities.

(vii) The sole remedy available to the Authority or to any other person for the failure of the Municipality to comply with any provision of this paragraph (j) shall be an action for specific performance of the Municipality's obligations under this paragraph.

(k) No Free Service. The Municipality will not furnish or supply, or cause to be furnished or supplied, any use, output, capacity or service of the Project free of charge to any person, firm, corporation (public or private), public agency or instrumentality other than the Municipality itself.

(l) Commencement of Construction. The Municipality shall initiate construction of the Project within twelve (12) months after the Loan Closing.

(m) Archeological Artifacts. In the event that archaeological artifacts or historical resources are unearthed during construction excavation, the Municipality shall stop, or cause to be stopped, construction activities and will notify the superintendent of the State Historical Board of North Dakota and the Authority or the Department of such unearthing and follow all applicable state and federal laws and regulations governing such occurrence.

(n) Additional Covenants and Requirements. If necessary in connection with the Authority's issuance of the Authority Bonds or the making of the Loan, additional covenants and requirements will be evidenced by certificates or other documents in the form or forms as may be agreed upon by the Municipality and the Authority.

(o) Continuing Representations. The covenants and representations of the Municipality contained herein shall be true at the time of the execution of this Loan Agreement and the Municipality agrees that such covenants and

representations will be binding and enforceable at all times during the term of this Loan Agreement.

(p) No Lobbying. No portion of the Loan may be used for lobbying or propaganda as prohibited by 18 U.S.C. §1913 or Section 607(a) of Public Law 96-74 or other federal restriction or regulation referenced in the form of North Dakota State Revolving Fund Program Certificate Relating to Lobbying and Litigation which is attached as Exhibit C to this Loan Agreement and shall be executed by the Municipality.

(q) Buy American Requirements. The Municipality covenants and agrees that it will comply with the requirements described as follows:

(i) The Municipality will comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Municipality understands includes, among other requirements, that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (a) the Municipality has requested and obtained a waiver from the Department's Municipal Facilities Division ("Department") pertaining to the Project or (b) the Department or Authority has otherwise advised the Municipality writing that the American Iron and Steel Requirement is not applicable to the Project.

(ii) The Municipality will comply with all record keeping requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a federal agency, the Department or the Authority such as performance of program deliverables, information on costs and Project progress. The Municipality understands that (a) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (b) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Loan Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Municipal Securities and/or other remedial actions.

(r) Compliance with Davis Bacon Act. The Municipality shall, to the extent applicable to the Loan or any related grant, comply with the Davis Bacon and Related Acts requirements. 40 U.S.C. 3141, et seq.

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ARTICLE IV ASSIGNMENT

SECTION .01. Assignment and Transfer by Authority .

(a) The Municipality acknowledges that, other than the Administrative Fees payable pursuant to the Municipal Bond Resolution, all interests of the Authority in and under this Loan Agreement and the Municipal Securities have been pledged as security for the Authority Bonds, and that if any Event of Default shall occur, the Authority or the Trustee shall be entitled to act hereunder. The Municipality hereby acknowledges and consents that the Authority or the Trustee may compel or enforce the right to receive payments required to be made by the Municipality hereunder and may compel or otherwise enforce observance and performance by the Municipality of its other duties, covenants, obligations and agreements hereunder, and that the right and authority to enforce such requirements may be further transferred, assigned, and reassigned in whole or in part to one or more assignees or subassignees without the necessity of obtaining the consent of, but after giving prior written notice to, the Municipality.

(b) In the event of any assignment or transfer of this Loan Agreement and the Municipal Securities, the Authority shall retain the right to compel or otherwise enforce observance and performance by the Municipality of its obligations and agreement to pay Administrative Fees.

SECTION .02. Assignment by Municipality .

(a) This Loan Agreement may not be assigned by the Municipality unless the following conditions shall be satisfied: (i) the Authority shall have approved the assignment in writing; (ii) the assignee shall be a governmental unit within the meaning of Section 141(c) of the Code, shall be a political subdivision as defined in the Authority Act and shall have expressly assumed in writing the full and faithful observance and performance of the Municipality's duties, covenants, agreements and obligations under this Loan Agreement; (iii) immediately after such assignment, the assignee shall not be in default in the performance or observance of any duties, covenants, obligations or agreements of the Municipality under this Loan Agreement; (iv) the Authority shall have received an opinion of bond counsel to the effect that the assignment will not adversely affect the exclusion of interest on the Authority Bonds from gross income for purposes of Federal income taxation under Section 103(a) of the Code; and (v) the Authority shall have received an opinion of its counsel to the effect that such assignment will not violate the provisions of any agreement entered into by the Authority or the State through the Department with, or any condition of any grant received by the Authority or the State through the Department from, the United States of America, which is related to any SRF capitalization grant received by the Authority or the State through the Department.

(b) No assignment under this Section shall relieve the Municipality from primary liability for any of its obligations under this Loan Agreement and in the event of

such assignment, the Municipality shall continue to remain primarily liable for the performance and observance of its obligations to be performed and observed under this Loan Agreement.

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ARTICLE V DEFAULTS AND REMEDIES

SECTION .01. Events of Default . If any of the following events occur, it is hereby defined and declared to be and to constitute an Event of Default:

(a) Failure by the Municipality to pay, or cause to be paid, any payment, including the payment of principal and interest on the Municipal Securities, required to be paid hereunder when due.

(b) Failure by the Municipality to make, or cause to be made, any required payments of principal, redemption premium, if any, and interest on any bonds, notes or other obligations of the Municipality for borrowed money (other than the Loan and the Municipal Securities and after giving effect to any applicable grace period), the payments of which are secured by any revenues derived or to be derived from the Project.

(c) Failure by the Municipality to pay, or cause to be paid, the Administrative Fee or any portion thereof when due or to perform or observe any other covenant, agreement or condition on its part to be observed or performed under this Loan Agreement, other than as referred to in paragraph (a) of this section, which failure shall continue for a period of thirty (30) days after written notice, specifying such failure and requesting that it be remedied, is given to the Municipality by the Authority, unless the Authority shall agree in writing to an extension of the time prior to its expiration; however, if the failure stated in such notice is correctable but cannot be corrected within the applicable period, the Authority may not unreasonably withhold its consent to an extension of time up to 120 days from the delivery of the written notice referred to above if corrective action is instituted by the Municipality within the applicable period and diligently pursued until the Event of Default is corrected.

(d) Any representation made by or on behalf of the Municipality contained in this Loan Agreement or in any instrument furnished in compliance with or with reference to this Loan Agreement or the Loan or in connection with the Municipal Securities, is false or misleading in any material respect.

(e) A petition is filed by or against the Municipality under any federal or state bankruptcy or insolvency law or other similar law in effect on the date of this Loan Agreement or thereafter enacted, unless in the case of any such petition filed against the Municipality such petition shall be dismissed within thirty (30) days after such filing and such dismissal shall be final and not subject to appeal; or the Municipality shall become insolvent or bankrupt or make an assignment for the benefit of its creditors; or a custodian (including, without limitation, a receiver, liquidator or trustee of the Municipality or any of its property) shall be appointed by court order or take possession of the Municipality or its property or assets if such order remains in effect or such possession continues for more than thirty (30) days.

SECTION .02. Notice of Default . The Municipality shall give the Authority prompt telephonic notice of the occurrence of any Event of Default at such time as any senior administrative or financial officer of the Municipality becomes aware of the existence thereof. Any telephone notice pursuant to this Section 5.02 shall be confirmed in writing as soon as practicable by the Municipality.

SECTION .03. Remedies on Default . Whenever an Event of Default referred to in Section 5.01 shall have occurred and be continuing, the Authority shall have the right to take, or to direct the Trustee or its authorized agent to take, any action permitted or required to be taken under the Municipal Bond Resolution or this Loan Agreement and to take whatever other action at law or in equity may appear necessary or desirable to collect the amounts then due and thereafter to become due hereunder or to enforce the performance and observance of any duty, covenant, obligation or agreement of the Municipality hereunder.

SECTION .04. Application of Moneys . Any moneys collected by the Authority pursuant to Section 5.03 shall be applied (a) first, to pay interest due and payable on the Municipal Securities, (b) second, to pay principal due and payable on the Municipal Securities, (c) third, to pay any other amounts due and payable under this Loan Agreement.

SECTION .05. No Remedy Exclusive; Waiver: Notice . No remedy herein conferred upon or reserved to the Authority or the Trustee, is intended to be exclusive and every remedy shall be cumulative and shall be in addition to every other remedy given under this Loan Agreement or now or hereafter existing at law or in equity. No delay or omission to exercise any right, remedy or power accruing upon any Event of Default shall impair any such right, remedy or power or shall be construed to be a waiver thereof, but any such remedy or power may be exercised from time to time and as often as may be deemed expedient. In order to entitle the Authority or the Trustee, to exercise any remedy reserved to it in this Article, it shall not be necessary to give any notice, other than such notice as may be required in this Article V.

SECTION .06. Retention of Authority's Rights . Notwithstanding any assignment or transfer of this Loan Agreement pursuant to the provisions hereof or of the Municipal Bond Resolution, or anything else to the contrary contained herein, the Authority shall have the right upon the occurrence of an Event of Default to take any action, including (without limitation) bringing an action against the Municipality at law or in equity, as the Authority may, in its discretion, deem necessary to enforce the obligations of the Municipality to the Authority pursuant to this Loan Agreement and the Municipal Bond Resolution.

SECTION .07. Default by Authority . In the event of any default by the Authority under any covenant, agreement or obligation of this Loan Agreement, the Municipality may pursue any available remedy at law or in equity, including without limitation suit for damages or injunction, special action, action for specific performance or any other available equitable remedy designed to enforce the performance or observance of any duty, covenant, obligation or agreement of the Authority hereunder as may be necessary or appropriate.

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ARTICLE VI MISCELLANEOUS

SECTION .01. Notices . All notices, certificates or other communications under this Loan Agreement shall be sufficiently given and shall be deemed given when hand delivered or mailed by registered or certified mail, postage prepaid, to the Municipality, the Authority and the Department at the following addresses:

(a) Authority:

North Dakota Public Finance Authority
1200 Memorial Highway
P.O. Box 5509
Bismarck, North Dakota 58506-5509
Attention: Executive Director

(b) Department:

North Dakota State Department of Health
Municipal Facilities
918 East Divide Avenue, 3rd Floor
P.O. Box 5520
Bismarck, ND 58501-1947

(c) Municipality:

City of Minot
515 2nd Avenue SW
Minot, ND 58702

Any of the foregoing parties may designate any further or different addresses to which subsequent notices, certificates or other communications shall be sent, by notice in writing given to the others.

SECTION .02. Binding Effect . This Loan Agreement shall inure to the benefit of and shall be binding upon the Department, the Authority and the Municipality and their respective successors and assigns.

SECTION .03. Severability . In the event any provision of this Loan Agreement shall be held illegal, invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate, render unenforceable or otherwise affect any other provision.

SECTION .04. Amendments, Supplements and Modifications . This Loan Agreement may not be amended, supplemented or modified without the prior written consent of the Authority and the Municipality.

SECTION .05. Execution in Counterparts . This Loan Agreement may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

SECTION .06. Applicable Law . This Loan Agreement shall be governed by and construed in accordance with the laws of the State of North Dakota.

SECTION .07. Consents and Approvals . Whenever the written consent or approval of the Authority is required under the provisions of this Loan Agreement, such consent or approval may only be given by the Authority unless otherwise provided by law or by rules, regulations or resolutions of the Authority or unless expressly delegated to the Authority's agent.

SECTION .08. Captions . The captions or headings in this Loan Agreement are for convenience only and shall not in any way define, limit or describe the scope or intent of any provisions or Sections of this Loan Agreement.

SECTION .09. Further Assurances . The Municipality will, at the request of the Authority, authorize, execute, acknowledge and deliver such further resolutions, conveyances, transfers, assurances, financing statements and other instruments as may be necessary or desirable for better assuring, conveying, granting, assigning and confirming the rights, security interests and agreements granted or intended to be granted by this Loan Agreement and the Municipal Securities.

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NORTH DAKOTA PUBLIC FINANCE AUTHORITY

By: _____
DeAnn Ament, Executive Director

[Signature Page – Loan Agreement (Series 2018B)]

CITY OF MINOT, NORTH DAKOTA

By: _____
Chuck Barney, Mayor

ATTEST:

_____
Kelly Matalka, City Clerk

[Signature Page – Loan Agreement (Series 2018B)]

EXHIBIT A

DESCRIPTION OF PROJECT

Construct improvements to the Municipality's water and sewer utility, including replacing storm sewer, sanitary sewer lines, waterlines and streets with new utilities for the relocation and construction of all flood protection structures and storm water pump station.

EXHIBIT B

MUNICIPAL SECURITIES PAYMENT SCHEDULE

EXHIBIT C

NORTH DAKOTA STATE REVOLVING FUND PROGRAM
CERTIFICATE RELATING TO LOBBYING AND LITIGATION

The undersigned hereby certify that they are, respectively, the duly elected or appointed, qualified and acting Mayor and Director of Finance and Administrative Services of the Municipality (as defined in the North Dakota State Revolving Fund Program Loan Agreement of even date (the "Loan Agreement")), and as such officials, they are familiar with the Municipality's property, affairs, and records, and the undersigned, as such officials, hereby further acknowledge, agree, and certify as follows:

1. No grant or loan funds awarded under this State Revolving Fund Program will be used to engage in lobbying of the Federal Government or in litigation against the U.S. unless authorized under existing law. The Municipality shall abide by OMB Circulars A-21, A-87, and A-122, which generally prohibit the use of federal grant funds for litigation against the U.S. or for lobbying or other political activities.

2. The Municipality will comply with Title 40 CFR Part 34, New Restrictions on Lobbying. The Municipality shall incorporate or refer to the language of this provision in the Loan Agreement for all loans exceeding $100,000.

3. In accordance with the Byrd Anti-Lobbying Amendment, any Municipality which makes a prohibited expenditure under Title 40 CFR Part 34 or fails to file the required certification or lobbying forms shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure.

Dated: [_____], 2018.

CITY OF MINOT, NORTH DAKOTA

By _____
Mayor

By _____
City Clerk

NORTH DAKOTA
STATE REVOLVING FUND PROGRAM

LOAN AGREEMENT

NORTH DAKOTA PUBLIC FINANCE AUTHORITY
(Lender)

and

CITY OF MINOT, NORTH DAKOTA
(Municipality)

(To be completed by Authority)

Dated Date of Loan Agreement: _____, 2018

SRF Program (circle one): Clean Water SRF
Drinking Water SRF

State Act (circle one): N.D.C.C. ch. 61-28.2 (Clean Water)
N.D.C.C. ch. 61-28.1 (Drinking Water)

Summary Description of Project: Construction of improvements to the Municipality's water and sewer utility

Approved Loan amount: $1,734,000

Construction period: **[Spring, 2018 – Summer, 2020]**

Form of municipal securities: Sales Tax and Water and Sewer Reserve Revenue Bonds, Series 2018C

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EXHIBIT A: Description of Project
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EXHIBIT C: Form of North Dakota State Revolving Fund Program Certificate Relating to Lobbying and Litigation

LOAN AGREEMENT

THIS LOAN AGREEMENT is made and entered into as of _____, 2018, by and between the NORTH DAKOTA PUBLIC FINANCE AUTHORITY (the "Authority"), an agency and instrumentality of the State of North Dakota (the "State"), and the CITY OF MINOT, NORTH DAKOTA (the "Municipality"), a political subdivision of the State.

ARTICLE I DEFINITIONS

SECTION .01. Definitions . The following terms as used in this Loan Agreement shall, unless the context clearly requires otherwise, have the following meanings:

"Administrative Fee" means an annual fee of 1/2 of one percent (.50%) of the outstanding principal amount of the Loan or such lesser amount, if any, as the Authority may approve from time to time.

"Authority Act" means N.D.C.C. ch. 6-09.4.

"Authority Bonds" or "Bonds" mean bonds of the Authority authorized, authenticated, and delivered in order to finance or refinance the Project pursuant to this Loan Agreement and to enable the Department, through the Authority, to draw EPA capitalization grant funds for deposit in the SRF.

"Code" means the Internal Revenue Code of 1986 as the same may from time to time be amended and supplemented, including any regulations promulgated thereunder and any administrative or judicial interpretations thereof.

"Costs" means those costs associated with the Project and the Loan that are eligible to be funded from the SRF, as determined by the Department and the Authority.

"Department" means the North Dakota Department of Health.

"EPA" means the United State Environmental Protection Agency.

"Event of Default" means any occurrence or event specified in Section 5.01 of this Loan Agreement.

"General Records" shall have the same meaning given in Section 3.01(f) of this Loan Agreement.

"Loan" means the loan evidenced by the Municipal Securities, made by the Authority to the Municipality pursuant to this Loan Agreement to finance or refinance all or a portion of the Costs of the Project. For all purposes of this Loan Agreement, the amount of the Loan at any time shall be the amount of the Loan less any principal amount which has been repaid to the Authority by the Municipality.

"Loan Agreement" means this Loan Agreement, including the Exhibits attached to, and hereby made a part hereof, as it may be supplemented, modified or amended from time to time in accordance with the terms hereof.

"Loan Closing" means the date upon which the Municipality shall issue and deliver the documents listed in Section 2.05 and shall be eligible to receive the Loan.

"Loan Commitment" means the offer by the Department to provide financial assistance to the Municipality from the SRF, subject to approval by the Authority. The Loan Commitment, when accepted by the Municipality through appropriate action of its governing body, shall be a "binding commitment" within the meaning of that term in the SRF Act.

"Loan Repayments" means the payments payable by the Municipality to the Authority, including payments payable under the Municipal Bond Resolution and the Municipal Securities.

"Municipal Bond Resolution" means the resolution(s) or ordinance(s) of the governing body of the Municipality authorizing the issuance of the Municipal Securities.

"Municipality" means the borrower under this Loan Agreement, which must be a "political subdivision," as defined in section 6-09.4-03(5) of the Authority Act.

"Municipal Securities" means municipal securities, as such term is defined in the Authority Act, executed and delivered by the Municipality to the Authority to evidence the Loan in accordance with the Municipal Bond Resolution.

"Project" means the improvement or undertaking of the Municipality described in Exhibit A attached hereto, for purposes of the State Water Pollution Control Revolving Loan Fund and the Federal Clean Water Act, or to the public water and sewer system of the Municipality for purposes of the State Safe Drinking Water Act and the Federal Safe Drinking Water Act, all or a portion of the Costs of which are financed or refinanced by the Authority from the SRF through the making of the Loan under this Loan Agreement.

"SRF" means the revolving loan fund(s) created by the State Act.

"SRF Act" means, for purposes of the State Water Pollution Control Revolving Loan Fund Act, the Federal Clean Water Act, and for purposes of the State Safe Drinking Water Act, the Federal Safe Drinking Water Act, including any regulations and guidelines promulgated thereunder.

"State Act" means, for purposes of the Federal Clean Water Act, N.D.C.C. ch. 61-28.2 (the State Water Pollution Control Revolving Loan Fund Act), and, for purposes of the Federal Safe Drinking Water Act, N.D.C.C. ch. 61-28.1 (the State Safe Drinking Water Act).

"System Records" shall have the same meaning given in Section 3.01(f) of this Loan Agreement.

"Trustee" means the Trustee appointed by the Authority pursuant to the State Revolving Fund Program Master Trust Indenture and its successor or successors and any other trustee which may at any time be substituted in its place as Trustee pursuant to the Indenture.

SECTION .02. Additional Terms . Except where the context otherwise requires, words importing the singular number shall include the plural number and vice versa, and words importing persons shall include firms, associations, corporations, agencies and districts. Words importing one gender shall include the other gender.

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ARTICLE II LOAN; OBLIGATIONS; DISCLAIMER; DELIVERY OF DOCUMENTS

SECTION .01. The Loan . The Authority hereby agrees to loan and disburse to the Municipality, and the Municipality agrees to borrow and accept from the Authority, the Loan in the principal amount of the Municipal Securities, plus accrued interest, if any. The Municipality shall use the proceeds of the Loan to pay the Costs of the Project in accordance with the Municipal Bond Resolution and this Loan Agreement.

SECTION .02. Disbursement of Loan Proceeds . The Authority will disburse the Loan upon (a) execution and delivery by the Municipality of the documents described in Section 2.06 and (b) issuance and delivery by the Municipality of the Municipal Securities to the Authority and (c) submission to and approval by the Department and the Authority of Requisitions for Payment in the form approved by the Department.

SECTION .03. Draws of Municipal Securities Proceeds . The proceeds of the Municipal Securities are appropriated by the Municipality to pay expenses necessarily incurred in the construction and completion of the Project and the issuance of the Municipal Securities. Requests for draws on the Loan, in the form of Requisitions for Payment, shall be submitted by the Municipality to the Department from time to time in accordance with procedures established by the Department. Requisitions for Payment approved by the Department shall be forwarded to the Authority and the Trustee for approval and funding. After all claims and expenses with respect to the Project and the issuance of the Municipal Securities have been duly paid and satisfied, the amortization schedule for the Municipal Securities shall be adjusted to reflect the total principal amount drawn under this Loan Agreement.

SECTION .04. Unconditional Obligations . The Municipality shall not be obligated to make any payments required to be made by any other political subdivision with respect to the lending of funds by the Authority from the SRF.

SECTION .05. Disclaimer of Warranties and Indemnification . The Municipality acknowledges and agrees that (i) neither the Authority nor the Department has made or makes any warranty or representation, either express or implied as to the value, design, condition, merchantability or fitness for a particular purpose or fitness for any use of the Project or any portions thereof or any other warranty or representation with respect thereto; and (ii) in no event shall the Authority, nor the Department or their respective officers, directors, employees, or agents be liable or responsible for any direct, incidental, indirect, special or consequential damages in connection with or arising out of this Loan Agreement or the Project or the existence, furnishing, functioning or use of the Project.

SECTION .06. Delivery of Documents . Concurrently with the execution and delivery of this Loan Agreement, the Municipality will cause each of the following items to be delivered to the Authority:

(a) Executed counterparts of this Loan Agreement.

(b) Copies of the Municipal Bond Resolution adopted May 7, 2018 by the governing body of the Municipality authorizing the execution and delivery of this Loan

Agreement and the Municipal Securities, certified by an authorized officer of the Municipality.

(c) An arbitrage certificate and a closing certificate covering such matters as may be agreed upon by the Municipality and the Authority.

(d) An opinion or opinions of the Municipality's counsel, which may be given by one or more counsel, covering such matters concerning the validity and tax status of the Municipal Securities as may be agreed upon by the Municipality and the Authority.

(e) Such other certificates, documents, opinions and information as the Authority may require.

Items 2.06(b), (c), and (d) must be prepared and provided by the Municipality to the Authority prior to the Loan Closing for review and approval.

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ARTICLE III COVENANTS AND REPRESENTATIONS

SECTION .01. Covenants and Representations of Municipality .

(a) Performance Under Loan Agreement. The Municipality covenants and agrees (i) to maintain the Project in good repair and operating condition and (ii) to cooperate with the Authority and the Department in the observance and performance of the respective duties, covenants, obligations and agreements of the Municipality and the Authority under this Loan Agreement.

(b) Completion of Project and Provision of Moneys Therefor. The Municipality covenants and agrees (i) to exercise its best efforts in accordance with prudent utility practice to complete the Project and to so accomplish such completion on or before the estimated Project completion date; and (ii) to provide from its own fiscal resources all moneys in excess of the total amount of the Loan required to complete the Project.

(c) Disposition of Project. The Municipality covenants and agrees that it will not sell, lease, abandon or otherwise dispose of all or substantially all or any substantial portion of the Project or any other system which provides revenues for upkeep and maintenance of the Project except on ninety (90) days prior written notice to the Authority and, in any event, shall not sell, lease, abandon or otherwise dispose of the Project unless the following conditions are met: (i) the Municipality, with the approval of the Authority, shall assign this Loan Agreement and its rights and interests hereunder in accordance with Section 4.02 to the purchaser or lessee of the Project, which must be a political subdivision as defined in the Authority Act, and such purchaser or lessee shall assume all duties, covenants, obligations and agreements of the Municipality under this Loan Agreement; and (ii) the Authority, in its sole discretion, by appropriate action determines that such sale, lease, abandonment or other disposition will not adversely affect (A) the ability of the Municipality or its assignees to meet its duties, covenants, obligations and agreements under the Municipal Bond Resolution, (B) the value of this Loan Agreement as security for the payment of Authority Bonds and interest thereon, (C) the eligibility of interest on Authority Bonds then outstanding or which could be issued in the future for exclusion from gross income for purposes of federal income taxation, or (D) any agreement entered into by the Authority or the State through the Department with, or any condition of any grant received by the Authority or the State through the Department from, the United States of America, which is related to any SRF capitalization grant received by the Authority or the State through the Department.

(d) Operation and Maintenance of Project. The Municipality covenants and agrees that it will, in accordance with prudent wastewater or drinking water treatment utility practice, as the case may be, (i) at all times operate the Project and the properties associated with and operated in conjunction with the Project and any business in connection therewith in an efficient manner, (ii) maintain the Project

in good repair, working order and operating condition, (iii) from time to time make all necessary and proper repairs, renewals, replacements, additions, betterments and improvements with respect to the Project so that at all times the enterprise or business carried on in connection therewith shall be properly and advantageously conducted; provided that this covenant shall not be construed as requiring the Municipality to expend any funds which are derived from sources other than the operation of the Project or other receipts of such Project which are not pledged under the Municipal Bond Resolution for such purpose, and provided further that nothing herein shall be construed as preventing the Municipality from doing so.

(e) The Municipality covenants and agrees that the proceeds of the Loan shall be used and expended in a manner consistent with the State Act and the SRF Act, all regulations and guidelines promulgated thereunder, and this Loan Agreement. The Authority affirms that expenditure for the Project as described in the loan application is consistent with the foregoing laws and documents.

(f) Records; Accounts.

(i) The Municipality will, to the extent required by generally accepted government accounting principles, keep accurate records and accounts for the utility (the "System Records") separate from its other records and accounts (the "General Records"). The System Records will be maintained in accordance with generally accepted government accounting principles and will be audited annually or biennially by an independent accountant, which audit may be part of the annual or biennial audit of the General Records of the Municipality. The System Records and General Records will be made available for inspection by the Authority and the Department at any reasonable time. A copy of the Municipality's audited financial statements, including all written comments and recommendations of the auditor, will be furnished to the Authority within 150 days of the close of the fiscal year or years being audited. The Municipality agrees that its financial reports for the year or years which it receives draws under this Agreement shall be prepared in accordance with the Federal Single Audit Act and the Federal Office of Management and Budget's Circular A-128.

(ii) The Municipality will keep, or cause to be kept, accurate records, if such records must be kept for compliance with the requirements of Section 148 of the Code, of each investment it makes in investment property (as that term is defined in Section 148(b) of the Code) acquired, directly or indirectly, with proceeds of the Authority Bonds. The Authority will advise the Municipality if the loan is not being funded with the proceeds of Authority Bonds. Further, with respect to such investments made by the Municipality which are not excepted from the computation of rebate under Section 148(f)(4) of the Code, the Municipality (A) will calculate, or cause to be calculated, the amount (the "rebate amount") that is to be

rebated to the United States Treasury pursuant to Section 148(f) of the Code, and (B) will for each computation date under Section 148(f) of the Code (or on any further periodic basis requested in writing by the Authority) remit the following to the Authority: (1) the calculations supporting the determination of the rebate amount and (2) an amount of money equal to the rebate installment then owed. To the extent any such rebate amounts (or the investment income thereon) are in excess of the Authority's rebate requirement allocable to the Municipal Securities, such amounts will be promptly returned by the Authority to the Municipality.

(g) Inspections; Information. The Municipality will permit the Authority, the Department, and the Trustee, and any designated party to examine, visit and inspect, at any and all reasonable times, the property constituting the Project, and to inspect and make copies of any accounts, books and records, including (without limitation) its Systems Records, General Records, and any other records regarding receipts, disbursements, contracts, investments and any other matters relating thereto and to its financial standing, and will supply such reports and information as the Authority, the Department and the Trustee may reasonably require in connection therewith.

(h) Insurance. The Municipality shall maintain or cause to be maintained, in force, insurance policies with responsible insurers or self insurance programs providing against risk of direct physical loss, damage or destruction of the Project, at least to the extent that similar insurance is usually carried by utilities constructing, operating and maintaining, works of the nature of the Project, including liability coverage, all to the extent available at reasonable cost but in no case less than will satisfy all applicable regulatory requirements. The Authority, the Department and the Trustee may require the Municipality to provide them with evidence of insurance on the Project.

(i) Costs of Project. The Municipality certifies that the Costs of the Project provided to the Authority are a reasonable and accurate estimation, and upon direction of the Authority will provide a certificate from its engineer stating that such Costs are a reasonable and accurate estimation.

(j) Continuing Disclosure.

(i) So long as the Municipality shall constitute an obligated person within the meaning, of S.E.C. Rule 15c2-12 (the "Rule") as in effect from time to time, the Municipality agrees to furnish to the Authority such financial information and operating data with respect to the Municipality at such time and in such forms as the Authority shall reasonably request in order to comply with the provisions of the Rule and to provide notice to the Authority in a timely manner, not in excess of ten (10) business days after any of the following events with respect to the Municipal Securities:

(A) principal and interest payment delinquencies;

(B) non-payment related defaults, if material;

(C) unscheduled draws on debt service reserves reflecting financial difficulties;

(D) unscheduled draws on credit enhancements reflecting financial difficulties;

(E) substitution of credit or liquidity providers, or their failure to perform;

(F) adverse tax opinions, the issuance by the Internal Revenue Service of proposed or final determinations of taxability, Notices of Proposed Issue (IRS Form 5701-TEB) or other material notices or determinations with respect to the tax status of the security, or other material events affecting the tax status of the security;

(G) modifications to rights of security holders, if material;

(H) bond calls, if material, and tender officers;

(I) defeasances;

(J) release, substitution, or sale of property securing repayment of the securities, if material;

(K) rating changes;

(L) bankruptcy, insolvency, receivership or similar event of the Municipality;

(M) the consummation of a merger, consolidation, or acquisition involving the Municipality or the sale of all or substantially all of the assets of the municipality, other than in the ordinary course of business, the entry into a definitive agreement to undertake such an action or the termination of a definitive agreement relating to any such actions, other than pursuant to its terms, if material; and

(N) appointment of a successor or additional trustee or the change of name of a trustee, if material.

(ii) The Municipality agrees that from time to time it will also provide notice to the Authority of the occurrence of other events, in addition to those listed above, if such other events are material with respect to the Municipal Securities.

(iii) The Municipality will provide, in a timely manner, to the Authority, notice of a failure to satisfy the requirements of this paragraph (j).

(iv) The intent of the Municipality's undertaking pursuant to this paragraph (j) is to facilitate the Authority's ability to comply with the requirements of the Rule. Accordingly, the Municipality agrees to provide the Authority with any information the Authority may reasonably require in order to comply with the requirements of the Rule, as in effect from time to time.

(v) To the extent the Rule no longer requires issuers of municipal securities to provide all or any portion of the information the Municipality has agreed to provide pursuant to this paragraph (j), the obligation of the Municipality to provide such information pursuant to this paragraph also shall cease immediately.

(vi) The Municipality will promptly notify the Authority of any material adverse change in the activities, prospects or condition (financial or otherwise) of the Municipality, or in the ability to make all Loan Repayments and otherwise observe and perform its duties, covenants, obligations, and agreements under this Loan Agreement and the Municipal Securities.

(vii) The sole remedy available to the Authority or to any other person for the failure of the Municipality to comply with any provision of this paragraph (j) shall be an action for specific performance of the Municipality's obligations under this paragraph.

(k) No Free Service. The Municipality will not furnish or supply, or cause to be furnished or supplied, any use, output, capacity or service of the Project free of charge to any person, firm, corporation (public or private), public agency or instrumentality other than the Municipality itself.

(l) Commencement of Construction. The Municipality shall initiate construction of the Project within twelve (12) months after the Loan Closing.

(m) Archeological Artifacts. In the event that archaeological artifacts or historical resources are unearthed during construction excavation, the Municipality shall stop, or cause to be stopped, construction activities and will notify the superintendent of the State Historical Board of North Dakota and the Authority or the Department of such unearthing and follow all applicable state and federal laws and regulations governing such occurrence.

(n) Additional Covenants and Requirements. If necessary in connection with the Authority's issuance of the Authority Bonds or the making of the Loan, additional covenants and requirements will be evidenced by certificates or other documents in the form or forms as may be agreed upon by the Municipality and the Authority.

(o) Continuing Representations. The covenants and representations of the Municipality contained herein shall be true at the time of the execution of this Loan Agreement and the Municipality agrees that such covenants and

representations will be binding and enforceable at all times during the term of this Loan Agreement.

(p) No Lobbying. No portion of the Loan may be used for lobbying or propaganda as prohibited by 18 U.S.C. §1913 or Section 607(a) of Public Law 96-74 or other federal restriction or regulation referenced in the form of North Dakota State Revolving Fund Program Certificate Relating to Lobbying and Litigation which is attached as Exhibit C to this Loan Agreement and shall be executed by the Municipality.

(q) Buy American Requirements. The Municipality covenants and agrees that it will comply with the requirements described as follows:

(i) The Municipality will comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Municipality understands includes, among other requirements, that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (a) the Municipality has requested and obtained a waiver from the Department's Municipal Facilities Division ("Department") pertaining to the Project or (b) the Department or Authority has otherwise advised the Municipality writing that the American Iron and Steel Requirement is not applicable to the Project.

(ii) The Municipality will comply with all record keeping requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a federal agency, the Department or the Authority such as performance of program deliverables, information on costs and Project progress. The Municipality understands that (a) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (b) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Loan Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Municipal Securities and/or other remedial actions.

(r) Compliance with Davis Bacon Act. The Municipality shall, to the extent applicable to the Loan or any related grant, comply with the Davis Bacon and Related Acts requirements. 40 U.S.C. 3141, et seq.

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ARTICLE IV ASSIGNMENT

SECTION .01. Assignment and Transfer by Authority .

(a) The Municipality acknowledges that, other than the Administrative Fees payable pursuant to the Municipal Bond Resolution, all interests of the Authority in and under this Loan Agreement and the Municipal Securities have been pledged as security for the Authority Bonds, and that if any Event of Default shall occur, the Authority or the Trustee shall be entitled to act hereunder. The Municipality hereby acknowledges and consents that the Authority or the Trustee may compel or enforce the right to receive payments required to be made by the Municipality hereunder and may compel or otherwise enforce observance and performance by the Municipality of its other duties, covenants, obligations and agreements hereunder, and that the right and authority to enforce such requirements may be further transferred, assigned, and reassigned in whole or in part to one or more assignees or subassignees without the necessity of obtaining the consent of, but after giving prior written notice to, the Municipality.

(b) In the event of any assignment or transfer of this Loan Agreement and the Municipal Securities, the Authority shall retain the right to compel or otherwise enforce observance and performance by the Municipality of its obligations and agreement to pay Administrative Fees.

SECTION .02. Assignment by Municipality .

(a) This Loan Agreement may not be assigned by the Municipality unless the following conditions shall be satisfied: (i) the Authority shall have approved the assignment in writing; (ii) the assignee shall be a governmental unit within the meaning of Section 141(c) of the Code, shall be a political subdivision as defined in the Authority Act and shall have expressly assumed in writing the full and faithful observance and performance of the Municipality's duties, covenants, agreements and obligations under this Loan Agreement; (iii) immediately after such assignment, the assignee shall not be in default in the performance or observance of any duties, covenants, obligations or agreements of the Municipality under this Loan Agreement; (iv) the Authority shall have received an opinion of bond counsel to the effect that the assignment will not adversely affect the exclusion of interest on the Authority Bonds from gross income for purposes of Federal income taxation under Section 103(a) of the Code; and (v) the Authority shall have received an opinion of its counsel to the effect that such assignment will not violate the provisions of any agreement entered into by the Authority or the State through the Department with, or any condition of any grant received by the Authority or the State through the Department from, the United States of America, which is related to any SRF capitalization grant received by the Authority or the State through the Department.

(b) No assignment under this Section shall relieve the Municipality from primary liability for any of its obligations under this Loan Agreement and in the event of

such assignment, the Municipality shall continue to remain primarily liable for the performance and observance of its obligations to be performed and observed under this Loan Agreement.

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ARTICLE V DEFAULTS AND REMEDIES

SECTION .01. Events of Default . If any of the following events occur, it is hereby defined and declared to be and to constitute an Event of Default:

(a) Failure by the Municipality to pay, or cause to be paid, any payment, including the payment of principal and interest on the Municipal Securities, required to be paid hereunder when due.

(b) Failure by the Municipality to make, or cause to be made, any required payments of principal, redemption premium, if any, and interest on any bonds, notes or other obligations of the Municipality for borrowed money (other than the Loan and the Municipal Securities and after giving effect to any applicable grace period), the payments of which are secured by any revenues derived or to be derived from the Project.

(c) Failure by the Municipality to pay, or cause to be paid, the Administrative Fee or any portion thereof when due or to perform or observe any other covenant, agreement or condition on its part to be observed or performed under this Loan Agreement, other than as referred to in paragraph (a) of this section, which failure shall continue for a period of thirty (30) days after written notice, specifying such failure and requesting that it be remedied, is given to the Municipality by the Authority, unless the Authority shall agree in writing to an extension of the time prior to its expiration; however, if the failure stated in such notice is correctable but cannot be corrected within the applicable period, the Authority may not unreasonably withhold its consent to an extension of time up to 120 days from the delivery of the written notice referred to above if corrective action is instituted by the Municipality within the applicable period and diligently pursued until the Event of Default is corrected.

(d) Any representation made by or on behalf of the Municipality contained in this Loan Agreement or in any instrument furnished in compliance with or with reference to this Loan Agreement or the Loan or in connection with the Municipal Securities, is false or misleading in any material respect.

(e) A petition is filed by or against the Municipality under any federal or state bankruptcy or insolvency law or other similar law in effect on the date of this Loan Agreement or thereafter enacted, unless in the case of any such petition filed against the Municipality such petition shall be dismissed within thirty (30) days after such filing and such dismissal shall be final and not subject to appeal; or the Municipality shall become insolvent or bankrupt or make an assignment for the benefit of its creditors; or a custodian (including, without limitation, a receiver, liquidator or trustee of the Municipality or any of its property) shall be appointed by court order or take possession of the Municipality or its property or assets if such order remains in effect or such possession continues for more than thirty (30) days.

SECTION .02. Notice of Default . The Municipality shall give the Authority prompt telephonic notice of the occurrence of any Event of Default at such time as any senior administrative or financial officer of the Municipality becomes aware of the existence thereof. Any telephone notice pursuant to this Section 5.02 shall be confirmed in writing as soon as practicable by the Municipality.

SECTION .03. Remedies on Default . Whenever an Event of Default referred to in Section 5.01 shall have occurred and be continuing, the Authority shall have the right to take, or to direct the Trustee or its authorized agent to take, any action permitted or required to be taken under the Municipal Bond Resolution or this Loan Agreement and to take whatever other action at law or in equity may appear necessary or desirable to collect the amounts then due and thereafter to become due hereunder or to enforce the performance and observance of any duty, covenant, obligation or agreement of the Municipality hereunder.

SECTION .04. Application of Moneys . Any moneys collected by the Authority pursuant to Section 5.03 shall be applied (a) first, to pay interest due and payable on the Municipal Securities, (b) second, to pay principal due and payable on the Municipal Securities, (c) third, to pay any other amounts due and payable under this Loan Agreement.

SECTION .05. No Remedy Exclusive; Waiver: Notice . No remedy herein conferred upon or reserved to the Authority or the Trustee, is intended to be exclusive and every remedy shall be cumulative and shall be in addition to every other remedy given under this Loan Agreement or now or hereafter existing at law or in equity. No delay or omission to exercise any right, remedy or power accruing upon any Event of Default shall impair any such right, remedy or power or shall be construed to be a waiver thereof, but any such remedy or power may be exercised from time to time and as often as may be deemed expedient. In order to entitle the Authority or the Trustee, to exercise any remedy reserved to it in this Article, it shall not be necessary to give any notice, other than such notice as may be required in this Article V.

SECTION .06. Retention of Authority's Rights . Notwithstanding any assignment or transfer of this Loan Agreement pursuant to the provisions hereof or of the Municipal Bond Resolution, or anything else to the contrary contained herein, the Authority shall have the right upon the occurrence of an Event of Default to take any action, including (without limitation) bringing an action against the Municipality at law or in equity, as the Authority may, in its discretion, deem necessary to enforce the obligations of the Municipality to the Authority pursuant to this Loan Agreement and the Municipal Bond Resolution.

SECTION .07. Default by Authority . In the event of any default by the Authority under any covenant, agreement or obligation of this Loan Agreement, the Municipality may pursue any available remedy at law or in equity, including without limitation suit for damages or injunction, special action, action for specific performance or any other available equitable remedy designed to enforce the performance or observance of any duty, covenant, obligation or agreement of the Authority hereunder as may be necessary or appropriate.

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ARTICLE VI MISCELLANEOUS

SECTION .01. Notices . All notices, certificates or other communications under this Loan Agreement shall be sufficiently given and shall be deemed given when hand delivered or mailed by registered or certified mail, postage prepaid, to the Municipality, the Authority and the Department at the following addresses:

(a) Authority:

North Dakota Public Finance Authority
1200 Memorial Highway
P.O. Box 5509
Bismarck, North Dakota 58506-5509
Attention: Executive Director

(b) Department:

North Dakota State Department of Health
Municipal Facilities
918 East Divide Avenue, 3rd Floor
P.O. Box 5520
Bismarck, ND 58501-1947

(c) Municipality:

City of Minot
515 2nd Avenue SW
Minot, ND 58702

Any of the foregoing parties may designate any further or different addresses to which subsequent notices, certificates or other communications shall be sent, by notice in writing given to the others.

SECTION .02. Binding Effect . This Loan Agreement shall inure to the benefit of and shall be binding upon the Department, the Authority and the Municipality and their respective successors and assigns.

SECTION .03. Severability . In the event any provision of this Loan Agreement shall be held illegal, invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate, render unenforceable or otherwise affect any other provision.

SECTION .04. Amendments, Supplements and Modifications . This Loan Agreement may not be amended, supplemented or modified without the prior written consent of the Authority and the Municipality.

SECTION .05. Execution in Counterparts . This Loan Agreement may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

SECTION .06. Applicable Law . This Loan Agreement shall be governed by and construed in accordance with the laws of the State of North Dakota.

SECTION .07. Consents and Approvals . Whenever the written consent or approval of the Authority is required under the provisions of this Loan Agreement, such consent or approval may only be given by the Authority unless otherwise provided by law or by rules, regulations or resolutions of the Authority or unless expressly delegated to the Authority's agent.

SECTION .08. Captions . The captions or headings in this Loan Agreement are for convenience only and shall not in any way define, limit or describe the scope or intent of any provisions or Sections of this Loan Agreement.

SECTION .09. Further Assurances . The Municipality will, at the request of the Authority, authorize, execute, acknowledge and deliver such further resolutions, conveyances, transfers, assurances, financing statements and other instruments as may be necessary or desirable for better assuring, conveying, granting, assigning and confirming the rights, security interests and agreements granted or intended to be granted by this Loan Agreement and the Municipal Securities.

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NORTH DAKOTA PUBLIC FINANCE AUTHORITY

By: _____
DeAnn Ament, Executive Director

[Signature Page – Loan Agreement (Series 2018C)]

CITY OF MINOT, NORTH DAKOTA

By: _____
Chuck Barney, Mayor

ATTEST:

_____
Kelly Matalka, City Clerk

[Signature Page – Loan Agreement (Series 2018C)]

EXHIBIT A

DESCRIPTION OF PROJECT

Construct improvements to the Municipality's water and sewer utility, including floodwalls, a large storm water pump station, sanitary sewer lines, waterlines, storm sewer lines and a sanitary lift and storm sewer lift.

EXHIBIT B

MUNICIPAL SECURITIES PAYMENT SCHEDULE

EXHIBIT C

NORTH DAKOTA STATE REVOLVING FUND PROGRAM
CERTIFICATE RELATING TO LOBBYING AND LITIGATION

The undersigned hereby certify that they are, respectively, the duly elected or appointed, qualified and acting Mayor and Director of Finance and Administrative Services of the Municipality (as defined in the North Dakota State Revolving Fund Program Loan Agreement of even date (the "Loan Agreement")), and as such officials, they are familiar with the Municipality's property, affairs, and records, and the undersigned, as such officials, hereby further acknowledge, agree, and certify as follows:

1. No grant or loan funds awarded under this State Revolving Fund Program will be used to engage in lobbying of the Federal Government or in litigation against the U.S. unless authorized under existing law. The Municipality shall abide by OMB Circulars A-21, A-87, and A-122, which generally prohibit the use of federal grant funds for litigation against the U.S. or for lobbying or other political activities.

2. The Municipality will comply with Title 40 CFR Part 34, New Restrictions on Lobbying. The Municipality shall incorporate or refer to the language of this provision in the Loan Agreement for all loans exceeding $100,000.

3. In accordance with the Byrd Anti-Lobbying Amendment, any Municipality which makes a prohibited expenditure under Title 40 CFR Part 34 or fails to file the required certification or lobbying forms shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure.

Dated: [_____], 2018.

CITY OF MINOT, NORTH DAKOTA

By _____
Mayor

By _____
City Clerk

RESOLUTION AUTHORIZING THE ISSUANCE OF WATER AND SEWER UTILITY RESERVE REVENUE BONDS, SERIES 2018A TO FINANCE THE UNDERTAKING OF IMPROVEMENTS TO THE MUNICIPAL WATER AND SEWER UTILITY

BE IT RESOLVED by the City Council of the City of Minot, North Dakota (the "City") as follows:

Section 1. Authorization.

1.01. Authority for Bond Issuance. In accordance with the provisions of Article 3 of the Home Rule Charter of the City and Section 2-130 of the City of Minot Code of Ordinances (the "Code") previously adopted by the City Council, the City is empowered to issue revenue bonds for the expansion and improvement of its municipal water and sewer utility (the "Utility"). The bonds are to be issued in general accordance with the provisions of Chapter 40-35, North Dakota Century Code, but may be additionally secured by a reserve created and maintained in accordance with Section 2-130 of the Code.

1.02. Additional Bonds. Pursuant to Section 2-130 of the Code, there have been issued and are now outstanding (or in the case of the Series 2018B Bonds and Series 2018C Bonds, expected to be issued and outstanding) (the "Outstanding Bonds"):

Title	Amount Outstanding	Dated Date	Date of Resolution
Water and Sewer Utility Reserve Revenue Bonds, Series 2011B (the "2011B Bonds")	$870,000	December 22, 2011	December 5, 2011
Water and Sewer Utility Reserve Revenue Bonds, Series 2012B (the "2012B Bonds")	$1,545,000	November 28, 2012	November 5, 2012
Water and Sewer Utility Reserve Revenue Refunding Bonds, Series 2012C (the "2012C Bonds")	$1,265,000	November 28, 2012	November 5, 2012
Water and Sewer Utility Reserve Revenue Bonds, Series 2013C (the "2013C Bonds")	$4,050,000	November 26, 2013	November 4, 2013

Title	Amount Outstanding	Dated Date	Date of Resolution
Water and Sewer Utility Reserve Revenue Bonds, Series 2014C (the "2014C Bonds")	$3,480,000	November 25, 2014	November 3, 2014
Water and Sewer Utility Reserve Revenue Bonds, Series 2015D (the "2015D Bonds")	$5,585,000	November 24, 2015	November 2, 2015
Water and Sewer Utility Reserve Revenue Bonds, Series 2016C (the "2016C Bonds")	$4,520,000	November 29, 2016	November 7, 2016
Sales Tax and Water and Sewer Utility Reserve Revenue Bonds, Series 2018B (the "Series 2018B Bonds")	$12,282,000	TBD	May 7, 2018
Sales Tax and Water and Sewer Utility Reserve Revenue Bonds, Series 2018C (the "Series 2018C Bonds")	$1,734,000	TBD	May 7, 2018

Pursuant to the applicable bond resolutions authorizing the issuance of the Outstanding Bonds, additional revenue bonds may be issued and made payable, in whole or in part, from the net revenues of the Utility, on a parity with said Outstanding Bonds, if (a) no default exists under the terms of said resolutions, or the terms of any other resolution authorizing the issuance of the bonds payable from the net revenues of the Utility; (b) the resolution authorizing the issuance of such additional bonds contains the covenant as to rates and charges required by Section 2-130 of the Code and provides for the funding of the debt service reserve account required by Section 2-130 of the Code; (c) the City Council reasonably determines that the rates and charges then in effect, or to be in effect prior to the issuance of said additional bonds, together with any other revenues, including sales tax collections, then or theretofore pledged to the payment of such bonds or additional bonds, will produce revenues sufficient to comply with the provisions of Section 2-130 of the Code and the resolution authorizing the issuance of said additional bonds; and (d) the full faith and credit of the City is pledged to maintain the debt service reserve account balance for the additional bonds as required by Section 2-130 of the Code. It is hereby determined that all of the foregoing conditions will be met as of the date of issuance of the Bonds and, therefore, the Bonds presently authorized will and shall be entitled to the equal and proportionate benefit and security of

the pledge of the revenue and income derived and to be derived from the operation of the Utility, on a parity with said Outstanding Bonds without preference.

The City will undertake improvements to the Utility, including upsizing approximately two miles of piping from wastewater aeration ponds to the lagoon cells and addition of manholes and control structures in connection therewith (the "Project"). Pursuant to the requirements of the Code, the City has published notice of the proposed Project, has allowed for the filing of written protests and hereby finds the protests insufficient to bar the Project. The City hereby finds it to be necessary and desirable to provide permanent financing for the Project by the issuance of its Water and Sewer Reserve Revenue Bond, Series 2018A, in the principal amount of $6,678,000 (the "Bonds").

1.03. Sale. The City, in response to its application for financial assistance from the State Department of Health, has received an offer from the Industrial Commission of North Dakota-North Dakota Public Finance Authority to purchase the Bonds at a price equal to the principal amount plus accrued interest, if any, to the date of purchase, which offer is more fully set out in a loan agreement (the "Loan Agreement") to be entered into between the City and the North Dakota Public Finance Authority (the "PFA"), a copy of which has been made available to members of the City Council for review. It is hereby found and determined that the offer of the PFA to purchase the Bonds is reasonable and advantageous to the City and is hereby accepted, and the Loan Agreement, in substantially the form presented to the City at this meeting, is hereby accepted and authorized to be executed on behalf of the City by the Mayor and the City Clerk, with such modifications as may be approved by said officers. The Mayor and the City Clerk are authorized and directed to execute the Loan Agreement and to deliver it to the PFA, which execution and delivery shall be conclusive evidence of the approval of any modifications with respect to the Loan Agreement.

1.04. Performance Requirements. Pursuant to Ordinance No. 659 of the City, the City has established on its books a "Water and Sewer Utility Fund" and has provided for the allocation of revenues of the Utility to accounts for operation and maintenance, replacement and depreciation and surplus, provided that the City has reserved the right in Ordinance No. 659 to establish separate and additional accounts within the Water and Sewer Utility Fund for the purpose of segregating and applying revenues to the payment of bonds issued to finance improvements to the Utility. If so established, such accounts shall be credited with such portions of the revenues of the Utility as may be contracted under the terms of the resolutions authorizing the issuance of bonds, such credits to be made after crediting the operation and maintenance account to the extent required by Ordinance No. 659, but before crediting any amounts to the accounts for replacement and depreciation and surplus. For the purpose of providing for the payment of the Bonds herein authorized, the City does hereby covenant and agree that from and after the completion and acceptance of the Project, it will operate the same as a part of the Utility, and will at all times continue to impose, maintain and collect rates, charges and rentals for the services, facilities and benefits provided by the Utility (including all additions and betterments thereof) to its inhabitants and industries and all others, such as will make the revenues of the Utility sufficient, together with any other funds appropriated to the Water and Sewer Utility Fund, to meet all of the requirements of the Water and Sewer Utility Fund as outlined in Ordinance No. 659, including the payment of all current, reasonable and necessary costs of operation and maintenance, and the maintenance of a reasonable reserve for contingencies, and the production of revenues, in excess of the foregoing

requirements ("net revenues") at least sufficient for the payment of principal and interest currently due, and the maintenance of any required debt service reserve accounts, with respect to all bonds payable from accounts established within said Fund, including the Bonds herein authorized, and to provide an additional depreciation allowance as stated in Ordinance No. 659.

Section 2. Form. The Bonds shall initially be issued to the PFA in the form of a single registered Bond with annual installments of principal in substantially the form attached as Exhibit A hereto. At the request of the PFA, the City will deliver, in exchange for the Bonds initially issued, registered Bonds in the same aggregate outstanding principal amount, bearing interest at the same rate, in denomination of $5,000 or any integral multiple thereof, not exceeding the amount of principal payable on any single principal payment date.

Section 3. Bond Terms; Registration; Redemption.

3.01. Date, Maturities, Denomination and Payment. For the purposes specified in Section 1, the City authorizes the issuance of the Bonds in the aggregate principal amount of $6,678,000, dated, as originally issued, as of the date of issuance thereof. The Bonds shall be issued as a single registered bond in the amount of $6,678,000 or in denominations of $5,000 or any integral multiple thereof, and shall be payable in annual installments of principal on September 1 in the years and amounts set forth below, as follows, subject to adjustment or re-amortization in accordance with the provisions of the Loan Agreement:

Year	Amount	Year	Amount
2019	$278,000	2029	$335,000
2020	280,000	2030	340,000
2021	285,000	2031	350,000
2022	290,000	2032	355,000
2023	300,000	2033	365,000
2024	305,000	2034	370,000
2025	310,000	2035	375,000
2026	315,000	2036	385,000
2027	320,000	2037	395,000
2028	330,000	2038	395,000

The principal balance of the Bonds shall bear interest, from its date of issue until paid or duly called for redemption, at the rate of 1.50% per annum.

3.02. Interest Payment Dates. Interest on the Bonds shall be payable on March 1 and September 1 to the owner of record thereof at the close of business on the fifteenth day of the immediately preceding month, whether or not such day is a business day.

3.03. Redemption. The Bonds shall be subject to redemption, in whole or in part, and if in part in principal amounts which are integral multiples of $5,000, prior to their stated maturity, with the written consent of the PFA, at a price equal to the principal amount thereof plus accrued interest to the date of redemption.

3.04. Registration. The City shall appoint, and shall maintain, a bond registrar, transfer agent and paying agent (the Registrar). The effect of registration and the rights and duties of the City and the Registrar with respect thereto shall be as follows:

(a) Register. The Registrar shall keep a bond register in which the Registrar shall provide for the registration of ownership of Bonds and the registration of transfers and exchanges of Bonds entitled to be registered, transferred or exchanged.

(b) Transfer of Bonds. Upon surrender for transfer of any Bond duly endorsed by the registered owner thereof or accompanied by a written instrument of transfer, in form satisfactory to the Registrar, duly executed by the registered owner thereof or by an attorney duly authorized the Registrar shall authenticate and deliver, in the name of the designated transferee or transferees, a new Bond similar in form to the Bonds initially issued, of a like aggregate principal amount, as requested by the transferor.

(c) Exchange of Bonds. Whenever any Bonds are surrendered for exchange the Registrar shall authenticate and deliver the Bonds which the owner making the exchange is entitled to receive.

(d) Cancellation. All Bonds surrendered upon any transfer or exchange shall be promptly cancelled by the Registrar and thereafter disposed of as directed by the City.

(e) Improper or Unauthorized Transfer. When any Bond is presented to the Registrar for transfer, the Registrar may refuse to transfer the same until it is satisfied that the endorsement on such Bond or separate instrument of transfer is valid and genuine and that the requested transfer is legally authorized. The Registrar shall incur no liability for the refusal, in good faith, to make transfers which it, in its judgment, deems improper or unauthorized.

(f) Persons Deemed Owners. The City and the Registrar may treat the person in whose name any Bond is at any time registered in the bond register as the absolute owner of such Bond, whether such Bond shall be overdue or not, for the purpose of receiving payment of, or on account of, the principal of and interest on such Bond and for all other purposes, and all such payments so made to any such registered owner or upon the owner's order shall be valid and effectual to satisfy and discharge the liability upon such Bond to the extent of the sum or sums so paid.

(g) Taxes Fees and Charges. For every transfer or exchange of Bonds, the Registrar may impose a charge upon the owner thereof sufficient to reimburse the Registrar for any tax, fee or other governmental charge required to be paid with respect to such transfer or exchange.

(h) Mutilated Lost, Stolen or Destroyed Bonds. In case any Bond shall become mutilated or be destroyed, stolen or lost, the Registrar shall deliver a new Bond of like amount, number, maturity date and tenor in exchange and substitution for and upon cancellation of any such mutilated Bond or in lieu of and in substitution for any such Bond destroyed, stolen or lost, upon the payment of the reasonable expenses and charges of the Registrar in connection therewith; and, in the case of a Bond destroyed, stolen or lost, upon

filing with the Registrar of evidence satisfactory to it that such Bond was destroyed, stolen or lost, and of the ownership thereof, and upon furnishing to the Registrar of an appropriate bond or indemnity in form, substance and amount satisfactory to it, in which both the City and the Registrar shall be named as obligees. All Bonds so surrendered to the Registrar shall be cancelled by it and evidence of such cancellation shall be given to the City. If the mutilated, destroyed, stolen or lost Bond has already matured or been called for redemption in accordance with its terms it shall not be necessary to issue a new Bond prior to payment.

3.05. Appointment of Initial Registrar. The City hereby appoints The Bank of North Dakota, in Bismarck, North Dakota, as the initial Registrar. The City reserves the right to remove the Registrar upon thirty (30) days notice and upon the appointment of a successor Registrar, in which event the predecessor Registrar shall deliver all cash and Bonds in its possession to the successor Registrar and shall deliver the bond register to the successor Registrar. So long as the Bonds are registered in the name of the PFA, the City shall obtain the prior written approval of the PFA to the removal of the Registrar and appointment of a successor. The City shall pay the reasonable and customary charges of the Registrar from the Operation and Maintenance Account of its Fund.

3.06. Execution, Authentication and Delivery. The Bonds shall be prepared under the direction of the City Clerk and shall be executed on behalf of the City by the signatures of the Mayor and the City Clerk, provided that all signatures may be printed, engraved or lithographed facsimiles of the originals. In case any officer whose signature or a facsimile of whose signature shall appear on the Bonds shall cease to be such officer before the delivery of any Bond, such signature or facsimile shall nevertheless be valid and sufficient for all purposes, the same as if he had remained in office until delivery. Notwithstanding such execution, no Bond shall be valid or obligatory for any purpose or entitled to any security hereunder until the certificate of authentication on such Bond has been duly executed by the manual signature of an authorized representative of the Registrar. The executed certificate of authentication on each Bond shall be conclusive evidence that it has been authenticated and delivered under this Resolution.

Section 4. Water and Sewer Utility Fund.

4.01. Water and Sewer Utility Fund. Pursuant to Ordinance No. 659 of the City, the City Auditor has established and will maintain the Water and Sewer Utility Fund (the "Fund") as a separate and special fund in the financial records of the City until all bonds issued and made payable therefrom, and interest and redemption premiums due thereon, have been duly paid or discharged. Within the Fund are various separate accounts to be maintained by the City.

4.02. Operation and Maintenance Account. To the Operation and Maintenance Account there shall be credited upon each monthly apportionment, as a first lien and charge on the gross revenues, such sum as shall be needed, over and above any credit balance then held in the Operation and Maintenance Account, to pay all claims then due and allowed which by accepted accounting practices constitute normal, reasonable and current expenses of the operation and maintenance of the Utility, and to pay all such expenses estimated to accrue for a period of one month thereafter, and to maintain a reasonable reserve for contingencies. Money in the Operation and Maintenance Account shall be used only to pay expenses of this type, and not for major repairs, replacements or capital improvements which are properly chargeable to replacement and

depreciation reserves or surplus funds. The net revenues of the Utility, which are herein pledged and appropriated to the extent required for the payment of the Bonds herein authorized and interest thereon, are hereby defined as the aggregate of all sums on hand in the Fund from time to time in excess of the current requirements of the Operation and Maintenance Account as described herein.

4.03. Construction Account. A Construction Account has been established within the Fund, which shall be used only to pay, as incurred and allowed, costs which under accepted accounting practices are capital costs of the Project, including, but not limited to, payments due for work and materials performed and delivered under construction contracts, architectural, engineering, inspection, supervision, fiscal and legal expenses, the cost of necessary lands and easements, interest accruing on the Bonds during the period of construction of the Project and for six months thereafter, if and to the extent that the Reserve Revenue Bond Account is not sufficient for payment of such interest, reimbursement of any advances made from other City funds, and all other expenses incurred in connection with the construction and financing of the Project. To the Construction Account there shall be credited all proceeds of the Bonds, except accrued interest, if any, which shall be credited to the Reserve Revenue Bond Account and the sums appropriated, if any, to the Reserve Revenue Bond Reserve Account referred to in Section 4.05, and all other funds appropriated by the City for the purposes referred to in this paragraph, when needed for such purposes, and all income received from the investment of the Construction Account.

4.04. Reserve Revenue Bond Account. A Reserve Revenue Bond Account has been established within the Fund, to which there shall be set aside and credited an amount equal to not less than the sum of one-sixth of the interest due within the next six months plus one-twelfth of the principal to become due within the next twelve months with respect to all reserve revenue bonds heretofore or herein issued or issued in the future and made payable from the Reserve Revenue Bond Account, which amounts, with respect to the Bonds, are to be derived from the net revenues of the Utility at each monthly apportionment. This requirement is cumulative, and if the net revenues are not sufficient to credit the sum required in any month, an amount equal to the deficiency shall be transferred from the Reserve Revenue Bond Reserve Account, Replacement and Depreciation Accounts or Surplus Account of the Fund, or shall be credited from the next net revenues thereafter received in excess of current requirements. Money from time to time held in the Reserve Revenue Bond Account shall be disbursed only to meet payments of principal, premium, if any, and interest due on Bonds issued and made payable from the Reserve Revenue Bond Account.

4.05. Reserve Revenue Bond Reserve Account. A Reserve Revenue Bond Reserve Account has been established within the Fund. Upon the issuance of any series of definitive reserve revenue bonds, the balance in the Reserve Revenue Bond Reserve Account shall be increased, if necessary, either from the proceeds of such bonds or from funds on hand and available for the purpose, to an amount equal to the lesser of (i) maximum annual debt service on, (ii) 125% of the average annual debt service on, or (iii) ten percent of the proceeds of, the Bonds. Funds will be transferred from the Reserve Revenue Bond Reserve Account to the Reserve Revenue Bond Account at any time the balance on hand in the Reserve Revenue Bond Account is insufficient to meet current requirements for payment of principal and interest on the Bonds payable therefrom. In the event of such transfer, and if the then-existing deficiency in the Reserve Revenue Bond Reserve Account cannot be restored from available funds in the Replacement and Depreciation Accounts or Surplus Account of the Fund, the City shall levy a tax upon all taxable

property within the corporate limits of the City sufficient to restore the balance in the Reserve Revenue Bond Reserve Account to the amount required pursuant to Section 2-130 of the Code, which tax shall be subject to no limitation as to rate or amount. In the event a tax is levied for such purpose, the amount of such tax shall be reimbursed to the general fund of the City out of the first available revenues in the Replacement and Depreciation Accounts or Surplus Account of the Fund.

4.06. Replacement and Depreciation Accounts. Accounts for replacement and depreciation (collectively, the "Replacement and Depreciation Accounts") have been established within the Fund. To the Replacement and Depreciation Accounts there shall be credited from the net revenues remaining after allocations to the Operation and Maintenance Account, the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account such sum as shall be needed, over and above any credit balances then held in the Replacement and Depreciation Accounts, to pay such disbursements as may from time to time be found necessary or desirable for replacement of worn-out or obsolete Utility property or for extensions, enlargements or improvements of the Utility which are not directed by the City Council to be financed by special assessments or the issuance of water and sewer utility reserve revenue bonds.

4.07. Surplus Account. To the Surplus Account shall be credited all net revenues from time to time received in excess of the current requirements of the Replacement and Depreciation Accounts, Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account; except that in the event of the future pledge and appropriation of surplus net revenues for the payment and security of additional obligations subordinate to the pledge and appropriation of net revenues to the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account, the City reserves the right to create one or more additional accounts within the Fund for the segregation of surplus net revenues available for the payment of any such obligations. The balance on hand from time to time in the Surplus Account shall be available and shall be used to the full extent necessary to restore any deficiency in the Operation and Maintenance Account, the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account, but when not so needed, may be used to pay for replacements, repairs or capital improvements of the Utility, or to pay principal and interest on subordinate obligations hereafter issued for such purposes, or to redeem and pay before maturity bonds payable from the Reserve Revenue Bond Account, when and as such bonds become redeemable according to their terms, or for any other proper purpose of the City authorized in accordance with resolutions of the City Council.

4.08. Costs of Issuance Account. A Costs of Issuance Account (the "Costs of Issuance Account") has been created within the Fund. The proceeds of the Bonds, if any, deposited in the Costs of Issuance Account shall be used only to pay costs of issuance of the Bonds. There shall be credited to the Costs of Issuance Account, from the proceeds of the Bonds, an amount equal to the estimated costs of issuance to be paid therefrom.

Section 5. Priorities and Additional Bonds.

5.01. Priorities. Each and all of the Bonds issued pursuant to this resolution shall be equally and ratably secured by and payable from the net revenues of the Utility on a parity with the Outstanding Bonds described in Section 1.02 without preference or priority of any one bond of any issue over any other, provided that if at any time the net revenues are insufficient to pay principal

and interest then due on all such bonds payable from said net revenues, the money available therefore shall be first used to pay the interest accrued on all such bonds which are then outstanding, and the balance shall be applied toward payment of the maturing principal of such bonds in order of their maturities, the earliest maturing bonds to be paid first, and pro rata in payment of bonds maturing on the same date.

5.02. Refunding Bonds. The City reserves the right and privilege of refunding any or all of the Bonds herein authorized, subject to the following terms and conditions:

Any matured Bonds, or principal installment thereof, may be refunded if money available for the payment thereof at maturity or on a principal installment date should at any time be insufficient to make such payment in full, and may be made payable from the Reserve Revenue Bond Account on a parity as to interest with all then outstanding bonds issued hereunder, provided that (1) the maturity of each such Bond shall be subsequent to the last maturity or principal installment of any then outstanding bonds issued hereunder which are not refunded, and (2) no Bondholder shall be required to accept a refunding Bond in exchange for any Bond owned.

5.03. Additional Reserve Revenue Bonds. The City reserves the right to issue additional Reserve Revenue Bonds pursuant to Section 2-130 of the Code for the purpose of (i) paying any additional cost of completing the Project in excess of the cost now estimated, (ii) refunding Bonds payable from the Fund under circumstances other than those contemplated in Section 5.02, or (iii) paying the cost of additional improvements to the Utility, which additional revenue bonds shall be payable on a parity with the Bonds now authorized, provided that the test set forth in Section 1.02 is met and, subsequent to said date: (a) no default exists under the terms of this resolution, or the terms of any other resolution authorizing the issuance of bonds payable from the net revenues of the Utility; (b) the resolution authorizing the issuance of such bonds contains the covenant as to rates and charges required by Section 2-130 of the Code and provides for the funding of the debt service reserve account required by Section 2-130 of the Code; (c) the City Council reasonably determines that the rates and charges then in effect, or to be in effect prior to the issuance of said additional bonds, together with any other revenues, including sales tax collections, then or theretofore pledged to the payment of such bonds or additional bonds, will produce net revenues of the Utility sufficient to comply with the provisions of Section 2-130 of the Code and the resolution authorizing the issuance of said additional bonds; and (d) the full faith and credit of the City is pledged to maintain the debt service reserve account balance for the additional bonds as required by Section 2-130 of the Code.

Nothing in this resolution shall preclude the City from issuing additional bonds which are expressly made a charge on only the surplus net revenues of the Utility as set forth in Ordinance No. 659, subordinate to the pledge of net revenues to the Bonds described in Section 1.02 and the Bonds authorized hereunder.

Section 6. Defeasance. When the Bonds have been discharged as provided in this section, all pledges, covenants and other rights granted by this resolution shall cease. The City may discharge its obligations with respect to the Bonds on any date by depositing with the paying agent on or before that date a sum sufficient for the payment thereof in full; or, if the Bonds should not be paid when due, the same may nevertheless be discharged by depositing with the paying agent a sum sufficient for the payment thereof in full with interest accrued from the due date of such

deposit. The City may also discharge its obligations with respect to the Bonds according to its terms by depositing with the paying agent on or before that date an amount equal to the principal and interest which are then due, provided that notice of such redemption has been duly given as provided herein. The City may also discharge its obligations with respect to the Bonds by irrevocably depositing in escrow with a bank or trust company qualified by law to act as an escrow agent, for the purpose of paying all principal and interest due on the Bonds prior to a date upon which all of the same will be prepayable according to their terms and paying all remaining bonds of the series on that date, a sum of cash and securities of the types authorized by North Dakota law, in such aggregate amount, bearing interest at such rates and maturing or callable at the holder's option on such dates as shall be required to provide funds sufficient for this purpose.

Section 7. Covenants. The City hereby covenants and agrees with the PFA and registered owners from time to time of the Bonds that from and after the completion of the Project, it will operate the same as a part of the Utility, and will at all times continue to impose, maintain and collect rates, charges and rentals for the services, facilities and benefits provided by the Utility (including all additions and betterments thereof) to its inhabitants and industries and all others, such as will make the revenues of the Utility sufficient to meet all of the requirements of the Fund as outlined in Ordinance No. 659, including the payment of all current, reasonable and necessary costs of operation and maintenance, and the maintenance of a reasonable reserve for contingencies, and the production of net revenues, in excess of the foregoing requirements, at least equal to 120% of principal and interest currently due, and the maintenance of any reserves required, with respect to all bonds payable therefrom, including the Bonds. The City will at all times keep the Utility and the various parts thereof ~~issued~~insured against loss or damage by causes customarily insured against for like properties, and in amounts customarily maintained by prudent owners of like properties, and will use the proceeds of any and all such insurance to repair or restore the damage compensated thereby, or to pay and retire outstanding bonds payable from the net revenues of the Utility. The City will cause proper and adequate books of record and account to be kept showing complete and correct entries of all receipts, disbursements and other transactions relating to the Utility, the monthly revenues derived from its operation, and the segregation and application of the revenues in accordance with this resolution and the Ordinance No. 659, in such reasonable detail as may be determined by the City in accordance with generally accepted accounting practices and principles. The City will not mortgage, lease, sell, or otherwise dispose of any real or personal properties of the Utility, unless:

(a) Prior to or simultaneous with such mortgage, lease, sale or other disposition, the Bonds shall be discharged as provided in Section 6; or

(b) The properties to be mortgaged, leased, sold or otherwise disposed of are unserviceable, inadequate, obsolete or no longer required for use in connection with the Utility; or

(c) The mortgage, lease, sale or other disposition will not prevent the City from complying with the provisions of this resolution and the PFA has given its consent thereto; or

(d) In any event referred to in clause (b) or (c), all proceeds of the mortgage, lease, sale or other disposition of such properties are deposited into the Fund.

In the event of a default in the payment of any Bond, the registered owner thereof shall have all rights, remedies, powers and privileges granted by law for the enforcement of the registered owner's rights and the collection of the Bonds, including all rights and remedies of registered owners of revenue bonds under the provisions of Chapter 40-35, North Dakota Century Code, as amended. The City represents and covenants that the City is or will be the owner of all facilities financed by the Bonds.

Section 8. Tax Covenants and Arbitrage Matters.

8.01. Arbitrage Certification. The Mayor and the City Clerk being the officers of the City charged with the responsibility for issuing the Bonds pursuant to this resolution, are authorized and directed to execute and deliver to the PFA a certificate in accordance with the provisions of Section 148 of the Internal Revenue Code of 1986, as amended (the "Code") and applicable Regulations, stating the facts, estimates and circumstances in existence on the date of issue and delivery of the Bonds which make it reasonable to expect that the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be arbitrage bonds within the meaning of the Code and Regulations.

8.02. Rebate. The City acknowledges that the Bonds are subject to the rebate requirements of Section 148(f) of the Code. The City covenants and agrees to retain such records, make such determinations, file such reports and documents and pay such amounts at such times as are required under said Section 148(f) and applicable Regulations to preserve the exclusion of interest on the Bonds from gross income for federal income tax purposes, unless the Bonds qualify for the exception from the rebate requirement under Section 148(f)(4)(C) of the Code and no "gross proceeds" of the Bonds (other than amounts constituting a "bona fide debt service fund") arise during or after the expenditure of the original proceeds thereof. In furtherance of the foregoing, the City Clerk is hereby authorized and directed to execute a Rebate Certificate, in the form prescribed by Bond Counsel, and the City hereby covenants and agrees to observe and perform the covenants and agreements contained therein, unless amended or terminated in accordance with the provisions thereof.

8.03. Reimbursement. The City certifies that the proceeds of the Bonds will not be used by the City to reimburse itself for any expenditure with respect to the Project which the City paid or will have paid prior to the issuance of the Bonds unless, with respect to such prior expenditures, the City shall have made a declaration of official intent which complies with the provisions of Section 1.150-2 of the Regulations; provided that this certification shall not apply (i) with respect to certain de minimis expenditures, if any, with respect to the Project meeting the requirements of Section 1.150-2(f)(1) of the Regulations, or (ii) with respect to "preliminary expenditures" for the Project as defined in Section 1.150-2(f)(2) of the Regulations, including engineering or architectural expenses and similar preparatory expenses, which in the aggregate do not exceed 20% of the "issue price" of the Bonds.

8.04. Not Qualified Tax-Exempt Obligations. The Bonds are not designated as "qualified tax-exempt obligations" for purposes of Section 265(b)(3) of the Code relating to the disallowance of interest expense for financial institutions.

Section 9. Authentication of Transcript. The officers of the City are hereby authorized and directed to prepare and furnish to the PFA and to Dorsey & Whitney LLP, Bond Counsel, certified copies of all proceedings and records relating to the Bonds and such other affidavits, certificates and information as may be required to show the facts relating to the legality and marketability of the Bonds, as the same appear from the books and records in their custody and control or as otherwise known to them, and all such certified copies, affidavits and certificates, including any heretofore furnished, shall be deemed representations of the City as to the correctness of all statements contained therein.

Adopted this 7th day of May, 2018.

_____
Mayor

Attest:_____
City Clerk

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF WARD)

The undersigned, being the duly appointed, qualified and acting City Clerk of the City of Minot, North Dakota, hereby certifies that the foregoing is a full, true and correct copy of a resolution duly passed and adopted by the City Council of the City at its meeting duly called and held May 7, 2018, by the following roll call vote:

Ayes:

Nays:

Absent:

and that the resolution has been duly presented to and approved and signed by the Mayor, and has not subsequently been amended and is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of the City of Minot, North Dakota.

Dated: May 7, 2018.

_____
City Clerk

(SEAL)

EXHIBIT A

UNITED STATES OF AMERICA
STATE OF NORTH DAKOTA
COUNTY OF WARD

CITY OF MINOT

WATER AND SEWER UTILITY RESERVE REVENUE BOND, SERIES 2018A

No. R-1 $6,678,000

Rate	Final Maturity	Date of Original Issue	CUSIP
1.50%	September 1, 2038	[May __], 2018	NONE

REGISTERED OWNER: NORTH DAKOTA PUBLIC FINANCE AUTHORITY

PRINCIPAL AMOUNT: SIX MILLION SIX HUNDRED SEVENTY-EIGHT THOUSAND DOLLARS

KNOW ALL PERSONS BY THESE PRESENTS that the City of Minot, North Dakota, acknowledges itself specially indebted and for value received hereby promises to pay to the registered owner designated above, or registered assigns, solely out of its Water and Sewer Utility Bond Fund (the "Fund"), the principal sum specified above, in installments in the amounts and on the dates set forth on Schedule B hereto, with interest on the outstanding principal balance from the date hereof at the annual rate of one and one half percent (1.50%) per annum, payable on March 1 and September 1 in each year, commencing September 1, 2018, to the person in whose name this Bond is registered at the close of business on the fifteenth day (whether or not a business day) of the immediately preceding month. Payments shall be made by check or draft, or other agreed means of payment, by The Bank of North Dakota, in Bismarck, North Dakota, as Bond Registrar and Paying Agent, or its successor designated under the Resolution described herein. Upon each disbursement of loan amounts to the Borrower pursuant to the Loan Agreement described below, the North Dakota Public Finance Authority (the "PFA") shall enter (or cause to be entered) the amount advanced on Schedule A under "Advances" and the total amount advanced under the Loan Agreement, including such disbursement under "Total Amount Advanced." In the event that the Total Amount Advanced is less than the principal amount of this Bond, the PFA shall prepare a revised Schedule B, or cause a revised Schedule B to be prepared, as provided in the Loan Agreement described below.

This Bond is issued pursuant to a resolution adopted by the City Council on May 7, 2018 (the "Resolution"), for the purpose of financing improvements to the City's Water and Sewer Utility (the "Utility"), pursuant to and in full conformity with the Constitution and laws of the State of North Dakota and the charter and ordinances of the City of Minot thereunto enabling, including Title 40, Chapter 35, North Dakota Century Code, as amended, Section 2-130 of the City of Minot Code of Ordinances (the "Code") and Ordinance No. 659 of the City. Reference is made

to the Resolution for a description of the nature and extent of the security for the Bonds, the rights thereunder of the City and the bondholders and the terms upon which the Bonds and any additional bond maybe issued and secured. This Bond, including interest, is payable from the net revenues of the Utility pledged to the payment hereof, and does not constitute a debt of the City within the meaning of any constitutional or statutory limitation.

Bonds of this series are issued in evidence of a loan made to the City pursuant to the terms of Loan Agreement, dated on or about [May __], 2018, between the City and the PFA, and reference is made to the terms of said Loan Agreement for further provisions relating to the terms upon which the Bonds are issued and secured.

This Bond is subject to prepayment and redemption prior to its stated maturity date on any date, with the written consent of the PFA, and reamortization of installments in the event of partial prepayment.

As provided in the Resolution and subject to certain limitations set forth therein, this Bond is transferable upon the books of the City at the office of the Bond Registrar, by the registered owner hereof in person or by the owner's attorney duly authorized in writing upon surrender hereof together with a written instrument of transfer satisfactory to the Bond Registrar, duly executed by the registered owner or the owner's attorney, and may also be surrendered in exchange for Bonds of other authorized denominations. Upon such transfer or exchange the City will cause a new Bond or Bonds to be issued in the name of the transferee or registered owner, of the same aggregate principal amount, bearing interest at the same rate and payable as to principal and interest on the same date or dates, subject to reimbursement for any tax, fee or governmental charge required to be paid with respect to such transfer or exchange.

The City and any Bond Registrar may deem and treat the person in whose name this Bond is registered as the absolute owner hereof, whether this Bond is overdue or not, for the purpose of receiving payment and for all other purposes, and neither the City nor any Bond Registrar shall be affected by any notice to the contrary.

This Bond shall not be valid or become obligatory for any purpose or be entitled to any security or benefit under the Resolution until the Certificate of Authentication hereon shall have been executed by the Bond Registrar by manual signature of one of its authorized representatives.

IT IS CERTIFIED, RECITED, COVENANTED AND AGREED that under the law, ordinances and Resolution referred to above, the City has duly created said Reserve Revenue Bond Account (the "Bond Account") in its Fund and has appropriated thereto an amount of net revenues from its Fund sufficient to pay all principal of, premium, if any, and interest on this Bond as such becomes due; that rates will be charged for the use and service of the Utility sufficient at all times to produce net revenues which, together with other revenues pledged thereto, will produce the amounts necessary to pay all bonds payable from the Fund, including the Bonds; that a Reserve Revenue Bond Reserve Account (the "Reserve Account"), has been created in the Fund in an amount equal to the lesser of maximum annual debt service on, 125% of the average annual debt service on, or 10% of the proceeds of the Bonds, and, in the event that there shall be at any time a deficiency in the Reserve Account, the City is required by Section 2-130 of the Code to levy a tax upon all taxable property in the City for restoration of such deficiency, which deficiency levy is

not subject to any limitation as to rate or amount; and that all acts, conditions and things required by the Constitution and laws of the State of North Dakota and the City Charter to be done precedent to and in the issuance of this Bond, in order to make it a valid and binding special obligation of the City in accordance with its terms, have been done, have happened and have been performed in regular and due time, form and manner as so required.

IN WITNESS WHEREOF, the City of Minot, North Dakota, by its City Council, has caused this Bond to be executed on its behalf by the signatures of the Mayor and the City Clerk.

CITY OF MINOT, NORTH DAKOTA

_____ _____

(Facsimile Signature – City Clerk) (Facsimile Signature – Mayor)

CERTIFICATE OF AUTHENTICATION

This is one of the Bonds delivered pursuant to the Resolution mentioned within.

Date of Authentication: _____

THE BANK OF NORTH DAKOTA,
Bismarck, North Dakota, as Bond Registrar

By_____
Authorized Representative

ASSIGNMENT

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____, the within Bond and all rights thereunder, and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Bond on the books kept for registration thereof, with full power of substitution in the premises.

Dated: _____

_____

NOTICE: The signature to this assignment must correspond with the name as it appears upon the face of the within Bond in every particular, without alteration or enlargement or any change whatsoever.

PLEASE INSERT SOCIAL SECURITY NUMBER OR OTHER IDENTIFYING NUMBER OF ASSIGNEE:

_____

Signature Guaranteed:

_____

Signature(s) must be guaranteed by an "eligible guarantor institution" meeting the requirements of the Registrar, which requirements include membership or participation in STAMP or such other "signature guaranty program" as may be determined by the Registrar in addition to or in substitution for STAMP, all in accordance with the Securities Exchange Act of 1934, as amended.

SCHEDULE A
TOTAL AMOUNT ADVANCED

Year	Amount Advanced	Cumulative Amount Advanced	Year	Amount Advanced	Cumulative Amount Advanced

SCHEDULE B
TOTAL LOAN PAYMENT

Date	Principal	Interest	Total Principal & Interest	Annual P&I Payment	Outstanding Balance	Admin. Fee	Total Payment	Annual Total Payment	Debt Service Reserve Funding
					6,678,000.00				
9/1/2018	-	25,000.00	25,000.00	25,000.00	6,678,000.00	8,000.00	33,000.00	33,000.00	-
3/1/2019	-	50,085.00	50,085.00	-	6,678,000.00	16,695.00	66,780.00	-	-
9/1/2019	278,000.00	50,085.00	328,085.00	378,170.00	6,400,000.00	16,695.00	344,780.00	411,560.00	81,370.00
3/1/2020	-	48,000.00	48,000.00	-	6,400,000.00	16,000.00	64,000.00	-	-
9/1/2020	280,000.00	48,000.00	328,000.00	376,000.00	6,120,000.00	16,000.00	344,000.00	408,000.00	81,370.00
3/1/2021	-	45,900.00	45,900.00	-	6,120,000.00	15,300.00	61,200.00	-	-
9/1/2021	285,000.00	45,900.00	330,900.00	376,800.00	5,835,000.00	15,300.00	346,200.00	407,400.00	81,370.00
3/1/2022	-	43,762.50	43,762.50	-	5,835,000.00	14,587.50	58,350.00	-	-
9/1/2022	290,000.00	43,762.50	333,762.50	377,525.00	5,545,000.00	14,587.50	348,350.00	406,700.00	81,370.00
3/1/2023	-	41,587.50	41,587.50	-	5,545,000.00	13,862.50	55,450.00	-	-
9/1/2023	300,000.00	41,587.50	341,587.50	383,175.00	5,245,000.00	13,862.50	355,450.00	410,900.00	81,370.00
3/1/2024	-	39,337.50	39,337.50	-	5,245,000.00	13,112.50	52,450.00	-	-
9/1/2024	305,000.00	39,337.50	344,337.50	383,675.00	4,940,000.00	13,112.50	357,450.00	409,900.00	-
3/1/2025	-	37,050.00	37,050.00	-	4,940,000.00	12,350.00	49,400.00	-	-
9/1/2025	310,000.00	37,050.00	347,050.00	384,100.00	4,630,000.00	12,350.00	359,400.00	408,800.00	-
3/1/2026	-	34,725.00	34,725.00	-	4,630,000.00	11,575.00	46,300.00	-	-
9/1/2026	315,000.00	34,725.00	349,725.00	384,450.00	4,315,000.00	11,575.00	361,300.00	407,600.00	-
3/1/2027	-	32,362.50	32,362.50	-	4,315,000.00	10,787.50	43,150.00	-	-
9/1/2027	320,000.00	32,362.50	352,362.50	384,725.00	3,995,000.00	10,787.50	363,150.00	406,300.00	-
3/1/2028	-	29,962.50	29,962.50	-	3,995,000.00	9,987.50	39,950.00	-	-
9/1/2028	330,000.00	29,962.50	359,962.50	389,925.00	3,665,000.00	9,987.50	369,950.00	409,900.00	-
3/1/2029	-	27,487.50	27,487.50	-	3,665,000.00	9,162.50	36,650.00	-	-
9/1/2029	335,000.00	27,487.50	362,487.50	389,975.00	3,330,000.00	9,162.50	371,650.00	408,300.00	-
3/1/2030	-	24,975.00	24,975.00	-	3,330,000.00	8,325.00	33,300.00	-	-
9/1/2030	340,000.00	24,975.00	364,975.00	389,950.00	2,990,000.00	8,325.00	373,300.00	406,600.00	-
3/1/2031	-	22,425.00	22,425.00	-	2,990,000.00	7,475.00	29,900.00	-	-
9/1/2031	350,000.00	22,425.00	372,425.00	394,850.00	2,640,000.00	7,475.00	379,900.00	409,800.00	-
3/1/2032	-	19,800.00	19,800.00	-	2,640,000.00	6,600.00	26,400.00	-	-
9/1/2032	355,000.00	19,800.00	374,800.00	394,600.00	2,285,000.00	6,600.00	381,400.00	407,800.00	-
3/1/2033	-	17,137.50	17,137.50	-	2,285,000.00	5,712.50	22,850.00	-	-
9/1/2033	365,000.00	17,137.50	382,137.50	399,275.00	1,920,000.00	5,712.50	387,850.00	410,700.00	-
3/1/2034	-	14,400.00	14,400.00	-	1,920,000.00	4,800.00	19,200.00	-	-
9/1/2034	370,000.00	14,400.00	384,400.00	398,800.00	1,550,000.00	4,800.00	389,200.00	408,400.00	-
3/1/2035	-	11,625.00	11,625.00	-	1,550,000.00	3,875.00	15,500.00	-	-
9/1/2035	375,000.00	11,625.00	386,625.00	398,250.00	1,175,000.00	3,875.00	390,500.00	406,000.00	-
3/1/2036	-	8,812.50	8,812.50	-	1,175,000.00	2,937.50	11,750.00	-	-
9/1/2036	385,000.00	8,812.50	393,812.50	402,625.00	790,000.00	2,937.50	396,750.00	408,500.00	-
3/1/2037	-	5,925.00	5,925.00	-	790,000.00	1,975.00	7,900.00	-	-
9/1/2037	395,000.00	5,925.00	400,925.00	406,850.00	395,000.00	1,975.00	402,900.00	410,800.00	-
3/1/2038	-	2,962.50	2,962.50	-	395,000.00	987.50	3,950.00	-	-
9/1/2038	395,000.00	2,962.50	397,962.50	400,925.00	-	987.50	398,950.00	402,900.00	-
Total	$ 6,678,000.00	$ 1,141,645.00	$ 7,819,645.00	$ 7,819,645.00		$ 380,215.00	$ 8,199,860.00	$ 8,199,860.00	$ 406,850.00

Document comparison by Workshare Compare on Thursday, April 26, 2018 10:39:43 AM

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Split/Merged cell	
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Moved to	0
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Format changed	0

Total changes	4

RESOLUTION AUTHORIZING THE ISSUANCE OF SALES TAX AND WATER AND SEWER UTILITY RESERVE REVENUE BONDS, SERIES 2018B TO FINANCE THE UNDERTAKING OF IMPROVEMENTS TO THE MUNICIPAL WATER AND SEWER UTILITY

BE IT RESOLVED by the City Council of the City of Minot, North Dakota (the "City") as follows:

Section 1. Authorization and Sale.

1.01. Authority for Bond Issuance. In accordance with the provisions of Article 3 of the Home Rule Charter of the City and Section 2-130 of the City of Minot Code of Ordinances (the "Code") previously adopted by the City Council, the City is empowered to issue revenue bonds for the expansion and improvement of its municipal water and sewer utility (the "Utility"). The bonds are to be issued in general accordance with the provisions of Chapter 40-35, North Dakota Century Code, but may be additionally secured by a) a reserve created and maintained in accordance with Section 2-130 of the Code and / or b) other funds and revenues of the City, including sales tax collections, which are available for the purpose.

1.02. Additional Bonds. Pursuant to Section 2-130 of the Code, there have been issued and are now outstanding (or in the case of the Series 2018A Bonds and Series 2018C Bonds, expected to be issued and outstanding) (the "Outstanding Bonds"):

Title	Amount Outstanding	Dated Date	Date of Resolution
Water and Sewer Utility Reserve Revenue Bonds, Series 2011B (the "2011B Bonds")	$870,000	December 22, 2011	December 5, 2011
Water and Sewer Utility Reserve Revenue Bonds, Series 2012B (the "2012B Bonds")	$1,545,000	November 28, 2012	November 5, 2012
Water and Sewer Utility Reserve Revenue Refunding Bonds, Series 2012C (the "2012C Bonds")	$1,265,000	November 28, 2012	November 5, 2012
Water and Sewer Utility Reserve Revenue Bonds, Series 2013C (the "2013C Bonds")	$4,050,000	November 26, 2013	November 4, 2013

Title	Amount Outstanding	Dated Date	Date of Resolution
Water and Sewer Utility Reserve Revenue Bonds, Series 2014C (the "2014C Bonds")	$3,480,000	November 25, 2014	November 3, 2014
Water and Sewer Utility Reserve Revenue Bonds, Series 2015D (the "2015D Bonds")	$5,585,000	November 24, 2015	November 2, 2015
Water and Sewer Utility Reserve Revenue Bonds, Series 2016C (the "2016C Bonds")	$4,520,000	November 29, 2016	November 7, 2016
Water and Sewer Utility Reserve Revenue Bonds, Series 2018A (the "Series 2018A Bonds")	$6,678,000	TBD	May 7, 2018
Sales Tax and Water and Sewer Utility Reserve Revenue Bonds, Series 2018C (the "Series 2018C Bonds")	$1,734,000	TBD	May 7, 2018

Pursuant to the applicable bond resolutions authorizing the issuance of the Outstanding Bonds, additional revenue bonds may be issued and made payable, in whole or in part, from the net revenues of the Utility, on a parity with said Outstanding Bonds, if (a) no default exists under the terms of said resolutions, or the terms of any other resolution authorizing the issuance of the bonds payable from the net revenues of the Utility; (b) the resolution authorizing the issuance of such additional bonds contains the covenant as to rates and charges required by Section 2-130 of the Code and provides for the funding of the debt service reserve account required by Section 2-130 of the Code; (c) the City Council reasonably determines that the rates and charges then in effect, or to be in effect prior to the issuance of said additional bonds, together with any other revenues, including sales tax collections, then or theretofore pledged to the payment of such bonds or additional bonds, will produce revenues sufficient to comply with the provisions of Section 2-130 of the Code and the resolution authorizing the issuance of said additional bonds; and (d) the full faith and credit of the City is pledged to maintain the debt service reserve account balance for the additional bonds as required by Section 2-130 of the Code. It is hereby determined that all of the foregoing conditions will be met as of the date of issuance of the Bonds and, therefore, the Bonds presently authorized will and shall be entitled to the equal and proportionate benefit and security of the pledge of the revenue and income derived and to be derived from the operation of the Utility, on a parity with said Outstanding Bonds without preference.

The City will undertake improvements to the Utility, including replacing storm sewer, sanitary sewer lines, waterlines and streets with new utilities for the relocation and construction of all flood protection structures and storm water pump station (the "Project"). Pursuant to the requirements of the Code, the City has published notice of the proposed Project, has allowed for the filing of written protests and hereby finds the protests insufficient to bar the Project. The City hereby finds it to be necessary and desirable to provide permanent financing for the Project by the issuance of its Sales Tax and Water and Sewer Utility Reserve Revenue Bond, Series 2018B, in the principal amount of $12,282,000 (the "Bonds").

1.03. Sale. The City, in response to its application for financial assistance from the State Department of Health, has received an offer from the Industrial Commission of North Dakota-North Dakota Public Finance Authority to purchase the Bonds at a price equal to the principal amount plus accrued interest, if any, to the date of purchase, which offer is more fully set out in a loan agreement (the "Loan Agreement") to be entered into between the City and the North Dakota Public Finance Authority (the "PFA"), a copy of which has been made available to members of the City Council for review. It is hereby found and determined that the offer of the PFA to purchase the Bonds is reasonable and advantageous to the City and is hereby accepted, and the Loan Agreement, in substantially the form presented to the City at this meeting, is hereby accepted and authorized to be executed on behalf of the City by the Mayor and the City Clerk, with such modifications as may be approved by said officers. The Mayor and the City Clerk are authorized and directed to execute the Loan Agreement and to deliver it to the PFA, which execution and delivery shall be conclusive evidence of the approval of any modifications with respect to the Loan Agreement.

1.04. Performance Requirements. Pursuant to Ordinance No. 659 of the City, the City has established on its books a "Water and Sewer Utility Fund" and has provided for the allocation of revenues of the Utility to accounts for operation and maintenance, replacement and depreciation and surplus, provided that the City has reserved the right in Ordinance No. 659 to establish separate and additional accounts within the Water and Sewer Utility Fund for the purpose of segregating and applying revenues to the payment of bonds issued to finance improvements to the Utility. If so established, such accounts shall be credited with such portions of the revenues of the Utility as may be contracted under the terms of the resolutions authorizing the issuance of bonds, such credits to be made after crediting the operation and maintenance account to the extent required by Ordinance No. 659, but before crediting any amounts to the accounts for replacement and depreciation and surplus. For the purpose of providing for the payment of the Bonds herein authorized, the City does hereby covenant and agree that from and after the completion and acceptance of the Project, it will operate the same as a part of the Utility, and will at all times continue to impose, maintain and collect rates, charges and rentals for the services, facilities and benefits provided by the Utility (including all additions and betterments thereof) to its inhabitants and industries and all others, such as will make the revenues of the Utility sufficient, together with any other funds appropriated to the Water and Sewer Utility Fund or an account within in, to meet all of the requirements of the Water and Sewer Utility Fund as outlined in Ordinance No. 659, including the payment of all current, reasonable and necessary costs of operation and maintenance, and the maintenance of a reasonable reserve for contingencies, and the production of revenues, in excess of the foregoing requirements ("net revenues") at least sufficient for the payment of principal and interest currently due, and the maintenance of any required debt service reserve accounts, with respect to all bonds payable from accounts established within said Fund, including

the Bonds herein authorized, and to provide an additional depreciation allowance as stated in Ordinance No. 659.

Section 2. Form. The Bonds shall initially be issued to the PFA in the form of a single registered Bond with annual installments of principal in substantially the form attached as Exhibit A hereto. At the request of the PFA, the City will deliver, in exchange for the Bonds initially issued, registered Bonds in the same aggregate outstanding principal amount, bearing interest at the same rate, in denomination of $5,000 or any integral multiple thereof, not exceeding the amount of principal payable on any single principal payment date.

Section 3. Bond Terms; Registration; Redemption.

3.01. Date, Maturities, Denomination and Payment. For the purposes specified in Section 1, the City authorizes the issuance of the Bonds in the aggregate principal amount of $12,282,000, dated, as originally issued, as of the date of issuance thereof. The Bonds shall be issued as a single registered bond in the amount of $12,282,000 or in denominations of $5,000 or any integral multiple thereof, and shall be payable in annual installments of principal on September 1 in the years and amounts set forth below, as follows, subject to adjustment or re-amortization in accordance with the provisions of the Loan Agreement:

Year	Amount	Year	Amount
2020	$477,000	2031	$590,000
2021	485,000	2032	605,000
2022	495,000	2033	615,000
2023	505,000	2034	630,000
2024	515,000	2035	640,000
2025	525,000	2036	655,000
2026	535,000	2037	665,000
2027	545,000	2038	680,000
2028	560,000	2039	695,000
2029	570,000	2040	715,000
2030	580,000		

The principal balance of the Bonds shall bear interest, from its date of issue until paid or duly called for redemption, at the rate of 1.50% per annum.

3.02. Interest Payment Dates. Interest on the Bonds shall be payable on March 1 and September 1 to the owner of record thereof at the close of business on the fifteenth day of the immediately preceding month, whether or not such day is a business day.

3.03. Redemption. The Bonds shall be subject to redemption, in whole or in part, and if in part in principal amounts which are integral multiples of $5,000, prior to their stated maturity, with the written consent of the PFA, at a price equal to the principal amount thereof plus accrued interest to the date of redemption.

3.04. Registration. The City shall appoint, and shall maintain, a bond registrar, transfer agent and paying agent (the Registrar). The effect of registration and the rights and duties of the City and the Registrar with respect thereto shall be as follows:

(a) Register. The Registrar shall keep a bond register in which the Registrar shall provide for the registration of ownership of Bonds and the registration of transfers and exchanges of Bonds entitled to be registered, transferred or exchanged.

(b) Transfer of Bonds. Upon surrender for transfer of any Bond duly endorsed by the registered owner thereof or accompanied by a written instrument of transfer, in form satisfactory to the Registrar, duly executed by the registered owner thereof or by an attorney duly authorized the Registrar shall authenticate and deliver, in the name of the designated transferee or transferees, a new Bond similar in form to the Bonds initially issued, of a like aggregate principal amount, as requested by the transferor.

(c) Exchange of Bonds. Whenever any Bonds are surrendered for exchange the Registrar shall authenticate and deliver the Bonds which the owner making the exchange is entitled to receive.

(d) Cancellation. All Bonds surrendered upon any transfer or exchange shall be promptly cancelled by the Registrar and thereafter disposed of as directed by the City.

(e) Improper or Unauthorized Transfer. When any Bond is presented to the Registrar for transfer, the Registrar may refuse to transfer the same until it is satisfied that the endorsement on such Bond or separate instrument of transfer is valid and genuine and that the requested transfer is legally authorized. The Registrar shall incur no liability for the refusal, in good faith, to make transfers which it, in its judgment, deems improper or unauthorized.

(f) Persons Deemed Owners. The City and the Registrar may treat the person in whose name any Bond is at any time registered in the bond register as the absolute owner of such Bond, whether such Bond shall be overdue or not, for the purpose of receiving payment of, or on account of, the principal of and interest on such Bond and for all other purposes, and all such payments so made to any such registered owner or upon the owner's order shall be valid and effectual to satisfy and discharge the liability upon such Bond to the extent of the sum or sums so paid.

(g) Taxes Fees and Charges. For every transfer or exchange of Bonds, the Registrar may impose a charge upon the owner thereof sufficient to reimburse the Registrar for any tax, fee or other governmental charge required to be paid with respect to such transfer or exchange.

(h) Mutilated Lost, Stolen or Destroyed Bonds. In case any Bond shall become mutilated or be destroyed, stolen or lost, the Registrar shall deliver a new Bond of like amount, number, maturity date and tenor in exchange and substitution for and upon cancellation of any such mutilated Bond or in lieu of and in substitution for any such Bond destroyed, stolen or lost, upon the payment of the reasonable expenses and charges of the Registrar in connection therewith; and, in the case of a Bond destroyed, stolen or lost, upon

filing with the Registrar of evidence satisfactory to it that such Bond was destroyed, stolen or lost, and of the ownership thereof, and upon furnishing to the Registrar of an appropriate bond or indemnity in form, substance and amount satisfactory to it, in which both the City and the Registrar shall be named as obligees. All Bonds so surrendered to the Registrar shall be cancelled by it and evidence of such cancellation shall be given to the City. If the mutilated, destroyed, stolen or lost Bond has already matured or been called for redemption in accordance with its terms it shall not be necessary to issue a new Bond prior to payment.

3.05. Appointment of Initial Registrar. The City hereby appoints The Bank of North Dakota, in Bismarck, North Dakota, as the initial Registrar. The City reserves the right to remove the Registrar upon thirty (30) days notice and upon the appointment of a successor Registrar, in which event the predecessor Registrar shall deliver all cash and Bonds in its possession to the successor Registrar and shall deliver the bond register to the successor Registrar. So long as the Bonds are registered in the name of the PFA, the City shall obtain the prior written approval of the PFA to the removal of the Registrar and appointment of a successor. The City shall pay the reasonable and customary charges of the Registrar from the Operation and Maintenance Account of its Fund.

3.06. Execution, Authentication and Delivery. The Bonds shall be prepared under the direction of the City Clerk and shall be executed on behalf of the City by the signatures of the Mayor and the City Clerk, provided that all signatures may be printed, engraved or lithographed facsimiles of the originals. In case any officer whose signature or a facsimile of whose signature shall appear on the Bonds shall cease to be such officer before the delivery of any Bond, such signature or facsimile shall nevertheless be valid and sufficient for all purposes, the same as if he had remained in office until delivery. Notwithstanding such execution, no Bond shall be valid or obligatory for any purpose or entitled to any security hereunder until the certificate of authentication on such Bond has been duly executed by the manual signature of an authorized representative of the Registrar. The executed certificate of authentication on each Bond shall be conclusive evidence that it has been authenticated and delivered under this Resolution.

Section 4. Water and Sewer Utility Fund.

4.01. Water and Sewer Utility Fund. Pursuant to Ordinance No. 659 of the City, the City Auditor has established and will maintain the Water and Sewer Utility Fund (the "Fund") as a separate and special fund in the financial records of the City until all bonds issued and made payable therefrom, and interest and redemption premiums due thereon, have been duly paid or discharged. Within the Fund are various separate accounts to be maintained by the City.

4.02. Operation and Maintenance Account. To the Operation and Maintenance Account there shall be credited upon each monthly apportionment, as a first lien and charge on the gross revenues, such sum as shall be needed, over and above any credit balance then held in the Operation and Maintenance Account, to pay all claims then due and allowed which by accepted accounting practices constitute normal, reasonable and current expenses of the operation and maintenance of the Utility, and to pay all such expenses estimated to accrue for a period of one month thereafter, and to maintain a reasonable reserve for contingencies. Money in the Operation and Maintenance Account shall be used only to pay expenses of this type, and not for major repairs, replacements or capital improvements which are properly chargeable to replacement and

depreciation reserves or surplus funds. The net revenues of the Utility, which are herein pledged and appropriated to the extent required for the payment of the Bonds herein authorized and interest thereon, are hereby defined as the aggregate of all sums on hand in the Fund from time to time in excess of the current requirements of the Operation and Maintenance Account as described herein.

4.03 Construction Account. A Construction Account has been established within the Fund, which shall be used only to pay, as incurred and allowed, costs which under accepted accounting practices are capital costs of the Project, including, but not limited to, payments due for work and materials performed and delivered under construction contracts, architectural, engineering, inspection, supervision, fiscal and legal expenses, the cost of necessary lands and easements, interest accruing on the Bonds during the period of construction of the Project and for six months thereafter, if and to the extent that the Reserve Revenue Bond Account is not sufficient for payment of such interest, reimbursement of any advances made from other City funds, and all other expenses incurred in connection with the construction and financing of the Project. To the Construction Account there shall be credited all proceeds of the Bonds, except accrued interest, if any, which shall be credited to the Reserve Revenue Bond Account and the sums, if any, appropriated to the Reserve Revenue Bond Reserve Account referred to in Section 4.05, and all other funds appropriated by the City for the purposes referred to in this paragraph, when needed for such purposes, and all income received from the investment of the Construction Account.

4.04. Reserve Revenue Bond Account. A Reserve Revenue Bond Account has been established within the Fund, to which there shall be set aside and credited an amount equal to not less than the sum of one-sixth of the interest due within the next six months plus one-twelfth of the principal to become due within the next twelve months with respect to all reserve revenue bonds heretofore or herein issued or issued in the future and made payable from the Reserve Revenue Bond Account, which amounts, with respect to the Bonds, are to be derived from the net revenues of the Utility at each monthly apportionment, to the extent not already on deposit and paid from other sources described herein. This requirement is cumulative, and if the net revenues are not sufficient to credit the sum required in any month, an amount equal to the deficiency shall be transferred from the Reserve Revenue Bond Reserve Account, Replacement and Depreciation Accounts or Surplus Account of the Fund, or shall be credited from the next net revenues thereafter received in excess of current requirements. Money from time to time held in the Reserve Revenue Bond Account shall be disbursed only to meet payments of principal, premium, if any, and interest due on obligations issued and made payable from the Reserve Revenue Bond Account.

Pursuant to Section 2-130 of the Code and notwithstanding anything else contained herein to the contrary, the City hereby pledges, to payment of the Bonds, revenues derived from the sales tax imposed pursuant to Sections 28.5-103 and 28.5-104 of the Code and available for flood control projects, including the Project, pursuant to Section 28.5-108(1) of the Code (the "Sales Tax Revenues") an amount sufficient to pay interest and principal due on the Bonds. Such amount of Sales Tax Revenues shall be deposited in the Reserve Revenue Bond Account prior to each payment date for the Bonds and may be used to abate the net revenues of the Utility otherwise pledged to payment of debt service on the Bonds.

4.05. Reserve Revenue Bond Reserve Account. A Reserve Revenue Bond Reserve Account has been established within the Fund. Upon the issuance of any series of definitive reserve revenue bonds, the balance in the Reserve Revenue Bond Reserve Account shall be

increased, if necessary, either from the proceeds of such bonds or from funds on hand and available for the purpose, to an amount equal to the lesser of (i) maximum annual debt service on, (ii) 125% of the average annual debt service on, or (iii) ten percent of the proceeds of, the Bonds. Funds will be transferred from the Reserve Revenue Bond Reserve Account to the Reserve Revenue Bond Account at any time the balance on hand in the Reserve Revenue Bond Account is insufficient to meet current requirements for payment of principal and interest on the Bonds payable therefrom. In the event of such transfer, and if the then-existing deficiency in the Reserve Revenue Bond Reserve Account cannot be restored from available funds in the Replacement and Depreciation Accounts or Surplus Account of the Fund, the City shall levy a tax upon all taxable property within the corporate limits of the City sufficient to restore the balance in the Reserve Revenue Bond Reserve Account to the amount required pursuant to Section 2-130 of the Code, which tax shall be subject to no limitation as to rate or amount. In the event a tax is levied for such purpose, the amount of such tax shall be reimbursed to the general fund of the City out of the first available revenues in the Replacement and Depreciation Accounts or Surplus Account of the Fund.

4.06. Replacement and Depreciation Accounts. Accounts for replacement and depreciation (collectively, the "Replacement and Depreciation Accounts") have been established within the Fund. To the Replacement and Depreciation Accounts there shall be credited from the net revenues remaining after allocations to the Operation and Maintenance Account, the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account such sum as shall be needed, over and above any credit balances then held in the Replacement and Depreciation Accounts, to pay such disbursements as may from time to time be found necessary or desirable for replacement of worn-out or obsolete Utility property or for extensions, enlargements or improvements of the Utility which are not directed by the City Council to be financed by special assessments or the issuance of water and sewer utility reserve revenue bonds.

4.07. Surplus Account. To the Surplus Account shall be credited all net revenues from time to time received in excess of the current requirements of the Replacement and Depreciation Accounts, Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account; except that in the event of the future pledge and appropriation of surplus net revenues for the payment and security of additional obligations subordinate to the pledge and appropriation of net revenues to the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account, the City reserves the right to create one or more additional accounts within the Fund for the segregation of surplus net revenues available for the payment of any such obligations. The balance on hand from time to time in the Surplus Account shall be available and shall be used to the full extent necessary to restore any deficiency in the Operation and Maintenance Account, the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account, but when not so needed, may be used to pay for replacements, repairs or capital improvements of the Utility, or to pay principal and interest on subordinate obligations hereafter issued for such purposes, or to redeem and pay before maturity bonds payable from the Reserve Revenue Bond Account, when and as such bonds become redeemable according to their terms, or for any other proper purpose of the City authorized in accordance with resolutions of the City Council.

4.08. Costs of Issuance Account. A Costs of Issuance Account (the "Costs of Issuance Account") has been created within the Fund. The proceeds of the Bonds, if any, deposited in the Costs of Issuance Account shall be used only to pay costs of issuance of the Bonds. There shall

be credited to the Costs of Issuance Account, from the proceeds of the Bonds, an amount equal to the estimated costs of issuance to be paid therefrom.

Section 5. Priorities and Additional Bonds.

5.01. Priorities. Each and all of the Bonds issued pursuant to this resolution shall be equally and ratably secured by and payable from the net revenues of the Utility on a parity with the Outstanding Bonds described in Section 1.02 without preference or priority of any one bond of any issue over any other, provided that if at any time the net revenues or other funds pledged thereto, including the Sales Tax Revenues, as applicable, are insufficient to pay principal and interest then due on all such bonds payable from said net revenues, the net revenues available therefore shall be first used to pay the interest accrued on all such bonds which are then outstanding, and the balance shall be applied toward payment of the maturing principal of such bonds in order of their maturities, the earliest maturing bonds to be paid first, and pro rata in payment of bonds maturing on the same date.

5.02. Refunding Bonds. The City reserves the right and privilege of refunding any or all of the Bonds herein authorized, subject to the following terms and conditions:

Any matured Bonds, or principal installment thereof, may be refunded if money available for the payment thereof at maturity or on a principal installment date should at any time be insufficient to make such payment in full, and may be made payable from the Reserve Revenue Bond Account on a parity as to interest with all then outstanding bonds issued hereunder, provided that (1) the maturity of each such Bond shall be subsequent to the last maturity or principal installment of any then outstanding bonds issued hereunder which are not refunded, and (2) no Bondholder shall be required to accept a refunding Bond in exchange for any Bond owned.

5.03. Additional Reserve Revenue Bonds. The City reserves the right to issue additional Reserve Revenue Bonds pursuant to Section 2-130 of the Code for the purpose of (i) paying any additional cost of completing the Project in excess of the cost now estimated, (ii) refunding Bonds payable from the Fund under circumstances other than those contemplated in Section 5.02, or (iii) paying the cost of additional improvements to the Utility, which additional revenue bonds shall be payable on a parity with the Bonds now authorized as to the net revenues of the Utility, provided that the test set forth in Section 1.02 is met and, subsequent to said date: (a) no default exists under the terms of this resolution, or the terms of any other resolution authorizing the issuance of bonds payable from the net revenues of the Utility; (b) the resolution authorizing the issuance of such bonds contains the covenant as to rates and charges required by Section 2-130 of the Code and provides for the funding of the debt service reserve account required by Section 2-130 of the Code; (c) the City Council reasonably determines that the rates and charges then in effect, or to be in effect prior to the issuance of said additional bonds, together with any other revenues, including sales tax collections, then or theretofore pledged to the payment of such bonds or additional bonds, will produce net revenues of the Utility sufficient to comply with the provisions of Section 2-130 of the Code and the resolution authorizing the issuance of said additional bonds; and (d) the full faith and credit of the City is pledged to maintain the debt service reserve account balance for the additional bonds as required by Section 2-130 of the Code.

Nothing in this resolution shall preclude the City from issuing additional bonds which are expressly made a charge on only the surplus net revenues of the Utility as set forth in Ordinance No. 659, subordinate to the pledge of net revenues to the Bonds described in Section 1.02 and the Bonds authorized hereunder. The City may pledge the Sales Tax Revenues to other obligations, provided that such pledge does not cause the City to fail to comply with the covenants contained in Section 7 hereof.

Section 6. Defeasance. When the Bonds have been discharged as provided in this section, all pledges, covenants and other rights granted by this resolution shall cease. The City may discharge its obligations with respect to the Bonds on any date by depositing with the paying agent on or before that date a sum sufficient for the payment thereof in full; or, if the Bonds should not be paid when due, the same may nevertheless be discharged by depositing with the paying agent a sum sufficient for the payment thereof in full with interest accrued from the due date of such deposit. The City may also discharge its obligations with respect to the Bonds according to its terms by depositing with the paying agent on or before that date an amount equal to the principal and interest which are then due, provided that notice of such redemption has been duly given as provided herein. The City may also discharge its obligations with respect to the Bonds by irrevocably depositing in escrow with a bank or trust company qualified by law to act as an escrow agent, for the purpose of paying all principal and interest due on the Bonds prior to a date upon which all of the same will be prepayable according to their terms and paying all remaining bonds of the series on that date, a sum of cash and securities of the types authorized by North Dakota law, in such aggregate amount, bearing interest at such rates and maturing or callable at the holder's option on such dates as shall be required to provide funds sufficient for this purpose.

Section 7. Covenants. The City hereby covenants and agrees with the PFA and registered owners from time to time of the Bonds that from and after the completion of the Project, it will operate the same as a part of the Utility, and will at all times continue to impose, maintain and collect rates, charges and rentals for the services, facilities and benefits provided by the Utility (including all additions and betterments thereof) to its inhabitants and industries and all others, such as will make the revenues of the Utility sufficient to meet all of the requirements of the Fund as outlined in Ordinance No. 659, including the payment of all current, reasonable and necessary costs of operation and maintenance, and the maintenance of a reasonable reserve for contingencies, and the production of net revenues, in excess of the foregoing requirements, at least equal to 120% of principal and interest currently due, and the maintenance of any reserves required, with respect to all bonds payable therefrom, including the Bonds, provided that in the event other funds are pledged to a series of reserve revenue bonds, such funds may be accounted for in establishing rates sufficient to provide such coverage. The City will at all times keep the Utility and the various parts thereof insured against loss or damage by causes customarily insured against for like properties, and in amounts customarily maintained by prudent owners of like properties, and will use the proceeds of any and all such insurance to repair or restore the damage compensated thereby, or to pay and retire outstanding bonds payable from the net revenues of the Utility. The City will cause proper and adequate books of record and account to be kept showing complete and correct entries of all receipts, disbursements and other transactions relating to the Utility, the monthly revenues derived from its operation, and the segregation and application of the revenues in accordance with this resolution and the Ordinance No. 659, in such reasonable detail as may be determined by the City in accordance with generally accepted accounting practices and principles.

The City will not mortgage, lease, sell, or otherwise dispose of any real or personal properties of the Utility, unless:

(a) Prior to or simultaneous with such mortgage, lease, sale or other disposition, the Bonds shall be discharged as provided in Section 6; or

(b) The properties to be mortgaged, leased, sold or otherwise disposed of are unserviceable, inadequate, obsolete or no longer required for use in connection with the Utility; or

(c) The mortgage, lease, sale or other disposition will not prevent the City from complying with the provisions of this resolution and the PFA has given its consent thereto; or

(d) In any event referred to in clause (b) or (c), all proceeds of the mortgage, lease, sale or other disposition of such properties are deposited into the Fund.

In the event of a default in the payment of any Bond, the registered owner thereof shall have all rights, remedies, powers and privileges granted by law for the enforcement of the registered owner's rights and the collection of the Bonds, including all rights and remedies of registered owners of revenue bonds under the provisions of Chapter 40-35, North Dakota Century Code, as amended. The City represents and covenants that the City is or will be the owner of all facilities financed by the Bonds.

Section 8. Tax Covenants and Arbitrage Matters.

8.01. Arbitrage Certification. The Mayor and the City Clerk being the officers of the City charged with the responsibility for issuing the Bonds pursuant to this resolution, are authorized and directed to execute and deliver to the PFA a certificate in accordance with the provisions of Section 148 of the Internal Revenue Code of 1986, as amended (the "Code") and applicable Regulations, stating the facts, estimates and circumstances in existence on the date of issue and delivery of the Bonds which make it reasonable to expect that the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be arbitrage bonds within the meaning of the Code and Regulations.

8.02. Rebate. The City acknowledges that the Bonds are subject to the rebate requirements of Section 148(f) of the Code. The City covenants and agrees to retain such records, make such determinations, file such reports and documents and pay such amounts at such times as are required under said Section 148(f) and applicable Regulations to preserve the exclusion of interest on the Bonds from gross income for federal income tax purposes, unless the Bonds qualify for the exception from the rebate requirement under Section 148(f)(4)(C) of the Code and no "gross proceeds" of the Bonds (other than amounts constituting a "bona fide debt service fund") arise during or after the expenditure of the original proceeds thereof. In furtherance of the foregoing, the City Clerk is hereby authorized and directed to execute a Rebate Certificate, in the form prescribed by Bond Counsel, and the City hereby covenants and agrees to observe and perform the covenants and agreements contained therein, unless amended or terminated in accordance with the provisions thereof.

8.03. Reimbursement. The City certifies that the proceeds of the Bonds will not be used by the City to reimburse itself for any expenditure with respect to the Project which the City paid or will have paid prior to the issuance of the Bonds unless, with respect to such prior expenditures, the City shall have made a declaration of official intent which complies with the provisions of Section 1.150-2 of the Regulations; provided that this certification shall not apply (i) with respect to certain de minimis expenditures, if any, with respect to the Project meeting the requirements of Section 1.150-2(f)(1) of the Regulations, or (ii) with respect to "preliminary expenditures" for the Project as defined in Section 1.150-2(f)(2) of the Regulations, including engineering or architectural expenses and similar preparatory expenses, which in the aggregate do not exceed 20% of the "issue price" of the Bonds.

8.04. Not Qualified Tax-Exempt Obligations. The Bonds are not designated as "qualified tax-exempt obligations" for purposes of Section 265(b)(3) of the Code relating to the disallowance of interest expense for financial institutions.

Section 9. Authentication of Transcript. The officers of the City are hereby authorized and directed to prepare and furnish to the PFA and to Dorsey & Whitney LLP, Bond Counsel, certified copies of all proceedings and records relating to the Bonds and such other affidavits, certificates and information as may be required to show the facts relating to the legality and marketability of the Bonds, as the same appear from the books and records in their custody and control or as otherwise known to them, and all such certified copies, affidavits and certificates, including any heretofore furnished, shall be deemed representations of the City as to the correctness of all statements contained therein.

Adopted this 7th day of May, 2018.

_____
Mayor

Attest:_____
City Clerk

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF WARD)

The undersigned, being the duly appointed, qualified and acting City Clerk of the City of Minot, North Dakota, hereby certifies that the foregoing is a full, true and correct copy of a resolution duly passed and adopted by the City Council of the City at its meeting duly called and held May 7, 2018, by the following roll call vote:

Ayes:

Nays:

Absent:

and that the resolution has been duly presented to and approved and signed by the Mayor, and has not subsequently been amended and is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of the City of Minot, North Dakota.

Dated: May 7, 2018.

_____
City Clerk

(SEAL)

EXHIBIT A

UNITED STATES OF AMERICA
STATE OF NORTH DAKOTA
COUNTY OF WARD

CITY OF MINOT

SALES TAX AND WATER AND SEWER UTILITY RESERVE REVENUE BOND, SERIES 2018B

No. R-1 $12,282,000

Rate	Final Maturity	Date of Original Issue	CUSIP
1.50%	September 1, 2040	[May __], 2018	NONE

REGISTERED OWNER: NORTH DAKOTA PUBLIC FINANCE AUTHORITY

PRINCIPAL AMOUNT: TWELVE MILLION TWO HUNDRED EIGHTY-TWO THOUSAND DOLLARS

KNOW ALL PERSONS BY THESE PRESENTS that the City of Minot, North Dakota, acknowledges itself specially indebted and for value received hereby promises to pay to the registered owner designated above, or registered assigns, solely out of its Water and Sewer Utility Bond Fund (the "Fund"), the principal sum specified above, in installments in the amounts and on the dates set forth on Schedule B hereto, with interest on the outstanding principal balance from the date hereof at the annual rate of one and one half percent (1.50%) per annum, payable on March 1 and September 1 in each year, commencing September 1, 2018, to the person in whose name this Bond is registered at the close of business on the fifteenth day (whether or not a business day) of the immediately preceding month. Payments shall be made by check or draft, or other agreed means of payment, by The Bank of North Dakota, in Bismarck, North Dakota, as Bond Registrar and Paying Agent, or its successor designated under the Resolution described herein. Upon each disbursement of loan amounts to the Borrower pursuant to the Loan Agreement described below, the North Dakota Public Finance Authority (the "PFA") shall enter (or cause to be entered) the amount advanced on Schedule A under "Advances" and the total amount advanced under the Loan Agreement, including such disbursement under "Total Amount Advanced." In the event that the Total Amount Advanced is less than the principal amount of this Bond, the PFA shall prepare a revised Schedule B, or cause a revised Schedule B to be prepared, as provided in the Loan Agreement described below.

This Bond is issued pursuant to a resolution adopted by the City Council on May 7, 2018 (the "Resolution"), for the purpose of financing improvements to the City's Water and Sewer Utility (the "Utility"), pursuant to and in full conformity with the Constitution and laws of the State of North Dakota and the charter and ordinances of the City of Minot thereunto enabling, including Title 40, Chapter 35, North Dakota Century Code, as amended, Sections 2-130, and

28.5-101 through 28.5-108 of the City of Minot Code of Ordinances (the "Code") and Ordinance No. 659 of the City. Reference is made to the Resolution for a description of the nature and extent of the security for the Bonds, the rights thereunder of the City and the bondholders and the terms upon which the Bonds and any additional bond maybe issued and secured. This Bond, including interest, is payable from the net revenues of the Utility and Sales Tax Revenues pledged to the payment hereof, as described in the Resolution.

Bonds of this series are issued in evidence of a loan made to the City pursuant to the terms of Loan Agreement, dated on or about June 1, 2018, between the City and the PFA, and reference is made to the terms of said Loan Agreement for further provisions relating to the terms upon which the Bonds are issued and secured.

This Bond is subject to prepayment and redemption prior to its stated maturity date on any date, with the written consent of the PFA, and reamortization of installments in the event of partial prepayment.

As provided in the Resolution and subject to certain limitations set forth therein, this Bond is transferable upon the books of the City at the office of the Bond Registrar, by the registered owner hereof in person or by the owner's attorney duly authorized in writing upon surrender hereof together with a written instrument of transfer satisfactory to the Bond Registrar, duly executed by the registered owner or the owner's attorney, and may also be surrendered in exchange for Bonds of other authorized denominations. Upon such transfer or exchange the City will cause a new Bond or Bonds to be issued in the name of the transferee or registered owner, of the same aggregate principal amount, bearing interest at the same rate and payable as to principal and interest on the same date or dates, subject to reimbursement for any tax, fee or governmental charge required to be paid with respect to such transfer or exchange.

The City and any Bond Registrar may deem and treat the person in whose name this Bond is registered as the absolute owner hereof, whether this Bond is overdue or not, for the purpose of receiving payment and for all other purposes, and neither the City nor any Bond Registrar shall be affected by any notice to the contrary.

This Bond shall not be valid or become obligatory for any purpose or be entitled to any security or benefit under the Resolution until the Certificate of Authentication hereon shall have been executed by the Bond Registrar by manual signature of one of its authorized representatives.

IT IS CERTIFIED, RECITED, COVENANTED AND AGREED that under the law, ordinances and Resolution referred to above, the City has duly created said Reserve Revenue Bond Account (the "Bond Account") in its Fund and has appropriated thereto an amount of net revenues from its Fund which, together with other funds pledged hereto, are sufficient to pay all principal of, premium, if any, and interest on this Bond as such becomes due; that rates will be charged for the use and service of the Utility sufficient at all times to produce net revenues which, together with other revenues pledged thereto, will produce the amounts necessary to pay all bonds payable from the Fund, including the Bonds; that a Reserve Revenue Bond Reserve Account (the "Reserve Account"), has been created in the Fund in an amount equal to the lesser of maximum annual debt service on, 125% of the average annual debt service on, or 10% of the proceeds of the Bonds, and, in the event that there shall be at any time a deficiency in the Reserve Account, the City is required

by Section 2-130 of the Code to levy a tax upon all taxable property in the City for restoration of such deficiency, which deficiency levy is not subject to any limitation as to rate or amount; and that all acts, conditions and things required by the Constitution and laws of the State of North Dakota and the City Charter to be done precedent to and in the issuance of this Bond, in order to make it a valid and binding special obligation of the City in accordance with its terms, have been done, have happened and have been performed in regular and due time, form and manner as so required.

IN WITNESS WHEREOF, the City of Minot, North Dakota, by its City Council, has caused this Bond to be executed on its behalf by the signatures of the Mayor and the City Clerk.

CITY OF MINOT, NORTH DAKOTA

(Facsimile Signature – City Clerk)

(Facsimile Signature – Mayor)

CERTIFICATE OF AUTHENTICATION

This is one of the Bonds delivered pursuant to the Resolution mentioned within.

Date of Authentication: _____

THE BANK OF NORTH DAKOTA,
Bismarck, North Dakota, as Bond Registrar

By_____
Authorized Representative

ASSIGNMENT

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____, the within Bond and all rights thereunder, and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Bond on the books kept for registration thereof, with full power of substitution in the premises.

Dated: _____

_____

NOTICE: The signature to this assignment must correspond with the name as it appears upon the face of the within Bond in every particular, without alteration or enlargement or any change whatsoever.

PLEASE INSERT SOCIAL SECURITY NUMBER OR OTHER IDENTIFYING NUMBER OF ASSIGNEE:

_____

Signature Guaranteed:

_____

Signature(s) must be guaranteed by an "eligible guarantor institution" meeting the requirements of the Registrar, which requirements include membership or participation in STAMP or such other "signature guaranty program" as may be determined by the Registrar in addition to or in substitution for STAMP, all in accordance with the Securities Exchange Act of 1934, as amended.

SCHEDULE A
TOTAL AMOUNT ADVANCED

Year	Amount Advanced	Cumulative Amount Advanced	Year	Amount Advanced	Cumulative Amount Advanced

SCHEDULE B

TOTAL LOAN PAYMENT

Date	Principal	Interest	Total Principal & Interest	Annual P& I Payment	Outstanding Balance	Admin. Fee	Total Payment	Debt Service Reserve Funding
					12,282,000.00			
9/1/2018	-	45,000.00	45,000.00	45,000.00	12,282,000.00	15,000.00	60,000.00	-
3/1/2019	-	92,115.00	92,115.00	-	12,282,000.00	30,705.00	122,820.00	-
9/1/2019	-	92,115.00	92,115.00	184,230.00	12,282,000.00	30,705.00	122,820.00	-
3/1/2020	-	92,115.00	92,115.00	-	12,282,000.00	30,705.00	122,820.00	-
9/1/2020	477,000.00	92,115.00	569,115.00	661,230.00	11,805,000.00	30,705.00	599,820.00	145,145.00
3/1/2021	-	88,537.50	88,537.50	-	11,805,000.00	29,512.50	118,050.00	-
9/1/2021	485,000.00	88,537.50	573,537.50	662,075.00	11,320,000.00	29,512.50	603,050.00	145,145.00
3/1/2022	-	84,900.00	84,900.00	-	11,320,000.00	28,300.00	113,200.00	-
9/1/2022	495,000.00	84,900.00	579,900.00	664,800.00	10,825,000.00	28,300.00	608,200.00	145,145.00
3/1/2023	-	81,187.50	81,187.50	-	10,825,000.00	27,062.50	108,250.00	-
9/1/2023	505,000.00	81,187.50	586,187.50	667,375.00	10,320,000.00	27,062.50	613,250.00	145,145.00
3/1/2024	-	77,400.00	77,400.00	-	10,320,000.00	25,800.00	103,200.00	-
9/1/2024	515,000.00	77,400.00	592,400.00	669,800.00	9,805,000.00	25,800.00	618,200.00	145,145.00
3/1/2025	-	73,537.50	73,537.50	-	9,805,000.00	24,512.50	98,050.00	-
9/1/2025	525,000.00	73,537.50	598,537.50	672,075.00	9,280,000.00	24,512.50	623,050.00	-
3/1/2026	-	69,600.00	69,600.00	-	9,280,000.00	23,200.00	92,800.00	-
9/1/2026	535,000.00	69,600.00	604,600.00	674,200.00	8,745,000.00	23,200.00	627,800.00	-
3/1/2027	-	65,587.50	65,587.50	-	8,745,000.00	21,862.50	87,450.00	-
9/1/2027	545,000.00	65,587.50	610,587.50	676,175.00	8,200,000.00	21,862.50	632,450.00	-
3/1/2028	-	61,500.00	61,500.00	-	8,200,000.00	20,500.00	82,000.00	-
9/1/2028	560,000.00	61,500.00	621,500.00	683,000.00	7,640,000.00	20,500.00	642,000.00	-
3/1/2029	-	57,300.00	57,300.00	-	7,640,000.00	19,100.00	76,400.00	-
9/1/2029	570,000.00	57,300.00	627,300.00	684,600.00	7,070,000.00	19,100.00	646,400.00	-
3/1/2030	-	53,025.00	53,025.00	-	7,070,000.00	17,675.00	70,700.00	-
9/1/2030	580,000.00	53,025.00	633,025.00	686,050.00	6,490,000.00	17,675.00	650,700.00	-
3/1/2031	-	48,675.00	48,675.00	-	6,490,000.00	16,225.00	64,900.00	-
9/1/2031	590,000.00	48,675.00	638,675.00	687,350.00	5,900,000.00	16,225.00	654,900.00	-
3/1/2032	-	44,250.00	44,250.00	-	5,900,000.00	14,750.00	59,000.00	-
9/1/2032	605,000.00	44,250.00	649,250.00	693,500.00	5,295,000.00	14,750.00	664,000.00	-
3/1/2033	-	39,712.50	39,712.50	-	5,295,000.00	13,237.50	52,950.00	-
9/1/2033	615,000.00	39,712.50	654,712.50	694,425.00	4,680,000.00	13,237.50	667,950.00	-
3/1/2034	-	35,100.00	35,100.00	-	4,680,000.00	11,700.00	46,800.00	-
9/1/2034	630,000.00	35,100.00	665,100.00	700,200.00	4,050,000.00	11,700.00	676,800.00	-
3/1/2035	-	30,375.00	30,375.00	-	4,050,000.00	10,125.00	40,500.00	-
9/1/2035	640,000.00	30,375.00	670,375.00	700,750.00	3,410,000.00	10,125.00	680,500.00	-
3/1/2036	-	25,575.00	25,575.00	-	3,410,000.00	8,525.00	34,100.00	-
9/1/2036	655,000.00	25,575.00	680,575.00	706,150.00	2,755,000.00	8,525.00	689,100.00	-
3/1/2037	-	20,662.50	20,662.50	-	2,755,000.00	6,887.50	27,550.00	-
9/1/2037	665,000.00	20,662.50	685,662.50	706,325.00	2,090,000.00	6,887.50	692,550.00	-
3/1/2038	-	15,675.00	15,675.00	-	2,090,000.00	5,225.00	20,900.00	-
9/1/2038	680,000.00	15,675.00	695,675.00	711,350.00	1,410,000.00	5,225.00	700,900.00	-
3/1/2039	-	10,575.00	10,575.00	-	1,410,000.00	3,525.00	14,100.00	-
9/1/2039	695,000.00	10,575.00	705,575.00	716,150.00	715,000.00	3,525.00	709,100.00	-
3/1/2040	-	5,362.50	5,362.50	-	715,000.00	1,787.50	7,150.00	-
9/1/2040	715,000.00	5,362.50	720,362.50	725,725.00	-	1,787.50	722,150.00	-
Total	**$ 12,282,000.00**	**$ 2,390,535.00**	**$ 14,672,535.00**	**$ 14,672,535.00**		**$ 796,845.00**	**$ 15,469,380.00**	**$ 725,725.00**

4851-4731-4785\4

RESOLUTION AUTHORIZING THE ISSUANCE OF SALES TAX AND WATER AND SEWER UTILITY RESERVE REVENUE BONDS, SERIES 2018C TO FINANCE THE UNDERTAKING OF IMPROVEMENTS TO THE MUNICIPAL WATER AND SEWER UTILITY

BE IT RESOLVED by the City Council of the City of Minot, North Dakota (the "City") as follows:

Section 1. Authorization and Sale.

1.01. Authority for Bond Issuance. In accordance with the provisions of Article 3 of the Home Rule Charter of the City and Section 2-130 of the City of Minot Code of Ordinances (the "Code") previously adopted by the City Council, the City is empowered to issue revenue bonds for the expansion and improvement of its municipal water and sewer utility (the "Utility"). The bonds are to be issued in general accordance with the provisions of Chapter 40-35, North Dakota Century Code, but may be additionally secured by a) a reserve created and maintained in accordance with Section 2-130 of the Code and / or b) other funds and revenues of the City, including sales tax collections, which are available for the purpose.

1.02. Additional Bonds. Pursuant to Section 2-130 of the Code, there have been issued and are now outstanding (or in the case of the Series 2018A Bonds and Series 2018B Bonds, expected to be issued and outstanding) (the "Outstanding Bonds"):

Title	Amount Outstanding	Dated Date	Date of Resolution
Water and Sewer Utility Reserve Revenue Bonds, Series 2011B (the "2011B Bonds")	$870,000	December 22, 2011	December 5, 2011
Water and Sewer Utility Reserve Revenue Bonds, Series 2012B (the "2012B Bonds")	$1,545,000	November 28, 2012	November 5, 2012
Water and Sewer Utility Reserve Revenue Refunding Bonds, Series 2012C (the "2012C Bonds")	$1,265,000	November 28, 2012	November 5, 2012
Water and Sewer Utility Reserve Revenue Bonds, Series 2013C (the "2013C Bonds")	$4,050,000	November 26, 2013	November 4, 2013

Title	Amount Outstanding	Dated Date	Date of Resolution
Water and Sewer Utility Reserve Revenue Bonds, Series 2014C (the "2014C Bonds")	$3,480,000	November 25, 2014	November 3, 2014
Water and Sewer Utility Reserve Revenue Bonds, Series 2015D (the "2015D Bonds")	$5,585,000	November 24, 2015	November 2, 2015
Water and Sewer Utility Reserve Revenue Bonds, Series 2016C (the "2016C Bonds")	$4,520,000	November 29, 2016	November 7, 2016
Water and Sewer Utility Reserve Revenue Bonds, Series 2018A (the "Series 2018A Bonds")	$6,678,000	TBD	May 7, 2018
Sales Tax and Water and Sewer Utility Reserve Revenue Bonds, Series 2018B (the "Series 2018B Bonds")	$12,282,000	TBD	May 7, 2018

Pursuant to the applicable bond resolutions authorizing the issuance of the Outstanding Bonds, additional revenue bonds may be issued and made payable, in whole or in part, from the net revenues of the Utility, on a parity with said Outstanding Bonds, if (a) no default exists under the terms of said resolutions, or the terms of any other resolution authorizing the issuance of the bonds payable from the net revenues of the Utility; (b) the resolution authorizing the issuance of such additional bonds contains the covenant as to rates and charges required by Section 2-130 of the Code and provides for the funding of the debt service reserve account required by Section 2-130 of the Code; (c) the City Council reasonably determines that the rates and charges then in effect, or to be in effect prior to the issuance of said additional bonds, together with any other revenues, including sales tax collections, then or theretofore pledged to the payment of such bonds or additional bonds, will produce revenues sufficient to comply with the provisions of Section 2-130 of the Code and the resolution authorizing the issuance of said additional bonds; and (d) the full faith and credit of the City is pledged to maintain the debt service reserve account balance for the additional bonds as required by Section 2-130 of the Code. It is hereby determined that all of the foregoing conditions will be met as of the date of issuance of the Bonds and, therefore, the Bonds presently authorized will and shall be entitled to the equal and proportionate benefit and security of the pledge of the revenue and income derived and to be derived from the operation of the Utility, on a parity with said Outstanding Bonds without preference.

The City will undertake improvements to the Utility, including construction of floodwalls, a large storm water pump station, sanitary sewer lines, waterlines and storm sewer lines and a sanitary lift and storm sewer lift (the "Project"). Pursuant to the requirements of the Code, the City has published notice of the proposed Project, has allowed for the filing of written protests and hereby finds the protests insufficient to bar the Project. The City hereby finds it to be necessary and desirable to provide permanent financing for the Project by the issuance of its Sales Tax and Water and Sewer Utility Reserve Revenue Bond, Series 2018C, in the principal amount of $1,734,000 (the "Bonds").

1.03. Sale. The City, in response to its application for financial assistance from the State Department of Health, has received an offer from the Industrial Commission of North Dakota-North Dakota Public Finance Authority to purchase the Bonds at a price equal to the principal amount plus accrued interest, if any, to the date of purchase, which offer is more fully set out in a loan agreement (the "Loan Agreement") to be entered into between the City and the North Dakota Public Finance Authority (the "PFA"), a copy of which has been made available to members of the City Council for review. It is hereby found and determined that the offer of the PFA to purchase the Bonds is reasonable and advantageous to the City and is hereby accepted, and the Loan Agreement, in substantially the form presented to the City at this meeting, is hereby accepted and authorized to be executed on behalf of the City by the Mayor and the City Clerk, with such modifications as may be approved by said officers. The Mayor and the City Clerk are authorized and directed to execute the Loan Agreement and to deliver it to the PFA, which execution and delivery shall be conclusive evidence of the approval of any modifications with respect to the Loan Agreement.

1.04. Performance Requirements. Pursuant to Ordinance No. 659 of the City, the City has established on its books a "Water and Sewer Utility Fund" and has provided for the allocation of revenues of the Utility to accounts for operation and maintenance, replacement and depreciation and surplus, provided that the City has reserved the right in Ordinance No. 659 to establish separate and additional accounts within the Water and Sewer Utility Fund for the purpose of segregating and applying revenues to the payment of bonds issued to finance improvements to the Utility. If so established, such accounts shall be credited with such portions of the revenues of the Utility as may be contracted under the terms of the resolutions authorizing the issuance of bonds, such credits to be made after crediting the operation and maintenance account to the extent required by Ordinance No. 659, but before crediting any amounts to the accounts for replacement and depreciation and surplus. For the purpose of providing for the payment of the Bonds herein authorized, the City does hereby covenant and agree that from and after the completion and acceptance of the Project, it will operate the same as a part of the Utility, and will at all times continue to impose, maintain and collect rates, charges and rentals for the services, facilities and benefits provided by the Utility (including all additions and betterments thereof) to its inhabitants and industries and all others, such as will make the revenues of the Utility sufficient, together with any other funds appropriated to the Water and Sewer Utility Fund or an account within in, to meet all of the requirements of the Water and Sewer Utility Fund as outlined in Ordinance No. 659, including the payment of all current, reasonable and necessary costs of operation and maintenance, and the maintenance of a reasonable reserve for contingencies, and the production of revenues, in excess of the foregoing requirements ("net revenues") at least sufficient for the payment of principal and interest currently due, and the maintenance of any required debt service reserve accounts, with respect to all bonds payable from accounts established within said Fund, including

the Bonds herein authorized, and to provide an additional depreciation allowance as stated in Ordinance No. 659.

Section 2. Form. The Bonds shall initially be issued to the PFA in the form of a single registered Bond with annual installments of principal in substantially the form attached as Exhibit A hereto. At the request of the PFA, the City will deliver, in exchange for the Bonds initially issued, registered Bonds in the same aggregate outstanding principal amount, bearing interest at the same rate, in denomination of $5,000 or any integral multiple thereof, not exceeding the amount of principal payable on any single principal payment date.

Section 3. Bond Terms; Registration; Redemption.

3.01. Date, Maturities, Denomination and Payment. For the purposes specified in Section 1, the City authorizes the issuance of the Bonds in the aggregate principal amount of $1,734,000, dated, as originally issued, as of the date of issuance thereof. The Bonds shall be issued as a single registered bond in the amount of $1,734,000 or in denominations of $5,000 or any integral multiple thereof, and shall be payable in annual installments of principal on September 1 in the years and amounts set forth below, as follows, subject to adjustment or re-amortization in accordance with the provisions of the Loan Agreement:

Year	Amount	Year	Amount
2020	$69,000	2031	$ 85,000
2021	70,000	2032	85,000
2022	70,000	2033	85,000
2023	70,000	2034	90,000
2024	75,000	2035	90,000
2025	75,000	2036	90,000
2026	75,000	2037	95,000
2027	75,000	2038	95,000
2028	80,000	2039	100,000
2029	80,000	2040	100,000
2030	80,000		

The principal balance of the Bonds shall bear interest, from its date of issue until paid or duly called for redemption, at the rate of 1.50% per annum.

3.02. Interest Payment Dates. Interest on the Bonds shall be payable on March 1 and September 1 to the owner of record thereof at the close of business on the fifteenth day of the immediately preceding month, whether or not such day is a business day.

3.03. Redemption. The Bonds shall be subject to redemption, in whole or in part, and if in part in principal amounts which are integral multiples of $5,000, prior to their stated maturity, with the written consent of the PFA, at a price equal to the principal amount thereof plus accrued interest to the date of redemption.

3.04. Registration. The City shall appoint, and shall maintain, a bond registrar, transfer agent and paying agent (the Registrar). The effect of registration and the rights and duties of the City and the Registrar with respect thereto shall be as follows:

(a) Register. The Registrar shall keep a bond register in which the Registrar shall provide for the registration of ownership of Bonds and the registration of transfers and exchanges of Bonds entitled to be registered, transferred or exchanged.

(b) Transfer of Bonds. Upon surrender for transfer of any Bond duly endorsed by the registered owner thereof or accompanied by a written instrument of transfer, in form satisfactory to the Registrar, duly executed by the registered owner thereof or by an attorney duly authorized the Registrar shall authenticate and deliver, in the name of the designated transferee or transferees, a new Bond similar in form to the Bonds initially issued, of a like aggregate principal amount, as requested by the transferor.

(c) Exchange of Bonds. Whenever any Bonds are surrendered for exchange the Registrar shall authenticate and deliver the Bonds which the owner making the exchange is entitled to receive.

(d) Cancellation. All Bonds surrendered upon any transfer or exchange shall be promptly cancelled by the Registrar and thereafter disposed of as directed by the City.

(e) Improper or Unauthorized Transfer. When any Bond is presented to the Registrar for transfer, the Registrar may refuse to transfer the same until it is satisfied that the endorsement on such Bond or separate instrument of transfer is valid and genuine and that the requested transfer is legally authorized. The Registrar shall incur no liability for the refusal, in good faith, to make transfers which it, in its judgment, deems improper or unauthorized.

(f) Persons Deemed Owners. The City and the Registrar may treat the person in whose name any Bond is at any time registered in the bond register as the absolute owner of such Bond, whether such Bond shall be overdue or not, for the purpose of receiving payment of, or on account of, the principal of and interest on such Bond and for all other purposes, and all such payments so made to any such registered owner or upon the owner's order shall be valid and effectual to satisfy and discharge the liability upon such Bond to the extent of the sum or sums so paid.

(g) Taxes Fees and Charges. For every transfer or exchange of Bonds, the Registrar may impose a charge upon the owner thereof sufficient to reimburse the Registrar for any tax, fee or other governmental charge required to be paid with respect to such transfer or exchange.

(h) Mutilated Lost, Stolen or Destroyed Bonds. In case any Bond shall become mutilated or be destroyed, stolen or lost, the Registrar shall deliver a new Bond of like amount, number, maturity date and tenor in exchange and substitution for and upon cancellation of any such mutilated Bond or in lieu of and in substitution for any such Bond destroyed, stolen or lost, upon the payment of the reasonable expenses and charges of the Registrar in connection therewith; and, in the case of a Bond destroyed, stolen or lost, upon

filing with the Registrar of evidence satisfactory to it that such Bond was destroyed, stolen or lost, and of the ownership thereof, and upon furnishing to the Registrar of an appropriate bond or indemnity in form, substance and amount satisfactory to it, in which both the City and the Registrar shall be named as obligees. All Bonds so surrendered to the Registrar shall be cancelled by it and evidence of such cancellation shall be given to the City. If the mutilated, destroyed, stolen or lost Bond has already matured or been called for redemption in accordance with its terms it shall not be necessary to issue a new Bond prior to payment.

3.05. Appointment of Initial Registrar. The City hereby appoints The Bank of North Dakota, in Bismarck, North Dakota, as the initial Registrar. The City reserves the right to remove the Registrar upon thirty (30) days notice and upon the appointment of a successor Registrar, in which event the predecessor Registrar shall deliver all cash and Bonds in its possession to the successor Registrar and shall deliver the bond register to the successor Registrar. So long as the Bonds are registered in the name of the PFA, the City shall obtain the prior written approval of the PFA to the removal of the Registrar and appointment of a successor. The City shall pay the reasonable and customary charges of the Registrar from the Operation and Maintenance Account of its Fund.

3.06. Execution, Authentication and Delivery. The Bonds shall be prepared under the direction of the City Clerk and shall be executed on behalf of the City by the signatures of the Mayor and the City Clerk, provided that all signatures may be printed, engraved or lithographed facsimiles of the originals. In case any officer whose signature or a facsimile of whose signature shall appear on the Bonds shall cease to be such officer before the delivery of any Bond, such signature or facsimile shall nevertheless be valid and sufficient for all purposes, the same as if he had remained in office until delivery. Notwithstanding such execution, no Bond shall be valid or obligatory for any purpose or entitled to any security hereunder until the certificate of authentication on such Bond has been duly executed by the manual signature of an authorized representative of the Registrar. The executed certificate of authentication on each Bond shall be conclusive evidence that it has been authenticated and delivered under this Resolution.

Section 4. Water and Sewer Utility Fund.

4.01. Water and Sewer Utility Fund. Pursuant to Ordinance No. 659 of the City, the City Auditor has established and will maintain the Water and Sewer Utility Fund (the "Fund") as a separate and special fund in the financial records of the City until all bonds issued and made payable therefrom, and interest and redemption premiums due thereon, have been duly paid or discharged. Within the Fund are various separate accounts to be maintained by the City.

4.02. Operation and Maintenance Account. To the Operation and Maintenance Account there shall be credited upon each monthly apportionment, as a first lien and charge on the gross revenues, such sum as shall be needed, over and above any credit balance then held in the Operation and Maintenance Account, to pay all claims then due and allowed which by accepted accounting practices constitute normal, reasonable and current expenses of the operation and maintenance of the Utility, and to pay all such expenses estimated to accrue for a period of one month thereafter, and to maintain a reasonable reserve for contingencies. Money in the Operation and Maintenance Account shall be used only to pay expenses of this type, and not for major repairs, replacements or capital improvements which are properly chargeable to replacement and

depreciation reserves or surplus funds. The net revenues of the Utility, which are herein pledged and appropriated to the extent required for the payment of the Bonds herein authorized and interest thereon, are hereby defined as the aggregate of all sums on hand in the Fund from time to time in excess of the current requirements of the Operation and Maintenance Account as described herein.

4.03 Construction Account. A Construction Account has been established within the Fund, which shall be used only to pay, as incurred and allowed, costs which under accepted accounting practices are capital costs of the Project, including, but not limited to, payments due for work and materials performed and delivered under construction contracts, architectural, engineering, inspection, supervision, fiscal and legal expenses, the cost of necessary lands and easements, interest accruing on the Bonds during the period of construction of the Project and for six months thereafter, if and to the extent that the Reserve Revenue Bond Account is not sufficient for payment of such interest, reimbursement of any advances made from other City funds, and all other expenses incurred in connection with the construction and financing of the Project. To the Construction Account there shall be credited all proceeds of the Bonds, except accrued interest, if any, which shall be credited to the Reserve Revenue Bond Account and the sums, if any, appropriated to the Reserve Revenue Bond Reserve Account referred to in Section 4.05, and all other funds appropriated by the City for the purposes referred to in this paragraph, when needed for such purposes, and all income received from the investment of the Construction Account.

4.04. Reserve Revenue Bond Account. A Reserve Revenue Bond Account has been established within the Fund, to which there shall be set aside and credited an amount equal to not less than the sum of one-sixth of the interest due within the next six months plus one-twelfth of the principal to become due within the next twelve months with respect to all reserve revenue bonds heretofore or herein issued or issued in the future and made payable from the Reserve Revenue Bond Account, which amounts, with respect to the Bonds, are to be derived from the net revenues of the Utility at each monthly apportionment, to the extent not already on deposit and paid from other sources described herein. This requirement is cumulative, and if the net revenues are not sufficient to credit the sum required in any month, an amount equal to the deficiency shall be transferred from the Reserve Revenue Bond Reserve Account, Replacement and Depreciation Accounts or Surplus Account of the Fund, or shall be credited from the next net revenues thereafter received in excess of current requirements. Money from time to time held in the Reserve Revenue Bond Account shall be disbursed only to meet payments of principal, premium, if any, and interest due on obligations issued and made payable from the Reserve Revenue Bond Account.

Pursuant to Section 2-130 of the Code and notwithstanding anything else contained herein to the contrary, the City hereby pledges, to payment of the Bonds, revenues derived from the sales tax imposed pursuant to Sections 28.5-103 and 28.5-104 of the Code and available for flood control projects, including the Project, pursuant to Section 28.5-108(1) of the Code (the "Sales Tax Revenues") an amount sufficient to pay interest and principal due on the Bonds. Such amount of Sales Tax Revenues shall be deposited in the Reserve Revenue Bond Account prior to each payment date for the Bonds and may be used to abate the net revenues of the Utility otherwise pledged to payment of debt service on the Bonds.

4.05. Reserve Revenue Bond Reserve Account. A Reserve Revenue Bond Reserve Account has been established within the Fund. Upon the issuance of any series of definitive reserve revenue bonds, the balance in the Reserve Revenue Bond Reserve Account shall be

increased, if necessary, either from the proceeds of such bonds or from funds on hand and available for the purpose, to an amount equal to the lesser of (i) maximum annual debt service on, (ii) 125% of the average annual debt service on, or (iii) ten percent of the proceeds of, the Bonds. Funds will be transferred from the Reserve Revenue Bond Reserve Account to the Reserve Revenue Bond Account at any time the balance on hand in the Reserve Revenue Bond Account is insufficient to meet current requirements for payment of principal and interest on the Bonds payable therefrom. In the event of such transfer, and if the then-existing deficiency in the Reserve Revenue Bond Reserve Account cannot be restored from available funds in the Replacement and Depreciation Accounts or Surplus Account of the Fund, the City shall levy a tax upon all taxable property within the corporate limits of the City sufficient to restore the balance in the Reserve Revenue Bond Reserve Account to the amount required pursuant to Section 2-130 of the Code, which tax shall be subject to no limitation as to rate or amount. In the event a tax is levied for such purpose, the amount of such tax shall be reimbursed to the general fund of the City out of the first available revenues in the Replacement and Depreciation Accounts or Surplus Account of the Fund.

4.06. Replacement and Depreciation Accounts. Accounts for replacement and depreciation (collectively, the "Replacement and Depreciation Accounts") have been established within the Fund. To the Replacement and Depreciation Accounts there shall be credited from the net revenues remaining after allocations to the Operation and Maintenance Account, the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account such sum as shall be needed, over and above any credit balances then held in the Replacement and Depreciation Accounts, to pay such disbursements as may from time to time be found necessary or desirable for replacement of worn-out or obsolete Utility property or for extensions, enlargements or improvements of the Utility which are not directed by the City Council to be financed by special assessments or the issuance of water and sewer utility reserve revenue bonds.

4.07. Surplus Account. To the Surplus Account shall be credited all net revenues from time to time received in excess of the current requirements of the Replacement and Depreciation Accounts, Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account; except that in the event of the future pledge and appropriation of surplus net revenues for the payment and security of additional obligations subordinate to the pledge and appropriation of net revenues to the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account, the City reserves the right to create one or more additional accounts within the Fund for the segregation of surplus net revenues available for the payment of any such obligations. The balance on hand from time to time in the Surplus Account shall be available and shall be used to the full extent necessary to restore any deficiency in the Operation and Maintenance Account, the Reserve Revenue Bond Account and the Reserve Revenue Bond Reserve Account, but when not so needed, may be used to pay for replacements, repairs or capital improvements of the Utility, or to pay principal and interest on subordinate obligations hereafter issued for such purposes, or to redeem and pay before maturity bonds payable from the Reserve Revenue Bond Account, when and as such bonds become redeemable according to their terms, or for any other proper purpose of the City authorized in accordance with resolutions of the City Council.

4.08. Costs of Issuance Account. A Costs of Issuance Account (the "Costs of Issuance Account") has been created within the Fund. The proceeds of the Bonds, if any, deposited in the Costs of Issuance Account shall be used only to pay costs of issuance of the Bonds. There shall

be credited to the Costs of Issuance Account, from the proceeds of the Bonds, an amount equal to the estimated costs of issuance to be paid therefrom.

Section 5. Priorities and Additional Bonds.

5.01. Priorities. Each and all of the Bonds issued pursuant to this resolution shall be equally and ratably secured by and payable from the net revenues of the Utility on a parity with the Outstanding Bonds described in Section 1.02 without preference or priority of any one bond of any issue over any other, provided that if at any time the net revenues or other funds pledged thereto, including the Sales Tax Revenues, as applicable, are insufficient to pay principal and interest then due on all such bonds payable from said net revenues, the net revenues available therefore shall be first used to pay the interest accrued on all such bonds which are then outstanding, and the balance shall be applied toward payment of the maturing principal of such bonds in order of their maturities, the earliest maturing bonds to be paid first, and pro rata in payment of bonds maturing on the same date.

5.02. Refunding Bonds. The City reserves the right and privilege of refunding any or all of the Bonds herein authorized, subject to the following terms and conditions:

Any matured Bonds, or principal installment thereof, may be refunded if money available for the payment thereof at maturity or on a principal installment date should at any time be insufficient to make such payment in full, and may be made payable from the Reserve Revenue Bond Account on a parity as to interest with all then outstanding bonds issued hereunder, provided that (1) the maturity of each such Bond shall be subsequent to the last maturity or principal installment of any then outstanding bonds issued hereunder which are not refunded, and (2) no Bondholder shall be required to accept a refunding Bond in exchange for any Bond owned.

5.03. Additional Reserve Revenue Bonds. The City reserves the right to issue additional Reserve Revenue Bonds pursuant to Section 2-130 of the Code for the purpose of (i) paying any additional cost of completing the Project in excess of the cost now estimated, (ii) refunding Bonds payable from the Fund under circumstances other than those contemplated in Section 5.02, or (iii) paying the cost of additional improvements to the Utility, which additional revenue bonds shall be payable on a parity with the Bonds now authorized as to the net revenues of the Utility, provided that the test set forth in Section 1.02 is met and, subsequent to said date: (a) no default exists under the terms of this resolution, or the terms of any other resolution authorizing the issuance of bonds payable from the net revenues of the Utility; (b) the resolution authorizing the issuance of such bonds contains the covenant as to rates and charges required by Section 2-130 of the Code and provides for the funding of the debt service reserve account required by Section 2-130 of the Code; (c) the City Council reasonably determines that the rates and charges then in effect, or to be in effect prior to the issuance of said additional bonds, together with any other revenues, including sales tax collections, then or theretofore pledged to the payment of such bonds or additional bonds, will produce net revenues of the Utility sufficient to comply with the provisions of Section 2-130 of the Code and the resolution authorizing the issuance of said additional bonds; and (d) the full faith and credit of the City is pledged to maintain the debt service reserve account balance for the additional bonds as required by Section 2-130 of the Code.

Nothing in this resolution shall preclude the City from issuing additional bonds which are expressly made a charge on only the surplus net revenues of the Utility as set forth in Ordinance No. 659, subordinate to the pledge of net revenues to the Bonds described in Section 1.02 and the Bonds authorized hereunder. The City may pledge the Sales Tax Revenues to other obligations, provided that such pledge does not cause the City to fail to comply with the covenants contained in Section 7 hereof.

Section 6. Defeasance. When the Bonds have been discharged as provided in this section, all pledges, covenants and other rights granted by this resolution shall cease. The City may discharge its obligations with respect to the Bonds on any date by depositing with the paying agent on or before that date a sum sufficient for the payment thereof in full; or, if the Bonds should not be paid when due, the same may nevertheless be discharged by depositing with the paying agent a sum sufficient for the payment thereof in full with interest accrued from the due date of such deposit. The City may also discharge its obligations with respect to the Bonds according to its terms by depositing with the paying agent on or before that date an amount equal to the principal and interest which are then due, provided that notice of such redemption has been duly given as provided herein. The City may also discharge its obligations with respect to the Bonds by irrevocably depositing in escrow with a bank or trust company qualified by law to act as an escrow agent, for the purpose of paying all principal and interest due on the Bonds prior to a date upon which all of the same will be prepayable according to their terms and paying all remaining bonds of the series on that date, a sum of cash and securities of the types authorized by North Dakota law, in such aggregate amount, bearing interest at such rates and maturing or callable at the holder's option on such dates as shall be required to provide funds sufficient for this purpose.

Section 7. Covenants. The City hereby covenants and agrees with the PFA and registered owners from time to time of the Bonds that from and after the completion of the Project, it will operate the same as a part of the Utility, and will at all times continue to impose, maintain and collect rates, charges and rentals for the services, facilities and benefits provided by the Utility (including all additions and betterments thereof) to its inhabitants and industries and all others, such as will make the revenues of the Utility sufficient to meet all of the requirements of the Fund as outlined in Ordinance No. 659, including the payment of all current, reasonable and necessary costs of operation and maintenance, and the maintenance of a reasonable reserve for contingencies, and the production of net revenues, in excess of the foregoing requirements, at least equal to 120% of principal and interest currently due, and the maintenance of any reserves required, with respect to all bonds payable therefrom, including the Bonds, provided that in the event other funds are pledged to a series of reserve revenue bonds, such funds may be accounted for in establishing rates sufficient to provide such coverage. The City will at all times keep the Utility and the various parts thereof insured against loss or damage by causes customarily insured against for like properties, and in amounts customarily maintained by prudent owners of like properties, and will use the proceeds of any and all such insurance to repair or restore the damage compensated thereby, or to pay and retire outstanding bonds payable from the net revenues of the Utility. The City will cause proper and adequate books of record and account to be kept showing complete and correct entries of all receipts, disbursements and other transactions relating to the Utility, the monthly revenues derived from its operation, and the segregation and application of the revenues in accordance with this resolution and the Ordinance No. 659, in such reasonable detail as may be determined by the City in accordance with generally accepted accounting practices and principles.

The City will not mortgage, lease, sell, or otherwise dispose of any real or personal properties of the Utility, unless:

(a) Prior to or simultaneous with such mortgage, lease, sale or other disposition, the Bonds shall be discharged as provided in Section 6; or

(b) The properties to be mortgaged, leased, sold or otherwise disposed of are unserviceable, inadequate, obsolete or no longer required for use in connection with the Utility; or

(c) The mortgage, lease, sale or other disposition will not prevent the City from complying with the provisions of this resolution and the PFA has given its consent thereto; or

(d) In any event referred to in clause (b) or (c), all proceeds of the mortgage, lease, sale or other disposition of such properties are deposited into the Fund.

In the event of a default in the payment of any Bond, the registered owner thereof shall have all rights, remedies, powers and privileges granted by law for the enforcement of the registered owner's rights and the collection of the Bonds, including all rights and remedies of registered owners of revenue bonds under the provisions of Chapter 40-35, North Dakota Century Code, as amended. The City represents and covenants that the City is or will be the owner of all facilities financed by the Bonds.

Section 8. Tax Covenants and Arbitrage Matters.

8.01. Arbitrage Certification. The Mayor and the City Clerk being the officers of the City charged with the responsibility for issuing the Bonds pursuant to this resolution, are authorized and directed to execute and deliver to the PFA a certificate in accordance with the provisions of Section 148 of the Internal Revenue Code of 1986, as amended (the "Code") and applicable Regulations, stating the facts, estimates and circumstances in existence on the date of issue and delivery of the Bonds which make it reasonable to expect that the proceeds of the Bonds will not be used in a manner that would cause the Bonds to be arbitrage bonds within the meaning of the Code and Regulations.

8.02. Rebate. The City acknowledges that the Bonds are subject to the rebate requirements of Section 148(f) of the Code. The City covenants and agrees to retain such records, make such determinations, file such reports and documents and pay such amounts at such times as are required under said Section 148(f) and applicable Regulations to preserve the exclusion of interest on the Bonds from gross income for federal income tax purposes, unless the Bonds qualify for the exception from the rebate requirement under Section 148(f)(4)(C) of the Code and no "gross proceeds" of the Bonds (other than amounts constituting a "bona fide debt service fund") arise during or after the expenditure of the original proceeds thereof. In furtherance of the foregoing, the City Clerk is hereby authorized and directed to execute a Rebate Certificate, in the form prescribed by Bond Counsel, and the City hereby covenants and agrees to observe and perform the covenants and agreements contained therein, unless amended or terminated in accordance with the provisions thereof.

8.03. Reimbursement. The City certifies that the proceeds of the Bonds will not be used by the City to reimburse itself for any expenditure with respect to the Project which the City paid or will have paid prior to the issuance of the Bonds unless, with respect to such prior expenditures, the City shall have made a declaration of official intent which complies with the provisions of Section 1.150-2 of the Regulations; provided that this certification shall not apply (i) with respect to certain de minimis expenditures, if any, with respect to the Project meeting the requirements of Section 1.150-2(f)(1) of the Regulations, or (ii) with respect to "preliminary expenditures" for the Project as defined in Section 1.150-2(f)(2) of the Regulations, including engineering or architectural expenses and similar preparatory expenses, which in the aggregate do not exceed 20% of the "issue price" of the Bonds.

8.04. Not Qualified Tax-Exempt Obligations. The Bonds are not designated as "qualified tax-exempt obligations" for purposes of Section 265(b)(3) of the Code relating to the disallowance of interest expense for financial institutions.

Section 9. Authentication of Transcript. The officers of the City are hereby authorized and directed to prepare and furnish to the PFA and to Dorsey & Whitney LLP, Bond Counsel, certified copies of all proceedings and records relating to the Bonds and such other affidavits, certificates and information as may be required to show the facts relating to the legality and marketability of the Bonds, as the same appear from the books and records in their custody and control or as otherwise known to them, and all such certified copies, affidavits and certificates, including any heretofore furnished, shall be deemed representations of the City as to the correctness of all statements contained therein.

Adopted this 7th day of May, 2018.

_____
Mayor

Attest:_____
City Clerk

STATE OF NORTH DAKOTA)
) ss.
COUNTY OF WARD)

The undersigned, being the duly appointed, qualified and acting City Clerk of the City of Minot, North Dakota, hereby certifies that the foregoing is a full, true and correct copy of a resolution duly passed and adopted by the City Council of the City at its meeting duly called and held May 7, 2018, by the following roll call vote:

Ayes:

Nays:

Absent:

and that the resolution has been duly presented to and approved and signed by the Mayor, and has not subsequently been amended and is now in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of the City of Minot, North Dakota.

Dated: May 7, 2018.

_____
City Clerk

(SEAL)

EXHIBIT A

UNITED STATES OF AMERICA
STATE OF NORTH DAKOTA
COUNTY OF WARD

CITY OF MINOT

SALES TAX AND WATER AND SEWER UTILITY RESERVE REVENUE BOND, SERIES 2018C

No. R-1 $1,734,000

Rate	Final Maturity	Date of Original Issue	CUSIP
1.50%	September 1, 2040	[May __], 2018	NONE

REGISTERED OWNER: NORTH DAKOTA PUBLIC FINANCE AUTHORITY

PRINCIPAL AMOUNT: ONE MILLION SEVEN HUNDRED THIRTY-FOUR THOUSAND DOLLARS

KNOW ALL PERSONS BY THESE PRESENTS that the City of Minot, North Dakota, acknowledges itself specially indebted and for value received hereby promises to pay to the registered owner designated above, or registered assigns, solely out of its Water and Sewer Utility Bond Fund (the "Fund"), the principal sum specified above, in installments in the amounts and on the dates set forth on Schedule B hereto, with interest on the outstanding principal balance from the date hereof at the annual rate of one and one half percent (1.50%) per annum, payable on March 1 and September 1 in each year, commencing September 1, 2018, to the person in whose name this Bond is registered at the close of business on the fifteenth day (whether or not a business day) of the immediately preceding month. Payments shall be made by check or draft, or other agreed means of payment, by The Bank of North Dakota, in Bismarck, North Dakota, as Bond Registrar and Paying Agent, or its successor designated under the Resolution described herein. Upon each disbursement of loan amounts to the Borrower pursuant to the Loan Agreement described below, the North Dakota Public Finance Authority (the "PFA") shall enter (or cause to be entered) the amount advanced on Schedule A under "Advances" and the total amount advanced under the Loan Agreement, including such disbursement under "Total Amount Advanced." In the event that the Total Amount Advanced is less than the principal amount of this Bond, the PFA shall prepare a revised Schedule B, or cause a revised Schedule B to be prepared, as provided in the Loan Agreement described below.

This Bond is issued pursuant to a resolution adopted by the City Council on May 7, 2018 (the "Resolution"), for the purpose of financing improvements to the City's Water and Sewer Utility (the "Utility"), pursuant to and in full conformity with the Constitution and laws of the State of North Dakota and the charter and ordinances of the City of Minot thereunto enabling, including Title 40, Chapter 35, North Dakota Century Code, as amended, Sections 2-130, and

28.5-101 through 28.5-108 of the City of Minot Code of Ordinances (the "Code") and Ordinance No. 659 of the City. Reference is made to the Resolution for a description of the nature and extent of the security for the Bonds, the rights thereunder of the City and the bondholders and the terms upon which the Bonds and any additional bond maybe issued and secured. This Bond, including interest, is payable from the net revenues of the Utility and Sales Tax Revenues pledged to the payment hereof, as described in the Resolution.

Bonds of this series are issued in evidence of a loan made to the City pursuant to the terms of Loan Agreement, dated on or about June 1, 2018, between the City and the PFA, and reference is made to the terms of said Loan Agreement for further provisions relating to the terms upon which the Bonds are issued and secured.

This Bond is subject to prepayment and redemption prior to its stated maturity date on any date, with the written consent of the PFA, and reamortization of installments in the event of partial prepayment.

As provided in the Resolution and subject to certain limitations set forth therein, this Bond is transferable upon the books of the City at the office of the Bond Registrar, by the registered owner hereof in person or by the owner's attorney duly authorized in writing upon surrender hereof together with a written instrument of transfer satisfactory to the Bond Registrar, duly executed by the registered owner or the owner's attorney, and may also be surrendered in exchange for Bonds of other authorized denominations. Upon such transfer or exchange the City will cause a new Bond or Bonds to be issued in the name of the transferee or registered owner, of the same aggregate principal amount, bearing interest at the same rate and payable as to principal and interest on the same date or dates, subject to reimbursement for any tax, fee or governmental charge required to be paid with respect to such transfer or exchange.

The City and any Bond Registrar may deem and treat the person in whose name this Bond is registered as the absolute owner hereof, whether this Bond is overdue or not, for the purpose of receiving payment and for all other purposes, and neither the City nor any Bond Registrar shall be affected by any notice to the contrary.

This Bond shall not be valid or become obligatory for any purpose or be entitled to any security or benefit under the Resolution until the Certificate of Authentication hereon shall have been executed by the Bond Registrar by manual signature of one of its authorized representatives.

IT IS CERTIFIED, RECITED, COVENANTED AND AGREED that under the law, ordinances and Resolution referred to above, the City has duly created said Reserve Revenue Bond Account (the "Bond Account") in its Fund and has appropriated thereto an amount of net revenues from its Fund which, together with other funds pledged hereto, are sufficient to pay all principal of, premium, if any, and interest on this Bond as such becomes due; that rates will be charged for the use and service of the Utility sufficient at all times to produce net revenues which, together with other revenues pledged thereto, will produce the amounts necessary to pay all bonds payable from the Fund, including the Bonds; that a Reserve Revenue Bond Reserve Account (the "Reserve Account"), has been created in the Fund in an amount equal to the lesser of maximum annual debt service on, 125% of the average annual debt service on, or 10% of the proceeds of the Bonds, and, in the event that there shall be at any time a deficiency in the Reserve Account, the City is required

by Section 2-130 of the Code to levy a tax upon all taxable property in the City for restoration of such deficiency, which deficiency levy is not subject to any limitation as to rate or amount; and that all acts, conditions and things required by the Constitution and laws of the State of North Dakota and the City Charter to be done precedent to and in the issuance of this Bond, in order to make it a valid and binding special obligation of the City in accordance with its terms, have been done, have happened and have been performed in regular and due time, form and manner as so required.

IN WITNESS WHEREOF, the City of Minot, North Dakota, by its City Council, has caused this Bond to be executed on its behalf by the signatures of the Mayor and the City Clerk.

CITY OF MINOT, NORTH DAKOTA

_____ _____

(Facsimile Signature – City Clerk) (Facsimile Signature – Mayor)

CERTIFICATE OF AUTHENTICATION

This is one of the Bonds delivered pursuant to the Resolution mentioned within.

Date of Authentication: _____

THE BANK OF NORTH DAKOTA,
Bismarck, North Dakota, as Bond Registrar

By_____
Authorized Representative

ASSIGNMENT

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____, the within Bond and all rights thereunder, and hereby irrevocably constitutes and appoints _____ attorney to transfer the within Bond on the books kept for registration thereof, with full power of substitution in the premises.

Dated: _____

_____

NOTICE: The signature to this assignment must correspond with the name as it appears upon the face of the within Bond in every particular, without alteration or enlargement or any change whatsoever.

PLEASE INSERT SOCIAL SECURITY NUMBER OR OTHER IDENTIFYING NUMBER OF ASSIGNEE:

_____

Signature Guaranteed:

_____

Signature(s) must be guaranteed by an "eligible guarantor institution" meeting the requirements of the Registrar, which requirements include membership or participation in STAMP or such other "signature guaranty program" as may be determined by the Registrar in addition to or in substitution for STAMP, all in accordance with the Securities Exchange Act of 1934, as amended.

SCHEDULE A
TOTAL AMOUNT ADVANCED

Year	Amount Advanced	Cumulative Amount Advanced	Year	Amount Advanced	Cumulative Amount Advanced

SCHEDULE B
TOTAL LOAN PAYMENT

Date	Principal	Interest	Total Principal & Interest	Annual P&I Payment	Outstanding Balance	Admin. Fee	Total Payment	Annual Total Payment	Debt Service Reserve Funding
					1,734,000.00				
9/1/2018	-	4,000.00	4,000.00	4,000.00	1,734,000.00	1,000.00	5,000.00	5,000.00	-
3/1/2019	-	13,005.00	13,005.00	-	1,734,000.00	4,335.00	17,340.00	-	-
9/1/2019	-	13,005.00	13,005.00	26,010.00	1,734,000.00	4,335.00	17,340.00	34,680.00	20,600.00
3/1/2020	-	13,005.00	13,005.00	-	1,734,000.00	4,335.00	17,340.00	-	-
9/1/2020	69,000.00	13,005.00	82,005.00	95,010.00	1,665,000.00	4,335.00	86,340.00	103,680.00	20,600.00
3/1/2021	-	12,487.50	12,487.50	-	1,665,000.00	4,162.50	16,650.00	-	-
9/1/2021	70,000.00	12,487.50	82,487.50	94,975.00	1,595,000.00	4,162.50	86,650.00	103,300.00	20,600.00
3/1/2022	-	11,962.50	11,962.50	-	1,595,000.00	3,987.50	15,950.00	-	-
9/1/2022	70,000.00	11,962.50	81,962.50	93,925.00	1,525,000.00	3,987.50	85,950.00	101,900.00	20,600.00
3/1/2023	-	11,437.50	11,437.50	-	1,525,000.00	3,812.50	15,250.00	-	-
9/1/2023	70,000.00	11,437.50	81,437.50	92,875.00	1,455,000.00	3,812.50	85,250.00	100,500.00	20,600.00
3/1/2024	-	10,912.50	10,912.50	-	1,455,000.00	3,637.50	14,550.00	-	-
9/1/2024	75,000.00	10,912.50	85,912.50	96,825.00	1,380,000.00	3,637.50	89,550.00	104,100.00	-
3/1/2025	-	10,350.00	10,350.00	-	1,380,000.00	3,450.00	13,800.00	-	-
9/1/2025	75,000.00	10,350.00	85,350.00	95,700.00	1,305,000.00	3,450.00	88,800.00	102,600.00	-
3/1/2026	-	9,787.50	9,787.50	-	1,305,000.00	3,262.50	13,050.00	-	-
9/1/2026	75,000.00	9,787.50	84,787.50	94,575.00	1,230,000.00	3,262.50	88,050.00	101,100.00	-
3/1/2027	-	9,225.00	9,225.00	-	1,230,000.00	3,075.00	12,300.00	-	-
9/1/2027	75,000.00	9,225.00	84,225.00	93,450.00	1,155,000.00	3,075.00	87,300.00	99,600.00	-
3/1/2028	-	8,662.50	8,662.50	-	1,155,000.00	2,887.50	11,550.00	-	-
9/1/2028	80,000.00	8,662.50	88,662.50	97,325.00	1,075,000.00	2,887.50	91,550.00	103,100.00	-
3/1/2029	-	8,062.50	8,062.50	-	1,075,000.00	2,687.50	10,750.00	-	-
9/1/2029	80,000.00	8,062.50	88,062.50	96,125.00	995,000.00	2,687.50	90,750.00	101,500.00	-
3/1/2030	-	7,462.50	7,462.50	-	995,000.00	2,487.50	9,950.00	-	-
9/1/2030	80,000.00	7,462.50	87,462.50	94,925.00	915,000.00	2,487.50	89,950.00	99,900.00	-
3/1/2031	-	6,862.50	6,862.50	-	915,000.00	2,287.50	9,150.00	-	-
9/1/2031	85,000.00	6,862.50	91,862.50	98,725.00	830,000.00	2,287.50	94,150.00	103,300.00	-
3/1/2032	-	6,225.00	6,225.00	-	830,000.00	2,075.00	8,300.00	-	-
9/1/2032	85,000.00	6,225.00	91,225.00	97,450.00	745,000.00	2,075.00	93,300.00	101,600.00	-
3/1/2033	-	5,587.50	5,587.50	-	745,000.00	1,862.50	7,450.00	-	-
9/1/2033	85,000.00	5,587.50	90,587.50	96,175.00	660,000.00	1,862.50	92,450.00	99,900.00	-
3/1/2034	-	4,950.00	4,950.00	-	660,000.00	1,650.00	6,600.00	-	-
9/1/2034	90,000.00	4,950.00	94,950.00	99,900.00	570,000.00	1,650.00	96,600.00	103,200.00	-
3/1/2035	-	4,275.00	4,275.00	-	570,000.00	1,425.00	5,700.00	-	-
9/1/2035	90,000.00	4,275.00	94,275.00	98,550.00	480,000.00	1,425.00	95,700.00	101,400.00	-
3/1/2036	-	3,600.00	3,600.00	-	480,000.00	1,200.00	4,800.00	-	-
9/1/2036	90,000.00	3,600.00	93,600.00	97,200.00	390,000.00	1,200.00	94,800.00	99,600.00	-
3/1/2037	-	2,925.00	2,925.00	-	390,000.00	975.00	3,900.00	-	-
9/1/2037	95,000.00	2,925.00	97,925.00	100,850.00	295,000.00	975.00	98,900.00	102,800.00	-
3/1/2038	-	2,212.50	2,212.50	-	295,000.00	737.50	2,950.00	-	-
9/1/2038	95,000.00	2,212.50	97,212.50	99,425.00	200,000.00	737.50	97,950.00	100,900.00	-
3/1/2039	-	1,500.00	1,500.00	-	200,000.00	500.00	2,000.00	-	-
9/1/2039	100,000.00	1,500.00	101,500.00	103,000.00	100,000.00	500.00	102,000.00	104,000.00	-
3/1/2040	-	750.00	750.00	-	100,000.00	250.00	1,000.00	-	-
9/1/2040	100,000.00	750.00	100,750.00	101,500.00	-	250.00	101,000.00	102,000.00	-
Total	**$ 1,734,000.00**	**$ 334,495.00**	**$ 2,068,495.00**	**$ 2,068,495.00**		**$ 111,165.00**	**$ 2,179,660.00**	**$ 2,179,660.00**	**$ 103,000.00**

NORTH DAKOTA CLEAN WATER STATE REVOLVING FUND PROGRAM (CWSRF)

Loan Application Package

NORTH DAKOTA DEPARTMENT *of* HEALTH
Division of Municipal Facilities

ND North Dakota Public Finance Authority

CONTENTS AND INSTRUCTIONS

CONTENTS OF APPLICATION PACKAGE

1. SRF Program Application
2. Budget Sheet
3. Debarment and Suspension Certification
4. Preaward Compliance Review Report
5. Resolution of Governing Body

APPLICATION SUBMISSION

Complete items 1-5 and submit with original signatures to:

North Dakota Department of Health (NDDoH)
Division of Municipal Facilities
918 East Divide Avenue, Third Floor
Bismarck, ND 58501-1947

APPLICATION PROCESS

1. Project must be on the Department of Health's Intended Use Plan (IUP)
2. Application is reviewed by ND Public Finance Authority (PFA)
3. Application is reviewed by PFA's Advisory Committee
4. Application is reviewed by the ND Industrial Commission
5. Political subdivision's bond counsel prepares bond documents
6. Bond documents are filed with the PFA
7. Political subdivision may submit loan draw requests to the NDDoH

IMPORTANT REMINDERS

- The political subdivision is responsible for selecting and retaining bond counsel.
- CWSRF loans are federal funds and subject to specific auditing procedures. Please alert your auditor.
- Revenue bonds require 120 percent coverage and a reserve fund.
- Audit reports or financial statements must be filed annually with the PFA.

This fillable form has text in GREEN that can be changed by the user.

QUESTIONS REGARDING:

Completing pages 1-7 of the application:
ND Public Finance Authority
Phone: 1.800.526.3509 or 701.328.7100
Fax: 701.328.7130
Email: ndpfa@nd.gov
Website: www.nd.gov/pfa

Project Approval and IUP:
ND Department of Health
Phone: 701.328.5211
Fax: 701.328.5200
Email: dbergsag@nd.gov
Website: http://www.ndhealth.gov/MF/

Clean Water
State Revolving Fund Program
Loan Application

Political Subdivision: City of Minot

Data Universal Numbering System (DUNS Number): 07-649-8799

Contact Person for Political Subdivision: David Lakefield

Title: Finance Director **Email:** david.lakefield@minotnd.org

Phone: 701-857-4784 **Fax:** 701-857-4782

Physical Address: 515 2nd Ave SW
58702-5006 (zip+4)

Mailing Address: PO Box 5006
58702-5006 (zip+4)

All information provided in this program application is certified to be true and correct, as of the date of application, by the authorized public official whose name appears below and has been designated in the attached Resolution of Governing Body of Applicant.

Authorized Signature **Date**

David Lakefield Finance Director
Printed Name and Title

A. GENERAL

1. Political Subdivision's Auditor/Officer: _____
(if different from above)

   Email: _____

   Phone: _____ Fax: _____

   Address: _____

   _____

2. Political Subdivision's Bond Counsel: Dorsey & Whitney

3. Political Subdivision's Engineering Firm: _____

   Project Engineer: Apex Engineering Group Phone: 701-373-7980

   Email: _____

B. PROJECT INFORMATION

1. Description of project to be financed with the loan proceeds:

Project will consist of upsizing piping from the City of Minot aeration ponds to the lagoon cells so that adequate treatment of wastewater can take place. Project will include about 2 miles of piping, multiple manholes and control structures.

2.

Source	Amount of Funding (Please round to the nearest thousand)
SRF Loan Request	$ 6,678,000
CDBG	
LOCAL	
OTHER	$ 0
Total Project Costs	$ 6,678,000

3. Number of years to repay loan (maximum term 30 years): 20.
If a loan term greater than 20 years is desired, a tabulation of the useful life and cost of project components must be attached. The components should be assigned a useful life of 20 years or less, OR 30 years or more.

4. Construction will begin: Spring 2018. Construction will be completed: Fall 2018.

Estimated Request for SRF Funds	Amount of Payment Requests
Year 1	$ 6,678,000
Year 2	
Year 3	
Year 4	
Year 5	
Total Payment Requests (Must equal SRF Loan Request Amount)	$ 6,678,000

5. If the purpose of the requested financing is to refinance an outstanding obligation, please provide the following information and attach a copy of the debt service schedule for the obligation to be refinanced:

   a. Original dollar amount of the debt to be refinanced: _____

   b. Date of original bond issue: _____

6. Will other federal funding be used for this project? Yes ☐ No ☑

   If yes, provide contact information for other federal funding source.

   Name: _____ Phone: _____

   Email: _____

C. FUNDING INFORMATION

1. Please describe the source of funds for the repayment of principal and interest on the proposed financing (i.e., general obligation tax levy, special assessments, user fees):

   Debt will be serviced by user fees

2. If the proposed financing will be evidenced by **revenue bonds**, please attach your own worksheet or complete the following worksheet concerning existing rates, necessary rate increases, and estimated/projected revenues with respect to the utility system or fund related to the proposed project. Rates and fees must provide annual net revenues equal to 120 percent of the average annual principal and interest requirements for repayment of the loan. Further, a reserve fund must be established in the amount which qualifies as a reasonably required reserve fund under federal tax laws and regulations. The reserve fund must be fully funded no later than five years after the loan has been fully funded or as otherwise agreed.

Rate history and projections:

Please attach rate schedule or meeting minutes evidencing current rates.

Check one: *Monthly* ☐ or *Annual* ☐

	Prior Year 2	Prior Year 1	Current Year	Projected Year 1	Projected Year 2
Service connections:					
Residential					
Commercial					
Base rate:					
Residential					
Commercial					
Revenue per connection:					
Residential					
Commercial					

3. Estimated increase or decrease in total **annual** operation and maintenance costs (including depreciation and repair and replacement reserves) as the result of this project:

Source	Increase/(Decrease)
Operation	
Maintenance	
Repairs	
Depreciation	
Replacement Reserves	
Total O&M Increase/(Decrease)	$ 0

4. Five largest users as of September, 20 17:

Name	Usage (percentage of total)	Revenue (most recent fiscal year)
See Attached		

D. BONDED INDEBTEDNESS

1. Present Indebtedness: If necessary, attach additional pages.

Year Issued	Purpose	Type of Bond	Initial Amount	Outstanding Balance	Avg.Annual P&I Payment Amount	Final Maturity Date
	See Attached	Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		TOTALS:	$ 0	$ 0		

Please list any available sinking funds already deposited and pledged to the payment of principal and interest on the outstanding obligations listed above.

Sinking Funds:

Issue Identified by Date and Purpose	Sinking Fund Amount

2. Anticipated Indebtedness: Please list any known future indebtedness of any type, including lease financing, which the political subdivision intends to issue or incur in the next 24 months. Include in the description the type of debt, estimated amount and the final maturity.

Special Assessment Bonds	1,235,000	2033
Sales Tax Bonds	16,187,500	2038

3. Defaults: If the political subdivision has ever defaulted in the payment of principal or interest on any of its outstanding indebtedness, please give a description of the default and any corrective measures taken by the political subdivision. N/A

E. ECONOMIC AND SOCIAL INFORMATION

1. Population of political subdivision:

   Current Estimated _____ 2010 _____ 2000 _____ 1990 _____

2. School enrollment projected for the next year, the current school year, and the past three school years, if available. Historical enrollment can be found at https://www.nd.gov/dpi/data/SchoolFinanceFacts/

   Please indicate whether the school serves K-12, K-6, Grades 7-12, etc.

   K-12

Projected/ Next Year	Current Year	Prior Year 1	Prior Year 2	Prior Year 3

3. List the three largest employers within the boundaries of the political subdivision, if such information is available:

EMPLOYER	TYPE OF BUSINESS	NUMBER OF EMPLOYEES
Minot AFB	Government	12,129
Trinity Health	Hospital	2,067
Minot Public Schools	Education	1,076

4. Please describe any significant changes concerning major employers within the boundaries of the political subdivision during the past 24 months and any reported future changes concerning existing or new major employers:

F. ADDITIONAL INFORMATION

1. In the preceding fiscal year, did the political subdivision receive the following?

   a. 80 percent or more of its annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); Yes ☐ No ☑
   AND

   b. $25,000,000 or more in annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards)? Yes ☑ No ☐

G. ATTACHMENTS

1. Do you have a Capital Improvement Plan or a Wastewater System Plan?

   Yes ☑ No ☐ If yes, please include a copy(s) with the completed application

2. The following information **must be submitted** with this loan application (Requested information which appears in the financial statements may be included by reference):

   a. The three most recent annual audited financial statements; **if you already file audits with the PFA, only provide audits not previously filed**

   b. The most recent year-end and month-end combined balance sheets for all fund types and account groups

   c. The most recent year-end and month-end combined statements of revenues and expenses for all enterprise funds

   d. The current year's operating budget for the fund in which the project will be held as an asset and the proposed operating budget for the first year of the loan repayment term (and any other years for which a proposed budget has been prepared)

   e. The feasibility/engineering study for the proposed project

3. If the proposed financing will be evidenced by **improvement bonds (special assessments)**, please attach copies of the following:

   a. Resolution or ordinance creating the improvement district

   b. Certificate confirming the assessment list

   c. City auditor's most recent certification of special assessments to the county auditor (if applicable)

4. If the proposed financing will be evidenced by **revenue bonds (user fees)**, please attach evidence of rates. This may be in the form of a rate schedule or meeting minutes.

BUDGET SHEET

(Please round to the nearest thousand)

COST CLASSIFICATION	SRF	CDBG	LOCAL	OTHER	TOTAL
1. Administrative expenses					$ 0
2. Land, structures, rights-of-way					$ 0
3. Engineering basic fees					$ 0
4. Other engineering fees					$ 0
5. Project inspection fees					$ 0
6. Land development					$ 0
7. Relocation expenses					$ 0
8. Construction and project improvement					$ 0
9. Equipment					$ 0
10. Capitalized interest					$ 0
11. Other					$ 0
12. Miscellaneous					$ 0
13. **SUBTOTAL**	$ 0	$ 0	$ 0	$ 0	$ 0
14. Contingencies					$ 0
15. **TOTAL**	$ 0	$ 0	$ 0	$ 0	$ 0

16. SRF Funds ..... $ 0
17. CDBG Funds ..... $ 0
18. LOCAL Funds ..... $ 0
19. OTHER Funds ..... $ 0
20. TOTAL All Funds ..... $ 0

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

Instructions

Under Executive Order 12549, an individual or organization debarred or excluded from participation in federal assistance or benefit programs may not receive any assistance award under a federal program, or a subagreement thereunder, for $25,000 or more.

Accordingly, each prospective recipient of a North Dakota State Revolving Fund loan and any contract or subagreement participant thereunder, must complete the attached certification or provide an explanation why they cannot. For further details, see 40 CFR Section 32.510, Participants' Responsibilities.

WHERE TO SUBMIT:

The prospective loan recipient must return the signed certification or explanation with its application to the state as required in the application instructions.

A prospective prime contractor must submit a completed certification or explanation to the individual or organization awarding the contract.

Each prospective subcontractor must submit a completed certification or explanation to the prime contractor for the project.

HOW TO OBTAIN FORMS:

The state includes the certification form and instructions in each application kit. Applicants may reproduce these materials as needed and provide them to their prospective prime contractor who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies/assistance may be requested from:

North Dakota Department of Health
Division of Municipal Facilities
918 East Divide Avenue, Third Floor
Bismarck, ND 58501-1947

Telephone 701.328.5211
Fax 701.328.5200

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The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not, within a three-year period preceding this application/proposal, had one or more public transactions (federal, state or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U.S.C. Section 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____
Name and Title of Authorized Representative

_____ _____
Signature of Authorized Representative Date

I am unable to certify to the above statements.
Attached is my explanation.

PREAWARD COMPLIANCE REVIEW REPORT FOR CONSTRUCTION LOANS

Instructions - General

Recipients must comply with the following statutes by virtue of receiving the loan.

Title VI of the Civil Rights Act of 1964 provides that no person in the United States shall on the grounds of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. The Act goes on to explain that the title shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where a primary objective of the federal financial assistance is to provide employment).

Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall, on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. These same requirements apply to any program or activity receiving financial assistance under the Federal Safe Drinking Water Act as amended.

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The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission.

Title IX of the Education Amendments of 1972 provides that no person should on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal education institution.

The primary purpose of the construction loan program under the Federal Water Pollution Control and the Safe Drinking Water Act, as amended, is development of water pollution control and drinking water facilities.

Accordingly, the information on this form is required to enable the State of North Dakota and the U. S. Environmental Protection Agency to determine whether prospective treatment works construction recipients are developing treatment system projects on a nondiscriminatory basis as required by the above-referenced statutes.

Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable."

ITEMS:

I. Self-explanatory.

II.A. Civil rights lawsuits mean any lawsuit or complaint alleging discrimination on the basis of race, color, national origin, sex, age or handicap pending against the applicant or entity, which actually benefits from the loan. For example, if a city is the named applicant, but the loan will actually benefit the water or wastewater department, only civil rights lawsuits involving the water or wastewater department, whether named as a party or not, should be listed.

II.B. Civil rights compliance review means any review assessing the applicant's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or handicap. If any part of the review covered the entity which actually benefits from the loan, it should be listed. If it did not, the review should not be listed.

III.A. Give population of applicant's treatment system jurisdiction, broken out by categories as specified.

III.B. If there is a significant disparity between minority and nonminority populations to receive service, not otherwise satisfactorily explained, the Regional office may require a map which indicates the minority and nonminority population served and not served by this project.

III.C. "Jurisdiction" means the geographical area over which applicant has authority to provide treatment works service.

III.D. and E. Self-explanatory.

IV. Self-explanatory.

Preaward Compliance Review Report For Construction Loans

Note: Read instructions on preceding page before completing form.

I. A. Applicant *(Name and State)*	B. SRF Project No.

II. A. Are any civil rights lawsuits or complaints pending against applicant? ☐ Yes ☐ No
If "Yes" list those complaints and the disposition of each complaint.

II. B. Have any civil rights compliance reviews been conducted during the two years prior to this application for activities which would receive EPA assistance? ☐ Yes ☐ No
If "Yes" list those compliance reviews and status of each review.

III. A. Population Characteristics	Number of People
1. a. Population of entire service area	
b. Minority population of entire service area	
2. a. Population currently served	
b. Minority population currently served	
3. a. Population to be served by project	
b. Minority population to be served by project	
4. a. Population to remain without service	
b. Minority population to remain without service	

B. If entire community under the applicant's jurisdiction is not served under the existing facilities or will not be served under the proposed plan, give reasons why.

C. Give the schedule for future construction by which service will be provided to all inhabitants within applicant's jurisdiction. If there is no schedule, explain why.

D. Is a federal agency being asked or already providing financial assistance to any construction associated with this project? If "Yes", list the federal agency(s), describe the associated work and the dollar amount of assistance. ☐ Yes ☐ No

E. Will all new facilities or alterations to existing facilities financed by this loan be designed and constructed to be readily accessible and useable by handicapped persons? If "No", explain how a regulatory exception (40 CFR 7.70) applies. ☐ Yes ☐ No

IV. Certification

I certify that the information given above is true and correct to the best of my knowledge or belief.
(*A willfully false statement is punishable by law*: U.S. Code, Title 18, Section 1001)

A. Signature of Authorized Official	B. Title of Authorized Official	C. Date

For the U.S. Environmental Protection Agency

☐ Approved ☐ Disapproved	Regional Director of Civil Rights	Date

RESOLUTION OF GOVERNING BODY OF APPLICANT
(Suggested Format)

RESOLUTION NO._____

Resolution authorizing filing of application with the North Dakota Department of Health for a Loan under the Clean Water Act.

WHEREAS, under the terms of the Clean Water Act, the United States of America has authorized the making of loans to authorized applicants to aid in the construction of specific public projects:
Now, therefore, BE IT RESOLVED _____
(Governing Body of Applicant)

1. That _____ be and is hereby authorized to execute
(Designate Official)
and file an application on behalf of _____ with the North
(Legal Name of Applicant)
Dakota Department of Health for a loan to aid in the construction of:

(Brief Project Description)

2. That _____, _____, be and is
(Name of Authorized Representative) *(Title)*
hereby authorized and directed to furnish such information as the North Dakota Department of Health may reasonably request in connection with the application which is herein authorized to be filed, to sign all necessary documents, and, on behalf of city, to accept loan offer and receive payment of loan funds.

CERTIFICATE OF RECORDING OFFICER

The undersigned duly qualified and acting _____ of the
(Title of Officer)
_____ does hereby certify:
(Legal Name of Applicant)
That the attached resolution is a true and correct copy of the resolution, authorizing the filing of application with the North Dakota Department of Health, as regularly adopted at a legally convened meeting of the _____ duly held on the _____ day of
(Name of Governing Body of Applicant)
_____, 20_____; and further that such resolution has been fully recorded in the journal of proceedings and records in my office.

In WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 20___.

(SEAL)
If applicant has an official seal, impress here.

_____
(Signature of Recording Officer)

_____
(Title of Recording Officer)

NORTH DAKOTA CLEAN WATER STATE REVOLVING FUND PROGRAM (CWSRF)

Loan Application Package

NORTH DAKOTA DEPARTMENT *of* HEALTH
Division of Municipal Facilities

ND North Dakota Public Finance Authority

CONTENTS AND INSTRUCTIONS

CONTENTS OF APPLICATION PACKAGE

1. SRF Program Application
2. Budget Sheet
3. Debarment and Suspension Certification
4. Preaward Compliance Review Report
5. Resolution of Governing Body

APPLICATION SUBMISSION

Complete items 1-5 and submit with original signatures to:

North Dakota Department of Health (NDDoH)
Division of Municipal Facilities
918 East Divide Avenue, Third Floor
Bismarck, ND 58501-1947

APPLICATION PROCESS

1. Project must be on the Department of Health's Intended Use Plan (IUP)
2. Application is reviewed by ND Public Finance Authority (PFA)
3. Application is reviewed by PFA's Advisory Committee
4. Application is reviewed by the ND Industrial Commission
5. Political subdivision's bond counsel prepares bond documents
6. Bond documents are filed with the PFA
7. Political subdivision may submit loan draw requests to the NDDoH

IMPORTANT REMINDERS

- The political subdivision is responsible for selecting and retaining bond counsel.
- CWSRF loans are federal funds and subject to specific auditing procedures. Please alert your auditor.
- Revenue bonds require 120 percent coverage and a reserve fund.
- Audit reports or financial statements must be filed annually with the PFA.

This fillable form has text in GREEN that can be changed by the user.

QUESTIONS REGARDING:

Completing pages 1-7 of the application:
ND Public Finance Authority
Phone: 1.800.526.3509 or 701.328.7100
Fax: 701.328.7130
Email: ndpfa@nd.gov
Website: www.nd.gov/pfa

Project Approval and IUP:
ND Department of Health
Phone: 701.328.5211
Fax: 701.328.5200
Email: dbergsag@nd.gov
Website: http://www.ndhealth.gov/MF/

Clean Water
State Revolving Fund Program
Loan Application

Political Subdivision: City of Minot

Data Universal Numbering System (DUNS Number): 07-649-8799

Contact Person for Political Subdivision: Chuck Barney

Title: Mayor **Email:** mayor@minotnd.org

Phone: 701-857-4750 **Fax:** 701-857-4782

Physical Address: 515 2nd Ave SW
58702-5006 (zip+4)

Mailing Address: PO Box 5006
58702-5006 (zip+4)

All information provided in this program application is certified to be true and correct, as of the date of application, by the authorized public official whose name appears below and has been designated in the attached Resolution of Governing Body of Applicant.

Authorized Signature **Date**

Chuck Barney, Mayor
Printed Name and Title

A. GENERAL

1. Political Subdivision's Auditor/Officer: David Lakefield
(if different from above)

   Email: david.lakefield@minotnd.org

   Phone: 701-857-4774 Fax: 701-857-4782

   Address: 515 2nd ave. sw PO Box 5006
   Minot, ND 58702-5006

2. Political Subdivision's Bond Counsel: Dorsey & Whitney

3. Political Subdivision's Engineering Firm: Houston Engineering

   Project Engineer: Jerry Bents Phone: 701-237-5065

   Email: jbents@houstoneng.com

B. PROJECT INFORMATION

1. Description of project to be financed with the loan proceeds:

Project will replace storm sewer. sanitary sewer lines, waterlines and streets with new utilities for the relocation and construction of all food protections structures. In addition a large storm water pump station will be constructed to handle the rainfall events.

2.

Source	Amount of Funding (Please round to the nearest thousand)
SRF Loan Request	$ 12,282,000
SWC/CDBG	
LOCAL	$ 6,498,000
OTHER - DWSRF	$ 1,734,000
STATE WATER COMMISSION	$ 38,095,000
Total Project Costs	$ 58,609,000

3. Number of years to repay loan (maximum term 30 years): 20.
If a loan term greater than 20 years is desired, a tabulation of the useful life and cost of project components must be attached. The components should be assigned a useful life of 20 years or less, OR 30 years or more.

4. Construction will begin: Spring 2018. Construction will be completed: Summer 2020.

Estimated Request for SRF Funds	Amount of Payment Requests
Year 1	$ 8,000,000
Year 2	$ 3,000,000
Year 3	$ 1,282,000
Year 4	
Year 5	
Total Payment Requests (Must equal SRF Loan Request Amount)	$ 12,282,000

5. If the purpose of the requested financing is to refinance an outstanding obligation, please provide the following information and attach a copy of the debt service schedule for the obligation to be refinanced:

   a. Original dollar amount of the debt to be refinanced: _____

   b. Date of original bond issue: _____

6. Will other federal funding be used for this project? Yes ☐ No ☑

If yes, provide contact information for other federal funding source.

Name: NA Phone: NA

Email: NA

C. FUNDING INFORMATION

1. Please describe the source of funds for the repayment of principal and interest on the proposed financing (i.e., general obligation tax levy, special assessments, user fees):

   Debt will be serviced by user fees and/or sales tax revenues.

2. If the proposed financing will be evidenced by **revenue bonds**, please attach your own worksheet or complete the following worksheet concerning existing rates, necessary rate increases, and estimated/projected revenues with respect to the utility system or fund related to the proposed project. Rates and fees must provide annual net revenues equal to 120 percent of the average annual principal and interest requirements for repayment of the loan. Further, a reserve fund must be established in the amount which qualifies as a reasonably required reserve fund under federal tax laws and regulations. The reserve fund must be fully funded no later than five years after the loan has been fully funded or as otherwise agreed.

Rate history and projections:

Please attach rate schedule or meeting minutes evidencing current rates.

See appendix "A" for water/sewer and storm sewer rates

Check one: *Monthly* ☑ or *Annual* ☐

	Prior Year 2	Prior Year 1	Current Year	Projected Year 1	Projected Year 2
Service connections: Residential	11,133	11,168	11,206	11,240	11,275
Commercial	875	882	890	896	903
Base rate: Residential	$ 6.04	$ 6.04	$ 6.04	$ 6.52	$ 7.04
Commercial	$ 5.99	$ 5.99	$ 5.99	$ 6.47	$ 6.99
Revenue per connection: Residential	$ 28.85	$ 28.85	$ 29.40	$ 31.25	$ 33.20
Commercial	$ 135.14	$ 135.14	$ 135.14	$ 145.97	$ 157.74

3. Estimated increase or decrease in total **annual** operation and maintenance costs (including depreciation and repair and replacement reserves) as the result of this project:

Source	Increase/(Decrease)
Operation	
Maintenance	
Repairs	
Depreciation	
Replacement Reserves	
Total O&M Increase/(Decrease)	$ 0

4. Five largest users as of September, 2017:

Name	Usage (percentage of total)	Revenue (most recent fiscal year)
Single Family	40	$ 1,993,998
Commercial	25	$ 1,075,275
Multi family(5+)	17	$ 677,937
Trailer Park	8	$ 335,048
Govt.	3	$ 159,724

D. BONDED INDEBTEDNESS

1. Present Indebtedness: If necessary, attach additional pages.

Year Issued	Purpose	Type of Bond	Initial Amount	Outstanding Balance	Avg.Annual P&I Payment Amount	Final Maturity Date
	See Attached	Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		TOTALS:	$ 0	$ 0		

Please list any available sinking funds already deposited and pledged to the payment of principal and interest on the outstanding obligations listed above.

Sinking Funds:

Issue Identified by Date and Purpose	Sinking Fund Amount

2. Anticipated Indebtedness: Please list any known future indebtedness of any type, including lease financing, which the political subdivision intends to issue or incur in the next 24 months. Include in the description the type of debt, estimated amount and the final maturity.

Special Assessment Bonds	1,235,000	2033
Sales Tax Bonds	16,187,500	2038

3. Defaults: If the political subdivision has ever defaulted in the payment of principal or interest on any of its outstanding indebtedness, please give a description of the default and any corrective measures taken by the political subdivision. N/A

E. ECONOMIC AND SOCIAL INFORMATION

1. Population of political subdivision:

   Current Estimated 48,743 2010 40,967 2000 36,567 1990 34,650

2. School enrollment projected for the next year, the current school year, and the past three school years, if available. Historical enrollment can be found at https://www.nd.gov/dpi/data/SchoolFinanceFacts/

   Please indicate whether the school serves K-12, K-6, Grades 7-12, etc.

   K-12

Projected/ Next Year	Current Year	Prior Year 1	Prior Year 2	Prior Year 3
7,509	7,509	7,443	7,429	7,591

3. List the three largest employers within the boundaries of the political subdivision, if such information is available:

EMPLOYER	TYPE OF BUSINESS	NUMBER OF EMPLOYEES
Minot AFB	Government	12,129
Trinity Health	Hospital	2,067
Minot Public Schools	Education	1,076

4. Please describe any significant changes concerning major employers within the boundaries of the political subdivision during the past 24 months and any reported future changes concerning existing or new major employers:

   none

F. ADDITIONAL INFORMATION

1. In the preceding fiscal year, did the political subdivision receive the following?

   a. 80 percent or more of its annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); Yes ☐ No ☑
   AND

   b. $25,000,000 or more in annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards)? Yes ☑ No ☐

G. ATTACHMENTS

1. Do you have a Capital Improvement Plan or a Wastewater System Plan?

   Yes ☑ No ☐ If yes, please include a copy(s) with the completed application

2. The following information **must be submitted** with this loan application (Requested information which appears in the financial statements may be included by reference):

   a. The three most recent annual audited financial statements; **if you already file audits with the PFA, only provide audits not previously filed**
   See attachments C,E and F: City of Minot 2014,2015, and 2016 CAFR

   b. The most recent year-end and month-end combined balance sheets for all fund types and account groups See attachments C and D: City of Minot 2016 CAFR and city of Minot Sept. 2017 quarterly financial report

   c. The most recent year-end and month-end combined statements of revenues and expenses for all enterprise funds See attachments C and D City of Minot 2016 CAFR and City of Minot quarterly financial report

   d. The current year's operating budget for the fund in which the project will be held as an asset and the proposed operating budget for the first year of the loan repayment term (and any other years for which a proposed budget has been prepared)
   See attachment A: City of Minot 2018 final budget

   e. The feasibility/engineering study for the proposed project
   A copy of the waste water facility plan is submitted electronically presviously on another application

3. If the proposed financing will be evidenced by **improvement bonds (special assessments)**, please attach copies of the following:

   a. Resolution or ordinance creating the improvement district

   b. Certificate confirming the assessment list

   c. City auditor's most recent certification of special assessments to the county auditor (if applicable)

4. If the proposed financing will be evidenced by **revenue bonds (user fees)**, please attach evidence of rates. This may be in the form of a rate schedule or meeting minutes.
   See attachment A: City of Minot 2018 Final Budget

BUDGET SHEET

(Please round to the nearest thousand)

COST CLASSIFICATION	SRF	SWC/CDBG	LOCAL	OTHER - DWSRF	TOTAL
1. Administrative expenses					$ 0
2. Land, structures, rights-of-way					$ 0
3. Engineering basic fees	$ 1,354,000	$ 4,204,000	$ 717,000	$ 193,000	$ 6,468,000
4. Other engineering fees					$ 0
5. Project inspection fees					$ 0
6. Land development					$ 0
7. Relocation expenses					$ 0
8. Construction and project improvement	$ 10,928,000	$ 33,891,000	$ 5,781,000	$ 1,541,000	$ 52,141,000
9. Equipment					$ 0
10. Capitalized interest					$ 0
11. Other					$ 0
12. Miscellaneous					$ 0
13. **SUBTOTAL**	$ 12,282,000	$ 38,095,000	$ 6,498,000	$ 1,734,000	$ 58,609,000
14. Contingencies					$ 0
15. **TOTAL**	$ 12,282,000	$ 38,095,000	$ 6,498,000	$ 1,734,000	$ 58,609,000

16.	SRF Funds	$ 12,282,000
17.	SWC/CDBG Funds	$ 38,095,000
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19.	OTHER - DW Funds	$ 1,734,000
20.	TOTAL All Funds	$ 58,609,000

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Bismarck, ND 58501-1947

Telephone 701.328.5211
Fax 701.328.5200

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The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not, within a three-year period preceding this application/proposal, had one or more public transactions (federal, state or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U.S.C. Section 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

Chuck Barney

Name and Title of Authorized Representative

01/22/2018

Signature of Authorized Representative | Date

I am unable to certify to the above statements.
Attached is my explanation.

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Instructions - General

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Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall, on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. These same requirements apply to any program or activity receiving financial assistance under the Federal Safe Drinking Water Act as amended.

Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified handicapped individual shall solely, by reason of their handicap, be excluded from participation in, be denied the benefit of, or be subject to discrimination under any program or activity receiving federal financial assistance. Employment discrimination on the basis of handicap is prohibited in all such programs or activities.

The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission.

Title IX of the Education Amendments of 1972 provides that no person should on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal education institution.

The primary purpose of the construction loan program under the Federal Water Pollution Control and the Safe Drinking Water Act, as amended, is development of water pollution control and drinking water facilities.

Accordingly, the information on this form is required to enable the State of North Dakota and the U. S. Environmental Protection Agency to determine whether prospective treatment works construction recipients are developing treatment system projects on a nondiscriminatory basis as required by the above-referenced statutes.

Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable."

ITEMS:

I. Self-explanatory.

II.A. Civil rights lawsuits mean any lawsuit or complaint alleging discrimination on the basis of race, color, national origin, sex, age or handicap pending against the applicant or entity, which actually benefits from the loan. For example, if a city is the named applicant, but the loan will actually benefit the water or wastewater department, only civil rights lawsuits involving the water or wastewater department, whether named as a party or not, should be listed.

II.B. Civil rights compliance review means any review assessing the applicant's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or handicap. If any part of the review covered the entity which actually benefits from the loan, it should be listed. If it did not, the review should not be listed.

III.A. Give population of applicant's treatment system jurisdiction, broken out by categories as specified.

III.B. If there is a significant disparity between minority and nonminority populations to receive service, not otherwise satisfactorily explained, the Regional office may require a map which indicates the minority and nonminority population served and not served by this project.

III.C. "Jurisdiction" means the geographical area over which applicant has authority to provide treatment works service.

III.D. and E. Self-explanatory.

IV. Self-explanatory.

Preaward Compliance Review Report For Construction Loans

Note: Read instructions on preceding page before completing form.

I. A. Applicant *(Name and State)*	B. SRF Project No.
City of Minot	

II. A. Are any civil rights lawsuits or complaints pending against applicant? If "Yes" list those complaints and the disposition of each complaint. ☐ Yes ☑ No

II. B. Have any civil rights compliance reviews been conducted during the two years prior to this application for activities which would receive EPA assistance? If "Yes" list those compliance reviews and status of each review. ☐ Yes ☑ No

III. A.	Population Characteristics	Number of People
1.	a. Population of entire service area	48,743
	b. Minority population of entire service area	6,727
2.	a. Population currently served	48,743
	b. Minority population currently served	6,727
3.	a. Population to be served by project	48,743
	b. Minority population to be served by project	6,727
4.	a. Population to remain without service	0
	b. Minority population to remain without service	0

B. If entire community under the applicant's jurisdiction is not served under the existing facilities or will not be served under the proposed plan, give reasons why.

C. Give the schedule for future construction by which service will be provided to all inhabitants within applicant's jurisdiction. If there is no schedule, explain why.

NA

D. Is a federal agency being asked or already providing financial assistance to any construction associated with this project? If "Yes", list the federal agency(s), describe the associated work and the dollar amount of assistance. ☐ Yes ☑ No

E. Will all new facilities or alterations to existing facilities financed by this loan be designed and constructed to be readily accessible and useable by handicapped persons? If "No", explain how a regulatory exception (40 CFR 7.70) applies. ☑ Yes ☐ No

IV. Certification

I certify that the information given above is true and correct to the best of my knowledge or belief. (*A willfully false statement is punishable by law*: U.S. Code, Title 18, Section 1001)

A. Signature of Authorized Official	B. Title of Authorized Official	C. Date
	Mayor	

For the U.S. Environmental Protection Agency

	Regional Director of Civil Rights	Date
☐ Approved ☐ Disapproved		

RESOLUTION OF GOVERNING BODY OF APPLICANT
(Suggested Format)

RESOLUTION NO._____

Resolution authorizing filing of application with the North Dakota Department of Health for a Loan under the Clean Water Act.

WHEREAS, under the terms of the Clean Water Act, the United States of America has authorized the making of loans to authorized applicants to aid in the construction of specific public projects:
Now, therefore, BE IT RESOLVED _____
(Governing Body of Applicant)

1. That _____ be and is hereby authorized to execute
(Designate Official)
and file an application on behalf of _____ with the North
(Legal Name of Applicant)
Dakota Department of Health for a loan to aid in the construction of:

(Brief Project Description)

2. That _____, _____, be and is
(Name of Authorized Representative) *(Title)*
hereby authorized and directed to furnish such information as the North Dakota Department of Health may reasonably request in connection with the application which is herein authorized to be filed, to sign all necessary documents, and, on behalf of city, to accept loan offer and receive payment of loan funds.

CERTIFICATE OF RECORDING OFFICER

The undersigned duly qualified and acting _____ of the
(Title of Officer)
_____ does hereby certify:
(Legal Name of Applicant)
That the attached resolution is a true and correct copy of the resolution, authorizing the filing of application with the North Dakota Department of Health, as regularly adopted at a legally convened meeting of the _____ duly held on the _____ day of
(Name of Governing Body of Applicant)
_____, 20_____; and further that such resolution has been fully recorded in the journal of proceedings and records in my office.

In WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 20___.

(SEAL)
If applicant has an official seal, impress here.

_____
(Signature of Recording Officer)

_____
(Title of Recording Officer)

NORTH DAKOTA DRINKING WATER STATE REVOLVING FUND PROGRAM (DWSRF)

Loan Application Package

NORTH DAKOTA
DEPARTMENT *of* HEALTH
Division of Municipal Facilities

ND North Dakota Public Finance Authority

CONTENTS AND INSTRUCTIONS

CONTENTS OF APPLICATION PACKAGE

1. SRF Program Application
2. Budget Sheet
3. Request for Supplemental Information
4. Debarment and Suspension Certification
5. Preaward Compliance Review Report
6. Resolution of Governing Body

APPLICATION SUBMISSION

Complete items 1-6 and submit with original signatures to:

North Dakota Department of Health (NDDoH)
Division of Municipal Facilities
918 East Divide Avenue, Third Floor
Bismarck, ND 58501-1947

APPLICATION PROCESS

1. Project must be on the Department of Health's Intended Use Plan (IUP)
2. Application is reviewed by ND Public Finance Authority (PFA)
3. Application is reviewed by PFA's Advisory Committee
4. Application is reviewed by the ND Industrial Commission
5. Political subdivision's bond counsel prepares bond documents
6. Bond documents are filed with the PFA
7. Political subdivision may submit loan draw requests to the NDDoH

IMPORTANT REMINDERS

- The political subdivision is responsible for selecting and retaining bond counsel.
- DWSRF loans are federal funds and subject to specific auditing procedures. Please alert your auditor.
- Revenue bonds require 120 percent coverage and a reserve fund.
- Audit reports or financial statements must be filed annually with the PFA.

This fillable form has text in GREEN that can be changed by the user.

QUESTIONS REGARDING:

Completing pages 1 – 7 of the application:
ND Public Finance Authority
Phone: 1.800.526.3509 or 701.328.7100
Fax: 701.328.7130
Email: ndpfa@nd.gov
Website: www.nd.gov/pfa

Project Approval and IUP:
ND Department of Health
Phone: 701.328.5211
Fax: 701.328.5200
Email: dbruschw@nd.gov
Website: http://www.ndhealth.gov/MF/

Drinking Water
State Revolving Fund Program
Loan Application

Political Subdivision: City of Minot

Data Universal Numbering System (DUNS Number): 07-649-8799

Contact Person for Political Subdivision: Chuck Barney

Title: Mayor **Email:** mayor@minotnd.org

Phone: 701-857-4750 **Fax:** 701-857-4782

Physical Address: 515 2nd Ave SW
58701 (zip+4)

Mailing Address: PO Box 5006
58702-5006 (zip+4)

All information provided in this program application is certified to be true and correct, as of the date of application, by the authorized public official whose name appears below and has been designated in the attached Resolution of Governing Body of Applicant.

Authorized Signature **Date**

Chuck Barney, Mayor
Printed Name and Title

A. GENERAL

1. Political Subdivision's Auditor/Officer: David Lakefield
(if different from above)

   Email: david.lakefield@minotnd.org

   Phone: 701-857-4774 Fax: 701-857-4782

   Address: 515 2nd Ave. SW PO Box 5006
   Minot, ND 58702-5006

2. Political Subdivision's Bond Counsel: Dorsey & Whitney

3. Political Subdivision's Engineering Firm: Houston Engineering, Inc.

   Project Engineer: Jerry Bents Phone: 701-237-5065

   Email: jbents@houstoneng.com

B. PROJECT INFORMATION

1. Description of project to be financed with the loan proceeds:

This funding will be utilized for new waterlines and portions of the street infrastructure on the flood protection project. Total project consists of floodwalls, a large storm water pump station, Sanitary sewer lines, waterlines, storm sewer lines and a sanitary lift and storm sewer lift.

2.

Source	Amount of Funding (Please round to the nearest thousand)
SRF Loan Request	$ 1,734,000
CDBG/SWC	$ 38,095,000
LOCAL	$ 6,498,000
OTHER-CWSRF	$ 12,282,000
Total Project Costs	$ 58,609,000

3. Number of years to repay loan (maximum term 30 years): _____.
If a loan term greater than 20 years is desired, a tabulation of the useful life and cost of project components must be attached. The components should be assigned a useful life of 20 years or less, OR 30 years or more.

4. Construction will begin: _____. Construction will be completed: _____.

Estimated Request for SRF Funds	Amount of Payment Requests
Year 1	$ 1,200,000
Year 2	$ 500,000
Year 3	$ 34,000
Year 4	
Year 5	
Total Payment Requests (Must equal SRF Loan Request Amount)	$ 1,734,000

5. If the purpose of the requested financing is to refinance an outstanding obligation, please provide the following information and attach a copy of the debt service schedule for the obligation to be refinanced:

   a. Original dollar amount of the debt to be refinanced: _____

   b. Date of original bond issue: _____

6. Will other federal funding be used for this project? Yes ☐ No ☑

   If yes, provide contact information for other federal funding source.

   Name: _____ Phone: _____

   Email: _____

C. FUNDING INFORMATION

1. Please describe the source of funds for the repayment of principal and interest on the proposed financing (i.e., general obligation tax levy, special assessments, user fees):

   Debt will be serviced by user fees and/or sales tax revenues.

2. If the proposed financing will be evidenced by **revenue bonds**, please attach your own worksheet or complete the following worksheet concerning existing rates, necessary rate increases, and estimated/projected revenues with respect to the utility system or fund related to the proposed project. Rates and fees must provide annual net revenues equal to 120 percent of the average annual principal and interest requirements for repayment of the loan. Further, a reserve fund must be established in the amount which qualifies as a reasonably required reserve fund under federal tax laws and regulations. The reserve fund must be fully funded no later than five years after the loan has been fully funded or as otherwise agreed.

Rate history and projections:

Please attach rate schedule or meeting minutes evidencing current rates. See Appendix "A"

Check one: *Monthly* ☐ or *Annual* ☐

	Prior Year 2	Prior Year 1	Current Year	Projected Year 1	Projected Year 2
Service connections:					
Residential					
Commercial					
Base rate:					
Residential					
Commercial					
Revenue per connection:					
Residential					
Commercial					

3. Estimated increase or decrease in total **annual** operation and maintenance costs (including depreciation and repair and replacement reserves) as the result of this project:

Source	Increase/(Decrease)
Operation	
Maintenance	
Repairs	
Depreciation	
Replacement Reserves	
Total O&M Increase/(Decrease)	$ 0

4. Five largest users as of November 30, 2017:

Name	Usage (percentage of total)	Revenue (most recent fiscal year)
Single family	43	$ 4,905,000
Rural Water	7	$ 850,000
Multi family 5+	12	$ 1,384,000
Commercial	19	$ 2,133,000
Minot Air Force Base	6	$ 730,000

D. BONDED INDEBTEDNESS

1. Present Indebtedness: If necessary, attach additional pages.

Year Issued	Purpose	Type of Bond	Initial Amount	Outstanding Balance	Avg.Annual P&I Payment Amount	Final Maturity Date
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		Sewer Revenue				
		TOTALS:	$ 0	$ 0		

Please list any available sinking funds already deposited and pledged to the payment of principal and interest on the outstanding obligations listed above.

Sinking Funds:

Issue Identified by Date and Purpose	Sinking Fund Amount

2. Anticipated Indebtedness: Please list any known future indebtedness of any type, including lease financing, which the political subdivision intends to issue or incur in the next 24 months. Include in the description the type of debt, estimated amount and the final maturity.

Type of Debt	Estimated Amount	Final Maturity
Special assessment bonds	$1,215,000	2033
Sales Tax Bonds	$16,187,500	2038

3. Defaults: If the political subdivision has ever defaulted in the payment of principal or interest on any of its outstanding indebtedness, please give a description of the default and any corrective measures taken by the political subdivision. _____

_____

E. ECONOMIC AND SOCIAL INFORMATION

1. Population of political subdivision:

   Current Estimated 48,743 2010 40,967 2000 36,567 1990 34,650

2. School enrollment projected for the next year, the current school year, and the past three school years, if available. Historical enrollment can be found at https://www.nd.gov/dpi/data/SchoolFinanceFacts/

   Please indicate whether the school serves K-12, K-6, Grades 7-12, etc.

   K-12

Projected/ Next Year	Current Year	Prior Year 1	Prior Year 2	Prior Year 3
7,509	7,509	7,443	7,429	7,591

3. List the three largest employers within the boundaries of the political subdivision, if such information is available:

EMPLOYER	TYPE OF BUSINESS	NUMBER OF EMPLOYEES
Minot AFB	Govt.	12,129
Trinity Health	Hospital	2,067
Minot Public Schools	Education	1,076

4. Please describe any significant changes concerning major employers within the boundaries of the political subdivision during the past 24 months and any reported future changes concerning existing or new major employers:

   NONE

F. ADDITIONAL INFORMATION

1. In the preceding fiscal year, did the political subdivision receive the following?

   a. 80 percent or more of its annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); Yes ☐ No ☑
   AND

   b. $25,000,000 or more in annual gross revenues from federal procurement contracts (and subcontracts) and federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards)? Yes ☑ No ☐

G. ATTACHMENTS

1. Do you have a Capital Improvement Plan or a Water System Plan?

   Yes ☑ No ☐ If yes, please include a copy(s) with the completed application
   CIP is Included in appendix "A" as part of city budget

2. The following information **must be submitted** with this loan application (Requested information which appears in the financial statements may be included by reference):

   a. The three most recent annual audited financial statements; **if you already file audits with the PFA, only provide audits not previously filed**
   See appendix C,E and F for Minot 2014,2015 and 2016 CAFR

   b. The most recent year-end and month-end combined balance sheets for all fund types and account groups See appendix C and D: Minot 2016 CAFR, Sept 2017 quarterly report

   c. The most recent year-end and month-end combined statements of revenues and expenses for all enterprise funds See appendix C and D

   d. The current year's operating budget for the fund in which the project will be held as an asset, and the proposed operating budget for the first year of the loan repayment term (and any other years for which a proposed budget has been prepared) See appendix A - City of Minot 2018 nudget

   e. The feasibility/engineering study for the proposed project The EIS was submitted to NDDoH by Houston Engineering

3. If the proposed financing will be evidenced by **improvement bonds (special assessments)**, please attach copies of the following: N/A

   a. Resolution or ordinance creating the improvement district

   b. Certificate confirming the assessment list

   a. City auditor's most recent certification of special assessments to the county auditor (if applicable)

4. If the proposed financing will be evidenced by **revenue bonds (user fees)**, please attach evidence of rates. This may be in the form of a rate schedule or meeting minutes.

BUDGET SHEET

(Please round to the nearest thousand)

COST CLASSIFICATION	SRF	CDBG/SWC	LOCAL	OTHER-CWSRF	TOTAL
1. Administrative expenses					$ 0
2. Land, structures, rights-of-way					$ 0
3. Engineering basic fees	$ 193,000	$ 4,204,000	$ 717,000	$ 1,354,000	$ 6,468,000
4. Other engineering fees					$ 0
5. Project inspection fees					$ 0
6. Land development					$ 0
7. Relocation expenses					$ 0
8. Construction and project improvement	$ 1,541,000	$ 33,891,000	$ 5,781,000	$ 10,928,000	$ 52,141,000
9. Equipment					$ 0
10. Capitalized interest					$ 0
11. Other					$ 0
12. Miscellaneous					$ 0
13. **SUBTOTAL**	$ 1,734,000	$ 38,095,000	$ 6,498,000	$ 12,282,000	$ 58,609,000
14. Contingencies					$ 0
15. **TOTAL**	$ 1,734,000	$ 38,095,000	$ 6,498,000	$ 12,282,000	$ 58,609,000

16. SRF Funds ..... $ 1,734,000
17. CDBG/SWC Funds ..... $ 38,095,000
18. LOCAL Funds ..... $ 6,498,000
19. OTHER-CWS Funds ..... $ 12,282,000
20. TOTAL All Funds ..... $ 58,609,000

ATTACHMENT

DRINKING WATER STATE REVOLVING FUND (DWSRF) PROGRAM
REQUEST FOR SUPPLEMENTAL INFORMATION
PERTAINING TO TECHNICAL, MANAGERIAL, AND FINANCIAL CAPABILITY

Political Subdivision: City of Minot Date: 1-9-18

Contact Person for Supplemental Information: Dan Jonasson

Telephone Number: 701-857-4140 Fax Number: 701-857-4130

This portion of the loan application is designed to gather additional pertinent information related to capacity from eligible public water systems (PWSs) seeking DWSRF assistance. Capacity refers to the overall technical, managerial, and financial capability of a PWS to consistently produce and deliver drinking water meeting all requirements of the federal Safe Drinking Water Act (SDWA). States are precluded from providing DWSRF assistance to any eligible PWS that lacks capacity to maintain SDWA compliance unless the PWS owner or operator agrees to undertake feasible and appropriate changes to ensure capacity compliance over the long term. In addition, states cannot provide DWSRF assistance to any eligible PWS that is in significant noncompliance under the SDWA unless such assistance will ensure compliance.

This information, the financial information from the loan application, and other available and relevant information (such as SDWA compliance data, sanitary survey reports, and operator certification status) will be evaluated by the DWSRF Program to assess your system's capacity at present and for the foreseeable future. The North Dakota Public Finance Authority (PFA), as financial agent for the DWSRF Program through formal agreement, will evaluate the financial information requested in the loan application and make recommendations to the DWSRF Program concerning financial capability. The final decision regarding overall capacity will be made by the DWSRF Program.

Your system may be required to provide additional information to complete this assessment as deemed necessary by the DWSRF Program and the PFA. **Please note that the lack of capacity at the time of loan application will not preclude DWSRF assistance if the project will ensure capacity, or your system agrees to implement additional changes that will ensure capacity.** On a case-by-case basis, special conditions may be included in the loan agreement to rectify compliance and/or capacity problems.

A written response must be recorded for each question and on each set of lines for this portion of the loan application to be considered complete. The lines are intended for short responses only (such as "None" or "See attached") and are not intended to provide sufficient space to fully record most responses. The use of attachments is encouraged and may be required. When referencing an attachment, please indicate on the appropriate line(s) the title or number of the attachment as well as where the requested information may be found within the attachment. **Please direct questions about supplemental information on technical, managerial, and financial capability to the DWSRF Program at 701.328.5211.**

Technical Capability

A schematic of your water system must be submitted showing all water sources, water treatment facilities (if any), pumping stations, water storage structures, and water distribution system. If you have a treatment plant, a complete flow diagram must be submitted that shows all treatment units, the clear well(s), any storage structures at the plant site, and the flow patterns during normal and alternate operations.

Source and finished water

Is your water supply, from a quantity standpoint, sufficient to meet present average and peak water demands? Yes ☑ No ☐ If no, attach detailed information describing: (1) the conditions under which present source water quantity shortages occur; (2) the maximum water (in gallons per capita per day) presently available to residential users within your system during both average and peak water demand periods; and, (3) explain how this project and other measures you are planning to take will rectify present water quantity shortages.

Is your water supply, from a quantity standpoint, adequate to meet projected future residential, commercial, and industrial water needs? Yes ☑ No ☐ If no, attach detailed information describing projected future water needs, and explain how this project and other measures you are planning to take will address such needs.

Please describe your present or planned involvement with the North Dakota Department of Health Wellhead Protection and/or Source Water Assessment Programs.

The City of Minot participates and is actively involved in the Wellhead Protection Program.

Infrastructure Note: Documentation may include, but is not limited to: well driller's report(s), engineer evaluation(s), master plan(s), capital improvement plan(s), and facilities plan(s).

Please describe the condition of your well(s) and/or source water intake(s), and raw water transmission piping.

The City's raw water is supplied by 14 operational wells in the Sundre and Minot aquifers. The overall condition of our raw water system is very good. This is a critical part of our operation, as such, regular maintenance is performed to keep wells operational and running efficiently.

Please describe the condition of your treatment, storage, finished water transmission, and distribution facilities.

The water treatment plant has some age to it but is generally in good condition with regular maintenance and upgrades as needed. The storage facilities are inspected regularly and repaired as necessary to keep in good working condition. Finished water transmission is in good condition and repaired as necessary. On the distribution end of the process the City has miles of older deteriorating cast iron, but we plan replacement projects annually to make sure problems areas are replaced and updated.

Please describe the current and future adequacy of your potable water facilities, including source, treatment, storage, raw and finished water transmission, distribution, and appurtenances.

Currently our water system adequately supplies the necessary water to the citizens of Minot and the surrounding area. Looking into the future we have projects planned to address issues or concerns with supplying adequate potable water to the growing community.

Please describe your infrastructure improvement/replacement needs and plan for addressing such needs.

We are currently working on an expansion to the water treatment facility to provide additional capacity. Additional plant remodeling will take place as the NAWS project is able to progress. We do annual water main replacement projects to make sure we are eliminating problem areas.

Technical Knowledge

What is the class of your water treatment facilities? 4

What is the class of your water distribution and storage system? 3

Does your system have at least one operator that is certified at a grade level at or above the class of your water treatment facility and water distribution and storage system? Yes ☑ No ☐

If yes, please provide documentation. If no, please provide a written commitment and timeframe as to when an appropriately certified operator will be obtained. Please note that your system may contract for system oversight by a certified operator from another PWS or specialty firm as long as the operator is appropriately certified at a grade level at or above the class of your water facilities.

See appendix G - List of operators and level of certification

Do you have a written water system operation and maintenance (O&M) manual? Yes ☑ No ☐

Please provide written assurances that you will update the manual as needed to reflect the DWSRF project. If your system does not have an O&M manual, please provide written assurances that a manual will be developed as part of the DWSRF project.

Included in Appendix G

Do you have a written emergency response plan for your water system? Yes ☑ No ☐
Please provide written assurances that you will update the plan as needed to reflect the DWSRF project. If your system does not presently have an emergency response plan, please provide written assurances that a plan will be developed as part of the DWSRF project.

We currently have an emergency response plan. It is updated regularly to ensure it is up to date with current conditions. It is included in appendix G

Do you understand your drinking water monitoring, reporting, and treatment responsibilities under the SDWA? Yes ☑ No ☐

What division in the North Dakota Department of Health do you contact if you have questions concerning your regulatory responsibilities under the SDWA?

Division of Municipal Facilities

Please list all violations of the SDWA, if any, that your system incurred during the last four calendar years up to the present date. For example, if you are completing this loan application in April of 2016, list all SDWA violations for the time period January 1, 2012 to March 31, 2016. If violations occurred during this time period, please provide a written plan detailing corrective steps that have been or will be taken to avoid such violations in the future. If no violations occurred during this time period, simply write "no violations." Your response will be verified through the North Dakota Drinking Water Program.

no violations

Managerial Capability

An organizational chart identifying all individuals involved in the management and operations of your water system must be submitted.

Ownership Accountability

Please identify the owner and manager of your water system and indicate who has the authority and responsibility for making technical, managerial, and financial decisions regarding your water system.

Owner - City of Minot
Dan Jonasson, Public Works Director - oversees al of Public Works, including Water treatment, distribution.

Mark Paddock (water plant superintendent) and Mark Vollmer (water distribution superintendent) have the authority and responsibility to make technical, managerial, and financial decisions

Staffing and Organization

Please identify the operator(s) of your water system and include specific job descriptions and responsibilities for each. If any operator has nondrinking water-related responsibilities, indicate the percentage of time devoted specifically to your drinking water system.

See Appendix G - List of operators and job descriptions

Do you require your water operators to earn continuing education credits by attending drinking water-related training programs, seminars, workshops, or schools established or officially recognized by the North Dakota Operator Training and Inspections Program? Yes ☑ No ☐

Please describe the status of operator certification for each employee involved with the operation and maintenance of your potable water facilities, and provide assurances that requirements to become and/or remain certified will be fulfilled. Your response will be verified through the North Dakota Operator Training and Inspections Program.

Currently we have two operators that are not certified. These operators are new and have not been employed long enough to sit for a certification exam. All operators are required to be properly licensed for their respective jobs and will not remain employed unless they can maintain certification

Policies

Please identify all individuals having the authority and responsibility to establish policies for your water system.

Public Works Director, Asst. Public Works Director and Water Treatment Supt.
All policies are approved by City Council

Does your water system have written policies covering such areas as changes to the system, standard materials, new hook-ups, mandatory hook-ups, water main extensions, cross-connections, and customer rights/responsibilities? Yes ☑ No ☐ If yes, please identify all areas for which written policies exist.

Most items are covered in our standard specification for construction of a public project within a City Right of Way. Changes to the system, new hookups, etc. are required to have the approval of the Public Works Director and/or City Council

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

Instructions

Under Executive Order 12549, an individual or organization debarred or excluded from participation in federal assistance or benefit programs may not receive any assistance award under a federal program, or a subagreement thereunder, for $25,000 or more.

Accordingly, each prospective recipient of a North Dakota State Revolving Fund loan and any contract or subagreement participant thereunder, must complete the attached certification or provide an explanation why they cannot. For further details, see 40 CFR Section 32.510, Participants' Responsibilities.

WHERE TO SUBMIT:

The prospective loan recipient must return the signed certification or explanation with its application to the state as required in the application instructions.

A prospective prime contractor must submit a completed certification or explanation to the individual or organization awarding the contract.

Each prospective subcontractor must submit a completed certification or explanation to the prime contractor for the project.

HOW TO OBTAIN FORMS:

The state includes the certification form and instructions in each application kit. Applicants may reproduce these materials as needed and provide them to their prospective prime contractor who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies/assistance may be requested from:

North Dakota Department of Health
Division of Municipal Facilities
918 East Divide Avenue, Third Floor
Bismarck, ND 58501-1947

Telephone 701.328.5211
Fax 701.328.5200

CERTIFICATION REGARDING
DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not, within a three-year period preceding this application/proposal, had one or more public transactions (federal, state or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 U.S.C. Section 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____
Name and Title of Authorized Representative

_____ _____
Signature of Authorized Representative Date

I am unable to certify to the above statements.
Attached is my explanation.

PREAWARD COMPLIANCE REVIEW REPORT FOR CONSTRUCTION LOANS

Instructions - General

Recipients must comply with the following statutes by virtue of receiving the loan.

Title VI of the Civil Rights Act of 1964 provides that no person in the United States shall on the grounds of race, color or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. The Act goes on to explain that the title shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where a primary objective of the federal financial assistance is to provide employment).

Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall, on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. These same requirements apply to any program or activity receiving financial assistance under the Federal Safe Drinking Water Act as amended.

Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified handicapped individual shall solely, by reason of their handicap, be excluded from participation in, be denied the benefit of, or be subject to discrimination under any program or activity receiving federal financial assistance. Employment discrimination on the basis of handicap is prohibited in all such programs or activities.

The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission.

Title IX of the Education Amendments of 1972 provides that no person should on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal education institution.

The primary purpose of the construction loan program under the Federal Water Pollution Control and the Safe Drinking Water Act, as amended, is development of water pollution control and drinking water facilities.

Accordingly, the information on this form is required to enable the State of North Dakota and the U. S. Environmental Protection Agency to determine whether prospective treatment works construction recipients are developing treatment system projects on a nondiscriminatory basis as required by the above-referenced statutes.

Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable."

ITEMS:

I. Self-explanatory.

II.A. Civil rights lawsuits mean any lawsuit or complaint alleging discrimination on the basis of race, color, national origin, sex, age or handicap pending against the applicant or entity, which actually benefits from the loan. For example, if a city is the named applicant, but the loan will actually benefit the water or wastewater department, only civil rights lawsuits involving the water or wastewater department, whether named as a party or not, should be listed.

II.B. Civil rights compliance review means any review assessing the applicant's compliance with laws prohibiting discrimination on the basis of race, color, national origin, sex, age, or handicap. If any part of the review covered the entity which actually benefits from the loan, it should be listed. If it did not, the review should not be listed.

III.A. Give population of applicant's treatment system jurisdiction, broken out by categories as specified.

III.B. If there is a significant disparity between minority and nonminority populations to receive service, not otherwise satisfactorily explained, the Regional office may require a map which indicates the minority and nonminority population served and not served by this project.

III.C. "Jurisdiction" means the geographical area over which applicant has authority to provide treatment works service.

III.D. and E. Self-explanatory.

IV. Self-explanatory.

Preaward Compliance Review Report For Construction Loans

Note: Read instructions on preceding page before completing form.

I. A. Applicant *(Name and State)*	B. SRF Project No.
City of Minot	

II. A. Are any civil rights lawsuits or complaints pending against applicant? ☐ Yes ☑ No
If "Yes", list those complaints and the disposition of each complaint.

II. B. Have any civil rights compliance reviews been conducted during the two years prior to this application for activities which would receive EPA assistance? ☐ Yes ☐ No
If "Yes", list those compliance reviews and status of each review.

III. A. Population Characteristics	Number of People
1. a. Population of entire service area	
b. Minority population of entire service area	
2. a. Population currently served	
b. Minority population currently served	
3. a. Population to be served by project	
b. Minority population to be served by project	
4. a. Population to remain without service	
b. Minority population to remain without service	

B. If entire community under the applicant's jurisdiction is not served under the existing facilities or will not be served under the proposed plan, give reasons why.

NA

C. Give the schedule for future construction by which service will be provided to all inhabitants within applicant's jurisdiction. If there is no schedule, explain why.

D. Is a federal agency being asked or already providing financial assistance to any construction associated with this project? If "Yes", list the federal agency(s), describe the associated work and the dollar amount of assistance. ☐ Yes ☐ No

E. Will all new facilities or alterations to existing facilities financed by this loan be designed and constructed to be readily accessible and useable by handicapped persons? ☐ Yes ☐ No
If "No", explain how a regulatory exception (40 CFR 7.70) applies.

IV. Certification

I certify that the information given above is true and correct to the best of my knowledge or belief.
(*A willfully false statement is punishable by law*: U.S. Code, Title 18, Section 1001)

A. Signature of Authorized Official	B. Title of Authorized Official	C. Date

For the U.S. Environmental Protection Agency

	Regional Director of Civil Rights	Date
☐ Approved ☐ Disapproved		

RESOLUTION OF GOVERNING BODY OF APPLICANT
(Suggested Format)

RESOLUTION NO._____

Resolution authorizing filing of application with the North Dakota Department of Health for a Loan under the Clean Water Act.

WHEREAS, under the terms of the Clean Water Act, the United States of America has authorized the making of loans to authorized applicants to aid in the construction of specific public projects:
Now, Therefore, BE IT RESOLVED _____
(Governing Body of Applicant)

1. That _____ be and is hereby authorized to execute
(Designate Official)
and file an application on behalf of _____ with the North
(Legal Name of Applicant)
Dakota Department of Health for a loan to aid in the construction of:

(Brief Project Description)

2. That _____, _____, be and is
(Name of Authorized Representative) *(Title)*
hereby authorized and directed to furnish such information as the North Dakota Department of Health may reasonably request in connection with the application which is herein authorized to be filed, to sign all necessary documents, and, on behalf of city, to accept loan offer and receive payment of loan funds.

CERTIFICATE OF RECORDING OFFICER

The undersigned duly qualified and acting _____ of the
(Title of Officer)
_____ does hereby certify:
(Legal Name of Applicant)
That the attached resolution is a true and correct copy of the resolution, authorizing the filing of application with the North Dakota Department of Health, as regularly adopted at a legally convened meeting of the _____ duly held on the _____ day of
(Name of Governing Body of Applicant)
_____, 20_____; and further that such resolution has been fully recorded in the journal of proceedings and records in my office.

In WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 20___.

(SEAL)
If applicant has an official seal, impress here.

_____
(Signature of Recording Officer)

_____
(Title of Recording Officer)

AUTHORIZATION FOR AUTOMATIC ACH TRANSACTIONS

BANK OF NORTH DAKOTA
TRUST
SFN 60623 (3-2014)

I hereby authorize Bank of North Dakota to initiate **debit/credit** entries to our account(s) as indicated below. I agree to have available funds in our account to effect this transfer. This authority will remain in effect until I notify the Bank of North Dakota in writing at least one week prior to the next settlement. I acknowledge that the origination of ACH transactions to our account must comply with the provision of U.S. law.

Customer Name	City of Minot				
Name of Customer Financial Institution	First Western Bank				
Financial Institution Address	900 S. Broadway	City	Minot	State	ZIP Code 58701
ABA Routing Number	091310440				
Account Number	939851	Type of Account ☑ Checking ☐ Savings			
Amount Variable		Effective Date (the day the transaction will post to your account) 2 business days prior to March 1 and September 1			
Purpose Principal interest and administrative fees for bond requirements					

Each person signing this Agreement represents and warrants that he or she is duly authorized and has legal capacity to execute and deliver this Agreement. Each party represents and warrants to the other that the execution and delivery of the Agreement and the performance of such party's obligation here under have been duly authorized and that the Agreement is a valid and legal agreement binding on such party and enforceable in accordance with its terms.

Signature	Date

OFFICE USE ONLY

Date Received	Completed By	Date Completed
Reviewed By		Date Reviewed

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Wicke, Assistant City Engineer

DATE: 4/23/2018

SUBJECT: **BEL AIR COMMONS ADDITION DEVELOPMENT (PLAT) AGREEMENT PROJECT (4352)**

I. RECOMMENDED ACTION

1. Recommend approval of the Development (Plat) Agreement by the Council.
2. Authorize the Mayor to sign the Development (Plat) Agreement.

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	(701) 857-4100
David Wicke, Assistant City Engineer	(701) 857-4100

III. DESCRIPTION

A. Background

This area was previously platted as, Bel Air Twinhomes Second Addition, Lot 1, a portion of Vacated 5th Avenue NW and remaining unplatted portion of the SW1/4SW1/4 Section 15, Township 155 North, Range 83 West, Ward County, North Dakota, located within the City of Minot corporate limits, for the purposes of the construction of a commercial lot and open space within Ward County.

The Developer wishes for the annexation of a 3.60 acre unplatted portion of the SW Quarter of the SW Quarter of Section 15, Township 155, Range 83 into the corporate limits. Also requested is approval of a two-lot subdivision, rezoning, and a corresponding amendment to the Comprehensive Development Plan. The subject property is located on the north side of 4th Avenue NW along the east side the west U.S. Hwy. 83 bypass. Two lots are proposed, one at the south end of the property along 4th Avenue NW that will be marketed for office development. The other lot, containing some 3.60 acres, will extend northward along the bypass serving as an open space connection to the Petersen Greenway open space dedicated recently to the Minot Park District by the developers of Northridge Villas. This lot is the land that needs to be annexed (see Annexation exhibit). This item was approved by the Planning Commission and City Council in February/March of 2018. The Development agreement must be approved and signed before the plat will be recorded.

B. Proposed Project
Staff and the Developer, Merit Development, LLC, wish to execute and agreement relating to the obligations for development and conditions outlined by City Staff and approved by the Planning Commission and City Council.

The language is consistent with other agreements the City has executed in the past with other Developers. A security valued at 120% of all public street and utility infrastructure costs as determined by the design engineer's opinion of probable construction costs or by a contractor's bid shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
NA

B. Service/Delivery Impact:
NA

C. Fiscal Impact:
NA

V. ALTERNATIVES
NA

VI. TIME CONSTRAINTS
Council's approval of the recommendation is required before the re-plat can be recorded.

VII. LIST OF ATTACHMENTS

A. Bel Air Commons Plat Development Agreement

BEL AIR COMMONS PLAT AGREEMENT

Required Improvements within publicly dedicated rights-of-way and easements serving Bel Air Commons to the City Minot / Ward County, ND

This Agreement is made this _____ day of _____, 2018 between the City of Minot, a municipal corporation ("City"), whose mailing address is P.O. Box 5006, Minot, ND 58702 and Merit Development, LLC ("Developer"), whose mailing address is 8250 E Rancho Vista Drive Scottsdale, AZ 85251.

WHEREAS, the Developer owns the property known as Bel Air Commons, more specifically described as: Being Lot 1, Bel Air Twinhomes Second Addition and a Portion of Vacated 5th Avenue NW to the City of Minot, North Dakota and Remaining Unplatted Portion of the SW1/4SW1/4 Section 15, Township 155 North, Range 83 West, Ward County, North Dakota, located within the City of Minot corporate limits ("Bel Air Commons"), for the purposes of the construction of a commercial lot and open space within Ward County;

WHEREAS, the City is requiring the Developer to complete specific improvements and other conditions before granting further permits for the Development of Bel Air Commons;

WHEREAS, the purpose of this Agreement is to memorialize the specific improvements and conditions the Developer shall complete before the City will authorize additional permits for the development of Bel Air Commons;

WHEREAS, in addition to any specific improvements and conditions provided in this Agreement, Exhibits A and B, are hereby incorporated herein by reference;

WHEREAS, the City is requiring the following improvements as conditioned within approval of the Bel Air Commons:

NOW, THEREFORE, it is hereby agreed and stipulated that the Developer shall complete the following before the City grants any further permits for the Development of Bel Air Commons:

1. Public Street and Utility Infrastructure Improvements
    a. Developer shall install, at its sole cost, the watermain, sanitary sewer, and storm sewer utilities including all services to all Lots to serve the development within the Bel Air Commons.
        i. Any existing water and sewer utilities installed in the vacated portion of 5th Avenue NW shall become privately owned and maintained by the Developer.
    b. Developer shall install, at its sole cost, any public street improvements to serve the development within Bel Air Commons.

i. Any existing street infrastructure installed in the vacated portion of 5th Avenue shall become privately owned and maintained by the Developer.

c. At Developer's sole cost, the required public street and utility infrastructure improvements shall be designed by a registered professional engineer in North Dakota and submitted to the City Engineering Department for review. Approval of the plans by the City Engineering Department is required before any construction can begin.

d. At Developer's sole cost, all public street and utility infrastructure must be installed and tested per the City Standard Specifications and Details by the Developer.

e. At Developer's sole cost, all public street and utility infrastructure must be inspected full time by an engineering firm, licensed to do work in North Dakota, and under the direction of a professional engineer, licensed to do work in North Dakota.

i. If at any time during construction the work is not being inspected by an engineering firm, the City may order the work to stop immediately until the work can be inspected. The City shall not be held responsible in any way for the work stoppage.

f. The Developer shall warranty all public street and utility infrastructure work constructed as part of Bel Air Commons to be free of material and workmanship defects for a period of two years after final written acceptance by the City.

i. At any time during the two-year warranty period, the Developer shall correct any deficiencies found by the City. The Developer shall be responsible for the sole cost of correcting any deficiencies identified by the City including but not limited to contractor costs, attorney's fees, and engineering costs.

g. The Developer shall submit record drawings certified by the engineer of record to the City for all public street and utility infrastructure installed as part of Bel Air Commons conforming to the City's Record Plan Policy on file with the Engineering Department. Record drawings shall be submitted in hard copy, dwg, and GIS format.

h. Security valued at 120% of all public street and utility infrastructure costs, as determined by a contractor's bid for the work or the design engineer's opinion of probable cost shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney.

2. Storm Water Management System
   a. Onsite storm water management for Bel Air Commons shall be served by the City owned detention pond located on Bel Air 15th Addition ponding area, north of Bel Air Commons.
   b. Developer shall submit an updated storm water management plan to the City for review. Adequacy of the detention pond to serve Bel Air Commons shall be determined in the storm water management plan. Any required upgrades or expansions to the pond shall be installed at the sole cost of the Developer.

3. Erosion Control Practices
   a. Developer shall meet all erosion control practice requirements of the State of North Dakota.

b. Developer shall obtain written approval from the City Engineer on all erosion control practices.

4. Planning Requirements
   a. The Developer shall dedicate an easement before any building permits are issued by the City. The easement shall be a 20' wide access easement 27th St NW west and then north to provide access to proposed Lot 1. The easement shall be designed to follow the configuration of the driveway serving the future development.
   b. No driveway access installation shall be permitted without prior written approval from the City Engineering Department.
   c. Developer shall provide a 10' wide utility easement along 4th Avenue NW for the entire width of frontage.
   d. Developer shall submit an updated storm water management plan for review and approval by the City Engineer.
   e. Erosion control practices shall meet State of North Dakota requirements and be approved by the City Engineer.
   f. The Developer's Agreement shall be in place prior to the plat being recorded.
   g. Developer shall install sidewalks on 27th St NW.
   h. Developer shall pay all applicable public utility fees/connection fees.
   i. Developer shall enter into a separate agreement with the Minot Park District for dedication of the greenway and open space.

5. Public Land Dedication
   a. Per the Minot Park District determination, Developer shall dedicate Lot 1, Bel Air Commons to the Minot Park District. The dedication of land to the Minot Park District shall be by a separate agreement. Land dedication must take place before any building permits are issued.

6. This Agreement shall be governed by and interpreted according to North Dakota law. The appropriate venue and jurisdiction for any litigation hereunder shall be in a court located in Ward County, North Dakota.

7. Each party represents and warrants that this Agreement has been duly authorized, executed and delivered by it; that the undersigned representatives are duly authorized to sign this Agreement on behalf of the party for whom they are signing and whom they represent; that performance of all the actions contemplated thereby have been duly authorized by all requisite action and that this Agreement constitutes a valid and binding obligation, enforceable against Developer, its successors and assigns in accordance with its terms.

8. Neither this Agreement nor any item hereof may be changed, waived, discharged, or terminated orally, but only by instrument in writing by all parties hereto.

9. If any part of this Agreement shall be judged invalid, the remainder shall not be invalidated. Any part of any section found to be invalid shall not invalidate the remaining part of said section, and the invalid section may be reformed to be valid and

enforceable to the extent allowed by law.

10. This Agreement shall be recorded in the Ward County Recorder's Office, and shall constitute a covenant running with the land, and shall be binding on the Developer, its administrators, executors, assigns, heirs and any other successors in interests.

IN WITNESS WHEREOF, the parties hereto, after due authorization by its respective governing bodies/partners, hereby sign this agreement on the day and year first above written.

CITY OF MINOT, ND

By: _____
Chuck Barney, Mayor

Attest: _____
Kelly Matalka, City Clerk

MERIT DEVELOPMENT, LLC

By: _____
Phillip Reed Handley – Member
Merit Development, LLC

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of _____, 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____
_____
Notary Public, _____ County,
North Dakota.
My Commission Expires: _____

EXHIBIT 'A'
Bel Air Commons Plat

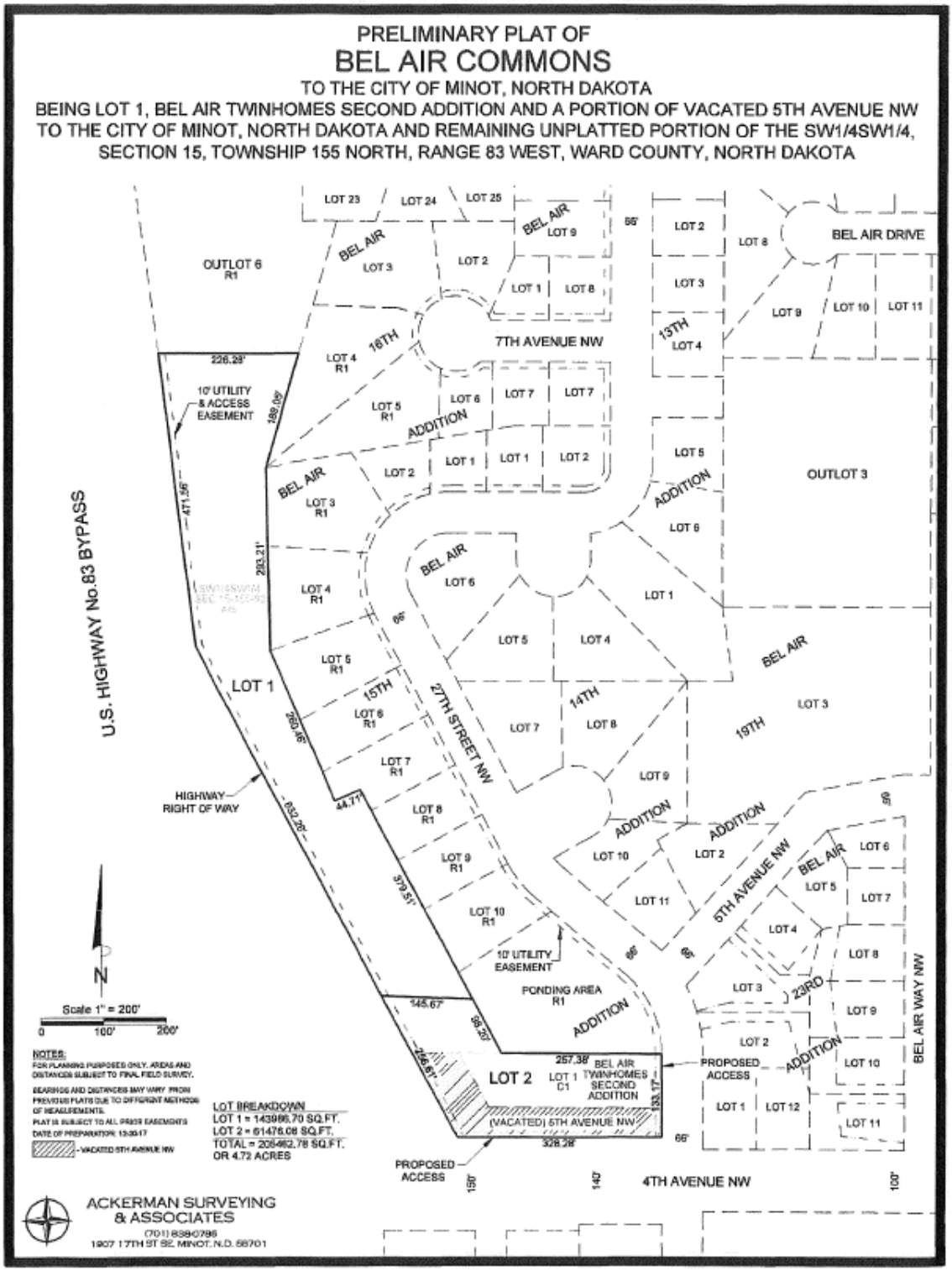


EXHIBIT 'B'

CITY OF MINOT DEVELOPMENT POLICY

In the interest of public safety and orderly development within the City of Minot a policy has been established that establishes what sequence of events needs to take place in order for building permits and occupancy permits to be issued for all residential, commercial, and industrial development within the City of Minot jurisdiction.

A. Building permits for individual sites will be issued upon:
    1. Approval of a storm water management plan for the site or subdivision.
    2. Approval of site plan or subdivision plans.
    3. Installation and testing of necessary water and sewer main to serve the adjacent properties.
    4. Adjacent streets or access easements to serve the properties have the appropriate gravel sections put in place.
    5. Provide City with verification that proper state storm water permits have been obtained for the project.

Upon completion of the above items building permits will be issued as deemed appropriate by the Engineering department. It will be the developer's responsibility to maintain the gravel streets or access easements throughout the project in a manner sufficient to allow access for emergency vehicles and inspection personnel. If at any time, it is determined that the roadways have fallen into an unacceptable condition no further permits will be issued until the necessary corrections have been made.

B. Occupancy permits for individual sites will be issued upon:
    1. Water and sewer mains serving properties have passed the appropriate tests.
    2. Utilities to include gas and electric have been installed to the property.
    2. Curb and gutter and one lift of asphalt have been installed in roadway or easement adjacent to property.

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Wicke, Assistant City Engineer

DATE: 4/24/2018

SUBJECT: **GALUSHA RANCH ADDITION (PLAT) AGREEMENT**
PROJECT (4353)

I. RECOMMENDED ACTION

1. Recommend approval of the Development (Plat) Agreement by the Council.
2. Authorize the Mayor to sign the Development (Plat) Agreement.

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	(701) 857-4100
David Wicke, Assistant City Engineer	(701) 857-4100

III. DESCRIPTION

A. Background

This area was previously unplatted portion of the Northwest ¼ of the Southeast ¼, Northeast ¼ of the Southeast ¼, Southwest ¼ of the Southeast ¼ and southeast ¼ of the southeast ¼ of Section 6, Township 154, Range 82 West, Ward County, North Dakota, located outside the City of Minot corporate limits but within the City of Minot extra territorial jurisdiction, for the purposes of the construction of a residential lots within the unplatted portion of the property as described above within Ward County.

The Developer wishes the portion of the property to be rezoned from AG, Agricultural District to RA, Agricultural Residential District with other portions of the property to remain in Zone AG. The subject property is located on the north side of County Highway 14A (54th Ave SE) and the west side of 27th St SE. The Property will be divided into thirty-eight (38) lots in total. Block 1, Lot 3 will remain in Zone AG, with all the remaining lots to be rezoned to RA, Agricultural Residential District. This item was approved by the Planning Commission and City Council in February/March of 2018. The Development agreement must be approved and signed before the plat will be recorded.

B. Proposed Project

Staff and the Developer, Ready Builders II, Inc., wish to execute and agreement relating to the obligations for development and conditions outlined by City Staff and approved by the Planning Commission and City Council.

The language is consistent with other agreements the City has executed in the past with other Developers. A security valued at 120% of all public street and utility infrastructure costs as determined by the design engineer's opinion of probable construction costs or by a contractor's bid shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
NA

B. Service/Delivery Impact:
NA

C. Fiscal Impact:
NA

V. ALTERNATIVES
NA

VI. TIME CONSTRAINTS
Council's approval of the recommendation is required before the plat can be recorded.

VII. LIST OF ATTACHMENTS

A. Galusha Ranch Addition Plat Development Agreement

GALUSHA RANCH ADDITION PLAT AGREEMENT

Required Improvements within publicly dedicated rights-of-way and easements serving the Galusha Ranch Addition to the City Minot / Ward County, ND

This Agreement is made this _____ day of _____, 2018 between the City of Minot, a municipal corporation ("City"), whose mailing address is P.O. Box 5006, Minot, ND 58702 and Ready Builders II, Inc., ("Developer"), whose mailing address is 605 31st Avenue SW Minot, ND 58701.

WHEREAS, the Developer owns the property known as the Galusha Ranch Addition, more specifically described as: Being an uplatted portion of the NW1/4SE1/4, NE1/4SE1/4, SW1/4SE1/4 and SE1/4SE1/4 of Section 6, Township 154 North, Range 82 West, Ward County, North Dakota, located within the City of Minot extraterritorial limits ("Galusha Ranch Addition"), for the purposes of the construction of residential lots within Ward County;

WHEREAS, the City is requiring the Developer to complete specific improvements and other conditions before granting further permits for the Development of the Galusha Ranch Addition;

WHEREAS, the purpose of this Agreement is to memorialize the specific improvements and conditions the Developer shall complete before the City will authorize additional permits for the development of Galusha Ranch Addition;

WHEREAS, in addition to any specific improvements and conditions provided in this Agreement, Exhibits A, B, and C are hereby incorporated herein by reference;

WHEREAS, the City is requiring the following improvements as conditioned within approval of the Galusha Ranch Addition Plat:

NOW, THEREFORE, it is hereby agreed and stipulated that the Developer shall complete the following before the City grants any further permits for the Development of the Galusha Ranch Addition:

1. Public Street and Utility Infrastructure Improvements
    a. Developer shall install, at its sole cost, the storm sewer culverts and rural water main utilities, including all services to all Lots to serve the development within the Galusha Ranch Addition.
        i. Sanitary sewer septic systems shall be installed by Developer or Developer's successors with the approval of First District Health.
        ii. Potable water systems shall be approved by North Prairie Rural Water. Installation of rural water systems shall be by separate agreement with North Prairie Rural Water.
        iii. Sanitary Sewer Easements to the City of Minot provided through unplatted SW1/4NE1/4, Sec.6-154-82 and through Lots 1, 2 & 3, Block 1, Galusha Ranch Addition for future extension of public utilities. Easements shall be

dedicated on the plat or filed by separate instrument.

b. Developer shall install, at its sole cost, the public rural street section to serve the development within the Galusha Ranch Addition. The Developer may install a paved road surface on top of the rural roadway section. At a minimum, the rural section roadways shall meet Township roadway standards. Any improvements to Ward County Road 14A shall meet standards adopted or specified by the Ward County Highway Department.

    i. Developer shall design and install, at its sole cost, an urban road section from County Road 14A north to a sufficient distance, as determined and approved by the City Engineer, to address site grading and drainage issues concerning neighboring properties.

c. At Developer's sole cost, the required public street and utility infrastructure improvements shall be designed by a registered professional engineer in North Dakota and submitted to the City Engineering Department for review. Approval of the plans by the City Engineering Department is required before any construction can begin.

d. At the Developer's sole cost, all public street and utility infrastructure shall be installed and tested per the City Standard Specifications and Details by the Developer. North Prairie Rural Water infrastructure shall be installed to North Prairie Rural Water requirements.

e. At the Developer's sole cost, all public street and utility infrastructure shall be inspected periodically as determined by the engineer, and by an engineering firm, licensed to do work in North Dakota, and under the direction of a professional engineer, licensed to do work in North Dakota. At the Developer's sole cost, concrete testing, asphalt testing, density tests and bluetop grading verification of subgrade and aggregate base shall also be submitted to the City Engineer.

    i. Areas of failing tests and/or work deemed unacceptable to the Engineer shall be corrected and re-inspected at the Developer's sole cost. All work must be verified to meet Section 1.d of this Agreement before building permits will be issued.

f. The Developer shall warranty all public street and utility infrastructure work constructed as part of the Galusha Ranch Addition to be free of material and workmanship defects for a period of two years after final written acceptance by the City.

    i. At any time during the two-year warranty period, the Developer shall correct any deficiencies found by the City. The Developer shall be responsible for the sole cost of correcting any deficiencies identified by the City including, but not limited to, contractor costs, attorney's fees, and engineering costs.

g. The Developer shall submit record drawings certified by the engineer of record to the City for all public street and utility infrastructure installed as part of the Galusha Ranch Addition conforming to the City's Record Plan Policy on file with the Engineering Department. Record drawings shall be submitted in hard copy, dwg, and GIS format.

h. Security valued at 120% of all public street and utility infrastructure costs, as determined by a contractor's bid for the work or the design engineer's opinion of

probable cost, shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney.

2. Storm Water Management System
    a. Onsite storm water management for the Galusha Ranch Addition is required. Developer shall submit a storm water management plan to the City for review and approval by the City Engineer. Any required improvements by the City shall be installed at the Developer's sole cost.
        i. Maintenance of any culverts, channels, pipes, ponds, and any other appurtenance to the system shall be maintained by the Developer, his successors, and assigns or by a homeowner's association.

3. Erosion Control Practices
    a. Developer shall meet all erosion control practice requirements of the State of North Dakota.
    b. Developer shall obtain written approval from the City Engineer on all erosion control practices.

4. Planning Requirements
    a. Developer shall submit a Storm Water Management Plan for review and approval by the City Engineer.
    b. Erosion control practices will need to meet State of North Dakota requirements and approved by the City Engineer.
    c. The township or a homeowner's association will be responsible for road maintenance.

5. Public Land Dedication
    a. Per the Minot Park District determination, Developer shall provide a 15' Utility and Trail Easement on the plat along the southern and eastern portion of 43rd Avenue.
    b. Developer shall pay a fee of $381.00 per lot to the City at the time of building permit issuance.
6. County Road 14A Improvements
    a. Improvements to Ward County Road 14A are governed by the existing Memorandum of Agreement (MOA) between the Developer and Ward County. The MOA is attached and incorporated by reference into this agreement (Exhibit C).
7. Right of Way and Easement Maintenance
    a. Maintenance of right of ways and easements shall be provided by a homeowner's association. The homeowner's association shall be created and recorded at the Ward County Recorder's office prior to receiving any building permits.
8. Developer shall sign a non-protest of annexation agreement with the City for lots within Galusha Ranch Addition. Annexation shall occur when public sanitary sewer is extended through the Galusha Ranch Addition. At such time, connection to public sewer shall be required and any associated fees shall be paid to the City.

9. This Agreement shall be governed by and interpreted according to North Dakota law. The

appropriate venue and jurisdiction for any litigation hereunder shall be in a court located in Ward County, North Dakota.

10. Each party represents and warrants that this Agreement has been duly authorized, executed and delivered by it; that the undersigned representatives are duly authorized to sign this Agreement on behalf of the party for whom they are signing and whom they represent; that performance of all the actions contemplated thereby have been duly authorized by all requisite action and that this Agreement constitutes a valid and binding obligation, enforceable against Developer, its successors and assigns in accordance with its terms.

11. Neither this Agreement nor any item hereof may be changed, waived, discharged, or terminated orally, but only by instrument in writing by all parties hereto.

12. If any part of this Agreement shall be judged invalid, the remainder shall not be invalidated. Any part of any section found to be invalid shall not invalidate the remaining part of said section, and the invalid section may be reformed to be valid and enforceable to the extent allowed by law.

13. This Agreement shall be recorded in the Ward County Recorder's Office, and shall constitute a covenant running with the land, and shall be binding on the Developer, its administrators, executors, assigns, heirs and any other successors in interests, including any homeowner's association.

IN WITNESS WHEREOF, the parties hereto, after due authorization by its respective governing bodies/partners, hereby sign this agreement on the day and year first above written.

CITY OF MINOT, ND

By: _____
Chuck Barney, Mayor

Attest: _____
Kelly Matalka, City Clerk

READY BUILDERS II

By: _____

Stacey D. Abel – President
Ready Builders II, Inc.

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of _____, 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____
_____
Notary Public, _____ County,
North Dakota.
My Commission Expires: _____

EXHIBIT 'A'
Galusha Ranch Addition Plat

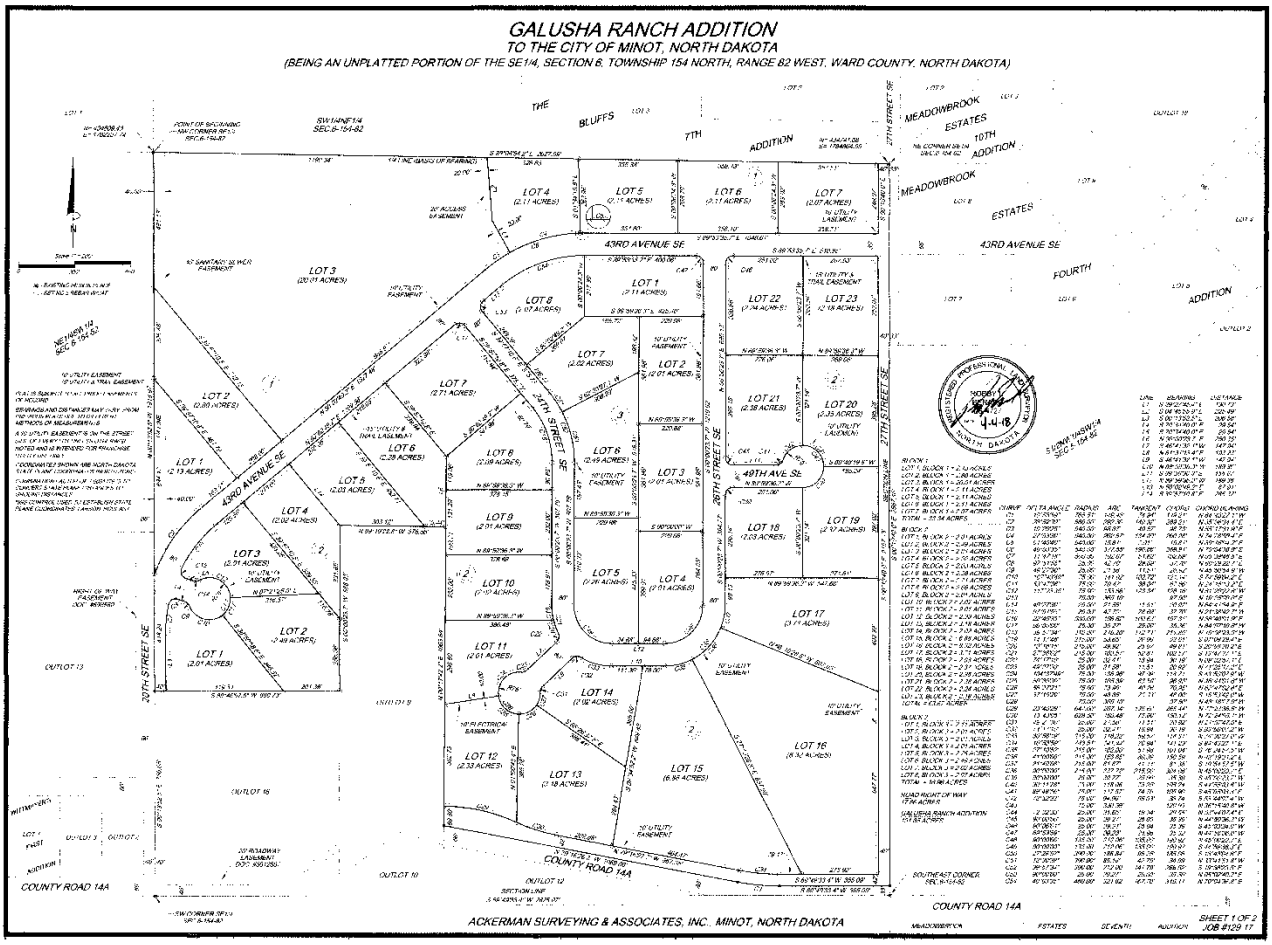


EXHIBIT 'B'

CITY OF MINOT DEVELOPMENT POLICY

In the interest of public safety and orderly development within the City of Minot a policy has been established that establishes what sequence of events needs to take place in order for building permits and occupancy permits to be issued for all residential, commercial, and industrial development within the City of Minot jurisdiction.

A. Building permits for individual sites will be issued upon:
    1. Approval of a storm water management plan for the site or subdivision.
    2. Approval of site plan or subdivision plans.
    3. Installation and testing of necessary water and sewer main to serve the adjacent properties.
    4. Adjacent streets or access easements to serve the properties have the appropriate gravel sections put in place.
    5. Provide City with verification that proper state storm water permits have been obtained for the project.

Upon completion of the above items building permits will be issued as deemed appropriate by the Engineering department. It will be the developer's responsibility to maintain the gravel streets or access easements throughout the project in a manner sufficient to allow access for emergency vehicles and inspection personnel. If at any time, it is determined that the roadways have fallen into an unacceptable condition no further permits will be issued until the necessary corrections have been made.

B. Occupancy permits for individual sites will be issued upon:
    1. Water and sewer mains serving properties have passed the appropriate tests.
    2. Utilities to include gas and electric have been installed to the property.
    2. Curb and gutter and one lift of asphalt have been installed in roadway or easement adjacent to property.

EXHIBIT 'C'

MEMORANDUM OF AGREEMENT

T FOR THE DEVELOPMENT OF THE SE1/4 SECTION 6-154-82

Memorandum Of Agreement
For the Development of the SE ¼ Section 6-154-82

1. **Purpose.**

This Agreement is made this __20__ day of __March__ 2018 between Ward County (County) and __Stacey Abel__ (Developer). This MOU will lay out the Scope and Responsibilities, between the two entities concerning the proposed development located on the north side of County Road 14 located in the SE ¼ of Section 6 Township 154 Range 82

2. **Background**

The project location is located north of County Road 14 approximately 1.5 miles east of US 83. The current roadway is a two lane paved road with two 12ft lanes and an ADT of 975. The roadway is a county minor collector and is an off system roadway. The speed limit on the roadway ranges between 45 MPH to 35 MPH with advisory curve signs. This is a rural section of road, which has lower density development consisting of 2 to 5 acre lots with some of the older lots being less than 2 acres. The county road would continue to support lower density development. If in the future, a higher density development were to occur, Ward County would require the agreement to be updated, addressing potential road improvements need to County Road 14 and who would be responsible for those improvements.

Previously when the developer platted Outlot 16, right of way was platted along the west side of the property at the quarter line and adjacent to right of way platted when Outlot 2 was platted. The Developer also platted additional right of way on the east portion of Outlot 16 and a 20 ft roadway easement in order to provide right of way for a realignment of the curve in the County Road.

3. **Responsibilities**

Developer:

1. Will provide borrow material to construct turn lanes and other improvement to County Road 14 adjacent to the development.
2. Will provide right of way on the north side of County Road 14 adjacent to the SE ¼ of Section 6 Township 154 Range 82, with the exception of Outlot 9, to improve the access off of County Road 14 into the development and to improve the curve to the east of Outlot 16.
3. Will provide access to Outlot 16 from the new proposed subdivision roadway and understands once the roadway is constructed, the existing access to outlot 16 will be eliminated.
4. The developer will coordinate the construction of the access to match up with either the existing roadway or proposed turn lanes.

County

1. Will construct a left turn lane into the proposed development when the traffic counts warrant the construction or in conjunction with the construction of the subdivision road.
2. Will remove the existing access to Outlot 16 off of County Road 14 once the subdivision roadway is constructed, if not completed by the developer.
3. The county will coordinate the construction of the turn lanes to match up with the proposed access.

Memorandum Of Agreement
For the Development of the SE ¼ Section 6-154-82

Ward County:

Alan Walter, Chair — Date: 3/20/18

Attest:

Devra Smestad, Auditor/Treasurer

Developer:

Stacey Abel — Date: 3/21/18

Attest:

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Wicke, Assistant City Engineer

DATE: 4/5/2018

SUBJECT: **WEST ACRES BUSINESS CENTER ADDITION (PLAT) AGREEMENT PROJECT (4354)**

I. RECOMMENDED ACTION

1. Recommend approval of the Development (Plat) Agreement by the Council.
2. Authorize the Mayor to sign the Development (Plat) Agreement.

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	(701) 857-4100
David Wicke, Assistant City Engineer	(701) 857-4100

III. DESCRIPTION

A. Background

This area is known as the West Acres Business Center Lots 1, 2, and 3 located within the City of Minot corporate limits, for the purposes of commercial development with uses consistent with the property's C-2 zoning within Ward County.

The Developer wishes to re-plat Lots A, B and C of Outlot 30, Section 27, Township 155, Range 83 East. The subject property is located on the at the southwest corner of Elk Drive which is the frontage road running along the southwest side of US Highways 2/52/83 Bypass and West Burdick Expressway/Sundown Drive. This item was approved by the Planning Commission and City Council in September/October of 2017. The Development Agreement must be approved and signed before the re-plat will be recorded.

B. Proposed Project

Staff and the Developer, Bruce Bentz, LLLP, wish to execute and agreement relating to the obligations for development and conditions outlined by City Staff and approved by the Planning Commission and City Council.

The language is consistent with other agreements the City has executed in the past with other Developers. A security valued at 120% of all public street and utility infrastructure costs as

determined by the design engineer's opinion of probable construction costs or by a contractor's bid shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney.

The developer will be required to reconstruct Elk Drive to an urban section from Sundown Drive east to the existing end of the urban section. The developer may install the roadway himself, work with other landowners adjacent to the roadway to install the urban section, or petition the city council for creation of a special assessment district.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
NA

B. Service/Delivery Impact:
NA

C. Fiscal Impact:
NA

V. ALTERNATIVES
NA

VI. TIME CONSTRAINTS
Council's approval of the recommendation is required before the re-plat can be recorded.

VII. LIST OF ATTACHMENTS

A. West Acres Business Center Plat Development Agreement

WEST ACRES BUSINESS CENTER PLAT AGREEMENT

Required Improvements within publicly dedicated rights-of-way and easements serving the West Acres Business Center to the City Minot / Ward County, ND

This Agreement is made this ____ day of _____, 2018 between the City of Minot, a municipal corporation ("City"), whose mailing address is P.O. Box 5006, Minot, ND 58702 and Bruce Bentz, LLLP ("Developer"), whose mailing address is 1900 N. Bismarck Expressway Avenue, Bismarck, ND 58501.

WHEREAS, the Developer owns the property known as the West Acres Business Center Lots 1, 2, and 3 located within the City of Minot corporate limits ("West Acres Business Center"), for the purposes of commercial development with uses consistent with the property's C-2 zoning;

WHEREAS, the City is requiring the Developer to complete specific improvements and other conditions before granting further permits for the development of the West Acres Business Center;

WHEREAS, the purpose of this Agreement is to memorialize the specific improvements and conditions the Developer shall complete before the City will authorize additional permits for the development of West Acres Business Center;

WHEREAS, in addition to any specific improvement and conditions provided in this Agreement, Exhibits A, B, and C are hereby incorporated herein by reference;

WHEREAS, the City is requiring the following improvements as conditioned within approval of the West Acres Business Center Plat:

NOW, THEREFORE, it is hereby agreed and stipulated that the Developer shall complete the following before the City grants any further permits for the development of the West Acres Business Center:

1. Public Street and Utility Infrastructure Improvements
    a. Developer shall install, at its sole cost, the sanitary sewer, storm sewer, and water utilities including all services to all lots to serve the development within the West Acres Business Center.
    b. The Developer shall install the public, urban street section and street lighting to serve the unpaved portion of Elk Drive between Sundown Drive and the east edge of existing street pavement on Elk Drive located at 2615 Elk Drive.
        i. As an alternative, the developer may petition the City for the creation of a Special Assessment District. The district shall be created and upfront 35% pre-payment per City of Minot Special Assessment Policy paid before any permits for the development are issued.

ii. As an additional alternative, a private agreement between the Developer and adjacent property owners to the public street improvements can be formed to share the costs of the public street improvements. If this alternative is used, the public improvements shall be installed before any permits for the development are issued.

c. The required public street improvements for the unpaved portion of Elk Drive are to be designed by a registered professional engineer licensed in North Dakota and reviewed and approved by the City.

d. At Developer's sole cost, all public street and utility infrastructure shall be installed and tested per the City Standard Specifications and Details.

e. At Developer's sole cost, all public street and utility infrastructure must be inspected full time by an engineering firm, licensed to do work in North Dakota, and under the direction of a professional engineer, licensed to do work in North Dakota.

i. If at any time during construction the work is not being inspected by an engineering firm, the City may order the work to stop immediately until the work can be inspected. The City shall not be held responsible in any way for the work stoppage.

f. The Developer shall warranty all public street and utility infrastructure work constructed as part of the West Acres Business Center to be free of material and workmanship defects for a period of two years after final written acceptance by the City, unless the improvements are done by a special assessment district.

i. At any time during the two-year warranty period, the Developer shall correct any deficiencies found by the City. The Developer shall be responsible for the sole cost of correcting any deficiencies identified by the City including but not limited to contractor costs, attorney's fees, and engineering costs.

g. Unless the improvements are done pursuant to the special assessment alternative outlined in section 1(b)(i), the Developer shall submit record drawings certified by the engineer of record to the City for all public street and utility infrastructure installed as part of the West Acres Business Center conforming to the City's Record Plan Policy on file with the Engineering Department. Record drawings shall be submitted in hard copy, .dwg, and GIS format.

h. Security valued at 120% of all public street and utility infrastructure costs, as determined by a contractor's bid for the work or the design engineer's opinion of probable cost shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney. <u>If improvements are done by special assessment district, the Developer shall be responsible for the 35% pre-payment necessary to create the special assessment district according to the City's Special Assessment Policy.</u>

2. Storm Water Management System Maintenance

a. Refer to Storm Water Management Facility Maintenance Agreement as Exhibit 'C' which is attached incorporated by reference into this Agreement

3. Erosion Control Practices
    a. Developer shall meet all erosion control practice requirements of the State of North Dakota.
    b. Developer shall obtain written approval from the City Engineer on all erosion control practices.

4. Planning Requirements
    a. The Developer's Agreement between Developer and the City of Minot shall be approved, executed, and recorded prior to recording of the plat.
    b. Developer shall submit Storm Water Management Plans for review and approval by the City Engineer.
    c. Developer shall ensure drainage to NDDOT right-of-way is approved by NDDOT.
    d. Developer shall submit a Traffic Impact Study and the Traffic Impact Study shall be reviewed by the City and NDDOT engineers. Recommended improvements shall be installed by the Developer at Developer's sole cost.
    e. Elk Drive from Sundown Drive east to existing pavement on Elk Drive shall be improved to urban road standards through a Developer petitioned special assessment district, agreement with adjacent property owners, or the Developer of West Acres Business Center. The improvements described in the preceding sentence shall be completed before any building permits are issued.
5. Public Land Dedication
    a. Developer shall meet the requirements of the Minot Park District by either a public land dedication or in-lieu fee as determined by the Minot Park District.
6. This Agreement shall be governed by and interpreted according to North Dakota law. The appropriate venue and jurisdiction for any litigation hereunder shall be in a court located in Ward County, North Dakota.

7. Each party represents and warrants that this Agreement has been duly authorized, executed and delivered by it; that the undersigned representatives are duly authorized to sign this Agreement on behalf of the party for whom they are signing and whom they represent; that performance if all the actions contemplated thereby have been duly authorized by all requisite action and that this Agreement constitutes a valid and binding obligation, enforceable against Developer, its successors and assigns in accordance with its terms.

8. Neither this Agreement nor any item hereof may be changed, waived, discharged, or terminated orally, but only by instrument in writing by all parties hereto.

9. If any part of this agreement shall be judged invalid, the remainder shall not be invalidated. Any part of any section found to be invalid shall not invalidate the remaining part of said section, and the invalid section may be reformed to be valid and

enforceable to the extent allowed by law.

10. This agreement shall be recorded in the Ward County Recorder's Office, and shall constitute a covenant running with the land, and shall be binding on the Developer, its administrators, executors, assigns, heirs and any other successors in interests, including any property association.

IN WITNESS WHEREOF, the parties hereto, after due authorization by its respective governing bodies/partners, hereby sign this agreement on the day and year first above written.

CITY OF MINOT, ND

By: _____
Chuck Barney, Mayor

Attest: _____
Kelly Matalka, City Clerk

By: _____
Bruce Bentz, Bruce Bentz, LLLP

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of _____, 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____

_____

Notary Public, _____ County,

North Dakota.

My Commission Expires: _____

EXHIBIT ‘A’WEST ACRES BUSINESS CENTER PLAT

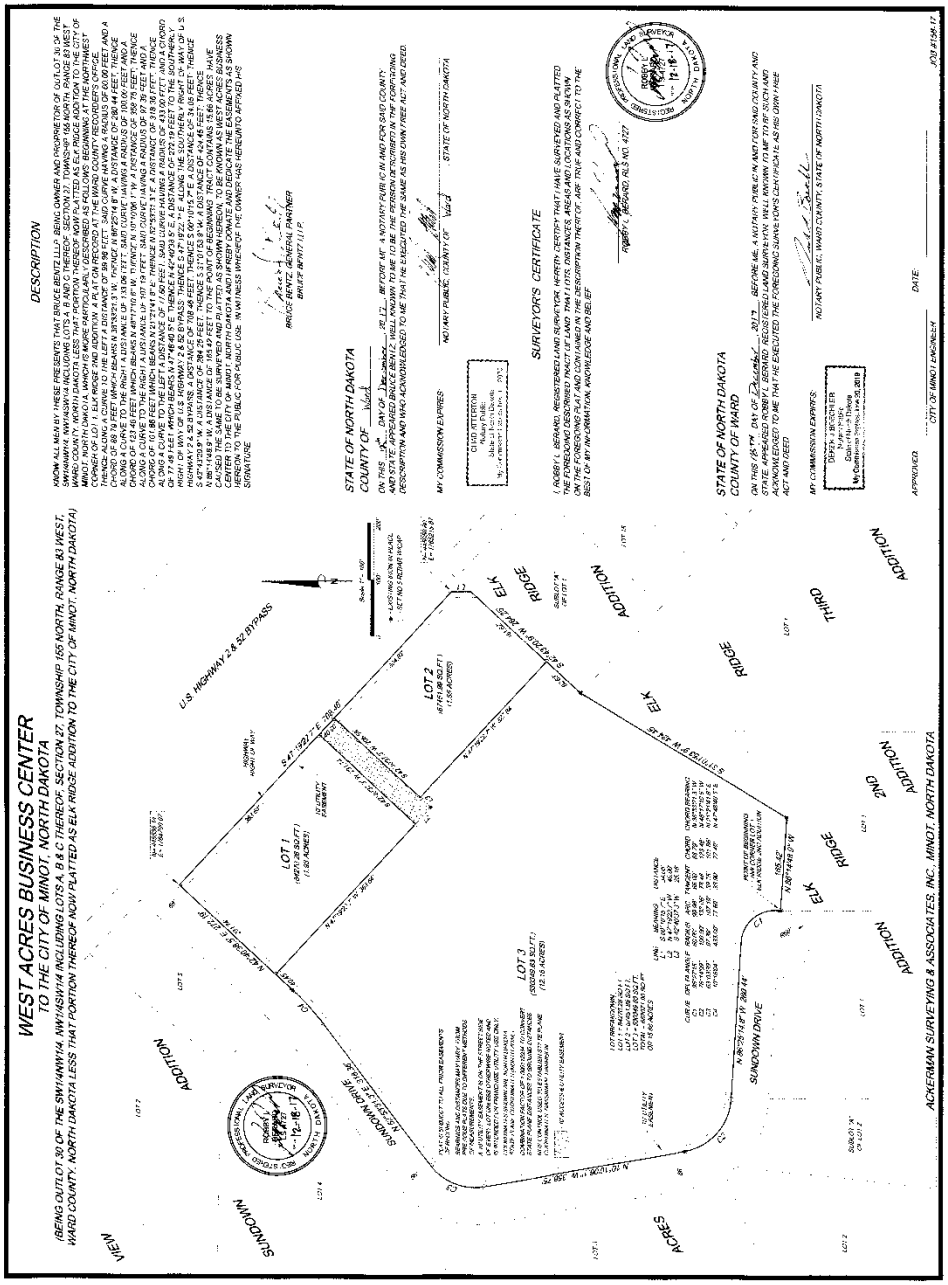


EXHIBIT ‘B’

CITY OF MINOT DEVELOPMENT POLICY

In the interest of public safety and orderly development within the City of Minot a policy has been established that establishes what sequence of events needs to take place in order for building permits and occupancy permits to be issued for all residential, commercial, and industrial development within the City of Minot jurisdiction.

A. Building permits for individual sites will be issued upon:
    1. Approval of a storm water management plan for the site or subdivision.
    2. Approval of site plan or subdivision plans.
    3. Installation and testing of necessary water and sewer main to serve the adjacent properties.
    4. Adjacent streets or access easements to serve the properties have the appropriate gravel sections put in place.
    5. Provide City with verification that proper state storm water permits have been obtained for the project.

Upon completion of the above items, building permits will be issued as deemed appropriate by the Engineering department. It will be the developer's responsibility to maintain the gravel streets or access easements throughout the project in a manner sufficient to allow access for emergency vehicles and inspection personnel. If at any time, it is determined that the roadways have fallen into an unacceptable condition no further permits will be issued until the necessary corrections have been made.

B. Occupancy permits for individual sites will be issued upon:
    1. Water and sewer mains serving properties that have passed the appropriate tests.
    2. Utilities to include gas and electric have been installed to the property.
    3. Curb and gutter and one lift of asphalt have been installed in roadway or easement adjacent to property.

EXHIBIT 'C'

STORM WATER MANAGEMENT FACILITY MAINTENANCE AGREEMENT

WEST ACRES BUSINESS CENTER

THIS AGREEMENT made and entered into this ____ day of _____, 2018, by **Bruce Bentz, LLLP.** hereinafter called the "Developer", whether one or more, and the City of Minot, hereinafter called the "City". WITNESSETH, that WHEREAS, the Developer is the owners of certain real property described below and as recorded by deed in the land records of Ward County, North Dakota, hereinafter called the "Property" as listed below:

Lots 1, 2, and 3 West Acres Business Center to the City of Minot (Bruce Bentz, LLLP)

WHEREAS, Developer is proceeding to build on and develop all or a portion of the properties as shown on **Exhibit A**, and subsequent amendments (e.g., Storm Water Management Plan) and WHEREAS, the Site Plan **Exhibit C-1**/known as **West Acres Business Center** hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the City, provides for management and conveyance of storm water within the confines of the property and discharge related piping or structures which are located off property; and WHEREAS the City and the Developer, its successors and assigns, including condominium association or property association, agree that the health, safety and welfare of the residents of Minot, North Dakota, require that on-site storm water management facilities be constructed and maintained on the Property; and

WHEREAS, the City requires that on-site storm water management facilities and all pipes and structures located outside of the public right of way as shown on the Plan be constructed and adequately maintained by the Developer, its successors and assigns, including any condominium association or property owner association.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows;

1. The on-site and off-site storm water management facilities shall be constructed by the Developer, its successors and assigns, in accordance with City of Minot Storm Water Management Ordinance, Standard Specifications and Details

2. Except as provided herein, the Developer, its successors and assigns, including any condominium association or property association, shall adequately maintain the storm water management and conveyance facilities located outside of the public right of way. This includes all pipes, channels or other conveyances built to convey storm water to and from the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the storm water. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design function. A Long-Term Maintenance Plan containing an inspection schedule and maintenance checklist for all storm water management facilities shall provide information about the storm water management system components so that property owners will

know the locations and maintenance needs of the components and structural best management practices and shall be used to check the facilities for inspection as outlined in the Plan's Storm Water Pollution Prevention Plan (SWPPP).

3. The Developer, its heirs, successors and assigns, shall inspect the storm water management facility and submit an inspection report annually to the City of Minot Director of Public Works. The purpose of the inspection is to assure safe and proper functioning of the facilities. The inspection shall cover the entire facilities, berms, outlet structure, pond areas, pipes, access roads, etc. Deficiencies shall be noted in the inspection report.

4. The Developer, its heirs, successors and assigns, hereby grant permission to the City, its authorized agents and employees, to enter upon the Property and to inspect the storm water management facilities whenever the City deems necessary. The purpose of inspection is to follow-up on reported deficiencies and/or to respond to citizen complaints. The City shall provide the Developer, its successors and assigns, copies of the inspection findings and a directive to commence with the repairs if necessary.

5. In the event the Developer, its heirs, successors and assigns, fails to maintain the storm water management facilities in good working condition acceptable to the City, the City, with due notice, may enter upon the property and take whatever steps necessary to correct deficiencies as identified in the inspection report and to charge the cost of such repairs to the Developer, its successors and assigns. This provision shall not be construed to allow the City to erect any structure of a permanent nature on the land of the Developer outside of the easement for the storm water management facilities. It is expressly understood and agreed that the City is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the City.

6. The Developer, its heirs, successors and assigns, will perform the work necessary to keep the facilities in good working order as appropriate. A maintenance schedule for the storm water management facilities (including sediment removal) is outlined in the Long-Term Maintenance Plan and the schedule will be followed.

7. In the event the City, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, material, and the like, the Developer, its heirs, successors and assigns, shall reimburse the City upon demand, within thirty (30) days of receipt thereof for all actual cost incurred by the City hereunder. If not paid within the prescribed time period, the City shall secure a lien against the real property in the amount of such costs and may be placed on the ad valorem tax bill.

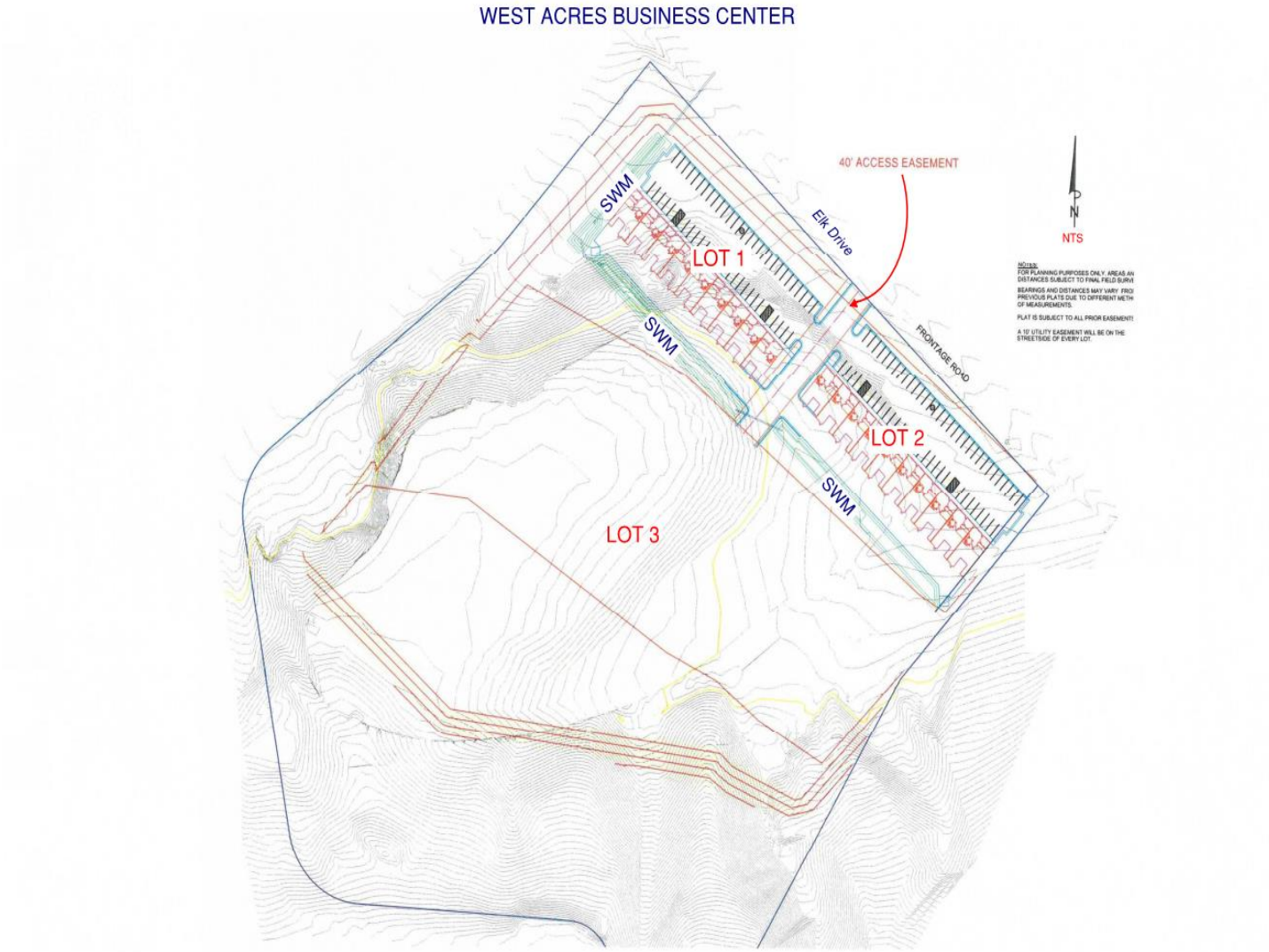
8. The Developer shall provide easements along and around storm water management and conveyance facilities and access to storm sewers constructed or existing within the subject properties. Easements shall also be provided around the storm water detention pond. These easements shall include ingress and egress on the Developer’s property, or where designated, to access the existing storm sewer systems and manholes located within the property.

9. This agreement shall be recorded in the Ward County Recorder's Office, and shall constitute a covenant running with the land, and shall be binding on the Developer, its administrators, executors, assigns, heirs and any other successors in interests, including any condominium association or property association.

10. Developer shall create a condominium association or property association that shall be responsible for all future construction and maintenance of the storm water management and conveyance facilities. The condominium or property association shall be created and recorded before any certificates of occupancy shall be granted by the City.

EXHIBIT ‘C-1’

WEST ACRES BUSINESS CENTER SITE PLAN



IN WITNESS WHEREOF, this instrument is executed by the undersigned on the _____ day of _ _____, 2018.

Bruce Bentz, LLLP

_____

Bruce Bentz
Owner

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of _____, 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____

_____

Notary Public, _____ County,

North Dakota.

My Commission Expires: _____

City of Minot

_____

Signature – Title

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of _____, 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____

_____

Notary Public, _____ County,

North Dakota.

My Commission Expires: _____

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Wicke, Assistant City Engineer

DATE: 4/24/2018

SUBJECT: **URIJAH'S SECOND ADDITION (PLAT) AGREEMENT**
PROJECT (4355)

I. RECOMMENDED ACTION

1. Recommend approval of the Development (Plat) Agreement by the Council.
2. Authorize the Mayor to sign the Development (Plat) Agreement.

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	(701) 857-4100
David Wicke, Assistant City Engineer	(701) 857-4100

III. DESCRIPTION

A. Background

This area was previously platted as Urijah's First Addition, Lots 1 and 2, Ward County, North Dakota, located outside the City of Minot corporate limits but within the City of Minot extra territorial jurisdiction, for the purposes of the construction of a residential lots within the re-platted property known as Urijah's First Addition, Lots 1 and 2 within Ward County.

The Developer wishes the property to be rezoned from RA, Agricultural Residential District to R1, Single Family Residential District. The subject property is located on the west side of County Highway 14 and the south side of 37th Ave SE, south of County Road 19 South. The Property will be divided into seven (7) lots in total with four lots, Lots (4-7) proposed along the north end of the property along 37th Ave SE, Lot 1 at the south end of the property west of County Highway 14, Lot 2 along the east side of the property along County Highway 14 and Lot 3 on the west side of the property between Lots 1 and 4 - 7 with and access easement to the lot from County Highway 14. This item was approved by the Planning Commission and City Council in February/March of 2018. The Development agreement must be approved and signed before the plat will be recorded.

B. Proposed Project

Staff and the Developer, BK Properties, LLC, wish to execute and agreement relating to the obligations for development and conditions outlined by City Staff and approved by the Planning Commission and City Council.

The language is consistent with other agreements the City has executed in the past with other Developers. A security valued at 120% of all public street and utility infrastructure costs as determined by the design engineer's opinion of probable construction costs or by a contractor's bid shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney. The developer must also sign a non-protest of annexation agreement with the City since the developer will be connecting to the City's sewer system.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
NA

B. Service/Delivery Impact:
NA

C. Fiscal Impact:
NA

V. ALTERNATIVES
NA

VI. TIME CONSTRAINTS
Council's approval of the recommendation is required before the re-plat can be recorded.

VII. LIST OF ATTACHMENTS

A. Urijah's Second Addition Plat Development Agreement

URIJAH'S SECOND ADDITION PLAT AGREEMENT

Required Improvements within publicly dedicated rights-of-way and easements serving Urijah's 2nd Addition, Lots 1 – 7 to the City Minot / Ward County, ND

This Agreement is made this _____ day of _____, 2018 between the City of Minot, a municipal corporation ("City"), whose mailing address is P.O. Box 5006, Minot, ND 58702 and BK Properties LLC, ("Developer"), whose mailing address is PO Box 2052, Minot, ND 58702-2052, and Danielle M. Reichenberger, a private individual who owns Lot 1 Urijah's Second Addition, whose mailing address is 3601 37th Avenue SE, Minot North Dakota 58701.

WHEREAS, the Developer owns the property known as Urijah's Second Addition, more specifically described as: Urijah's 2nd Addition, Lots 1 – 7, located outside the City of Minot corporate limits but within the City of Minot extra territorial jurisdiction ("Urijah's Second Addition"), for the purposes of the construction of residential lots within the re-platted property known as Urijah's First Addition, Lot 2;

WHEREAS, the City is requiring the Developer to complete specific improvements and other conditions before granting further permits for the Development of Urijah's Second Addition;

WHEREAS, the purpose of this Agreement is to memorialize the specific improvements and conditions the Developer shall complete before the City will authorize additional permits for the development of Urijah's Second Addition;

WHEREAS, in addition to any specific improvements and conditions provided in this Agreement, Exhibits A and B are hereby incorporated herein by reference;

WHEREAS, the City is requiring the following improvements as conditioned within approval of Urijah's Second Addition Plat:

NOW, THEREFORE, it is hereby agreed and stipulated that the Developer shall complete the following before the City grants any further permits for the Development of Urijah's Second Addition:

1. Rezoning
    a. The Developer shall rezone Urijah's Second Addition from RA, Agricultural Residential District to R1, Single Family Residential District.
        i. All lots and their proposed uses, buildings, structure types, parking, etc. shall adhere to the requirements of the City Minot Zoning Ordinances.
2. Public Utility Infrastructure Improvements
    a. Developer shall install, at its sole cost, the 8" lateral sanitary sewer including all services to Lots 4-7 to serve the development within Urijah's Second Addition. Developer understands that Lots 1-3 shall be served with septic systems as approved

by 1st District Health.

b. Developer further understands that Lots 1-7 shall be served with water by North Prairie Rural Water. The Developer shall make any and all arrangements with North Prairie Rural Water for service including all costs or agreements necessary for service.

c. The required public utility plans for connection to sanitary sewer shall be submitted by the Developer which shall be reviewed by the City for conformance to City standards and specifications. The City shall approve such plans if they meet all requirements of the City.

d. At Developer's sole cost, all public utility infrastructure shall be installed and tested per the City Standard Specifications and Details by the Developer.

e. At Developer's sole cost, the 8" lateral sanitary sewer including all services to Lots 4-7shall be inspected full time by an engineering firm, licensed to do work in North Dakota, and under the direction of a professional engineer, licensed to do work in North Dakota.

    i. If at any time during construction the work is not being inspected by an engineering firm, the City may order the work to stop immediately until the work can be inspected. The City shall not be held responsible in any way for the work stoppage.

f. The Developer shall warranty all public utility infrastructure work constructed as part of Urijah's 2nd Addition to be free of material and workmanship defects for a period of two years after final written acceptance by the City.

    i. At any time during the two-year warranty period, the Developer shall correct any deficiencies found by the City. The Developer shall be responsible for the sole cost of correcting any deficiencies identified by the City including but not limited to contractor costs, attorney's fees, and engineering costs.

g. The Developer shall submit record drawings certified by the engineer of record to the City for all public utility infrastructure installed as part of Urijah's 2nd Addition conforming to the City's Record Plan Policy on file with the Engineering Department. Record drawings shall be submitted in hard copy, dwg, and GIS format.

h. Security valued at 120% of all public utility infrastructure costs, as determined by a contractor's bid for the work or the design engineer's opinion of probable cost shall be required and provided by the Developer to the City; the required security shall be in the form of an unconditional letter of credit or performance bond, and shall be submitted in a form acceptable to the City Attorney.

3. Maintenance of Public Right of Way and Easements
    a. Unless specific ownership is defined on the plat, all easements and public right of way dedicated with this plat shall be for public use and access.
    b. Because easements and public right of way are located outside of the corporate limits of the City, the City shall not be responsible for any maintenance relating to the easements and public right of way.
    c. Developer shall obtain approval, from jurisdiction providing maintenance, for any driveways and access locations to lots platted with the development.

4. Storm Water Management System

a. A detailed drainage plan has been submitted to the City Engineer, which has been reviewed and approved. Developer shall ensure drainage associated with this plat is in accordance with the final approved drainage plan.
b. Developer shall install culverts needed to convey drainage for this development per the final approved drainage plan.

5. Erosion Control Practices
   a. Developer shall meet all erosion control practice requirements of the State of North Dakota.
   b. Developer shall obtain written approval from the City Engineer on all erosion control practices.

6. Planning Requirements
   a. A developer's agreement with the City of Minot shall be approved, executed, and recorded prior to recording of the final plat.
   b. Developer shall provide a non-protest of annexation agreement for all new lots for future annexation by the City.
   c. Developer shall submit a storm water technical memorandum certified by a registered professional engineer licensed to do work in North Dakota which determines the adequacy of storm network to accept the development's storm water flows. This memorandum shall be reviewed and approved by the City Engineering Department.
   d. Developer shall pay connection fees for public sanitary sewer.

7. Public Land Dedication
   a. Lots 4 – 7 will be subject to the residential multiplier for the Minot Park District acquisition and maintenance fee program. Payment of this fee shall be prior to the building permit issuance for each lot.

8. This Agreement shall be governed by and interpreted according to North Dakota law. The appropriate venue and jurisdiction for any litigation hereunder shall be in a court located in Ward County, North Dakota.

9. Each party represents and warrants that this Agreement has been duly authorized, executed and delivered by it; that the undersigned representatives are duly authorized to sign this Agreement on behalf of the party for whom they are signing and whom they represent; that performance of all the actions contemplated thereby have been duly authorized by all requisite action and that this Agreement constitutes a valid and binding obligation, enforceable against Developer, its successors and assigns in accordance with its terms.

10. Neither this Agreement nor any item hereof may be changed, waived, discharged, or terminated orally, but only by instrument in writing by all parties hereto.

11. If any part of this Agreement shall be judged invalid, the remainder shall not be invalidated. Any part of any section found to be invalid shall not invalidate the remaining part of said section, and the invalid section may be reformed to be valid and enforceable to the extent allowed by law.

12. This Agreement shall be recorded in the Ward County Register of Deed's Office, and shall constitute a covenant running with the land, and shall be binding on the Developer, its administrators, executors, assigns, heirs and any other successors in interests, including any property association.

IN WITNESS WHEREOF, the parties hereto, after due authorization by its respective governing bodies/partners, hereby sign this agreement on the day and year first above written.

CITY OF MINOT, ND

By: _____
Chuck Barney, Mayor

Attest: _____
Kelly Matalka, City Clerk

BK PROPERTIES

By: _____
Ken Herslip
BK Properties, LLC

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of , 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____
_____
Notary Public, _____ County,
North Dakota.
My Commission Expires: _____

DANIELLE M. REICHENBERGER

By: _____
Danielle M. Reichenberger

STATE OF NORTH DAKOTA)
) ss
COUNTY OF _____)

On this ____ day of , 2018, before me personally appeared _____, known to me to be the person who is described in, and who executed the within and foregoing instrument and who acknowledged to me that he executed the same.

(seal)

_____
_____
Notary Public, _____ County,
North Dakota.
My Commission Expires: _____

EXHIBIT 'A'

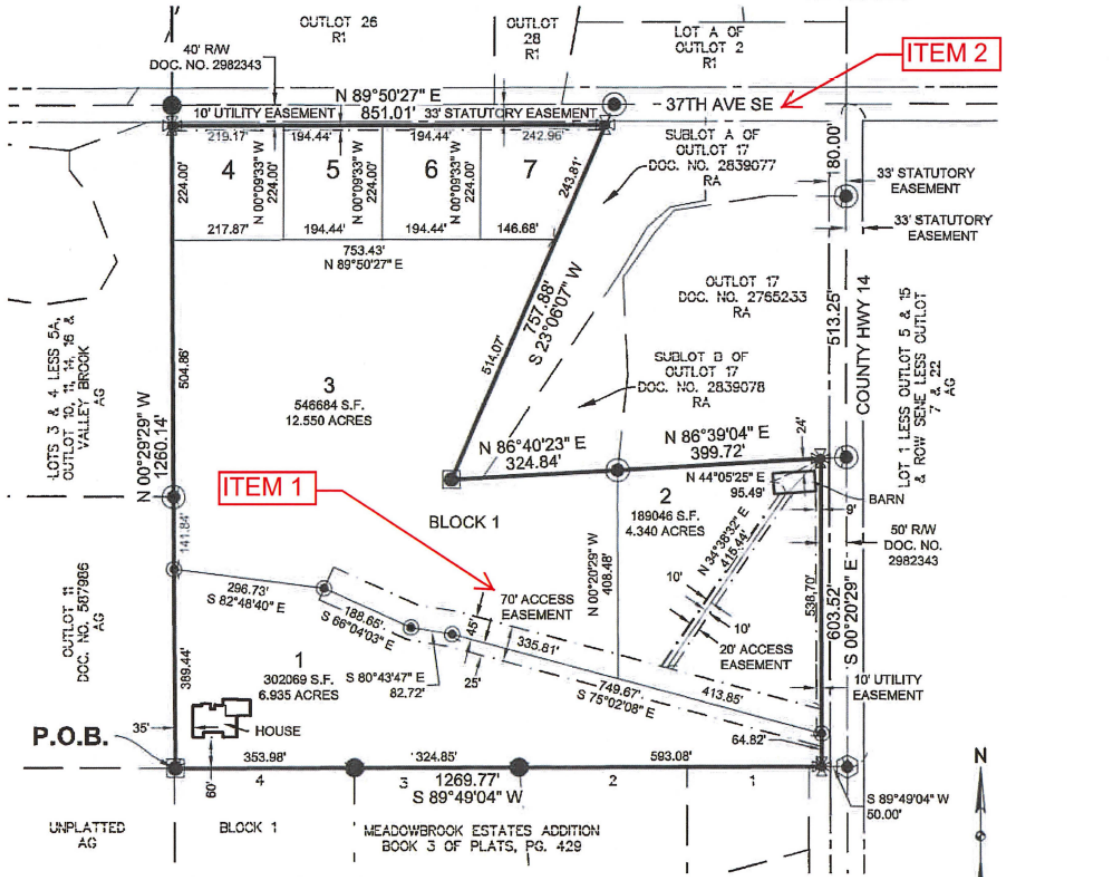
EXHIBIT A

PRELIMINARY PLAT

URIJAH'S SECOND ADDITION

A REPLAT OF URIJAHS FIRST ADDITION IN GOVERNMENT LOT 2 IN SECTION 5, TOWNSHIP 154 NORTH, RANGE 82 WEST OF THE FIFTH PRINCIPAL MERIDIAN, TO THE CITY OF MINOT, WARD COUNTY, NORTH DAKOTA

OWNER LOT 1:	OWNER LOT 2:	ENGINEER/SURVEYOR
DANIELLE M. REICHENBERGER 3601 37TH AVE SE MINOT, ND 58701	BK PROPERTIES 300 3RD AVE SW #C MINOT, ND 58701	KLJ 2900 10TH ST SW, SUITE A MINOT, NORTH DAKOTA 58701 701-839-3383



CURRENT ZONING: AGRICULTURAL RESIDENTIAL (RA)
PROPOSED ZONING: SINGLE-FAMILY (R1) LOTS 4, 5, 6 & 7

PLAT AREA IS CLASSIFIED ZONE X PER FIRM 38101C0803D. FIRM EFFECTIVE DATE IS JANUARY 19, 2000. ZONE X IS AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOODPLAIN.

NUMBER OF LOTS: 7
- LOT 1 ACREAGE - 6.935 ACRES
- LOT 2 ACREAGE - 4.340 ACRES
- LOT 3 ACREAGE - 12.550 ACRES
- LOT 4 ACREAGE - 1.124 ACRES
- LOT 5 ACREAGE - 1.000 ACRES
- LOT 6 ACREAGE - 1.000 ACRES
- LOT 7 ACREAGE - 1.002 ACRES
- TOTAL ACREAGE - 27.951 ACRES

PLAT LEGEND

- REBAR & LS CAP 3881 SET
- LOT CORNER (TO BE SET)
- 1" IRON PIPE FOUND
- #5 REBAR FOUND
- PK NAIL FOUND
- #4 REBAR & LS 6551 2" AC FOUND
- EXISTING ADJACENT PROPERTY LINE
- PROPOSED EASEMENT LINE

1 OF 2

KLJ

Dec 07, 2017 - 3:48pm - \\bsmk-files01\P\Private\ND\City\Minot\7617143 BK Properties - Herslip\CADD\7617143_ReplatUrijahsFirst_PrePlat.dwg

© KLJ 2017

EXHIBIT 'B'

CITY OF MINOT DEVELOPMENT POLICY

In the interest of public safety and orderly development within the City of Minot a policy has been established that establishes what sequence of events needs to take place in order for building permits and occupancy permits to be issued for all residential, commercial, and industrial development within the City of Minot jurisdiction.

A. Building permits for individual sites will be issued upon:
    1. Approval of a stormwater management plan for the site or subdivision.
    2. Approval of site plan or subdivision plans.
    3. Installation and testing of necessary water and sewer main to serve the adjacent properties.
    4. Adjacent streets or access easements to serve the properties have the appropriate gravel sections put in place.
    5. Provide City with verification that proper state storm water permits have been obtained for the project.

Upon completion of the above items building permits will be issued as deemed appropriate by the Engineering department. It will be the developer's responsibility to maintain the gravel streets or access easements throughout the project in a manner sufficient to allow access for emergency vehicles and inspection personnel. If at any time, it is determined that the roadways have fallen into an unacceptable condition no further permits will be issued until the necessary corrections have been made.

B. Occupancy permits for individual sites will be issued upon:
    1. Water and sewer mains serving properties have passed the appropriate tests.
    2. Utilities to include gas and electric have been installed to the property.
    3. Curb and gutter and one lift of asphalt have been installed in roadway or easement adjacent to property.

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Wicke, Assistant City Engineer

DATE: 4/24/2018

SUBJECT: **RIGHT OF WAY ENCROACHMENT AGREEMENT APPLICATION**

I. RECOMMENDED ACTION

1. Recommend approval of the Right of Way Encroachment Agreement Application submitted by Aksal Group, LLC for the future construction of ADA accessibility to the subject property's building.

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	857-4100
David Wicke, Assistant City Engineer	857-4100

III. DESCRIPTION

A. Background
The Subject property requesting the encroachment permit is described as the Original Minot Addition Lots 1, 2 & 3 Less Soo Line R/W, Block 1 and is located at 3 First Street SE, Minot, ND 58701. Applicant is applying for the encroachment permit to access the doorways on the east side of the building of subject property and have them comply with ADA standards for accessibility. In order to comply with ADA Standards, the applicant will construct an ADA accessible ramp and walkway to allow ingress/egress to the east side of the building. The proposed ramp/walkway will encroach on the City's right-of-way.

B. Proposed Project
Encroachments within the right-of-way are interpreted as a permanent encroachment as defined in Article I. Section 28-3 of the Code of Ordinances. If the City Council deems that the request is warranted, it should be approved with the following recommendations:

1. That the City Council approves the encroachment listed above.
2. That the permit holder agrees that the costs of maintenance and replacement be their responsibility.
3. That the City Attorney prepares the encroachment permit agreement, including language to protect the City from liability.
4. That the City Council retains the right to revoke the encroachment permit if it becomes necessary for any reasons.
5. That the permit holder pays a $100 permit fee.
6. That the permit holder shall obtain and comply with insurance coverage requirements.
7. No person may construct or install the proposed ramp/walkway within the public right-of-way without having first obtained a permit from the City Engineer.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
NA

B. Service/Delivery Impact:
NA

C. Fiscal Impact:
All costs associated with the Permit shall be bore solely by the applicant. The City will not be responsible for the permit holder's routine maintenance, repair, replacement or other related cost associated with the proposed ramp/walkway.

V. ALTERNATIVES
NA

VI. TIME CONSTRAINTS
NA

VII. LIST OF ATTACHMENTS

A. Right-of-Way Encroachment Agreement Application
B. Encroachment Exhibit – 3 1st St Se
C. Accompanying Photos

City of Minot
Engineering Department

RIGHT OF WAY ENCROACHMENT AGREEMENT APPLICATION

Contact Information:

Applicant/Owner Aksal Group,LLC / Jessica Ackerman

Mailing Address 1112 Sunrise Court SE - Minot, ND 58701

Phone (701) 837-5781 Email jessicajackerman@gmail.com

Application Information:

Address of Requested Encroachment 3 1st Street SE - Minot, ND 58701

Legal Description of Property Original Minot Addition Lots 1, 2 & 3 Less Soo Line R/W, Block 1

Briefly describe the reason for this request There are existing doors on the east side of the building that are proposed to be re-established. As such, Aksal Group intends to make these doors accessible / ADA compliant. The sidewalk grade along Central Avenue is too low to facilitate an accessible ramp that would be completely off the right of way.

Signature of Applicant

4 April 2018
Date

*$100.00 processing fee will be required before recording of encroachment (after City Council approval).

1025 31st St SE
Minot, ND 58701

engineers@minotnd.org

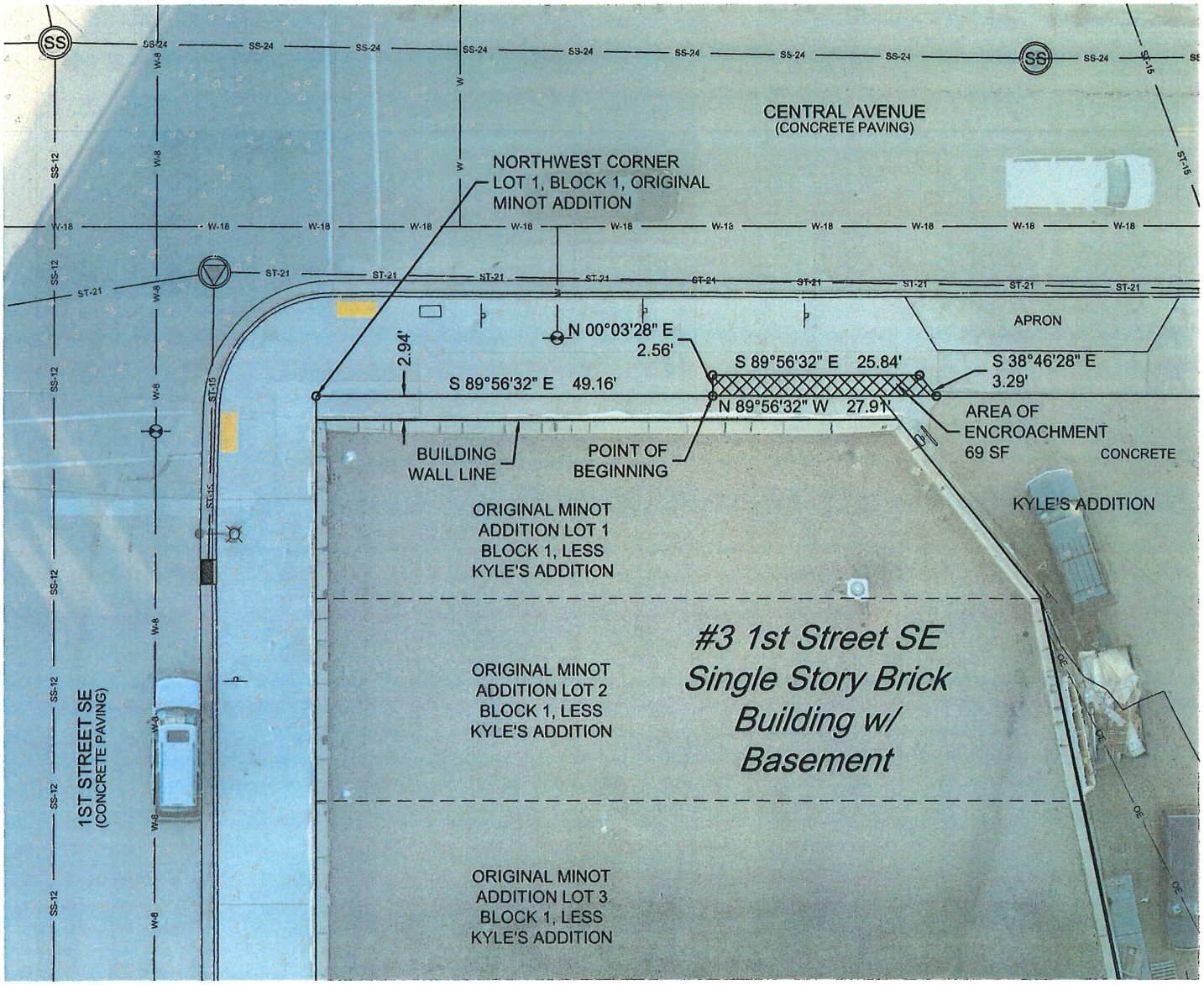
(701)857-4100
FAX (701)857-4130

ENCROACHMENT EXHIBIT

#3 1st Street Southeast

0 10 20

Scale 1" = 20'



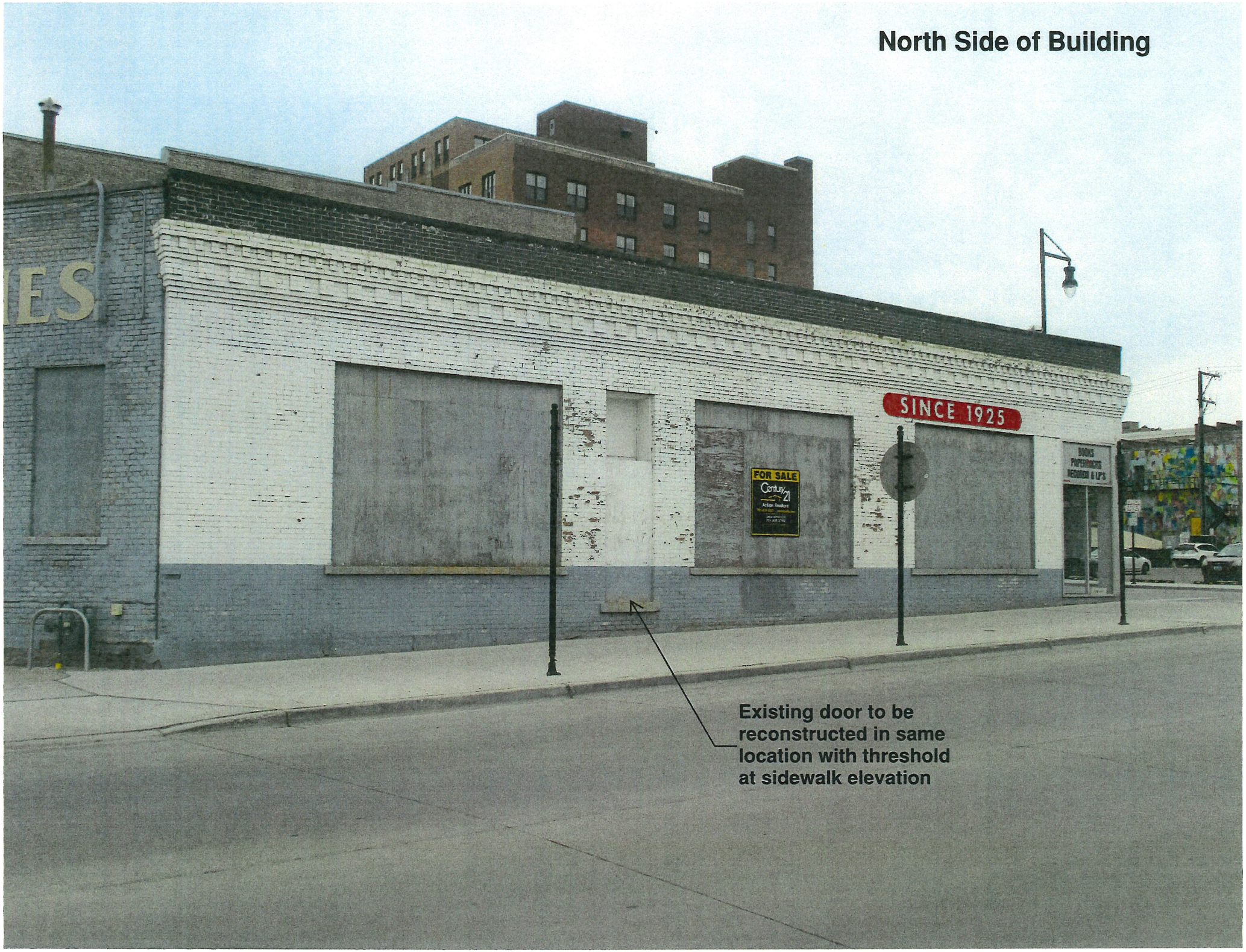
Description of Encroachment Area:

Commencing at the northwest corner of Original Minot Addition, Lot 1, Block 1; thence S 89°56'32" E along the north line of said Lot 1, a distance of 49.16 feet to the point of beginning of encroachment area; thence N 00°03'28" E, a distance of 2.56 feet; thence S 89°56'32" E, a distance of 25.84 feet; thence S 38°46'28" E, a distance of 3.29 feet; thence N 89°56'32" W, a distance of 27.91 feet to the point of beginning of encroachment area. Encroachment area contains approximately 69 square feet.

REGISTERED PROFESSIONAL LAND SURVEYOR
ROBBY L. BERARD
4-6-18
DATE
NORTH DAKOTA

East Side of Building




North Side of Building
SINCE 1925
FOR SALE
Century 21
Existing door to be reconstructed in same location with threshold at sidewalk elevation

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Wicke, Assistant City Engineer

DATE: 4/24/2018

SUBJECT: **US 2 AND BURDICK EXPRESSWAY MICROSURFACING COST PARTICIPATION AND MAINTENANCE (CPM) AGREEMENT (PROJECT #4362)**

I. RECOMMENDED ACTION

1. Recommend approval of the Cost Participation and Maintenance (CPM) Agreements with the NDDOT and authorize the Mayor and staff to execute the agreements

II. DEPARTMENT CONTACT PERSONS

Lance Meyer, City Engineer	(701) 857-4100
David Wicke, Assistant City Engineer	(701) 857-4100

III. DESCRIPTION

A. Background
The East Burdick Expressway from 42nd St SE to US Highway 2 is a principal arterial street and 42nd St SE from 10th Ave SE to East Burdick Expressway is a major collector street located within the City of Minot Corporate Limits. The North Dakota Department of Transportation (NDDOT) will bid the work in May of 2018 to resurface by microsurfacing the streets described above. The City's cost share of the project will come from annual street maintenance funds.

B. Proposed Project
The project stems from a need to extend the service life of the roadways by way of a protective thin coat of polymer-modified emulsified asphalt mixed with finely crushed aggregate to create a durable, cost effective road surface, thereby improving rideability, safety and extending the pavement's serviceable life.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
The roadway will have an improved surface for rideability, safety and extending the pavement's serviceable life. Microsurfacing fills ruts, seals cracks, improves friction resistance and has an aesthetic benefits which also acts as a good contrast for pavement striping.

B. Service/Delivery Impact:
Traffic flows will be impacted during the microsurfacing operations, traffic control devices and/or detour routes will be employed during the work.

C. Fiscal Impact:
The City's will have a 10% cost share in which annual street maintenance funds will be utilized to pay for the City's share.

Estimated Project Costs
NDDOT Project No. NHU-4-002(124)909
East Burdick Expressway from 42nd St SE to US Highway 2:

Preliminary Cost Estimate	$61,337.00
City of Minot Estimated Cost Share	$2,312.00

NDDOT Project No. SU-4-989(122)
42nd St SE from 10th Ave SE to East Burdick Expressway

Preliminary Cost Estimate	$6,517.00
City of Minot Estimated Cost Share	$0.00

V. ALTERNATIVES
NA

VI. TIME CONSTRAINTS
NA

VII. LIST OF ATTACHMENTS

A. East Burdick Expressway CPM Agreement NHU-4-002(124)909
B. 42nd St SE CPM Agreement SU-4-989(122)
C. Appendix A - East Burdick Expressway Cost Estimate and Funding Breakdown
D. Risk Management Appendix

North Dakota Department of Transportation
COST PARTICIPATION AND MAINTENANCE AGREEMENT

Federal Award Information – to be provided by NDDOT

CFDA No: 20.205	CFDA Title: Highway Planning & Construction
Award Name: Federal Aid Highway Program	Awarding Fed. Agency: Federal Highway Admin
NDDOT Program Mgr: Striefel, Ardin L.	Telephone: 328-2559

Notice to Subrecipients: Federal awards may have specific compliance requirements. If you are not aware of the specific requirements for your award, please contact your NDDOT Program Manager.

Project No.NHU-4-002(124)909
Location: MINOT,BURDICK EXPY(42ND ST SE-US2)
Type of Improvement: Microsurfacing
Point of Beginning: 909.006
Point of Ending: 909.290

In consideration of the mutual benefits to be derived therefrom, it is agreed between the state of North Dakota, acting by and through its Director of Transportation, hereinafter referred to as NDDOT, whose address is 608 East Boulevard Avenue, Bismarck, North Dakota 58505-0700, and the Local Public Agency (LPA) of Minot, North Dakota, hereinafter referred to as the LPA, the project will be constructed in accordance with the current edition of NDDOT's *Standard Specifications for Road and Bridge Construction* and with the plans incorporated into this agreement by reference.

The LPA

a. Will pay 10 percent of the cost of rights of way and easements acquired for the project; and
b. Will pay 10 percent of the total cost of all items which are determined eligible for funding participation. This total cost will include the actual construction cost plus 10 percent for the preliminary and construction engineering; and
c. Will pay 100 percent of the construction costs plus 10 percent for the preliminary and construction engineering of all items as requested by the LPA for items determined to be non-participating or ineligible for federal aid.

PART I

LPA Obligation:

1. The LPA will pay to NDDOT as the work progresses or when completed its share of the total cost of the project as defined above.

2. It is specifically agreed that if at any time the LPA fails to pay the amount billed to NDDOT within 60 days after billings, this document shall constitute an assignment of funds derived from the State Highway Tax Distribution Fund now or hereafter coming into the hands of the State Treasurer to the credit of the LPA, and the State Treasurer is hereby directed to deliver and pay over to NDDOT all funds credited to the LPA until the total thereof equals the sum billed pursuant to this agreement.

The preliminary cost estimate of the project is $61,337, with the LPA's estimated share being $2,312.

PART II

Post Construction

After the project is completed the LPA agrees to:

1. The LPA will control the length and location of curb openings for future entrances and will not permit the length of curb openings for entrances to exceed the length shown on the plans or as shown on a sketch of typical entrances for similar entrances; and will prohibit the construction or use of any entrances along the project within the LPA other than those shown on the plans, without prior approval of NDDOT.

2. The LPA will not change any speed limit signs as shown on the plans without prior approval of NDDOT.

3. The LPA will prohibit double and diagonal parking and will control all parallel parking where allowed within the limits of the project in a manner satisfactory to NDDOT and to the Federal Highway Administration (FHWA), or both.

4. All signs, signals, markings, and other protective structures erected on or in connection with the project, including those installed at the sole cost and expense of the LPA or by others, shall be approved by NDDOT. All traffic control devices will be in conformance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways.

PART III

Maintenance

1. The NDDOT is responsible for all maintenance activities on mainline and the north service roadway. The LPA is responsible for all maintenance for the south service road. The LPA is responsible for all maintenance on the south service road to include maintenance seals, signing, striping, snow plowing, and snow removal.

2. The LPA will maintain the striping for parking and any striping located on side streets and the south service road.

3. The LPA will be responsible to provide a local match for the cost of the initial seal following this project, and any future seals. The local match percentage will be the same as identified in this agreement.

PART IV

General:

1. Appendices A and E of the Title VI Assurances, attached, are hereby incorporated into and made a part of this agreement.

2. The Risk Management Appendix, attached, is hereby incorporated and made a part of this agreement.

3. Entities that receive federal funds through NDDOT may be required to obtain an audit in accordance with 2 C.F.R. Part 200, Subpart F. A copy of such audit shall be submitted to NDDOT. Entities that spend less than $750,000 of federal funds from all sources may be subject to reviews by NDDOT at its discretion. Additionally, all entities receiving federal funds through NDDOT shall certify whether a Single Audit has been completed as part of the annual Federal award process. These requirements are applicable to counties, cities, state agencies, Indian tribes, colleges, hospitals, and non profit businesses.

4. The LPA is advised that its signature on this contract or agreement certifies that any person associated therewith is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency within the past three years; and has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction on any matter involving fraud or official misconduct within the past three years.

5. NDDOT is not responsible for any Property Taxes or Special Assessments on property which has been acquired as part of the roadway reconstruction project. The LPA is responsible to make arrangements for deferral or payment of such Taxes and/or Special Assessments.

Executed by the LPA of _____, at _____, North Dakota, the last date below signed.

APPROVED:

_____
LPA ATTORNEY (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

LPA of _____

_____
NAME (TYPE OR PRINT)

_____
SIGNATURE

_____
*
TITLE

_____
DATE

ATTEST:

_____
AUDITOR (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

Executed for the North Dakota Department of Transportation by the Director at Bismarck, North Dakota, the last date below signed.

APPROVED as to substance by:

_____
DIVISION DIRECTOR(TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

_____
DIRECTOR (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

*Mayor or President of Commission

CLA 17058 (Div. 38)
L.D. Approved 10-17

AUTHORIZATION

At a _____meeting held on the _____day of _____, 20____, it was moved by _____ and seconded by _____ that the attached certification and agreement be approved, and that the *_____ and Auditor be authorized to execute in behalf of the LPA of_____ and that two executed copies be returned to the NDDOT Director.

Adopted on a vote of ____ aye, ____ nay, _____ absent.

ATTEST:

_____
AUDITOR (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

APPROVED:

LPA of _____

_____
NAME (TYPE OR PRINT)

_____
SIGNATURE

*

_____
TITLE

_____
DATE

CERTIFICATION

It is hereby certified that the LPA of _____ will issue improvement warrants to finance the amounts that the LPA is obligated to pay under terms of the attached agreement with the North Dakota Department of Transportation and that authority to do so has been obtained in accordance with the Section 40-22-06 of the North Dakota Century Code.

Executed at _____, North Dakota, the last date below signed.

ATTEST:

_____
AUDITOR (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

APPROVED:

LPA of _____

_____
NAME (TYPE OR PRINT)

_____
SIGNATURE

*

_____
TITLE

_____
DATE

*Mayor or President of Commission

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX A OF THE TITLE VI ASSURANCES

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees as follows:

1. Compliance with Regulations: The Contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. Non-discrimination: The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. Information and Reports: The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Recipient or the Federal Highway Administration as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

   a. withholding payments to the Contractor under the contract until the Contractor complies; and/or
   b. cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX E OF THE TITLE VI ASSURANCES

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.P.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

North Dakota Department of Transportation
COST PARTICIPATION AND MAINTENANCE AGREEMENT

Federal Award Information – to be provided by NDDOT

CFDA No: 20.205	CFDA Title: Highway Planning & Construction
Award Name: Federal Aid Highway Program	Awarding Fed. Agency: Federal Highway Admin
NDDOT Program Mgr: Striefel, Ardin L.	Telephone: 701-328-2559

Notice to Subrecipients: Federal awards may have specific compliance requirements. If you are not aware of the specific requirements for your award, please contact your NDDOT Program Manager.

Project No.SU-4-989(122)
Location: MINOT 42ND ST SE (10TH AVE - BURDICK EXPRESSWAY)
Type of Improvement: MICROSURFACING
Point of Beginning: STA 18+30
Point of Ending: STA 24+00

In consideration of the mutual benefits to be derived therefrom, it is agreed between the state of North Dakota, acting by and through its Director of Transportation, hereinafter referred to as NDDOT, whose address is 608 East Boulevard Avenue, Bismarck, North Dakota 58505-0700, and the Local Public Agency (LPA) of Minot, North Dakota, hereinafter referred to as the LPA, the project will be constructed in accordance with the current edition of NDDOT's *Standard Specifications for Road and Bridge Construction* and with the plans incorporated into this agreement by reference.

The LPA

a. Will not be required to pay for any costs except for any extra items which the City may request for its own benefit.
b. Will pay 100 percent of the construction costs plus 10 percent for the preliminary and construction engineering of all items as requested by the LPA for items determined to be non-participating or ineligible for federal aid.

PART I

LPA Obligation

1. The LPA will pay to NDDOT as the work progresses or when completed its share of the total cost of the project as defined above.

2. It is specifically agreed that if at any time the LPA fails to pay the amount billed to NDDOT within 60 days after billings, this document shall constitute an assignment of funds derived from the State Highway Tax Distribution Fund now or hereafter coming into the hands of the State Treasurer to the credit of the LPA, and the State Treasurer is hereby directed to deliver and pay over to NDDOT all funds credited to the LPA until the total thereof equals the sum billed pursuant to this agreement. The preliminary cost estimate of the project is $6,517, with the LPA's estimated share being $0.

PART II

Post Construction

After the project is completed the LPA agrees to take over all ownership of this roadway.

PART III

Maintenance

The LPA is responsible for all maintenance activities.

PART IV

General:

1. Appendices A and E of the Title VI Assurances, attached, are hereby incorporated into and made a part of this agreement.

2. The Risk Management Appendix, attached, is hereby incorporated and made a part of this agreement.

3. Entities that receive federal funds through NDDOT may be required to obtain an audit in accordance with 2 C.F.R. Part 200, Subpart F. A copy of such audit shall be submitted to NDDOT. Entities that spend less than $750,000 of federal funds from all sources may be subject to reviews by NDDOT at its discretion. Additionally, all entities receiving federal funds through NDDOT shall certify whether a Single Audit has been completed as part of the annual Federal award process. These requirements are applicable to counties, cities, state agencies, Indian tribes, colleges, hospitals, and non profit businesses.

4. The LPA is advised that its signature on this contract or agreement certifies that any person associated therewith is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency within the past three years; and has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction on any matter involving fraud or official misconduct within the past three years.

5. NDDOT is not responsible for any Property Taxes or Special Assessments on property which has been acquired as part of the roadway reconstruction project. The LPA is responsible to make arrangements for deferral or payment of such Taxes and/or Special Assessments.

Executed by the LPA of _____, at _____, North Dakota, the last date below signed.

APPROVED:

LPA of _____

LPA ATTORNEY (TYPE OR PRINT)

NAME (TYPE OR PRINT)

SIGNATURE

SIGNATURE

DATE

*

TITLE

DATE

ATTEST:

AUDITOR (TYPE OR PRINT)

SIGNATURE

DATE

Executed for the North Dakota Department of Transportation by the Director at Bismarck, North Dakota, the last date below signed.

APPROVED as to substance by:

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

DIVISION DIRECTOR(TYPE OR PRINT)

DIRECTOR (TYPE OR PRINT)

SIGNATURE

SIGNATURE

DATE

DATE

*Mayor or President of Commission

CLA 17058 (Div. 38)
L.D. Approved 10-17

AUTHORIZATION

At a _____meeting held on the _____day of _____, 20____, it was moved by _____ and seconded by _____ that the attached certification and agreement be approved, and that the *_____ and Auditor be authorized to execute in behalf of the LPA of_____ and that two executed copies be returned to the NDDOT Director.

Adopted on a vote of ____ aye, ____ nay, _____ absent.

ATTEST:

_____
AUDITOR (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

APPROVED:

LPA of _____

_____
NAME (TYPE OR PRINT)

_____
SIGNATURE

*

_____
TITLE

_____
DATE

CERTIFICATION

It is hereby certified that the LPA of _____ will issue improvement warrants to finance the amounts that the LPA is obligated to pay under terms of the attached agreement with the North Dakota Department of Transportation and that authority to do so has been obtained in accordance with the Section 40-22-06 of the North Dakota Century Code.

Executed at _____, North Dakota, the last date below signed.

ATTEST:

_____
AUDITOR (TYPE OR PRINT)

_____
SIGNATURE

_____
DATE

APPROVED:

LPA of _____

_____
NAME (TYPE OR PRINT)

_____
SIGNATURE

*

_____
TITLE

_____
DATE

*Mayor or President of Commission

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX A OF THE TITLE VI ASSURANCES

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees as follows:

1. Compliance with Regulations: The Contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. Non-discrimination: The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the Contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. Information and Reports: The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Recipient or the Federal Highway Administration as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

   a. withholding payments to the Contractor under the contract until the Contractor complies; and/or
   b. cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPENDIX E OF THE TITLE VI ASSURANCES

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the Contractor) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.P.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Appendix A

NHU-4-002(124)909 Cost Estimate and Funding Breakdown

Cost Estimate:	Total		Federal	State	City
US 2 Mainline Estimate at 37.7 Percent =	$23,124	=	$18,714	$2,097	$2,312
Total of Engineer's Estimate =	$23,124		$18,714	$2,097	$2,312

Note: The costs above are estimated.

Project Split = (RP 909.006 to 909.290)/(RP 909.006 to 909.760) = 0.284/0.754 = 0.377
Project Estimate = $61,337

4/2/2018

Risk Management Appendix

Routine* Service Agreements With Sovereign Entities and Political Subdivisions of the State of North Dakota:

Parties: **State** – State of North Dakota, its agencies, officers and employees

Governmental Entity – The Governmental Entity executing the attached document, its agencies, officers and employees

Governments – State and Government Entity, as defined above

Each party agrees to assume its own liability for any and all claims of any nature including all costs, expenses and attorney's fees which may in any manner result from or arise out of this agreement.

Each party shall secure and keep in force during the term of this agreement, from insurance companies, government self-insurance pools or government self-retention funds, authorized to do business in North Dakota, the following insurance coverages:

1) **Commercial general liability** and **automobile liability** insurance – minimum limits of liability required of the Governmental Entity are **$250,000 per person** and **$500,000 per occurrence**. The minimum limits of liability required of the State are **$250,000 per person** and **$1,000,000 per occurrence**.
2) **Workers compensation** insurance meeting all statutory limits.
3) The policies and endorsements may not be canceled or modified without **thirty (30) days prior written notice** to the undersigned State representative.

The State reserves the right to obtain complete, certified copies of all required insurance documents, policies, or endorsements at any time.

Each party that hires subcontractors shall require any non-public subcontractors, prior to commencement of work set out under an agreement between that party and the non-public subcontractor, to:

Defend, indemnify, and hold harmless the Governments, its agencies, officers and employees, from and against claims based on the vicarious liability of the Governments or its agents, but not against claims based on the Government's contributory negligence, comparative and/or contributory negligence or fault, sole negligence, or intentional misconduct. The legal defense provided by the Subcontractor to the Governments under this provision must be free of any conflicts of interest, even if retention of separate legal counsel for the Governments is necessary. Subcontractor also agrees to defend, indemnify, and hold the Governments harmless for all costs, expenses and attorneys' fees incurred if the Governments prevail in an action against Subcontractor in establishing and litigating the indemnification coverage provided herein. This obligation shall continue after the termination of this agreement.

Subcontractor shall secure and keep in force during the term of this agreement, from insurance companies, government self-insurance pools or government self-retention funds authorized to do business in North Dakota: 1) commercial general liability; 2) automobile liability; and 3) workers compensation insurance all covering the Subcontractor for any and all claims of any nature which may in any manner arise out of or result from this agreement. The minimum limits of liability required are $250,000 per person and $1,000,000 per occurrence for commercial general liability and automobile liability coverages, and statutory limits for workers compensation. The Governments shall be endorsed on the commercial general liability policy and automobile liability policy as additional insureds. Said endorsement shall contain a "Waiver of Subrogation" waiving any right of recovery the insurance company may have against the Governments as well as provisions that the policy and/or endorsement may not be canceled or modified without thirty (30) days prior written notice to the undersigned representatives of the Governments, and that any attorney who represents the State under this policy must first qualify as and be appointed by the North Dakota Attorney General as a Special Assistant Attorney General as required under N.D.C.C. Section 54-12-08. Subcontractor's insurance coverage shall be primary (i.e., pay first) as respects any insurance, self-insurance or self-retention maintained by the Governments. Any insurance, self-insurance or self-retention maintained by the Governments shall be excess of the Contractor's insurance and the Subcontractor's insurance and shall not contribute with them. The insolvency or bankruptcy of the insured Subcontractor shall not release the insurer from payment under the policy, even when such insolvency or bankruptcy prevents the insured Subcontractor from meeting the retention limit under the policy. Any deductible amount or other obligations under the Subcontractor's policy(ies) shall be the sole responsibility of the Subcontractor. This insurance may be in policy or policies of insurance, primary and excess, including the so-called umbrella or catastrophe form and be placed with insurers rated "A-" or better by A.M. Best Company, Inc. The Governments will be indemnified, saved, and held harmless to the full extent of any coverage actually secured by the Subcontractor in excess of the minimum requirements set forth above. The Government Entity that hired the Subcontractor shall be held responsible for ensuring compliance with the above requirements by all Subcontractors. The Governments reserve the right to obtain complete, certified copies of all required insurance documents, policies, or endorsements at any time.

*See *North Dakota Risk Management Manual,* section 5.1 for discussion of "unique" and "routine" agreements.

RM Consulted 2007
Revised 5-09

NDDOT
North Dakota
Department of Transportation

City of Minot

TO: Mayor Chuck Barney

Members of the City Council

FROM: *Dan Jonasson, Director of Public Works*

DATE: *April 24, 2018*

SUBJECT: **P3135.2D SWIF ACTION D OUTFALL PIPE REHABILITATION PROJECT**

I. RECOMMENDED ACTION

1. Recommend approval of the Plans and specifications and authorize bidding of SWIF Action D outfall pipe rehabilitation project.

II. DEPARTMENT CONTACT PERSONS

Dan Jonasson, Director of Public Works	857-4140
Jason Sorenson, Asst. Director of Public Works	857-4140

III. DESCRIPTION

A. Background

Levee inspections are completed quarterly in accordance with our SWIF (System Wide Improvement Framework) which is a plan completed by the City to address the levee deficiencies identified by the USACE during their yearly inspections. In order to stay eligible for the PL-84-99 program with the USACE, we must have a plan (SWIF) which outlines our actions to repair the deficiencies. Previous projects have been approved and are being comp0leted which consisted of bank repairs along 10th street, televising and assessment of culverts which penetrate the levee or flood control, erosion and repairs on levees and banks along Roosevelt park as well as Souris Drive area.

B. Proposed Project

The project will correct deficiencies noted in outfall pipes that intersect the flood protection line. This will repair approximately 25 pipes and work ranges from new pipes to correct crushed or deficient pipes, flap gates and erosion protection to bring the outfalls into USACE standards.

C. Consultant Selection

Houston Engineering was chosen in accordance with state selection criteria to complete the SWIF, as well as the improvements designated in the SWIF.

IV. IMPACT:

A. Strategic Impact:

This work will allow us to maintain our ability to leverage PL-84-99 funding and support from the USACE. It will restore our existing levee system to the new USACE standards, while the longer term flood project is being built.

B. Service/Delivery Impact:
This project is part of the long term improvements needed to keep our existing flood protection in place. Funding for this work was shown in These projects were shown in the

C. Fiscal Impact:
Public Works has applied for funding from the State Water Commission for part of this work. The estimated amount of funding we may expect to receive is shown in the cost breakdown below. The State Water Commission will act on this request at the June 14, 2018 Water Commission meeting. The public Works director will be in attendance to request this funding from the state. If approved, actual funding will be adjusted when bids are received.

Project Costs	
Engineer's estimate of construction cost	$1,699,815.00
State Water Commission request for eligible features	$ 434,263.81
Local share from flood Sales Tax funding set aside	$1,265,551.19
Total	$1,699,815.00

V. ALTERNATIVES

Alt 1. Do not approve the plans and specs. – City will not be in compliance with the SWIF, approved by council and will be in default of the commitment to restore the existing flood protection to USACE standards.

VI. TIME CONSTRAINTS

Council's approval of the recommendation will allow the project to be bid and start construction within the 2018 construction season.

VII. LIST OF ATTACHMENTS

A. 90% Plans
B. 90% specs

City of Minot

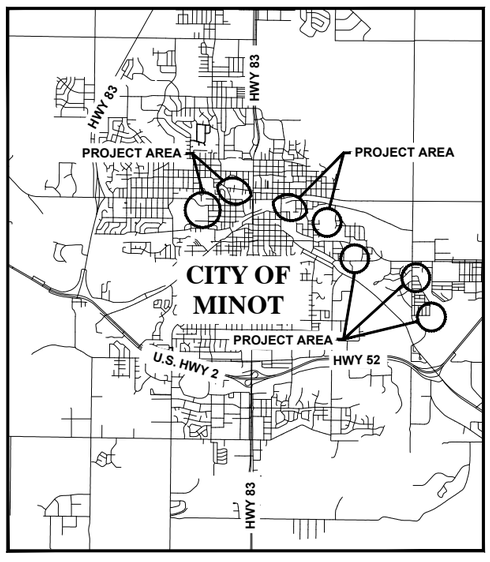
SURVEY INFORMATION
HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
VERTICAL DATUM CONVERSION: NAVD 88 = NGVD 29 + 1.24'
COORDINATE SYSTEM: ND STATE PLANE NORTH ZONE
UNIT OF MEASURE: U.S. SURVEY FOOT

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT

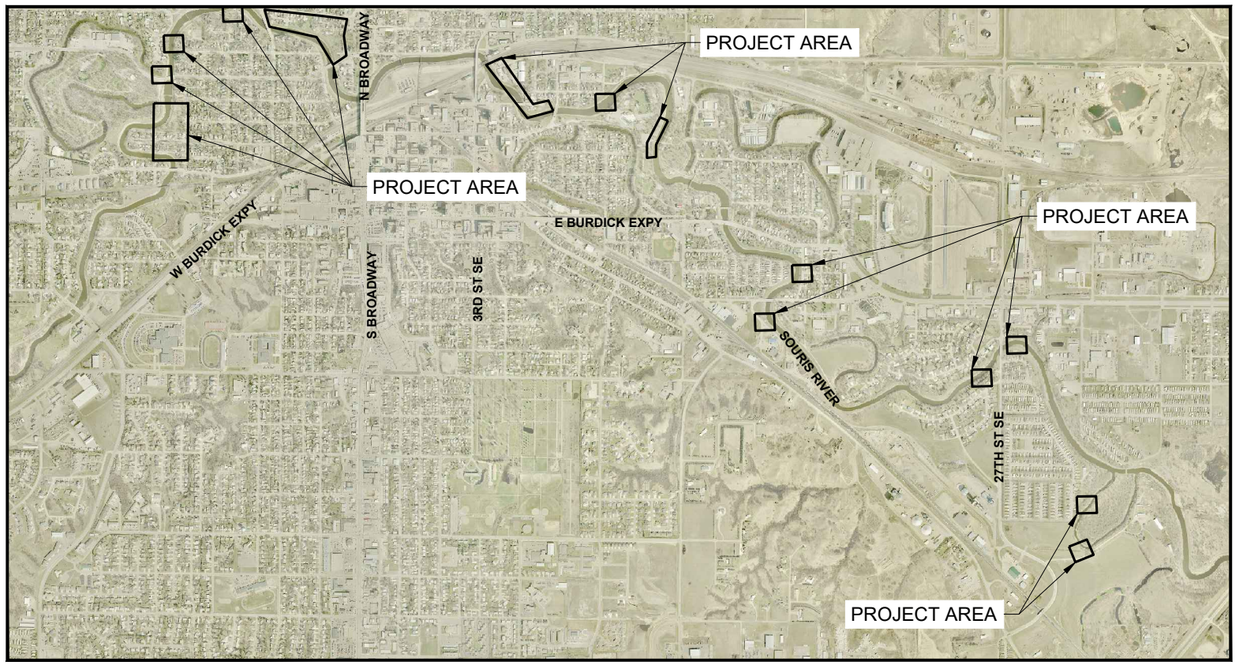
90% SUBMITTAL

MINOT SWIF ACTION D
CITY OF MINOT, NORTH DAKOTA
CITY PROJECT NO. 3135.2D
APRIL 2018

LEGEND	EXISTING	NEW
WATER MAIN	W	W
SANITARY SEWER MAIN	SS	
STORM SEWER MAIN	STS	STS
STORM INLET		
MANHOLE		
CLEANOUT		
FIRE HYDRANT		
GATE VALVE		
LIGHT POLE		
UNDERGROUND ELECTRIC	UGE	
UNDERGROUND TELEPHONE	UGT	
GAS MAIN	G	
CONIFEROUS TREE		
DECIDUOUS TREE		
FENCE	X X	
STANDARD CURB & GUTTER		
REMOVAL AREA		
NEW BITUMINOUS PAVEMENT		
NEW CONCRETE		
DRAINAGE DIRECTION		
EMBANKMENTS/FILL AREAS		
EXCAVATION AREAS		



VICINITY MAP



LOCATION MAP

NOTES:

1. AERIAL IMAGE IS FROM 2015 AND MAY NOT REFLECT CURRENT CONDITIONS.
2. EXISTING GROUND SURFACES ARE A COMBINATION OF 2017 LIDAR AND FIELD SURVEY AND MAY NOT REFLECT CURRENT CONDITIONS.

THE UNDERGROUND UTILITIES HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION, AS-BUILT MAPS AS PROVIDED BY MUNICIPALITIES OR UTILITY COMPANIES, AND/OR EXISTING DRAWINGS. THERE IS NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED, NOR IS THERE A GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY RESULT FROM ITS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.

SHEET INDEX

General Plans

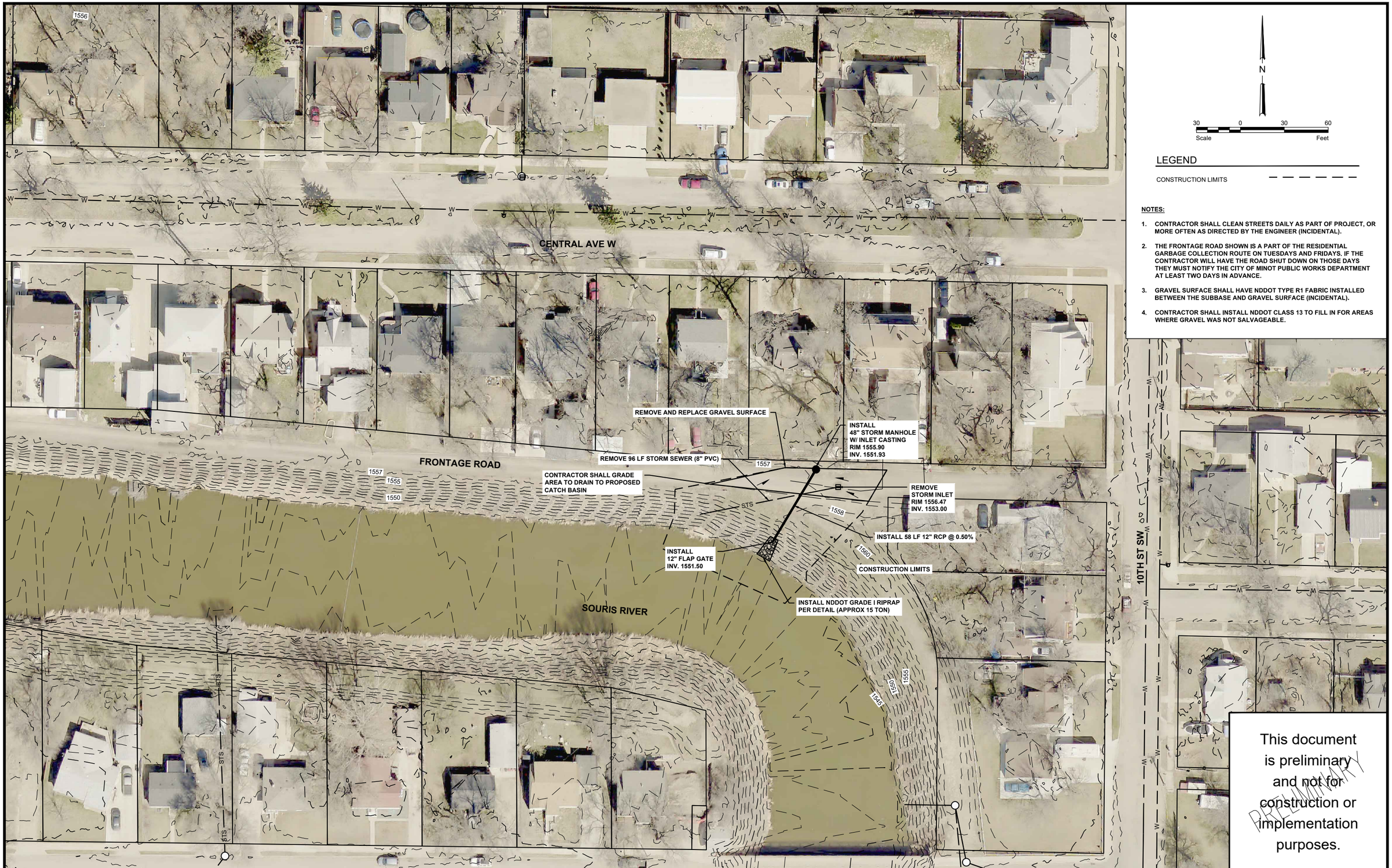
1	COVER SHEET	23	AREA 20
2	AREA 1	24	AREA 21
3	AREA 2-3	25-26	AREA 22
4-5	AREA 4-5	27-38	DETAILS
6-7	AREA 6-7	39-56	EROSION CONTROL PLAN
8-9	AREA 8	57-58	EROSION CONTROL DETAILS
10-11	AREA 9	59-73	TRAFFIC CONTROL
12-13	AREA 10		
14-15	AREA 11-12		
16	AREA 13-14		
17	AREA 15		
18	AREA 16		
19-20	AREA 17		
21	AREA 18		
22	AREA 19		

This document is preliminary and not for construction or implementation purposes.

PRELIMINARY

Houston Engineering Inc.

\\houston\hei\Fargo\JBN\6000\6027\16_6027_050\CAD\Plans\CIP No. 2\01_Cover.dwg-Cover-4/11/2018 7:35 PM-{buhler}



LEGEND

CONSTRUCTION LIMITS

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. THE FRONTAGE ROAD SHOWN IS A PART OF THE RESIDENTIAL GARBAGE COLLECTION ROUTE ON TUESDAYS AND FRIDAYS. IF THE CONTRACTOR WILL HAVE THE ROAD SHUT DOWN ON THOSE DAYS THEY MUST NOTIFY THE CITY OF MINOT PUBLIC WORKS DEPARTMENT AT LEAST TWO DAYS IN ADVANCE.
3. GRAVEL SURFACE SHALL HAVE NDDOT TYPE R1 FABRIC INSTALLED BETWEEN THE SUBBASE AND GRAVEL SURFACE (INCIDENTAL).
4. CONTRACTOR SHALL INSTALL NDDOT CLASS 13 TO FILL IN FOR AREAS WHERE GRAVEL WAS NOT SALVAGEABLE.

This document is preliminary and not for construction or implementation purposes.

PRELIMINARY

90% SUBMITTAL

City of Minot
CITY PROJECT NO. 3135.2D

Houston Engineering Inc.
Fargo
P: 701.237.5065
F: 701.237.5101

Drawn by	Date
BAU, JAR	4-11-18
Checked by	Scale
RGE	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN AREA 1
PROJECT NO. 6027-050

SHEET 2 of 73

\\houston\he\Fargo\JBN\6000\6027\16_6027_050\CAD\Plans\CIP No. 2\SWIF D - West Design.dwg AREA 1 4/11/2018 7:36 PM (buhler)

N

30 0 30 60

Scale Feet

LEGEND

REMOVE TREE

CONSTRUCTION LIMITS

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. THE FRONTAGE ROAD SHOWN IS A PART OF THE RESIDENTIAL GARBAGE COLLECTION ROUTE ON TUESDAYS AND FRIDAYS. IF THE CONTRACTOR WILL HAVE THE ROAD SHUT DOWN ON THOSE DAYS THEY MUST NOTIFY THE CITY OF MINOT PUBLIC WORKS DEPARTMENT AT LEAST TWO DAYS IN ADVANCE.
3. EXISTING LEVEE SHALL BE RECONSTRUCTED PER THE EARTHWORK SPECIFICATIONS.

EXISTING HEADWALL STRUCTURE TO REMAIN. PROTECT AT ALL TIMES.

REMOVE AND REPLACE 24" FLAP GATE AT HEADWALL STRUCTURE

CONNECT NEW 24" RCP TO EXISTING HEADWALL STRUCTURE (SEE DETAILS)

REMOVE AND REPLACE 100LF OF EXISTING 24" RCP WITH NEW 24" RCP @ 0.35%

APPROX. INV. 1540.95

CONSTRUCTION LIMITS

24" RCP

STORM MANHOLE
RIM 1554.85
N INV. 1544.71
(E, S/ & W) INV. 1543.71

CLEAR AND GRUBBING LIMITS

10TH ST NW

1ST AVE NW

SOURIS RIVER

EXISTING HEADWALL STRUCTURE TO REMAIN. PROTECT AT ALL TIMES.

CLEAR AND GRUBBING LIMITS

CONNECT NEW 12" RCP TO EXISTING HEADWALL STRUCTURE (SEE DETAILS)

REMOVE AND REPLACE EXISTING 12" CMP WITH 40 LF OF 12" RCP @ APPROX. 2.0%

APPROX. INV. 1545.70

FRONTAGE ROAD

This document is preliminary and not for construction or implementation purposes.

PRELIMINARY

90% SUBMITTAL

City of Minot
CITY PROJECT NO. 3135.2D

Houston Engineering Inc.
Fargo
P: 701.237.5065
F: 701.237.5101

Drawn by	Date
BAU, JAR	4-11-18
Checked by	Scale
RGE	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN
AREA 2-3
PROJECT NO. 6027-050

SHEET
3 of 73

\\houston\hel\Fargo\JBN\6000\6027\16_6027_050\CAD\Plans\CIP No. 2\SWIF D - West Design.dwg-AREA 2-3-4/11/2018 7:36 PM-{buhler}

N

30 0 30 60

Scale Feet

LEGEND

REMOVE TREE

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**
2. **CONTRACTOR SHALL DEWATER THE PROJECT AREA PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL DEVELOP A PLAN FOR DEWATERING PROJECT AREA AND SUBMIT TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.**

REMOVE 14 LF STORM SEWER (96" CMP)

REMOVE 69 LF STORM SEWER (96" CMP)

CONSTRUCTION LIMITS

TO REMAIN
EXISTING ENERGY DISSIPATING STRUCTURE
W INV. 1536.10
E INV. 1536.10

TO REMAIN
EXISTING GATEWELL STRUCTURE
W INV. 1536.10
E INV. 1536.10

4TH AVE SW

SOURIS RIVER

10TH ST SW

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City of Minot
CITY PROJECT NO. 3135.2D

Houston Engineering Inc.

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F: 701.237.5101

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND REMOVAL PLAN - AREA 4

PROJECT NO. 6027-050

SHEET 4 of 73

N

30 0 30 60

Scale Feet

LEGEND

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**

INSTALL 13 LF 96" RCP @ 0.00%

INSTALL CONCRETE HEADWALL STRUCTURE (SEE DETAILS) INV. 1536.86

INSTALL 54 LF 96" RCP @ 1.40%

TO REMAIN
EXISTING OUTFALL STRUCTURE
W INV. 1536.10
E INV. 1536.10

CONSTRUCTION LIMITS

MODIFY EXISTING OUTFALL STRUCTURE (SEE DETAILS)

TO REMAIN
EXISTING GATEWELL STRUCTURE
W INV. 1536.10
E INV. 1536.10

MODIFY EXISTING GATEWELL STRUCTURE (SEE DETAILS)

4TH AVE SW

SOURIS RIVER

10TH ST SW

1543 1545 1550 1553 1554 1555 1556 1557 1560

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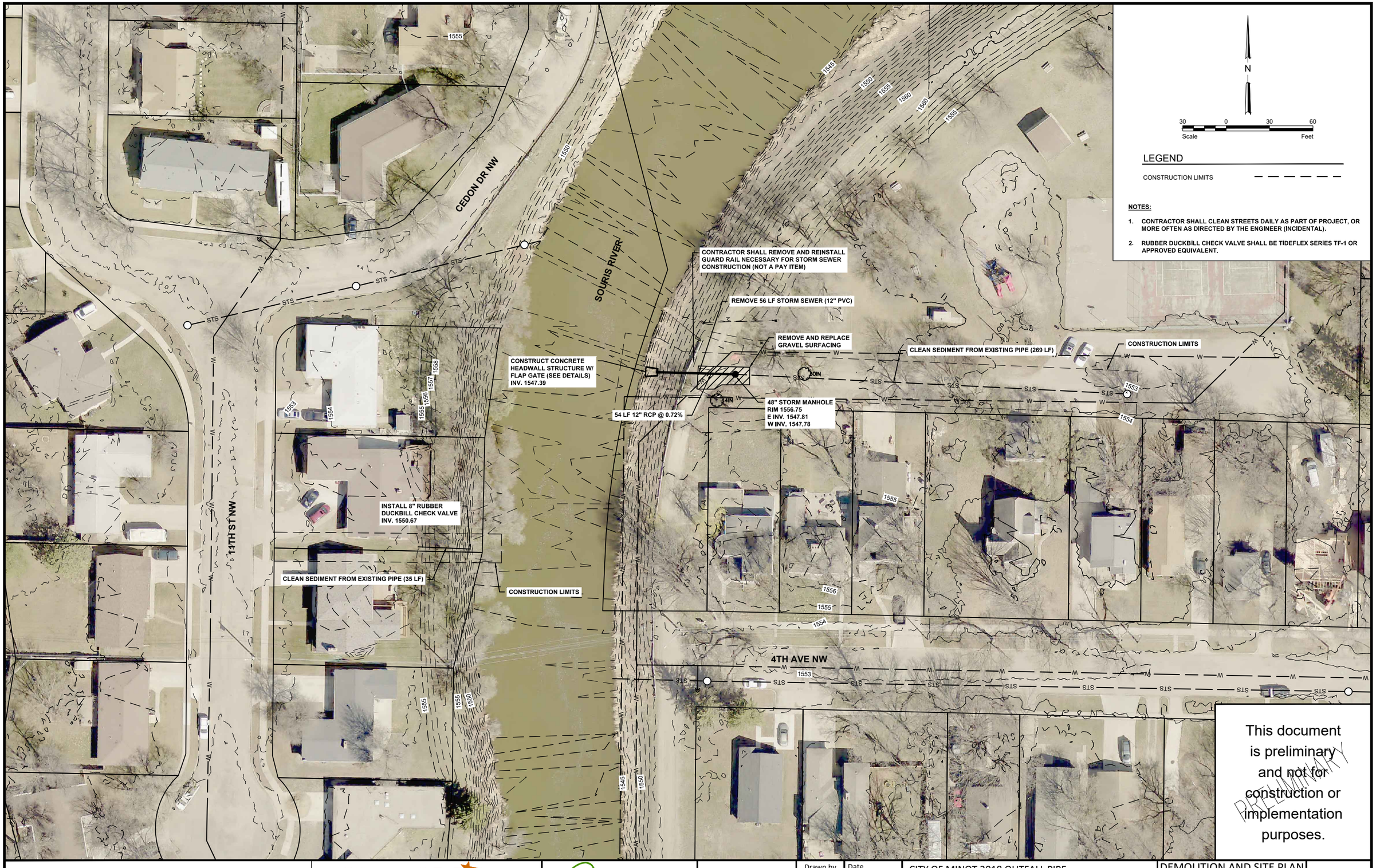
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 4

PROJECT NO. 6027-050

SHEET
5 of 73



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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN AREA 5-6
PROJECT NO. 6027-050

SHEET 6 of 73

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N

30 0 30 60

Scale Feet

LEGEND

CONSTRUCTION LIMITS

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. CONTRACTOR SHALL SALVAGE AND REINSTALL EXISTING PARK BENCHES (INCIDENTAL).
3. COST TO BACKFILL SLOPE SHALL BE INCIDENTAL TO HEADWALL STRUCTURE REMOVAL.
4. CONTRACTOR SHALL REMOVE SHEETPILE AT EXISTING HEADWALL STRUCTURE TO A MINIMUM OF 1 FOOT BELOW FINISHED GRADE ELEVATION (INCIDENTAL).

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN AREA 7
PROJECT NO. 6027-050

SHEET 7 of 73

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N

30 0 30 60

Scale Feet

LEGEND

REMOVE TREE

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**
2. **CONTRACTOR SHALL DELIVER SALVAGED GUARDRAIL TO CITY OF MINOT PUBLIC WORKS DEPARTMENT.**

5TH AVE NW

6TH ST NW

5TH ST NW

6TH ST NW

SOURIS RIVER

REMOVE BITUMINOUS PAVEMENT

REMOVE SANITARY MANHOLE

REMOVE 68 LF CURB AND GUTTER

REMOVE AND SALVAGE GUARDRAIL (NOT A PAY ITEM)

REMOVE 15 LF SANITARY SEWER (10" VCP)

REMOVE SIDEWALK

REMOVE HYDRANT

REMOVE 54 LF WATERMAIN (6" CIP)

REMOVE 71 LF STORM SEWER (18" RCP AND 10" STEEL)

REMOVE BITUMINOUS PAVEMENT

REMOVE SIDEWALK

REMOVE 80 LF CURB AND GUTTER

CONSTRUCTION LIMITS

EXISTING HEADWALL TO REMAIN. PROTECT AT ALL TIMES.

REMOVE 25 LF SANITARY SEWER (10" VCP)

REMOVE SIDEWALK

REMOVE SANITARY MANHOLE

REMOVE HYDRANT

REMOVE 61 LF WATERMAIN (6" CIP)

REMOVE AND SALVAGE GUARDRAIL (NOT A PAY ITEM)

1+00 2+00 3+00 4+00 5+00 6+00 6+50

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND REMOVAL PLAN - AREA 8

PROJECT NO. 6027-050

SHEET 8 of 73

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NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. CONTRACTOR SHALL INSTALL TYPE 3 BARRICADE WITH RETROREFLECTIVE RED AND WHITE STRIPES.

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 8
PROJECT NO. 6027-050

SHEET 9 of 73

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Checked by	Scale
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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND REMOVAL PLAN - AREA 9

PROJECT NO. 6027-050

SHEET 10 of 73

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N

30 0 30 60
Scale Feet

LEGEND

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**

4TH ST NW

GAS MH
RIM 1552.36

STORM INLET
RIM 1551.86
INV. 1548.70

STORM INLET
RIM 1551.92
INV. 1548.95

CONNECT NEW 12" RCP TO EXISTING HEADWALL STRUCTURE (SEE DETAILS)

STORM HEADWALL STRUCTURE
INV. 1547.38

INSTALL 67 LF 12" RCP @ 1.97%

EXISTING HEADWALL STRUCTURE TO REMAIN. PROTECT AT ALL TIMES.

CONSTRUCT
GATEWELL STRUCTURE
RIM 1561.00
NE INV. 1537.23
SW INV. 1536.73

SOURIS RIVER

CONSTRUCT
CONCRETE HEADWALL
STRUCTURE (SEE DETAILS)
INV. 1536.70

CONSTRUCT
CONCRETE DRIVEWAY
(14' WIDTH)

STORM VAULT
RIM 1556.75
INV. 1537.68

EXCAVATE AREA
AS SHOWN

INSTALL
108" STORM MANHOLE
W/ INLET CASTING
RIM 1551.00
N INV. 1537.38± (FIELD VERIFY)
SW INV. 1537.38± (FIELD VERIFY)

INSTALL 186 LF 60" RCP @ 0.05%

INSTALL
96" STORM MANHOLE
RIM 1552.75
NE INV. 1537.29
SW INV. 1537.29

INSTALL 116 LF 60" RCP @ 0.05%

CONSTRUCT LEVEE EMBANKMENT

INSTALL 52 LF 60" RCP @ 0.05%

N BROADWAY

4TH AVE NW

3RD AVE NW

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 9

PROJECT NO. 6027-050

SHEET
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NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND REMOVAL PLAN - AREA 10
PROJECT NO. 6027-050

SHEET 12 of 73

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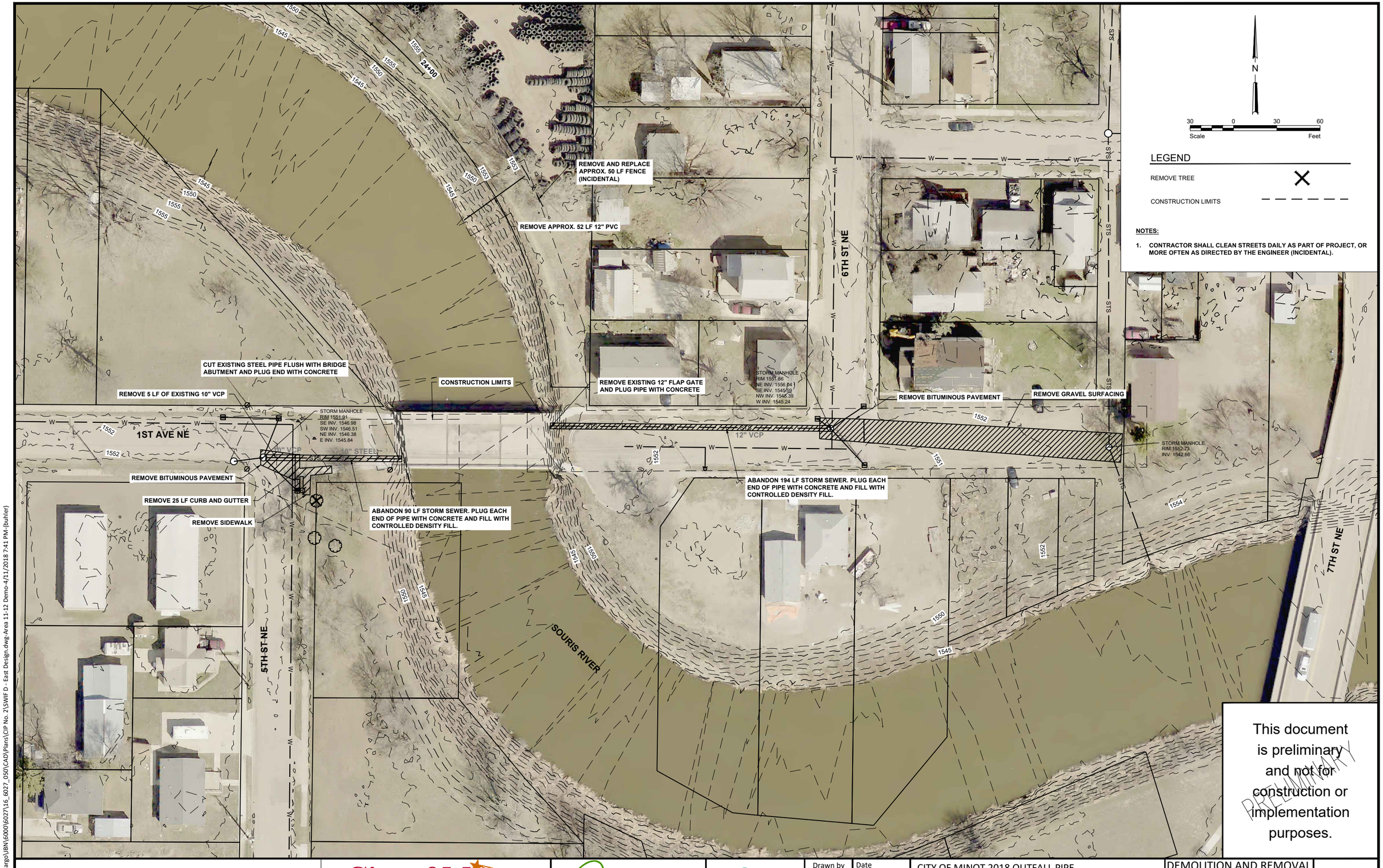
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 10
PROJECT NO. 6027-050

SHEET
13 of 73



NOTES:

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND REMOVAL PLAN - AREA 11-12
PROJECT NO. 6027-050

SHEET 14 of 73

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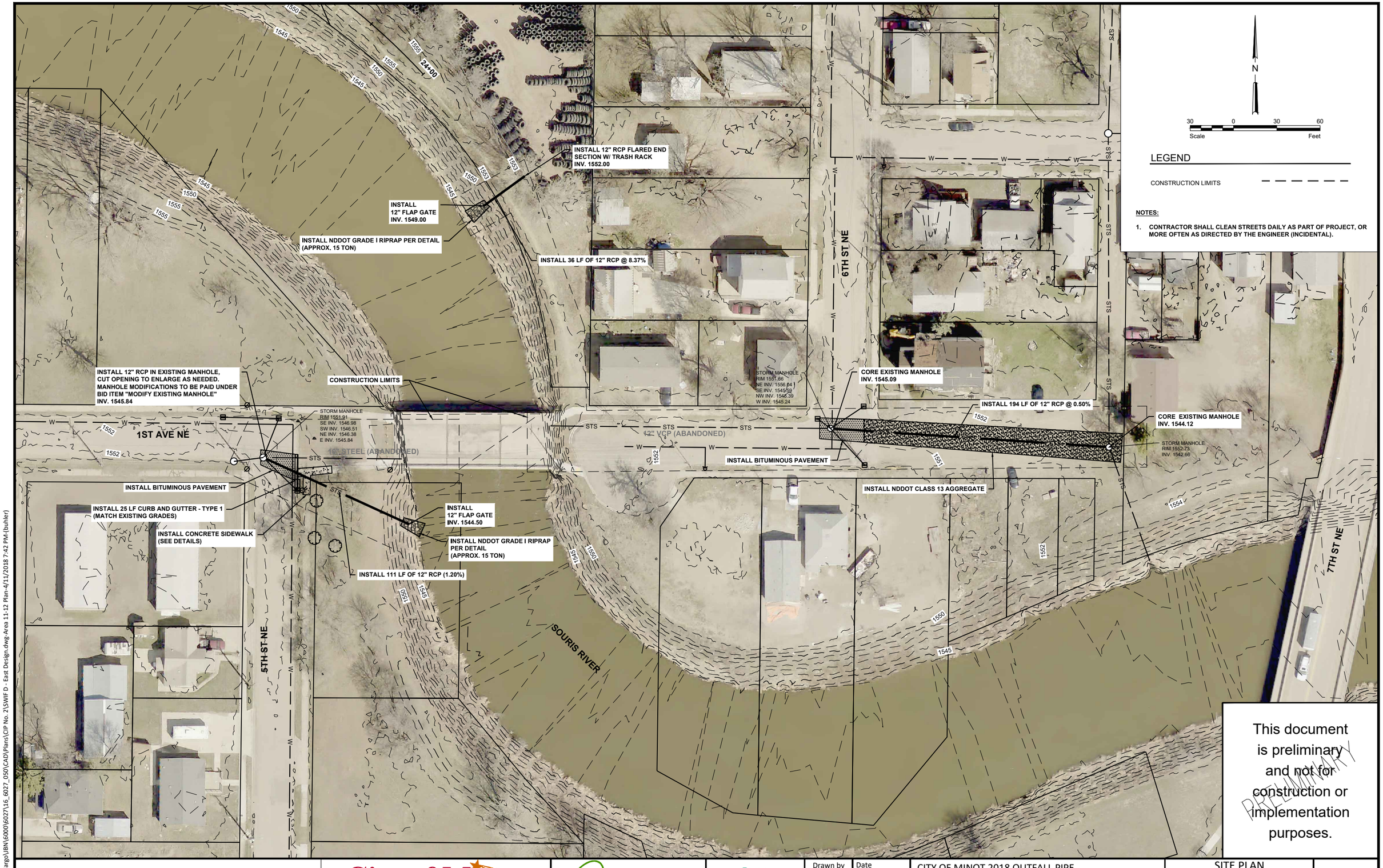

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 11-12
PROJECT NO. 6027-050

SHEET
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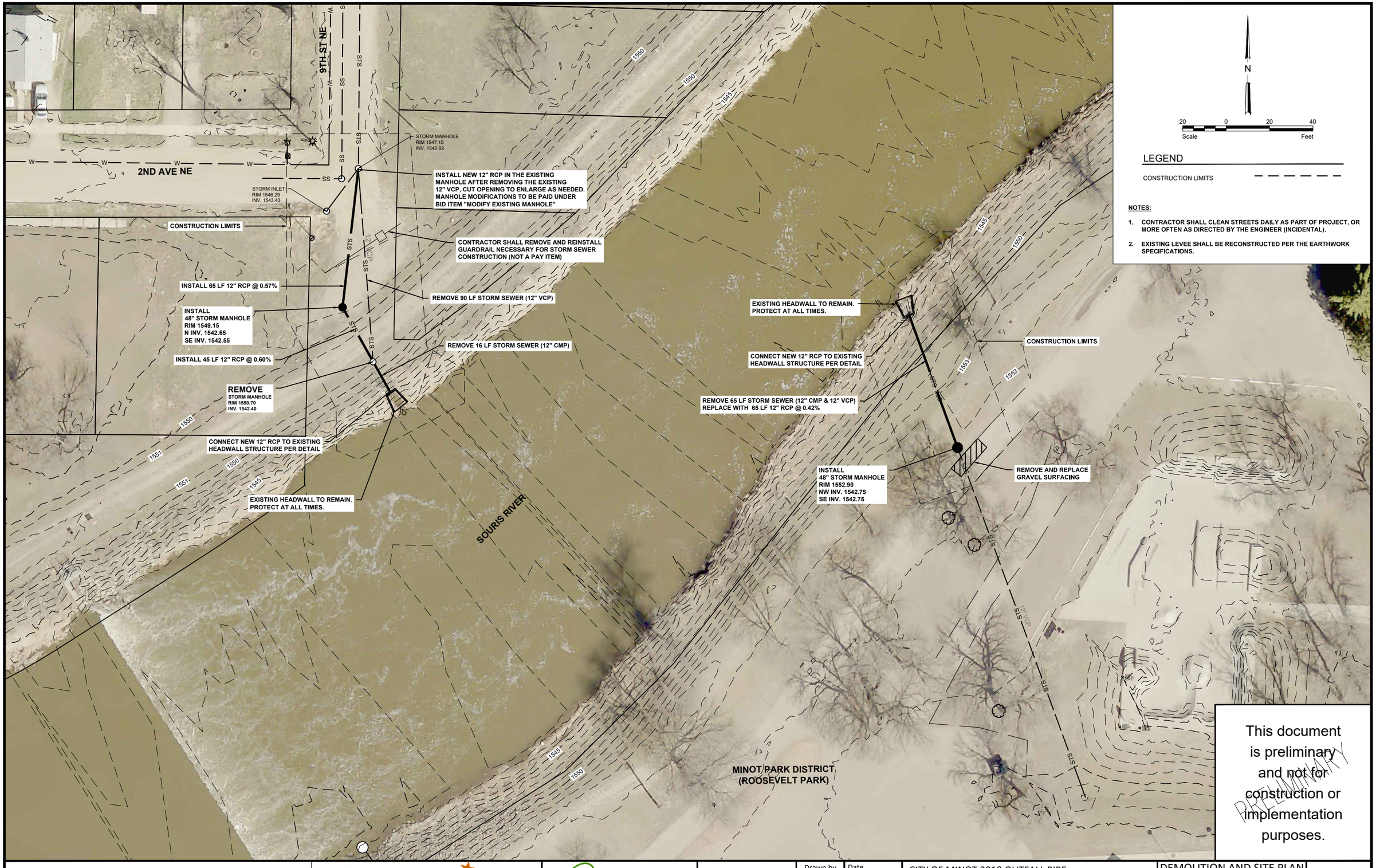

N

20 0 20 40

Scale Feet

LEGEND

CONSTRUCTION LIMITS

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. EXISTING LEVEE SHALL BE RECONSTRUCTED PER THE EARTHWORK SPECIFICATIONS.

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN AREA 13-14
PROJECT NO. 6027-050

SHEET 16 of 73

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MINOT PARK DISTRICT
(ROOSEVELT PARK)

SOURIS RIVER

1560
1550
1545

CONSTRUCTION LIMITS

CLEAN SEDIMENT FROM 163 LF EXISTING PIPE
(SEE NOTES)

STS
STS
STS

EXISTING INLINE VALVE

INSTALL NDDOT GRADE I RIPRAP PER DETAIL
(APPROX. 15 TON)

INSTALL
12" FLAP GATE
INV. 1543.91

1550
1550
1545

W
W

N

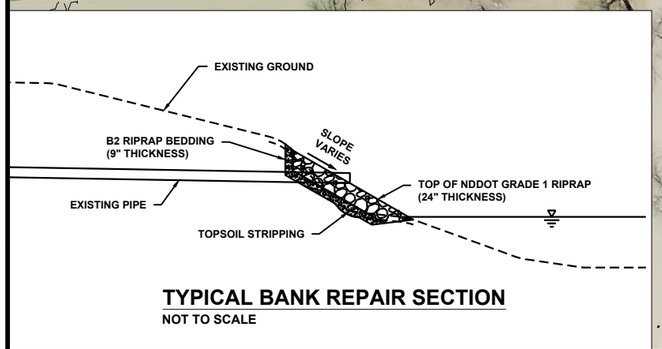
30 0 30 60
Scale Feet

LEGEND

CONSTRUCTION LIMITS

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. EXISTING PIPE HAS AN IN-LINE VALVE INSIDE THE PIPE THAT COLLECTS DEBRIS AND MAY REQUIRE FLUSHING FROM BOTH DIRECTIONS TO REMOVE DEBRIS.
3. CONTRACTOR SHALL PROTECT EXISTING RAILROAD TRACKS DURING CONSTRUCTION.



TYPICAL BANK REPAIR SECTION
NOT TO SCALE

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN
AREA 15
PROJECT NO. 6027-050

SHEET
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MINOT PARK DISTRICT
(ROOSEVELT PARK)

TREE REMOVAL LIMITS. APPROXIMATELY 3 TREES TO BE REMOVED.

CONSTRUCTION LIMITS

EXISTING INLINE VALVE

STORM INLET
RIM: 549.66
INV: 1545.48

STS

INSTALL NDDOT GRADE I RIPRAP PER DETAIL (APPROX. 15 TON)

INSTALL 12" FLAP GATE (PROVIDED BY THE CITY OF MINOT) INV. 1545.95

CLEAN SEDIMENT FROM 67 LF EXISTING PIPE (SEE NOTES)

1550
1545
1550
1552
1553

SOURIS RIVER

N

30 0 30 60
Scale Feet

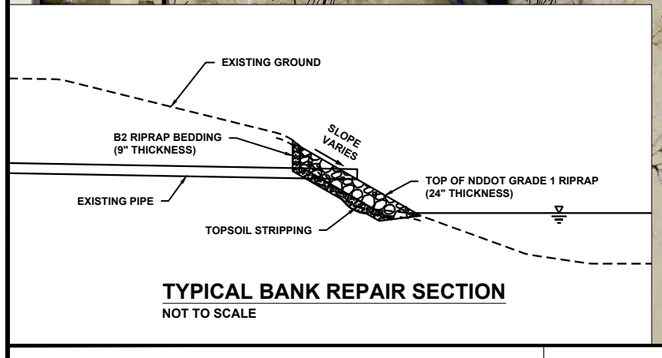
LEGEND

REMOVE TREE

CONSTRUCTION LIMITS

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. EXISTING PIPE HAS AN IN-LINE VALVE INSIDE THE PIPE THAT COLLECTS DEBRIS AND MAY REQUIRE FLUSHING FROM BOTH DIRECTIONS TO REMOVE DEBRIS.
3. CONTRACTOR SHALL PROTECT EXISTING RAILROAD TRACK DURING CONSTRUCTION.



TYPICAL BANK REPAIR SECTION
NOT TO SCALE

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN
AREA 16
PROJECT NO. 6027-050

SHEET
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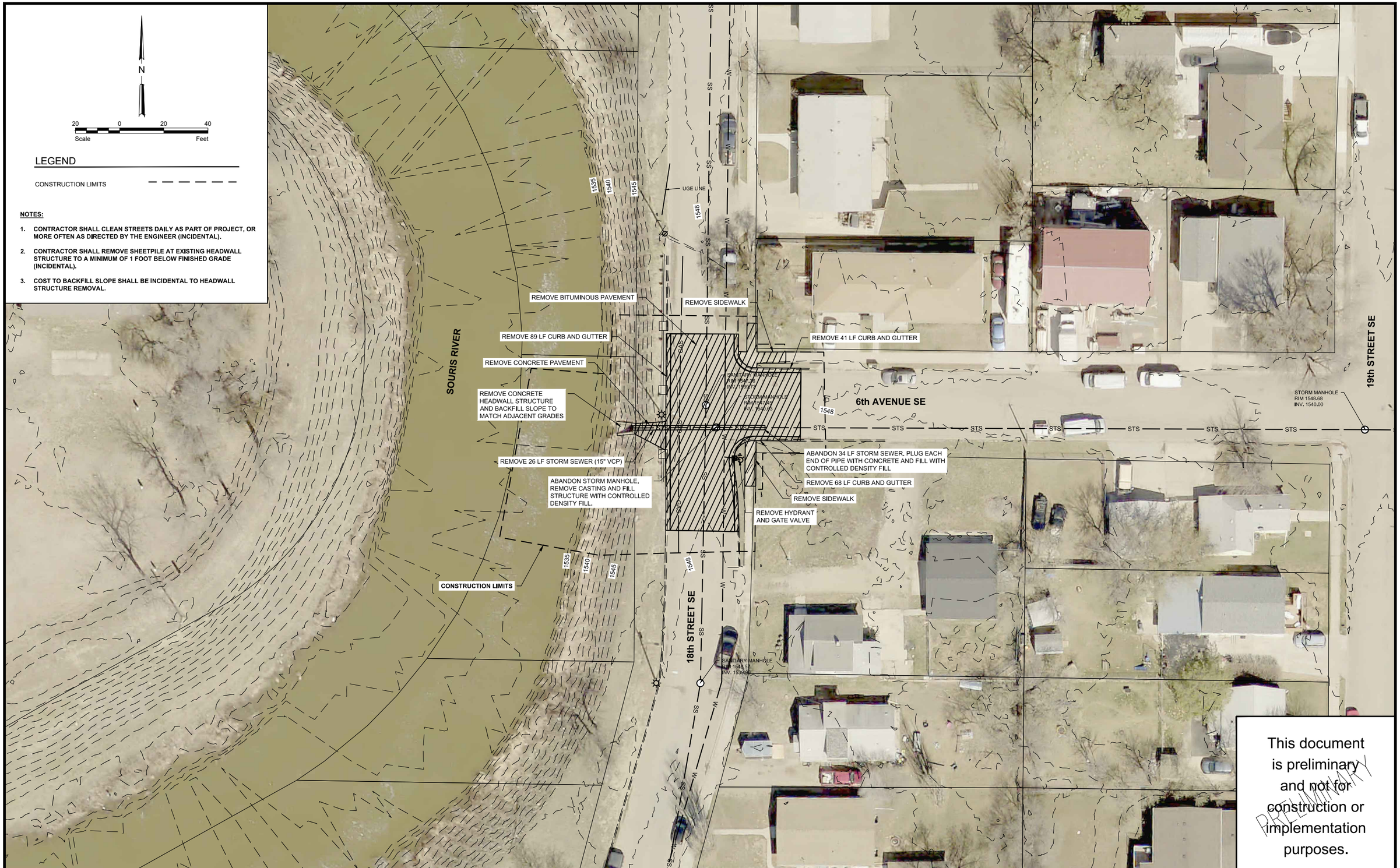

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N

20 0 20 40

Scale Feet

LEGEND

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**

INSTALL 41 LF CURB AND GUTTER - TYPE 1

INSTALL CONCRETE SIDEWALK WITH ADA RAMP (SEE DETAIL)

1547.86TC
1547.36GUT

INSTALL STORM CATCH BASIN
RIM 1547.20
INV. 1542.70

1547.85TC
1547.35GUT

INSTALL 26 LF 12" RCP @ 1.90%

INSTALL 84 LF CURB AND GUTTER - TYPE 1

1547.92TC
1547.42GUT

INSTALL 48" STORM MANHOLE
RIM 1547.50
N INV. 1542.20
E INV. 1540.67 (FIELD VERIFY)
S INV. 1542.60
SW INV. 1536.45

SANITARY MANHOLE
RIM 1547.38
INV. 1539.73

ABANDONED STORM MANHOLE
RIM 1547.45
INV. 1540.81

SOURIS RIVER

INSTALL 26 LF 18" RCP @ 0.25%

1547.92TC
1547.42GUT

INSTALL 4 LF 12" RCP @ 2.50%

INSTALL
STORM CATCH BASIN
RIM 1547.20
INV. 1542.70

INSTALL HYDRANT AND GATE VALVE

INSTALL CONCRETE SIDEWALK WITH ADA RAMP (SEE DETAIL)

CONSTRUCT
CONCRETE HEADWALL STRUCTURE
W/ FLAP GATE (SEE DETAILS)
INV. 1536.16

INSTALL
48" STORM MANHOLE
W/ INLET CASTING
RIM 1546.85
INV. 1536.25

INSTALL 56 LF 18" RCP @ 0.25%

INSTALL 66 LF CURB AND GUTTER - TYPE 1

1547.61TC
1547.11GUT

1548.18TC
1547.68GUT

CONSTRUCTION LIMITS

INSTALL BITUMINOUS PAVEMENT

SANITARY MANHOLE
RIM 1548.57
INV. 1539.66

STORM MANHOLE
RIM 1548.68
INV. 1540.00

UGE LINE

6th AVENUE SE

18th STREET SE

19th STREET SE

1535 1540 1545 1548

SS W STS GAS

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City of Minot
CITY PROJECT NO. 3135.2D

Houston Engineering Inc.

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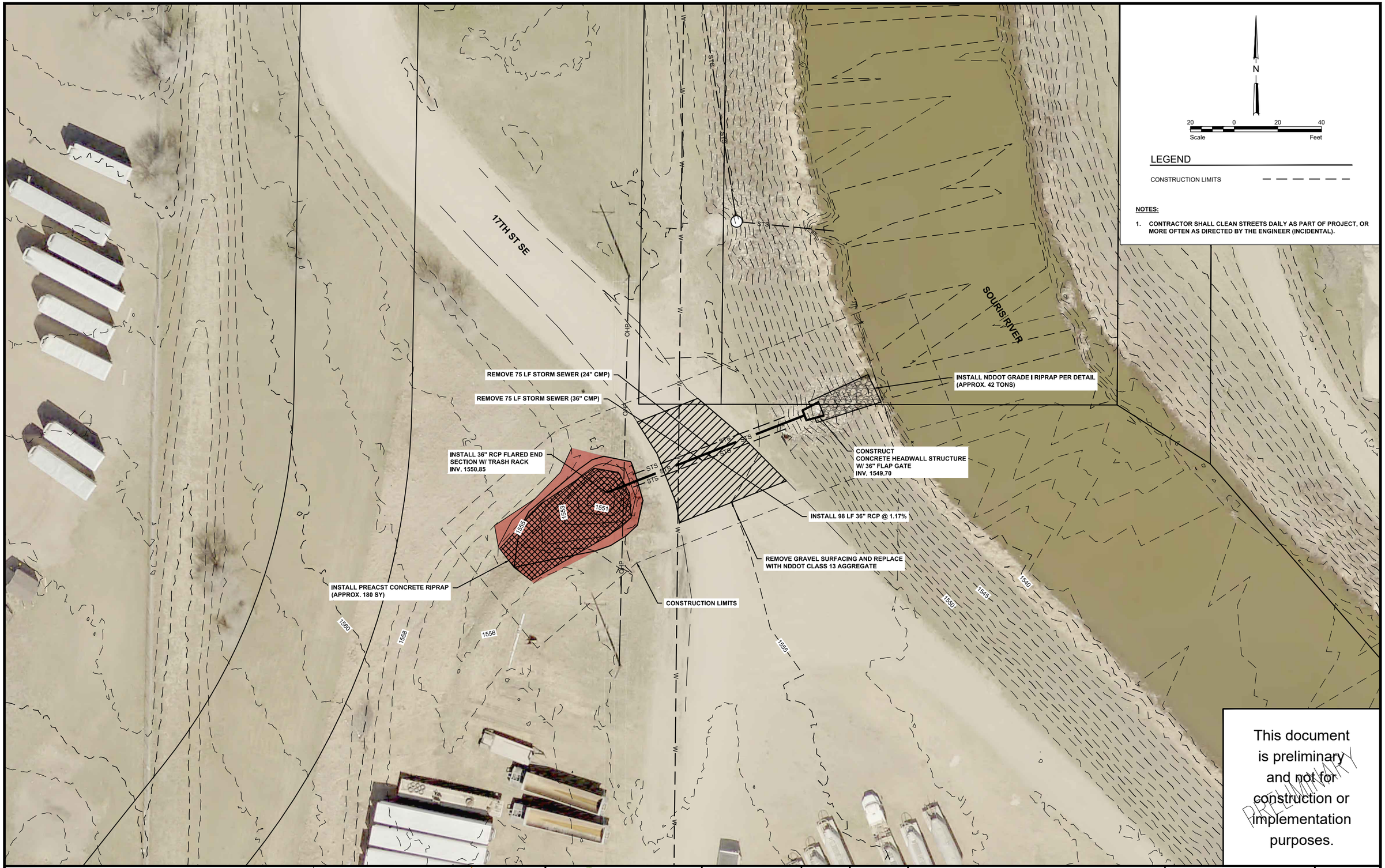
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 17
PROJECT NO. 6027-050

SHEET
20 of 73

\\houston\he\Fargo\JBN\6000\6027\16_6027_050\CAD\Plans\CIP No. 2\Site Plan.dwg-Area 17-4/11/2018 7:44 PM-(buhler)



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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN AREA 18
PROJECT NO. 6027-050

SHEET 21 of 73



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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN AREA 19
PROJECT NO. 6027-050

SHEET 22 of 73

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LEGEND

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN
AREA 20
PROJECT NO. 6027-050

SHEET
23 of 73



NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. CONTRACTOR TO DELIVER SALVAGED FLAP GATE TO THE CITY OF MINOT PUBLIC WORKS FACILITY (INCIDENTAL).

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND SITE PLAN
AREA 21
PROJECT NO. 6027-050

SHEET
24 of 73

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N

20 0 20 40

Scale Feet

LEGEND

REMOVE TREE

CONSTRUCTION LIMITS

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**

SOURIS RIVER

CONSTRUCTION LIMITS

REMOVE 38 LF STORM SEWER (36" CMP)

← TO 27TH ST SE

1535 1540 1545 1542 1530 1532 1549 1550

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DEMOLITION AND REMOVAL PLAN - AREA 22

PROJECT NO. 6027-050

SHEET 25 of 73

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N

20 0 20 40

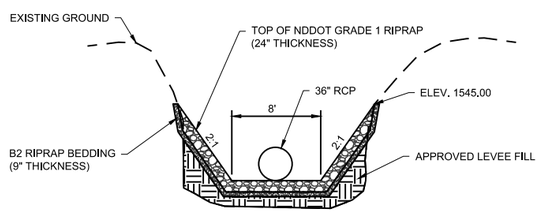
Scale Feet

LEGEND

CONSTRUCTION LIMITS

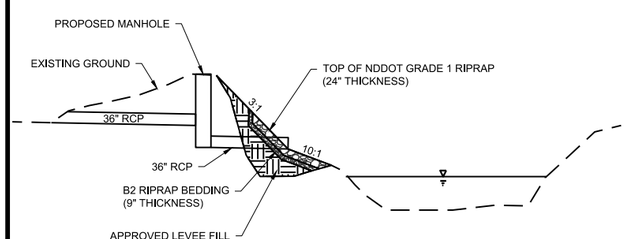
NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**



TYPICAL AREA 17 SLOPE REPAIR CROSS SECTION

NOT TO SCALE



TYPICAL AREA 17 SLOPE REPAIR PROFILE

NOT TO SCALE

SOURIS RIVER

PROPOSED GRADING SURFACE (SEE DETAIL)

INSTALL NDDOT GRADE 1 RIPRAP PER DETAIL (APPROX. 92 TON)

INSTALL 36" RC APRON INV. 1539.40

INSTALL 36 LF 36" RCP @ 0.20%

INSTALL 72" STORM MANHOLE RIM 1548.50 W INV. 1539.30 E INV. 1535.60

INSTALL 36" FLAP GATE INV. 1535.50

INSTALL 45 LF 36" RCP @ 0.20%

CONSTRUCTION LIMITS

← TO 27TH ST SE

1535 1540 1545 1548 1530 1549 1547

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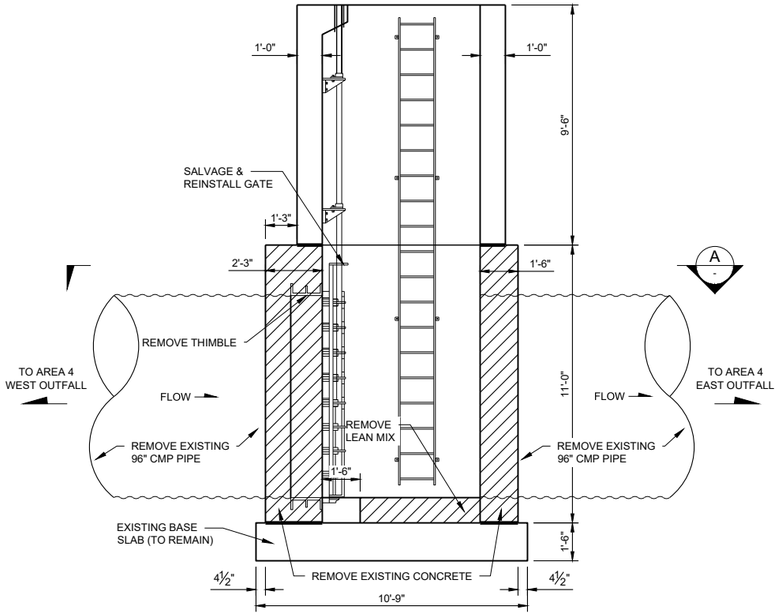
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

SITE PLAN
AREA 22

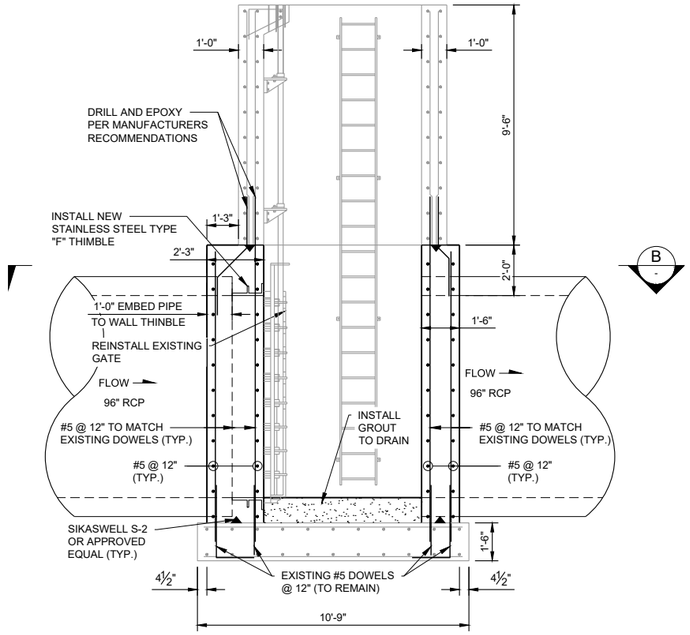
PROJECT NO. 6027-050

SHEET 26 of 73



1 EXISTING GATEWELL REMOVALS

Scale 3 0 3 6 Feet

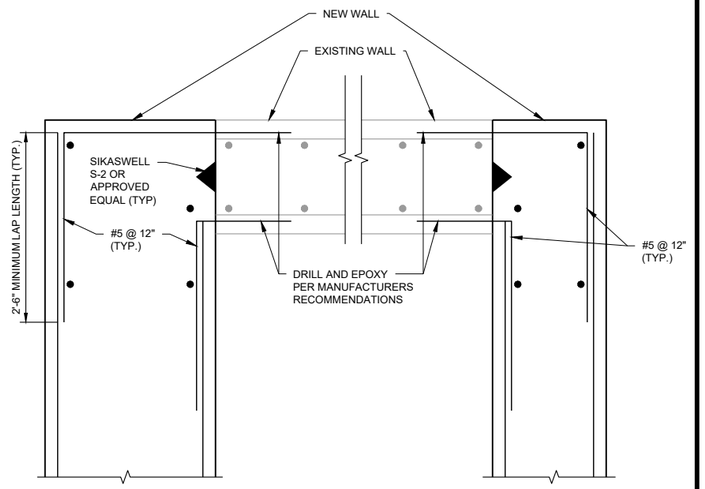


1 EXISTING GATEWELL ELEVATION

Scale 3 0 3 6 Feet

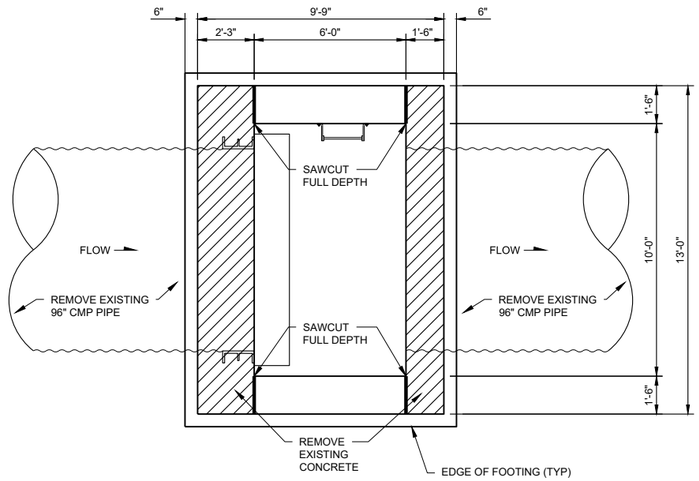
NOTES:

1. REMOVAL LIMITS SHALL BE AS SHOWN. CONTRACTOR SHALL USE CARE TO NOT DAMAGE THE EXISTING DOWEL BARS EXTRUDING FROM THE BASE SLAB INTO THE WALL. ANY EXISTING DOWEL BARS DAMAGED DURING REMOVAL SHALL BE CUT AND A NEW BAR SPLICED ON USING A MECHANICAL COUPLER CAPABLE OF DEVELOPING 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING STEEL.
2. EMBED NEW 96" RCP INTO NEW WALL SO THAT PIPE IS FLUSH WITH INSIDE FACE OF GATEWELL STRUCTURE. CONTRACTOR SHALL INSTALL SIKASWELL S-2 OR AN APPROVED EQUIVALENT EXTRUDABLE SWELLING WATERSTOP AROUND THE FULL PERIMETER OF THE NEW RCP PIPE.
3. NEW 96" RCP PIPE SHALL BE INSTALLED TO MATCH THE CURRENT INVERT ELEVATIONS.
4. MATCH EXISTING CONCRETE CLEAR COVER.
5. INSTALL SIKASWELL S-2 OR APPROVED EQUAL AT ALL JOINTS.
6. CONTRACTOR WILL BE RESONSIBLE FOR SUPPLYING A NEW WALL THIMBLE CAPABLE OF MOUNTING TO EXISTING SLUICE GATE. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AND NOTIFY ENGINEER OF ANY DEFICIENCIES.
7. CONTRACTOR SHALL REPACK GREASE WHERE NECESSARY ON EXISTING GATE.



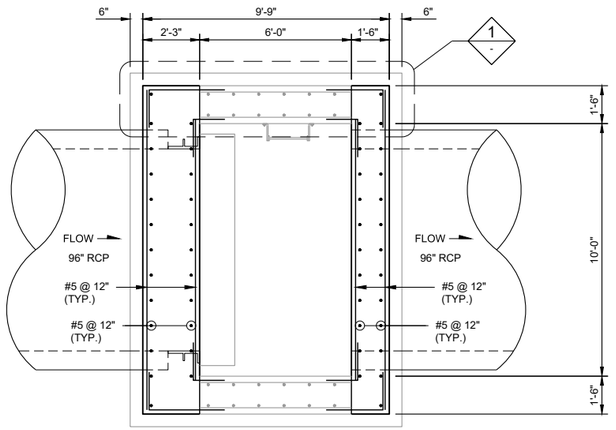
1 WALL JOINT DETAIL

Scale 1 0 1 2 Feet



A SECTION

Scale 3 0 3 6 Feet



B SECTION

Scale 3 0 3 6 Feet

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CVW	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

AREA 4 GATEWELL MODIFICATIONS
PROJECT NO. 6027-050

SHEET 27 of 73

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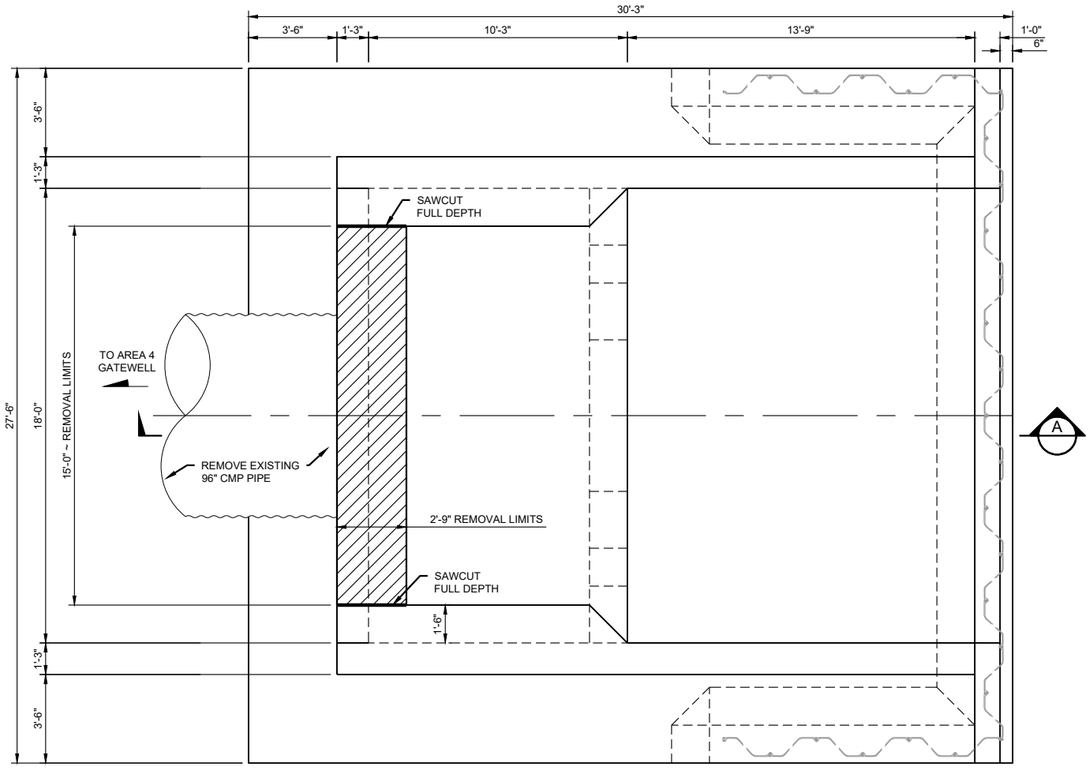
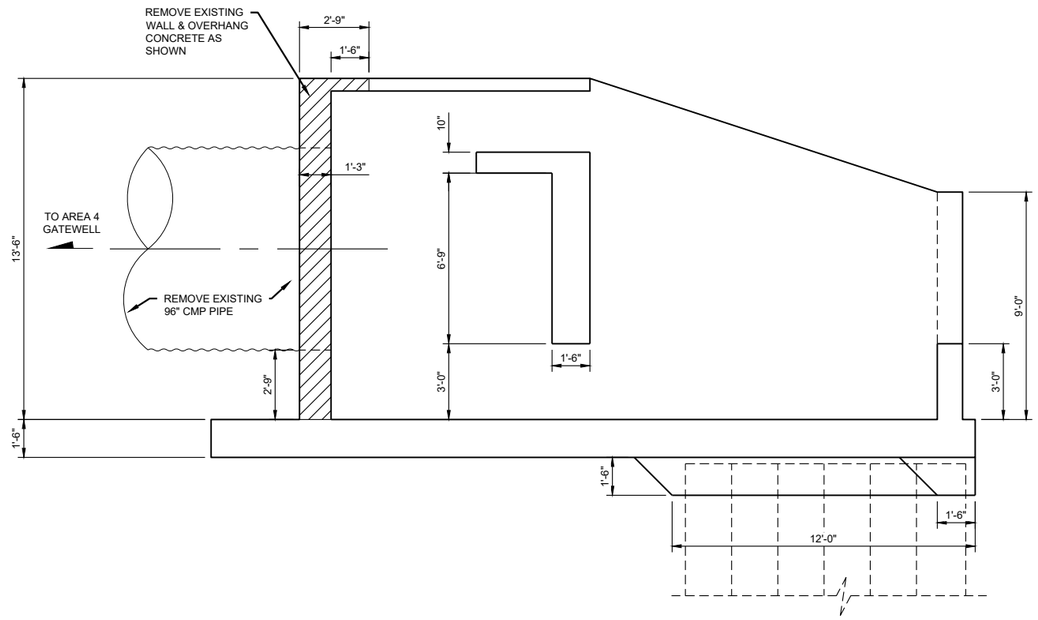
NOTES:

1. REMOVAL LIMITS SHALL BE AS SHOWN. CONTRACTOR SHALL USE CARE TO NOT DAMAGE THE EXISTING DOWEL BARS EXTRUDING FROM THE BASE SLAB INTO THE WALL.
2. CONTRACTOR SHALL REMOVE ALL SEDIMENT & DEBRIS FROM OUTFALL STRUCTURE. INCLUDE COST FOR SEDIMENT & DEBRIS REMOVAL IN PRICE BID FOR OTHER ITEMS.
3. EXISTING STRUCTURE DIMENSIONS SHOWN WERE TAKEN FROM ORIGINAL DESIGN PLANS AND HAVE NOT BEEN VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS PRIOR TO BEGINNING WORK & REPORT ANY DISCREPANCIES TO THE ENGINEER.



1 - EXISTING AREA 4 EAST OUTFALL REMOVALS

3 0 3 6
Scale Feet



A - EXISTING SECTION

3 0 3 6
Scale Feet

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

AREA 4 EAST OUTFALL - REMOVALS
PROJECT NO. 6027-050

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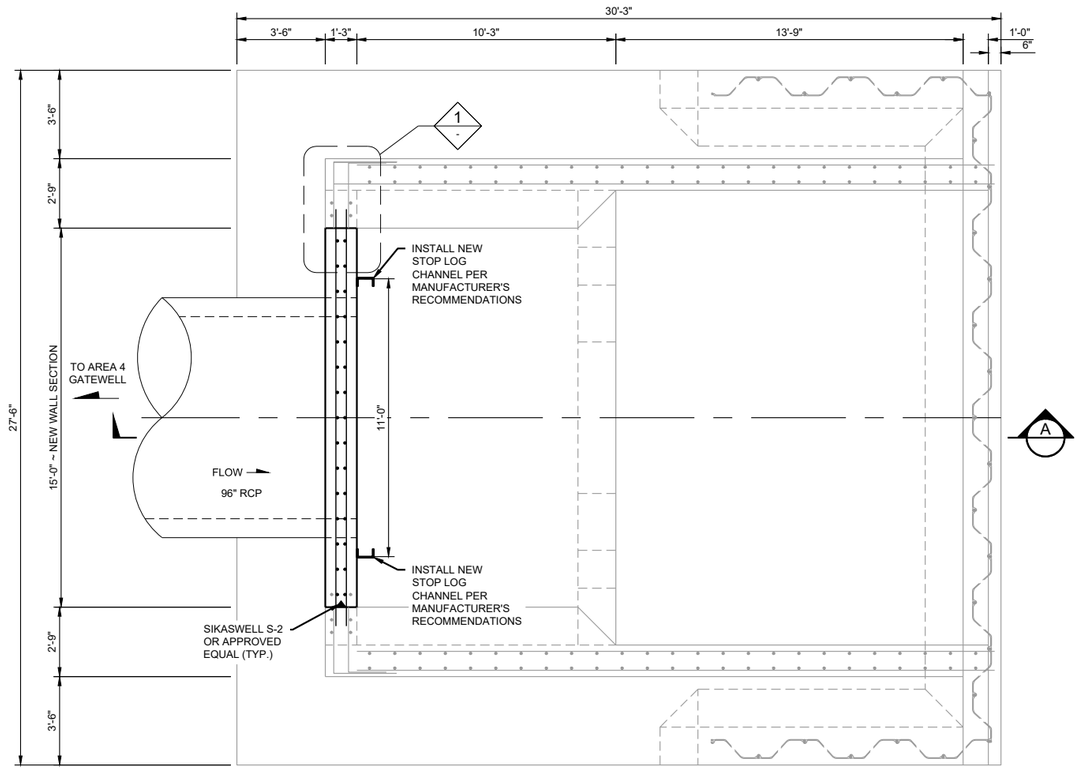
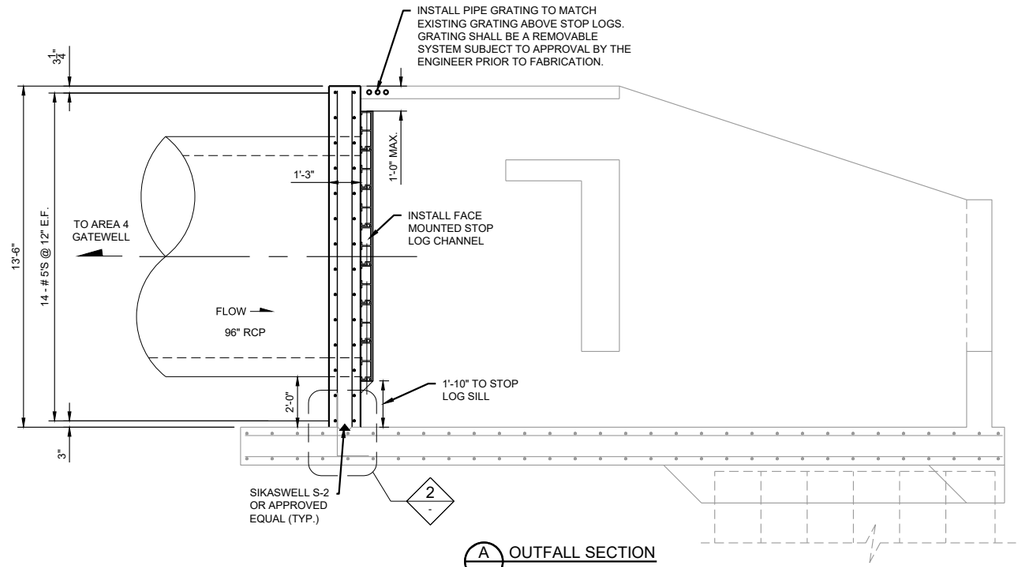


1 - EXISTING AREA 4 EAST OUTFALL IMPROVEMENTS

Scale 3 0 3 6 Feet

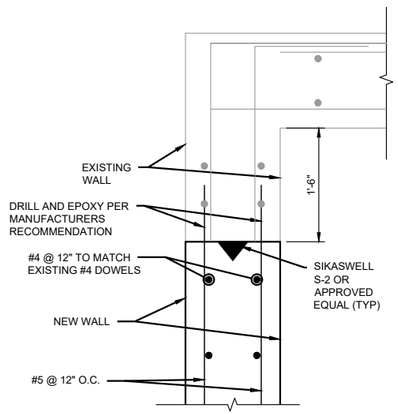
NOTES:

1. EMBED NEW 96" RCP INTO NEW WALL SO THAT PIPE IS FLUSH WITH INSIDE FACE OF GATEWELL STRUCTURE. CONTRACTOR SHALL INSTALL SIKASWELL S-2 OR AN APPROVED EQUIVALENT EXTRUDABLE SWELLING WATERSTOP AROUND THE FULL PERIMETER OF THE NEW RCP PIPE.
2. NEW 96" RCP PIPE SHALL BE INSTALLED TO MATCH THE CURRENT INVERT ELEVATIONS.
3. MATCH EXISTING CONCRETE CLEAR COVER.
4. INSTALL SIKASWELL S-2 OR APPROVED EQUAL AT ALL JOINTS BETWEEN EXISTING AND NEW CONCRETE.
5. EXISTING STRUCTURE DIMENSIONS SHOWN WERE TAKEN FROM ORIGINAL DESIGN PLANS AND HAVE NOT BEEN VERIFIED. CONTRACTOR TO VERIFY DIMENSIONS PRIOR TO BEGINNING WORK & REPORT ANY DISCREPANCIES TO THE ENGINEER.



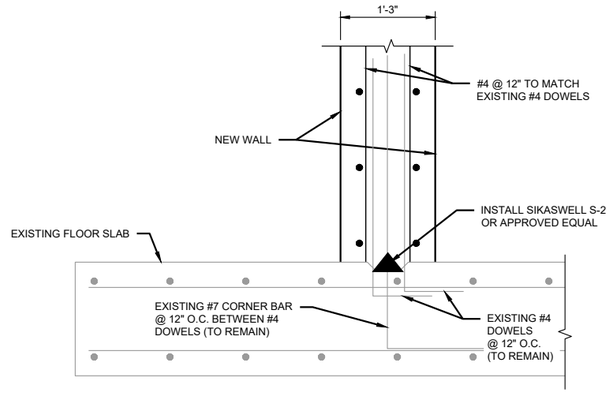
A - OUTFALL SECTION

Scale 3 0 3 6 Feet



1 - WALL JOINT DETAIL

Scale 1 0 1 2 Feet



2 - FLOOR JOINT DETAIL

Scale 1 0 1 2 Feet

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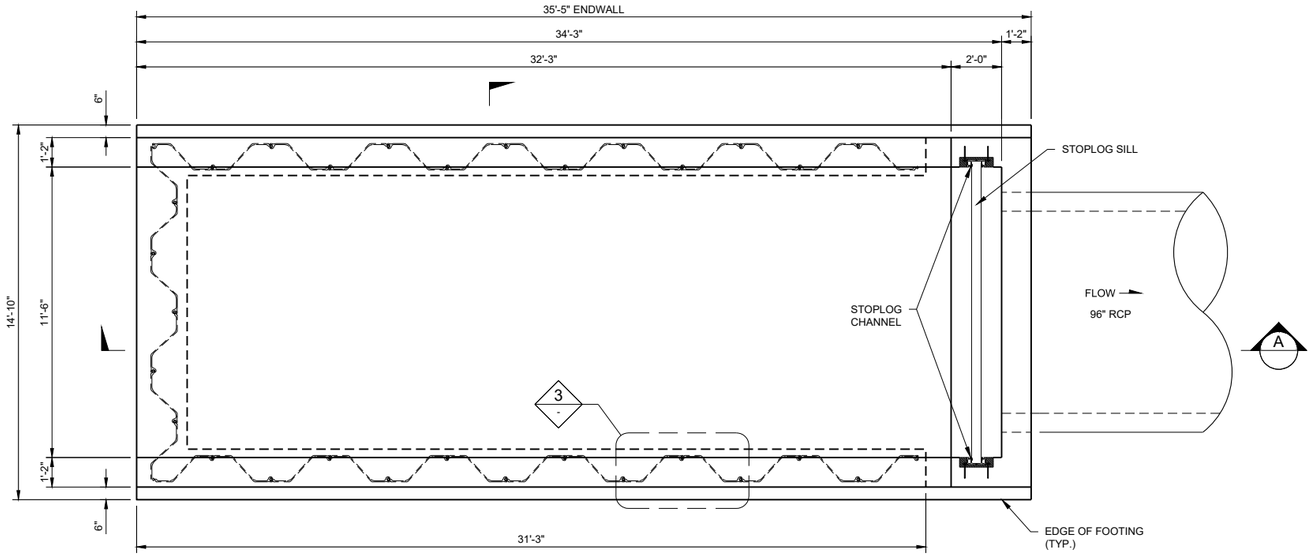
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

AREA 4 EAST OUTFALL - IMPROVEMENTS

PROJECT NO. 6027-050

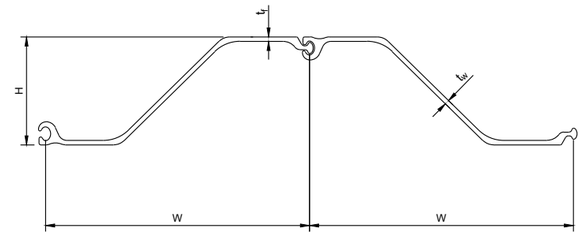


1 AREA 4 INLET LAYOUT

Scale: 3 0 3 6 Feet

NOTES:

1. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,500psi.
2. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIRMENTS OF ASTM A-615. "DEFORMED-BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
3. ALL CONSTRUCTION JOINT SHALL HAVE 1½" X 3½" KEYWAYS WITH 6" PVC CENTERBULB TYPE WATERSTOP.
4. CONTRACTOR SHALL PROVIDE 8" MINIMUM MUD MAT UNDER ENTIRE APRON AS SHOWN. MUD MAT TO BE CONSTRUCTED FROM UNREINFORCED CONCRETE WITH f'_c = 3,000psi.
5. EMBED NEW 96" RCP INTO NEW WALL SO THAT PIPE IS FLUSH WITH INSIDE FACE OF GATEWELL STRUCTURE. CONTRACTOR SHALL INSTALL SIKASWELL S-2 OR AN APPROVED EQUIVALENT EXTRUDABLE SWELLING WATERSTOP AROUND THE FULL PERIMETER OF THE NEW RCP PIPE.

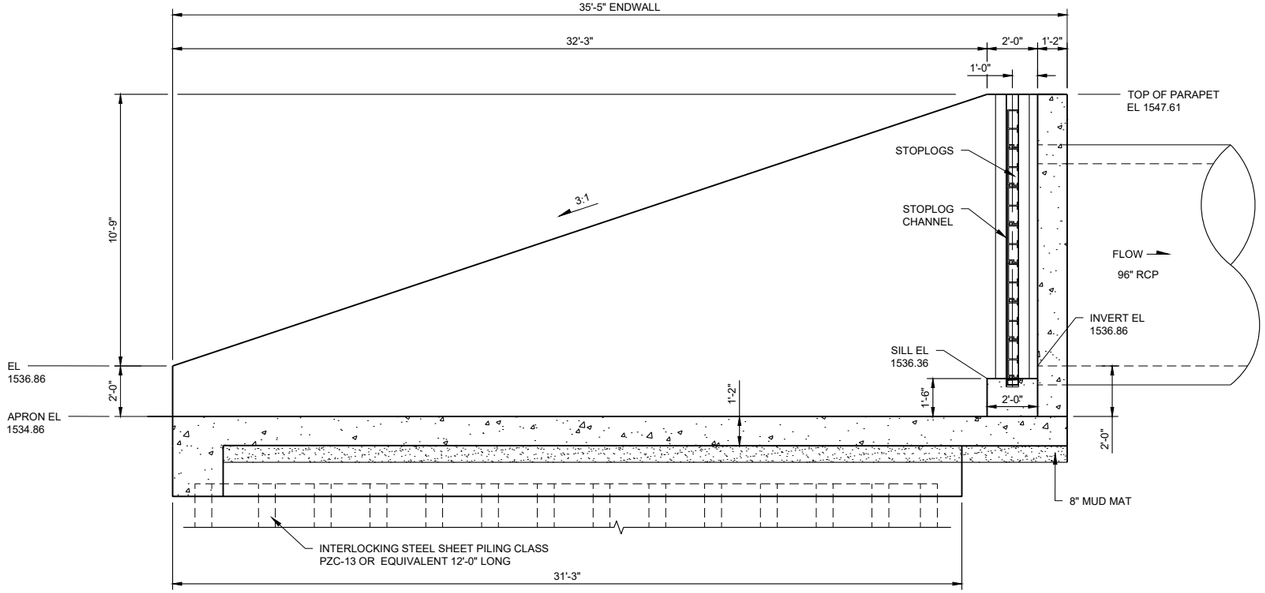


3 SHEET PILE DETAIL (PZC 13)

NOT TO SCALE

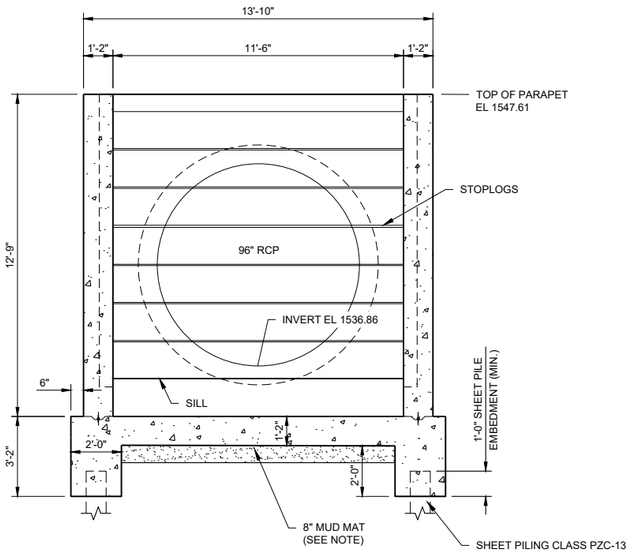
SECTION	Width (W)	Height (H)	THICKNESS		WEIGHT		SECTION MODULUS	Moment of Inertia	COATING AREA
			Flange (t_f)	Web (t_w)	Pile	Wall	ELASTIC		Both Sides ft^2/ft of single
	in	in	in	in	lb/ft	lb/ft^2	in^3/ft	in^4/ft	
PZC 13	27.88	12.56	0.375	0.375	50.4	21.7	24.2	152.0	5.60

ASTM	YIELD STRENGTH	
	(ksi)	(MPa)
A 572 Grade 50	50	345



A AREA 4 INLET ELEVATION

Scale: 3 0 3 6 Feet



B AREA 4 INLET SECTION

Scale: 3 0 3 6 Feet

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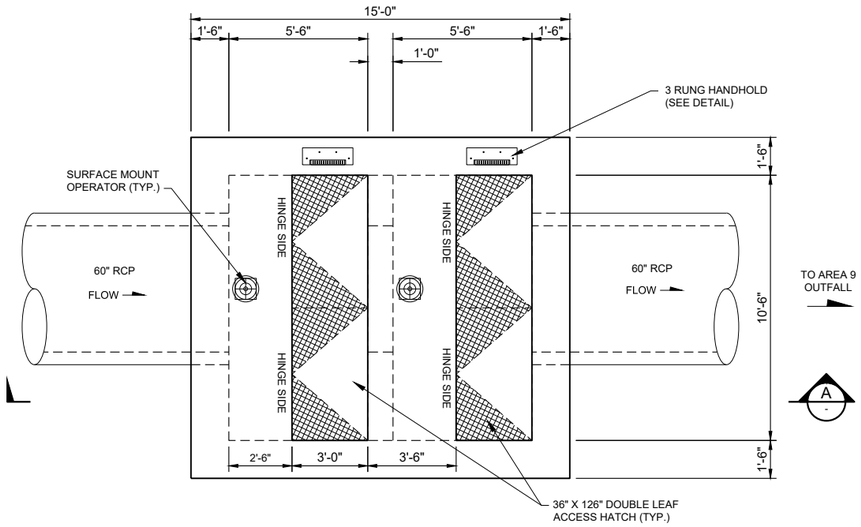
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

AREA 4 WEST INLET

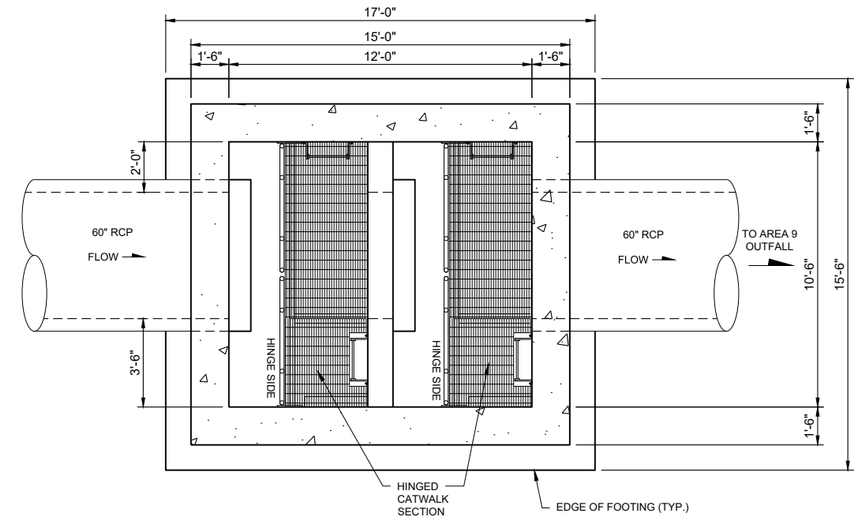
PROJECT NO. 6027-050

SHEET 30 of 73



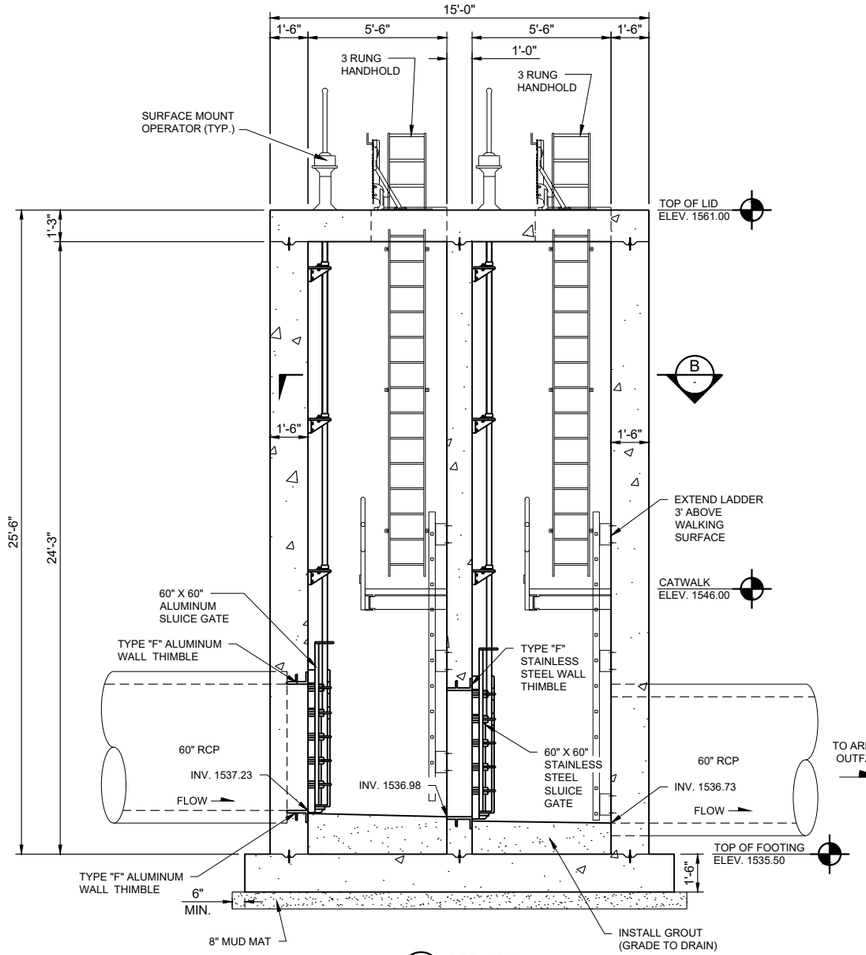
AREA 9 GATEWELL - PLAN

3 0 3 6
Scale Feet



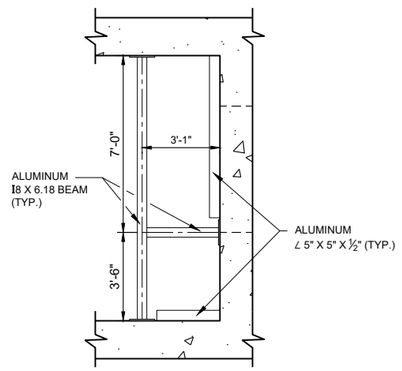
B SECTION

3 0 3 6
Scale Feet



A SECTION

3 0 3 6
Scale Feet



BEAM FRAMING - TYPICAL

NOTES:

1. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,500psi.
2. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIRMENTS OF ASTM A-615, "DEFORMED-BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
3. ALL CONSTRUCTION JOINT SHALL HAVE 1½" X 3½" KEYWAYS WITH 6" PVC CENTERBULB TYPE WATERSTOP.
4. CONTRACTOR SHALL PROVIDE 8" MINIMUM MUD MAT UNDER ENTIRE APRON AS SHOWN. MUD MAT TO BE CONSTRUCTED FROM UNREINFORCED CONCRETE WITH f'_c = 3,000psi.
5. ACCESS HATCHES SHALL BE DESIGNED FOR A 300 PSF LIVE LOAD AND INCLUDE AN INTEGRAL FALL PROTECTION GRATING SYSTEM.
6. 60" X 60" ALUMINUM SLUICE GATE SHALL BE DESIGNED TO WITHSTAND 10' MINIMUM UNSEATING HEAD.
7. 60" X 60" STAINLESS STEEL SLUICE GATE SHALL BE DESIGNED TO WITHSTAND 25' MINIMUM UNSEATING HEAD.

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City of Minot
CITY PROJECT NO. 3135.2D

Houston Engineering Inc.
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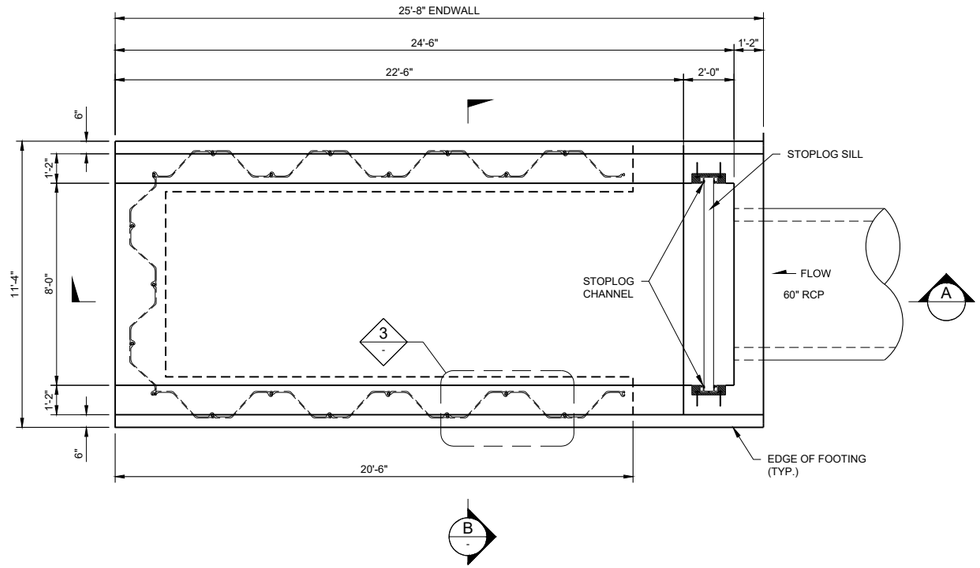
CVW	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

AREA 9 GATEWELL
PROJECT NO. 6027-050

SHEET
31 of 73

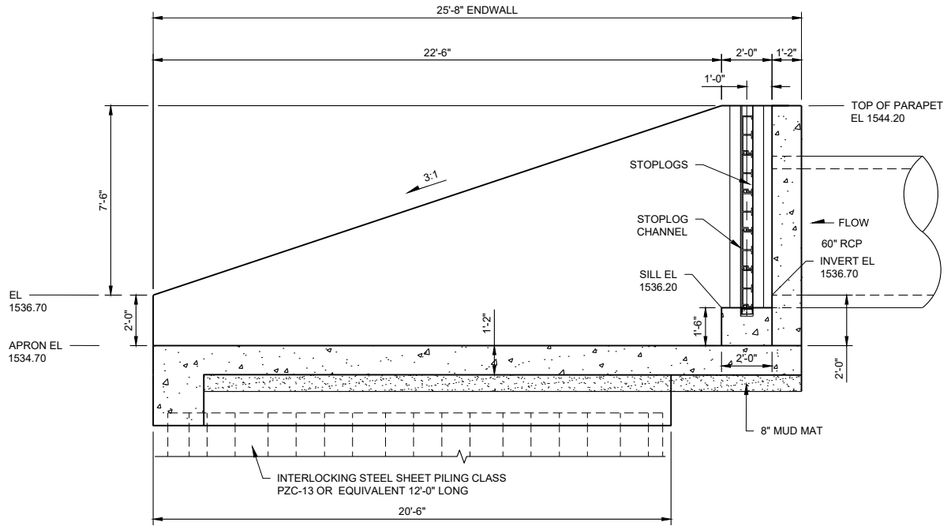


1 AREA 9 OUTFALL LAYOUT

Scale 3 0 3 6 Feet

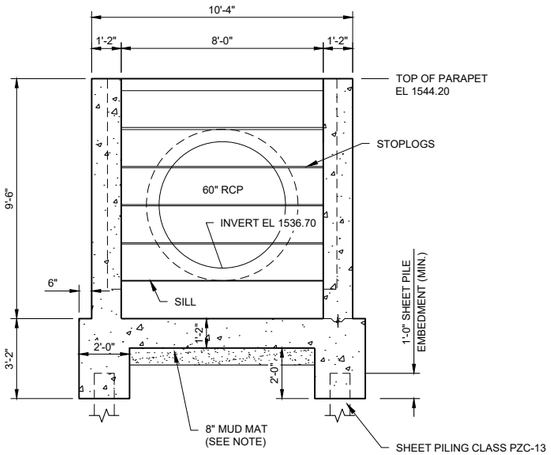
NOTES:

1. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,500psi.
2. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIRMENTS OF ASTM A-615. "DEFORMED-BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
3. ALL CONSTRUCTION JOINT SHALL HAVE 1½" X 3½" KEYWAYS WITH 6" PVC CENTERBULB TYPE WATERSTOP.
4. CONTRACTOR SHALL PROVIDE 8" MINIMUM MUD MAT UNDER ENTIRE APRON AS SHOWN. MUD MAT TO BE CONSTRUCTED FROM UNREINFORCED CONCRETE WITH f'_c = 3,000psi.
5. EMBED NEW 60" RCP INTO NEW WALL SO THAT PIPE IS FLUSH WITH INSIDE FACE OF GATEWELL STRUCTURE. CONTRACTOR SHALL INSTALL SIKASWELL S-2 OR AN APPROVED EQUIVALENT EXTRUDABLE SWELLING WATERSTOP AROUND THE FULL PERIMETER OF THE NEW RCP PIPE.



A AREA 9 OUTFALL SECTION

Scale 3 0 3 6 Feet



B AREA 9 OUTFALL SECTION

Scale 3 0 3 6 Feet

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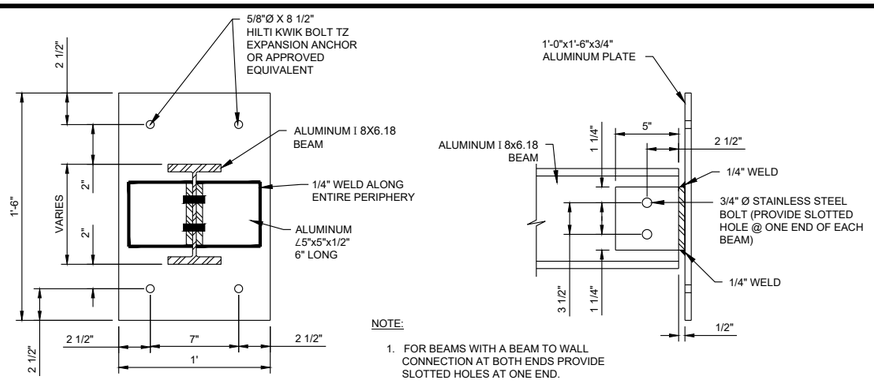
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

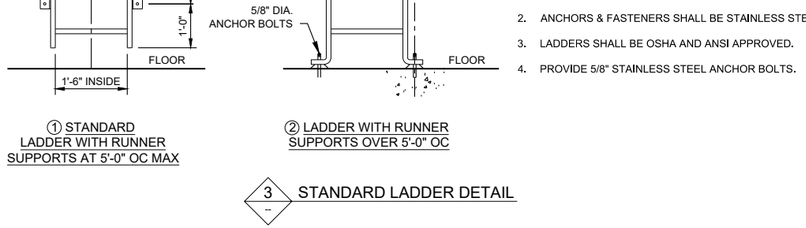
AREA 9 OUTFALL
PROJECT NO. 6027-050



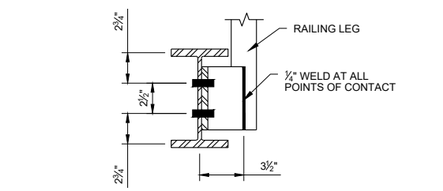
NOTE:

1. FOR BEAMS WITH A BEAM TO WALL CONNECTION AT BOTH ENDS PROVIDE SLOTTED HOLES AT ONE END.

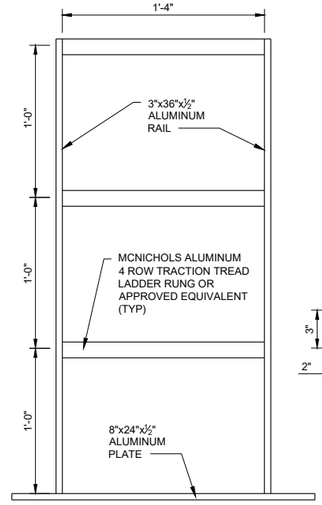
1 -- CATWALK END PLATE CONNECTION - BEAM TO WALL



2 -- CATWALK CONNECTION DETAIL - BEAM TO BEAM

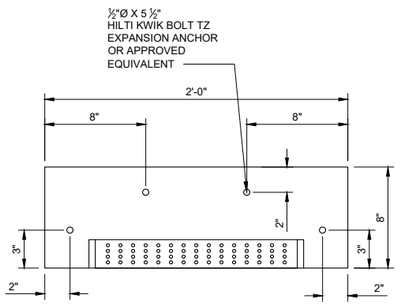


4 -- RAILING CONNECTION DETAIL



NOTE:

HANDHOLD TO BE INSTALLED SUCH THAT THERE IS 10" SPACING BETWEEN FRONT OF PLATE AND LID OPENING.



5 -- 3 RUNG HANDHOLD DETAIL

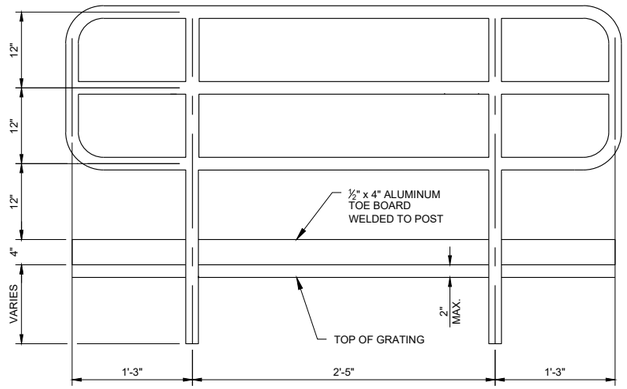
NOTES:

1. LADDERS SHALL BE ALUMINUM UNLESS INDICATED OTHERWISE.
2. ANCHORS & FASTENERS SHALL BE STAINLESS STEEL.
3. LADDERS SHALL BE OSHA AND ANSI APPROVED.
4. PROVIDE 5/8" STAINLESS STEEL ANCHOR BOLTS.

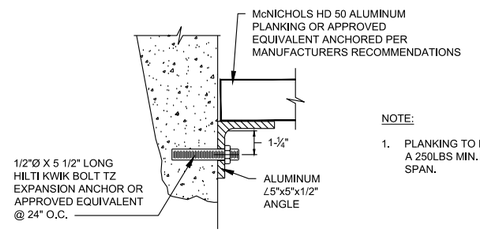
3 -- STANDARD LADDER DETAIL

NOTES:

1. RAILING TO BE CONSTRUCTED FROM 2" O.D. ALUMINUM PIPE.
2. RAILING TO BE MOUNTED SO THAT THE BOTTOM OF TOE BOARD IS NO MORE THAN 2" ABOVE WALKING SURFACE.
3. TOE BOARD IS TO BE CONTINUOUS ALONG ALL FIXED RAILING SURFACES.
4. RAILING TO BE INSTALLED WITH 1" CLEAR AT WALLS AND 2" CLEAR AT ADJACENT RAIL SECTIONS.
5. RAILING SEGMENTS ADJACENT TO HINGED CATWALK SECTION SHALL INCLUDE MEANS TO LOCK OR HOLD HINGED CATWALK SECTION IN UPRIGHT POSITION.



6 -- RAILING DETAIL



NOTE:

1. PLANKING TO BE DESIGNED FOR A 250LBS MIN. LIVE LOAD PER 4' SPAN.

7 -- CATWALK SUPPORT DETAIL

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CITY PROJECT NO. 3135.2D

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

AREA 9 GATEWELL DETAILS
PROJECT NO. 6027-050

SHEET 33 of 73

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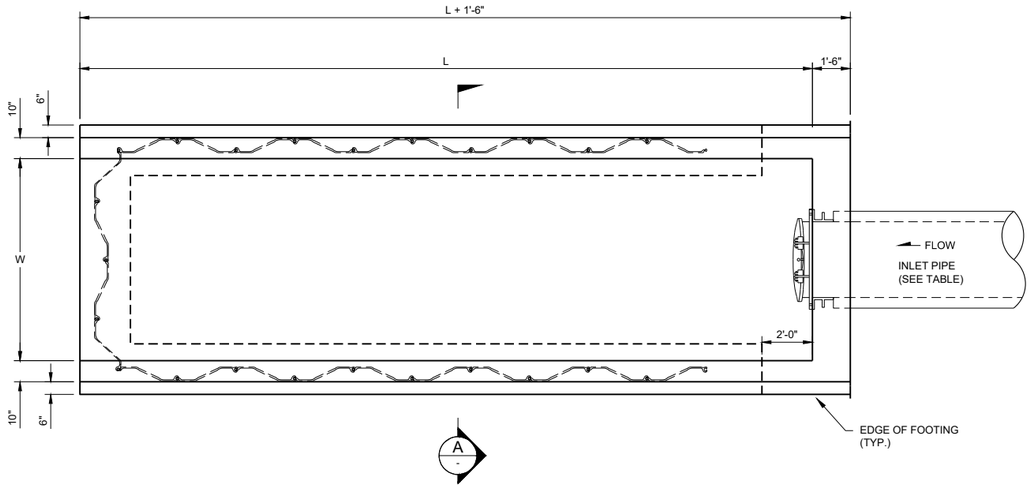


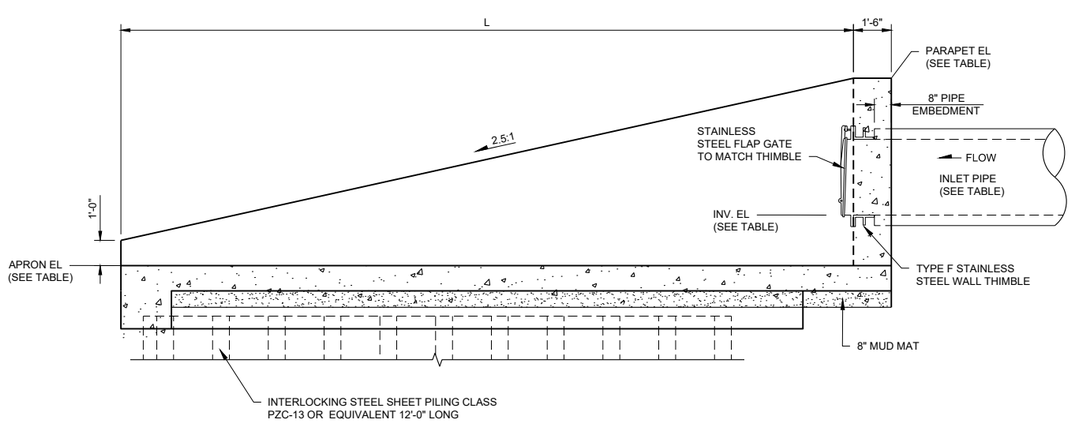
1 TYPICAL OUTFALL LAYOUT

3 0 3 6
Scale Feet

NOTES:

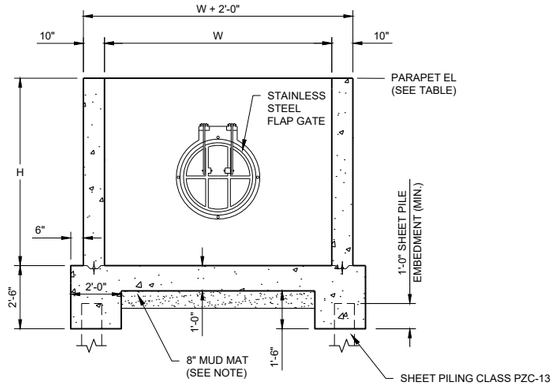
1. ALL STRUCTURAL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,500psi.
2. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO THE REQUIRMENTS OF ASTM A-615. "DEFORMED-BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", GRADE 60.
3. ALL CONSTRUCTION JOINT SHALL HAVE $1\frac{1}{2}$" X $3\frac{1}{2}$" KEYWAYS WITH 6" PVC CENTERBULB TYPE WATERSTOP.
4. CONTRACTOR SHALL PROVIDE 8" MINIMUM MUD MAT UNDER ENTIRE APRON AS SHOWN. MUD MAT TO BE CONSTRUCTED FROM UNREINFORCED CONCRETE WITH f'_c = 3,000psi.

						ELEVATIONS		
	I.D.	MTL.	L	W	H	APRON	INV.	PARAPET
AREA 6	12"	RCP	10'-5"	2'-8"	5'-2"	1545.39	1547.39	1550.56
AREA 7	12"	RCP	10'-5"	2'-8"	5'-2"	1542.80	1544.80	1547.97
AREA 19	18"	PVC	11'-3"	2'-10"	5'-6"	1538.38	1540.38	1543.88
AREA 20	36"	RCP	15'-10"	5'-0"	7'-4"	1546.70	1548.70	1554.03
AREA 21	24"	PVC	12'-6"	3'-4"	6'-0"	1534.00	1536.00	1540.00



2 TYPICAL OUTFALL ELEVATION

3 0 3 6
Scale Feet



A TYPICAL OUTFALL SECTION

3 0 3 6
Scale Feet

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TYPICAL HEADWALL STRUCTURE DETAILS

PROJECT NO. 6027-050

SHEET 34 of 73

A. RIGID PIPE REFERS TO ALL TYPES OF REINFORCED AND UN-REINFORCED CONCRETE PIPE AND VITRIFIED CLAY PIPE.

B. TYPICAL TRENCH SECTIONS (I, II AND III) ARE TO BE USED ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. IF BOULDERS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER OR WIDER THAN SHOWN. THE ENGINEER SHALL BE ADVISED SHOULD THIS OCCUR.

C. THE NEED FOR PROTECTIVE SYSTEMS, AND EXCAVATION SLOPES SHALL BE DETERMINED CONSIDERING APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, AND GEOTECHNICAL CONSULTANTS' RECOMMENDATIONS.

D. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH THE APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS.

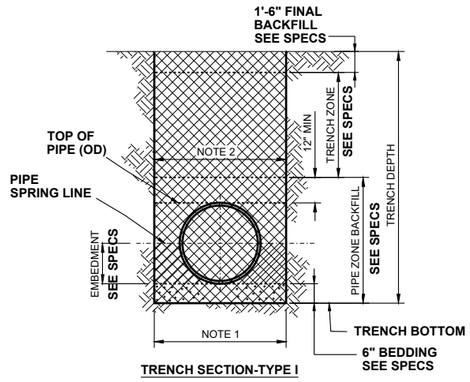
E. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN AND COMPLIANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS.

F. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALL SLOPES SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, UNLESS SUPPORTING DOCUMENTATION IS SUBMITTED, ACCORDING TO AFOREMENTIONED SAFETY STANDARDS.

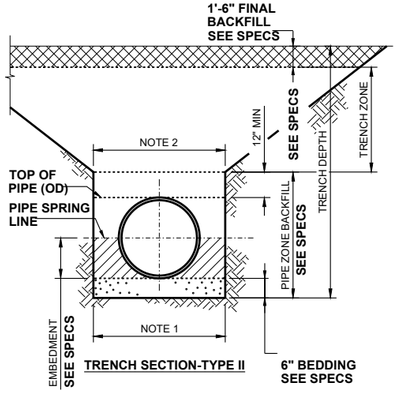
G. IF OVER-EXCAVATION DUE TO POOR FOUNDATION MATERIAL IS ORDERED BY THE ENGINEER, THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTION OF THE SPECIFICATIONS ARTICLE ENTITLED, "FILL AND BACKFILL MATERIAL REQUIREMENTS."

H. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED, AND APPROPRIATE DEWATERING SHALL BE IMPLEMENTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTIONS OF THE SPECIFICATIONS, OR AS ORDERED BY THE ENGINEER.

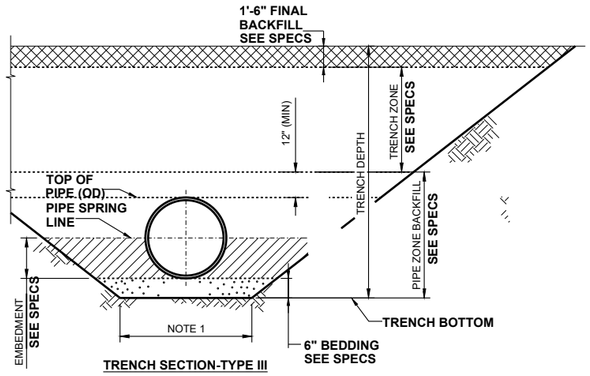
I. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THEY COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS COMPLIANCE AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER.



TRENCH SECTION-TYPE I



TRENCH SECTION-TYPE II



TRENCH SECTION-TYPE III

NOTES:

1. MIN TRENCH BOTTOM WIDTH:
   OD + 24" FOR MECHANICAL COMPACTION
   OD + 18" FOR WATER CONSOLIDATION
2. MAX TRENCH WIDTH @ TOP OF PIPE
   OD + 36" FOR, 18" & LARGER PIPE OD
   OD + 24" FOR LESS THAN 18" PIPE OD

TRENCH SECTION, RIGID PIPE

NOT TO SCALE

A. FLEXIBLE PIPE REFERS TO ALL STEEL, DUCTILE-IRON, AND PLASTIC PIPES.

B. TYPICAL TRENCH SECTIONS (I, II AND III) ARE TO BE USED ONLY WHERE STABLE, COMPACT SOIL CONDITIONS EXIST. IF BOULDERS OR LARGE OBSTRUCTIONS ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER OR WIDER THAN SHOWN. THE ENGINEER SHALL BE ADVISED SHOULD THIS OCCUR.

C. THE NEED FOR PROTECTIVE SYSTEMS AND EXCAVATION SLOPES SHALL BE DETERMINED CONSIDERING APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, AND GEOTECHNICAL CONSULTANTS' RECOMMENDATIONS.

D. PROTECTIVE SYSTEMS SHALL BE DESIGNED AND BUILT IN ACCORDANCE WITH THE APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS.

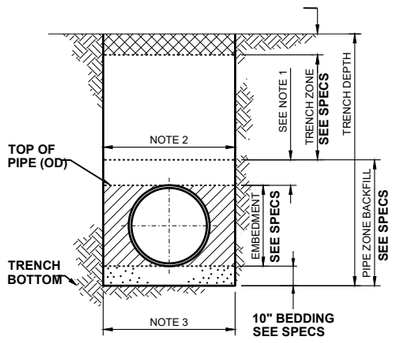
E. SUPPORTING DOCUMENTATION SHALL BE SUBMITTED TO THE ENGINEER REGARDING PIPE DESIGN AND COMPLIANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS.

F. UNSUPPORTED VERTICAL AND/OR SLOPING TRENCH WALL SLOPES SHALL NOT BE STEEPER THAN ALLOWED BY APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS, UNLESS SUPPORTING DOCUMENTATION IS SUBMITTED, ACCORDING TO AFOREMENTIONED SAFETY STANDARDS.

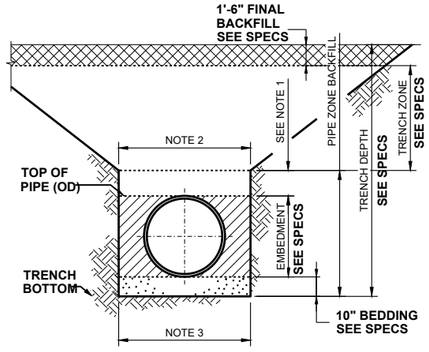
G. TRENCH SECTIONS OTHER THAN THE TYPICAL SECTIONS SHOWN MAY BE UTILIZED PROVIDED THEY COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL (OSHA) SAFETY STANDARDS AND REGULATIONS. DOCUMENTATION SUPPORTING THIS COMPLIANCE AND PIPE DESIGN CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER.

H. IF OVER-EXCAVATION DUE TO POOR FOUNDATION MATERIAL IS ORDERED BY THE ENGINEER, THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTION OF THE SPECIFICATIONS ARTICLE ENTITLED, "FILL AND BACKFILL MATERIAL REQUIREMENTS."

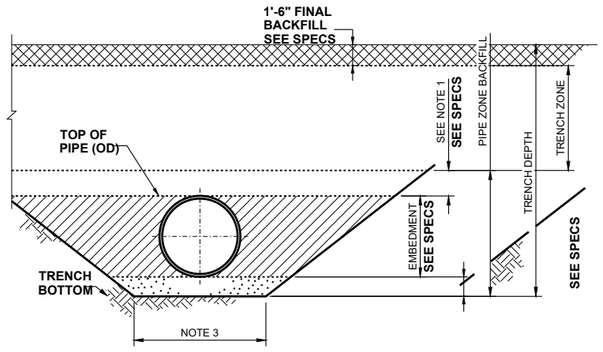
I. IF DURING CONSTRUCTION, THE WATER TABLE IS DISCOVERED TO BE ABOVE THE TRENCH BOTTOM, THE ENGINEER SHALL BE NOTIFIED, AND APPROPRIATE DEWATERING SHALL BE IMPLEMENTED TO LOWER THE WATER LEVEL BELOW THE TRENCH BOTTOM. THE BACKFILL MATERIAL SHALL BE ACCORDING TO THE EARTHWORK SECTIONS OF THE SPECIFICATIONS, OR AS ORDERED BY THE ENGINEER.



TRENCH SECTION - TYPE I



TRENCH SECTION - TYPE II



TRENCH SECTION - TYPE III

NOTES:

1. 6" MIN FOR PIPE DIAMETER < 24"
   12" MIN FOR PIPE DIAMETER > 24"
2. MAX TRENCH WIDTH @ TOP OF PIPE:
   OD + 36" FOR, 18" & LARGER PIPE OD
   OD + 24" FOR LESS THAN 18"
3. MIN TRENCH BOTTOM WIDTH =
   OD + 24" FOR MECHANICAL COMPACTION

—10" BEDDING SEE SPECS

TRENCH SECTION, FLEXIBLE PIPE

NOT TO SCALE

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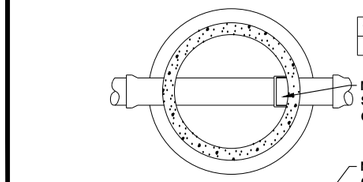
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

DETAILS

PROJECT NO. 6027-050

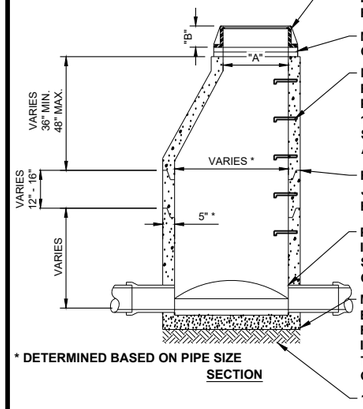
PRECAST INVERT MUST BE 1/2 DIAMETER OF THE PIPE AND BENCHES SLOPED 2" TOWARD THE INVERT.



CASTING	LID TYPE	A	B
1642	B	27"	7"

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM

PLAN



NEENAH FRAME AND TYPE B COVER OR EQUAL, LETTERED "SANITARY SEWER" WITH 2 CONCEALEDPICK HOLES TYPE F. SEE SPECIFICATION FOR CASTING NUMBER

MINIMUM OF 2, MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS

MANHOLE STEPS SHALL BE STEEL REINFORCED POLYPROPYLENE PLASTIC. STEPS TO BE CASTED, AT 16" ON CENTER SPACING, AT THE SAME TIME CONCRETE SECTIONS ARE CAST

RUBBER O-RING GASKET ON ALL JOINTS. PRECAST INVERT REQUIRED. BLOCK STRUCTURES ARE NOT ALLOWED.

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL. ALL DOGHOUSES SHALL BE GROUTED ON BOTH INSIDE AND OUTSIDE.

MINIMUM THICKNESS OF PRECAST BASE IS 6" FOR 14' DEEP OR LESS, AND INCREASES 1" IN THICKNESS FOR EVERY 4' OF DEPTH GREATER THAN 14'.

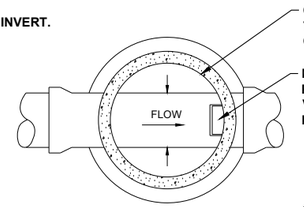
12" AGGREGATE BASE

* DETERMINED BASED ON PIPE SIZE

SECTION

SANITARY SEWER MANHOLE

NOT TO SCALE

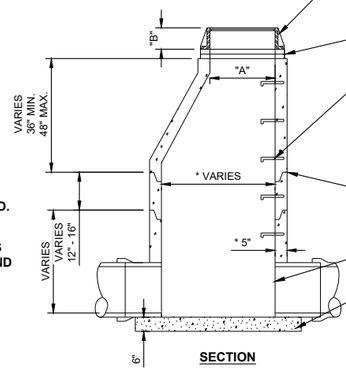


GROUT BOTTOM OF MANHOLE TO 1/2 Ø AT PIPE AND SLOPE GROUT 2" TOWARD INVERT

MANHOLE STEPS SHALL BE PLACED SO THAT OFFSET VERTICAL PORTION OF CONE IS FACING DOWNSTREAM

CASTING	LID TYPE	A	B
1642	B	27"	7"

PLAN



NEENAH FRAME AND COVER OR EQUAL LETTERED "STORM SEWER", WITH 2 CONCEALED PICK HOLES TYPE F.

MINIMUM OF 2, MAXIMUM OF 6 CONCRETE ADJUSTMENT RINGS

MANHOLE STEPS SHALL BE STEEL REINFORCED POLYPROPYLENE PLASTIC. STEPS TO BE CASTED, AT 16" ON CENTER SPACING, AT THE SAME TIME CONCRETE SECTIONS ARE CAST

RUBBER O-RING GASKET ON ALL JOINTS. NO BLOCK STRUCTURES ARE ALLOWED.

PIPE SHALL BE CUT OUT FLUSH WITH INSIDE FACE OF WALL

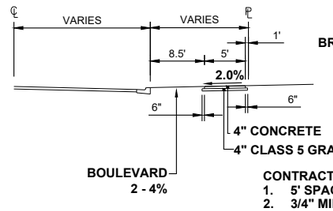
MINIMUM SLAB THICKNESS IS 6" FOR 14' DEPTH. INCREASE THICKNESS 1" FOR EVERY 4' OF DEPTH GREATER THAN 14' AND REINFORCE WITH 6" X 6" MESH.

*DETERMINED BASED ON PIPE SIZE

SECTION

STORM SEWER MANHOLE

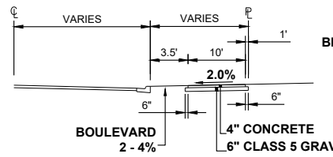
NOT TO SCALE



BROOM FINISH

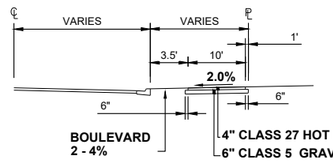
CONTRACTION JOINTS:
1. 5' SPACING TOOLED JOINTS.
2. 3/4" MIN DEPTH.

TYPICAL CONCRETE SIDEWALK



BROOM FINISH

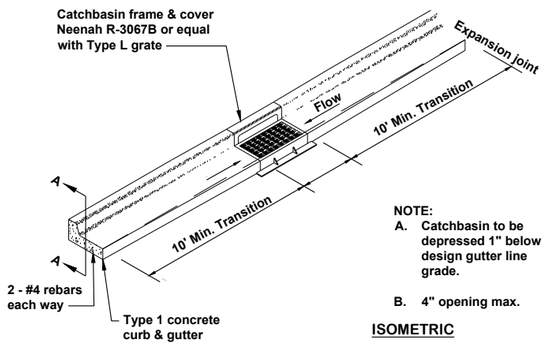
TYPICAL CONCRETE SHARED USE PATH



TYPICAL BITUMINOUS SHARED USE PATH

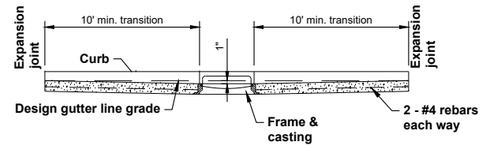
TYPICAL SIDEWALK SECTION

NOT TO SCALE



NOTE:
A. Catchbasin to be depressed 1" below design gutter line grade.
B. 4" opening max.

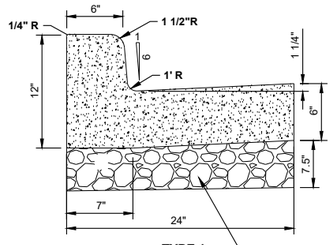
ISOMETRIC



SECTION A-A

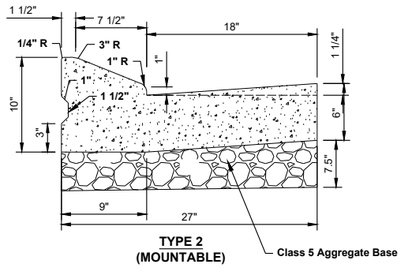
TYPE I CURB AND GUTTER CONSTRUCTION AT CATCH BASIN

NOT TO SCALE



TYPE 1

Class 5 Aggregate Base

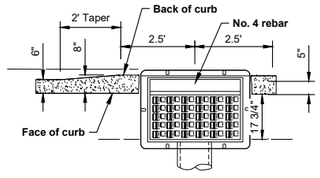


TYPE 2
(MOUNTABLE)

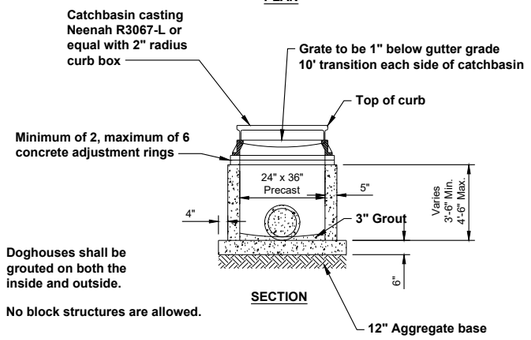
Class 5 Aggregate Base

CURB AND GUTTER

NOT TO SCALE



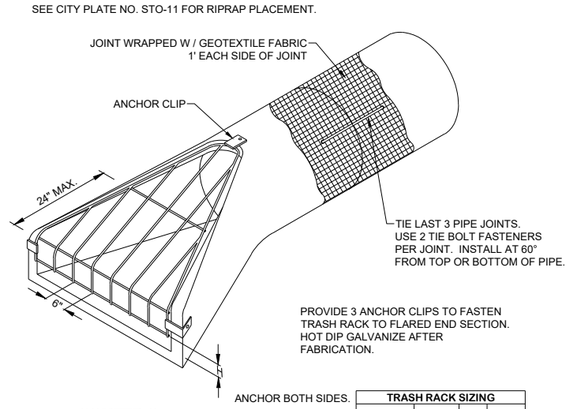
PLAN



SECTION

CATCH BASIN

NOT TO SCALE



ISOMETRIC

TRASH RACK SIZING			
PIPE SIZE	BARS	'H'	BOLTS
12" - 18"	3/4 Ø	4"	5/8"
21" - 42"	1" Ø	6"	3/4"
48" - 84"	1 1/4" Ø	12"	1"

FLARED END SECTION AND TRASH RACK

NOT TO SCALE

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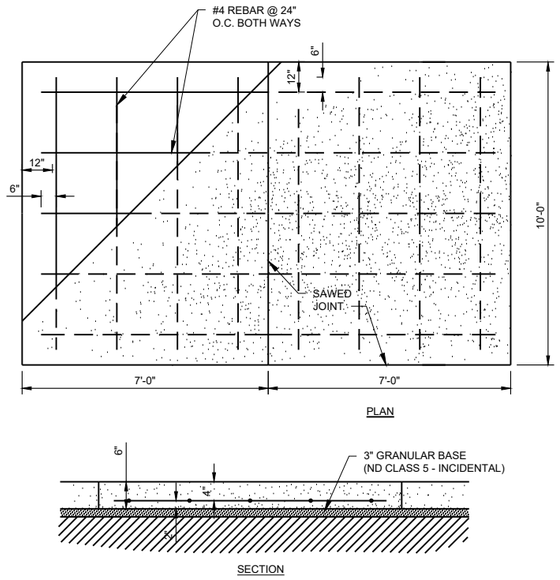
RGE	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

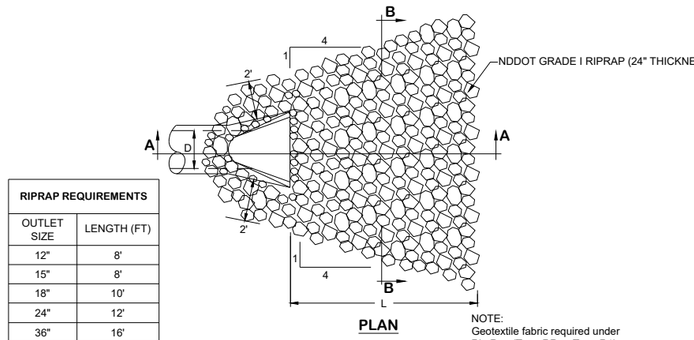
DETAILS

PROJECT NO. 6027-050



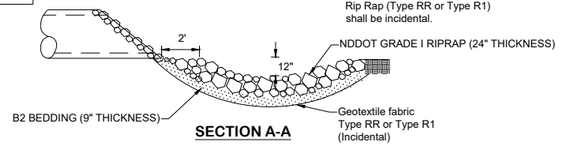
14' CONCRETE ACCESS ROAD

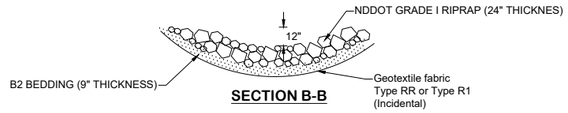
NOT TO SCALE



RIPRAP REQUIREMENTS	
OUTLET SIZE	LENGTH (FT)
12"	8'
15"	8'
18"	10'
24"	12'
36"	16'

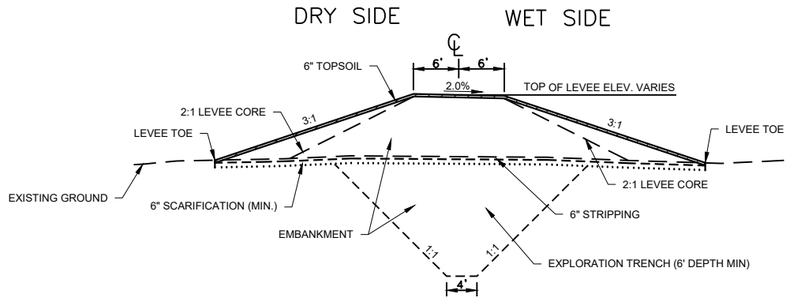
NOTE:
Geotextile fabric required under Rip Rap (Type RR or Type R1) shall be incidental.





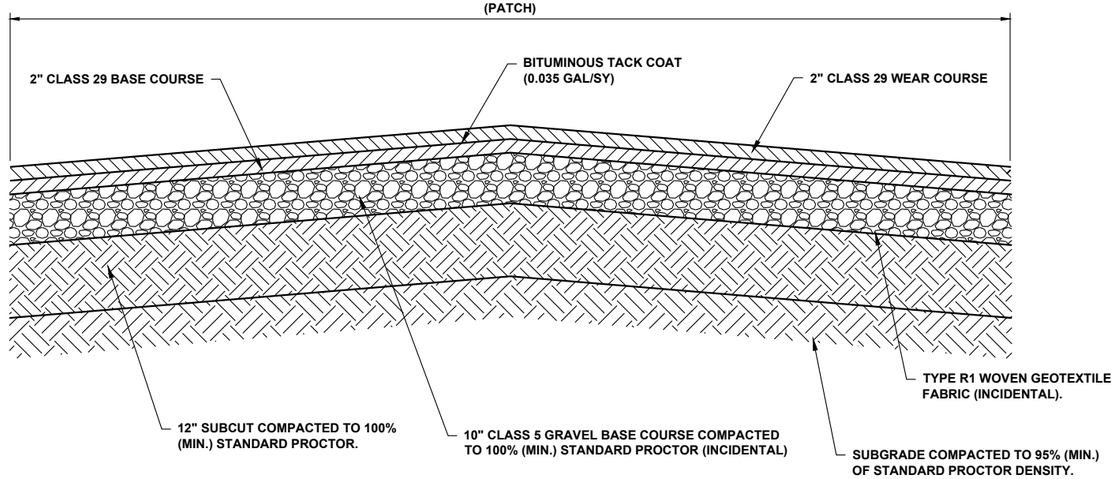
RIPRAP AT OUTLETS

NOT TO SCALE



TYPICAL LEVEE SECTION

NOT TO SCALE



NOTE: SAW CUT ALL EDGES PRIOR TO PAVEMENT REMOVAL.

TYPICAL RESIDENTIAL ROADWAY SECTION

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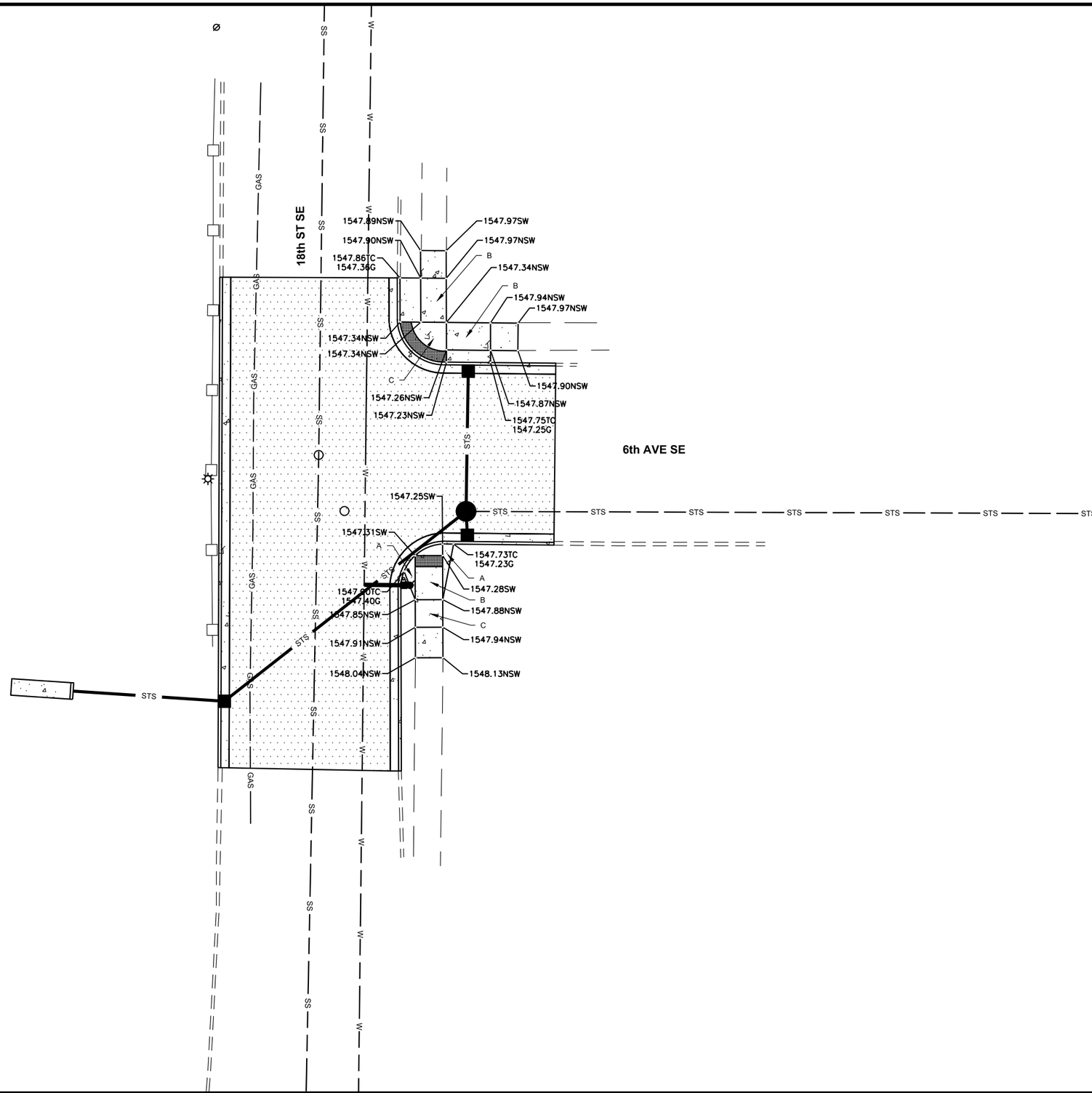
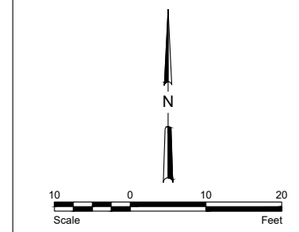
MINOT, NORTH DAKOTA

DETAILS

PROJECT NO. 6027-050





A	2' FLARE
B	12:1 MAX SLOPE
C	2% MAX SLOPE ALL DIRECTIONS
D	10:1 MAX FLARE SLOPE
	DETECTABLE WARNING PANEL

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ADA RAMP DETAIL
PROJECT NO. 6027-050

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N

30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE (XX XX)
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
- EROSION CONTROL BLANKET
- CONSTRUCTION ENTRANCE
- DRAINAGE ARROW

NOTES:

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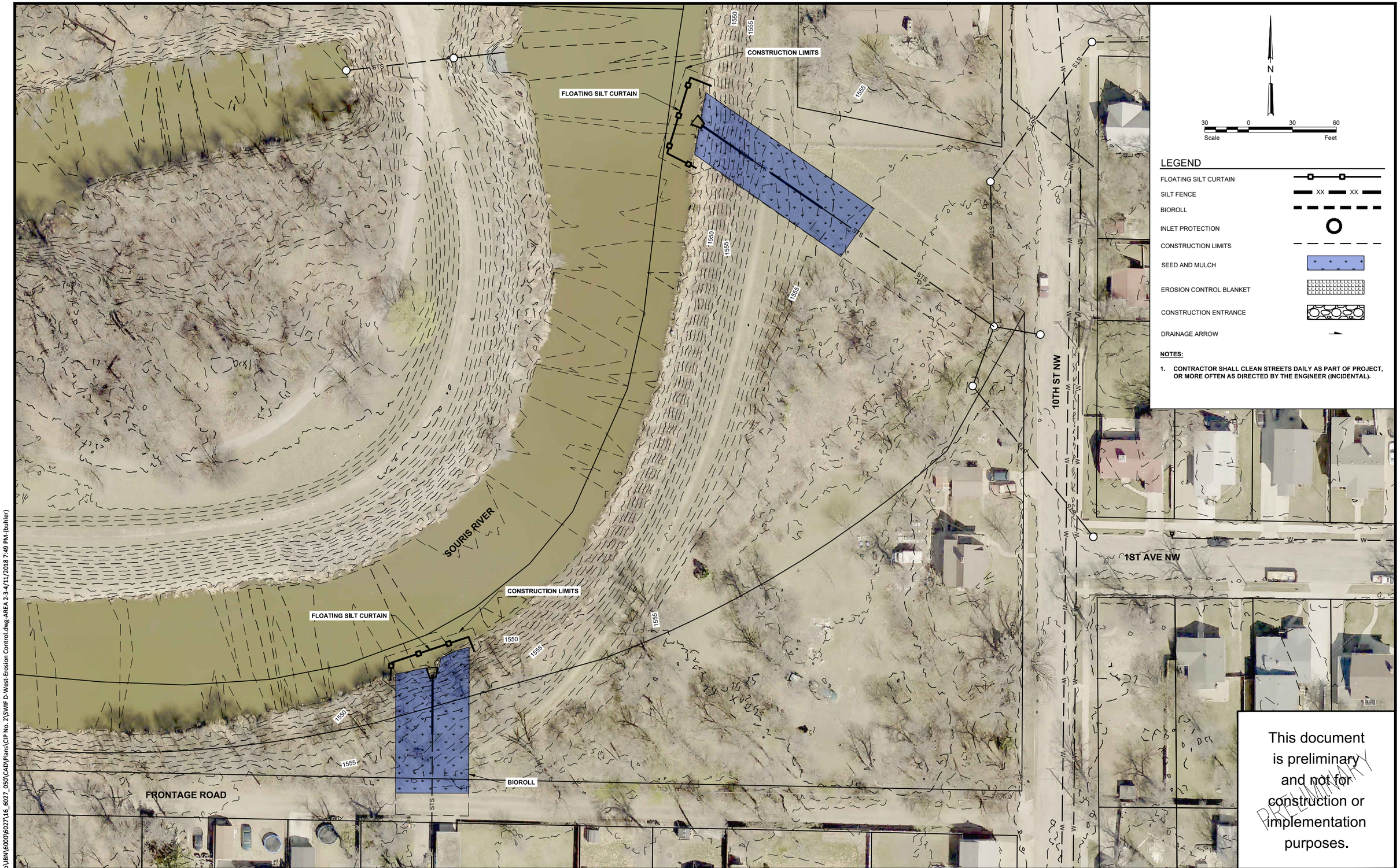
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 1

PROJECT NO. 6027-050

SHEET 39 of 73



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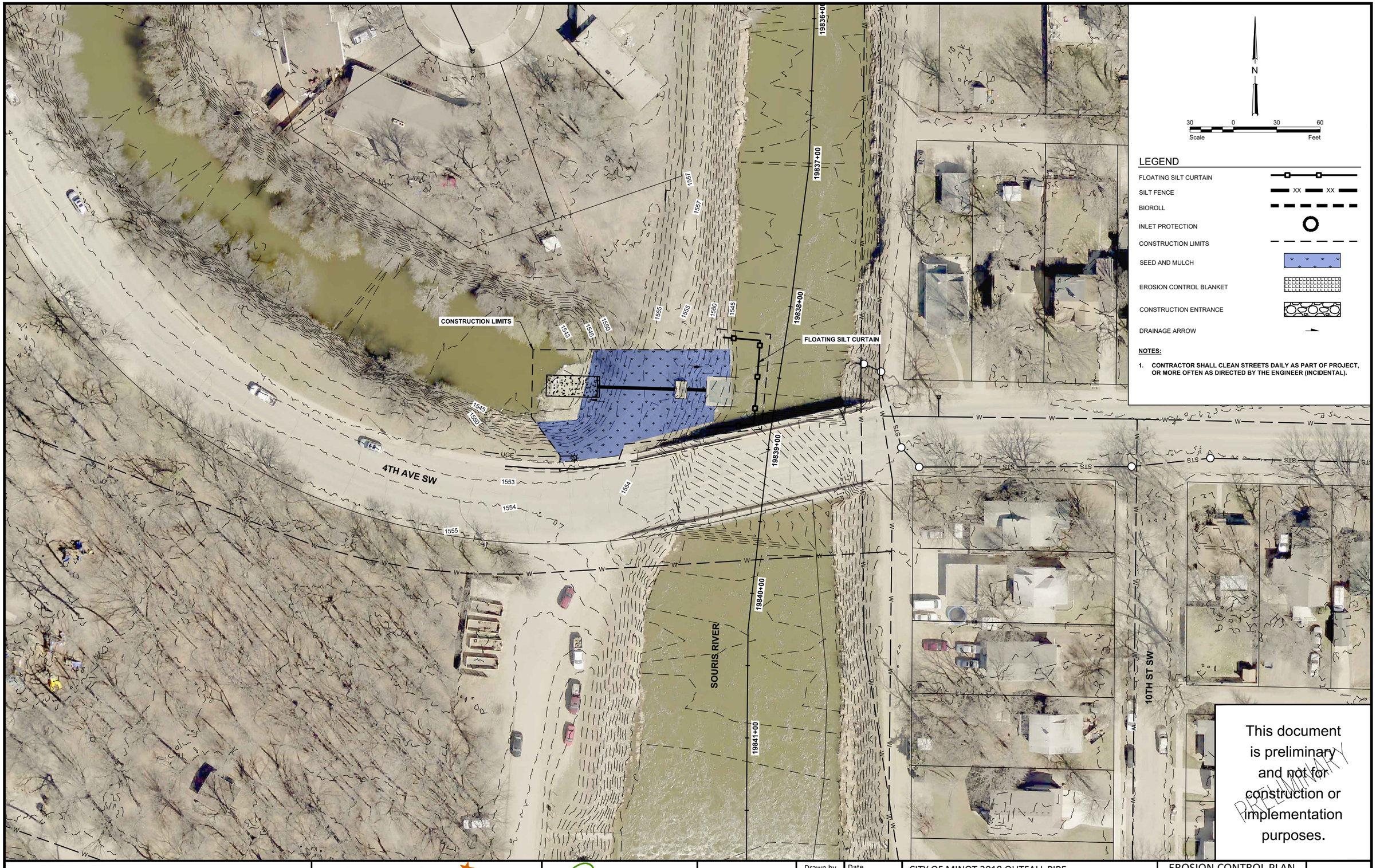
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 2-3
PROJECT NO. 6027-050



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Scale Feet

LEGEND

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- SILT FENCE — XX XX
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 4
PROJECT NO. 6027-050

SHEET 41 of 73

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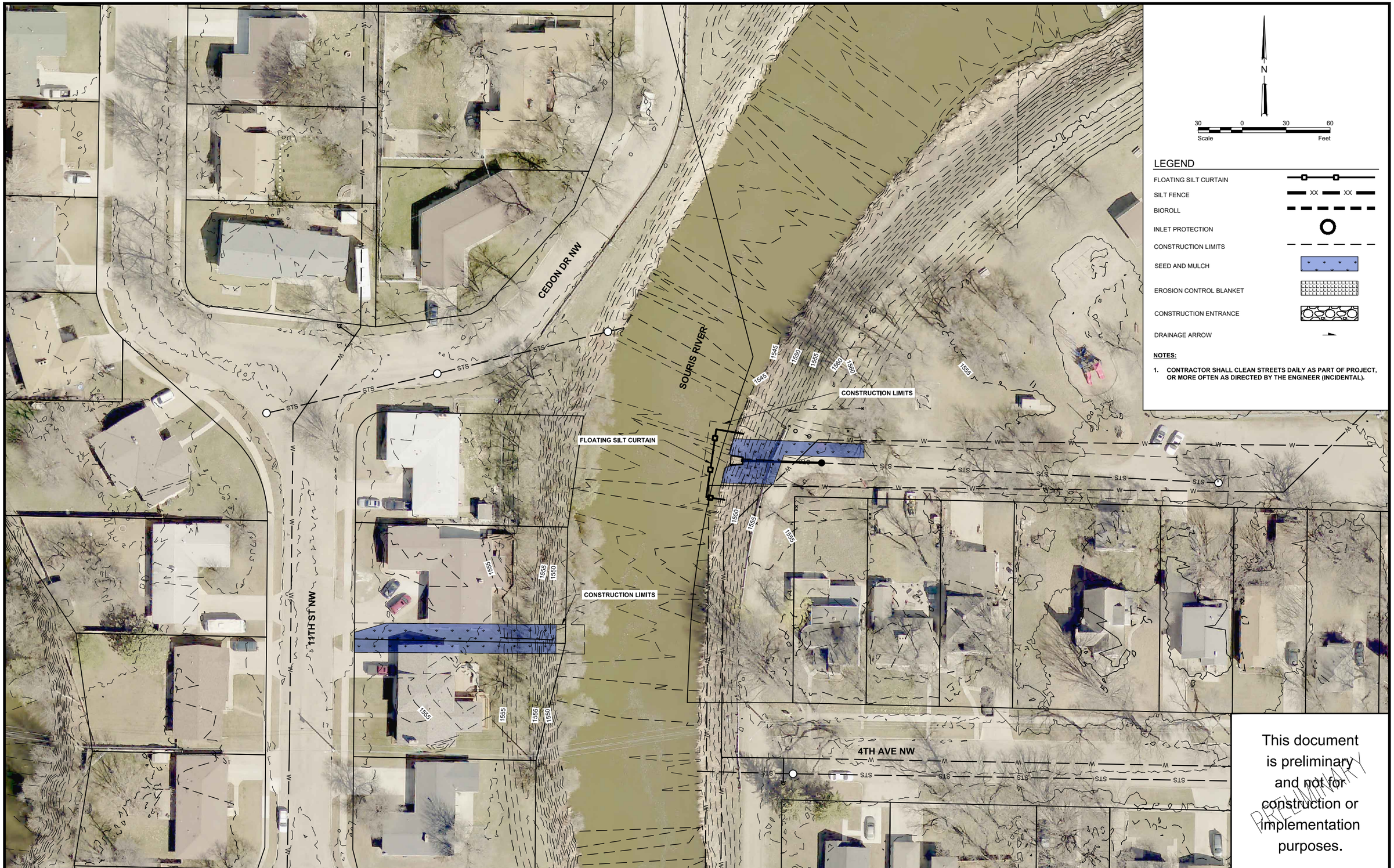

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MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 5-6
PROJECT NO. 6027-050

SHEET 42 of 73

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Scale Feet

LEGEND

- FLOATING SILT CURTAIN
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- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
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MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 7

PROJECT NO. 6027-050

SHEET
43 of 73



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Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX XX
- BIOROLL
- INLET PROTECTION
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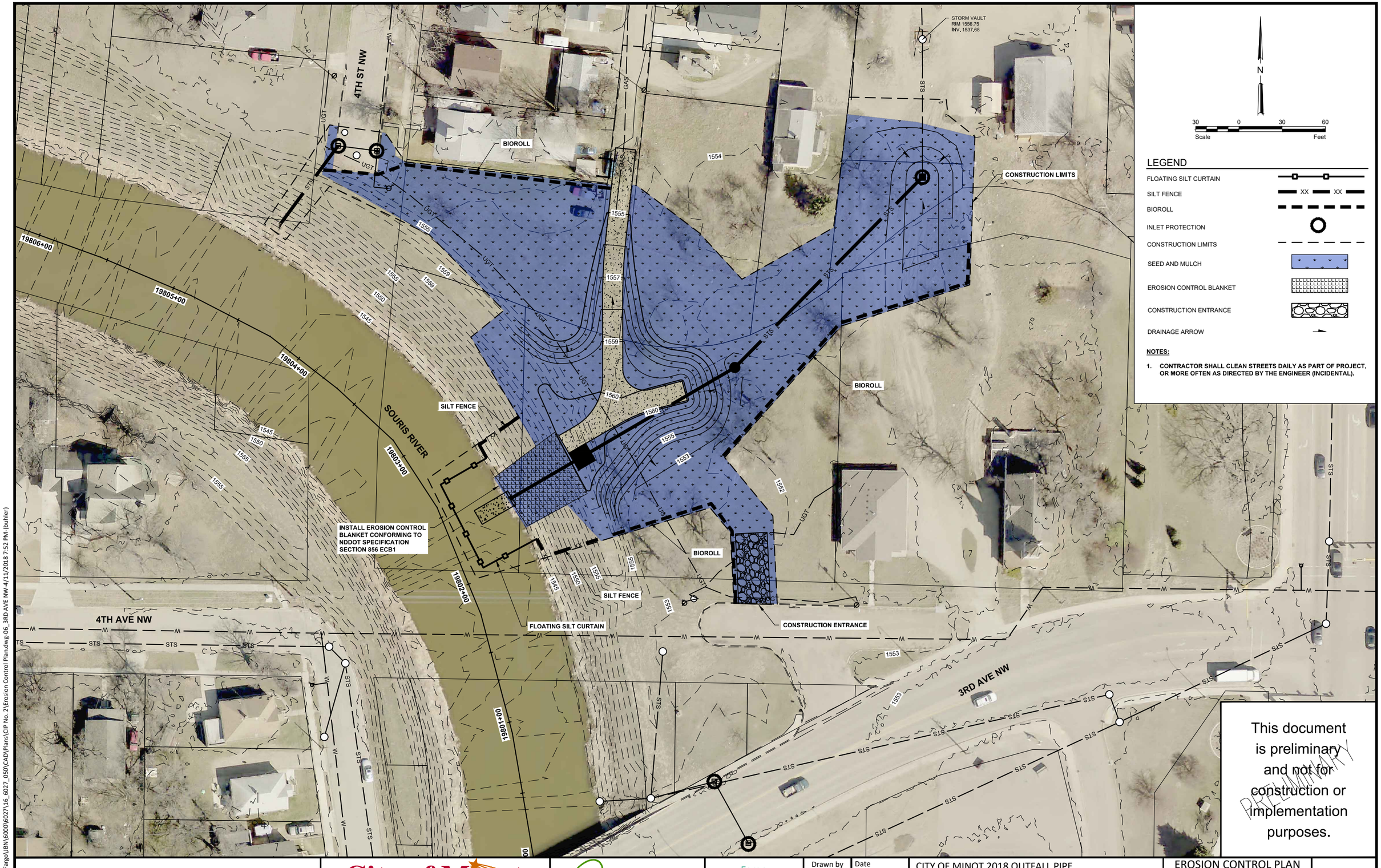
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 8

PROJECT NO. 6027-050



LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE (XX XX)
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
- EROSION CONTROL BLANKET
- CONSTRUCTION ENTRANCE
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Checked by	Scale
RGE	AS SHOWN

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 9
PROJECT NO. 6027-050

SHEET 45 of 73

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N

30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
- EROSION CONTROL BLANKET
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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 10-11

PROJECT NO. 6027-050

SHEET 46 of 73

SILT FENCE

BIOROLL

FLOATING SILT CURTAIN

CONSTRUCTION LIMITS

1ST AVE NE

5TH ST NE

6TH ST NE

7TH ST NE

SOURIS RIVER

1545

1550

1555

N

30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX — XX
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
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CITY PROJECT NO. 3135.2D

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P: 701.237.5065
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Checked by	Scale
RGE	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 12

PROJECT NO. 6027-050

SHEET 47 of 73

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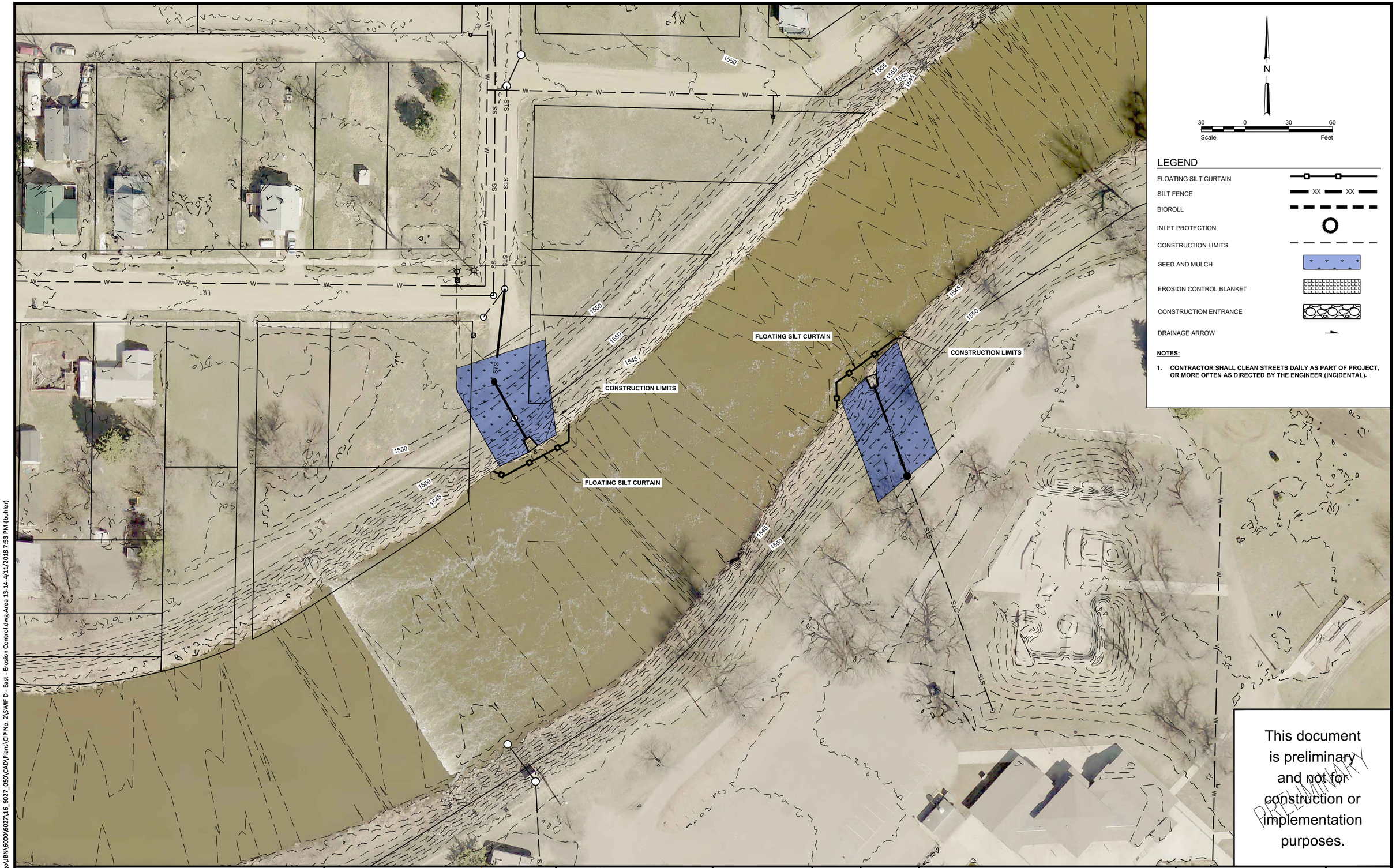

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30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX — XX
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
- EROSION CONTROL BLANKET
- CONSTRUCTION ENTRANCE
- DRAINAGE ARROW

NOTES:

1. **CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).**

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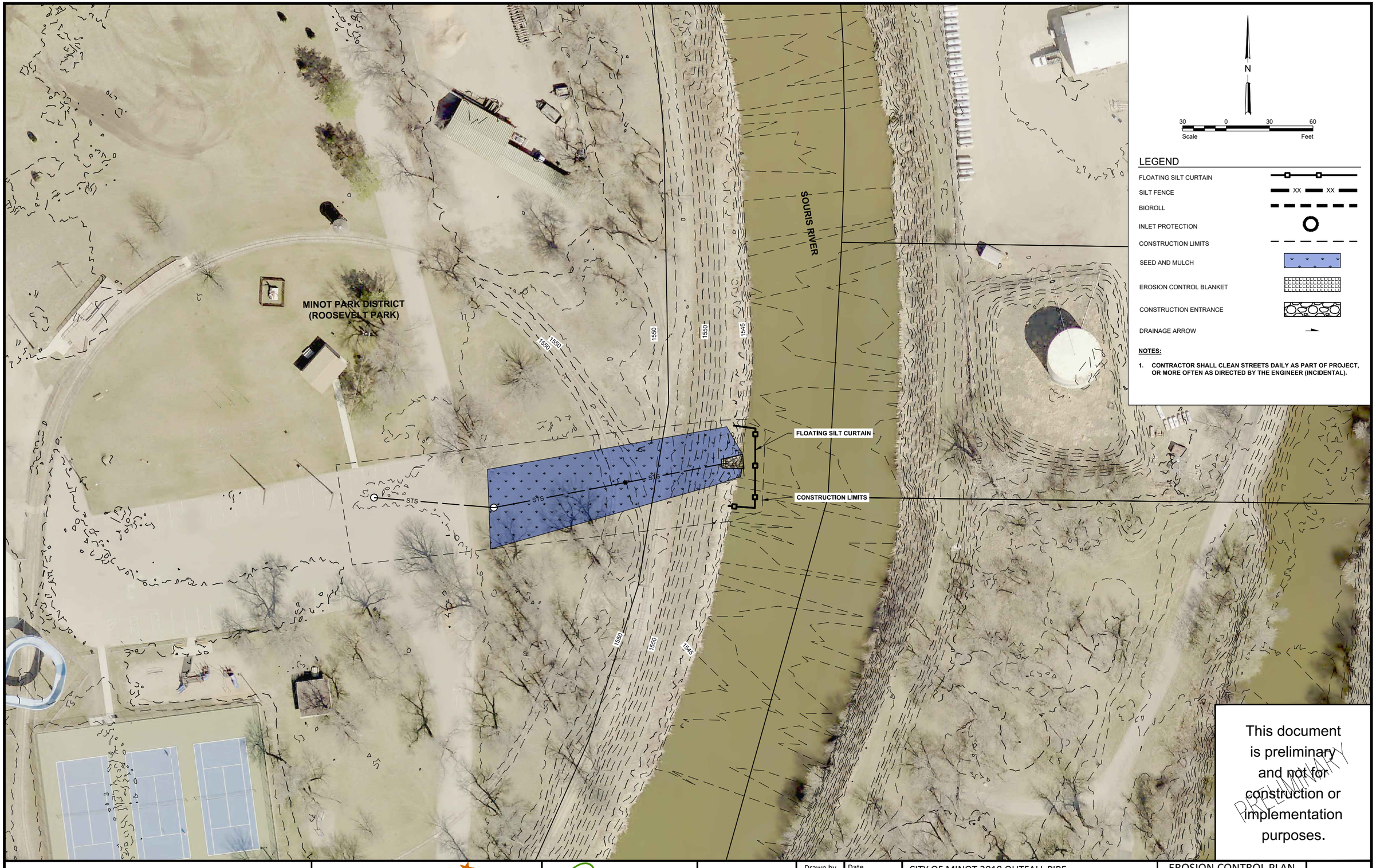
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 13-14

PROJECT NO. 6027-050

SHEET 48 of 73



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Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE (XX XX)
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 15

PROJECT NO. 6027-050

SHEET 49 of 73

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MINOT PARK DISTRICT
(ROOSEVELT PARK)

CONSTRUCTION LIMITS

FLOATING SILT CURTAIN

SOURIS RIVER

1550

1545

ST3

N

30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX — XX
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 16
PROJECT NO. 6027-050

SHEET
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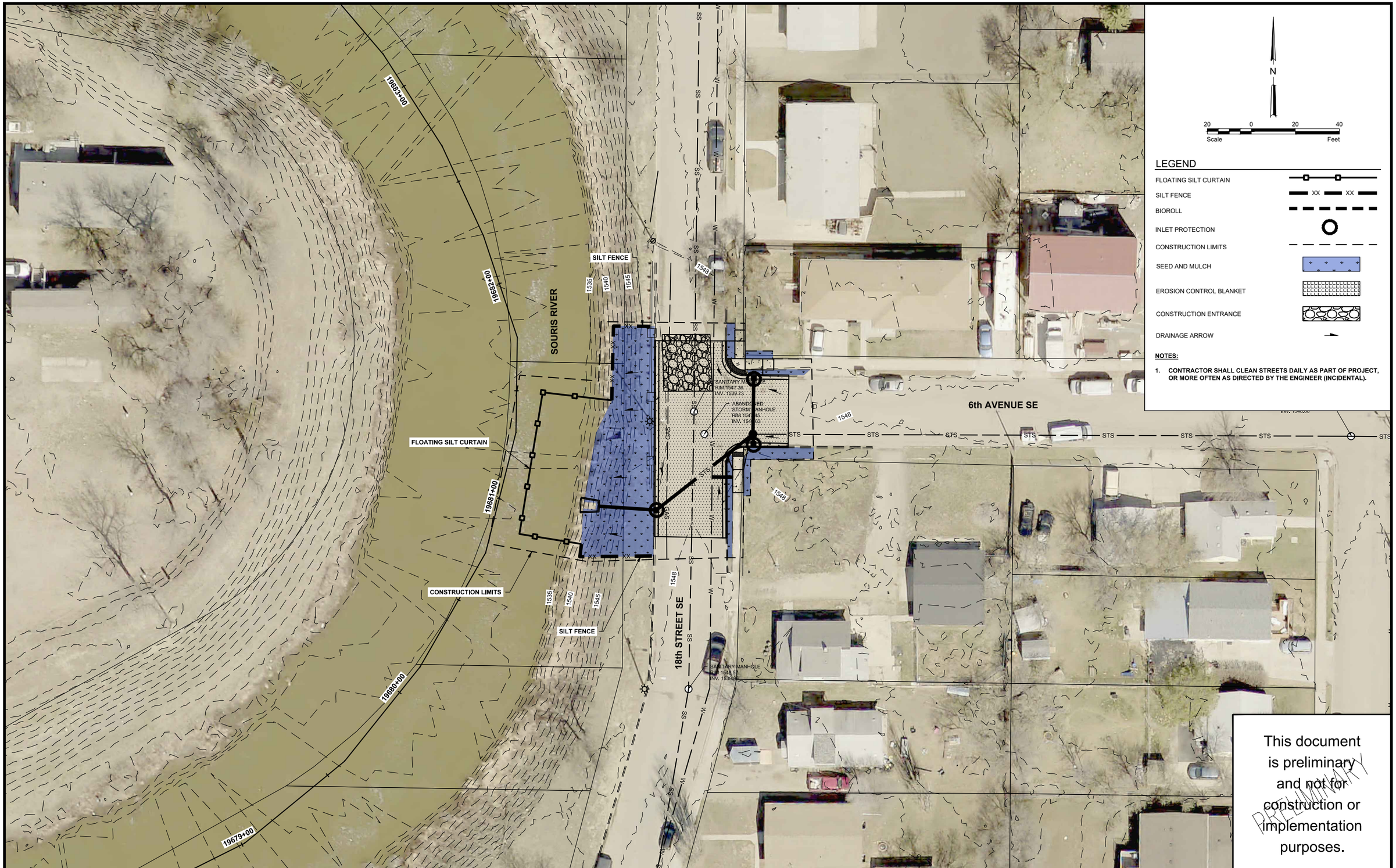

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 17

PROJECT NO. 6027-050

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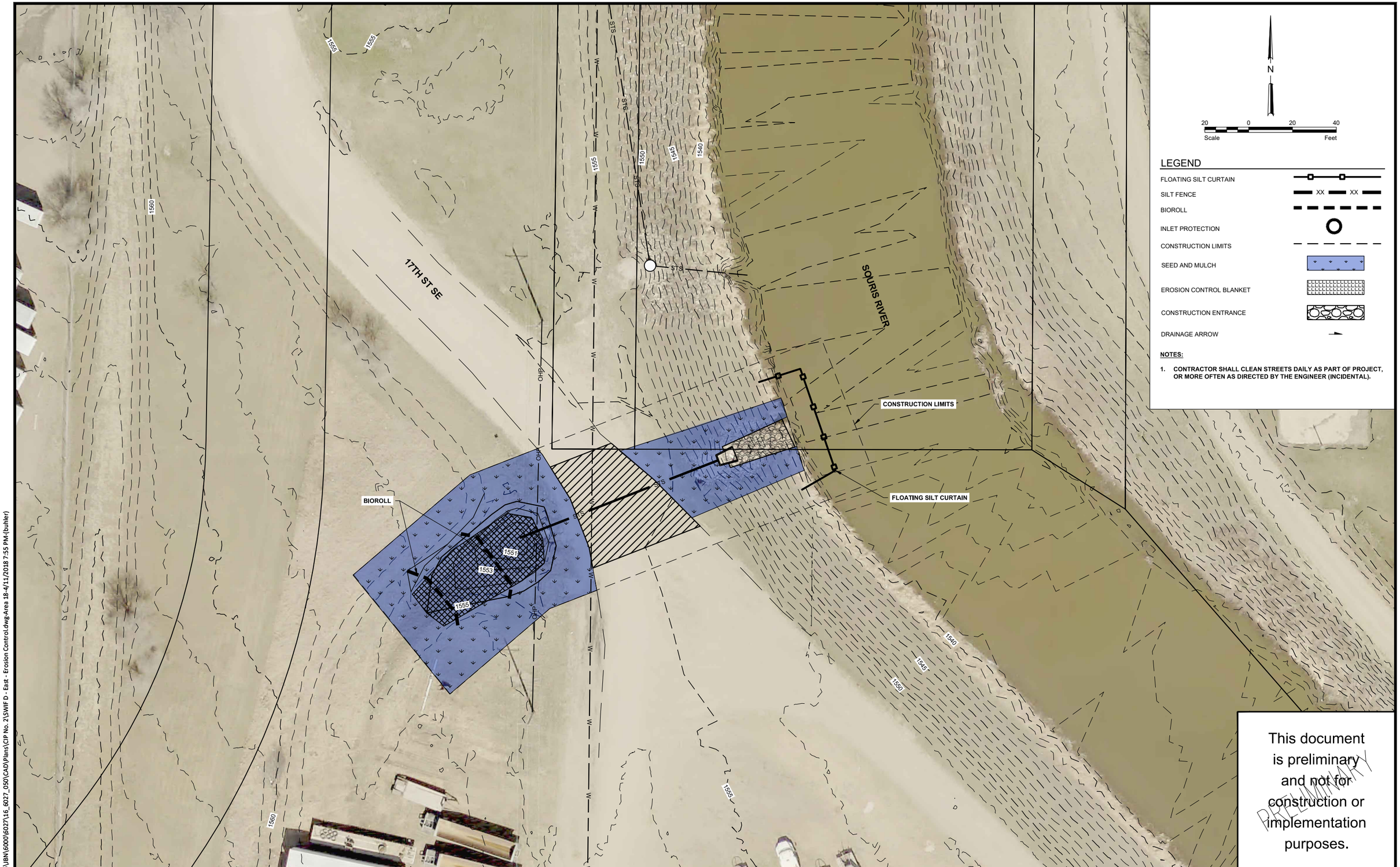

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX XX
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
- EROSION CONTROL BLANKET
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MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 18
PROJECT NO. 6027-050

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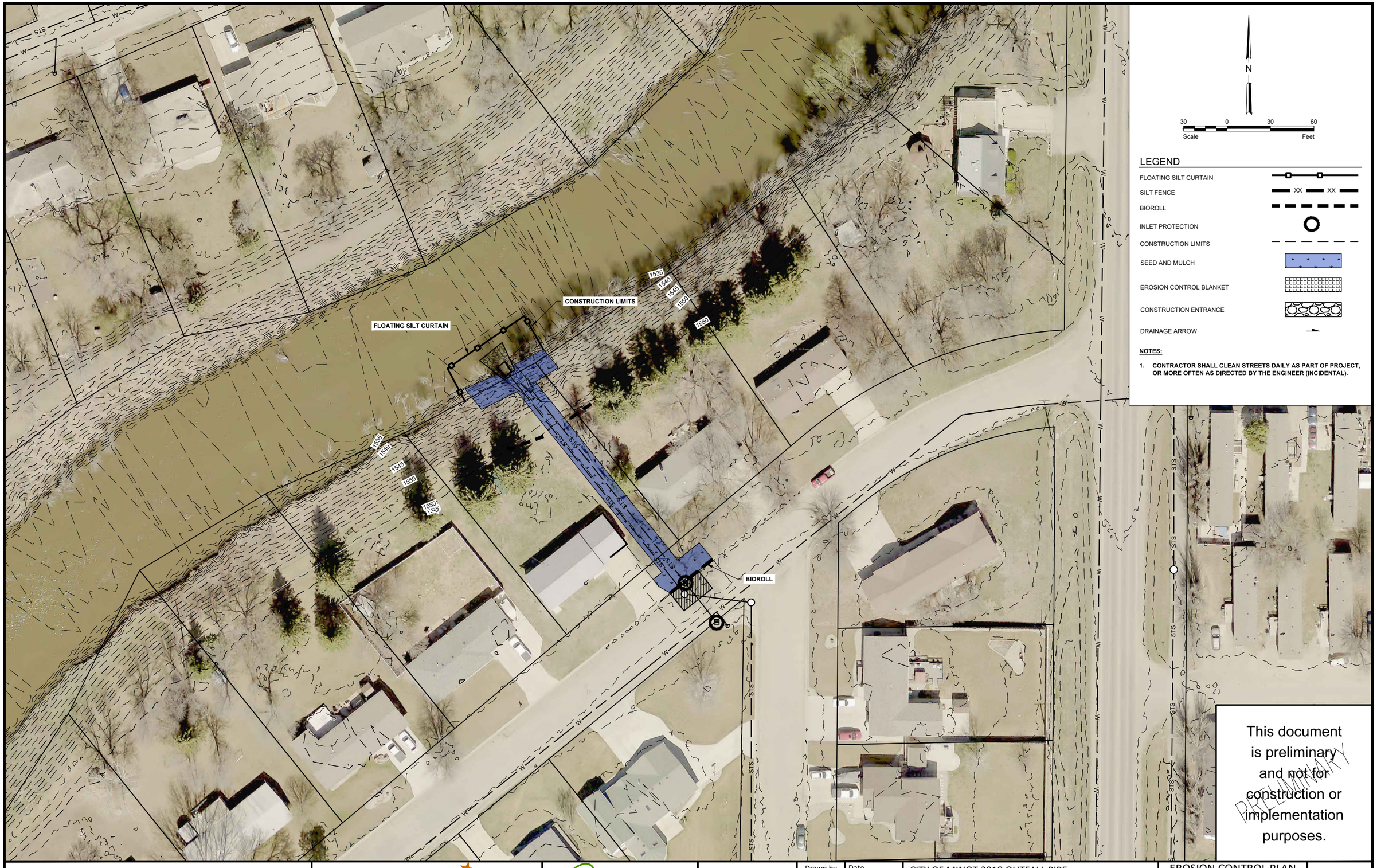

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30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX XX
- BIOROLL
- INLET PROTECTION
- CONSTRUCTION LIMITS
- SEED AND MULCH
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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN AREA 19

PROJECT NO. 6027-050

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 20
PROJECT NO. 6027-050

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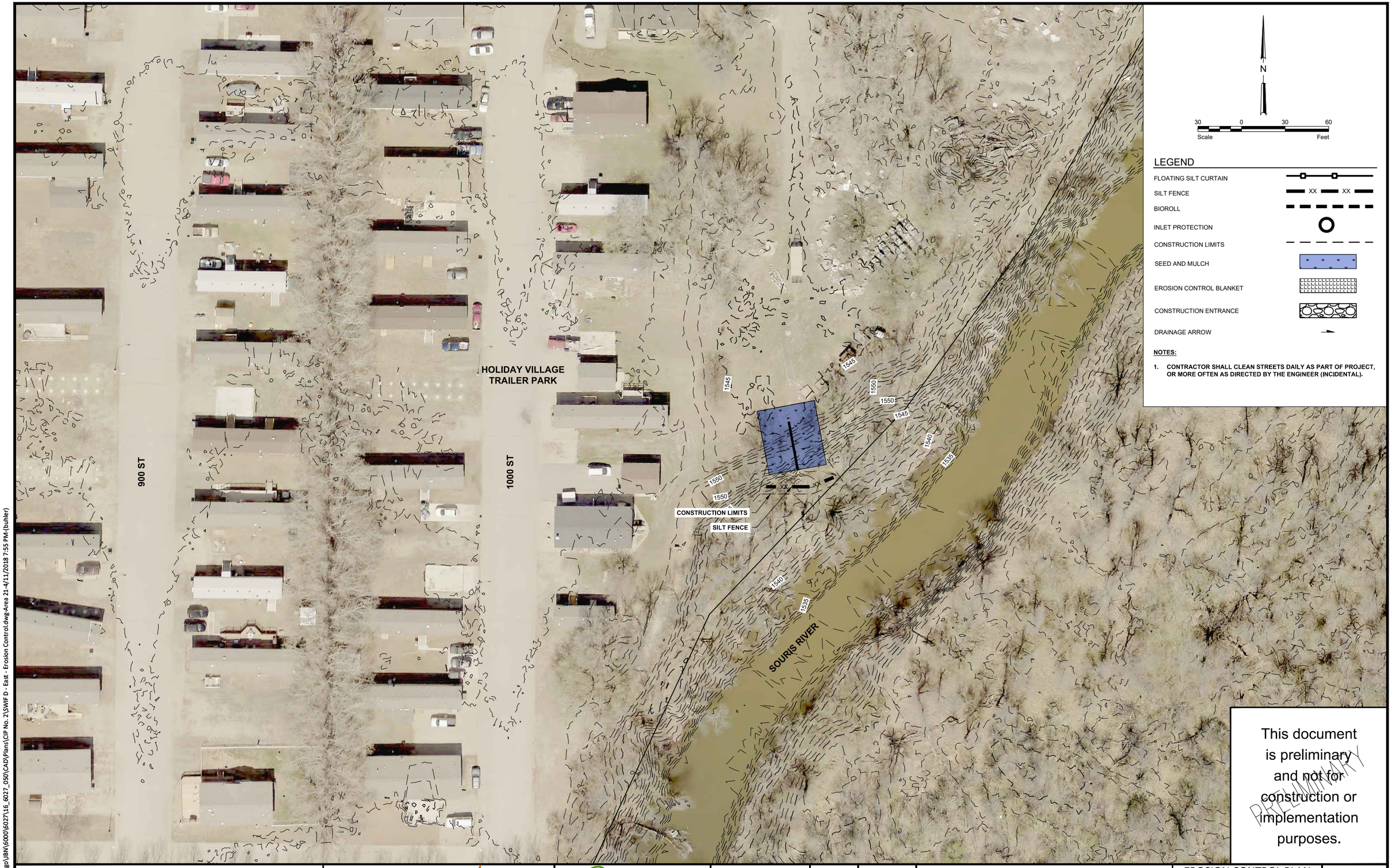

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30 0 30 60

Scale Feet

LEGEND

- FLOATING SILT CURTAIN
- SILT FENCE — XX XX
- BIOROLL
- INLET PROTECTION
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MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 21

PROJECT NO. 6027-050

SHEET
55 of 73

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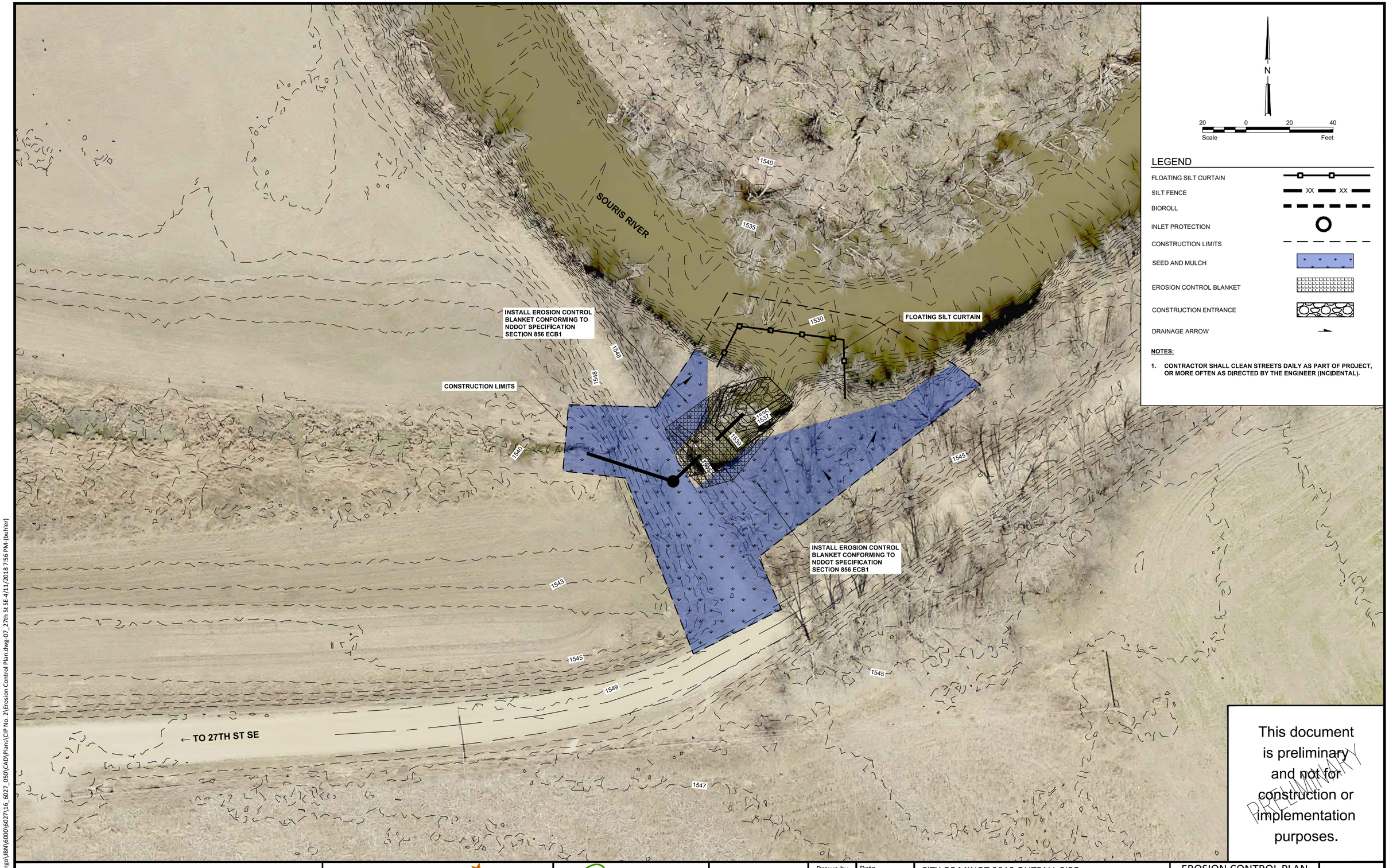

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL PLAN
AREA 22
PROJECT NO. 6027-050

SHEET
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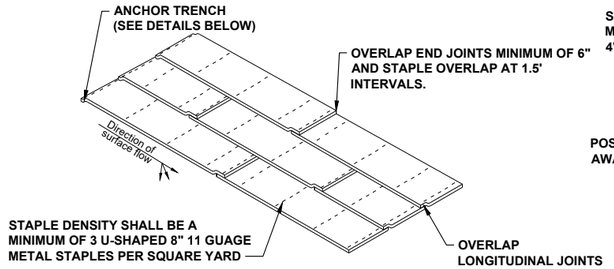
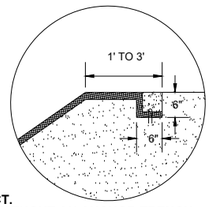
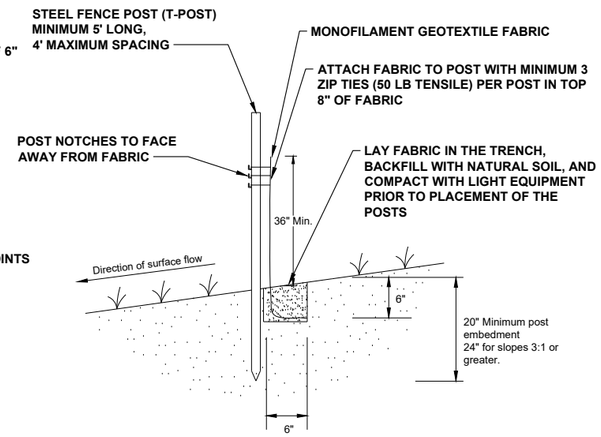




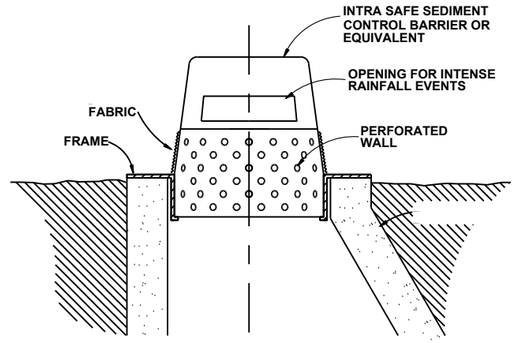
ANCHOR TRENCH

1. DIG 6" X 6" TRENCH.
2. LAY BLANKET IN TRENCH.
3. STAPLE AT 1.5' INTERVALS.
4. BACKFILL WITH NATURAL SOIL AND COMPACT.
5. BLANKET LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH.

EROSION CONTROL BLANKET
NOT TO SCALE



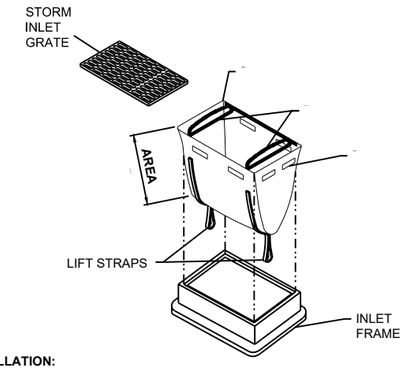
SILT FENCE STANDARD
NOT TO SCALE



NOTES:

1. ALTERNATIVE INLET PROTECTION DEVICES MAY BE ALLOWED SUBJECT TO ENGINEER'S APPROVAL.
2. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN TO INSURE THAT SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO INLET SHALL BE IMMEDIATELY REMOVED.
3. ANY INLET PROTECTION USED SHALL BE EQUIPPED WITH AN EMERGENCY OVERFLOW TO MINIMIZE THE THREAT OF STREET FLOODING DURING AN INTENSE RAINFALL EVENT.

INLET PROTECTION (TYPE A)
NOT TO SCALE



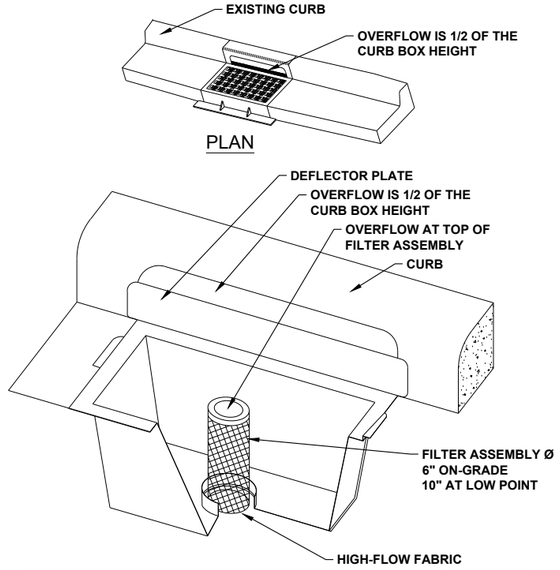
INSTALLATION:

1. REMOVE THE INLET GRATE.
2. STAND THE GRATE UPRIGHT. INSTALL THE GRATE BETWEEN THE LIFTING HANDLES.
3. PLACE THE BAG IN THE INLET AND LOWER THE AND GRATE USING LIFTING STRAPS.

MAINTENANCE

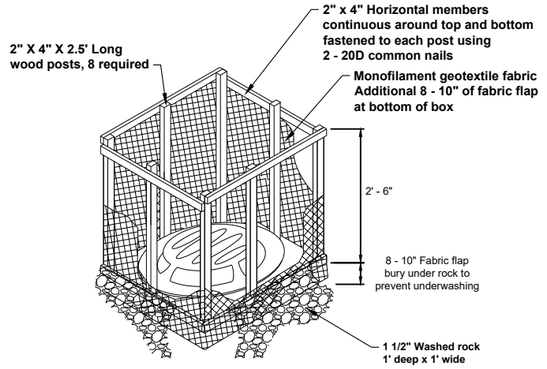
1. CHECK BAG REGULARLY AND AFTER RAIN EVENTS. IF THE BAG IS FILLED TO 1/3 OF ITS CAPACITY WITH SEDIMENT, EMPTY BAG.
2. REMOVE DEBRIS AROUND THE INLET GRATE PRIOR TO REMOVING BAG..
3. USE THE LIFT HANDLES TO REMOVE THE BAG AND USE THE HANDLES ON THE BOTTOM TO EMPTY BAG.

INLET PROTECTION (TYPE B)
NOT TO SCALE



WIMCO ROAD DRAIN CG-23 HIGH FLOW INLET PROTECTION CURB AND GUTTER MODEL OR CITY APPROVED EQUAL.

INLET PROTECTION CATCH BASIN INSERT
NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL CONSTRUCT SILT BOX TO FIT AROUND THE INLET STRUCTURE WITH 6" MINIMUM CLEARANCE TO EDGES OF STRUCTURE.
2. SILT BOX TO BE PLACED ON AN EVEN SURFACE 6" BELOW STRUCTURE OPENING.
3. TOP OF SILT BOX TO EXTEND 18" MINIMUM ABOVE EXISTING GRADE.
4. WOODEN LATH SHALL BE NAILED SECURELY TO THE POST MEMBER TO SECURE FILTER FABRIC.

INLET PROTECTION BEEHIVE CASTING
NOT TO SCALE

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

EROSION CONTROL DETAILS
PROJECT NO. 6027-050

SHEET
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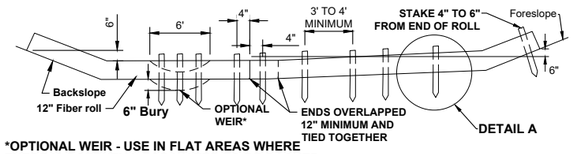
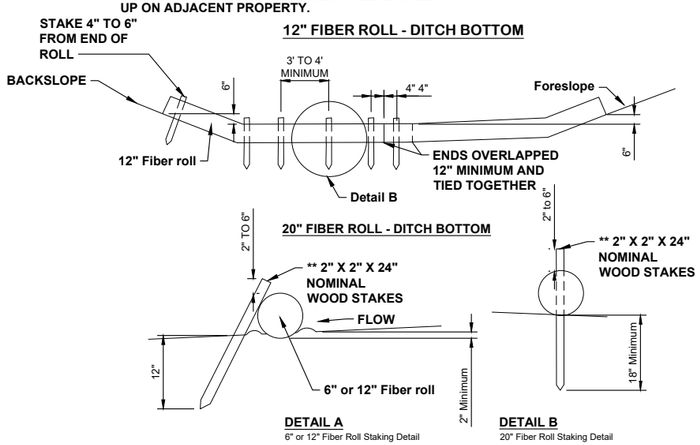


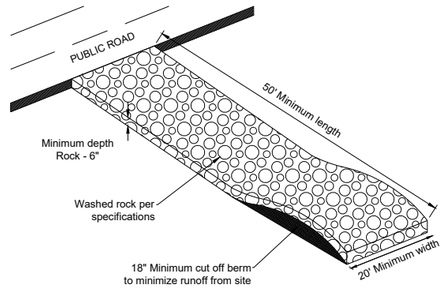
*OPTIONAL WEIR - USE IN FLAT AREAS WHERE THERE IS POTENTIAL FOR WATER TO BE BACKED UP ON ADJACENT PROPERTY.



** STAKES SPACED EVERY 3-4 FEET. MANUFACTURER MAY REQUIRE STAKE THROUGH CENTER OF FIBER ROLL. THE FIBER ROLL MANUFACTURER'S STAKING DETAILS SUPERSEDE THIS STAKING DETAIL.

EROSION CONTROL FIBER ROLL STAKING

NOT TO SCALE

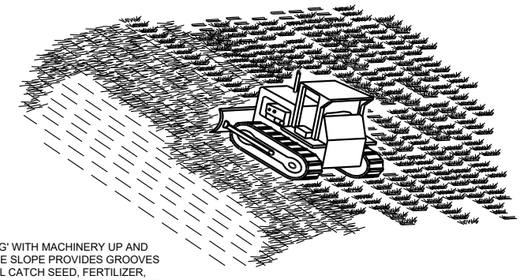


NOTES:

1. Filter fabric shall be placed under rock to stop mud migration through rock.
2. Entrance must be maintained regularly to prevent sedimentation on public roadways.
3. Curb and Gutter must be protected at all times from damage due to equipment or construction activities when crossing curb and gutter.

CONSTRUCTION ENTRANCE

NOT TO SCALE

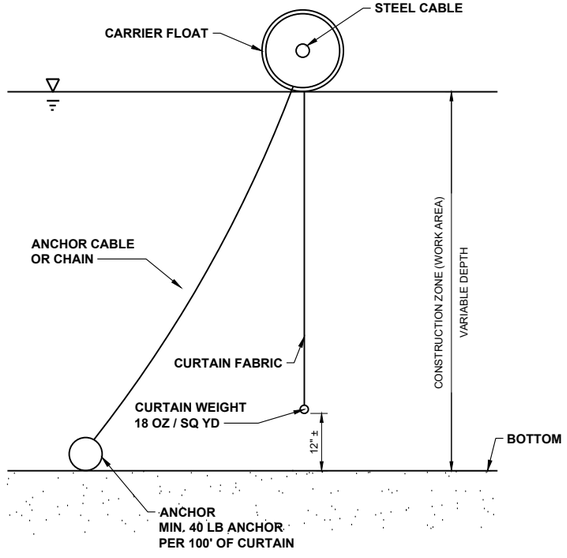


'TRACKING' WITH MACHINERY UP AND DOWN THE SLOPE PROVIDES GROOVES THAT WILL CATCH SEED, FERTILIZER, MULCH, RAINFALL AND REDUCE RUNOFF.

ALL DISTURBED SLOPES TO BE TRACKED AS SHOWN BETWEEN TIME OF EMBANKMENT AND SEEDING.

SURFACE ROUGHENING

NOT TO SCALE



NOTE:
DOUBLE SILT CURTAINS SHOULD BE SPACED 10' APART.

FLOATING SILT CURTAIN

NOT TO SCALE

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EROSION CONTROL DETAILS

PROJECT NO. 6027-050

SHEET 58 of 73

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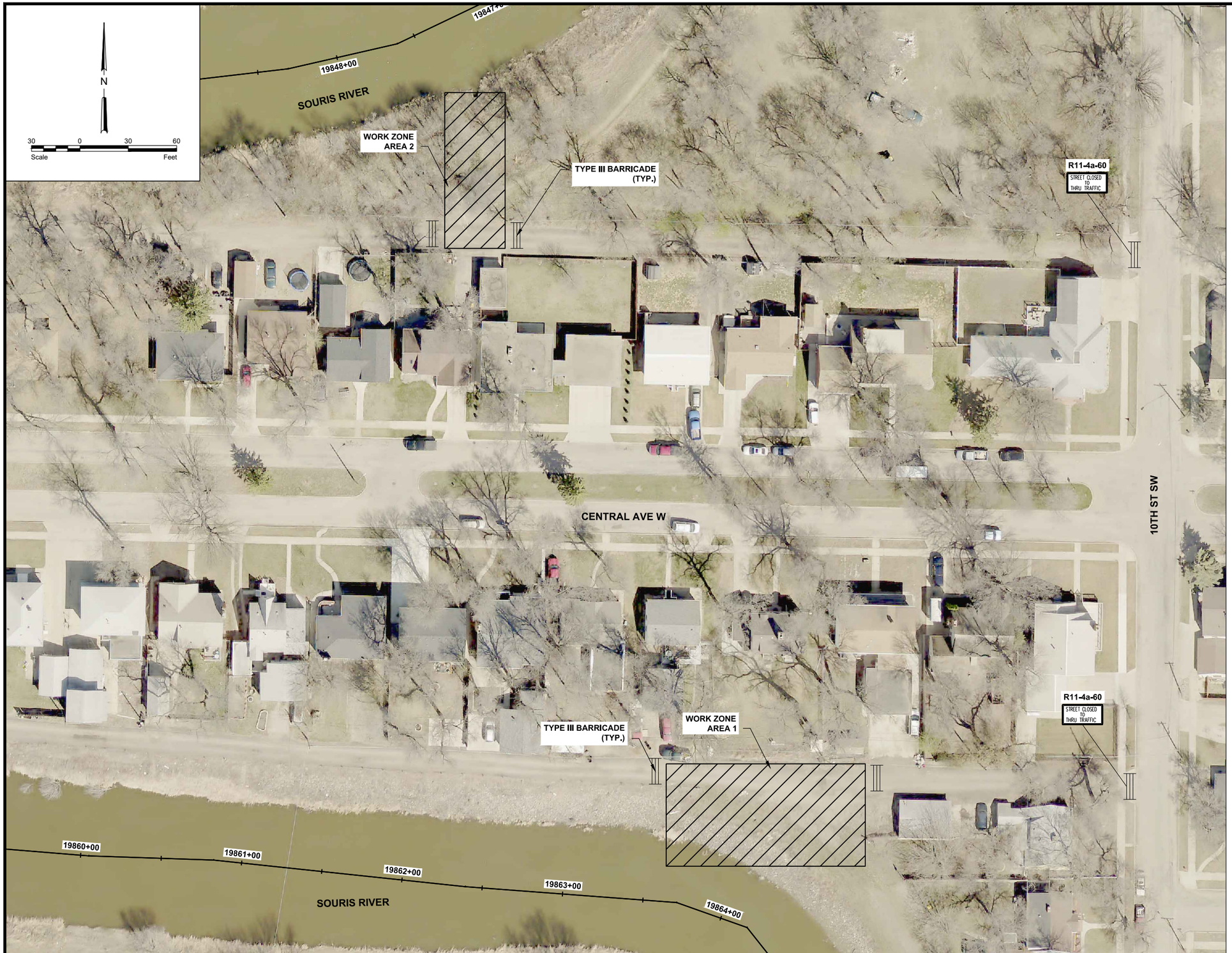

TRAFFIC MANAGEMENT:

CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO EFFECTIVELY ADDRESS VEHICLE AND PEDESTRIAN TRAFFIC, ACCESSIBILITY, AND WORKER SAFETY DURING CONSTRUCTION. CONTRACTOR SHALL FOLLOW ALL NDDOT REQUIREMENTS FOR TRAFFIC MANAGEMENT.

NOTES:

1. CONTRACTOR SHALL COORDINATE DETOUR ROUTE WITH ADJACENT PROJECTS. ALL COSTS TO ADJUST, ADD, OR REMOVE TRAFFIC CONTROL SIGNS AND DEVICES, IF NECESSARY, SHALL BE INCLUDING IN THE BID PRICE FOR TRAFFIC CONTROL.
2. ALL SIGNS SHALL BE SPACED A MINIMUM OF 75 LF APART AND 75 LF IN ADVANCE OF THE INTERSECTION UNLESS SHOWN OTHERWISE OR DIRECTED BY THE ENGINEER. SIGN LOCATIONS ARE APPROXIMATE.
3. IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY ELECT TO USE PORTABLE SIGN SUPPORTS IN LIEU OF POST MOUNTED SIGN SUPPORTS.
4. CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH ADJACENT LANDOWNERS IN ORDER TO MAINTAIN ACCESS AT ALL TIMES.
5. WORK ZONE AREAS 1 AND 2 SHALL NOT BE CONSTRUCTED CONCURRENTLY.

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 1 & 2

PROJECT NO. 6027-050

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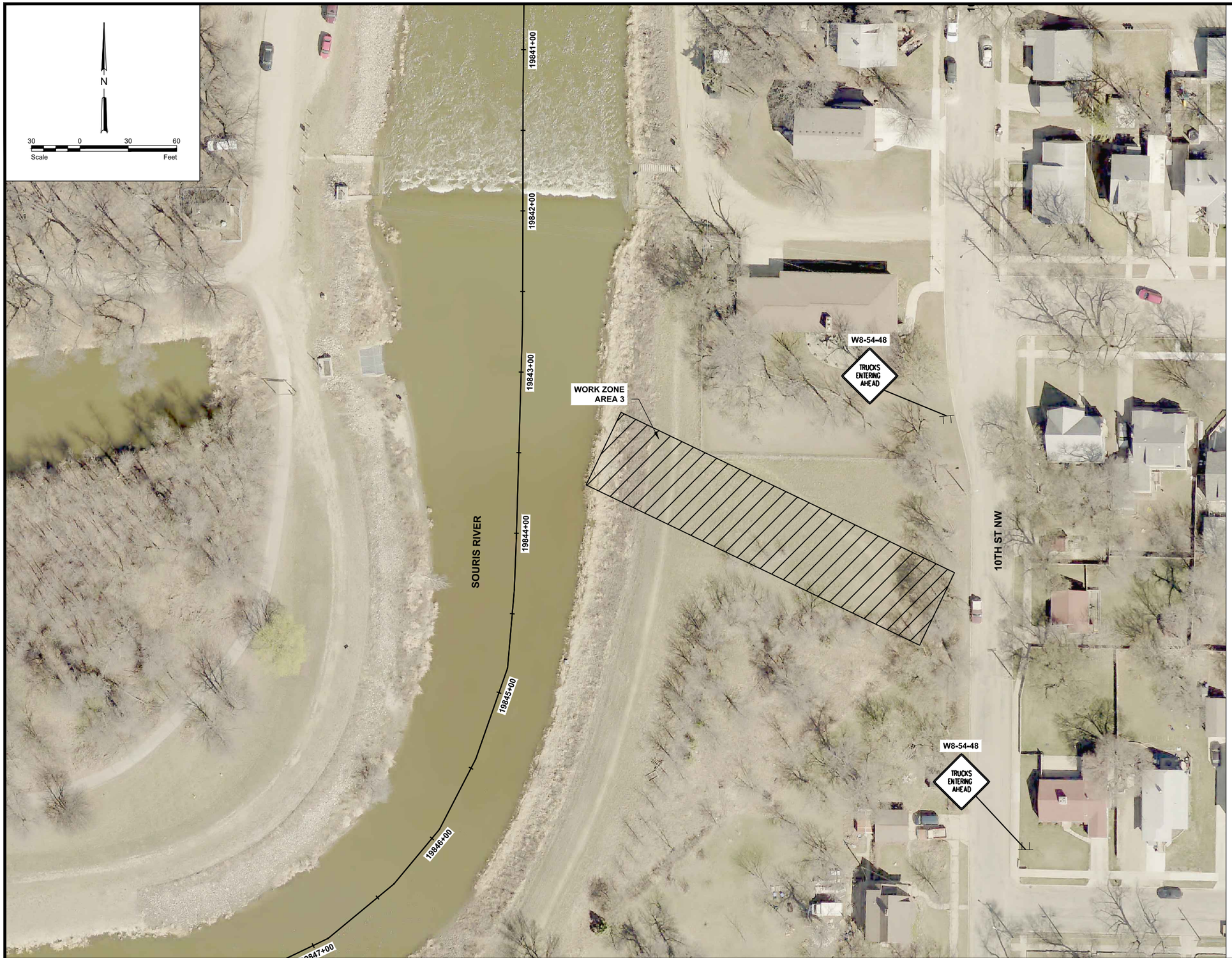

TRAFFIC MANAGEMENT:

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 3

PROJECT NO. 6027-050

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 4

PROJECT NO. 6027-050

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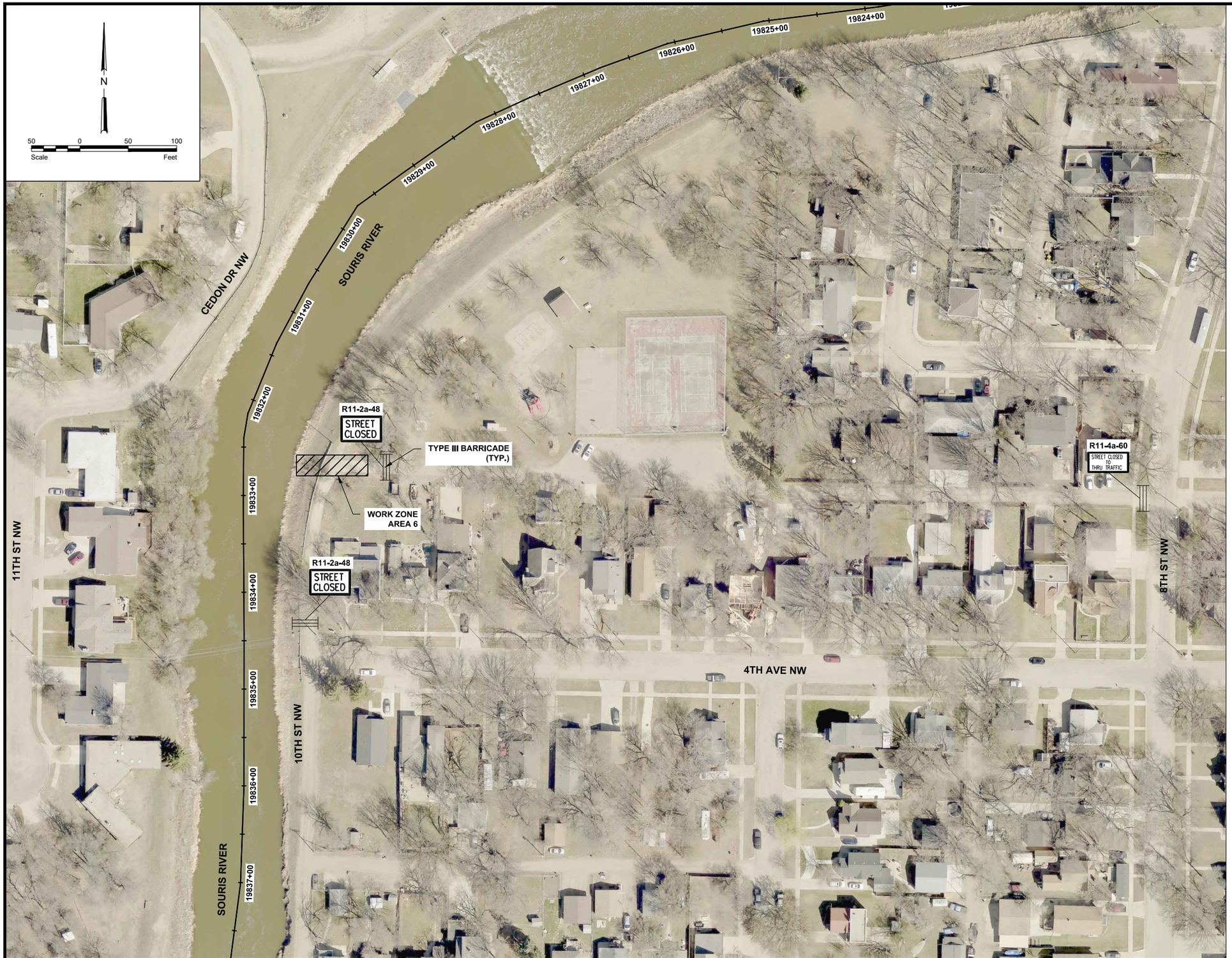

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 6

PROJECT NO. 6027-050

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MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 8
PROJECT NO. 6027-050

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 9
PROJECT NO. 6027-050

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MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 10

PROJECT NO. 6027-050

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CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 11

PROJECT NO. 6027-050

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MINOT, NORTH DAKOTA

TRAFFIC CONTROL AREA 12

PROJECT NO. 6027-050

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TRAFFIC CONTROL AREA 13

PROJECT NO. 6027-050

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TRAFFIC CONTROL AREA 17
PROJECT NO. 6027-050

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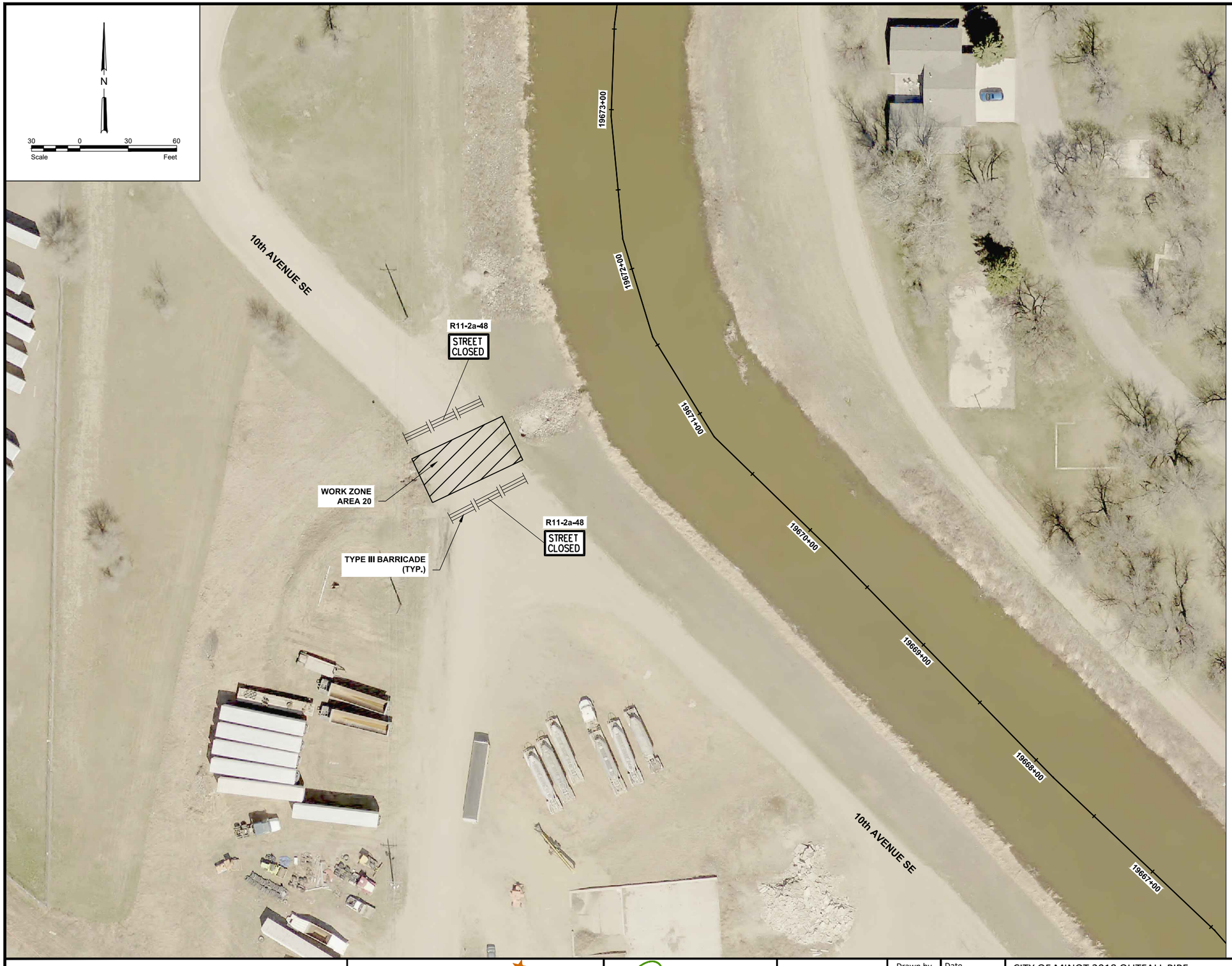

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TRAFFIC CONTROL AREA 18
PROJECT NO. 6027-050

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TRAFFIC CONTROL AREA 19
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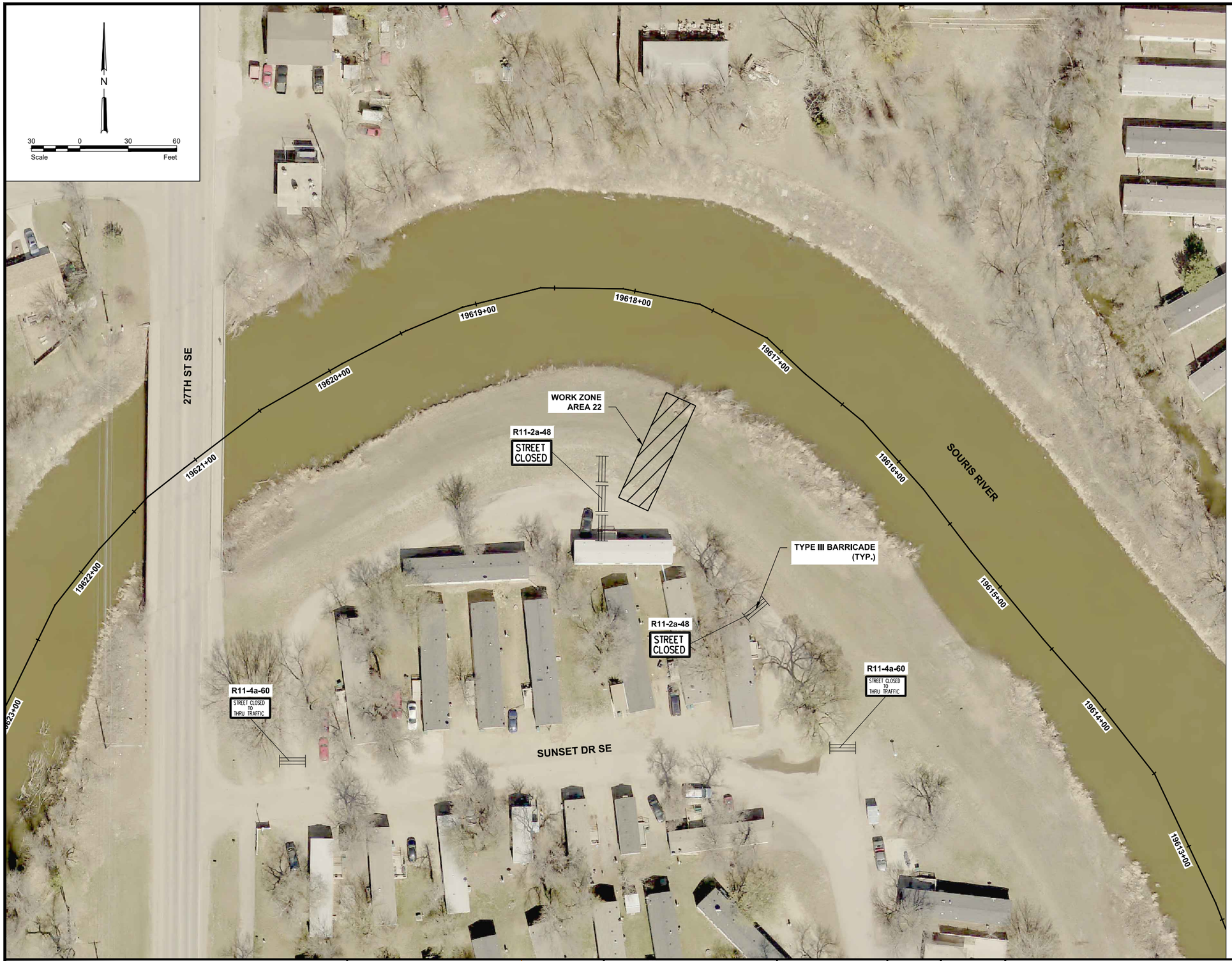

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3. IF APPROVED BY THE ENGINEER, THE CONTRACTOR MAY ELECT TO USE PORTABLE SIGN SUPPORTS IN LIEU OF POST MOUNTED SIGN SUPPORTS.
4. CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH ADJACENT LANDOWNERS IN ORDER TO MAINTAIN ACCESS AT ALL TIMES.

This document is preliminary and not for construction or implementation purposes.

PRELIMINARY

90% SUBMITTAL

City of Minot
CITY PROJECT NO.

Houston Engineering Inc.
Fargo
P: 701.237.5065
F: 701.237.5101

Drawn by	Date
BAU, JAR	4-11-18
Checked by	Scale
RGE	AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

TRAFFIC CONTROL
AREA 20
PROJECT NO. 6027-050

SHEET
73 of 73

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Contract Documents for

CITY OF MINOT

2018 OUTFALL PIPE REHABILITATION PROJECT MINOT SWIF ACTION D

CITY OF MINOT, NORTH DAKOTA

City of Minot Project No. 3135.2D

April 2018

HoustonEngineering Inc.

00 01 01

DIVISION 01

GENERAL REQUIREMENTS

DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01 11 00 - SUMMARY OF WORK

PART 1 – GENERAL

1.01 DESCRIPTION OF THE WORK

A. The Work to be performed under this Contract includes tree removal, levee modification, gatewell installation and modification, pipe replacement, outfall installation and slope protection installation as set forth in the project plans. The Work shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles; furnishing all labor, transportation, and services, including fuel, power, water, and essential communications; and performing all work or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The Work shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the Work in good faith shall be provided by the Contractor as though originally so indicated, at no increase in cost to the Owner.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

1. Mobilization: Work to be performed includes but is not limited to: completion of all mobilization and demobilization items as outlined in Section 01 71 13 – Mobilization.

2. Clearing and Grubbing: Work to be performed includes but is not limited to: clearing, grubbing, removal of trees 4-inches in diameter and smaller measured 2-feet from the base of the tree, stumps, shrubs, grubbing of stumps, vegetation, removal of roots as specified, chipping, loading, hauling and disposal of materials from the construction site, all incidentals and all work associated with Clearing and Grubbing.

3. Remove Tree: Work to be performed includes but is not limited to: removal of trees, stumps, loading, hauling, disposal of materials from the construction site, and restoration of disturbed areas.

4. Remove Tree in Levee: Work to be performed includes but is not limited to: removal of trees, stumps, loading, hauling, disposal of materials from the construction site, and restoration of disturbed areas.

5. Remove Bituminous Pavement: Work to be performed includes but is not limited to: furnish sawcutting, removal of bituminous pavement, loading and hauling and disposal of bituminous from project site, and salvaging for material recycling.

6. Remove Gravel Surfacing: Work to be performed includes but is not limited to: furnish loading and hauling and disposal of gravel from project site, and salvaging for material recycling.

7. Remove Concrete Pavement: Work to be performed includes but is not limited to: furnish sawcutting, removal of concrete pavement, loading and hauling and disposal of concrete and reinforcing steel from project site, and salvaging for material recycling.

8. Remove Curb and Gutter: Work to be performed includes but is not limited to: furnish sawcutting, removal of concrete or bituminous curb and gutter, reinforcing steel and concrete

embedments, loading and hauling and disposal of demolished curb and gutter from the project site, and salvaging for material recycling.

9. Remove Sidewalk: Work to be performed includes but is not limited to: furnish sawcutting, removal of concrete or bituminous sidewalk, reinforcing steel and concrete embedments, loading and hauling and disposal of demolished sidewalk from the project site, and salvaging for material recycling.

10. Remove Hydrant and Valve: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of material, and performing all operations as are necessary for the Removal of the hydrant and valve, all complete as specified.

11. Remove Storm Catch Basin: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of material, and performing all operations as are necessary for the Remove Storm Catch Basin, all complete as specified.

12. Remove Storm Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of material, and performing all operations as are necessary for the Remove Storm Manhole, all complete as specified.

13. Remove Storm Vault: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of material, and performing all operations as are necessary for the Remove Storm Vault, all complete as specified.

14. Remove Sanitary Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of material, and performing all operations as are necessary for the Remove Sanitary Manhole, all complete as specified.

15. Remove Concrete Headwall Structure: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of material, and performing all operations as are necessary for the Remove Concrete Headwall Structure, all complete as specified.

16. Remove Pipe (All Types, Less than 60”): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Remove Pipe (All Types, Less than 60”), all complete as specified. Furnish pipe removal, coordinate service interruption (if any), remove and dispose of pipe and bedding aggregate, fittings, appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Pipe (All Types, Less than 60”).

17. Remove Pipe (60” RCP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Remove Pipe (60” RCP), all complete as specified. Furnish pipe removal, coordinate service interruption (if any), remove and dispose of pipe and bedding aggregate, fittings,

appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Pipe (60" RCP).

18. Remove Storm Sewer (96" CMP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of all material, and performing all operations as are necessary for the Remove Storm Sewer (96" CMP), all complete as specified.

19. Abandon Manhole (All Types, All Sizes): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Abandon Manhole (All Types, All Sizes), all complete as specified. Removal of casting and adjusting rings, coordinate service interruption (if any), fill structure with controlled density fill, loading, hauling and disposal of manhole materials and debris, and all work associated with Abandon Manhole (All Types, All Sizes).

20. Abandon Pipe (All Types, All Sizes): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Abandon Pipe (All Types, All Sizes), all complete as specified. Furnish excavation, coordinate service interruption (if any), fill pipe with controlled density fill, bulkhead all pipe ends with concrete, remove and dispose of pipe and bedding aggregate, fittings, appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Abandon Pipe (All Types, All Sizes).

21. Clean and Jet 8" PVC: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Clean and Jet 8" PVC, all complete as specified.

22. Clean and Jet 12" PVC: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Clean and Jet 12" PVC, all complete as specified.

23. Remove 12" Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of all material, and performing all operations as are necessary for the Remove 12" Flap Gate, all complete as specified.

24. Remove 24" Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, removal and disposal of all material, and performing all operations as are necessary for the Remove 24" Flap Gate, all complete as specified.

25. Strip and Stockpile Topsoil: Work to be performed includes but is not limited to: strip, stockpile, and process topsoil and vegetative material salvaged from areas within the construction limits identified on the Drawings; remove or pulverize all vegetative material, remove debris, stones, and rocks; stockpile and maintain stockpile and necessary erosion control of stockpiles as required for duration of work until placement; and all processing to meet topsoil specifications; all work associated with the Strip and Stockpile Topsoil. This item shall also include the off-site disposal and all related costs of all material removed and disposed of from the topsoil as a part of the processing.

26. Install Salvaged Topsoil: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are

necessary for the Install Salvaged Topsoil, all complete as specified. This item includes but is not limited to the following work by Contractor: place, and process topsoil and vegetative material salvaged from areas within the construction limits identified on the Drawings; remove or pulverize all vegetative material, remove debris, stones, and rocks; placement; and all processing to meet topsoil specifications; all work associated with Install Salvaged Topsoil.

27. Import and Install Topsoil: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Import and Install Topsoil, all complete as specified. This item includes but is not limited to the following work by Contractor: place imported topsoil. Placement; and all processing to meet topsoil specifications; all work associated with Import and Install Topsoil.

28. Import and Install Approved Levee Fill: Work to be performed includes but is not limited to: develop borrow area including initial overburden removal, borrow excavation, furnish and install earthwork to lines and grades shown on the plans, borrow source testing and material property verification, removal and stockpile of nonconforming deleterious material, import levee fill from approved borrow site(s), excavation, loading, haul, installation, compaction, managing moisture content, testing, grading, and subgrade finish grading.

29. Exploration Trench: Work to be performed includes but is not limited to: perform excavation, scarifying excavated trench walls to the lines and grades specified, loading, hauling, backfilling with levee material, and exporting material excavated off site.

30. Excavation: Work to be performed includes but is not limited to: excavation of all material including topsoil, stockpiling, removal and proper offsite disposal of excess excavated material or excavated material unsuitable for reuse in the project, grading, and restoration following completion of excavation.

31. Aggregate Base Course CL 13 (6” Thick): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Aggregate Base Course CL 13 (6” Thick), all complete as specified.

32. Bituminous Pavement (4” Thick): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Bituminous Pavement (4” Thick), all complete as specified. This item includes but is not limited to the following work by the Contractor: furnish and install bituminous pavement and class 5 aggregate base, material testing, loading, hauling, transport, thickness and extents, and compaction.

33. Concrete Driveway (6” Thick): Work to be performed includes but is not limited to: furnish and install forming, ready-mix concrete, class 5 aggregate base, testing, steel reinforcement, embedments, vibrating, all joints, and curing compound for the type and dimensions as shown on the plans.

34. Concrete Sidewalk (4” Thick): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Sidewalk (4” Thick), all complete as specified.

35. Curb and Gutter – Type 1: Work to be performed includes but is not limited to: furnish and install forming, ready-mix concrete, class 5 aggregate base, machine-placed curb and gutter, hand-formed curb and gutter, integrant curb, curb returns, curb radii, joints, reinforcement and, curing compound for the type and dimensions as shown on the plans, and all work associated with Curb and Gutter – Type 1.

36. Hydrant and 6" Gate Valve: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Hydrant and 6" Gate Valve, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, hydrant, valve, extensions, fittings, blocks, hardware, bedding, backfill, wrapping, tracer wire, and all work associated with Hydrant and 6" Gate Valve.

37. Modify Existing Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and lid, and performing all operations as are necessary for the Modify Existing Manhole, all complete as specified.

38. Core Existing Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, and performing all operations as are necessary for the Core Existing Manhole, all complete as specified.

39. Gatewell Structure: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Gatewell Structure, all complete as specified.

40. Gatewell Structure Modifications: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Gatewell Structure Modifications, all complete as specified.

41. Concrete Headwall Structure w/ Flap Gate (12" RCP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (12" RCP), all complete as specified.

42. Concrete Headwall Structure w/ Flap Gate (18" RCP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (18" RCP), all complete as specified.

43. Concrete Headwall Structure w/ Flap Gate (24" PVC): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (24" PVC), all complete as specified.

44. Concrete Headwall Structure w/ Flap Gate (36" RCP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (36" RCP), all complete as specified.

45. Concrete Headwall Structure w/ Flap Gate (60” RCP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (60” RCP), all complete as specified.

46. Concrete Headwall Structure w/ Stop Logs (96” RCP): Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Stop Logs (96” RCP), all complete as specified.

47. Connect New 12” RCP to Headwall: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Connect New 12” RCP to Headwall, all complete as specified.

48. Connect New 18” RCP to Headwall: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Connect New 18” RCP to Headwall, all complete as specified.

49. Connect New 24” RCP to Headwall: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Connect New 24” RCP to Headwall, all complete as specified.

50. 12” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 12” RCP Storm Sewer, all complete as specified.

51. 15” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 15” RCP Storm Sewer, all complete as specified.

52. 18” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 18” RCP Storm Sewer, all complete as specified.

53. 24” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 24” RCP Storm Sewer, all complete as specified.

54. 36” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 36” RCP Storm Sewer, all complete as specified.

55. 60” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 60” RCP Storm Sewer, all complete as specified.

56. 96” RCP Storm Sewer: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 96” RCP Storm Sewer, all complete as specified.

57. 12” RCP Flared End Section w/ Trash Rack: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 12” RCP Flared End Section w/ Trash Rack, all complete as specified.

58. 15” RCP Flared End Section w/ Trash Rack: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 15” RCP Flared End Section w/ Trash Rack, all complete as specified.

59. 18” RCP Flared End Section w/ Trash Rack: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 18” RCP Flared End Section w/ Trash Rack, all complete as specified.

60. 36” RCP Flared End Section w/ Trash Rack: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 36” RCP Flared End Section w/ Trash Rack, all complete as specified.

61. 12” Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 12” Flap Gate, all complete as specified.

62. 15” Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 15” Flap Gate, all complete as specified.

63. 18” Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 18” Flap Gate, all complete as specified.

64. 24” Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 24” Flap Gate, all complete as specified.

65. 36” Flap Gate: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 36” Flap Gate, all complete as specified.

66. Storm Catch Basin: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and grate, and performing all operations as are necessary for the Storm Catch Basin, all complete as specified.

67. 48” Dia Storm Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and lid, and performing all operations as are necessary for the 48” Dia Storm Manhole, all complete as specified.

68. 72” Dia Storm Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and lid, and performing all operations as are necessary for the 72” Dia Storm Manhole, all complete as specified.

69. 96” Dia Storm Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and lid, and performing all operations as are necessary for the 96” Dia Storm Manhole, all complete as specified.

70. 108” Dia Storm Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and lid, and performing all operations as are necessary for the 108” Dia Storm Manhole, all complete as specified.

71. 48” Dia Sanitary Sewer Manhole: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, shoring, excavation, backfill, casting and lid, and performing all operations as are necessary for the 48” Dia Sanitary Sewer Manhole, all complete as specified.

72. 8” Rubber Duckbill Check Valve: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 8” Rubber Duckbill Check Valve, all complete as specified.

73. Type 3 Barricade: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Type 3 Barricade, all complete as specified.

74. B2 Riprap Bedding: Work to be performed includes furnishing and installation of B2 Riprap Bedding. This includes furnishing and installation of imported B2 Riprap Bedding on site.

75. NDDOT Grade I Riprap: Work to be performed includes installing riprap for slope repair and protection as shown on the plans. Installed items include furnishing and installation of riprap at the grade shown on the plans.

76. Precast Concrete Riprap: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Precast Concrete Riprap, all complete as specified.

77. Erosion Control Blanket: Work to be performed includes but is not limited to: furnish, install, anchor, and maintain Erosion Control Blanket of the type and dimensions specified conforming to NDDOT Specification Section 856 Type 3 Coconut, anchored trench, anchors, and repair damaged areas, removal, if required, and all Work associated with the Erosion Control Blanket.

78. Bioroll: Work to be performed includes but is not limited to: furnish, install, anchor and maintain anchorage for the Bioroll for the duration of the Work, and removal upon stabilization of the site, all complete as specified and all work associated with the Bioroll.

79. Inlet Protection: Work to be performed includes but is not limited to: furnish, install, maintain inlet protection of the type specified, periodically removing and disposing of accumulated sediment, and inlet protection siltation sock, aggregate, fabric, inlet protection, and remove the inlet protection after site is stabilized, all complete as specified and all work associated with the Inlet Protection.

80. Silt Fence: Work to be performed includes but is not limited to: furnish, install, anchor, and maintain posts, fabric, fasteners and anchorage for Silt Fence of the type and dimensions specified for the duration of the Work, periodically removing and disposing of accumulated sediment, and removal upon stabilization of the site.

81. Floating Silt Curtain: Work to be performed includes but is not limited to: furnish, install, anchor and maintain floats, posts, fabric, fasteners and anchorage for the floating silt curtain for the duration of the Work, and removal upon stabilization of the site.

82. Construction Entrance: Work to be performed includes but is not limited to: all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Construction Entrance, all complete as specified.

83. Seeding: Work to be performed includes but is not limited to: furnish and install seeding, topsoil preparation, watering as specified, and maintain seeding.

84. Hydromulching: Work to be performed includes but is not limited to: furnish, install, and maintain hydraulic soil stabilizer, fiber, and tackifier.

85. Traffic Control: Work includes providing traffic control for the project. This includes signing for streets and sidewalks, and cleaning of roadways.

1.03 COORDINATION OF WORK

A. **Interference With Work On Utilities:** The Contractor shall cooperate fully with all utility forces of the OWNER or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the Work, and shall schedule the WORK so as to minimize interference with said relocation, altering, or other rearranging of facilities.

B. **Affected Utility Companies:** The utility companies potentially affected by this Project are listed below. The utility company listing is not intended to be a complete and all-inclusive list. Other utilities may exist in the Project area and may not be shown within the lists. The Contractor shall be responsible for contacting the “North Dakota One-Call System” and all affected utilities; municipalities, local, County, State, and Federal entities whether or not they are shown or listed.

C. **Coordination with Utilities:** The Contractor shall coordinate the Work with various utilities by calling the “North Dakota One-Call System” prior to commencing work in an area and contacting applicable utility companies if damage, conflicts, or emergencies occur during the work.

Xcel Energy
City of Minot Public Works
Montana-Dakota-Utilities
Midcontinent Communications
SRT Communications, Inc.

1.04 CONTRACTOR USE OF SITE

A. The Contractor's use of the Site shall be limited to its construction operations, including on-Site storage of materials, on-Site fabrication facilities, and field offices.

B. The Contractor shall not use any portion of the adjacent private lands.

1.05 OUTAGE PLAN AND REQUESTS

A. Unless the Contract Documents indicate otherwise, the Contractor shall not remove from service, de-energize, or modify settings for any existing operating plant, tank, pipeline, valve, equipment, structure, road, or any other facility without permission from the Engineer.

1.06 OWNER USE OF THE SITE

A. The Owner may utilize all or part of the existing Site and existing facilities during the entire period of construction for the conduct of the Owner’s normal operations. The Contractor shall cooperate and coordinate with the Owner to facilitate the Owner's operations and to minimize interference with the Contractor's operations at the same time. In any event, the Owner shall be allowed access to the Site during the period of construction.

1.07 PROJECT MEETINGS

A. Progress Meetings

1. The Engineer will schedule and hold regular progress meetings as set forth in the Supplementary Conditions Section 10.02.

1.08 SPECIFIC CONTRACTOR REQUIREMENTS

A. **Notification to Affected Occupants:** The Contractor shall conduct his work so as to minimize interference with public travel and, at his own expense, provide and maintain alternative routes to accommodate public travel. The Contractor shall serve 24-hour notice to the occupants whose access to their residence or business will be blocked.

B. **Notification to Local Law Enforcement and Emergency/Medical Services:** The Contractor shall notify Law Enforcement, Fire Department, and Ambulance Service prior to blocking off streets or roads.

C. **Use of Roads:**

1. The Contractor will be permitted to block off a portion of a public road on which work is in progress, however, adequate provisions shall be made throughout the project to ensure that emergency vehicles can reach each property within the construction area.

2. The Contractor shall make provisions to provide access at all times to property abutting the project.

3. The Contractor shall notify the respective County Highway Departments, Park District, or City Street Department prior to closing any county highway or city street. The Contractor shall provide and install warning signs and/or barricades according to the standards of the respective governing road or highway department.

D. **Field Tests:** Refer to 01 45 00 Quality Control.

E. **Right-of-Ways:**

1. The right-of-ways necessary for construction of the project will be provided by the Owner. The Contractor shall confine his construction operations to the immediate vicinity of the location shown on the plans and shall use due care in placing construction tools, equipment, excavated materials and pipe line materials and supplies, so as to cause the least possible damage to property and interference with traffic.

2. The Contractor shall stay within the established construction boundaries provided by the Owner. Contractor shall make separate arrangements with landowners on an individual basis if desiring to go beyond these boundaries for any reason. Contractor shall document each separate agreement with landowners and furnish copies of said documentation to the Owner and Engineer.

3. The Contractor shall be responsible for all damage to property outside of the construction boundaries and shall make satisfactory settlement for such damage directly with the property owner and tenant involved, as their interests in such damage may require.

F. **Fences:** Any fences which are damaged or removed during the course of the Work, which are specified on the plans to be removed, shall be repaired to original condition or replaced with new fence at the Contractor's expense.

G. **Barricades and Lights:**

1. All open trenches and other excavations shall be provided with suitable barriers, signs and lights to the extent that adequate protection is provided to the public against accident by reason of such open construction. Obstruction such as material piles and equipment shall be provided with similar warning signs, barriers and lights.

2. All barricades and obstructions shall be illuminated by means of acceptable warning lights at night and all lights used for this purpose shall be kept burning from sunset to sunrise. Materials stored upon or alongside public streets, roads and highways shall be so placed that the Work at all times shall be so conducted as to cause the minimum obstruction and inconvenience to the traveling public.

H. **Safety Plan:** Refer to General Conditions 7.12 & 7.13 and Supplementary Conditions SC-7.12.

I. **Protection and Maintenance of Public and Private Property:** The Contractor shall protect, shore, brace, support and maintain all underground pipes, conduits, drains and other underground construction uncovered or otherwise affected by the construction work. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires and other surface structures affected by construction operations in connection with the performance of the contract, together with all shrubs in yards and parking lots crossed by or adjacent to the work shall be maintained, and if removed or otherwise damaged, shall be restored to the original condition thereof as determined and approved by the Engineer. All replacements of such underground construction and surface structures or parts thereof shall be made with new materials conforming to the requirements of these specifications or, if not specified, as approved by the Engineer.

J. **Repairs after Job Completion:** It is understood that during the warranty period, repairs due to faulty workmanship or materials shall be covered by the Performance Bond. However, a break in a water line or other major failure shall be deemed an emergency and must be repaired immediately. The Contractor, therefore, prior to leaving the project, shall have an understanding and agreement by signed letter or appropriate entry in the owner's meeting notes as to the procedure for notifying Contractor and making said emergency repairs.

K. **Construction Staking:** Construction staking as required for the project will be provided by the Engineer. Protection of construction stakes is the responsibility of the Contractor. Cost for restaking for any reason except a staking error will be the responsibility of the Contractor.

L. **Cooperation with Landowners:** At all times, the Contractor shall extend full cooperation to all landowners performing necessary private work including private use of land.

M. **Borrow Materials:**

1. Any borrow material procured from sources arranged for by the Contractor must be approved by the Engineer. All sources are subject to the requirements as set forth in permit conditions applied by the USACE, ND Department of Health and SHPO.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01 14 19 – USE OF SITE

PART 1 -- GENERAL

1.01 GENERAL

A. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than prior to such damage or temporary relocation, all in accordance with the Contract Documents.

1.02 RIGHTS-OF-WAY

A. The Contractor shall not do any Work that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; any fence; or any other structure, nor shall the Contractor enter upon the rights-of-way involved until notified that the Owner has secured authority therefor from the proper party.

B. After authority has been obtained, the Contractor shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support, or otherwise protect such pipeline, transmission line, ditch, fence, or structure, or replace the same.

1.03 PROTECTION OF STREET OR ROADWAY MARKERS

A. The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced. Survey markers or points disturbed by the Contractor shall be accurately restored after street or roadway resurfacing has been completed.

1.04 RESTORATION OF PAVEMENT

A. **General:** All paved areas including asphaltic concrete berms cut or damaged during construction shall be replaced with similar materials of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents or in the requirements of the agency issuing the permit. The pavement restoration requirement to match existing sections shall apply to all components of existing sections, including sub-base, base, and pavement. Temporary and permanent pavement shall conform to the requirements of the affected pavement owner. Pavements which are subject to partial removal shall be neatly saw cut in straight lines.

B. **Temporary Resurfacing:** Wherever required by the public authorities having jurisdiction, the Contractor shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.

C. **Permanent Resurfacing:** In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion

of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

D. **Restoration of Sidewalks or Private Driveways:** Wherever sidewalks or private roads have been removed for purposes of construction, the Contractor shall place suitable temporary sidewalks or roadways promptly after backfilling and shall maintain them in satisfactory condition for the period of time fixed by the authorities having jurisdiction over the affected portions. If no such period of time is so fixed, the Contractor shall maintain said temporary sidewalks or roadways until the final restoration thereof has been made.

1.05 EXISTING UTILITIES AND IMPROVEMENTS

A. **General:** The Contractor shall protect underground Utilities and other improvements which may be impaired during construction operations, regardless of whether or not the Utilities are indicated on the Drawings. The Contractor shall take all possible precautions for the protection of unforeseen Utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

B. Except where the Drawings indicate Utilities have been field located during design or certain Utility locations shall be exposed as part of the Work, the Contractor shall be responsible for exploratory excavations as it deems necessary to determine the exact locations and depths of Utilities which may interfere with its work. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's progress. When such exploratory excavations show the Utility location as shown on the Drawings to be in error, the Contractor shall so notify the Engineer.

C. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the Utility.

D. **Utilities to be Moved:** In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the Contractor, be notified by the Owner to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the Engineer a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.

E. **Utilities to be Removed:** Where the proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing Utility or other improvement which is indicated, the Contractor shall remove and, without unnecessary delay, temporarily replace or relocate such Utility or improvement in a manner satisfactory to the Engineer and the owner of the facility. In all cases of such temporary removal or relocation, restoration to the former location shall be accomplished by the Contractor in a manner that will restore or replace the Utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.

F. **OWNER's Right of Access:** The right is reserved to the Owner and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-

way, or easement for the purpose of making changes in their property made necessary by the Work of this Contract.

G. **Underground Utilities Indicated:** Existing Utility lines that are indicated or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all Utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the Contractor, unless otherwise repaired by the owner of the damaged Utility. If the owner of the damaged facility performs its own repairs, the Contractor shall reimburse said owner for the costs of repair.

H. **Underground Utilities Not Indicated:** In the event that the Contractor damages existing Utility lines that are not indicated, made known to the contractor, or identified by the required one-call prior to excavation, a verbal report of such damage shall be made immediately to the Engineer and a written report thereof shall be made promptly thereafter. The Engineer will immediately notify the owner of the damaged Utility. If the Engineer is not immediately available, the Contractor shall notify the Utility owner of the damage. If directed by the Engineer, repairs shall be made by the Contractor under the provisions for changes and extra work in accordance with the General Conditions.

I. Costs of locating and repairing damage not due to failure of the Contractor to exercise reasonable care, and removing or relocating such Utility facilities not indicated in the Contract Documents with reasonable accuracy, and for equipment on the project which was actually working on that portion of the Work which was interrupted or idled by removal or relocation of such Utility facilities, and which was necessarily idled during such work will be paid for as extra work in accordance with the provisions of the General Conditions.

J. **Approval of Repairs:** All repairs to a damaged Utility or improvement are subject to inspection and approval by an authorized representative of the Utility or improvement owner before being concealed by backfill or other work.

K. **Maintaining in Service:** Unless indicated otherwise, oil and gasoline pipelines, power, and telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the Engineer are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The Contractor shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.06 TREES OR SHRUBS WITHIN STREET RIGHTS-OF-WAY AND PROJECT LIMITS

A. **General:** Except where trees or shrubs are indicated to be removed and/or removed and replaced, the Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs, including those lying within street rights-of-way and project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the jurisdictional agency or Owner. Existing trees and shrubs which are damaged during construction shall be trimmed or replaced by the Contractor or a certified tree company under permit from the jurisdictional agency and/or

the Owner. Tree trimming and replacement shall be accomplished in accordance with the following paragraphs.

B. **Trimming:** Symmetry of the tree shall be preserved; no stubs or splits or torn branches left; clean cuts shall be made close to the trunk or large branch. Spikes shall not be used for climbing live trees. Cuts over 1-1/2 inches in diameter shall be coated with a tree paint product that is waterproof, adhesive, and elastic, and free from kerosenes, coal tar, creosote, or other material injurious to the life of the tree.

C. **Replacement:** The Contractor shall immediately notify the jurisdictional agency and/or the Owner if any tree or shrub is damaged by the Contractor's operations. If, in the opinion of said agency or the Owner, the damage is such that replacement is necessary, the Contractor shall replace the tree or shrub at its own expense. The tree or shrub shall be of a like size and variety as the one damaged, or, if of a smaller size, the Contractor shall pay to the owner of said tree a compensatory payment acceptable to the tree or shrub owner, subject to the approval of the jurisdictional agency or Owner. The size of the tree or shrub shall be not less than 1-inch diameter nor less than 6 feet in height. Unless otherwise indicated, the Contractor shall water and maintain the replacement trees and shrubs for 6 months after planting.

1.07 NOTIFICATION BY THE CONTRACTOR

A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way, the Contractor shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than 3 days nor more than 7 days prior to excavation so that a representative of said owners or agencies can be present during such work if they so desire.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 22 00 – MEASUREMENT AND PAYMENT

PART 1 -- GENERAL

1.01 GENERAL

1. Work under this contract will be paid on a unit price basis as outlined on the Bid Schedule(s) for the quantity of work installed. It is the Bidding Contractor's sole responsibility to verify that he has received all sheets of the Drawings and Specifications. It is also the Bidding Contractor's sole responsibility to be familiar with the necessary interfaces with other portions of the project.

2. The unit prices shall include full compensation for furnishing the labor, materials, tools and equipment to complete the Work included in the Contract Documents. All associated costs not specifically included in a bid item by the Contract Documents shall be included in the price bid for other items.

3. Bid Items

Item 1. Mobilization

Payment: Payment for mobilization shall be full compensation for the completion of all mobilization and demobilization items as outlined in Section 01 71 13 – Mobilization. Payment for Mobilization will be made at the rate of 75% of the Mobilization bid value once the Contractor has mobilized to the project site, as defined in Section 01 71 13, and at the rate of 25% of the Mobilization bid value once the Contractor has fully demobilized from the project site, as defined in Section 01 71 13.

Item 2. Clearing and Grubbing

Measurement: Clearing and Grubbing will be measured on the unit basis of area in Square Yards (SY) of Clearing and Grubbing performed as measured in the field by the Owner's Representative and rounded to the nearest tenth (0.1) of a square yard.

Payment: Contractor will be paid per Square Yard (SY) of Clearing and Grubbing performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Clearing and Grubbing, all complete as specified. This item includes but is not limited to the following work by Contractor: clearing, grubbing, removal of trees 4-inches in diameter and smaller measured 2-feet from the base of the tree, stumps, shrubs, grubbing of stumps, vegetation, removal of roots as specified, chipping, loading, hauling and disposal of materials from the construction site, all incidentals and all work associated with Clearing and Grubbing.

Item 3. Remove Tree

Measurement: Remove Tree will be measured on the unit basis of each (EA) for Remove Tree performed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Remove Tree performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Remove Tree, all complete as specified. This item includes but is not limited to the following work by Contractor: removal of trees, stumps, loading, hauling, disposal of materials from the construction site, and restoration of disturbed areas and all work associated with Remove Tree.

Item 4. Remove Tree In Levee

Measurement: Remove Tree In Levee will be measured on the unit basis of each (EA) for Remove Tree In Levee performed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Remove Tree In Levee performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Remove Tree In Levee, all complete as specified. This item includes but is not limited to the following work by Contractor: removal of trees, stumps, tree roots, loading, hauling, disposal of materials from the construction site, importing and placing approved levee fill conforming to earthwork specifications, restoration of disturbed areas including seed and mulch, and all work associated with Remove Tree In Levee.

Item 5. Remove Bituminous Pavement

Measurement: Removal of Bituminous Pavement will be measured on the unit basis of area in square yards (SY) of Removal of Bituminous Pavement performed, measured in the field by the Owner's Representative and rounded to the nearest square yard.

Payment: Contractor will be paid per square yard (SY) for Remove Bituminous Pavement performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove Bituminous Pavement, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish sawcutting, removal of bituminous pavement, loading and hauling and disposal of bituminous from project site, and salvaging for material recycling.

Item 6. Remove Gravel Surfacing

Measurement: Removal of Gravel Surfacing will be measured on the unit basis of area in square yards (SY) of Removal of Gravel Surfacing performed, measured in the field by the Owner's Representative and rounded to the

nearest square yard.

Payment: Contractor will be paid per square yard (SY) for Remove Gravel Surfacing performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove Gravel Surfacing, all complete as specified. This item includes but is not limited to the following work by Contractor: removal of gravel surfacing, loading and hauling and disposal of gravel from project site, and salvaging for reuse of material.

Item 7. Remove Concrete Pavement

Measurement: Removal of Concrete Pavement will be measured on the unit basis of area in square yards (SY) of Removal of Concrete Pavement performed, measured in the field by the Owner's Representative and rounded to the nearest square yard.

Payment: Contractor will be paid per square yard (SY) for Remove Concrete Pavement performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove Concrete Pavement, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish sawcutting, removal of Concrete pavement, loading and hauling and disposal of Concrete from project site, and salvaging for material recycling.

Item 8. Remove Curb and Gutter

Measurement: Remove Curb and Gutter will be measured on the unit basis of length in lineal feet (LF) of Remove Curb and Gutter performed and as measured in the field by the Owner's Representative and rounded to the nearest whole foot.

Payment: Contractor will be paid per lineal foot (LF) for Removal of Curb and Gutter performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Removal of Curb and Gutter, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish sawcutting, removal of concrete or bituminous curb and gutter, reinforcing steel and concrete embedments, loading and hauling and disposal of demolished curb and gutter from the project site, salvaging for material recycling, and all work associated with Remove Curb and Gutter.

Item 9. Remove Sidewalk

Measurement: Contractor will be paid per square yard (SY) for Remove Sidewalk performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove Sidewalk, all complete as specified. This item includes but is not limited to the following

work by Contractor: furnish sawcutting, removal of pavement, any reinforcing steel and concrete embedments, loading and hauling and disposal of pavement from the project site, salvaging for material recycling, and all work associated with Remove Sidewalk.

Payment: Removal of Sidewalk will be measured on the unit basis of area in square yards (SY) of Remove Sidewalk performed, measured in the field by the Owner's Representative and rounded to the nearest square yard.

Item 10. Remove Hydrant and Valve

Measurement: Remove Hydrant and Valve will be measured on the unit basis of each (EA) for Remove Hydrant and Valve performed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Remove Hydrant and Valve performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Remove Hydrant and Valve, all complete as specified. This item includes but is not limited to the following work by Contractor: hydrant, valve, and pipe removal, disconnecting service from existing line, loading, hauling, disposing of hydrant, valve, pipe, and debris, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Hydrant and Valve.

Item 11. Remove Storm Catch Basin

Measurement: Remove Catch Basin will be measured on the unit basis of each (EA) for Remove Storm Inlet performed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Remove Catch Basin performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Remove Catch Basin, all complete as specified. This item includes but is not limited to the following work by Contractor: catch basin removal, removing concrete base and riser sections, adjusting rings, frames, castings, connections, excavation, foundation removal, loading, hauling, disposing of catch basin and debris, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Catch Basin.

Item 12. Remove Storm Manhole

Measurement: Remove Storm Manhole will be measured on the unit basis of each (EA) for Remove Storm Manhole performed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Remove Storm Manhole performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all

operations as are necessary for the Remove Storm Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: manhole removal, removing concrete base and riser sections, adjusting rings, frames, castings, connections, excavation, foundation removal, loading, hauling, disposing of manhole and debris, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Storm Manhole.

Item 13. Remove Storm Vault

Unit of measure: Lump Sum

Payment: Contractor will be paid as a lump sum (LS) for Remove Storm Vault performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Remove Storm Vault, all complete as specified. This item includes but is not limited to the following work by Contractor: vault removal, removing concrete base and riser sections, adjusting rings, frames, castings, connections, excavation, foundation removal, loading, hauling, disposing of manhole and debris, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Storm Vault. The storm vault is trapezoidal in shape, with approximate dimensions as follows: north wall equal to 10’ in length and south wall equal to 5’ in length.

Item 14. Remove Sanitary Manhole

Measurement: Remove Sanitary Manhole will be measured on the unit basis of each (EA) for Remove Sanitary Manhole performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Remove Sanitary Manhole performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove Sanitary Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: manhole removal, removing concrete base and riser sections, adjusting rings, frames, castings, connections, excavation, foundation removal, loading, hauling, disposing of manhole and debris, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Sanitary Manhole.

Item 15. Remove Concrete Headwall Structure

Measurement: Remove Concrete Headwall Structure will be measured on the unit basis of each (EA) for Remove Concrete Headwall Structure performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Remove Concrete Headwall Structure performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and

performing all operations as are necessary for the Remove Concrete Headwall Structure, all complete as specified. This item includes but is not limited to the following work by Contractor: structure removal, removing concrete base and walls, gates, connections, excavation, foundation removal, loading, hauling, disposing of structure and debris, scarifying excavated trench walls, backfill with impervious fill, backfill compaction, topsoil import and placement, and all work associated with Remove Concrete Headwall Structure.

Item 16. Remove Pipe (All Types, Less than 60")

Measurement: Remove Pipe (All Types, Less than 60") will be measured on the unit basis of length in lineal feet (LF) of Remove Storm Sewer performed and as measured in the field by the Owner's Representative and rounded to the nearest whole foot.

Payment: Contractor will be paid per lineal foot (LF) for Remove Storm Pipe (All Types, Less than 60") performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Remove Storm Pipe (All Types, Less than 60"), all complete as specified. This item includes but is not limited to the following work by Contractor: furnish pipe removal, coordinate service interruption (if any), remove and dispose of pipe and bedding aggregate, fittings, appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Pipe (All Types, Less than 60").

Item 17. Remove Pipe (60" RCP)

Measurement: Remove Pipe (60" RCP) will be measured on the unit basis of length in lineal feet (LF) of Remove Storm Sewer performed and as measured in the field by the Owner's Representative and rounded to the nearest whole foot.

Payment: Contractor will be paid per lineal foot (LF) for Remove Storm Pipe (60" RCP) performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Remove Storm Pipe (60" RCP), all complete as specified. This item includes but is not limited to the following work by Contractor: furnish pipe removal, coordinate service interruption (if any), remove and dispose of pipe and bedding aggregate, fittings, appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Pipe (60" RCP).

Item 18. Remove Storm Sewer (96" CMP)

Unit of measure: Lump Sum

Payment: Contractor will be paid as a lump sum (LS) for Remove Storm Sewer (96" CMP) performed. This unit price shall be payment in full for the costs of all

supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Remove Storm Sewer (96” CMP), all complete as specified. This item includes but is not limited to the following work by Contractor: furnish pipe removal, coordinate service interruption (if any), remove and dispose of pipe and bedding aggregate, concrete debis, fittings, appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Remove Storm Sewer (96” CMP).

Item 19. Abandon Manhole (All Types, All Sizes)

Measurement: Abandon Manhole (All Types, All Sizes) will be measured on the unit basis of each (EA) for Abandon Manhole (All Types, All Sizes) performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Abandon Manhole (All Types, All Sizes) performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Abandon Manhole (All Types, All Sizes), all complete as specified. This item includes but is not limited to the following work by Contractor: removal of casting and adjusting rings, filling structure with controlled density fill, loading, hauling, disposing of manhole materials and debris, and all work associated with Abandon Manhole (All Types, All Sizes).

Item 20. Abandon Pipe (All Types, All Sizes)

Measurement: Abandon Pipe (All Types, All Sizes) will be measured on the unit basis of length in lineal feet (LF) of Abandon Pipe (All Types, All Sizes) performed and as measured in the field by the Owner’s Representative and rounded to the nearest whole foot.

Payment: Contractor will be paid per lineal foot (LF) for Abandon Pipe (All Types, All Sizes) performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Abandon Pipe (All Types, All Sizes), all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, coordinate service interruption (if any), fill pipe with controlled density fill, bulkhead all pipe ends with concrete, remove and dispose of pipe and bedding aggregate, fittings, appurtenances, loading, hauling and disposal of debris excavation, scarifying excavated trench walls, backfill with impervious fill, backfill compaction and all work associated with Abandon Pipe (All Types, All Sizes).

Item 21. Clean and Jet 8” PVC

Measurement: Clean and Jet 8” PVC will be measured on the unit basis of length in lineal feet (LF) of Clean and Jet 8” PVC performed and as measured in the field by the Owner’s Representative and rounded to the nearest whole foot.

Payment: Contractor will be paid per lineal foot (LF) for Clean and Jet 8” PVC performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Clean and Jet 8” PVC, all complete as specified. This item includes but is not limited to the following work by Contractor: provide jetting equipment to remove debris from pipe, removal of pipe debris, loading, hauling and disposal of debris, and all work associated with Clean and Jet 8” PVC.

Item 22. Clean and Jet 12” PVC

Measurement: Clean and Jet 12” PVC will be measured on the unit basis of length in lineal feet (LF) of Clean and Jet 12” PVC performed and as measured in the field by the Owner’s Representative and rounded to the nearest whole foot.

Payment: Contractor will be paid per lineal foot (LF) for Clean and Jet 12” PVC performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary to perform Clean and Jet 12” PVC, all complete as specified. This item includes but is not limited to the following work by Contractor: provide jetting equipment to remove debris from pipe, removal of pipe debris, loading, hauling and disposal of debris, and all work associated with Clean and Jet 12” PVC.

Item 23. Remove 12” Flap Gate

Measurement: Remove 12” Flap Gate will be measured on the unit basis of each (EA) for Remove 12” Flap Gate performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Remove 12” Flap Gate performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove 12” Flap Gate, all complete as specified. This item includes but is not limited to the following work by Contractor: flap gate removal and disposal (or delivery, if required), existing pipe repair, and all work associated with Remove 12” Flap Gate.

Item 24. Remove 24” Flap Gate

Measurement: Remove 24” Flap Gate will be measured on the unit basis of each (EA) for Remove 24” Flap Gate performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Remove 24” Flap Gate performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Remove 24” Flap Gate, all complete as specified. This item includes but is not limited to the following work by

Contractor: flap gate removal and disposal (or delivery, if required), existing pipe repair, and all work associated with Remove 24" Flap Gate.

Item 25. Strip and Stockpile Topsoil

Measurement: Strip and Stockpile Topsoil will be measured on the unit basis of volume in in-place cubic yards (CY) of Strip and Stockpile Topsoil performed as measured in the field by the Owner's Representative and rounded to the nearest cubic yard.

Payment: Contractor will be paid per cubic yard (CY) for Topsoil (Stripping and Stockpiling) performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Topsoil (Stripping and Stockpiling), all complete as specified. This item includes but is not limited to the following work by Contractor: strip, stockpile, and process topsoil and vegetative material salvaged from areas within the construction limits identified on the Drawings; remove or pulverize all vegetative material, remove debris, stones, and rocks; stockpile and maintain stockpile and necessary erosion control of stockpiles as required for duration of work until placement; and all processing to meet topsoil specifications; all work associated with the Strip and Stockpile Topsoil. All related costs of all material removed and disposed of from the topsoil as a part of the processing.

Item 26. Install Salvaged Topsoil

Measurement: Install Salvaged Topsoil will be measured on the unit basis of volume in in-place cubic yards (CY) of Install Salvaged Topsoil performed as measured in the field by the Owner's Representative and rounded to the nearest cubic yard.

Payment: Contractor will be paid per cubic yard (CY) for Install Salvaged Topsoil performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Install Salvaged Topsoil, all complete as specified. This item includes but is not limited to the following work by Contractor: place, and process topsoil and vegetative material salvaged from areas within the construction limits identified on the Drawings; remove or pulverize all vegetative material, remove debris, stones, and rocks; placement; and all processing to meet topsoil specifications; all work associated with the Install Salvaged Topsoil.

Item 27. Import and Install Topsoil

Measurement: Import and Install Topsoil will be measured on the unit basis of volume in installed in-place cubic yards (CY) of Topsoil (Imported) furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest cubic yard. The Contractor shall coordinate the delivery of imported topsoil with the Engineer prior to importing to ensure the installed imported material can be properly measured for payment.

Payment: Contractor will be paid per cubic yard (CY) for Import and Install Topsoil furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Import and Install Topsoil, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish and install import topsoil, managing moisture content, loading, hauling, transport, stockpile, grade to dimensions, thicknesses and extents specified, install without compaction and all work associated with Import and Install Topsoil.

Item 28. Import and Install Approved Levee Fill

Measurement: Import and Install Approved Levee Fill will be measured on the unit basis of volume in installed in-place cubic yards (CY) of Approved Levee Fill furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest cubic yard.

Payment: Contractor will be paid per cubic yard (CY) for Import and Install Approved Levee Fill furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Import and Install Approved Levee Fill, all complete as specified. This item includes but is not limited to the following work by Contractor: develop borrow area including initial overburden removal, borrow excavation, furnish and install earthwork, borrow source testing and material property verification, removal and stockpile of nonconforming deleterious material, import levee fill from approved borrow site(s), excavation, loading, haul, installation, compaction, managing moisture content, testing, grading and subgrade finish grading and all work associated with Import and Install Approved Levee Fill.

Item 29. Exploration Trench

Measurement: Exploration Trench will be measured on the unit basis of volume in in-place cubic yards (CY) of Exploration Trench performed as measured in the field by the Owner's Representative and rounded to the nearest bank cubic yard.

Payment: Contractor will be paid per in-place cubic yard (CY) for Exploration Trench performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Exploration Trench, all complete as specified. This item includes but is not limited to the following work by Contractor: perform excavation, scarifying excavated trench walls to the lines and grades specified, loading, hauling, backfilling with levee material, exporting material excavated off site, and all work associated with Exploration Trench.

Item 30. Excavation

Measurement: Excavation will be measured on the unit basis of in- situ volume at the on-site excavation site in cubic yards (CY) of Excavation performed as

measured in the field by the Owner's Representative using drawings, measurements, pre-construction topographic surveys and post-construction topographic surveys and rounded to the nearest cubic yard.

Payment: Contractor will be paid per cubic yard (CY) for Excavation performed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Excavation, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, stockpiling, loading and haling excess material off site, scarification, and all work associated with Excavation.

Item 31. Aggregate Base Course CL 13 (6" Thick)

Measurement: Aggregate Base Course CL 13 (6" Thick) will be measured on the unit basis of area in square yards (SY) of Aggregate Base Course CL 13 (6" Thick) furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest square yard.

Payment: Contractor shall be paid a unit price per square yard (SY) for furnishing and installing Aggregate Base Course CL 13 (6" Thick). This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Aggregate Base Course CL 13 (6" Thick), all complete as specified. This item includes but is not limited to the following work by Contractor: prepare subgrade, furnish, install, scarify and compact aggregate material to the dimensions and thicknesses as shown on drawings, furnish and install R1 Woven Geotextile Fabric, all incidentals and all work associated with Aggregate Base Course CL 13 (6" Thick).

Item 32. Bituminous Pavement (4" Thick)

Measurement: Bituminous Pavement (4" Thick) will be measured on the unit basis of area in square yards (SY) of Bituminous Pavement (4" Thick) furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest square yard.

Payment: Contractor shall be paid a unit price per square yard (SY) for furnishing and installing Bituminous Pavement (4" Thick). This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Bituminous Pavement (4" Thick), all complete as specified. This item includes but is not limited to the following work by the Contractor: furnish and install bituminous pavement, class 5 aggregate base, and R1 Woven Geotextile Fabric, material testing, loading, hauling, transport, thickness and extents, and compaction.

Item 33. Concrete Driveway (6" Thick)

Measurement: Concrete Driveway (6" Thick) will be measured on the unit basis in square yards (SY) of Concrete Driveway (6" Thick) furnished and

installed as measured in the field by the Owner's Representative and rounded to the nearest square yard.

Payment: Contractor will be paid a unit price per square yard (SY) for Concrete Driveway (6" Thick) and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Driveway (6" Thick), all complete as specified. This item includes but is not limited to the following work by Contractor: furnish and install class 5 aggregate base, material testing, managing moisture content, loading, hauling, transport, stockpile, grading to dimensions, thicknesses and extents, compaction and all work associated with Concrete Driveway (6" Thick).

Item 34. Concrete Sidewalk (4" Thick)

Measurement: Concrete Sidewalk (4" Thick) will be measured on the unit basis in square yards (SY) of Concrete Sidewalk (4" Thick) furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest square yard.

Payment: Contractor will be paid a unit price per square yard (SY) for Concrete Sidewalk (4" Thick) and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Sidewalk (4" Thick), all complete as specified. This item includes but is not limited to the following work by Contractor: furnish and install class 5 aggregate base, material testing, managing moisture content, loading, hauling, transport, stockpile, grading to dimensions, thicknesses and extents, compaction and all work associated with Concrete Sidewalk (4" Thick).

Item 35. Concrete Curb and Gutter (Type 1)

Measurement: Concrete Curb and Gutter will be measured on the unit basis of length in linear feet (LF) of Concrete Curb and Gutter (Type 1) furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest linear foot.

Payment: Contractor shall be paid a unit price per linear foot (LF) for furnishing and installing Concrete Curb and Gutter (Type 1). This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Concrete Curb and Gutter (Type 1), all complete as specified. This item includes but is not limited to the following work by Contractor: sawcutting, furnish and install forming, ready-mix concrete, class 5 aggregate base, machine-placed curb and gutter, hand-formed curb and gutter, integrant curb, curb returns, curb radii, joints, reinforcement and curing compound for the type and dimensions as shown on Drawings, and all work associated with Concrete Curb and Gutter (Type 1).

Item 36. Hydrant and 6" Gate Valve

Measurement: Hydrant and 6” Gate Valve will be measured on the unit basis of each (EA) for Hydrant and 6” Gate Valve furnished and installed as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Hydrant and 6” Gate Valve furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Hydrant and 6” Gate Valve, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, hydrant, valve, extensions, fittings, blocks, hardware, bedding, backfill, wrapping, tracer wire, and all work associated with Hydrant and 6” Gate Valve.

Item 37. Modify Existing Manhole

Measurement: Modify Existing Manhole will be measured on the unit basis of each (EA) for Modify Existing Manhole performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Modify Existing Manhole performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Modify Existing Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: sawcutting existing structure to proper opening, grouting around new pipe, and all work associated with Modify Existing Manhole.

Item 38. Core Existing Manhole

Measurement: Core Existing Manhole will be measured on the unit basis of each (EA) for Core Existing Manhole performed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Core Existing Manhole performed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Core Existing Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: coring existing structure to proper opening, grouting around new pipe, and all work associated with Core Existing Manhole.

Item 39. Gatewell Structure

Unit of Measurement: Lump Sum

Payment: Payment will be made for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Gatewell Structure, all complete as specified.

Item 40. Gatewell Structure Modifications

Unit of Measurement: Lump Sum

Payment: Payment will be made for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Gatewell Structure Modifications, all complete as specified.

Item 41. Concrete Headwall Structure w/ Flap Gate (12” RCP)

Measurement: Concrete Headwall Structure w/ Flap Gate (12” RCP) will be measured on the unit basis of each (EA) for Concrete Headwall Structure w/ Flap Gate (12” RCP) furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Concrete Headwall Structure w/ Flap Gate (12” RCP) furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (12” RCP), all complete as specified.

Item 42. Concrete Headwall Structure w/ Flap Gate (18” RCP)

Measurement: Concrete Headwall Structure w/ Flap Gate (18” RCP) will be measured on the unit basis of each (EA) for Concrete Headwall Structure w/ Flap Gate (18” RCP) furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Concrete Headwall Structure w/ Flap Gate (18” RCP) furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (18” RCP), all complete as specified.

Item 43. Concrete Headwall Structure w/ Flap Gate (24” PVC)

Measurement: Concrete Headwall Structure w/ Flap Gate (24” PVC) will be measured on the unit basis of each (EA) for Concrete Headwall Structure w/ Flap Gate (24” PVC) furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Concrete Headwall Structure w/ Flap Gate (24” PVC) furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (24” PVC), all complete as specified.

Item 44. Concrete Headwall Structure w/ Flap Gate (36” RCP)

Measurement: Concrete Headwall Structure w/ Flap Gate (36” RCP) will be measured on the unit basis of each (EA) for Concrete Headwall Structure w/ Flap Gate (36” RCP) furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Concrete Headwall Structure w/ Flap Gate (36” RCP) furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (36” RCP), all complete as specified.

Item 45. Concrete Headwall Structure w/ Flap Gate (60” RCP)

Measurement: Concrete Headwall Structure w/ Flap Gate (60” RCP) will be measured on the unit basis of each (EA) for Concrete Headwall Structure w/ Flap Gate (60” RCP) furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Concrete Headwall Structure w/ Flap Gate (60” RCP) furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Flap Gate (60” RCP), all complete as specified.

Item 46. Concrete Headwall Structure w/ Stop Logs (96” RCP)

Measurement: Concrete Headwall Structure w/ Stop Logs (96” RCP) will be measured on the unit basis of each (EA) for Concrete Headwall Structure w/ Stop Logs (96” RCP) furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Concrete Headwall Structure w/ Stop Logs (96” RCP) furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Concrete Headwall Structure w/ Stop Logs (96” RCP), all complete as specified.

Item 47. Connect New 12” RCP to Headwall

Measurement: Connect New 12” RCP to Headwall will be measured on the unit basis of each (EA) for Connect New 12” RCP to Headwall furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Connect New 12” RCP to Headwall furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Connect

New 12” RCP to Headwall, all complete as specified.

Item 48. Connect New 18” RCP to Headwall

Measurement: Connect New 18” RCP to Headwall will be measured on the unit basis of each (EA) for Connect New 18” RCP to Headwall furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Connect New 18” RCP to Headwall furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Connect New 18” RCP to Headwall, all complete as specified.

Item 49. Connect New 24” RCP to Headwall

Measurement: Connect New 24” RCP to Headwall will be measured on the unit basis of each (EA) for Connect New 24” RCP to Headwall furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Connect New 24” RCP to Headwall furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Connect New 24” RCP to Headwall, all complete as specified.

Item 50. 12” RCP Storm Sewer

Measurement: 12” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 12” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 12” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 12” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 12” RCP Storm Sewer.

Item 51. 15” RCP Storm Sewer

Measurement: 15” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 15” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 15” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 15” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 15” RCP Storm Sewer.

Item 52. 18” RCP Storm Sewer

Measurement: 18” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 18” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 18” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 18” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 18” RCP Storm Sewer.

Item 53. 24” RCP Storm Sewer

Measurement: 24” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 24” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 24” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 24” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 24” RCP Storm Sewer.

Item 54. 36” RCP Storm Sewer

Measurement: 36” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 36” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 36” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 36” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 36” RCP Storm Sewer.

Item 55. 60” RCP Storm Sewer

Measurement: 60” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 60” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 60” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 60” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 60” RCP Storm Sewer.

Item 56. 96” RCP Storm Sewer

Measurement: 96” RCP Storm Sewer will be measured on the basis of length in lineal feet (LF) for 96” RCP Storm Sewer furnished and installed as measured in the field by the Owner’s Representative rounded to the nearest whole foot.

Payment: Contractor will be paid a unit price per lineal foot (LF) for 96” RCP Storm Sewer furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for 96” RCP Storm Sewer all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep

trench design, trench shoring, bedding aggregate, pipe, fittings, bends, elbows, tees, reducers, gaskets, pipe joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 96" RCP Storm Sewer.

Item 57. 12" RCP Flared End Section w/ Track Rack

Measurement: 12" RCP Flared End Section w/ Trash Rack will be measured on the unit basis of each (EA) for 12" RCP Flared End Section w/ Trash Rack furnished and installed as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) 12" RCP Flared End Section w/ Trash Rack furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 12" RCP Flared End Section w/ Trash Rack, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 12" RCP Flared End Section w/ Trash Rack.

Item 58. 15" RCP Flared End Section w/ Track Rack

Measurement: 15" RCP Flared End Section w/ Trash Rack will be measured on the unit basis of each (EA) for 15" RCP Flared End Section w/ Trash Rack furnished and installed as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) 15" RCP Flared End Section w/ Trash Rack furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 15" RCP Flared End Section w/ Trash Rack, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 15" RCP Flared End Section w/ Trash Rack.

Item 59. 18" RCP Flared End Section w/ Track Rack

Measurement: 18" RCP Flared End Section w/ Trash Rack will be measured on the unit basis of each (EA) for 18" RCP Flared End Section w/ Trash Rack furnished and installed as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) 18” RCP Flared End Section w/ Trash Rack furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 18” RCP Flared End Section w/ Trash Rack, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 18” RCP Flared End Section w/ Trash Rack.

Item 60. 36” RCP Flared End Section w/ Track Rack

Measurement: 36” RCP Flared End Section w/ Trash Rack will be measured on the unit basis of each (EA) for 36” RCP Flared End Section w/ Trash Rack furnished and installed as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 36” RCP Flared End Section w/ Trash Rack furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 36” RCP Flared End Section w/ Trash Rack, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, trench safety requirements, deep trench design, trench shoring, bedding aggregate, pipe, joints tie bolts, hardware, bedding, backfill, drainage fill, geotextile fabric and appurtenances of the dimension, type and size as shown on the Drawings; and all work associated with 36” RCP Flared End Section w/ Trash Rack.

Item 61. 12” Flap Gate

Measurement: 12” Flap Gate will be measured on the unit basis of each (EA) as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid for each (EA) 12” Flap Gate furnished and installed. The unit price will be payment in full for the costs of all supervision, labor, materials, equipment, overhead and profit, and performing all operations necessary for the 12” Flap Gate, all completed as specified. This item includes, but is not limited to, the following Work by the Contractor: Prepare and furnish shop drawings, furnish and install gate, frame (where necessary), and all Work associated with the 12” Flap Gate.

Item 62. 15” Flap Gate

Measurement: 15” Flap Gate will be measured on the unit basis of each (EA) as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid for each (EA) 15” Flap Gate furnished and installed. The unit price will be payment in full for the costs of all supervision,

labor, materials, equipment, overhead and profit, and performing all operations necessary for the 15” Flap Gate, all completed as specified. This item includes, but is not limited to, the following Work by the Contractor: Prepare and furnish shop drawings, furnish and install gate, frame (where necessary), and all Work associated with the 15” Flap Gate.

Item 63. 18” Flap Gate

Measurement: 18” Flap Gate will be measured on the unit basis of each (EA) as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid for each (EA) 18” Flap Gate furnished and installed. The unit price will be payment in full for the costs of all supervision, labor, materials, equipment, overhead and profit, and performing all operations necessary for the 18” Flap Gate, all completed as specified. This item includes, but is not limited to, the following Work by the Contractor: Prepare and furnish shop drawings, furnish and install gate, frame (where necessary), and all Work associated with the 18” Flap Gate.

Item 64. 24” Flap Gate

Measurement: 24” Flap Gate will be measured on the unit basis of each (EA) as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid for each (EA) 24” Flap Gate furnished and installed. The unit price will be payment in full for the costs of all supervision, labor, materials, equipment, overhead and profit, and performing all operations necessary for the 24” Flap Gate, all completed as specified. This item includes, but is not limited to, the following Work by the Contractor: Prepare and furnish shop drawings, furnish and install gate, frame (where necessary), and all Work associated with the 24” Flap Gate.

Item 65. 36” Flap Gate

Measurement: 36” Flap Gate will be measured on the unit basis of each (EA) as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid for each (EA) 36” Flap Gate furnished and installed. The unit price will be payment in full for the costs of all supervision, labor, materials, equipment, overhead and profit, and performing all operations necessary for the 36” Flap Gate, all completed as specified. This item includes, but is not limited to, the following Work by the Contractor: Prepare and furnish shop drawings, furnish and install gate, frame (where necessary), and all Work associated with the 36” Flap Gate.

Item 66. Storm Catch Basin

Measurement: Storm Catch Basin will be measured on the unit basis of each (EA) for Storm Catch Basin furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Storm Catch Basin furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Storm Catch Basin, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, excavation safety requirements, excavation shoring, aggregate base, precast concrete manhole, base sections, riser sections, tee/access manhole, adjusting rings, specialty coatings, mortar, gaskets, casting with frame, steps, pipe connections, draintile installation/connection to structure, backfill of the type and size shown on the Drawings, and all work associated with the Storm Catch Basin.

Item 67. 48” Dia Storm Manhole

Measurement: 48” Dia Storm Manhole will be measured on the unit basis of each (EA) for 48” Dia Storm Manhole furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 48” Dia Storm Manhole furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 48” Dia Storm Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, excavation safety requirements, deep excavation design, excavation shoring, aggregate base, precast concrete manhole, base sections, riser sections, cone sections, tee/access manhole, adjusting rings, specialty coatings, mortar, gaskets, casting with frame, steps, pipe connections, draintile installation/connection to structure, backfill of the type and size shown on the Drawings, and all work associated with the 48” Dia Storm Manhole.

Item 68. 72” Dia Storm Manhole

Measurement: 72” Dia Storm Manhole will be measured on the unit basis of each (EA) for 72” Dia Storm Manhole furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 72” Dia Storm Manhole furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 72” Dia Storm Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, excavation safety requirements, deep excavation design, excavation shoring, aggregate base, precast concrete manhole, base sections, riser sections, cone sections, tee/access manhole, adjusting rings, specialty coatings, mortar, gaskets, casting with frame, steps, pipe connections, draintile installation/connection to structure, backfill of the type and size shown on the Drawings, and all work associated with the 72” Dia Storm Manhole.

Item 69. 96” Dia Storm Manhole

Measurement: 96” Dia Storm Manhole will be measured on the unit basis of each (EA) for 96” Dia Storm Manhole furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 96” Dia Storm Manhole furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 96” Dia Storm Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, excavation safety requirements, deep excavation design, excavation shoring, aggregate base, precast concrete manhole, base sections, riser sections, cone sections, tee/access manhole, adjusting rings, specialty coatings, mortar, gaskets, casting with frame, steps, pipe connections, draintile installation/connection to structure, backfill of the type and size shown on the Drawings, and all work associated with the 96” Dia Storm Manhole.

Item 70. 108” Dia Storm Manhole

Measurement: 108” Dia Storm Manhole will be measured on the unit basis of each (EA) for 108” Dia Storm Manhole furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 108” Dia Storm Manhole furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 108” Dia Storm Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: excavation, excavation safety requirements, deep excavation design, excavation shoring, aggregate base, precast concrete manhole, base sections, riser sections, cone sections, tee/access manhole, adjusting rings, specialty coatings, mortar, gaskets, casting with frame, steps, pipe connections, draintile installation/connection to structure, backfill of the type and size shown on the Drawings, and all work associated with the 108” Dia Storm Manhole.

Item 71. 48” Dia Sanitary Sewer Manhole

Measurement: 48” Dia Sanitary Sewer Manhole will be measured on the unit basis of each (EA) for 48” Dia Storm Manhole furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 48” Dia Sanitary Sewer Manhole furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the 48” Dia Sanitary Sewer Manhole, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish and install excavation, excavation safety requirements, deep excavation design, excavation shoring, aggregate base, precast concrete manhole, base sections, riser sections, cone

sections, adjusting rings, mortar, gaskets, casting with frame, steps, pipe connections, draintile installation/connection to structure, backfill, appurtenances, coordinating temporary bypass or service interruption (if necessary) and all work associated with 48” Dia Sanitary Sewer Manhole.

Item 72. 8” Rubber Duckbill Check Valve

Measurement: 8” Rubber Duckbill Check Valve will be measured on the unit basis of each (EA) for 8” Rubber Duckbill Check Valve furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) 8” Rubber Duckbill Check Valve furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Rubber Duckbill Check Valve, all complete as specified. Work to be performed includes but is not limited to: furnish and install check valve, excavation, backfill, hardware, fittings, and appurtenances as shown on the plans.

Item 73. 8” Rubber Duckbill Check Valve

Measurement: Type 3 Barricade will be measured on the unit basis of each (EA) for Type 3 Barricade furnished and installed and as measured in the field by the Owner’s Representative.

Payment: Contractor will be paid per each (EA) Type 3 Barricade furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Type 3 Barricade, all complete as specified and shown on the Drawings.

Item 74. B2 Riprap Bedding

Measurement: Measurement will be by the ton (2,000 pounds avoirdupois) of B2 Riprap Bedding acceptably placed within the tolerances specified. Quantities shall be computed to the nearest whole ton. The Contractor shall provide copies of certified weight scale tickets to the Engineer for all loads of B2 Riprap Bedding delivered to the project and incorporated into the Work.

Payment: Contractor shall be paid a unit price per Ton (TON) for furnishing and installing B2 Riprap Bedding. Payment will be made for furnishing all materials, equipment and labor and performing all operations necessary to provide and place B2 Bedding as shown and specified.

Deductions: Payment will be made only for B2 Riprap Bedding placed within the specified tolerances. All B2 Riprap Bedding permitted by the Engineer to remain outside the tolerances specified shall be deducted from the quantity for which payment is to be made. Volume of excess B2 Riprap Bedding shall be determined based on quantity survey performed by the Engineer. The excess volume shall be deducted for the payment quantity at the rate of 1.8 tons per cubic yard, regardless of actual weight per cubic yard.

Item 75. NDDOT Grade I Riprap

Measurement: Measurement will be by the ton (2,000 pounds avoirdupois) of riprap acceptably placed within the tolerances specified. Quantities shall be computed to the nearest whole ton. The Contractor shall provide copies of certified weight scale tickets to the Engineer for all loads of riprap delivered to the project and incorporated into the Work.

Payment: Contractor shall be paid a unit price per Ton (TON) for furnishing and installing NDDOT Grade I Riprap. Payment will be made for furnishing all materials, equipment and labor and performing all operations necessary to provide and place riprap for slope protection as shown and specified.

Deductions: Payment will be made only for riprap placed within the specified tolerances. All riprap permitted by the Engineer to remain outside the tolerances specified shall be deducted from the quantity for which payment is to be made. Volume of excess riprap shall be determined based on quantity survey performed by the Engineer. The excess volume shall be deducted for the payment quantity at the rate of 1.7 tons per cubic yard, regardless of actual weight per cubic yard or riprap class.

Item 76. Precast Concrete Riprap

Measurement: Precast Concrete Riprap will be measured on the unit basis of area in square yards (SY) of Precast Concrete Riprap furnished and installed, and rounded to the nearest square yard at each site. The area will be measured by Owner's Representative as determined by the actual horizontal surface area of the Precast Concrete Riprap installed as shown on the plans and/or as directed in field by Owner's Representative. No allowance shall be included in the measurement for the required overlapping, or wrapping at, or anchoring at edges. Excess material will not be measured for payment.

Payment: Contractor will be paid per square yard (SY) for Precast Concrete Riprap furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Precast Concrete Riprap, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish and install Precast Concrete Riprap, installation in accordance with manufacturer's recommendations, sequencing with topsoil and seeding work, excavations for keying in material, hardware, anchors, compaction; staples; stakes and all work associated with Precast Concrete Riprap.

Item 77. Erosion Control Blanket

Measurement: Erosion Control Blanket will be measured on the unit basis of area in square yards (SY) of Erosion Control Blanket furnished and installed as measured in the field by the Owner's Representative and rounded to the nearest square yard. Measurement shall be of the extent, with no allowances for overlapping.

Payment: Contractor will be paid per square yard (SY) for Erosion Control Blanket furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Erosion Control Blanket, all complete as specified. This item includes but is not limited to the following Work by Contractor: furnish, install, anchor, and maintain Erosion Control Blanket of the type and dimensions specified conforming to NDDOT Specification Section 856 ECB1, anchored trench, anchors, and repair damaged areas, removal, if required, and all Work associated with the Erosion Control Blanket.

Item 78. Bioroll

Measurement: Bioroll will be measured on the unit basis of length in lineal feet (LF) of Bioroll furnished and installed and as measured in the field by the Owner's Representative and rounded to the nearest whole foot. Length will be determined horizontally along the centerline of the installed log product from end to end with no allowance for overlap.

Payment: Contractor will be paid per lineal foot (LF) for Bioroll furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Bioroll, all complete as specified. This item includes but is not limited to the following Work by Contractor: furnish, install and maintain Bioroll, periodically removing and disposing of accumulated sediment, staking and anchorage removing upon site stabilization as shown on Drawings and all Work associated with the Bioroll. Eighty percent (80%) of the unit price will be paid for furnishing and installing Bioroll and twenty percent (20%) of the unit price will be paid upon removal of the Bioroll (Type).

Item 79. Inlet Protection

Measurement: Inlet Protection will be measured on the unit basis of each (EA) for Inlet Protection furnished and installed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Inlet Protection furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Inlet Protection, all complete as specified. This item includes but is not limited to the following Work by Contractor: furnish, install, maintain inlet protection of the type specified, periodically removing and disposing of accumulated sediment, and inlet protection siltation sock, aggregate, fabric, inlet protection, and remove the inlet protection after site is stabilized, all complete as specified and all Work associated with the Inlet Protection. Eighty percent (80%) of the unit price will be paid for furnishing and installing the Inlet Protection and twenty percent (20%) of the unit price will be paid upon removal of the inlet protection.

Item 80. Silt Fence

Payment: Contractor will be paid per lineal foot (LF) for Silt Fence furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for Silt Fence, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish, install, anchor, and maintain posts, fabric, fasteners and anchorage for Silt Fence of the type and dimensions specified for the duration of the Work, periodically removing and disposing of accumulated sediment, and removal upon stabilization of the site, all complete as specified and all Work associated with Silt Fence. Eighty percent (80%) of the unit price will be paid for furnishing and installing the Silt Fence and twenty percent (20%) of the unit price will be paid upon removal of the Silt Fence.

Measurement: Silt Fence will be measured on the unit basis of length in lineal feet (LF) of Silt Fence furnished and installed and as measured in the field by the Owner's Representative and rounded to the nearest whole foot. Length will be determined horizontally along the centerline of the installed fence from end to end with no allowance for overlap.

Item 81. Floating Silt Curtain:

Measurement: Floating Silt Curtain will be measured on the unit basis of length in lineal feet (LF) of Floating Silt Curtain furnished and installed and as measured in the field by the Owner's Representative and rounded to the nearest whole foot. Length will be determined horizontally along the centerline of the installed curtain from end to end with no allowance for overlap.

Payment: Contractor will be paid per lineal foot (LF) for Floating Silt Curtain furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Floating Silt Curtain, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish, install, anchor and maintain floats, posts, fabric, fasteners and anchorage for the floating silt curtain for the duration of the Work, and removal upon stabilization of the site, all complete as specified and all work associated with the Floating Silt Curtain. Eighty percent (80%) of the unit price will be paid for furnishing and installing the Floating Silt Curtain and twenty percent (20%) of the unit price will be paid upon removal of the floating silt curtain.

Item 82. Construction Entrance

Measurement: Construction Entrance will be measured on the unit basis of each (EA) for Construction Entrance furnished and installed and as measured in the field by the Owner's Representative.

Payment: Contractor will be paid per each (EA) Construction Entrance furnished and installed. The unit price will be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Construction Entrance, all

complete as specified. This item includes but is not limited to the following Work by Contractor: furnish, install, maintain, periodically removing and disposing of accumulated sediment, and remove entrance after site is stable, including aggregate, geotextile, incidental grading and cleanup Work all complete as specified and all Work associated with the Construction Entrance. Eighty percent (80%) of the unit price will be paid for furnishing and installing the entrance and twenty percent (20%) of the unit price will be paid upon removal of the Construction Entrance.

Item 83. Seeding

Measurement: Seeding will be measured on the unit basis of area in Acres (AC) of Seeding furnished and installed and as measured in the field by the Owner's Representative and rounded to the nearest tenth (0.1) of an acre.

Payment: Contractor will be paid per Acre (AC) for Seeding furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Seeding, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish and install seeding, topsoil preparation, watering as specified, maintain seeding and all work associated with the Seeding. Eighty percent (80%) of the unit price will be paid for furnishing and installing the Seeding and twenty percent (20%) of the unit price will be paid upon Grass Stand per the specifications.

Item 84. Hydromulching

Measurement: Hydromulching will be measured on the unit basis of area in Acres (AC) of Hydromulching furnished and installed and as measured in the field by the Owner's Representative and rounded to the nearest tenth (0.1) of an acre.

Payment: Contractor will be paid per Acre (AC) for Hydromulching furnished and installed. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, and performing all operations as are necessary for the Hydromulching, all complete as specified. This item includes but is not limited to the following work by Contractor: furnish, install, and maintain hydraulic soil stabilizer, fiber, tackifier all work associated with the Hydromulching.

Item 85. Traffic Control

Unit of Measurement: Lump Sum

Payment: Payment will be made for furnishing all materials, equipment and labor and performing all operations necessary to provide traffic control for the project in accordance with NDDOT Specifications. This unit price shall be payment in full for the costs of all supervision, materials, equipment, labor, supplies, profit and overhead, any permits required for implementing traffic control, and performing all operations as are necessary for the Traffic Control, all complete as specified.

4. The General Conditions, Supplementary General Conditions, City of Minot Supplemental Provisions, and items in the general requirements of the drawings and specifications which are not listed in the schedule of work items on the Bid Schedule are, in general, applicable to more than one listed work item, and no separate work item is provided therefore. Include the cost of work not listed but necessary to complete the project designated in the Contract Documents in the various listed work items of the Bid Schedule.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 26 63 – CHANGE ORDERS

PART 1 -- GENERAL

1.01 DESCRIPTION OF WORK

A. Promptly implement change order procedures by providing full written data required to evaluate changes, maintain detailed records of work done on a time-and-material/force account basis, and provide full documentation to the Resident Project Representative (RPR).

B. Designate in writing the member of the Contractor's organization who is authorized to accept changes in the Work and who is responsible for informing others in the Contractor's employ of the authorization of changes in the work.

1.02 DEFINITIONS

B. The terms Change Order, Work Change Directive, and Field Order are defined in the General Conditions.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION

3.01 PRELIMINARY PROCEDURES

A. Owner or RPR may initiate changes by submitting a Request for Proposal (RFP) to Contractor. Request will include:

1. Detailed description of the Change, products, and location of the change in the Project.

2. Supplementary or revised Drawings and Specifications.

3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.

4. A specific period of time during which the requested price will be considered valid.

5. Such request is for information only, and is not an instruction to execute the changes or to stop work in progress.

B. Contractor may initiate changes by submitting a written notice to RPR, containing:

1. Description of the proposed changes.

2. Statement of the reason for making the changes.

3. Statement of the effect on the Contract Sum and the Contract Time.

4. Statement of the effect on the work of separate contractors.

5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

3.02 WORK CHANGE DIRECTIVE AUTHORIZATION

A. In lieu of a RFP, RPR may issue a Work Change Directive authorization for Contractor to proceed with a change for subsequent inclusion in a Change Order.

B. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change, and will designate the method of determining any change in the Contract Sum and any change in Contract Time.

C. The RPR will sign and date the Work Change Directive Authorization as authorization for the Contractor to proceed with the changes.

D. Contractor may sign and date the Work Change Directive Authorization to indicate agreement with the terms therein.

3.03 SUPPORTING DATA

A. Support each quotation for a lump sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow for evaluation of the quotation.

B. On request, provide additional data to support time and cost computations:

1. Labor required.

2. Equipment required.

3. Products required.

a. Recommended source of purchase and unit cost

b. Quantities required

4. Taxes, insurance and bonds.

5. Credit for work deleted from Contract, similarly documented.

6. Overhead and profit.

7. Justification for any change in Contract Time.

C. Support each claim for additional costs and for work done on a time-and-material/force account basis with documentation as required for a lump-sum proposal, plus additional information:

1. Name of the Owner's authorized agent who ordered the work, and date of the order.

2. Dates and times work was performed, and by whom.

3. Time record, summary of hours worked, and hourly rates paid.

4. Receipts and invoices for:

a. Equipment used, listing dates and times of use

b. Products used, listing of quantities

c. Subcontracts

3.04 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Contractor shall periodically revise Schedule of Values and Request for Payment forms to record each Change Order as a separate item of Work, and to record the adjusted Contract Sum.

B. Contractor shall periodically revise the Construction Schedule to reflect each change in Contract Time.

1. Revise sub-schedules to show changes for other items of work affected by the changes.

C. Upon completion of work under a Change Order, Contractor shall enter pertinent changes in the project deliverables.

- END OF SECTION -

DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01 33 00 – SUBMITTAL REQUIREMENTS

PART 1 -- GENERAL

1.01 GENERAL

A. Wherever submittals are required in the Contract Documents, submit them to the Engineer.

B. Within 7 Days after the date of commencement as stated in the Notice to Proceed, the Contractor shall submit the following items for review:

1. A preliminary schedule and estimated date of submittal of Shop Drawings and samples. The schedule of submittals shall be based on Contractor's priority, planned construction sequence and schedule, long lead items, and size of submittal package. Allow time for resubmittals.

2. A list of permits and licenses the Contractor shall obtain, indicating the agency required to grant the permit and the expected date of submittal for the permit and required date for receipt of the permit.

1.02 “OR-EQUAL” ITEMS

A. Wherever materials, products, or equipment are indicated in the Contract Documents by using the name of a proprietary item or the name of a particular manufacturer, the naming is intended to establish the type, function, and quality required. If the name is followed by the words “or equal”, or “approved equivalent”, substitutions may be provided per the requirements of this section.

As stated in Article 11 of the “Instructions to Bidders”, if a Contractor or Supplier desires to provide unlisted materials, products, or equipment as “or-equal” items, **a written request must be provided to the Engineer at least 10 working days prior to the scheduled bid opening.** Refer to the “Instruction to Bidders” for Procedure

1.03 PRECONSTRUCTION CONFERENCE SUBMITTALS

A. At the preconstruction conference, submit the following items to the Engineer for review:

1. A revised schedule of submittals.

2. A list of permits and licenses the Contractor shall obtain, indicating the agency required to grant the permit, the expected date of submittal for the permit, and required date for receipt of the permit.

3. A 60 Day plan of operation.

4. A project overview bar chart.

1.04 SHOP DRAWINGS

A. Wherever called for in the Contract Documents or where required by the Engineer, the Contractor shall furnish three copies, of each Shop Drawing submittal with letter of transmittal. Shop Drawings may include detail design calculations, shop-prepared drawings, fabrication and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items. Whenever the Contractor is required to submit design calculations as part of a submittal, such calculations shall bear the signature and seal of an engineer registered in the appropriate branch and in the state wherein the project is located, unless otherwise indicated.

B. Shop Drawing submittals shall be accompanied by the Engineer's standard submittal transmittal form or a form supplied by the Contractor acceptable to the Engineer, a reproducible copy of which is available from the Engineer. A submittal without the form or where applicable items on the form are not completed will be returned for resubmittal.

C. Organization

1. A single submittal transmittal form shall be used for each technical specification section or item or class of material or equipment for which a submittal is required. A single submittal covering multiple sections will not be acceptable, unless the primary specification references other sections for components. Example: if a pump section references other sections for the motor, shop-applied protective coating, anchor bolts, local control panel, and variable frequency drive, a single submittal would be acceptable. A single submittal covering vertical turbine pumps and horizontal split case pumps would not be acceptable.

2. On the transmittal form, index the components of the submittal and insert tabs in the submittal to match the components. Relate the submittal components to specification paragraph and subparagraph, drawing number, detail number, schedule title, room number, or building name, as applicable.

3. Unless indicated otherwise, terminology and equipment names and numbers used in submittals shall match those used in the Contract Documents.

D. Format

1. Minimum sheet size shall be 8-1/2 inches by 11-inches. Maximum sheet size shall be 24-inches by 36-inches. Every page in a submittal shall be numbered in sequence. Each copy of a submittal shall be collated and stapled or bound, as appropriate. The Engineer will not collate sheets or copies.

2. Where product data from a manufacturer is submitted, clearly mark which model is proposed, with complete pertinent data capacities, dimensions, clearances, diagrams, controls, connections, anchorage, and supports. Sufficient level of detail shall be presented for assessment of compliance with the Contract Documents.

3. Each submittal shall be assigned a unique number. Submittals shall be numbered sequentially, and the submittal numbers shall be clearly noted on the transmittal. Original submittals shall be assigned a numeric submittal number followed by a letter of the alphabet to distinguish between the original submittal and each resubmittal. For example, if submittal 25-A requires a resubmittal, the first

resubmittal will bear the designation "25-B" and the second resubmittal will bear the designation "25-C" and so on.

E. Disorganized submittals that do not meet the requirements of the Contract Documents will be returned without review.

F. Except as may otherwise be indicated, the Engineer will keep two copies and return one copies of each submittal to the Contractor with comments noted thereon, within 30 Days following receipt by the Engineer. It is considered reasonable that the Contractor will make a complete and acceptable submittal to the Engineer by the first resubmittal on an item. The Owner reserves the right to withhold monies due to the Contractor to cover additional costs of the Engineer's review beyond the first resubmittal. The Engineer's maximum review period for each submittal or resubmittal will be 30 Days. Thus, for a submittal that requires 2 resubmittals before it is complete, the maximum review period could be 90 Days. Adequate time should also be scheduled to allow for placing of orders and securing delivery. Delays or extra costs incurred by improper scheduling of submittals shall be the responsibility of the Contractor.

G. If a submittal is returned to the Contractor marked "NO EXCEPTIONS TAKEN," formal revision and resubmission will not be required.

H. If a submittal is returned marked "MAKE CORRECTIONS NOTED," Contractor shall make the corrections indicated on the submittal, but formal revision and resubmission will not be required.

I. If a submittal is returned marked "AMEND-RESUBMIT," or “REVISE AND RESUBMIT, the Contractor shall revise it and shall resubmit the required number of copies. Resubmittal of portions of multi-page or multi-drawing submittals will not be allowed. For example, if a Shop Drawing submittal consisting of 10 drawings contains one drawing noted as "AMEND - RESUBMIT," the submittal as a whole is deemed "AMEND - RESUBMIT," and 10 drawings are required to be resubmitted.

J. If a submittal is returned marked "REJECTED-RESUBMIT," it shall mean either that the proposed material or product does not satisfy the specification, the submittal is so incomplete that it cannot be reviewed, or is a substitution request not submitted in accordance with this section. In the first 2 cases, the Contractor shall prepare a new submittal and shall submit the required number of copies. In the latter case, the Contractor shall submit on the material or equipment indicated in the contract documents.

K. Resubmittal of rejected portions of a previous submittal will not be allowed. Every change from a submittal to a resubmittal or from a resubmittal to a subsequent resubmittal shall be identified and flagged on the resubmittal.

L. Fabrication of an item may commence only after the Engineer has reviewed the pertinent submittals and returned copies to the Contractor marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED." Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as changes to the contract requirements.

M. Submittals shall be carefully reviewed by an authorized representative of the Contractor prior to submission to the Engineer. Each submittal shall be dated and signed by the

Contractor as being correct and in strict conformance with the Contract Documents. In the case of Shop Drawings, each sheet shall be so dated and signed. Any deviations from the Contract Documents shall be noted on the transmittal sheet. The Engineer will only review submittals that have been so verified by the Contractor. Non-verified submittals will be returned to the Contractor without action taken by the Engineer, and any delays caused thereby shall be the total responsibility of the Contractor.

N. Corrections or comments made on the Contractor's Shop Drawings during review do not relieve the Contractor from compliance with Contract Drawings and Specifications. Review is for conformance to the design concept and general compliance with the Contract Documents only. The Contractor is responsible for confirming and correlating quantities and dimensions, fabrication processes and techniques, coordinating Work with the trades, and satisfactory and safe performance of the Work.

O. If a substitution of a component or material results in a change being required in the work to be performed by the Contractor or other Contractors involved at the contract site, the Contractor proposing the substitution shall be responsible for all costs associated with the substitution.

P. The Contractor shall have a readily available copy of the approved submittals pertaining to the work in progress at the job site.

1.05 SAMPLES

A. The Contractor shall submit the number of samples indicated by the Specifications. If the number is not indicated, submit not less than 3 samples. Where the amount of each sample is not indicated, submit such amount as necessary for proper examination and testing by the methods indicated.

B. Samples shall be individually and indelibly labeled or tagged, indicating the salient physical characteristics and manufacturer's name. Upon acceptance by the Engineer, two sets of the samples will be stamped and dated by the Engineer and returned to the Contractor, one set of samples will be retained by the Engineer, and one set shall remain at the Site in the Engineer's field office until completion of the Work.

1.06 RECORD DRAWINGS

A. In addition to the requirements of Article 7.11 of the General Conditions, the Contractor shall maintain record drawings as follows. On the Drawings, the Contractor shall mark every project condition, location, configuration, and any other change or deviation which may differ from the Contract Drawings at the time of award, including buried or concealed construction and utility features that are revealed during the course of construction. Special attention shall be given to recording the horizontal and vertical location of buried utilities that differ from the locations indicated, or that were not indicated on the Contract Drawings. Said record drawings shall be supplemented by any detailed sketches as necessary or as Contractor is directed, to fully indicate the Work as actually constructed. These record drawings are the Contractor's representation of as-built conditions, shall include revisions made by addenda and change orders, and shall be maintained up-to-date during the progress of the Work. Red ink shall be used for alterations and notes. Notes shall identify relevant Change Orders by number and date.

B. In the case of those drawings that depict the detail requirement for equipment to be assembled and wired in the factory, such as motor control centers and the like, the record drawings shall be updated by indicating those portions which are superseded by change order drawings or final Shop Drawings, and by including appropriate reference information describing the change orders by number and the Shop Drawings by manufacturer, drawing, and revision numbers.

C. Prior to submitting the final application for payment, up-to-date record drawings shall be submitted in the form of a hard copy set of prints with carefully plotted information overlaid, and in electronic format. Acceptable formats include Microsoft Office XP or newer, AutoCad Version 2006 or newer, Microstation Version 2004 or newer, Adobe Acrobat Version 7.0 or newer, or other software required by the Specifications.

D. Disorganized or incomplete record drawings will not be accepted. The Contractor shall revise them and resubmit within 10 Days.

E. Information submitted by the Contractor will be assumed to be correct, and the Contractor shall be responsible for the accuracy of such information.

1.07 QUALITY CONTROL (QC) SUBMITTALS

A. Quality control submittals are defined as those required by the Specifications to present documentary evidence to the Engineer that the Contractor has satisfied certain requirements of the Contract Documents.

B. Unless otherwise indicated, QC submittals shall be submitted:

1. Before delivery and unloading, for the following types of submittals:

   a. Manufacturers' installation instructions

   b. Manufacturers' and Installers' experience qualifications

   c. Ready mix concrete delivery tickets

   d. Design calculations

   e. Affidavits and manufacturers' certification of compliance with indicated product requirements

   f. Laboratory analysis results

   g. Factory test reports

2. Within 30 Days of the event documented for the following types of submittals:

   a. Manufacturers' field representative certification of proper installation

   b. Field measurement

   c. Field test reports

d. Receipt of permit

e. Receipt of regulatory approval

C. The Engineer will record the date that a QC submittal was received and review it for compliance with submittal requirements, but the review procedures above for Shop Drawings and samples will not apply.

1.08 GENERAL CONDITIONS SUBMITTALS

A. Additional submittal requirements contained in the General Conditions include the following:

1. Construction Progress Schedule and Cost Breakdown: Bar chart to Engineer. Reference: General Conditions 2.05 and 6.04.

2. Change in the Work: Written notice to Engineer. Reference: General Conditions Article 10.

3. Discrepancies, Materials or Specified Method: Written notice to Engineer. Reference: General Conditions 3.03.

4. Extension of Time: Request and Supporting Documents to Engineer. Reference: General Conditions 12.02.

5. Force Account Work: Daily work sheets to Engineer. Reference: General Conditions Article 11.

6. Observation Prior to Covering Work: Notify Engineer in advance. Reference: General Conditions 13.03.

7. Substitution of Equal Items: Request and submit substantiating data to Engineer. Reference: General Conditions 6.05.

8. Supplemental Drawings Requiring Changes in the Work: Written notice to Engineer and utility owner. Reference: General Conditions 4.04.

9. Utilities, Unidentified or Different from Plans: Written notice to Engineer and utility owner. Reference: General Conditions 4.04.

10. Work Day Variation: Notify Engineer in advance. Reference: General Conditions 6.02.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION -

SECTION 01 41 26

PERMITS

PART 1: GENERAL

1.01 THE REQUIREMENT

A. The intent of this Section is to provide the known list of required permits for the Work under the Contract Documents. Completeness of the list is not guaranteed by Owner. The absence of information does not relieve Contractor of responsibility for determining and verifying the extent of permits required and for obtaining permits.

B. Obtain permits required for the execution of the Work, as indicated. Furnish copies of permits obtained by Contractor to the Owner's Representative, in accordance with Paragraph 1.04.B of this Section.

C. Comply with conditions of the permits and with Laws and Regulations applicable to the performance of the Work, in accordance with General Conditions, Paragraphs 7.08 Permits and 7.10 Laws and Regulations.

D. Inform Owner's Representative of conflicts between permit requirements and the Contract Documents. Comply with permit requirements.

E. Copies of permits obtained by Owner will be provided by the Owner's Representative. Maintain a notebook of permits onsite during construction.

1.02 SUMMARY OF PERMITS TO BE OBTAINED BY CONTRACTOR

A. Contractor Obtained Permits: Apply for and obtain the following permits:

Permitting Authority	Permit Name	Permittee
ND Department of Health	Stormwater Permit (NDPES)	Owner/Contractor

B. Complete the permit applications and submit to the permitting agency. Coordinate with the Owner's Permit Coordinator as necessary to clarify permit requirements. Unless the permitted activity is specifically limited, permits obtained cover the entire Work.

1.03 SUMMARY OF PERMITS OR APPROVALS OBTAINED BY OWNER

A. The following permits have been or are in the process of being obtained by Owner:

Permitting Authority	Permit Name	Permittee
USACE	Section 408 A	Owner
USACE	National Environmental Policy Act Compliance	
USACE	Clean Water Act -Section 404	Owner
FEMA	Conditional Letter of Map Revision	

Permitting Authority	Permit Name	Permittee
US Fish and Wildlife Service	Section 7 Concurrence	
US Fish and Wildlife Service	Fish and Wildlife Coordination Act Compliance	
Natural Resources Conservation Service	Farmland Protection Policy	
ND Department of Health	Clean Water Act -Section 401	Owner
ND State Water Commission	Levee Modification – Application to Construct or Modify a Dam, Dike, Ring Dike, or other Water Resource Facility	Owner
ND State Water Commission / Office of the State Engineer	Sovereign Land Permit	Owner
North Dakota Department of Transportation	Project review and Approval	
State Historical Society of North Dakota	Section 106 Concurrence	
Burlington Northern Santa Fe Railway	Permission to work in railroad right-of-way	
Minot Park District	Project Review	
City of Minot	Project Review	
City of Minot	Project Approval	
City of Minot	Non-building Floodplain Development Permit	Owner

B. Copies of the permits and their requirements, if available, will be provided by Owner's Representative. Unless the permitted activity is specifically limited, permits obtained cover the entire work. Contractor shall comply with the requirements of all permits.

C. No additional compensation or additional Contract Times will be granted to Contractor because of delays by Owner in obtaining permits unless Contractor is unable to proceed and complete Work and such delays are demonstrated by the Contractor's Progress schedule. Provide Owner at least 30 calendar days' notice if the Contractor's schedule will be impacted due to permits not being secured.

1.04 PRE-CONSTRUCTION SUBMITTALS

A. Furnish copies referred to below in accordance with Section 01 33 00, Submittal Requirements.

B. Submit copies of permits referenced in Paragraph 1.02 and approvals for construction as required by Laws and Regulations and governing agencies within 14 days of approval.

C. Submit copies of compliance reports or other documentation whether submitted by Contractor to a regulatory agency or provided to Contractor by a regulatory agency within 2 days of receipt.

D. Upon the completion of the work, submit evidence of permit close-out for the permits held by Contractor, except stormwater-related permits, prior to Owner's issuance of Final Completion.

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION (NOT USED)

END OF SECTION 01 41 26

SECTION 01 41 26.13

NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

PART 1: GENERAL

1.01 GENERAL

A. This section covers best management practices (BMPs) to be implemented for prevention of storm water pollution as required by the National Pollutant Discharge Elimination System (NPDES). The North Dakota Department of Health is responsible for administering permits for NPDES in the state of North Dakota. The requirements herein supplement those covered in Section 01 41 26, Permits.

1. Definitions: The following terms apply to this specification and the General Permit, unless redefined in subsequent paragraphs.

a. “EPA" means the United States Environmental Protection Agency.

b. “NPDES” means the National Pollutant Discharge Elimination System.

c. “NDPDES” means North Dakota Pollutant Discharge Elimination System.

d. "BMP" means Best Management Practices.

e. "General Permit" means the permit authorizing the discharge of storm water associated with a construction activity under the National Pollutant Discharge Elimination System/State Disposal System Permit Program.

f. "Owner" as referred to in the general permit shall mean the City of Minot.

g. "SWPPP" means Stormwater Pollution Prevention Plan.

h. "Notice of Intent (NOI)" means the application to be filed with the state to receive a general permit for storm water discharges associated with a construction activity.

1.02 SUBMITTALS

A. The following shall be submitted in accordance with the front end documents:

1. Preconstruction Submittals:

a. Stormwater Pollution Prevention Plan (SWPPP). An electronic template of the SWPPP is available on the North Dakota Dept. of Health web site www.ndhealth.gov/WQ/Storm/Construction/ConstructionHome

b. Prepare a specific SWPPP and submit to the Owner’s Representative along with the Application in accordance with the General Permit and these Specifications. The Owner’s Representative will review the SWPPP within 7 calendar days once a complete and correct submittal is received.

1) Submit a Notice of Intent (NOI) to the Owner’s Representative for review and signature prior to transmitting to the state. An electronic template of the NOI is available on the North Dakota Dept. of Health

web site
www.ndhealth.gov/WQ/Storm/Construction/ConstructionHome

c. Closeout Submittals: Submit a Notice of Termination (NOT) to the Owner's Representative for review and signature prior to transmitting to the state.

d. Records: Submit a copy of all SWPPP revisions, if applicable, to the Owner's Representative along with all inspection reports and documentation required for record keeping as required by the Permit.

1.03 PERMIT COMPLIANCE AND REQUIREMENTS

A. Comply with the requirements of General Permit No. NDR10-0000, including the following:

1. Schedule: No contract construction activities that require an NPDES permit may commence until the State's General Permit is effective.

B. Application: Contractor will submit SWPPP and NOI to North Dakota Dept. of Health after completion of documents listed in 1.03.C.

C. Storm Water Pollution Prevention Plan (SWPPP):

1. Prepare and implement the SWPPP. At a minimum, the SWPPP shall consist of the following documents:

a. The SWPPP Drawing.

b. The Surface Water Map.

c. The Site Map.

d. The Narrative.

e. Forms, including Inspections, SWPPP Change Log, Issue Tracking.

2. Maintain the SWPPP at the site and make available to federal, state, and local officials as required by the General Permit.

D. The SWPPP Drawing: The drawings prepared for this project may be used for the base drawing for the SWPPP drawing. The plans used for the SWPPP drawing shall be neatly and clearly reproduced. Full size plan sheets are recommended, but shall not be smaller than 11x17 inches. The SWPPP drawing shall be clear, neat and readable. At a minimum, the drawing shall include the following.

1. The drawings shall be labeled "SWPPP."

2. The date and the name of the person who prepared the SWPPP.

3. Location and type of temporary and permanent erosion prevention and sediment control BMPs.

4. Tabulation of quantities of proposed BMPs (This may be included in the Narrative).

5. Details and appropriate notes for proposed BMPs.

6. If applicable, location of staging areas, temporary stockpiles, concrete washout areas, construction access, construction equipment washing area.

7. Notes describing final stabilization.

8. Other information required by the General Permit.

E. The Surface Water Map: This map can be a USGS 7.5 minute quad or equivalent. Identify surface waters within one mile of project boundary. Identify Special Waters and Impaired Waters as defined by the General Permit, that are within one mile of project boundary that will receive storm water from the site.

F. The Site Map: The drawings prepared for this project may be used for the base drawing for the site map. The plans used for the site map shall be neatly and clearly reproduced. Full size plan sheets are recommended, but shall not be smaller than 11x17 inches. The site map shall be clear, neat and readable. At a minimum, the map shall include the following.

1. The drawings shall be labeled "Site Map."

2. The date and the name of the person who prepared the site map.

3. Construction Site Boundaries.

4. Delineation of disturbed and non-disturbed areas.

5. Existing and final grades.

6. Delineation of drainage areas.

7. Flow direction arrows.

8. Soil types shall be summarized or delineated on the plan view. Soil information may be obtained from project borings, if provided in the project drawings. Soil information may also be obtained from soil surveys or other sources.

G. The Narrative: At a minimum, the written narrative shall include the following. A SWPPP template, if included with these specifications or one from the State, may be used for the Narrative.

1. A description of the overall project and the type of construction activity.

2. A description of temporary and permanent erosion prevention and sediment control BMPs.

3. Provide the drainage path runoff takes as it leaves the site.

4. Include the municipal, county or state-operated storm sewer or drainage ditch, as well as the first named waterbody or wetland to which the site drains

   a. Identify whether or not the waterbody is listed in the most recent North Dakota Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Water Needing Total Maximum Daily Loads or if a total maximum daily load (TMDL) has been developed for the waterbody.

   b. Identify the distance to the waterbody.

   c. Identify the proposed BMP's to be used to satisfy the additional requirements by the General Permit for the waterbody.

5. Describe procedures to be used to establish additional temporary SWPPP measures.

6. BMPs as necessary for the site conditions during construction.

7. A timeline for the installation of the BMPs.
8. Sizing calculations for temporary sedimentation basins if proposed.
9. Identify the following personnel, their experience and training. Confirm that their training meets the requirements of the General Permit:
    a. The person who prepared the SWPPP.
    b. The person who will oversee the implementation of the SWPPP.
    c. Identify the chain of command of all personnel on the site who will be responsible for the implementation of the SWPPP including the installation, inspection, maintenance, and removal of the BMPs.

PART 2: PRODUCTS

2.01 ROCK (STABILIZED) CONSTRUCTION ENTRANCE

A. Rock construction entrances shall conform to the dimensions, limits and thicknesses as indicated on the Drawings. The course aggregate shall not consist of crushed concrete or bituminous materials. Gradation of the course aggregate shall be coarse 2" washed, crushed rock.

B. Geotextile Fabric in accordance with NDDOT Standard Specification 858 Type S1 Separation shall be placed beneath the rock entrance.

2.02 TEMPORARY EROSION CONTROL BLANKET

A. Temporary Erosion Control Blanket (ECB) shall conform to NDDOT Standard Specification Section 856.

B. ECB type shall be chosen based on the construction drawing set, construction SWPPP, and length of time expected prior to continuing work or final stabilization in the area.

2.03 SILT FENCE

A. Silt Fence, posts and fasteners shall be in accordance with Drawings and project SWPPP. Materials used shall conform to Section 260 of NDDOT Specifications and as specified herein.

2.04 RUNOFF DIVERSION BERM AND TEMPORARY DITCH

A. Runoff Diversion Berm and Temporary Ditch shall conform to the minimum dimensions, limits, slopes and thicknesses as indicated on the Drawings.

B. Ditch shall be fully blanketed as indicated on the Drawings.

C. Contractor shall size, install and maintain berms and ditches for the redirection of all runoff in accordance with the project SWPPP. As subwatershed divides, slopes, exposed areas and drainage conditions change during construction, Contractor shall be responsible for coordinating and establishing the appropriate berms and ditches to direct runoff to temporary sedimentation locations and overflow locations.

2.05 TEMPORARY SEDIMENTATION BASIN

A. Temporary Sedimentation Basins shall be designed to meet the minimum requirements of the NDPDES construction stormwater general permit (Permit No. NDR10-0000) located in Appendix 1 of the permit.

2.06 INLET PROTECTION

A. Contractor shall provide inlet protection in accordance with the Drawings or as approved by Engineer. The protection measures shall be approved devices and methods to prevent the transportation of sediments into the storm sewer system.

B. Approved inlet protection devices include Wimco, LLC "curb & gutter", http://www.roaddrain.com/curbgutter.html

C. Contractor shall not use sediment control logs or portions of a silt fence for curb and gutter storm sewer inlet protection.

2.07 TEMPORARY ROCK FILTER DIKE

A. Temporary Rock Filter Dike shall be constructed of river run gravel with rock sizes ¾" to 1 ½" evenly graded, clear and washed. The dike shall be constructed to dimensions and locations as shown on the Drawings.

B. Temporary Rock Filter Dike along ditches and slopes shall be in accordance with NDDOT Standard Detail D-256-1.

2.08 EROSION CONTROL LOG (ECL)

A. ECL shall conform to NDDOT Standard Specification 261.

B. Stakeless ECL may also be used, such as compost or wood chip filled. Product information shall be submitted to Engineer per the SUBMITTALS section and the construction SWPPP shall be updated.

C. ECL shall be a minimum of 9" diameter.

2.09 CONCRETE WASHOUT AREA

A. Contractor shall furnish the appropriate measures for proper concrete washout.

B. Concrete Washout Area shall be as specified on Drawings with an impermeable layer to prevent seepage of wash water into soil or transport of wash water in runoff.

C. Contractor shall have elevated sides to any washout area to prevent run-in of stormwater to the washout pit (if a pit is used).

D. Concrete washout areas shall be sized for the level of work using the concrete washout area.

E. Concrete washouts shall be maintained and when they become inundated, the materials shall be removed and disposed of properly.

2.10 FLOTATION SILT CURTAIN

A. Flotation Silt Curtain shall be in accordance with NDDOT Standard Specification 262, shall meet the requirements for Type Moving Water and Work Area, and shall be constructed to the type and dimensions as shown on the Drawings.

2.11 TEMPORARY SEEDING

A. Temporary seeding shall use oats or winter wheat depending on time of year.

2.12 TEMPORARY MULCHING

A. Mulching includes spray-on tactifiers, paper hydraulic mulches, wood hydraulic mulches, and hydraulic bonded fiber matrix.

B. Product used must be appropriate for the application, including: compatibility with seed mix (if used), slope, functional longevity, expected water flow rates, and construction SWPPP limitations.

C. All appropriate soil amendments shall be included if seed mix applications are being used.

PART 3: EXECUTION

3.01 IMPLEMENTATION

A. Be responsible for fulfilling the obligations of the general permit.

B. Install the sediment and erosion control BMPs in accordance with the submitted SWPPP. Modify the BMPs if inspection indicates distress to the system or reveals unforeseen circumstances, or if directed by the Owner's Representative. Record updates to the plan. Initiate permanent stabilization as soon as practicable in any portion of the site where construction activities are complete.

3.02 MAINTENANCE

A. Be responsible for implementing and managing the erosion and sediment control BMPs until the entire work site has undergone final stabilization, and a Notice of Termination has been submitted to the Owner's Representative and the State.

3.03 RECORDS

A. Record on Contractor Quality Control reports:

1. Dates when major stripping and grading activities occur.
2. Dates when construction activities temporarily or permanently cease on a portion of the site.
3. When permanent stabilization practices are initiated.
4. Activities associated with inspection and maintenance.

3.04 ROCK (STABILIZED) CONSTRUCTION ENTRANCE

A. Rock (Stabilized) Construction Entrance shall be installed, inspected and maintained in accordance with the SWPPP so that sediment is not tracked onto public roadways.

B. Construction entrances and crossings, including on roadways and trails, shall be cleaned and maintained at the end of each work day as necessary.

C. Construction entrances must be constructed and maintained in a manner that protects existing driveways, curb and gutter, including turn radius of equipment.

D. Contractor shall sweep roads free of all sediment which is transported onto them as a result of construction. Sweeping shall be done at least daily if sediment is on the streets or more frequently if requested by the Owner or Owner's Representative, City, County, or NDDOT. The cost for sweeping shall be at the Contractor's expense.

E. Contractor shall be responsible for removal and recycling/disposal of construction entrances.

3.05 TEMPORARY EROSION CONTROL BLANKET

A. Temporary Erosion Control Blanket shall be installed, inspected and maintained in accordance with the SWPPP and the manufacturer's recommendations. Immediately repair erosion control blanket if damaged.

B. Temporary Erosion Control Blanket shall be installed in accordance with the manufacturer's recommendations and as shown on the Drawings.

C. Contractor shall replace worn or degraded Erosion Control Blankets when compliance inspections determine they are not effective anymore at no additional cost to owner.

D. At no additional cost to Owner, provide all maintenance, adjustments, repairs, and replacements to erosion control blankets as required to ensure their effectiveness throughout the Project.

3.06 SILT FENCE

A. Silt Fence shall be installed, inspected and maintained in accordance with the SWPPP. Remove collected material from the face of the fence when it has reached one half of the fence's height, or prior to any expected heavy runoff situation. The Owner or Owner's Representative may direct the installation of additional silt fence if removing the sediment deposit is not feasible.

B. Contractor shall remove silt fence upon successful vegetation establishment. Level and grade the area to prevent any obstruction of water flow.

C. Protect the filter fabric from moisture and ultraviolet exposure before placement.

3.07 RUNOFF DIVERSION BERM AND TEMPORARY DITCH

A. Prior to vegetation establishment, Runoff Diversion Berm and Temporary Ditch shall direct runoff from unvegetated areas to temporary sedimentation basins as shown on the Drawings, as set forth in the SWPPP and as required for proper performance of the Work.

Contractor shall be responsible for establishing temporary drainage areas and providing drainage to the appropriate location of temporary sedimentation basins for the Work.

B. Runoff Diversion Berm and Temporary Ditch shall be fully blanketed as shown in the Drawings.

C. The Contractor shall monitor performance of the ditch and berm for precipitation events and field verify the necessary ditch extents, depth and berm height and provide proper redirection of runoff to the intended locations for field-verified existing grades.

3.08 TEMPORARY SEDIMENTATION BASIN

A. Temporary Sedimentation Basins shall be installed and maintained in accordance with the SWPPP. Basin locations and sizes shown on the Drawings are for the temporary drainage areas shown on the Drawings. Contractor shall be responsible for establishing temporary drainage areas, verifying required storage volume and providing the appropriate size and location of basins for the Work.

B. Contractor shall size, install and maintain berms and ditches for the redirection of all runoff in accordance with the project SWPPP. As drainage conditions change during construction, Contractor shall be responsible for coordinating and establishing the appropriate berms and ditches to direct runoff to temporary sedimentation locations.

C. Contractor shall maintain the temporary sedimentation basin so that the minimum design standards of the NDPDES construction stormwater general permit (Permit No. NDR10-0000) are met at all times.

3.09 INLET PROTECTION

A. Contractor shall maintain each installed inlet protection device. Maintenance includes installation, cleaning as needed, repair or replacement as needed, removal for winter season and reinstallation in spring, and removal at end of project.

3.10 TEMPORARY ROCK FILTER DIKE

A. Rock filter dikes shall be placed as temporary sediment control method as indicated in the plans, or directed by the Engineer.

B. Rock filter dike shall be cleaned and maintained as required throughout the duration of the Work. Accumulated sediment and debris shall be removed, and rock shall be replaced as required.

C. Removal of rock filter dike shall be performed:

1. After contributing drainage area has been stabilized; or
2. At request of city of Minot, ND; or
3. At end of project.

3.11 EROSION CONTROL LOG (ECL)

A. ECL shall be installed, anchored, and maintained in accordance with the SWPPP and manufacturer's recommendations.

B. Accumulated sediment shall be removed when sediment height reaches ½ of log height.

C. Contractor shall replace worn or degraded ECL when compliance inspections determine they are not effective anymore at no additional cost to owner.

3.12 CONCRETE WASHOUT AREA

A. Concrete washout shall not be discharged at grade or otherwise allowed to flow into existing waterways, groundwater or storm sewers.

B. Washout materials must be disposed of in accordance with the SWPPP.

C. Concrete washout at the batch plant is an acceptable alternative.

D. Concrete washout areas must have a visible sign identifying it as a "concrete washout area".

E. Concrete washout areas must be identified on the construction SWPPP maps.

3.13 FLOTATION SILT CURTAIN

A. Flotation silt curtain shall touch the riverbed when protecting work areas as shown on the Drawings. Contractor shall provide flotation silt curtain with appropriate curtain length for the different seasons of work expected for this project.

B. Contractor shall ensure that curtains are properly weighted and anchored for the expected seasonal flow rate of the Mouse River for the duration of the work protected by that curtain.

C. Contractor to adjust Flotation Silt Curtain alignment as necessary to protect Work areas along waterways at all time.

3.14 TEMPORARY SEEDING

A. Contractor shall Temporary Seed disturbed areas as indicated by the SWPPP.

B. Temporary seeding shall use appropriate soil amendments to promote growth of temporary seeding.

C. Temporary seeding shall use either an ECB or temporary mulching to control erosion until the temporary seeding establishes.

3.15 TEMPORARY MULCHING

A. Temporary Mulching must be provided on disturbed areas as indicated by the SWPPP and on the construction drawings.

B. Manufacturer's recommended application rates shall be used or as directed by Engineer.

C. Contractor shall maintain mulched areas and repair or replace damaged areas until permanent cover is established.

END OF SECTION 01 41 26.13

DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01 42 13 - ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 GENERAL

A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of the Specifications, the following acronyms or abbreviations which may appear shall have the meanings indicated herein.

1.02 ABBREVIATIONS

AA	Aluminum Association
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABMA	American Bearing Manufacturer's Association – ABMA
ACGIH	American Conference of Governmental Industrial Hygienists
ACI	American Concrete Institute
AF&PA	American Forest and Paper Association
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AHA	American Hardboard Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AIHA	American Industrial Hygiene Association
AIIM	Association for Information and Image Management
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association International, Inc
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	The Engineered Wood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	Air-Conditioning and Refrigeration Institute
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Nondestructive Testing
ASQ	American Society for Quality
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWCI	American Wire Cloth Institute
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association

AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
CABO	Council of American Building Officials
CDA	Copper Development Association
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLFMI	Chain Link Fence Manufacturer's Institute
CLPCA	California Lathing and Plastering Contractors Association
CMAA	A division/section of the Material Handling Industry of America
CRSI	Concrete Reinforcing Steel Institute
DCDMA	Diamond Core Drilling Manufacturer's Association
DHI	Door and Hardware Institute
DIPRA	Ductile Iron Pipe Research Association
EI	Energy Institute
EIA	Electronic Industries Alliance
EPA	Environmental Protection Agency
ETL	Electrical Test Laboratories
FCC	Federal Communications Commission
FCI	Fluid Controls Institute
FEMA	Federal Emergency Management Association
FHWA	Federal Highway Administration
FM	Factory Mutual System
FPL	Forest Products Laboratory
HI	Hydronics Institute, Hydraulic Institute
HSWA	Federal Hazardous and Solid Waste Amendments
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IBC	International Building Code
ICC	International Code Council
ICEA	Insulated Cable Engineers Association
ICCEC	Electrical Code
ICC-ES	International Code Council Evaluation Service
IEEE	Institute of Electrical and Electronics Engineers
IESNA	Illuminating Engineering Society of North America
IFC	International Fire Code
IFGC	International Fuel Gas Code
IMC	International Mechanical Code
IME	Institute of Makers of Explosives
IPC	International Plumbing Code, Association Connecting Electronic Industries
IRC	International Residential Code
ISA	Instrument Society of America
ISDI	Insulated Steel Door Institute
ISEA	Industrial Safety Equipment Association
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
ITU-T	Telecommunications Standardization Sector of the International Telecommunications Union
LPI	Lightning Protection Institute

LRQA	Lloyd’s Register Quality Assurance
MBMA	Metal Building Manufacturer's Association
MIL	Military Standards (DoD)
MPTA	Mechanical Power Transmission Association
MSS	Manufacturers Standardization Society
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
NAASCO	National Association of Sewer Service Companies
DASMA	Door and Access Systems Manufacturers Association International
NAPF	National Association of Pipe Fabricators
NBBPVI	National Board of Boiler and Pressure Vessel Inspectors
NCCLS	National Committee for Clinical Laboratory Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NETA	International Electrical Testing Association
NFPA	National Fire Protection Association or National Fluid Power Association
NISO	National Information Standards Organization
NIST	National Institute of Standards and Technology
NLGI	National Lubricating Grease Institute
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NWWDA	National Wood Window and Door Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PPI	Plastic Pipe Institute
RCRA	Resource Conservation and Recovery Act
RIS	Redwood Inspection Service, a division of the California Redwood Association, CRA
RMA	Rubber Manufacturers Association
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SDI	Steel Door Institute, Steel Deck Institute
SHPO	State Historical Preservation Office
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPFA	Steel Plate Fabricator’s Association
SPIB	Southern Pine Inspection Bureau
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Society for Protective Coating
SSPWC	Standard Specifications for Public Works Construction
STLE	Society of Tribologists and Lubricating Engineers
TAPPI	Technical Association of the Worldwide Pulp, Paper, and Converting Industry
TFI	The Fertilizer Institute
TIA	Telecommunications Industries Association
TPI	Truss Plate Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
USACE	United States Army Corps of Engineers

WCLIB	West Coast Lumber Inspection Bureau
WDMA	National Window and Door Manufacturers Association
WEF	Water Environment Federation
WI	Woodwork Institute
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 42 19 – REFERENCE STANDARDS

PART 1 – GENERAL

1.01 GENERAL

A. **Titles of Sections and Paragraphs:** Titles and subtitles accompanying specification sections and paragraphs are for convenience and reference only and do not form a part of the Specifications.

B. **Applicable Publications:** Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is indicated, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Contract is advertised for Bids shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth in the Specifications or shown on the Drawings will be waived because of any provision of or omission from said standards or requirements.

C. **Specialists, Assignments:** In certain instances, specification text requires (or implies) that specific Work is to be assigned to specialists or expert entities who must be engaged to perform that Work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of Work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of Contract requirements remains with the Contractor.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. The Contractor shall construct the Work in accordance with the Contract Documents and the referenced portions of those referenced codes, standards, and specifications.

B. References to "Building Code" or “International Building Code" shall mean International Building Code of the International Code Council (ICC) as amended by the local jurisdiction. Similarly, references to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean International Mechanical Code, International Plumbing Code and International Fire Code of the International Code Council (ICC) as amended by the local jurisdiction. "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the Work is advertised for Bids shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.

C. In case of conflict between codes, reference standards, drawings, and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and direction prior to ordering or providing

any materials or furnishing labor. The Contractor shall bid for the most stringent requirements.

D. References to "OSHA Regulations for Construction" shall mean **Title 29, Part 1926, Construction Safety and Health Regulations,** Code of Federal Regulations (OSHA), including all changes and amendments thereto.

E. References to "OSHA Standards" shall mean **Title 29, Part 1910, Occupational Safety and Health Standards,** Code of Federal Regulations (OSHA), including all changes and amendments thereto.

F. **Applicable Standard Specifications**: References in the Contract Documents to "Standard Specifications" shall mean the City of Minot Standard Specifications and details.

1.03 REGULATIONS RELATED TO HAZARDOUS MATERIALS

A. The Contractor shall be responsible that all Work included in the Contract Documents, regardless if indicated or not, shall comply with all EPA, OSHA, RCRA, NFPA, and any other federal, state, and local regulations governing the storage and conveyance of hazardous materials, including petroleum products.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

- END OF SECTION -

DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01 45 00 - QUALITY CONTROL

PART 1 -- GENERAL

1.01 DEFINITION

A. Specific quality control requirements for the Work are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the Work beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

1.02 INSPECTION AT PLACE OF MANUFACTURE

A. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by the Engineer at the place of manufacture.

B. The presence of the Engineer at the place of manufacture, however, shall not relieve the Contractor of the responsibility for providing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Engineer.

1.03 SAMPLING AND TESTING

A. Unless otherwise indicated, all sampling and testing will be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered; however, the Owner reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the Engineer will assure the Owner that the quality of the workmanship is in full accord with the Contract Documents.

B. Any waiver by the Owner of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the testing or other quality assurance requirements originally indicated, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any requirements of the Contract Documents.

C. Notwithstanding the existence of such waiver, the Engineer reserves the right to make independent investigations and tests, and failure of any portion of the Work to meet any of the requirements of the Contract Documents, shall be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such Work in accordance with the General Conditions.

1.04 INSPECTION AND TESTING SERVICE

A. Inspection and testing laboratory service shall comply with the following:

a. Unless indicated otherwise by the Technical Specifications, the Owner will appoint, employ, and pay for services of an independent firm to perform inspection and testing or will perform inspection and testing itself.

b. The Owner or independent firm will perform inspections, testings, and other services as required by the Engineer under Paragraph 1.3C above.

c. Reports of testing, regardless of whether the testing was the Owner's or the Contractor's responsibility, will be submitted to the Engineer in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

d. The Contractor shall cooperate with the Owner or independent firm and furnish samples of materials, design mix, equipment, tools, storage, and assistance as requested.

e. The Contractor shall notify Engineer 48 hours prior to the expected time for operations requiring inspection and laboratory testing services.

f. Retesting required because of non-conformance to requirements shall be performed by the same independent firm on instructions by the Engineer. The Contractor shall bear all costs from such retesting.

g. For samples and tests required for Contractor's use, the Contractor shall make arrangements with an independent firm for payment and scheduling of testing. The cost of sampling and testing for the Contractor's use shall be the Contractor's responsibility.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION

3.01 INSTALLATION

A. **Inspection**: The Contractor shall inspect materials or equipment upon the arrival on the job site and immediately prior to installation, and reject damaged and defective items.

B. **Measurements**: The Contractor shall verify measurements and dimensions of the Work, as an integral step of starting each installation.

C. **Manufacturer's Instructions**: Where installations include manufactured products, the Contractor shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

- END OF SECTION -

DIVISION 1 – GENERAL REQUIREMENTS
SECTION 01 50 00 – TEMPORARY FACILITIES AND CONTROLS

PART 1 -- GENERAL

1.01 GENERAL

Provide the following utilities and facilities when required to complete the Work. Maintain the site and environment at an acceptable standard throughout the course of the project. Costs for providing these facilities and services shall be included in the base bid for the project and shall be included in the unit or lump sum price of the work items to which it is appurtenant.

1.02 COMPLIANCE WITH CODES

Comply with all codes and regulations applicable to the installation and maintenance of temporary utilities.

1.03 WATER CONTROL

Make provisions for maintaining proper drainage of the work area. Preserve and maintain natural drainage patterns. Remedy situations which could cause excessive erosion including the use of drainage checks or water bars on slopes subject to erosion.

1.04 NOISE CONTROL

Maintain equipment, particularly muffling systems on internal combustion engines, so that acceptable noise levels are not exceeded. If on-site generators are used, locate in areas where the sound will be least offensive. Provide sound barriers if needed.

1.05 EASEMENTS, RIGHT-OF-WAY, PERMITS, LAWS, AND ORDINANCES

A. The rights-of-way and any temporary working easements shown on the plans have been acquired or will be acquired by the Owner prior to the time the Contractor's work is commenced in the field.

B. The Contractor shall confine his construction to the area within the right-of-way or permanent and temporary construction easements as acquired by the Owner.

C. The Contractor shall be responsible for all damage He/She causes to property outside the boundaries of the easement/right-of-way and shall make satisfactory settlement for such damage directly with the property owner and/or tenants involved.

D. After completion of construction, the Contractor shall, within the length of time stipulated in these specifications, restore the work area as nearly as possible to the condition in which they existed prior to the Contractor's use.

E. If it is necessary or desirable that the Contractor use or occupy land outside of the Owner's right-of-way or easement, the Contractor shall obtain written consent from or execute a written agreement with the landowner and tenant of such land permitting such

operation and furnish a copy of the signed consent form or written agreement to the Engineer.

The Contractor shall not enter for pipe delivery or occupy for any other purpose with men, tools, equipment, construction materials, or with materials excavated from the pipe trench, any private property outside the designated right-of-way/easement boundaries without such written permission from the landowner and tenant of the entered or occupied property.

F. The Contractor shall, at own expense, procure all permits, certificates, and licenses required by law for the execution of the work. The Contractor shall comply with all federal, state, or local law ordinances or rules and regulations relating to the performance of the work. Unless otherwise shown in the plans and specifications, any plumbing work shall be in accordance with the North Dakota Plumbing Code.

The permits obtained contain requirements which affect the cost of project work and some permanent permits may require supplementary work permits and fees to execute construction. Contractor shall comply with the permit requirements and obtain and pay the fees involved with the supplementary work permits.

1.06 TRANSPORTATION OF MATERIALS AND EQUIPMENT

The use of public roadways by the Contractor, his subcontractors, and his suppliers to transport equipment and other heavy materials to and from the job site shall be in compliance with the applicable city, county, and state highway requirements including the seasonal legal load and speed limitations.

1.07 BARRICADES AND LIGHTS IN STREETS AND PUBLIC RIGHT-OF-WAY

All open trenches and other excavations shall be provided with suitable barriers, signs, and lights to the extent that adequate protection is provided to the public against accident by reason of such open construction. Obstructions, such as material piles and equipment, shall be provided with similar warning signs and lights.

Materials stored upon or alongside public streets, roads, and highways shall be so placed and the work at all times shall be so conducted as to cause the minimum obstruction and inconvenience to the traveling public. All barricades, signs, warning lights, and other protective devices shall be in conformance with the minimum requirements of the Manual on Uniform Traffic Control Devices and shall be installed and maintained in conformance with applicable statutory requirements, and where within highway rights-of-way, as required by the authority having jurisdiction thereover.

1.08 FIRE DANGER

Take all steps to minimize fire danger in the vicinity of and adjacent to the construction site. Provide labor and equipment to protect the surrounding private property from fire damage resulting from construction operations. All costs arising from fire or the prevention of fire shall be at the expense of the Contractor.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 57 00 - TEMPORARY CONTROLS

PART 1 -- GENERAL

1.01 GENERAL

A. The use of explosives will not be permitted.

B. Schedule and conduct all Work in a manner that will minimize environmental impacts.

1.02 DUST CONTROL

A. The Contractor shall prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for any damage resulting from dust originating from its operations. The dust control measures shall be continued until the Contractor is relieved of further responsibility by the Engineer. The Owner will have the right to halt production, at no cost to the Owner, if the Contractor fails to comply with dust control provisions, until such time that the Contractor is in compliance with the dust control provisions.

1.03 RUBBISH CONTROL

A. During the progress of the Work, the Contractor shall keep the Site and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the Site, and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the Site in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws, and to the particular requirements of Part 1926 of the OSHA Safety and Health Standards for Construction.

1.04 SANITATION

A. **Toilet Facilities:** Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.

B. **Sanitary and Other Organic Wastes:** The Contractor shall establish a regular collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the Site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

1.05 OTHER ENVIRONMENTAL CONTROLS

A. **ENVIRONMENTAL POLLUTION:** Provide all labor, materials and equipment needed to prevent environmental pollution in accordance with applicable laws and regulations. Environmental pollution is defined as the presence of chemical, physical or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; affect other species; or degrade the utility of the environment for aesthetic and/or recreational purposes. Environmental protection procedures shall consider protection of air, water and land; as well as managing noise and solid waste.

B. **CHEMICALS:** All chemicals used during project construction or furnished for project operation, whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 66 00 – PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 -- GENERAL

1.01 GENERAL

Provide secure storage and protection for products to be incorporated into the Project, and maintain protection for products after installations and until completion of the Project.

1.02 DELIVERY OF MATERIALS

A. All materials delivered to the site shall be secured and protected during transport in compliance with manufacturer's instructions.

1.03 STORAGE

A. Store products immediately on delivery and protect until installed in the Project. Store products in accordance with manufacturer's instruction, keeping seals and labels intact and legible. Upon request, a copy of the manufacturer's storage instructions shall be provided to the Engineer.

B. Store products subject to damage by the elements in suitable weather-tight enclosures.

1. Maintain temperatures within ranges required by manufacturer's instructions.

2. Provide humidity control for sensitive products, as required by manufacturer's instructions.

3. Store unpacked products on shelves, in bins, or in neat piles accessible for inspection.

C. Exterior Storage

1. Provide substantial platforms, blocking or skids to support fabricated products above ground and prevent wetting, soiling, or staining. Cover products, subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.

2. Store loose granular materials on solid surfaces such as paved areas, or provide plywood or sheet materials to prevent mixing with foreign matter.

a. Provide surface drainage to prevent flow or ponding of rainwater.

b. Prevent mixing of refuse or chemically injurious materials or liquids.

c. Arrange storage in manner to provide easy access for inspection.

1.04 MAINTENANCE OF STORAGE

B. Maintain periodic system of inspection of stored products on scheduled basis to assure that:

1. State of storage facilities is adequate to provide required conditions.

2. Required environmental conditions are maintained on continuing basis.

3. Surfaces of products exposed to elements are not adversely affected. Any weathering of products, coatings, or finishes is not acceptable under requirements of Contract Documents.

B. Equipment which requires servicing during long term storage shall have complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed instructions shown on exterior of package. Comply with manufacturer's instructions on scheduled basis.

1.05 PROTECTION AFTER INSTALLATION

A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of Project.

B. Control traffic to prevent damage to equipment and surfaces.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION – 01 71 13 - MOBILIZATION

PART 1 -- GENERAL

1.01 GENERAL

A. Mobilization shall include the obtaining of all permits not obtained by the Owner, moving equipment and materials onto the site, and shall include the following principal items all as required for the proper performance and completion of the Work:

1. Providing Bonds and Insurance, including Railroad insurance requirements as applicable.

2. Moving on to the site of all Contractor's plant and equipment required for first month operations.

3. Arranging for and erection of Contractor's work and storage yard.

4. Obtaining all required permits.

5. Having all OSHA required notices and establishment of safety programs.

6. Having the Contractor's superintendent at the job site full time.

7. Submitting initial submittals.

8. Mobilization is limited to a maximum of 5 percent of the total bid.

B. Demobilization shall include moving all Contractor’s plant and equipment and surplus materials off the site and cleanup of the Contractor’s work and storage yard(s). When equipment is no longer utilized or needed by the Contractor, the equipment shall be moved off the site by Contractor or Owner may withhold payment for the demobilization component of the Mobilization bid item.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01 74 00 – CLEANING AND WASTE MANAGEMENT

PART 1 -- GENERAL

1.01 GENERAL

A. This section includes cleaning during construction and contract closeout and final cleaning on completion of the work.

B. At all times maintain areas covered by the Contract, adjacent properties, and public access roads free from accumulations of waste, debris, and rubbish caused by construction operations.

C. Conduct cleaning and disposal operations to comply with local ordinances and antipollution laws. Do not burn or bury rubbish or waste materials on project site. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner on the ground or in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

D. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

1.02 CLEANING DURING THE WORK

A. During execution of work clean the site, adjacent properties, and public access roads and dispose of waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

C. Provide containers for collection and disposal of waste materials, debris, and rubbish.

D. Remove grease, dust, dirt, stains, labels, and other foreign materials from exposed and semi-exposed surfaces.

E. Repair, patch, and touch-up marred surfaces to specified finish to match adjacent surfaces.

F. Cover or wet all loads of excavated material leaving the site or of material being imported to prevent blowing dust.

1.03 FINAL CLEANING

A. At the completion of work and immediately prior to final inspection, cleaning of the entire project will be accomplished as follows: Remove debris from project site, complete final landscaping as needed, and clean around all appurtenances, including equipment inside of the appurtenances.

B. Remove grease, dust, dirt, stains, labels, and other foreign materials from sight-exposed interior and exterior finished surfaces of concrete manholes, including manhole floors and any above grade structures.

C. Remove grease, dirt, stains, labels, and other foreign materials from equipment installed in manholes such as air valves, meters, flow control valves, and piping. Remove all dirt and debris between the manhole covers and insulator pad.

D. Repair, patch, and touch-up marred surfaces to specified finish to match adjacent surfaces.

E. Remove from the Owner's property or easement all temporary structures and all materials, equipment, and appurtenances not required as a part of, or appurtenant to, the completed work.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION (Not Used)

- END OF SECTION -

DIVISION 02

EXISTING CONDITIONS

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 DESCRIPTION

A. All of the work included in this Section shall be completed in accordance with the following paragraphs as well as the General Requirements as set forth in Division 1 of these Specifications and in accordance with all of the provisions of the Contract Documents.

B. Work covered by this Section includes furnishing all supervision, labor, equipment, materials, and performing all operations necessary to demolish, salvage or abandon existing structures, and features as indicated on the Drawings, including but not limited to the following:

1. Conduct pre-construction property condition documentation inspection of residential properties to be protected during the Work.

2. Removal of existing features within the work limits.

3. Removal of concrete and bituminous pavement, roadway base aggregates/materials, including but not limited to sidewalks, driveways, streets, curb and gutter, etc.

4. Selective removal or demolition of concrete, steel, timber, brick, or other materials as shown on the Drawings and as necessary to accomplish the Work

5. Load, transport, and dispose offsite all other demolition materials, rubble, and gathered miscellaneous debris located above ground.

6. Backfill, compact and grade demolition excavations and inspection trench with soil in accordance with the levee earthwork requirements set forth in Section 31 20 00 Earthwork of the Specifications.

7. Perform Pre-Construction/Post-Construction Roadway documentation.

8. Perform Pre-Construction Damage Survey.

1.2 RELATED SECTIONS

A. 01 11 00 Summary of Work

B. 31 10 10 Clearing and Grubbing

C. 31 20 00 Earthwork

D. Stormwater Pollution Prevention Plan (SWPPP)

1.3 DEFINITIOINS

A. *Demolish* – is to completely remove a specified pipe, fitting, housing, feature or structure without regard for the conditions of the item after being removed.

B. *Salvage* – is to remove an item in a condition that they may be reused for a similar purpose.

C. *Abandon* – is to leave items in place without disturbing the surrounding area.

1.4 REFERENCES

A. North Dakota Department of Health Asbestos Control Program (https://www.ndhealth.gov/AQ/IAQ/ASB/)

B. Code of Federal Regulations (CFR) pt. 61, asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP)

C. 29 CFR Parts 1910 et. al., Occupational Safety & Health Administration (OSHA)

D. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. U.S. Army Corps of Engineers - Engineering Manuals (EM)

a. EM 385-1-1 Safety and Health Requirements (2008)

2. North Dakota Department of Transportation (NDDOT) Standard Specifications (2014)

a. Section 107.17 Removed Material

b. Section 202 Removals

1.5 JOB CONDITIONS

A. Contractor shall be solely responsible for evaluating existing facilities and Site conditions and considering all factors that may affect the progress or performance of the Work.

B. Contractor shall become the owner of materials generated by the demolition efforts and shall dispose of or recycle all of the demolition debris in accordance with all applicable law and regulations.

C. In the event that asbestos containing material (ACM), underground storage tanks (UST) or containers, or other hazardous materials are encountered during demolition activities, Contractor shall immediately stop work in that area and notify Engineer.

D. Access to the properties identified for demolition is subject to the scheduling restrictions shown on the Drawings and described in Section 01 11 00 Summary of Work.

1.6 SEQUENCING AND SCHEDULING

A. Contractor shall sequence removal of existing levees and construction of new levees in a manner such that the pre-project level of flood risk management can be maintained if a flood event occurs during the project. Contractor shall be responsible for construction of temporary levees to maintain the pre-project level of flood risk management during the project. Contractor is required to reconstruct temporary levees within 24 hours if flooding is forecasted.

B. Contractor shall notify Engineer before proceeding with demolition work to provide Owner the opportunity to inspect the work area prior to, during, and upon completion of work.

C. Contractor shall stage demolition work so as not to damage other portions of the work not scheduled for removal.

D. Contractor shall notify Engineer of any un-documented features that are discovered in

the work area prior to removal or demolition.

E. Contractor shall stage demolition work so as not to damage any newly constructed items.

F. Contractor shall be responsible for sequencing of all demolition work as it relates to implementation of the Stormwater Pollution Prevention Plan (SWPPP) for the work. Erosion and sediment control measures must be installed prior to disturbing existing vegetated land cover, removing existing pavements or structures or exposing erodible soils.

1.7 QUALITY ASSURANCE

A. Contractor shall assume full responsibility for any and all damages resulting from his Work.

B. Damage to existing structures or newly constructed items as a result of Contractor's activities shall be repaired at Contractor's expense to the satisfaction of Owner. Contractor shall repair or remove items that are damaged. Repair or replacement of damaged items will be performed to condition at least equal to that which existed prior to start of Work at no additional cost to Owner.

C. Provide protection of persons and property throughout progress of Work. Proceed in such a manner as to minimize spread of dust and flying particles and to provide safe working conditions for personnel.

D. Obtain permission from Engineer before abandoning or removing any existing structures, conduit, materials, equipment and appurtenances that are not specified for demolition in the drawings.

E. Contractor shall utilize equipment, materials, and procedures which are anticipated to meet the quality requirements specified.

F. Contractor shall make accommodations for Engineer to observe base and fill layers before further work is performed thereon. Tests of fill and/or bedding layers may be taken by Owner.

G. Contractor shall perform all excavation, backfilling, compaction and grading of soils at demolition areas within the proposed levee right-of-way in accordance with the earthwork requirements for levee construction.

1.8 SUBMITTALS

A. Pre-Construction/Post-Construction Roadway Documentation and Repair: Contractor shall submit to Engineer the documentation gathered during inspection of roadways.

B. Pre-Construction Damage Survey: Contractor shall submit to Engineer the documentation gathered during damage surveys.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 GENERAL

A. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from project site daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by Owner. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections of these Specifications. In the interest of conservation, salvage shall be pursued to the maximum extent possible; salvaged items and

materials shall be disposed of as specified.

B. Contractor shall demolish structures in a safe, orderly manner, which includes the use of temporary rails, barricades and nets in accordance with applicable federal, state, and local regulations; and shall protect all adjacent structures, utilities, and services during demolition.

C. Contractor shall use demolition methods to reduce or eliminate vibration that may cause damage to nearby structures.

D. Precautions shall be taken to prevent damage to existing features and completed Work which is to remain in place, be reused, or remain the property of Owner and to any new Work constructed or installed under this Contract. Any damage to such Work shall be repaired or replaced as approved by Owner at no additional cost to Owner. Contractor shall ensure that structural elements are not overloaded as a result of the demolition Work. Shoring, bracing, and temporary supports shall be designed, installed and maintained, as required to maintain structural integrity.

E. Dust resulting from demolition shall be controlled to avoid creation of a nuisance in the surrounding area. The use of water will not be permitted when it would result in or create hazardous or objectionable conditions such as erosion, transport of sediments into river, pollution, flooding or ice.

F. The use of explosives will not be permitted.

G. The burning of refuse and debris on the project site will not be permitted.

H. Title to material and equipment to be demolished, except Owner salvage and historical items, is vested in Contractor upon receipt of notice to proceed. Owner will not be responsible for the condition, loss or damage to such property after notice to proceed.

3.2 PRE-CONSTRUCTION/POST-CONSTRUCTION ROADWAY DOCUMENTATION AND REPAIR

A. Contractor shall identify all access routes and notify respective roadway owners of preconstruction meeting.

B. Preconstruction meeting will include the following discussion and notification relevant to Site access:

1. Contractor shall indicate what roads they anticipate hauling on
2. Contractor shall complete Pre-Condition Assessment of access roads prior to any construction hauling or construction activities.
3. 48-hour notification required prior to hauling
4. Hauling hour restriction
5. Dust Control
6. Noise Control

C. Pre-Condition Assessment - Contractor shall coordinate a pre-condition roadway walk through with Engineer and access road owner to document existing deterioration and video access roads.

D. Post-Condition Inspection – prior to Substantial Completion, Contractor shall coordinate a post- condition walk through with Engineer and access road owner to document possible deterioration resulting from Contractor's operations and video access roads.

E. Contractor shall make repairs to roadways damaged as a result of Contractor's activities.

Necessary repairs identified by the assessment shall be repaired at Contractor's expense. Coordination with City and NDDOT officials shall be performed at Contractor's expense.

3.3 PRE-CONSTRUCTION DAMAGE SURVEY

A. Preconstruction Damage Survey

Contractor shall conduct preconstruction property damage surveys prior to the start of construction. These surveys shall be performed initially and repeated later as required. Contractor shall have both letter and personal contact with residents, institutional operators, and/or business establishments that are within the project work limits and near enough for ground and noise vibrations to be considered objectionable. This contact shall be made prior to beginning construction. Contractor shall submit a list of those individuals and companies contacted.

B. Preconstruction Condition Surveys

Contractor shall photograph facilities within the work limits, including, but not limited to, roads, borrow areas, sidewalks, trees, shrubs, and lawns prior to working in an area in order to document the preconstruction conditions. Contractor shall also take photographs of the conditions in the same areas upon completion of the project.

C. Preconstruction Survey Reports

Contractor shall prepare, prior to the start of contract construction work/activities at each work site, each preconstruction damage report containing surveys, photographs, sketches and diagrams, field notes taken, descriptions and reports, all signed and witnessed by the persons involved in the survey. Thereafter, as contract work progresses, Contractor shall resurvey as often as necessary, in order to verify the adequacy of Contractor's construction methods for prevention of damage and to obtain sufficient evidence for use in defense against possible claims for damage from third parties. Data obtained by Contractor from each resurvey shall be submitted to the Owner within 5 calendar days after it is requested by the owner or engineer.

D. Contractor Responsibility

Nothing contained herein shall relieve Contractor of responsibility for claims arising from its construction operations. Failure to inspect any structure, whether or not required by the contract documents, or inadequacy of the inspections shall not relieve Contractor of its responsibilities.

3.4 EXPLORATION TRENCH

A. Contractor shall furnish exploration trench excavation as described in Section 31 20 00 of these Specifications.

B. All utilities or other features observed in the fully excavated exploration trench shall be removed as specified to prepare the corridor for levee construction. Contractor shall inform Engineer of all found features and utilities prior to removal. Locations of found features and utilities shall be documented on Contractor's record documents.

C. Contractor shall backfill, compact and grade exploration trench excavations in accordance with the levee earthwork requirements set forth in Section 31 20 00 Earthwork of the Specifications.

3.5 DEMOLITION AND REMOVALS

A. All demolition materials shall be removed from below grade spaces prior to backfilling and compaction. Debris shall not be backfilled or buried on site.

B. Contractor shall backfill, compact and grade demolition excavations in accordance with the levee earthwork requirements set forth in Section 31 20 00 Earthwork of the Specifications.

C. Contractor may use any appropriate and legal method for demolition, except blasting, as Contractor deems most practicable considering all applicable factors and requirements.

D. Contractor shall conduct all demolition activities such as to prevent damage to all adjacent real and personal property.

E. Contractor shall perform removal of pavement in accordance with NDDOT Standard Specification 2104.

3.6 HAULING AND TRANSPORTATION OF DEMOLITION DEBRIS

A. Contractor shall be responsible for and shall complete all the work necessary to ensure that material removed from the Site will be accepted by the disposal or recycling facility(s).

B. Contractor shall arrange for and provide transportation of demolition debris to off-site disposal or recycling facilities.

C. Contractor shall provide all equipment, materials and labor to load all vehicles planned for transportation of demolition debris.

D. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Federal, State and Local laws and regulations regarding hauling and disposal shall apply.

E. Contractor shall prepare all forms necessary for waste profiling, acceptance, transportation, and disposal.

F. Materials removed from the Site shall be transported directly to the approved recycling and/or disposal facility. Contractor shall not change either route or mode of transport after commencing offsite transportation without Owner's written approval.

G. All transport vehicles shall be visually clean of soil, dust or other materials prior to vehicle departure from the Site.

H. Contractor is responsible for arranging weighing of transport vehicles for travel on public roadways.

I. Contractor shall maintain strict compliance with all federal, state and local laws, regulations, or requirements when transporting hazardous and non-hazardous soil or other materials from the Site to recycling and/or disposal facilities.

J. Any spill caused by Contractor's handling of any material shall be cleaned up at Contractor's sole expense.

3.7 SALVAGEABLE ITEM AND MATERIAL

A. Contractor shall salvage all metal scrap and other salvageable materials from the demolition materials, and load and transport the salvageable materials to an offsite facility acceptable to Owner. Salvageable materials shall include those materials that are recyclable. Contractor shall pay all costs or receive all proceeds that may result from salvage of metal scrap and other salvageable materials.

B. Contractor shall salvage items and material to the maximum extent possible.

1. Items Salvaged for Owner

a. Salvaged items to remain the property of Owner at Owner's request shall be removed in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during

removal or storage shall be repaired or replaced to match existing items. Containers shall be properly identified as to contents.

2. Items Salvaged for Contractor

a. Material salvaged for Contractor shall become the property of Contractor and stored as approved by Engineer and shall be removed from Owner property before completion of the contract. Material salvaged for Contractor shall not be sold on the site.

3.8 DISPOSAL

A. Contractor shall load, transport, and dispose of all non-salvageable materials resulting from the demolition.

B. Contractor shall pay all transportation costs and other charges, tipping fees, and costs associated with the disposal of the demolition materials.

C. Contractor shall promote sound waste management practices such as waste recycling to limit the amount of material sent to approved landfills

D. All removed material shall be properly recycled, salvaged, or disposed of in an approved landfill. Disposition of all removed materials shall be approved by Owner and in accordance with all Local, State, and Federal laws.

E. Any hazardous materials shall be handled, transported, and disposed of at a landfill approved by Owner and according to federal, state and local laws.

F. Demolished and removed materials shall be the property of Contractor. Owner stakes no claims to materials.

G. Recycled materials shall be the property of Contractor. Owner stakes no claim to the materials.

H. Unsalvageable material, concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed of as specified.

3.9 BACKFILL

A. Contractor shall grade/backfill excavations associated with demolition activities in accordance with levee earthwork as set forth in Section 31 20 00 of the Specifications. Backfill, compaction (in lifts as specified), grading, quality assurance and quality control of excavations created for the purposes of demolition or other removals shall be conducted in accordance with the Section 31 20 00 of these Specifications for construction of levee embankments.

3.10 DEWATERING AND EROSION/SEDIMENT CONTROL

A. Groundwater and surface water at excavations shall be managed in accordance with the following Sections of these Specifications:

1. Stormwater Pollution Prevention Plan (SWPPP) for the Work

B. Contractor shall restore the areas affected by the demolition work to minimize erosion of exposed surfaces in accordance with the Stormwater Pollution Prevention Plan (SWPPP) for the Work.

C. Contractor shall implement erosion and sediment control best management practices (BMPs), furnish temporary vegetation cover and permanently restore the areas affected by the demolition work to minimize erosion of exposed surfaces in accordance in accordance with the Stormwater Pollution Prevention Plan (SWPPP) for the Work.

3.11 PROTECTION REQUIREMENTS

A. Protection of Personnel

1. During the demolition work Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workers remove debris or perform other work in the immediate area. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, may be allowed to remain standing without additional bracing, shoring, of lateral support until demolished. Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

B. Protection of Existing Property

1. Before beginning any demolition work, Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of Owner; any damaged items shall be repaired or replaced as approved by Engineer. Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

2. The project abuts private property. Contractor shall limit activities to the minimal area necessary to perform the Work and shall not conduct activities beyond the construction limits shown on the Drawings. Contractor shall not disturb any private properties unless an easement is present and shown on the Drawings.

C. Protection From the Weather

1. Salvageable materials and equipment shall be protected from the weather at all times.

END OF SECTION 02 41 00

DIVISION 03

CONCRETE

SECTION 03 11 13.00 10

STRUCTURAL CAST-IN-PLACE CONCRETE FORMING

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 306R_10	(1998; R 2010) (Old Weather Concreting)
ACI 347	(2004; Errata 2008; Errata 2012) Guide to Formwork for Concrete

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1995; R 2004) Basic Hardboard

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA L870	(2010) Voluntary Product Standard, PS 1-09, Structural Plywood

ASTM INTERNATIONAL (ASTM)

ASTM C1074	(2011) Standard Practice for Estimating Concrete Strength by the Maturity Method
ASTM C1077	(2013b) Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation
ASTM C31	(2012) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39	(2012) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C578	(2012b) Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

1.02 SYSTEM DESCRIPTION

The design, engineering, and construction of the formwork is the responsibility of the Contractor. Formwork and shoring to be designed by a Professional Structural Engineer currently registered in the state of North Dakota and having a minimum of three (3) years experience in this type of design work. Design formwork in accordance with methodology of ACI 347 for anticipated loads, lateral pressures, and stresses, and capable of withstanding the pressures resulting from placement and vibration of concrete. Comply with the tolerances specified. Design the formwork as a complete system with consideration given to the effects of cementitious materials and mixture additives such as fly ash, cement type, plasticizers, accelerators, retarders, air entrainment, and others.

Monitor the adequacy of formwork design and construction prior to and during concrete placement as part of the Contractor's approved Quality Control Plan. Submit design analysis and calculations for form design and methodology used in the design.

1.03 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Acknowledgement that products submitted meet requirements of standards referenced.

Manufacturer's installation instructions. Manufacturer and type of proposed form materials. Manufacturer and type of proposed form ties.

Manufacturer and type of proposed form coating material. Formwork designer qualifications required for the following:

Walls and columns with vertical pour heights exceeding 15 FT. Elevated floor slabs and beams.

If requested, submit structural analysis and concrete strength data used in planning and implementing form removal and shoring.

PART 2: PRODUCTS FORM MATERIALS

Submit manufacturer's data, including literature describing form materials, accessories, and form releasing agents.

2.01 FORMS FOR CLASS B FINISH

This class of finish shall apply to all surfaces except those specified to receive Class C.Forms for Class B finished surfaces shall be plywood panels conforming to APA L870, Grade B-B concrete form panels, Class I or II. Other form materials or liners may be used provided the smoothness and appearance of concrete produced will be equivalent to that produced by the plywood concrete form panels. Forms for round wall surfaces shall be the prefabricated seamless type. Steel lining on wood sheathing will not be permitted. Do not use aluminum forms.

2.02 FORMS FOR CLASS C FINISH

Forms for Class C finished surfaces shall be shiplap lumber; plywood conforming to APA L870, Grade B-B concrete form panels, Class I or II; tempered concrete form hardboard conforming to AHA A135.4; other approved concrete form material; or steel, except that steel lining on wood sheathing

shall not be used. Forms for round wall surfaces may have one vertical seam. Do not use aluminum forms

A. Form Ties

1. Commercially fabricated for use in form construction.

   a. Do not use wire ties.

2. Constructed so that ends or end fasteners can be removed without causing spalling at surfaces of the concrete.

3. 3/4 inch minimum diameter cones on both ends.

4. Embedded portion of ties to be not less than 2 inches from face of concrete after ends have been removed.

5. Provide ties with built-in waterstops in all below grade level walls.

6. Through-wall ties that are designed to be entirely removed are not allowed in any water retaining structural feature.

B. Form Releasing Agents

Form releasing agents shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds. If special form liners are to be used, follow the recommendation of the form coating manufacturer. Submit manufacturer's recommendation on method and rate of application of form releasing agents.

C. Form Liner

Form Liner Finishes shall be:

1. Custom Herringbone Inset
2. Utility Brick
3. Split Face Stone

Both shall be manufactured per the plan details. Provide as indicated and as specified in Section 03 33 00.

PART 3: EXECUTION

3.01 INSTALLATION

A. Formwork

Forms shall be constructed true to the structural design and required alignment. Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified in Section 03 30 00.00 10 Cast-in-Place Concrete and conforming to construction tolerance given in TABLE 1. Continuously monitor the alignment and stability of the forms during all phases to assure the finished product will meet the required surface class or classes specified. Failure of any supporting surface either due to surface texture, deflection or form collapse shall be the responsibility of the Contractor as will the replacement or correction of unsatisfactory surfaces. Where concrete surfaces are to have a Class B

finish, joints in form panels shall be arranged as approved. When forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be re-used if there is any evidence of defects which would impair the quality of the resulting concrete surface. All surfaces of used forms shall be cleaned of mortar and any other foreign material before reuse.

3.02 CHAMFERING

All exposed joints, edges and external corners shall be chamfered by 1/2 inch molding placed in the forms unless the drawings specifically state that chamfering is to be omitted or as otherwise specified.

3.03 COATING

Forms for Class B and Class C finished surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.04 FORM REMOVAL

Forms shall not be removed without approval. The minimal time required for concrete to reach a strength adequate for removal of formwork without risking the safety of workers or the quality of the concrete depends on a number of factors including, but not limited to, ambient temperature, concrete lift heights, type and amount of concrete admixture, and type and amount of cementitious material in the concrete. It is the responsibility of the Contractor to consider all applicable factors and leave the forms in place until it is safe to remove them. In any case forms shall not be removed unless the minimum time, minimum ambient temperature, and minimum compressive strength requirements below are met, except as otherwise directed or specifically authorized. When conditions are such as to justify the requirement, forms will be required to remain in place for a longer period. All removal shall be accomplished in a manner which will prevent damage to the concrete and ensure the complete safety of the structure. Where forms support more than one element, the forms shall not be removed until the form removal criteria are met by all supported elements. Evidence that concrete has gained sufficient strength to permit removal of forms shall be determined by tests on control cylinders. All control cylinders shall be stored in the structure or as near the structure as possible so they receive the same curing conditions and protection methods as given those portions of the structure they represent. Control cylinders shall be removed from the molds at an age of no more than 24 hours. Prepare and test control cylinders in accordance with ASTM C31/C31M and ASTM C39/C39M at an independent laboratory that complies with ASTM C1077.Test within 4 hours after removal from the site.

A. Formwork Not Supporting Weight of Concrete

Formwork for walls, columns, sides of beams, gravity structures, and other vertical type formwork not supporting the weight of concrete shall not be removed in less than 24 hours after concrete placement is completed and may be removed as soon as concrete has hardened sufficiently to resist damage from removal. Leave forms and shoring used to support weight of concrete in place until concrete has attained its specified 28 day comprehensive strength.

B. Formwork Supporting Weight of Concrete

Formwork supporting weight of concrete and shoring shall not be removed until

structural members have acquired their specified 28 day compressive strength

3.05 INSPECTION

Forms and embedded items shall be inspected by the contractor in sufficient time prior to each concrete placement in order to certify to the Owner's Representative that they are ready to receive concrete. The results of each inspection shall be reported in writing. Submit field inspection reports for concrete forms and embedded items.

Table 1 Tolerances for Formed Surfaces	
1. Variations from the plumb:	
a. In the lines and surfaces of piers, walls and in arises	1/4 inch in any 10 feet of length Maximum for entire length – 1 inch
b. For exposed corner, control-joint grooves, and other conspicuous lines	1/4 inch in any 20 feet of length Maximum for entire length – ½ inch
2. Variation from the level or from the grades indicated on the drawings:	
a. In slab soffits, ceilings beam soffits, and in arises, measured before removal of supporting shores	1/4 inch in any 10 feet of length 3/8 inch in any bay or in any 20 feet of length
b. In exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines	1/4 inch in any bay or in any 20 feet of length Maximum for entire length -- 1/2 inch
3. Variation of the linear building lines from established position in plan	1/2 inch in any 10 feet 1 inch maximum
4. Variation of distance between walls.	1/4 inch per 10 feet of distance, but not more than 1/2 inch in any one bay, and not more than 1 inch total variation
5. Variation in the sizes and locations of sleeves, floor openings, and wall openings	Minus 1/4 inch, Plus 1/2 inch
6. Variation in cross-sectional dimensions of beams and in the thickness of slabs and walls	Minus 1/4 inch, Plus 1/2 inch
7. Footings:	
a. Variation of dimensions in plan	Minus 1/2 inch, plus 2 inches when formed or plus 3 inches when placed against unformed excavation
b. Misplacement of eccentricity	2 percent of the footing width in the direction of misplacement but not more than 2 inches
c. Reduction in thickness	Minus 5 percent of the specified thickness

END OF SECTION 03 11 13.00 10

SECTION 03 15 00.00 10

CONCRETE ACCESSORIES

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO T 111	(2011) Standard Method of Test for Mineral Matter or Ash in Asphalt Materials

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1995; R 2004) Basic Hardboard

ASME INTERNATIONAL (ASME)

ASME BPVC SEC IX	(2010) BPVC Section IX-Welding and Brazing Qualifications

ASTM INTERNATIONAL (ASTM)

ASTM A1011	(2013) Standard Specification for Steel, Sheet, and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability and Ultra-High Strength
ASTM A109	(2013) Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled
ASTM A167	(1999; R 2009) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A480	(2013b) Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
ASTM B152	(2013) Standard Specification for Copper Sheet, Strip, Plate, and Rolled Bar
ASTM B370	(2012) Standard Specification for Copper Sheet and Strip for Building Construction
ASTM C919	(2012) Use of Sealants in Acoustical Applications
ASTM C920	(2011) Standard Specification for Elastomeric Joint Sealants
ASTM D1751	(2004; E 2013; R 2013) Standard

	Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	(2004a; R 2008) Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion
ASTM D2628	(1991; R 2011) Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements
ASTM D2835	(1989; R 2012) Lubricant for Installation of Preformed Compression Seals in Concrete Pavements
ASTM D4	(1986; R 2010) Bitumen Content
ASTM D412	(2006a; R 2013) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D471	(2012a) Standard Test Method for Rubber Property - Effect of Liquids
ASTM D5249	(2010) Backer Material for Use with Cold-and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D6	(1995; E 2011; R 2011) Loss on Heating of Oil and Asphaltic Compounds
ASTM D7116	(2005) Standard Specification for Joint Sealants, Hot Applied, Jet Fuel Resistant Types, for Portland Cement Concrete Pavement
	U.S. ARMY CORPS OF ENGINEERS (USACE)
COE CRD-C 513	(1974) Corps of Engineers Specifications for Rubber Waterstops
COE CRD-C 572	(1974) Corps of Engineers Specifications for Polyvinylchloride Waterstops

1.02 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

PVC Waterstops;

Strip Type Waterstops;

Procedures for Splicing Waterstops;

SD-03 Product Data

Preformed Expansion Joint Filler Sealant

PVC Waterstops

Strip Type Waterstops SD-

04 Samples

Lubricant for Preformed Compression Seals Field-Molded Type

Non-metallic Materials PVC Waterstops

Strip Type Waterstops Splicing PVC Waterstops;

Splicing Strip Type Waterstops; SD-07

Certificates

Preformed Expansion Joint Filler Sealant

PVC Waterstops

Strip Type Waterstops

1.03 DELIVERY, STORAGE, AND HANDLING

Protect material delivered and placed in storage off the ground from moisture, dirt, and other contaminants. Deliver sealants in the manufacturer's original unopened containers. Remove sealants from the site whose shelf life has expired.

PART 2: PRODUCTS

Submit manufacturer's data, including literature describing form materials, accessories, and form releasing agents.

2.01 CONTRACTION JOINT STRIPS

A. Contraction joint strips shall be 1/8 inch thick tempered hardboard conforming to AHA A135.4, Class In lieu of hardboard strips, rigid polyvinylchloride (PVC) or high impact polystyrene (HIPS) insert strips specifically designed to induce controlled cracking in slabs on grade may be used.

Such insert strips shall have removable top section.

2.02 PREFORMED EXPANSION JOINT FILLER

Expansion joint filler shall be preformed material conforming to ASTM D1751 or ASTM D1752, Type I, or resin impregnated fiberboard conforming to the physical requirements of ASTM D1752. Submit certified manufacturer's test reports for premolded expansion joint filler strips, compression seals and lubricant to verify compliance with applicable specification. Unless otherwise indicated, filler material shall be 1/2 inch thick and of a width applicable for the joint formed. Backer material, when required, shall conform to ASTM D5249.

2.03 SEALANT

Joint sealant shall conform to the following:

A. Preformed Polycholoroprene Elastomeric Type ASTM D2628.

2.04 WATERSTOPS

Shop fabricate intersection and change of direction waterstops. Submit a sample of each material

consisting of a piece not less than 12 inches long cut from each 200 feet of finished waterstop furnished, but not less than a total of 4 linear feet of each type and size furnished. For spliced segments of waterstops to be installed in the work, furnish one spliced sample of each size and type for every 50 splices made in the factory and every 10 splices made at the job site for inspection and testing. Make the spliced samples using straight run pieces with the splice located at the mid-length of the sample and finished as required for the installed waterstop. The total length of each spliced sample shall be not less than 12 inches long. Submit waterstop materials and splice samples for inspection and testing identified to indicate manufacturer, type of material, size and quantity of material and shipment represented.

A. Non-Metallic Materials'

Waterstops, PVC Type:

1. Acceptable manufacturers:
   a. Greenstreak Plastic Products.
   b. Vinylex Corporation.
2. Materials:
   a. Virgin polyvinyl chloride compound not containing any scrap or reclaimed materials or pigment.
   b. Standard:
      COE CRD-C572.
3. In expansion joints:
   a. 9 IN wide by 3/8 IN thick bulb type waterstop.
   b. 2 IN minimum horizontal movement without rupturing.
   c. Greenstreak Plastic Products Style #754.
4. In joints as indicated on Drawings:
   a. 4 inches wide by 3/16 inch thick bulb type waterstop.
   b. Greenstreak Plastic Products Style #701.
5. In control joints:
   a. 6 IN wide by 3/8 IN thick with ribs and center bulb.
   b. Greenstreak Plastic Products Style #705.
6. In all other joints:
   a. 6 IN wide by 3/8 IN thick with ribs and center bulb.
   b. Greenstreak Plastic Products Style #705 or equal.
7. Provide hog rings or grommets at maximum 12 IN OC along length of the waterstop.
8. Provide factory-made waterstop fabrications at all changes in direction, intersections and transitions, leaving only straight butt splices for the field.

Submit a piece not less than 12 inch long cut from each 200 ft of finished waterstop furnished, but not less than a total of 4 ft of each type, size, and lot furnished. One splice sample of each size and type for every 50 splices made in the factory and every

10 splices made at the job site.

Make the splice samples using straight run pieces with the splice located at the mid-length of the sample and finished as required for the installed waterstop. The total length of each splice shall be not less than 12 inches long.

B. Non-Metallic Hydrophilic

Swellable strip type compound of polymer modified chloroprene rubber that swells upon contact with water shall conform to ASTM D412 as follows: Tensile strength 420 psi minimum; ultimate elongation 600 percent minimum. Hardness shall be 50 minimum on the type A durometer and the volumetric expansion ratio in distilled water at 70 degrees F shall be 3 to 1 minimum.

Waterstops, Preformed Strip Type:

1. Acceptable manufacturers:
   a. Hydrotite CJ by Greenstreak Plastics, Inc.
   b. Adeka Ultra Seal USA.
   c. Synko Flex.
   d. Volclay Waterstop Rx.
   e. Swellstop by Greenstreaks Plastics, Inc.
2. Materials:
   a. Hydrophilic type waterstop manufactured solely for the purpose of preventing water from traveling through construction joints.
   b. Hydrotite type CJ-0725-3K.

2.05 TESTS, INSPECTIONS, AND VERIFICATIONS

A. Materials Tests

1. Non-Metallic Waterstops

Samples of materials and splices will be visually inspected and tested by and at the expense of the Contractor for compliance with COE CRD-C 513 or COE CRD-C 572 as applicable. If a sample fails to meet the specification requirements, provide new samples and the cost of retesting will be deducted from payments due the Contractor.

B. Splicing Waterstops

1. Procedure and Performance Qualifications

Demonstrate procedure and performance qualifications for splicing waterstops in the presence of the Owner's Representative. Submit procedures for splicing waterstops for approval.

2. Non-Metallic Waterstops

Demonstrate procedure and performance qualifications for splicing non-metallic waterstops by the manufacturer at the factory and the Contractor at the job site by each making three spliced samples of each size and type of finished waterstop.

PART 3: EXECUTION

3.01 INSTALLATION

Joint locations and details, including materials and methods of installation of joint fillers and waterstops, shall be as specified and indicated. In no case shall any fixed metal be continuous through an expansion or contraction joint.

A. Contraction Joints

Contraction joints in slabs may be constructed by inserting tempered hardboard strips or rigid PVC or HIPS insert strips into the plastic concrete using a steel parting bar, when necessary, or by cutting the concrete with a saw after concrete has set. Make joints 1/8 inch to 3/16 inch wide and extend into the slab one-fourth the slab thickness, minimum, but not less than 1 inch. Contraction joints in floodwall shall be constructed as shown in the plans, and extend completely through the stem.

1. Joint Strips

Provide strips of the required dimensions and as long as practicable. After the first floating, groove the concrete with a tool at the joint locations. Insert the strips in the groove and depress them until the top edge of the vertical surface is flush with the surface of the slab. Float and finish the slab as specified. Working of the concrete adjacent to the joint shall be the minimum necessary to fill voids and consolidate the concrete. Where indicated, saw out the top portion of the strip after the curing period to form a recess for sealer. Discard the removable section of PVC or HIPS strips and leave the insert in place. Maintain true alignment of the strips during insertion.

2. Sawed Joints

Saw joints early enough to prevent uncontrolled cracking in the slab, but late enough that this can be accomplished without appreciable spalling.

Cutting shall be started as soon as the concrete has hardened sufficiently to prevent raveling of the edges of the saw cut. Cutting shall be completed before shrinkage stresses become sufficient to produce cracking. Use concrete sawing machines that are adequate in number and power, and with sufficient replacement blades to complete the sawing at the required rate. Cut joints to true alignment and in sequence of concrete placement. Remove sludge and cutting debris. Form reservoir for joint sealant.

3. Bond Breaker

Coat joints requiring a bond breaker with curing compound/bond breaker or with bituminous paint. Protect waterstops during application of bond breaking material to prevent them from being coated.

B. Expansion Joints

Use preformed expansion joint filler in expansion and isolation joints in slabs around columns and between slabs on grade and vertical surfaces where indicated. Extend the filler to the full slab depth, unless otherwise indicated. Neatly finish the edges of the joint with an edging tool of 1/8 inch radius, except where a resilient floor surface will be applied. Where the joint is to receive a sealant, the filler strips shall be installed at the proper level below the finished floor with a slightly tapered, dressed and oiled wood strip temporarily secured to the top to form a recess to the size shown on the drawings.

Remove the wood strip after the concrete has set. Contractor may opt to use a removable expansion filler cap designed and fabricated for this purpose in lieu of the wood strip. Thoroughly clean the groove of laitance, curing compound, foreign materials, protrusions of hardened concrete, and any dust. If blowing out the groove use oil-free compressed air.

C. Joint Sealant

Fill contraction joints and expansion joints with joint sealant, unless otherwise shown. Joint surfaces shall be clean, dry, and free of oil or other foreign material which would adversely affect the bond between sealant and concrete. Apply joint sealant as recommended by the manufacturer of the sealant.

1. Joints with Preformed Compression Seals

Install compression seals with equipment capable of installing joint seals to the prescribed depth without cutting, nicking, twisting, or otherwise distorting or damaging the seal or concrete and with no more than 5 percent stretching of the seal. Cover the sides of the joint and, if necessary, the sides of the compression seal with a coating of lubricant. Coat butt joints with liberal applications of lubricant.

2. Joints with Field-Molded Sealant

Do not seal joints when the sealant material, ambient air, or concrete temperature is less than 40 degrees F. When the sealants are meant to reduce the sound transmission characteristics of interior walls, ceilings, and floors the guidance provided in ASTM C919 shall be followed. Coat joints requiring a bond breaker with curing compound or with bituminous paint. Install bond breaker and back-up material where required.

Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendations.

3.02 WATERSTOPS, INSTALLATION AND SPLICES

Install waterstops at the locations shown to form a continuous water-tight diaphragm. Make adequate provision to support and completely protect the waterstops during the progress of the work. Repair or replace any waterstop punctured or damaged. Protect exposed waterstops during application of form release agents to avoid being coated. Provide suitable guards to protect exposed projecting edges and ends of partially embedded waterstops from damage when concrete placement has been discontinued.

Accomplish splices with certified trained personnel using approved equipment and procedures.

A. Non-Metallic

Fittings shall be shop made using a machine specifically designed to mechanically weld the waterstop. A miter guide, proper fixturing (profile dependant), and portable power saw shall be used to miter cut the ends to be joined to ensure good alignment and contact between joined surfaces.

The splicing of straight lengths shall be done by squaring the ends to be joined. Maintain continuity of the characteristic features of the cross section of the waterstop (ribs, tabular center axis, protrusions, etc.) across the splice.

1. Polyvinyl Chloride Waterstop

Make splices by heat sealing the adjacent waterstop edges together using a thermoplastic splicing iron utilizing a non-stick surface specifically designed for waterstop welding. Use the correct temperature to sufficiently melt without charring the plastic. Reform waterstops at splices with a remolding iron with ribs or corrugations to match the pattern of the waterstop. The spliced area, when cooled, shall show no signs of separation, holes, or other imperfections when bent by hand in as sharp an angle as possible

2. Quality Assurance

Edge welding will not be permitted. Compress or close centerbulbs when welding to non-centerbulb type. Waterstop splicing defects which are unacceptable include, but are not limited to the following: 1) Tensile strength less than 80 percent of parent section. 2) Free lap joints. 3) Misalignment of centerbulb, ribs, and end bulbs greater than 1/16 inch. 4) Misalignment which reduces waterstop cross section more than 15 percent. 5) Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness. 6) Misalignment of waterstop splice resulting in misalignment of waterstop in excess of 1/2 inch in 10 feet. 7) Visible porosity in the weld area, including pin holes. 8) Charred or burnt material. 9) Bubbles or inadequate bonding. 10) Visible signs of splice separation when cooled splice is bent by hand at a sharp angle.

B. Non-Metallic Hydrophilic Waterstop Installation

Miter cut ends to be joined with sharp knife or shears. The ends shall be adhered with cyanacryiate (super glue) adhesive. When joining hydrophilic type waterstop to PVC waterstop, the hydrophilic waterstop shall be positioned as shown on the drawings. Apply a liberal amount of a single component hydrophilic sealant to the junction to complete the transition.

3.03 CONSTRUCTION JOINTS

Treat construction joints coinciding with expansion and contraction joints as expansion or contraction joints as applicable.

END OF SECTION 03 15 00.00 10

SECTION 03 20 00.00 10

CONCRETE REINFORCING

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 318	(2011; Errata 1 2011; Errata 2 2012; Errata 3-4 2013) Building Code Requirements for Structural Concrete and Commentary

ACI SP-66 (2004) ACI Detailing Manual AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(2011) Structural Welding Code - Reinforcing Steel

ASTM INTERNATIONAL (ASTM)

ASTM A1035	(2013b) Standard Specification for Deformed and Plain, Low-carbon, Chromium, Steel Bars for Concrete Reinforcement
ASTM A1064	(2013) Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM A184	(2006; E2011) Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A370	(2012a) Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A53	(2012) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A615	(2013) Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A675	(2003; R 2009) Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties
ASTM A706	(2013) Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A767	(2009) Standard Specification for

	Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
ASTM A775	(2007b) Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	(2012) Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	(2013) Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM C1116	(2010a) Standard Specification for Fiber-Reinforced Concrete
ASTM E94	(2004; R 2010) Radiographic Examination
CONCRETE REINFORCING STEEL INSTITUTE (CRSI)	
CRSI 10MSP	(2009; 28th Ed) Manual of Standard Practice
U.S. DEPARTMENT OF DEFENSE (DOD)	
UFC 3-310-04	(2012) Seismic Design for Buildings

1.02 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Reinforcement;

SD-03 Product Data

Welding

Butt-Splices;

Materials;

SD-04 Samples

Epoxy-Coated Bars

SD-06 Test Reports

Mill Reports;

Material;

SD-07 Certificates

Reinforcing Steel

Qualification of Steel Bar Butt-Splicers

1.03 QUALITY ASSURANCE

A. Qualification of Steel Bar Butt-Splicers

Qualification of steel bar butt-splicers shall be certified to have satisfactorily completed a course of instruction in the proposed method of butt-splicing or have satisfactorily performed such work within the preceding year. Submit certificates on the Qualifications of Steel Bar Butt-Splicers prior to commencing butt-splicing

B. Qualification of Butt-Splicing Procedure

As a condition of approval of the butt-splicing procedure, make three test butt-splices of steel bars of each size to be spliced using the proposed butt-splicing method, in the presence of the Owner's Representative. These test butt-splices and unspliced bars of the same size shall be tension tested to destruction with stress-strain curves plotted for each test.

Test results shall show that the butt-splices meet the specified strength and deformation requirements in order for the splicing procedure to be approved.

1.04 DELIVERY, STORAGE, AND HANDLING

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

PART 2: PRODUCTS

2.01 DOWELS

Dowels shall conform to ASTM A675, Grade 80. Steel pipe conforming to ASTM A53, Schedule 80, may be used as dowels provided the ends are closed with metal or plastic inserts or with mortar.

2.02 FABRICATED BAR MATS

Fabricated bar mats shall conform to ASTM A184.

2.03 REINFORCING STEEL

Reinforcing steel shall be deformed bars conforming to ASTM A615 and ASTM A706 grades and sizes as indicated.

Submit certified copies of mill reports attesting that the reinforcing steel furnished contains no less than 25 percent recycled scrap steel and meets the requirements specified herein, prior to the installation of reinforcing steel.

2.04 WELDED WIRE FABRIC

Welded wire fabric shall conform to ASTM A1064. When directed by the Owner's Representative for special applications, welded wire fabric shall conform to ASTM A884. For wire with a specified yield strength (fy) exceeding 60,000 psi, fy shall be the stress corresponding to a strain of 0.35 percent.

2.05 WIRE TIES

Wire ties shall be 16 gauge or heavier black annealed steel wire. Wire ties used for tying epoxy coated

reinforcement shall be epoxy coated.

2.06 REBAR ADHESIVE

ANCHORS Acceptable
Manufacturer's:

A. HIT-HY150 System by HILTI FASTENING SYSTEMS, INC.

B. Simpson SET XP Structural Epoxy-Tie.

C. Anchoring System by Simpson.

D. Strong -Tie Anchor Systems.

2.07 SUPPORTS

Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI 10MSP and shall be steel or precast concrete blocks. Precast concrete blocks shall have wire ties and shall be not less than 4 inches square when supporting reinforcement on ground. Precast concrete block shall have compressive strength equal to that of the surrounding concrete. Where concrete formed surfaces will be exposed to weather or where surfaces are to be painted, steel supports within 1/2 inch of concrete surface shall be galvanized, plastic protected or of stainless steel. Concrete supports used in concrete exposed to view shall have the same color and texture as the finish surface. For slabs on grade, supports shall be precast concrete blocks, plastic coated steel fabricated with bearing plates, or specifically designed wire-fabric supports fabricated of plastic.

Bar supports shall comply with the requirements of ACI SP-66. Supports for bars in concrete with formed surfaces exposed to view or to be painted shall be plastic-coated wire, stainless steel or precast concrete supports. Precast concrete supports shall be wedged-shaped, not larger than 3-1/2 by 3-1/2 inches, of thickness equal to that indicated for concrete cover and have an embedded hooked tie-wire for anchorage. Bar supports used in precast concrete with formed surfaces exposed to view shall be the same quality, texture and color as the finish surfaces.

2.08 TEST, INSPECTIONS, AND VERIFICATIONS

Perform material tests, specified and required by applicable standards, by an approved laboratory and certified to demonstrate that the materials are in conformance with the specifications. Tests, inspections, and verifications shall be performed and certified at the Contractor's expense. Submit certified tests reports of reinforcement steel showing that the steel complies with the applicable specifications for each steel shipment and identified with specific lots prior to placement. Submit three copies of the heat analyses for each lot of steel furnished certifying that the steel conforms to the heat analyses.

A. Reinforcement Steel Tests

Mechanical testing of steel shall be in accordance with ASTM A370 except as otherwise specified or required by the material specifications. Tension tests shall be performed on full cross-section specimens using a gage length that spans the extremities of specimens with welds or sleeves included. Chemical analyses of steel heats shall show the percentages of carbon, phosphorous, manganese, sulphur and silicon present in the steel.

PART 3: EXECUTION

3.01 REINFORCEMENT

Reinforcement steel and accessories shall be fabricated and placed as specified and shown and approved shop drawings. Fabrication and placement details of steel and accessories not specified or shown shall be in accordance with ACI SP-66 and ACI 318. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall not be bent after embedment in concrete. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose a danger to life safety. Wire tie ends shall face away from the forms. Submit detail drawings showing reinforcing steel placement, schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes and spacing.

A. Placement

Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete.

Reinforcement shall be placed in accordance with ACI 318 at locations shown plus or minus one bar diameter. Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage shall be as indicated in the plans or as required by ACI 318. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed. No cutting of rebars shall be done without written approval. Do not place any concrete until the Engineer submits a solution to rebar congestion problem.

B. Splicing

Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical connection; except that lap splices shall not be used for bars larger than No. 11 unless otherwise indicated. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6 inches. Mechanical butt splices shall be in accordance with the recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Bars shall be flame dried before butt splicing. Adequate jigs and clamps or other devices shall be provided to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.

Rebar Mechanical Splicing – Acceptable Manufacturers:

1. Lenton Rebar Splicing by Erico, Inc.
2. Richmond dowel bar splicer system by Richmond Screw and Anchor Co., Inc.
3. Bar-Grip Systems by Barsplice Products, Inc.

C. Place Tolerances

1. Spacing

The spacing between adjacent bars and the distance between layers of bars may not vary from the indicated position by more than one bar diameter nor more than 1 inch.

2. Concrete Cover

The minimum concrete cover of main reinforcement steel bars shall be as shown. The allowable variation for minimum cover shall be as follows.

Minimum Cover (inch)	Variation (inch)
6	plus 1/2
4	plus 3/8
3	plus 3/8
2	plus 1/4
1-1/2	plus 1/4

D. Splicing

Splices in steel bars shall be made only as required. Bars may be spliced at alternate or additional locations at no additional cost to the Owner's Representative subject to approval.

1. Lap Splices

Lap splices shall be used only for bars smaller than size 14 and welded wire fabric. Lapped bars may be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than 1/5 the required length of lap or 6 inches.

2. Butt-Splices

Use butt-splices only for splicing size 14 and 18 bars and for splicing #11 bars to larger bars except where otherwise shown or authorized. Make butt-splices by a method which develops splices suitable for tension, compression and stress reversal applications. Bars shall be cleaned of all oil, grease, dirt, rust, scale and other foreign substances and shall be flame dried before splicing. Adequate jigs and clamps or other devices shall be provided to support, align and hold the longitudinal centerline of the bars to be butt-spliced in a straight line. Submit proposed procedure for butt-splicing steel bars prior to making the test butt-splices for qualification of the procedure. Properties and analyses of steel bars and splicing materials shall be included in the submitted procedure. Physical properties of splicing sleeves shall include length, inside and outside diameters, and inside surface details. Butt-splices shall be as follows:

a. Mechanical Butt-Splicers

Mechanical butt-splices shall be an approved exothermic, threaded coupling, swaged sleeve or other positive connecting type. Bars to be spliced by a mechanical butt-splicing process may be sawed, sheared or flame cut provided the ends of sheared bars are reshaped after shearing and all slag is removed from the ends of flame cut bars by chipping and wire brushing prior to splicing. Surfaces to be enclosed within a splice sleeve or coupling shall be cleaned by wire brushing or other approved method prior to splicing. Splices shall be made using manufacturer's standard jigs, clamps, ignition devices and other required accessories. In addition to the strength requirements specified paragraph BUTT-SPLICES the additional deformation of number 14 and smaller bars due to slippage or other movement within the splice sleeve shall not exceed 0.015 inches (unit strain 0.0015 inches/inch) beyond the elongation of an unspliced bar based upon a

10 inch gage length spanning the extremities of the sleeve at a stress of 30,000 psi. The additional deformation of number 18 bars shall not exceed 0.03 inches (unit strain 0.003 inches/inch) beyond the elongation of an unspliced bar based upon a 10 inch gage length spanning the extremities of the sleeve at a stress of 30,000 psi. The amount of the additional deformation shall be determined from the stress-strain curves of the unspliced and spliced bars tested as required paragraph QUALIFICATION OF BUTT-SPLICING PROCEDURE for qualification of the butt-splicing procedure. Tension splices of number 14 or smaller bar shall be staggered longitudinally a minimum of 5 feet or as otherwise indicated so that no more than half of the bars are spliced at any one section. Tension splices of number 18 bars shall be staggered longitudinally a minimum of 5 feet so that no more than 1/3 of the bars are spliced at any one section.

Proprietary Rebar Mechanical Splices:

To develop in tension and compression a minimum of 125% of the yield strength of the rebars being spliced.

3.02 WELDED-WIRE FABRIC PLACEMENT

Welded-wire fabric shall be placed in slabs as indicated. Fabric placed in slabs on grade shall be continuous between expansion, construction, and contraction joints. Fabric placement at joints shall be as indicated.

Lap splices shall be made in such a way that the overlapped area equals the distance between the outermost crosswires plus 2 inches. Laps shall be staggered to avoid continuous laps in either direction. Fabric shall be wired or clipped together at laps at intervals not to exceed 4 feet. Fabric shall be positioned by the use of supports.

3.03 DOWEL INSTALLATION

Dowels shall be installed in slabs on grade at locations indicated and at right angles to joint being doweled. Dowels shall be accurately positioned and aligned parallel to the finished concrete surface before concrete placement. Dowels shall be rigidly supported during concrete placement. One end of dowels shall be coated with a bond breaker

3.04 FIELD TEST AND INSPECTIONS

A. Identification of Splices

Establish and maintain an approved method of identification of all field mechanical butt-splices which will indicate the splicer and the number assigned each splice made by the splicer.

B. Examining, Testing, and Correcting

Perform the following during the butt-splicing operations as specified and as directed:

1. Visual Examination

Visually inspect all mechanical splices and verify they are done per manufacturer's recommendations.

END OF SECTION 03 20 00.00 10

SECTION 03 22 70.01 13

CONTROLLED LOW-STRENGTH MATERIAL (CLSM)

PART 1: GENERAL

1.01 REFERENCES

All publications referenced shall be the most current version, edition, standard, latest revision, or reapproval unless otherwise stated. The following publications and standards listed below will be referred to only by the basic designation thereafter, and shall form a part of this specification to the extent indicated by the references thereto.

ASTM INTERNATIONAL (ASTM)

ASTM C 33/C 33M	(2011a) Standard Specification for Concrete Aggregates
ASTM C 94	(2011b) Ready-Mixed Concrete
ASTM C 150	(2011) Standard Specification for Portland Cement
ASTM C 220	(1991; R 2009) Standard Specification for Flat Asbestos-Cement Sheets
ASTM C 618	(2008) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete
ASTM C 685	(2010) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C 940	(2010a) Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory
ASTM D 4832	(2010) Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders
ASTM D 5971	(2007) Standard Practice for Sampling Freshly Mixed Controlled Low-Strength Material
ASTM D 6023	(2007) Standard Test Method for Density (Unit Weight), Yield, Cement Content, and Air Content (Gravimetric) of Controlled Low- Strength Material (CLSM)
ASTM D 6103	(2004) Standard Test Method for Flow Consistency of Controlled Low Strength Material (CLSM)

1.02 DESIGN REQUIREMENTS

Controlled Low-Strength Material (CLSM) mixture proportion shall consist of 100 pounds or less of portland cement plus fly ash per cubic yard; pozzolan; sand; water; and a fluidifier, if required to obtain the required slump. The CLSM fill shall have a wet density of no less than 90 pounds per cubic foot and shall have a flow consistency of more than 8 inches. The flow consistency shall be determined in accordance with ASTM D 6103. CLSM fill shall have a compressive strength exceeding 100 psi at 28 days. The compressive strength of the CLSM shall be determined in

accordance with ASTM D 4832 after being made and cured in accordance with ASTM D 4832. The mixture proportions shall be reported in accordance with ASTM C 94. If the CLSM is to be placed using a concrete pump, the mixture proportions shall be designed so that it will not segregate in the pump line under pressure or when there is an interruption in flow.

1.03 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES

SD-01 Data

On-Site Batching and Mixing Water Reducing

Concrete Mixture Proportions

The Contractor shall submit manufacturer's literature from suppliers which demonstrates compliance with applicable specifications for all equipment and materials.

SD-07 Schedules Placing

The methods and equipment for transporting, handling, and depositing the CLSM backfill and CLSM fill shall be submitted to the Owner's Representative prior to the first placement.

SD-08 Statements

Concrete Mixture Proportions

CLSM mixture proportions shall be the responsibility of the Contractor and shall be designed in accordance with the criteria in paragraph DESIGN REQUIREMENTS. Ten days prior to placement of CLSM, the Contractor shall submit to the Engineer the mixture proportions that will produce CLSM of the qualities required. Mixture proportions shall include the dry weights of cementitious material(s); and saturated surface-dry weights of the fine aggregate; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project.

SD-09 Reports

CLSM Mixture Proportions Tests

Applicable test reports shall be submitted to verify that the CLSM mixture proportions selected will produce CLSM of the quality specified. The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered to the Owner's Representative within 3 days after the end of each weekly reporting period.

SD-13 Certificates
Cement

Cementitious Material will be accepted on the basis of a manufacturer's certificate of compliance.

Aggregates

Aggregates will be accepted on the basis of certificate of compliance that the aggregates meet the requirements of the specifications under which it is furnished.

1.04 QUALITY ASSURANCE

A. Contractor Quality Control (CQC)

Assurance of adherence to this specification for off-site materials used for CLSM batching shall be the responsibility of the Contractor Quality Control (CQC) staff. Additionally, it shall be the responsibility of the Contractor Quality Control (CQC) staff to ensure all CLSM is batched in strict accordance with the proportions outlined in the approved mix designs.

1. Materials

The Contractor Quality Control (CQC) staff shall sample and test aggregates, cementitious materials, and other materials used in the batching of CLSM to determine compliance with the specifications as considered appropriate. Samples of aggregates shall be obtained at the point of batching in accordance with ASTM D75.

2. Fresh CLSM

Sufficient testing of freshly batched CLSM shall be performed by CQC staff prior to leaving the batch plant to ensure CLSM is delivered to the site in accordance with these specifications.

3. Inspection

CLSM operations will be tested and inspected by the Owner's Representative as the project progresses. It is the responsibility of the Contractor to provide reasonable means of access for procurement of representative test samples meeting all necessary OSHA requirements as well as any applicable state or local job-site safety requirements.

B. Owner’s Representative Assurance Inspection and Testing

The Owner's Representative will inspect construction and on-site materials as considered appropriate and will monitor operations of the Contractor's CQC staff as necessary. Owner's Representative inspection or testing will not relieve the Contractor of any CQC responsibilities.

1. Materials

The Owner’s Representative reserves the right to sample and test aggregates, cementitious materials, other materials, and CLSM to determine compliance with the specifications as considered appropriate.

2. Fresh CLSM

Fresh CLSM will be sampled on-site as delivered and prior to placement in accordance with ASTM D5971 and tested in accordance with these specifications, as considered necessary. All on-site tests will be provided by the Owner and performed by the Owner’s Representative.

3. Inspection

CLSM operations will be tested and inspected by the Owner's Representative as the project progresses. Failure to detect defective work or material will not prevent rejection later when a defect is discovered nor will it obligate the Owner's

Representative for final acceptance.

PART 2: PRODUCTS

2.01 MATERIALS

A. Ready-Mix Concrete

Ready-mixed concrete shall conform to ASTM C 94, except as otherwise specified.

1. Volumetric Batching and Continuous Mixing

   Volumetric batching and continuous mixing shall conform to ASTM C685.

2. On-Site Batching and Mixing

   The Contractor shall have the option of using an on-site batching and mixing facility. The method of measuring materials, batching operation, and mixer shall be submitted for review by the Owner's Representative. On-site plant shall conform to the requirements of either ASTM C 94 or ASTM C 685.

B. Portland Cement

Portland Cement shall conform to ASTM C150, Type I or II, or lowalkali.

C. Pozzolan

Pozzolan shall be Class F or C fly ash conforming to ASTM C618.

D. Sand

Sand shall meet the requirements of fine aggregate of ASTM C 33/C33M.

E. Fluidifier

The fluidifier shall give the CLSM fill the following salient characteristics:

1. must have less than 1 percent bleed water in accordance with ASTM C 940
2. have an initial set time of more than 5 hours in accordance with ASTM C 220 modified by using a Ferioli apparatus
3. have a flow consistency equal to or more than 8 inches in accordance with ASTM D 6103
4. have a compressive strength exceeding 100 psi at 28 days in accordance with ASTM D 4832
5. maintain a homogeneous mixture during pumping
   a. Quantity of admixture(s) required in the mixture proportion is governed by the salient characteristics specified.
   b. The admixture shall be added as directed by the manufacturer, in most cases it added to the CLSM at the job site and mixed for a minimum of 5 minutes at mixing speed.
6. Required maximum field permeability of 5x10-6 cm/sec.

F. Water

Water shall be potable water that is fresh, clean, and free from sewage, oil, acid, alkali, salts, or organic matter.

2.02 MIXING AND TRANSPORTING

The CLSM shall be mixed and transported in accordance with ASTM C94.

PART 3: EXECUTION

3.01 TRENCH PREPARATION

Once the culvert trench has been excavated, it shall be cleaned of all loose material and debris to the satisfaction of the Owner's Representative before any CLSM fill is placed. Blocks or other supports, as approved by the Owner's Representative, shall be used to allow CLSM to completely encase the utility or culvert. CLSM fill shall be placed to the limits shown in the plans. The pipeline shall be securely anchored to maintain its position and prevent it from any movement during placement of the CLSM. The CLSM shall be placed in a manner such that CLSM achieves intimate contact with the bottom of the entire utility.

3.02 PLACEMENT

A. General

CLSM placement shall not be permitted when, in the opinion of the Owner's Representative, weather conditions prevent proper placement. When CLSM is mixed and/or transported by a truck mixer, the CLSM shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours (or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used). The fluidifier shall not be added to the Ready Mix trucks until they have arrived onsite. The fluidifier shall be added to each truck at the proper dosage rate and mixed for 5 minutes and no morethan 15 minutes before it is placed. CLSM shall be conveyed from the mixer to point of placement as rapidly as practicable by methods which prevent segregation or loss of ingredients

B. Consolidation

Consolidation of the CLSM will not be required.

3.03 TESTING AND INSPECTION REQUIREMENTS FOR CQC

A. Testing and inspection requirements for Contractor Quality Control (CQC) shall be in accordance with Specification 03 30 00.00 10 Cast-in-Place Concrete section 3.10.

3.04 FIELD QUALITY CONTROL AND TESTING

A. CLSM tests at placement site will be provided by the Owner and performed by an independent testing agency. No CLSM shall be placed until all tests have been completed and the CLSM is found to be in compliance with this Specification.

B. When, in the opinion of the Owner's Representative, the CLSMoperation is out of control, cease CLSM placement and correct the operation.

C. CLSM samples for testing shall be taken as near the point of placement as is practical and in accordance with ASTM D5971. The following test will be provided by the Owner and performed by an independent testing agency at the point of placement.

1. Test Specimens

   One set of six 6-by-12 in. test specimens shall be taken for each different CLSM mixture placed during the day. Test specimens will be taken for the initial 50 cubic yards and then for every subsequent 100 cubic yards of that CLSM mixture placed each day. Test specimens shall be laboratory cured in accordance with ASTM D4832.

   Additional sets of test specimens will be taken when the mixture proportions are changed, excessive variation in workability is observed, or when the Owner's Representative deems additional tests are necessary based on other observed changes in the CLSM.

2. Density

   One density test shall be performed each time a set of test specimens is fabricated. Tests shall be made in accordance with ASTM D6023. When a single test result fails to be in compliance with this Specification, perform a second test immediately. The results of the two tests shall be averaged and this average used as the density.

3. Flow Consistency

   One flow consistency test shall be performed each time a set of test specimens is fabricated. Tests shall be made in accordance with ASTM D6103. When a single test result fails to be in compliance with this Specification, perform a second test immediately. The results of the two tests shall be averaged and this average used as flow consistency.

   Whenever a test result is outside the specified limits, the remaining CLSM shall not be placed and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to made so that the water-cement ratio does not exceed that specified in the submitted CLSM mixture proportion. Each subsequent delivery to the site shall be tested until flow consistency meets these Specifications.

4. Temperature

   The temperature of CLSM shall be measured prior to unloading the first load and again each time a set of test specimens is fabricated in accordance with ASTM C1064.

5. Evaluation of CLSM Compressive Strength

   An independent testing agency will test the 6-by-12 in. test specimens in accordance with ASTM D4832. Of the six tests specimens taken in each set, one shall be evaluated for compressive strength at 7-days and one at 14-days. Two shall be evaluated at 28-days, and the remaining 2 specimens shall be retained for future testing.

END OF SECTION 03 22 70.01 13

SECTION 03 24 00

GROUT

PART 1: GENERAL

1.01 SECTION INCLUDES

A. Cement grout.

B. Non-shrink grout.

C. Epoxy grout.

1.02 RELATED SECTIONS

A. Section 03 10 00—Concrete Forms and Accessories.

B. Section 03 20 00—Concrete Reinforcement.

C. Section 03 30 00—Cast-in-place Concrete.

1.03 REFERENCES

A. Current editions of the following standards and publications.

1. ASTM C109/C109M, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (using 2 inch or 50 mm cube specimens)

2. ASTM C1107/C1107M, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

1.04 SUBMITTALS

A. Manufacturer's literature: non-shrink grout.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver in original, unopened containers with manufacturer's name, labels, product identification, and batch numbers. Store as recommended by manufacturer.

PART 2: PRODUCTS

2.01 MATERIALS

A. Cement Grout:

1. Portland cement, sand, and water sufficient for placement and hydration.

2. Minimum compressive strength (28 days): 5000 psi

B. Non-Shrink Grout: ASTM C1107

1. Premixed, packaged ferrous or non-ferrous aggregate shrink-resistant grout.

2. Non-metallic, nongas forming, and free of corrosive-type material.

3. Minimum compressive strength (28 days), ASTM C109: 7,000 psi

4. Acceptable products:
    a. Five-Star non-shrink, non-metallic grout
    b. Masterflow 928 Grout by BASF Construction Chemicals, LLC Building Systems
    c. Crystex by L&M Construction Chemicals, Inc.
    d. SikaGrout 212 by Sika Corporation
    e. Approved equal.

C. Epoxy Adhesive
1. To anchor dowels or anchor bolts into existing concrete
2. Acceptable products:
    a. Epcon Ceramic 6 Epoxy Anchoring System by ITW Ramset/Red Head
    b. Hilti HIT-RE 500-SD by Hilti.
    c. Sikadur 32, Hi-Mod, 2-component, 100 percent solids, moisture insensitive structural epoxy adhesive by Sika
    d. Concresive 1420 and 1490 epoxy bonding agent by ChemRex, Inc.

2.02 EQUIPMENT

A. Grouting Equipment: Capable of continuous mechanical mixing that will produce grout free of lumps and undispersed cement.

B. Clean oil, ice, or other deleterious substances from grouting equipment.

PART 3: EXECUTION

3.01 PREPARATION

A. Remove all debris, standing water, ice, and any loose or deleterious materials from the surfaces where grout is to be applied before grouting.

3.02 INSTALLATION

A. Follow manufacturer's recommendations for installation and temperature restrictions.

B. Do not grout if it is raining or snowing, or if rain or snow appears imminent and the area of application is not adequately protected.

C. Protect surface near work area due to the mixing, handling, and application of grout material.

D. Place grout in a neat and orderly fashion in the designated areas.

E. Weather protection:
1. Cold weather:
    a. Applies to cement grout placed when the ambient temperature is below 40 degrees F.
    b. Conform to recommendations and requirements of ACI 306.1.

c. Concrete damaged by freezing to be removed and replaced at contractor's expense.

2. Hot weather:

   a. Applies to cement grout placed when the ambient temperature exceeds 90 degrees F.

   b. Conform to recommendations and requirements of ACI 305.1.

END OF SECTION 03 24 00

SECTION 03 30 00.00 10

CAST-IN-PLACE CONCRETE

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 117	(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary
ACI 211.1	(1991; R 2009) Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete
ACI 211.2	(1998; R 2004) Standard Practice for Selecting Proportions for Structural Lightweight Concrete
ACI 213R	(2003) Guide for Structural Lightweight-Aggregate Concrete
ACI 214R	(2011) Evaluation of Strength Test Results of Concrete
ACI 301	(2010; Errata 2011) Specifications for Structural Concrete
ACI 305.1	(2014) Specification for Hot Weather Concreting
ACI 318	(2011; Errata 1 2011; Errata 2 2012; Errata 3-4 2013) Building Code Requirements for Structural Concrete and Commentary

ASTM INTERNATIONAL (ASTM)

ASTM C1017	(2007) Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1059	(1999; R 2008) Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
ASTM C1064	(2011) Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1077	(2013b) Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation

ASTM C1107	(2013) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C1116	(2010a) Standard Specification for Fiber-Reinforced Concrete
ASTM C1240	(2012) Standard Specification for Silica Fume Used in Cementitious Mixtures
ASTM C1260	(2007) Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C131	(2006) Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	(2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	(2012) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	(2012) Standard Specification for Portland Cement
ASTM C1567	(2013) Standard Test Method for Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C172	(2010) Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	(2012) Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C192	(2013a) Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231	(2010) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	(2010a) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C31	(2012) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	(2013) Standard Specification for Concrete Aggregates
ASTM C330	(2009) Standard Specification for Lightweight Aggregates for Structural Concrete
ASTMC39	(2012) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTMC42	(2013) Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete

ASTMC494	(2013) Standard Specification for Chemical Admixtures for Concrete
ASTMC496	(2011) Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
ASTMC552	(2013) Standard Specification for Cellular Glass Thermal Insulation
ASTMC567	(2011) Determining Density of Structural Lightweight Concrete
ASTMC578	(2012b) Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
ASTMC591	(2013) Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
ASTMC595	(2013) Standard Specification for Blended Hydraulic Cements
ASTMC618	(2012a) Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTMC685	(2011) Concrete Made by Volumetric Batching and Continuous Mixing
ASTMC78	(2012; E 2013) Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTMC881	(2010) Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTMC937	(2010) Grout Fluidifier for Preplaced-Aggregate Concrete
ASTM C94	(2013a) Standard Specification for Ready-Mixed Concrete
ASTM C989	(2012a) Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM D75	(2009) Standard Practice for Sampling Aggregates
ASTM E1155	(1996; R 2008) Standard Test Method for Determining Floor Flatness and Floor Levelness Numbers
ASTM E96	(2012) Standard Test Methods for Water Vapor Transmission of Materials

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44	(2013) Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices

NATIONAL READY MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA CPMB 100	(2000; R 2006) Concrete Plant Standards

NRMCA QC 3	(2011) Quality Control Manual: Section 3, Plant Certifications Checklist: Certification of Ready Mixed Concrete Production Facilities
NRMCA TMMB 100	(2001; R 2007) Truck Mixer, Agitator and Front Discharge Concrete Carrier Standards

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 104	(1980) Method of Calculation of the Fineness Modulus of Aggregate
COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete
COE CRD-C 521	(1981) Standard Test Method for Frequency and Amplitude of Vibrators for Concrete
COE CRD-C 94	(1995) Corps of Engineers Specification for Surface Retarders

1.02 SYSTEM DESCRIPTION

Provide concrete composed of Portland cement, other cementitious and pozzolanic materials as specified, aggregates, water and admixtures as specified.

A. Proportioning Studies-Normal Weight Concrete

Trial design batches, mixture proportions studies, and testing requirements for various classes and types of concrete specified are the responsibility of the Contractor. Mixture proportions shall be based on compressive strength as determined by test specimens fabricated in accordance with ASTM C192 and tested in accordance with ASTM C39.

1. Samples of all materials used in mixture proportioning studies shall be representative of those proposed for use in the project and be accompanied by the manufacturer's or producer's test reports indicating compliance with these specifications.
2. Make trial mixtures having proportions, consistencies, and air content suitable for the work based on methodology described in ACI 211.1, using at least three different water-cement ratios for each type of mixture, which will produce a range of strength encompassing those required for each class and type of concrete required on the project.
3. The maximum water-cement ratios required in subparagraph Water-Cement Ratio below will be the equivalent water-cement ratio as determined by conversion from the weight ratio of water to cement plus pozzolan by the weight equivalency method as described in ACI 211.1. If pozzolan is used in the concrete mixture, the minimum pozzolan content shall be 15 percent by weight of the total cementitious material, and the maximum shall be 35 percent.
4. Design laboratory trial mixtures for maximum permitted slump and air content. Make separate sets of trial mixture studies for each combination of cementitious materials and each combination of admixtures proposed for use. No combination of either shall be used until proven by such studies, except that, if approved in

writing and otherwise permitted by these specifications, an accelerator or a retarder may be used without separate trial mixture study. Separate trial mixture studies shall also be made for concrete for any conveying or placing method proposed which requires special properties and for concrete to be placed in unusually difficult placing locations.

5. Report the temperature of concrete in each trial batch. For each water-cement ratio, at least three test cylinders for each test age shall be made, cured in accordance with ASTM C192 and tested at 7 and 28 days in accordance with ASTM C39. From these test results, plot a curve showing the relationship between water-cement ratio and strength for each set of trial mix studies. In addition, a curve shall be plotted showing the relationship between 7 day and 28 day strengths. Design each mixture to promote easy and suitable concrete placement, consolidation and finishing, and to prevent segregation and excessive bleeding.

6. Submit the results of trial mixture design studies along with a statement giving the maximum nominal coarse aggregate size and the proportions of ingredients that will be used in the manufacture of each strength or class of concrete, at least 14 days prior to commencing concrete placing operations. Aggregate weights shall be based on the saturated surface dry condition. Accompany the statement with test results from an approved independent commercial testing laboratory, showing that mixture design studies have been made with materials proposed for the project and that the proportions selected will produce concrete of the qualities indicated. No substitutions shall be made in the materials used in the mixture design studies without additional tests to show that the quality of the concrete is satisfactory.

7. Mass Concrete

    a. Mass Concrete is defined as any concrete member or pour that is equal or greater than 36 IN thick in the minimum direction.
    b. The use of a concrete set-retarding admixture is required and the use of concrete water reducing admixture is recommended. The use of established curing and testing procedures are acceptable and may be used in establishing potential concrete strength with the purpose of detecting variations of concrete quality and judging the effectiveness of job control measures.
    c. Provide mass concrete in accordance with ACI 301-10, Section 8 unless otherwise indicated.
    d. Thermal requirements:
        1) The maximum temperature in concrete after placement shall not exceed 158 DegF; and
        2) The maximum temperature difference between center and surface of placement shall not exceed 35 DegF.
    e. Cement: Type II.
    f. Pozzolan:
        1) Mass concrete: use one of the following in the mix design:
            a) Fly Ash: 35 percent maximum by weight of Portland cement content per cubic yard shall be replaced with fly ash at a rate of 1 LB fly ash for 1 LB cement.
            b) GGBFS: 20 to 30 percent by weight of Portland cement content per cubic yard shall be replaced with ground granulated blast-furnace slag at a rate of 1 LB GGBFS for 1

LB cement.

c) Fly Ash and GGBFS: combined maximum of 45 percent by weight of Portland Cement content per cubic ypard shall be replaced with Fly Ash at a rate of 1 LB fly ash for 1 LB cement and with ground granulated blast-furnace slag at a rate of 1 LB GGBFS for 1 LB cement.

B. Average Compressive Strength

The mixture proportions selected during mixture design studies shall produce a required average compressive strength (f'cr) exceeding the specified compressive strength (f'c) by the amount indicated below. This required average compressive strength, f'cr, will not be a required acceptance criteria during concrete production. However, whenever the daily average compressive strength at 28 days drops below f'cr during concrete production, or daily average 7-day strength drops below a strength correlated with the 28-day f'cr, adjust the mixture, as approved, to bring the daily average back up to f'cr. During production, the required f'cr shall be adjusted, as appropriate, based on the standard deviation being attained on the job.

C. Computations from Test Records

Where a concrete production facility has test records, establish a standard deviation in accordance with the applicable provisions of ACI 214R. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected; shall represent concrete produced to meet a specified strength or strengths (f'c) within 1,000 psi of that specified for proposed work; and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days. Required average compressive strength f'cr used as the basis for selection of concrete proportions shall be the larger of the equations that follow using the standard deviation as determined above:

fcr = fc + 1.34S where units are in psi

f'cr = f'c + 2.33S - 500 where units are in psi Where S = standard deviation

Where a concrete production facility does not have test records meeting the requirements above but does have a record based on 15 to 29 consecutive tests, a standard deviation shall be established as the product of the calculated standard deviation and a modification factor from the following table:

Number of Test	Modification Factor for Standard Deviation
15	1.16
20	1.08
25	1.03
30 or more	1.00

D. Computations without Previous Test Records

When a concrete production facility does not have sufficient field strength test records for calculation of the standard deviation, the required average strength f'cr shall be determined as follows:

1. If the specified compressive strength f'c is less than 3,000 psi, f'cr = f'c + 1000 psi

2. If the specified compressive strength f'c is 3,000 to 5,000 psi, f'cr = f'c + 1,200 psi
3. If the specified compressive strength f'c is over 5,000 psi, f'cr = f'c + 1,400 psi

E. Tolerances

Except as otherwise specified herein, tolerances for concrete batching, mixture properties, and construction as well as definition of terms and application practices shall be in accordance with ACI 117. Take level and grade tolerance measurements of slabs as soon as possible after finishing; when forms or shoring are used, the measurements shall be made prior to removal.

F. Floor Finish

For the purpose of this Section the following terminology correlation between ACI 117 and this Section shall apply:

Floor Profile Quality Classification from ACI 117	This Section
Conventional Bullfloated	Same
Conventional Straightedged	Same
Flat	Float Finish or Trowel Finish

Levelness tolerance does not apply where design requires floors to be sloped to drains or sloped for other reasons.

1. Floors by the Straightedge System

The flatness of the floors shall be carefully controlled and the tolerances shall be measured by the straightedge system as specified in paragraph 4.5.7 of ACI 117, using a 10 foot straightedge, within 72 hours after floor slab installation and before shores and/or forms are removed. The listed tolerances shall be met at any and every location at which the straightedge can be placed.

Bullfloated	5/16 inch
Straightedged	5/16 inch
Float Finish	5/16 inch
Trowel Finish	5/16 inch

G. Strength Requirements

Specified compressive strength (f'c) shall be as follows:

Compressive Strength	Structure or Portion of Structure
5000 psi at 28 days	Precast Concrete
4500 psi at 56 days	Mass Concrete
4000 psi at 28 days	Concrete topping
3000 psi at 28 days	Concrete Fill, Lean Mix Backfill
4500 psi at 28 days	All other concrete

Concrete made with high-early strength cement shall have a 7-day strength equal to the specified 28-day strength for concrete made with Type I or II portland cement. Compressive strength shall be determined in accordance with ASTM C39.

Total Stress Shear Strength	Structure or Portion of Structure
500 psf	Lean Mix Backfill

H. Water-Cement Ratio

Maximum water-cement ratio (w/c) for normal weight concrete shall be as follows:

Water-Cement Ratio, By Weight	Structure or Portion of Structure
0.40	Mass Concrete
0.42	All other concrete with 4500 psi compressive strength
0.45	Concrete Topping with 4000psi compressive strength
0.45	Concrete Topping with 3000 psi compressive strength
0.45	Precast Concrete with 5000 psi compressive strength

These w/c's may cause higher strengths than that required above for compressive strength. The maximum w/c required will be the equivalent w/c as determined by conversion from the weight ratio of water to cement plus pozzolan, by the weight equivalency method as described in ACI 211.1. In the case where silica fume or GGBF slag is used, the weight of the silica fume and GGBF slag shall be included in the equations of ACI 211.1 for the term P which is used to denote the weight of pozzolan.

I. Air Entertainment

Provide air entrainment in all concrete resulting in a total air content percent by volume as follows:

1. 1-1/2 IN maximum aggregate size: 4-1/2 to 6-1/2 percent total air content.
2. 1 IN maximum aggregate size: 5 to 7 percent total air content.
3. 3/4 IN maximum aggregate size: 5 to 7 percent total air content.
4. 1/2 IN maximum aggregate size: 5-1/2 to 8 percent total air content.
5. Interior slabs and mats with power trowel finish: Maximum 3 percent total air content.

J. Slump

Slump of the concrete, as delivered to the point of placement into the forms, shall be within the following limits. Slump shall be determined in accordance with ASTM C143.

Structural Element	Slump (inches)	
	Minimum	Maximum
Walls and beams, foundation walls, footings, slabs and toppings	2	4
Any structural concrete approved for placement by pumping:		
At pump	2	6
At discharge of line	1	4

When use of a plasticizing admixture conforming to ASTM C1017 or when a Type F or G high range water reducing admixture conforming to ASTM C494 is permitted to increase the slump of concrete, concrete shall have a slump of 2 to 4 inches before the admixture is added and a maximum slump of 8 inches at the point of delivery after the admixture is added.

1. Concrete of lower than minimum slump may be used provided it can be properly placed and consolidated.

2. Provide additional water or water reducing admixture at ready mix plant for concrete that is to be pumped to allow for slump loss due to pumping.

   a. Provide only enough additional water so that slump of concrete at discharge end of pump hose does not exceed maximum slump specified and the maximum specified water-cement ration is not exceeded.

3. Slump may be adjusted in the field through the use of water reducers.

   a. Coordinate dosage and mixing requirements with concrete supplier.

K. Concrete Temperature

The temperature of the concrete as delivered shall not exceed 90 degrees F. When the ambient temperature during placing is 40 degrees F or less, or is expected to be at any time within 6 hours after placing, the temperature of the concrete as delivered shall be between 55 and 75 degrees F.

L. Size of Coarse Aggregate

Use the largest feasible nominal maximum size aggregate (NMSA), specified in PART 2 paragraph AGGREGATES, in each placement. However, nominal maximum size of aggregate shall not exceed any of the following: three-fourths of the minimum cover for reinforcing bars, three-fourths of the minimum clear spacing between reinforcing bars, one-fifth of the narrowest dimension between sides of forms, or one-third of the thickness of slabs or toppings.

1.03 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Recycled Content Products; (LEED)

Portland Cement

Ready-Mixed Concrete

Vapor Barrier

Latex Bonding Agent

Floor Finish

Floor Hardener

Chemical Admixtures

Epoxy Resin

SD-04 Samples

Surface Retarder

SD-05 Design Data

Cold Weather Placement;

Mixture Proportions;

Lightweight Aggregate Concrete

SD-06 Test Reports

Testing and Inspection for CQC;

SD-07 Certificates

Qualifications

1.04 QUALITY ASSURANCE

Personnel assigned to concrete construction shall be qualified as American Concrete Institute (ACI) Certified Workmen in one of the following grades or show written evidence of having completed similar qualification programs:

Concrete Field TestingTechnician	Grade I
Concrete Laboratory TestingTechnician	Grade I or II
Concrete ConstructionInspector	Level II
Concrete Transportation Construction Inspector or Reinforced ConcreteSpecial Inspector	Jointly certified by American Concrete Institute (ACI), and International Code Council (ICC)

A. Contractor Quality Control (CQC)

Assurance of adherence to this specification for off-site materials used for concrete batching shall be the responsibility of the Contractor Quality Control (CQC) staff. Additionally, it shall be the responsibility of the Contractor Quality Control (CQC) staff to ensure all concrete is batched in strict accordance with the proportions outlined in the approved mix designs.

1. Materials

The Contractor Quality Control (CQC) staff shall sample and test aggregates, cementitious materials, and other materials used in the batching of concrete to determine compliance with the specifications as considered appropriate. Samples of aggregates shall be obtained at the point of batching in accordance with ASTM D75.

2. Fresh Concrete

Sufficient testing of freshly batched concrete shall be performed by CQC staff prior to leaving the batch plant to ensure concrete is delivered to the site in accordance with these specifications.

3. Inspection

Concrete operations will be tested and inspected by the Owner's Representative as the project progresses. It is the responsibility of the Contractor to provide reasonable means of access for procurement of representative test samples meeting all necessary OSHA requirements as well as any applicable state or local job-site safety requirements.

B. Owner’s Representative Assurance Inspection and Testing

The Owner's Representative will inspect construction and on-site materials as considered appropriate and will monitor operations of the Contractor's CQC staff as necessary.

Owner's Representative inspection or testing will not relieve the Contractor of any CQC responsibilities.

1. Materials

   The Owner's Representative reserves the right to sample and test aggregates, cementitious materials, other materials, and concrete to determine compliance with the specifications as considered appropriate.

2. Fresh Concrete

   Fresh concrete will be sampled on-site as delivered and prior to placement in accordance with ASTM C172 and tested in accordance with these specifications, as considered necessary. All on-site tests will be provided by the Owner and performed by the Owner's Representative.

3. Hardened Concrete

   Tests on hardened concrete will be provided by the Owner and performed by the Owner's Representative when such tests are considered necessary.

4. Inspection

   Concrete operations will be tested and inspected by the Owner's Representative as the project progresses. Failure to detect defective work or material will not prevent rejection later when a defect is discovered nor will it obligate the Owner's Representative for final acceptance.

1.05 DELIVERY, STORAGE, AND HANDLING

Store cement and other cementitious materials in weathertight buildings, bins, or silos which will exclude moisture and contaminants and keep each material completely separated. Aggregate stockpiles shall be arranged and used in a manner to avoid excessive segregation and to prevent contamination with other materials or with other sizes of aggregates. Aggregate shall not be stored directly on ground unless a sacrificial layer is left undisturbed. Store reinforcing bars and accessories above the ground on platforms, skids or other supports. Other materials shall be stored in such a manner as to avoid contamination and deterioration.

Admixtures which have been in storage at the project site for longer than 6 months or which have been subjected to freezing shall not be used unless retested and proven to meet the specified requirements. Materials shall be capable of being accurately identified after bundles or containers are opened.

PART 2: PRODUCTS

2.01 CEMENTITIOUS MATERIALS

Cementitious Materials shall be portland cement, portland-pozzolan cement, or portland cement in combination with pozzolan conforming to appropriate specifications listed below. Restrict usage of cementitious materials in concrete that will have surfaces exposed in the completed structure so there is no change in color, source, or type of cementitious material.

A. Portland Cement

   ASTM C150, Type II low alkali.

B. High-Early-Strength Portland Cement

ASTM C150, Type III with tricalcium aluminate limited to 5 percent, low alkali. Use Type III cement only in isolated instances and only when approved in writing.

C. Pozzolan (Fly Ash)

Pozzolan shall conform to ASTM C618, Class F, including low alkali multiple factor, drying shrinkage, uniformity, and moderate sulfate resistance requirements in Table 3 of ASTM C618.

1. Non-staining.
2. Suited to provide hardened concrete of uniform light gray color.
3. Maximum loss on ignition: 4 percent.
4. Compatible with other concrete ingredients and having no deleterious effects on the hardened concrete.
5. Produced by source approved by the State Highway Department in the state where the Project is located for use in concrete for bridges.
6. Cement and fly ash type used shall correspond to that upon which selection of concrete proportions was based in the mix design.

If pozzolan is used, it shall never be less than 15 percent nor more than 35 percent by weight of the total cementitious material.

2.02 AGGREGATES

Provide aggregates approved for bridge construction by the State Highway Department in the State of North Dakota. Pozzolan and other additives shall not be used to compensate for alkali reactivity of aggregates.

A. Fine Aggregate

Fine aggregate shall conform to the quality and gradation requirements of ASTM C33, fine aggregates to be natural, not manufactured Manufacturer's:

B. Coarse Aggregate

Coarse aggregate shall conform to ASTM C33. Coarse aggregate sieve analysis:

1. For concrete topping: ASTM C33, size number 7 (maximum 1/2 IN).
2. For Mass Concrete: ASTM C33, size number 4 (maximum 1-1/2 IN).
   a. Minimum specific gravity: 2.57,
3. For all other concrete: ASTM C33, size number 57 (maximum 1 IN) or size number 67 (maximum 3/4 IN).

2.03 CHEMICAL ADMIXTURES

Chemical admixtures, when required or permitted, shall conform to the appropriate specification listed. Admixtures shall be furnished in liquid form and of suitable concentration for easy, accurate control of dispensing. Do not use calcium chloride.

A. Air-Entraining Admixture

ASTM C260 and shall consistently entrain the air content in the specified ranges under

field conditions.

B. Accelerating Admixture

ASTM C494, Type C or E, except that calcium chloride or admixtures containing calcium chloride shall not be used.

C. Water-Reducing or Retarding Admixture

ASTM C494, Type A, B, or D, except that the 6-month and 1-year compressive and flexural strength tests are waived.

D. High-Range Water Reducer

ASTM C494, Type F or G, except that the 6-month and 1-year strength requirements are waived. The admixture shall be used only when approved in writing, such approval being contingent upon particular mixture control as described in the Contractor's Quality Control Plan and upon performance of separate mixture design studies.

E. Surface Retarder

COE CRD-C 94. Submit sample of surface retarder material with manufacturer's instructions for application in conjunction with air-water cutting.

F. Shrinking Reducing Admixture

Utilize at dosage necessary to help achieve required skrinkage value stated herein.

1. Similar to:

   a. Eclipse 4500 by W.R. Grace & Co.

   b. Conex by Euclid Chemical Co.

2. Admixtures to be chlorine free.

   Provide admixture of same type, manufacturer and quantity as used in establishing required concrete proportions in the mix design

G. Other Chemical Admixtures

Chemical admixtures for use in producing flowing concrete shall comply with ASTM C1017, Type I or II. These admixtures shall be used only when approved in writing, such approval being contingent upon particular mixture control as described in the Contractor's Quality Control Plan and upon performance of separate mixture design studies

2.04 WATER

Water for mixing shall be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali, except that non-potable water may be used if it meets the requirements of COE CRD-C 400.

A. Allowable Shrinkage

1. Concrete for all water containing structures: 0.032% per ASTM C157 after 28 days.

2. All other concrete: 0.048% per ASTM C157 after 28 days.

3. Use shrinkage reducing admixture if required to meet specified shrinkage limit.

   Maximum total chloride ion content for concrete mix including all

ingredients measured as a weight percent of cement:

A. Prestressed concrete: 0.06%.

B. All other concrete: 0.10%.

Sand Cement Grout:

A. Approximately three (3) parts sand, one (1) part Portland cement, 6 +1 percent entrained air and water to produce a slump which allows grout to completely fill required areas and surround adjacent reinforcing.

1. Provide sand in accordance with requirements for fine aggregate for concrete.

B. Minimum 28 day compressive strength: 3000 psi

2.05 NONSHRINK GROUT

See Specification 03 24 00 Grout.

2.06 LATEX BONDING AGENT

Latex agents for bonding fresh to hardened concrete shall conform to ASTM C1059.

2.07 EPOXY RESIN

Epoxy resins for use in repairs shall conform to ASTM C881, Type V, Grade 2 Class as appropriate to the existing ambient and surface temperatures. Submit manufacturer's product data, indicating VOC content. Manufacturer's catalog data for the items above, including printed instructions.

A. Three-component epoxy resin system:

1. Two (2) liquid epoxy components.
2. One (1) inert aggregate filler component.
3. Adhesive acceptable manufacturers:BASF "Masterflow 648 CP".
4. Exxon Chemical Company "Escoweld 2505."
5. Sika "Sikadur Hi-Mod."
6. U.S. Grout "Five Start Epoxy Grout."
7. Euclid Chemical "E3-G."

B. Aggregate acceptable manufacturers:

1. BASF "Masterflow 648 CP".
2. Exxon Chemical Company "Escoweld 2510."
3. Sika aggregate.
4. U.S. Grout aggregate.
5. Euclid Chemical "Euclid aggregate."

C. Aggregate manufacturer shall be the same as the adhesive manufacturer.

D. The aggregate shall be compatible with the adhesive.

E. Each component furnished in separate package for mixing at jobsite

2.08 EMBEDDED ITEMS

Embedded items shall be of the size and type indicated or as needed for the application.

2.09 FLOOR HARDENER

Floor hardener shall be a colorless aqueous solution containing zinc silicofluoride, magnesium silicofluoride, or sodium silicofluoride. These silicofluorides can be used individually or in combination. Proprietary hardeners may be used if approved in writing by the Owner's Representative.

2.10 PERIMETER INSULATION

Perimeter insulation shall be polystyrene conforming to ASTM C578, Type II; polyurethane conforming to ASTM C591, Type II; or cellular glass conforming to ASTM C552, Type I or IV.

2.11 VAPOR RETARDER

Vapor retarder shall be polyethylene sheeting with a minimum thickness of 6 mils or other equivalent material having a vapor permeance rating not exceeding 0.5 perms as determined in accordance with ASTM E96.

2.12 JOINT MATERIALS

A. Joint Fillers, Sealers, and Waterstops

Materials for expansion joint fillers and waterstops shall be in accordance with Section 03 15 00.00 10 CONCRETE ACCESSORIES. Materials for and sealing of joints shall conform to the requirements of Section 07 92 00 JOINT SEALANTS.

B. Contraction Joints in Slabs

Materials for contraction joint inserts shall be in accordance with Section 03 15 00.00 10 CONCRETE ACCESSORIES.

PART 3: EXECUTION

3.01 PREPARATION FOR PLACING

Before commencing concrete placement, perform the following: Surfaces to receive concrete shall be clean and free from frost, ice, mud, and water. Forms shall be in place, cleaned, coated, and adequately supported, in accordance with Section 03 11 13.00 10 STRUCTURAL CONCRETE FORMWORK. Reinforcing steel shall be in place, cleaned, tied, and adequately supported, in accordance with Section 03 20 00.00 10 CONCRETE REINFORCEMENT. Transporting and conveying equipment shall be in-place, ready for use, clean, and free of hardened concrete and foreign material. Equipment for consolidating concrete shall be at the placing site and in proper working order. Equipment and material for curing and for protecting concrete from weather or mechanical damage shall be at the placing site, in proper working condition and in sufficient amount for the entire placement. When hot, windy conditions during concreting appear probable, equipment and material shall be at the placing site to provide windbreaks, shading, fogging, or other action to prevent plastic shrinkage cracking or other damaging drying of the concrete.

A. Foundations

1. Concrete on Earth Foundations

Earth (subgrade, base, or subbase courses) surfaces upon which concrete is to be placed shall be clean, damp, and free from debris, frost, ice, and standing or running water. Prior to placement of concrete, the foundation shall be well drained and shall be satisfactorily graded and uniformly compacted, inspected, and approved by Geotechnical Engineer.

2. Excavated Surfaces in Lieu of Forms

Concrete for footings may be placed directly against the soil provided the earth has been carefully trimmed, is uniform and stable, and meets the compaction requirements of Section 31 00 00.00 13 EARTHWORK FOR LEVEES AND FLOODWALLS AND RETAINING WALLS. Place the concrete without becoming contaminated by loose material, and outlined within the specified tolerances. Concrete for footings placed directly against earth shall have 4" clear to reinforcement. Additional concrete to provide the additional clearance will be at the cost of the contractor.

B. Previously Placed Concrete

Concrete surfaces to which additional concrete is to be bonded shall be prepared for receiving the next horizontal lift by cleaning the construction joint surface with either air-water cutting, sandblasting, high-pressure water jet, or other approved method. Prepare concrete at the side of vertical construction joints as approved by the Owner's Representative. Air-water cutting shall not be used on formed surfaces or surfaces congested with reinforcing steel. Regardless of the method used, the resulting surfaces shall be free from all laitance and inferior concrete so that clean surfaces of well bonded coarse aggregate are exposed and make up at least 10-percent of the surface area, distributed uniformly throughout the surface. The edges of the coarse aggregate shall not be undercut. Keep the surface of horizontal construction joints continuously wet for the first 12 hours during the 24-hour period prior to placing fresh concrete. The surface shall be washed completely clean as the last operation prior to placing the next lift. For heavy duty floors and two-course floors, a thin coat of neat cement grout of about the consistency of thick cream shall be thoroughly scrubbed into the existing surface immediately ahead of the topping placing. The grout shall be a 1:1 mixture of portland cement and sand passing the No. 8 sieve. The topping concrete shall be deposited before the grout coat has had time to stiffen.

1. Waste Disposal

Air-water cutting of a fresh concrete surface shall be performed at the proper time and only on horizontal construction joints. The air pressure used in the jet shall be 100 psi, plus or minus 10 psi, and the water pressure shall be just sufficient to bring the water into effective influence of the air pressure. When approved by the Owner's Representative, a surface retarder complying with the requirements of COE CRD-C 94 may be applied to the surface of the lift in order to prolong the period of time during which air-water cutting is effective. After cutting, the surface shall be washed and rinsed as long as there is any trace of cloudiness of the wash water. Where necessary to remove accumulated laitance, coatings, stains, debris, and other foreign material, high-pressure waterjet or sandblasting shall be used as the last operation before placing the next lift.

2. High-Pressure Water Jet

Use a stream of water under a pressure of not less than 3,000 psi for cutting and

cleaning. Its use shall be delayed until the concrete is sufficiently hard so that only the surface skin or mortar is removed and there is no undercutting of coarse-aggregate particles. If the waterjet is incapable of a satisfactory cleaning, the surface shall be cleaned by sandblasting.

3. Wet Sandblasting

   Use wet sandblasting after the concrete has reached sufficient strength to prevent undercutting of the coarse aggregate particles. After wet sandblasting, the surface of the concrete shall then be washed thoroughly to remove all loose materials.

4. Waste Disposal

   The method used in disposing of waste water employed in cutting, washing, and rinsing of concrete surfaces shall be such that the waste water does not stain, discolor, or affect exposed surfaces of the structures, or damage the environment of the project area. The method of disposal shall be subject to approval.

5. Preparation of Previously Placed Concrete

   Concrete surfaces to which other concrete is to be bonded shall be abraded in an approved manner that will expose sound aggregate uniformly without damaging the concrete. Remove laitance and loose particles. Surfaces shall be thoroughly washed and shall be moist but without free water when concrete is placed.

C. Vapor Retarder

Provide vapor retarder beneath the interior on-grade concrete floor slabs. Use the greatest widths and lengths practicable to eliminate joints wherever possible. Joints shall be lapped a minimum of 12 inches. Torn, punctured, or damaged vapor retarder material shall be removed and new vapor retarder shall be provided prior to placing concrete. For minor repairs, patches may be made using laps of at least 12 inches. Lapped joints shall be sealed and edges patched with pressure-sensitive adhesive or tape not less than 2 inches wide and compatible with the membrane.

Place vapor retarder directly on underlying subgrade, base course, or capillary water barrier, unless it consists of crushed material or large granular material which could puncture the vapor retarder. In this case, a thin layer of approximately 1/2 inch of fine graded material should be rolled or compacted over the fill before installation of the vapor retarder to reduce the possibility of puncture. Control concrete placement so as to prevent damage to the vapor retarder.

D. Perimeter Insulation

Install perimeter insulation at locations indicated. Adhesive shall be used where insulation is applied to the interior surface of foundation walls and may be used for exterior application.

E. Embedded Items

Before placement of concrete, determine that all embedded items are firmly and securely fastened in place as indicated on the drawings, or required. Conduit and other embedded items shall be clean and free of oil and other foreign matter such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when

specifically authorized or directed. Voids in sleeves, inserts, and anchor slots shall be filled temporarily with readily removable materials to prevent the entry of concrete into voids. Welding shall not be performed on embedded metals within 12 inches of the surface of the concrete.

Tack welding shall not be performed on or to embedded items.

3.02 CONCRETE PRODUCTION

A. General Requirements

Concrete shall be furnished from a ready-mixed concrete plant. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94, except as otherwise specified. Truck mixers, agitators, and nonagitating transporting units shall comply with NRMCA TMMB 100. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA QC 3. Approved batch tickets shall be furnished for each load of ready-mixed concrete.

B. Truck Mixers

Truck mixers, the mixing of concrete therein, and concrete uniformity shall conform to the requirements of ASTM C94. A truck mixer may be used either for complete mixing (transit-mixed) or to finish the partial mixing done in a stationary mixer (shrink-mixed). Each truck shall be equipped with two counters from which it is possible to determine the number of revolutions at mixing speed and the number of revolutions at agitating speed. Or, if approved in lieu of this, the number of revolutions shall be marked on the batch tickets. Water shall not be added at the placing site unless specifically approved; and in no case shall it exceed the specified w/c.

Any such water shall be injected at the base of the mixer, not at the discharge end.

3.03 TRANSPORTING CONCRETE TO PROJECT SITE

Transport concrete to the placing site in truck mixers.

3.04 CONVEYING CONCRETE ONSITE

Convey concrete from mixer or transporting unit to forms as rapidly as possible and within the time interval specified by methods which will prevent segregation or loss of ingredients using following equipment. Conveying equipment shall be cleaned before each placement.

A. Buckets

The interior hopper slope shall be not less than 58 degrees from the horizontal, the minimum dimension of the clear gate opening shall be at least 5 times the nominal maximum-size aggregate, and the area of the gate opening shall not be less than 2 square feet. The maximum dimension of the gate opening shall not be greater than twice the minimum dimension. The bucket gates shall be essentially grout tight when closed and may be manually, pneumatically, or hydraulically operated except that buckets larger than 2 cubic yards shall not be manually operated. The design of the bucket shall provide means for positive regulation of the amount and rate of deposit of concrete in each dumping position.

B. Transfer Hoppers

Concrete may be charged into nonagitating hoppers for transfer to other conveying devices. Transfer hoppers shall be capable of receiving concrete directly from delivery vehicles and shall have conical-shaped discharge features. Equip the transfer hopper with a hydraulically operated gate and with a means of external vibration to effect complete discharge. Concrete shall not be held in nonagitating transfer hoppers more than 30 minutes.

C. Trucks

Truck mixers operating at agitating speed or truck agitators used for transporting plant-mixed concrete shall conform to the requirements of ASTM C94. Use nonagitating equipment only for transporting plant-mixed concrete over a smooth road and when the hauling time is less than 15 minutes. Bodies of nonagitating equipment shall be smooth, watertight, metal containers specifically designed to transport concrete, shaped with rounded corners to minimize segregation, and equipped with gates that will permit positive control of the discharge of the concrete.

D. Chutes

When concrete can be placed directly from a truck mixer, agitator, or nonagitating equipment, the chutes normally attached to this equipment by the manufacturer may be used. Use a discharge deflector when required by the Owner's Representative. Separate chutes and other similar equipment will not be permitted for conveying concrete.

E. Belt Conveyors

Design and operate belt conveyors to assure a uniform flow of concrete from mixer to final place of deposit without segregation of ingredients or loss of mortar and provided with positive means, such as discharge baffle or hopper, for preventing segregation of the concrete at the transfer points and the point of placing. Construct belt conveyors such that the idler spacing does not exceed 36 inches. The belt speed shall be a minimum of 300 feet per minute and a maximum of 750 feet per minute. If concrete is to be placed through installed horizontal or sloping reinforcing bars, the conveyor shall discharge concrete into a pipe or elephant trunk that is long enough to extend through the reinforcing bars.

F. Concrete Pumps

Concrete may be conveyed by positive displacement pump when approved. The pumping equipment shall be piston or squeeze pressure type; pneumatic placing equipment shall not be used. The pipeline shall be rigid steel pipe or heavy-duty flexible hose. The inside diameter of the pipe shall be at least 3 times the nominal maximum-size coarse aggregate in the concrete mixture to be pumped but not less than 4 inches. Aluminum pipe shall not be used.

3.05 PLACING CONCRETE

Discharge mixed concrete within 1.5 hours or before the mixer drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates. When the concrete temperature exceeds 85 degrees F, reduce the time to 45 minutes. Place concrete within 15 minutes after it has been discharged from the transporting unit. Concrete shall be handled from mixer or transporting unit to forms in a continuous manner until the approved unit of operation is completed. Provide adequate scaffolding, ramps and walkways so that personnel and equipment are not supported by in-place reinforcement.

Placing will not be permitted when the sun, heat, wind, or limitations of facilities prevent proper consolidation, finishing and curing. Provide sufficient placing capacity so that concrete can be kept free of cold joints.

A. Depositing Concrete

Deposit concrete as close as possible to its final position in the forms, and with no vertical drop greater than 5 feet except where suitable equipment is provided to prevent

segregation and where specifically authorized. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than 12 inches thick, except that all slabs shall be placed in a single lift. Concrete to receive other construction shall be screeded to the proper level. Concrete shall be deposited continuously in one layer or in layers so that fresh concrete is deposited on in-place concrete that is still plastic. Fresh concrete shall not be deposited on concrete that has hardened sufficiently to cause formation of seams or planes of weakness within the section.

Concrete that has surface dried, partially hardened, or contains foreign material shall not be used. When temporary spreaders are used in the forms, the spreaders shall be removed as their service becomes unnecessary. Concrete shall not be placed in slabs over piers and walls until concrete in piers and walls has been in-place at least two hours or until the concrete begins to lose its plasticity. Place concrete for beams at the same time as concrete for adjoining slabs.

B. Consolidation

Immediately after placing, consolidate each layer of concrete by internal vibrators, except for slabs 4 inches thick or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete; keep a spare vibrator at the jobsite during all concrete placing operations. The vibrators shall have a frequency of not less than 10,000 vibrations per minute, an amplitude of at least 0.025 inch, and the head diameter shall be appropriate for the structural member and the concrete mixture being placed. Insert vibrators vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a reasonable amount. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then vertically withdrawn slowly while operating. Form vibrators shall not be used unless specifically approved and unless forms are constructed to withstand their use. Vibrators shall not be used to move concrete within the forms. Slabs 4 inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique. Frequency and amplitude of vibrators shall be determined in accordance with COE CRD-C 521. Do not use grate tampers (jitterbugs).

C. Cold Weather Requirements

Use special protection measures, approved by the Owner's Representative, if freezing temperatures are anticipated before the expiration of the specified curing period. The ambient temperature of the air where concrete is to be placed and the temperature of surfaces to receive concrete shall be not less than 40 degrees F. The temperature of the concrete when placed shall be not less than 50 degrees F nor more than 75 degrees F. Heating of the mixing water or aggregates will be required to regulate the concrete placing temperature. Materials entering the mixer shall be free from ice, snow, or frozen lumps. Salt, chemicals or other materials shall not be incorporated in the concrete to prevent freezing. Upon written approval, an accelerating admixture conforming to ASTM C494, Type C or E may be used, provided it contains no calcium chloride. Do not use calcium chloride.

D. Hot Weather Requirements

When job-site conditions are present or anticipated that accelerate the rate of moisture

loss or rate of cement hydration of freshly mixed concrete, including an ambient temperature of 80 degrees F or higher, and an evaporation rate that exceeds 0.2 lb/ft^2/h, concrete work shall conform to all requirements of ACI 305.1.

E. Prevention of Plastic Shrinkage Cracking

During hot weather with low humidity, and particularly with appreciable wind, as well as interior placements when space heaters produce low humidity, the Contractor shall be alert to the tendency for plastic shrinkage cracks to develop and shall institute measures to prevent this. Take particular care if plastic shrinkage cracking is potentially imminent and especially if it has developed during a previous placement. Conform with the requirement of ACI 305.1. In addition the concrete placement shall be further protected by erecting shades and windbreaks and by applying fog sprays of water, sprinkling, ponding or wet covering. Plastic shrinkage cracks that occur shall be filled by injection of epoxy resin as directed, after the concrete hardens. Plastic shrinkage cracks shall never be troweled over or filled with slurry.

F. Placing Concrete in Congested Areas

Use special care to ensure complete filling of the forms, elimination of all voids, and complete consolidation of the concrete when placing concrete in areas congested with reinforcing bars, embedded items, waterstops and other tight spacing. An appropriate concrete mixture shall be used, and the nominal maximum size of aggregate (NMSA) shall meet the specified criteria when evaluated for the congested area. Vibrators with heads of a size appropriate for the clearances available shall be used, and the consolidation operation shall be closely supervised to ensure complete and thorough consolidation at all points. Where necessary, splices of reinforcing bars shall be alternated to reduce congestion. Where two mats of closely spaced reinforcing are required, the bars in each mat shall be placed in matching alignment to reduce congestion.

G. Placing Flowable Concrete

If a plasticizing admixture conforming to ASTM C1017 is used or if a Type F or G high range water reducing admixture is permitted to increase the slump, the concrete shall meet all requirements of paragraph SYSTEM DESCRIPTION. Use extreme care in conveying and placing the concrete to avoid segregation. No relaxation of requirements to accommodate flowable concrete will be permitted.

3.06 JOINTS

Locate and construct joints as indicated or approved. Joints not indicated on the drawings shall be located and constructed to minimize the impact on the strength of the structure. In general, locate such joints near the middle of the spans of supported slabs, beams, and girders unless a beam intersects a girder at this point, in which case the joint in the girder shall be offset a distance equal to twice the width of the beam. Joints in walls and piers shall be at the underside of floors, slabs, beams, or girders and at the tops of footings or floor slabs, unless otherwise approved. Joints shall be perpendicular to the main reinforcement. All reinforcement shall be continued across joints; except that reinforcement or other fixed metal items shall not be continuous through expansion joints, or through construction or contraction joints in slabs on grade. Reinforcement shall be 2 inches clear from each joint. Except where otherwise indicated, construction joints between interior slabs on grade and vertical surfaces shall consist of expansion joint filler material for the full depth of the slab. The joint filler material shall be recessed 1/2 inch and sealant applied at exposed floor locations. The perimeters of the slabs shall be free of fins, rough edges, spalling, or other unsightly appearance. Reservoir for sealant for construction and contraction joints in slabs shall be formed to the dimensions shown on the drawings

or by sawing to widen the top portion of sawed joints. Joints to be sealed shall be cleaned and sealed as indicated and in accordance with Section 07 92 00 JOINT SEALANTS.

A. Construction Joints

For concrete other than slabs on grade, locate construction joints as directed below. Concrete shall be placed continuously so that each unit is monolithic in construction. Fresh concrete shall not be placed against adjacent hardened concrete until it is at least 48 hours old. Locate construction joints as indicated or approved. Where concrete work is interrupted by weather, end of work shift or other similar type of delay, location and type of construction joint shall be subject to approval of the Owner's Representative. Unless otherwise indicated and except for slabs on grade, extend reinforcing steel through construction joints. Construction joints in slabs on grade shall be doweled as shown. Concrete walls, or piers shall be in place at least 2 hours, or until the concrete begins to lose its plasticity, before placing concrete for beams, girders, or slabs thereon. In walls having openings, terminate lifts at the top and bottom of the opening. Other lifts shall terminate at such levels as to conform to structural requirements. Where horizontal construction joints in walls are required, a strip of 1 inch square-edge lumber, beveled and oiled to facilitate removal, shall be tacked to the inside of the forms at the construction joint. Place concrete to a point 1 inch above the underside of the strip. The strip shall be removed 1 hour after the concrete has been placed, and any irregularities in the joint line shall be leveled off with a wood float, and all laitance shall be removed. Prior to placing additional concrete, horizontal construction joints shall be prepared as specified in paragraph Previously Placed Concrete above.

B. Construction Joints - General:

1. Locate joints as indicated on Contract Drawings or as shown on approved Shop Drawings.
    a. Where construction joint spacing shown on Drawings exceeds the joint spacing indicated in Paragraph B. below, submit proposed construction joint location in conformance with this Specification Section.
2. Unplanned construction joints will not be allowed.
    a. If concrete cannot be completely placed between planned construction joints, then it must be removed.
3. In general, locate joints near middle of spans of slabs, beams and girders unless a beam intersects a girder at this point, in which case, offset joint in girder a distance equal to twice the width of the beam.
4. Locate joints in walls and columns at underside of floors, slabs, beams, or girders, and at tops of foundations or floor slabs, unless shown otherwise.
    a. At Contractor's option, beam pockets may be formed into concrete walls.
    b. Size pockets to allow beam reinforcing to be placed as detailed on Drawings.
5. Place beams and girders at same time as slabs.
6. Place corbels monolithically with walls.
    a. Locate wall vertical construction joints midway between corbels.
    b. Where only a single corbel is located place it also monolithically with wall

and locate wall vertical construction joint a minimum of 3 feet from face of corbel.

7. Make joints perpendicular to main reinforcement with all reinforcement continuous across joints.

8. Provide roughened construction joints at all construction joints unless indicated otherwise on Drawings.

   a. Clean the previously hardened concrete interface and remove all laitance.

   b. Intentionally roughen the interface to a full amplitude of 1/4 inch.

   c. Provide recessed flat surface as required to install strip type waterstops.

9. Provide continuous keyways only where indicated on Drawings.

   a. Construction joint keyways shall have the following dimensions, unless shown otherwise on Drawings or directed otherwise by Engineer.

   b. Construction joint keyways in walls:

      i. Keyway width, not less than 1/3 and not more than 1/2 the wall thickness measured perpendicular to wall faces.
      ii. Keyway depth to be not less than 1-1/2 inches.
      iii. Place keyway in wall center unless shown otherwise on Drawings.

   c. Construction joint keyways in footings, foundations, base slabs, and structural or elevated slabs:

      i. Keyway height not less than 1/3 and not more than 1/2 the footing or slab thickness.
      ii. Keyway depth not less than 1-1/2 inches.
      iii. Keyway in footing or slab center unless shown otherwise on Drawings.

   d. Construction joint keyways in beams:

      i. Keyway height not less than 1/3 and not more than 1/2 the beam depth.
      ii. Keyway depth not less than 1-1/2 IN.
      iii. Keyway in beam center unless shown otherwise on Drawings.

10. Allow a minimum of 48 HRS before placement of adjoining concrete construction.

C. Construction Joints - Spacing:

1. General - Structures not intended to contain liquid:

   a. Wall vertical construction joints:

      i. 60 FT maximum centers.
      ii. At wall intersections, 30 FT maximum from corner.

   b. Wall horizontal construction joints: 20 to 25 FT centers.

   c. Base slab, floor, and roof slab construction joints:

      i. Placements to be approximately square and not to exceed 3500 square

feet.

ii. Maximum side dimension of a slab pour to be less than:
- Twice the length of the short side.
- 80 foot.

2. Structures intended to contain liquids:

a. Wall vertical construction joints:

i. 30 FT maximum centers.
ii. At wall intersections, 15 FT maximum from corner.

b. Wall horizontal construction joints: 12 to 18 FT centers.

c. Walls that are thicker than 18 inches may be poured less than

30 feet tall in one (1) pour provided the following requirements are satisfied:

i. A test wall of similar size, height and thickness will be poured to demonstrate the quality of the concrete work.
ii. The test wall will be located as a portion of a non-water bearing wall.
- The test wall will include a waterstop at the bottom of the wall.
- Alternatively, a separate test wall, not part of the final work, may be constructed.

iii. The concrete placement and concrete quality of the test wall will be observed by the Engineer.
- Concrete will be judged on the following:
  (1) Ability to keep bottom of the pour clean and free from trash and debris.
  (2) Ability to protect the waterstop from folding over due to the force of falling concrete.
  (3) Ability to properly consolidate all concrete in the wall pour, including below formed openings.

iv. Engineer will evaluate the Contractor's work and may recommend taller concrete wall pours if concrete quality is acceptable.
v. Preparation for all subsequent wall pours over 18 feet tall must be the same as the preparation of the test wall.
vi. Should the quality of concrete work on subsequent wall pours be judged inadequate, the Contractor may be directed to limit wall pour heights to 18 feet as originally specified.
vii. Should the quality of concrete work on the test wall be judged inadequate, additional test walls will not be observed and judged to allow pour heights greater than 18 feet unless allowed by Engineer.

d. Base slab and floor slab construction joints:

i. Placements to be approximately square and not to exceed 2000 square feet.
ii. Maximum side dimension of a slab pour to be less than:
- Twice the length of the short side.
- 60 feet.

D. Construction Joints - Bonding:

1. Obtain bond between concrete pours at construction joints by thoroughly

cleaning and removing all laitance from construction joints.

a. Before new concrete is placed, all construction joints shall be coated with cement grout, or dampened.

i. General: Use cement grout or dampening for all construction joints.

2. Roughened construction joints:

a. Roughen the surface of the concrete to expose the aggregate uniformly.

b. Remove laitance, loosened particles of aggregate or damaged concrete at the surface, or at the Contractor's option, use an approved chemical retarder which delays but does not prevent setting of the surface of the mortar in accordance with the manufacturer's recommendations.

i. Retarded mortar shall be removed within 24 hours after placing to produce a clean exposed aggregate bonding surface.

c. Cover the hardened concrete of horizontal joints with a coat of cement grout of similar proportions to the concrete, except substitute fine aggregate for coarse aggregate.

d. Place 1 inch layer of grout in bottoms of wall or column lifts immediately before placing concrete.

i. Vibrate grout and first layer of concrete simultaneously.

e. Place fresh concrete before the grout has attained its initial set.

3. Other keyed construction joints:

a. Thoroughly clean construction joints and remove all laitance.

b. Dampen the hardened concrete (but do not saturate) immediately prior to placing of fresh concrete

E. Contraction Joints in Slabs on Grade

Contraction joints shall be located and detailed as shown on the drawings. Produce contraction joints by forming a weakened plane in the concrete slab using materials and procedures specified in Section 03 15 00.00 10 CONCRETE ACCESSORIES, or sawing a continuous slot with a concrete saw, as indicated on the drawings.

F. Expansion Joints

Installation of expansion joints and sealing of these joints shall conform to the requirements of Section 03 15 00.00 10 CONCRETE ACCESSORIES and Section 07 92 00 JOINT SEALANTS.

1. Do not permit reinforcement or other embedded metal items bonded to concrete (except smooth dowels bonded on only one side of joint) to extend continuously through an expansion joint.

2. Use neoprene expansion joint fillers, unless noted otherwise on Drawings.

3. Seal expansion joints as shown on Drawings.

a. See Section 03 15 00.00 10 CONCRETE ACCESSORIES for requirements.

Expansion Joints

G. Isolation Joints

Installation of isolation joints and sealing of these joints shall conform to the requirements of Section 03 15 00.00 10 CONCRETE ACCESSORIES and Section 07 92 00 JOINT SEALANTS.

1. Do not permit reinforcement or other embedded metal items bonded to concrete to extend continuously through an isolation joint.
2. Use neoprene expansion joint fillers, unless noted otherwise on Drawings.
3. Seal isolation joints as shown on Drawings.
    a. See Section 03 15 00.00 10 CONCRETE ACCESSORIES for requirements.

Expansion Joints

4. Use neoprene expansion joint fillers, unless noted otherwise on Drawings.
5. Seal isolation joints as shown on Drawings.
    a. See Section 03 15 00.00 10 CONCRETE ACCESSORIES for requirements.

Expansion Joints

H. Waterstops

Install waterstops in conformance with the locations and details shown on the drawings using materials and procedures specified in Section 03 15 00.00 10 CONCRETE ACCESSORIES.

1. Preformed strip type:
    a. Install on smooth surface of hardened concrete by use of nails, adhesive or other means as recommended by manufacturer to prevent movement of waterstop during placement of concrete.
    b. Waterstop to be continuous with splices in accordance with manufacturer's instructions.
    c. Use in joints against existing concrete and where indicated on Drawings.
2. PVC type:
    a. Position waterstop accurately in forms.
    b. Secure waterstops in correct position using hog rings or grommets spaced along the length of waterstop and tie wire to adjacent reinforcing.
    c. Hold horizontal waterstops in place with continuous supports.
    d. Install according to manufacturer's instructions.
        1) Do not displace reinforcement from required location.

e. Waterstops to be continuous.

f. Splice ends with perpendicular butt splice using electrical splicing iron in accordance with manufacturer's instructions.

g. Unless otherwise noted, use for all construction joints in new construction for all structures indicated on Drawings.

I. Dowels and Tie Bars

Install dowels and tie bars at the locations shown on the drawings and to the details shown, using materials and procedures specified in Section 03 20 00.00 10 CONCRETE REINFORCING and herein. Conventional smooth "paving" dowels shall be installed in slabs using approved methods to hold the dowel in place during concreting within a maximum alignment tolerance of 1/8 inch in 12 inches. "Structural" type deformed bar dowels, or tie bars, shall be installed to meet the specified tolerances. Care shall be taken during placing adjacent to and around dowels and tie bars to ensure there is no displacement of the dowel or tie bar and that the concrete completely embeds the dowel or tie bar and is thoroughly consolidated.

3.07 FLOOR HARDENER

Areas as indicated on the drawings shall be treated with floor hardener applied after the concrete has been cured and then air dried for 28 days. Apply three coats, each the day after the preceding coat was applied. For the first application, one pound of the silicofluoride shall be dissolved in one gallon of water. For subsequent applications, the solution shall be two pounds of silicofluoride to each gallon of water. Floor should be mopped with clear water shortly after the preceding application has dried to remove encrusted salts. Apply proprietary hardeners in accordance with the manufacturer's instructions. During application, area should be well ventilated. Take precautions when applying silicofluorides due to the toxicity of the salts. Any compound that contacts glass or aluminum should be immediately removed with clear water.

3.08 EXTERIOR SLAB AND RELATED ITEMS

c. Pits and Trenches

Construct pits and trenches as indicated on the drawings. Bottoms and walls shall be placed monolithically or waterstops and keys, shall be provided as approved.

3.9 SETTING BASE PLATES AND BEARING PLATES

After being properly positioned, column base plates, bearing plates for beams and similar structural members, and machinery and equipment base plates shall be set to the proper line and elevation with damp-pack bedding mortar, except where nonshrink grout is indicated. The thickness of the mortar or grout shall be approximately 1/24 the width of the plate, but not less than 3/4 inch unless noted otherwise on the drawings. Concrete and metal surfaces in contact with grout shall be clean and free of oil and grease, and concrete surfaces in contact with grout shall be damp and free of laitance when grout is placed. Use nonshrink grout for equipment base plates and as indicated on the drawings.

c. Damp-Pack Bedding Mortar

Damp-pack bedding mortar shall consist of 1 part cement and 2-1/2 parts fine aggregate having water content such that a mass of mortar tightly squeezed in the hand will retain its shape but will crumble when disturbed. The space between the top of the concrete and bottom of the bearing plate or base shall be

packed with the bedding mortar by tamping or ramming with a bar or rod until it is completely filled.

d. Non-shrink Grout

Nonshrink grout shall be a ready-mixed material requiring only the addition of water. Water content shall be the minimum that will provide a flowable mixture and completely fill the space to be grouted without segregation, bleeding, or reduction of strength.

1. Mixing and Placing Non-shrink Grout

Mixing and placing shall be in conformance with the material manufacturer's instructions and as specified therein. Ingredients shall be thoroughly dry-mixed before adding water. After adding water, mix the batch for 3 minutes. Batches shall be of size to allow continuous placement of freshly mixed grout. Discard grout not used within 30 minutes after mixing. The space between the top of the concrete or machinery-bearing surface and the plate shall be filled solid with the grout. Forms shall be of wood or other equally suitable material for completely retaining the grout on all sides and on top and shall be removed after the grout has set. The placed grout shall be carefully worked by rodding or other means to eliminate voids; however, overworking and breakdown of the initial set shall be avoided. Grout shall not be retempered or subjected to vibration from any source. Where clearances are unusually small, placement shall be under pressure with a grout pump. Temperature of the grout, and of surfaces receiving the grout, shall be maintained at 65 to 85 degrees F until after setting.

2. Treatment of Exposed Surfaces

For metal-oxidizing nonshrink grout, exposed surfaces shall be cut back 1 inch and immediately covered with a parge coat of mortar consisting of 1 part portland cement and 2-1/2 parts fine aggregate by weight, with sufficient water to make a plastic mixture. The parge coat shall have a smooth finish. For other mortars or grouts, exposed surfaces shall have a smooth-dense finish and be left untreated. Curing shall comply with Section 03 39 00.00 10 CONCRETE CURING.

3.10 TESTING AND INSPECTION REQUIREMENTS FOR CQC

A. Perform the inspection and tests described below and, based upon the results of these inspections and tests, take the action required. Submit certified copies of laboratory test reports, including mill tests and all other test data, for portland cement, blended cement, pozzolan, ground granulated blast furnace slag, silica fume, aggregate, admixtures, and curing compound proposed for use on this project.

B. Grading and Corrective Action

1. Fine Aggregate

At least once during each shift when the concrete plant is operating, there shall be one sieve analysis and fineness modulus determination in accordance with ASTM C136 and COE CRD-C 104 for the fine aggregate or for each fine aggregate if it is batched in more than one size or classification. The location at which samples are taken may be selected by the Contractor as the most advantageous for control. However, the Contractor is responsible for delivering fine aggregate to the mixer within specification limits. When the amount passing on any sieve is outside the specification limits, the fine aggregate shall be immediately resampled and retested.

If there is another failure on any sieve, the fact shall be immediately reported to the Owner's Representative, concreting shall be stopped, and immediate steps taken to correct the grading.

2. Coarse Aggregate

At least once during each shift in which the concrete plant is operating, there shall be a sieve analysis in accordance with ASTM C136 for each size of coarse aggregate. The location at which samples are taken may be selected by the Contractor as the most advantageous for production control. However, the Contractor shall be responsible for delivering the aggregate to the mixer within specification limits. A test record of samples of aggregate taken at the same locations shall show the results of the current test as well as the average results of the five most recent tests including the current test. The Contractor may adopt limits for control coarser than the specification limits for samples taken other than as delivered to the mixer to allow for degradation during handling. When the amount passing any sieve is outside the specification limits, the coarse aggregate shall be immediately resampled and retested. If the second sample fails on any sieve, that fact shall be reported to the Owner's Representative. Where two consecutive averages of 5 tests are outside specification limits, the operation shall be considered out of control and reported to the Owner's Representative. Concreting shall be stopped and immediate steps shall be taken to correct the grading.

C. Quality of Aggregates

Thirty days prior to the start of concrete placement, perform all tests for aggregate quality required by ASTM C33. In addition, after the start of concrete placement, perform tests for aggregate quality at least every three months, and when the source of aggregate or aggregate quality changes. Samples tested after the start of concrete placement shall be taken immediately prior to entering the concrete mixer.

D. Scales, Batching and Recording

Check the accuracy of the scales by test weights prior to start of concrete operations and at least once every three months. Such tests shall also be made as directed whenever there are variations in properties of the fresh concrete that could result from batching errors. Once a week the accuracy of each batching and recording device shall be checked during a weighing operation by noting and recording the required weight, recorded weight, and the actual weight batched. At the same time, test and ensure that the devices for dispensing admixtures are operating properly and accurately.

When either the weighing accuracy or batching accuracy does not comply with specification requirements, the plant shall not be operated until necessary adjustments or repairs have been made. Discrepancies in recording accuracies shall be corrected immediately.

E. Batch-Plant Control

Continuously control the measurement of concrete materials, including cementitious materials, each size of aggregate, water, and admixtures. Adjust the aggregate weights and amount of added water as necessary to compensate for free moisture in the aggregates. The amount of air-entraining agent shall be adjusted to control air content within specified limits. Prepare a report indicating type and source of cement used, type and source of pozzolan used, amount and source of admixtures used, aggregate source,

the required aggregate and water weights per cubic yard amount of water as free moisture in each size of aggregate, and the batch aggregate and water weights per cubic yard for each class of concrete batched during each day's plant operation.

F. Concrete Mixture

1. Air Content Testing

Perform air content tests when concrete is batched. In addition, at least two tests for air content shall be made on randomly selected batches of each separate concrete mixture produced during each 8-hour period of concrete production. Perform additional tests when excessive variation in workability is reported by the placing foreman or Owner's Representative inspector. Tests shall be made in accordance with ASTM C231 for normal weight concrete. Plot test results on control charts which shall at all times be readily available to the Owner's Representative and submitted weekly. Keep copies of the current control charts in the field by testing crews and results plotted as tests are made. When a single test result reaches either the upper or lower action limit, perform a second test immediately. The results of the two tests shall be averaged and this average used as the air content of the batch to plot on both the air content and the control chart for range, and for determining need for any remedial action. The result of each test, or average as noted in the previous sentence, shall be plotted on a separate control chart for each mixture on which an "average line" is set at the midpoint of the specified air content range from paragraph Air Entrainment in PART 1. Set an upper warning limit and a lower warning limit line 1.0 percentage point above and below the average line, respectively. An upper action limit and a lower action limit line shall be set 1.5 percentage points above and below the average line, respectively. The range between each two consecutive tests shall be plotted on a secondary control chart for range where an upper warning limit is set at 2.0 percentage points and an upper action limit is set at 3.0 percentage points. Samples for air content may be taken at the mixer, however, the Contractor is responsible for delivering the concrete to the placement site at the stipulated air content. If the Contractor's materials or transportation methods cause air content loss between the mixer and the placement, Contractor shall make necessary adjustments based on anticipated air content loss to ensure air content is within the allowable range at placement. Air content tests will be conducted at the placement site by the Owner’s Representative and results will be shared with the Contractor for use correlating changes in between mixer and placement.

2. Air Content Corrective Action

Whenever points on the control chart for percent air reach either warning limit, an adjustment shall immediately be made in the amount of air-entraining admixture batched. As soon as practical after each adjustment, another test shall be made to verify the result of the adjustment. Whenever a point on the secondary control chart for range reaches the warning limit, the admixture dispenser shall be recalibrated to ensure that it is operating accurately and with good reproducibility. Whenever a point on either control chart reaches an action limit line, the air content shall be considered out of control and the concreting operation shall immediately be halted until the air content is under control. Additional air content tests shall be made when concreting is restarted.

3. Slump Testing

In addition to slump tests which are made when concrete is batched, at least four slump tests shall be made on randomly selected batches in accordance with ASTM C143 for each separate concrete mixture produced during each 8-hour or less period of concrete production each day. Also, additional tests shall be made when excessive variation in workability is reported by the placing foreman or Owner's Representative inspector. Plot test results on control charts which shall at all times be readily available to the Owner's Representative and submitted weekly. Keep copies of the current control charts in the field by testing crews and results plotted as tests are made. When a single slump test reaches or goes beyond either the upper or lower action limit, immediately perform a second test. The results of the two tests shall be averaged and this average used as the slump of the batch to plot on both the control charts for slump and the chart for range, and for determining need for any remedial action. Set limits on separate control charts for slump for each type of mixture. The upper warning limit shall be set at 1/2 inch below the maximum allowable slump specified in paragraph Slump in PART 1 for each type of concrete and an upper action limit line and lower action limit line shall be set at the maximum and minimum allowable slumps, respectively, as specified in the same paragraph. The range between each consecutive slump test for each type of mixture shall be plotted on a single control chart for range on which an upper action limit is set at 2 inches. Take samples for slump at the mixer. However, the Contractor is responsible for delivering the concrete to the placement site at the stipulated slump. If the Contractor's materials or transportation methods cause slump loss between the mixer and the placement, Contractor shall make necessary adjustments based on anticipated slump loss to ensure slump is within the allowable range at placement. Slump tests will be conducted at the placement site by the Owner's Representative and results will be shared with the Contractor for use correlating changes in between mixer and placement.

4. Slump Corrective Action

Whenever points on the control charts for slump reach the upper warning limit, make an adjustment immediately in the batch weights of water and fine aggregate. The adjustments are to be made so that the total water content does not exceed that amount allowed by the maximum w/c ratio specified, based on aggregates which are in a saturated surface dry condition. When a single slump reaches the upper or lower action limit, no further concrete shall be delivered to the placing site until proper adjustments have been made. Immediately after each adjustment, another test shall be made to verify the correctness of the adjustment. Whenever two consecutive individual slump tests, made during a period when there was no adjustment of batch weights, produce a point on the control chart for range at or above the upper action limit, halt the concreting operation immediately, and take appropriate steps to bring the slump under control. Additional slump tests shall be made as directed.

5. Temperature

Measure the temperature of the concrete when it is batched in accordance with ASTM C1064. Report the temperature to the Owner's Representative.

G. Inspection Before Placing

Inspect foundations, construction joints, steel reinforcement, placement, headed anchor bolts, forms, waterstops, and embedded items in sufficient time prior to each concrete

placement. The Owner's Representative shall be notified a minimum of 48 hours prior to any anticipated concrete placement. Report the results of each inspection in writing. Once the CQC inspection has been completed and reported, The Contractor shall allow adequate time for the Owner's Representative to verify that all necessary items are in place and ready to receive concrete. No concrete shall be placed until both the Contractor and Owner's Representative have completed their necessary inspections.

H. Placing

The placing foreman shall supervise placing operations, shall determine that the correct quality of concrete or grout is placed in each location as specified and as directed by the Owner's Representative, and shall be responsible for measuring and recording concrete temperatures and ambient temperature hourly during placing operations, weather conditions, time of placement, volume placed, and method of placement. The placing foreman shall not permit batching and placing to begin until it has been verified that an adequate number of vibrators in working order and with competent operators are available. Placing shall not be continued if any pile of concrete is inadequately consolidated. If any batch of concrete fails to meet the temperature requirements, immediate steps shall be taken to improve temperature controls.

I. Vibrators

Determine the frequency and amplitude of each vibrator in accordance with COE CRD-C 521 prior to initial use and at least once a month when concrete is being placed. Perform additional tests as directed when a vibrator does not appear to be adequately consolidating the concrete. The frequency shall be determined while the vibrator is operating in concrete with the tachometer being held against the upper end of the vibrator head while almost submerged and just before the vibrator is withdrawn from the concrete. Determine the amplitude with the head vibrating in air. Take two measurements, one near the tip and another near the upper end of the vibrator head, and these results averaged. Report the make, model, type, and size of the vibrator and frequency and amplitude results in writing.

Any vibrator not meeting the requirements of paragraph Consolidation above, shall be immediately removed from service and repaired or replaced.

J. Cold-Weather Protection

At least once each shift and once per day on non-work days, an inspection shall be made of all areas subject to cold-weather protection. Any deficiencies shall be noted, corrected, and reported.

K. Mixer Uniformity

1. Stationary Mixers

Prior to the start of concrete placing and once every 6 months when concrete is being placed, or once for every 75,000 cubic yards of concrete placed, whichever results in the shortest time interval, uniformity of concrete mixing shall be determined in accordance with ASTM C94.

2. Truck Mixers

Prior to the start of concrete placing and at least once every 6 months when concrete is being placed, uniformity of concrete mixing shall be determined in accordance with ASTM C94. Select the truck mixers randomly for testing. When

satisfactory performance is found in one truck mixer, the performance of mixers of substantially the same design and condition of the blades may be regarded as satisfactory.

3. Mixer Uniformity Corrective Action

When a mixer fails to meet mixer uniformity requirements, either the mixing time shall be increased, batching sequence changed, batch size reduced, or adjustments shall be made to the mixer until compliance is achieved.

L. Reports

Report all results of tests or inspections conducted, informally as they are completed and in writing daily. Prepare a weekly report for the updating of control charts covering the entire period from the start of the construction season through the current week. During periods of cold-weather protection, reports of pertinent temperatures shall be made daily. These requirements do not relieve the Contractor of the obligation to report certain failures immediately as required in preceding paragraphs. Such reports of failures and the action taken shall be confirmed in writing in the routine reports. The Owner's Representative has the right to examine all contractor quality control records.

3.11 FIELD QUALITY CONTROL AND TESTING

A. Concrete tests at placement site will be provided by the Owner and performed by an independent testing agency. No concrete shall be placed until all tests have been completed and the concrete is found to be in compliance with this Specification.

B. When, in the opinion of the Owner’s Representative, the concrete operation is out of control, cease concrete placement and correct the operation.

C. When concrete is being pumped in place, at no additional cost to the Owner, a minimum of one-half cubic yard shall be run through the pump prior to sampling. The one-half cubic yard of concrete will not be allowed to be used for construction and shall be disposed of by the Contractor.

D. Concrete samples for testing shall be taken as near the point of placement as is practical and in accordance with ASTM C172. The following test will be provided by the Owner and performed by an independent testing agency at the point of placement.

1. Test Specimens

One set of four 6-by-12 in. test specimens shall be taken for each different concrete mixture placed during the day. Test specimens will be taken for the initial 50 cubic yards and then for every subsequent 100 cubic yards of that concrete mixture placed each day. Test specimens shall be laboratory cured in accordance with ASTM C31.

A fifth test specimen shall be taken during cold weather concreting and shall be cured on the job site under the same conditions as the concrete it represents.

Additional sets of test specimens will be taken when the mixture proportions are changed, excessive variation in workability is observed, or when the Owner’s Representative deems additional tests are necessary based on other observed changes in the concrete.

If additional test specimens are requested by the Contractor for any reason, the cost of those test specimens, and all subsequent tests, shall be at the expense of the

Contractor.

2. Air Content Testing

   One air content test shall be performed each time a set of test specimens is fabricated. Tests shall be made in accordance with ASTM C231 for normal weight concrete. When a single test result fails to be in compliance with this Specification, perform a second test immediately. The results of the two tests shall be averaged and this average used as the air content.

3. Slump Testing

   One slump test shall be performed each time a set of test specimens is fabricated. Tests shall be made in accordance with ASTM C143. When a single test result fails to be in compliance with this Specification, perform a second test immediately. The results of the two tests shall be averaged and this average used as slump.

4. Temperature

   The temperature of the concretes shall be measured each time a set of test specimens is fabricated in accordance with ASTM C1064.

5. Evaluation of Concrete Compressive Strength

   An independent testing agency will test the 6-by-12 in. test specimens in accordance with ASTM C39. Of the four tests specimens taken in each set, one shall be evaluated for compressive strength at 7-days. Two shall be evaluated at 28-days, and the fourth specimen shall be retained for future testing. When a fifth specimen is fabricated for cold weather concreting, that test specimen shall be evaluated for compressive strengths after 7-days of field cure.

   The strength of the concrete will be considered satisfactory so long as the average of all consecutive test results equals or exceeds the specified compressive strength f'c and no individual test result falls below the specified strength f'c by more than 500 psi. A "test" is defined as the average of two companion cylinders, or if only one cylinder is tested, the results of the single cylinder test. Additional analysis or testing, including taking cores and/or load tests may be required at the Contractor's expense when the strength of the concrete in the structure is considered potentially deficient.

6. Investigation of Low-Strength Compressive Test Results

   When any strength test of standard-cured test cylinders falls below the specified strength requirement by more than 500 psi or if tests of field-cured cylinders indicate deficiencies in protection and curing, take steps to assure that the load-carrying capacity of the structure is not jeopardized. When the strength of concrete in place is considered potentially deficient, cores shall be obtained and tested, at the expense of the contractor, in accordance with ASTM C42. At least three representative cores shall be taken from each member or area of concrete in place that is considered potentially deficient. The location of cores will be determined by the Owner's Representative to least impair the strength of the structure. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement. Non-destructive tests (tests other than test cylinders or cores) shall not be used as a basis for acceptance or rejection. Perform the coring and repair the

holes (Contractor shall submit proposed core hole repairs to the Engineer for approval). Concrete cores will be tested by an independent testing agency.

7. Load Tests

If the core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be directed by the Owner's Representative in accordance with the requirements of ACI 318. Concrete work evaluated by structural analysis or by results of a load test as being understrength shall be corrected in a manner satisfactory to the Owner's Representative. All investigations, testing, load tests, and correction of deficiencies shall be performed by and at the expense of the Contractor and approved by the Owner's Representative, except that if all concrete is found to be in compliance with the drawings and specifications, the cost of investigations, testing, and load tests will be at the expense of the Owner.

END OF SECTION 03 30 00.00 10

SECTION 03 35 00.00 10

CONCRETE FINISHING

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE INTERNATIONAL (ACI)

ACI 117	(2010; Errata 2011) Specifications for Tolerances for Concrete Construction and Materials and Commentary
ACI 303R	(2012) Guide to Cast-In-Place Architectural Concrete Practice
ACI305R	(2010) Guide to Hot Weather Concreting ASTM

ASTM INTERNATIONAL (ASTM)

ASTM C1059	(1999; R 2008) Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
ASTM C309	(2011) Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C881	(2010) Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C940	(2010) Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete

1.02 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Latex Bonding Compound

Epoxy Resin

SD-05 Design Data

Dry Shake Finish

PART 2: PRODUCTS

2.01 LATEX BONDING COMPOUND

Latex bonding compound agents for bonding fresh to hardened concrete shall conform to ASTM C1059. Submit samples as required.

2.02 EPOXY RESIN

Epoxy resin for use in repairs shall conform to ASTM C881, Type III, Grade I or II. Submit samples as required.

PART 3: EXECUTION

3.01 FINISHING FORMED SURFACES

Forms, form materials, and form construction are specified in Section 03 11 13.00 10 STRUCTURAL CAST-IN-PLACE CONCRETE FORMING. Finishing of formed surfaces shall be as specified herein. Unless another type of architectural or special finish is specified, surfaces shall be left with the texture imparted by the forms except that defective surfaces shall be repaired.

Maintain uniform color of the concrete by use of only one mixture without changes in materials or proportions for any structure or portion of structure that requires a Class B finish. The form panels used to produce the finish shall be orderly in arrangement, with joints between panels planned in approved relation to openings, building corners, and other architectural features. Forms shall not be reused if there is any evidence of surface wear or defects that would impair the quality of the surface.

A. Class A Finish and Class B Finish

Class A finish is not required. Class B finish is required at vertical concrete surfaces exposed to view. Remove fins, ravelings, and loose material, all surface defects over 1/2 inch in diameter or more than 1/2 inch deep, shall be repaired and, except as otherwise indicated or as specified in Section 03 11 13.00 10 STRUCTURAL CONCRETE FORMWORK, holes left by removal of form ties shall be reamed and filled. Defects more than 1/2 inch in diameter shall be cut back to sound concrete, but in all cases at least 1 inch deep.

B. Class C and Class D Finish

Class C finish is required on vertical concrete surfaces not exposed to view and all remaining surfaces not covered by Class B or Class D. Class D finish is required at vertical concrete surfaces of foundations not exposed to view. Fins, ravelings, and loose material shall be removed, and, except as otherwise indicated or as specified in Section 03 11 13.00 10 STRUCTURAL CONCRETE FORMWORK, holes left by removal of form ties shall be reamed and filled. Honeycomb and other defects more than 1/2 inch deep or more than 2 inches in diameter shall be repaired. Defects more than 2 inches in diameter shall be cut back to sound concrete, but in all cases at least 1 inch deep.

3.02 REPAIRS

Except for major defects, as defined hereinafter, repair surface defects as specified herein within 24 hours after forms are removed. Repairs of the so-called “plaster-type” will not be permitted in any location. Tolerances of formed surfaces shall conform to the requirements of ACI 117. These tolerances apply to the finished concrete surface, not to the forms themselves; forms shall be set true to line and grade. Form tie holes requiring repair and other defects whose depth is at least as great as their surface diameter shall be repaired as specified in paragraph Damp-Pack Mortar Repair below. Defects whose surface diameter is greater than their depth shall be repaired as specified in paragraph Repair of Major Defects below. Repairs shall be finished flush with adjacent surfaces and with the same surface texture. The cement used for all repairs shall be a blend of job cement with white cement proportioned so that the final color after curing and aging will be the same as the adjacent concrete. Concrete with excessive honeycomb, or other defects which affect the strength of the member, will be rejected. Repairs shall be demonstrated to be acceptable and free from cracks or loose or drummy areas at the

completion of the contract and, for Class B Finishes, shall be inconspicuous. Repairs not meeting these requirements will be rejected and shall be replaced.

A. Damp-Pack Mortar Repair

Form tie holes requiring repair and other defects, whose depth is at least as great as their surface diameter but not over 4 inches, shall be repaired by the damp-pack mortar method. Form tie holes shall be reamed and other similar defects shall be cut out to sound concrete. The void shall then be thoroughly cleaned, thoroughly wetted, brush-coated with a thin coat of neat cement grout and filled with mortar. Mortar shall be a stiff mix of 1 part portland cement to 2 parts fine aggregate passing the No. 16 mesh sieve, and minimum amount of water. Use only sufficient water to produce a mortar which, when used, will stick together on being molded into a ball by a slight pressure of the hands and will not exude water but will leave the hands damp. Mortar shall be mixed and allowed to stand for 30 to 45 minutes before use with remixing performed immediately prior to use.

Mortar shall be thoroughly tamped in place in thin layers using a hammer and hardwood block. Holes passing entirely through walls shall be considered for repair of major defects. All holes shall be packed full. Damp-pack repairs shall be moist cured for at least 48 hours.

B. Repair of Major Defects

Major defects will be considered to be those more than 1/2 inch deep or, for Class B finishes, more than 1/2 inch in diameter and, for Class C and D finishes, more than 2 inches in diameter. Also included are any defects of any kind whose depth is over 4 inches or whose surface diameter is greater than their depth. Repair major defects as specified below.

1. Surface Application of Mortar Repair

Defective concrete shall be removed, and removal shall extend into completely sound concrete. Use approved equipment and procedures which will not cause cracking or microcracking of the sound concrete. If reinforcement is encountered, remove concrete so as to expose the reinforcement for at least 2 inches on all sides. All such defective areas greater than 12 square inches shall be outlined by saw cuts at least 1 inch deep. Defective areas less than 12 square inches shall be outlined by a 1 inch deep cut with a core drill in lieu of sawing. All saw cuts shall be straight lines in a rectangular pattern in line with the formwork panels.

After concrete removal, the surface shall be thoroughly cleaned by high pressure washing to remove all loose material. Keep surfaces continually saturated for the first 12 of the 24 hours immediately before placing mortar and shall be damp but not wet at the time of commencing mortar placement. The Contractor, as an option, may use either hand-placed mortar or mortar placed with a mortar gun. If hand-placed mortar is used, the edges of the cut shall be perpendicular to the surface of the concrete. The prepared area shall be brush-coated with a thin coat of neat cement grout. The repair shall then be made using a stiff mortar, preshrunk by allowing the mixed mortar to stand for 30 to 45 minutes and then remixed, thoroughly tamped into place in thin layers. If hand-placed mortar is used, test each repair area for drumminess by firm tapping with a hammer and inspecting for cracks, both in the presence of

the Owner's Representative, immediately before completion of the contract, and replacing any showing drumminess or cracking. If mortar placed with a mortar gun is used, the gun shall be a small compressed air-operated gun to which the mortar is slowly hand fed and which applies the mortar to the surface as a high-pressure stream, as approved. Repairs made using shotcrete equipment will not be accepted. The mortar used shall be the same mortar as specified for damp-pack mortar repair. If gun-placed mortar is used, the edges of the cut shall be beveled toward the center at a slope of 1:1. All surface applied mortar repairs shall be continuously moist cured for at least 7 days. Moist curing shall consist of several layers of saturated burlap applied to the surface immediately after placement is complete and covered with polyethylene sheeting, all held closely in place by a sheet of plywood or similar material rigidly braced against it. Keep burlap continually wet.

2. Repair of Deep and Large Defects

Deep and large defects will be those that are more than 6 inches deep and also have an average diameter at the surface more than 18 inches or that are otherwise so identified by the Owner's Representative. Such defects shall be repaired as specified herein or directed, except that defects which affect the strength of the structure shall not be repaired and that portion of the structure shall be completely removed and replaced. Repair deep and large defects by procedures approved in advance including forming and placing special concrete using applied pressure during hardening.

Preparation of the repair area shall be as specified for surface application of mortar. In addition, the top edge (surface) of the repair area shall be sloped at approximately 20 degrees from the horizontal, upward toward the side from which concrete will be placed. The special concrete shall be a concrete mixture with low water content and low slump, and shall be allowed to age 30 to 60 minutes before use. Concrete containing a specified expanding admixture may be used in lieu of the above mixture; design the paste portion of such concrete mixture to have an expansion between 2.0 and 4.0 percent when tested in accordance with ASTM C940. Provide a full width "chimney" at the top of the form on the placing side to ensure filling to the top of the opening. Use a pressure cap on the concrete in the chimney with simultaneous tightening and revibrating the form during hardening to ensure a tight fit for the repair. Remove the form after 24 hours and immediately the chimney shall be carefully chipped away to avoid breaking concrete out of the repair; the surface of the repair concrete shall be dressed as required.

3.03 FORMED SURFACE REPAIR

After removal of forms, all ridges, lips, and bulges on surfaces permanently exposed shall be removed. All repairs shall be completed within 48 hours after form removal

A. Class B Finishes

Surfaces listed in Section 03 11 13.00 10 STRUCTURAL CAST-IN-PLACE CONCRETE FORMING and as shown to have Classe B finishes shall have surface defects repaired as follows: defective areas, voids, and honeycombs smaller than 16 square inches in area and less than 1/2 inch deep and bug holes exceeding 1/2 inch in diameter shall be chipped and filled with dry-packed mortar. Holes left by

removal of tie rods shall be reamed and filled with dry-packed mortar as specified in paragraph MATERIAL AND PROCEDURE FOR REPAIRS below. Defective and unsound concrete areas larger than described shall be defined by 1/2 inch deep dovetailed saw cuts in a rectangular pattern with lines parallel to the formwork, the defective concrete removed by chipping, and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin meeting the requirements of paragraph EPOXY RESIN in PART 2, a latex bonding agent meeting the requirements of paragraph LATEX BONDING COMPOUND in PART 2, or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with paragraph MATERIAL AND PROCEDURE FOR REPAIRS below.

B. Class C Finish

Surfaces listed in Section 03 11 13.00 10 STRUCTURAL CONCRETE FORMWORK and as shown shall have defects repaired as follows: defective areas, voids, and honeycombs smaller than 24 square inches and less than 2 inches deep; bug holes exceeding 1-1/2 inches in diameter shall be chipped and filled with dry-packed mortar; and holes left by removal of the tie rods shall be chipped and filled with dry-packed mortar. Defective and unsound concrete areas larger than 24 square inches and deeper than 1-1/2 inches shall be defined by 1/2 inch deep dovetailed saw cuts in a rectangular pattern, the defective concrete removed by chipping, and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin meeting the requirements of paragraph EPOXY RESIN in PART 2, a latex bonding agent meeting the requirements of paragraph LATEX BONDING COMPOUND in PART 2, or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete in accordance with paragraph MATERIAL AND PROCEDURE FOR REPAIRS below.

C. Class D Finish

Surfaces listed in Section 03 11 13.00 10 STRUCTURAL CONCRETE FORMWORK and as shown to have class D finish shall have surface defects repaired as follows: defective areas, voids, and honeycombs greater than 48 square inches in area or more than 2 inches deep shall be defined by 1/2 inch deep dovetailed saw cuts in a rectangular pattern, the defective concrete removed by chipping and the void repaired with replacement concrete. The prepared area shall be brush-coated with an epoxy resin meeting the requirements of paragraph EPOXY RESIN in PART 2, a latex bonding agent meeting the requirements of paragraph LATEX BONDING COMPOUND in PART 2, or a neat cement grout after dampening the area with water. The void shall be filled with replacement concrete as specified below.

D. Material and Procedure for Repairs

The cement used in the dry-packed mortar or replacement concrete shall be a blend of the cement used for production of project concrete and white Portland cement properly proportioned so that the final color of the mortar or concrete will match adjacent concrete. Trial batches shall be used to determine the proportions required to match colors. Dry-packed mortar shall consist of one part cement to two and one-half parts fine aggregate. The fine aggregate shall be that used for production of project concrete. The mortar shall be remixed over a period of at least 30 minutes without addition of water until it obtains the stiffest consistency that will permit

placing. Mortar shall be thoroughly compacted into the prepared void by tamping, rodding, ramming, etc. and struck off to match adjacent concrete. Replacement concrete shall be produced using project materials and shall be proportioned by the Owner's Representative. It shall be thoroughly compacted into the prepared void by internal vibration, tamping, rodding, ramming, etc. and shall be struck off and finished to match adjacent concrete. Form shall be used to confine the concrete. If an expanding agent is used in the repair concrete, the repair shall be thoroughly confined on all sides including the top surfaces. Metal tools shall not be used to finish permanently exposed surfaces. The repaired areas shall be cured for 7 days. The temperature of the in situ concrete, adjacent air, and replacement mortar or concrete shall be above 40 degrees F during placement, finishing, and curing. Other methods and materials for repair may be used only when approved in writing y the Owner's Representative. Repairs of the so called "plaster-type" will not be permitted.

3.04 FINISHING UNFORMED SURFACES

The finish of all unformed surfaces shall meet the requirements of paragraph Tolerances in Section 03 30 00.00 10 CAST-IN-PLACE CONCRETE, when tested as specified herein.

A. General

The ambient temperature of spaces adjacent to unformed surfaces being finished and of the base on which concrete will be placed shall be not less than 50 degrees-F. In hot weather all requirements of Section 03 30 00.00 10 CAST-IN-PLACE CONCRETE paragraphs Hot Weather Requirements and Prevention of Plastic Shrinkage Cracking above shall be met. In hot weather when the rate of evaporation of surface moisture, as determined by use of Figure 2.1.5 of ACI 305R, may reasonably be expected to exceed 0.2 pounds per square foot per hour. Make provisions for windbreaks, shading, fog spraying, or wet covering with a light-colored material in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow. Unformed surfaces that are not to be covered by additional concrete or backfill shall have a float finish, with additional finishing as specified below, and shall be true to the elevation shown on the drawings. Surfaces to receive additional concrete or backfill shall be brought to the elevation shown on the drawings, properly consolidated, and left true and regular. Unless otherwise shown on the drawings, exterior surfaces shall be sloped for drainage. Where drains are provided, interior floors shall be evenly sloped to the drains. Joints shall be carefully made with a jointing or edging tool. The finished surfaces shall be protected from stains or abrasions. Grate tampers or "jitterbugs" shall not be used for any surfaces. The dusting of surfaces with dry cement or other materials or the addition of any water during finishing shall not be permitted. If bleedwater is present prior to finishing, the excess water shall be carefully dragged off or removed by absorption with porous materials such as burlap. During finishing operations, extreme care shall be taken to prevent over finishing or working water into the surface; this can cause "crazing" (surface shrinkage cracks which appear after hardening) of the surface. Any slabs with surfaces which exhibit significant crazing shall be removed and replaced. During finishing operations, surfaces shall be checked with a 10 foot straightedge, applied in both directions at regular intervals while the concrete is still plastic, to detect high or low areas.

B. Rough Slab Finish

As a first finishing operation for unformed surfaces and as final finish for slabs to

receive mortar setting beds, the floor slab surface shall receive a rough slab finish prepared as follows. The concrete shall be uniformly placed across the slab area, consolidated as previously specified, and then screeded with straightedge strikeoffs immediately after consolidation to bring the surface to the required finish level with no coarse aggregate visible. Side forms and screed rails shall be provided, rigidly supported, and set to exact line and grade. Allowable tolerances for finished surfaces apply only to the hardened concrete, not to forms or screed rails. Forms and screed rails shall be set true to line and grade. "Wet screeds" shall not be used.

C. Floated Finish

Apply a floated finish to surfaces to receive a troweled finish. The screeding shall be followed immediately by darbying or bull floating before bleeding water is present, to bring the surface to a true, even plane. No water, cement, or mortar shall be added to the surface during the finishing operation. Then, after the concrete has stiffened so that it will withstand a man's weight without imprint of more than 1/4 inch and the water sheen has disappeared, it shall be floated to a true and even plane free of ridges. Perform floating by use of suitable hand floats or power driven equipment. Use sufficient pressure on the floats to bring a film of moisture to the surface. Hand floats shall be made of wood, magnesium, or aluminum. Concrete that exhibits stickiness shall be floated with a magnesium float. Care shall be taken to prevent over-finishing or incorporating water into the surface.

D. Troweled Finish

Apply a troweled finish to surface exposed to view. After floating is complete and after the surface moisture has disappeared, unformed surfaces shall be steel-troweled to a smooth, even, dense finish, free from blemishes including trowel marks. In lieu of hand finishing, an approved power finishing machine may be used in accordance with the directions of the machine manufacturer. Additional trowelings shall be performed, either by hand or machine until the surface has been troweled 2 times, with waiting period between each. Care shall be taken to prevent blistering and if such occurs, troweling shall immediately be stopped and operations and surfaces corrected. A final hard steel troweling shall be done by hand, with the trowel tipped, and using hard pressure, when the surface is at a point that the trowel will produce a ringing sound. The finished surface shall be thoroughly consolidated and shall be essentially free of trowel marks and be uniform in texture and appearance. The concrete mixture used for troweled finished areas shall be adjusted, if necessary, in order to provide sufficient fines (cementitious material and fine sand) to finish properly.

E. Non-Slip Finish

Construct non-slip floors in accordance with the following subparagraphs.

1. Broomed

a. The following areas exterior stoops, slabs, and ramps shall be given a broomed finish. After floating, the surface shall be lightly steel troweled, and then carefully scored by pulling a coarse fiber ppush-type broom across the surface. Brooming shall be transverse to traffic or at right angles to the slope of the slab. After the end of the curing period, the surface shall be vigorously broomed with a coarse fiber broom to remove all loose or semi-detached particles.

3.05 FIELD QUALITY CONTROL

Horizontal slab finishes will be accepted provided:

A. Applicable specification requirements are satisfied.

B. Water does not pond in areas sloped to drain.

C. Gap between a 10 FT straightedge placed anywhere and the finished surface does not exceed:

1. Class B tolerance: 1/4 IN.

2. Class C tolerance: 1/2 IN.

D. Accumulated deviation from intended true plane of finished surface does not exceed 1/2 IN.

E. Accuracy of floor finish does not adversely affect installation and operation of movable equipment, floor supported items, or items fitted to floor (doors, tracks, etc.).

Unacceptable finishes shall be replaced or, if approved in writing by Engineer, may be corrected provided strength and appearance are not adversely affected.

1. High spots to be removed by grinding and/or low spots filled with a patching compound or other remedial measures to match adjacent surfaces.

END OF SECTION 03 35 00.00 10

SECTION 03 39 00.00 10

CONCRETE CURING

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICALS (AASHTO)

AASHTO M 182	(2005; Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats

ASTM INTERNATIONAL (ASTM)

ASTM C171	(2007) Standard Specification for Sheet Materials for Curing Concrete
ASTM C309	(2011) Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

NIST HB 44	(2013) Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete

1.02 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Curing Materials;

Impervious Sheets

Membrane Forming Compound

SD-05 Design Data

Mass Concrete Thermal Monitoring Control Plan

SD-06 Test Reports

Testing and Inspection for CQC;

1.03 DELIVERY, STORAGE, AND HANDLING

Materials shall be stored in such a manner as to avoid contamination and deterioration. Materials shall be capable of being accurately identified after bundles or containers are opened.

PART 2: PRODUCTS

2.01 CURING MATERIALS

A. Impervious-Sheet

Impervious-sheet materials shall conform to ASTM C171, type optional, except, that polyethylene sheet shall not be used.

B. Membrane-Forming Curing Compound

Membrane-Forming curing compound shall conform to ASTM C309, Type- 1-D or 2, except that no surface that is to be painted, stained, or receive any additional concrete shall be cured with curing compound. Only a styrene acrylate or chlorinated rubber compound meeting Class B requirements shall be used for surfaces that are to receive waterproofing, or floors that are to receive adhesive applications of resilient flooring. The curing compound selected shall be compatible with waterproofing, or flooring specified. Nonpigmented compound shall contain a fugitive dye, and shall have the reflective requirements in ASTM C309 waived.

C. Burlap and Cotton Mat

Burlap and cotton mat used for curing shall conform to AASHTO M 182.

2.02 WATER

Water for curing shall be fresh, clean, potable, and free of injurious amounts of oil, acid, salt, or alkali, except that non-potable water may be used if it meets the requirements of COE CRD-C 400.

PART 3: EXECUTION

3.01 CURING AND PROTECTION

A. General

Concrete shall be cured by an approved method for the period of time given below:

Table 1: Time Period	
Type III Portland cement	3 Days
Portland cement when accelerator is used to achieve high early strength, except when fly-ash is used	3 Days
Type II Portland cement	14 days

Table 1: Time Period	
Portland cement blended with 25 percent or less fly-ash	14 days
Portland cement blended with more than 25 percent fly-ash	21 days

Immediately after placement, protect concrete from premature drying, extremes in temperatures, rapid temperature change and mechanical injury for the duration of the curing period. Concrete shall be protected from the damaging effects of rain for 12 hours and from flowing water for 14 days or 7 days with Type III cement. No fire or excessive heat including welding shall be permitted near or in direct contact with concrete or concrete embedments at any time. Maintain air and forms in contact with concrete at a temperature above 50 degrees F for the first 3 days and at a temperature above 32 degrees F for the remainder of the specified curing period. Exhaust fumes from combustion heating units shall be vented to the outside of the enclosure, and heaters and ducts shall be placed and directed so as not to cause areas of overheating and drying of concrete surfaces or to create fire hazards. Materials and equipment needed for adequate curing and protection shall be available and at the site prior to placing concrete. No fire or excessive heat, including welding, shall be permitted near or in direct contact with the concrete at any time. Except as otherwise permitted by paragraph Membrane Forming Curing Compounds in PART 2, moist curing shall be provided for any areas to receive any paint or other applied coating, any architectural concrete, or to which other concrete is to be bonded. Except for plastic coated burlap, impervious sheeting alone shall not be used for curing.

B. Moist Curing

Maintain concrete, to be moist-cured, continuously wet for the entire curing period, commencing immediately after finishing. If water or curing materials used stain or discolor concrete surfaces which are to be permanently exposed, the concrete surfaces shall be cleaned as approved.

When wooden forms are left in place during curing, they shall be kept wet at all times. If steel forms are used in hot weather, nonsupporting vertical forms shall be carefully broken loose from the concrete, soon after the concrete hardens, and curing water continuously applied into the void so as to continuously saturate the entire concrete surface. If the forms are removed before the end of the curing period, curing shall be carried out as on unformed surfaces, using suitable materials. Horizontal surfaces shall be cured by ponding, by continuous sprinkling, by sand kept continuously wet, by continuously saturated burlap or cotton mats, or by continuously saturated plastic coated burlap. Burlap and mats shall be clean and free from any contamination and shall be completely saturated before being placed on the concrete. Provide an approved work system to ensure that moist curing is continuous 24 hours per day. Horizontal construction joints may be allowed to dry for 12 hours immediately prior to the placing of the following lift.

C. Membrane Forming Curing Compounds

1. Application Restrictions

Concrete may be cured with an approved membrane-forming curing compound in

lieu of moist curing except that membrane curing will not be permitted on any surface to which other concrete is to be bonded, on any surface containing protruding steel reinforcement or on architectural concrete surfaces. The curing compound selected shall be compatible with any waterproofing or flooring specified. Membrane curing compound shall not be used on surfaces that are maintained at curing temperatures with free steam.

2. Pigmented Curing Compound

   A pigmented curing compound meeting the requirements of the above paragraph may be used on surfaces that will not be exposed to view, including sidewalks and roadways, when the project is completed.

3. Nonpigmented Curing Compound

   A nonpigmented curing compound containing a fugitive dye may be used on surfaces that will be exposed to view when the project is completed. Concrete cured with nonpigmented curing compound must be shaded from the sun for the first 3 days when the ambient temperature is 90 degrees F or higher.

4. Application

   Apply the curing compound to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface. The surfaces shall be thoroughly moistened with water, and the curing compound applied as soon as free water disappears. The curing compound shall be applied to unformed surfaces as soon as free water has disappeared and bleeding has stopped. The curing compound shall be applied in a two-coat continuous operation by approved motorized power-spraying equipment operating at a minimum pressure of 75 psi, at a uniform coverage of not more than 400 square feet per gallon for each coat, and the second coat shall be applied perpendicular to the first coat. Concrete surfaces that have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage specified. All concrete surfaces on which the curing compound has been applied shall be adequately protected for the duration of the entire curing period from pedestrian and vehicular traffic and from any other cause that will disrupt the continuity of the curing membrane.

D. Impervious Sheeting (Evaporative Retardant)

   Except for plastic coated burlap, impervious sheeting alone shall not be used for curing. Use impervious-sheet curing only on horizontal or nearly horizontal surfaces. Surfaces shall be thoroughly wetted and be completely covered with the sheeting. Sheeting shall be at least 18 inches wider than the concrete surface to be covered. Covering shall be laid with light-colored side up. Covering shall be lapped not less than 12 inches and securely weighted down or shall be lapped not less than 4 inches and taped to form a continuous cover with completely closed joints. The sheet shall be weighted to prevent displacement so that it remains in contact with the concrete during the specified length of curing. Coverings shall be folded down over exposed edges of slabs and secured by approved means. Sheets shall be immediately repaired or replaced if tears or holes appear during

the curing period.

E. Ponding or Immersion

Concrete shall be continually immersed throughout the curing period. Water shall not be more than 20 degrees F less than the temperature of the concrete.

F. Cold Weather Curing and Protection

When the daily ambient low temperature is less than 32 degrees F maintain the temperature of the concrete above 40 degrees F for the first seven days after placing. During the period of protection removal, control the air temperature adjacent to the concrete surfaces so that concrete near the surface will not be subjected to a temperature differential of more than 25 degrees F as determined by suitable temperature measuring devices furnished by the Contractor, as required, and installed adjacent to the concrete surface and 2 inches inside the surface of the concrete. Perform the installation of the thermometers as directed.

3.02 MASS CONCRETE

A. Mass Concretes defined as any concrete member or pour that is equal or greater than 36 IN thick in the minimum direction

B. Curing: Method of curing shall be as described above.

C. Contractor shall submit a thermal monitoring control plan for each mass concrete placement, meeting the following requirements:

1. Concrete mix used.
2. Upper limit for concrete temperature at the time of each placement.
3. Projected differential temperature between center and surface of mass concrete pour.
4. Drawings showing location for temperature sensors in each concrete placement.
    a. See ACI 301-10, Section 8.3 for temperature sensor location(s) and sensor requirements
5. A sample of the format and frequency of temperature data presentation. This shall include the identification of the time when the maximum core temperature is reached and when all surface/core temperature differentials are exceeded.
6. Description of the curing procedures including material and methods, and curing duration.
7. Description of formwork removal procedures to ensure that the temperature difference along the temporarily exposed surface does not exceed the established temperature differential limit as well as how the curing process will be maintained.
8. Thermal monitoring shall continue for the duration the concrete is insulated or unless otherwise directed by Owner.

D. Curing and Insulating Period

1. All formed and unformed exposed concrete surfaces shall be insulated during the

curing.

2. The insulation monitoring period shall last a minimum of seven days or longer as required as described in the "monitoring period" section below.

3. Insulation requirements shall be based on the air temperature surrounding the concrete.

   a. A minimum of one layer of commercial available concrete insulating blankest will be used.

   b. Other materials of similar R-Value may be approved by the Engineer.

E. Surface Temperature:

1. During the curing and insulating period the surface temperature of the concrete will be monitored a minimum of twice per day until the surface temperature of the mass concrete falls to within 30 Degrees F of the ambient air temperature surrounding the mass concrete.

2. During this monitoring period, the surface temperature of the mass concrete shall not be permitted to drop more than 15 Degrees F over a 24-hour period

   a. If the temperature drop is exceeded, insulation shall be reinstalled and left in place for a period of 12 hours.

3. During the monitoring period, the temperature difference between the center and surface of the mass concrete pour shall not be permitted to exceed the specified maximum difference.

   a. If the temperature difference is exceeded, provide additional insulation or other corrections as identified in the thermal monitoring control plan until the temperature difference is within specified limits.

4. Do not artificially cool the surface of the mass concrete with water of other means during the monitoring period.

F. Core Temperature:

1. Insulation of the concrete surface(s) shall continue until the temperature differential between the concrete section core temperature and the concrete section surface temperature is consistently less than 35 Degrees F for longer than three days.

G. Provide all necessary thermometers and temperature measuring equipment necessary for monitoring concrete and ambient air temperature during the Monitoring Period.

1. Record all times and temperatures during the Monitoring Period. Allow Engineer and/or Special Inspector to witness results of each temperature reading.

3.03 TESTING AND INSPECTION FOR CQC

Perform the inspection and tests described below and, based upon the results of these inspections and tests, take the action required. Submit certified copies of laboratory test reports, including curing compound proposed for use on this project.

A. Curing Inspection

1. Moist Curing Inspections. At least once each shift, and not less than twice per day

on both work and non-work days, an inspection shall be made of all areas subject to moist curing. The surface moisture condition shall be noted and recorded.

2. Moist Curing Corrective Action. When a daily inspection report lists an area of inadequate curing, immediate corrective action shall be taken, and the required curing period for those areas shall be extended by 1 day.

3. Membrane Curing Inspection. No curing compound shall be applied until the Contractor has verified that the compound is properly mixed and ready for spraying. At the end of each operation, estimate the quantity of compound used by measurement of the container and the area of concrete surface covered, compute the rate of coverage in square feet/gallon, and note whether or not coverage is uniform.

4. Membrane Curing Corrective Action. When the coverage rate of the curing compound is less than that specified or when the coverage is not uniform, the entire surface shall be sprayed again.

5. Sheet Curing Inspection. At least once each shift and once per day on non-work days, an inspection shall be made of all areas being cured using impervious sheets. The condition of the covering and the tightness of the laps and tapes shall be noted and recorded.

6. Sheet Curing Corrective Action. When a daily inspection report lists any tears, holes, or laps or joints that not completely closed, the tears and holes shall promptly be repaired or the sheets replaced, the joints closed, and the required curing period for those areas shall be extended by 1 day.

END OF SECTION 03 39 00.00 10

DIVISION 5

METALS

SECTION 05 12 00

STRUCTURAL STEEL

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

AISC201	(2006) AISC Certivication Program for Structual Steel Fabricators
AISC317	(1999) Manual of Steel Construction, Volume II-Connections
AISC325	(2011) Steel Construction Manual
AISC326	(2009) Detailing for Steel Construction
AISC341	(2010) Seismic Provisions for Structural Steel Buildings
AISC348	(2009) Specification For Structural Joints Using High-Strength Bolts
AISC360	(2010) Specification for Structural Steel Buildings

AMERICAN WELDING SOCIETY (AWS)

AWS A2.4	(2012) Standard Symbols for Welding, Brazing and Nondestructive Examination
AWS D1.1/D1.1M	(2012; Errata 2011) Structural Welding Code – Steel

ASME INTERNATIONAL (ASME)

ASME B46.1	(2009) Surface Texture, Surface Roughness, Waviness and Lay

ASTM INTERNATIONAL (ASTM)

ASTM A108	(2007)Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
ASTM A123/A123M	(2013) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A143/A143M	(2007) Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement
ASTM A153/A153M	(2009) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A276	(2013a) Standard Specification for Stainless Steel Bars and Shapes

ASTM A307	(2012) Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
ASTM A325	(2010; E 2013) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A325M	(2013) Standard Specification for Structural Bolts, Steel, Heat Treated, 830 MPa Minimum Tensile Strength (Metric)
ASTM A36/A36M	(2012) Standard Specification for Carbon Structural Steel
ASTM A496/A496M	(2007) Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement
ASTM A500/A500M	(2013) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A514/A514M	(2013) Standard Specification forHigh-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
ASTM A53/A53M	(2012) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A563	(2007a) Standard Specification for Carbon and Alloy Steel Nuts
ASTM A6/A6M	(2013a) Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM A780/A780M	(2009) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A992/A992M	(2011) Standard Specification for Structural Steel Shapes
ASTM B695	(2004; R 2009) Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
ASTM C1107/C1107M	(2013) Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C827/C827M	(2010) Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
ASTM E164	(2008) Ultrasonic Contact Examination of Weldments
ASTM E165	(2009) Standard Test Method for Liquid Penetrant Examination
ASTM E709	(2008) Standard Guide for Magnetic Particle Examination
ASTM E94	(2004; R 2010) Radiographic Examination
ASTM F1554	(2007a; E 2011) Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
ASTM F436	(2011) Hardened Steel Washers
ASTM F593	(2013) Stainless Steel Bolts, Hex Cap Screws, and Studs
ASTM F844	(2007a) Washers, Steel, Plain (Flat), Unhardened for General Use
ASTM F959	(2013) Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC PA 1	(2000; E 2004) Shop, Field, and Maintenance Painting of Steel
SSPC Paint 25	(1997; E 2004) Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II
SSPC SP 3	(1982; E 2004) Power Tool Cleaning
SSPC SP 6/NACE No.3	(2007) Commercial Blast Cleaning

1.02 SYSTEM DESCRIPTION

Provide the structural steel system, including shop primer and galvanizing, as indicated complete and ready for use. Structural steel systems including design, materials, installation, workmanship, fabrication, assembly, erection, inspection, quality control, and testing shall be provided in accordance with AISC 360 and AISC 341 except as modified in this contract.

1.03 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Erection Plan, including description of temporary supports;

Fabrication drawings including description of connections;

SD-03 Product Data

Shop primer

Welding electrodes and rods

Load indicator washers

Non-Shrink Grout

Include test report for Class B primer.

SD-06 Test Reports

Bolts, nuts, and washers

Supply the certified manufacturer's mill reports which clearly show the applicable ASTM mechanical and chemical requirements together with the actual test results for the supplied fasteners.

SD-07 Certificates

Steel

Bolts, nuts, and washers

Galvanizing

AISC Quality Certification

Welding procedures and qualifications

1.04 AISC QUALITY CERTIFICATION

Work shall be fabricated in an AISC certified Category Std fabrication plant.

1.05 QUALITY ASSURANCE

A. Drawing Requirements

Submit fabrication drawings for approval prior to fabrication. Prepare in accordance with AISC 326 and AISC 325. Fabrication drawings shall not be reproductions of contract drawings. Include complete information for the fabrication and erection of the structure's components, including the location, type, and size of bolts, welds, member sizes and lengths, connection details, blocks, copes, and cuts. Use AWS A2.4 standard welding symbols. Member substitutions of details shown on the contract drawings shall be clearly highlighted on the fabrication drawings. Explain the reasons for any deviations from the contract drawings.

B. Certifications

1. Erection Plan

Submit for record purposes. Indicate the sequence of erection, temporary shoring and bracing.

2. Welding Procedures and Qualifications

Prior to welding, submit certification for each welder stating the type of welding and positions qualified for, the code and procedure qualified under, date qualified, and the firm and individual certifying the qualification tests. If the qualification date of the welding operator is more than one-year old, the welding operator's qualification certificate shall be accompanied by a current certificate by the welder attesting to the fact that he has been engaged in welding since the date of certification, with no break in welding service greater than 6 months.

Conform to all requirements specified in AWS D1.1/D1.1M.

C. Secial Inspections

See Statement of Special Inspections on Sheets S-201 and S-202

PART 2: STEEL

2.01 STEEL

A. Structural
Channels, angles plates, and bars. ASTM A36/A36M.

B. Structural Shapes for Use in Metal Fabrications
Wide Flange shapes, ASTM A992/A992M.

C. Structural Steel Tubing
Round: ASTM A500/A500M, Grade B Fy = 42 ksi; Square or rectangular ASTM A500/A500M, Grade B, F y= 46 ksi.

D. Steel Pipe
ASTM A53/A53M, Type E or S, Grade B, Fy = 35 ksi, weight class STD (Standard) unless noted otherwise.

2.02 BOLTS, NUTS, AND WASHERS

Provide the following unless indicated otherwise.

A. Structural Steel

1. Bolts

ASTM A307, Grade A. The bolt heads and the nuts of the supplied fasteners must be marked with the manufacturer's identification mark, the strength grade and type specified by ASTm specifications. Bolts shall only be used where indicated on the drawings.

2. Nuts

ASTM A563 Grade A, Heavy Hex Style, Grade and Style for applicable ASTM bolt standard recommended.

3. Washers

ASTM F844 washers for ASTM A307 bolts.

B. High-Strength Structural Steel and Structural Steel Tubing

1. Bolts

ASTM A325, Type 1 heavy hex steel structural bolts. Connections shall be bearing type with threads included in the shear plain. Finish shall be plain.

2. Nuts

ASTM A563, heavy hex carbon steel nuts. Grade and Styles as specified in the applicable ASTM bolt standard. At galvanized steel locations the finish shall be mechanically deposited zinc coating, ASTM B695, Class 50, Type 1 galvanizing.

3. Washers

ASTM F436, plain carbon steel. At galvanized steel locations the finish shall be mechanically deposited zinc coating, ASTM B695, Class 50, Type 1 galvanizing.

C. Foundation Anchorage

1. Headed Anchor Bolt

ASTM F1554 Gr 36 (where indicated on the drawings). Stainless steel Type 304 or 316 conforming to ASTM F593.

2. Anchor Nuts

ASTM A563, Grade A, hex style. Stainless steel Type 304 or Type 316 conforming to ASTM F593.

3. Anchor Washers

ASTM F436M, Plain hardened carbon steel.

ASTM F844. Stainless steel Type 304 or Type 316 conforming to ASTM A276.

4. Anchor Plate Washers

ASTM A36/A36M Stainless steel Type 304 or Type 316 conforming to ASTM A276.

D. Load Indicator Washers

ASTM F959. Provide ASTM B695, Class 50, Type 1 galvanizing.

2.03 STRUCTURAL STEEL ACCESSORIES

A. Welding Electrodes and Rods

AWS D1.1/D1.1M, E70 series.

B. Non-Shrink Grout

ASTM C1107/C1107M, with no ASTM C827/C827M shrinkage. Grout shall be nonmetallic, nonstaining. See Section 03 30 00.00 10.

C. Welded Headed Studs

ASTM A108, Grades 1015 through 1020, headed-stud type, cold finished carbon steel, AWS D1.1/D1.1M, Type B.

1. Acceptable Manufacturers

Subject to compliance with the Contract Documents, the following manufacturer's are accpetable:

Headed studs and deformed bar anchors:

a. Nelson Stud Welding Div., TRW Inc.

b. Stud Welding Products, Inc.

D. Deformed Bar Anchors (DBA)

Cold drawn wire, conforming to ASTM A496/A496M, minimum tensile strength of 80,000 psi, and straight and solid fluxed.

2.04 SHOP PRIMER

SSPC Paint 25, (alkyd primer) Type 1. Primer shall conform to Federal, State, and local VOC regulations. If flash rusting occurs, re-clean the surface prior to application of primer.

2.05 GALVANIZING

ASTM A123/A123M or ASTM A153/A153M, with minimum coating of 2.0 OZ of zinc per square foot of meter (average of specimens), unless specified otherwise galvanize after fabrication where practicable.

2.06 FABRICATION

A. Markings

Prior to erection, members shall be identified by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections shall be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded. Do not locate match markings in areas that will decrease member strength or cause stress concentrations. Affix embossed tags to hot-dipped galvanized members.

B. Shop Primer

Shop prime structural steel, except as modified herein, in accordance with SSPC PA 1. Do not prime steel surfaces embedded in concrete, galvanized surfaces, or surfaces within 0.5 inch of the toe of the welds prior to welding (except surfaces on which metal decking is to be welded). Slip critical surfaces shall be primed with a Class B coating. Prior to assembly, prime surfaces which will be concealed or inaccessible after assembly. Do not apply primer in foggy or rainy weather; when the ambient temperature is below 45 degrees F or over 95 degrees F; or when the primer may be exposed to temperatures

below 40 degrees F within 48 hours after application, unless approved otherwise by the Owner's Representative.

1. Cleaning

   SSPC SP 6/NACE No.3, except steel exposed in spaces above ceilings, attic spaces, furred spaces, and chases that will be hidden to view in finished construction may be cleaned to SSPC SP 3 when recommended by the shop primer manufacturer. Maintain steel surfaces free from rust, dirt, oil, grease, and other contaminants through final assembly.

2. Primer

   Apply primer to a minimum dry film thickness of 2.0 mil except provide the Class B coating for slip critical joints in accordance with the coating manufacturer's recommendations. Repair damaged primed surfaces with an additional coat of primer.

2.07 DRAINAGE HOLES

Adequate drainage holes shall be drilled to eliminate water traps. Hole diameter shall be 1/2 inch and location shall be indicated on the detail drawings. Hole size and location shall not affect the structural integrity.

PART 3: EXECUTION

3.01 FABRICATION

Fabrication shall be in accordance with the applicable provisions of AISC 325. Fabrication and assembly shall be done in the shop to the greatest extent possible. The fabricating plant shall be certified under the AISC 201 for Category STD structural steelwork.

Compression joints depending on contact bearing shall have a surface roughness not in excess of 500 micro inch as determined by ASME B46.1, and ends shall be square within the tolerances for milled ends specified in ASTM A6/A6M.

Structural steelwork, except surfaces of steel to be encased in concrete, surfaces to be field welded, and contact surfaces of friction-type high-strength bolted connections shall be prepared for painting in accordance with endorsement "P" of AISC 201 and primed with the specified paint.

Shop splices of members between field splices will be permitted only where indicated on the Contract Drawings. Splices not indicated require the approval of the Owner's Representative.

3.02 ERECTION

A. Erection of structural steel, except as indicated in item b. below, shall be in accordance with the applicable provisions of AISC 325. Erection plan shall be reviewed, stamped and sealed by a licensed structural engineer.

   Provide for drainage in structural steel. After final positioning of steel members, provide full bearing under base plates and bearing plates using nonshrink grout. Place nonshrink grout in accordance with the manufacturer's instructions.

B. Deformed Bar Anchors

   Prepare steel surfaces as recommended by manufacturer of anchors. Use automatic end welding of anchors according to AWS D1.1/D1.1M and manufacturer's written instructions.

C. Storage

Material shall be stored out of contact with the ground in such manner and location as will minimize deterioration.

3.03 CONNECTIONS

Except as modified in this section, connections not detailed shall be designed in accordance with AISC 360. Build connections into existing work. Do not tighten anchor bolts set in concrete with impact torque wrenches. Punch, subpunch and ream, or drill bolt and pin holes perpendicular to the surface of the member. Holes shall not be cut or enlarged by burning. Bolts, nuts, and washers shall be clean of dirt and rust, and lubricated immediately prior to installation.

A. Common Grade Bolts

ASTM A307 bolts shall be tightened to a "snug tight" fit."Snug tight" is the tightness that exists when plies in a joint are in firm contact. If firm contact of joint plies cannot be obtained with a few impacts of an impact wrench, or the full effort of a man using a spud wrench, contact the Owner's Representative for further instructions.

B. High-Strength Bolts

ASTM A325 bolts shall be fully tensioned to 70 percent of their minimum tensile strength. Provide load indicator washers in all ASTM A325M bolted connections. Bolts shall be installed in connection holes and initially brought to a snug tight fit. After the initial tightening procedure, bolts shall then be fully tensioned, progressing from the most rigid part of a connection to the free edges.

1. Installation of load Indicator Washers (LIW)

ASTM F959. Where possible, the LIW shall be installed under the bolt head and the nut shall be tightened. If the LIW is installed adjacent to the turned element, provide a flat ASTM F436 washer between the LIW and nut when the nut is turned for tightening, and between the LIW and bolt head when the bolt head is turned for tightening.

3.04 GAS CUTTING

Use of gas-cutting torch in the field for correcting fabrication errors will not be permitted on any major member in the structural framing. Use of a gas cutting torch will be permitted on minor members not under stress only after approval has been obtained from the Owner's Representative.

3.05 WELDING

AWS D1.1/D1.1M, except use only shielded metal arc welding and low hydrogen electrodes for ASTM A514/A514M steel. Do not stress relieve ASTM A514/A514M steel by heat treatment. Grind exposed welds smooth as indicated. Provide AWS D1.1/D1.1M qualified welders, welding operators, and tackers.

The Contractor shall develop and submit the Welding Procedure Specifications (WPS) for all welding, including welding done using prequalified procedures. Prequalified procedures may be submitted for information only; however, procedures that are not prequalified shall be submitted for approval.

A. Removal of Temporary Welds, Run-Off Plates, and Backing Strips

Removal is not required Remove only from finished areas.

3.06 SHOP PRIMER REPAIR

Repair shop primer in accordance with the paint manufacturer's recommendation for surfaces damaged by handling, transporting, cutting, welding, or bolting.

A. Field Priming

Field priming of steel exposed to the weather, or located in building areas without HVAC for control of relative humidity. After erection, the field bolt heads and nuts, field welds, and any abrasions in the shop coat shall be cleaned and primed with paint of the same quality as that used for the shop coat.

3.07 GALVANIZING REPAIR

Provide as indicated or specified. Galvanize after fabrication where practicable. Repair damage to galvanized coatings using ASTM A780/A780M zinc rich paint for galvanizing damaged by handling, transporting, cutting, welding, or bolting. Do not heat surfaces to which repair paint has been applied.

3.08 FIELD QUALITY CONTROL

Perform field tests, and provide labor, equipment, and incidentals required for testing, except that electric power for field tests will be furnished as set forth in Division 1. The Owner's Representative shall be notified in writing of defective welds, bolts, nuts, and washers within 7 working days of the date of inspection.

A. Testing Agency

Owner's representative will engage a qualified independent testing and inspection agency to perform field tests and inspections and prepare test and inspection reports. Any work that does not comply with the specified requirements will be removed and replaced or corrected as required at the contractor’s expense.

B. Welds

1. Visual Inspection

AWS D1.1/D1.1M. Visually inspect all welds. Furnish the services of AWS-certified welding inspectors for fabrication and erection inspection and testing and verification inspections. Welding inspectors shall visually inspect and mark welds, including fillet weld end returns.

Inspection by the Owner's Representative will include proper preparation, size, gaging location, and acceptability of welds; identification marking; operation and current characteristics of welding sets in use.

2. Nondestructive Testing

In addition to Visual inspection, field welding will be tested according to AWS D1.1/D1.1M and the following inspection procedures, at testing agengy's option.

a. Liquid penetration: ASTM E165. Inspect 50% of full penetration welds and 20% of fillet welds.
b. Magnetic Particle Inspection: ASTM E709 Performed finished weld. Cracks or Zones of incomplete fusion or penetration will not be accepted.
c. Ultrasonic Inspection: ASTM E164. Test 20% of liquid dye penetrant tested full penetration welds with ultrasonic testing.
d. Radiographic Inspection: ASTM E94. Test 20% of liquid dye penetrant tested full penetration welds with radiographic testing.

If more than 20% of welds made by a welder contain defects identified by testing, then all welds made by that welder shall be tested by radiographic or ultrasonic testing, as approved by the Owner's Representative. When all welds made by an individual welder are required to be tested, magnetic particle testing shall be used only in areas in accessible to either radiographic or ultrasonic testing. Retest defective areas after repair.

C. Load Indicator Washers

1. Load Indicator Washer Compression

Load indicator washers shall be tested in place to verify that they have been compressed sufficiently to provide the 0.015 inch gap when the load indicator washer is placed under the bolt head and the nut is tightened, and to provide the 0.005 inch gap when the load indicator washer is placed under the turned element, as required by ASTM F959.

2. Load Indicator Gaps

In addition to the above testing, an independent testing agency as approved by the Owner's Representative, shall test in place the load indicator gaps on 20 percent of the installed load indicator washers to verify that the ASTM F959 load indicator gaps have been achieved. If more than 10 percent of the load indicators tested have not been compressed sufficiently to provide the average gaps required by ASTM F959, then all in place load indicator washers shall be tested to verify that the ASTM F959 load indicator gaps have been achieved. Test locations shall be selected by the Owner's Representative.

D. High-Strength Bolts

1. Testing Bolt, Nut, and Washer Assemblies

Test a minimum of 3 bolt, nut, and washer assemblies from each mill certificate batch in a tension measuring device at the job site prior to the beginning of bolting start-up. Demonstrate that the bolts and nuts, when used together, can develop tension not less than the provisions specified in AISC 348, Table 4, depending on bolt size and grade. The bolt tension shall be developed by tightening the nut. A representative of the manufacturer or supplier shall be present to ensure that the fasteners are properly used, and to demonstrate that the fastener assemblies supplied satisfy the specified requirements.

2. Inspection

Inspection procedures shall be in accordance with AISC 348, Section 9 . Confirm and report to the Owner's Representative that the materials meet the project specification and that they are properly stored. Confirm that the faying surfaces have been properly prepared before the connections are assembled. Observe the specified job site testing and calibration, and confirm that the procedure to be used provides the required tension. Monitor the work to ensure the testing procedures are routinely followed on joints that are specified to be fully tensioned.

Inspection by the Owner's Representative will include proper preparation, size, gaging location, and acceptability of welds; indentification marking; operation and current characteristics of welding sets in use; and calibration of torque wrenches for high-strength bolts.

The Contractor shall inspect proper preparation, size, gaging location, and acceptability of welds; identification marking, operation and current characteristics of welding sets in use; and calibration of torque wrenches for high-srength bolts.

The Contractor shall inspect high-strength bolted connections in accordance with AISC 317.

3. Testing

The Owner's Representative has the option to perform nondestructive tests of the installed bolts to verify compliance with pre-load bolt tension requirements. The Contractor shall allow access for the Owner's Representative to perform the tests. The nondestructive testing will be done in-place using an ultrasonic measuring device or any other device capable of determining in-place pre-load bolt tension. The test locations shall be selected by the Owner's Representative. If more than 10 percent of the bolts tested contain defects identified by testing, then all bolts used from the batch from which the tested bolts were taken, shall be tested.

E. Testing for Embrittlement

ASTM A143/A143M for steel products hot-dip galvanized after fabrication.

End of Section 05 12 00

SECTION 05 50 13

MISCELLANEOUS METAL FABRICATIONS

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMNI ASSOCIATION (AA)

AA DAF45	(2003; Reaffirmed 2009) Designation System for Aluminum Finishes

AMERICAN INSTITUTE OF STEEP CONSTRUCTION (AISC)

AISC 303	(2010 Code of Standard Practice for Steel Buildings and Bridges

AMERICAN SOCIETY OF SAFETY ENGINEERS (ASSE/SAFE)

ASSE/SAFE A10.3	(2006) Operations – Safety Requirements for Powder Actuated Fastening Systems

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2010; Errata 2011) Structural Welding Code - Steel

ASME INTERNATIONAL (ASME)

ASME B18.2.1	(2012; Errata 2013) Square and Hex Bolts and Screws (Inch Series)
ASME B18.21.1	(2009) Washers: Helical Spring-Lock, Tooth Lock, and Plain Washers (Inch Series)
ASME B18.6.2	(1998; R 2010) Slotted Head Cap Screws, Square Head Set Screws, and Slotted Headless Set Screws: Inch Series)
ASME B18.6.3	(2013) Machine Screws, Tapping Screws, and Machine Drive Screws (Inch Series)

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M	(2013) Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
ASTM A153/A153M	(2009) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A307	(2012) Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

ASTM A36/A36M	(2012) Standard Specification for Carbon Structural Steel
ASTM A47/A47M	(1999; R 2009) Standard Specification for Ferritic Malleable Iron Castings
ASTM A48/A48M	(2003; R 2012) Standard Specification for Gray Iron Castings
ASTM A500/A500M	(2013) Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A53/A53M	(2012) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A653/A653M	(2011) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Drip Process
ASTM A780/A780M	(2009) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM A924/A924M	(2013) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM A992/A992M	(2011) Standard Specification for Structural Steel Shapes
ASTM B108/B108M	(2012; E 2012) Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B209	(2010) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B221	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B26/B26M	(2012) Standard Specification for Aluminum-Alloy Sand Castings
ASTM B632/B632M	(2008) Standard Specification for Aluminum-Alloy Rolled Tread Plate
ASTM C1513	(2013) Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections
ASTM D1187/D1187M	(1997; E 2011; R 2011) Asphalt-Base Emulsions for Use as Protective Coatings for Metal

MASTER PAINTERS INSTITUTE (MPI)

MPI 79 (Oct 2009) Alkyd Anti – Corrosive Metal Primer

NATIONAL ASSOCITATION OF ARCHITECTURAL METAL MANUFACTURERS (NAAMM)

NAAMM MBG 531 (2009) Metal Bar Grating Manual

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 3 (1982; E 2004) Power Tool Cleaning

SSPC SP6/NACE No.3 (2007) Commercial Blast Cleaning

1.02 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Floor access doors (FAD) and panels, installation drawings;

Cover plates and frames, installation drawings;

Guard posts (Bollards);

Embedded angles and plates, installation drawings;

Roof hatch;

Anchor Bolts;

Mechanical and Adhesive Anchors;

Submit fabrication drawings showing layouts, connections to structural system, and anchoring details as specified in AISC 303

Submit templates, erection and installation drawings indicating thickness, type, grade, class of metal, and dimensions. Show construction details, reinforcement, anchorage, and installation with relation to the building construction.

SD-03 Product Data

Including manufacturer's standard allowable load tables

Floor access doors and panels

Floor gratings

Roof hatch

Anchor Bolts;

Mechanical and Adhesive Anchors;

1.03 QUALIFICATION OF WELDERS

Qualify welders in accordance with AWS D1.1/D1.1M. Use procedures, materials, and equipment of the type required for the work.

1.04 DELIVERY, STORAGE, AND PROTECTION

Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damage items with new items.

PART 2: PRODUCTS

2.01 MATERIALS

A. Structural Carbon Steel
ASTM A36/A36M
ASTM A992/A992M, Grade 50.

B. Structural Tubing
ASTM A500/A500M, Grade B (46 ksi minimum yield).

C. Steel Pipe
ASTM A53/A53M, Type E or S, Grade B.

D. Fittings for Steel Pipe
Standard malleable iron fittings ASTM A47/A47M.

E. Gratings
1. Gray cast iron ASTM A48/A48M, Class 40.
2. Metal plank grating, non-slip requirement, aluminum ASTM B209, 6061-T6; steel ASTM A653/A653M, G90.
3. Aluminum bar type grating NAAMM MBG 531.

F. Floor Plates, Diamond Patterned
Floor plate ASTM B632/B632M. Aluminum plate shall not be less than ¼ inch thick (Type 6061-T6).

G. Anchor Bolts
ASTM A307. Where exposed, shall be of the same material, color, and finish as the metal to which applied.

1. Acceptable Manufacturer's

Subject to compliance with Contract Documents, the following manufacturers are acceptable:

a. Headed studs and deformed bar anchors:

i. Nelson Stud Welding Div., TRW Inc.
ii. Stud Welding Products, Inc.

b. Mechanical anchors:

i. Simpson Strong-Tie "Strong-Bolt."
ii. Simpson Strong-Tie "Titen-HD."
iii. Hilti "HSL-3."
iv. Hilti "Kwik Bolt TZ."

c. Adhesive anchors:

i. Simpson Strong-Tie "Set-XP."

ii. Hilti “Hit-RE 500-SD.”

d. Self-tapping concrete anchors:

i. ITW Buildex.

e. Castings, trench covers and accessories:

i. Neenah Foundry Co.
ii. Deeter Foundry Co.
iii. Barry Craft Construction Casting Co.
iv. McKinley Iron Works.

f. Aluminum ladders:

i. Any manufacturer capable of meeting the requirements of this Specification Section.

g. Galvanizing repair paint:

i. Clearco Products Co., Inc.
ii. ZRC Products.

h. Metal (Modular) framing system:

i. Unistrut Building Systems.
ii. B-Line Systems
iii. Kindorf.
iv. Megal Products Div., USG Industries, Inc.
v. Mono-Systems, Inc.

i. Ladder safety extension post:

i. Bilco.

2. Mechanical Anchors and Adhesive Anchors

a. Stainless steel, Type 304, 314 or 316.

b. Provide minimum edge distance cover and spacing as recommended by manufacturer, or as indicated on Drawings whichever is larger.

i. Minimum embedment as recommended by manufacturer or eight (8) diameters of bolt, whichever is larger.
ii. Notify Engineer if required depth of embedment cannot be achieved at a particular anchor bolt location.
iii. Follow manufacturer's recommendations for installation and torque.

c. Submit manufacturer's load test data to verify at least the anchor bolt capacities at the following embedment depths:

i. Data must be based on actual tests performed in unreinforced mass of concrete of not more than 4000 psi compressive strength.
ii. Capacity must be at a concrete temperature of at least 130 degrees Fahrenheit.

ANCHOR BOLT DIAMETER	EMBEDMENT	MINIMUM ULTIMATE
(inches)	(inches)	TENSION CAPACITY (KIP)* **
3/8	3	4.8
½	4	8.1
5/8	5	11.4
¾	6	15.4
7/8	7	20.0
1	8	24.7
1-1/4	10	34.3

* Data must be based on actual tests preformed in unreinforced mass concrete of not more than 4000 psi compressive strength.

** Capacity must be at a concrete temperature of at least 130 DegF.

d. Post-Installed Mechanical and adhesive Anchors:

i. Use of mechanical bolts requires approval by Engineer.
ii. Stainless steel, Type 304 or 316.
iii. Provide minimum edge distance cover as recommended by manufacturer or as indicated on Drawings.
iv. Unless noted otherwise on Plans, acceptable concrete anchor products shall be:

- Mechanical anchors for use in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ACI 355.2 and ICC-ES AC193.Pre-approved mechanical anchors include:
  a. Simpson Strong-Tie "Strong-Bolt" (ICC-ES ESR-1771).
  b. Simpson Strong-Tie "Titen-HD" (ICC-ES ESR 2713).
  c. Hilti "HSL-3" (ICC-ES ESR 1545).
  d. Hilti "Kwik Bolt TZ" (ICC-ES ESR 1917).
- Adhesive anchors for use in cracked and uncracked concrete shall have been tested and qualified for use in accordance with ICC-ES AC308. Pre-approved adhesive anchors include:
  a. Simpson Strong-Tie "Set-XP" (ICC-ES ESR-2508).
  b. Hilti "Hit-RE 500-SD" (ICC-ES ESR 2322).

e. Self-tapping concrete anchors:

i. Tapcon by ITW Buildex.
ii. 410 stainless steel.

iii. ¼ IN DIA with 5/16 IN hex head.

e. Minimum embedment as recommended by manufacturer.

f. #3 Phillips flat head.

3. Lag Screws and Bolts

ASME B18.2.1, type and grade best suited for the purpose.

4. Bolts and Nuts

ASTM A307, Grade A.

5. Bolts, Nuts, and Washers, High Strength

ASTM A325. Provide two (2) washers with all bolts.

6. Powder Actuated Fasteners

Follow safety provisions of ASSE/SAFE A10.3

7. Screws

ASME B18.2.1, ASME B18.6.2, ASME B18.6.3 and ASTM C1513.

8. Washers

Provide plain washers to conform to ASME B18.21.1. Provide beveled washers for American Standard beams and channels, square or rectangular, tapered in thickness, and smooth. Provide lock washers to conform to ASME B18.21.1.

H. Aluminum Alloy Products

Conform to ASTM B209 for sheet plate, ASTM B221 for extrusions and ASTM B26/B26M or ASTM B108/B108M for castings, as applicable. Provide aluminum extrusions at least 1/8 inch thick and aluminum plate or sheet at least 0.050 inch thick.

2.02 FABRICATION FINISHES

A. Galvanizing

Hot-dip galvanize items specified to be zinc-coated, after fabrication where practicable. Galvanizing: ASTM A123/A123M, ASTM A153/A153M, ASTM A653/A653M or ASTM A924/A924M, G90, as applicable.

B. Galvanize

Anchor bolts, washers, bolts and nuts where noted on drawings, and parts or devices necessary for proper installation, unless indicated otherwise.

C. Repair of Zinc-Coated Surfaces

Repair damaged surfaces with galvanizing repair method and paint conforming to ASTM A780/A780M or by application of stick or thick paste material specifically designed for repair of galvanizing, as approved by Owner's Representative. Clean areas to be repaired and remove slag from welds.

Heat surfaces to which stick or paste material is applied, with a torch to a temperature sufficient to melt the metallics in stick or paste; spread molten material uniformly over surfaces to be coated and wipe off excess material.

D. Shop Cleaning and Painting

1. Surface Preparation

   Blast clean surfaces in accordance with SSPC SP 6/NACE No.3. Surfaces that will be exposed in spaces above ceiling or in attic spaces, crawl spaces, furred spaces, and chases may be cleaned in accordance with SSPC SP 3 in lieu of being blast cleaned. Wash cleaned surfaces which become contaminated with rust, dirt, oil, grease, or other contaminants with solvents until thoroughly clean. Steel to be embedded in concrete shall be free of dirt and grease. Do not paint or galvanize bearing surfaces, including contact surfaces within slip critical joints, but coat with rust preventative applied in the shop.

2. Pretreatment, Priming and Painting

   Apply Pretreatment, primer, and paint in accordance with manufacturer's printed instructions.

E. Nonferrous Metal Surfaces

Protect by plating, anodic, or organic coatings.

F. Aluminum Surfaces

1. Surface Condition

   Before finishes are applied, remove roll marks, scratches, rolled-in scratches, kinks, stains, pits, orange peel, die marks, structural streaks, and other defects which will affect uniform appearance of finished surfaces.

2. Aluminum Finishes

   Unexposed sheet, plate and extrusions may have mill finish as fabricated. Sandblast castings' finish, medium, AA DAF45. Unless otherwise specified, provide all other aluminum items with a standard mill finish. Provide a coating thickness not less than that specified for protective and decorative type finishes for items used in interior locations or architectural Class I type finish for items used in exterior locations in AA DAF45.

2.03 FLOOR ACCESS DOORS AND PANELS

Provide flush type floor access doors and panels unless otherwise indicated. Fabricate frames for floor access doors of aluminum not lighter than ¼ inch thick with welded joints and anchorage for securing flush top of concrete. Provide floor access doors with stiffened edges and welded attachments. Provide floor access doors hinged to frame and with a flush-face, turn-screw-operated latch. Provide mill finish. Design base: Type "K or KD" by Bilco or approved equal.

2.04 COVER PLATES AND FRAMES

Install the tops of cover plates and frames flush with floor.

2.05 ROOF HATCH (SCUTTLES)

Proved aluminum with 3 inch beaded flange, welded and ground at corner. Provide a minimum clear opening as indicated on drawings. Construction and accessories as follows:

A. Insulate cover and curb with one inch thick rigid fiberboard insulation covered and protected by aluminum sheet with 12 inches high curb, formed with 3 inch mounting flange with holes provided for securing to the roof deck. Equip the curb with an integral

metal cap flashing of the same gage and metal as the curb, full welded and ground at corners for weather tightness.

B. Provide hatch completely assembled with pintle hinges, compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles on inside and outside, and neoprene draft seal. Provide fasteners for padlocking on the inside. Equip the cover with an automatic hold-open arm complete with grip handle to permit one-hand release. Cover action shall be smooth through its entire range with an operation pressure of approximately 30 pounds.

C. Base design: Model type "D" Double Leaf by Bilco for Broadway Pump Station Roof Hatch Openings.

Model type "S" Single Leaf by Bilco for all other access hatches.

2.06 FLOOR GRATINGS

Design aluminum grating in accordance with NAAMM MBG 531 for bar type grating or manufacturer's charts for plank grating.

A. Design floor gratings to support a live load of 100 pounds per square foot for the spans indicated (300 pound concentrated load on a 4 inch square one), with maximum deflection of L/240.

B. NAAMM MBG 531, band edges of grating with bars of the same size as the bearing bars. Provide full depth banding unless otherwise indicated. Weld banding in accordance with the manufacturer's standard for trim unless otherwise indicated. Design tops of bearing bars, cross or intermediate bars to be in the same plane and match grating finish.

C. Anchor gratings to structural members with clips and bolts (stainless steel).

Slip resistance requirements must exceed both wet and dry a static coefficient of friction of 0.5.

2.07 GUARD POSTS (BOLLARDS/PIPE GUARDS)

Provide 8 inch galvanized extra strong weight steel pipe as specified in ASTM A53/A53M. Anchor posts in concrete as indicated and fill solidly with concrete with minimum compressive strength of 3000 psi, and round off at top.

2.08 MISCELLANEOUS PLATES AND SHAPES)

Mechanical testing of steel shall be in accordance with ASTM A370 except as otherwise specified or required by the material specifications. Tension tests shall be performed on full cross-section specimens using a gage length that spans the extremities of specimens with welds or sleeves included. Chemical analyses of steel heats shall show the percentages of carbon, phosphorous, manganese, sulphur and silicon present in the steel.

2.09 DOWNSPOUT BOOTS (PUMP STATION)

Provide cast iron downspout boots with receiving bells sized to fit downspouts.

PART 3: EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

Install items at locations indicated, according to manufacturer's instructions. Verify all measurements

and take all field measurements necessary before fabrication. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and harmonize with the material to which fastenings are applied. Include materials and parts necessary to complete each item, even though such work is not definitely shown or specified. Poor matching of holes for fasteners shall be cause for rejection. Conceal fastenings where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Form joints exposed to the weather shall be formed to exclude water. Items listed below require additional procedures.

3.02 WORKMANSHIP

Provide miscellaneous metalwork that is well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Provide continuous welding along the entire area of contact except where tack welding is permitted. Do not tack weld exposed connections of work in place and ground smooth. Provide a smooth finish on exposed surfaces of work in place and unless otherwise approved, flush exposed riveting. Mill joints where tight fits are required. Corner joints shall be coped or mitered, well formed, and in true alignment. Accurately set work to established lines and elevations and securely fastened in place. Install in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

3.03 ANCHORAGE, FASTENINGS, AND CONNECTIONS

Provide anchorage where necessary for fastening miscellaneous metal items securely in place. Include for anchorage not otherwise specified or indicated slotted inserts, expansion shields, and powder-driven fasteners, when approved for concrete; toggle bolts and through bolts for masonry; machine and carriage bolts for steel; through bolts, lag bolts, and screws for wood. Do not use wood plugs in any material. Provide non-ferrous attachments for non-ferrous metal. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.

3.04 BUILT- IN WORK

Form for anchorage metal work built-in with concrete or masonry, or provide with suitable anchoring devices as indicated or as required. Furnish metal work in ample time for securing in place as the work progresses.

3.05 WELDING

Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1/D1.1M. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation.

3.06 FINISHES

A. Dissimilar Materials

Where dissimilar metals are in contact, protect surfaces with a coat conforming to MPI 79 to prevent galvanic or corrosive action. Where aluminum is in contact with concrete, plater, mortar, masonry, wood, or absorptive materials subject to wetting, protect with ASTM D1187/D1187M, asphalt-base emulsion.

B. Field Preparation

Remove rust preventive coating just prior to field erection, using a remover approved by the rust preventive manufacturer. Surfaces, when assembled, shall be free of rust, grease, dirt and other foreign matter.

C. Environmental Conditions

Do not clean or paint surface when damp or exposed to foggy or rainy weather, when metallic surface temperature is less than 5 degrees F above the dew point of the surrounding air, or when surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Owner's Representative.

3.07 COVER PLATES AND FRAMES

Install the tops of cover plates and frames flush with floor.

3.08 INSTALLATION OF GUARD POSTS (BOLLARDS/PIPE GUARDS)

Set bollards/pipe guards vertically in 3000 psi concrete as detailed. 48 Inch projection above ground, 48 Inch embedment in concrete unless detailed otherwise on drawings.

END OF SECTION 05 50 13

SECTION 05 50 14

STRUCTURAL METAL FABRICATIONS

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA ADM	(2010) Aluminum Design Manual

AMERICAN GEAR MANUFACTURERES ASSOCIATION (AGMA)

ANSI/AGMA 2005	(2003D; R 2008) Design Manual for Bevel Gears
ANSI/AGMA 6001	(2008E) Design and Selection of Components for Enclosed Gear Drives

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2010; Errata 2011) Structural Welding Code - Steel
AWS D1.2/D1.2M	(2008) Structural Welding Code - Aluminum

ASME INTERNATIONAL (ASME)

ASME B4.1	(1967; R 3009) Preferred Limits and Fits for Cylindrical Parts
ASME B46.1	(2009) Surface Texture, Surface Roughness, Waviness and Lay
ASME BPVC SEC IX	(2010) BPVC Section IX-Welding and Brazing Qualifications

ASTM INTERNATIONAL (ASTM)

ASTM B4.1	(2013) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A325	(2010; E 2013) Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTMA380/A380M	(2013) Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems
ASTM A490	(2012) Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength

ASTM A514/A514M	(2013) Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding
ASTM A780/A780M	(2009) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM D962	(1981; E 2008;) Aluminum Powder and Paste Pigments for Paints
ASTM E165/E165M	(2012) Standard Practice for Liquid Penetrant Examination for General Industry
ASTM E709	(2008) Standard Guide for Magnetic Particle Examination

1.02 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings;

SD-03 Product Data

Welding of Structural Steel;

Welding of Aluminum;

Structural Steel Welding Repairs;

Materials Orders

Materials List

Shipping Bill

SD-06 Test Reports

Tests, Inspections, and Verifications

SD-07 Certificates

Qualifications of Welders and Welding Operators

Application Qualification for Steel Studs; G

Welding of Aluminum;

1.03 QUALITY ASSURANCE

A. Qualification of Welders and Welding Operators

Certify that the qualification of welders and welding operators and tack welders who will perform structural steel welding have been qualified for the particular type of work to be done in accordance with the requirements of AWS D1.1/Da.1M, Section 4, Section IX, prior to commencing fabrication.

1. List the qualified welders by name and specify the code and procedures under which qualified and the date of qualification within the certification. Prior

qualification will be accepted if welders have performed satisfactory work under the code for which qualified within the preceding three months. Welders are required to repeat the qualifying tests when their work indicates a reasonable doubt as to proficiency. Those passing the requalification tests will be recertified. Those not passing will be disqualified until passing. Contractor incurs all expenses in connection with qualification and requalification.

2. Perform welding of aluminum conforming to AA ADM or AWS D1.2/D1.2M, Sections 1 through 7, 9, and 10. The welding process and welding operators shall be prequalified as required by AWS D1.2/D1.2M, Section 5 or AA ADM, Subsection 7.2.4 in accordance with the methods described in ASME BPVC SEC IX, Section IX. Furnish for approval a certified report giving the results of the qualifying tests, and a complete schedule of the welding process for each aluminum fabrication to be welded prior to commencing fabrication prior to commencing welding.

3. Maintain an approved inspection system and perform required inspections in accordance with Contract Clause CONTRACTOR INSPECTION SYSTEM. Welding will be subjected to inspection to determine conformance with the requirements of AWS D1.1/D1.1M, the approved welding procedures and provisions stated in other sections of these specifications.

B. SPECIAL INSPECTIONS

See Statement of Special Inspections on Sheets S-201 and S-202.

C. Detail Drawings

Submit detail drawings for metalwork and machine work, prior to fabrication, include within the detail drawings catalog cuts, templates, fabrication and assembly details and type, grade and class of material as appropriate. Elements of fabricated items inadvertently omitted on contract drawings shall be detailed by the fabricator and indicated on the detail drawings.

PART 2: PRODUCTS

2.01 FABRICATION

A. Structural Fabrication

Material shall be straight before being laid off or worked. Perform straightening, if necessary, by methods that will not impair the metal. Sharp kinks or bends will be cause for rejection of the material. Material with welds will not be accepted except where welding is definitely specified, indicated or otherwise approved. Make bends using approved dies, press brakes or bending rolls. Where heating is required, take precautions to avoid overheating the metal and allow it to cool in a manner that will not impair the original properties of the metal. Proposed flame cutting of material, other than structural steel, will be subject to approval and shall be indicated on detail drawings. Shearing shall be accurate and all portions of the work neatly finished. Corners shall be square and true unless otherwise shown. Re-entrant cuts shall be filleted to a minimum radius of 3/4 inch unless otherwise approved. Provide finished members free of twists, bends and open joints. Bolts, nuts and screws shall be tight.

1. Dimensional Tolerances for Structural Work

Measure dimensions using an approved calibrated steel tape of approximately the same temperature as the material being measured. The overall dimensions of an assembled structural unit shall be within the tolerances indicated on the drawings or as specified in the particular section of theses specifications for the item of work. Where tolerances are not specified in other sections of these specifications or shown, an allowable variation of 1/32 inch is permissible in the overall length of component members with both ends milled; component members without milled ends shall not deviate from the dimensions shown by more than 1/16 inch for members 30 feet or less in length, and by more than 1/8 inch for members over 30 feet in length.

2. Structural Steel Fabrication

Structural steel may be cut by mechanically guided or hand-guided torches, provided an accurate profile with a surface that is smooth and free from cracks and notches is obtained. Prepare surfaces and edges in accordance with AWS D1.1/D1.1M, Subsection 3.2. Where structural steel is not to be welded, chipping or grinding will not be required except as necessary to remove slag and sharp edges of mechanically guided or hand-guided cuts not exposed to view. Chip, grind or machine to sound metal hand-guided cuts which are to be exposed or visible.

3. Structural Aluminum Fabrication

Lay out and cut aluminum in accordance with the AA ADM, Section 6.

B. Welding

1. Welding of Structural Steel

a. Welding Procedures for Structural Steel

Prequalify welding procedures for structural steel as described in AWS D1.1/D1.1M, Subsection 3.1 or qualify by tests as prescribed in AWS D1.1/D1.1M, Section 4. Properly documented evidence of compliance with all requirements of these specifications for previous qualification tests shall establish a welding procedure as prequalified. For welding procedures qualified by tests, the test welding and specimen testing will be witnessed and the test report document signed by the Owner's Representative. Approval of any welding procedure will not relieve the Contractor of the responsibility for producing a finished structure meeting all requirements of these specifications. The Contractor will be directed or authorized to make any changes in previously approved welding procedures that are deemed necessary or desirable by the Engineer. Submit a complete schedule of welding procedures for each steel structure to be welded prior to commencing fabrication. The schedule shall conform to the requirements specified in the provisions AWS D1.1/D1.1M, Sections 2, 3, 4, 6, 7 and applicable portions of Section 8. Provide within the schedule detailed procedure specifications and tables or diagrams showing the procedures to be used for each required joint. Include in the welding procedures filler metal, preheat, interpass temperature and stress-relief heat treatment requirements. Each welding procedure shall be clearly identified as being prequalified or required to be qualified by tests. Welding procedures shall show types and locations of welds designated or in the specifications to receive nondestructive examination.

b. Welding Process

Perform welding of structural steel by an electric arc welding process using a method which excludes the atmosphere from the molten metal and conforms to the applicable provisions of AWS D1.1/D1.1M. Minimize residual stresses, distortion and shrinkage from welding.

c. Welding Technique

i. Filler Metal

The electrode, electrode-flux combination and grade of weld metal shall conform to the appropriate AWS specification for the base metal and welding process being used or be as shown where a specific choice of AWS specification allowables is required. Include the AWS designation of the electrodes to be used in the schedule of welding procedures. Use only low hydrogen electrodes for manual shielded metal-arc welding regardless of the thickness of the steel. Use a controlled temperature storage oven at the job site as prescribed by AWS D1.1/D1.1M, Subsection 3.5 to maintain low moisture of low hydrogen electrodes.

ii. Preheat and Interpass Temperature

Perform preheating as required by AWS D1.1/D1.1M, Subsection 3.5 or as otherwise specified except that the temperature of the base metal shall be at least 70 degrees F. Slowly and uniformly preheat the weldments by approved means to the prescribed temperature, held at that temperature until the welding is completed and then permitted to cool slowly in still air.

iii. Stress-Relief Heat Treatment

Where stress relief heat treatment is specified or shown, perform in accordance with the requirements of AWS D1.1/D1.1M, Subsection 5.8 unless otherwise authorized or directed.

d. Workmanship

Perform welding workmanship in accordance with AWS D1.1/D1.1M, Section 3 and other applicable requirements of these specifications.

i. Preparation of Base Metal

Prior to welding inspect surfaces to be welded to ensure compliance with AWS D1.1/D1.1M, Subsection 3.2.

ii. Temporary Welds

Make temporary welds, required for fabrication and erection, under the controlled conditions prescribed for permanent work. Make temporary welds using low-hydrogen welding electrodes and by welders qualified for permanent work as specified in these specifications. Condust preheating for temporary welds as required by AWS D1.1/D1.1M for permanent welds except that the minimum temperature shall be 120 degrees F in any case. In making temporary welds, arcs shall not be struck in other than weld locations. Remove each temporary weld and

grind flush with adjacent surfaces after serving its purpose.

iii. Track Welds

Subject tack welds that are to be incorporated into the permanent work to the same quality requirements as the permanent welds; clean and thoroughly fuse them with permanent welds. Perform preheating as specified above for temporary welds. Multiple-pass tack welds shall have cascaded ends.

Remove defective tack welds before permanent welding.

2. Welding of Steel Castings

Remove unsound material from the surfaces of steel castings, to be incorporated into welded connections, by chipping, machining, air-arc gouging or grinding. Do not weld major connections designed for transfer of stresses if the temperature of the casting is lower than 100 degrees F. Castings containing over 0.35 percent carbon or over 0.75 percent manganese shall be preheated to a temperature not to exceed 450 degrees F and conduct welding while the castings are maintained at a temperature above 350 degrees F. Welding will not be permitted on castings containing carbon in excess of 0.45 percent except on written authorization. Castings requiring welding repairs after the first annealing and castings involving welding fabrication shall be stress-relieved annealed prior to receiving final machining unless otherwise permitted.

3. Welding of Steel Studs

Conform to the requirements of AWS D1.1/D1.1M, Section 7, except as otherwise specified for the procedures for welding steel studs to structural steel, including mechanical, workmanship, technique, stud application qualification, production quality control and fabrication and verification inspection procedures.

a. Application of Qualification for Steel Studs

As a condition of approval of the stud application process, furnish certified test reports and certification that the studs conform to the requirements of AWS D1.1/D1.1M, Subsections 7.2 and 7.3, certified results of the stud manufacturer's stud base qualification test, and certified results of the stud application qualification test as required by AWS D1.1/D1.1M, Subsection 7.6, prior to commencing fabrication, except as otherwise specified.

b. Production Quality Control

Conform to the requirements of AWS D1.1/D1.1M, Subsection 7.7, except as otherwise specified for quality control for production welding of studs. Studs on which pre-production testing is to be performed shall be welded in the same general position as required on production studs (flat, vertical, overhead or sloping). If the reduction of the length of studs becomes less than normal as they are welded, stop welding immediately and do not resume until the cause has been corrected.

C. Bolted Connections

1. Bolted Structural Steel Connections

Provide bolts, nuts and washers of the type specified or indicated. Equip all nuts

with washers except for high strength bolts. Use beveled washers where bearing faces have a slope of more than 1:20 with respect to a plane normal to the bolt axis. Where the use of high strength bolts is specified or indicated, the materials, workmanship and installation shall conform to the applicable provisions of ASTM A325 or ASTM A490.

a. Bolt holes shall be accurately located, smooth, perpendicular to the member and cylindrical.
b. Holes for regular bolts shall be drilled or subdrilled and reamed in the shop and not be more than 1/16 inch larger than the diameter of the bolt.
c. Holes for fitted bolts shall be match-reamed or drilled in the shop. Remove burrs resulting from reaming. Keep bolt threads entirely outside of the holes. The body diameter of bolts shall have tolerances as recommended by ASME B4.1for the class of fit specified. Place fitted bolts in reamed holes by selective assembly to provide an LN-2 fit.
d. Holes for high strength bolts shall not have diameters more than 1/16 inch larger than bolt diameters. If the thickness of the material is not greater than the diameter of the bolts, the holes may be punched. If the thickness of the material is greater than the diameter of the bolts the holes may be drilled full size or subpunched or subdrilled at least 1/8 inch smaller than the diameter of the bolts and then reamed to full size. Poor matching of holes will be cause for rejection. Drifting occurring during assembly shall not distort the metal or enlarge the holes. Reaming to a larger diameter of the next standard size bolt will be allowed for slight mismatching.

2. Bolted Aluminum Connections

Conform to the requirements of AA ADM, Section 6 for punching, drilling, reaming and bolting for bolted aluminum connections.

D. Castings

Each casting and castings weighing more than 500 required pounds shall bear cast or stamped heat numbers. Deviations from the dimensions of castings shown shall not exceed amounts that will impair the strength of castings by more than 10 percent as computed from the dimensions shown. Dimensions of castings shown on approved detail drawings are finished dimensions.

Castings that are warped or otherwise distorted or that are oversize to an extent that will interfere with proper fit with other parts of the machinery or structure will be rejected. The structure of metal in castings shall be homogeneous and free from excessive nonmetallic inclusions. Excessive segregation of impurities or alloys at critical points in castings will be cause for rejection. Do not make repairs to castings prior to approval. Minor surface imperfections not affecting the strength of casting may be welded in the "green" if approved. Surface imperfections will be considered minor when the depth of the cavity prepared for welding is the lesser of 20 percent of the actual wall thickness or 1 inch. Defects other than minor surface imperfections may be welded only when specifically authorized in accordance with the following requirements:

1. The defects have been entirely removed and are judged not to affect the strength, use or machinability of the castings when properly welded and stress relieved.

2. The proposed welding procedure, stress relief and method of examination of the repair work have been submitted and approved.

E. Machine Work

Tolerances, allowances and gauges for metal fits between plain, non-threaded, cylindrical parts shall conform to ASME B4.1 for the class of fit shown or required unless otherwise shown on approved detail drawings.

Where fits are not shown they will be suitable as approved. Tolerances for machine-finished surfaces designated by non-decimal dimensions shall be within 1/64 inch. Sufficient machining stock will be allowed on placing pads to ensure true surfaces of solid material. Provide finished contact or bearing surfaces true and exact to secure full contact. Polish journal surfaces and finish all surfaces with sufficient smoothness and accuracy to ensure proper operation when assembled. Parts entering any machine shall be accurately machined and all like parts be interchangeable except that parts assembled together for drilling or reaming of holes or machining will not be required to be interchangeable with like parts. Accurately locate all drilled holes bolts.

1. Finished Surfaces

   Provide surface finishes, indicated or specified, in accordance with ASME B46.1. Values of required roughness heights are arithmetical average deviations expressed in microinches. These values are maximum. Lesser degrees will be satisfactory unless otherwise indicated. Compliance with surface requirements shall be determined by sense of feel and visual inspection of the work compared to Roughness Comparison Specimens in accordance with the provisions of ASME B46.1. Values of roughness width and waviness height shall be consistent with the general type of finish specified by roughness height. Where the finish is not indicated or specified use that which is most suitable for the particular surface, provide the class of fit required and be indicated on the detail drawings by a symbol which conforms to ASME B46.1 when machine finishing is provided. Flaws such as scratches, ridges, holes, peaks, cracks or checks which will make the part unsuitable for the intended use will be cause for rejection.

2. Unfinished Surfaces

   Lay out all work to secure proper matching of adjoining unfinished surfaces unless otherwise directed. Where there is a large discrepancy between adjoining unfinished surfaces chip and grind smooth or machine to secure proper alignment. Unfinished surfaces shall be true to the lines and dimensions shown and be chipped or ground free of all projections and rough spots. Fill in depressions or holes not affecting the strength or usefulness of the parts in an approved manner.

3. Pin Holes

   Pin holes are to be bored true to gauges, smooth, straight and at right angles to the axis of the member. The boring shall be done after the member is securely fastened in position.

4. Gears

   Provide gears that have machine cut teeth of a form conforming to applicable design requirements of ANSI/AGMA 2005 and ANSI/AGMA 6001 unless otherwise specified or shown.

5. Shafting

   Turn or grind shafting with hot-rolled or cold-rolled steel, as required, unless

otherwise specified or authorized. Provide fillets where changes in section occur. Cold-finished shafting may be used where keyseating is the only machine work required.

6. Bearings

Bearings may be lined with babbit or bronze unless otherwise specified or shown. Where the bearing pressure is in excess of 200 psi, bearings shall be lined with bronze. Anti-friction bearings of approved types and of sizes not less than those recommended by the bearing manufacturer for the duty intended will be permitted subject to approval. Properly align all bearings provided with a suitable means of lubrication. Install anti-friction bearings as required to provide for retention of the lubricant and to exclude dirt and grit.

F. Miscellaneous Provisions

1. Metallic Coatings

a. Zinc Coatings – Apply zinc coatings in a manner and of a thickness and quality conforming to ASTM A123/A123M. Where zinc coatings are destroyed by cutting, welding or other causes regalvanize the affected areas. Regalvanize coatings 2 ounces or heavier with a suitable low-melting zinc base alloy similar to the recommendations of the American Hot-Dip Galvanizers Association to the thickness and quality specified for the original zinc coating. Repair coatings less than 2 ounces in accordance with ASTM A780/A780M.

b. Cleaning of Corrosion-Resisting Steel

Remove oil, paint and other foreign substances from corrosion-resisting steel surfaces after fabrication. Perform cleaning by vapor degreasing or by the use of cleaners of the alkaline, emulsion or solvent type. After the surfaces have been cleaned give a final rinsing with clean water followed by a 24 hour period during which the surfaces are intermittently wet with clean water and then allowed to dry for the purpose of inspecting the clean surfaces. Visually inspect the surfaces for evidence of paint, oil, grease, welding slag, heat treatment scale, iron rust or other forms of contamination. If evidence of foreign substance is found, clean again in accordance with the applicable provisions of ASTM A380/A380M. Furnish the proposed method of treatment for approval. Visually reinspect after treatment. Use only stainless steel or nonmetallic bristle brushes to remove foreign substances. Any contamination occurring subsequent to the initial cleaning shall be removed by one or more of the methods indicated above.

a. Lubrication

The arrangement and details for lubrication shall be as shown. Thoroughly clean and lubricate, with an approved lubricant, all bearing surfaces before erection or assembly.

G. Shop Assembly

Assemble each structural unit furnished in the shop to determine the correctness of the fabrication and matching of the component parts unless otherwise specified. Do not exceed those tolerances shown. Closely check each unit assembled to ensure that all

necessary clearances have been provided and that binding does not occur in any moving part. Assembly in the shop shall be in the same position as final installation in the field unless otherwise specified. Perform assembly and disassembly work in the presence of the Owner's Representative unless waived in writing.

Immediately remedy errors or defects disclosed by the Contractor without cost to the Owner's Representative. Before disassembly for shipment each piece of a machinery or structural unit shall be match-marked to facilitate erection in the field. Indicate the location of match-marks by circling with a ring of white paint after the shop coat of paint has been applied or as otherwise directed.

2.02 TESTS, INSPECTIONS, AND VERIFICATIONS

Perform material tests and analyses certified by an approved laboratory to demonstrate that materials are in conformity with the specifications. These tests and analyses shall be performed and certified at the Contractor's expense. Perform tests, inspections, and verifications conforming to the requirements of the particular sections of these specifications for the respective items of work unless otherwise specified or authorized. Conduct tests in the presence of the Owner's Representative if so required. Furnish specimens and samples for additional independent tests and analyses upon request by the Owner's Representative. Properly label specimens and samples and prepare for shipment. Submit certified test reports for materials with all materials delivered to the site.

A. Nondestructive Testing

When doubt exists as to the soundness of any material part, such part may be subjected to any form of nondestructive testing determined by the Owner's Representative. This may include ultrasonic, magnaflux, dye penetrant, x-ray, gamma ray or any other test that will thoroughly investigate the part in question. The cost of such investigation will be borne by the Owner's Representative.

B. Tests of Structural Units

The details for tests of structural units shall conform to the requirements of the particular sections of these specifications covering these items. Assemble each complete structural unit and test them in the shop, in the presence of the Owner's Representative, unless otherwise directed. Waiving of tests will not relieve the Contractor of responsibility for any fault in operation, workmanship or material that occurs before the completion of the contract or guarantee. After being installed at the site, each complete structural unit shall be operated through a sufficient number of complete cycles to demonstrate to the satisfaction of the Owner's Representative that it meets the specified operational requirements in all respects.

C. Inspection of Structural Steel Welding

Nondestructive examination of designated welds will be required. Supplemental examination of any joint or coupon cut from any location in any joint may be required.

1. Visual Examination

Visually inspect all welds. For all visual examination of completed welds clean and carefully examine for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement and other surface defects to ensure compliance with the requirements of AWS D1.1/D1.1M, Section 6, subsection 6.9, Part C.

2. Nondestructive Examination

Perform as designated or described in the sections of these specifications, the nondestructive examination of shop and field welds covering the particular items of work.

a. Testing Agency

The nondestructive examination of welds and the evaluation of examination tests as to the acceptability of the welds shall be performed by a testing agency adequately equipped and competent to perform such services or by the Contractor using suitable equipment and qualified personnel. In either case, written approval of the examination procedures is required and the examination tests shall be made in the presence of the Owner's Representative. The evaluation of examination tests are subject to the approval and all records become the property of the Owner's Representative.

b. Examination Procedures

Conform to the following requirements.

i. Ultrasonic Testing

Making, evaluating and reporting ultrasonic testing of welds shall conform to the requirements of AWS D1.1/D1.1M, Section 6, Part C. Provide ultrasonic equipment capable of making a permanent record of the test indications. Make a record of each weld tested.

ii. Radiographic Testing

Making, evaluating and reporting radiographic testing of welds shall conform to the requirements of AWS D1.1/D1.1M, Section 6, Parts C and E.

iii. Magnetic Particle Inspection

Perform dye penetrant inspection of welds shall conform to the applicable provisions of ASTM E709.

iv. Liquid Dye Penetrant Inspection

Perform dye penetrant inspection of welds conforming to the applicable provisions of ASTM E165/E165M. Inspect 50% of full penetration welds and 20% of fillet welds.

c. Acceptability of Welds

Welds will be unacceptable if shown to have defects prohibited by AWS D1.1/D1.1M, or possess any degree of incomplete fusion, inadequate penetration or undercutting.

d. Welds to be Subject to Nondestructive Examination

Test 20% of liquid dye penetrant tested full penetration welds with ultrasonic of radiographic testing.

3. Test Coupons

The Owner's Representative reserves the right to require the Contractor to remove coupons from completed work when doubt as to soundness cannot be resolved by

nondestructive examination. Should tests of any two coupons cut from the work of any welder show strengths less than that specified for the base metal it will be considered evidence of negligence or incompetence and such welder will be removed from the work. When coupons are removed from any part of a structure, repair the members cut in a neat manner with joints of the proper type to develop the full strength of the members.

Repaired joints shall be peened as approved or directed to relieve residual stress. The expense for removing and testing coupons, repairing cut members and the nondestructive examination of repairs shall be borne by the Owner's Representative or the Contractor in accordance with the Contract Clauses INSPECTION AND ACCEPTANCE.

4. Supplemental Examination

When the soundness of any weld is suspected of being deficient due to faulty welding or stresses that might occur during shipment or erection, the Owner's Representative reserves the right to perform nondestructive supplemental examinations before final acceptance. The cost of such inspection will be borne by the Owner's Representative.

D. Structural Steel Welding Repairs

Repair defective welds in the structural steel welding repairs in accordance with AWS D1.1/D1.1M, Subsection 3.7. Remove defective weld metal to sound metal by use of air carbon-arc or oxygen gouging. Do not use oxygen gouging on ASTM A514/A514M steel. Thoroughly clean surfaces before welding. Retest welds that have been repaired by the same methods used in the original inspection. Except for the repair of members cut to remove test coupons and found to have acceptable welds costs of repairs and retesting will be borne by the Contractor. Submit welding repair plans for steel, prior to making repairs.

E. Inspection and testing of Steel Stud Welding

Perform fabrication and verification inspection and testing of steel stud welding conforming to the requirements of AWS D1.1/D1.1M, Subsection 7.8 except as otherwise specified. The Owner's Representative will serve as the verification inspector. One stud in every 100 and studs that do not show a full 360 degree weld flash, have been repaired by welding or whose reduction in length due to welding is less than normal shall be bent or torque tested as required by AWS D1.1/D1.1M, Subsection 7.8. If any of these studs fail, bend or torque test two additional studs. If either of the two additional studs fails, all of the studs represented by the tests will be rejected. Studs that crack under testing in either the weld, base metal or shank will be rejected and replaced.

PART 3: EXECUTION

3.01 INSTALLATION

Thoroughly clean all parts to be installed. Remove packing compounds, rust, dirt, grit and other foreign matter. Clean holes and grooves for lubrication. Examine enclosed chambers or passages to make sure that they are free from damaging materials. Where units or items are shipped as assemblies they will be inspected prior to installation. Disassembly, cleaning and lubrication will not be required except where necessary to place the assembly in a clean and properly lubricated condition. Do not use

pipe wrenches, cold chisels or other tools likely to cause damage to the surfaces of rods, nuts or other parts used for assembling and tightening parts. Tighten bolts and screws firmly and uniformly but take care not to overstress the threads. When a half nut is used for locking a full nut place the half nut first followed by the full nut. Lubricate threads of all bolts except high strength bolts, nuts and screws with an approved lubricant before assembly. Coat threads of corrosion-resisting steel bolts and nuts with an approved antigalling compound. Driving and drifting bolts or keys will not be permitted.

A. Alignment and Setting

Accurately align each machinery or structural unit by the use of steel chims or other approved methods so that no binding in any moving parts of distortion of any member occurs before it is fastened in place. The alignment of all parts with respect to each other shall be true within the respective tolerances required. Set true machines to the elevations shown.

B. Blocking and Wedges

Remove all blocking and wedges used during installation for the support of parts to be grouted in foundations before final grouting unless otherwise directed. Blocking and wedges left in the foundations with approval shall be of steel or iron.

C. Foundations and Grouting

Concreting of subbases and frames and the final grouting under parts of machines shall be in accordance with the procedures as specified in Section 03 30 00.00 10 CAST-IN-PLACE CONCRETE.

3.02 TESTS

A. Workmanship

Workmanship must be of the highest grade and in accordance with the best modern practices to conform with the specifications for the item of work being furnished.

B. Production Welding

Perform production welding conforming to the requirements of AWS D1.1/D1.1M or AWS D1.2/D1.2M, as applicable. Studs, on which pre-production testing is to be performed, shall be welded in the same general position as required on production items (flat, vertical, overhead or sloping). Test and production stud welding will be subjected to visual examination or If the reduction of the length of studs becomes less than normal as they are welded, stop welding immediately and do not resume until the cause has been corrected.

3.03 PROTECTION OF FINISHED WORK

A. Machined Surfaces

Thoroughly clean foreign matter off machined surfaces. All finished surfaces shall be protected by suitable means. Oil and wrap unassembled pins and bolts with moisture resistant paper or protect them by other approved means. Wash finished surfaces of ferrous metals to be in bolted contact, with an approved rust inhibitor and coat them with an approved rust resisting compound for temporary protection during fabrication, shipping and storage periods. Paint finished surfaces of metals which will be exposed after installation, except corrosion resisting steel or nonferrous metals as specified in Section 09 90 00 PAINTINGS AND COATINGS.

B. Lubrication After Assembly

After assembly fill all lubricating systems with the lubricant specified and apply additional lubricant at intervals as required to maintain the equipment in satisfactory condition until acceptance of the work.

C. Aluminum

Protect aluminum that will be in contact with grout or concrete from galvanic or corrosive action, with a coat of zinc-chromate primer and a coat of aluminum paint. Protect aluminum in contact with structural steel against galvanic or corrosive action with a coat of zinc-chromate primer and a coat of aluminum paint. Provide aluminum paint consisting of an aluminum paste conforming to ASTM D962, spar varnish and thinner compatible with the varnish. Field mix the aluminum paint in proportion of 2 pounds of paste, not more than one gallon of spar varnish and not more than one pint of thinner.

END OF SECTION 05 50 14

SECTION 05 51 33

METAL LADDERS

PART 1: GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ALUMINUM ASSOCIATION (AA)

AA DAF 45	(2003; Reaffirmed 2009) Designation System for Aluminum Finishes)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A14.3	(2008) American National Standards for Ladders – Fixed – Safety Requirements

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7	(2010; Change 2010; Change 2011; Errata 2011; Change 2011) Minimum Design Loads for Buildings and Other Structures

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2010; Errata 2011) Structural Welding Code – Steel)

ASTM INTERNATIONAL (ASTM)

ASTM B108/B108M	(2012; E 2012) Standard Specification for Aluminum-Alloy Permanent Mold Castings
ASTM B209	(2010) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B221	(2013) Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B26/B26M	(2012) Standard Specification for Aluminum-Alloy Sand Castings
ASTM D1187/D1187M	(1997; E 2011; R 2011) Asphalt-Base Emulsions for Use as Protective Coatings for Metal

MASTER PAINTERS INSTITUTE (MPI)

MPI 79	(Oct 2009) Alkyd Anti-Corrosive Metal Primer

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.27	Fixed Ladders

1.02 SYSTEM DESCRIPTION

The design, engineering, and construction of ladders is the responsibility of the Contractor Engineer for contractor-designed system and components: Professional Structural Engineer in the State of North Dakota.

Design Submittals shall include:

A. Certification that manufactured unites meet all design loads specified.

B. Shop Drawings and engineering design calculations.

1. Indicate design live loads.

2. Sealed by a professional engineer registered in the State of North Dakota.

3. Engineer (A/E) will review for general compliance with Contract Documents.

Design ladders to be as listed below:

C. Fully welded type.

1. All welds to be fully penetration welds.

D. All ladders of a particular material shall have consistent construction and material shapes and sizes unless detailed otherwise on the drawings.

E. Design ladder in accordance with ASHA Standards, ANSI A14.3, and ASCE 7 and applicable Building Codes.

F. Ladders shall be designed to support a minimum of concentrate live load of 300 pounds at any point to produce the maximum stress in the member being designed. Apply additional 300 pound loads for each section of ladder exceeding 10 feet.

G. Maximum allowable stresses per AA ADM 1.

H. Maximum lateral deflection: Side rail span/240 when lateral load of 100 pounds is applied to any location.

1.03 SUBMITTALS

SD-02 Shop Drawings

Ladders, installation drawings;

SD-03- Product Data

Design;

Ladders

Ladder Safety Extension Post;

1.04 QUALIFICATION OF WELDERS

Qualify welders in accordance with AWS D1.1/D1.1M. Use procedures, materials, and equipment of the type required for the work.

1.05 DELIVERY, STORAGE, AND PROTECTION

Protect from corrosion, deformation, and other types of damage. Store items in an enclosed area free from contact with soil and weather. Remove and replace damaged items with new items.

PART 2: PRODUCTS

2.01 Materials

A. Aluminum Alloy Products

Conform to ASTM B209 for sheet plate, ASTM bb221 for extrusions and ASTM B26/B26M or ASTM B108/B08M for castings, as applicable. Provide aluminum extrusions at least 1/8 inch thick and aluminum plate or sheet at least 0.125 inch thick.

2.02 FABRICATION FINISHES

A. Aluminum

Mill finish.

B. Aluminum Surfaces

1. Surface Conditions

Remove roll marks, scratches, rolled-in scratches, kinks, stains, pits, orange peel, die marks, structural streaks, and other defects which will affect uniform appearance of finished surfaces.

2. Aluminum Finishes

Unexposed plate and extrusions may have mill finish as fabricated. Sandblast castings' finish, medium, AA DAF 45. Unless otherwise specified, provide all other aluminum items with standard mill finish.

2.03 Ladders

Fabricate vertical ladders conforming to Section Section 7 of 29 CFR 1910.27. Use 3 by 1/2 inch aluminum flat bars for stringers and 2 1/4 inch (4) row traction tread ladder rungs. Rungs to be not less than 16 inches wide, spaced one foot apart, welded to stringers. Install ladders so that the distance from the rungs to the finished wall surface will not be less than 7 inches. Provide heavy aluminum clip angles welded to the stringer as indicated. Provide intermediate clip angles not over 48 inches on centers except at wet well floor access door locations (FAD-103, FAD-104, FAD-105 & FAD-106). Reinforce ladder stringers where clip anchors exceed 48 inches on center.

A. Floor Mounted Ladders

Floor Mounted Ladders as listed in plans.

B. Wall Mounted Ladders

Wall Mounted Ladders as listed in plans.

2.04 LADDER SAFETY EXTENSION POSTS

Acceptable manufacturer is Bilco.

A. Telescoping tubular aluminum section that automatically locks into place when fully extended.
B. Non-ferrous corrosion-resistant spring and hardware.
C. Factory assembled with all hardware necessary for mounting to ladder.
D. Bilco "LadderUp safety post.

PART 3: EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

Install items at locations indicated, according to manufacturer's instructions. Verify all measurements and take all field measurements necessary before fabrication. Provide Exposed fastenings of compatible materials, generally matching in color and finish, and harmonize with the material to which fastenings are applied. Include materials and parts necessary to complete each item, even though such work is not definitely shown or specified. Poor matching of holes for fasteners will be cause for rejection. Conceal fastenings where practicable. Thickness of metal and details of assembly and supports must provide strength and stiffness. Items listed below require additional procedures.

3.02 WORKMANSHIP

Metalwork must be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching must produce clean true lines and surfaces. Continuously weld along the entire area of contact. Do not tack weld exposed connections of work in place. Grid smooth exposed welds. Provide smooth finish on exposed surfaces of work in place, unless otherwise approved. Where tight fits are required, mill joints. Cope or miter corner joints, well formed, and in true alignment. Install in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

3.03 ANCHORAGE, FASTENINGS, AND CONNECTIONS

Provide anchorage where necessary for fastening metal items securely in place. Include for anchorage not otherwise specified or indicated slotted inserts, expansion anchors, and powder-actuated fasteners, when approved for concrete; toggle bolts and through bolts for masonry; machine bolts. Provide stainless steel fasteners and anchors. Make exposed fastenings of compatible materials, generally matching in color and finish, to which fastenings are applied. Conceal fastenings where practicable.

3.04 WELDING

Perform welding, welding inspection, and corrective welding, in accordance with AWS D1.1/D1.1 M. Use continuous welds on all exposed connections. Grind visible welds smooth in the finished installation. Full penetration butt weld at bends in ladder side rails.

3.05 FINISHES

A. Dissimilar Materials

Where dissimilar metals are in contact, protect surfaces with a coat conforming to MPI 79 to prevent galvanic or corrosive action. Where aluminum is in contact with concrete, plaster, mortar, masonry, wood, or absorptive materials subject to wetting, protect with ASTM D1187/D1187M, asphalt-base emulsion.

B. Field Preparation

Remove rust preventive coating just prior to field erection, using a remover approved by the rust preventive manufacturer. Surfaces, when assembled, must be free of grease, dirt and other foreign matter.

C. Environmental Conditions

Do not clean surface when damp or exposed to foggy or rainy weather, when metallic surface temperature is less than 5 degrees F above the dew point of the surrounding air, or when surface temperature is below 45 degrees F or over 95 degrees F, unless approved by the Owner's Representative.

3.06 LADDERS

Secure to the adjacent construction with the clip angles attached to the stringer. Install intermediate

clip angles not over 48 inches on center except at wet well floor access clear door locations (FAD-103, FAD-104, FAD-105, FAD-106).

Anchor ladder to concrete structure with a minimum ¾ inch stainless steel bolts with minimum 6 inch embedment.

Anchor ladder to masonry structure with a minimum ¾ inch stainless steel anchor bolts with minimum 6 inch embedment.

A. When anchoring into masonry, fill masonry cores with grout at anchor locations and each masonry core within 8 inches of anchor.

Install ladder safety extension post in accordance with manufacturer's instructions.

A. Mount device opposite the climbing side.

B. Provide ladder safety extension device as indicated.

END OF SECTION 05 51 33

DIVISION 31

EARTHWORK

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Clearing

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, metal debris and other debris and rubbish occurring in the areas to be cleared.

1.1.2 Grubbing

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

1.1.3 Clearing and Grubbing Limits

The Contractor shall assume that clearing and grubbing shall be performed on all trees, stumps, and other vegetation, described above, within Contractor access routes and the new work areas and as required for Contractor operations including but not limited to access and staging areas. The Contractor shall give the Engineer a minimum of 72 hours of notice of commencing clearing and grubbing operations. The Engineer will mark trees, brush, and other vegetation within the work limits that are to be saved and not cleared and grubbed.

1.2 SEQUENCING AND SCHEDULING

A. Contractor shall obtain Notice to Proceed from Owner before beginning any clearing and grubbing operations.

B. Prior to disturbing existing vegetation or soils, temporary erosion control measures shall be in place. Erosion control devices shall conform to NDDOT Specifications.

C. Contractor shall meet with Owner and Engineer to review all clearing and grubbing limits before starting any removal operations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CLEARING

Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as

the circumstances require as specified in SECTION 01 14 19 USE OF SITE.

Limbs of trees designated to be left standing within the cleared areas that are damaged by construction operations shall be trimmed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches. Cuts more than 1-1/2 inches in any dimension shall be painted with an approved tree-wound paint.

3.2 GRUBBING

Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for structures. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.3 TREE REMOVAL

Where indicated or directed by the Engineer, trees and stumps shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING. Trees shall be disposed of as specified in paragraph DISPOSAL OF MATERIALS.

3.4 DISPOSAL OF MATERIALS

Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations, including existing metal debris and other debris and rubbish, shall be disposed of outside the limits of project-site land at the Contractor's responsibility, except when otherwise directed in writing. Such directive will state the conditions covering the disposal of such products and will also state the areas in which they may be placed.

3.5 DAMAGE

Contractor shall be responsible for any damage that may occur to existing utilities and features during the Work and will be required to make repairs to or replace any damaged items at no expense to Owner.

3.6 ACCEPTANCE

Upon completion of the site clearing, obtain the Engineer's acceptance of the extent of clearing and grubbing.

END OF SECTION 31 11 00

SECTION 31 20 00

EARTHWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 117	(2004) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 136	(2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D 698	(2007e1) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600kN-m/cu. m.))
ASTM D 1556	(2007) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 2487	(2011) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2488	(2009a) Description and Identification of Soils (Visual-Manual Procedure)
ASTM D 4318	(2010) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 4718	(1987; R 2007) Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
ASTM D 6938	(2010) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.2 SUBMITTALS

Engineer approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL REQUIREMENTS:

SD-01 Preconstruction Submittals

Work Plan; G

The Contractor shall submit a plan indicating the intended sequence of work.

The plan shall include starting and stopping locations of embankment excavations. The plan shall clearly indicate the extents of the existing embankment to be under excavation at any one time.

The plan shall include the means and methods that will be used for each of the embankment construction operations including stripping, exploration trench, excavation, placement, and compaction of all materials.

The plan shall address risks to the schedule and the means and methods that will be used to mitigate those risks to keep the project on schedule. Risks to consider include weather, productivity, ground conditions, material supply, subcontractor reliability, labor or equipment issues.

The plan shall include crew composition for embankment construction operation, indicating the size and number of each equipment type.

The work may not begin until the plan is approved by the Engineer.

SD-06 Test Reports

Testing;

A summary of testing results indicated in PARAGRAPH: TESTING shall be submitted when the site work is substantially complete. The Engineer shall be informed of test results daily for direction on corrective action required. Draft copies of field testing results shall be furnished to the Engineer on a frequent and regular basis as directed, but do not need to be formally transmitted through the submittal process.

Daily Report Forms

A compilation of the daily report forms for earthwork observation ordered by date shall be submitted when the work is substantially complete. Preliminary copies shall be furnished to the Engineer on a weekly or monthly basis as directed, but do not need to be formally transmitted through the submittal process.

SD-07 Certificates

Testing; G

Qualifications of the Corps validated commercial testing laboratory or the Contractor's validated testing facilities.

1.3 SUBSURFACE DATA

Reference Section 00 72 00 GENERAL CONDITIONS.

PART 2 PRODUCTS

2.1 DEFINITIONS

2.1.1 Satisfactory Materials

Satisfactory materials shall be of a character and quality satisfactory for the purpose intended, and shall meet the applicable material specifications.

2.1.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills; trash; refuse; backfills from previous construction; and material that would otherwise be classified as satisfactory which contains root and other organic matter or frozen material. Notify the Engineer when encountering any contaminated materials.

2.1.3 Cohesionless and Cohesive Materials

Cohesionless materials include materials classified in ASTM D 2487 as GW, GP, SW, or SP. Cohesive materials include materials classified as GC, SC, ML, CL, MH, or CH. Materials classified as GM and SM will be identified as cohesionless only when the fines are nonplastic.

2.1.4 Proctor

Degree of compaction required is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 698. The maximum density is hereafter abbreviated as the "Standard Proctor" or "Proctor" value.

2.2 MATERIALS

All material placed as fill or backfill shall consist of material classified by ASTM D 2487 as GW, GP, GC, GM, SP, SM, SC, CL, CH or SW. The material shall be free of ice, snow, frozen earth, trash, debris, sod, roots, organic matter, and stones larger than 3 inches in any dimension. Any fill material placed below the high water mark must be free from top soils, decomposable materials, and persistent synthetic organic compounds (in toxic concentrations).

2.2.1 Levee Fill

Soil material suitable for levee construction. Levee construction includes constructing levee and the preparation of the areas upon which they are to be placed, including utility crossings and exploration trenches beneath the levee footprint. Satisfactory Materials shall have a liquid limit no higher than 50 percent, plasticity index no less than 12 percent and classified by ASTM D 2487 as CL or SC.

2.2.2 Topsoil

Material suitable for topsoil obtained from offsite areas is defined as: Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant

growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

PART 3 EXECUTION

3.1 CLASSIFICATION OF SOIL MATERIALS

Classification of soil materials shall be performed by the Owner. All testing expenses shall be paid for by the Owner. The scheduling of the testing shall be the Contractor's responsibility.

3.2 STOCKPILES

Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed. Satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. Any material that becomes contaminated, frozen or too wet for use shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Owner. Stockpiles shall not be allowed to be placed within the project limits unless the Contractor provides written documentation, at the Contractors expense, by a Professional Engineer registered in the State of North Dakota stating that the proposed stockpile will not cause river bank instability. Stockpiles shall have appropriate erosion control measures at all times.

3.3 EXCAVATION

Excavation of every description, regardless of material encountered, within the grading limits of the project shall be performed to the lines and grades indicated. All excavated material to be removed such as all unsatisfactory material, including any soil which is disturbed by the Contractor's operations or softened due to exposure to the elements and water, and surplus material shall become the property of the Contractor and shall be disposed of properly away from the work site at locations identified by the Contractor. Excavations carried below the depths indicated shall be refilled to the proper grade with satisfactory material. During construction, excavation shall be performed in a manner and sequence that will provide proper drainage at all times.

3.3.1 Changes and Differing Site Conditions

Any excavation subgrades that are unstable, pump, rut excessively, reveal soil conditions that are substantially different from that indicated in the contract, or are unsuitable for proceeding with the work shall immediately be reported to Engineer. In the event that it is necessary to remove material to a depth greater than specified, the Engineer will provide direction for changed work and an adjustment in the contract price will be considered in accordance with the contract. Unsatisfactory material encountered below the grades shown shall be removed as directed. Determination of elevations and measurements of approved overdepth excavation of unsatisfactory material below grades indicated shall be done under the direction of the Engineer. The Engineer shall be notified prior to proceeding with any unauthorized work. Additional work not authorized by the Engineer shall be at the Contractor's expense.

3.3.2 Drainage

Provide for the collection and disposal of surface and subsurface water encountered during construction. Completely drain construction site during periods of construction to keep soil materials sufficiently dry. Throughout construction grade the construction area to provide positive surface water

runoff away from the construction activity or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified herein. It is the responsibility of the Contractor to assess the soil and ground water conditions presented by the plans and specifications and to employ necessary measures to permit construction to proceed.

3.4 EXCAVATION BELOW WATER

A. For excavations to be performed below water, contractor shall follow requirements as stated in Section 01 41 26.13 North Dakota Pollutant Discharge Elimination System and Stormwater Pollution Prevention Plan (SWPPP) for the Work.

3.5 EXPLORATION TRENCH

Contractor shall excavate the exploration trench to the depth indicated on the Drawings for locating potential undesirable or unacceptable subsurface features.

1. Any pipes, tiles, conduits, buried debris, or other utilities that are indicated or specified for removal shall be removed from within the footprint of the levee and plugged outside of the levee limits as directed by Engineer.
2. Unsatisfactory foundation materials encountered shall be removed from within the footprint of the levee as directed by Engineer.
3. Utilities indicated or specified to remain in place shall be protected from damage during exploration trench operations.
4. If the exploration trench reveals conditions requiring additional work not indicated or specified, such work will be as directed by Engineer. The additional work not indicated or specified may include (but is not limited to) the removal of utilities within the levee foundation, removal of unsatisfactory levee foundation materials, excavation of wide trenches and or dewatering to accommodate conditions, removal of excess water seepage to allow visual inspection, and furnishing a competent person to observe the excavation continuously or as necessary to complete the Work all of which are incidental to exploration trench operations.

Contractor shall furnish exploration trench as shown on the Drawings.

1. The exploration trench shall generally be located close to the levee centerline. The exploration trench shall be continuous at all points, aligned with smooth curves, and free from abrupt changes in alignment. Engineer may direct the actual alignment of the exploration trench within the limits of the levee right of way to intercept suspect areas.
2. All water and mud shall be removed from the trench before backfill is placed. Only levee fill material may be used for backfill.
3. Contractor shall coordinate with geotechnical to allow geotechnical to observe the trench before backfilling, unless waived for trench stability reasons. Contractor shall notify the geotechnical a minimum of 5 days prior to start of this Work. Contractor shall coordinate with geotechnical Resident Project to furnish access for witnessing and observing this Work.
4. Trenches to be entered for inspections shall be performed in accordance with OSHA requirements. In reaches where trenches need to be entered and caving or undesirable

seepage occurs, Contractor shall modify Work (including measures such as, but not limited to, widen the trench, flatten excavation slopes, dewater to keep the trench stable, assign a competent person to observe the excavation continuously in addition to the excavator operator) to protect the health and safety of site personnel.

5. Excessive water seepage shall be removed by Contractor to allow visual inspection, entry of excavation (when required), and proper placement and compaction of backfill.

6. Observation shall be recorded on daily report forms for observing trench excavations as approved by Engineer. Immediately after excavating the trench, Engineer shall inspect and record the soil and water conditions encountered and any other pertinent features. Soils on the base and side slopes shall be identified in accordance with ASTM D 2488.

7. During excavation of the exploration trench, Contractor shall immediately notify the geotechnical in the event that soil conditions encountered differ significantly from those shown on the boring logs or the Drawings.

8. Details indicated in the Drawings show minimum trench geometry required for the exploration trench. Changes to the trench geometry shall be approved by Engineer. Changes in trench geometry to facilitate conventional earth moving equipment or other means of construction shall be at Contractor's expense.

All exploration trench backfill shall be placed in lifts and completed as specified in paragraph: 3.7 COMPACTION.

3.6 SUBGRADE PREPARATION

A. Contractor shall perform all cutting, blading, and shaping as required to cut and shape the subgrade to the grades and elevations indicated.

B. Subgrade preparation includes fine grading, reworking as necessary, and preparation of cut, fill, or levee embankment upon which levee, floodwall, structure and equipment foundations, pipe, sub-base, base, pavement or other project features will be placed. Remove unsuitable subgrade material, such as weak or compressible soils.

C. Contractor shall scarify and mix entire surface of subgrade to a depth of at least 6 inches. Moisture-condition scarified subgrade to within 3 percent of the optimum moisture content. If subgrade stabilization material is required, incorporate it into the subgrade at this time.

D. After the material has been thoroughly mixed and moisture-conditioned, Contractor shall accurately construct and fine grade the subgrade to indicated line, grade, and contour with high and low spots eliminated.

E. Contractor shall compact for full width to the specified density.

F. Contractor shall finish subgrade to straightedge or template within specified tolerances with the finished surface bladed to a uniform, dense, smooth texture.

G. Contractor shall proof roll the subgrade over the footprint of the levee (outside of backfilled exploration trenches) following rough grading. The proof rolling shall consist of 2 passes of either a loaded tandem dump truck or a larger standard rubber tired piece of loaded heavy construction equipment with a minimum gross weight of 25 tons. Operate the equipment at speeds between 2-1/2 to 3-1/2 mph. Notify Owner's Representative a minimum of 2 days prior to proof rolling. Perform proof rolling in the presence of Owner's Representative and bring any soft areas to Owner's Representative's attention. Areas will be considered soft if rutting or pumping in excess of 1.5 inches is observed during a proofroll.

3.7 SUBGRADE FILLING/RAISING GRADE

A. Spreading and compacting of specified material shall be performed by Contractor to produce the specified density and a uniform surface smooth and true to grade.

B. Contractor shall compact fill for raising of subgrade to indicated elevation. Fill material shall be spread in uniform lifts not exceeding 6 inches in compacted thickness. Fill material that does not contain sufficient moisture to compact properly shall be moisture conditioned; if it contains excess moisture it shall be worked, aerated or otherwise permitted to dry to the proper moisture content. Fill material placed and shall then be thoroughly mixed to create uniform moisture content before being compacted. Each layer of spread fill material shall be compacted by Contractor to the specified density.

C. Control of fill shall consist of field inspection and testing to determine that each layer has been compacted to the required density and to ensure that optimum moisture is being obtained. Any layer or portion of a layer that does not attain the compaction required shall be scarified and re- compacted by Contractor until the required compaction is obtained and verified with testing.

3.8 LEVEE EMBANKMENT CONSTRUCTION

1. Spreading and compacting of specified material shall be performed by Contractor to produce the specified density and a uniform surface smooth and true to grade.
2. Contractor shall construct levee embankments to lines, grades, and contours indicated, in layers as nearly uniform and horizontal as is consistent with the indicated finished contour and profile. Maximum thickness of the layers shall be 6 inches compacted thickness.
3. Contractor shall furnish proper bonding between compacted lifts of specified material. Use of appropriate compaction equipment such as sheepsfoot rollers (vibratory or non-vibratory) and scarification between lifts, is required for construction of levees. Construction equipment and methods shall avoid poor bonding between lifts, characterized by layered or laminated texture at the lift interfaces. Smooth surfaces (such as produced from smooth drum rollers, rubber-tired rollers, and construction traffic) shall be scarified prior to placing subsequent lifts.
4. Contractor shall compact each layer to specified density for entire width of the levee embankment. Contractor shall achieve required compaction by rolling with compaction equipment suitable for type and condition of the particular material. Roll in a longitudinal direction parallel to longest dimension, starting at outer edges and progressing toward the center.
5. Contractor shall moisture-condition levee embankment fill material as required to achieve its compaction to the specified density, within the tolerances specified herein.
6. Contractor shall not compact material that contains excessive moisture. In such cases, scarify to the full depth of the layer having excessive moisture content and dry by reworking, mixing with dry materials, or other approved methods into a homogenous material.
7. Contractor shall remove material that cannot be compacted to required density within specified tolerances, and replace with suitable material.

8. When adding fill to the side slopes of the existing levee, the fill should be benched into the slope in steps at least 1 foot in height or flatten the slope to 10% maximum prior to placing fill.

9. Contractor shall not commence final shaping until above specified requirements have been completed. Contractor shall shape entire surface of the slopes of cuts and levee embankments to true grade, alignment, and cross section indicated.

3.9 SUBGRADE PREPARATION

All areas upon which fill is to be placed shall be stripped before the fill is started. Material shall not be placed on surfaces that are muddy, frozen, contain frost, or where unsatisfactory material remains in or under the fill. For cohesionless soils, the subgrade surface shall be compacted to at least 100 Percent of the Standard Proctor density. For cohesive soils, the subgrade shall be proof rolled with rubber tired equipment and any soft areas shall be brought to the Engineer's attention.
Sloped ground surfaces steeper than one vertical to four horizontal on which fill is to be placed shall be stepped such that the fill material will bond with the existing surface. The existing surface shall also be scarified prior to placement of the first lift of fill to enhance the bonding between the two materials.

3.9.1 Subgrade Correction

Soft or otherwise unsatisfactory material shall generally be removed and replaced with satisfactory excavated material or other approved material as directed. Low areas resulting from removal of unsatisfactory material shall be brought up to required grade with satisfactory materials, and the entire subgrade shall be shaped to line, grade, and cross section and compacted as specified.

3.10 FINISHING

All areas covered by the project, including excavated and filled sections and adjacent transition areas, shall be uniformly smooth-graded. The finished surface shall be reasonably smooth, compacted, and free from irregular surface changes. The degree of finish shall be that ordinarily obtainable from blade-grader operations, except as otherwise specified. Ditches and gutters shall be finished to permit adequate drainage. The surface of areas to be turfed shall be finished to a smoothness suitable for the application of turfing.

3.11 PLACING TOPSOIL

Topsoil placement shall be staged such that construction traffic for hauling material does not travel over the topsoil after it is placed. Topsoil shall be spread with a low ground pressure dozer, skid steer loaders, or other equipment capable of lightly compacting the soil and approved by the Engineer. Topsoil shall be spread in one lift of uniform thickness. The finished grade shall be such that after subsequent treatment (tillage, topsoiling and planting) the planted grade shall join 1 inch below adjoining surfaced grade of walks, curbs and drives and even with adjoining turfed areas.

3.12 COMPACTION

3.12.1 Moisture Control

Control of moisture in the fill shall be maintained to provide acceptable compaction. The moisture content after compaction shall be within the limits of 3 percentage points above the optimum and 1

percentage point below the optimum moisture content as determined by field moisture density tests. Dried or crusted cohesive soils shall be plowed, disked, or otherwise broken up before compaction. If water is added to fills, the layer shall be spread in even lifts, moistened as necessary, thoroughly mixed, and compacted. Fill too wet to achieve proper compaction shall require drying prior to placement. Possible drying methods include spreading and disking of soil prior to placing in fill.

3.12.2 Placement And Compaction

Each layer shall be spread uniformly on an acceptable soil surface. The type of fill, its maximum uncompacted lift thickness, and the minimum compaction requirements (Percent of Standard Proctor density) to which each type of fill shall be compacted shall be as listed below.

Fill Zone	Maximum Uncompacted Lift Thickness (inches)	Percent of Standard Proctor Density
General Grading	12	95
Levees, Impervious Fill	12	95
Utility/Pipe Backfill - Use specification for zone where utility is located.		

a. Fill materials shall be placed in horizontal layers not exceeding 6 inches loose depth when hand operated compactors are used.

b. A conversion factor of 1.8 tons/CY shall be used to determine quantity requirements for B2 bedding unless otherwise directed by the Engineer.

3.13 TESTING

3.13.1 General

All testing expenses shall be paid for by the Owner. The scheduling of the testing shall be the Contractor's responsibility. Prior to sampling and testing the work, testing laboratories shall be inspected and approved in accordance with Section 00 72 00 GENERAL CONDITIONS. The Engineer reserves the right to direct the location and select the material for samples to be tested and to direct where and when moisture-density tests shall be performed. In the event of a failed test, the Contractor shall be responsible for rescheduling and the expenses of retesting.

3.13.2 Field Density Tests

Report forms for summaries of field density tests shall include, at a minimum, information shown below. Additional data required by the applicable ASTM test methods shall be kept on file by the Contractor. Tests shall be numbered sequentially throughout the job, and retests shall reference the original test number (1A, 1B, etc.).

1. Test Number
2. Dry density, water content and gravel content of field test
3. Proctor Number, maximum dry density, optimum water content, and gravel content
4. Relative Compaction
5. Each test shall be plotted on the graphic presentation of the applicable Proctor test.

3.13.3 Proctor Tests

Report forms for summaries of Proctor tests shall include the minimum information. Additional data required by the applicable ASTM test methods shall be kept on file by the Contractor. Jar samples shall be retained by the testing laboratory for each Proctor test until field testing is completed.

1. Test Number and method
2. Sample location and visual soil description
3. maximum dry density, and optimum water content
4. gravel contents in sample and test specimens

3.13.4 Treatment of Oversize Particles for Density Tests

The fine gravel contents shall be corrected by selecting an appropriate Proctor sample. The fine gravel content shall be the particles retained on the No. 4 sieve and passing the 3/4" sieve. The fine gravel content of the field density test shall be within +5% of the fine gravel content of the Proctor sample.

The oversize fraction shall be particles retained on the 3/4" sieve. For oversize fractions greater than 5%, the oversize particles shall be corrected in accordance with the Finer Fraction Method specified in ASTM D 4718.

Each sand cone test shall report the gravel content retained on the No. 4, 3/8" and 3/4" sieve as appropriate for the proctor method referenced.

Where nuclear testing is used and lack of uniformity in the soil due to layering, rock or voids is suspected, the test volume site shall be dug up and visually examined to determine if the test material is representative of the full material in general and if rock correction is required.

3.13.5 Corrective Action

Tests of materials which do not meet the contract requirements (failing test) will not be counted as part of the required testing. Each such failing test must be retaken at the same location as the failing test was taken. If testing indicates material does not meet the contract requirements, the material represented by the failing test shall not be placed in the contract work or shall be recompacted or removed. The quantity of material represented by the failing test shall be determined by the Engineer up to the quantity represented by the testing frequency. The Contractor may increase testing frequency in the vicinity of a failing test in order to reduce removal requirements, as approved by the Engineer. Such increases in testing frequency shall be at the Contractor's expense and at no additional cost to the Owner.

3.13.6 Testing Schedule

Perform one of each of the following tests for each material used. Provide additional tests for each source change, and as directed by the Engineer.

a. Moisture-Density Relations (ASTM D 698)

One test for each material variation, not less than 3 tests total.

b. In-Place Densities (ASTM D 1556 or ASTM D 6938)

(1) Levee Fill/Exploration Trench, one test per 300 linear feet of each lift of levee fill and a minimum of 3 tests per day when fill placement is performed

(2) Typical, one test per 200 CY of fill placed

c. In-place Density Verification (ASTM D 1556)

(1) Levee Fill, verify every tenth test per ASTM D 6938 on levee fill.

d. Percent Passing No. 200 sieve (ASTM D 1140)

(1) Levee Fill, one test for each standard proctor

e. Plasticity Index

(1) Levee Fill, one test for each standard proctor. One test per 1,000 yd^3 of placed material.

f. Sieve Analysis, (ASTM C 136)

(1) B2 bedding, 1 test for each source

3.14 NUCLEAR DENSITY TESTING EQUIPMENT

Nuclear density testing equipment shall be used in general accordance with ASTM D 6938. In addition, the following conditions shall apply:

a. Prior to using the nuclear density testing equipment on the site, the Contractor shall submit to the Engineer a certification that the operator has completed a training course approved by the nuclear density testing equipment manufacturer, the most recent data sheet from the manufacturer's calibration, and a copy of the most recent statistical check of the standard count precision.

b. The first test and every tenth test thereafter shall include a sand cone correlation test. The sand cone test shall be centered over the prepared surface for the nuclear test, shall include a nominal 6 inch diameter sand cone, and shall include a minimum wet soil weight of 6 pounds extracted from the hole. In addition, testing of aggregate base soils shall include a minimum of 3 sand cone correlations for each day of testing; and testing of bituminous shall include a minimum of 3 core densities for each day of testing. The density correlations shall be submitted with test results. Each transmittal including density test data shall include a summary of all density correlations for the job neatly prepared on a summary sheet including at a minimum:

(1) date, meter serial number and operators initials.
(2) standard count and adjustment data for each test.
(3) material type.
(4) probe depth.
(5) moisture content by each test method and the deviation.
(6) wet density by each test method and the deviation.

c. The nuclear density testing equipment shall be capable of extending a probe 6 inches minimum down into a hole. The probe shall generally be extended to the maximum depth obtainable.

d. Nuclear density testing equipment used within 2 vertical feet from the existing ground water level, 5 horizontal feet from a vertical wall or massive concrete structure, or in a trench shall have the standard count changed before and after each test, or the manufacturers published correction procedure shall be followed.

e. Nuclear density testing equipment shall not be used during rain.

3.15 SUBGRADE AND EMBANKMENT PROTECTION

Compacted subgrades that are disturbed by the Contractor's operations or adverse weather shall be scarified and compacted as specified herein to the required density prior to further construction thereon. Subgrades not meeting the specifications for finish, material type and density at the time of surface material placement shall be corrected at the Contractor's expense. Cohesive embankments and subgrades shall be kept crowned or sloped for drainage. Newly graded areas shall be protected from traffic and erosion. Any settlement or washing away that may occur from any cause during the duration of the project and warranty period shall be repaired at the Contractor’s expense. No base course or pavement shall be laid until the subgrade has been checked and approved by the Engineer. Ditches and drains along subgrade shall be maintained to provide effective drainage. All work shall implement best management practices for erosion control.

END OF SECTION 31 20 00

SECTION 31 23 13
SUBGRADE PREPARATION

PART 1: GENERAL

1.01 SUMMARY

A. This work consists of scarifying, shaping, compacting, and maintaining the subgrade, or reshaping an existing roadway before constructing a base, or surface course.

1.02 REFERENCES

A. North Dakota Department of Transportation "Standard Specifications for Road and Bridge Construction" 2014 Edition, as revised.

1. Section 230.04 D – Subgrade Preparation

PART 2: PRODUCTS (NOT USED)

PART 3: EXECUTION

3.01 GENERAL

A. All work shall conform to NDDOT Spec Section 230.04 D except as modified:

1. Subgrade elevations shall not vary by more than identified in Section 31 20 00 Earthwork paragraph 3.7 C.

2. Scarification of subgrade must be approved by the Engineer before beginning the work. If the subgrade is unstable due to excessive moisture content, the subgrade shall be scarified and dried over a reasonable time period. When the material has been dried, it shall be returned to the roadbed and compacted to proper elevation and once again be test rolled. If the material continues to be unstable, the Engineer may authorize the removal of the material as muck excavation.

3. Scarification of subgrade must be approved by the Engineer before beginning the work.

3.02 COMPACTION OF SUBGRADE

A. 100% Standard Proctor from the proposed pavement subgrade elevation down 1 foot.

3.03 FIELD QUALITY CONTROL

A. Subgrade will be checked by the Engineer after grading operations but before placement of aggregate.

1. Subgrade will be test rolled using a Tandem Truck with a gross weight of 45,000 pounds. A failing test will be indicated by yielding and rutting of 1-1/2 inches or greater.

2. Subgrade elevation will be checked by using a string line with a tolerance of 0.04 feet at any point checked.

END OF SECTION 31 23 13

SECTION 31 32 19.23
GEOTEXTILE LAYER SEPARATION

PART 1: GENERAL

1.01 SECTION INCLUDES:

A. Type R1 Woven Geotextile Fabric.

1.02 RELATED SECTIONS

A. Section 31 20 00 Earthwork

B. Section 31 23 13 Subgrade Preparation

1.03 REFERENCES

A. Current editions of the following standards and publications:

1. NDDOT Standard Specifications for Road and Bridge Construction.

1.04 SUBMITTALS

A. Manufacturer's descriptive literature and product specifications for each product.

PART 2: PRODUCTS

2.01 TYPE R1 WOVEN GEOTEXTIE FABRIC

1. Shall conform to all requirements of Section 858.01 of the NDDOT Standard Specifications.

PART 3: EXECUTION

3.01 INSTALLATION

A. Upon completion of earthwork and subgrade preparation operations, install geotextile fabric in accordance with Section 709.04.D of the NDDOT Standard Specifications.

END OF SECTION 31 32 19.23

DIVISION 32

EXTERIOR IMPROVEMENTS

SECTION 32 11 23

AGGREGATE BASE COURSE

PART 1: GENERAL

1.01 SECTION INCLUDES:

A. Aggregate Base

1.02 RELATED SECTIONS

A. Section 31 20 00 Earthwork

B. Section 31 23 13 Subgrade Preparation

C. Section 31 32 19.23 Geotextile Layer Separation

1.03 REFERENCES

A. Current editions of the following standards and publications:

1. NDDOT Standard Specifications for Road and Bridge Construction.
2. City of Minot Standard Specifications.

1.04 SUBMITTALS

A. Gradation sample report for aggregate base course.

1.05 QUALITY ASSURANCE

A. Independent testing agency:

1. Field testing: see Part 3.03

PART 2: PRODUCTS

2.01 AGGREGATE BASE

A. Conform with Section 816.02 of the NDDOT Standard Specifications.

1. Fractured Faces: 10% minimum.

PART 3: EXECUTION

3.01 PREPARATION

A. Prior to installation of aggregate material, the subgrade shall be prepared as stated in Section 31 23 13 Subgrade Preparation, and geotextile fabric installed per Section 31 32 19.23 Geotextile Layer Separation.

3.02 AGGREGATE BASE INSTALLATION

A. Conform to Section 302 of the NDDOT Standard Specifications except as modified herein:

1. Aggregate that does not conform to specified gradation will be removed and replaced or will be blended with appropriate sizes to comply with specified gradation. No price reductions will be allowed.

2. Finished surface shall not vary from plan elevation by more than 0.04 feet.

3.03 FIELD TESTING

A. The Contractor shall adhere to Section 01 45 16.13 Contractor Quality Control for testing requirements.

B. Line and grade will be checked by the Engineer using the string line method. The grade shall not vary by more than 0.04 feet from plan elevation. The Contractor shall provide the Engineer notice when tolerances are ready to be checked.

3.04 SITE PROTECTION

A. The Contractor shall be responsible to protect the aggregate material from damage until it is covered by pavement. Aggregate material shall be free of ruts or other damage prior to paving. Any damage will be repaired by the Contractor prior to paving at no additional cost.

END OF SECTION 32 11 23

SECTION 32 12 17

HOT MIX BITUMINOUS PAVEMENT

PART 1: GENERAL

1.01 SECTION INCLUDES:

A. Bituminous Tack.

B. Bituminous Prime.

C. Performance Grade (PG) Asphalt Cement

D. Aggregate

1.02 RELATED SECTIONS

A. Section 32 11 23 Aggregate Base Course.

B. Section 32 16 13 Concrete Sidewalks and Curbs and Gutters.

1.03 REFERENCES

A. Current editions of the following standards and publications:

1. NDDOT Standard Specifications for Road and Bridge Construction.
2. City of Minot Standard Specifications.

1.04 SUBMITTALS

A. Manufacturer's descriptive literature and product specifications for each product.

B. Batch plant qualifications:

1. Plant's name.
2. Address.
3. Phone number.
4. Distance and travel time to site.

C. Asphalt mix design:

1. Meet requirements of Section 430 of the NDDOT Standard Specifications.
2. Submit for each mix at least 14 calendar days prior to start of work
   a. Certified mix design by professional engineer licensed in North Dakota.
   b. Identification of aggregate source and compliance test to ASTM requirements.
   c. Proportions of each material required.
3. Do not change mix designs and supplier unless new batch plant qualifications and mix designs are submitted and approved.

D. Asphalt placement plan: identification of placement sequence, equipment, and techniques.

E. Load tickets.

1.05 QUALITY ASSURANCE

A. Independent testing agency:

1. Field testing: see Part 3.03

PART 2: PRODUCTS

2.01 BITUMINOUS TACK

A. CSS-1h or SS-1h per Section 401.03.B of the NDDOT Standard Specifications.

2.02 PRIME COAT

A. In accordance with Section 401.03.A of the NDDOT Standard Specifications.

2.03 PERFORMANCE GRADED (PG) ASPHALT CEMENT

A. Unless otherwise noted in the plans, PG 58-34 asphalt cement shall be used meeting Section 818 of the NDDOT Standard Specifications.

2.04 AGGREGATE

A. Minimum aggregate designation for bituminous pavement shall meet FAA 43 as described in Section 430 of the NDDOT Standard Specifications.

PART 3: EXECUTION

3.01 PREPARATION

A. Prior to paving operations:

1. Aggregate base must be approved by the Engineer.
2. Mix designs must be approved by the Engineer.
3. All curb and gutter within the paving limits must be constructed and approved by the Engineer.
4. Existing pavement that will receive another lift must be swept clean and be free of dirt and water.

3.02 BITUMINOUS PAVING OPERATIONS

A. Paving operations shall conform to Section 430.04 of the NDDOT Standard Specifications except as modified herein:

1. All edges of existing pavement must be saw cut full depth or must be milled to provide a smooth transition for new pavement.
2. All concrete edges, including curb and gutter must be tacked prior to paving operations for all paving lifts.
3. Tack shall be applied between pavement layers at a rate of 0.10 Gal/SY. The Engineer may adjust the quantity as low as 0.05 Gal/SY if necessary.
4. Prime Coat shall be applied to the base layer at a rate of 0.25 Gal/SY.

5. The Contractor shall be responsible for the quality control (QC) portion of the mixture and compaction.

   a. Densities per sublot will be taken at random with a minimum of 1 nuclear density (ASTM D2950) per sublot, and the mean density in each sublot shall equal or exceed the specified density. A minimum of 10 percent of the sublots shall be cored.

6. Testing shall follow Section 01 45 16.13 Contractor Quality Control.

3.03 FIELD TESTING

A. The Contractor shall adhere to Section 01 45 16.13 Contractor Quality Control for testing requirements.

END OF SECTION 32 12 17

SECTION 32 13 13

PORTLAND CEMENT CONCRETE PAVEMENT

PART 1: GENERAL

1.01 SECTION INCLUDES:

A. Concrete.

B. Concrete curing.

C. Expansion joint material.

D. Joint sealer.

E. Forms.

F. Steel Reinforcement

1.02 RELATED SECTIONS

A. Section 32 11 23 – Aggregate Base Course

1.03 REFERENCES

A. Current editions of the following standards and publications:

1. NDDOT Standard Specifications for Road and Bridge Construction.
2. City of Minot Standard Specifications.
3. ACI 306.1-90 “Standard Specification for Cold Weather Concreting”
4. ACI 308.1-11 “Specification for Curing Concrete”
5. ACI 325.9R-15 “Guide for Construction of Concrete Pavements”
6. ACI 117 “Specification for Tolerances for Concrete Construction Materials”
7. CRSI Manual of Standard Practice

1.04 SUBMITTALS

A. Manufacturer’s descriptive literature and product specifications for each product.

B. Batch plant qualifications:

1. Plant’s name.
2. Address.
3. Phone number.
4. Distance and travel time to site.

C. Concrete mix design:

1. Submit for each mix at least 14 calendar days prior to start of work
   a. Certified mix design by professional engineer licensed in North Dakota.
   b. Identification of aggregate source and compliance test to ASTM requirements.

c. Compressive strength at 28 days.

d. Brand, type, and amount of cementitious material in mix.

e. Proportions of each material required per cubic yard.

2. Do not change mix designs and supplier unless new batch plant qualifications and mix designs are submitted and approved.

D. Concrete placement plan: identification of placement sequence, equipment, and techniques.

E. Load tickets.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. ACI Publications: Comply with ACI 325.9R-15 “Guide for Construction of Concrete Pavements”, unless modified by requirements in the Contract Documents.

C. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

D. Independent testing agency:

1. Field testing: see Part 3.11

PART 2: PRODUCTS

2.01 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

B. Use flexible or curved forms for curves with a radius 100 feet (30.5 m) or less.

C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.02 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

B. Dowel bars and tie bars for pavement joints.

Dowel bar for header or contraction joints in Portland Cement Concrete pavement shall be plain, round bars fabricated from steel meeting AASHTO M31 or M322. Diameter shall be 1 ¼” for 8 inch pavement or thicker up to nominal 10 inch thickness.

Dowels shall be saw cut to the required length and cleaned to remove all cutting burrs, loose mill scale, rust, grease, and oil. The bars may be sheared providing the deformation of the bars from true round shape does not exceed 0.04 inch in diameter or thickness, and shall not extend more than 0.04 inch from the sheared end.

The free end of drilled dowels at headers or construction joints shall be fitted with a plastic or metal sleeve of an approved design covering 2 inches ± 1 inch of the dowel. The sleeve shall have a closed end and a stop to hold the closed end at least one inch from the end of the dowel bar. The sleeve shall not collapse or distort in shape in handling and placing of the dowels and concrete.

All dowels and tie bars shall be epoxy coated in accordance with AASHTO M 284 with a thickness of 8 to 12 mils. Freshly exposed steel as a result of shearing, saw-cutting, or cutting by other means during the fabrication process is acceptable on the ends of tie or dowel bars used in pavement joints. Any bars with rust showing through the epoxy coatings shall be rejected.

Dowels shall be provided a factory or field applied debonding coating meeting NDDOT standards. Grease will not be an acceptable debonding coating. Storage of dowel bars until installation shall be out of the sun and under tarps or other protection from blowing dust.

Dowels shall be 18” in length and installed true in alignment horizontally and vertically to the alignment of the pavement. Skewed dowel baskets shall be provided for joints that are skewed within the joint plan. Joint sawing will be sufficiently accurate to ensure a minimum of 6 inches of length imbedded in a side of the joint.

C. Bar Supports:

1. All dowels shall be either mounted in baskets or drilled and epoxied into previously placed headers. Baskets shall be properly anchored to ensure stability during paving. Height of dowels in the slab shall be restricted to the middle 1/4 of the concrete pavement.

2. Bar Supports include: bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

   a. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.03 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: Type I or I-A or Type II

2. Fly Ash: AASHTO M-295

B. Normal-Weight Aggregates: ASTM C 33, Class 4S coarse aggregate, uniformly graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement. Water: ASTM C 94/C 94M.

C. Air-Entraining Admixture: ASTM C 260.

D. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride

ions by mass of cementitious material.

2.04 CURING MATERIALS

A. Water: Potable.

B. White Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B.

2.05 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.06 CONCRETE MIXTURES – GENERAL PAVING

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 4000 psi.

2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.42.

3. Slump Limit: 4 inch maximum.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6-1/2 percent plus or minus 1.5 percent for concrete design mixtures

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:

1. Fly Ash or Pozzolan: Minimum of 15 percent and maximum of 30 percent cement, by weight, direct replacement.

2.07 CONCRETE MIXTURES – FAST TRACK, HIGH EARLY STRENGTH

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength for Fast Track concrete paving 3000 psi in 30 hours for thickness greater than six inches in depth.

2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.42.

3. Slump Limit: 4 inches maximum.

C. Add air-entraining admixture at required rate in order to achieve normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6-1/2 percent plus or minus 1.5 percent for concrete design mixtures

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions and general best practices. Accelerator admixtures shall not contain chloride.

F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:

1. Fly Ash or Pozzolan: Minimum of 15%, by weight, direct replacement.

2.08 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

2.09 PAVING JOINT SEALANT MATERIALS, GENERAL

A. All jointing materials shall comply with NDDOT Standard Specification 826.02 A.1, “Hot Applied Joint Sealant, Type 1”.

PART 3: EXECUTION

3.01 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared base surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.

2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons.

3. Base with soft spots and areas of pumping or rutting exceeding depth of 1 inch require correction according to requirements in 31 20 00 Earthwork.

4. In areas that rut less than 1 inch the ruts shall be filled with base material, compacted and brought to grade as specified in section 31 20 00 Earthwork.

C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and base is ready to receive pavement.

D. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove loose material from compacted base surface immediately before placing concrete.

B. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

C. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

C. Slip Form Paving: The Engineer shall set stakes establishing the finished grade of the pavement. The Contractor shall place and maintain the appropriate equipment for operating the automatic equipment. The Contractor shall maintain the grade stakes until the pavement is placed.

1. Concrete Placement: The Contractor shall pave the proposed roadway section as one continuous operation. Concrete shall be placed uniformly at a rate that produces a homogenous pavement that requires minimum manual finishing. The slip form paver shall operate at a continuous forward movement. Concrete mixing and placement shall be scheduled to accommodate the continuous forward movement of the paver.

   While paving the Contractor shall maintain a constant and uniform head of concrete at a depth ranging from 1.5 to 2 times the depth of the finished slab.

2. Consolidation: The slip form paver shall consolidate the full width and depth of the concrete in a single pass, using an approved internal or surface vibrator. All internal vibrators shall reach mid depth of the concrete section or as deep as possible without impacting reinforcing. The internal vibrator shall have a locking mechanism to ensure no part of the vibrating unit contacts the reinforcing steel. Internal vibrators shall operate within a frequency range of 4,000 to 8,000 vibrations per minute. Surface vibrators shall operate within a frequency range of 3,500 to 6,000 vibrations per minute. Vibrators shall not be operated at a frequency to cause segregation of the mix. Vibration frequency may require

reduction as the paver is slowed to avoid mix segregation. Vibrators shall be stopped whenever forward motion of the paver is stopped.

If it is determined by the Engineer that the vibrator fails to meet specifications, the Contractor shall repair or change the vibrator before paving operations will be allowed to begin. The Contractor shall provide vibrator monitoring equipment to record time, location, paver speed and operating frequency. The Contractor shall provide a recording with data in 25 foot increments to Engineer daily. The Engineer may determine more frequent submissions may be necessary. All data shall be provided to the Engineer directly from the job site, prior to the data entering an office environment. If the monitoring equipment fails, the vibrators shall immediately be checked manually. However, the Contractor shall replace the equipment within a reasonable amount of time as determined by the Engineer.

3.04 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement. Tie bars shall meet a vertical tolerance of 1” and a transverse tolerance of 3”. Dowel bars shall be installed within 1/8” of the alignment and elevation.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.05 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete.

1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

2. All joints shall be sealed per Section 3.06 “INSTALLATION OF JOINT SEALANTS”

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Extend joint fillers full width and depth of joint.

2. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.

3. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.

4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

5. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into rectangular/square areas with a maximum length to width ratio of 1.5 to 1. Maximum space between the contraction joints shall be 15' feet. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows to match jointing of existing adjacent concrete pavement:

1. Sawed Joints: Form contraction joints with saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) or wider joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks. Joint width shall be sufficient to prevent bridging of hot pour sealants and resulting sag.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces. Construction joints of slip-formed pavement shall not be tooled.

3.06 INSTALLATION OF JOINT SEALANTS

A. General: All joints shall be sawed with a diamond blade saw.

B. Hot Poured Joint Sealant: An indirect heating, double-boiler type, heating kettle shall be used where oil or other suitable material is used as a heat transfer medium. The kettle shall have a thermostat controlled heat source, accurate temperature indication device and an effective mechanical agitator.

The pressure-type applicator shall completely fill the joint from the bottom to the desired height without overflow or spillage of sealing compound onto the pavement surface.

3.07 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery. Water may be added at the job site up to a level which will not exceed the w/c ratio. After water addition, mixer truck shall mix concrete an additional 30 revolutions prior to retesting or dumping for placement.

F. Make all adjustments to slump or air entrainment in the first one half cubic yard dumped from truck. Do not add water (retemper) to fresh concrete after dumping for production is commenced.

G. Deposit and spread concrete in a continuous operation between transverse joints. Do not

use vibrators to move concrete into place.

H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation.

2. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

I. If the concrete is placed with a slip form paver the screeding shall be done by the paver. If the concrete is hand poured the Contractor shall screed pavement surfaces with a vibrating or roller screed. Final surface closure shall be with a straightedge or bull float.

J. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

K. Slip-Form Pavers: When automatic machine placement is used for pavement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce pavement to required thickness, lines, grades, finish, and jointing as required for formed pavement.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of paver machine during operations.

L. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.

M. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

2. Do not use frozen materials or materials containing ice or snow.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

N. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.08 FINISHING

A. Final Surface Finish: After surface irregularities have been removed and prior to the concrete attaining an initial set, a seamless strip of stiff-fiber artificial grass carpet shall be drug longitudinally along the full width of the pavement. The surface texture shall leave uniform roughened corrugations. The width of the drag shall be in contact with the full width of the pavement. The drag shall be operated off of a string-line with its leading edge attached to a bridge riding on the forms or adjacent slab. The drag shall be maintained clear and free from encrusted mortar. The Contractor shall replace all drags that cannot be cleaned.

3.09 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Concrete shall be cured in conformance with ACI 308.1 Standard Specification for Curing Concrete

C. Comply with ACI 306.1 for cold-weather protection.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.10 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch.

2. Thickness: Plus 3/8 inch, minus 1/4 inch.

3. Surface: Gap below 10-foot long, unleveled straightedge not to exceed 1/4 inch.

4. Joint Spacing: 3 inches.

5. Contraction Joint Depth: Minimum of ¼ pavement thickness up to one half thickness at doglegs and sufficient in depth to create a crack. Saw cuts in the latter part of the saw window may have to be deeper than ¼ thickness of pavement.

6. Joint Width: Plus 1/8 inch, but sufficient in width to prevent bridging of hot pour sealant.

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. (76 cu.m) or fraction thereof of each concrete mix placed each day.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

   b. Tester shall provide coolers or other thermal protection boxes to ensure sample temperatures are maintained between 60 and 80 degree F while in the field. Samples shall be removed from the field on a timely basis according to ACI for final curing in the lab.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.

4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 properly broken specimens at 28 days.

   a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

7. Maturity Testing of Fast-track Mixes (High Early Strength): "Maturity" in accordance with ASTM C1074 (Nurse-Saul Function) shall be used to determine strength of concrete for early opening to traffic. Maturity curves shall be developed from production mix on the first day of paving. A minimum of 10 cylinders will be prepared for time/temperature curve development. Two properly broken cylinders shall be averaged at 16, 24, and 30 hours or longer to create the time/temperature curve for the 3000 psi strength to opening. The time/temperature curves will be used for all fast-track mixes for remainder of project unless some components change drastically from original mixes. The time/temperature curve shall be verified every 30 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Engineer but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as the work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.13 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude construction and public traffic from pavement until concrete has achieved 75% of the design strength for the mix (minimum of 3000 psi). When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

E. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION 32 13 13

SECTION 32 16 13

CONCRETE SIDEWALKS, DRIVEWAYS AND CURBS AND GUTTERS

PART 1: GENERAL

1.01 SECTION INCLUDES:

A. Forms.

B. Steel Reinforcement.

C. Concrete Materials.

D. Curing Materials.

1.02 RELATED SECTIONS

A. Section 32 11 23 – Aggregate Base Course.

B. Section 32 13 13 – Portland Cement Concrete Pavement.

1.03 REFERENCES

A. Current editions of the following standards and publications:

1. NDDOT Standard Specifications for Road and Bridge Construction.
2. City of Minot Standard Specifications.
3. ACI 301-16 “Specifications for Structural Concrete”.
4. ACI 306.1-90 “Standard Specifications for Cold Weather Concreting”.

1.04 SUBMITTALS

A. Manufacturer’s descriptive literature and product specifications for each product.

B. Batch plant qualifications:

1. Plant’s name.
2. Address.
3. Phone number.
4. Distance and travel time to site.

C. Concrete mix design:

1. Submit for each mix at least 14 calendar days prior to start of work
    a. Certified mix design by professional engineer licensed in North Dakota.
    b. Identification of aggregate source and compliance test to ASTM requirements.
    c. Compressive strength at 28 days.
    d. Brand, type, and amount of cementitious material in mix.
    e. Proportions of each material required per cubic yard.

2. Do not change mix designs and supplier unless new batch plant qualifications and mix designs are submitted and approved.

D. Concrete placement plan: identification of placement sequence, equipment, and techniques.

E. Load tickets.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.

C. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

D. Independent testing agency:

1. Field testing: see Part 3.12

PART 2: PRODUCTS

2.01 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.

1. Use flexible or curved forms for curves with a radius 100 feet (30.5 m) or less.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.02 STEEL REINFORCMENT

A. Reinforcement to meet requirements and products specified in Section 32 13 13 Portland Cement Concrete Pavement.

2.03 CONCRETE MATERIALS

A. Cementitious Material: Shall be as defined in Section 32 13 13 Portland Cement Concrete Pavement.

B. Normal-Weight Aggregates: Shall be as defined in Section 32 13 13 Portland Cement Concrete Pavement, with the following modification:

1. 3/4” maximum size aggregate in mixes for Curb and Gutter, Sidewalks, and Driveways.

C. Water: ASTM C 94/C 94M.

D. Air-Entraining Admixture: ASTM C 260.

E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

2.04 CURING MATERIALS

A. White waterborne membrance forming curing compound, ASTM C 309, Type 2.

2.05 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.06 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.

B. Proportion mixtures to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 4000 psi
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
3. Slump Limit: less than 4 inches.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6 1/2 percent plus or minus 1.5 percent.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:

1. Fly Ash or Pozzolan: 20 percent for Sidewalks and Driveways.
2. Fly Ash or Pozzolan: 15 percent for Curb & Gutter.

2.07 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3: EXECUTION

3.01 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.02 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.04 STEEL REINFORCEMENT

A. General: All reinforcement to be epoxy coated for all pavement and shall comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.05 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete.

1. When joining existing pavement, place joints to align with previously placed joints, unless otherwise indicated.

2. All joints shall be sealed per Section 32 13 13 Portland Cement Concrete Pavement.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 100 feet (15.25 m) within curb and gutter and 60 feet within concrete sidewalks and as close to lot lines as possible, unless otherwise indicated.

2. Extend joint fillers full width and depth of joint.

3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.

4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.

5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: The Contractor shall form weakened-plane contraction joints. Maximum space between the contraction joints shall be 5 feet for concrete sidewalks and 10 feet for driveways and curb and gutter. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows to match jointing of existing adjacent concrete pavement:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a ¼-inch (6mm) radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.06 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery. Water may be added at the job site up to a level which will not exceed the w/c ratio. After watter addition, mixer truck shall mix concrete an additional 30 revolutions prior to retesting or placement.

F. Do not add water to fresh concrete after testing.

G. Deposit and spread concrete in a continuous operation between transverse joints. Do not use vibrators to move concrete into place.

H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.

I. Screed pavement surfaces with a straightedge and strike off.

J. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

K. Curbs and Gutters: When automatic machine placement is used for curb and gutter placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove and replace with formed concrete.

L. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

2. Do not use frozen materials or materials containing ice or snow.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.

M. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.07 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to the curb line to provide a uniform, fine-line texture.

3.08 STAMP

A. The Contractor shall stamp the name of the firm and year of construction into the fresh concrete on either side of all expansion joints for sidewalk construction

1. Stamp shall consist of letter of 1 1/4 inches high and of sufficient depth to imprint the concrete to the depth of 1/8 inch. The stamp shall have the Contractor’s name and the year of construction.

3.09 CONCRETE PROTECTION AND CURING

A. Refer to Section 32 13 13 Portland Cement Concrete Pavement.

3.10 PAVEMENT TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:

1. Elevation: 1/4 inch (6 mm).
2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).
3. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/4 inch (6 mm).
4. Joint Spacing: 3 inches (75 mm).
5. Contraction Joint Depth: Plus ¼ inch (6 mm), no minus.
6. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting

agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least 1 composite sample for each 25 cu. yd. (76 cu.m) or fraction thereof of each concrete mix placed each day.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.

4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.

   a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

D. Test results shall be reported in writing to Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by the Engineer but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 16 13

SECTION 32 92 19.00 13

SEEDING

PART 1 GENERAL

All disturbed areas within the limits of work shall be seeded unless otherwise covered as indicated on the drawings. All seed shall be drill seeded. Other seeding methods are subject to approval. Existing turf areas which have been damaged during the contract operations, and which are outside of the limits of work, shall be restored following the requirements in this section, at no additional cost to the Owner.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS-01	(1995) Federal Seed Act Regulations Part 201

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION (NDDOT)

NDDOT 251	(2014) Standard Specifications for Road and Bridge Construction - Erosion Control
NDDOT	(2014) Standard Specifications for Road and Bridge Construction

1.2 SUBMITTALS

Engineer approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL REQUIREMENTS:

SD-03 Product Data

Manufacturer's Literature; G

The Contractor shall submit manufacturer's literature discussing physical characteristics, applications, guarantees, and installation of the seed, mulch, and fertilizer. The Contractor shall submit manufacturer's literature for equipment showing application and installation instructions.

SD-06 Test Reports

Seed Test; G

The Contractor shall submit test reports for a purity and germination test following the Association of Official Seed Analysts (AOSA) rules for each seed mixture. The

test reports shall indicate the purity percentage and germination percentage for each species.

Quantity Check; G

Bag count or bulk weight measurements of material used compared with area covered to determine the application rate and quantity installed.

Maintenance Record; G

Maintenance work performed, days watering occurred, area repaired or reinstalled, diagnosis for unsatisfactory stand of grass plants.

SD-07 Certificates

Certificates of Compliance; G

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements.
Certified copies of the material certificates shall include the following:

a. Seed. Mixture percentage, percent pure live seed, percent germination, weed seed content, and date tested.

b. Fertilizer. Mixture percentage, composition, source, and date tested

c. Mulch. Composition and source.

1.3 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.3.1 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed materials shall be delivered in manufacturer's original, unopened containers with labels and tags intact and legible. Seed that is wet, moldy, otherwise damaged, or bears a test date more than five months old, shall be rejected. Unacceptable materials shall be removed from the job site.

1.3.2 Storage

Materials shall be stored in areas provided by the Contractor. The storage areas shall be made accessible to the Engineer so that application rates can be verified. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment materials shall be stored according to manufacturer's literature and not with seed.

1.3.3 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.3.4 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the

manufacture's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

PART 2 PRODUCTS

2.1 SEED

Substitutions will not be allowed without written request from the Contractor and approval from the Engineer. The mixing of seed may be done by the seed supplier prior to delivery, or on site in the presence of the Engineer. Seed Test reports and Certificates of Compliance shall be provided 7 days prior to delivery of materials.

2.1.1 Seed Classification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for mixture percentage, purity, germination, weed seed content, and inert material. Labels shall be in conformance with AMS-01 and applicable state seed laws.

2.1.2 Seed Species and Mixtures

Follow seed material guidelines outlined in NDDOT Standard Specifications for Road and Bridge Construction, Section NDDOT 251. Seed species and mixtures shall be proportioned by weight as follows:

Mix Designation		Pounds Pure Live Seed Per Acre
Permanent Seed Species Class I		
Kentucky Blue Grass		4.0
Perennial Rye Grass		5.4
Blue Grama		2.4
Sideoats Grama		7.2
	TOTAL	19.0

2.1.3 Quality

Weed seed shall be a maximum 1 percent by weight of the total mixture. Innoculent shall consist of the proper bacteria applied in the amount and manner recommended by the manufacturer to all legumes in the seed mix.

2.2 MULCH

Mulch shall be free from noxious weeds, mold, and other deleterious materials. Certificates of Compliance shall be provided 7 days prior to delivery of materials.

2.2.1 Straw Mulch

Straw mulching material shall not be allowed.

2.2.2 Bonded Fiber Matrix

Bonded fiber matrix shall consist of a continuous layer of elongated fiber strands held together by a water resistant bonding agent. The bonded fiber matrix shall be uniformly applied and have no gaps between the product and the seeded soil. The product shall be 100 percent biodegradable and composed of 90 percent wood fiber, 9 percent natural binder and 1 percent organic and mineral activators (all by weight). The treatment shall be installed with hydraulic seeding equipment.

2.3 WATER

Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements in concentrations toxic to plant life.

PART 3 EXECUTION

3.1 INSTALLING SEED TIME AND CONDITIONS

3.1.1 Notification

The Contractor shall notify the Engineer 24 hours in advance of beginning seeding or any changes in turf establishment operations.

3.1.2 Seeding Time

All seedbed preparation and seeding shall be done between the dates of April 20 to July 15 or between the dates of August 10 to the first frost. No finished construction area shall be left untopsoiled and unseeded. When substantially complete areas are not seeded within the specified seeding times, a temporary cover shall be placed.

3.1.3 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. Do not seed when the ground is frozen, snow covered, muddy, or when air temperature exceeds 90 degrees Fahrenheit. Apply seed within twenty four hours after seed bed preparation. When special conditions warrant a variance to the seeding operations, proposed alternate times shall be submitted for approval.

3.2 TOPSOIL

Provide 6 inches of topsoil to meet indicated finish grade. After areas have been brought to indicated finish grade, incorporate fertilizer into soil a minimum depth of 6 inches by disking, harrowing, tilling or other method approved by Engineer. Remove debris and stones larger than 1 inch in any dimension remaining on the surface after finish grading. Correct irregularities in finish surfaces to eliminate depressions. Protect finished topsoil areas from damage by vehicular or pedestrian traffic.

3.3 SEEDING

Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind velocity are greater than 5 mph.

3.3.1 Equipment

Gravity feed applicators, which drop seed directly from a hopper onto the prepared soil, shall not be used because of the difficulty in achieving even coverage.

3.3.2 Drill Seeding

Drill seeding shall be done with grass drills not more than 6-inches apart and shall be sown uniformly over the designated area. Seed shall be sown to an average depth of ½-inch.

3.3.3 Hydroseeding

Hydroseeding not allowed on this project.

3.3.4 Mulching

3.3.4.1 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the seeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.3.5 Initial Watering

Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 3 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed.

3.3.6 Quantity Check

A quantity check shall be made and documentation submitted showing the application rate and quantity installed supported by bag count or bulk weight measurements of materials used relative to area covered.

3.4 RESTORATION AND CLEAN UP

Immediately upon completion of the seeding operation in an area, the area shall be protected against traffic or other use by erecting barricades, providing signage, or as directed. Existing turf areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense. Excess and waste material shall be removed from the seeded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

3.5 SITE PREPARATION

The Contractor shall verify that finished grades are as indicated on drawings, and that the placing of topsoil and the smooth grading requirements have been completed in accordance with Section 31 00 00.00 03 EARTHWORK, prior to the commencement of the planting operation. The location of underground utilities and facilities in the area of the planting operation shall be verified. Damage to underground utilities and facilities shall be repaired at the Contractor's expense.

3.6 MAINTENANCE

3.6.1 Maintenance Watering

The Contractor shall be responsible for watering after planting daily for a period of 7 days after seed is installed to promote adequate growth and development. Water shall be distributed with equipment that does not erode or disturb the mulch. If the grass wilts, or if the soil becomes crusted and desiccated during germination, the Engineer may direct watering. Watering directed by the Engineer shall be performed within 48 hours after notice by the Engineer to the Contractor; and shall place about 10,000 gallons per acre.

3.6.2 Mowing

Bluegrass predominant seed mixes: Mowing shall be done as needed to maintain lawn areas at a nominal height of 3 inches until final acceptance, except not more than 1/3 of the grass leaf shall be removed by the initial cutting. Clippings shall be removed when the amount of cut turf is heavy enough to damage the turfed areas. Seeded areas shall be mowed immediately prior to final inspection.

3.6.3 General Maintenance

Maintenance of the seeded areas shall include eradicating weeds, protecting embankments and ditches from surface erosion, maintaining erosion control materials and mulch, protecting installed areas from traffic, mowing, watering, and post-fertilization. If any portion of the surface becomes rilled, gullied, damaged, or destroyed, that portion shall be repaired to re-establish the area without additional cost to the Owner. The Contractor shall control erosion during the construction period by using ditch checks, sod swales, silt fences or other methods until a proper stand of turf is established.

3.6.3.1 Repair or Reinstall

Unsatisfactory stand of grass plants and mulch shall be repaired or reinstalled, and eroded areas shall be properly filled. Mulch material that has been removed by wind or other causes shall be replaced and secured. Maintenance shall include protecting embankments and ditches from erosion and maintaining erosion control material.

3.6.4 Maintenance Record

A record of each site visit shall be furnished, describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

3.7 ACCEPTANCE

A stand of turf is defined as a uniform stand of grass that is at least 2 inches tall with a minimum of

100 grass plants per square foot and reasonably free of weeds and visual imperfections as assessed by the Engineer. The Contractor shall control erosion during the construction period by using ditch checks, sod swales, silt fences or other methods until a proper stand of turf is established.

3.8 SURFACE EROSION CONTROL

Where indicated or as directed, surface erosion control material shall be installed in accordance with manufacturer's instructions. Placement of the material shall be accomplished without damage to installed material or without deviation to finished grade. When directed during contract delays affecting the seeding operation or when a quick cover is required to prevent surface erosion, the areas designated shall be seeded with a temporary seed crop.

END OF SECTION 32 92 19.00 13

DIVISION 35

WATERWAY AND MARINE CONSTRUCTION

SECTION 35 20 14

STOPLOGS

PART 1: GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, equipment and incidentals required to install and ready for operation aluminum stop logs, guide frames and stop log lifters as shown on the Contract Drawings and as specified herein.

1.02 SUBMITTALS

A. Provide the following information to confirm compliance with the specification in addition to the submittal requirements specified in Section 01 33 00 – Submittal Procedures.

1. Complete description of all materials including the material thickness of all structural components of the stop logs, guide frames and stop log lifter.
2. Stop log design shall be signed by a registered professional engineer in the state of North Dakota.
3. Installation drawings showing all details of construction, details required for installation, dimensions and anchor bolt locations.
4. Maximum bending stress and deflection of the stop logs under the maximum design head.
5. The location of the company headquarters and the location of the principle manufacturing facility. Provide the name of the company that manufactures the equipment if the supplier utilizes an outside source.

1.03 QUALITY ASSURANCE

A. Qualifications

1. All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 20 years experience designing and manufacturing stop logs. The manufacturer shall have manufactured stop logs for a minimum of 100 projects.

PART 2: PRODUCTS

2.01 GENERAL

A. Stop log assemblies shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings.

B. Leakage shall not exceed 0.05 gpm/ft of wetted seal perimeter.

C. The stop logs shall be provided with a continuous resilient seal along the bottom and both sides. The guide frames shall not incorporate seals.

D. Stop logs shall be of the height as shown in the Contract Drawings and they shall be designed to function properly when stacked in any order.

E. Stop logs shall be designed to drop into place under their own weight without any downward pressure necessary. Stacking stop plates are not acceptable in lieu of stop logs.

F. All structural components of the stop logs shall be fabricated of aluminum and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.

G. All structural components of the guide frames shall be fabricated of stainless steel and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.

H. All welds shall be performed by welders with AWS certification.

I. Finish: Mill finish on aluminum and stainless steel. All aluminum in contact with concrete shall be shop coated with a heavy coat of bitumastic paint. Welds on aluminum shall be cleaned to provide a uniform finish. Welds on stainless steel shall be sandblasted to remove weld burn and scale.

J. Materials:

Components	Materials
Frame Guides and Invert	Stainless Steel, Type 304L, ASTM A240
Stop Logs	6061-T6 Aluminum
Lip Seal	Urethane, EPDM or Neoprene ASTM D-2000
Anchor Studs, Fasteners and Nuts	Stainless Steel, Type 316, ASTM A276

2.02 FRAME GUIDES

A. The frame guides or grooves and invert member shall be constructed of stainless steel with a minimum thickness of 1/4-inch.

1. Frame design shall allow for embedded mounting or mounting directly to a wall with stainless steel anchor bolts and grout. Mounting style shall be as shown on the Contract Drawings.
2. An invert member shall be provided across the bottom of the guides. The invert member shall be of the flushbottom type.
3. Frame mounted seals are not acceptable.

2.03 STOP LOGS

A. The stop logs shall be constructed of extruded aluminum shapes with a minimum thickness of 5/16-inch.

1. Each stop log shall be 18 inches tall unless otherwise indicated on the Contract Drawings.
2. Maximum bending stress shall not exceed 7600 psi at the maximum operating head.
3. Adequate drainage shall be provided for each stop log.
4. Two slots shall be provided in the top of each stop log for removal and installation via the stop log lifter.
5. Each stop log shall be outfitted with an identification tag indicating the manufacturer, width of the opening and maximum head rating at a minimum. Additional tags shall be included on each stop log that indicate "dry side" and "wet side". Tags shall be welded to each log. Each tag will also be labeled "City of Minot #3529.1-Broadway Access Ramp" for the Broadway Access Ramp stoplogs.

2.04 SEALS

A. Each stop log shall be outfitted with a continuous resilient lip seal along the bottom and both sides to restrict leakage in accordance with the requirements listed in this specification.

1. The continuous lip seal shall be constructed of urethane or rubber and shall be mechanically retained to the stop log.
2. The lip seal shall be activated by a combination of the weight of the stop log and the differential water pressure, which pushes the seal against the inside of the groove assembly.
3. Stop logs that utilize rubber "J" seals or "P" seals are not acceptable.

2.05 LIFTER

A. One stop log lifter shall be provided for each different guide frame width.

1. The lifter shall be constructed of aluminum and shall be outfitted with UHMW guide bars and stainless steel fasteners.
2. The lifter shall be provided with lifting hooks designed to engage the slots in the top of the stop logs. A lanyard release will be incorporated into the design.
3. The lifter shall be capable of installing and removing all stop logs of the same width whether they are installed or at the operating floor level.

2.06 ANCHOR BOLTS

A. Anchor bolts shall be provided by the stop log manufacturer for mounting the guide frames and storage racks (if applicable).

1. Quantity and location shall be determined by the stop log manufacturer.

2. If epoxy type anchor bolts are provided, the stop log manufacturer shall provide the studs and nuts.

3. Anchor bolts shall have a minimum diameter of 1/2-inch.

PART 3: EXECUTION

3.01 INSTALLATION

A. Installation of the stop logs, guide frames and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the Contractor to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations.

B. The Contractor shall review the installation drawings and installation instruction prior to installing the guide frames.

C. The guide frames shall be installed in a true vertical plane, square and plumb.

D. The Contractor shall fill the void in between the guide frames and the wall with non-shrink grout as shown on the installation drawing and in accordance with the manufacturer’s recommendations.

3.02 FIELD TESTING

A. After installation, all stop logs shall be field tested in the presence of the Engineer and Owner to ensure that all items of equipment are in full compliance with this Section. The stop logs shall be inserted into the guide frames to confirm that they operate in accordance with the specification. Each stop log assembly shall be water tested by the Contractor, at the discretion of the Engineer and Owner, to confirm that leakage does not exceed the specified allowable leakage.

END OF SECTION 35 20 14

SECTION 35 31 19.00 13

STONE PROTECTION (RIPRAP AND BEDDING)

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced.The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM C 33/C 33M	(2011) Standard Specifications for Concrete Aggregates
ASTM C 127	(2007) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C 136	(2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 295	(2008) Petrographic Examination of Aggregates for Concrete
ASTM D 75	(2009) Standard Practice for Sampling Aggregates
ASTM D 4791	(2010) Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D 4992	(2007) Evaluation of Rock to be Used for Erosion Control
ASTM D 5312	(2004) Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions
ASTM D 6825	(2002, Errata 2008) Standard Guide for Placement of Riprap Revetments

CORPS OF ENGINEERS (COE)

EM 1110-2-2302	(1990) Construction with Large Stone

1.2 SUBMITTALS

Engineer approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL REQUIREMENTS:

SD-01 Preconstruction Submittals

Material Sources; G

The Contractor shall designate in writing only one source or one combination of sources from which he proposes to furnish stone. The Contractor shall state in writing methods of processing and handling riprap, and shall notify the Engineer when production methods are changed.

SD-06 Test Reports

Gradation Test; G

Gradation Test Results for riprap. The Contractor shall submit gradation of the riprap to the Engineer prior to any hauling and delivery of materials.

SD-07 Certificates

Certified Weight Scale Tickets;

Copies of all certified weight scale tickets shall be furnished to the Engineer at a frequency as directed. The tickets do not need to be formally submitted through the submittal process.

PART 2 PRODUCTS

2.1 STONE SOURCES AND EVALUATION

The rock supplied shall be produced from one rock formation to provide a product of uniform appearance. The Contractor shall not supply rock from various formations, or mix field stone with quarried rock, unless approved by the Engineer. It is the Contractor's responsibility to determine that the stone source or combination of sources selected is capable of providing the quality, quantities and gradation needed and at the rate needed to maintain the scheduled progress of the work.

2.1.1 Acceptance of Materials

Acceptance of a source of stone is not to be construed as acceptance of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable for stone as determined by the Engineer. The Engineer also reserves the right to reject individual units of produced specified materials in stockpiles at the quarry, all transfer points, and at the project construction site when such materials are determined to be unsuitable.

2.2 RIPRAP

Riprap gradation shall conform to NDDOT Standard Specifications for Road and Bridge Construction, Section 256, Grade I Riprap. The stone shall be well graded within the limits specified. Grout of riprap will not be required.

Provide riprap with the following gradation:

NDDOT Grade I Riprap Gradation	
Size (Inches)	**Percent Smaller**
20	100
18	70-90
15	40-60
10	0-10
6	0-2

2.2.1 Riprap From Offsite Sources

2.2.1.1 General

All stone shall be durable material with a specific gravity not less than 2.65. Stone shall be of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. It shall be free from cracks, blast fractures, bedding, seams and other defects that would tend to increase its deterioration from natural causes. A hairline crack is defined as detrimental if it has a width greater than 4 mil and is continuous for one-third the dimension of at least two sides of the stone. The stone shall be clean and reasonably free from soil, quarry fines, and shall contain no refuse. Any foreign material adhering to or combined with the stone as a result of stockpiling shall be removed prior to placement. The maximum aspect ratio (greatest dimension:least dimension) of any piece of stone for size ranges shall be not greater than 3:1 when measured across mutually perpendicular axis. ASTM D 4791 shall be used as a guide to perform the test.

2.2.1.2 Production

Riprap shall be handled and selectively loaded onto trucks in a manner to avoid segregation and provide a distribution of stone sizes consistent with the gradation band and test samples. Each truckload shall be representative of the gradation requirements.

2.3 BEDDING MATERIAL

A. Bedding material brought on site shall be composed of tough, durable particles, adequately free from thin, flat and elongated pieces, and shall contain no organic matter nor soft, friable particles in quantities considered objectionable by the Engineer. Bedding material shall be well-graded between the limits specified below in Paragraph 2.3B through the entire layer thickness shown in the Construction Drawings.

B. Granular Bedding Gradations

1. B2 Granular Bedding

Sieve Opening/Number	Granular Bedding B2 Percent Passing By Weight	
	Minimum	Maximum
6"	100	100
4"	79	100
3"	71	88
1.5"	54	71
3/4"	38	54
3/8”	22	38
No. 4	7	22
No. 10	0	5

2.4 SOURCE QUALITY CONTROL

All testing expenses shall be paid for by the Owner. The scheduling of the testing shall be the Contractor’s responsibility. Gradation tests for riprap, and bedding materials brought on site shall be performed by the methods and at the frequency listed below. A satisfactory gradation test shall be obtained prior to placement of materials. In the event of a failed test, the Contractor shall be responsible for rescheduling and the expenses of retesting.

2.4.1 Sampling Requirements

The Engineer shall perform all sampling of material. Samples shall be taken from onsite material stockpiles.

2.4.2 Bedding Gradation Testing

The Engineer shall sample the B2 bedding material on site that is to be used prior to placement at the Owner’s expense. The bedding and filter materials shall be sampled in accordance with ASTM D 75 and tested in accordance with ASTM C 136.

a. Notification. The Engineer shall be informed 24 hours prior to material being delivered to the site.

b. Testing Frequency. One gradation test shall be performed prior to placement of material.

c. Sample Size. Aggregate samples shall have a minimum gross weight not less than 110 pounds per inch of the maximum nominal aggregate size in the specified gradation.

2.5 STOCKPILES

Stockpiles shall be formed by a series of layers or truckload dumps, where the rock essentially remains where it is placed. Subsequent layers shall be started 10 feet from the edge of the previous

layer so that the rock will not roll down the edges of the pile. Any stone which has become contaminated with soil or refuse shall not be put into the work unless the contaminating material has been removed prior to placement.

PART 3 EXECUTION

3.1 PROTECTION OF EXISTING PROJECT FEATURES DURING RIPRAP AND BEDDING PLACEMENT

The Contractor shall employ construction methods to prevent damage to the existing riprap section and storage yard features when placing riprap and bedding.

3.2 RIPRAP AND BEDDING CONSTRUCTION TOLERANCES

Work shall generally meet the required elevations, slope and grade; and the outer surfaces shall be even and present a neat appearance.

a. Subgrades. Areas on which stone protection will be placed shall be graded and/or dressed to conform to the lines and grades shown on the contract drawings within 2 inches above or below the neat lines. The surface shall be reasonably smooth to match tolerances normally obtained by rough grading with bladed equipment. For subaqueous construction in greater than 3 feet of water, the tolerance shall be 6 inches.

b. Layer Thickness. Where a layer thickness is specified, areas found to be less than 80% of the specified thickness shall be corrected. This tolerance shall only be exceeded on isolated spot checks, and if the tolerance is commonly exceeded, the Contractor shall change construction methods to improve the quality control. The specified tolerance above the section thickness shall be 4 inches for NDDOT Grade I Riprap and 2 inches for B2 bedding. Extreme limits of the tolerances given shall not be continuous in any direction for an area greater than 200 square feet. The average section thickness for the entire area of a specific gradation placed shall be no more than section thickness shown plus 50% of the specified tolerance. If it is necessary to estimate riprap quantities for changes, the volume shall be based on neat line dimensions and the plan dimension for thickness. A conversion factor of 1.4 tons/CY shall be used to determine quantity requirements for riprap unless otherwise directed by the Engineer.

c. Surface Tolerances. The finished surface tolerance above the neatline shall generally not deviate from the lines and grades shown by more than the tolerances specified for layer thickness. Riprap that has a rough and uneven surface shall be reworked by hand to stabilize stones that wobble and are out of tolerance, except where the Engineer approves use of equipment. Rearranging of individual stones shall be required to the extent necessary to obtain a well-graded distribution of stone sizes.

3.3 FOUNDATION PREPARATION

Foundation areas shall be excavated or filled to the lines and grades shown. Filling shall be with earth similar to the adjacent material and shall be well compacted. Immediately prior to placing riprap or bedding, the prepared subgrade will be inspected by the Engineer unless waived; and no material shall be placed thereon until that area has been approved.

3.4 BEDDING PLACEMENT REQUIREMENTS

Bedding material shall be spread uniformly on the prepared base to the lines and grades indicated and in such manner as to avoid disturbance to the subgrade. Placing by methods which tend to segregate the particle sizes or cause mixing of the separate layers will not be permitted. Placement shall begin at the bottom of the area to be covered and continue up slope. Subsequent loads of material shall be placed against previously placed material in such a manner as to ensure a relatively homogenous mass. Any damage to the surface of the prepared base during placing of the material shall be repaired before proceeding with the work. Compaction of bedding material will not be required, but the surface shall be finished to present an adequately even surface, free from mounds or windrows.

3.5 PLACEMENT OF RIPRAP

3.6.1 Riprap Placement Requirements

Riprap shall be placed in general accordance with ASTM D 6825. Where discrepancies occur, this specification shall govern.

3.6.1.1 Layer Requirements

Riprap shall be placed in a manner that will produce a well-graded mass of rock with the minimum practicable percentage of voids. The large stones shall be well distributed. The finished riprap shall be free from objectionable pockets of small stones and clusters of larger stones.

3.6.1.2 Construction Methods

Unsegregated stone shall be placed in a systematic manner. Riprap shall be placed to its full course thickness in one operation and in such manner as to avoid displacing underlying material. Placement shall typically begin at the bottom of the area to be covered and continue up slope. Subsequent loads of material shall be placed against previously placed material in such a manner as to ensure a relatively homogenous mass. Final finish of slope shall be performed as the material is placed.

Placing riprap in layers will not be permitted. Placing riprap by dumping it into chutes, or by any method likely to cause segregation of the various sizes, will not be permitted. Placing riprap by dumping it at the top of the slope and pushing it down the slope will not be permitted. No equipment shall be operated directly on the completed stone protection system. Dump trucks shall be equipped with bottom hinged tailgates if rock is directly placed into position with the trucks.

3.6.1.3 Riprap Placement in Water

Riprap to be placed under water shall be placed in a systematic manner so as to ensure a continuous uniform layer of well-graded stone of the required thickness. Riprap to be placed under water shall be placed with a drop height less than 2 feet. Riprap shall not be cast across the surface of the water. The equipment shall be capable of reaching the placed material to monitor the water depth and surface coverage.

3.7 MAINTENANCE

The Contractor shall maintain the stone protection and underlying works until accepted by the Engineer. When appropriate, the Contractor shall place stone protection in a timely manner to

reduce risk of scour. Any material displaced prior to acceptance and due to the Contractor's negligence or neglect shall be replaced at the Contractor's expense.

3.8 CONTRACTOR QUALITY CONTROL

The Contractor shall establish and maintain quality control for all work performed at the job site under this section to assure compliance with contract requirements. The Contractor shall maintain records of quality control tests, inspections and corrective actions. Quality control measures shall cover all construction operations including, but not limited to, the placement of all materials to the slope and grade lines shown and in accordance with this section.

In addition to the Contractor's system to establish and maintain quality control for stone placement operations, the following information shall be recorded and promptly provided to the Engineer on request:

a. Record tonnage of stone placed in completed sections of the work and check quantity for compliance with design sections.

b. Surveys are required for riprap to verify that materials are placed to the thickness and geometry required by the contract documents. The survey expenses shall be paid for by the Owner. The Engineer shall make surveys as the work progresses to verify lines, grades, and thicknesses established for completed work. The Contractor shall give adequate notification for survey to the Engineer prior to and after riprap placement. Review and approval of the surveys by the Engineer is required before proceeding with the next step of work.

3.9 DEBRIS REMOVAL

All debris including logs, timbers, plastic, and any other debris type materials shall be removed from the excavation areas and all other riprap placement areas. Debris shall be disposed of in accordance with SECTIONS 01 14 19 USE OF SITE and 01 74 00 CLEANING AND WASTE MANAGEMENT.

END OF SECTION 35 31 19.00 13

DIVISION 43

PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT

SECTION 43 30 56

HYDRAULIC GATES, GENERAL

PART 1: GENERAL

1.01 THE SUMMARY

A. The Contractor shall provide hydraulic gates with appurtenances, complete and operable, in accordance with the Contract Documents.

B. The provisions of this Section shall apply to flap gates, slide gates, stop gates, cast iron slide gates, and shear gates, except where otherwise indicated in the Contract Documents.

C. The requirements of Section 46 01 00 – Equipment, General, apply to this Section.

D. The requirements of Section 43 30 12 – Valve and Gate Actuators apply to this Section.

E. Single Manufacturer

1. The Contractor shall assign to a single manufacturer responsibility for the furnishing and functional operation of the hydraulic gates, including operators and accessories.

2. The designated single manufacturer, however, need not manufacture more than one part of the units, but shall coordinate the design, assembly, testing, and installation of the units.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

AWWA C560	Cast Iron Slide Gates
AWWA C561	Stainless Steel Slide Gates
AWWA C562	Aluminum Slide Gates
AWWA C563	Composite Slide Gates
AWWA C 513	Open Channel Fabricated Metal Slide Gates
ASTM A 276	Stainless Steel Bars and Shapes
ASTM B 21	Naval Brass Rod, Bar, and Shapes
ASTM B 584	Copper Alloy Sand Castings for General Applications

1.03 CONTRACTOR SUBMITTALS

A. Furnish submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Shop Drawings

1. Submit Shop Drawings of hydraulic gates as indicated in their respective Section.

C. Technical Manuals

1. Submit complete technical manuals, including printed instructions for proper maintenance, lubrication, and complete parts list indicating the various parts by name, number, and exploded view where necessary.

2. A list of recommended spare parts for the Owner to store at the facility shall be included.

D. Certification

1. The Contractor shall obtain written certification from the designated single manufacturer, addressed to the Owner, stating that the equipment will efficiently and thoroughly perform the required functions in accordance with these Contract Documents, and that the designated single manufacturer accepts the Contractor's assignment of responsibility for coordination of gate equipment, including operators, controls, and services required for proper installation and operation.

E. Field Procedures

1. Prior to installation of the gates, provide instructions for field procedures for installation, adjustments, inspection, and testing.

1.04 QUALITY ASSURANCE

A. Equipment Field Testing

1. The Contractor shall be responsible for the coordination of the tests of each hydraulic gate in the presence of the manufacturer's factory service representative.

2. Excessive leaks shall be corrected and the equipment retested until found to be satisfactory.

1.05 MANUFACTURER'S SERVICE REPRESENTATIVE

A. Installation and Startup Assistance

1. Service and testing assistance by the manufacturer's engineering representative for each gate and valve shall be furnished by the Contractor during installation and startup.

B. Instruction of Owner's Personnel

1. The Contractor shall arrange for the services of a factory service representative to instruct the Owner's personnel in the operation and maintenance of the equipment.

1.06 SPECIAL WARRANTY REQUIREMENT

A. The Contractor shall furnish the manufacturer's written guarantee that the hydraulic gates comply with the indicated requirements.

B. The Contractor shall furnish the manufacturer's warranties as published in its literature.

PART 2: PRODUCTS

2.01 GENERAL

A. Equipment provided under this Section shall be new, of current manufacture, and shall be the products of reputable manufacturers specializing in the manufacture of such products and which have had previous experience in such manufacture.

B. The Contractor shall, upon request, furnish the names of not less than 5 successful installations of the manufacturer's equipment of comparable nature to that offered under the Contract.

C. Combinations of manufactured equipment which are provided under these Specifications shall be entirely compatible, and the Contractor and the manufacturer shall be responsible for the compatible and successful operation of the various components of the units.

D. Indicated and necessary mountings and appurtenances shall be included.

2.02 MATERIALS

A. Materials employed in the manufacture and installation of the hydraulic gates and operators shall be suitable for the intended application. Material not specifically called for shall be high-grade, standard commercial quality, free from defects and imperfection that might affect the serviceability of the product for the purpose for which it is intended.

2.03 HARDWARE

A. Bolts and nuts shall comply with the requirements of Section 05 50 13 – Miscellaneous Metal Fabrications.

2.04 PROTECTIVE COATING

A. Coat ferrous metal in accordance with the requirements of Section 09 96 00 – High-Performance Coating

2.05 TOOLS AND SPARE PARTS

A. Tools

1. Furnish special tools that are necessary for maintenance and repair of the gates.

2. Such tools shall be suitably stored in metal toolboxes and identified with the equipment number by means of stainless steel or solid plastic nametags attached to the box.

B. Spare Parts

1. Where applicable, furnish the following spare parts in a box as described above for tools, for air- or hydraulic-actuated gates for each type and size of gate:

a. One set of directional valves, solenoid or pilot actuated

b. One set of cylinder actuator seals

c. One set of filters

d. One repair kit for the hydraulic pump, containing seals or packing, gaskets, and O-rings.

PART 3: EXECUTION

3.01 INSTALLATION

A. Slide and shear gates shall be installed in strict accordance with the manufacturer's printed recommendations and the indicated requirements.

B. Operators shall be located as to avoid interference with handrails and structural members.

C. Gates with Wall Thimbles

1. Shortly before setting each gate, apply a 1/8-inch-thick layer of mastic grade polysulfide elastomeric sealant to the back of the gate frame.

2. After setting the gate, the nuts shall be turned down on the anchor bolts far enough only to make them snug and to cause the rubber sealant to begin to ooze out, but not far enough to produce any significant stress to the frame.

3. Excess sealant at the edges shall be removed.

4. The sealant shall be allowed to cure for at least 7 Days, after which the anchor bolt nuts shall be tightened to their final positions.

5. If gaskets are being used, they shall be installed over the studs in one piece, or dovetailed and cemented with a liquid-type gasket material.

D. Damage to surface coatings incurred during shipment or installation shall be repaired.

END OF SECTION

SECTION 43 30 62

SLIDE/STOP GATES

PART 1: GENERAL

1.01 THE SUMMARY

A. The Contractor shall provide slide/stop gates, complete and operable, in accordance with the Contract Documents.

B. The requirements of Section 43 30 56 – Hydraulic Gates, General, apply to this Section.

1.02 CONTRACTOR SUBMITTALS

A. Shop Drawings

1. Submit the following:

a. Drawings of gates, frames, slides, and actuators.

b. Design load calculations for slide and frame deflection at the maximum expected head.

c. Where a gate operator is indicated in the Gate Schedule as manual, submit calculations for the lifting force generated by 40 pounds effort on the crank.

d. Where a gate operator is indicated in the Gate Schedule as electric, actuator information shall be submitted with the gate shop drawings as a complete package clearly indicating the output forces of the actuator versus the required opening and closing forces under the design seating and unseating heads.

e. Stem buckling design calculations shall submitted indicating the proper sizing of the stem in accordance with the applicable standards.

f. Seismic anchorage calculations shall be sealed by an Engineer currently registered in the North Dakota. Refer to Structural Contract Drawings for seismic loading criteria.

1.03 QUALITY ASSURANCE

A. The leakage allowance for slide gates under the design seating and unseating heads shall conform with the applicable AWWA Standards; for example, AWWA C561 for fabricated stainless steel slide gates.

B. All welds shall be performed by welders with AWS D1.6 certification. Certificates shall be included in the shop drawing submittal.

C. Factory Testing

1. Gates shall be factory-assembled and functionality-tested prior to delivery to the Site.

2. Test certificates shall be submitted.

PART 2: PRODUCTS

2.01 GENERAL

A. Gates shall comply with the following Standards:

1. AWWA C513 (unless indicated otherwise) Open-Channel, Fabricated-Metal Slide Gates and Open-Channel, Fabricated-Metal Weir Gates

2. AWWA C561 Stainless Steel Slide Gates

3. AWWA C562 Aluminum Slide Gates

4. AWWA C563 Composite Slide Gates

B. Gates shall be new and of current manufacture, adequately braced in order to prevent warpage and bending under the intended use.

C. Gate actuators shall be sized, selected, and furnished by the gate manufacturer.

D. Gate actuators throughout the project shall be products of a single manufacturer.

E. Mounting Requirements

1. Where indicated in the drawings, frames for self-contained gates shall be terminated below finished deck level and pedestal shall be mounted on frame.

2. Guide frames shall be extended 3 feet, 6 inches above the walkway in order to match the height of the handrail.

3. Where a gate is mounted in an opening between 2 sections of handrail, additional horizontal members shall be added to the gate frame to match the handrail, guardrail, and kickplate spacing of the adjacent railing. Horizontal members shall be arranged such that the railing will not interfere with operation of the actuator.

2.02 STAINLESS STEEL SLIDE GATES

A. Construction

1. Unless otherwise indicated, materials of construction shall be in accordance with AWWA C561 suitable for the service. All structural parts of the gate assembly shall have a minimum thickness of ¼-inch.

2. After fabrication, all weld burn and weld slag shall be removed by mechanical passivation in accordance with ASTM A380.

3. The seal system shall be durable and shall be designed to accommodate high velocities and frequent cycling without loosening or suffering damage.

4. Materials used in the fabrication of the slide gates shall conform to the requirements of the standards designated for each material as indicated below:

Description	Material Standards
Stainless Steel Gates	
Slide	ASTM A 276, Type 304
Frame	ASTM A 276, Type 304
Stem and coupling	ASTM A 276, Type 304
Hardware	ASTM A 276, Type 316, All necessary attaching bolts and anchor bolts shall be furnished by the slide gate manufacturer
Stem Cover	Fracture-resistant clear lexan or butyrate plastic stem covers complete with indicator markings to indicate gate position
Guides and seats	UHMW Polyethylene, ASTM D 4020, bolted to the guide or slide and be field replaceable without the need to remove the gate from the wall
Seals	Self-adjusting UHMWPE seal system, bolted or mechanically fastened to the guide or slide and be field replaceable without the need to remove the gate from the wall

B. Lifting Devices

1. Provide lifting devices complete with stem, lifting nut, intermediate supports with steady bushings, interconnecting shafts with flexible couplings and stainless steel hardware (when shown on the Contract Drawings), stem cover, indicator, and gear reducer, hand wheel, crank, electric or hydraulic cylinder, where indicated.

2. The lifting devices shall be NEMA 4 weatherproof.

3. Pedestal Mounting

   a. The lifting devices shall be mounted on pedestals constructed of cast iron or fabricated steel.

   b. The pedestals shall have an ample base or bracket area to evenly distribute the load to the supporting concrete structure.

4. The centerline of the manual actuator shall be approximately 3 feet above the base for pedestal-mounted actuators, and approximately 4 feet above the floor for frame-mounted actuators.

5. Power lifting devices shall be in accordance with Section 43 30 12 – Valve and Gate Actuators.

6. Slide gate hoist heads shall be constructed of cast iron, ductile iron or cast aluminum.

7. The operating nut shall be constructed of solid bronze, in accordance with ASTM B 584.

8. Gearboxes shall have stainless steel input shafts. The input shafts shall be supported by ball thrust or roller bearings. Mechanical seals shall be provided.

9. Parts shall be provided with an alternative lubrication system.

10. Stems shall be designed to withstand at least twice the maximum output of the gate actuator in a stalled condition. The stem shall have a slenderness ratio (L/R) less than 200.

11. Handwheel Crank

a. The unit shall be designed for a 40–pound maximum effort on the crank in order to operate the gate.

b. The "open" direction shall be provided on the operator assembly. Clockwise movement of the crank shall close the gate.

c. A 2 inch square nut shall be mounted to each input shaft. The operating crank shall be easily removable in order to facilitate the use of a portable power operator.

12. Thimbles

a. When not otherwise specified in the Contract Drawings, provide thimbles for the following gates;

1) Gates with 10 feet and greater of unseating head.

2) Gates isolating piping connection to a structure

b. Thimbles shall be fabricated and furnished as a single scope of supply from the gate manufacturer.

c. Thimbles shall be "E"-shaped and shall be of fully-welded construction constructed of the same material as the frame of the gate per these specifications, with a minimum material thickness of ¼-inch.

d. One side of the thimble shall be flush with the face of wall and shall be drilled and tapped to match the template used for the slide gate frame. The other side of the thimble shall be either flush with the face of wall or shall be designed with an end connection to suit adjacent piping as indicated in the Contract Drawings.

e. The wall thimble shall be provided with grout holes drilled in the sill of the wall thimble to permit entrapped air to escape and to permit satisfactory concrete placement beneath the thimble.

f. The surface of the thimble shall be machined to match the gate or shall have an EPDM rubber gasket so as to be watertight.

g. The thimble shall have a weep ring continuously seal welded or stitch welded to it.

C. Manufacturers, or Equal

1. **Whipps, Inc., Athol, Massachusetts**

2. **Rodney Hunt Company / Fontaine, Orange, Massachusetts**

3. **Hydro Gate Corp.**

4. **Waterman Industries**

2.03 FIBERGLASS STOP GATES

A. General

1. Plastic and fiberglass items shall be manufactured by the "matched die-molded method."

2. Plastic and fiberglass items shall be constructed of a material suitable for contact with potable water, and shall be certified for such use on the Shop Drawings.

3. Provide bolts, anchor bolts, nuts, washers, and supports for plastic and fiberglass items in accordance with the requirements of the manufacturers of the plastic and fiberglass items.

B. Construction

1. Fiberglass stop gates shall be manufactured of blue-green fiberglass-reinforced polyester resin laminate material, containing ultra-violet radiation and weathering inhibitors.

2. Each gate shall be molded individually to the exact size indicated

3. Each gate shall be provided with a handhole or T-handle and "J" bulb type seals suitable for the indicated fluid service, and shall be reinforced with integrally molded stiffeners or sandwich core construction.

4. Details, calculations, and drawings shall show the method of fabrication and shall verify that the plates will withstand any normal pressures or forces exerted, without buckling or otherwise being damaged.

5. Guide frames shall be constructed of cast fiberglass-reinforced polyester resin material, containing weathering and ultraviolet radiation inhibitors.

6. Guide frames shall be provided with factory-bonded corners.

7. Mounting hardware, if indicated or required, shall be constructed of Type 316 stainless steel.

C. Manufacturers, or Equal

1. **Fischer & Porter (Warminster)**

2. **F. B. Leopold Co., (Division of Sybron Corp.)**

3. **Plasti-Fab, Inc.**

4. **Waterman Gate Company**

PART 3: EXECUTION

3.01 INSTALLATION

A. The slide/stop gates shall be installed in strict accordance with the requirements of Section 43 30 56 – Hydraulic Gates, General.

END OF SECTION

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SECTION 43 30 68

FLAP GATES

PART 1: GENERAL

1.01 SUMMARY

A. The Contractor shall provide flap gates, complete and operable, in accordance with the Contract Documents.

B. The requirements of Section 43 30 56 – Hydraulic Gates, General, apply to this Section

C. Epoxy grout.

1.02 CONTRACTOR SUBMITTALS

A. Submit the following information to confirm compliance with the specification:

1. Complete description of all materials including the material thickness of all structural components of the frame and flap.

2. Installation drawings showing all details of construction, details required for installation, dimensions and ancho bolt locations

3. Design load calculations for frame and flap deflection at the maximum expected head (seating head).

4. The flap gate shall be designed to withstand the maximum design head with a minimum safety factor of 4 with regards to ultimate tensile and a safety factor of 2 with regards to yield.

1.03 QUALITY ASSURANCE

A. The leakage for flap gates under the design seating head shall not exceed 0.1 gpm/ft of wetted seal perimeter.

B. All welds shall be performed by welders with AWS D1.6 certification. Certificates shall be included in the shop drawing submittal.

C. Factory Testing

1. Gates shall be factory-assembled and functionality-tested prior to delivery to the Site.

2. Test certifications shall be submitted.

PART 2: PRODUCTS

2.01 GENERAL

A. Gates shall be the size, type, material, and construction as shown on the drawings and specified herein.

B. The flap gate shall utilize a resilient seal around the perimeter of the opening.

C. All structural components of the frame and flap shall be fabricated of stainless steel have a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation, and while in service.

D. Finish: Mill finish required for stainless steel. Welds shall be sandblasted to remove weld burn and scale.

E. Materials

Components	Materials
Frame	Stainless Steel, Type 304L, ASTM A240
Flap, Stiffeners and Hinge Arms	Stainless Steel, Type 304L, ASTM A240
Hinge Pins	Stainless Steel, Type 304, ASTM A240
Seals	Neoprene or EPDM, ASTM D2000 or Urethane
Anchor Studs, Fasteners and Nuts	Stainless Steel, Type 316, ASTM A276
Seal	Neoprene or EPDM, ASTM D-2000

2.02 STAINLESS STEEL FLAP GATES

A. Frame

1. The frame shall be constructed of formed stainless steel plate with a minimum thickness of 1/4-inch.

   a. Frame design shall be of the flanged back type suitable for mounting directly to a wall with stainless steel anchor bolts and grout or mounting to a pipe flange with stainless steel mounting studs and a mastic gasket material. Mounting style shall be as shown on the Contract Drawings.

   b. The angle of the flap when seated against the frame shall be between 3 degrees and 7 degrees from the vertical.

   c. Lifting lugs shall be provided on the top of the frame to facilitate installation.

B. Hinge Arms

1. Hinge arms shall be constructed of formed stainless steel plate with a minimum thickness of 3/4-inch and shall connect the frame to the flap.

   a. Dual hinge arms shall be provided on all flap gates in excess of 18 inches wide.

   b. Flap gates in excess of 18 inches wide shall have two pivot joints per arm. An adjustable lower pivot with limited rotation and a fixed upper hinge lug arrangement.

   c. The hinge pins shall have a minimum diameter of 1-inch and shall be constructed of solid stainless steel rod.

   d. Gates mounted to pump discharge pipes shall be designed and rated for pump discharge.

C. Flap

1. The flap and reinforcing stiffeners shall be constructed of stainless steel plate with a minimum thickness of 1/4-inch.

a. The flap shall not deflect more than 1/360 of the span under the maximum design head.

b. Reinforcing stiffeners shall be welded to the flap.

c. A lifting lug shall be provided on the bottom of the flap.

d. The manufacturer's name, opening size and maximum head rating shall be etched or cut from a stainless steel plate and welded on the flap.

D. Seals

1. All flap gates shall be provided with a seal system to restrict leakage in accordance with the requirements listed in this specification.

a. A continuous resilient seal shall be mounted to the seating surface of the frame to restrict leakage.

b. The seals shall be held in place by a stainless steel retainer and stainless steel attachment bolts. The attachment bolts shall have a minimum diameter of 5/16-inch.

c. The seal system shall be durable and shall be designed to accommodate frequent operation without loosening or suffering damage.

d. All seals must be bolted or otherwise mechanically fastened to the frame. Arrangement with seals that are force fit and/or held in place with adhesives are unacceptable.

e. The seals shall be mounted so as not to obstruct the water way opening.

E. Anchor Bolts

1. Anchor bolts shall be provided by the flap gate manufacturer for mounting the gates when shown on the Contract Drawings.

a. Quantity and location shall be determined by the gate manufacturer.

b. If epoxy type anchor bolts are provided, the gate manufacturer shall provide the studs and nuts.

c. Anchor bolts shall have a minimum diameter of 5/8-inch.

F. Manufacturers, or equal

1. **Whipps, Inc., Athol, Massachusetts**

2. **Rodney Hunt Company / Fontaine, Orange Massachusetts**

3. **Hydro Gate Corp.**

4. **Waterman Industries**

PART 3: EXECUTION

3.01 INSTALLATION

A. The flap gate shall be installed in strict accordance with the requirements of Section 43 30 56 – Hydraulic Gates, General

3.02 FIELD TESTING

A. After installation, all gates shall be field tested in the presence of the Engineer and Owner to ensure that all items of equipment are in full compliance with this Section. Each gate shall be visually inspected to confirm that the flap seats against the frame properly.

END OF SECTION 43 30 68

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: *Dan Jonasson, Director of Public Works*

DATE: *April 17, 2018*

SUBJECT: **ENGINEERING SERVICES – MINOT SWIF P3135.2E**

I. RECOMMENDED ACTION

1. Recommend approval of Houston Engineering for future design and construction engineering on the Minot SWIF Improvements

II. DEPARTMENT CONTACT PERSONS

Dan Jonasson, Director of Public Works	857-4140
Jason Sorenson, Asst. Director of Public Works	857-4140

III. DESCRIPTION

A. Background
Public Works prepared a Request for Qualifications for engineering services and advertised in accordance with State law. Houston Engineering was the only firm that responded to the RFQ and their qualifications show they are qualified to perform the design and construction management work. Houston engineering has done all of the previous SWIF work for the City and is qualified to perform these services.

B. Proposed Project
The project will consist of design engineering, bidding, and construction engineering and project close out of repair of deficiencies found during USACE inspections to correct deficiencies in the current levee/flood control system.

C. Consultant Selection
Houston Engineering was the only consultant that responded to the RFQ and is qualified to perform the services outlined in the RFQ.

IV. IMPACT:

A. Strategic Impact:
City of Minot has committed to a staged approach with the USACE to address the deficiencies outlined by the USACE in the existing flood protection/levee system through Minot.

B. Service/Delivery Impact:
This project is needed to restore the structural integrity of the existing flood control system and meet USACE and FEMA requirements to be eligible for PL-84-99 funding.

C. Fiscal Impact:
There is no fiscal impact at this time.

V. ALTERNATIVES

VI. TIME CONSTRAINTS

Council's approval of the recommendation will allow the project to continue to move forward in accordance with our approved SWIF program. Separate agreements will be brought forth to Council as future projects are needed.

VII. LIST OF ATTACHMENTS

A. RFQ soliciting firms for work.
B. Houston Engineering Proposal

City of Minot
Request for Qualifications (RFQ)
City Project No. 3135.2E

Minot SWIF plan improvements

The City of Minot is requesting qualification submittals for reporting, permitting, design and construction engineering services for its System Wide Improvement Framework (SWIF) on the City's existing flood control system in the City of Minot. The project will include updating a yearly Emergency Action Plan, yearly SWIF report to the USACE, investigation of ROW and surveying of existing easements, along with the design and construction engineering of improvements identified from yearly levee and flood control inspections to bring the City of Minot into compliance with our current approved plan submitted to the USACE. Work shall include but not be limited to repair of existing levees, storm water drainage systems, tree removal, erosion areas and all other items identified in the USACE levee inspections.

DUE DATE AND NUMBER OF PROPOSALS

One (1) original and five (5) copies of the proposal are due at the Minot Public Works Office, 1025 31st Street SE, Minot, ND 58701, no later than 4:00 p.m. Local Time, Monday March 26, 2018. The proposals are to be addressed to:

Dan Jonasson, Director of Public Works
PO Box 5006
1025 31st Street SE
Minot, ND 58702

All proposals should be marked:

Project 3135.2E Request for Qualifications, Minot SWIF improvements

SELECTION PROCEDURE

The selection will follow the procedure detailed in NDCC Chapter 54-44.7. The City of Minot will form a selection committee whose members will score the submittals and rank them by score. From the ranked list, the committee will select a list for interviews, which will also be scored. Negotiations will be initiated with the highest scoring firm or firms, and only if an agreement on a contract cannot be reached with that firm the committee will move down the list.

SCOPE OF WORK

General

The Scope of Work includes analysis, design, right of way research, construction engineering, yearly Emergency Action Plan updates, SWIF plan updates, participating in yearly inspection of the existing Minot levee inspections performed by the City of Minot and USACE which determines deficiencies in the existing flood protection works. The critical components of the project include, but are not limited to:

Assist in the review and inspection of any floodwall features added into the Minot flood control system to assure they are maintained in compliance with the USACE policy.

Provide survey, design engineering, construction engineering and general consultant services for noted deficiencies identified in the annual inspection reports. Provide long term planning of CIP projects and updates to staff in accordance with the City of Minot SWIF plan.

Provide preliminary engineering, design and construction engineering services for corrections to storm sewer line that penetrate the existing flood works as well as prepare plans and specifications to address deficiancies identified in the City SWIF plan. Prepare funding requests to State Water Commission for funding assistance and/or any other entities identified for funding assistance.

SCOPE OF SERVICES

This Request for Qualifications (RFQ) is for analysis, design, right of way research, construction engineering, yearly Emergency Action Plan updates, SWIF plan updates, participating in yearly inspection of the existing Minot levee inspections performed by the City of Minot and USACE which determines deficiencies in the existing flood protection works and any and all items identified that the city needs assistance in to maintain and address deficiencies in the existing flood works program.

The Consultant will be responsible for actively managing the project and for the performance of all preliminary engineering, environmental analysis and documentation, permitting activity, right-of-way documents, final design engineering, The Consultant will also be responsible for providing construction engineering and management services.

Project Contact

If you have a question or suspect an error, you must immediately notify the Project Contact identified in this section. Do not discuss the solicitation or your proposal, directly or indirectly, with any City officer or employee other than the City Project Contact. Only written answers to questions either by email or written correspondence shall be allowed and be binding on the City. Any and all questions submitted in writing will be answered regarding the project and will be posted on the City of Minot website. www.minotnd.org.

Dan Jonasson
Minot Director of Public Works
1025 31st Street SE
Minot, ND 58701
Phone: 701 857-4140
Fax: 701 857-4130
email: dan.jonasson@minotnd.org

Deliver Proposals to:

Dan Jonasson
Minot Director of Public Works
1025 31st Street SE
Minot, ND 58701

The City of Minot will open Proposals at the due date, time and delivery location. Prior to the due date, you may mail or hand-deliver proposals, modifications, or withdrawals. We do not allow email, fax, or other electronic submissions. We must physically receive submissions as specified; it is not sufficient to show you mailed or commenced delivery before the due date and time. We will not consider proposals, modifications, or withdrawals submitted after the due date and time. All times are City of Minot local times.

Proposal Page Limit

The proposal shall be limited to 40 pages. Resumes and references can be included in an appendix and will not count against the page limit.

Number of Copies

You must submit **1** signed original and **5** copies of the Proposal in a sealed envelope. In addition, you must submit [1] copy on CD in the following format: MS WORD 2003 or in an Adobe PDF file.

Offer Firm Time

Your Proposal must remain firm for 120 days from opening.

Proposals become the property of the City of Minot and these and late submissions will not be returned. Your proposal will be subject to disclosure or examination by the public under North Dakota Century Code Chapter 44-04-17.1 through 44-04-31 (open records law).

Public Records and Requests for Confidential Treatment

Proposals become the property of the City of Minot and these and late submissions will not be returned. Your RFQ/Proposal will be open to the public under North Dakota Century Code Chapter 44-04-17.1 through 44-04-31. We will disclose the successful Vendor's name and the substance of the proposal.

Reservations

You must read and understand the solicitation and tailor your Proposal and activities to ensure compliance. We reserve the right to amend the solicitation, reject any and all Proposals; to award by item, group of items, or grand total; and to waive minor defects. We may request a clarification; inspect your premises; interview staff; request a presentation; or otherwise verify the contents of

the Proposal, including information about subcontractors and suppliers. We may request Best and Final Proposals when appropriate. We will make all decisions on compliance, evaluation, terms, and conditions, and shall make decisions solely in the best interests of the City. This competitive process requires that you provide additional information and otherwise cooperate with us. If you do not comply with requests for information and cooperate, we may reject your proposal. You have no right to an award by submitting a Proposal. We are not responsible for and will not pay any costs associated with the preparation and submission of your Proposal. If you are the awardee, you shall not commence, and will not be paid for any billable work prior to the date all parties execute the contract, unless approved in writing in advance by the City Director of Public Works.

Governing Law and Forum

North Dakota law and rule govern this solicitation and any resulting contract. You must bring any action relating to this solicitation or any resulting contract in the appropriate court in North Dakota. We do not allow binding arbitration.

SUBMISSION REQUIREMENTS

Format of Proposed Statement

In order to conduct a reasonable and efficient evaluation of prospective engineering firms, the City requires that firms prepare proposals that are clear and concise, and which follow the format outlined below. Proposals shall be bound and submitted on typewritten, one-sided, 8-½" x 11" paper. Margins shall be no less than 1" around the perimeter of each page. Font size shall be no less than 11-point type. The proposal shall contain a Table of Contents that cross-references each requirement with specific page in the proposal.

Submittal Requirements

In addition to the Submittal Form included in this Request for Qualifications (RFQ), all companies shall submit one (1) original and five (5) copies of their proposals to demonstrate the extent to which the company and/or team meets the requirements of this RFQ. Submissions shall follow the outline below and include, at a minimum: company profile, project understanding and approach, staff experience, including resumes of each associate or individual working under the terms of the contract, a list of any sub-consultants that the company proposes to use including resumes of key personnel, and examples of recent work similar in nature to the work described under this RFQ.

Qualification Statements

All qualification statements shall be organized in the following manner:

Company Profile: Provide a general description of the company, a brief history of the firm, with particular regard to the number of years in business and the number of years of specific relevant experience. Identify office locations, number, and type of personnel available to serve the City. Provide the name of the principal contact person at the company to whom all questions should be addressed.

Key Personnel: Each prospective firm must submit a list of key personnel, their areas of expertise, licenses and certifications, and a description of the manner in which the engineering tasks will be organized within the firm. The lead engineer must be a North Dakota licensed professional engineer, specializing in one or more of the required disciplines. All support personnel must be identified with their respective roles enumerated. Provide complete resumes for all key personnel along with an organizational chart.

Project Understanding and Approach

The proposal must demonstrate that the proposer understands the scope of the overall project. The proposer should also develop an approach to implementing the project, to demonstrate that the project can be successfully completed while simultaneously addressing the resolution of critical issues identified in levee inspection reports and documents.

Engineering and Project Experience

The proposal must include examples of work for a minimum of five (5) clients which demonstrate experience with flood protection, levee, levee inspection, SWIF preparation, floodwall projects, procedures, ordinances, related rules and regulations, and federal and state program requirements. This list should be in table format including project name, project description, client name, references, and year completed.

Specific references, including client name, project description, and staff member in charge, must be included with this information and the projects must demonstrate experience in the following areas:

The firm and/or team must have at least five (5) years experience in flood protection and levee engineering. Experience in value engineering, SWIF plan preparation, Emergency Action plan preparation and designing utility and drainage systems, storm-water preparation of construction bidding documents, permitting, and construction administration services is mandatory. Familiarity and experience with FEMA, USACE, and North Dakota State Water Commission Program funding rules and regulations is highly desired, as well.

References

A minimum of five (5) references of similar type project for related engineering services work shall be provided with recently verified phone numbers and addresses.

Supplemental Information

Respondents are encouraged to submit any other information which they deem useful in presenting their related abilities and qualifications.

Format of submittal

The committee will base its evaluations on nine (9) criteria listed below. The submittal will be divided into nine (9) tabbed sections labeled A through I. For each criterion the committee

members will use only the information included in the respective tabbed section. Failure to follow this format may result in rejection of the submittal.

SELECTION CRITERIA

The proposals will be examined and evaluated based on the factors presented below. It is the responsibility of the engineer/consultant to provide information, evidence, or exhibits which clearly demonstrate the ability to satisfactorily respond to project requirements and the factors listed below.

A. PAST PERFORMANCE

Performance on previous work performed for the City of Minot.

B. ABILITY OF PROFESSIONAL PERSONNEL

Specialized experience is required of the project personnel proposed to undertake the work assignments. Proposal must clearly demonstrate the capability, academic back-ground, training, certifications, and experience of the proposed personnel. The availability of the proposed staff is also of critical importance and must be demonstrated by showing each persons availability and workload. Specific project experience relevant to this Scope of Services must be demonstrated and project experience identified to specific company experience identified above or other projects, including specific project responsibilities, must be included.

C. WILLINGNESS TO MEET TIME AND BUDGET REQUIREMENTS

Provide schedule of firms availability to complete the project.

D. LOCATION - WITH HIGHER PRIORITY GIVEN TO FIRMS HEADQUARTERED IN NORTH DAKOTA

Provide location from which milkeage and expenses will be charged from.

E. RECENT, CURRENT, AND PROJECTED WORKLOADS OF THE PERSONS OR FIRMS

Provide schedule of each person assigned to the project and availability toward this project and work load for those persons.

F. RELATED EXPERIENCE ON SIMILAR PROJECTS

1. Specialized experience is required in a series of work areas. Proposals must clearly demonstrate full knowledge, understanding, and experience in the methods, techniques, and guidelines required for the performance of the required work. All elements within this factor are of equal importance. The engineer/consultant must indicate specific experience

in the required areas. The Consultant will submit a monthly progress report with their monthly progress payment requests that includes a description of current key activities.

G. RECENT AND CURRENT WORK FOR PROJECTS OF THIS TYPE.

A list of references of at least five (5) recent contracting offices on projects of similar type, magnitude and complexity is required. References must include current telephone numbers and affiliation.

H. PROJECT UNDERSTANDING

The engineer/consultant must demonstrate an understanding of the flood protection measures, river system, and alternatives and issues identified as deffient in the Minot Levee work plan.

In addition to the understanding of the Scope and approach, the engineer/consultant must demonstrate the following which will be considered in the selection:

1. Knowledge of current issues and state-of-the-art practices and procedures in the relevant technical areas previously discussed.

2. Experience demonstrated on similar projects and in the preparation of a 5 year CIP to prioritize projects in accordance with the City SWIF plan..

3. Working knowledge of the geographic area as evidenced by prior work experience in the City and the existing flood protection features.

4. An ability to coordinate with USACE personnel for the implementation of improvements and updates to the City SWIF, EAP and deficiencies identified in yearly reports.

5. The ability to provide the necessary skills and expertise from in-house resources and/or sub-consultants.

6. Methods for assuring product quality, cost control, delivery schedule, and project oversight. A narrative description of the engineer/consultant's quality control plan must be included.

I. FEMA/USACE Permitting/Funding Experience

The project funding for the construction is uncertain at this time, however sales tax funding is available and it is anticipated that the Consultant will be required to assist in preparation of applications for funding to various agencies. The engineer/consultant must demonstrate an understanding of the rules, regulations and requirements associated with FEMA/USACE or State Water Commission funded projects and any prior experience with funding from these agencies.

EVALUATION PROCEDURE

1. All proposals will be reviewed and rated based upon the combination of factors regarding the proposal submitted and the evaluation criteria set forth in the proposal.

2. The City also reserves the right to pick multiple firms for the projects if it is determined that one firm has stronger strengths in a specific discipline of projects design and construction abilities.

3. Preference will be given to firms with North Dakota experience and prior knowledge and work experience with the City of Minot.

   Based upon the results of this review process, a contract may be developed with the highest-rated engineer/consultant. If the City and the selected firm are unable to reach a mutually negotiated agreement, the City shall terminate negotiations with the selected firm and begin negotiations with the second ranked firm.

ADDITIONAL REQUIREMENTS

Rejection of Proposals

Proposals that do not conform to the requirements set forth in this RFQ may be rejected by the City. Proposals may be rejected for reasons that include, but are not limited to, the following:

- The Proposal contains unauthorized amendments to the requirements of the RFQ
- The Proposal is conditional
- The Proposal is incomplete or contains irregularities which make the proposal indefinite or ambiguous
- The Proposal is not received by the deadline
- The Proposal is not signed by an authorized representative of the party
- The Proposal contains false or misleading statements or references
- The Proposal does not follow the indicated format

Acceptance of Proposals

The City reserves the right, in its sole discretion, to waive minor irregularities in Proposals. A minor irregularity is a variation of the RFQ, which does not give one party an advantage or benefit not enjoyed by the other parties, or adversely impacts the interest of the City. Waivers, when granted, shall in no way modify the RFQ requirements or excuse the party from full compliance with the RFQ specifications and other contract requirements, if the party is awarded the contract.

Exceptions and Deviations

Proposers taking exception to any part of section of the solicitation shall indicate such exceptions on the Proposal and shall be fully described. Failure to indicate any exception will be interpreted as the Proposer's intent to comply fully with the requirements as written. Conditional or qualified Proposers, unless specifically allowed, shall be subject to rejection in whole or in part.

Nonconforming Terms and Conditions

A Proposal that includes terms and conditions that do not conform with the terms and conditions in the RFQ is subject to rejection as non-responsive. The City reserves the right to permit the Proposer to withdraw nonconforming terms and conditions from its Proposal prior to a determination by the City of non-responsiveness based on the submission of nonconforming terms and conditions.

Expenses Incurred in Preparing Offers

The City accepts no responsibility for any expense incurred by the Proposer in the preparation and presentation of an offer. Such expenses shall be borne exclusively by the Proposer.

Proprietary Information

All submittals become public information. The Submitter should not include any information considered proprietary or confidential.

Additional Information

Questions concerning the RFQ document must be submitted in writing to the City of Minot, Attn: Dan Jonasson, PO Box 5006 - 1025 31st Street SE, Minot, North Dakota 58701, via email at dan.jonasson@minotnd.org or by facsimile to (701) 857-4130. Questions will be received through March 23, 2018 at 4:00 p.m. Responses to all questions will be distributed in writing via email or fax to all known Proposers and will be posted to the City of Minot's website (www.minotnd.org). Proposers are cautioned that any statements made by the contact person that materially change any portion of the RFQ shall not be relied upon unless subsequently ratified by a formal written amendment to this RFQ.

Debarment

By submitting a Proposal, the Proposer certifies that it is not currently debarred from submitting Proposals for contracts issued by any political subdivision or agency of the State of North Dakota or the Federal government and that it is not a person or entity that is currently debarred from submitting Proposals for contracts issued by any political subdivision or agency of the State of North Dakota or the Federal government.

THE CITY OF MINOT
REQUEST FOR PROPOSAL
SUBMISSION FORM

Company _____

Address _____

Contact Person _____

Telephone Number _____

Email Address _____

NOTE: It is the Proposer's responsibility to provide adequate information in their Proposal package to enable the City to ensure that the Proposal meets the required criteria. Items listed in the package shall be in the same order as listed in the specifications. Failure to do so could result in the rejection of the Proposal.

EMPLOYEES NOT TO BENEFIT

I (we) hereby certify that if the contract is awarded to our firm, partnership, or corporation, that no employee of the City, or members of his/her family, including spouse, parents, or children has received or been promised, directly or indirectly, any financial benefit, by way of fee, commission, finder's fee, political contribution, or any similar form of remuneration on account of the act of awarding and/or executing this contract.

CONFLICTS OF INTEREST

The Proposer [ ] is [ ] is not aware (mark one box) of any information bearing on the existence of any potential organizational conflict of interest.

COLLUSION

I certify that this offer is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting an offer for the same services, materials, supplies, or equipment and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of State and Federal laws and can result in fines, prison sentences, and civil damage awards. I hereby certify that the responses to the above representations, certifications, and other statements are accurate and complete. I agree to abide by all conditions of the proposal and certify that I am authorized to sign for my company.

Signature Date _____

Name (Printed) _____

Title _____

Signature _____

Houston Engineering, Inc.

March 26, 2018

CITY OF MINOT

Qualifications for

MINOT SWIF PLAN IMPROVEMENTS

Project 3135.2E Request for Qualifications, Minot SWIF Improvements









HoustonEngineering Inc.

Minot Office | P 701.852.7931 | F 701.858.5655

18 3rd Street SE, Suite 100 | Minot, ND 58701

March 26, 2018

Dan Jonasson
Director of Public Works
1025 31st Street Southeast
Minot, ND 58701

Subject: Bringing Continuity to Ensure a Reliable SWIF Plan Improvements Program
Project 3135.2E Request for Qualifications, Minot SWIF Improvements

Dear Dan and Other Selection Committee Members:

For the past three years, Houston Engineering, Inc. (HEI) has been the City's go-to resource for all its System-Wide Improvement Framework (SWIF) needs. From SWIF creation, through Emergency Action Plan development, and into SWIF implementation, HEI has been by the City's side.

The same key staff who have successfully implemented the Minot SWIF improvements to date will continue to serve as the project team (showcased and included within this submittal). The history of these experts will allow them to carry forward existing knowledge and understanding of the SWIF process along with a deep understanding of where the efforts need to go next. This team will not have to spend any time catching up with the current state of your projects, meaning your needed Capital Improvement Projects won't take a break but will instead keep moving ahead.

In addition, failure to plan wisely will result in the City spending excessive funds with little return. We know that the SWIF must account for the Mouse River Enhanced Flood Protection Project (MREFPP). Because a separate team at HEI is helping lead the MREFPP effort, we can integrate our institutional knowledge of the MREFPP into SWIF projects while still allowing each team to focus their efforts wholly on separate tasks. This will help ensure your SWIF funds are not spent on infrastructure that will conflict with or be replaced by future MREFPP efforts in the near-term.

Many of our staff experienced the 2011 Mouse River flood firsthand, and the others have lived through the floods along the Red and Missouri rivers. As a result, we are eager to continue our work with the City on the SWIF and to bring further flood protection improvements to the area. If you have any questions, please do not hesitate to contact Mike Love at 701.499.2062 or mlove@houstoneng.com.

Sincerely,

HOUSTON ENGINEERING, INC.

Michael P. Love, PE
Project Manager
Direct: 701.499.2062
mlove@houstoneng.com

Jerry Bents, PE, Vice President
Principal-in-Charge, QC/QA
Direct: 701.499.2045
jbents@houstoneng.com

THE CITY OF MINOT
REQUEST FOR PROPOSAL
SUBMISSION FORM

Company	Houston Engineering, Inc.
Address	1401 21st Avenue North, Fargo, ND 58102
Contact Person	Jerry Bents, PE
Telephone Number	701.499.2045
Email Address	jbents@houstoneng.com

NOTE: It is the Proposer's responsibility to provide adequate information in their Proposal package to enable the City to ensure that the Proposal meets the required criteria. Items listed in the package shall be in the same order as listed in the specifications. Failure to do so could result in the rejection of the Proposal.

EMPLOYEES NOT TO BENEFIT

I (we) hereby certify that if the contract is awarded to our firm, partnership, or corporation, that no employee of the City, or members of his/her family, including spouse, parents, or children has received or been promised, directly or indirectly, any financial benefit, by way of fee, commission, finder's fee, political contribution, or any similar form of remuneration on account of the act of awarding and/or executing this contract.

CONFLICTS OF INTEREST

The Proposer [ ] is [X] is not aware (mark one box) of any information bearing on the existence of any potential organizational conflict of interest.

COLLUSION

I certify that this offer is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting an offer for the same services, materials, supplies, or equipment and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of State and Federal laws and can result in fines, prison sentences, and civil damage awards. I hereby certify that the responses to the above representations, certifications, and other statements are accurate and complete. I agree to abide by all conditions of the proposal and certify that I am authorized to sign for my company.

Signature Date	3/22/18
Name (Printed)	Jerry Bents
Title	Vice President
Signature	

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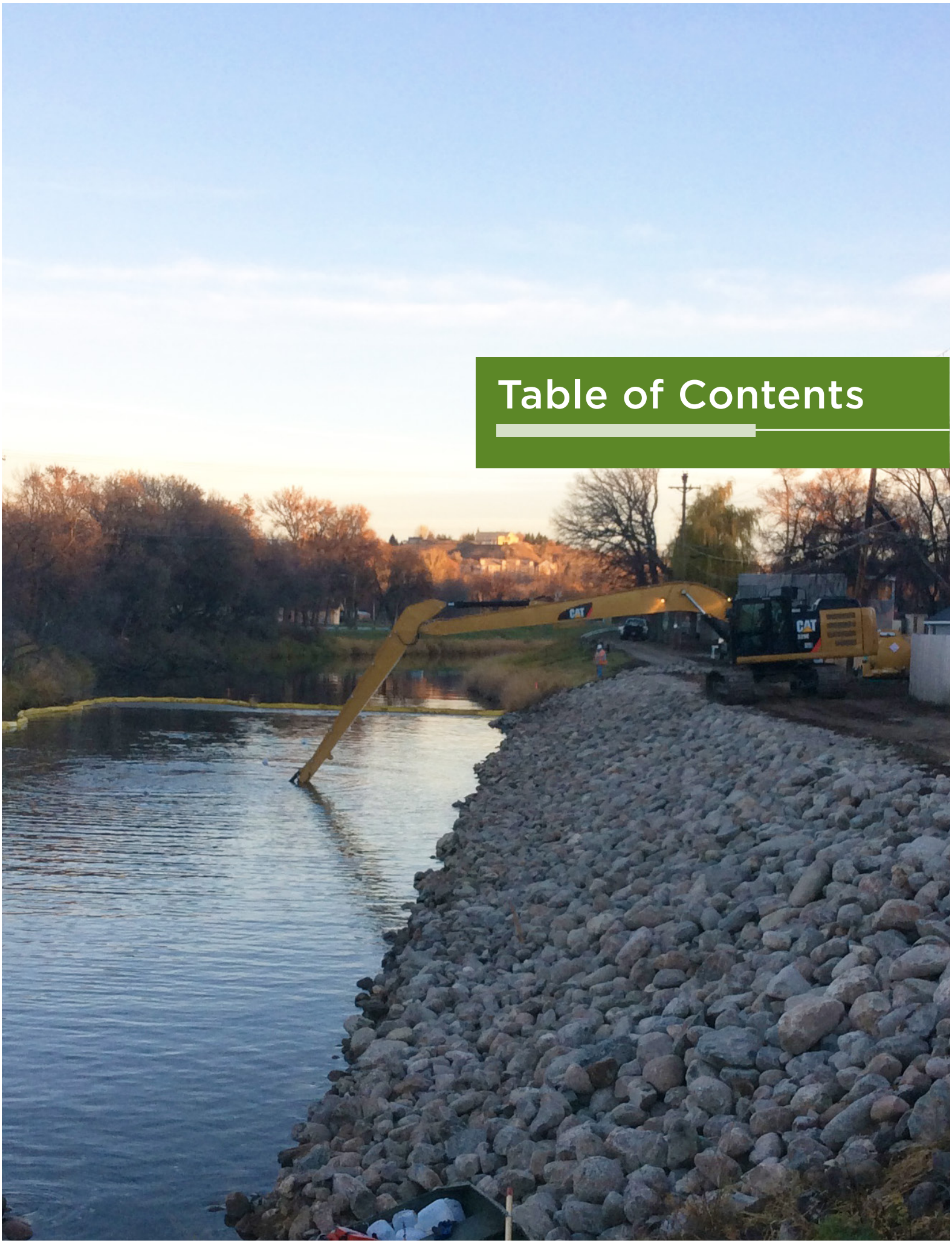



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City Project No. 3135.2E

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APPENDIX
A. Resumes* A-1

*Identifies items from submission requirements on pages 4-5 of the RFQ



A. Past Performance

A. PAST PERFORMANCE

The ambitious projects that the City of Minot and Houston Engineering, Inc. (HEI) have undertaken together since 2004 have stood clearly in the public's view and have been vital to the City's long-term well-being. The timeline of these projects is shown in the figure on page 3.

Sections F through I will thoroughly explain the extensive experience we have on related flood control projects both within Minot and the surrounding region. **As a result, we wanted this section to focus on explaining our unmatched performance on previous work directly related to this RFQ for Minot SWIF Plan Improvements.**

Although HEI provides a wide range of engineering services, we would be the first to admit that we are not the best firm to meet the City's needs in every sector of civil engineering. However, when it comes to this RFQ, we truly and firmly believe that HEI is the right team to provide efficient, consistent, and effective services in the completion of the Minot SWIF Plan Improvements on behalf of the City of Minot.

We hold this strong belief for the following 6 simple reasons:

1. **We developed the current Minot SWIF Plan** for the City based on extensive review of the current levee systems and coordination with city staff.
2. **We are currently completing the non-structural investigations** required as part of the SWIF (right-of-way and culvert investigations).
3. **We have developed plans for the first two Capital Improve Projects (CIP)** under the SWIF, through which we have developed the necessary lines of communication with state and federal funding and regulatory personnel to be efficient and effective.
4. **We wrote the current Emergency Action Plan (EAP)** that will require updating to account for implementation of additional flood control measures.
5. **We designed the first permanent flood mitigation project** completed within the city of Minot at the Water Treatment Plant. This project set the stage and has been a model for the design and implementation methods that will be used for all future flood protection design within the city of Minot.
6. **We are actively involved in the continued design and development of projects related to the Mouse River Enhanced Flood Protection Project (MREFPP) within the City of Minot.** Although the MREFPP is basin-wide, we are focusing our involvement on those portions directly within Minot, where we believe our vast knowledge of the City's levee and utility systems can provide you with the greatest value.



HEI HELPED DEVELOP AND IS HELPING IMPLEMENT THE CURRENT MINOT SWIF PLAN

In Section F (page 14), we have included in-depth write-ups for the following directly related work history to further explain our related experience:

1. Minot SWIF Development
2. Minot SWIF Implementation
    a. SWIF – Right-of-Way Investigations
    b. SWIF – Investigation and Analysis of Stormwater Outfalls
    c. SWIF CIP 1 – Bank Failure Rehabilitation
    d. SWIF CIP 2 – Pipe Rehabilitation
3. City of Minot EAP
4. Minot Water Treatment Plant (WTP) Hazard Mitigation Grant Program (HMGP)

With our past and current work efforts so closely tied to the Minot SWIF and its implementation, we feel confident we can provide the best efficiency, quality, and consistency going forward out of any firm.



Souris Valley and City of Minot Project Highlights





B. Ability of Professional Personnel

B. ABILITY OF PROFESSIONAL PERSONNEL

1. Project Team

At HEI, we consider ourselves matchmakers. We seek to match projects with staff who are uniquely qualified to deliver exceptional services and prioritize the needs of each client.



Mike Love and each member of the team outlined in our qualifications bring a blend of background knowledge, specialized expertise, and availability that is unique to this team. Mike served as Project Manager for the Minot SWIF development as well as for the SWIF implementation actions completed to date. Mike and his team through these efforts have developed a working relationship with City staff as well as USACE planning and regulatory staff to continue effective implementation. They are working with the SWIF data on a daily basis and will not miss a beat in continued implementation.

By allowing these staff to continue serving in the same (or similar) roles going forward, the City can ensure that you have a team that understands how the past connects to the future of your flood protection efforts.



Jerry Bents will provide senior guidance to this team as Principal-in-Charge as well as lead QC/QA efforts. Jerry is integrally involved in the MREFPP in the role of Project Manager, which will greatly benefit the SWIF team. The plans and designs that come out of the SWIF must account for future aspects of the MREFPP.

Jerry is in constant communication with the overall MREFPP team—both those at HEI and those elsewhere—giving him a real-time perspective of the project that he can bring to his Principal-in-Charge and QC/QA roles. By bringing this foresight to the table, we can help the City make informed decisions, ensuring your funds are spent effectively.

This group will be supported by a full team of technical support staff who can be called on at any time to provide the services necessary to ensure a successful project.

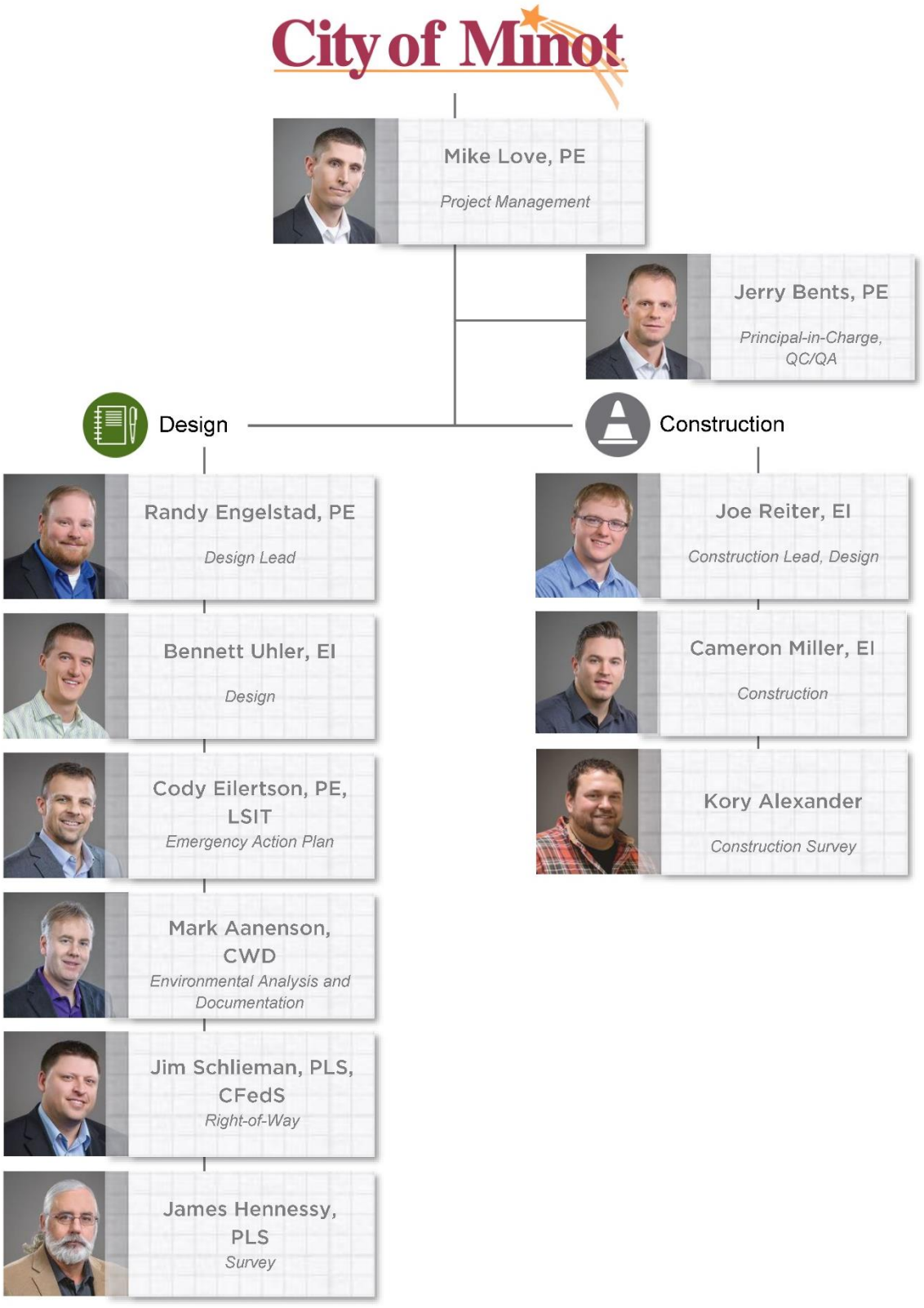
Our full team is introduced beginning on the following page. For full resumes on the members of our project team—including their areas of expertise, academic background, training, certifications, and experience—please see **Appendix A – Resumes**.

2. Project Team Availability and Workload

The project team members outlined in this proposal are largely independent of the ongoing projects in Minot and have the availability to prioritize the goals of the SWIF plan improvements. Please refer to our Project Team Availability and Workload Table on page 13 for additional details on the team's availability and how we are able to add capacity while retaining resources on existing ongoing projects.

The history that Mike and Jerry have with the Minot SWIF gives them the ability to keep your projects moving ahead, avoiding costly speed bumps and resulting in the most efficiently produced delivery.

3. Organizational Chart



4. Key Personnel

The capability, academic background, training, certifications, and experience of each project discipline leader is listed below. More details can be found in **Appendix A – Resumes.**



Education
BS in Civil Engineering, NDSU

Licensure/Training
Professional Engineer–
ND, MN

Experience
16 Years

MIKE LOVE, PE—Project Management

Mike will use his experience leading the development of the Minot SWIF to effectively serve as Project Manager for the Minot SWIF Plan Improvements.

Mike brings with a wealth of flood mitigation experience as a project manager, design engineer, hydrologic and hydraulic modeler, and construction administrator. His projects have included the design and construction of levees, lift stations, flood closure structures, drainage systems, gatewells, and inlets as well as grade raises and property demolition. Mike also assisted with bid support and land acquisitions, which will be an integral component of the SWIF project.

Mike was Project Manager for the Minot SWIF development and SWIF implementation to date and will carry that knowledge into future projects.



Education
BS in Civil Engineering, NDSU

Licensure/Training
Professional Engineer–
ND, MN

Experience
21 Years

JERRY BENTS, PE—Principal-in-Charge, QC/QA

Jerry Bents will serve as Principal-in-Charge and oversee QC/QA efforts for the Minot SWIF Plan Improvements.

Jerry has long played a key role in the MREFPP, and he understands how the SWIF and MREFPP must work collaboratively. Jerry will provide insight for plans and designs that come through the SWIF in his dual roles, ensuring that the City does not invest significant funds into projects that will result in minimal or short-lived benefits. Additionally, Jerry will serve as a second point-of-contact for the City and provide overall senior guidance to the project team.

Jerry helps lead the MREFPP, and his insight will save the City time and money by ensuring your funds are invested in reliable flood control that is compatible with the MREFPP.



Education
BS in Civil Engineering, NDSU
Licensure/Training
Professional Engineer– ND, MN
Experience
14 Years

RANDY ENGELSTAD, PE—Design Lead

Randy has taken on floods in many forms, fighting back with floodwalls, levees, and more. He recently led the $50-million 2nd Street/Downtown Reconstruction and Flood Management Project in Fargo. This included flood protection efforts and thousands of feet of utility relocation as well as the reconstruction and realignment of 2nd Street. **Randy has also been a lead design manager on the phases of Minot SWIF implementation completed to date.** Randy will use his experience to lead design efforts for the City to protect Minot with long-lasting flood control solutions.



Education
BS in Civil Engineering, NDSU
Experience
4 Years

BENNETT UHLER, EI—Design

Bennett primarily provides stormwater and flood control designs in his day-to-day work, and he will provide those same services to the City of Minot. Bennett's background includes stormwater master planning, underground utility design, levee design, and more. Bennet has also been a project designer on the phases of the Minot SWIF implementation completed to date. Bennett recently served as Design Engineer and Site Observer for the Woodlawn Park Flood Mitigation project and Areas D and E Flood Mitigation project in Moorhead.



Education
BS in Construction Engineering, NDSU
Licensure/Training
Professional Engineer– ND, MN, SD
Experience
19 Years

CODY EILERTSON, PE, LSIT—Emergency Action Plan

Before joining HEI, Cody served as the City of Fargo's Division Engineer for Design and Construction, where his efforts included planning and overseeing emergency flood protection measures for the floods of 2009, 2010, and 2011. Cody was also the Project Manager and Lead Author on the current City of Minot EAP.

Cody will lead annual efforts to update and revise the City of Minot's Emergency Action Plan.



Education
BS in Life Sciences/ Biology, MSUM
Licensure/Training
Certified Wetland Delineator— MN
Experience
27 Years

MARK AANENSON, CWD—Environmental Analysis and Documentation

Mark has led environmental analysis and documentation efforts for numerous flood control projects, including the MREFPP, Minot WTP HMGP, and SWIF Implementation phases completed to date. Mark will use his 27 years of experience to help the City navigate the requirements set forth by USACE, FEMA, the North Dakota State Water Commission (NDSWC), and other regulatory organizations to ensure your timelines are not jeopardized by delayed permits.



Education
BS in Land Surveying/ Mapping Science, St. Cloud State University
AAS in Civil Engineering and Survey Technology, St. Cloud Technical College
Licensure/Training
Professional Land Surveyor— ND, MN, SD
Certified Federal Surveyor
Experience
16 Years

JIM SCHLIEMAN, PLS, CFEDS—Right-of-Way

Jim Schlieman is already providing extensive right-of-way services to the City of Minot through the Minot SWIF, and he will continue to provide those same services as part of this team. By remaining in his current role, Jim will use his background and in-depth research on right-of-way issues that may challenge your project timelines, working to find solutions to sidestep any complications.

Jim serves as the Corporate Survey Manager for HEI, overseeing surveying efforts and managing survey projects across the region. This will allow him to commit resources as necessary to assist in meeting your needs.



Education
AAS in Cartographic Drafting, Denver Technical College
Licensure/Training
Professional Land Surveyor— ND, CO, UT
Experience
38 Years

JAMES HENNESSY, PLS—Survey

James is an accomplished surveyor with 38 years of professional experience. His previous work in the region includes services for the Minot SWIF, the MREFPP, the Minot WTP HMPG, and the Downtown Infrastructure Improvements project.

Based in Minot, Jim brings local insights to his work. He will continue to provide detailed and construction survey services to the City necessary to implement the SWIF.



Education
BS in Civil Engineering, NDSU
Licensure/Training
ACI Concrete Field Testing Technician
Experience
5 Years

JOE REITER, EI—Construction Lead, Design

Joe has served the City of Minot and other clients in the region numerous times in both construction and design. For the original Minot SWIF Capital Improvement Project, Joe provided construction management services. Joe has served as Lead Designer Engineer on multiple City of Minot projects as well as performed construction observation for various other high-profile City projects.

Based in Minot, Joe will bring his previous experience with the Minot SWIF to this project to help ensure the City of Minot has reliable permanent flood protection into the future. Joe will lead construction oversight as future phases of the SWIF are implemented.



Education
BS in Civil Engineering, NDSU
Licensure/Training
ATSSA Traffic Control Technician
OSHA 30-Hour Training
Experience
5 Years

CAMERON MILLER, EI—Construction

Cameron has focused many of his efforts in recent years on construction inspection and observation efforts for a wide variety of projects throughout Minot. He provided construction inspection services for the Minot SWIF as well as performed an investigation and analysis of outfall pipes and data collection.

Based in Minot, Cameron will again serve the City by providing the construction inspection and observation services necessary to successfully implement the SWIF.

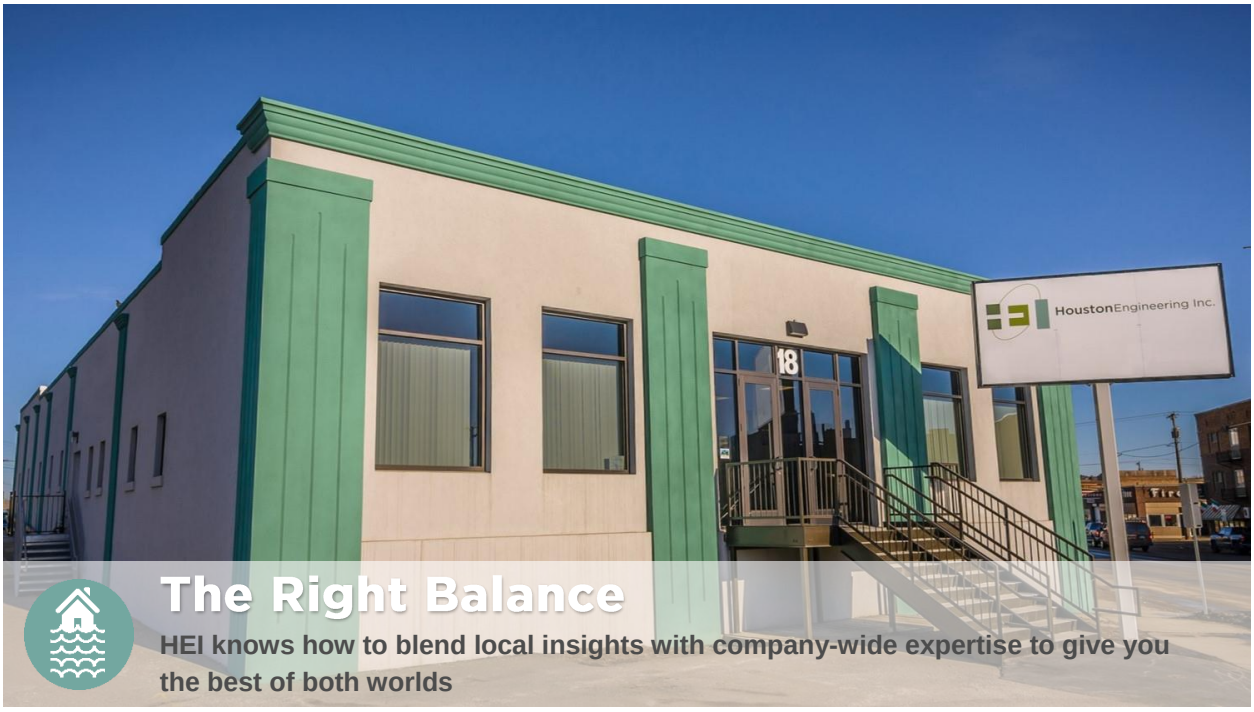


Education
AOS in Architectural Drafting and Construction Estimating, North Dakota State College of Science
Licensure/Training
OSHA 30-Hour Training
Experience
9 Years

KORY ALEXANDER—Construction Survey

Kory serves as a Survey Crew Chief out of HEI's Minot office. He served in that role for both the Minot SWIF and the MREFPP 4th Avenue Northeast Levee Extension.

Based in Minot, Kory will again serve the City as a Survey Crew Chief, providing construction surveying and staking needed for implementation of the SWIF.



The Right Balance

HEI knows how to blend local insights with company-wide expertise to give you the best of both worlds


C. Willingness to Meet
Time and Budget Requirements

C. WILLINGNESS TO MEET TIME AND BUDGET REQUIREMENTS

1. On Time

HEI is committed to completing your projects on time and within budget—if we can't deliver, we don't pursue the work.

The City of Minot and your flood protection efforts are one of the most important priorities at HEI. We have undertaken numerous flood protection projects in Minot, including the Minot SWIF, the Minot WTP HMGP, and various MREFPP phases. We want to continue to be your go-to partner for technical expertise, local knowledge, and caring responses.

Workload scheduling and management has been a consistent theme for HEI throughout our many projects in Minot. Despite leading numerous high-profile and complex projects simultaneously, our processes have allowed us to provide quality services again and again.

Part of this process is matching the right staff with the job. The project team identified in these qualifications are largely independent of other major projects ongoing in Minot, allowing them to prioritize the goals of the SWIF Plan Improvements over the next several years. Despite introducing some new staff, we have maintained common links to make key connections and ensure knowledge transfer to future phases.

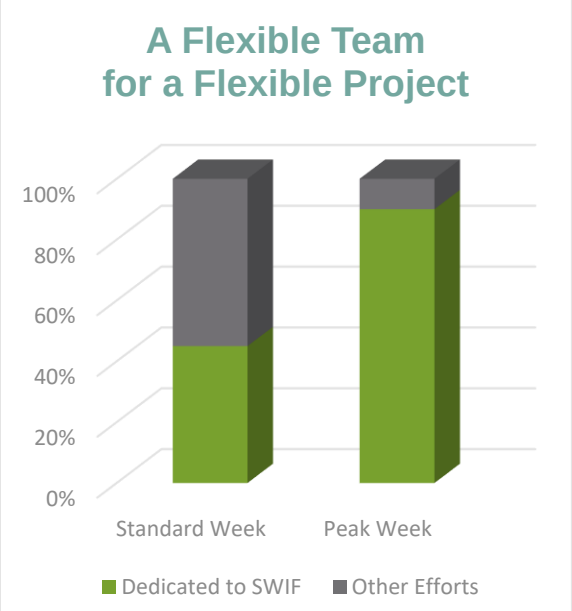
2. On Budget

Budgets are just as important as timelines. Our internal processes will not only keep our staff dedicated to your project and deliverables arriving on time, but they will also help maintain the project's budget.

External costs are also important. With that in mind, we have implemented a structured process for developing opinions of probable cost that are generated and updated throughout the design phase to better understand and monitor anticipated project costs.

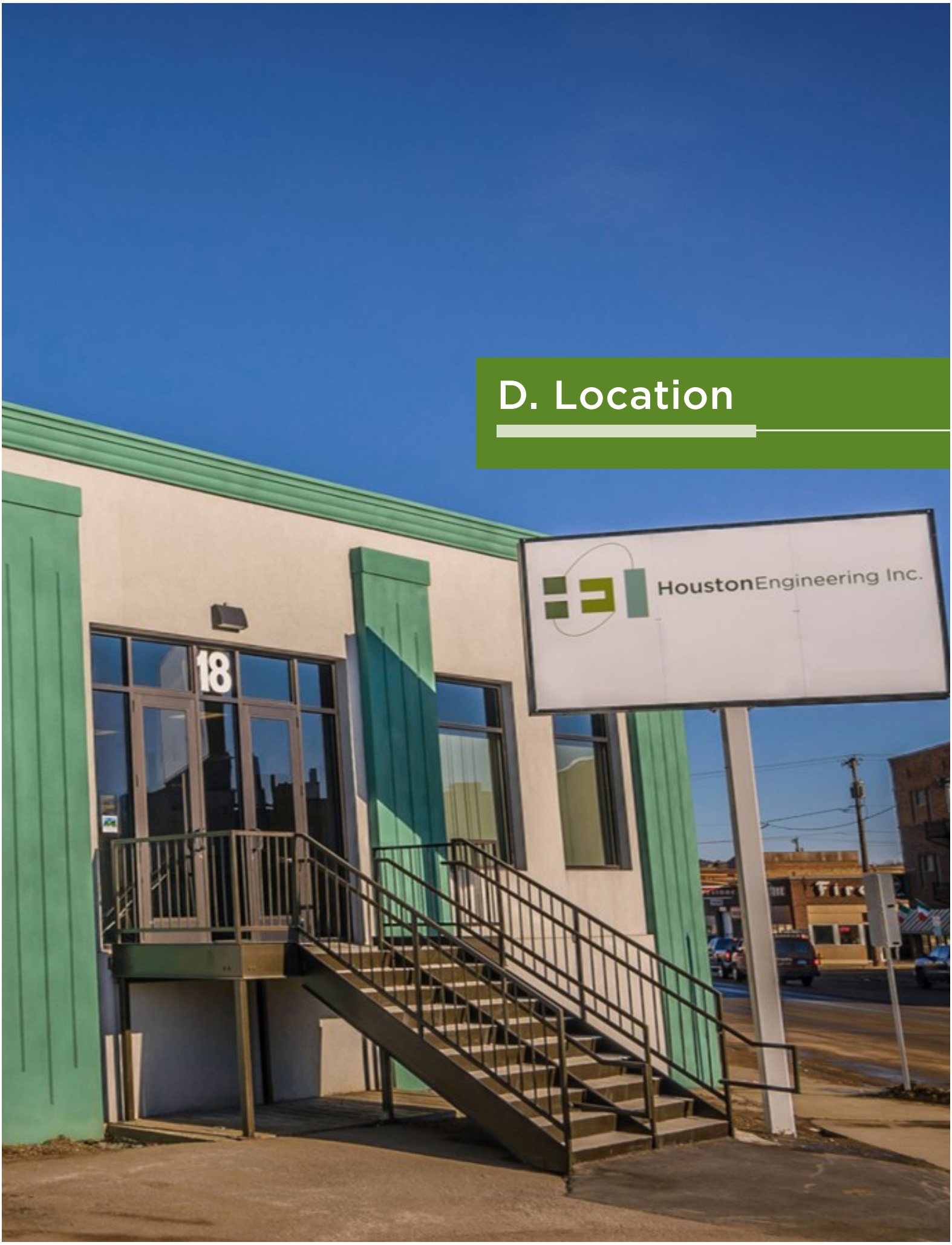
The team presented in this submittal has the availability to ramp up their efforts on the SWIF Plan Improvements project at any time. Our workloads can and will be adjusted during key times of the project to ensure that every one of your deadlines are met with quality deliverables.

Furthermore, Mike Love and Jerry Bents have a proven track record of making themselves available to the City of Minot, making regular trips to meet with City staff in person and connecting often over phone and through email when face-to-face meetings are not necessary. They are supported by local Minot staff who are available to the City and who have supported implementation of the Minot



OUR TEAM HAS THE FLEXILIBILITY TO ADAPT WITH THE SCHEDULE OF YOUR SWIF PROJECT, RAMPING UP DURING BUSIER TIMES (SUCH AS KEY CONSTRUCTION MILESTONES)

D. Location



D. LOCATION

1. Company Profile

Over the past 50 years, HEI has emerged as one of North Dakota's leaders in flood protection and water resource-related services. George Houston founded HEI in Fargo, ND, in 1968, and water resources served as one of the firm's cornerstones since the first days. HEI now offers services throughout North Dakota and the surrounding states, including civil engineering, surveying, environmental analysis and permitting assistance, planning, and more.

From the beginning, the company earned a strong reputation for its expertise in the areas of water resources management, municipal engineering, water supply, wastewater, transportation engineering, and surveying. We have emerged as the leader in the region, honing our skills on large-scale flood control projects. At the same time, we provide unmatched expertise in watershed and urban stormwater management; dam design, flood insurance studies; hydraulic, hydrodynamic, and hydrologic modeling; roadway and bridge design; site development; wetland delineation; environmental review and permitting; water supply and drought planning; wastewater treatment, and geographic information systems (GIS).

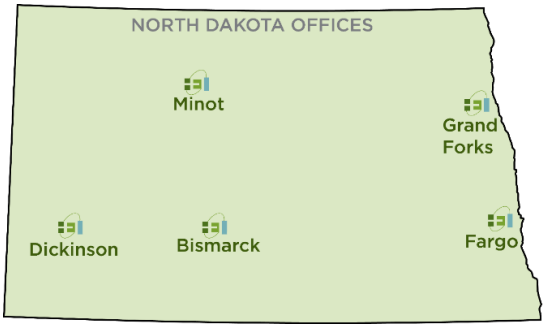
Our presence has been consistent to the Minot area with integral projects, such as the Minot SWIF Implementation, the MREFPP, the Minot WTP HMGP, and the Northwest Area Water Supply (NAWS) as well as municipal projects such as the Downtown Infrastructure Improvements project. HEI also provides experienced and familiar construction management and observation staff to the City.

With 50 years of experience, we have a proud North Dakota history and a bright future. We pride ourselves on adapting to an ever-changing industry and welcome the challenges that make every project unique. Our clients count on us to provide comprehensive, workable solutions that produce results now and continue to provide value well into the future.

2. Location from which Mileage and Expenses will be Charged

Tasks associated with the project will be assigned to the appropriate staff upon scope development concurrence with the City. Core staff committed to the Minot SWIF Plan Improvements project are located in Minot and Fargo. Mileage and expenses will be charged according to each staff member's location; however, travel from Fargo will only take place when necessary and often can be combined with travel needed for other projects. To further increase cost effectiveness, we have also structured our team to ensure that all survey and construction observation will be completed by staff out of our Minot office.

This process of efficiency has already proven successful because, upon review of the SWIF Implementation actions completed to date, the costs for mileage and expenses have been far less than 1% of our total fees.



3. HEI Locations

As HEI has grown from a single office in Fargo to numerous locations throughout North Dakota and the upper Midwest, we have always blended local insight with company-wide expertise. **We recognize both the importance of face-to-face meetings and the practicality of video conferencing, and we will continue to work to find the balance to collaborate with you.** The table below identifies HEI's office locations and the type of services offered from each. While the Minot and Fargo offices are expected to handle most—if not all—of the services required as part of this project, every one of our offices is at your disposal as needed.

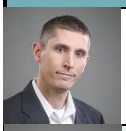
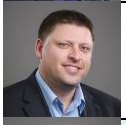
Office Locations	Personnel Available to Serve the City of Minot	
	Number	Type
Minot	11	Design/engineering, water resources and flood control design, transportation, municipal, waste management, client management, project management, construction management, surveying, planning
Bismarck	24	Design/engineering, water resources, environmental services, transportation, municipal, land and site development, water resources, client management, project management, hydrogeology, construction management, product development, surveying, GIS, CAD, planning
Fargo	93	Design/construction engineering, water resources and flood control design, environmental services, water supply, waste water, transportation, municipal, land and site development, client management, project management, hydrogeology, construction management, product development, surveying, GIS and web development, CAD
Dickinson	2	Design/construction engineering, water resources, construction management, and surveying
Grand Forks	2	Design/construction engineering, transportation, client management, project management, construction management
Maple Grove (MN)	46	Design/engineering, GIS/web application, water resources, water quality, environmental services, transportation, municipal, land and site development, waste management, client management, project management, construction management, survey
Thief River Falls (MN)	5	Design/engineering, transportation, municipal, land and site development, client management, project management, construction management, survey
Sioux Falls (SD)	1	Design/engineering, transportation, municipal, land and site development, client management, project management
West Des Moines (IA)	1	Client management, project management



E. Recent, Current, and Projected Workloads

E. RECENT, CURRENT, AND PROJECTED WORKLOADS

The table below illustrates the current availability of each team member for this project throughout the duration of the project. For full resumes for each team member, please refer to **Appendix A – Resumes**.

Name/Role	% Time Available
 **Mike Love, PE** Project Management	75%
 **Jerry Bents, PE** Principal-in-Charge, QC/QA	40%
 **Randy Engelstad, PE** Design Lead	80%
 **Bennett Uhler, EI** Design	80%
 **Cody Eilertson, PE, LSIT** Emergency Action Plan	30%
 **Mark Aanenson, CWD** Environmental Analysis and Documentation	60%
 **Jim Schlieman, PLS, CFedS** Right-of-Way	60%
 **James Hennessy, PLS** Survey	50%
 **Joe Reiter, EI** Construction Lead, Design	75%
 **Cameron Miller, EI** Construction	75%
 **Kory Alexander** Construction Survey	60%



F. Related Experience on Similar Projects

F. RELATED EXPERIENCE ON SIMILAR PROJECTS

Throughout North Dakota and Minnesota, HEI has become an industry leader in the design and implementation of flood control projects. Because we are so committed to protecting our communities from flooding, our designs have literally set the standards for flood control within the Souris, Missouri, and Red River basins. We are committed to careful analysis of both structural and non-structural flood protection measures to serve the single or multiple needs of our clients.

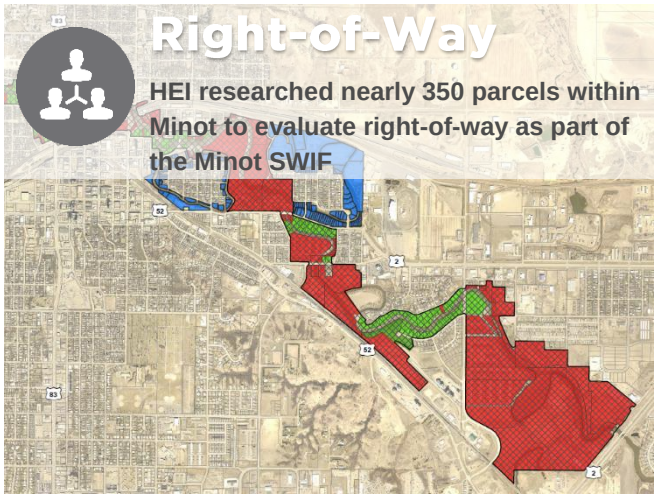
This team provides a broad understanding of the critical issues and management strategies related to flood risk, flood management, public acceptance, and environmental requirements. From just one team, the City will receive services for preliminary engineering, environmental analysis and documentation, permitting activity, right-of-way documentation, and final design engineering in addition to surveying and construction management and engineering.

The matrix on the following page highlights the wide array of our team's direct flood control experience on similar projects within the region. The factsheets that follow the matrix provide additional details on a few projects that are directly applicable to this effort.









1. Engineering and Project Experience Table

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrpition, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
System-Wide Improvement Framework – MREFPP Report, Minot, ND	Ongoing	ML	Page 23	✓	✓												✓	
System-Wide Improvement Framework – Right-of-Way, Minot, ND	Ongoing	ML	Page 24		✓											✓		
System-Wide Improvement Framework – Investigation and Analysis of Stormwater Outfalls, Minot, ND	Ongoing	ML	Page 25		✓													

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
System-Wide Improvement Framework CIP 1 – Bank Failure Rehabilitation, Minot, ND	Ongoing	ML	Page 26	✓	✓						✓	✓				✓	✓	✓
System-Wide Improvement Framework CIP 2 – Pipe Rehabilitation, Minot, ND	Ongoing	ML	Page 27	✓	✓					✓	✓	✓	✓			✓	✓	✓
Emergency Action Plan, Minot, ND	2016	CE	Page 28				✓	✓										
Minot Water Treatment Plant HMGP Flood Protection, Minot, ND	2013	JB	Page 29	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
2nd Street/Downtown Flood Risk Management Project, Fargo, ND	2012	RE	Page 30	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4th Street South Levee Flood Protection and Design, Fargo, ND	2015	RE	Page 31	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Preliminary Feasibility Analysis for Riverfront Property Flood Mitigation Project, Moorhead, MN	2011	ML	Page 32	✓		✓	✓		✓	✓	✓	✓	✓	✓				
Comprehensive Review of Potential Flood Mitigation Options, Fargo, ND	2011	JB	Page 33	✓		✓	✓		✓	✓	✓	✓	✓	✓				

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
Missouri River Correctional Center, Burleigh County, ND	2017	MG	N/A	✓		✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
Harwood/River Drive Permanent Flood Protection, Fargo, ND	2014	JB	N/A	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Oak Grove/Mickelson Flood Control Levee to Mickelson Field, Fargo, ND	2013	JB	N/A	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓
North Oaks Permanent Flood Control Project, Fargo, ND	2011	RS	N/A	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
Timberline and Meadow Creek Areas Flood Risk Management, Fargo, ND	2011	JB	N/A	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Area F1 Flood Mitigation Project, Moorhead, MN	2012	ML	N/A	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Southwood/Fargo Country Club Area Flood Risk Management Project, Fargo, ND	2011	JB	N/A	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓
Area A Flood Mitigation Project, Moorhead, MN	2012	ML	N/A	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓
Horn Park Levee Improvements and 3rd Street Floodwall, Moorhead, MN	2011	ML	N/A	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
Woodlawn Park Levee Improvement, Moorhead, MN	2011	ML	N/A	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Area C Flood Mitigation Project, Moorhead, MN	2012	ML	N/A	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Flood Control, Levee Improvement Project, Hendrum, MN	2010	JB	N/A	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Flood Control, Levee Improvement Project, Perley, MN	2010	JB	N/A	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Community Flood Control Levee Improvement Project, Climax, MN	2014	JB	N/A	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
Coulee's Crossing Area Flood Risk Management, Fargo, ND	2014	JB	N/A	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Oak Creek Flood Risk Management Project, Fargo, ND	2014	RE	N/A	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
BRRWD Project 71 – 50th Avenue Flood Mitigation, Moorhead, MN	2011	ML	N/A	✓			✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Levee Recertification, Halstad, MN	2011	JB	N/A	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓

Project Name and Location	Year Completed	Staff Member In Charge	Full Write-up with Project Descrption, Client Name, and Reference	Levees	SWIF Preparation/Implementation	Floodwalls	Procedures, Ordinances, Related Rules and Regulations, and Federal and State Program	Emergency Action Plan	Closure Structures	Pump Stations/Gate Wells	Geotechnical Analysis	Hydraulic/Hydrologic Analysis	Interior Flood Control Design	Utility Relocation Design	Value Engineering	Right-of-Way Services	Permitting/ Environmental Assessment	Plans and Specifications
Community Flood Control Levee Imp. Project, Nielsville, MN	2013	JB	N/A	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓
Drain 27 Flood Risk Management Project (I-29 to 42nd St.), Fargo, ND	2013	JB	N/A	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
Drain 27 Flood Risk Management (40th Ave. S. to I-29) Project, Fargo, ND	2013	JB	N/A	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
4th Street and Wastewater Stabilization Ponds Levee Certification, Fargo, ND	2012	RE	N/A	✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓

SYSTEM-WIDE IMPROVEMENT FRAMEWORK – MREFPP (CURRENT CITY OF MINOT CAPITAL IMPROVEMENTS PLAN), MINOT, NORTH DAKOTA



Background

The Mouse River Enhanced Flood Protection Project (MREFPP) is a necessary, complex, and massive undertaking that requires the modification of existing USACE levee systems within the City of Minot. These systems had received an “Unacceptable” rating by the USACE, requiring a System-Wide Improvement Framework (SWIF) for the levee systems that would address how the existing levee deficiencies would be corrected or maintained until the permanent solution (MREFPP) was complete.

The Project

The development of the Minot portion of the SWIF was completed by Houston Engineering, Inc. (HEI) as part of the MREFPP for the SRJB.

The SWIF was a fairly new process with only a few approved SWIFs in existence at the time. Therefore, developing the SWIF required a significant amount of research and coordination with the project sponsors and the USACE. This included researching the background and future plans for the levee system, researching and obtaining specific project agreements, planning and scheduling interagency coordination, FEMA coordination, and more.

The SWIF document spelled out inspection, operation, maintenance, and remediation actions required to maintain eligibility in the USACE Rehabilitation Assistance Program for the Minot levee. The SWIF serves as a framework to systematically correct existing levee deficiencies and prevent additional deficiencies. ■

» Location
Minot, North Dakota

» Client
Souris River Joint Board

» Contact
David Ashley, Chairman
701.626.2265

» Staff Member in Charge
Mike Love, PE

» Client Benefits

- Guidance and coordination of remediation actions to systematically correct levee deficiencies, preventing/protecting from loss of life as a result of system failures during a flood event.
- Despite only a handful of SWIFs having been approved at the time of this one’s creation, the client received a quality and reliable deliverable that is already having real effects throughout the City.

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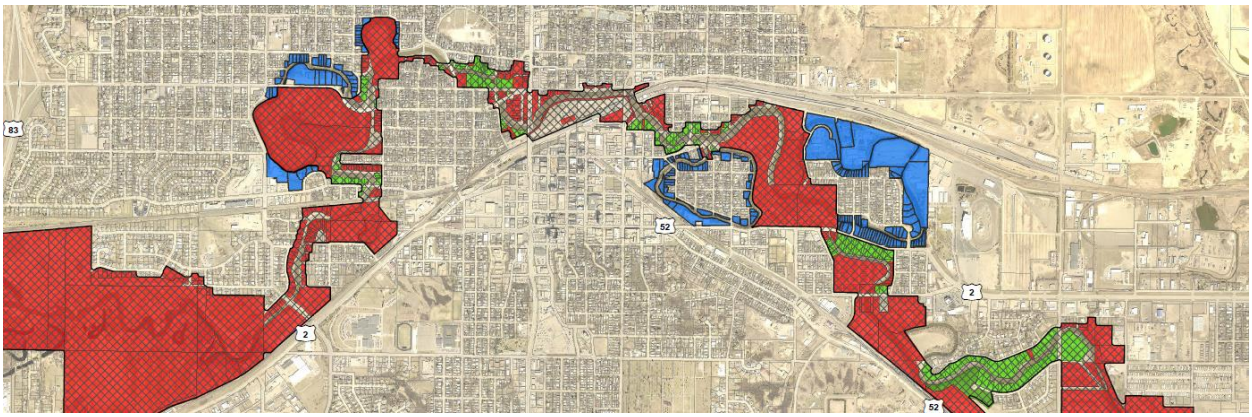
SYSTEM-WIDE IMPROVEMENT FRAMEWORK – RIGHT-OF-WAY
MINOT, NORTH DAKOTA



Background

The City of Minot was required to develop a System Wide Improvement Framework (SWIF) for the Minot Levee Systems located along the Souris River. The SWIF contained multiple actions that needed to be completed by the City in order to satisfy USACE requirements, one of which was to review and document the existing Minot Levee System right-of-way.

The Project

HEI was retained by the City of Minot to research, review, and document the existing Minot Levee System right-of-way.

HEI researched nearly 350 parcels to determine with certainty if signed easement documents existed. Survey crews also conducted a comprehensive search for existing monumentation for approximately 188 additional properties along the river oxbows.

Once HEI staff had gathered, reviewed, and confirmed the accuracy of the data, our geographic information systems (GIS) team created new maps to reflect the data.

Local survey crews will stake right-of-way extents throughout the project. ■



» Location
Minot, North Dakota

» Client
City of Minot

» Contact
Dan Jonasson
Director of Public Works
701.857.4140

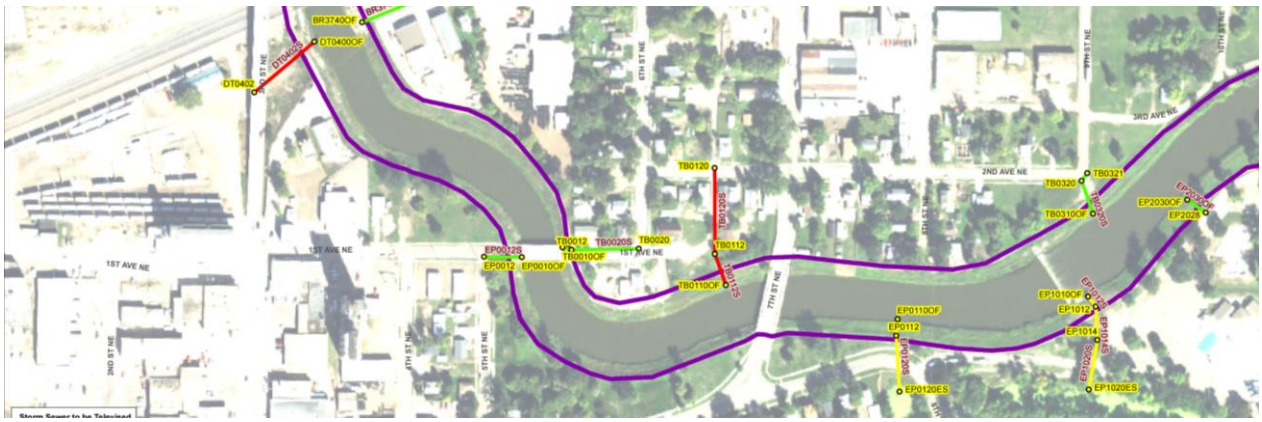
» Staff Member in Charge
Mike Love, PE

» Client Benefits

- Survey crews and other staff based in Minot were able to provide local insights into easement research.
- The existing project right-of-way data will be essential for completing future SWIF tasks.

(006027_0050_ROW) 3-23-18

SYSTEM-WIDE IMPROVEMENT FRAMEWORK – INVESTIGATION AND ANALYSIS OF STORMWATER OUTFALLS, MINOT, NORTH DAKOTA



Background

The City of Minot was required to develop a System Wide Improvement Framework (SWIF) for the Minot Levee Systems located along the Souris River. The SWIF contained multiple actions that needed to be completed by the City in order to satisfy USACE requirements, one of which was to investigate and analyze all of the storm sewer outfalls along the Minot Levee System.

The Project

The project consisted of compiling a detailed inventory of existing outfall pipes along the system, developing plans and specifications for a comprehensive pipe televising project, and overseeing the televising of the outfall pipes.

At the start of the project, HEI discovered that many of the outfall pipes to be televised were either submerged with water or had sediment deposits within them. As a result, extensive coordination with the contractor and City of Minot maintenance crews was required to complete dewatering, cleaning, and inspection of the pipes.

HEI reviewed video and made determinations on what needed to be repaired or replaced.

The results of this project will be utilized to develop a Capital Improvement Project aimed at repairing or replacing deficient outfall pipes. ■

» Location
Minot, North Dakota

» Client
City of Minot

» Contact
Dan Jonasson
Director of Public Works
701.857.4140

» Staff Member in Charge
Mike Love, PE

» Client Benefits

- Coordinated closely with both contractor and City staff to complete the review and analysis of outfalls.
- Provided groundwork for a Capital Improvement Project, which will repair and replace several deficient outfalls.

(006027_0050_IA) 3-26-18

SYSTEM-WIDE IMPROVEMENT FRAMEWORK CIP 1 – LEVEE REPAIR, BANK STABILIZATION, AND TREE CLEARING, MINOT, NORTH DAKOTA



Background

The Mouse River Enhanced Flood Protection Project (MREFPP) is a necessary, complex, and massive undertaking that requires the modification of existing US Army Corps of Engineers (USACE) levee systems. These systems had received an "Unacceptable" rating by the USACE, requiring a System-Wide Improvement Framework (SWIF) for the levee systems that would address how the existing levee deficiencies would be corrected or maintained until the permanent solution (the MREFPP) was complete.

After creating the original SWIF, Houston Engineering, Inc. (HEI) was retained to develop plans and specifications for a Capital Improvement Project to address several deficiencies in the system.

The Project

CIP 1 was completed in two phases. The first phase focused on the repair of bank failures in the Souris Court area and along 10th Street Northwest. The second phase focused on removing trees, repairing additional bank failures, constructing levees, and repairing an existing grade control structure.

HEI prepared the projects for construction by coordinating Section 404 and Section 408 reviews with the USACE. HEI also led permitting efforts with the North Dakota State Water Commission and City of Minot Floodplain Development Permitting Department. With the proper permits secured, HEI prepared bid packages and assisted with the bidding process for both projects.

Construction began in 2016 and will continue into 2018.

HEI is providing construction administration and observation and is coordinating construction materials testing with a subconsultant. ■

» Location
Minot, North Dakota

» Client
City of Minot

» Contact
Dan Jonasson
Director of Public Works
701.857.4140

» Staff Member in Charge
Mike Love, PE

» Client Benefits

- Construction administration and observation by local staff.
- Repair of the bank and improved stability following the 2011 flood.

(006027_0050_CIP1) 3-23-18

SYSTEM-WIDE IMPROVEMENT FRAMEWORK CIP 2 – PIPE REHABILITATIONS MINOT, NORTH DAKOTA



Background

The Mouse River Enhanced Flood Protection Project (MREFPP) is a necessary, complex, and massive undertaking that requires the modification of existing US Army Corps of Engineers (USACE) levee systems. These systems had received an “Unacceptable” rating by the USACE, requiring a System-Wide Improvement Framework (SWIF) for the levee systems that would address how the existing levee deficiencies would be corrected or maintained until the permanent solution (MREFPP) was complete.

After creating the original SWIF, Houston Engineering, Inc. (HEI) was retained to develop plans and specifications for a Capital Improvement Project to repair or replace existing outfall pipes along the Souris River.

The Project

CIP 2 focuses on necessary pipe rehabilitations at 25 locations. Twenty-two of the locations require largely straightforward rehabilitation efforts. The remaining three, however, require more extensive planning and design.

Results from the Investigation and Analysis of Outfall Pipes project previously completed by HEI (see page 25) were used to determine which outfall pipes could be repaired and which outfall pipes warranted replacing. HEI’s extensive knowledge of the Minot Levee System allowed us to cost effectively evaluate each pipe and develop plans and specifications for the rehabilitation of those pipes found to be deficient. ■

» Location
Minot, North Dakota

» Client
City of Minot

» Contact
Dan Jonasson
Director of Public Works
701.857.4140

» Staff Member in Charge
Mike Love, PE

» Client Benefits

- Oversight of Section 404 and Section 408 permitting with the USACE as well as permitting with the North Dakota State Water Commission and City of Minot.
- Rehabilitation and/or replacement of deficient pipes through the heart of Minot.
- Where necessary, more significant efforts will be undertaken, including the installation of a new gatewell structure that will aid in future flood fights.

(006027_0050_CIP2) 3-23-18

EMERGENCY ACTION PLAN
MINOT, NORTH DAKOTA



Background

The City of Minot retained Houston Engineering, Inc. (HEI) to draft an Emergency Action Plan (EAP).

The Project

HEI participated in meetings with the City to gather input into EAP development.

The EAP identifies responsibilities and procedures for various emergency levels. Some of the items the EAP covers include authority, flood organization personnel, contact list, flood elevations and history, tasks and prioritized actions, emergency shelters, evacuation procedures, communications, utilities, hazardous materials, floodplain management, and more.

HEI created flood maps for flows on the Souris River from 5,000 cfs to 11,000 cfs, showing possible land and road inundations. These maps show all stormwater outfalls at the Souris River and have an associated action table for what flood level requires storm outfall closures.

There is also a map to guide what major roads will need to be closed based on flows. Additional maps included show locations of all major stormwater lift stations, major sanitary lift stations, emergency shelters in the City of Minot, all municipal wells, and water main and sewer main river crossings. Maps also showed/ pinpointed natural gas main, electrical, and telephone river crossings. The EAP has a variety of forms that can be used during a flood and has City organizational charts for each Public Works department. ■

» Location
Minot, North Dakota

» Client
City of Minot

» Contact
Dan Jonasson
Public Works Director
701.857.4140

» Staff Member in Charge
Cody Eilertson, PE, LSIT

» Client Benefits

- Concrete guidance for the City and other officials to use during an emergency event, ensuring danger to residents is minimized.
- Plan for coordinated road closures to react more efficiently during different flood levels.
- Plan to coordinate the building of temporary levees during an oncoming flood.
- Mapped storm sewer outfall pipe locations allow for easier closures of outfall pipes during a flood.

15 (6027_042) 3-23-18

MINOT WATER TREATMENT PLANT HAZARD MITIGATION GRANT PROGRAM FLOOD PROTECTION, MINOT, NORTH DAKOTA



Gold Star Award

Background

The catastrophic Mouse (Souris) River flood event of 2011 caused historic damage to property and infrastructure in the City of Minot. During the flood, the City undertook heroic temporary protection efforts to prevent the water treatment plant from becoming inundated. This made it clear that the Minot Water Treatment Plant (WTP) needed permanent flood protection to prevent future water contamination.

The Project

The City of Minot enlisted Houston Engineering, Inc. (HEI) to create a Water Treatment Plant Flood Protection Project. The project consisted of a complex floodwall/tie-back levee system and relocation and modifications to the facility's Mouse River intake system and treatment methods. The project reduces the flood risk to the Minot WTP's on-site potable water storage and high-service pumping station. The flood protection system consists of approximately 1,750 feet of floodwall with two road closures and tie-back levees west of the plant and east of the high service pumping station.

While the Minot WTP treats primarily groundwater, the City also maintains an intake on the Mouse River as an emergency supply. As the groundwater source wells lie within the Mouse River floodplain, the modifications as part of this project give the City the capability of treating river water during a flood event without the risk of inundating the facility.

The project's budget was approximately $29 million, with nearly $22 million coming from federal Hazard Mitigation Grant Program (HMGP) funding. This project is the largest HMGP project complete within FEMA Region VIII. It is a model project within the FEMA organization with numerous tours completed to date to showcase its success. ■

» Location
Minot, North Dakota

» Client
City of Minot

» Contact
Dan Jonasson
Public Works Director
701.857.4140

» Staff Member in Charge
Jerry Bents, PE

» Client Benefits

- Creates permanent flood protection for northern North Dakota's primary water supply with approximately 1,750 feet of concrete floodwalls and 500 feet of earthen tie-back levees.
- Significantly reduces the need for temporary flood protection measures.
- The first permanent flood protection project implemented within Minot following the 2011 flood. The design methods have become the model for all future phases of the MREFPP.

13 (6027_029) 3-23-18

2ND STREET/DOWNTOWN RECONSTRUCTION FLOOD MANAGEMENT PROJECT, FARGO, NORTH DAKOTA



Background

As part of the Houston-Moore Group (HMG), Houston Engineering, Inc. (HEI) led the development of several options to help reduce flood risk in the Fargo downtown area along 2nd Street North.

The Project

The 2nd Street/Downtown Reconstruction project included realigning 2nd Street to the west to accommodate construction of a floodwall varying in height up to 15 feet. The proposed floodwall alignment between the river and the roadway included the acquisition of several commercial properties.

HEI was responsible for overall preliminary plan development, including topographic surveys, public and private utility relocation, determining hydraulic impacts, coordinating geotechnical exploration, final designs for floodwalls, gatewell structures, utilities, and street reconstruction.

HEI coordinated the relocation of numerous private utilities to accommodate the new floodwall. These private utilities were consolidated into joint utility trenches and required extensive coordination throughout the project construction.

HEI oversaw construction for this $40-million project.



» Location
Fargo, North Dakota

» Client
Flood Diversion Board of Authority/ City of Fargo

» Contact
Mark Bittner, PE
Director of Engineering
701.241.1572

» Staff Member in Charge
Randy Engelstad, PE

» Client Benefits

- Flood protection for the Downtown Central Business District.
- Recreational and aesthetic enhancements along the river corridor.
- Incorporation of future redevelopment activities in the adjacent areas.
- Construction of or improvements to floodwall, retaining wall, underground utilities, and roadways.
- Created 3D animated videos to assist with public involvement.

17 (7438_009) 3-23-18

4TH STREET SOUTH LEVEE FLOOD PROTECTION AND DESIGN
FARGO, NORTH DAKOTA



Background

In 2014, FEMA was in the process of updating the Flood Insurance Rate Map (FIRM). With this update, Fargo's 4th Street Levee was designated as a Provisionally Accredited Levee (PAL). For certification, the City was required to provide supporting documentation to ensure levees complied with 44 CFR Section 65.10 of the National Flood Insurance Program (NFIP).

The Project

The City retained Houston Engineering, Inc. (HEI) to develop a final certification report to submit for FEMA accreditation; however, during the certification process, riverbank stability concerns were identified in the 4th Street Levee corridor and the levee couldn't be certified as it was. HEI began a levee/floodwall design to modify and stabilize the existing levee.

Phase 1 included 265 feet of earthen levee, 210 feet of floodwall, storm sewer lift station with two 8,000 gpm pumps and a 46-inch outfall, 11' x 11' valve box for the reverse osmosis discharge line, 400 feet of 48-inch jack/bore of WTP overflow pipe, 4th Street road raise, and improved river access for USGS.

Phase 2 of the project addressed additional stability concerns by unloading the riverbank and closing the line of protection with a floodwall adjacent to a nearby condominium. Phase 2 consisted of 730 feet of floodwall and a storm sewer gatewell.

HEI is now in the process of assisting the City to help the flood protection become re-certified by FEMA. ■

» Location
Fargo, North Dakota

» Client
City of Fargo

» Contact
Mark Bittner, PE
Director of Engineering
701.241.1572

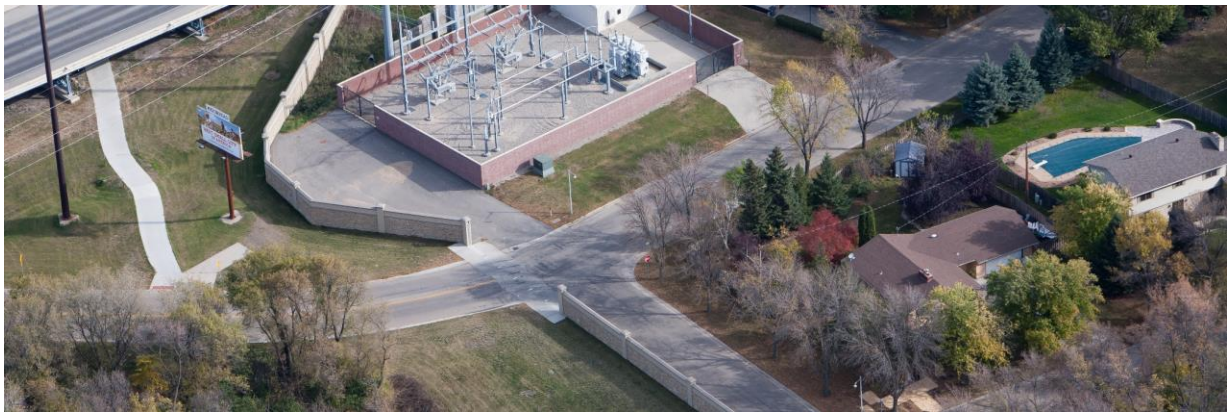
» Staff Member in Charge
Randy Engelstad, PE

» Client Benefits

- Levee protects approximately 75 structures from flooding.
- Residents remain out of floodplain and won't be required to pay flood insurance.
- New levee provides a more stable line of protection for the City.
- Lift station was constructed to a higher river stage, has more discharge capacity, is safer for operation and maintenance, and provides a more secure closure mechanism than the previous lift station.
- Floodwall designed to match water treatment plant.

12 (6059_051_Levee) 3-23-18

PRELIMINARY FEASIBILITY ANALYSIS FOR RIVERFRONT PROPERTY FLOOD MITIGATION PROJECT, MOORHEAD, MINNESOTA



Background

During the spring flood of 2009, the City of Moorhead installed miles of sandbags and temporary earthen levees in the rear yards of riverside homes to protect the rest of the city.

Following the flood, it was evident that the City of Moorhead needed a Comprehensive Flood Plan that would provide for a more resilient method of protecting its residents.

Since the funding for these needed improvements would come from a combination of local and state funding sources, it was imperative that the City develop a Capital Improvement Plan to identify acquisition needs, estimate costs of implementation, and prioritize the necessary projects that would need to be implemented over the next 10 years.

The Project

Houston Engineering, Inc. (HEI) provided an evaluation of more than 200 parcels within the City of Moorhead to determine the feasibility of various flood protection options.

After intitially determining where flood protection could reliably be constructed through a geotechnical evaluation, HEI developed preliminary protection alternatives/alignments for parcels determined feasible. A Comprehensive Flood Protection Master Plan was then developed.

This analysis is serving as a 10-year flood improvement plan that is currently guiding ongoing flood protection efforts throughout the City of Moorhead. ■

» Location
Moorhead, North Dakota

» Client
City of Moorhead

» Contact
Bob Zimmerman, PhD, PE
City Engineer
218.299.5390

» Staff Member in Charge
Mike Love, PE

» Client Benefits

- This 10-year Capital Improvement Plan is currently guiding ongoing flood protection efforts throughout the City of Moorhead.
- This Capital Improvement Plan is being used for budgeting and also requesting state cost share on an interval basis.
- Numerous new flood protection projects have been completed based on this plan, including earthen levees, floodwalls, and closure structures.

(006019_0024) 3-23-18

COMPREHENSIVE REVIEW OF POTENTIAL FLOOD MITIGATION OPTIONS FARGO, NORTH DAKOTA



Background

Following the spring flood of 2009, it was evident that the City of Fargo needed a Comprehensive Flood Plan that would help identify, estimate costs of implementation, and prioritize the necessary projects that would need to be implemented over the next 10-15 years. The goal of the plan was to identify the projects needed to effectively remove properties from the FEMA 100-year floodplain and provide additional protection in the event of a repeat of 2009.

The Project

The City of Fargo enlisted the services of Houston Engineering, Inc. (HEI) to develop a Citywide Comprehensive Flood Protection Master Plan of the future flood control requirements. The analysis included a conceptual review of alternative alignments and design using readily available information.

The project deliverables consisted of proposed future flood mitigation project concept alignments, estimated costs, and recommendations for prioritization and implementation. This comprehensive plan identified approximately $250 million in future protection needs.

This analysis has served and continues to serve as the Capital Improvement Plan for the City of Fargo flood improvement program, guiding ongoing flood protection efforts within Fargo. ■

» Location
Fargo, North Dakota

» Client
City of Fargo

» Contact
Mark Bittner, PE
Director of Engineering
701.241.1572

» Staff Member in Charge
Jerry Bents, PE

» Client Benefits

- This Capital Improvement Plan is currently guiding ongoing flood protection efforts throughout the City of Fargo.
- This plan identified additional real estate needs that are necessary for successfully implementing the project.
- Numerous new flood protection projects have been completed based on this plan, including earthen levees, floodwalls, and closure structures.

(006059_0043) 3-23-18



G. Recent and Current Work for Projects of This Type

G. RECENT AND CURRENT WORK FOR PROJECTS OF THIS TYPE

The SWIF Improvement Plan will require a wide range of skill sets, expertises, and experiences. With our history on similar projects, HEI will be able to provide the diverse skills this project requires and adapt to unexpected and unforeseen challenges.

In this section, we have outlined five clients we have served with flood control and related services in recent years. We encourage you to speak with any of our references provided to hear firsthand about our ability to manage and deliver on complex and vital projects like this.

1. References

City of Minot
Dan Jonasson
Public Works Director
1025 31st Street Southeast
Minot, ND 58701
701.857.4140
dan.jonasson@minotnd.org

Reference Projects:

- Minot SWIF
- Minot WTP HMGP
- Mouse River Enhanced Flood Protection Project



US Army Corps of Engineers
Nathan Wallerstedt, PE, PMP
Chief, Project Management Branch
180 5th Street East, Suite 700
St. Paul, MN 55101
651.290.5477
nathan.h.wallerstedt@usace.army.mil

Reference Projects:

- Minot SWIF
- Minot WTP HMGP
- MREFPP Phase MI-1
- MREFPP Phase MI-5



North Dakota Department of Emergency Services
Justin Messner, CFM
State Hazard Mitigation Officer
PO Box 5511
Bismarck, ND 58506-5511
701.328.8107
jmessner@nd.gov

Reference Project:

- Minot WTP HMGP



US Army Corps of Engineers
Bonnie Greenleaf
Project Manager
180 5th Street East, Suite 700
St. Paul, MN 55101
651.290.5476
bonnie.k.greenleaf@usace.army.mil

Reference Project:

- Minot Emergency Action Plan



City of Fargo
Nathan Boerboom, PE
Storm Sewer Utility Division Engineer
200 3rd Street North
Fargo, ND 58102
701.476.6743
nboerboom@cityoffargo.com

Reference Projects:

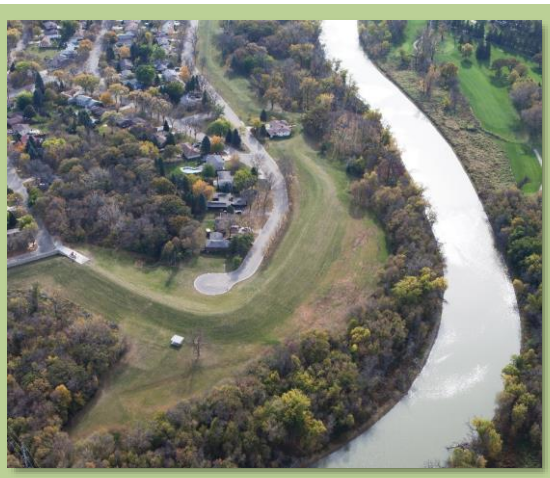
- 2nd Street/Downtown Reconstruction Flood Management Project
- 4th Street South Levee Flood Protection
- Comprehensive Review of Potential Flood Mitigation Options
- Various other City of Fargo Flood Control Projects



City of Moorhead
Bob Zimmerman, PhD, PE
City Engineer
500 Center Avenue
Moorhead, MN 56561
218.299.5390
bob.zimmerman@ci.moorhead.mn.us

Reference Projects:

- Areas A, B, C, D, E, F1, and F2 Flood Protection Projects
- Levee/Floodwall Certification Analysis
- Preliminary Feasibility Analysis for Riverfront Property Flood Mitigation Project



Wild Rice Watershed District
Kevin Ruud
Administrator
11 5th Avenue East
Ada, MN 56510
218.784.5501
kevin@wildricewatershed.org

Reference Projects:

- Hendrum Flood Control Levee Improvement Project
- Perley Flood Control Levee Improvement Project



Buffalo-Red River Watershed District
Gerald Van Amburg, PhD
Chairman
1303 4th Avenue Northeast
Barnesville, MN 56514
218.354.7710
vanambur@cord.edu

Reference Projects:

- Georgetown Ring Dike
- 50th Avenue South Flood Control Project





H. Project Understanding and Approach

H. PROJECT UNDERSTANDING AND APPROACH

1. Current Issues and State-of-the-Art Practices and Procedures

HEI understands the current issues associated with the Minot levee system like no one else. When the USACE assigned the Minot levee systems “unacceptable” ratings due to unresolved deficiencies, HEI assisted the City of Minot in developing and implementing a SWIF aimed at resolving unacceptable system deficiencies. In completing the SWIF and executing its various components, the City is able to maintain eligibility in the Federal PL84-99 program. The SWIF was also a key prerequisite to USACE Section 408 permitting of the MREFPP.

We understand that the SWIF’s complex nature makes it essential to have a detailed system for tracking all maintenance, repair, and inspection activities. HEI has developed a state-of-the-art GIS-based system to track new and existing system deficiencies, allowing the City to find real-time status updates in one centralized location. The City can also access this data in the field.

The City has designed and constructed several components of the MREFPP, which will replace portions of the original federal levee systems. While helpful in the long-term, the MREFPP presents a current (short-term) challenge for the City, as you must accomplish the goals of the SWIF while ensuring these repairs are compatible with the MREFPP.

HEI’s history and ongoing work with both the Minot SWIF and the MREFPP give us a big-picture understanding and technical knowledge about the inner workings of each. This allows us to provide solid guidance into the required repairs to the system and allows you to continue your SWIF compliance for PL84-99 eligibility and continued Section 408 approval of the MREFPP. With our thoughtful approach, no funds will be wasted by constructing SWIF infrastructure that will quickly become obsolete due to the MREFPP.

2. Demonstrated Experience on Similar Projects and with a 5-year CIP

CAPITAL IMPROVEMENT PROJECTS

We helped the City of Minot develop your portion of the SWIF for the Souris River Basin. As part of the SWIF, all of the Minot levee system deficiencies were reviewed, categorized, and prioritized based on risk to the system. Four initial CIPs were identified and scheduled for construction between 2016 and 2020 to address these deficiencies. To date, we have designed and assisted the City in bidding and constructing the first SWIF CIP. We are also currently working on the design of the second SWIF CIP for the City of Minot.

HEI has developed and implemented similar Capital Improvement Plans for several other clients in the region. Following the historic 2009 flood event on the Red River, HEI partnered with both the City of Moorhead, MN, and City of Fargo, ND, to complete 10-year comprehensive flood mitigation plans for each City. These plans consisted of an extensive geotechnical slope stability analysis that was then used to develop flood protection alignments and cost estimates. The plans have served as the playbook for both communities to prioritize and implement their flood control needs. This same level of long-range thinking will be applied to the remaining Minot SWIF repair projects.

HEI will apply the same type of long-range thinking that was used to develop 10-year comprehensive flood mitigation plans for the cities of Fargo and Moorhead.

ADDITIONAL SERVICES AND SIMILAR PROJECT EXPERIENCE

In addition to the SWIF CIP work, HEI has completed a comprehensive review of the Minot Levee System right-of-way, developed and assisted the City in bidding a televising project for all of the storm sewer outfalls, developed the Minot EAP, performed numerous quarterly levee system inspections with the USACE and City staff, and assisted the City in developing the first *Annual SWIF Progress Report*.

All of these projects, when put together, give us a big-picture view of your ongoing flood protection efforts and how they interrelate and affect one another that no other firm can match.

3. Knowledge of Geographic Area

HEI has had an office in Minot for 14 years and has performed more than 40 projects in the Minot area. We have been a trusted advisor to the City on your flood protection needs since 2011. In addition, HEI assisted the City of Minot in the development of your SWIF, and, for the past two years, we have worked directly with City staff to implement the various SWIF components.

HEI also designed, bid, and administered the construction of the Minot Water Treatment Plan HMGP project that provided much needed flood protection for that critical piece of infrastructure.

In 2014, HEI was selected by the City of Minot and the SRJB to assist with the development and implementation of the MREFPP. We designed and bid the 4th Avenue Northeast (Phase MI-1) portion of the MREFPP, which will begin construction in 2018 and will take approximately three years to complete. We are also currently working on the design of Phase MI-4 and Phase MI-5 of the MREFPP.

Through all of our local experience, we have studied, designed, and built in this geographic area extensively, giving us a strong understanding of how the geography of the region interacts and how the various projects interconnect.



THE HEI TEAM HAS STUDIED AND WORKED WITHIN THIS GEOGRAPHIC AREA EXTENSIVELY

4. Coordination with USACE

Staff at USACE and HEI have had abundant opportunities to forge strong working relationships and lines of communication, which will help expedite your future projects.

In recent years, our work on the Minot SWIF, Minot EAP, and MREFPP has strengthened and forged new relationships with key USACE staff from the St. Paul District responsible for the Minot Levee System. For the past three years, we have

walked the entire Minot Levee System with the USACE during their annual inspections. This has allowed us to get to know the USACE staff and better understand their criteria for identifying system deficiencies. This translates to a more streamlined review process when submitting SWIF CIPs to the USACE for 404/408 review. We urge you to reach out to Nathan Wallerstedt at the USACE at the number listed in our references in Section G (page 34) to learn more about this relationship.

5. In-House Resources

For 50 years, our clients have depended on us for a suite of services, including civil engineering, planning, surveying, GIS/programming, and environmental consulting. HEI's civil engineering services include flood protection, water resources, municipal infrastructure, water supply, transportation, railroad, site development, and waste management.

The City of Minot can depend on the insights of local staff combined with company-wide flood control, water resources, and environmental expertise thanks to extensive cross-office collaboration efforts. For years, we have honed our resources and techniques for sharing and editing documents electronically across all offices. Our engineers save all files on a company-wide server that can be accessed at any office in real time. HEI also uses SharePoint, an FTP site, and OneDrive for sharing documents across offices, and we use Skype to ensure all meetings are face-to-face.

6. Assurance of Quality, Cost Control, Delivery Schedule, and Project Oversight

Producing high-quality work has long been a part of HEI's corporate philosophy. We recognize that putting an emphasis on quality and accuracy is an invaluable step in completing a successful project. HEI's Quality Control/Quality Assurance Program (QP) will ensure the satisfactory completion of all engineering services, as spelled out in the request for qualifications.



OUR EXTENSIVE QC/QA PROCESS WILL ENSURE EXCELLENT DELIVERABLES

A QC/QA checklist serves as a key component of our QP. The checklist guides and details the specific activities required during each stage of a project. The QC/QA checklist will include the following items:

- **Scope/deliverables** – Identifying and tracking the project scope and deliverables
- **Work tasks** – Identifying and monitoring work tasks and flow
- **Schedule** – Identifying timeframes and milestones; reviewing daily progress
- **Contracts** – Preparing contracts, subcontracts, and amendments
- **Peer review** – Managing the quality of our services by "fresh eyes" review
- **Meetings/communications** – Maintaining ongoing communication

Each section clarifies the responsibility and accountability of each team member throughout the life of the project. The effectiveness of the QP demands that all personnel are aware of the project requirements and objectives.



I. FEMA/USACE Permitting/Funding Experience

I. FEMA/USACE PERMITTING/ FUNDING EXPERIENCE

HEI recognizes the importance of past experience working on projects involving FEMA and the USACE. We understand the rules, regulations, and requirements that are associated with the various FEMA and USACE programs. Our recent experience on the Minot WTP HMGP project will allow our team to comply quickly and create initial designs that will comply with FEMA and USACE regulations and requirements.

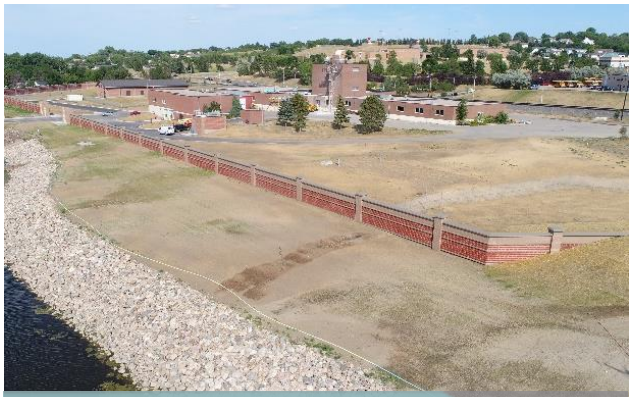
HEI helped develop the design criteria for flood protection at the Minot WTP that met Section 404 and Section 408 requirements. These criteria are now being used on the MREFPP.

As shown in Section F and as experienced locally with the Minot WTP HMGP project and the other Souris and Red River projects, our proposed team has extensive local and regional experience working through federal agency requirements for flood control and protection projects. All of the projects in North Dakota involved NDSWC funding, showing our extensive experience working with NDSWC-funded projects.

The responses received from FEMA project representatives and USACE staff regarding the Minot WTP HMGP project is a solid metric for measuring team performance. **Our understanding of and preparation for the review process mandated under federal guidelines helped the project receive extremely positive responses from FEMA.**

We were able to assist in developing design criteria for flood protection elements in the Minot reach in conjunction with USACE staff that will ensure consistency and buy-in with Section 408 and Section 404 actions as well as any environmental actions required.

HEI has worked closely with other clients to create FEMA-certified flood protection and remove residents from the floodplain. In Fargo, HEI and the City collaborated on the 4th Street South Levee Flood Protection and Design project. This provisionally accredited levee (PAL) no longer met FEMA requirements for levee certification. This led to several improvements in the area, including the design and construction of more than 900 feet of floodwall, 265 feet of earthen levee, two 8,000-gpm pumps, a road raise, and more. HEI is now assisting the City to help the flood protection become re-certified by FEMA.



THE MINOT WTP HMGP PROJECT IS A MODEL PROJECT WITHIN THE FEMA ORGANIZATION



Appendix A – Resumes

MIKE LOVE, PE
Project Management



Education
BS in Civil Engineering, North Dakota State University

Registration
PE North Dakota—5750
PE Minnesota—45726

Professional Experience
Houston Engineering, Inc.—2002-Present
Total Years of Experience—16 years

Mike Love has provided and led SWIF services for the City of Minot for years, and he will continue to serve you in that capacity as Project Manager. Mike brings a wealth of flood mitigation experience as a project manager, design engineer, hydrologic and hydraulic modeler, and construction administrator. His projects have included the design and construction of levees, floodwall, removable flood closure structures, lift stations, gatewells, and storm drainage systems.

- **System-Wide Improvement Framework Plan, Minot, ND.** As Project Manager, leading the creation of the Minot portions of the Souris River Basin System Wide Improvement Framework (SWIF). As part of this project HEI reviewed USACE annual inspection reports and performed our own inspections to fully document all of the system deficiencies. HEI then assisted in developing a plan to resolve those deficiencies. The plan included outlining routine maintenance activities, outlining Interim Risk Reduction Measures, and developing Capital Improvement Project all geared towards resolving or managing the risks of unacceptable system deficiencies.
- **System-Wide Improvement Framework Implementation, Minot, ND.** Project Manager for the implementation of Minot SWIF components. These include the planning, design, and construction of two capital improvements, development and administration of a comprehensive outfall televising plan and a detailed investigation and documentation of the existing Minot Levee System right-of-way.
- **Emergency Action Plan, Minot, ND.** Quality Control for the development of the Minot Emergecny Action Plan. The EAP helps the City handle emergency situations such as flooding in part by identifying responsibilities and procedures for various emergency levels. HEI also created flood maps to show possible road and land inundations.
- **Mouse River Enhanced Flood Protection Project – Phase MI-1, 4th Avenue Northeast, Minot, ND.** Design Engineer for the design of flood protection as part of the MREFPP. HEI's designs consist of both reinforced concrete floodwalls and earthen levee segments. The designs will tie into a larger system of flood protection that will protect the City of Minot from floods greater than 100-year events. ■

Mike led the original SWIF services for the City of Minot and has helped guide many related and supporting services.

JERRY BENTS, PE
Principal-in-Charge, QC/QA



Education
BS in Civil Engineering, North Dakota State University

Registration
PE North Dakota—4874
PE Minnesota—42249

Professional Experience
Houston Engineering, Inc.—1997-Present
Total Years of Experience—21 Years

Jerry will ensure the team provides services that rise to meet the many unique challenges that the City of Minot faces.

Jerry Bents will serve the City of Minot as Principal-in-Charge and implement and lead the QC/QA process. He stands out as one of North Dakota's foremost experts on flood protection and related services, a distinguishment earned through projects like the Mouse River Enhanced Flood Protection Project (MREFPP). Jerry understands the unique flood protection challenges that the City faces, and he will provide guidance to the team through his roles to ensure that the City receives cost-effective solutions that account for future MREFPP plans.

- **Emergency Action Plan, Minot, ND.** Principal-in-Charge in the creation of an emergency action plan (EAP) for the City of Minot. The EAP is designed to help the City handle emergency situations such as flooding. It accomplishes this, in part, by identifying responsibilities and procedures for various emergency levels. HEI also created flood maps to show possible road and land inundations by by modeling flows on the Souris (Mouse) River from 5,000 to 11,000 cfs.
- **Minot WTP HMGP Flood Protection, Minot, ND.** Flood Control Project Manager and Design Engineer for the $29-million flood control project protection the City of Minot Water Treatment Plant (WTP). The project consists of a floodwall/tie-back levee system and relocation of and modifications to the facility's Mouse River intake system. The project will reduce the flood risk to the Minot WTP, on-site potable water storage, and high service pumping station. These facilities provide the sole source of potable water for the City of Minot and the Minot Air Force Base while supplying multiple surrounding regional rural water systems and municipalities.
- **Mouse River Enhanced Flood Protection Project – Phase MI-1, 4th Avenue Northeast, Minot, ND.** Project Manager for the design of flood protection as part of the MREFPP. HEI's designs consist of both reinforced concrete floodwalls and earthen levee segments. The designs will tie into a larger system of flood protection that, together, will protect the City from floods greater than 100-year events.
- **Mouse River Enhanced Flood Protection Project – Phase MI-5, 4th Avenue Northeast Levee Extension, Minot, ND.** Project Manager for this tie-in levee that will connect with the earlier Phase MI-1 project. Tasks include overall coordination, review of preliminary concepts, attending progress meetings, leading site visits, and more.

RANDY ENGELSTAD, PE
Design Lead



Education
BS in Civil Engineering, North Dakota State University

Registration
PE North Dakota—6676
PE Minnesota—48967

Professional Experience
Houston Engineering, Inc.—2009-Present
Total Years of Experience—14 years

Randy has been on the front lines of flood protection efforts as both Project Manager and Design Engineer.

Randy Englestad has been on the front line of several North Dakota flood fighting efforts over the years. Through various design and project management roles, Randy has helped facilitate the construction of new levees and floodwalls, internal drainage improvements, and accompanying roadway reconstruction and utility improvements. Randy will use this accumulated knowledge to lead and oversee designs for your SWIF project.

- **2nd Street/Downtown Roadway Reconstruction and Flood Management Project, Fargo, ND.** Project Manager for planning, design, and construction for this $50-million municipal, roadway, and flood protection project along 2nd Street in downtown Fargo. The project included the relocation or replacement of 5,200 feet of water main; 5,600 feet of storm sewer; 2,900 feet of sanitary sewer; and 2,300 feet of sanitary sewer force main. The project also included the realignment of 2nd Street North and 2nd Street South in addition to floodwall and close structure designs.
- **4th Street and Wastewater Stabilization Ponds Roadway, Utility, and Flood Control Project, Fargo, ND.** Project Manager for the design and construction of a levee, floodwalls, public utility modifications, private utility relocations, road vertical alignment and paving revisions, and lift station and gatewell structures for the FEMA accreditation of the 4th Street Levee for the City of Fargo.
- **Drain 27 Permanent Flood Protection – Oakcreek and Copperfield Court, Fargo, ND.** Served as Project Manager and Design Engineer for the planning and development of construction plans and specifications as well as the construction of the project.
- **Timberline and Meadow Creek Area Flood Risk Management Project, Fargo, ND.** As Design Engineer, worked on the planning and development of construction plans and specifications. The project consisted of upgrading emergency levees at four separate sites to semi-permanent levees as well as installing potential connecting levees. The project also included work on concrete floodwalls, storm sewers, gatewell structures, and other associated features as well as various utility relocations and resulted in approximately 4,500 feet of permanent flood protection. ■

BENNETT UHLER, EI
Design



Education
BS in Civil Engineering, North Dakota State University

Registration
EI North Dakota—13488

Professional Experience
Houston Engineering, Inc.—2014-Present

Total Years of Experience—4 years

Bennett understands how to design water resource improvements in dense urban settings.

Bennett Uhler provides water resource services in urban settings, focusing on flood protection, stormwater management, and underground utilities. Bennett will provide various design services as needed for your SWIF project.

- **Minot SWIF Implementation, Minot, ND.** Design Engineer for the Capitol Improvements Project No. 1, which involved bank slope repairs and construction of new levees.
- **Areas D and E Flood Mitigation Project, Moorhead, MN.** Design Engineer and Site Observer for the planning, design, and construction oversight of a permanent flood mitigation project along River Drive South and Elm Street South in Moorhead. HEI constructed multiple levee sections, able to be quickly connected with temporary clay levees during flood events. The project included the design, installation, or modification of a storm gatewell, double box storm inlet structure, and manholes, as well as the installation of an upgraded storm sewer. HEI also carried out street reconstruction to improve traffic flow and safety.
- **Woodlawn Park Flood Mitigation, Moorhead, MN.** Design Engineer and Site Observer. HEI completed designs for an earthen levee, storm sewer, and storm inlets.
- **Clay County Correctional Facility and Joint Law Enforcement Center, Moorhead, MN.** As Design Engineer, led design for stormwater management, including storm sewer and stormwater ponds. HEI led civil engineering efforts in a significant expansion of the Clay County campus, which includes new jail and law enforcement facilities. Tasks include boundary and topographic surveying, utility relocation master planning, stormwater master planning, and vacation platting.
- **Stormwater Master Plan, Moorhead, MN.** As Design Engineer, supported the stormwater master plan for south Moorhead, including propositions for retention pond alternatives. Analyzed existing site conditions and determined future developed conditions. The information was used to design connecting systems of storm sewer, stormwater detention ponds, lift stations, and drainage ditches. ■

CODY EILERTSON, PE, LSIT
Emergency Action Plan



Education
BS in Construction Engineering, North Dakota State University

Registration
PE North Dakota—5799
PE South Dakota—13582
PE Minnesota—43061
LSIT Minnesota—126624

Professional Experience
Houston Engineering, Inc.—2015-Present

Total Years of Experience—19 years

Cody oversaw the drafting of several key portions of the Minot EAP, making him well suited to oversee its annual updates.

Cody Eilertson will lead annual updates to the City of Minot's Emergency Action Plan (EAP). Cody oversaw the drafting of several key portions of the Minot EAP, allowing him to bring that background and understanding into the EAP's annual update process. Before joining HEI, Cody served as the City of Fargo's Division Engineer for Design and Construction, where he designed and managed a wide variety of programs and projects. Cody has served as a technical advisor on multiple flood protection and infrastructure improvement projects.

- **Emergency Action Plan, Minot, ND.** Cody oversaw the drafting of several key portions of the City of Minot's EAP during its creation. The EAP is designed to help the City handle emergency situations such as flooding. It accomplishes this, in part, by identifying responsibilities and procedures for various emergency levels. HEI also created flood maps to show possible road and land inundations by by modeling flows on the Souris (Mouse) River from 5,000 cfs to 11,000 cfs. Additional maps show locations of major stormwater lift stations, emergency shelters, and more.
- **Minot WTP HMGP Flood Protection, Minot, ND.** Technical Advisor for the $20-million flood control project protection the City of Minot Water Treatment Plant (WTP). The project consisted of a floodwall system and relocation of and modifications to the facility's Mouse River intake system. The project reduced the flood risk to the Minot WTP, on-site potable water storage, and high service pumping station. These facilities provide the sole source of potable water for the City of Minot and the Minot Air Force Base as well as supplying multiple surrounding regional rural water systems and municipalities.
- **Mouse River Enhanced Flood Protection Plan – Phase MI-1, 4th Avenue Northeast, Minot, ND.** Technical Advisor for the design of flood protection as part of the MREFPP. HEI's designs consist of both reinforced concrete floodwalls and earthen levee segments. The designs will tie into a larger system of flood protection that, together, will protect the City of Minot from floods even greater than 100-year events. ■

MARK AANENSON, CWD
Environmental Analysis and Documentation



Education
BS in Life Sciences/Biology,
Minnesota State University Moorhead

Registration
CWD Minnesota—1001

Professional Experience
Houston Engineering, Inc.—1998-Present

Total Years of Experience—27 years

Mark will continue to help the City navigate environmental challenges and hurdles to ultimately create effective flood protection.

Mark Aanenson will guide and oversee all efforts related to environmental analysis and documentation. Mark is a Senior Environmental Scientist at HEI with experience in the areas of environmental permitting, environmental review, wetland permitting and delineation, water quality and biological assessment and monitoring programs, and the preparation of environmental documents, such as water quality protection plans and wetland delineation reports.

- **Mouse River Enhanced Flood Protection Project – Draft Environmental Impact Statement (EIS), Minot, ND.** Served as Project Permitting Lead for a regional flood protection plan that will modify an existing USACE federal flood project to increase the protection levels to recent historic flood levels. Mark was also responsible for permitting, field studies, EIS support, and regulatory coordination in addition to technical writing and project management, leading interagency coordination and community scoping meetings. The EIS was co-written by Barr Engineering and Houston Engineering, Inc.
- **Minot WTP HMGP Flood Protection, Minot, ND.** Environmental Scientist responsible for environmental analysis and permitting in this $29-million flood protection plan for the Minot Water Treatment Plant (WTP). Helped determine possible environmental consequences of the project, including land use; air quality; wetlands; drainage ditches; floodplains; geology and soil resources; vegetation; fish and wildlife; and rare, threatened, and endangered species.
- **Timberline and Meadow Creek Area Flood Risk Management Project, Fargo, ND.** Environmental Scientist in the field delineation and preparation of permitting documents for a flood control project for the Timberline area of Fargo. The project involved utility relocations, earthen levees, concrete floodwalls, storm sewer improvements, gatewell structures, and other associated features. The project was designed to meet both US Army Corps of Engineers and FEMA standards. The project resulted in approximately 4,500 feet of permanent flood protection. The permitting tasks also included the preparation of mitigation and monitoring plans. ■

JIM SCHLIEMAN, PLS, CFEDS
Right-of-Way



Education
BS in Land Surveying/Mapping Science, St. Cloud State University

AAS in Civil Engineering and Survey Technology, St. Cloud Technical College

Registration
PLS North Dakota—6086

PLS South Dakota—13668

PLS Minnesota—44867

CFedS—1450

Professional Experience
Houston Engineering, Inc.—2002-Present

Total Years of Experience—16 years

Jim serves as HEI's Corporate Survey Manager, bringing exceptional experience to right-of-way services for your project.

Jim Schlieman has provided key right-of-way services for both the Minot SWIF and the MREFPP in recent years, and he will continue to provide those services into the future.

Jim is a Principal at HEI and serves as the Corporate Survey Manager. Jim is a registered Professional Land Surveyor in North Dakota, South Dakota, and Minnesota and also a Certified Federal Surveyor. His responsibilities at HEI include project management of survey projects and supervision of survey staff. His extensive experience includes topographical surveys, boundary surveys, ALTA/ACSM Land Title Surveys, GIS and aerial photography control surveys, right-of-way and alignment surveys, plats, and other boundary and topographic subdivision platting, right-of-way platting, wetland mitigation and litigation surveys, and easement acquisition surveys.

- **Mouse River Enhanced Flood Protection Project – Phase MI-1, 4th Avenue Northeast, Minot, ND.** Project Surveyor tasked with creating legal descriptions and exhibits for new permanent and temporary easement parcels acquired as part of the Mouse River Enhanced Flood Protection Project (MREFPP). The easements were necessary for utility and roadway relocation. The designs will tie into a larger system of flood protection that, together, will protect the City of Minot from floods even greater than 100-year events.
- **Mouse River Enhanced Flood Protection Project – Phase MI-5, 4th Avenue Northeast Levee Extension, Minot, ND.** As Project Surveyor, supported design services for 4th Avenue Northeast Flood Protection Improvements. This multi-phase project will protect the City from floods greater than 100-year events. This phase of the project included extending a flood levee along 4th Avenue Northeast. Jim's tasks include reviewing right-of-way drawings and exhibits as well as writing legal descriptions. Construction cost is estimated to be $2.1 million.
- **Northwest Area Water Supply System, Minot, ND.** Project Surveyor responsible for cadastral calculations and preparation of right-of-way easement plats for this 45-mile-long water supply pipeline project from Lake Sakakawea to the City of Minot, ND. ■

JAMES HENNESSY, PLS
Survey



Education
AAS in Cartographic Drafting, Denver Technical College

Registration
PLS North Dakota—8961
PLS Colorado—34980
PLS Utah—7215103-2201

Professional Experience
Houston Engineering, Inc.—2013-Present
Total Years of Experience—38 Years

James has provided surveying for all the recent flood protection projects that HEI has designed in the Minot region.

James Hennessy will lead surveying efforts for ongoing efforts related to the Minot SWIF as necessary. James serves out of our Minot office and is an accomplished surveyor offering 38 years of success performing civil survey support for engineering projects. He also provides detailed design mapping and route surveys.

- **Minot SWIF, Minot, ND.** Project Surveyor for the creation of the Minot SWIF. Contributed to the review and documentation of existing right-of-way for the project; investigated and analyzed outfall pipes; and completed data collection, a geotechnical evaluation, and designs for capital improvements to the Souris Court and 10th Street Northwest areas. The SWIF serves as a portion of the larger MREFPP, which is bringing permanent and substantial flood protection to the City of Minot and the surrounding region
- **Mouse River Enhanced Flood Protection Project – Phase MI-1, 4th Avenue Northeast, Minot, ND.** Project Surveyor for the Mouse River Enhanced Flood Protection Plan (MREFPP). HEI's designs consist of both reinforced concrete floodwalls and earthen levee segments. The designs will tie into a larger system of flood protection that, together, will protect the City of Minot from floods even greater than 100-year events.
- **Downtown Infrastructure Improvements, Minot, ND.** Project Surveyor for a 26-square-block renovation project in downtown Minot. Project included collecting data for subsurface utilities, setting control for a large-scale LiDAR scan, and boundary monument collection and analysis. Used GPS and robotic total station to control the horizontal locations and spirit leveling controlled the vertical component.
- **Minot WTP HMGP, Minot, ND.** Project Surveyor for the $29-million flood control project protecting the Minot Water Treatment Plant (WTP). The project consists of a floodwall/tie-back levee system and relocation of and modifications to the facility's Mouse River intake system. The project reduces the flood risk to the Minot WTP, on-site potable water storage, and high service pumping station. ■

JOE REITER, EI
Construction Lead, Design



Education
BS in Civil Engineering, North Dakota State University

Certifications
EI North Dakota—13348

ACI Concrete Field Testing Technician

OSHA 30-Hour Training

Professional Experience
Houston Engineering, Inc.—2013-Present

Total Years of Experience—5 Years

Joe will provide local knowledge to the design team as well as coordinate field management throughout construction.

Joe Reiter is already engaged in the construction aspects of the Minot SWIF, and he will continue to provide those services in his role as Construction Lead. Joe will also support design efforts. Joe regularly performs construction inspection, surveying, and CAD duties for the City of Minot Public Works, Ward County Highway Department, and other area clients.

- **Minot SWIF Implementation, Minot, ND.** Construction Management for the implementation of the Minot System-Wide Improvement Framework (SWIF). Joe's role involved construction inspection. The SWIF serves as a portion of the larger MREFPP, which is bringing permanent and substantial flood protection to the City of Minot and the surrounding region.
- **Downtown Infrastructure Improvements, Minot, ND.** Construction Observor for the multi-block infrastructure replacement project as part of the City of Minot's effort to revitalize your downtown. Project included replacement of all the City's underground assets, streets, sidewalks, traffic signals, and street signs.
- **North Hill Zone Water Main Improvements, Minot, ND.** As Design Engineer, responsible for preliminary and final designs along with client coordination and construction management. This water main spans 3.7 miles of 12- to 16-inch water transmission main as well as a PRV vault.
- **North Hill Improvements – Elevated Storage Tank, Minot, ND.** Design Engineer for the construction of a new 1.5-million-gallon elevated water tank in northwest Minot. Provided preliminary and final designs, site planning, erosion control, and an opinion of probable cost. Also assisted with construction management and provided construction observation as necessary.
- **Water System Improvements, Highway 43 Corridor, Reservoir C to Highway 43, Turtle Mountain Band of Chippewa Indians.** Construction Observor for this project, which consisted of 28,600 lf of 10-inch DR 21 PVC water main for improvements to the Lake Upsilon area expansion project. Design tasks also included assistance with initial route survey, CAD drafting supervision for the plan/profile, and site plans. ■

CAMERON MILLER, EI
Construction



Education
BS in Civil Engineering, North Dakota State University, 2012

Registration
EI North Dakota—13329
ATSSA Traffic Control Technician
OSHA 30-Hour Training

Professional Experience
Houston Engineering, Inc.—2013-Present
Total Years of Experience—5 Years

Cameron will provide coordination between contractors and the design team.

Cameron Miller is already engaged in the construction process for the implementation of the Minot SWIF, and he will continue to provide those services into the future. Cameron regularly performs construction observation, surveying, and CAD duties out of HEI's Minot location.

- **Minot SWIF Implementation, Minot, ND.** Construction Inspector for the implementation of the Minot System-Wide Improvement Framework (SWIF). Cameron's role involves investigation and analyzation of outfall pipes, data collection, and construction inspection. The SWIF serves as a portion of the larger MREFPP, which is bringing permanent and substantial flood protection to the City of Minot and the surrounding region.
- **City of Minot Landfill Cell 6 Expansion, Minot, ND.** As Resident Project Representative, provided construction staking, as-built surveying, and preparation of record drawings.
- **Emergency Aquifer Well Rehabilitation, Minot, ND.** Construction Observor for site planning, piping layout, pump and well design, and system integration. Role required constant coordination with subconsultants, contractors, and owner operators as subsurface conditions were investigated during the construction process due to the urgent nature of the project. HEI was responsible for investigation of the existing well, preliminary and final design, and construction management.
- **Paving District #493, Minot, ND.** Lead Construction Observer for improvements to 37th Avenue Southeast and 13th Street Southeast. Work included designs for roadway improvements as well as erosion control, traffic control, and street lighting. Work also included placement of new storm sewer infrastructure, new curb and gutter, and asphalt pavement.
- **Burlington Northern Pathway, Minot, ND.** Construction Observer for repair of a multi-use path along the river in downtown Minot that was severely damaged during the 2011 flood. The riverbank and ground were completely cleared and then stabilized to support the new trail, with new plantings alongside, and a canopy where the trail runs underneath the BNSF railroad. ■

KORY ALEXANDER
Construction Survey



Education
AOS in Architectural Drafting and Construction Estimating, North Dakota State College of Science

Certifications
OSHA 30 Hour

Professional Experience
Houston Engineering, Inc.—2017-Present

Total Years of Experience—9 Years

Kory has provided field survey in the Minot community for nearly nine years and is very knowledgeable of the region.

Kory Alexander will help lead construction surveying efforts. Kory serves clients as a survey crew chief out of HEI's Minot location. He also serves clients as a licensed drone pilot, gathering unique and high quality data to better serve designers, assist with inspections and allow for original presentations to the public.

- **Minot SWIF Implementation, Minot, ND.** Survey Crew Chief for the implementation of the Minot System-Wide Improvement Framework (SWIF). HEI reviewed and documented existing right-of-way for the project; investigated and analyzed outfall pipes; and completed data collection, a geotechnical evaluation, and designs for capital improvements to the Souris Court and 10th Street Northwest areas.
- **Mouse River Enhanced Flood Protection Project – Phase MI-5, 4th Avenue Northeast Levee Extension, Minot, ND.** As Survey Crew Chief, supporting design services through preparation of construction plans and specifications. This phase of the project will extend a flood levee along 4th Avenue Northeast. Tasks include performing a topographic survey and examining storm and sanitary sewers along project site.
- **Sundre Raw Water Supply System Relocation Construction Management Services, Minot, ND.** As Survey Crew Chief, led the survey team in preparing for this relocation project. HEI was hired by the City of Minot to relocate the Sundre Raw Water Supply pipe from the Sundre Well Field connecting to the existing Northwest Area Water Supply (NAWS) pipe at 93rd Avenue Southwest and US 83, a raw water reservoir, and a pump station as well as to connect the pipe to the Minot Water Treatment Plant. Tasks include topographic surveying and construction staking.
- **Southwest Properties, Minot, ND.** Survey Crew Chief for the layout of a 20-acre commercial subdivision to be known as Southwest Business Park located in the fastest growth quadrant in Minot. After environmental assessments were done, HEI designed storm sewer and a detention pond for drainage, as well as connections to existing utilities. ■













Houston Engineering, Inc. • 18 3rd Street Southeast, Suite 100 • Minot, ND 58701 • 701.852.7931

50th
HOUSTON ENGINEERING, INC.
est. 1968

houstoneng.com

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: *Dan Jonasson, Director of Public Works*

DATE: *April 20, 2018*

SUBJECT: **INFORMATIONAL UPDATE ON THE MAPLE DIVERSION AND FEASIBILITY STUDY FOR THE MREFPP.**

I. RECOMMENDED ACTION

1. Informational update

II. DEPARTMENT CONTACT PERSONS

Dan Jonasson, Director of Public Works	857-4140
Ryan Ackerman, Administrator – SRJB	837-8737

III. DESCRIPTION

A. Background
The SRJB, design engineers and Public Works staff have been working with the USACE on the feasibility study, which has determined that the Maple Diversion has potential for a federal interest. As the designed has progressed to a 20% level of design, modifications have been made to the Maple Diversion. Ryan Ackerman, Administrator for the SRJB will provide a presentation on this.

B. Proposed Project
The project provides permanent flood protection to the flood of record and ties phases 3 and 1 of the MREFPP together.

C. Consultant Selection
Barr – Ackerman design team, along with Houston Engineering were selected by the SRJB in accordance with state statute to design phases of the MREFPP.

IV. IMPACT:

A. Strategic Impact:
This work is forth phase of several phases of permanent flood protection throughout the city of Minot. It will be built to provide protection to the flood of record plus 3' of free board. It is a high flow bypass.

B. Service/Delivery Impact:
This project is part of the long term flood protection and one of the first phases to start removing 60% of the people in the new FEMA firm maps.

C. Fiscal Impact:

Funding from the State Water Commission is being requested for 65% of the costs and there was legislative intent during the 2017 legislative session to fund the first four phases of flood protection in Minot, along with the east (MI-5) and west tieback levees. If the project is approved by the USACE and included in the WRDA bill, federal funds may be eligible at a future date.

V. ALTERNATIVES

Alt 1. Various alternatives were discussed during the Preliminary study as well as during the feasibility study portion of this project.

VI. TIME CONSTRAINTS

VII. LIST OF ATTACHMENTS



Houston Engineering Inc.

April 17, 2018

MOUSE RIVER ENHANCED FLOOD PROTECTION PROJECT
4th AVENUE NE TIEBACK – PHASE MI-5
CITY COUNCIL PRESENTATION

City of Minot and Souris River Joint Board

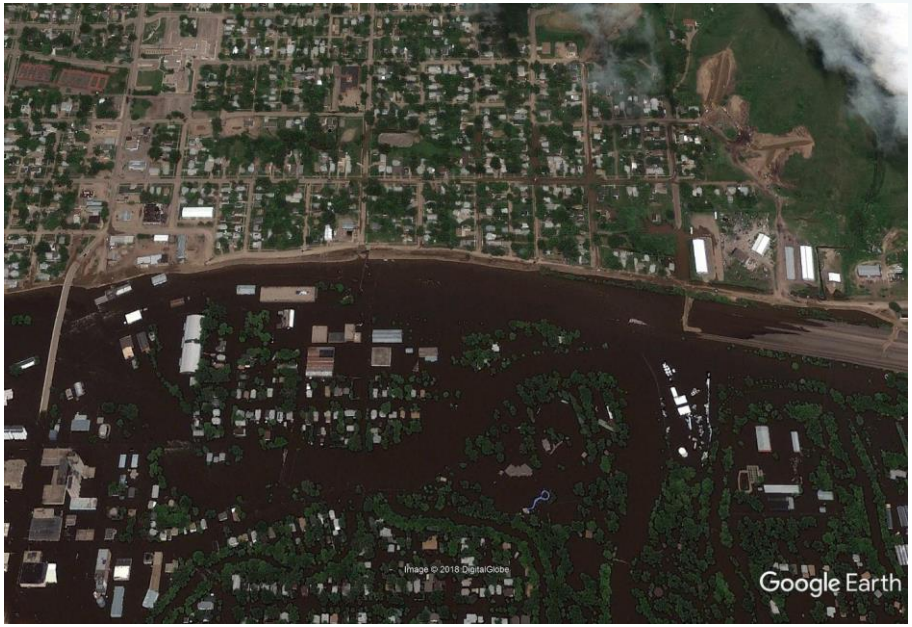


MREFPP Overview

- Project Overview
- Early Conceptual Options
- Preferred Option Refinement
- Phase MI-5 Current Project Layout
- Opinion of Probable Cost
- Project Constraints
- Questions/Input

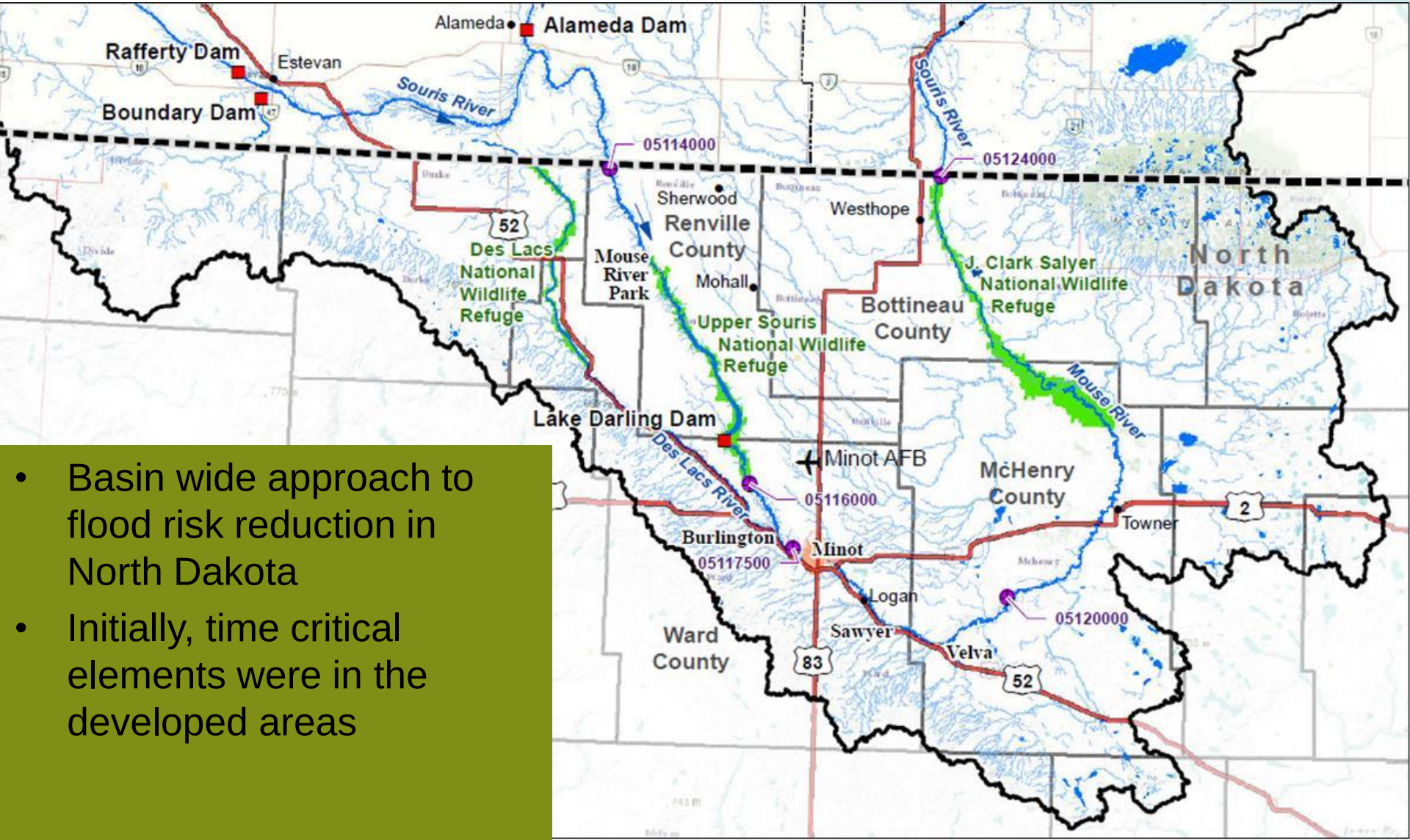


Current Aerial



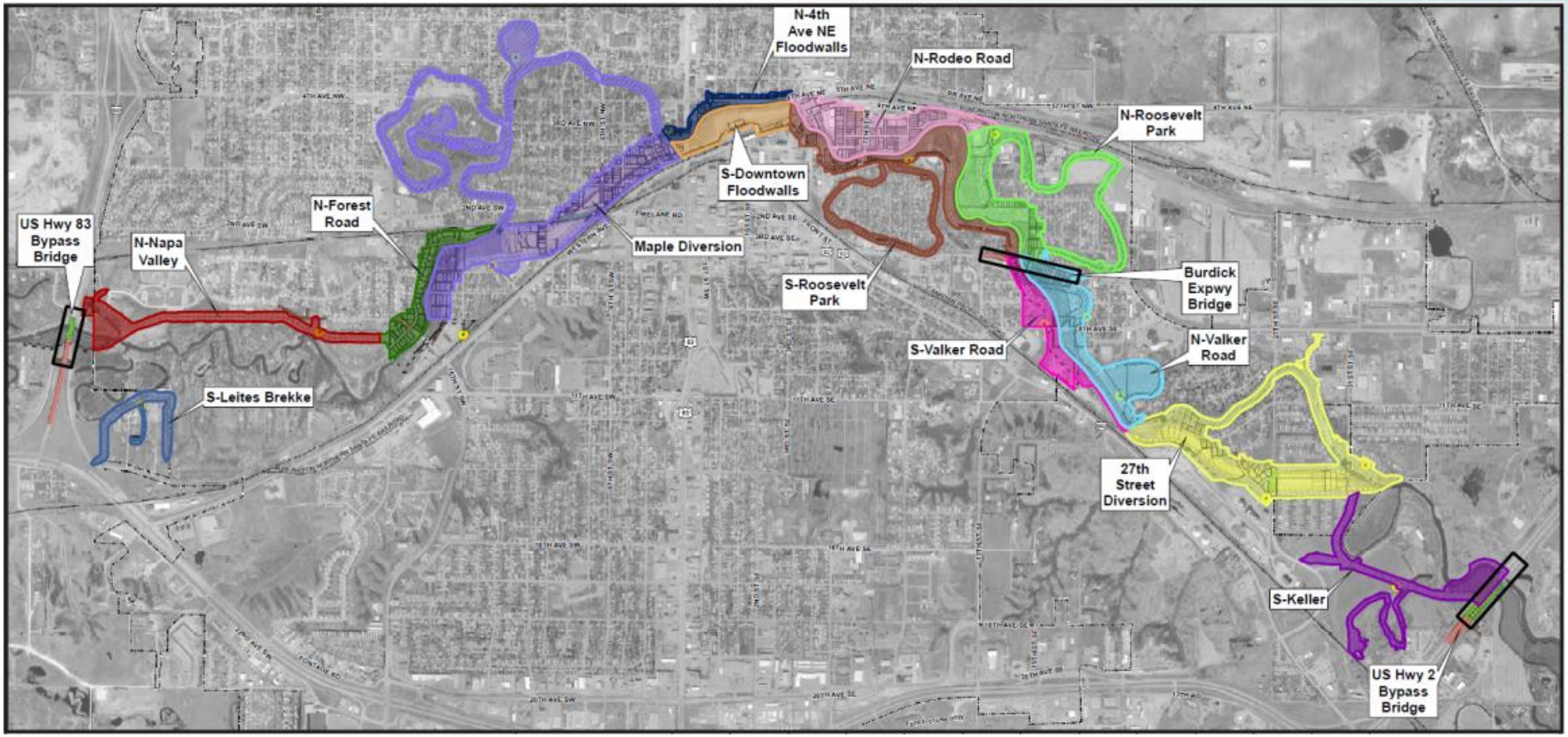
6/27/2011 Flood Aerial

Overall Mouse River Enhanced Flood Protection Project Scope



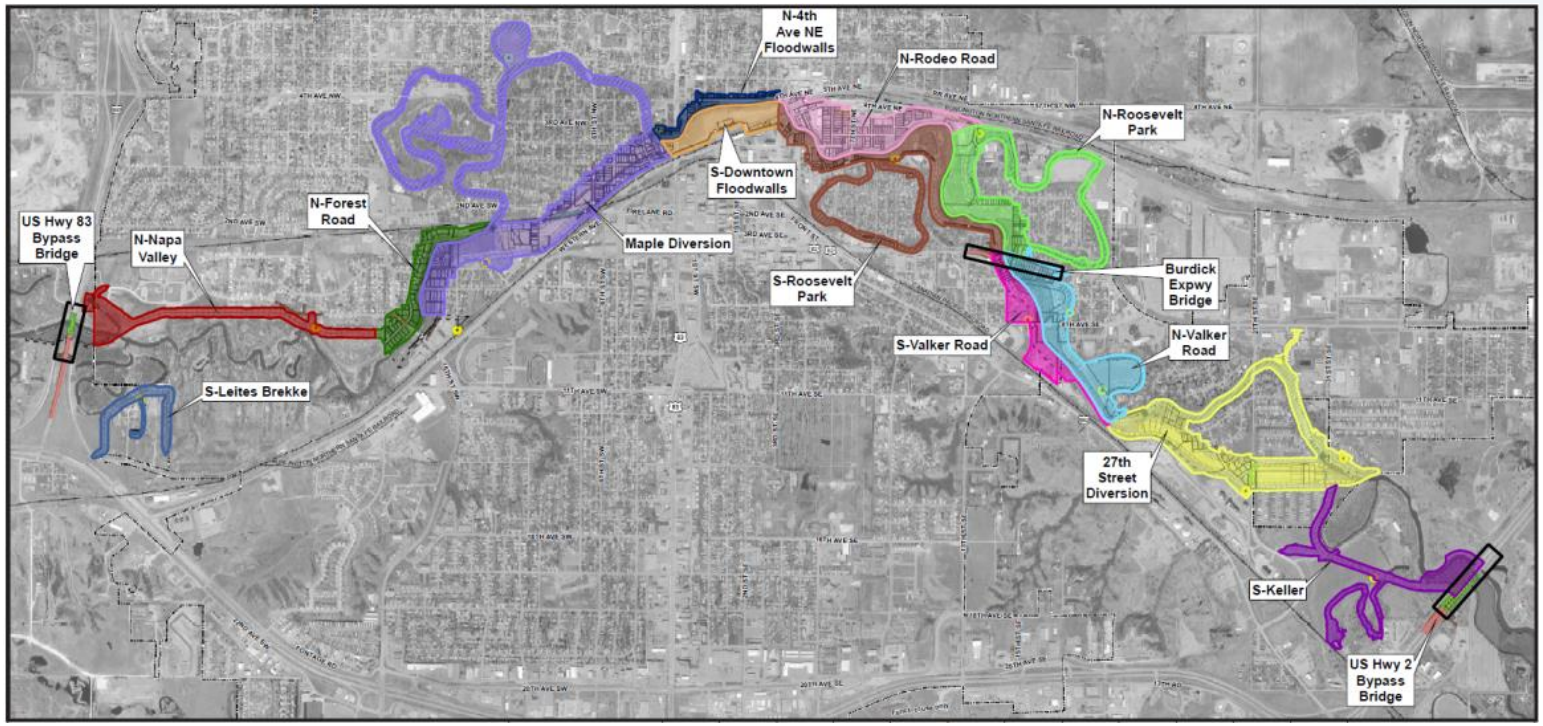
- Basin wide approach to flood risk reduction in North Dakota
- Initially, time critical elements were in the developed areas

MREFPP – Minot Segments

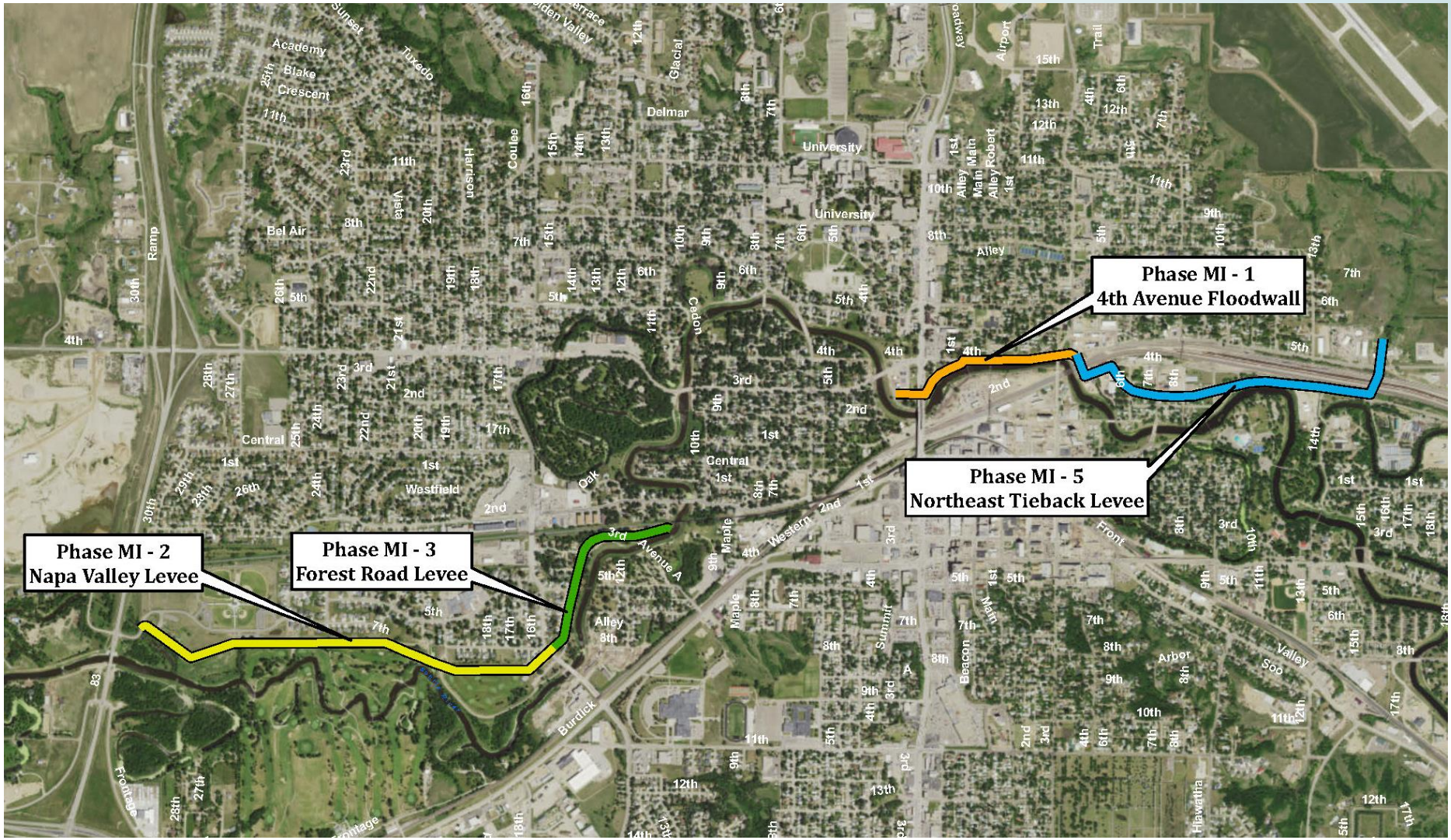


MREFPP – Minot Segments Overview

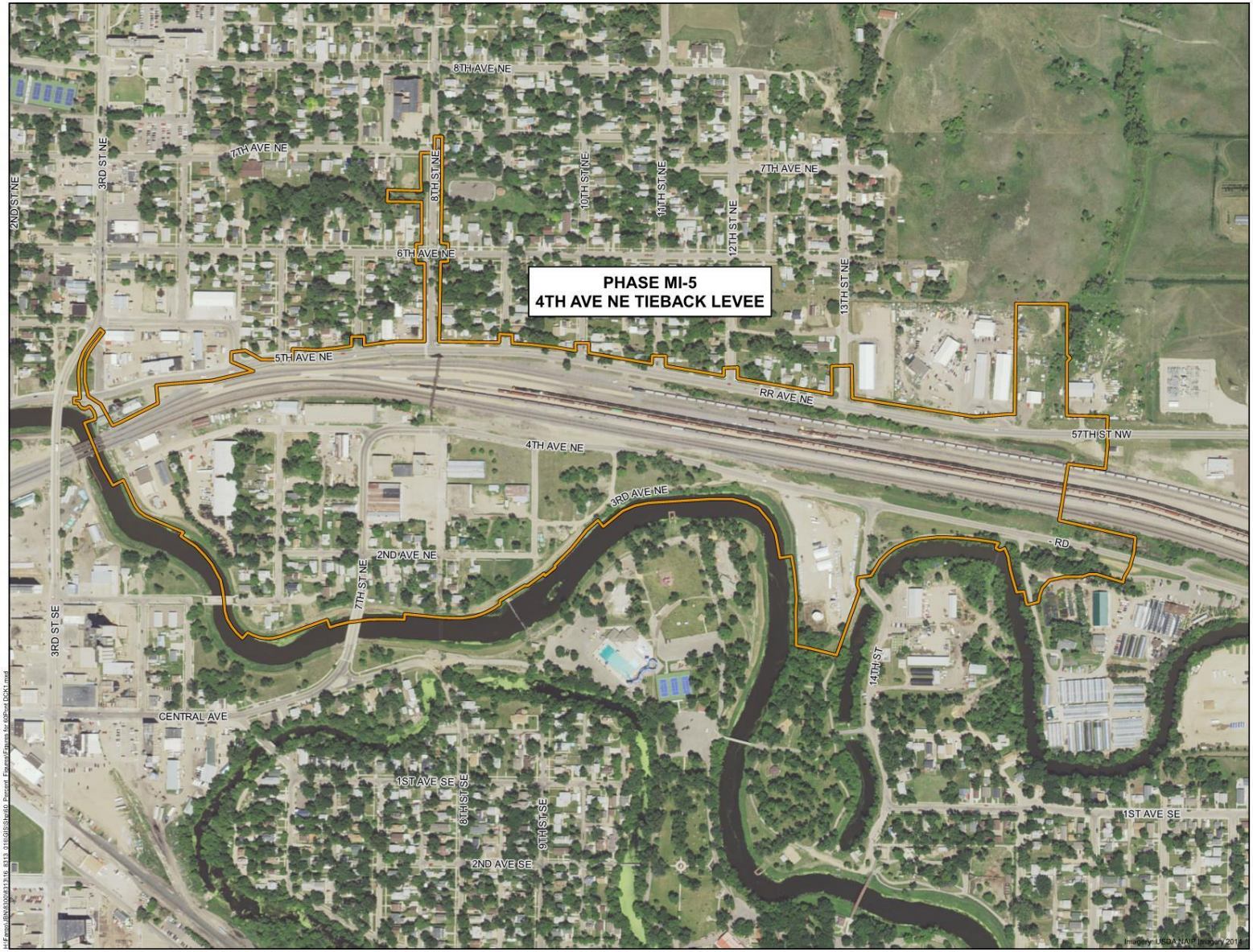
- Project Objective
  - *Reduce reliance on emergency measures*
  - *Compatibility with future MREFPP Phases to allow future Floodplain Accreditation*
- Level of Protection
  - *2011 Flood Levels + 3-ft*



Overview of Phases MI-1, MI-2, MI-3 & MI-5



Overview of Phase MI-5



Project Phase

Phase MI-5

0 205 410 820

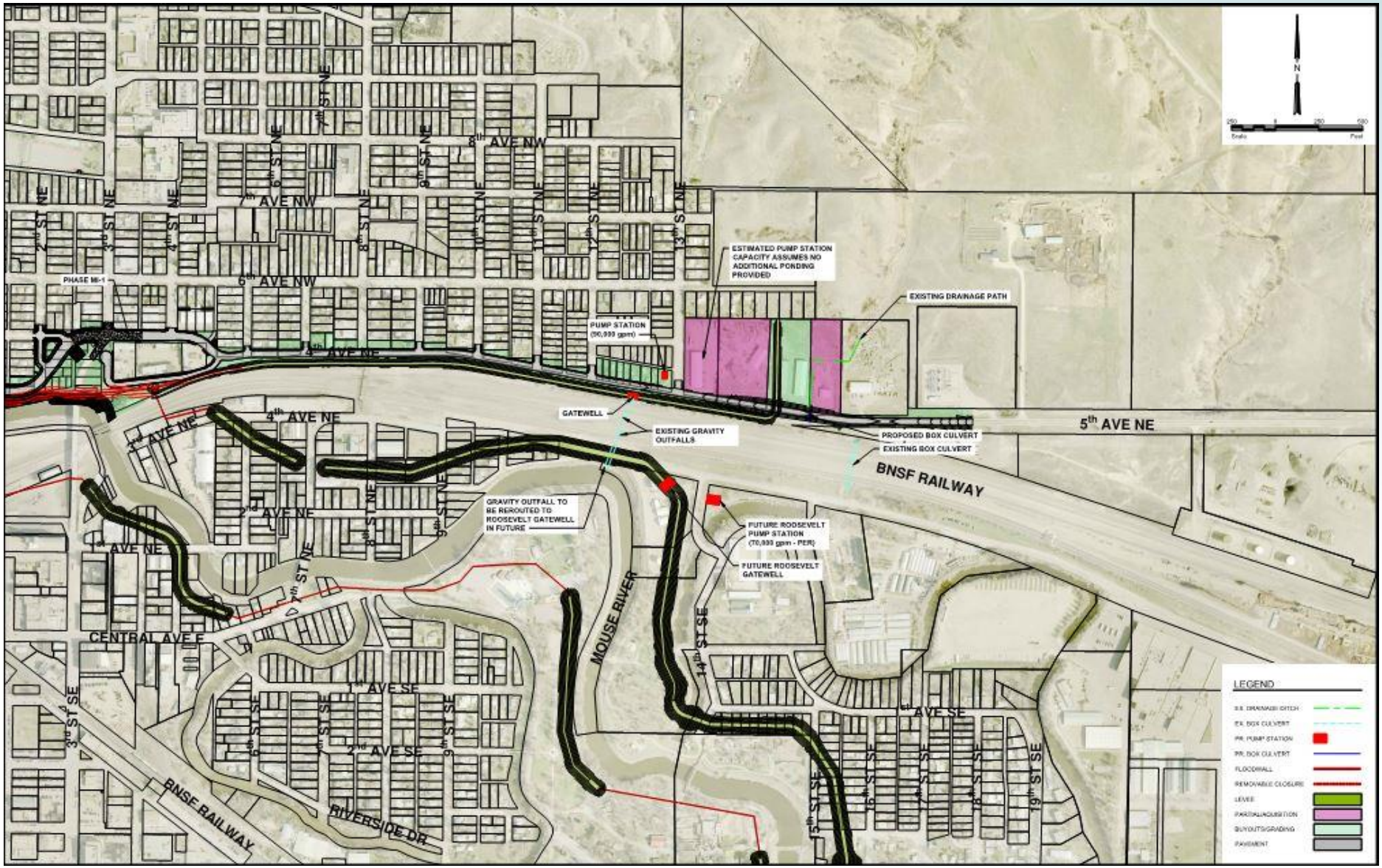
Feet

HoustonEngineering Inc.

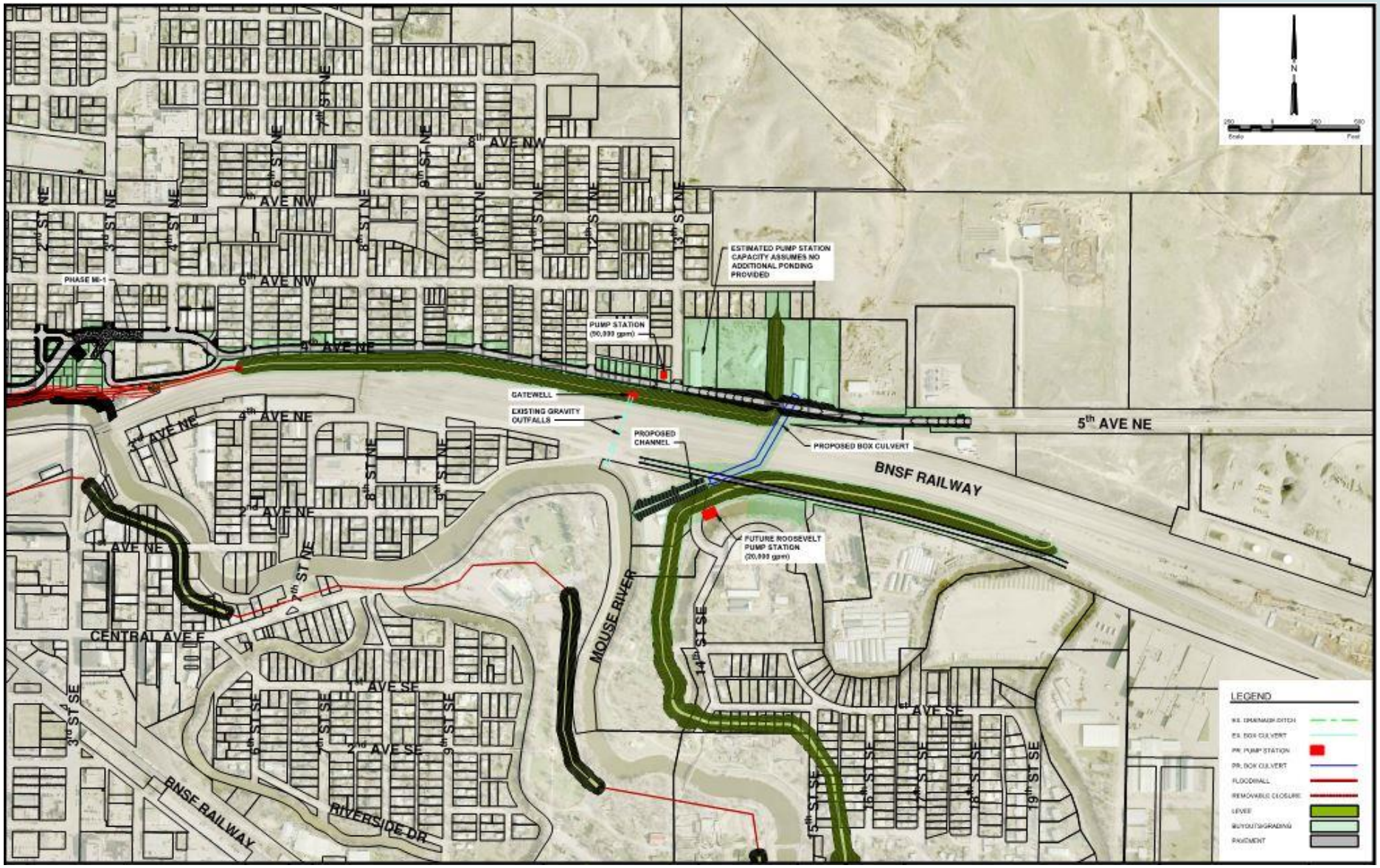
Figure 1-3

PHASE MI-5
Revised for 60%
Project Location & Phasing
Basis of Design Report
Mouse River Enhanced Flood
Protection Project
Phase MI-5
Minot, North Dakota

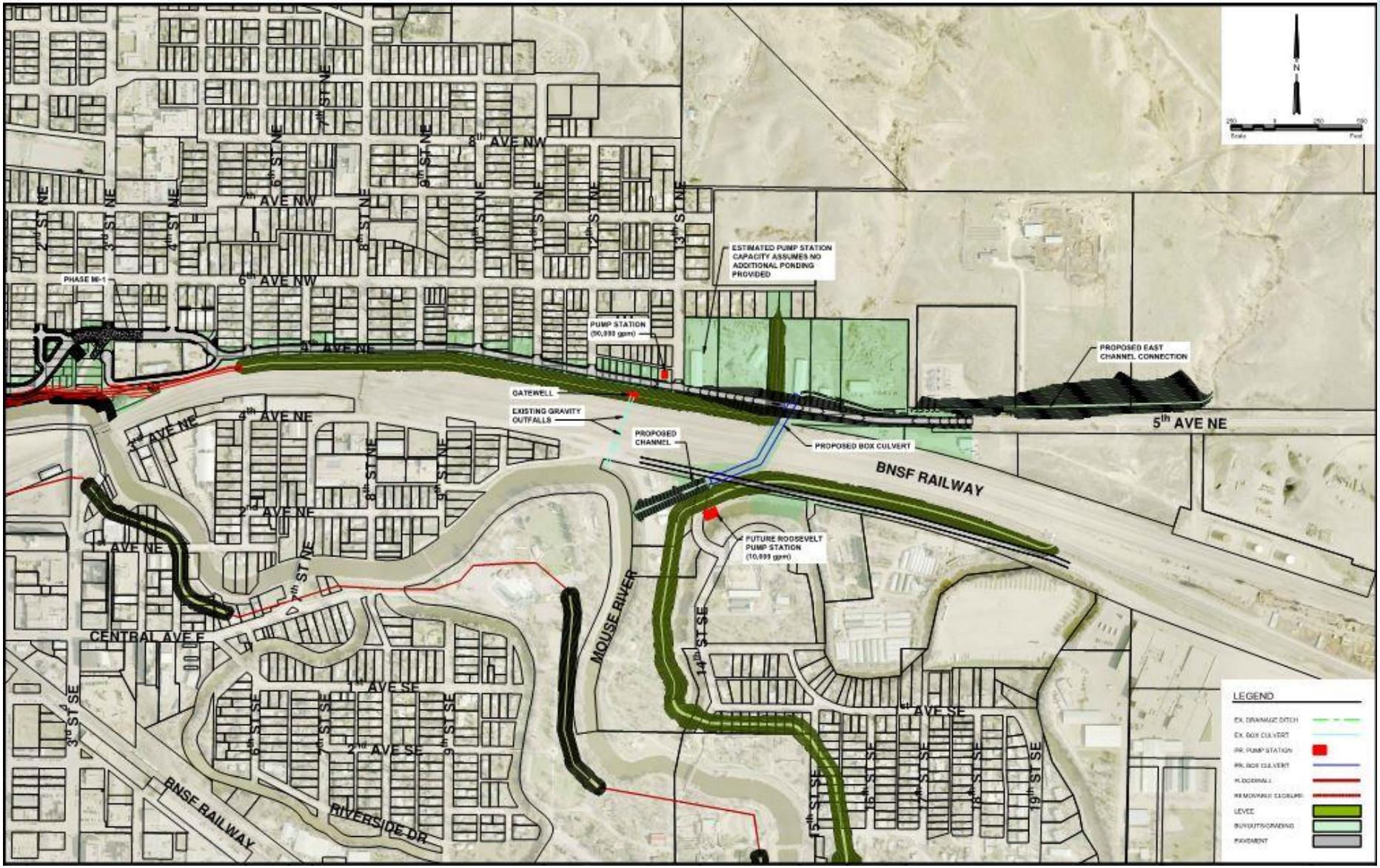
Conceptual Options – Option 1A



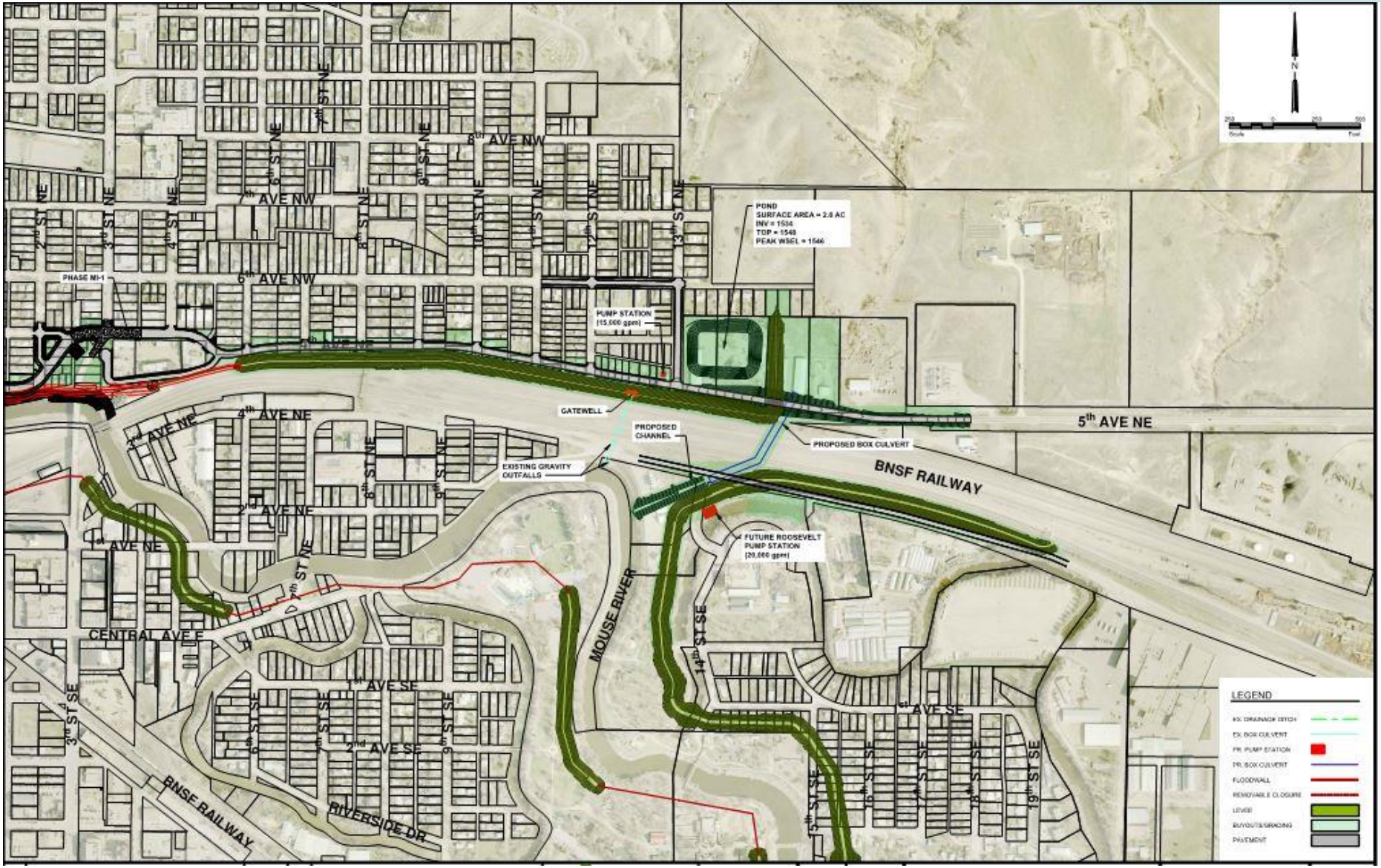
Conceptual Options – Option 2A



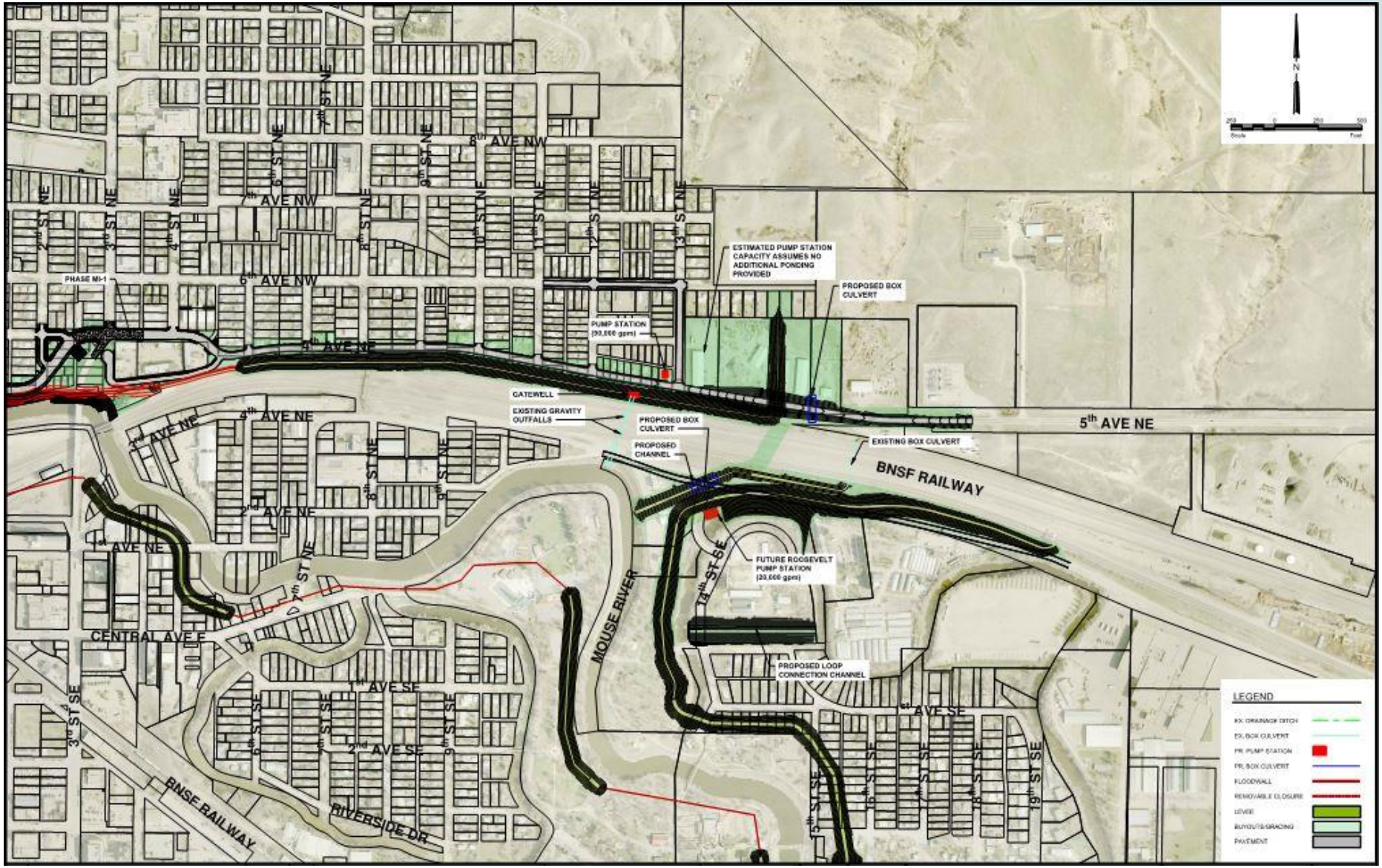
Conceptual Options – Option 2B



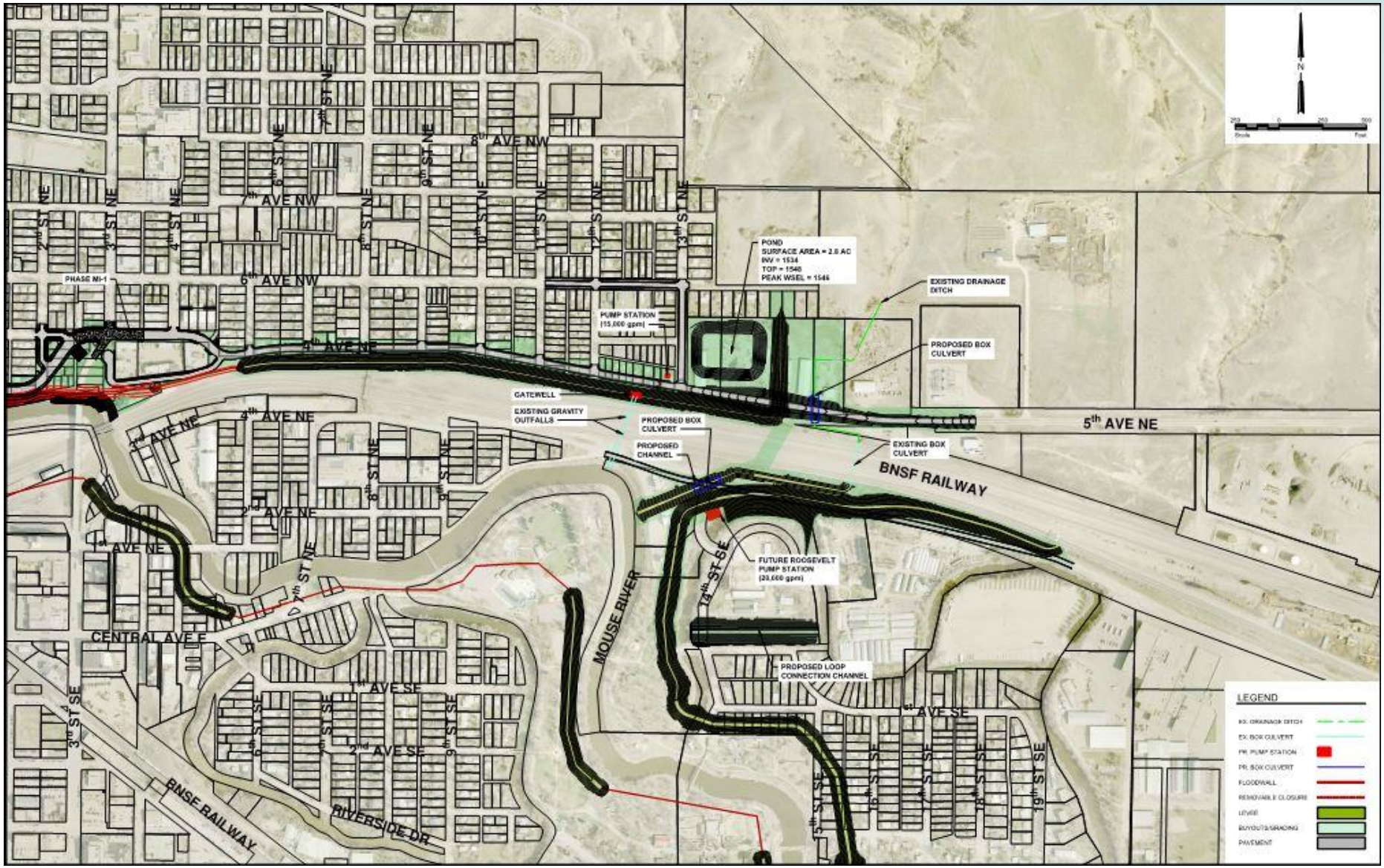
Conceptual Options – Option 2C



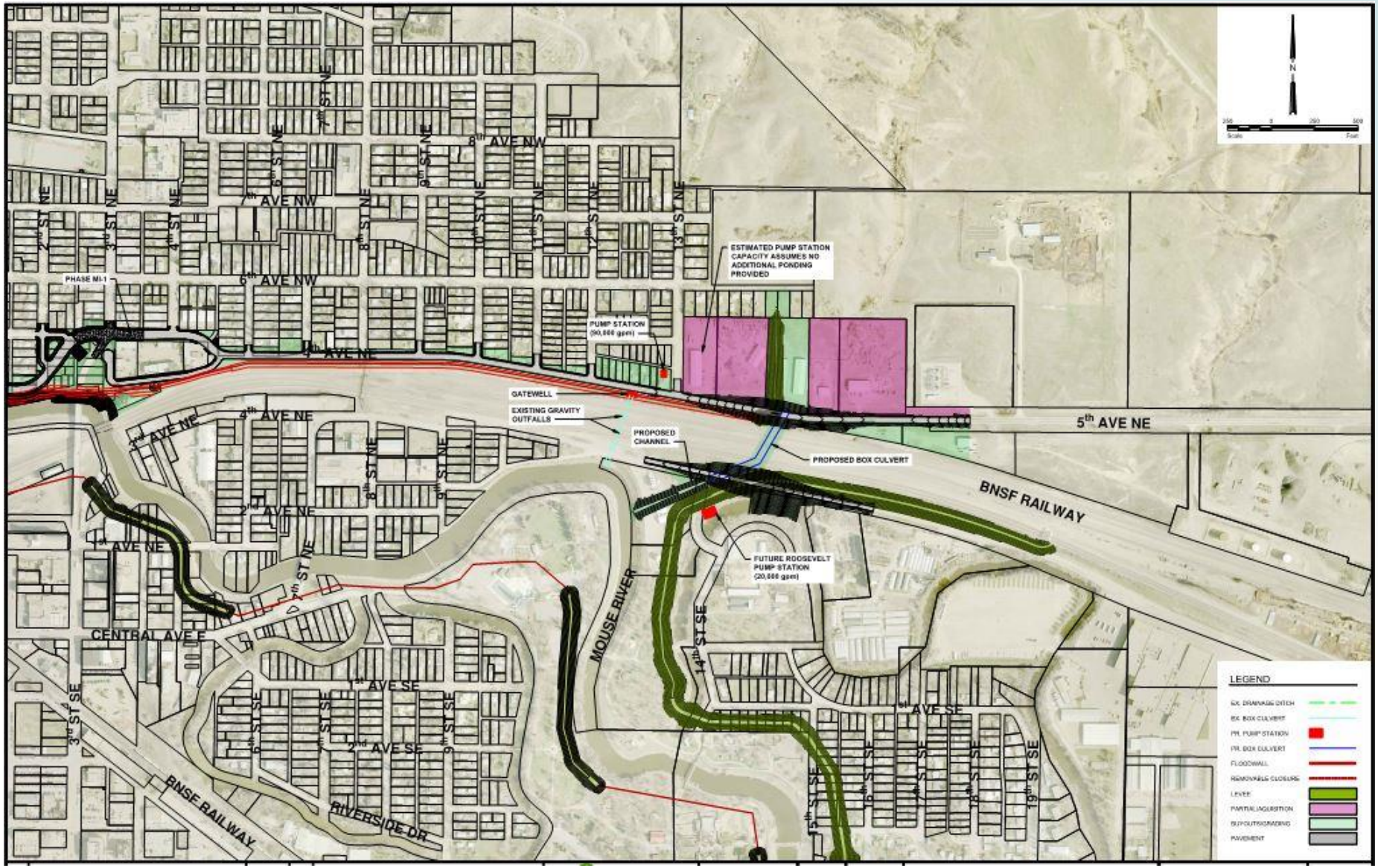
Conceptual Options – Option 2D



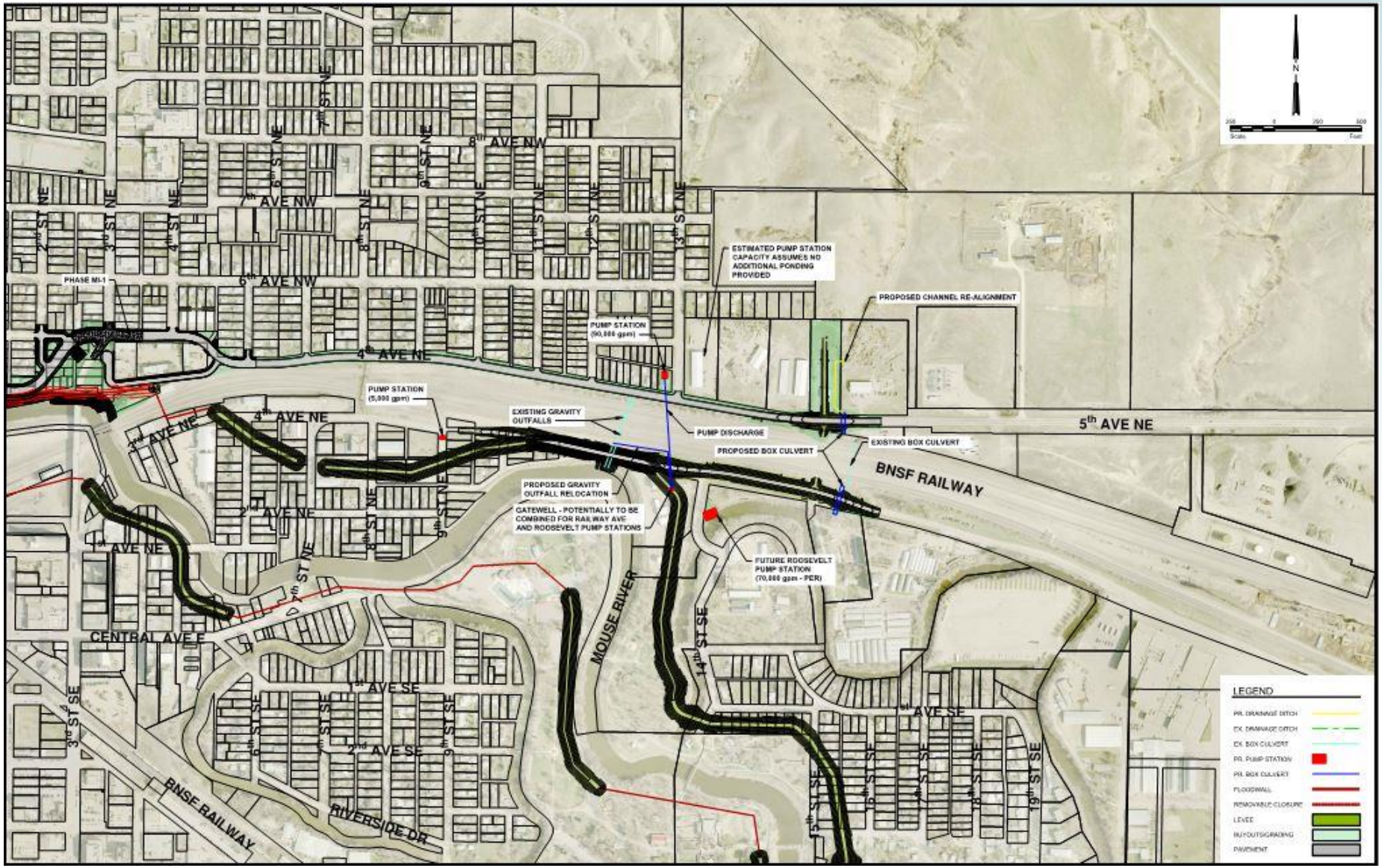
Conceptual Options – Option 2E



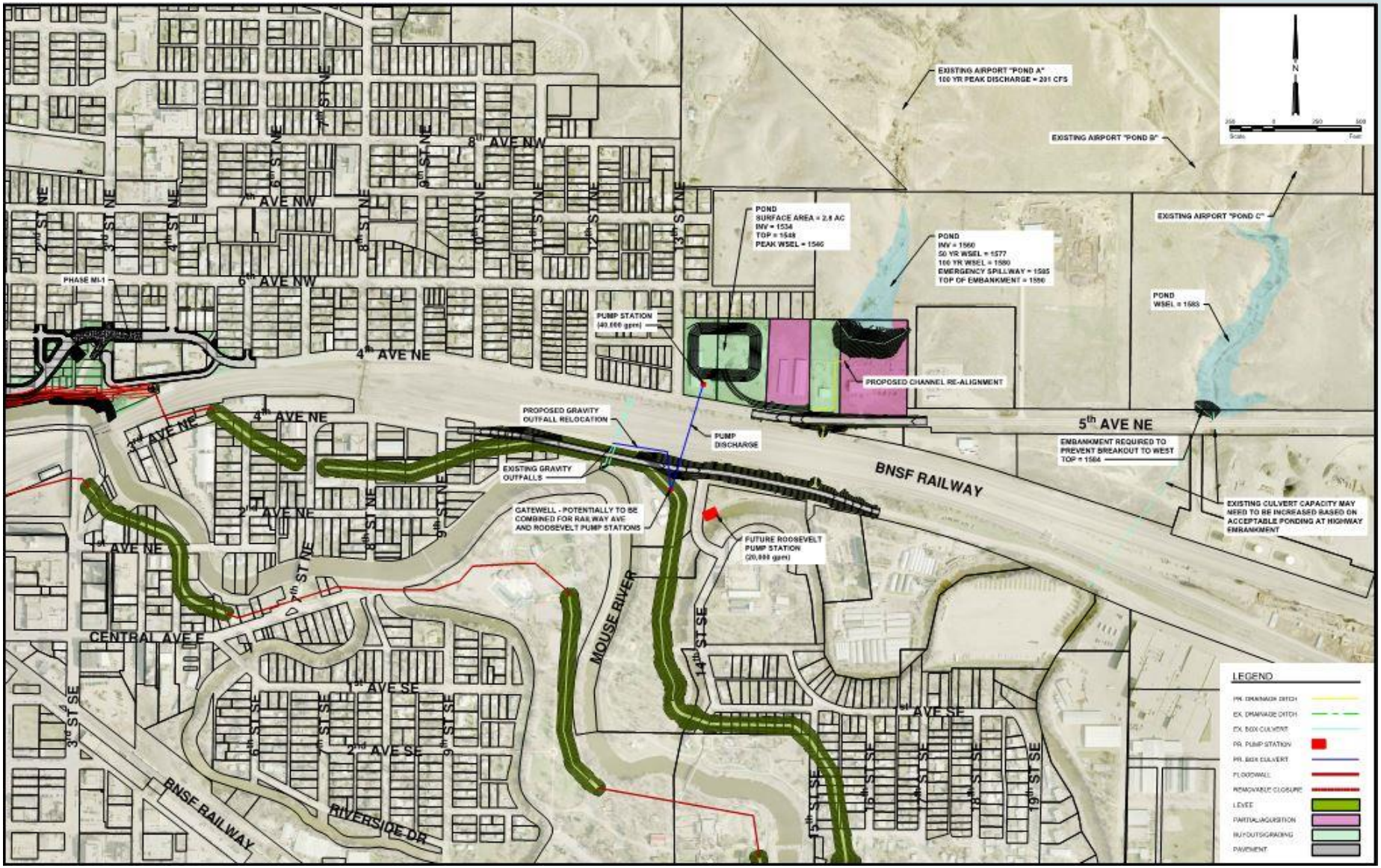
Conceptual Options – Option 3A



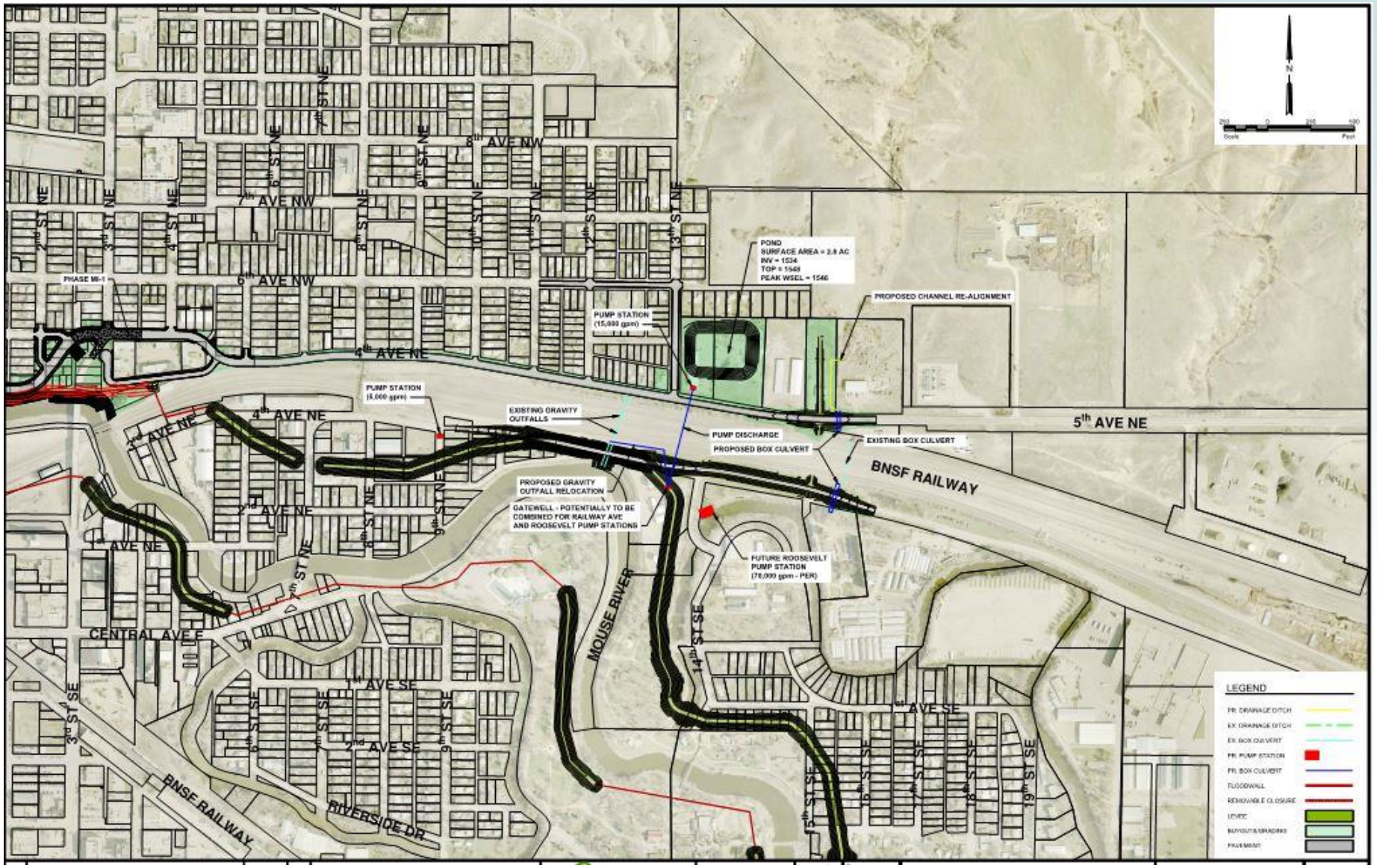
Conceptual Options – Option 4A



Conceptual Options – Option 4B



Conceptual Options – Option 4C



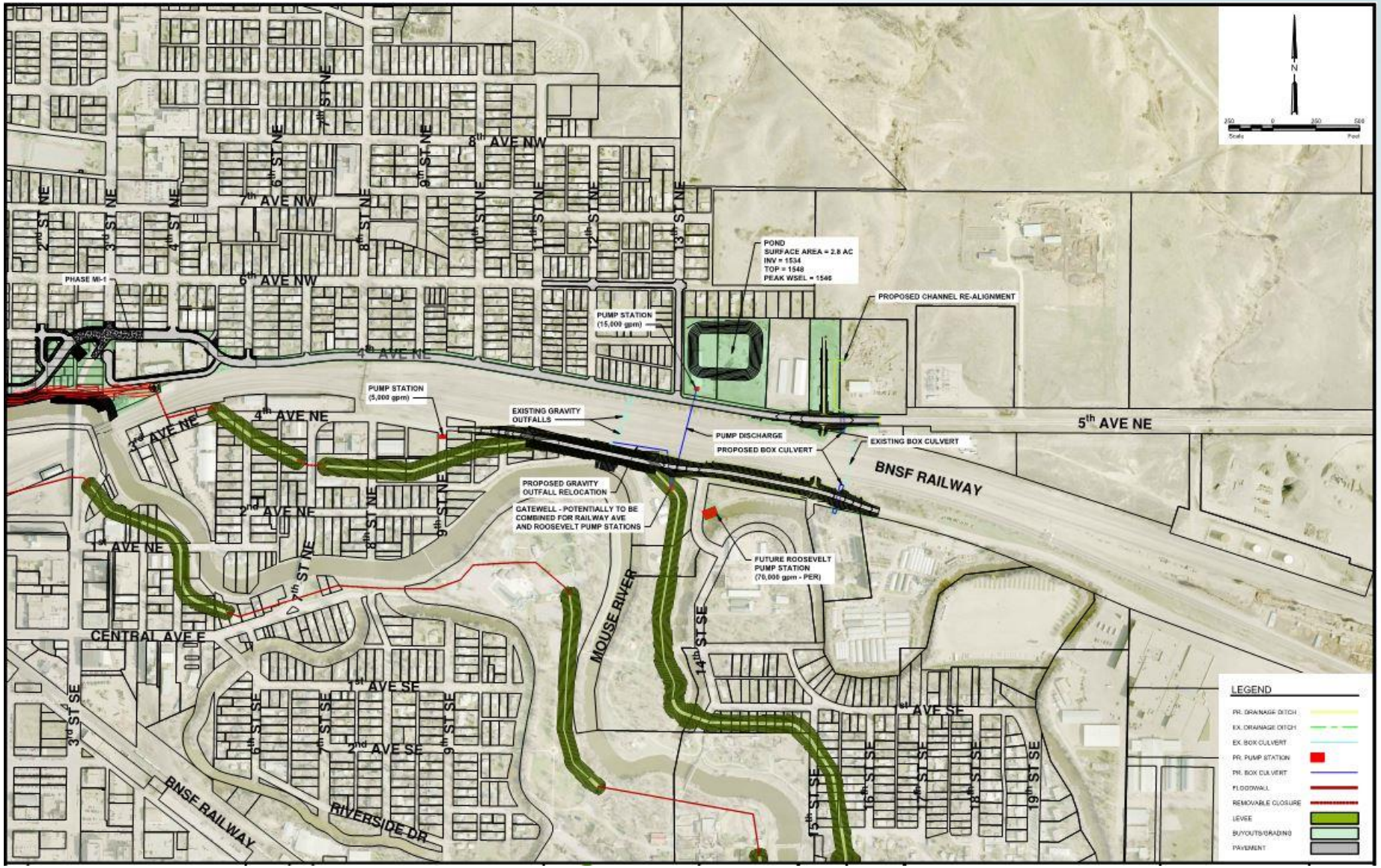
Summary of Parcel/Social Impacts from Preliminary Options

Alternative	Full Acquisitions	Partial Acquisitions	Total Acquisitions
1A	24	3	**27**
2A	34	8	**42**
2B	34	11	**45**
2C	34	8	**42**
2D	34	8	**42**
2E	34	10	**44**
3A	24	1	**25**
4A	1	6	**7**
4B	3	8	**11**
4C	3	6	**9**

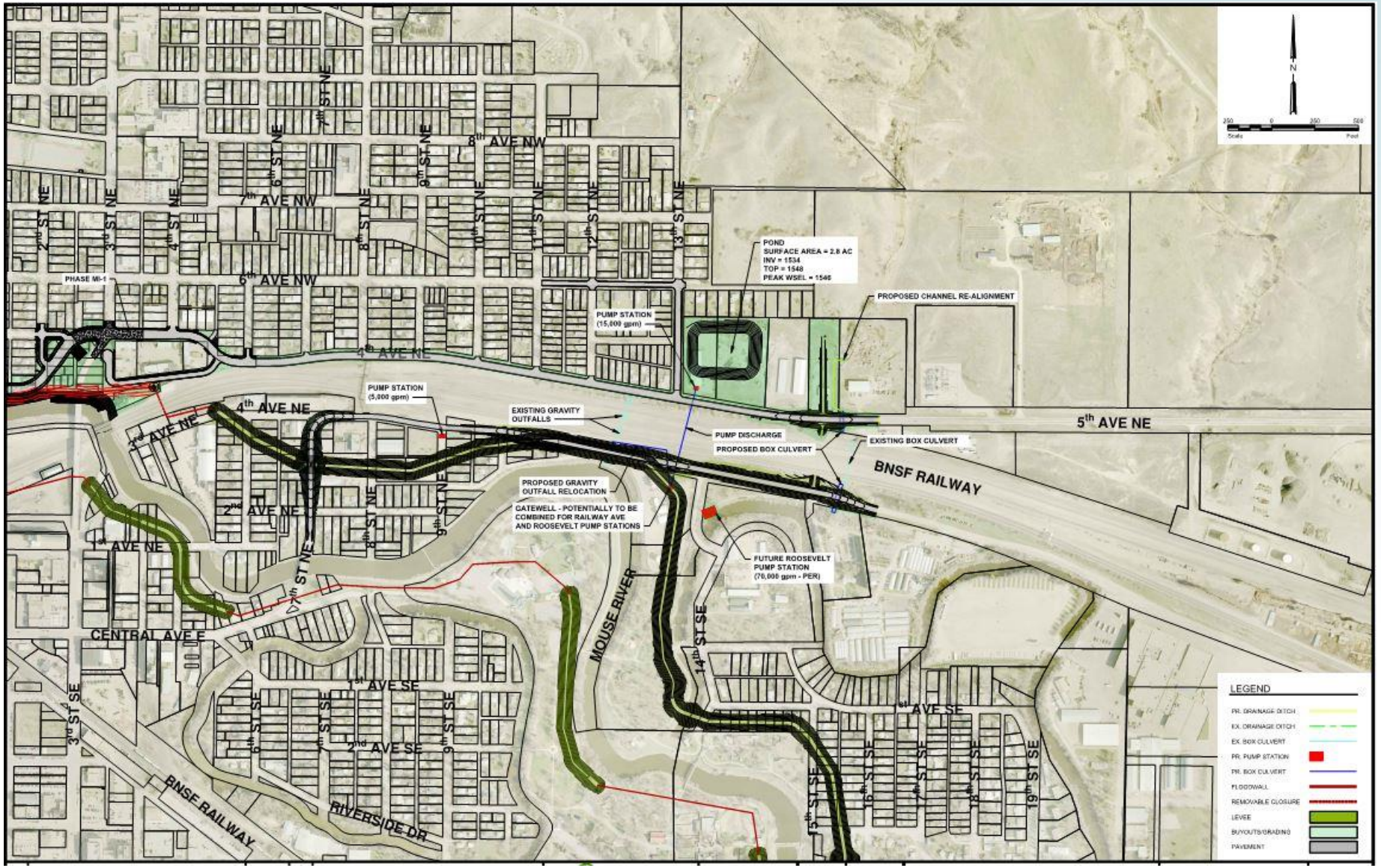
Conceptual Opinion of Probable Cost

	2A	2C	2E	4A	4C
MI-5A Point Estimate	$49.1	$37.9	$37.9	$36.8	$27.9
MI-5B Point Estimate	$14.0	$13.5	$15.3	$15.3	$15.3
MI-5 Total Point Estimate	**$63.1**	**$51.4**	**$53.2**	**$52.1**	**$43.2**

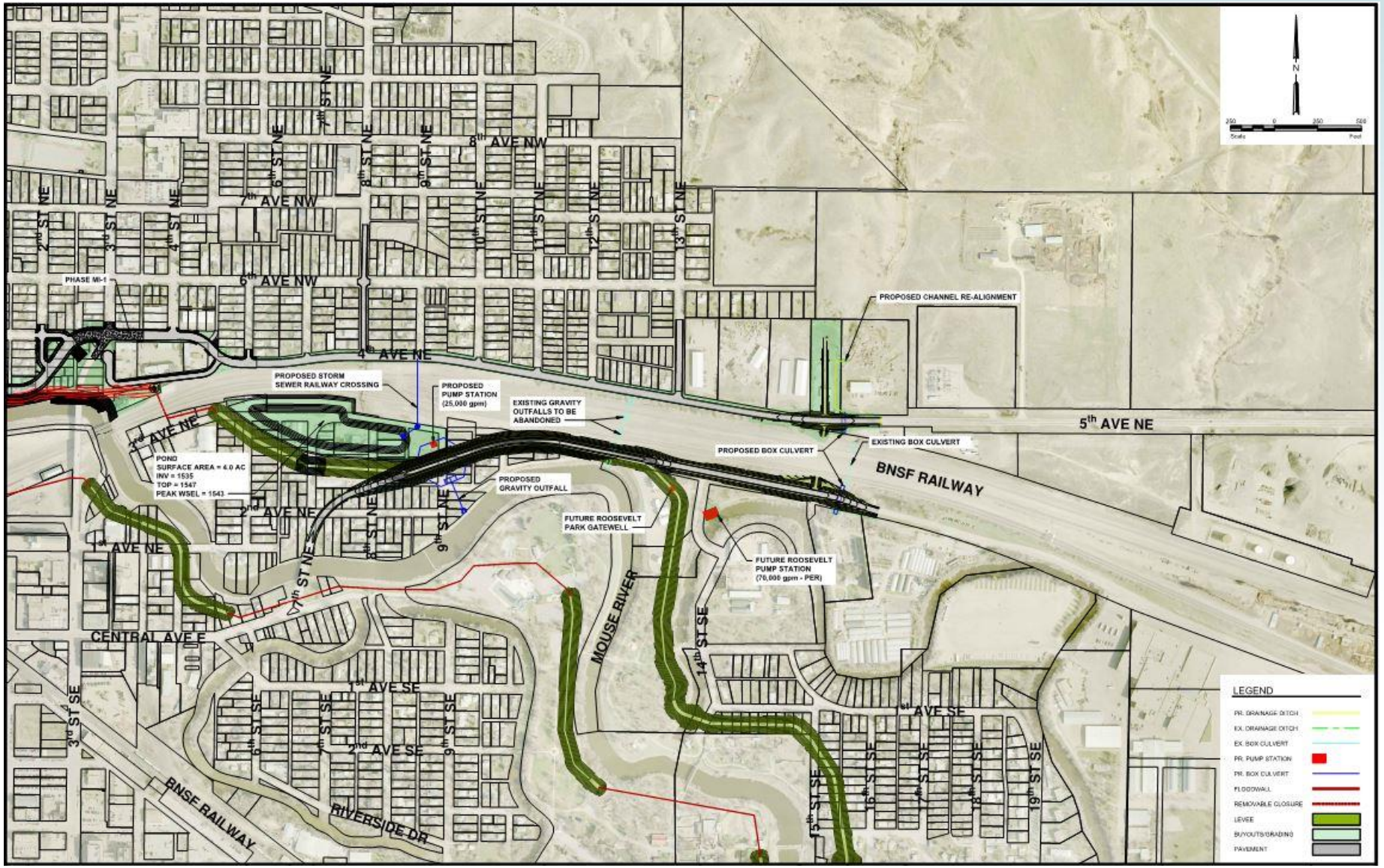
Preferred Option with Refinement – Option 4C-T1



Preferred Option with Refinement – Option 4C-T2



Preferred Option with Refinement – Option 4C-T3



Phase MI-5 Current Project Overview



Project Overview – 94 ft of Concrete Floodwalls



17.5’± in Height

Project Overview – 1 Removable Closure



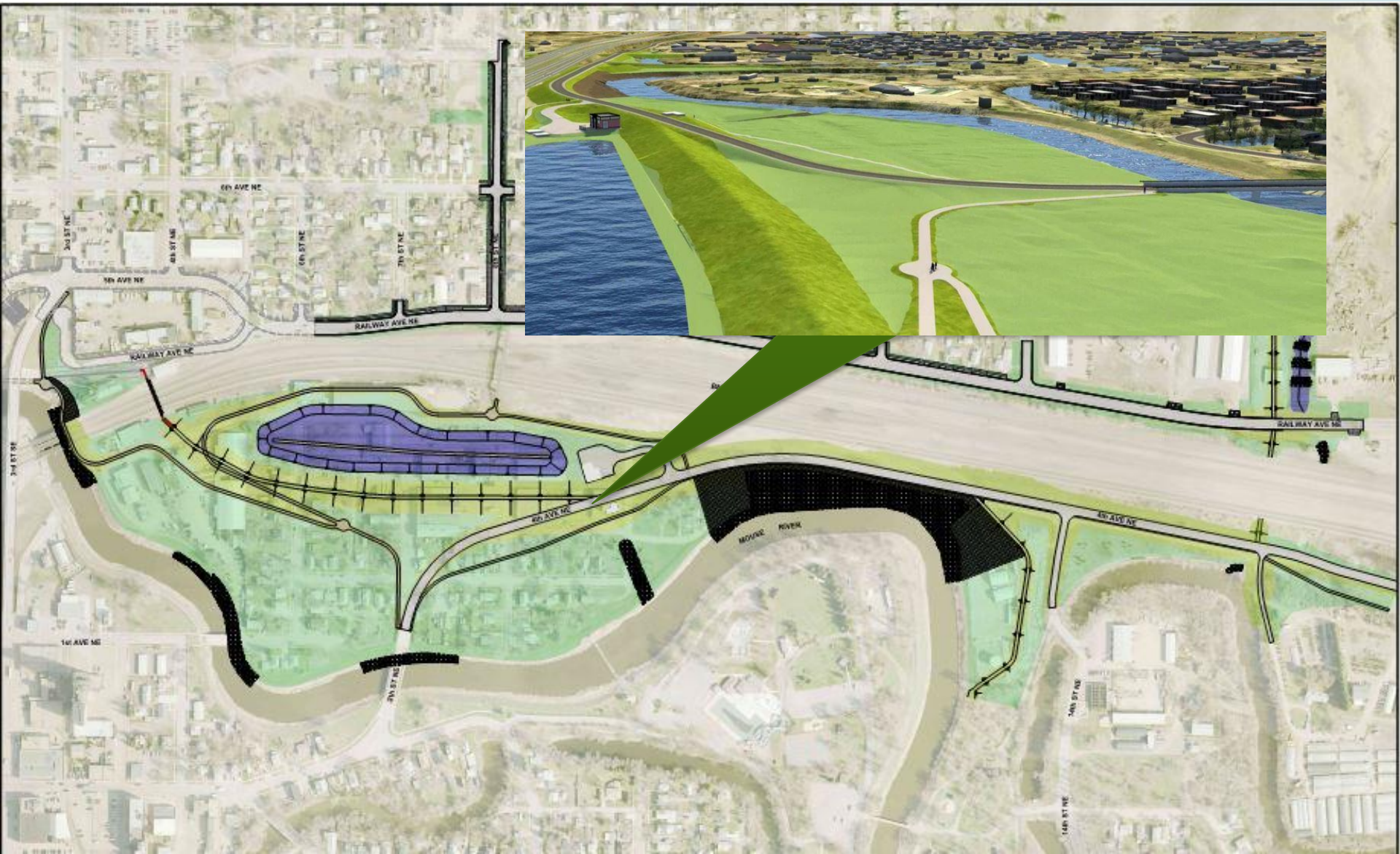
Project Overview – Earthen Levees Segments



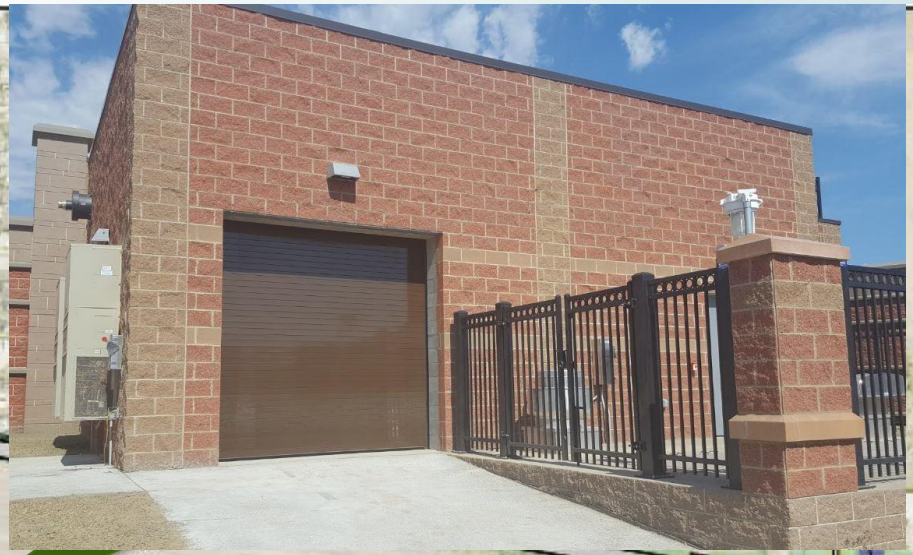
16’± in Height

6’± in Height for Tieback Levee

Project Overview – 4th Avenue NE Relocation



Project Overview – Storm Water Pump Station



30,000± gpm capacity

Project Overview – Various Utility System Modifications



- Storm Sewer
- Sanitary Sewer
- Water Distribution
- Sundre Line
- Franchise Utilities

Project Overview – Storm Water Storage Pond



Virtual Reality Tour



Engineers Opinion of Probable Cost

Item	OPC Anticipated Accuracy Range, Low (-15%)	OPC Phase MI-5 (Point Estimate)	OPC Anticipated Accuracy Range, High (+25%)
Estimated Construction Cost (1)(2)(3)(4)	$31.81 Million	$37.42 Million	$46.78 Million
Lands and Easements		TBD	
Planning, Engineering, and Design (PED) (Assume 12%)		$4.49 Million	
Construction Management (CM) (Assume 7%)		$2.62 Million	
Total Opinion of Cost	$37.85 Million	$44.53 Million	$55.66 Million

(1) Includes 15% contingency.
(2) Does not include temporal escalation costs, O&M costs, relocations, or betterments.
(3) Does not include acquisition of lands and easements.
(4) Numbers rounded to the nearest $0.01 million.

Project Constraints / Complications / Benefits

Pros

- Lowest Cost of all options considered
- Reduced Social Impacts

Cons

- Operation of Railroad Closures
- Permitting / Approvals

Questions/Input

Houston Engineering, Inc. • 18 3rd Street SE • Minot, ND 58701 • 701.852.7931

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: *Dan Jonasson, Director of Public Works*

DATE: *April 20, 2018*

SUBJECT: **MI-5 EAST TIEBACK LEVEE ALTERNATES – FLOOD CONTROL ALTERNATIVES FOR CONSIDERATION**

I. RECOMMENDED ACTION

1. Information will be provided for Council to make a recommendation of preferred alternative for MI-5 (East Tieback Levee)

II. DEPARTMENT CONTACT PERSONS

Dan Jonasson, Director of Public Works	857-4140
Ryan Ackerman, Administrator – SRJB	837-8737

III. DESCRIPTION

A. Background
The SRJB, design engineers and Public Works staff have been working since the 2011 flood on designing and permitting various stages of flood protection in Minot, as well as the rural reaches. Phases 1,2 and 3 are currently under construction and the HMGP project to protect the water treatment plant is complete. In addition Perkitt ditch storm water detention has been completed and Burlington flood protection is 90% complete in design. A feasibility study is underway to determine what federal interest there may be in the MREFPP, currently the Maple Diversion looks like the only likely candidate for federal funding.

B. Proposed Project
MI-5 or the east tieback levees will connect to phase 1, on the east side of the 3rd street bridge and tie into high ground on the east end of Minot. A list of alternatives that have been looked at for consideration are attached in the Houston Engineering presentation. Council will be asked to review these various alternatives and select a preferred option to have the SRJB advance

C. Consultant Selection
Barr – Ackerman design team, along with Houston Engineering were selected by the SRJB in accordance with state statute to design phases of the MREFPP.

IV. IMPACT:

A. Strategic Impact:

This work is the 5th phase of several phases of permanent flood protection throughout the city of Minot. It will be built to provide protection to the flood of record plus 3' of free board. This phase of flood control is along the alignment of the preliminary engineering report and alignment that was completed after the 2011 flood. It is another phase of flood protection, that will provide protection to the residents of Minot as well as be a crucial part of removing these residents from the new FIRM mapping from FEMA.

B. Service/Delivery Impact:
This project is part of the long term flood protection and one of the first phases to start removing 60% of the people in the new FEMA firm maps. It is estimated that this phase will be ready to bid in 2019, pending funding appropriation from the Legislature and the SWC.

C. Fiscal Impact:
Funding from the State Water Commission is being requested for 65% of the costs and there was legislative intent during the 2017 legislative session to fund the first phases of flood protection in Minot, which included the east (MI-5) and west tieback levees.

V. ALTERNATIVES

Numerous alternatives have been assessed, these are shown in the attached presentation that will be given at the Committee meeting. Houston Engineering will present these alternatives.

VI. TIME CONSTRAINTS

Council's approval of the preferred alternate will allow the project to move forward and gather public input on this preferred option as well as advance to final design for this phase.

VII. LIST OF ATTACHMENTS

A. *MI-5 Presentation*

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Lakefield, Finance Director

DATE: 04/24/18

SUBJECT: **PARKING RAMPS 2018 BUDGET (RAMP01 & RAMP02)**

I. RECOMMENDED ACTION

1. Move to approve the budget amendment for the City to manage the downtown parking ramps.

II. DEPARTMENT CONTACT PERSONS

Tom Barry, City Manager	857-4750
David Lakefield, Finance Director	857-4771
Lance Meyer, City Engineer	857-4101

III. DESCRIPTION

A. Background
The City of Minot has taken control of the downtown Parking Ramps requiring the need to establish a budget to allow for the smooth operation and maintenance of the ramps.

B. Proposed Project
The budgeted funds will allow for proper signage to be displayed, re-striping of the parking stalls, changing of the locks, clean-up of the ramps, establishment of financial records, staff training for the parking equipment, and other management and administrative needs as necessary for the remainder of FY 2018.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
The plan is to address immediate maintenance & safety needs of each ramp along with setting up a detailed cleaning, developing a maintenance checklist and schedule, identifying staff resources needs, evaluating the equipment and material needs to maintain the structures and developing a long-term capital improvement plan for each ramp.

B. Service/Delivery Impact:
NA

C. Fiscal Impact:
The parking ramps will be set up as enterprise funds with the parking receipts being the primary source of ongoing income. The deficiency estimated for the 2018 budget will be funded from sales tax major projects.

Project Costs

PARKING RAMP EXPENSES		
		2018
Account Number	Account Description	Budget
150-6500-512.01-30	Extra Help	$ 25,440
Salaries		
150-6500-512.02-20	Social Security	1,577
150-6500-512.02-21	Medicare	369
Employee Benefits		1,946
150-6500.512.04-22	Mtce Contract - Snow Removal	4,000
150-6500-512.04-33	Mtce Building & Grounds	88,000
Purchased Property Services		92,000
150-6500.512.05-30	Telephone	7,560
150-6500-512.05-40	Publications	4,000
Other Purchased Services		7,560
150-6500-512.06-21	Natural Gas	6,900
150-6500-512.06-22	Electricity	9,900
150-6500-512.06-50	Operation Supplies	65,500
Supplies		82,300
150-6500-512.07-93	Sweeper	13,000
Capital Purchases		13,000
Total Parking Ramp		$ 222,246

Project Funding

PARKING RAMP INCOME		
		2018
Account Number	Account Description	Budget
150-0000-381.02-61	Parking Receipts	$ 49,000
150-0000.391.32-10	Less Cash Reserves from Sale Tax Major Projects	173,246
Parking Ramp Income		$ 222,246

V. ALTERNATIVES

NA

VI. TIME CONSTRAINTS

Council's approval of the recommendation will allow the City to run the ramps in a fiscally responsible manner.

VII. LIST OF ATTACHMENTS

A. Budget Amendment Ordinance
B. Operations & Maintenance Transition Plan

ORDINANCE NO:

AN ORDINANCE AMENDING THE 2018 ANNUAL BUDGET TO ADD THE PARKING RAMPS EXPENSES AND REVENUE FOR THE DOWNTOWN PARKING RAMPS, RENAISSANCE AND CENTRAL. THE FUND IS BEING CREATED IN 2018 FOR THE CITY ACQUIRING THE PARKING STRUCTURES. THE RESERVES BEING USED TO FUND THE PARKING RAMPS RESERVES ARE FROM SALES TAX MAJOR PROJECTS.

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MINOT:

§1: Amend the 2018 annual budget to add the Parking Ramps expenses and revenues and approve the transfer of funds.

PARKING RAMP INCOME		
		2018
Account Number	**Account Description**	**Budget**
150-0000-381.02-61	Parking Receipts	$ 49,000
150-0000.391.32-10	Less Cash Reserves from Sale Tax Major Projects	173,246
Parking Ramp Income		$ 222,246
PARKING RAMP EXPENSES		
150-6500-512.01-30	Extra Help	$ 25,440
Salaries		
150-6500-512.02-20	Social Security	1,577
150-6500-512.02-21	Medicare	369
Employee Benefits		1,946
150-6500.512.04-22	Mtce Contract - Snow Removal	4,000
150-6500-512.04-33	Mtce Building & Grounds	88,000
Purchased Property Services		92,000
150-6500.512.05-30	Telephone	7,560
150-6500-512.05-40	Publications	4,000
Other Purchased Services		7,560
150-6500-512.06-21	Natural Gas	6,900
150-6500-512.06-22	Electricity	9,900
150-6500-512.06-50	Operation Supplies	65,500
Supplies		82,300
150-6500-512.07-93	Sweeper	13,000
Capital Purchases		13,000
Total Parking Ramp		$ 222,246

§2: Approve the transfer of funds:

263-0000-491.31-06		173,246
150-0000-391.32-10		173,246

PASSED FIRST READING:

PASSED SECOND READING:

ATTEST:

_____
Chuck Barney, Mayor

_____
Kelly Matalka, City Clerk

Downtown Parking Structures
Operation and Maintenance Transition Plan

Existing Conditions Analysis

1. Existing Work Completed
    a. In taking over control of operations, City staff has performed work on behalf of the City
        i. Video documentation of the condition of the structures
        ii. City property maintenance staff have done a complete walkthrough of each structure.
        iii. Door locks have been changed
        iv. Utilities for the building have been transferred into the City's name for payment.
    b. Lead: Police and Public Works
    c. Estimated Cost: $4,680.87
    d. Funding Source: City Parking Revenue
    e. Timeframe: Immediate

2. Evaluate the Non-Structural Condition of Each Structure
    a. Hire an independent property management company or inspection service to evaluate the existing non-structural condition of each parking structure.
        i. Analyze the exterior cladding for damage from water
        ii. Analyze the interior plumbing, electrical, and HVAC systems as to condition and required maintenance
        iii. Analyze the interior spaces and framing for mold, water damage, and general condition
    b. Lead: Legal
    c. Estimated Cost: $15,000 per structure
    d. Funding Source: CDBG-DR Allocation 1
    e. Timeframe 1 month

3. Evaluate the Structural Condition of Each Structure
    a. Hire structural engineering consultant to evaluate the existing structural conditions of each parking structure.
        i. Primary objective is to gauge the damage of water intrusion into the structure without a roof.
        ii. Visually inspect structures for major concerns such as cracks, settlement, water damage, etc.
    b. Lead: Legal
    c. Estimated Cost: $30,000 per structure
    d. Funding Source: CDBG-DR Allocation 1
    e. Timeframe: 2 months

Interim Parking Structure Management

1. Modify Signage on Each Structure and Re-Stripe the parking stalls
    a. Change out signage to signify the structure is being managed by the City. Hire parking lot maintenance company to stripe parking spaces.
        i. Match existing signs and replace with city logo, contact information, rates.
        ii. Review additional signage on exterior such as rate signage.
        iii. Hire company to stripe parking stalls and markings with high quality epoxy paint.
    b. Lead: Engineering
    c. Estimated Cost: $15,000 per structure
    d. Funding Source: City Parking Revenue
    e. Timeframe: Days after city can take control regarding signage. Late spring for re-striping.

2. Transfer Parking Management Equipment to City
    a. Once parking equipment is received by the City from Cypress, set up system at City Hall
        i. Place ticket printer, computer, and interface in water billing
        ii. Set up administration of financial system with Finance Department
        iii. Set up call system to call water billing during the day with phone rollover to police dispatch. Set up after hours call center with police dispatch.
        iv. IT will inventory IT equipment at each structure. Set up network with IT to operate the system at parking structures back to server at City Hall or SRT VPN network.
    b. Lead: Finance
    c. Estimated Cost: $2,000 per structure
    d. Funding Source: City Parking Revenue
    e. Timeframe: Within three weeks of setting up network

3. Set Up Financial Systems and Billing Accounts
    a. Set up account numbers, vendors, and billing accounts for customers
        i. Create separate account numbers for revenues and expenses for each structure
        ii. Switch credit card vendor information to collect revenues from customers
        iii. Set up billing accounts for monthly customers
        iv. Inventory consumables such as proximity cards and parking tickets. Re-stock as required
        v. Monthly pass holders get credited one month during transition.
    b. Lead: Finance
    c. Estimated Cost: $1000 for new supply of monthly parking pass cards and ticket machine supplies
    d. Funding Source: City Parking Revenue
    e. Timeframe: Within two weeks

4. Hire Amano McGann to Inspect Equipment, Provide Servicing, Provide Training

a. Hire equipment vendor Amano McGann (AM) to inspect equipment condition, service the equipment and train city staff on its use
    i. AM will inspect current condition of equipment provide report of condition
    ii. AM will send service technician to repair existing equipment at both structures
    iii. AM will train city staff on operations of equipment, printers, and vendor software
    iv. Inquire if AM has support contract options.
b. Lead: Engineering
c. Estimated Cost: $12,000
d. Funding Source: City Parking Revenue
e. Timeframe: Two weeks after equipment turned over to city

5. Have Council Consider 2 Hour Free Parking
    a. Council should consider a 2 hour free parking rate structure to complete with the free parking offered on city streets for 2 hours free.
        i. Promotes equality in structure versus street parking
        ii. Use as a marketing tool for the ramps
        iii. Have Council ratify fees at the May meeting.
        iv. Evaluate equipment re-programming needs
        v. Re-program and re-sign the building for 2 hour free parking change.
    b. Lead: City Manager
    c. Estimated Cost: Unknown
    d. Funding Source: City Parking Revenue
    e. Timeframe: Within a month of taking over management control

Communications

1. Prepare Draft Press Release On Eviction Of Cypress And New Management By The City
    a. Signal to the public that the City is now in charge and a transition period will begin. Expect better service and commitment to serving the parking needs of downtown.
        i. PIO and City Manager write press release
        ii. Attorney's review message for any issues that may affect lawsuit
    b. Lead: PIO
    c. Estimated Cost: None
    d. Funding Source: None
    e. Timeframe: Immediate

2. Communicate to Public and Monthly Pass Holders
    a. Send letter to monthly pass holders and communicate via press release of structure management changes.
        i. Send letter to monthly pass holders notifying them of changes and payment instructions.
    b. Lead: PIO
    c. Estimated Cost: $500
    d. Funding Source: City Parking Revenue

e. Timeframe: Immediately

3. Webpage Development for Structures
    a. Develop webpage on City website for information, contact, and forms.
        i. Update forms for purchase of monthly passes
        ii. Set up email and communication information.
    b. Lead: PIO and IT
    c. Estimated Cost: None
    d. Funding Source: None
    e. Timeframe: Within a month

4. Investigate Use of Advertising Banners
    a. To promote the structures, investigate the use of banners to place on the sides of the buildings.
        i. Get pricing for 4 large banners to place on the sides of the buildings.
        ii. Investigate where and how the banners would be installed.
    b. Lead: PIO
    c. Estimated Cost: $2,000 per structure
    d. Funding Source: City Parking Revenue
    e. Timeframe: Within one month

Structure Maintenance and Operations

1. Address Any Immediate Life, Health, And Safety Maintenance Issues
    a. After walkthroughs conducted by Public Works, create a list of immediate repairs that are needed such as lighting repairs, mold removal, HVAC components, etc
        i. Develop list of any immediate concerns
        ii. Develop budget figures for each concern to be corrected
        iii. Replace heater in fire control room
        iv. Correct fire suppression code issues
    b. Lead: Public Works
    c. Estimated Cost: $15,000 per structure
    d. Funding Source: CDBG-DR Allocation 1 where eligible, and City Parking Revenue
    e. Timeframe: Immediate upon taking over management control

2. Initiate A Detailed Cleaning Of Each Ramp
    a. Assess the cleaning needs to each ramp to remove bird droppings, salt/sand buildup, and graffiti.
        i. Initiate an assessment list of cleaning needs of each ramp
        ii. Put scope together to solicit quotes for initial cleaning service
        iii. Remove graffiti at each ramp
    b. Lead: Public Works
    c. Estimated Cost: $7,000 per structure
    d. Funding Source: City Parking Revenue
    e. Timeframe: As weather permits in the spring

3. Develop Weekly Maintenance Checklists For Structures
    a. Develop a weekly maintenance checklist for city staff to use to ensure critical structure systems are being checked for proper operation and maintenance
        i. Develop checklist to review critical systems such as lighting, HVAC motors and fans, fire suppression, plumbing systems, door locks, etc.
        ii. Set up weekly site visits to review these checklists
        iii. Create maintenance work items as needed when issues are found
    b. Lead: Public Works
    c. Estimated Cost: $2,000 per month per structure
    d. Funding Source: City Parking Revenue
    e. Timeframe: Immediate upon taking over management

4. Identify Staffing Resource Needs
    a. Evaluate the staffing requirements of operating the structures.
        i. Investigate whether it is more effective to hire employee or a service contract to operate and maintain the structures.
        ii. Cleaning service needs.
        iii. Financial service needs.
    b. Lead: Public Works
    c. Estimated Cost: Part-time summer intern property maintenance $29,304.24
    d. Funding Source: City Parking Revenue
    e. Timeframe: Within 3 months

5. Evaluate and Obtain Equipment and Materials to Maintain the Structures
    a. Evaluate the equipment and material needs to adequately maintain the structures.
        i. Sweepers
        ii. Cameras
        iii. IT Equipment
        iv. Anti-graffiti coating on concrete surfaces
        v. Snow and ice control
        vi. Painting
    b. Lead: Public Works and Finance
    c. Estimate Cost: $13,000 for sweeper purchase or $2,025/month, $30,000 each structure for other items.
    d. Funding Source: City Parking Revenue
    e. Timeframe: Within 3 months

6. Develop A Long Term Capital Improvement Plan For Each Ramp
    a. Develop a long term capital improvement plan for each ramp that budgets long term capital projects needed for each ramp
        i. Take reports of condition assessment and structural assessment and address those needs first
        ii. Develop an interior finish plan to address the unfinished appearance of the interior of the structures
        iii. Install security system to monitor structure interior spaces
    b. Lead: Engineering with Assistance from Public Works
    c. Estimated Cost: Undetermined, but likely over $500,000 per structure
    d. Funding Source: CDBG Allocation 1 if Eligible, likely City Parking Revenue or Other

e. Timeframe: Starting in 2019

7. Explore Options for Innovative Uses of Parking Structures Promoting Downtown
    a. Development a plan connecting garages to events, activities, and projects in downtown and elsewhere in city:
        i. Explore advertising options in the garages both as revenue generator and promoting activities
            1. Message boards
            2. Flyers
            3. Advertising signage
        ii. Explore with organizations and businesses in the downtown using one or both garages to host events (new and existing)
        iii. Explore utilizing garages as parking venues for major events elsewhere in the city (i.e. Fairgrounds)
            1. Shuttle to and from venues but creating potential to draw increased patronage and consumer attention to the downtown
            2. Link with merchant promotions such as discounts offered by merchants if park in the structures for special events
        iv. Explore promotions for use of the garages in the evenings to encourage increased attention by consumers to the downtown connected with merchants remaining open in the evening
            1. Maybe once a week evening free parking connected to merchants, restaurants, bars, professional offices, etc.
        v. Explore use of the Renaissance Zone to strategically develop the commercial space to induce sustained growth in the downtown
    b. Lead: NDR Program
    c. Estimated Cost: Undetermined
    d. Funding Source: City Parking Revenue
    e. Timeframe: Starting 2018

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: David Lakefield, Finance Director

DATE: 04/24/18

SUBJECT: **APPROVAL OF 2019 BUDGET SCHEDULE**

I. RECOMMENDED ACTION

1. Move to approve the 2019 Budget Schedule.

II. DEPARTMENT CONTACT PERSONS

Tom Barry, City Manager	857-4750
David Lakefield, Finance Director	857-4774

III. DESCRIPTION

A. Background
Minot's budgeting process begins in March of the year prior to the budget to be adopted. The attached budget schedule is an estimated timeline that is developed to ensure the budget is completed in a timely manner to meet county and state guidelines.

B. Proposed Project
The proposed project will start in March and continue through the summer months with educational budget workshops for the public, finance pulling the budget document together, and the City Manager meeting with the departments to compile an essential budget to provide for the needs of the City of Minot.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
The budget will be prepared to take into account some of the major funding obstacles the City of Minot has like flood control, NAWS, and capital projects while still providing for the normal operation of the City.

B. Service/Delivery Impact:
The goal of the budget is to help the City of Minot make informed budget decisions to account for the present conditions and look to the future needs of the City. The proposed Budget Schedule also denotes Special City Council Meetings which must be announced and approved by the City Council pursuant to our Ordinance.

C. Fiscal Impact:
There is no fiscal impact to approving the schedule.

V. ALTERNATIVES

NA

VI. TIME CONSTRAINTS

Council's approval of the recommendation will allow the budget to be prepared in a timely manner and meet all statutory deadlines.

VII. LIST OF ATTACHMENTS

A. 2019 Budget Schedule

FY 2019

BUDGET SCHEDULE
PROPOSED

March 30	Preliminary Budget forms to department heads
April 9-13	City Manager budget planning meeting with President of Council, Mark Jantzer
April - May	Pay Plan and Classification Study (Human Resources)
April 27	Send social service budget request forms (Tami)
May 18	Income estimates due from Finance Department
June 13	Annual Plan presentation to Civil Service Commission (Human Resources) 10 AM in Council Chambers
June 11	Budget request forms (including social service budget request forms) due in City Manager's Office
June 14 & 21	Budget Workshops to be held 4:00 – 6:30 PM in Auditorium Room 203
June 18 to June 29	Meetings with the Department Head, City Manager and Finance to go over Individual Budgets – Time blocked on June 21st -23rd to meet individually with each department to discuss the budget.
June 28	Annual Pay Plan Public Meeting (Human Resources) 10 AM
June 30 – July 22	Finance - Work on budget and budget message and presentation
July 25	Have budget ready to copy and bind
August 6	Proposed Budget and Annual Plan to City Council
August 28	Committee of the Whole Meeting – Preliminary Budget Questions & Answers Session at 4:15 PM in Auditorium Room 201
September 4	Council President's Budget Message due
September 18	Special City Council meeting - public hearing on Budget Ordinance; Committee of the Whole meeting on budget; and first reading of Budget Ordinance 6:30 PM in Council Chambers
September 25	Special City Council meeting - Final adoption of budget ordinance 6:30 PM in Council Chambers

City of Minot

TO: Mayor Chuck Barney
Members of the City Council

FROM: Tom Barry, City Manager

DATE: 04/24/18

SUBJECT: **2019 BUDGET PRINCIPLES AND PRIORITIES**

I. RECOMMENDED ACTION

1. Discuss, Refine, and Approve the FY19 Budget Principles and Priorities Document.

II. DEPARTMENT CONTACT PERSONS

Tom Barry, City Manager	857-4750
David Lakefield, Finance Director	857-4774

III. DESCRIPTION

A. Background
Development of the Fiscal Year Budget is an involved and laborious process. It is best guided by first establishing goals promulgated by the City Council. In this way, staff are provided guidance on the development of the City's Budget and can align their Department budget requests with the budget goals established by the Council.

B. Proposed Project
The City Manager, working closely with the Department Heads, has developed the attached 2019 Budget Principles and Priorities document for the City Council's consideration. The document was developed by placing emphasis on expenditures that preserve current investments, maintain operational responsibilities, and embrace future commitments.

C. Consultant Selection
NA

IV. IMPACT:

A. Strategic Impact:
Development and implementation of principles that guide development of the FY19 Budget aligns with best management practices for local governments and ensures that the budget developed meets Council mandates and community expectations.

B. Service/Delivery Impact:
Utilization of defined principles will ensure fairness and transparency and avoid misunderstandings or incompatible budgetary requests. This practice also places unbiased emphasis on all city functions and operations to ensure budgets are developed consistently and in alignment with a uniform set of citywide standards and expectations.

C. Fiscal Impact:
There is no direct fiscal impact to approving the principles and priorities.

V. ALTERNATIVES

To be discussed at the Committee of the Whole.

VI. TIME CONSTRAINTS

Council's approval of the FY19 Budget Principles and Priorities will allow the budget to be prepared in a consistent and timely manner.

VII. LIST OF ATTACHMENTS

A. 2019 Draft Budget Principles and Priorities

City of Minot
FY 2019
Budget Principles & Priorities

PROPOSED
DRAFT

- ✓ Meet Current Regulatory and Safety Requirements
- ✓ Sustainably Finance NAWS and Flood Control Initiatives
- ✓ Reduce Reliance on Sales Tax Subsidization of Property Tax Activities
- ✓ Stabilize the Workforce by Implementing Budget Strategies focused on Improving Employee Retention and Reducing Turnover
- ✓ Right Size the Support Functions of the Organization
- ✓ Maximize Operational Efficiencies and Cost Avoidance Opportunities
- ✓ Focus on Maintaining Existing Services and Assets
- ✓ Prioritize the Upgrade of Antiquated Infrastructure Before Adding New Infrastructure
- ✓ Invest in Data Acquisition, Automation and Efficiency Solutions
- ✓ Increase Customer Knowledge and Engagement Experiences
- ✓ Focus Capital Investments on the Core Not The Fringe
- ✓ Invest in Long Range and Strategic Planning Efforts
- ✓ Incorporate a Focus on Anticipatory Needs
- ✓ Be Sensitive to Customer Impacts
- ✓ Reduce Legal Liabilities