"This is where the strong belong. Moorhead is a rising metro.
We are growing a vibrant business, academic, and art community.
We have a culture of achievement, rooted in the spirit of curiosity.
Here, we choose to be more."

Thank you for choosing to build in Moorhead, MN! Within this binder you will find a variety of information regarding development and permits in Moorhead[1]. We hope you find this helpful and encourage your feedback on anything that can be improved upon.

There may be other permits required for items such as liquor, food, and demolition. Our one-stop-shop will provide the resources and contacts you need for any additional permitting.

Tab Number	Development Information/Permit Type	Permit/Application Submittal
1	Staff Contact List	
2	Incentives and Business Development Programs	economicdevelopment@moorheadmn.gov
3	Fee Schedule	
4	Zoning and Dumpster Enclosure Standards	planning@moorheadmn.gov
5	Plan Review Overview	
6	Commercial Plan Review Checklist and Application	buildingcodes@moorheadmn.gov
7	Building Permit Application	buildingcodes@moorheadmn.gov
8	Mechanical and Plumbing Permit Applications	buildingcodes@moorheadmn.gov
9	Stormwater Permit Application and Standards	engineering@moorheadmn.gov
10	Sign Permit	planning@moorheadmn.gov
11	Driveway Approach, Sidewalk and Right of Way Excavation Details and Procedures (utilities within City Right of Way)	engineering@moorheadmn.gov
12	MPS Water Standards (water connections in City ROW)	dispatch@mpsutility.com

[1] The binder does not include county, township, state or federal permits that may be required for your project

Section 1:

Staff Contact List

City of Moorhead

Primary Points of Contact

City Staff

Main Line (building codes, engineering, planning, economic development)		**(218) 299-5370/5390**
City Manager	Dan Mahli	(218) 299-5314
Business Incentives	Derrick LaPoint dlapoint@dtmoorhead.org	(218) 443-1361
Business Incentives	Amy Thorpe	(218) 299-5442
Project/Permit Coordination	Kristie Leshovsky	(218) 299-5332
City Planning and Zoning	Robin Huston	(218) 299-5374
Engineering and Utilities	Tom Trowbridge	(218) 299-5395
Engineering and Utilities	Clay Lexen	(218) 299-5494
Storm Water/MPCA SW Permits	Andrea Crabtree-Nayes	(218) 299-5387
Sanitation	Paul Fiechtner	(218) 299-5421
Building Permits	Michael Moss	(218) 299-5438
MN Electrical Inspection (*State of MN*)	Andy Bozovsky	(218) 340-0926
Fire Codes and UST license	Chad Stangeland	(218) 299-5433
Business and liquor license	Christina Rust	(218) 299-5304

City Email - FirstName.LastName@moorheadmn.gov

Moorhead Public Service

Main Line (MPS)		**(218) 477-8000**
General Manager	Travis Schmidt tschmidt@mpsutility.com	(218) 477-8084
Water Division	Jake Long jlong@mpsutility.com	(218) 477-8074
Electrical Division	Taylor Holte tholte@mpsutility.com	(218) 477-8085

US Dept of Agriculture*

Main Line		**(651) 201-6062**
Courtney Swanson	courtney.swanson@state.mn.us	(218) 443-0988

Clay County - Environmental Health*

Kent Severson	kent.severson@claycountymn.gov	(218) 299-7216

*Clay County – Food service, restaurants, motels/hotels, manufactured home parks, RV Parks, pools/spas

*US Dept of Ag – Majority of income is retail, gas or groceries

Section 2:

Incentives and Business Development Programs

CITY OF MOORHEAD
ECONOMIC DEVELOPMENT INCENTIVES

PROPERTY TAX PROGRAMS

RENAISSANCE ZONE PROPERTY TAX EXEMPTION	Property tax exemption for 5, 10 or 15 years for new or rehabilitated commercial, residential or mixed-use projects located within the Moorhead Renaissance Zone.
COMMERCIAL & INDUSTRIAL PROPERTY TAX EXEMPTION	Property tax exemption for 3 or 5 years for a new or expanding commercial or industrial facility.
MULTI-FAMILY RESIDENTIAL PROPERTY TAX EXEMPTION	Property tax exemption for 2 or 4 years for new or substantially rehabilitated multi-family housing. Additionally, an employee credit may be available for housing with health-related services.
TAX INCREMENT FINANCING	Pay-as-you-go financing reimburses a developer "upfront" development costs by reimbursing a portion of the increased property taxes that a new real estate development generates to finance the cost of the development. TIF qualifying expenses include land acquisition, demolition, environmental cleanup, and public infrastructure related to the development.
DISPARITY REDUCTION CREDIT	Program that caps commercial and industrial property tax rate at 1.6%.

LOAN/GRANT PROGRAMS

MOORHEAD LOAN FUND	Gap financing loans to business expansions and start-ups in Moorhead that create or maintain jobs. Up to $50,000.
STOREFRONT REHAB PROGRAM	Zero interest rate loans to small business owners specifically fund exterior storefront rehabilitation. $5,000 to $25,000 per storefront. Forgivable after 5 years. Requires 50% match.
WEST CENTRAL INITIATIVE BUSINESS AND INDUSTRY LOAN	Gap financing loans to expanding manufacturing businesses. Up to $300,000.
SBA 7A LOAN GUARANTEE	Loan Guarantees, to small businesses. To insure the primary lender does not hold all of the risk in the loan. Max guarantee of $5 million.
SBA MICROLOAN	Small loans to new or growing small businesses who could not otherwise get a loan. Up to $50,000.
SBA 504 LOAN	Subordinated loans to fund small business expansions. Up to $5 million.

CITY OF MOORHEAD
ECONOMIC DEVELOPMENT INCENTIVES

TAX CREDIT PROGRAMS

WORKERS' COMPENSATION REBATE PROGRAM	Income tax credit to businesses to rebate a portion of workers' compensation expense; up to $30,000 per business per year.
TARGET AREA CREDIT	Employee tax credits given to new or expanding primary sector businesses within a target up to $3,000 per employee.
SALES TAX CREDIT	Sales tax credit to new or expanding primary sector businesses up to $25,000.
SEED CAPITAL INVESTMENT CREDIT PROGRAM	45% tax credit on their investment, up to $112,500 per year to eligible innovative businesses in Moorhead for their investment in equipment, research and development, marketing and sales activity or working capital.
UTILITY RATE-BASED INCENTIVE	Utility credit (electric & water) for new or expanding primary sector with qualifying utility loads.
OPPORTUNITY ZONE	Roll over unrealized capital gains to be used in a real estate venture in a designated Opportunity Zone. The longer the investment is held, the greater benefit the investor sees. Federal Program run by the IRS.
MN JOB CREATION FUND	Grants to businesses creating high quality jobs with a focus on manufacturing, warehousing, distribution, and information technology related jobs. Up to $1 million to companies deemed eligible to participate.
MN INVESTMENT FUND	Gap financing loans to help add new workers and retain high-quality jobs on a statewide basis. The focus is on industrial, manufacturing, and technology to increase the local and state tax base and improve economic vitality statewide.

PARTNER ORGANIZATIONS	Downtown Moorhead Inc, Derrick LaPoint, dlapoint@dtmoorhead.org Moorhead Business Association, Sheri Larson, sheri@mhdmba.org West Central Small Business Development Center - westcentralmnsbdc.com West Central Initiative – wcif.org - Greg Wagner - greg@wcif.org SCORE - score.org - 701.239.5677 GFMEDC, Ryan Aasheim, raasheim@gfmedc.com Minnesota DEED, David Heyer, david.j.heyer@state.mn.us
FOR MORE INFORMATION	Derrick LaPoint, DMI, dlapoint@dtmoorhead.org, 218.443.1361 Amy Thorpe, City of Moorhead, amy.thorpe@moorheadmn.gov, 218.299.5441

Rev. 8/2021

Section 3:

Fee Schedule

Please contact Moorhead Building Codes for an estimated project permit fee

buildingcodes@moorheadmn.gov

Section 4:

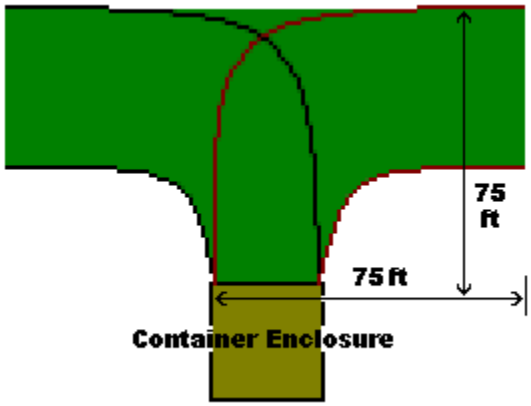
Zoning and Dumpster Enclosure Standards

Zoning information will be provided based on the project site

planning@moorheadmn.gov

City of Moorhead Container Information

- Containers and driveway are to be a minimum four inch thick solid and level surface (concrete or asphalt) with a minimum of 75 foot turning radius for the driveway if not straight to enclosure. This area (green areas below) must be free of all obstacles on the ground and overhead such as roof overhangs and parking and end with the truck lined up with the container in the enclosure.



- Enclosures need a minimum of three feet (36 inches) clear space on all sides of the container. At no time is there to be any item within the three foot clear area surrounding the entire container to include bagged garbage, snow, grease containers, recycling containers, or any other items. If containers are placed side by side, only one three foot clearance is required between the containers. It is the property owner's responsibility to keep this area clear. The clear area distance is measured from the furthest protruding part of the container on each side to the closest part of the enclosure, either wall or hinge post.

Screening Fence Interior Dimensions

Container Volume in Yards	Single Container Interior Fence* Dimensions		Double Container Interior Fence* Dimensions	
1	12.5' wide	5.33' deep	22' wide	5.33' deep
1 ½ & 2	12.5' wide	8.00' deep	22' wide	8.00' deep
3 & 4	12.5' wide	9.66' deep	22' wide	9.66' deep
6	12.5' wide	13.50' deep	22' wide	13.50' deep

*This width is for either to the inside of the enclosure or the gate opening if one is put on. At no time should the gate width be any narrower than the specified interior fence dimensions.

- Enclosure height is a minimum of six feet (72 inches).

- Locking of enclosures is permitted but only with City of Moorhead locks which may be used alone or in tandem with property owners locks. The City of Moorhead will provide locks when requested.

- Gates are not required. If gates are put on the enclosure, the three foot measurement is from the furthest protruding part of the container to the furthest protruding part of the enclosure walls, the hinge or the gate, which ever is closest to the container. Gate opening width is the same minimum as the interior width dimension of the enclosure. Gates must be able to be mechanically secured in the open position at all times and seasons, including winter. If this catch is not functioning, the City of Moorhead will not be responsible for resulting damages to the enclosure.

- Gates should open freely in all seasons. A four inch opening at the bottom works well to prevent binding.

- The property owner is responsible for removing all snow and ice from in front of, and inside, the enclosure. All snow and ice removal is to be performed prior to scheduled pickup. If there is still a problem with ice and snow, Sanitation will move the container out of the enclosure to allow for complete snow removal. If no attempt is made to clear ice and snow after an event, the container may be left and a return fee charged.

- Failure to maintain enclosures according to requirements may result in additional fees or fines. Fees and rates are established yearly by the City Council and published as an Appendix to the Moorhead, MN City Code.

- No items are to be placed in containers that are not permitted in the Clay County landfill. Items are listed in the Sanitation section of the City website.

- Contact Sanitation 218.299.5347 with questions.

Container and Enclosure Checklist

- [ ] Is the container enclosure site placed according to Moorhead, MN City Code (Title 3 Chapter 4)?
- [ ] Is the surface at least 4 inches of concrete or asphalt?
- [ ] Is the enclosure situated to allow for proper access by the Sanitation truck? Requires a 75 foot turning radius with no obstructions on the ground or overhead.
- [ ] Will your business grow to need a larger container, need used cooking grease storage, or have any additional items you want to keep in the enclosure? Will you be doing recycling and need containers of over a 100 gallon capacity which also must meet the requirements? If so, you will need to increase your size accordingly. All containers require three feet of clear space with no obstructions on all sides.
- [ ] Are you adding a gate? Gate opening width measurements are the same as the minimum inside dimensions of the enclosure.
- [ ] Did you include mechanical gate catches to hold them open and closed in all seasons?
- [ ] Did you plan for snow and ice removal?
- [ ] Do you require locks on the enclosure or container?

Moorhead, MN City Code excerpt

(Complete City Code on City of Moorhead website)

3-4-2: DISPOSAL IN CONTAINERS REQUIRED:

A. Containers: It shall be unlawful for any person to deposit any garbage, rubbish or waste material in any park, street, alley or any other property within the City unless such refuse is deposited in containers, the type, size and location of which are herein provided. Notwithstanding the requirements of this Section, the City reserves the right to vary the type, size and location of containers required herein whenever the Public Works Department determines its ability to sanitarily or conveniently collect and dispose of garbage, rubbish or waste material would be impaired, whenever the City determines a nuisance condition exists, or whenever the Public Works Department determines that it would be in the public interest to do so.

B. Dwellings: Any householders or occupants of any private dwellings shall provide themselves with one container or plastic bag to receive all refuse which may accumulate between the times of collection. All garbage and wet garbage shall be drained and wrapped before depositing into a container or plastic bag. All containers and plastic bags shall be maintained and kept clean in accordance with the City's public health and sanitation regulations in Title 3 of this Code as such regulations may be from time to time amended, supplemented or replaced. The containers or plastic bags shall be securely sealed and placed in a convenient place for collection by the City sanitation vehicles. Only one container or one plastic bag shall be set out for collection at each dwelling, which container or plastic bag shall not have a capacity in excess of thirty (30) gallons or thirty (30) pounds. If more than thirty (30) gallons or thirty (30) pounds are to be set out for collection, the excess must be placed in one or more prepaid refuse bags authorized by the City for collection of solid waste. Recyclable materials placed out for collection pursuant to Section 3-4-9 of this Chapter or yard waste set out for collection pursuant to Section 3-4-11 of this Chapter do not count toward the initial thirty (30) gallon or thirty (30) pound limit nor do they need to be disposed of in special prepaid refuse bags. Containers or plastic bags placed out for collection shall be protected from animals or anyone who may want to tear the containers or plastic bags, and shall be stored within the principal structure of the dwelling, within an accessory building to the dwelling, or, for exterior storage, stored in such a manner so as to: 1) not create a nuisance condition, 2) be out of sight from eye level view from the public right of way by locating the containers or plastic bags in the rear of the dwelling and 3) comply with all applicable setback requirements and easements.

C. Multiple Dwellings Other Than Condominiums And Cooperatives: The City shall provide and rent to owners and operators of multiple dwellings within the City, other than a condominium or cooperative, containers for the purpose of disposal of garbage, rubbish or waste material. Said containers shall be the sole and exclusive means for owners and operators of multiple dwellings within the City to dispose of garbage, rubbish or waste material. The containers will not be allowed on streets or boulevards. The containers shall be maintained and kept clean in accordance with the City's public health and sanitary regulations in Title 3 of this Code as such regulations may be from time to time amended, supplemented or replaced. The containers shall be located so that they may be sanitarily and conveniently collected in City sanitation vehicles. The containers shall be further located so as to: 1) not create a nuisance condition, 2) be out of sight from eye level view from the public right of way by locating the containers in the rear of the multiple dwelling, and 3) comply with all applicable setback requirements and easements. The containers may be required to be kept and stored on a concrete or asphalt surface and fully screened from view of adjacent properties and the public right of way by a fence or wall of at least six feet (6') in height and a minimum opaqueness of eighty percent (80%) whenever the Public Works Department finds good cause exists to

impose such requirements to protect the general health, safety and welfare of the public. Provided, however, the Public Works Department may grant exceptions to the above requirements, as well as exception to the zoning regulations relating to placement of dumpsters where existing physical conditions do not make compliance practical.

D. Condominiums And Cooperatives: Subject to approval by the Department of Public Works, owners and operators of condominiums or cooperatives within the City shall have the option upon request of the condominium or cooperative association to either: 1) rent the containers provided by the City for the disposal of garbage, rubbish or waste material in accordance with subsection C of this Section and comply with the terms contained therein, or 2) to provide themselves with containers or plastic bags to receive and deposit for collection in accordance with subsection B of this Section and to comply with the terms therein.

E. Business Establishments: The City shall provide and rent to owners and operators of restaurants, stores and business establishments within the City containers for the purpose of disposing of garbage, rubbish or waste material. Said containers shall be the sole and exclusive means for owners and operators of restaurants, stores or business establishments, within the City to dispose of garbage, rubbish or waste material except as may be otherwise permitted by the Department of Public Works. The containers will not be allowed on streets or boulevards. The containers shall be maintained and kept clean in accordance with the City's public health and sanitation regulations in Title 3 of this Code as such regulations may be from time to time amended, supplemented or replaced. The containers shall be located so that they may be sanitarily and conveniently collected in City sanitation vehicles. The containers shall be located so as to: 1) not create a nuisance condition, 2) be out of sight from eye level view from the public right of way by locating the containers in the rear of the restaurant, store or business establishment, and 3) comply with all applicable setback requirements and easements. The containers may be required to be kept and stored on a concrete or asphalt surface and fully screened from view of adjacent properties and the public right of way by a fence or wall of at least six feet (6') in height and a minimum opaqueness of eighty percent (80%) whenever the public works department finds good cause exists to impose such requirements to protect the general health, safety and welfare of the public.

F. Institutions Of Higher Learning: Four (4) year institutions of higher learning shall be permitted to provide collection services of garbage, rubbish and waste material utilizing the institution's equipment and personnel. (Ord. 96-18, 10-21-1996)

3-4-3: COLLECTION AND DISPOSAL OF SOLID WASTE:

The city shall hereafter provide for the collection and disposal of garbage, rubbish, waste material, yard waste and recyclable material as deposited and stored as provided herein. Such refuse shall be collected from private dwellings as described in subsections 3-4-2B, C and D of this chapter and from business establishments as described in subsections 3-4-2E and F of this chapter as deemed necessary. The city shall further provide for the transportation and disposition of said refuse by such means and in such manner as to ensure the protection of public health and to avoid the establishment of a public nuisance and to render safe, sanitary service to all residences or businesses requiring such service.

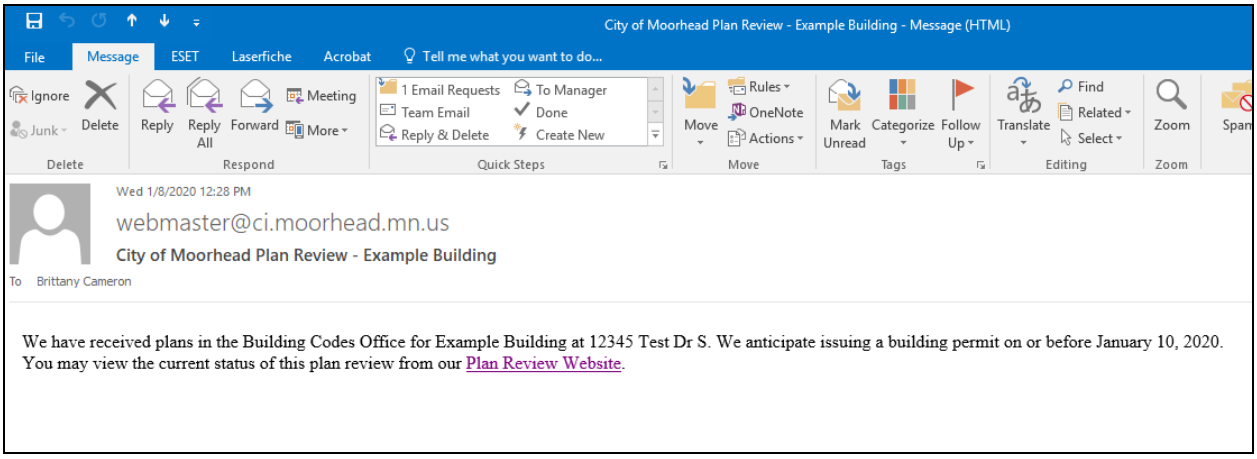
Except as specifically permitted in this chapter, no person or firm shall engage in collection and disposal of garbage, rubbish, waste material, yard waste or recyclable material in the city other than as authorized by the public works director to assist with collection during times of natural disaster or emergencies as declared by the mayor. (Ord. 96-18, 10-21-1996)

Section 5:

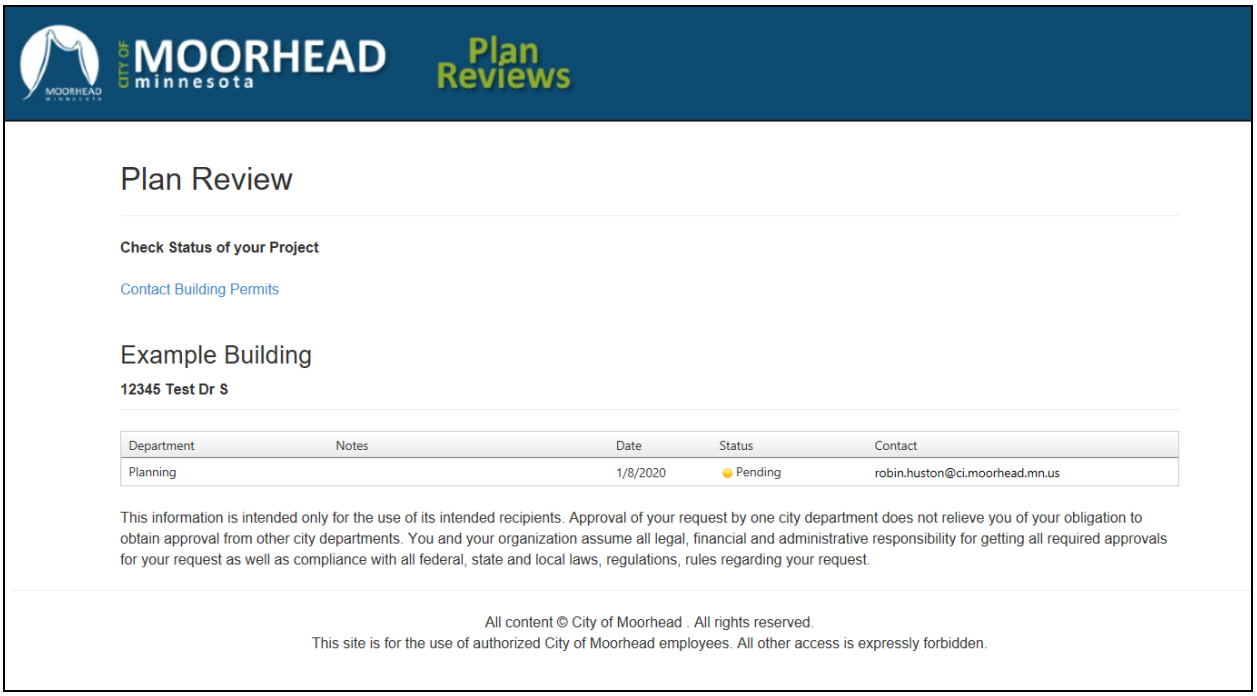
Plan Review Overview

Welcome to the City of Moorhead's Plan Review

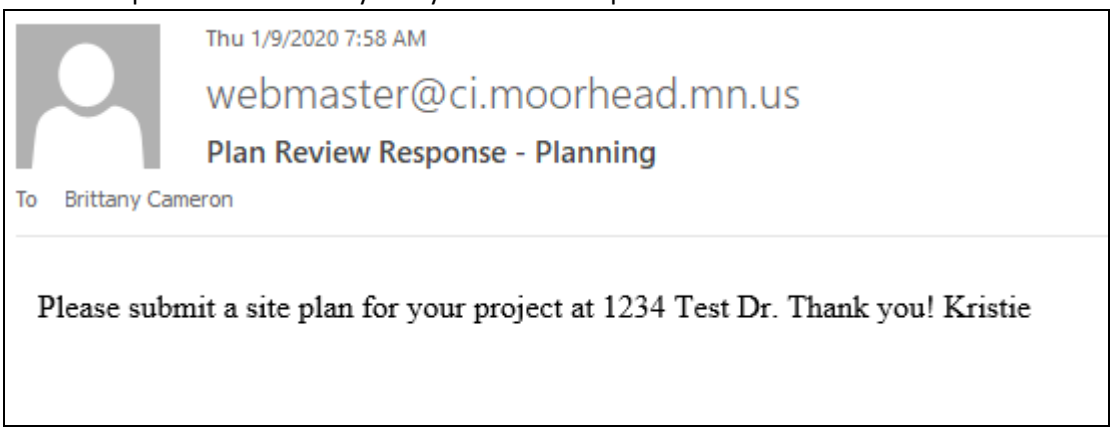
Once your applications, plans, and appropriate documents have been received by the Building Codes Department, your project will be created in Plan Review. You will receive a notification like the example shown below.



Departments at the City of Moorhead and Clay County are able to review the submitted items and make a determination if the project details comply with their standards. Select the link Plan Review Website from your email to see a current status of each department's review. All departments must show a status of Approved or Not Applicable for the Plan Review to be completed.



You may also receive notifications if something additional is required. Please return any requested items as soon as possible to limit any delay in the review process.



Thu 1/9/2020 7:58 AM

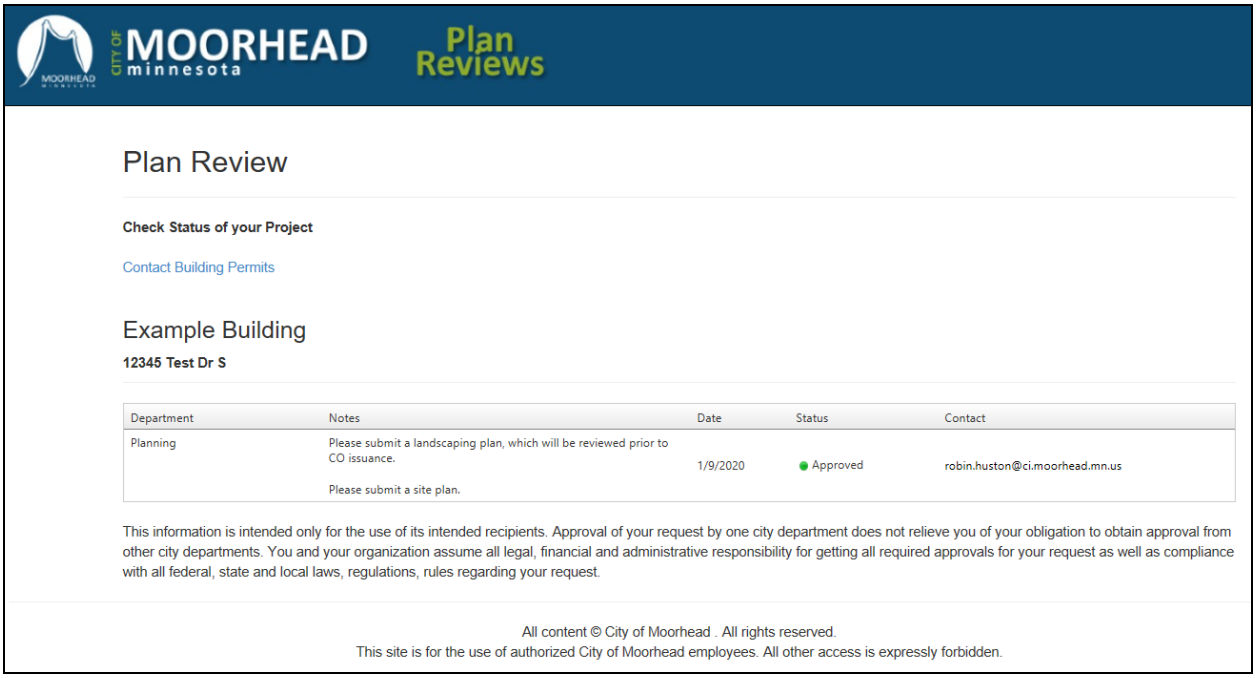
webmaster@ci.moorhead.mn.us

Plan Review Response - Planning

To Brittany Cameron

Please submit a site plan for your project at 1234 Test Dr. Thank you! Kristie

Once all departments have completed their review and updates (as required) have been made, a building permit will be issued.



CITY OF MOORHEAD minnesota — Plan Reviews

Plan Review

Check Status of your Project

Contact Building Permits

Example Building

12345 Test Dr S

Department	Notes	Date	Status	Contact
Planning	Please submit a landscaping plan, which will be reviewed prior to CO issuance. Please submit a site plan.	1/9/2020	Approved	robin.huston@ci.moorhead.mn.us

This information is intended only for the use of its intended recipients. Approval of your request by one city department does not relieve you of your obligation to obtain approval from other city departments. You and your organization assume all legal, financial and administrative responsibility for getting all required approvals for your request as well as compliance with all federal, state and local laws, regulations, rules regarding your request.

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This site is for the use of authorized City of Moorhead employees. All other access is expressly forbidden.

If you have any specific questions, please feel free to reach out to the contact for that department. If you have general questions please contact Building Codes at 218-299-5424.

We look forward to working with you!

Section 6:

Commercial Plan Review Checklist and Application

REQUIRED SUBMITTALS
FOR COMMERCIAL &
MULTI-FAMILY RESIDENTIAL
PERMIT APPLICATIONS
Call Building Codes – 218-299-5424 for questions

All requests for building permits for commercial and multi-family dwellings or for additions to existing commercial structures must be accompanied by the following documentation. **Please submit one hard copy and one pdf (electronic) copy of all plans pages including building component parts (hvac, electrical and alarm specifications).**

1. Civils - Site Plan (include any existing structures)
    a. lot lines
    b. all utilities
    c. dumpster locations
    d. site drainage plan (elevations needed)
    e. fire department vehicle access
    f. legal description (lot and block)
    g. address
    h. zoning requirements (site plan with setbacks, building/impervious surface coverage, boulevard trees, parking spaces, location of exterior equipment (if any)
2. Building plan pages, include:
    a. Architectural
    b. Structural
    c. Fire protection
    d. Alarm
    e. Electrical
    f. Plumbing
    g. HVAC (mechanical)
3. Energy Code compliance certificates
    a. Envelope
    b. HVAC
    c. Lighting
    d. Service water heating
4. Special Inspections –
    a. Inspectors, include certifications
    b. What inspections need to be done
5. Storm water (erosion control) permit application
6. Radon evacuation system (currently required on any building containing an "R" occupancy.
7. Commercial Plan Review Application
8. Building Permit Application
9. Building component part spec sheets, i.e. hvac equipment, alarms, electrical fixtures and panels, etc.

All plans must be neat, drawn to scale, and clearly indicate the nature and extent of the work. No permits will be issued until complete plans are made available for review. No work will be permitted to start before the permit is issued, and no plumbing or mechanical permits will be issued prior to obtaining a building permit.

CITY OF MOORHEAD BUILDING CODES
403 CENTER AVENUE / PO BOX 779
MOORHEAD, MINNESOTA 56561
PHONE (218)299-5424
E-MAIL buildingcodes@moorheadmn.gov

COMMERCIAL BUILDING PLAN REVIEW APPLICATION

APPLICANT IS: ❑ Owner ❑ Designer ❑ Contractor ❑ Other

SITE

Project Title

Project Site Address

OWNER

Owner | Contact Person

Owner Address | Phone Number

City, State, Zip | Email

CONTRACTOR

Contractor | Contact Person

Contractor Address | Phone Number

City, State, Zip | License Number (If Applicable)

Email

DESIGN FIRM

Designer | Contact Person

Firm Address | Phone Number

City, State, Zip | License Number (If Applicable)

Email

Civil Engineer (If applicable): | Mechanical Engineer (If applicable):

Email | Email

PROJECT

Class of Work: ❑ New ❑ Addition ❑ Alteration ❑ Other

Anticipated Start Date: _____ Total Constr Valuation: _____

Type of Construction: _____ Occupancy: _____ Square Footage: _____

Sub Contractors: (If applicable)
Plumbing _____
Mechanical _____
Electrical _____
Concrete _____

Descripton of Work: (For residential garages, additions, decks, and proches, please draw a site plan including setbacks from property lines, on the back of this permit application):

I hereby apply for a Building Permit and acknowledge that the information above is complete and accurate; that this is not a permit; that the work will be performed in accordance with the conditions of the permit, the approved plans and specifications, and the Minnesota State Building Code; and, that I will cause the work to remain accessible and exposed for inspection purposes.

Applicant Signature | Date

For Office Use Only: ❑ Cash ❑ Check ❑ Bill

Section 7:

Building Permit Application

CITY OF MOORHEAD BUILDING CODES

403 CENTER AVENUE / PO BOX 779 / MOORHEAD, MINNESOTA 56561
PHONE: 218.299.5424
EMAIL: buildingcodes@moorheadmn.gov

BUILDING PERMIT APPLICATION

PERMIT APPLICANT IS: ☐Owner ☐Designer ☐Contractor ☐Other

Site	Project Title	
	Project Site Address	
Owner	Owner	Contact Person
	Owner Address	Phone
	City, State, Zip	Email
Contractor	Contractor	Contact Person
	Contractor Address	Phone
	City, State, Zip	Email
Design Firm	Designer	Contact Person
	Firm Address	Phone
	City, State, Zip	Email
	Structural Engineer (if applicable):	Mechanical Engineer (if applicable):

Class of Work	☐ New ☐ Addition ☐ Alteration ☐ Other	**Estimated Start Date:**	
Type of Construction:		**Occupancy:**	
Square Footage:		**Total Const Value:**	$
Sub Contractors (if applicable)	Plumbing: _____ Mechanical: _____ Electrical: _____ Concrete: _____	**Water meter size:** ***Select a meter size*** *if installing a new water meter or increasing the size of a water meter.* ***Select No Meter Change*** *if the water meter will not be installed or replaced with the project.*	☐ No Meter Change ☐ 5/8 or 3/4 inch water meter ☐ 1 inch water meter ☐ 1-1/2 inch water meter ☐ 2 inch water meter ☐ 3 inch water meter ☐ 4 inch water meter ☐ 6 inch water meter ☐ 8 inch water meter
Description of Work	**(For residential garages, additions, decks, and porches, please draw a site plan including setbacks from property lines and attach to this application):**		

I hereby apply for a Building Permit and acknowledge that the information above is truthful, complete and accurate; that this application is not a permit; that the work will be performed in accordance with the conditions of the permit, the Moorhead City Code, the approved plans and specifications, and the Minnesota State Building Code; and, that I will cause the work to remain accessible and exposed for inspection purposes.

Applicant Signature*:	***Date:***

Office Use Only:

Floodplain Development Permit Required? ☐ Yes ☐ No	*Zoning Review Required?* ☐ Yes ☐ No
	Zoning Review Competed? ☐ Yes ☐ No

Section 8:

Mechanical and Plumbing Permit Applications

CITY OF MOORHEAD BUILDING CODES

403 CENTER AVENUE / PO BOX 779 / MOORHEAD, MINNESOTA 56561

PHONE: 218.299.5424

E-MAIL: buildingcodes@moorheadmn.gov

MECHANICAL PERMIT APPLICATION

CLASSIFICATION OF WORK: ❑ Residential ❑ Multiple ❑ Commercial ❑ Industrial

SITE

Project Title
Project Site Address

OWNER

Owner	Contact Person
Owner Address	Phone Number
City, State, Zip	Fax Number

CONTRACTOR

Contractor	Contact Person	
Contractor Address	Phone Number	
	Email	
City, State, Zip	Fax Number	License Number (If Applicable)

Valuation of Work $

Brief Description of Work:

Delivery of Permit (check one): Mail _____ Fax _____ Pickup _____ Email _____

Fax Number for Permit Delivery:

Email Address for Permit Delivery:

I hereby apply for a Mechanical Permit and acknowledge that the information above is complete and accurate; that this is not a permit; that the work will be performed in accordance with the conditions of the permit, the approved plans and specifications, and the Minnesota State Building Code; and, that I will cause the work to remain accessible and exposed for inspection purposes.

Applicant Signature	Date

CITY OF MOORHEAD BUILDING CODES

403 CENTER AVENUE / PO BOX 779 / MOORHEAD, MINNESOTA 56561

PHONE: 218.299.5424

E-MAIL: buildingcodes@moorheadmn.gov

PLUMBING PERMIT APPLICATION

CLASSIFICATION OF WORK: ❑ Residential ❑ Multiple ❑ Commercial ❑ Industrial

SITE

Project Title
Project Site Address

OWNER

Owner	Contact Person
Owner Address	Phone Number
City, State, Zip	Fax Number

CONTRACTOR

Contractor	Contact Person	
Contractor Address	Phone Number Email	
City, State, Zip	Fax Number	License Number (If Applicable)

# of Fixtures _____ Water _____ Sewer _____ Water Heater _____

Brief Description of Work:

Delivery of Permit (check one): Mail ____ Fax ____ Pickup ____ Email ____

Fax Number for Permit Delivery:

Email Address for Permit Delivery:

I hereby apply for a Plumbing Permit and acknowledge that the information above is complete and accurate; that this is not a permit; that the work will be performed in accordance with the conditions of the permit, the approved plans and specifications, and the Minnesota State Building Code; and, that I will cause the work to remain accessible and exposed for inspection purposes.

Applicant Signature	Date

CITY OF MOORHEAD
PLUMBING PLAN REVIEW APPLICATION

Project Name: _____

Project Street Address: _____

PROJECT OWNER

Name: _____

Address: _____

City: _____

State:_____ Zip:_____

Phone: _____

PLUMBING SYSTEM DESIGNER

Name:_____

Address: _____

City: _____

State:_____ Zip: _____

Phone:_____

Email:_____

REQUIRED:

☐ **Plan Review Fee:** Make checks payable to "City of Moorhead". Returned checks are subject to fees.

☐ **Plumbing Specifications:** Include a list of the manufacturer and model numbers of the plumbing fixtures, a list of pipe materials including the quality standard (ANSI, ASTM, etc.) testing and disinfection procedures.

SUBMIT IF APPLICABLE TO PROJECT:

☐ **Utility Site Plan:** Show the building, service lines, well and septic system locations on the property. If no new service connection will be installed, include a statement.

☐ **Floor Plan:** Show all fixture locations, all horizontal pipe locations and all pipe sizes for new plumbing.

☐ **Roof Plan:** Show the location of roof drains and the roof area served by each roof drain *if internally piped roof drains will be installed*. If no internally piped roof drains will be installed, include a statement.

☐ **Water Riser Diagrams:** Water distribution system showing pipe sizes and all fixtures, valves, backflow devices, and appurtenances.

☐ **Soil, Waste and Vent Riser Diagrams:** Isometric drawings of the waste and vent system showing pipe sizes and fixtures.

I certify that this plumbing system was designed in accordance with the Minnesota Plumbing Code, as amended, to the best of my abilities, and I agree to forward the plan approval, including corrective actions, to the installer of the system.

_____ _____

Signature MN License Number

_____

Name (Print or Type)

INCLUDE ALL OF THE REQUESTED INFORMATION.
INCOMPLETE OR ILLEGIBLE INFORMATION WILL DELAY YOUR PLAN REVIEW.

CITY OF MOORHEAD
PLUMBING PLAN REVIEW FEE CALCULATOR WORKSHEET

1. Select category and fee for plumbing system (Water, sewer, and drain, waste and vent (DVW) systems):

☐ Plumbing Plan, with or without building service (no additional fee for service connections if included)

Enter # of drain fixture units (DFU), _____ then select fee from the chart:

a. 25 or fewer DFU	_____$107.00
b. 26 to 50 DFU	_____$193.00
c. 51 to 150 DFU	_____$267.00
d. 151 to 249 DFU	_____$383.00
e. if 250 or more DFU (multiply $3.00 by number of DFU to $2,730 max)	_____$_____

FEE BASED ON NUMBER OF DFU $_____

PLUS

Number of interceptors, separators and/or catch basin ___ x $53.00 $_____

----------OR----------

☐ Building sewer service only (no interior plumbing), circle water, sewer, or both

Building sewer service only – per service line installed	_____$107.00
Building water service only – per service line installed	_____$107.00

PLUS

Number of interceptors, separators and/or catch basin ___ x $53.00 $_____

----------OR----------

☐ Building water distribution system only, ___ x $4.00 per supply fixture unit, No drainage system or service connections, ($100.00 min) $_____

2. Calculate fees for <u>Storm drainage system</u> (if applicable) ($175.00 min)

Number of roof drain openings _____ x $42.00 ($420.00 max) $_____

Number of Storm water interceptors, separators, and catch basins ___ x $53.00 $_____

3. TOTAL: Add fees for 1, 2 above **TOTAL FEE** **$**_____

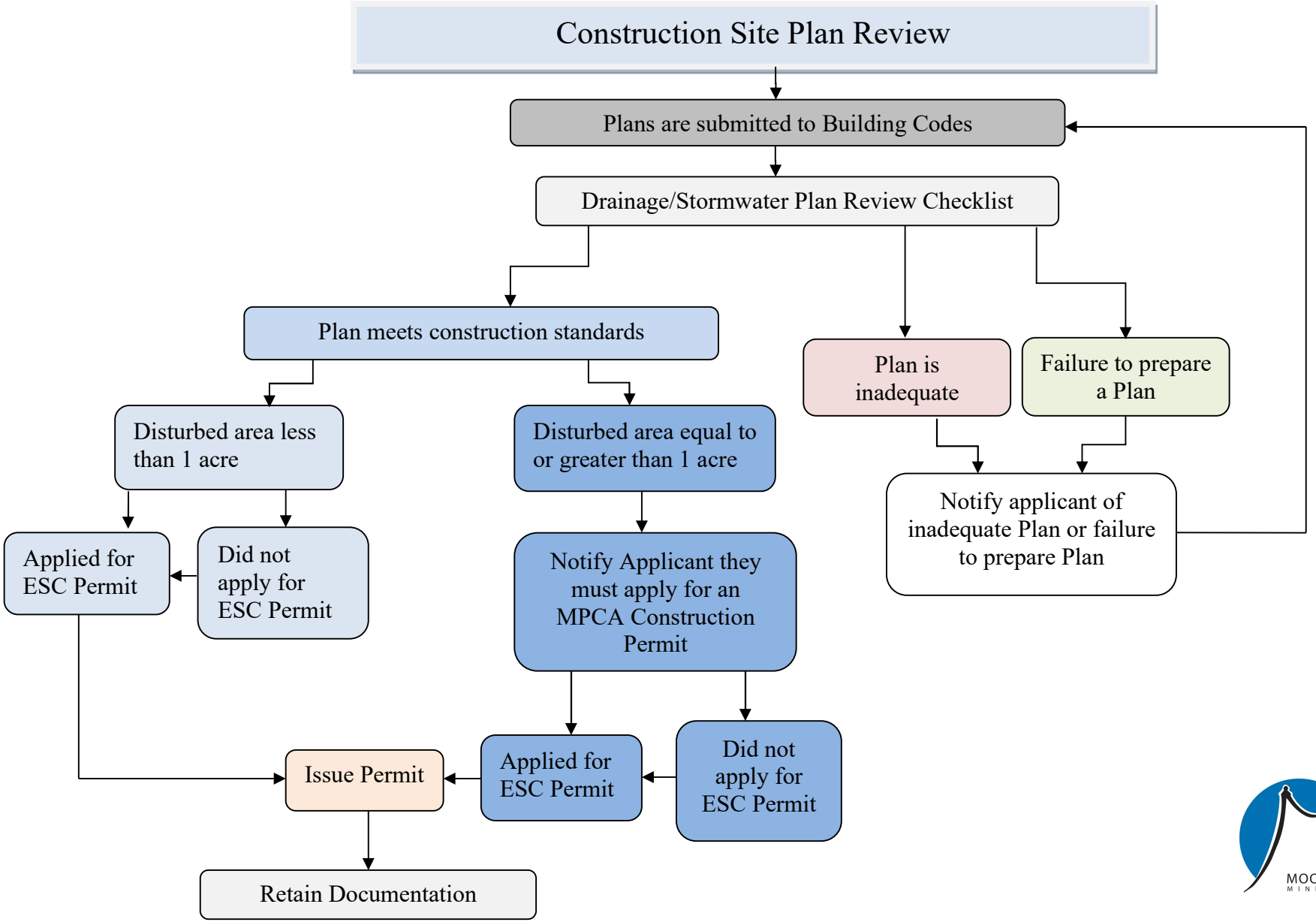
ADDITIONAL PLAN REVIEW FEE (Resulting from incomplete plans) $63.00 **$**_____

Section 9:

Stormwater Permit Application and Standards

Enforcement Response Procedures (ERPs)
(MS4 Permit Section 19.6-19.8)

Typical procedures but other ERPs may be implemented



Standard Operating Procedures (SOPs) for Site Plan Review

Purpose of SOP	Construction Site Plan Review
Location of SOP	G:\Stormwater Program MS4 2020-2025
Administrator of SOP	Utilities Engineer – Stormwater
MS4 Permit Section	19.5

SOP

- Applicant submits plans and Erosion/Sediment Control Permit to Building Codes.
- Building Codes sends notification to Engineering staff.
- Engineering staff reviews plans with Drainage and Stormwater Plan Review Checklist.
    - If the site is equal to or greater than 1 acre the applicant is notified that an MPCA Construction Stormwater Permit is required.
    - Applicant is sent comments of changes needed to the plans.
- Once plans are approved.
    - Erosion/Sediment Control Permit is issued.
- Record Retention
    - Drainage and Stormwater plan review checklist, plans and SWPPP are filed in the Engineering office.
    - Plan review log
        - G:\Stormwater Program\MS4 2020-2025\2020-2025 SWPPP Tracking Data

Reporting

- Number of site plans reviewed each year.
- Number of projects creating an acre or more of new impervious.
- Number of projects creating permanent BMPs.

Drainage and Stormwater Plan Review Checklist

Engineering - Stormwater
Phone # 218-299-5387

Date of Last Revision: February 9, 2024

Site Plan Review

The purpose of this checklist is to provide for uniform, consistent review of plans submitted to the Engineering Department for approval. In order to expedite review; owners, consultants, and/or contractors are encouraged to use this checklist as a guide in preparing plans. Incomplete plans will be returned for revision.

The City reviews, comments upon, and approves plans for the limited administrative purpose of determining whether there is reasonable assurance that site drainage is directed to appropriate stormwater facilities and does not adversely impact these facilities. This approval does not in any way relieve owners of responsibility, nor shall it make the City responsible, for any technical inadequacy in the proposed plan or improvements made. Although City staff attempts to ensure that site drainage does not adversely impact the proposed development site and/or adjacent sites, approval of a drainage plan does not guarantee that negative impacts will not occur.

I. Site Description

A. Project Name:							
B. Location (address):							
C. Project Contact:							
Check one:	Owner:		Consultant:		Contractor:		
Phone:	Fax:		E-mail:				

II. Stormwater Permits

Total site area:	Acres	Existing impervious area:		Acres	
New Development	Acres	Redevelopment		Acres	
Site area disturbed by construction:			Acres	See Note 1	
Post-construction impervious area:			Acres	See Note 2	
MPCA permit required (check one):		Yes		No	
Applicant notified they need an MPCA Permit.		Yes		Date:	
A. City of Moorhead ESC Permit		Permit #	ESC		
B. MPCA Construction Stormwater Permit		Permit #	C000		

Note 1: MPCA General Permit No. MN R100001 (stormwater associated with construction activity) is required if construction involves:

- clearing, grading, and/or excavation that disturbs one (1) acre or more, or
- clearing grading and/or excavation that disturbs less than one (1) acre but is part of a common plan of development which disturbs one (1) acre or more.

Note 2: Post-construction stormwater management program requires the use of any combination of BMPs, with highest preference given to Green Infrastructure techniques and practices necessary to meet the MPCA MS4 permit requirements and City Ordinance.

- A stormwater maintenance agreement for Private BMPs will be recorded to the parcel or parcels.

III. Drainage Plan Requirements - All Sites

Site elevations, as indicated below, must be provided. Elevations may be relative to an existing datum or may be relative to an arbitrary datum (e.g. low point in the system set to zero elevation). Elevations of existing stormwater system components (e.g. CBs) can be obtained from the Engineering Division. Site drainage shall not be directed onto adjacent property without written consent of the owner and/or an agreement between property owners. Sufficient information must be provided to demonstrate no adverse impact to adjacent property.

Drainage Plan Requirement:	Approved	Provide Additional Information
A. North arrow		
B. Street names		
C. Scale		
D. Location of nearest existing stormwater facility (e.g. CB, ditch, etc.) to accept drainage		
E. Elevation of nearest existing stormwater facility to accept drainage		
F. Top of curb (TOC) elevations		
G. Top of foundation (TOF) or finished floor (FF) elevations for all structures		
H. Finished site elevation grid (at no less than 100 ft intervals)		
I. Finished site high point (HP) elevations		
J. Finished site low point (LP) elevations		
K. Top of foundation (TOF) or finished floor (FF) elevations for buildings on adjacent lots (indicate if adjacent lot is vacant)		
L. Finished site general drainage patterns with arrows showing direction of flow		
M. On-site stormwater facilities if present or proposed (e.g. pipe size/slope/capacity, CB rim/invert elevations, etc.)		

*Projects within 1 mile of an impaired water(s) are required to follow Appendix A, C.1 and C.2 of the MPCA Construction Stormwater Permit.

Comments:

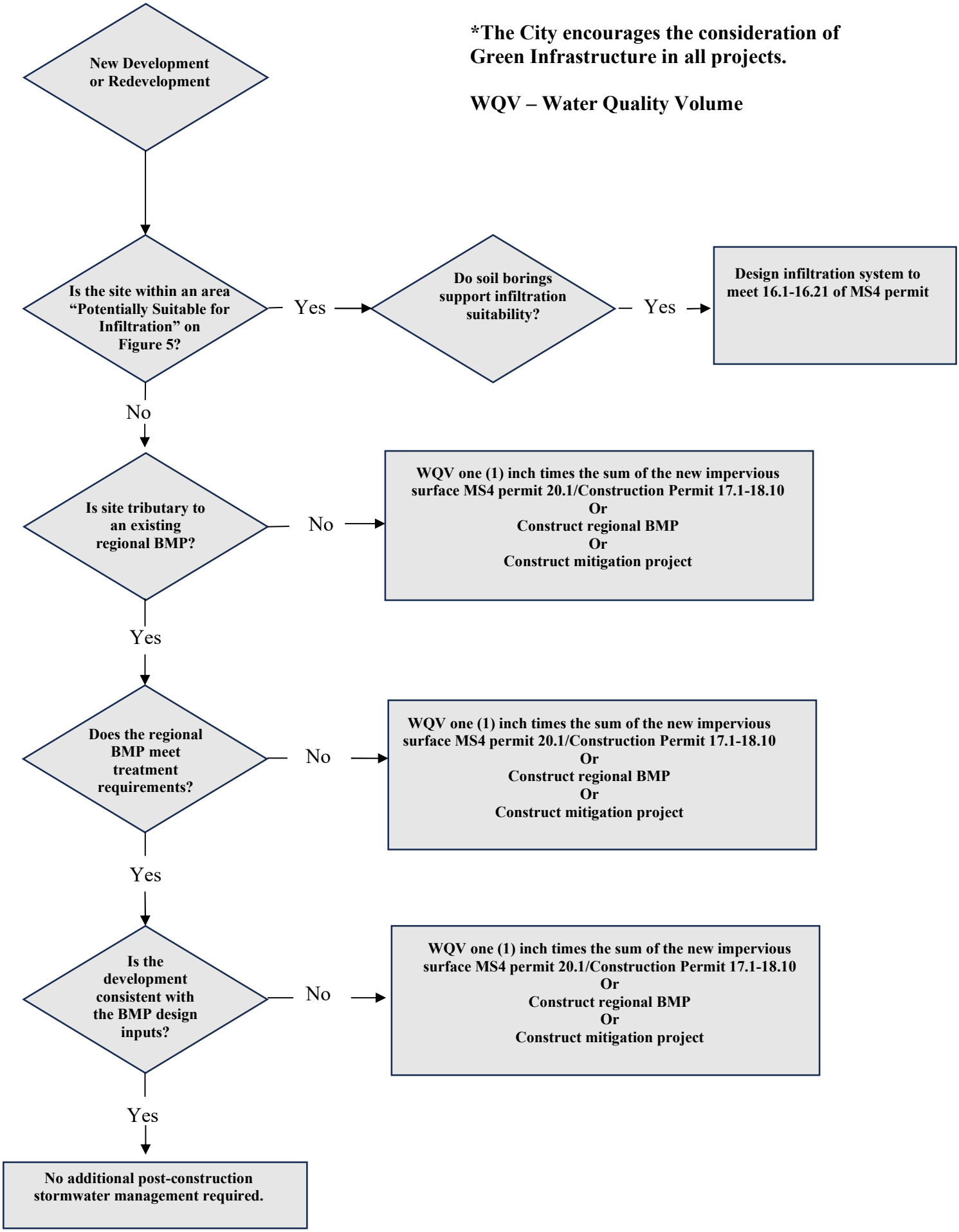
Erosion/Sediment Control Plan Review:					Approved	Provide Additional Information
A. BMPs to minimize erosion						
• Mulch Seeding/Sod						
• Riprap						
• Soil Roughening (cat tracks)						
• Other						
B. BMPs to minimize the discharge of sediment and other pollutants						
• Construction Entrance						
• Sediment Logs						
• Silt Fence						
• Inlet Protection						
• Grass buffer						
• Sediment basin						
• Other						
C. BMPs for dewatering activities						
D. Site inspections and records of rainfall events (Note of plans)						
E. BMP maintenance						
F. Management of solid and hazardous wastes						
• Leakproof washout containment system						
• Material/Chemical storage						
G. Final stabilization						
Within 1 mile of the Red River?	*Yes		No			
G. Temporary sediment basin						
Within 1 mile of the Red River?	*Yes		No			

IV. <u>Sites with new impervious of greater than or equal to one (1) acre, including projects less than one (1) acre that are part of a larger common plan of development or sale:</u>

New Development and Redevelopment:	Approved	Provide Additional Information
A. Inflitration MS4 Permit 16.1-16.21 design parameters Unless prohibited by MS4 Permit 20.9		
- Infiltration Basin		
- Infiltration trench		
- Rainwater gardens		
- Bioretention w/o underdrains		
- Swales with impermeable check dams		
- Natrual depressions		
B. Filtration MS4 Permit 17.1 – 17.11 design parameters		
- Sand Filters with underdrains		
- Biofiltration Areas		
- Swales using underdrains with impermiable check dams		
- Underground Sand Filters		
C. Wet Sediment Basin MS4 Permit 18.1 design parameters		
- Water Quality Volume (WQV) must be calculated as one (1) inch times the sum of the new impervious surface MS4 permit 20.6. Volume reduction practices for WQV must be considered first, unless prohibited by the MS4 permit 20.9		
- Minimum pond depth of 3 ft. plus sediment storage. City Ordinance		
- Design calculations for <u>pre-development</u> runoff (peak flows for 2-yr, 5-yr, 10-yr, 50-yr, and 100-yr events)		
- Design calculations for <u>post-development</u> runoff (peak flows for 2-yr, 5-yr, 10-yr, 50-yr, and 100-yr events)		
D. On-site treatment system location, dimensions, etc.		
E. Legal Maintenance Agreement		
F. Stormwater BMP Operational Plan		
G. Stormwater Inspection and Maintenance Plan		
H. Site drains to existing stormwater treatment facility?		
Yes ☐ If yes, skip G & H No ☐		
I. Off-site treatment (Mitigation) MS4 permit 20.20		
J. Payment received and used in accordance with MS4 permit 20.14		
Yes ☐ No ☐		

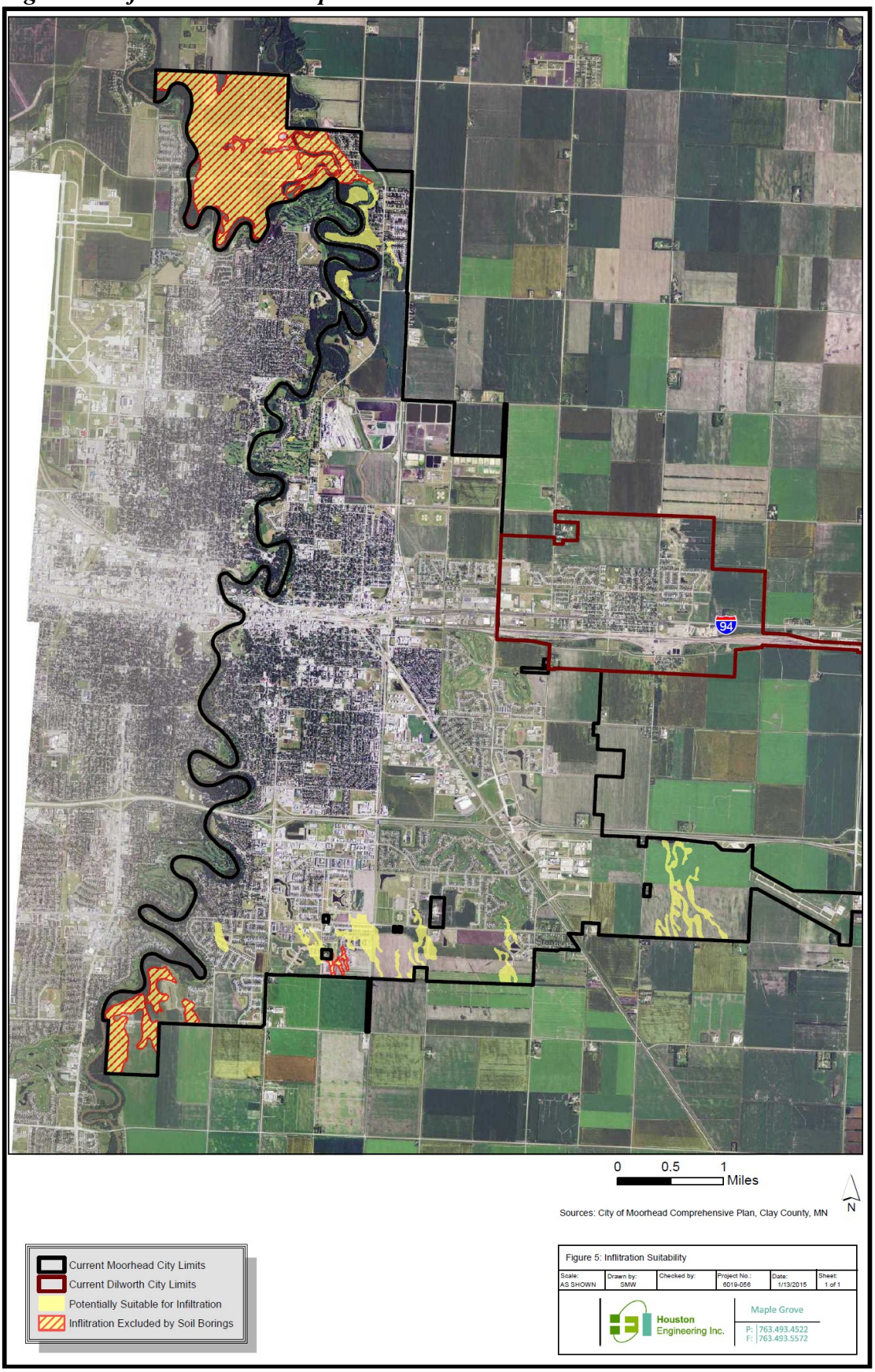
Comments:

Approved By:	Date:



Updated 2/9/2024

Figure 5: Infiltration Area Map



Commercial Erosion and Sediment Control Standards

See below for details on City of Moorhead Commercial Erosion and Sediment Control Standards. These standards are applied to site owners, operators, contractors, subcontractors, and material suppliers. Please email Stormwater staff andrea.crabtree@moorheadmn.gov or call 218.299.5387 with any questions.

Permits

1. Less than one (1) acre:
   - City's Erosion/Sediment Control Permit
   - Erosion/Sediment Control Plan Sheet
2. Equal to or greater than one (1) acre or part of a common plan of development:
   - City's Erosion/Sediment Control Permit
   - Erosion/Sediment Control Plan Sheet
   - Minnesota Pollution Control Agency's (MPCA) General stormwater permit
   - Stormwater Pollution Prevention Plan (SWPPP)

Standards

1. All construction project drainage plans and erosion/sediment control plans must be reviewed and approved by the City of Moorhead Engineering department before a Erosion/Sediment Control Permit is issued.
2. At project sites that require MPCA General stormwater permit for construction activity, where a contractor is not the site owner or operator, each contractor must comply with the provisions of the SWPPP for the project their construction activities will impact.
   - Each contractor must ensure that their activities do not render ineffective, the erosion prevention and sediment control best management practices (BMPs) for the site.
   - Should a contractor damage or render ineffective any BMPs for the site, the contractor must repair or replace such BMPs by the end of the next business day.
   - The contractor will be responsible for a BMP that includes seed or sod and must provide maintenance, including any watering necessary to insure the establishment of the seed or sod. The establishment period for a BMP that includes seed or sod shall be 30 days, after which, if the area does not have an acceptable level of establishment, the contractor must re-seed or re-sod until satisfactory establishment is achieved.
3. At project sites where a contractor is the site owner or operator, and the contractor disturbs one (1) or more acres of land, the contractor must apply for a City erosion/sediment control permit and an MPCA General stormwater permit for construction activity from the State of Minnesota prior to commencement of land disturbing activities.
4. Before commencing any land disturbing activity, all temporary erosion and sediment control measures must be installed down gradient from the disturbed construction area. These practices shall remain in place until final stabilization has been established.
   - The owner and/or contractor are responsible to ensure that all other contractors, subcontractors, and material suppliers comply with all erosion and sediment control requirements.
   - Stormwater inlet(s) that receive runoff from the proposed work area shall be protected. The temporary inlet protection must remain in place until the construction activity is completed, the street has been swept and any exposed soils are stabilized. The contractor is also responsible for removing any temporary inlet protection installed; after all disturbed areas are stabilized.
   - The owner and/or contractor are required to inspect all erosion control devices at least once each week and after every rainfall of ½ inch or more to ensure that they are working properly. A written report of each inspection must be maintained.

- Leakproof washout containers for concrete trucks must be provided, as applicable, on site. Containers shall be clearly marked and the location given to each driver. Containers must be maintained and material properly disposed of.
- Construction entrances to reduce or eliminate vehicle tracking are required at all locations where construction vehicles or equipment will access the project site from existing city streets.
  - During the period of construction, impervious areas that have been tracked with sediments, or have sediments spilled or eroded onto them, must be swept and the sediments removed by the end of the day. Use of hoses and water to flush the sediments into the storm inlets is not acceptable.

5. De-watering of a site may not be discharged in a manner that causes erosion, sedimentation, or flooding on the site, on downstream properties, in the receiving channels, or in any stormwater inlet. When de-watering use one of the following methods:
   - Temporary sedimentation basins
   - Sediment filtering bags
   - Grit chambers
   - Sand filters
   - Other appropriate controls as deemed necessary
6. Final stabilization:
   - Within one (1) mile from an impaired water (Red River of the North) all exposed soil areas must be initiated immediately to limit soil erosion but in no case completed later than seven (7) days after the construction activity in that portion of the site has temporarily or permanently ceased.
   - Greater than one (1) mile from an impaired water (Red River of the North) all exposed soil area must be initiated immediately to limit soil erosion but in no case completed later than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased.

ESC Permit

Erosion & Sediment Control Permit

All Fields Must Be Filled Out

_____
Construction Address or Parcel Number

_____
Subdivision Name

_____
Company Name (Please Print)

_____
Address

_____ _____ _____
City State Zip

_____
Contact Person (Please Print)

_____ _____
Contact Fax # Contact Phone #

_____
Contact e-mail address

I certify that I have reviewed the Erosion and Sediment Control Standards and/or the Storm water Pollution Prevention Plan and I am responsible for implementing, maintaining and monitoring effectiveness of the BMPs during construction and until stabilization has been achieved. I will be responsible for actions of subcontractors and delivery personnel at the worksite related to my construction activity.

_____ _____
Signature Date

Please Check One:

☐ Residential Construction (One and Two Family Dwellings)

☐ Excavation/Utility Construction

☐ Commercial Construction (Requires an Erosion Control Plan submitted with permit.)

C000
_____
MPCA Permit Number (Site greater than 1 acre or subdivision)

SUB00
_____
MPCA Subdivision Permit Number (All MPCA Permits must be mailed to the MPCA, submit a copy to the City)

Permit Fee: $25.00 up to 1 acre of disturbance, plus $12.50 for each additional acre of disturbance.

For City of Moorhead use only

_____
Erosion Control Plan Reviewed By Date

ESC Permit #	
Building Permit #	
ESC Date Issued	
Fee	$
Permit Closed	

City of Moorhead Storm water Management Ordinance Chapter 8 Title 3

Section 10:

Sign Permit

SIGN PERMIT APPLICATION

MOORHEAD MINNESOTA

Community Development Department | Planning & Zoning | 218.299.5370
planning@moorheadmn.gov

APPLICANT

NAME:	SIGN COMPANY:
EMAIL:	
PHONE:	
☐ ON PREMISE ☐ OFF PREMISE ☐ PORTABLE	

SIGN LOCATION

ADDRESS:			
DOES THE SIGN ABUT MNDOT ROW?	☐ HWY 75	☐ HWY 10	☐ INTERSTATE 94
ZONING:			
BUSINESS/EVENT ADVERTISED:	PLACEMENT DATE: REMOVAL DATE: *(FOR PORTABLE SIGNS ONLY)*		

PERMANENT SIGN DETAILS

SIGN INFORMATION - 1 (see reverse side for additional signs)

FREESTANDING		WALL MOUNTED	
SIGN TYPE:		SIGN TYPE:	
SIGN DIMENSIONS:		SIGN DIMENSIONS:	
SIGN AREA:		SIGN AREA:	
SIGN HEIGHT:		WALL HEIGHT:	
SIGN DISTANCE FROM LOT LINE:		WALL LENGTH:	
LOT LINE LENGTH:		WALL AREA:	
OTHER INFO:		OTHER INFO:	

PERMANENT SIGN PERMIT REQUIREMENTS:

- ☐ Site plan indicating the sign location on the property and the total property dimensions.
- ☐ Building elevations indicating building dimensions, existing/proposed sign locations, setbacks, and areas.
- ☐ Sign proposal illustrating sign type, size, dimensions, total height, and materials.
- ☐ Permanent Sign Permit fee of $25.00 per sign plus a $1 MN State surcharge fee per application.

- ☐ Portable Sign Permit fee of $15.00 per sign per application.
- ☐ For additional information: Sign Code, On Premises Signs, Off Premises Signs, Portable Signs
- ☐ For Dynamic Display Sign requirements, please see table for On Premises Signs.

SIGN INFORMATION - 2

FREESTANDING		WALL MOUNTED	
SIGN TYPE:		SIGN TYPE:	
SIGN DIMENSIONS:		SIGN DIMENSIONS:	
SIGN AREA:		SIGN AREA:	
SIGN HEIGHT:		WALL HEIGHT:	
SIGN DISTANCE FROM LOT LINE:		WALL LENGTH:	
LOT LINE LENGTH:		WALL AREA:	
OTHER INFO:		OTHER INFO:	

SIGN INFORMATION - 3

FREESTANDING		WALL MOUNTED	
SIGN TYPE:		SIGN TYPE:	
SIGN DIMENSIONS:		SIGN DIMENSIONS:	
SIGN AREA:		SIGN AREA:	
SIGN HEIGHT:		WALL HEIGHT:	
SIGN DISTANCE FROM LOT LINE:		WALL LENGTH:	
LOT LINE LENGTH:		WALL AREA:	
OTHER INFO:		OTHER INFO:	

SIGN INFORMATION - 4

FREESTANDING		WALL MOUNTED	
SIGN TYPE:		SIGN TYPE:	
SIGN DIMENSIONS:		SIGN DIMENSIONS:	
SIGN AREA:		SIGN AREA:	
SIGN HEIGHT:		WALL HEIGHT:	
SIGN DISTANCE FROM LOT LINE:		WALL LENGTH:	
LOT LINE LENGTH:		WALL AREA:	
OTHER INFO:		OTHER INFO:	

Section 11:

Driveway Approach, Sidewalk and Boulevard/Right of way Excavation Details and Procedures (utilities within City Right of way)

Installing an Approach or a Public Sidewalk

The Engineering Department will verify the following requirements are met prior to any work being completed within the right of way. The concrete contractor must provide:

- Certificate of Insurance Bond in the amount of $5,000 payable to the City of Moorhead
- Certificate of Liability Insurance

Once obtained, you may request a line and grade for your proposed sidewalk and/or approach. Please reach out to the Engineering Department at 218-299-5390. The length of sidewalk must be provided at this time. An inspector will be dispatched to location to complete your request.

At time of final inspection, please contact Engineering Department at 218-299-5390.

Temporary Lane Closure Permits

A temporary lane closure permit is required for all work requiring the closure of any portion of public roadways or sidewalk, and must be completed prior to the commencement of work. Fees will be assessed on a weekly basis as indicated in the fee schedule below. All fees are waived if the temporary lane closure permit is being submitted as part of a right-of-way excavation permit

Temporary Lane Closure Permit
*Mapping of traffic location is required for permit submittal
*Please have your ROW excavation permit number available if applicable

Fees:
Local or Local Collector Street – partial closure, no detour required: No fee

Local or Local Collector Street – full closure, detour required: $20 per week

Sidewalk or Bike Path – full closure: $20 per week

Arterial or Collector Street – parking lane or shoulder closure: No fee

Arterial or Collector Street – traffic lane closure, no detour required: $20 per week

Arterial or Collector Street – full closure, detour required: $100 per week

!! CAUTION !!

UTILITIES IN THE AREA, BEFORE CONSTRUCTION
UTILIZE 1 CALL **1-800-252-1166**

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL " **C** ". THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PLAN SYMBOLS

- RIGHT-OF-WAY LINE ROAD — R/W
- RIGHT-OF-WAY LINE DRAINAGE DITCH
- SECTION LINE
- QUARTER LINE
- PROPERTY LINE
- EASEMENT LINE
- RAILROAD
- FENCE
- SANITARY SEWER - EXISTING — SS
- SANITARY SEWER - PROPOSED — SS
- SANITARY SEWER SERVICE - EXISTING — SS–SV
- SANITARY SEWER SERVICE - PROPOSED — SS–SV
- SANITARY SEWER FORCE MAIN — SS–FM
- STORM SEWER - EXISTING — ST
- STORM SEWER - PROPOSED — ST
- WATER - EXISTING — W
- WATER - PROPOSED — W
- WATER SERVICE - EXISTING — W–SV
- WATER SERVICE - PROPOSED — W–SV
- TELEPHONE — TEL
- TELEVISION — CATV
- FIBER OPTIC — FBR
- OVERHEAD POWER — OHP
- UNDERGROUND POWER — UGP
- PETROLEUM PIPELINE — PETRO
- GAS — GAS
- CURB & GUTTER - EXISTING
- CURB & GUTTER - PROPOSED

- SANITARY MANHOLE (SS)
- STORM MANHOLE (ST)
- EXISTING MANHOLE
- HYDRANT
- EXISTING HYDRANT
- GATE VALVE
- EXISTING GATE VALVE
- CLEAN OUT
- CURB STOP
- PROPOSED INLET
- EXISTING INLET
- SIGN - STREET NAME
- SIGN - REGULATORY / WARNING
- POWER POLE or
- STREET LIGHT or
- ELECTRICAL TRANSFORMER (EL) or (EL)
- UTILITY PEDESTAL (TEL) or (TEL)
- UTILITY HANDHOLD / VAULT (U) or (U)
- DECIDUOUS TREE or
- CONIFEROUS TREE or
- BUSH / HEDGE or

SPECIFICATION REFERENCE

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN, AS MODIFIED BY THE CITY OF MOORHEAD SPECIFICATIONS AND SPECIAL PROVISIONS.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE 2014 MMUTCD, AND TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS (FIELD MANUAL) DATED JANUARY 2014.

City of Moorhead

Right-of-Way Details and Standards

MOORHEAD
MINNESOTA

INDEX

S.P. No.	ENG. No.	LEGAL. No.
LJH DRAWN BY	MEO CHECKED BY	TET APPROVED BY

MOORHEAD MINNESOTA Engineering

THESE DOCUMENTS HAVE BEEN PREPARED IN ACCORDANCE WITH CITY OF MOORHEAD SPECIFICATIONS AND STANDARDS. ALL RIGHT-OF-WAY WORK MUST BE APPROVED AND PERMITTED BY THE CITY OF MOORHEAD CITY ENGINEERS OFFICE BEFORE ANY WORK MAY COMMENCE.

EFFECTIVE DATE: 01-01-24

City of Moorhead
Right-of-Way
Details and Standards

Right-of-Way Details and Standards

SHEET 1 OF 9

G:\ENGR\DESIGN-CENTER\DETAILS\ROW Details 2024 - 4/2/2024 11:07 AM

Any area of work that requires the removal, physical disturbance or penetration of any part of the City maintained public right-of-way is subject to the requirements of the following details in accordance with City Code Title 8 Chapter 4. Any area affected by any excavation activity, including the staging area for storage equipment and materials, located in either the roadway or boulevard; will require a permit before commencement of work.

Right- of Way Excavation Permit

Excavation permits are required whenever an excavation or underground work is planned within the public right-of-way. No person may excavate any right-of-way without first having obtained the appropriate Right-of-Way Permit from the Engineering Department.

Applicants must submit a completed permit application along with the following information (Online application located at http://www.cityofmoorhead.com/departments/engineering/permits).:

-Scaled drawings/designs showing the scope and location of the proposed project

-$25,000 minimum Contractor Bond on file with the City

-Certificate of Liability Insurance (City of Moorhead listed as additional insured)

-Erosion/Sediment Control Permit Application (where applicable)

Fees

Boring/Trenching & Excavations (Length of boring/trenching activities and total perimeter of excavation, includes stormwater fee):

0′ – 500′ = $255

501′ – 1500′ = $555

1501′ + = $1255

MINIMUM PERMIT FEE = $255

Driveway and Sidewalk Permit

Driveway and sidewalk permits are required for installing driveway approaches, sidewalk or curb/gutter in the public right-of-way. The permit will only be issued to a bonded contractor or homeowner who obtains a certificate of insurance bond in the amount of $10,000 payable to the City of Moorhead.

Fees

Driveway Approach Permit = $50

Sidewalk or Curb & Gutter Permit = $50 per 50 foot increment

FOR ALL DRIVEWAY AND SIDEWALK PERMITS AND INSPECTIONS CALL THE CITY OF MOORHEAD ENGINEERING DEPARTMENT AT 218-299-5390.

. S.P. No.	ENG. No.	LEGAL No.
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MOORHEAD MINNESOTA Engineering

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EFFECTIVE DATE: 01-01-24

ROW Disclaimer

Right-of-Way Details and Standards

SHEET 2 OF 9

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NOTES:

1. TEMPORARY COLD WEATHER PATCH SHALL CONSIST OF A 4" MINIMUM OF COLD-MIX OR CONCRETE AND MUST BE MAINTAINED UNTIL PERMANENT PAVEMENT IS INSTALLED. CLASS 5 WILL NOT BE ALLOWED FOR WINTER TIME TEMPORARY PATCHES.
2. CONCRETE REPAIRS WITHIN 5' OF EXISTING JOINT MUST BE MADE TO THE JOINT.
3. ALL REBAR USED IN CURB AND STREET REPAIR WILL BE EPOXY COATED REBAR.
4. DRIVEWAY REMOVALS WITHIN THE RIGHT-OF-WAY SHALL EXTEND TO THE BACK OF CURB OR THE SIDEWALK CROSSING PLATE IF LESS THAN 3' OF DRIVEWAY REMAINS ADJACENT TO EXCAVATION AREAS.

CONSTRUCTION NOTES:

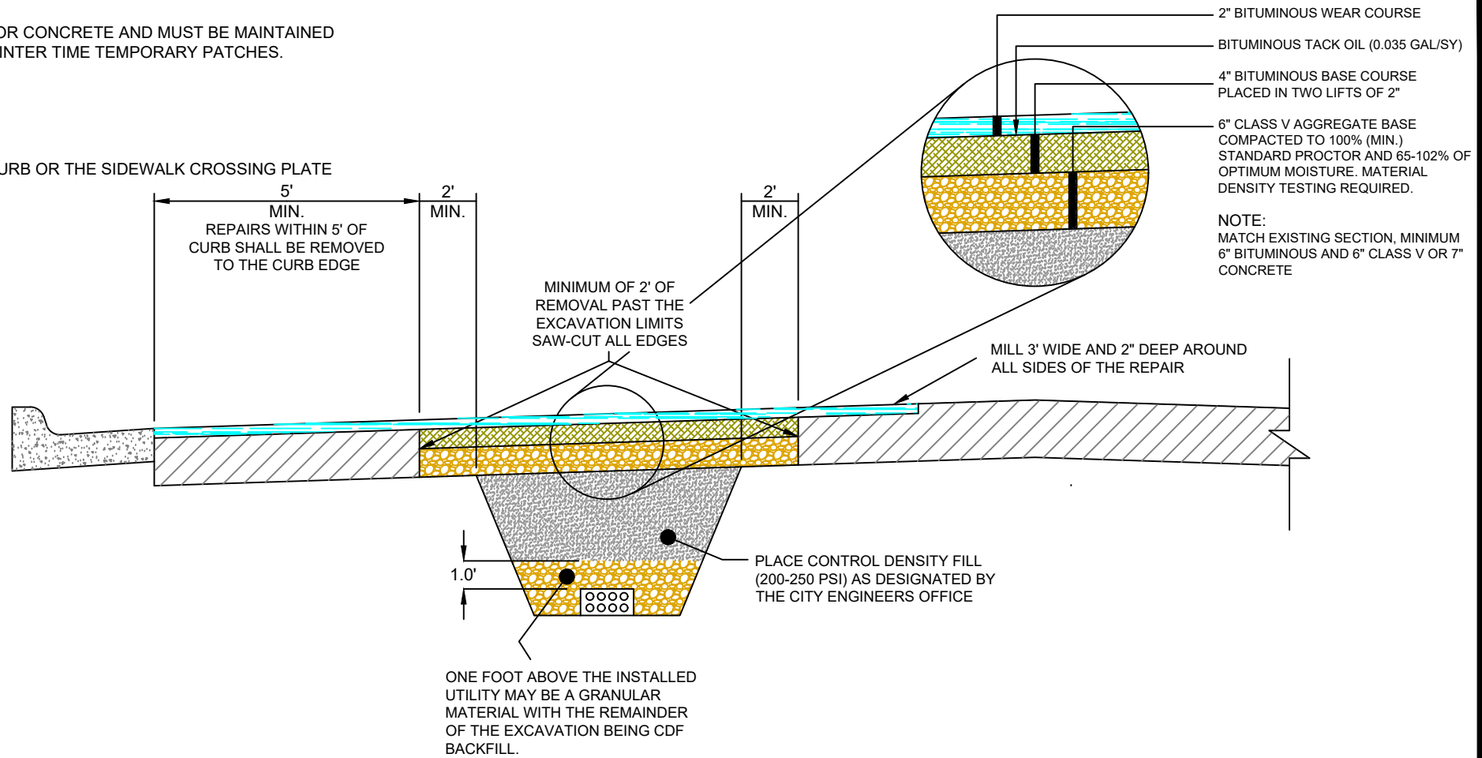
BITUMINOUS-
SHALL BE PLACED A MINIMUM OF 6" THICK. MATCH EXISTING BITUMINOUS DEPTH IF GREATER THAN 6"

BITUMINOUS OVERLAID CONCRETE-
PLACE 7" OF CONCRETE AND No. 5 REBAR AT 24" O.C. EACH WAY AND DOWEL INTO EXISTING PAVEMENT. PLACE BITUMINOUS TO MATCH EXISTING

CONCRETE-
REPLACE TO EXISTING DEPTH. PLACE No. 5 REBAR AT 24" O.C. EACH WAY AND DOWEL INTO EXITING PAVEMENT

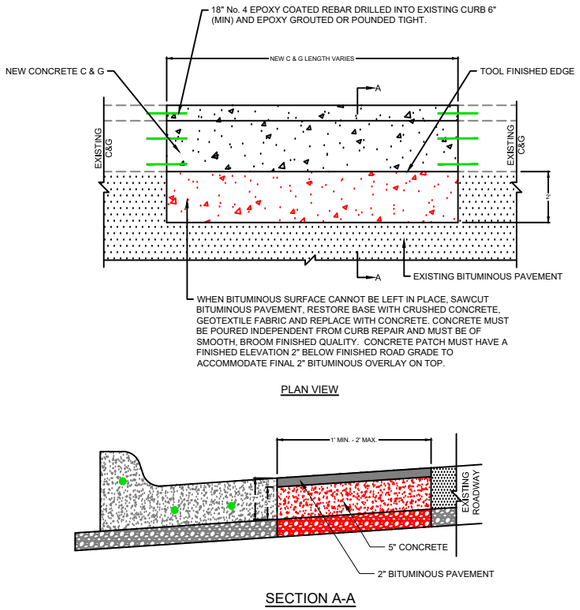
ALL STREETS AND AVENUES REQUIRE CDF BACKFILL*

*EXCAVATIONS OVER 150 SQUARE FEET HAVE THE OPTION TO USE CLASS V AGGREGATE FOR BACKFILL WITH DENSITY TESTING EVERY 3' IN ELEVATION AND EVERY 100 LF IN LENGTH. FAILURE TO PROVIDE TESTING RESULTS WILL RESULT IN THE REMOVAL AND REPLACEMENT OF THE EXCAVATION AT THE CONTRACTORS COST.



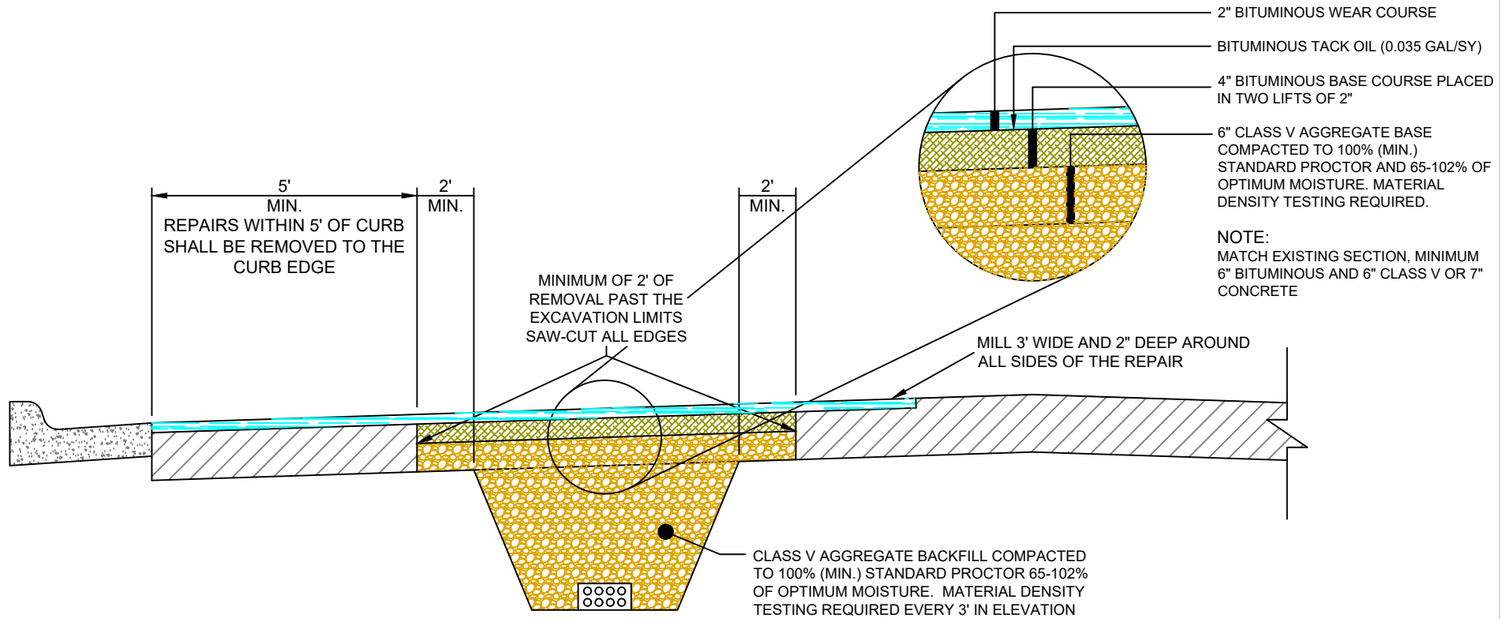
MINIMUM STANDARDS FOR STREET REPAIR, EXCAVATION UNDER 150 SF

NOT TO SCALE



SPOT CURB AND GUTTER REPLACEMENT

NOT TO SCALE



MINIMUM STANDARDS FOR STREET REPAIR, EXCAVATION OVER 150 SF

NOT TO SCALE

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MOORHEAD MINNESOTA Engineering

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EFFECTIVE DATE: 01-01-24

Street Patch Repair Details

Right-of-Way Details and Standards

SHEET 3 OF 9

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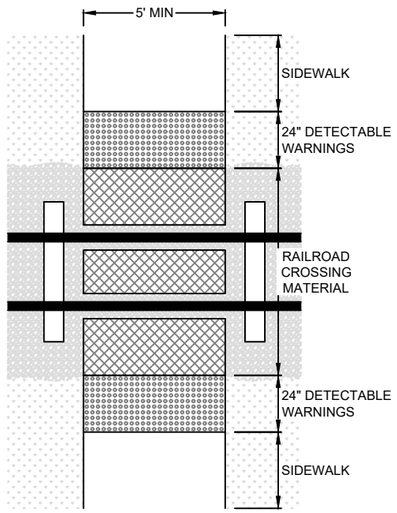
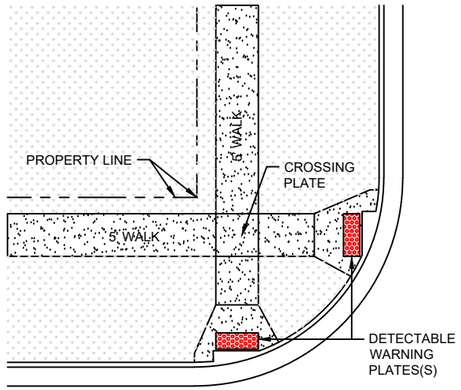
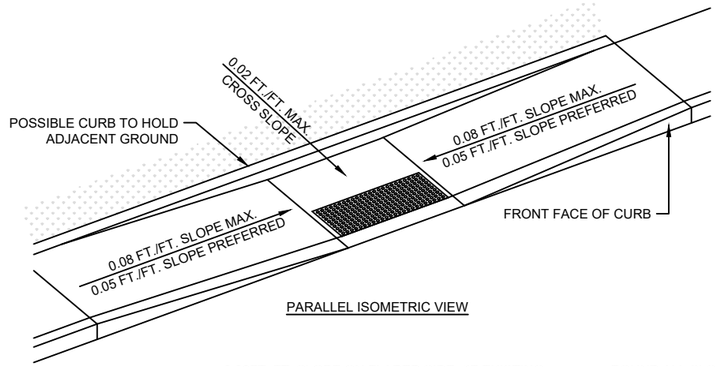


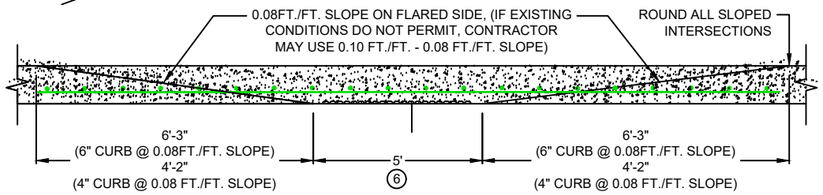
RAILROAD CROSSING
NOT TO SCALE



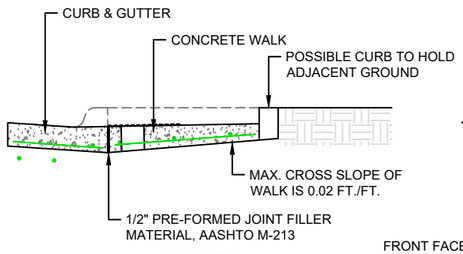
TYPICAL CORNER
(SEE PLAN SHEETS FOR NUMBER &LOCATION OF RAMPS)
NOT TO SCALE



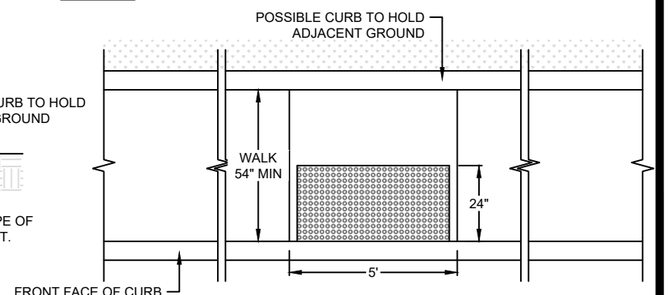
PARALLEL ISOMETRIC VIEW



ELEVATION

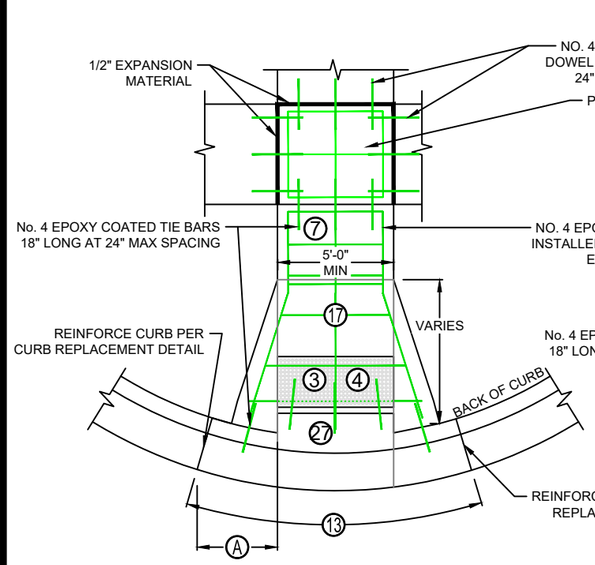


PLAN VIEW

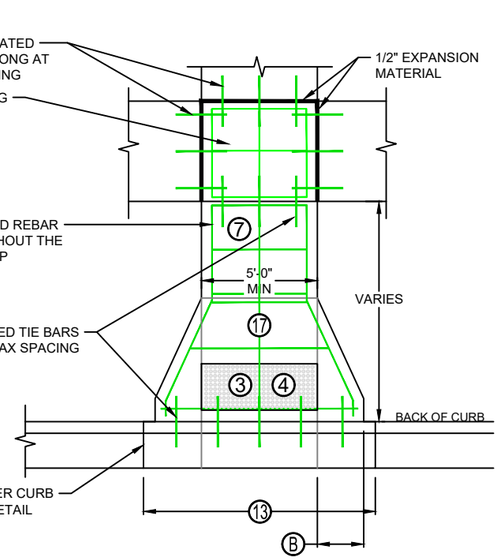


PARALLEL RAMP PLAN VIEW

PARALLEL RAMP
NOT TO SCALE



DIAGONAL / RADIAL RAMP
A: MOUNTABLE CURB - 2' MINIMUM FLAIR, HIGH-BACK CURB - 3' MINIMUM FLAIR; MEASURED PERPENDICULAR TO DIRECTION OF TRAVEL
NOT TO SCALE



PERPENDICULAR RAMP
B: MOUNTABLE CURB - 2' MINIMUM FLAIR, HIGH-BACK CURB - 3' MINIMUM FLAIR
NOT TO SCALE

NOTES:

1. PEDESTRIAN ACCESS ROUTE (PAR) LANDING TO BE **POURED BEFORE AND INDEPENDENT** TO THE PEDESTRIAN CURB RAMP.
2. WHEN ABUTTING EXISTING CONCRETE THAT EXCEEDS A 2% CROSS SLOPE THEN A TRANSITION OF NO MORE THAN 0.5% SLOPE CORRECTION PER FOOT TO BE USED.
3. ALL TRUNCATED DOMES MUST BE COATED CAST IRON AND BE A MNDOT APPROVED PRODUCT.
4. ALL TRUNCATED DOMES MUST HAVE FACTORY INSTALLED WEEP HOLES TO ENSURE PROPER BEDDING.
5. TRUNCATED DOMES MUST BE INSTALLED WITHIN 3" OF THE EDGE OF THE CONCRETE ON BOTH SIDES MEASURED PERPENDICULAR TO THE DIRECTION OF TRAVEL.
6. **THE CUTTING OF TRUNCATED DOME PANELS IS NOT ALLOWED.**
7. ALL CONCRETE SIDEWALK TO BE 6" THICK UNLESS OTHERWISE NOTED.
8. JOINT SPACING MUST NOT EXCEED 5' IN ANY DIRECTION SAWED OR TOOLED.
9. REINFORCEMENT SPACING SHALL NOT EXCEED 24" IN ANY DIRECTION AND BE SUPPORTED MID-DEPTH ON REBAR RISER CHAIRS EVERY 4' ON CENTER .
10. REINFORCING MUST BE PLACED 4" OF BOTH SIDES OF ALL JOINTS TOOLED OR SAWED.
11. ALL PATHS AT OR WIDER THAN 8' SHALL HAVE A LONGITUDINAL SAWED JOINT DOWN THE CENTER.
12. ALL REINFORCEMENT, AGGREGATE BASE, AND JOINTS SHALL BE INCIDENTAL TO CONSTRUCTION.
13. THE CURB AND CURB TRANSITION WILL BE PAID FOR AS LINEAR FEET OF CONCRETE CURB OR CONCRETE CURB AND GUTTER. SEE CURB & GUTTER DETAIL FOR ADDITIONAL REINFORCEMENT SPECS.
14. THE RAMP AREA WILL BE PAID AS ONE UNIT PEDESTRIAN RAMP 5' OR PEDESTRIAN RAMP 10'. THE TRUNCATED DOME AREA SHALL BE CONSIDERED INCIDENTAL.
15. THE PEDESTRIAN RAMP WILL INCLUDE AREA FROM BACK OF CURB THROUGH THE LANDING OR CROSSING PLATE AND IS NOT TO EXCEED 15', ANYTHING OVER 15' WILL BE PAID FOR AS CONCRETE WALK.
16. ALL TIE BARS AND DOWELS SHALL BE EPOXY COATED. ONE END OF ALL DOWEL BARS TO BE GREASED.
17. ALL REINFORCEMENT WITHIN THE PEDESTRIAN RAMP SHALL BE EPOXY COATED.
18. WHERE EPOXY COATED REBAR IS REQUIRED IT SHALL HAVE NO VISIBLE DINGS, SCRATCHES, OR OTHER EXPOSED METAL.
19. ALL REBAR, SUPPORTING CHAIRS, AND FRAMEWORK SHALL BE INCIDENTAL TO CONSTRUCTION.
20. TOOLED JOINTS MUST NOT EXCEED 1/4" IN WIDTH, MUST HAVE A 1/4" RADIUS BEVEL AND BE 1/4 THE SLAB THICKNESS IN DEPTH.
21. SAWED JOINTS MUST NOT EXCEED 1/4" IN WIDTH, BE 1/4 THE SLAB THICKNESS IN DEPTH AND BE SAW CUT WITHIN 24 HOURS OF CONCRETE PLACEMENT.
22. 1/2" PRE-FORMED JOINT FILLER MATERIAL, AASHTO M-213 (CELLULAR FIBER BIT. FELT)
23. LIMITS OF REMOVALS SHALL BE SHOWN IN THE PLANS OR AS DETERMINED IN THE FIELD BY THE ENGINEER. ALL EXCAVATED AND REMOVED MATERIAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OF NEW SIDEWALK AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY DISPOSE OF ALL EXCAVATED MATERIALS, INCLUDING BITUMINOUS AND CONCRETE.
24. **CONCRETE PROWAG CERTIFICATION:** THE CONTRACTOR MUST DESIGNATE A RESPONSIBLE PERSON COMPETENT IN ALL ASPECTS OF PROWAG TO ASSESS PROPOSED SIDEWALK LAYOUTS AT EACH SITE BEFORE WORK BEGINS. THE DESIGNATED PERSON MUST HAVE ATTENDED THE MNDOT ADA CONSTRUCTION CERTIFICATION COURSE AND RECEIVED A PASSING SCORE, WITHIN THE PAST 3 YEARS. A MINIMUM OF ONE PERSON PER PROJECT MUST POSSESS A VALID ADA CONSTRUCTION CERTIFICATION CARD ANYTIME ADA WORK IS BEING PERFORMED ON THE PROJECT. ADA WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING: ASSESSMENT OF PROPOSED SIDEWALK LAYOUTS AT EACH SITE BEFORE WORK BEGINS, DETERMINING AND MARKING REMOVAL LIMITS FOR WORK PERTAINING TO PEDESTRIAN FACILITIES, ALL ADA RELATED REMOVALS AND GRADING, FORMING AND FINISHING OF CONCRETE AT ALL PEDESTRIAN FACILITIES, PAVING PEDESTRIAN CROSSINGS, PLACING BITUMINOUS PEDESTRIAN FACILITIES, FINAL GRADING, AND PAVEMENT MARKINGS. ANY ADA WORK NOT LISTED ABOVE CAN BE ADDED AT THE DISCRETION OF THE ENGINEER. AN ADA CERTIFIED PERSON IS NOT REQUIRED ON SITE IF THE ONLY WORK BEING PERFORMED CONCERNS TRAFFIC SIGNALS AND APS INSTALLATIONS.
25. MAX 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

THESE REQUIREMENTS SHALL BE EFFECTIVE AS OF MAY 1ST, 2019. ANY TIME WORK THE CONTRACTOR IS PERFORMING CONCERNS PEDESTRIAN FACILITIES, THE CONTRACTOR'S ADA CERTIFIED PERSON SHALL BE ON SITE.

STANDARD PEDESTRIAN CURB RAMP
NOT TO SCALE

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ENG. No.	LEGAL. No.

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EFFECTIVE DATE: 01-01-24

Pedestrian ADA Ramp & Sidewalk Detail

Right-of-Way Details and Standards

SHEET 5 OF 9

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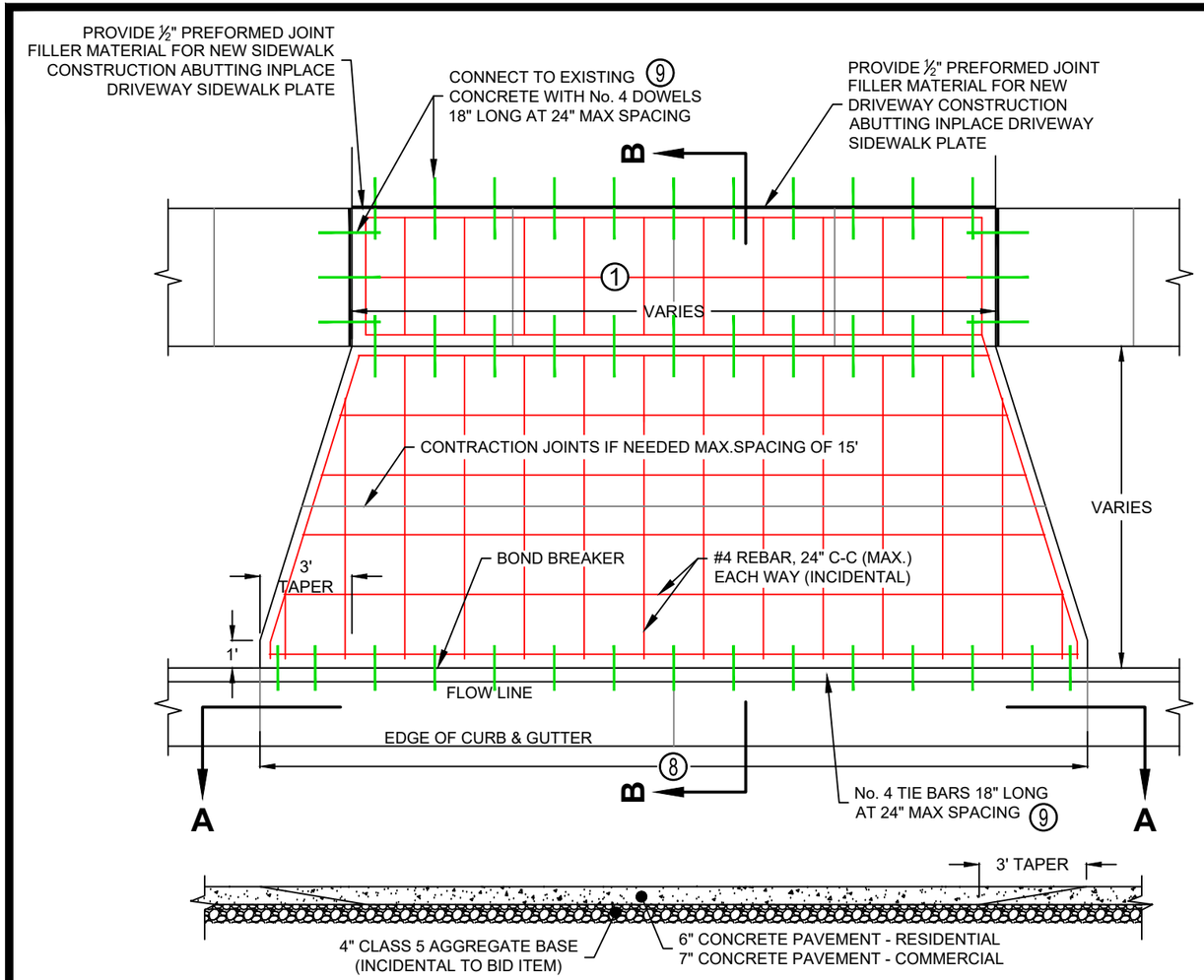
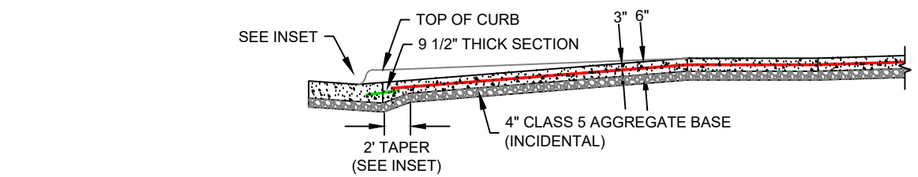
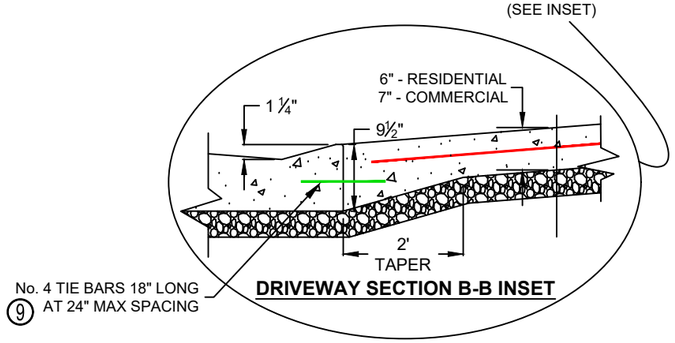


DRIVEWAY SECTION A-A



DRIVEWAY SECTION B-B
B-624 CURB

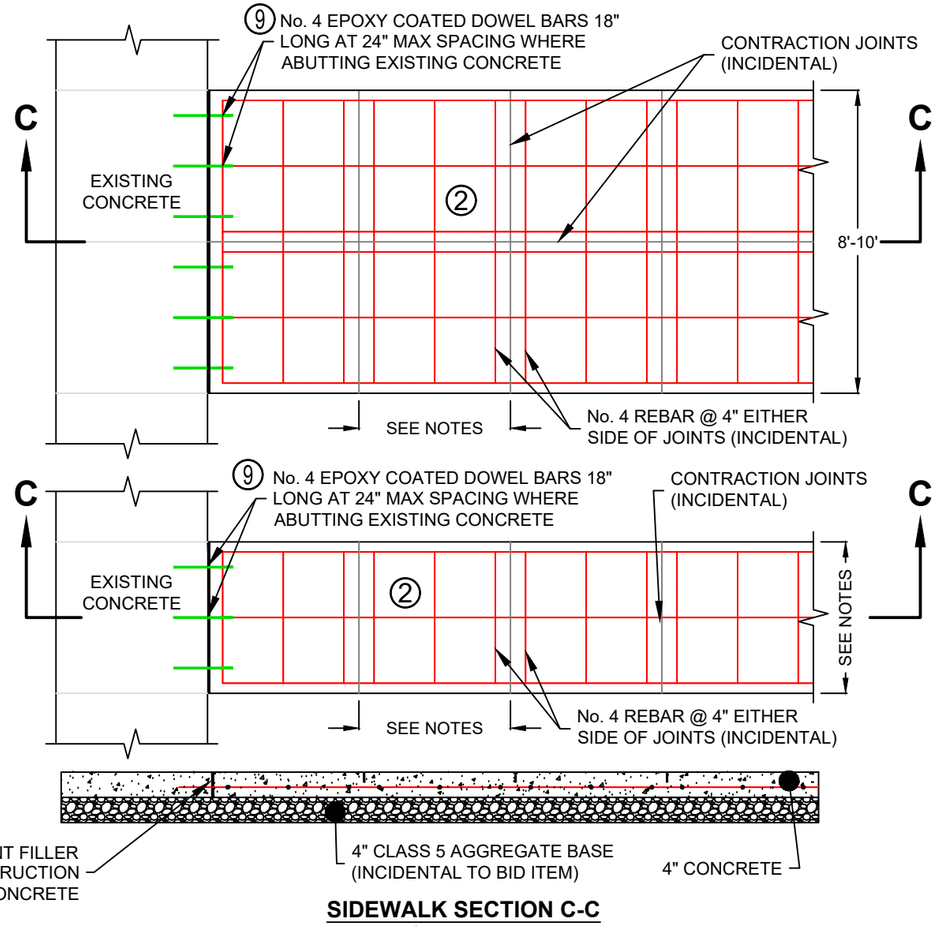


DRIVEWAY SECTION B-B INSET

NOTES:

1. DRIVEWAY CROSSING PLATE TO BE **POURED BEFORE AND INDEPENDENT** FROM THE APRON.
2. ALL CONCRETE SIDEWALK TO BE 4" THICK UNLESS OTHERWISE NOTED.
3. JOINT SPACING MUST NOT EXCEED 5' IN ANY DIRECTION SAWED OR TOOLED.
4. REINFORCEMENT SPACING SHALL NOT EXCEED 24" IN ANY DIRECTION AND BE SUPPORTED MID-DEPTH ON REBAR RISER CHAIRS EVERY 4' ON CENTER .
5. REINFORCING MUST BE PLACED 4" OF BOTH SIDES OF ALL JOINTS TOOLED OR SAWED.
6. ALL PATHS AT OR WIDER THAN 8' SHALL HAVE A LONGITUDINAL SAWED JOINT DOWN THE CENTER.
7. ALL REINFORCEMENT, AGGREGATE BASE, AND JOINTS SHALL BE INCIDENTAL TO CONSTRUCTION.
8. THE CURB AND CURB TRANSITION WILL BE PAID FOR AS LINEAR FEET OF CONCRETE CURB OR CONCRETE CURB AND GUTTER. SEE CURB & GUTTER DETAIL FOR ADDITIONAL REINFORCEMENT SPECS.
9. ALL TIE BARS AND DOWELS SHALL BE EPOXY COATED. ONE END OF ALL DOWEL BARS TO BE GREASED.
10. WHERE EPOXY COATED REBAR IS REQUIRED IT SHALL HAVE NO VISIBLE DINGS, SCRATCHES, OR OTHER EXPOSED METAL.
11. ALL REBAR, SUPPORTING CHAIRS, EXPANSION MATERIAL, AND FRAMEWORK SHALL BE INCIDENTAL TO CONSTRUCTION.
12. TOOLED JOINTS MUST NOT EXCEED ¼" IN WIDTH, MUST HAVE A ¼" RADIUS BEVEL AND BE ¼ THE SLAB THICKNESS IN DEPTH.
13. SAWED JOINTS MUST NOT EXCEED ¼" IN WIDTH, BE ¼ THE SLAB THICKNESS IN DEPTH AND BE SAW CUT WITHIN 24 HOURS OF CONCRETE PLACEMENT.
14. ½" PRE-FORMED JOINT FILLER MATERIAL, AASHTO M-213 (CELLULAR FIBER BIT. FELT) PLACED AT EVERY PC AND PT OR EVERY 200 FT. UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
15. LIMITS OF SIDEWALK REMOVAL SHALL BE SHOWN IN THE PLANS OR AS DETERMINED IN THE FIELD BY THE ENGINEER. ALL EXCAVATED AND REMOVED MATERIAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OF NEW SIDEWALK AND IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROPERLY DISPOSE OF ALL EXCAVATED MATERIALS, INCLUDING BITUMINOUS AND CONCRETE.
16. **CONCRETE PROWAG CERTIFICATION:** THE CONTRACTOR MUST DESIGNATE A RESPONSIBLE PERSON COMPETENT IN ALL ASPECTS OF PROWAG TO ASSESS PROPOSED SIDEWALK LAYOUTS AT EACH SITE BEFORE WORK BEGINS. THE DESIGNATED PERSON MUST HAVE ATTENDED THE MNDOT ADA CONSTRUCTION CERTIFICATION COURSE AND RECEIVED A PASSING SCORE, WITHIN THE PAST 3 YEARS. A MINIMUM OF ONE PERSON PER PROJECT MUST POSSESS A VALID ADA CONSTRUCTION CERTIFICATION CARD ANYTIME ADA WORK IS BEING PERFORMED ON THE PROJECT. ADA WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING: ASSESSMENT OF PROPOSED SIDEWALK LAYOUTS AT EACH SITE BEFORE WORK BEGINS, DETERMINING AND MARKING REMOVAL LIMITS FOR WORK PERTAINING TO PEDESTRIAN FACILITIES, ALL ADA RELATED REMOVALS AND GRADING, FORMING AND FINISHING OF CONCRETE AT ALL PEDESTRIAN FACILITIES, PAVING PEDESTRIAN CROSSINGS, PLACING BITUMINOUS PEDESTRIAN FACILITIES, FINAL GRADING, AND PAVEMENT MARKINGS. ANY ADA WORK NOT LISTED ABOVE CAN BE ADDED AT THE DISCRETION OF THE ENGINEER. AN ADA CERTIFIED PERSON IS NOT REQUIRED ON SITE IF THE ONLY WORK BEING PERFORMED CONCERNS TRAFFIC SIGNALS AND APS INSTALLATIONS.

THESE REQUIREMENTS SHALL BE EFFECTIVE AS OF MAY 1ST, 2019. ANY TIME WORK THE CONTRACTOR IS PERFORMING CONCERNS PEDESTRIAN FACILITIES, THE CONTRACTOR'S ADA CERTIFIED PERSON SHALL BE ON SITE.



SIDEWALK SECTION C-C

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EFFECTIVE DATE: 01-01-24

Sidewalk & Private Drive (Approach) Detail

Right-of-Way Details and Standards

SHEET 4 OF 9

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NOTES:

1. REINFORCEMENT NOT SHOWN
2. TYPE "A" CASTING ASSEMBLY TO BE USED FOR STORM AND SANITARY MANHOLES
3. TYPE "B" CASTING ASSEMBLY TO BE USED FOR REAR YARD, BOULEVARD, AND DITCH DRAINAGE
4. TYPE "C" CASTING ASSEMBLY TO BE USED IN TYPE "C" MOUNTABLE CURB AND GUTTER
5. TYPE "D" CASTING ASSEMBLY TO BE USED IN B-624 CURB AND GUTTER
6. TYPE "E" CASTING ASSEMBLY TO BE AT ADA PEDESTRIAN RAMP LOCATIONS AS DIRECTED BY THE ENGINEER
7. TYPE "F" CASTING ASSEMBLY TO BE USED FOR STORM SEWER CATCH BASIN INSTALLATIONS WITH ELEVATION CONSTRAINTS.
8. TYPE "G" CASTING ASSEMBLY TO BE USED IN CONCRETE ROADWAY CONSTRUCTION.
9. INLET PIPE OPENINGS SHALL BE GROUTED ON THE INSIDE AND OUTSIDE OF EACH STRUCTURE WITH AN APPROVED CONCRETE MIX
10. HDPE RINGS SHALL BE INSTALLED VERTICALLY; STAGGERING OF ADJUSTMENT RINGS SHALL NOT BE ALLOWED, CONTRACTOR SHALL ADJUST STRUCTURE PLACEMENT OR CURB ALIGNMENT AS NECESSARY
11. PROVIDE MORTAR FILLETS / INVERTS TO DIRECT FLOW TO OUTLET

TYPE "A" CASTING ASSEMBLY

FRAME	Mn/DOT 700-7
FRAME	Mn/DOT 700-4 (LOW PROFILE)
SAN. GRATE	Mn/DOT 716 (MUST HAVE CONCEALED PICK HOLES)
STS. GRATE	Mn/DOT 715

TYPE "B" CASTING ASSEMBLY

FRAME	CONCRETE (STND PLATE 4143E)
GRATE	MNDOT CASTING #731 (NEENAH R-4342)

TYPE "C" CASTING ASSEMBLY

FRAME	NEENAH 3508-A2
GRATE	NEENAH TYPE C

TYPE "D" CASTING ASSEMBLY

FRAME	Mn/DOT 801
GRATE	Mn/DOT 810
CURB BOX	Mn/DOT 823A (STRAIGHT CURB)
CURB BOX	Mn/DOT 821B (RADIUS CURB)

TYPE "E" CASTING ASSEMBLY

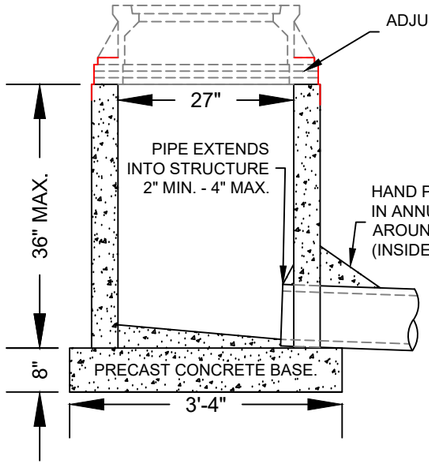
FRAME	Mn/DOT 805 (ADA RAMP USE)
GRATE	Mn/DOT 817 (ADA RAMP USE)

TYPE "F" CASTING ASSEMBLY

FRAME	Mn/DOT 700-4 (LOW PROFILE)
STS. GRATE	Mn/DOT 721

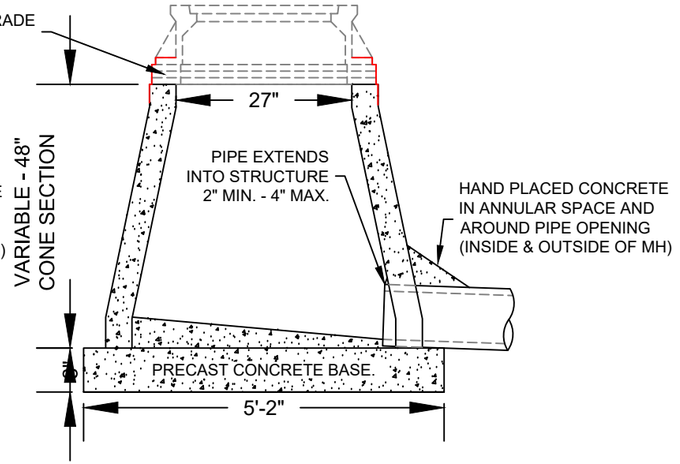
TYPE "G" CASTING ASSEMBLY

FRAME	NEENAH R-1955-1 (FLOATING CASTING)
GRATE	Mn/DOT 716 (MUST HAVE CONCEALED PICK HOLES)
GRATE	Mn/DOT 715



Mn/DOT DESIGN "H"

STANDARD PLATE NO. 4006L NOT TO SCALE



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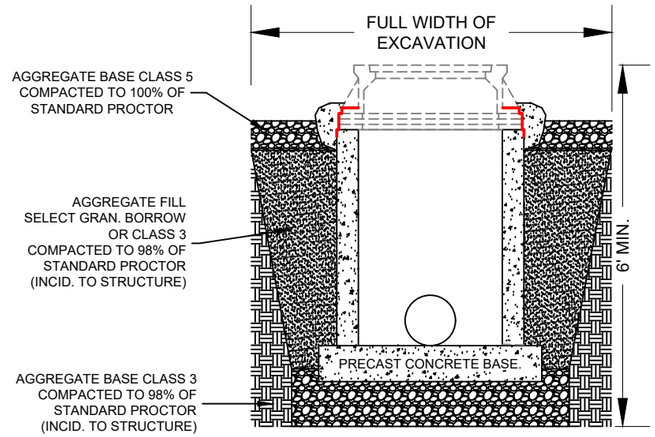
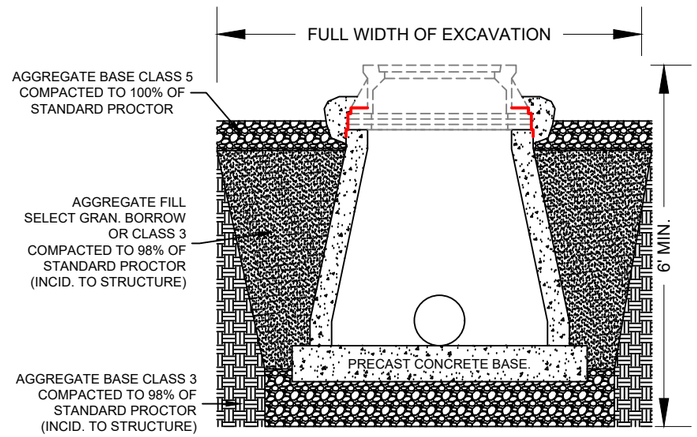


Mn/DOT DESIGN "H" CATCH BASIN INSTALLATION

STANDARD PLATE NO. 4006L NOT TO SCALE



Mn/DOT DESIGN "G" CATCH BASIN INSTALLATION

STANDARD PLATE NO. 4006L NOT TO SCALE

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. S.P. No.	ENG. No.	LEGAL. No.

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EFFECTIVE DATE: 01-01-24

Storm Sewer Details

Right-of-Way Details and Standards

SHEET 6 OF 9

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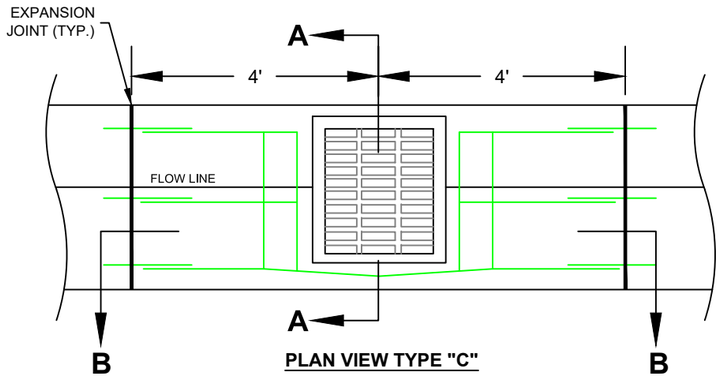
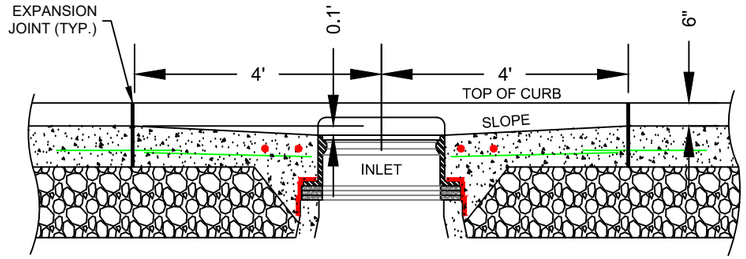
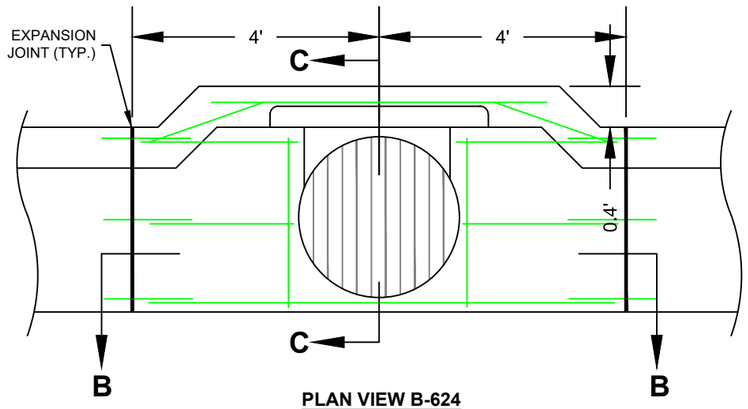


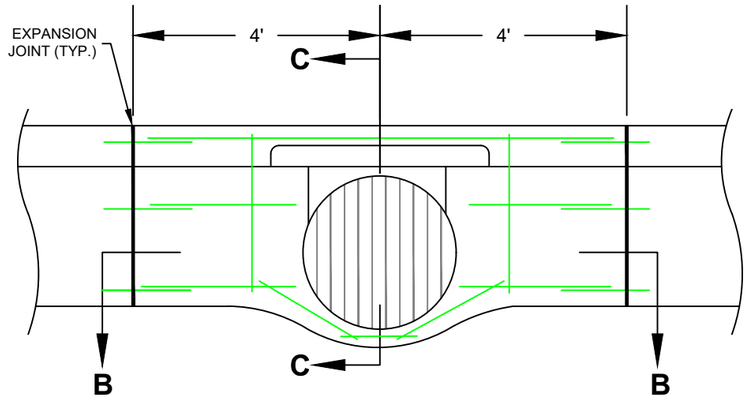
PLAN VIEW TYPE "C"



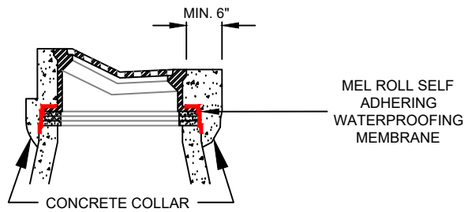
SECTION B-B



PLAN VIEW B-624



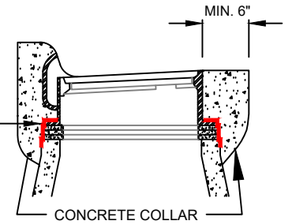
PLAN VIEW B-624



SECTION A-A

TYPE "C" MOUNTABLE CURB & GUTTER CONSTRUCTION AT CATCH BASIN

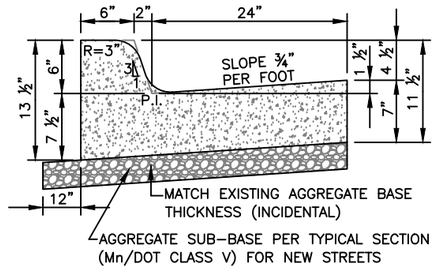
NOT TO SCALE



SECTION C-C

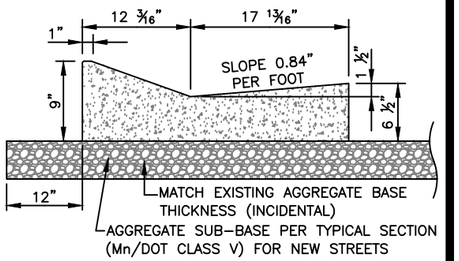
B-624 CURB & GUTTER CONSTRUCTION AT CATCH BASIN

NOT TO SCALE



B-624 CURB DETAIL

NOT TO SCALE



TYPE "C" MOUNTABLE CURB DETAIL

NOT TO SCALE

LJH DRAWN BY	MEO CHECKED BY	TET APPROVED BY
. S.P. No.	ENG. No.	LEGAL. No.

MOORHEAD MINNESOTA Engineering

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EFFECTIVE DATE: 01-01-24

Storm Sewer Curb Details

Right-of-Way Details and Standards

SHEET 7 OF 9

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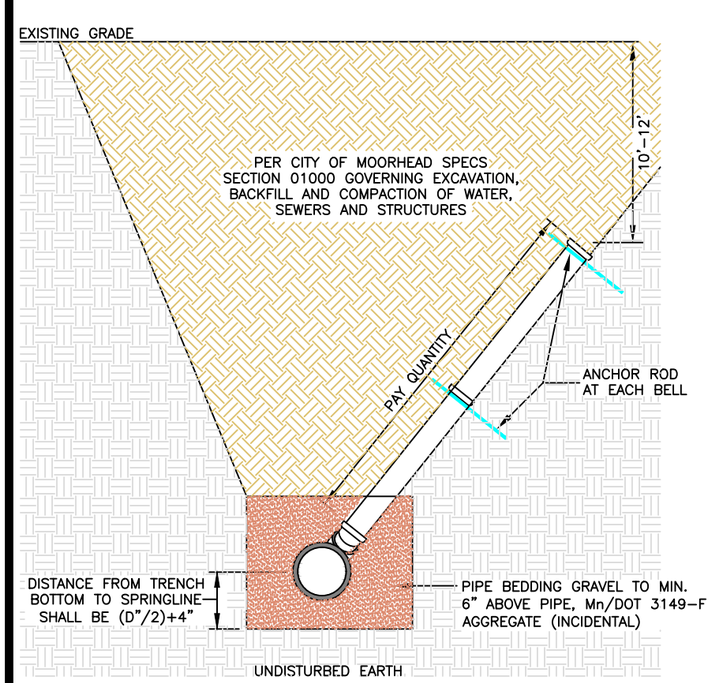
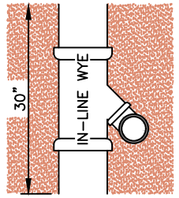


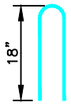
TYPICAL SANITARY SEWER SERVICE RISER DETAIL
(FOR SEWERS 12' OR MORE IN DEPTH)

MINIMUM SEWER SERVICE GRADES
4" - 2.00%, 6" - 1.00%, 8" - 0.50%
NOT TO SCALE

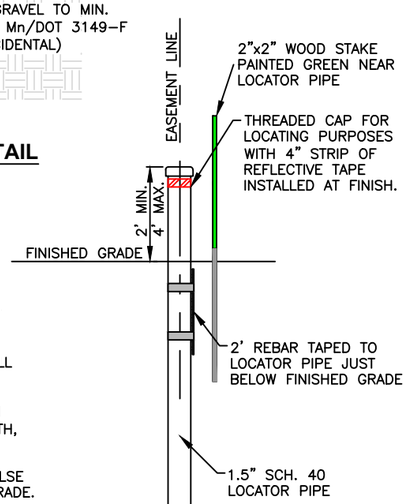


PLAN VIEW

NOTE:
ANCHOR ROD TO BE MADE OF #3 REINFORCING BARS

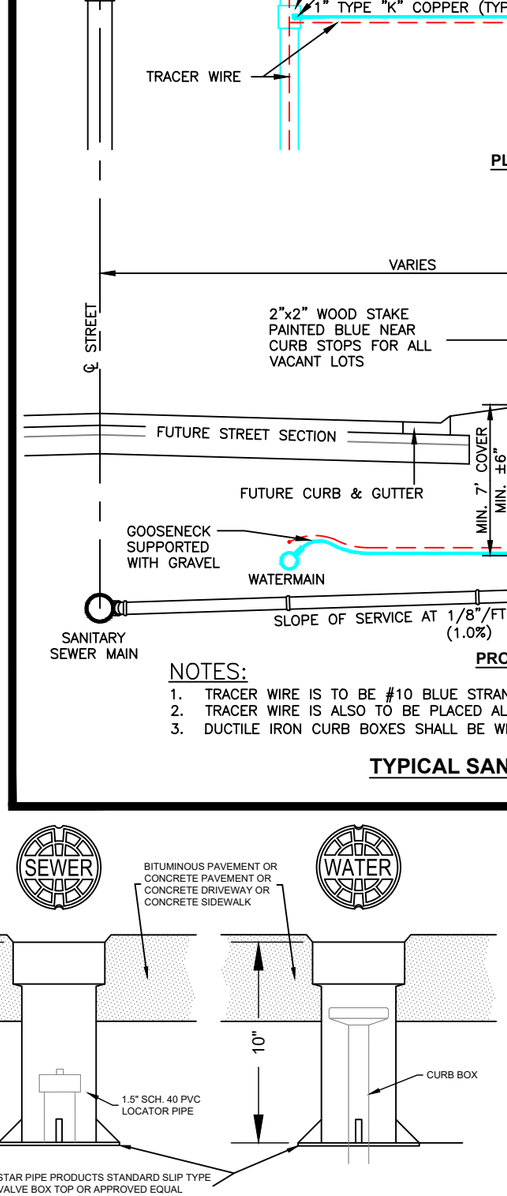


ANCHOR DETAIL
NOT TO SCALE



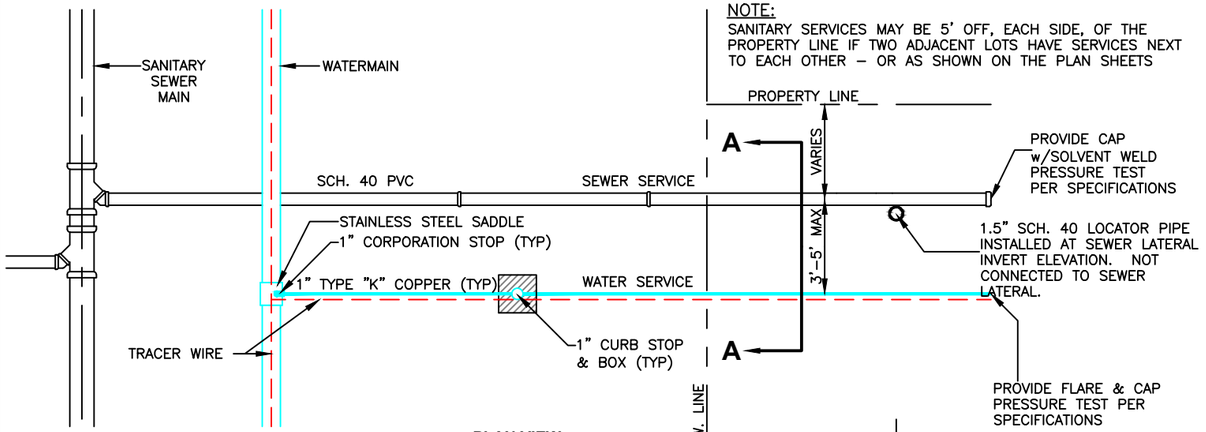
NOTES:
1. HEIGHT OF RISER SHALL BE MEASURED FROM INVERT TO TOP OF RISER.
2. PAYMENT FOR RISERS WILL BE AT THE UNIT PRICE BID AND SHALL INCLUDE ALL COSTS FOR MATERIALS, EXCAVATION AND LABOR.
3. SANITARY RISER MAY BE REQUIRED IF SANITARY SEWER IS 12' IN DEPTH OR MORE. IF SANITARY SEWER IS LESS THAN 12' IN DEPTH, NO RISER WILL BE REQUIRED.
4. LOCATOR PIPE SHALL BE ONE SEAMLESS SECTION OF PIPE OR ELSE WILL HAVE NO JOINTS WITHIN 5 FEET OF PROPOSED FINISHED GRADE.

TYPICAL SANITARY SEWER SERVICE RISER AND LOCATOR PIPE DETAIL
NOT TO SCALE

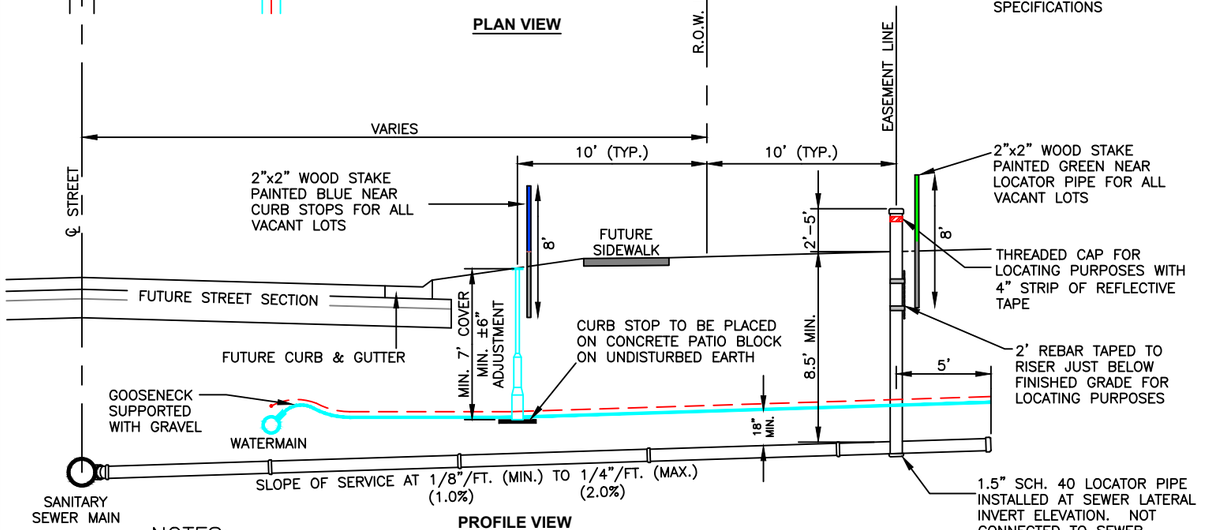


VALVE BOX FOR LOCATOR PIPE AND CURB BOX INSTALLATION IN PAVEMENTS
NOT TO SCALE

NOTE:
SANITARY SERVICES MAY BE 5' OFF, EACH SIDE, OF THE PROPERTY LINE IF TWO ADJACENT LOTS HAVE SERVICES NEXT TO EACH OTHER – OR AS SHOWN ON THE PLAN SHEETS



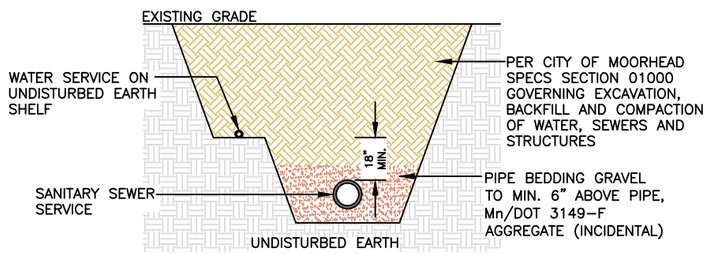
PLAN VIEW



PROFILE VIEW

NOTES:
1. TRACER WIRE IS TO BE #10 BLUE STRANDED, WHICH IS TO BE LOCATED ABOVE THE WATERMAIN
2. TRACER WIRE IS ALSO TO BE PLACED ALONG THE SERVICES AND CONNECTED TO THE TRACER WIRE ON THE MAIN
3. DUCTILE IRON CURB BOXES SHALL BE WRAPPED IN POLYETHYLENE (MIN. 0.008" THICK)

TYPICAL SANITARY SEWER & WATER SERVICE DETAIL
NOT TO SCALE



SECTION A-A

TRENCH DETAIL
SANITARY SEWER & WATER SERVICE
SINGLE TRENCH
NOT TO SCALE

LJH DRAWN BY	MEO CHECKED BY	TET APPROVED BY
. S.P. No.	ENG. No.	LEGAL No.

MOORHEAD MINNESOTA Engineering

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EFFECTIVE DATE: 01-01-24

Water and Sewer Service Details

Right-of-Way Details and Standards

SHEET 8 OF 9

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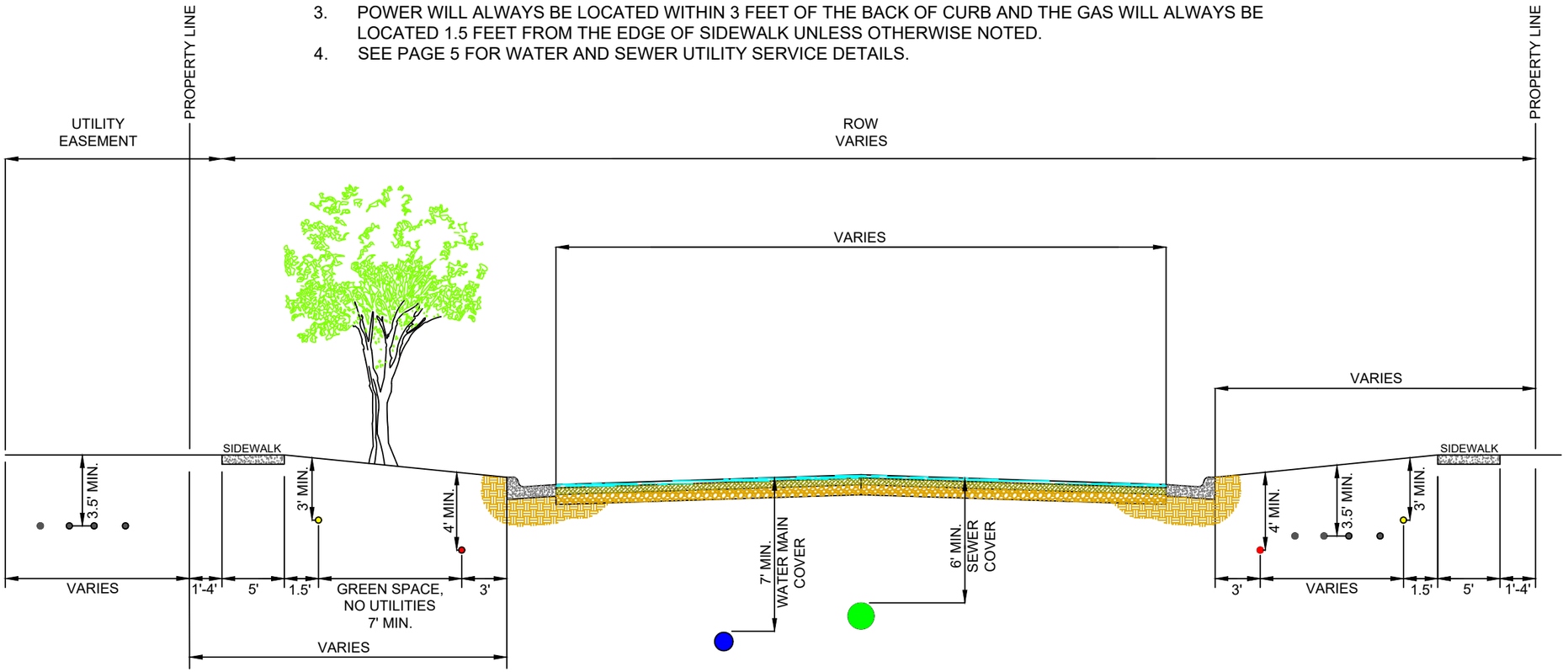
NOTES:

1. ALL UTILITIES, WITH THE EXCEPTION OF GAS AND POWER, MUST BE LOCATED WITHIN THE DESIGNATED UTILITY EASEMENT WHENEVER POSSIBLE.
2. ROW WIDTHS AND UTILITY EASEMENT SIZES VARY, INFORMATION WILL BE PROVIDED BY THE CITY ENGINEERS OFFICE UPON REQUEST.
3. POWER WILL ALWAYS BE LOCATED WITHIN 3 FEET OF THE BACK OF CURB AND THE GAS WILL ALWAYS BE LOCATED 1.5 FEET FROM THE EDGE OF SIDEWALK UNLESS OTHERWISE NOTED.
4. SEE PAGE 5 FOR WATER AND SEWER UTILITY SERVICE DETAILS.



WHEN UTILITY EASEMENT IS AVAILABLE

- POWER
- GAS
- COMMUNICATIONS - FIBER/TV/PHONE

WHEN NO UTILITY EASEMENT IS PRESENT

UTILITY LOCATION CONSTRUCTION STANDARDS

NOT TO SCALE

LJH *DRAWN BY*	MEO *CHECKED BY*	TET *APPROVED BY*
. *S.P. No.*	*ENG. No.*	*LEGAL. No.*

MOORHEAD MINNESOTA Engineering

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EFFECTIVE DATE: 01-01-24

Utility Location Construction Standards

Right-of-Way Details and Standards

SHEET 9 OF 9

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Section 12:

MPS Water Standards (water connections in City ROW)

MOORHEAD PUBLIC SERVICE

WATER DIVISION

STANDARDS FOR WATER UTILITY INSTALLATION

MOORHEAD®
PUBLIC SERVICE
connecting our community

Revisions to the 2021 Standards for Water Utility Installation

Division	Title
2210	Water Service Material
3120	Ductile Iron Fittings
3130	PVC Fittings
3150	Transition Couplings
3410	Corporation Stop Valves
3420	Curb Stop Valves
3430	Curb Stop Boxes
3440	Water Service Pipes
3460	Service Fittings
4310	Valves and Valve Boxes
4330	Water Service Stops
4510	Tracer Wire Installation

Description of Work

The work to be performed under these standards and accompanying plans and specifications consists of the furnishing of all labor, materials, and equipment to install or replace watermains in the city of Moorhead. The work includes excavation and removal of paving where encountered; furnishing, laying and jointing pipe; making connections to existing watermains as necessary; installing new valves, valve boxes, or valve manholes; installing hydrants; protecting existing utilities and public and private property; backfilling trenches; and other work as may be necessary in order that the work may be completed in accordance with these specifications and the plans and specifications accompanying them.

INDEX

DIVISION 1000
STANDARDS AND DEFINITIONS

1100 Reference Standards

1101 American Water Works Association (AWWA)

A. B300, Hypochlorites
B. B301, Liquid Chlorine
C. C100, Thickness Design of Cast Iron Pipe
D. C104, Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
E. C105, Polyethylene Encasement for Ductile-Iron Pipe Systems
F. C110, Ductile-Iron and Gray-Iron Fittings
G. C111, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
H. C153, Ductile-Iron Compact Fittings
I. C502, Dry-Barrel Fire Hydrants
J. C504, Rubber-Seated Butterfly Valves, 3 in. through 72 in.
K. C509, Resilient-Seated Gate Valves for Water Supply Service
L. C515, Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service
M. C550, Protective Interior Coatings for Valves and Hydrants
N. C600, Installation of Ductile Iron Water Mains and Their Appurtenances
O. C605, Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings
P. C651, Disinfecting Watermains
Q. C800, Underground Service Line Valves and Fittings
R. C900, PVC Pressure Pipe and Fabricated Fittings, 4 in. through 12 in., for Water Transmission and Distribution
S. C905, PVC Pressure Pipe and Fabricated Fittings, 14 in. through 48 in., for Water Transmission and Distribution

1102 American National Standards Institute (ANSI)

A. A21.4, American National Standard for Cement Mortar Lining for Cast-Iron and Ductile-Iron Pipe and Fittings for Water
B. A21.10, American National Standard for Gray-Iron and Ductile-Iron Fittings, 2-inch through 48-inch, for Water and Other Liquids
C. A21.11, American National Standard for Rubber-Gasket Joints for Cast-iron and Ductile-Iron Pressure Pipe and Fittings

1103 American Society of Testing Materials (ASTM)

A. A48, Standard Specification for Gray Iron Castings
B. D1784, Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds (Type 1, Grade 1)
C. D2241, Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR and Class T)

D. D2837, Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
E. D3139, Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
F. F477, Elastomeric Seals (Gaskets) for Joining Plastic Pipe

1104 United States Environmental Protection Agency (US EPA)

A. Safe Drinking Water Act
B. Reduction of Lead in Drinking Water Act

1105 NSF International

A. NSF 14, Plastics Piping System Components and Related Materials
B. NSF 60, Drinking Water Treatment Chemicals—Health Effects
C. NSF 61, Drinking Water System Components—Health Effects

1106 Plastic Pipe Institute (PPI)

A. TR-2, PVC Range Composition Listing of Qualified Ingredients

1200 Definitions

1201 Moorhead Public Service (MPS)

The purveyor of water used in the city and the drinking water utility that maintains the water distribution system in the city.

1202 City of Moorhead

The municipality in which the project is located.

1203 Contractor

The Contractor awarded the project by the City or MPS.

1204 Engineer

The consultant engineer or City/MPS engineering staff and/or their designated inspector assigned the engineering of the project.

1205 Engineer's Inspector

The inspector assigned to the project by the consultant or City/MPS engineering staff to inspect the installation of watermains and appurtenances.

– END OF SECTION –

DIVISION 2000
ENGINEERING DESIGN STANDARDS

2100 Plan Review

Plans and specifications shall be submitted to MPS a minimum of four weeks before a contract is advertised for bids. Any changes to the approved plans must be resubmitted for review and approval. Plans must show both plan and profile views of the facility to be constructed. Fittings shall be identified and located by station or other suitable dimensions. The plan should also indicate both existing and proposed utilities located within the construction area.

2200 Water Service Design

2210 Water Service Material

Two (2)-inch and smaller water service connections shall be copper pipe or Cross-linked Polyethylene (PEX) pipe. Four (4)-inch and larger water service connections shall be PVC or ductile iron pipe. Refer to Division 3000 for water service material specifications.

2300 Watermain Design

2310 Grade

The permanent finished street grade established by the City shall be used to determine the depth and grade directly over the watermain. No reduction in earth cover is allowed over any watermain or service connection that has a previous history of freezing, unless the pipe is adjusted to the proper depth under the new finished grade.

2320 Depth

The depth of cover over the crown of the pipe shall be as described below. Variations in pipe depth may be considered and approved. However, protective measures to prevent freezing may be required, depending on the conditions.

Pipe Size	Minimum Depth
< 12”	8.0’
12”	7.5’
16”	7.0’
> 20”	6.5’

2400 General

2410 Insulation

Insulation shall be used when a watermain offset or utility crossing is required because of a frost generating structure. Frost generating structures include, but are not limited to, catch basins, manholes,

and other outlets. The minimum guidelines for the placement of insulation shall be as follows:

A. If a water pipe crosses within 3 feet above or below a storm sewer, insulation shall be placed between the water pipe and storm sewer.
B. If a water pipe is offset over a storm sewer, insulation shall be placed both between the water pipe and storm sewer and over the top of the water pipe.
C. If a water pipe is within 4 feet of a frost generating structure, insulation shall be placed between the structure and water pipe.

Insulation shall be placed parallel to the water pipe and 2 feet beyond either side of the water pipe. For guidelines A and B above, insulation shall also extend 2 feet beyond either side of the storm sewer. For guideline C above, insulation shall extend 2 feet beyond either side of the water pipe and 2 feet beyond either side of the structure.

2420 Approved Equal

Material specifications to be used for watermain installations shall be submitted to MPS' Water Division for review and approval. MPS' Water Division will review material requested to be substituted as an approved equal on a case-by-case basis.

– END OF SECTION –

DIVISION 3000
MATERIALS

All products (treatment chemicals and material) that may come into contact with water intended for use in a public water system shall meet ANSI/NSF Standards 60 & 61, as appropriate. A product will be considered as meeting these standards if so certified by NSF, The Underwriters Laboratories, or other organizations accredited by ANSI to test and certify such products. All materials used for underground service line valves and fittings shall comply with the latest revision of ANSI/AWWA C800. All materials shall be new and unused.

3100 Pipe and Appurtenances

3110 Polyvinyl Chloride Pipe (PVC)

The PVC material shall conform to the requirements of ASTM D1784, Class 12454. The pipe shall be marked to indicate compliance with NSF 61, Factory Mutual (FM), and either be marked or tagged with the Underwriter Laboratory (UL) approval. All PVC watermain pipe material shall be blue in color. PVC pressure pipe shall be manufactured in accordance with the latest AWWA Standard revision, pressure class, and dimension ratio as follows:

Pipe Size	AWWA Standard	Pressure Class (psi)	Dimension Ratio (DR)
4”–12”	C900	235	18
14”–48”	C905	235	18

PVC Pipe Joints

Bell-end pipe, couplings, and fittings designed for making PVC joints using elastomeric gaskets to affect the pressure seal shall be tested as assembled joints and shall meet the laboratory performance requirements specified in the latest revision of ASTM D3139.

Gaskets and lubricants intended for use with PVC pipe, couplings, and fabricated fittings shall be made from materials that are compatible with the pipe and with each other when used together. Gaskets and lubricants shall not adversely affect the potable quality of the water that is to be transported.

3115 Fusible PVC (FPVC) Pipe

FPVC pipe shall conform to the latest revision of AWWA C900, AWWA C905, or ASTM D1784 for standard dimensions and material, as applicable. Testing shall be in accordance with the referenced AWWA standards for all pipe types.

The FPVC pipe shall be extruded with plain ends, which shall be square to the pipe and free of any bevel or chamfer. No bell or gasket, of any kind, shall be incorporated into the pipe. FPVC shall be manufactured in a standard 40-foot nominal length, or custom length as specified, and shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults or physical damage. FPVC pipe shall be blue in color for potable water use.

FPVC pipe shall be marked as follows:

A. Nominal pipe size;
B. Material type (PVC);
C. Dimension Ratio, Standard Dimension Ratio, or Schedule;
D. AWWA pressure class, or standard pressure rating for non-AWWA pipe, as applicable;
E. AWWA standard designation number, or pipe type for non-AWWA pipe, as applicable;
F. Extrusion production-record code;
G. Trademark or trade name; and
H. Cell Classification.

Fusion Technician Requirements

The FPVC fusion technician shall be fully qualified by the pipe supplier to install fusible PVC pipe of the type(s) and size(s) being used. Qualification shall be current as of the actual date of fusion performance on the project.

FPVC Pipe Joints

Fusible PVC pipe lengths shall be assembled in the field with butt-fused joints, unless otherwise specified. Contractor shall follow the pipe supplier's written guidelines for this procedure. All fusion joints shall be completed per the pipe supplier's guidelines.

FPVC Pipe and Joint Warranty

FPVC pipe installed shall be warranted for one year per the pipe supplier's standard terms. In addition to the standard pipe warranty, the fusion services shall be warranted for one year per the fusion service provider's standard terms.

Saddle/Tapping Connections

Tapped connections through the use of a saddle will require the installation of a Bell Restraint Harness (EBAA Series 6500 or approved equal) prior to tapping of the Fusible pipe.

3120 Ductile Iron Fittings

Ductile iron, mechanical joint fittings shall be used with both mechanical joint and push-on joint pipe and shall conform to the latest revision of AWWA C153. Ductile iron fittings must be used for fittings having an 4-inch diameter or larger.

All ductile iron fittings shall be:

- Mechanical joint, except as noted.
- Attached to the pipe using restraint devices, as specified in **Section 3150**.
- Wrapped, including the restraint devices, as specified in **Section 3160**.
- Bid complete with gaskets, glands, and bolts. All bolts shall be stainless steel.

All fittings shall be cement mortar lined on the interior and bituminous coated on the exterior. Cement lining shall conform to AWWA C104. Joints shall conform to the latest requirements of AWWA C111.

3130 PVC Fittings

PVC fittings shall conform to the requirements of AWWA C907, carry a working pressure of 150 psi, and be of the slip-joint type. Only fittings 4- inches in diameter, or less, may be PVC.

Acceptable PVC fittings include:

A. IPEX Blue Brute; or
B. Approved equal.

3140 Mechanical Joint Restraint

All connections between PVC pressure pipe and ductile iron fittings, valves, and/or hydrants shall be made with installing a mechanical joint restraint.

All bolts and ties shall be stainless steel. All factory-installed bolts shall also be stainless steel. All bolts shall be tightened to manufacturer's recommended tightness and verified with a torque wrench. After the installation of the fitting, the bolts shall be rechecked with a torque wrench to ensure tightness.

Acceptable mechanical joint restraints include:

A. EEBA Iron Series 2000 PV;
B. Sigma ONE-LOK Series SLCE;
C. Star Series; or
D. Approved equal.

3150 Transition Couplings

Transition couplings shall be used for connection of new watermains to existing watermains. All necessary bolts to install transition couplings shall be stainless steel. Transition couplings shall be PVC, ductile iron, carbon steel, or approved equal, and shall be coated inside and out with epoxy or nylon coating.

Acceptable transition couplings include:

A. HYMAX® Grip;
B. Romac Alpha;
C. Approved equal.

3160 Polyethylene Wrap

All ductile iron fittings, restraint devices, gate valves, butterfly valves, valve boxes, buried sections of hydrants, transition couplings, and/or other devices that contain metal shall be wrapped according to the latest revision of AWWA C105. The polyethylene plastic film must have an 8-mil minimum thickness. Cross-woven polyethylene plastic film having a 4-mil minimum thickness is also allowed.

3200 Valves

3210 Gate Valves

Gate valves shall be used on pipe sizes 4- through 12-inch. Ductile iron resilient-seated gate valves and tapping valves shall conform to the latest requirements of AWWA C515. Valve seats shall be able to withstand 200 psi and the body shall withstand 400 psi.

All valves shall be mechanical joint and attached to PVC pressure pipe with approved joint restraints listed in **Section 3150**.

Gaskets shall be rubber.

Valves shall be left-hand (counter-clockwise) opening with 2-inch operating nut.

The stem shall be made of bronze and shall use O-ring type stem seals.

All valves shall be coated inside and out in accordance with the latest revision of AWWA C550.

All bolts shall be stainless steel.

Acceptable manufacturers include:

A. American Flow Control;
B. U.S. Pipe;
C. Waterous; or
D. Approved equal.

3220 Butterfly Valves

Butterfly valves shall be used on pipe sizes larger than 12-inch. Butterfly valves shall be mechanical joint end valves, Class 150B, rubber-seated, suitable for buried service, and shall conform to the latest revision of AWWA C504. Epoxy coating shall be applied to all surfaces of the valve body and vane to an average film thickness of 10-mils, or conforming to the latest revision of AWWA C550. All body and operator bolts shall be stainless steel.

Valves shall by left-hand opening (counter-clockwise) with 2-inch operating nut.

Shaft seals shall be O-ring type.

Acceptable manufacturers include:

A. DeZURIK; or
B. Approved equal.

3230 Valve Boxes and Adaptors

Valve boxes are required on all gate valves and butterfly valves.

All valve boxes shall be made of cast-iron in accordance with ASTM A48 Class 30B material specification with a minimum tensile strength of 30,000 psi, have screw-type adjustment, be of the three-piece, 5 ¼-inch shaft, size G, and be furnished with cast iron bonnets and covers. The valve box shall be suitable for a depth of cover as specified. Valve box adaptors shall be installed for all valve boxes.

Drop lids shall be marked “WATER” and be American-made, or be heavy-duty foreign-made boxes that meet or exceed the weight of the American-made box.

Acceptable valve box manufacturers include:

A. Tyler 6850/668S;
B. Star® heavy-duty series boxes; or

C. Approved equal.

Acceptable valve box adaptors include:

A. Valve Box Adaptor II (Adaptor, Inc.); or
B. Approved equal.

3240 Tapping Sleeves and Valves

Tapping valves shall be in accordance with the latest revision of AWWA C509. Tapping sleeves shall be stainless steel with a stainless steel flange. Tapping sleeve gaskets shall provide sealing across the full pipe circumference and the full area of the sleeve. Bolts and nuts shall be stainless steel. All tapping sleeves shall be wrapped in polyethylene plastic film as specified in **Section 3170**.

3300 Fire Hydrants

Fire hydrants shall be non-jacket type meeting the latest revision of AWWA C502. Hose and pump nozzle connections shall be supplied with O-ring seals, nozzle caps, and nozzle cap chains.

Hydrants shall be Waterous Pacer WB67 Traffic Models, or approved equal, meeting the following specifications:

Main Valve Opening	5¼-inch valve opening
Hydrant Barrel	7⅜-inch minimum inside diameter
Shut-off type	Compression
Inlet Connection	6-inch size, mechanical joint fitting
Bury Length	As specified on the plan sheets
Bury Depth	Maximum bury depth of 9 feet, unless approved by Engineer
Traffic Flange	22-inch breakable flange
Hose Nozzles	Two 2½-inch National Standard Thread (NST) hose connections
Pumper Nozzle	One 5-inch Storz Nozzle, pre-installed on hydrants upon delivery to site, provided with a cap containing a 1½-inch National Standard Pentagonal operating nut
Cap Nuts	1½-inch National Standard Pentagonal operating nut, counter-clockwise open
Operating Nut	1½-inch National Standard Pentagonal operating nut, counter-clockwise open
Finish Paint	Standard Red above Ground Line

Installation of fire hydrants shall include the installation of a hydrant post measuring 1¾-inch square by 9 feet long. The trade name shall be Telespar®, or approved equal. Installation shall include a hydrant sign on both sides of the top of the hydrant post. MPS will provide additional signs as needed.

3400 Water Service Connections

The Contractor shall be required to furnish and install all stainless steel service saddles, corporation stops, copper pipe, curb stops, and fittings, as specified, necessary to connect existing services to the new

watermain. All materials used for underground service line valves and fittings shall comply with the latest revision of AWWA C800.

3410 Corporation Stop Valves

Corporation stop valves for water services 2-inch and smaller shall have the inlet threads protected in shipment by a plastic coating or other equally satisfactory means. Corporation valve inlets shall be threaded with standard AWWA/CC Taper. Corporation valve outlets shall be for use with flared copper tubing or approved compression style fittings listed below.

Acceptable corporation stop valves include:

A. Mueller Co. H-15000;
B. Ford F600 Series;
C. A.Y. McDonald (74701B);
D. A.Y. McDonald (74701BQ);
E. A.Y. McDonald (74701BQA); or
F. Approved equal.

3420 Curb Stop Valves

Curb stop valves for copper service connections 2-inch and smaller shall be without drain and shall have a Minneapolis thread pattern. End connections shall be for use with flared copper tubing or approved compression style fittings listed below.

Acceptable curb stop valves include:

A. Mueller Co. Oriseal;
B. Ford B22 Series;
C. A.Y. McDonald (76104);
D. A.Y. McDonald (74701BQ);
E. A.Y. McDonald (74701BQA); or
F. Approved equal.

3430 Curb Stop Boxes

Curb stop boxes shall be telescoping and be capable to extend 6 inches above grade with an 8-foot bury.

Acceptable curb stop tops include:

A. Copperhead BoaBox-Water
B. Approved Equal

Acceptable curb stop boxes include:

A. Mueller Co. H-10302;
B. Ford (EM2-80-46-78R); or
C. Approved equal.

3440 Water Service Pipes

Water service 2-inch and smaller shall be Type “K” soft copper or Cross-linked Polyethylene (PEX) pipe, or approved equal.

PEX pipe shall meet the following criteria:

- Manufactured using high-pressure peroxide method of cross-linking.
- Manufactured to SDR9 copper tube sizes (CTS) according to ASTM F876, AWWA C904, and CSA B137.5.
- Certified to AWWA C904 Cross-linked Polyethylene (PEX) Pressure Pipe for Water Service
- Certified to CSA B137.5 Cross-linked Polyethylene (PEX) tubing for Pressure Applications
- Certified to NSF/ANSI Standards 14 and 61 (NSF-pw-g) for Potable Water Applications
- Certified to PPI TR-3 Category 3306 for long-term hydrostatic strength, chlorine and UV resistance.
- Co-extruded UV Shield made fro, UV-resistant high-density polyethylene, color Blue
- Minimum recommended UV exposure time of one (1) year when tested in accordance with ASTM F2657.
- Pressure-rated for continuous use at 200 psi @ 73.4 degrees Fahrenheit based on a 0.63 design factor.
- Minimum markings: PEXa 3306, CSA B137.5, ASTM F876, F2023 and F2080, NSF-pw.
- Approved by manufacturer for use with manual plastic pipe squeeze-off tools for temporary stoppage of flow.

- Underground fittings and insert-stiffeners used with PEX pipe must comply with the material and performance requirements of ANSI/AWWA C800 and must be recommended for use by the fitting manufacturer for CTS SDR9 PEX pipe per the ANSI/AWWA C904 standard. Insert-stiffeners shall be stainless steel.

PVC water service pipe must conform to the standards in **Section 3110**.

3450 Service Saddles

All service saddles shall be double-bolt (minimum) stainless steel band-type with full half-circle gaskets. Service saddles shall have stainless steel washers between the nut and the plastic washer to equalize tightening stress. Rubber tapered gaskets shall be required to resist circumferential and longitudinal forces, along with O-rings or flat gaskets for hydraulic seal. Saddle bolts shall be tightened to the manufacturer's recommended tightness using a torque wrench. Bolt tightness shall be rechecked with a torque wrench after the pipe tap is complete.

Approved service saddles include:

A. Romac Industries Style 306;
B. Ford FS303;
C. PowerSeal Model 3412 AS;
D. Cascade CSC2; or
E. Approved equal.

3460 Service Fittings

Fittings at the property line shall be straight three-part unions or approved compression style fitting listed below. Soft soldered joints are not permitted.

A. Mueller Co. H-15400;
B. A. Y. McDonald “Q” style fitting; or
C. Approved equal.

3500 Miscellaneous

3510 Insulation

Insulation used for watermain offsets and utility crossings shall be rigid extruded polystyrene insulation board having a minimum compressive strength of 40 psi. The insulation material shall be furnished in panels 2 inches thick and shall be laid over top of each other to form a 4-inch layer of insulation. A minimum of two (2) wood skewers per board in each layer driven flush with the surface of the material shall be utilized to hold the insulation material in place during backfill operations.

Approved insulation types include:

A. Dow STYROFOAM™ HIGHLOAD 40; or
B. Approved equal.

– END OF SECTION –

DIVISION 4000
CONSTRUCTION

4100 General Requirements

Pipe and fittings shall be handled and laid in accordance with the latest revision of AWWA C600. Pipe and fittings shall be laid in the location shown on the plans—the exact location being designated by the Engineer during construction. Before laying any pipe, it shall be cleaned of all foreign matter and kept clean thereafter. Open ends shall be protected at all times to prevent the entrance of dirt, trench water, animals, or foreign material into the pipe. The bell and spigot shall be wiped clean and sufficient lubrication placed on the gasket and spigot before the pipe is pushed fully into the bell. Field cut spigot ends of push-on joints shall be beveled prior to being pushed into the bell. All handling, field cuts, and jointing shall be done per the manufacturer's recommendation.

4110 Preconstruction Requirements

A preconstruction meeting attended by the Contractor, Engineer, and MPS representative is required prior to the start of construction. If water facilities are proposed for installation in or across a state or county highway, the appropriate state or county engineer shall be invited to the meeting. Representatives of utility companies having facilities within the project area shall also be invited to the meeting.

4120 Notification

The Contractor shall notify MPS at least 48 hours in advance of construction so that an inspector may be assigned to the project. An MPS representative will also be assigned to the project to mark the location of watermain appurtenances, valves, and water service equipment using GPS equipment.

4130 Temporary Water Service

This work shall include providing, installing, maintaining, and removing all hosing, piping connections, and fittings necessary to provide continuous water service to water users during construction of the project. This shall also include any disinfection required by this specification.

Contractor shall be responsible to notify affected property owners, cleaning and disinfecting all materials used for temporary water connections, operating water shut-off valve inside the building, and back flushing all services before connecting to the new watermain.

Contractor is required to have two passing bacteria tests on all temporary water service connections before it shall be turned on to provide temporary water service. This shall include all hosing, piping, and fittings required to provide temporary connections. Coordination between the Contractor and MPS will be required to complete the bacteria testing.

Contractor shall provide personnel who will be available at all times (including evenings and weekends) to correct interrupted temporary water service or other problems associated with the project. The Contractor shall coordinate the contact information for these identified personnel with MPS before beginning the project.

Contractor shall be required to employ a registered and licensed master plumber who will be responsible for all plumbing connections on this project. Contractor shall provide backflow prevention devices on the temporary water supply.

Contractor will be required to remove all handles on valves within the temporary water service connections before the commencement of construction—this is to prevent the unintentional distribution of water service to water users.

4140 Materials

The Contractor shall furnish and install only the specified materials approved by MPS in these standards or those approved in **Division 2000**. MPS will be responsible for furnishing material that is required for work to be performed by MPS.

4150 Abandoning of Watermains, Hydrants, and Valves

The Contractor shall plug the ends of abandoned watermains with concrete whenever it is not practical to remove the abandoned pipe. When it is not practical to remove the existing hydrant, the Contractor shall remove the hydrant to 18 inches below grade and fill the stand pipe with concrete. If a valve is being abandoned in place, the Contractor shall close the valve, remove the valve box to the road grade, and fill the valve box with concrete.

4200 Pipe Installation

PVC pipe and associated fittings shall be installed in accordance with the latest revision of AWWA C605.

4210 Pipe Alignment and Grade

The pipe shall be laid to the horizontal alignment and depth as directed by the Engineer. The minimum bury depth shall be determined based on **Section 2320**.

Deflection of the pipe joints will be permitted up to a 5-degree maximum. A 5-degree deflection equals an offset of approximately 1-inch per foot of pipe. Any deflection exceeding 5 degrees will require the use of bends and fittings, which shall be furnished and installed by the Contractor.

At locations where a watermain crosses a sewer pipe, a full-length section of watermain pipe shall be centered over the sewer pipe to place joints as far away from the sewer pipe as possible. Contractor shall maintain 18 inches of vertical clearance between watermain pipe and sewers.

4220 Pipe Bedding and Backfilling

The pipe shall be bedded and backfilled with clean pit run material. No particle size may exceed 1 inch. The pipe shall be placed on a 3-inch layer of material and backfilled 3 inches over the top of the pipe. A uniform support shall be provided for the entire length of the pipe.

4300 Setting Valves, Valve Boxes, Service Stops, Hydrants, and Fittings

4310 Valves and Valve Boxes

Valves will be installed where shown on the plans or as directed by the Engineer. Before installing the valve, care should be taken to ensure that all foreign material has been removed from the inside of the valve.

The body of the valve shall be wrapped with polyethylene in accordance with the latest revision of AWWA C105. Also see **Section 3160**.

The stuffing boxes shall be tightened and the valve opened and closed to see that all parts are in first-class working order. Valves and valve boxes must be plumb. Valves shall be set on pre-cast concrete blocks.

The valve box adapter shall be installed on the valve, and the valve box shall be placed directly over the operating nut. The top of the box being placed 4 inches below final grade, and rose flush to final grade with one 2-inch and two 1-inch valve box insert risers.

The box shall be backfilled and thoroughly tamped around the box. After backfilling, a wrench shall be dropped on the valve to ensure that it is operable.

4320 Fire Hydrants

Hydrants shall be set at such an elevation that the specified pipe cover is provided throughout the length of the supply line and that the pumper nozzles are a minimum of 30 inches above the surrounding finished ground.

Contractor can either provide hydrants meeting the required elevations or provide hydrants with hydrant extensions (incidental to the hydrants) as approved by the Engineer. The breakaway flange shall be between 3 and 6 inches above finished ground elevation.

All hydrants shall be vertically plumb and shall have their pumper nozzle facing at right-angles to the street, unless otherwise specified.

Each hydrant shall be set on a concrete block and blocked behind with concrete blocks(s) of sufficient size to prevent settling and horizontal movement. Hydrant bases shall be backfilled with at least one-third cubic yard of crushed rock to facilitate drainage. The crushed rock shall extend to 6 inches above the weep hole.

4330 Water Service Stops

All curb boxes shall be wrapped in polyethylene having a minimum thickness of 8 mils, as specified in **Section 3160**.

Each water curb box shall be marked with a 2"x 2" x 4' wooden marker. The upper 24 inches of said markers shall be painted with blue paint in a manner satisfactory to the Engineer.

4340 Fittings

All fittings shall be PVC or ductile iron, and shall be "push-on" or "slip-joint," unless specified otherwise in the plans or special instructions to bidders.

4350 Thrust Blocks

All fittings shall be braced by means of poured concrete or concrete thrust blocks. No wood thrust blocks will be allowed. Poured concrete shall be 3,000 psi concrete poured against undisturbed earth. Care shall be taken not to cover up joints, bolts, flanges, and fittings with concrete.

Thrust restraint at the joints may be used in lieu of concrete thrust blocking with the permission of the Engineer. Restraint devices for PVC pipe shall meet or exceed the requirements of the latest revision of ASTM F1674 (Standard Test Method for Joint Restraint Products for use with PVC Pipe).

4400 Horizontal Directional Drilling (HDD) Requirements

A project safety and contingency plan shall include, but shall not be limited to, drilling fluid containment and cleanup procedures, equipment and plan for compromised utility installations, including electrical and power lines, watermain, sanitary sewer, storm sewer, and any other subsurface utility in the area. An HDD schedule identifying daily work hours and working dates for each installation is required.

4500 Tracer Wire and Installation

4510 Tracer Wire Installation and Termination

Open Trench- Tracer wire shall be No. 12 AWG Copper Clad Steel, high strength with minimum 450 lb. break load with minimum 30 ml HDPE insulation thickness (blue colored) as manufactured by Copperhead Industries (High Strength Tracer wire) or approved equal. Tracer wire should be continuous and shall be placed on the crown of the pipe and attached to the pipe every 10 feet. If splicing is needed, the use of splice caps approved by the Engineer will be required.

Trenchless Installation- Trace wire shall be No. 10 AWG high carbon 1055 grade steel extra-high strength copper-clad steel with a minimum 2,000 lb. break load with a minimum 45 ml HDPE insulation thickness (blue colored) as manufactured by Copperhead Industries (Soloshot Extra-High Strength-1045) or approved equal.

Main Line Connectors- All mainline trace wires must be interconnected in intersections, at mainline tees and mainline crosses. At tees, the three wires shall be joined using a single 3-way lockable connector. At crosses, the four wires shall be joined using a 4-way connector. Use of two 3-way connectors with a short jumper wire between them is an acceptable alternative.

Direct bury wire connectors shall include 3-way lockable connectors and mainline to lateral lug connectors specifically manufactured for use in underground trace wire installation. Connectors shall be dielectric silicon filled to seal out moisture and corrosion, and shall be installed in a manner so as to prevent any uninsulated wire exposure.

Tracer wire must be continuous to maintain connectivity. In-line splices shall be Copperhead, DryConn, or approved equal. The main line tracer wire shall not be broken or cut. Wire nut splices will not be allowed. Wire splices must be made to assure proper connectivity of the wire.

Grounding- Trace wire must be properly grounded at all dead ends/stubs unless notified otherwise. Grounding of tracer wire shall be achieved by use of a drive-in magnesium grounding anode rod with a minimum of 20 ft. of #14 red HDPE insulated copper clad steel wire connected to anode (minimum 0.5 lb.) specifically manufactured for this purpose, and buried at the same elevation as the watermain. Grounding anode must be driven into undisturbed soil (burying anodes with disturbed soil is not allowed). When grounding the trace wire at dead ends/stubs, the grounding anode shall be installed in a direction 180 degrees opposite of the trace wire, at the maximum possible distance.

On fire hydrants, main line tracer wire and grounding rod wire must be installed inside a 1-inch galvanized or plastic conduit brought up alongside the hydrant and then attached to a 2 terminal access box as manufactured by Copperhead Industries (Blue 2 terminal Cobra Access point), or approved equal.

On water services, the trace wire must be run from the watermain to the curb boxes. All service lateral trace wires shall be a single wire, connected to the mainline trace wire using a mainline to lateral lug connector, installed without cutting/splicing the mainline trace wire as manufactured as Copperhead Industries (Mainline to Service Connector) or approved equal. The tracer wire must come up the outside of all curb boxes. The tracer wire must be taped to the curb boxes and inserted and connected to the Copperhead BoaBox-Water Access Point or approved equal. ..

A. As part of the final inspection and acceptance of newly-installed watermains, all new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the Contractor, Engineer and MPS staff, prior to completion of any street construction or completion of the project, acceptance. Continuity testing in lieu of actual line tracing shall not be accepted.
B. If the tracer wire fails, the Contractor will be responsible for providing some means of tracing out newly-installed watermain including, but not limited to, re-installing tracer wire.

4520 Polystyrene Insulation Installation

Rigid extruded polystyrene conforming to the material requirements of this specification shall be installed with two layers of 2-inch thick insulation board at the locations designated in the plans. The insulation material shall be furnished in panels 2 inches thick and shall be placed on a smooth level foundation. If joints are required, they shall be in a staggered manner that will provide overlaps a minimum of 6 inches on the underlying sheets. The edges shall be trim and square. The insulation shall be held together by a minimum of two wood skewers per board in each layer—driven flush with the surface of the material. If the bedding procedure is not adequate to properly support the insulation, an additional treated wood shell will be required.

Backfilling and compaction of material over the insulation board shall be accomplished in a manner that will not damage the insulation material. Construction equipment of any kind shall not operate directly on the insulation board. The Contractor shall replace, at their own expense, sections of insulation damaged by the Contractor's construction operations.

4600 Operation of Valves and Hydrants

The Contractor shall notify MPS Water Division staff when gate valves need to be opened or closed. Only MPS Water Division staff shall operate existing valves and hydrants.

New valves that are installed by the Contractor shall not be opened adjacent to an existing watermain unless the following conditions have been met:

1. MPS Water Division staff have been notified and are available to operate the valve and flush adjacent watermains in the area, if necessary.
2. All testing is complete and approved, including pressure testing, disinfection, and bacteriological testing.

Unauthorized valve operations resulting in a labor or material cost to the City or MPS will be either invoiced (when not currently under City contract) or deducted from the payment due the Contractor. Charges to the Contractor, in either case, will be calculated at the City or MPS employee's direct wage rate times a 2.0 multiplier.

4700 As-Built Requirements

The Contractor shall notify MPS at least 48 hours in advance of construction so that an MPS representative can be assigned to the project to mark the location of watermain appurtenances, valves, and water service equipment using GPS equipment.

– END OF SECTION –

DIVISION 5000
PIPE, SERVICE CONNECTION, AND APPURTENANCE TESTING

5100 General Testing Requirements

The Contractor shall notify MPS Water Division staff when valves need to be opened or closed. MPS personnel must be onsite to supervise operation of the valves. The new watermain must be isolated from the existing mains until the new pipe passes the bacteriological testing requirements.

5200 Pressure and Hydrostatic Testing

It is the Contractor's responsibility to pass the pressure and hydrostatic testing. It is at the Contractor's own risk to pressure test against an existing valve in the water system. If the Contractor chooses to pressure test against an existing valve and they cannot pass the test, the valve will have to be replaced at the Contractor's expense.

Following the installation of a new watermain, all newly-laid pipe or valved sections shall be subjected to a hydrostatic test.

Each valved section of the pipeline shall be slowly filled with water. When venting air from pipelines, it is important to limit the pipeline fill rate to avoid excessive surge pressures when the water reaches the air venting openings.

Before applying the specified test pressure, air shall be expelled completely from the pipeline section under test. Before pressure testing can commence, any heavily-chlorinated water in the line must be thoroughly flushed.

The pipeline shall be allowed to stabilize at the test pressure before conducting the hydrostatic test. This may require several cycles of pressurizing and bleeding trapped air prior to beginning the test.

The hydrostatic test shall be at least 2 hours in duration with no drop in pressure during the test with a minimum pressure reading of 150 psi.

An additional curb stop shall be installed in the service line within the trench. The curb stop shall be closed when performing the pressure test. The curb stop shall have a temporary access pipe installed at or above grade to allow the curb stop to be opened after the pressure test is performed. The temporary access pipe shall be removed after the pressure test and bacteria test have been completed and approved, and the additional curb stop has been opened. The water service shall be back-flushed before restoring service to residences to remove any scaling or debris that is in the service line.

5300 Watermain Disinfection

Disinfection shall conform to Minnesota Department of Health requirements and the latest revision of AWWA C651. Thoroughly flush watermain prior to disinfection in order to remove all foreign matter that may have entered the pipe during construction.

A 50 mg/L (ppm) chlorine solution shall be used for disinfection.

5310 New Watermain Installation Disinfection

Hypochlorite tablets or liquid chlorine may be used on new watermain projects.

5320 Watermain Replacement Disinfection

Hypochlorite tablets shall not be used on watermain replacement projects—liquid chlorine is to be used and may be inserted through a hydrant or a corporation installed on the new watermain.

Location of the corporation shall generally be placed at a location such that the chlorine solution can be injected into a water supply stream and the chlorine mixture is carried through the entire length of the new watermain. Location of the corporation must meet approval of the Engineer.

Cost of corporation and disinfecting work shall be incidental to the watermain installation.

The corporation valves are to be closed at the main prior to the backfilling of the trench areas.

Maintain chlorine solution in watermain for a minimum of 24 hours.

Thoroughly flush line after retention time has expired until the chlorine content is at acceptable levels. The environment to which the heavily-chlorinated water is to be discharged shall be inspected. If deemed necessary, a reducing agent shall be added to neutralize the chlorine residual remaining in the water.

5330 Dechlorination

Heavily-chlorinated water that is flushed from the watermain, after disinfection, shall be disposed of according to the latest revision of AWWA C651.

5340 Bacteriological Testing

Upon completion of disinfecting and flushing the watermain, but prior to placing the watermain into service, the Contractor will coordinate with MPS to test for bacteriological quality.

Prior to acceptance, MPS will collect and test samples in accordance with Standard Methods of the Examination of Water and Wastewater, and shall show the absence of coliform organisms.

Two bacteriological tests shall be performed per 1,200 linear feet of watermain pipe. These tests shall be taken 24 hours apart. Two (2) consecutive samples must pass in order for the work to be accepted.

Bacteria sampling will not be allowed through a fire hydrant or fire hose. The sampling line must be dedicated and cleaned, disinfected, and flushed prior to sampling.

If tests indicated the presence of coliform bacteria, the Contractor shall re-flush the watermain and new samples will be collected. At the Contractor's option and cost, the watermain may be re-disinfected prior to re-flushing and re-sampling. If the re-test fails, Contractor shall repeat the disinfecting, flushing, sampling, and testing process until test results indicate absence of coliform bacteria. If the re-test fails, Contractor will be responsible for the additional costs of flushing, disinfecting, and re-testing for bacteria. Only after bacteriological test results are favorable shall the watermain be placed in service.

– END OF SECTION –

DIVISION 6000
FINAL INSPECTION, ACCEPTANCE, AND PAYMENT

6100 Final Inspection and Acceptance

Before any pavement operations may commence, the Contractor shall be required to request a final inspection with the Engineer and MPS.

As part of this inspection, the Engineer and MPS shall inspect all aspects of the watermain project including, but not limited to, valve operation and location, hydrant operation and location, tracer wire continently, curb stop operation and location. Once the Engineer and MPS have signed off and accepted the newly-installed watermain, the Contractor shall be paid for work completed.

6200 Measurement and Payment

All measurements and payments will be based on completed and accepted work. The payments listed below shall be full compensation for all labor, materials, equipment, and incidental items necessary to complete work.

Pipe will be measured in units of lineal feet along the center line of the pipe without deductions for fitting or valves. Payments shall be made at the Contract unit price per lineal foot for “Watermain” for each respective size and type listed in the proposal. Pay items shall include excavation bedding, backfill, thrust blocks, disinfection, and testing. Payment for installation of watermain shall not be paid in full until the main has been flushed, pressure tested, disinfected, and tested for bacteriological content and final inspection has been completed.

PVC or ductile-iron fittings and connections to existing facilities will not be measured for separate payment but will be considered a subsidiary item to the installation of the watermain unless a pay item is specifically included on the bid form.

Fire hydrants will be measured in units of each. Payment will be made at the contract unit price per each of the item “Fire Hydrants.”

All valves will be measured in units of each, which shall include the valve box and cover. Payment will be made at the contract unit price per each for “Gate Valves or Butterfly Valves and Valve Box” of the size indicated.

Hydrant leads will be measure in units of lineal feet along the centerline of the pipe. Payment shall be made at the contract unit price per lineal foot for the size of pipe as indicated.

Fittings will be measured for separate payment as a lump sum. Payment will be made on the basis of the contract lump sum for “Fittings.”

Measurement of water services shall be from the centerline of the watermain to connection to the existing services. Payment for said water services shall include all costs for installation of the water service,

including, but not limited to, copper water pipe, labor, and incidentals necessary to complete the work in accordance with these standards.

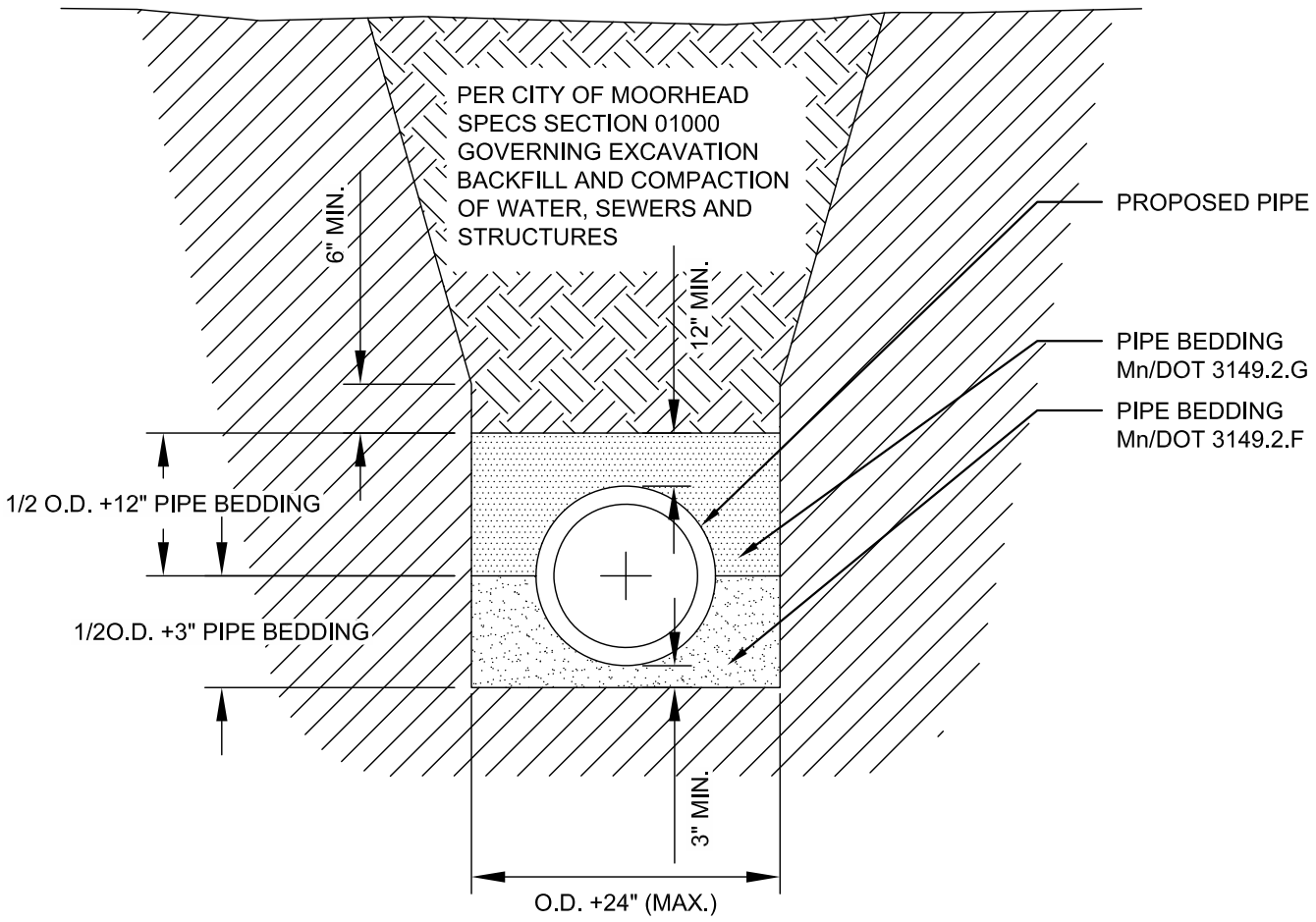
Payment for furnishing and installing corporation stops will be at the unit price bid on the proposal form. The unit price bid for corporation stops shall include the specified saddle.

Payment for furnishing and installing curb stops and curb boxes shall be at the unit price bid on the proposal form.

Temporary Water Service bid item shall include all work necessary for providing temporary water connections to water users affected by this project.

– END OF SECTION –

DRAWING INDEX



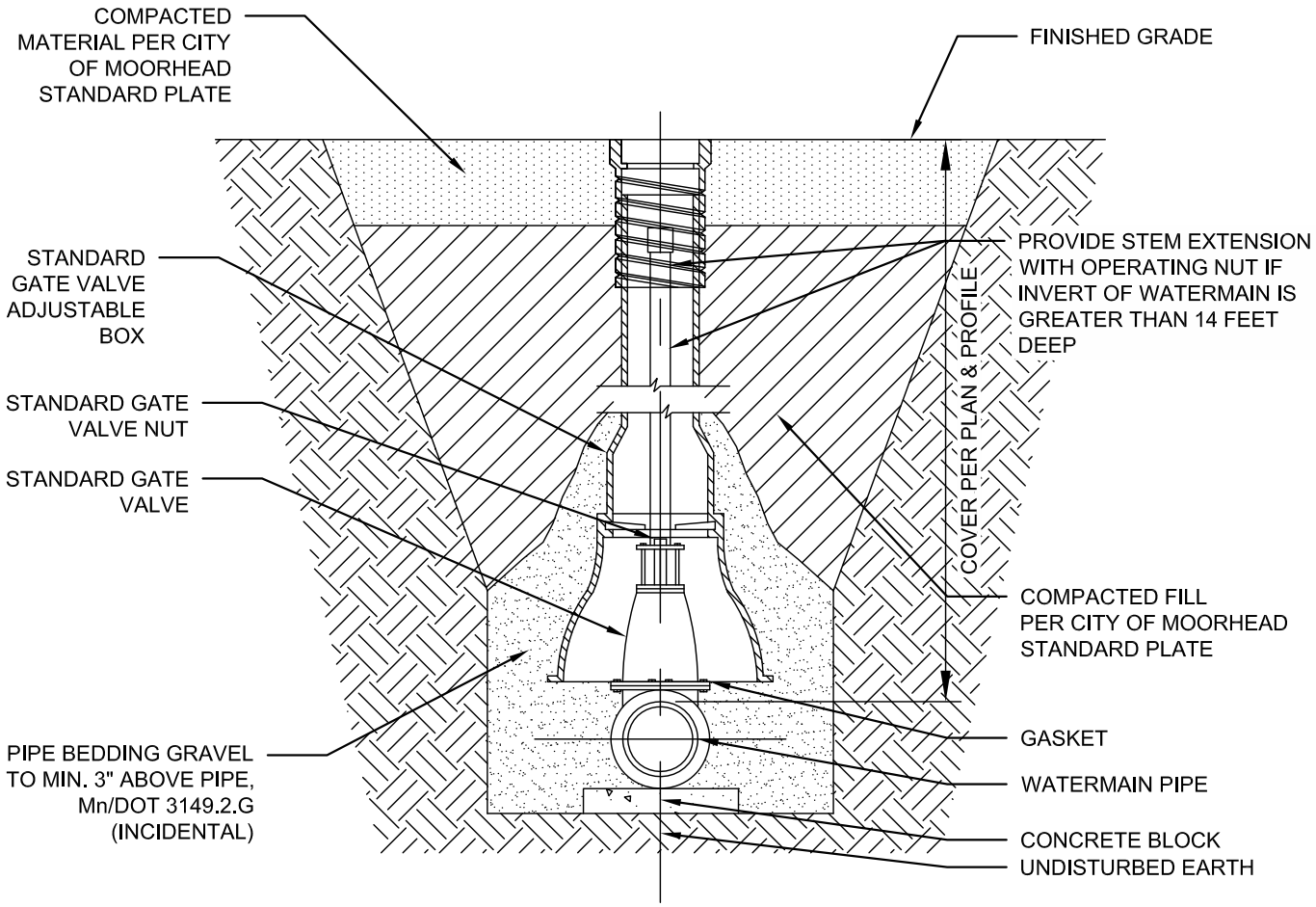
COORDINATE BACKFILL
REQUIREMENTS WITH THE
CITY OF MOORHEAD
STANDARD REPAIR PLATES

MOORHEAD PUBLIC SERVICE

WATERMAIN TRENCH DETAIL

MOORHEAD PUBLIC SERVICE
STANDARD DETAILS

D-1



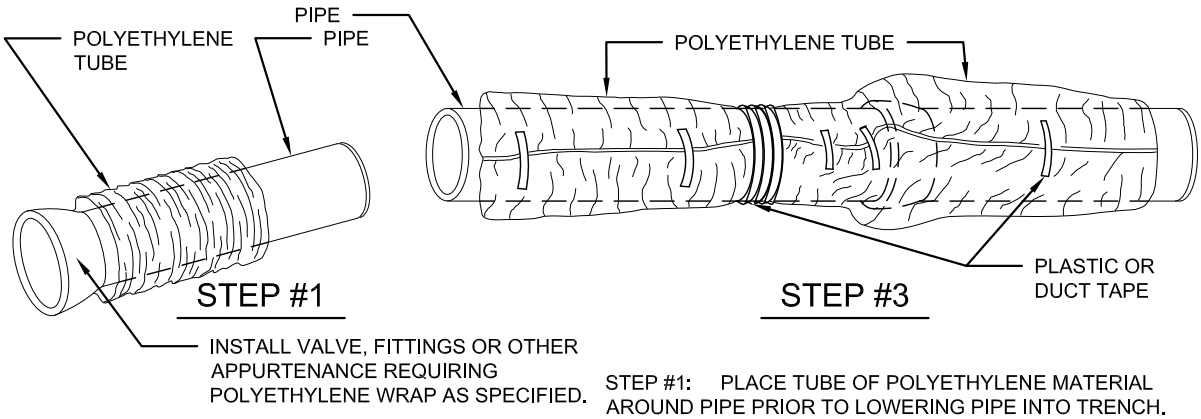
COORDINATE BACKFILL REQUIREMENTS WITH THE CITY OF MOORHEAD STANDARD REPAIR PLATES

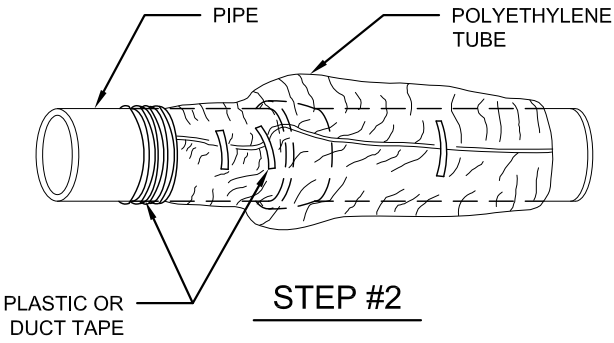
MOORHEAD PUBLIC SERVICE

GATE VALVE WITH EXTENSION AND SUPPORT DETAIL

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

D-2





STEP #1: PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP #2: PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

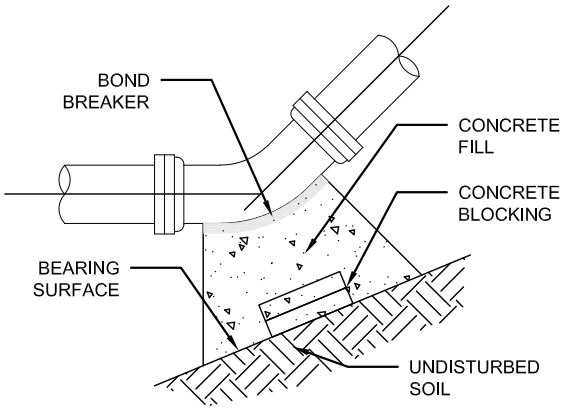
STEP #3: ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FT INTERVALS.

MOORHEAD PUBLIC SERVICE

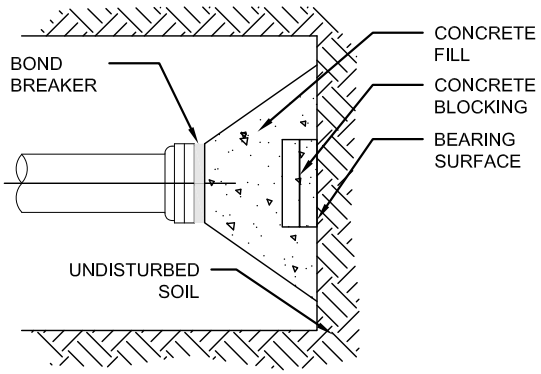
POLYETHELENE PIPE WRAP DETAILS

MOORHEAD PUBLIC SERVICE
STANDARD DETAILS

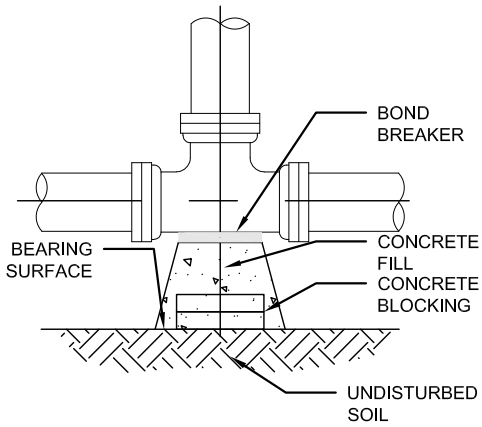
D-3



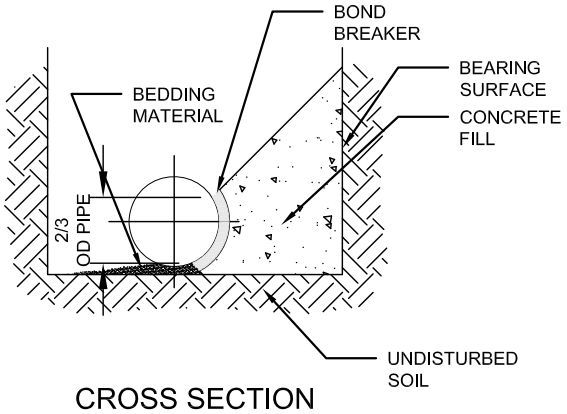
11-1/4°, 22-1/2°, 45° & 90° BENDS



DEAD END SECTION



TEE SECTION



CROSS SECTION

NOTES:

1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM

2. BASED ON 150 PSI INTERNAL PIPE PRESSURE PLUS WATER HAMMER. 4", 6", 8" AND 12" WATER HAMMER = 110 PSI 16", 20" AND 24" WATER HAMMER = 70 PSI

3. BASED ON 3,000 PSF SOIL BEARING CAPACITY.

4. CONCRETE BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH. BELLS AND BOLTS TO BE KEPT FREE OF CONCRETE. CONCRETE IN PLACE TO BE INCLUDED IN PRICE BID FOR WATERMAIN.

5. IF APPROVED BY THE ENGINEER, SOLID CONCRETE BLOCKS MAY BE USED FOR BLOCKING ON 8" DIA PIPE AND BELOW. 10" DIA. PIPE AND ABOVE WILL CONFORM TO CONCRETE POURED IN PLACE AREAS SHOWN ABOVE.

TABLE OF REQUIRED BEARING AREAS

SIZE OF PIPE	90°	45°	22 1/2°	11 1/4°	TEES, PLUGS & TAPPING SLEEVE
4"	2' SQ.	2' SQ.	2' SQ.	2' SQ.	2' SQ.
6"	3' SQ.	2' SQ.	2' SQ.	2' SQ.	3' SQ.
8"	5' SQ.	3' SQ.	2' SQ.	2' SQ.	4' SQ.
10"	8' SQ.	4' SQ.	3' SQ.	2' SQ.	6' SQ.
12"	11' SQ.	6' SQ.	3' SQ.	2' SQ.	8' SQ.
16"	20' SQ.	11' SQ.	6' SQ.	4' SQ.	15' SQ.
18"	25' SQ.	14' SQ.	7' SQ.	4' SQ.	18' SQ.
20"	22' SQ.	12' SQ.	10' SQ.	4' SQ.	15.5' SQ.
24"	61' SQ.	33' SQ.	17' SQ.	9' SQ.	43' SQ.
30"	75' SQ.	41' SQ.	21' SQ.	11' SQ.	53' SQ.

MOORHEAD PUBLIC SERVICE

THRUST BLOCKING DETAILS

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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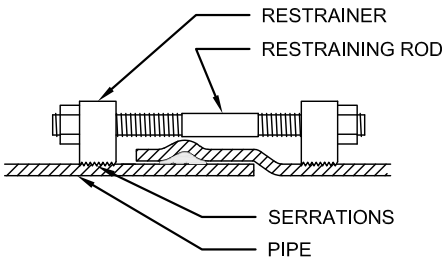
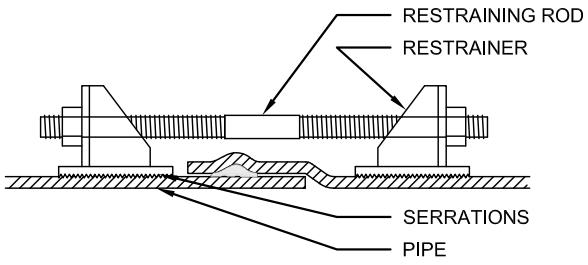
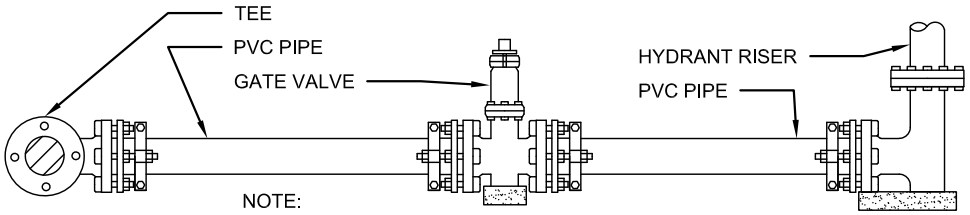


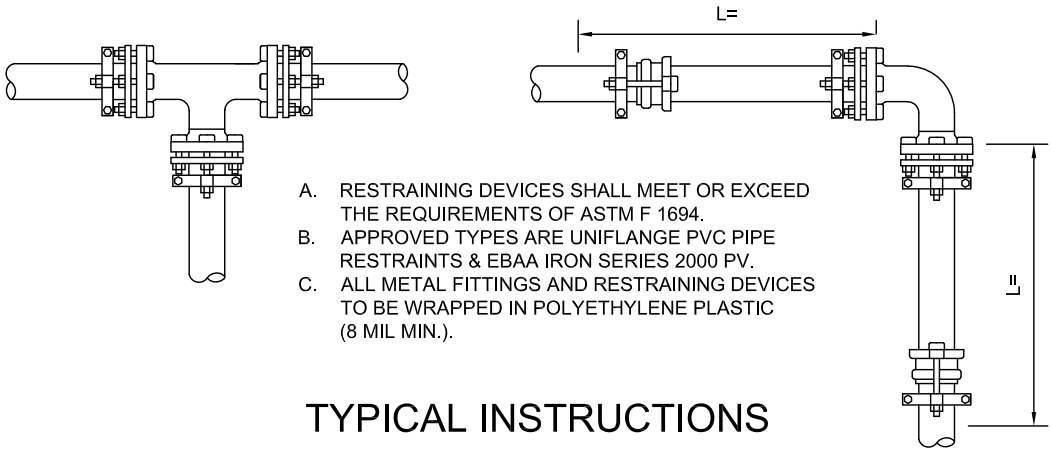
2" TO 12" DIA.



14" TO 36" DIA.



NOTE:
ADDITIONAL LENGTH OF PIPE TO BE RESTRAINED ON EACH SIDE OF ANY RESTRAINED FITTINGS (SEE TABLE BELOW).



A. RESTRAINING DEVICES SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM F 1694.
B. APPROVED TYPES ARE UNIFLANGE PVC PIPE RESTRAINTS & EBAA IRON SERIES 2000 PV.
C. ALL METAL FITTINGS AND RESTRAINING DEVICES TO BE WRAPPED IN POLYETHYLENE PLASTIC (8 MIL MIN.).

TYPICAL INSTRUCTIONS

RESTRAINED LENGTHS OF PVC PIPE

NOM. PIPE SIZE	90° BEND (L)	45° BEND (L)	22.5° BEND (L)	11.25° BEND (L)	SIZE ON SIZE TEE(L)*	VALVE/ DEAD-END(L)
6"	19'	8'	4'	2'	2'	35'
8"	25'	11'	5'	3'	13'	45'
10"	31'	13'	6'	3'	23'	55'
12"	36'	15'	8'	4'	33'	65'
16"	47'	20'	10'	5'	52'	84'
18"	49'	21'	10'	5'	62'	96'
20"	53'	22'	11'	6'	73'	106'
24"	61'	26'	13'	6'	95'	125'
30"	72'	30'	15'	8'	125'	152'
36"	82'	34'	17'	9'	155'	180'

* RECOMMENDED RESTRAINED LENGTHS FOR TEES ARE FOR THE BRANCH OUTLET AND ASSUME A MINIMUM 10 FT. SECTION OF PIPE ATTACHED TO EACH SIDE OF THE RUN. RESTRAINT DEVICES ARE ALSO REQUIRED ON BOTH RUN JOINTS OF THE TEE ITSELF.

SIZE	45° VERT. OFFSET* (L)	22 1/2° VERT. OFFSET* (L)
6"	15'/8'	7'/4'
8"	19'/11'	9'/5'
10"	23'/13'	11'/6'
12"	27'/15'	13'/8'
16"	35'/20'	17'/10'
18"	58'/12'	28'/6'
20"	64'/13'	31'/6'
24"	74'/15'	36'/7'
30"	89'/17'	43'/9'
36"	103'/20'	50'/10'

* FIRST NUMBER IS THE RECOMMENDED RESTRAINED LENGTH ON EACH SIDE OF THE DOWN BEND, THE SECOND NUMBER IS THE LENGTH FOR EACH SIDE OF THE UP BEND.

MOORHEAD PUBLIC SERVICE

RESTRAINT DEVICE FOR PVC PIPE BELL DETAILS

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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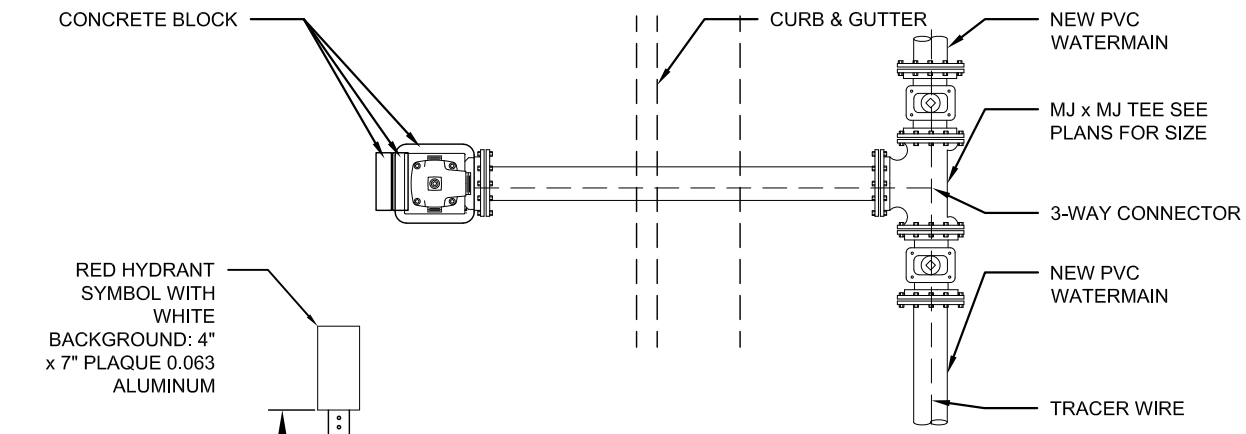
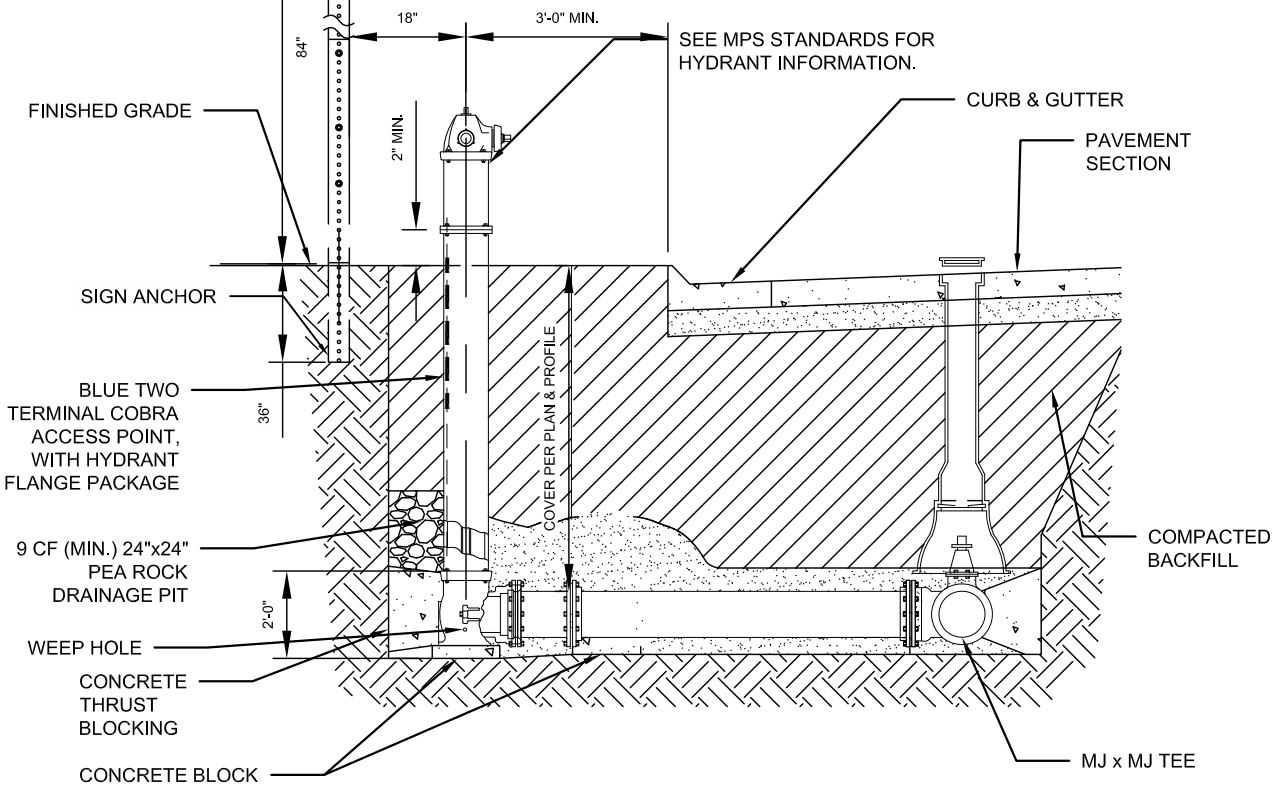


PLAN VIEW



SECTION VIEW

NOTE:

1. ALL BURIED CAST AND DUCTILE IRON MUST BE WRAPPED IN POLYETHYLENE (MIN. 0.008 INCH THICK)

MOORHEAD PUBLIC SERVICE

FIRE HYDRANT CONNECTION WITH GATE VALVES

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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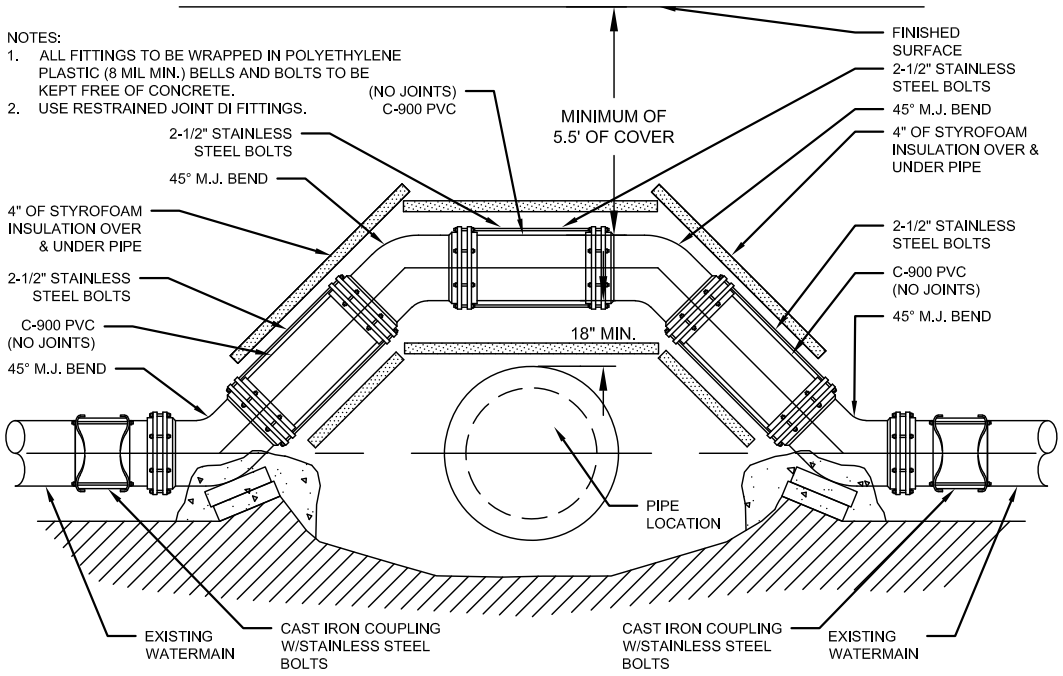
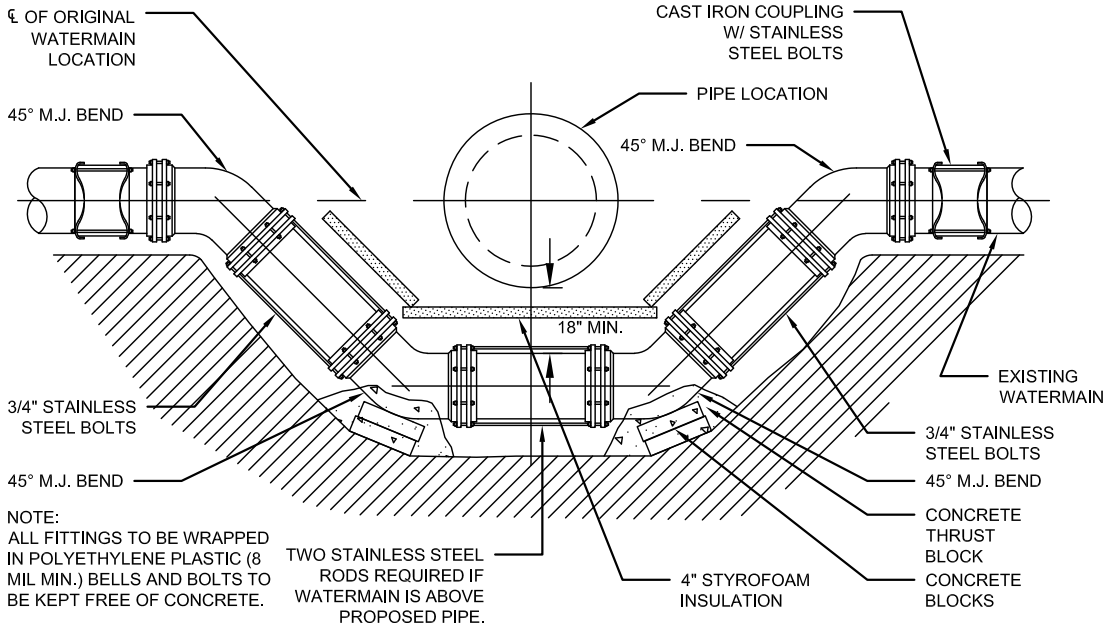


1 WATERMAIN RELOCATION OVER PIPE DETAIL

NO SCALE



2 WATERMAIN RELOCATION UNDER PIPE DETAIL

NO SCALE

MOORHEAD PUBLIC SERVICE

WATERMAIN RELOCATION OVER AND UNDER PIPING

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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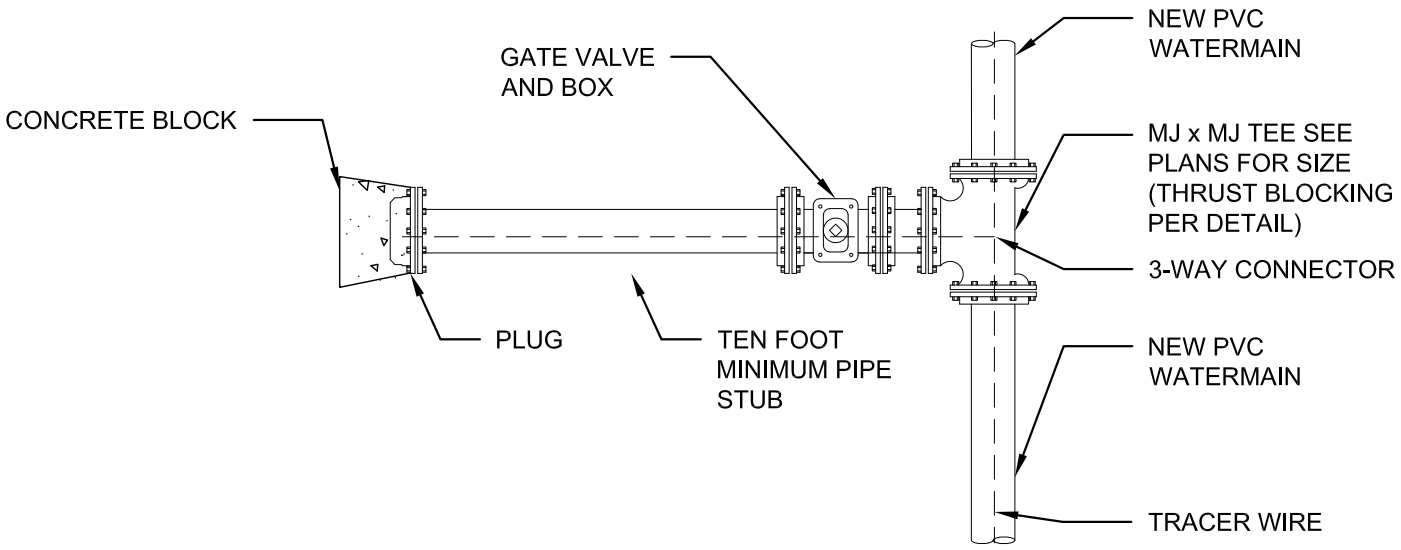

PLAN VIEW

NOTE:

1. ALL BURIED CAST AND DUCTILE IRON MUST BE WRAPPED IN POLYETHYLENE (MIN. 0.008 INCH THICK)

MOORHEAD PUBLIC SERVICE

WATERMAIN STUB DETAIL

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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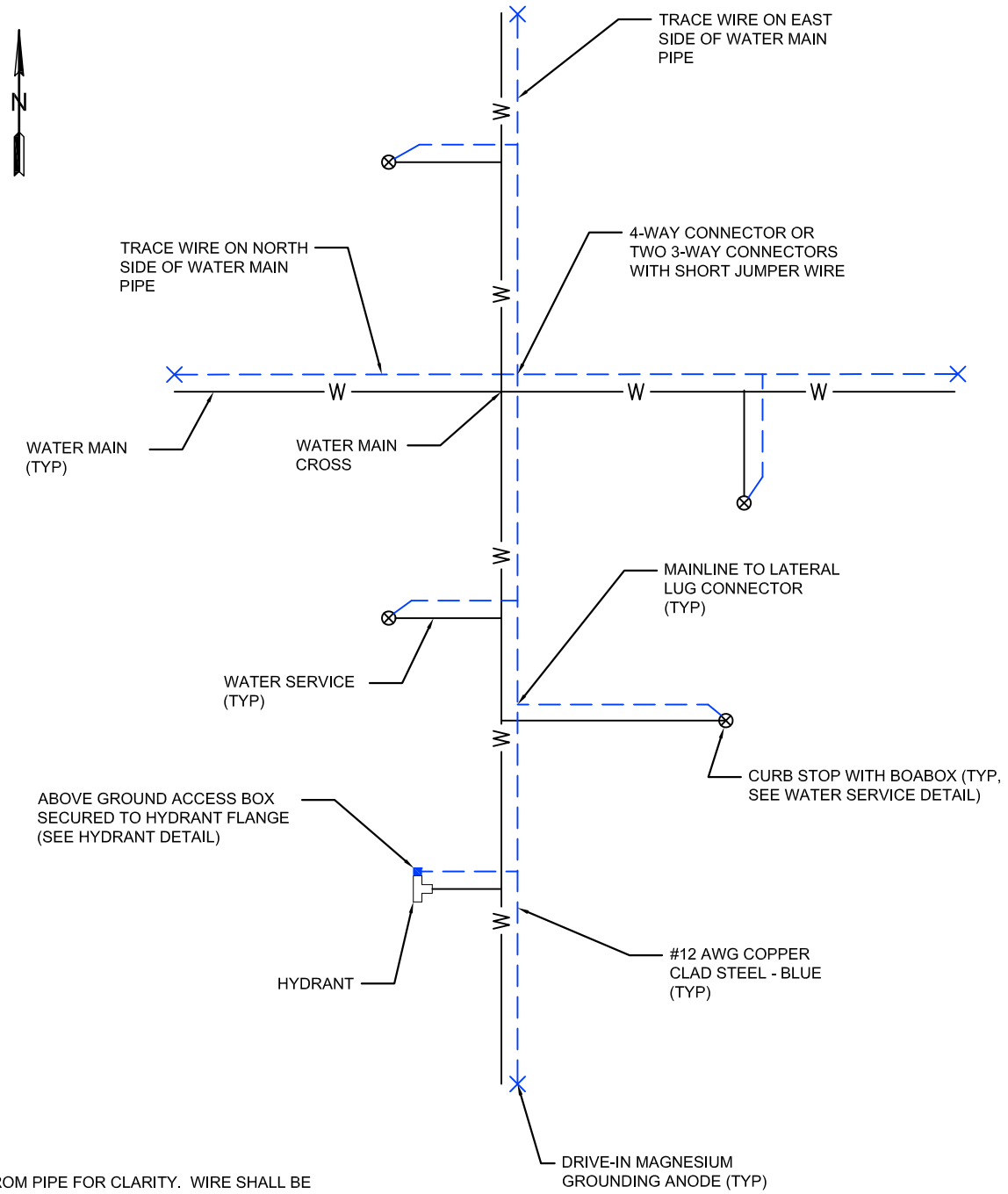

NOTES:

1. WIRE SHOWN AWAY FROM PIPE FOR CLARITY. WIRE SHALL BE INSTALLED ON THE BOTTOM SIDE OF THE PIPE BELOW THE SPRING LINE. THE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 5' INTERVALS.

TRACE WIRE PLAN (WATER)

NO SCALE

MOORHEAD PUBLIC SERVICE

TRACER WIRE DETAIL - STANDARD WATER PLAN

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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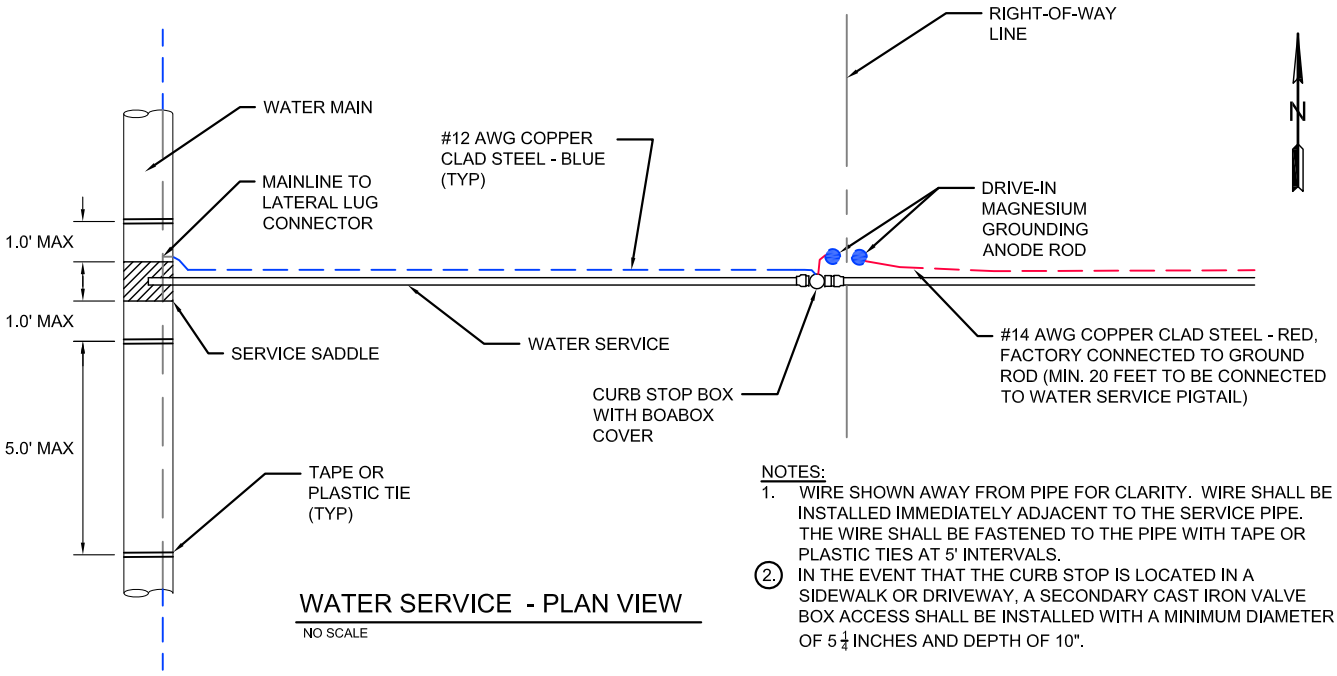
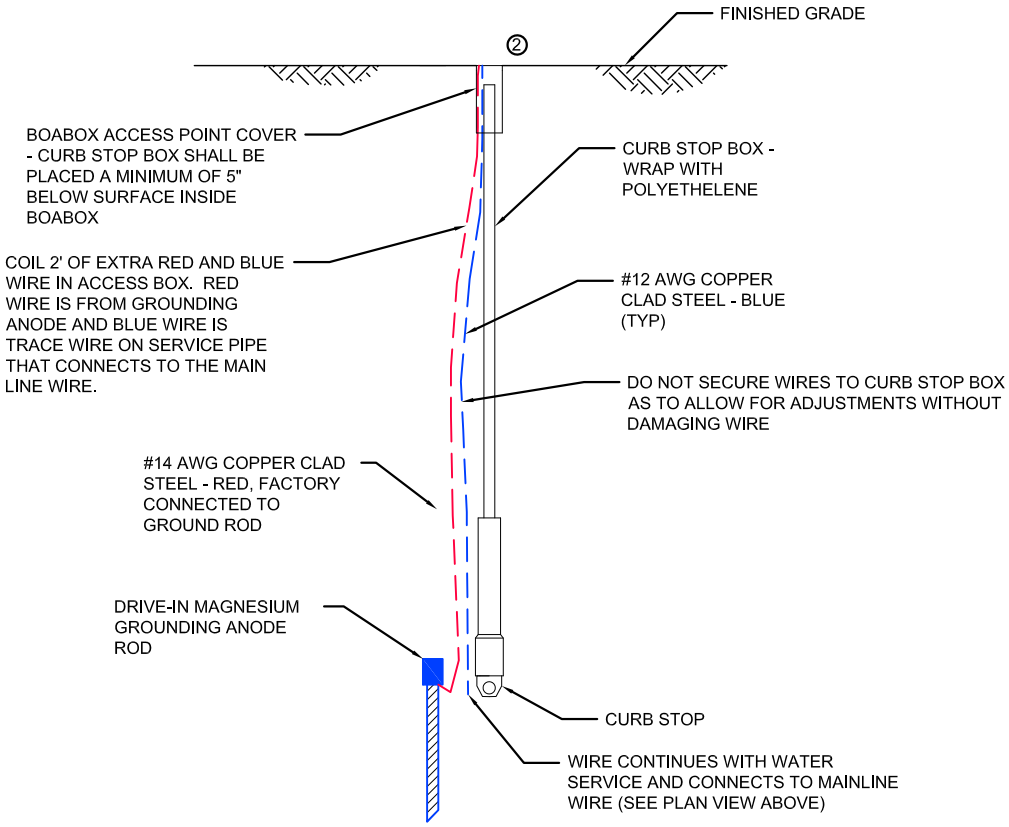


WATER SERVICE - PLAN VIEW

NO SCALE

NOTES:

1. WIRE SHOWN AWAY FROM PIPE FOR CLARITY. WIRE SHALL BE INSTALLED IMMEDIATELY ADJACENT TO THE SERVICE PIPE. THE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 5' INTERVALS.
2. IN THE EVENT THAT THE CURB STOP IS LOCATED IN A SIDEWALK OR DRIVEWAY, A SECONDARY CAST IRON VALVE BOX ACCESS SHALL BE INSTALLED WITH A MINIMUM DIAMETER OF 5 1/4 INCHES AND DEPTH OF 10".



WATER SERVICE - SECTION VIEW

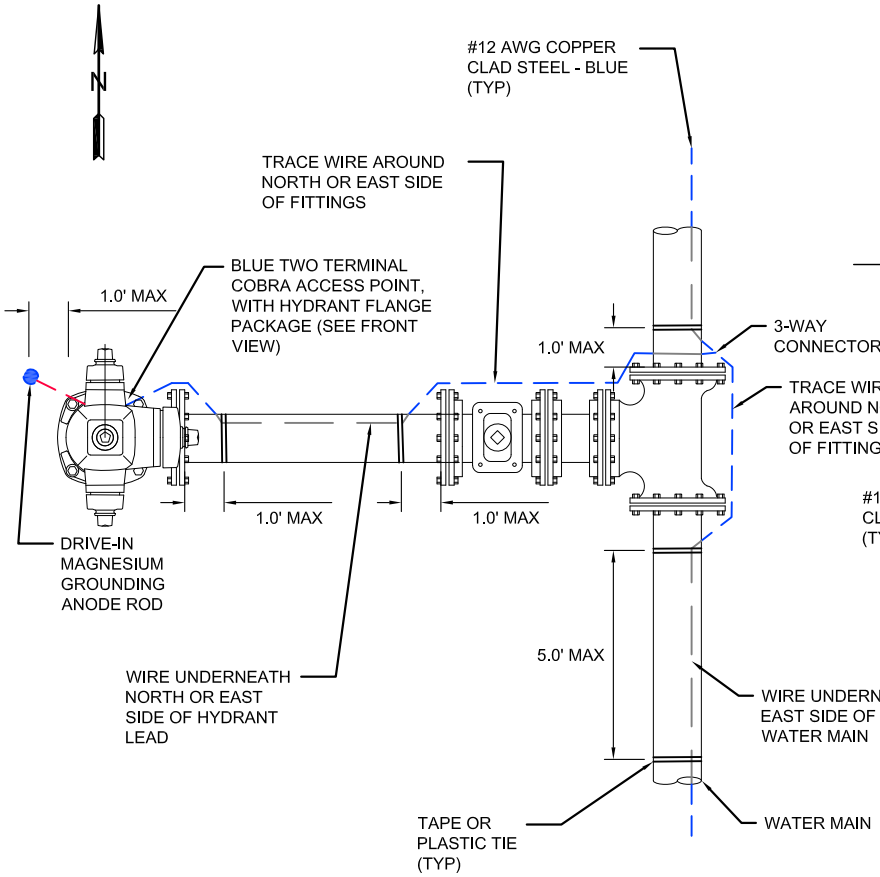
NO SCALE

MOORHEAD PUBLIC SERVICE

TRACER WIRE DETAIL - WATER SERVICE - SECTION VIEW

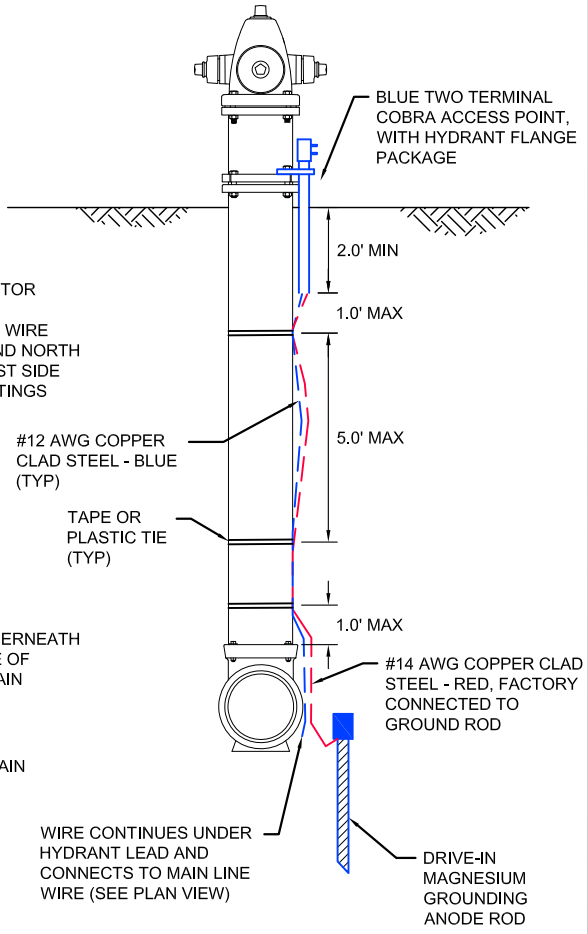
MOORHEAD PUBLIC SERVICE STANDARD DETAILS

D-10



HYDRANT - PLAN VIEW

NO SCALE



HYDRANT - SECTION VIEW

NO SCALE

MOORHEAD PUBLIC SERVICE

TRACER WIRE DETAIL - HYDRANT

MOORHEAD PUBLIC SERVICE STANDARD DETAILS

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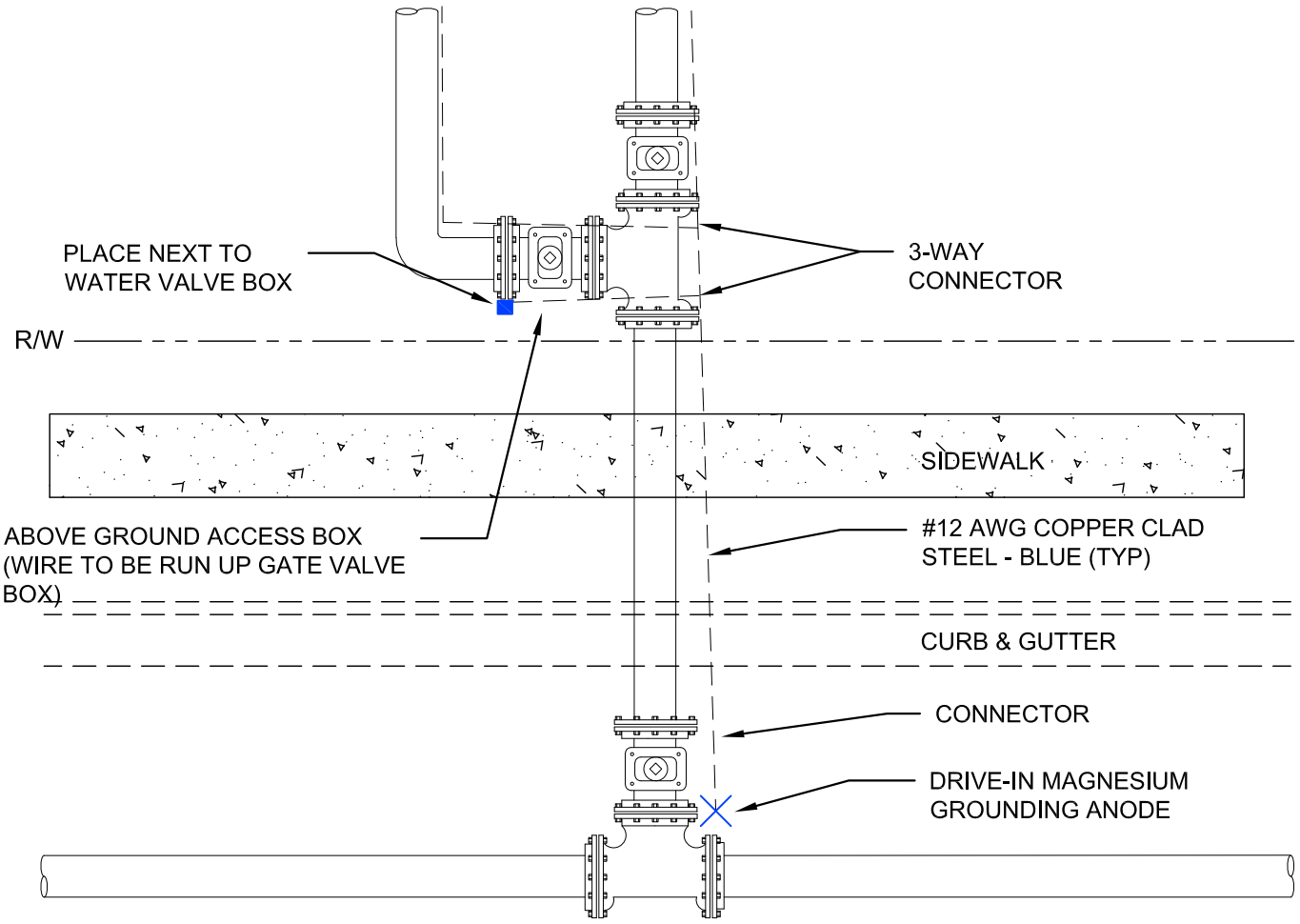

MOORHEAD PUBLIC SERVICE

TRACER WIRE DETAIL - RESIDENTIAL/ COMMERCIAL/INDUSTRIAL TAP

MOORHEAD PUBLIC SERVICE
STANDARD DETAILS

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