

GENERAL SPECIFICATIONS

CITY OF MAPLE GROVE, MINNESOTA

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GENERAL SPECIFICATIONS

CITY OF MAPLE GROVE, MINNESOTA

1) GENERAL

The General Specification and the Special Provisions and Conditions of the Contract as embodied in these Contract Documents shall be applied to all work and materials to be furnished and installed under these specifications.

2) LOCATION

The General work and appurtenances to be constructed and installed under this contract are located in the City of Maple Grove, Hennepin County, Minnesota, as shown on the drawings.

3) SCOPE OF WORK

The work to be done under this contract shall include the furnishing of all material, labor, tools, and equipment to construct, complete in place, the general work described in connection with water main, sewers and all appurtenances as shown on the drawings and as specified herein and in accordance with all pertinent requirements include but not limited to, the Minnesota Pollution Control Agency and Minnesota Department of Health.

4) METHOD OF PROCEDURE

The Contractor shall perform work in such a manner as to cause the least interference and delay to such other work as may be in progress at the time by other Contractors. The Contractor shall notify the Engineer in writing of his/her intentions to commence work at least five (5) days prior to moving onto the site.

Prior to the start of any work, the Contractor shall submit in writing to the Engineer a schedule of procedure and shop drawing submittals.

5) COORDINATION OF WORK

The Contractor shall be responsible for the satisfactory coordination of the construction with other construction and activities in the area affected.

Delays in work resulting from lack of harmony shall not in any way be a cause for extra compensation by any of the parties.

6) CONTRACTOR'S RESPONSIBILITY FOR MATERIALS

a. MATERIAL HANDLING

Pipe and accessories shall, unless directed in the special provisions, be unloaded at the point of delivery, hauled to and distributed at the site of the project. Handle with care to avoid damage.

b. MATERIAL FURNISHED BY CONTRACTOR

The Contractor shall be responsible for material furnished by him, and replace at his own expense material that is found to be defective in manufacture or that has become damaged in handling after delivery by the manufacturer. This shall include the furnishing of material and labor required for the replacement of installed material discovered defective prior to the final acceptance of the work or during the warranty period.

c. MATERIAL FURNISHED BY THE OWNER

Responsibility for material furnished by the Owner shall begin at the point of delivery by the manufacturer, or Owner, and acceptance of the material by the Contractor. Examine material furnished by the Owner at the time and place of delivery and reject defective material. The point of delivery shall be stated in the special provisions.

d. QUALITY AND WORKMANSHIP

The Owner or the Engineer may request certified lab data from the Manufacturer to verify the physical properties of the materials supplied under this specification or at his own expense may take random samples for testing by an independent laboratory.

QA Deviations – If an approved supplier must supply material that does not meet all requirements of this specification, he must notify the Engineer via a written description of the deviation with data that shows the magnitude of the deviation, the justification for the deviation from this specification, and the worst case, long term impact of the deviation on the project. The decision to accept material deviating from this specification prior to shipment shall be the responsibility of the Engineer.

Compaction testing will be performed for the Owner by an independent testing laboratory. The cost of passing tests will be paid by the Owner and the Contractor shall pay for all failing test and the retest.

The provisions of MnDOT 1603 and the most current version of the MnDOT Schedule of Materials Control will be the basis for all Quality Control testing performed by the Contractor as part of the Contract Work. In addition, the following testing rates and requirements will be utilized for street and utility construction work as part of Quality Assurance testing by the Owner and shall be performed by the Owner's Testing Representative.

Bituminous Testing				
Testing Location	Project Type	Sampling Responsibility	QA Testing Frequency	Reference Specification
Mix Sampling – Field / Placement	All Projects	Owner's Testing Representative ¹	1 per day per mix design	MnDOT 2360
All Courses Below Wear – Maximum Density Specification	All Projects	Owner Marks Core Location, Contractor Performs Coring	Varies Based on Tonnage	MnDOT 2360.3.D.1
Wear Course – Ordinary Compaction	All Projects	Owner's Testing Representative ¹	Varies Based on Tonnage	MnDOT 2360.3.D.2

¹ For samples at plant and in the field, the Contractor may be requested to take companion sample for Owner's testing. Owner will provide containers for sampling.

Trench Backfill Density				
Location / Depth	Proctor Type	Min % Compaction	QA Testing Frequency	Reference Specification
Outside Road Core	Standard	95%	1 per 500' of Trench	MnDOT 2106.3
Road Core ≤ below grading grade (bottom of aggregate base)	Standard	100%	1 per 250' of Trench	MnDOT 2106.3
Road Core, > 3' below grading grade	Standard	95%	1 per 500' of Trench	MnDOT 2106.3

Select Granular / Stabilizing Aggregate / Aggregate Base					
Location / Use	Gradation	Test Type	Min % Compaction	QA Compaction Testing Frequency	Reference Specification
Select Granular Borrow	1 per Source	Specified Density	100%	1 per 250' of Roadway	MnDOT 2106.3
Aggregate Base	1/12,000 yd ²	DCP – Penetration Index Method	See Specification	1 per 250' of roadway / trail/ sidewalk	MnDOT 2211.3
Full Depth Reclamation	1/12,000 yd ²	DCP for FDR	See Specification	1 per 250' of roadway / trail / sidewalk	MnDOT 2215

7) CONSTRUCTION STAKES, ALIGNMENT AND GRADE

All work under this contract shall be constructed in accordance with lines and grades shown on the drawings and as established by the Engineer.

The Contractor shall give the Engineer 48 hour notice of the Contractor's need for the establishment of line, grades and builds. After lines, grades and builds for any part of the work have been given by the Engineer, the Contractor shall be held responsible for the proper execution of the work and to protect and preserve all survey stakes until the work is completed. The Contractor shall at his/her own expense correct any mistakes that may be caused by their unauthorized disturbances or removal.

Lay and maintain pipe to the required lines and grades, with manholes, catch basins and fittings at the required locations. The Owner will furnish one set of line, grade and build stakes for the work. It shall be the Contractor's responsibility to preserve all survey stakes from loss or displacement. The Engineer may replace stakes he deems necessary for the proper prosecution of the work. Replacements shall be at the Contractor's expense. Lay pipes to the grade shown on the contract drawings. Make no deviation from the required line or grade except with the written consent of the Engineer.

The Contractor shall remove all survey stakes and lath from the job site upon completion of the project.

8) UNDERGROUND, SURFACE AND OVERHEAD UTILITIES

a. EXISTING UTILITIES

Existing water and sewer mains, and other underground utilities, are shown on the plans by general location. The owner does not guarantee the locations as shown on the plans, and the Contractor shall be responsible for verifying the exact location of these utilities, without additional compensation. Prior to the start of any construction, the Contractor shall notify all utility companies having utilities in the project area.

It shall be the Contractor's responsibility to determine and verify the location of existing pipes, valves or other underground structures as necessary to progress with the work with no additional compensation allowed. The Engineer shall make known records available.

b. OVERHEAD UTILITIES AND OBSTRUCTIONS

The Contractor shall protect overhead utilities, poles, etc. against damages.

9) PRIVATE PROPERTY PROTECTION

Protect trees, fences, poles and other private property unless their removal is authorized; and satisfactorily restore property damage or provide adequate compensation.

10) EXCAVATION AND TRENCH PREPARATION

The trench and trench bottom should be constructed in accordance to OSHA 2226 and OSHA 1926. Trenching should also be done in accordance with ASTM-D2321 – Section 7.

a. CLASS OF BEDDING

Class B, C-1, or C-2 bedding as shown on the standard detail plate SS-14 & SS-15, shall be used as directed on the plans or specified in the special provisions. Bed PVC pipe in accordance with the specifications described below. Special bedding shall be in accordance with the special provisions.

i. POLYVINYL CHLORIDE PIPE (PVC) PIPE.

Install and bed PVC pipe in accordance with ASTM Specification D-2321, and as shown in standard plate SS-15.

ii. POLYETHYLENE PIPE

Backfill shall consist of native or select type A, B or C granular material as outlined in ASTM D-2321.

iii. ACHIEVE CLASS B CLASS BEDDING

Compacted backfill in the "pipe zone". Bed the pipe in compacted crushed rock or pea gravel placed on a flat trench bottom. The bedding shall have a minimum thickness of 1/4 the outside pipe diameter and extend halfway up the pipe barrel at the sides. Fill the remainder of the side fills and a minimum depth of twelve inches (12") over the top of the pipe with compacted granular selected material.

iv. ACHIEVE CLASS C BEDDING

Shall be achieved by bedding the pipe with care in an earth foundation formed in the trench bottom by a shaped excavation which will fit the pipe barrel with for a width of at least 50% of the outside pipe diameter. Fill the sides and area over the pipe to a minimum depth of six inches (6") above the top of the pipe with compacted normal fill material.

b. CORRECTING FAULTY GRADE

Correct part of the trench excavated below grade with approved material and thoroughly compact without additional compensation.

c. PIPE FOUNDATION IN POOR SOIL

If, in the opinion of the Contractor, the material below the pipe is too soft to adequately support the pipe, the Contractor shall immediately inform the Engineer. When the bottom at subgrade is soft and in the opinion of the Engineer or representative of the Owner, cannot adequately support the pipe, excavate a further depth and/or width and refill to pipe foundation grade with approved material and thoroughly compact to assure a firm

foundation for the pipe with extra compensation allowed as provided elsewhere in these specifications.

11) BACKFILLING

Backfilling and grading shall be performed in accordance with the provisions of MnDOT 2503 and as amended and modified herein.

Backfill excavation in trenches to the original ground surface or to grades as specified or shown on the plans. Begin the backfilling as soon as practicable after the pipe has been placed. Prior to backfilling, clean the excavation of trash, debris, organic material, and undesirable material. Backfilling shall be done as completely as possible so as to prevent after settlement. The materials shall be compacted to attain complete filling by using the best materials available for this purpose, free from boulders or stones. Depositing of the backfill shall be done so the shock of falling material will not damage the underlying materials. Complete cleanup shall proceed directly behind the backfilling to accommodate the return to normal conditions. The Contractor shall have sufficient equipment on the job to assure timely backfill and cleanup at all times. Backfill trenches every night prior to leaving job site. Trenches may be left open with appropriate protection with approval by the Engineer and Owner. The Contractor shall take full responsibility for any mishaps that might occur for non-compliance of this requirement.

When the trench excavation is within the right-of-ways of State or County, the backfilling of the trench, compaction of materials and subgrade preparation shall be done in strict accordance with the existing requirements and specifications of the State or County Highway Department at no additional compensation.

The lower portion of the trench around the pipe shall be backfilled in accordance with the requirements shown for the pipe material. Granular material, free from rocks and boulders, shall be carefully placed by hand simultaneously on both sides of the pipe to a height of at least one foot (1') above the top of the pipe when specified to completely fill all spaces under and adjacent to the pipe. Backfill shall be tamped thoroughly on each side and under the pipe as far as practicable in layers not exceeding six inches (6") in thickness. Shovel place and hand tamp the pipe bedding material to fill spaces under and adjacent to the pipe. A jumping jack is required to be used along the length of the pipe on both sides.

Succeeding layers of backfill may contain coarse materials, but shall be free from pieces of rock, frozen material, concrete, roots, blacktop chunks,

stumps, tin cans, rubbish and other similar articles whose presence in the backfill, in the opinion of the Engineer, would cause settlement of the trench, or damage to the pipe. No black dirt, loam or other unsuitable materials shall be used as backfill in the trenches lying in the paved portion of the street. Under no condition shall lumps of broken blacktop or other such material of a size larger than two inches (2") in diameter be placed in the upper one foot (1') of the finished grade.

Backfill the trench to obtain compaction, with the lift thickness as required with a maximum of one foot (1') lifts. Compact the backfill material to 95% of the standard moisture density relationship of soils (ASTM D698-70) except the top three feet (3') of the trench which shall be compacted to 100% density.

Backfilling of utilities installed down lot lines shall require material to be compacted to 100 percent of the standard moisture density relationship of soils regardless of depth.

Backfilling of trenches in the traveled portions of the streets and under the curbs shall be accomplished in one foot (1') lifts. Where there is granular soil, compaction shall be obtained in each lift using a vibratory compactor. Where there are cohesive soils, the compaction of each list shall be obtained using a sheep's foot roller. No peat or other organic soils shall be backfilled under the traveled portions of streets.

Rubber-tired equipment shall be used to backfill trenches where other equipment will damage existing bituminous surfaces or sod.

In the event that suitable, granular material is not encountered during the normal excavation of the trench or when the material encountered is determined unsuitable by the Engineer for backfilling around the pipe as required above, the Contractor shall provide and place such approved material (sand fill) as required with no additional payment made thereto. All services shall have six inches (6") of clean sand (under #4 sieve) under and on the sides and one foot (1') above before other backfilling can proceed.

Unless specified, dispose of excavated material not suitable or not required for fill material within the project limits at the Contractor's expense. If the Engineer deems there is no area in the project limits to dispose of excess material, he shall direct the Contractor to dispose of material off site in a manner subject to the provisions of the following paragraph and the Contractor will be compensated in accordance with the bid unit price in the contract.

Before dumping materials or debris on a private or public land, the Contractor must obtain from the owner of land written permission for dumping and a waiver of claims against the owner for damage to land which may result together with permits required by law for dumping. File a copy of permission, waiver of claims and permit with the Engineer before disposal is made.

The Contractor shall provide one motor grader which shall be available at the project at all times for surface maintenance. If in the opinion of the Engineer, the Contractor is not maintaining the street surfaces sufficiently with one motor grader, the Contractor shall provide additional blades at no additional compensation.

In all cases, the Contractor shall blade the roadway after the trench has been backfilled, so that it shall provide full and adequate drainage and shall be passable to traffic when required. Existing roadway material shall be adequately salvaged, stockpiled, placed and graded to cap off the backfilled areas for purposes of maintaining access and providing a drivable surface free of rutting and ponding of water. Segregating soils during these operations is a specific requirement to prevent contamination of the soils that are needed for these purposes. The Contractor shall maintain the roadway in a condition acceptable to the Engineer at all times until final acceptance of the entire work by the Owner. This work shall be considered incidental.

Additional import material needed for purposes of maintaining traffic shall only be authorized and used for the specific purpose of maintaining traffic when full and proper measures have been taken to salvage and use the existing roadway base materials and all on-site material has been exhausted. Payment for additional material shall only be upon specific approval by the Engineer and shall be included for payment under the bid item of similar material.

In addition to the blading and maintenance requirements specified under this article, the Contractor shall also be required to adequately control dust on the streets after compaction and grading when directed by the Engineer. When so directed by the Engineer, the Contractor shall provide one tank truck of adequate size with spray bar or other suitable equipment for sprinkling streets which shall be available at all times for street maintenance. If in the opinion of the Engineer, the Contractor is not maintaining adequate dust control with one tank truck, the Contractor shall provide additional tank trucks at no additional compensation.

Consider settlements greater than one inch (1") measured with a string line from one edge of the settlement to the other within the warranty period of this contract failure of the mechanical compaction and repair street surfaces, driveways, and boulevard and ditch areas at no cost to the City.

All deficiencies in the quantity of material for backfilling trenches or for filling depressions caused by settlement shall be supplied by the Contractor. Any excess material shall be hauled away and disposed of by the Contractor at no additional compensation.

12) PIPE FOUNDATIONS

The Contractor shall notify the Engineer if he encounters unstable soil not suitable for bedding of pipe. As directed by the Engineer, the Contractor shall remove unstable material and replace with improved pipe foundation material as ordered by the Engineer. The Contractor shall not be paid extra for such additional excavation, but shall be paid for as improved pipe foundation at the unit price bid. Material for improved pipe foundation shall be MnDOT Spec. 3149H coarse filter aggregate. Not less than 50 percent of the material by weight that is retained on the No. 4 sieve shall have one (1) or more crushed faces.

13) PUMPING, BAILING AND DEWATERING

The Contractor shall, at their own expense, pump, or otherwise remove any water which may exist in the trenches and shall form all dams or other work necessary for keeping the excavation clear of water during progress of the work. In case of running sand or other bad ground, the work shall proceed day and night if the Engineer so directs.

The de-watering item shall only be used for additional de-watering needs above and beyond normal construction practices as described herein. Normal construction practices include use of up to 2 pumps in the excavation in crushed rock sumps. The dewatering item shall only include the additional pumps, well points, manifolds, etc.

14) ROCK EXCAVATION

When the trench is carried through rock, the depth of excavation shall be six inches (6") below the outside barrel of the pipe, fittings, and other appurtenances for pipe of sixteen inch (16") diameter or less and shall be nine inches (9") below the outside barrel of the pipe, fittings and other appurtenances for pipe of eighteen inch (18") diameter or greater. Adequate clearance for properly jointing pipe laid in rock trenches shall be

provided at bell holes. Sand shall be backfilled and tamped to proper grade before the pipe is laid. Width of excavation shall be computed on a basis of a uniform width twelve inches (12") greater than the outside diameter of the hubs or bells of pipe.

Rock excavation shall be defined as removal of all boulders larger than 1/3 cubic yard in volume and of ledge rock, concrete, or masonry structures that require an air hammer or blasting to remove. Loose, soft or disintegrated shale or rock in its natural state, masonry or concrete which can be economically removed without air hammer or blasting shall be classified as "loose rock". No additional compensation shall be provided for excavation of this character.

15) UNFORESEEN UNDERGROUND OBSTRUCTIONS

The removal of old timber, artificial loose stone or concrete fill or other man made obstructions that hinders the normal progress of the excavation, other than utility lines, shall be classified as "Removing Unforeseen Obstructions". The removal shall be paid for at actual cost plus 15 percent, as provided in these specifications.

16) TEMPORARY BRIDGES AND CROSSINGS

The Contractor shall construct and maintain temporary bridges and crossings, complete with flaggers, wherever necessary to expedite the work or to maintain traffic. Temporary bridges or crossings shall be of ample size to safely carry the load which may come upon them as determined by the Engineer. The cost of all labor, material, tools and equipment for temporary bridges and crossings shall be borne by the Contractor, and no separate or additional payment shall be made therefore.

17) RAILROAD AND HIGHWAY CROSSINGS

The method and construction required for any work under or adjacent to railroad tracks and highways shall be in accordance with the respective railroad or highway department permit.

Before construction is started, the successful bidder shall meet with the Minnesota Department of Transportation, County Highway Department, Railroad Maintenance Engineer, the consulting Engineers and the City of Maple Grove to determine the construction procedure to be followed, methods of rerouting traffic, placing of barricades, flares, signs, flagmen, etc., and methods of preventing damage to the highway or railroad. If required by the railroad or highway department, deposit with them a

certified check in the amount specified by them to cover the required repair work.

18) QUALITY SERVICE LOCATES (GPS - UTILITY DATA COLLECTION)

This work shall consist of the Contractor providing survey quality X, Y, Z locates of all sanitary sewer, storm sewer, water distribution, and traffic control structures. The data will be collected during construction, onsite using a hand held GPS, in Hennepin County Coordinate System. The required accuracy for the data collected shall be 0.33 foot tolerance. The intent being that the locations will be inserted into the City of Maple Grove geographic information system for asset management and ease of locating.

The survey shots must be taken at the following locations and submitted using the approved naming conventions as outlined in the tables below:

Sanitary Sewer

CODE	DESCRIPTION
SCO	Sanitary cleanout
SGV	Sanitary gate valve
SMH	Sanitary manhole (Indicate if forcemain outlet)
SAIRMH	Sanitary air release manhole
SBND	Sanitary bend
SPLUG	Sanitary plug/cap
SSL	Sanitary sleeve
SLS	Sanitary lift station wet well
SLSV	Sanitary lift station valve pit
SMS	Sanitary metering station
SFBND	Sanitary forcemain bend
SFM	Sanitary forcemain (point on main every 40')
SABAND	Sanitary end of abandoned pipe
SWYE	Sanitary service wye

Storm Sewer

CODE	DESCRIPTION
STCO	Storm cleanout
STCV	Storm control valve
STMH	Storm manhole (Indicate if sump or forcemain outlet)

STCBMH	Storm catch basin manhole (Indicate if sump or forcemain outlet)
STCB	Storm catch basin (Indicate if sump or forcemain outlet)
STBH	Storm bee hive (Indicate if sump or forcemain outlet)
STIN	Storm inlet - flared end section
STOUT	Storm outlet - flared end section
STOCS	Storm outlet control structure
STSPC	Storm Sewer Structure Special (Specify in notes: baffle, weir, etc.)
STBND	Storm bend
STPLUG	Storm plug/cap
STLS	Storm lift station wet well
STLSV	Storm lift station valve pit
STFBND	Storm forcemain bend
STFM	Storm forcemain (point on main every 40')
STDT	Storm drain tile structure
STSP	Storm service plug
STWYE	Storm service wye
STABAND	Storm end of abandoned pipe

Water

CODE	DESCRIPTION
WPIV	Water post indicator valve
WBVC	Water butterfly valve- center of valve
WBVN	Water butterfly valve operating nut
WGV	Water gate valve
WHGV	Water hydrant gate valve
WHYD	Water hydrant top nut
WAIRMH	Water air release manhole
WMMH	Water meter manhole
WMH	Water other manhole (Indicate manhole use in notes)
WBND	Water bend (Including changes in direction for WM services)
WCROS	Water cross
WIC	Water interconnect
WPLUG	Water plug/cap
WRED	Water reducer
WSL	Water sleeve
WTEE	Water tee
WCORP	Water service corporation stop

WCURB	Water service curb stop
WABAND	Water end of abandoned pipe

Electrical and Other

CODE	DESCRIPTION
ELHH	Electric street light hand hold
EL	Electric street light support
ESHH	Electric traffic signal hand hold
ES	Electric traffic signal support
SIGN	Sign (Specify MUTCD code in notes)
CONDUIT	Conduit crossings for private utilities (both sides)

Horizontal and vertical control will be provided by the Engineer.

The Contractor shall provide a Microsoft Excel spreadsheet, .CSV file, or shape file with the information in the following column headings:

- i. Description
- ii. Y Coordinate
- iii. X Coordinate
- iv. Z Elevation
- v. Code for Item Located using the standard naming conventions above
- vi. Date of each shot
- vii. Notes

The contractor will only be required to take shots of any utility they installed or altered in any way. The rest of the shots will be done by the Owner.

Quality Service Locates shall be submitted to the Owner or Owner's representative a minimum one week prior to curb placement. Any additional Quality Service data required after that point shall be submitted separately. If overall project is scheduled to be phased, Quality Service Locates shall be submitted with each phase. The City retains the right to prevent curb placement to occur until Quality Service Locates are submitted.

It is expected that the Owner will spend up to 4 hours analyzing, verifying accuracy, and entering submitted information from the Contractor's

Quality Service locates into the City's GIS system. Payment for QSL shall be reduced by \$100.00 for each additional hour spent translating, or modifying submitted data for City use.
See below example of what format shall be submitted to the City.

PROJECT NAME						
PROJECT NUMBER						
DESCRIPTION	Y_VALUE	X_VALUE	Z_VALUE	CODE	GPS DATE	NOTES AS NEEDED
CB111	211558.0	467319.3	960.87	STCB	8/19/2014 13:53	sump
LIGHT POLE	211553.4	467323.7	961.25	EL	8/20/2014 13:53	
EXIST MH	211573.3	467335.0	960.43	SMH	8/21/2014 13:53	
STORM STRUCTURE	211587.7	467326.8	960.28	STSPC	8/22/2014 13:53	weir structure
GATE VALVE	211555.8	467242.6	964.26	WGV	8/25/2014 13:53	
HYDRANT	211553.5	467242.6	967.39	WHYD	8/26/2014 13:53	

19) RESTORATION OF GROUND AND ROAD SURFACES

Wherever the surface of the ground is removed or disturbed by the Contractor's operation the Contractor shall restore, replace or rebuild all such surfaces to a condition at least equal to its condition at time of removal. Maintenance of streets and traffic shall comply with Article 5 "Maintenance of Traffic", Maple Grove Specifications for Plant Mixed Bituminous Construction and with Article 17 hereinbefore.

20) ADA REQUIREMENTS

All pedestrian facilities and shared trails on this Project must be constructed according to Public Rights-of-Way Accessibility Guidelines (PROWAG).

Refer to Maple Grove Standard Plates CONC-3 through CONC-7 for further guidance on Pedestrian Curb Ramp construction.

The Contractor must designate a responsible person familiar with PROWAG to assess proposed sidewalk layouts at each site before work begins. This

person must be on site at all times that any work concerning pedestrian facilities is being performed.

Pedestrian Access Routes must be constructed to meet the following criteria:

- a maximum 2% cross slope
- a maximum 8.3% longitudinal slope, not to exceed 15 feet
- landings must be a minimum 4 feet by 4 feet with a maximum 2% slope in all directions.

If the Contractor constructs any pedestrian or shared trail facilities that do not comply with PROWAG, the Contractor will be responsible for correcting the deficient facilities with no compensation paid for the corrective work. To ensure that the facilities are constructed to be compliant with PROWAG, the Contractor shall follow the following three steps:

- a. The Contractor shall identify the removal limits for the sidewalk and curb and gutter. If the Contractor determines the removal limits are not adequate to meet PROWAG, the Contractor shall stop work immediately and consult the Engineer to determine the best solution. Once the Engineer and the Contractor reach agreement on what is to be done, the Contractor may proceed to the next step.
- b. The Contractor shall transition from the in place curb type to the new curb and gutter. Prior to beginning the installation of any curb and gutter, the Contractor must verify the curb cuts:
 - will be located within the crosswalk;
 - will be aligned with the opposing pedestrian ramp across the roadway; and
 - will allow for required slopes to be met.

If all of these conditions cannot be met, the Contractor shall consult with the Engineer to determine the best solution. When the Contractor proceeds with the curb and gutter placement, they will be acknowledging that PROWAG can and will be met. The Contractor may then proceed to the next step.

- c. The Contractor shall verify that the required slopes and landing can be achieved after setting sidewalk forms, and prior to pouring the concrete walks. Once the Contractor has verified the required

landing area, longitudinal slopes, and cross slopes can be achieved, the Contractor can complete the concrete sidewalk pour.

The Contractor is reminded that all joints and edges of the walk shall be rounded with a 1/4 inch radius edging tool, contraction joints shall extend to at least 30 percent of walk thickness and shall be approximately 1/8 inch wide as per Mn/DOT 2521. The Contractor shall also have the option of providing saw cuts to construct the sidewalk joints. This work shall be considered incidental and no extra compensation paid.

21) CONCRETE CURBS, DRIVEWAYS, AND SIDEWALKS

Section 2531 is hereby supplemented by the following:

The Contractor shall have the option to furnish high early strength concrete where necessary to accommodate traffic, facilitate construction or comply with traffic provisions or at other locations as the Engineer may deem necessary. If requested by the Contractor, furnishing of high early strength concrete shall be considered incidental with no additional compensation made therefor. If requested by the Owner, furnishing of high early strength concrete shall be compensated via change order with written approval by the Engineer prior to commencing work.

Expansion joints shall be required as detailed in Specification 2531.3C, at all catch basin castings, and unless otherwise specified in the plans or detail plates, at a maximum of 60-meter (200 feet) spacing.

Catch basin inlet castings shall be depressed 2 inches below the design gutter flow line elevation. Castings constructed in violation of this specification shall be corrected with no additional compensation made.

Construction of "beavertail" end transitions, drop sections at driveways and other similar minor variations from the standard curb and gutter section shall be considered incidental with no additional compensation made therefor. Payment for areas of curb and gutter so modified shall be at the Contract unit price for the unmodified curb and gutter item.

Any existing curb and gutter damaged due to the negligent operation of the Contractor shall be replaced at the Contractor's expense. Any existing curb and gutter requiring removal to facilitate construction operations shall

first be authorized by the Engineer and shall be paid for under the appropriate contract items as indicated on the proposal.

a. CONCRETE CURING COMPOUND

Apply liquid curing compound in a fine spray to form a continuous, uniform film on the horizontal surface and vertical edges of pavement, curbs, and back of curbs immediately after surface moisture has disappeared, but no later than 30 minutes after finishing. With approval of the Engineer, the timing of cure application may be adjusted due to varying weather conditions and concrete mix properties to ensure acceptable macro texture is achieved and bleed has evaporated

Membrane curing compounds shall be clear TK2519 DCWB, AMS 3754 Clear or approved equal as directed by the Engineer. When connecting to existing concrete surfaces, Contractor shall use a curing compound that best matches existing coloration. Application rate shall be 150 square feet (SF) per gallon. Apply homogeneously to provide uniform solid white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper).

Curing shall be performed by applying the membrane curing compound or polyethylene to the exposed surface of the concrete immediately after the final finishing operation. When forms are removed in less than 72 hours after placing the concrete, curing compound shall be applied immediately or the trenches shall be backfilled immediately with suitable materials. In no case shall the forms be removed in less than 12 hours after placing the concrete.

The Contractor shall protect the concrete from damage caused by inclement weather, vandalism or freezing. After September 15, Contractor shall cure all concrete with polyethylene or thermal blankets for a period of 72 hours or as directed by the Engineer. Any polyethylene or thermal blankets required by the Engineer will be considered incidental to the contract.

Concrete treating oil meeting Minnesota Department of Transportation Specification 3755 shall be applied in two equal applications totaling 0.06 gallons per square yard on all concrete poured. No payment shall be made for treating oil but will be considered incidental to the price of the concrete.

b. PROTECTION AGAINST COLD WEATHER

If the National Weather Service forecast for the construction area predicts air temperatures of 36 degrees F or less within the upcoming 24 hours and the Contractor wishes to place concrete, a Cold Weather Protection Plan must be submitted and approved by the Engineer.

Cold Weather Protection Plan will be submitted in writing to the Engineer with a proposed time schedule and plans that provide provisions for adequately protecting the concrete during placement and curing. No concrete at risk of exposure to air temperatures less than 36 degrees F within 24 hours shall be placed until the Engineer approves the Contractor's Cold Weather Protection Plan.

22) WORKMANSHIP AND CLEANUP

Upon completion of the contract, the Contractor shall dismantle and remove all construction plant, equipment, appliances, barricades and surplus materials; shall clean all streets or other services used by the Contractor; and shall do such incidental work as may be necessary to leave the work or any premises occupied by the Contractor in a neat workable condition. This work shall be done with a minimum of inconvenience to the public or public travel.

When defective work on utilities; water main, storm and sanitary that is a danger to the public's well-being or health has been noticed, the Contractor has 4 hours to respond to the Engineer with detailed information on how and when they are going to fix the defective work. If the contractor does not repair the defective work within 24 hours of written or verbal notice, the City has the right to repair and bill the contractor for the work. If the City deems the defective work a public hazard, the City has the right to immediately repair the defective work and bill the contractor.

23) METHODS OF MEASUREMENT AND PAYMENT

a. IMPROVED PIPE FOUNDATION MATERIAL

Material used to assure firm foundation below the 6 inches of standard pipe bedding shall be paid for at the contract unit price per linear foot along the pipe in six (6) inch depth increments installed regardless of width. No foundation material will be paid for that is installed without the knowledge or consent of the Engineer nor will

payment be made for rock installed only for dewatering purposes. Payment shall include cost of excavation and placement.

b. ROCK EXCAVATION

Rock excavation shall be measured by volume in cubic yards and shall be measured from the top of the rock to a point below and on each side of the outside barrel of the pipe as specified and shall be paid for in accordance with MnDOT Specification 2451.

c. QUALITY SERVICE LOCATES

There will be no measurement for Quality Service Locates. Payment shall be on a lump sum basis, based on a percent complete of the project and shall include all labor and equipment associated with gathering and tabulating quality service locates for water main, sanitary sewer, and storm sewer required items provided that accuracy has been verified by the Maple Grove Engineering Department.

[END OF GENERAL SPECIFICATIONS]

EXHIBIT A

**City of Maple Grove
Record Drawing Requirements**

1. All plan sheets must be provided in Record Drawing format. All data shall be placed on a "Record Drawing" layer in base files. Record Drawings should include the following information:
 - a. General Contractor, General Contractor's mailing address, a list of subcontractors, the year constructed/completed, and name of inspector (All sheets)
 - b. Record Drawing Note: "This drawing is our record knowledge of the project as constructed. Information is furnished without warranty as to accuracy. Users should field verify locations and elevations prior to use." (All sheets)
 - c. Complete revision block (All sheets)
 - d. Strikeout existing information and add field verified data such as rim and invert elevations.
 - e. Stationing of cleanouts, wyes, services, etc as detailed in line items.
2. Record Drawing data collection must be completed in Hennepin County coordinate system.
3. Shoot all X,Y,Z coordinates on all sanitary/storm structures, inverts, sump drain services, clean out locations, gate valve boxes, curb stops, hydrants, lighting units and hand holes, etc., that are found within the project limits once the wear course has been placed.
4. All X,Y, Z coordinates must be within 0.05 foot tolerance for horizontal and vertical measurements.
5. All distances, elevations, and ties are based on filed measurements or verified shots taken after construction.
6. Survey shots must be taken at the following locations:
 - a. Center of all castings
 - b. Center of each gate valve box
 - c. Center of curb stops
 - d. Top nut on hydrant
 - e. Center of isolation gate valve box at hydrant
 - f. Center of cleanouts on sump drain and sanitary sewer

- g. Center of sump drain service tub
 - h. Center of hand hole
 - i. Adjacent to lighting unit
 - j. Center of Lift Station
7. Exhibit B of the General Specification is an approved list of the point code naming conventions used by the City. These point code naming conventions must be used for all record information gathered upon completion of the project.
 8. All gate valves found within the project limits shall be tied off with a minimum of 2 ties. These ties will be recorded on gate valve tie sheets (provided by the City of Maple Grove). Ties are to be recorded to the nearest **0.1'** and are to be taken in the following order:
 - a. Tie to top of nut on hydrants
 - b. Center of sanitary sewer or storm sewer manhole castings
 - c. Center at back of curb on catch basin inlets
 - d. Back of curb
 - e. NOTE: Do not tie gate valves to other gate valves, light poles, or house corners. Ties are not to exceed 200'. Isolation gate valves in front of hydrants are exempt of this requirement.
 9. A bench loop is required to provide benchmark elevations for all fire hydrants within the project limits. The level of precision shall be a minimum of Second Order, Class 1. GPS or Robot elevations for this task are not acceptable. Work must be done using a level and traverse the jobsite recording TNH's accordingly. These notes are to be given to the Maple Grove Survey Department for their record use.
 10. Wye service locations for **SANITARY SEWER** are stationed off the downstream **SANITARY** manhole. Stations shall be recorded to the nearest foot. All X,Y, Z coordinates are required for all new sanitary mainline service connections. (no ties required – stationing only) (example: **SO+00**)
 11. Wye service locations for **SUMP DRAIN** service and **SUMP DRAIN CLEANOUT** locations are stationed off the downstream **SANITARY** manhole. Stations shall be recorded to the nearest foot. (no ties required – stationing only) (example: **SERVO+00** or **COO+00**)
 12. Water service **CORPORATIONS** and **CURB BOX STOP** locations are stationed off the downstream **SANITARY** manhole. Stations shall be recorded to the nearest foot. Corporation stationed only need to be recorded if large deviations in

alignment exceeding 5 feet or are not perpendicular to the water main. (ties are required for curb stops) (example: **W0+00** or **CORP0+00**)

13. All X,Y,Z coordinates for buried utility items such as **BENDS, REDUCERS, SLEEVES, TEES, CROSSES,** and **PLUGS** are required and stationed off the downstream **SANITARY** manhole. Stations shall be recorded to the nearest foot. (no ties required – stationing only) (example: **BEND0+00, REDUCER0+00, SLEEVE0+00, TEE0+00, CROSS0+00, PLUG0+00**)
14. Update record plan sheets to reflect updated elevations, inverts, structure builds and locations. Strike out proposed plan information and add the new information to reflect field changes in bold text.
15. Submit one 11x17 set of preliminary record plans and CAD drawing to the City of Maple Grove for review, and comments.
16. Upon approval of the preliminary record plans and CAD drawing, the City requires the following information on CD/DVD:
 - a. 1 hard copy set of 11 x 17 record plans
 - b. 1 hard copy Mylar 22 x 34 record plans
 - c. 1 complete record set of 11 x 17 record plan sheets in PDF format
 - d. Individual record plan sheets using the following naming convention example for a contract. (project number/page number- see below)

Example: For Highlands Reconstruction Project 2008-08 pages would look like this:

20080801 = page 1 of plan set
20080802 = page 2 of plan set
20080803 = page 3 of plan set

- e. Electronic AutoCAD drawing containing field gathered record data
- f. Spreadsheet file of field gathered data and coordinates in Microsoft Excel format.

Please note the following information: At this time, the City of maple Grove does not require consultants to redraw the line work in the base files as long as record X,Y,Z coordinates have been shot to reflect exact field locations of structures onsite **AND** consultants have used the appropriate naming conventions of the field gathered points. The City of Maple Grove does require new line work if major deviations from the original construction plans are added or found.

Sanitary Sewer Manholes

Request Facility ID maps from City Staff. Use maps to gather new record data.

Update and redline existing "Sanitary Sewer Manhole Inspection Reports" with applicable information.

Shoot all X, Y, Z coordinates for each newly constructed or adjusted manholes and castings on site. All coordinates must be within 0.05 foot tolerance for horizontal and vertical measurements.

All shots must be taken in the center of the casting lid at finished grade. Comments required for any information not addressed in the report.

Storm Sewer: Catch Basins, Manholes, Inlets, & Outlets

Request Facility ID maps from City Staff. Use maps to gather new record data.

Update and redline existing "Storm Sewer Manhole Inspection Reports" with applicable information.

Shoot all X, Y, Z coordinates for each newly constructed, or adjusted, catch basin, or manhole and casting on site. All coordinates must be within 0.05 foot tolerance for horizontal and vertical measurements.

All shots must be taken in the center of the casting on the structure at finished grade. In the case of inlets and outlets - a shot will be taken at the end of the apron structure. In the absence of an apron, an invert will be taken at the end of pipe.

Comments required for any information not addressed in the report.

Watermain: Gate Valves & Hydrants

Request Facility ID maps from City Staff. Use maps to gather new record data.

Shoot all X, Y, Z coordinates for each new hydrant and gate valve on site. All coordinates must be within 0.5 foot tolerance for horizontal and vertical measurements.

All shots must be taken on the top nut of the new fire hydrant, or in the center of the gate valve box cover.

All gate valves, including isolation gate valves at hydrants will require X,Y,Z coordinates. Gate valve manholes will also require an inspection and a shot on the center of the casting lid at finished grade.

Roadway Lighting

Shoot all X, Y, Z coordinates for each new lighting standard and hand hole on site.

All coordinates must be within 0.05 foot tolerance for horizontal and vertical measurements.

All shots must be taken adjacent to the new lighting unit, or at the center of a hand hole cover at finished grade.

Signs

Shoot all X, Y, Z coordinates for each new and existing sign on site.

All coordinates must be within 0.05 foot tolerance for horizontal and vertical measurements. All shots must be taken adjacent to the sign.

EXHIBIT B

City Approved Naming Codes

This table represents the current master list of City approved point code names to be used in conjunction with the Record Plans and/or Quality Service Locates.

CODE	DESCRIPTION
SCO	Sanitary cleanout
SGV	Sanitary gate valve
SMH	Sanitary manhole (indicate if forcemain outlet)
SAIRMH	Sanitary air release manhole
SBND	Sanitary bend
SPLUG	Sanitary plug/cap
SSL	Sanitary sleeve
SLS	Sanitary lift station wet well
SLSV	Sanitary lift station valve pit
SMS	Sanitary metering station
SFBND	Sanitary forcemain bend
SFM	Sanitary forcemain (point on main every 40')
SABAND	Sanitary end of abandoned pipe
SWYE	Sanitary service wye
STCO	Storm cleanout
STCV	Storm control valve
STMH	Storm manhole (Indicate if sump or forcemain outlet)
STCBMH	Storm catch basin manhole (Indicate if sump or forcemain outlet)
STCB	Storm catch basin (Indicate if sump or forcemain outlet)
STBH	Storm bee hive (Indicate if sump or forcemain outlet)
STIN	Storm inlet - flared end section
STOUT	Storm outlet - flared end section
STOCS	Storm outlet control structure
STSPC	Storm Sewer Structure Special (Specify in notes: baffle, weir, etc.)
STBND	Storm bend
STPLUG	Storm plug/cap
STLS	Storm lift station wet well
STLSV	Storm lift station valve pit
STFBND	Storm forcemain bend
STFM	Storm forcemain (point on main every 40')
STDT	Storm drain tile structure

STSP	Storm service plug
STWYE	Storm service wye
STABAND	Storm end of abandoned pipe
WPIV	Water post indicator valve
WBVC	Water butterfly valve- center of valve
WBVN	Water butterfly valve operating nut
WGV	Water gate valve
WHGV	Water hydrant gate valve
WHYD	Water hydrant top nut
WAIRMH	Water air release manhole
WMMH	Water meter manhole
WMH	Water other manhole (Indicate manhole use in notes)
WBND	Water bend
WCROS	Water cross
WIC	Water interconnect
WPLUG	Water plug/cap
WRED	Water reducer
WSL	Water sleeve
WTEE	Water tee
WCORP	Water service corporation stop
WCURB	Water service curb stop
WABAND	Water end of abandoned pipe
ELHH	Electric street light hand hold
EL	Electric street light support
ESHH	Electric traffic signal hand hold
ES	Electric traffic signal support
SIGN	Sign (Specify MUTCD code in notes)