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August 31, 2023

To: Holders of the *2021 City of Lebanon Supplemental Standard Specifications and Drawings*

Re: August 2023 Amendments to the *Supplemental Standard Specifications and Drawings*

Dear Specifications Holders,

Since the 2021 Specifications and Drawings were issued, the City has been correcting known errors, updating standards, and clarifying existing language to improve these documents and bring them up to date. Periodically, we will issue addendums with these changes.

The revised Specifications and Drawings have been uploaded to the City website and go into effect for all projects let after today's date.

The affected pages and drawings have been attached to this letter for your convenience. I encourage you to take a few moments to familiarize yourself with the updates and replace the corresponding pages in the original 2021 documents.

If you have questions or concerns, please feel free to contact us.

Thanks,

Mike Trippett, PE  
Asst. City Engineer

mjt

enc: Modified Specification sheets and Drawings



# 2021 CITY OF LEBANON SUPPLEMENTAL STANDARD SPECIFICATIONS

MODIFYING THE  
2021 Oregon Standard Specifications  
for Construction

(Amended August 2023)

Approved By:



RENEWS: June 30, 2024

City Engineer  
City of Lebanon

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**TABLE OF CONTENTS**

**Preface** ..... xi

**List and Descriptions of August 2023 Edits** .....xiii

**PART 00100 - GENERAL CONDITIONS**

**Section 00110 - Organization, Conventions, Abbreviations and Definitions**

00110.10 Abbreviations ..... 1

00110.20 Definitions ..... 1

**Section 00120 - Bidding Requirements and Procedures**

00120.00 Prequalification of Bidders .....2

00120.01 General Bidding Requirements .....2

00120.05 Requests for Plans, Special Provisions, and Bid Booklets.....2

00120.16 Material, Equipment, and Method Substitutions.....3

00120.30 Changes to Plans, Specifications, or Quantities Before Opening of Bids .....3

00120.40 Preparation of Bids.....3

00120.45 Submittal of Bids .....5

00120.50 Submitting Bids for More than One Contract .....5

00120.60 Revision or Withdrawal of Bids .....5

00120.65 Opening and Comparing Bids .....6

00120.70 Rejection of Non-Responsive Bids.....6

00120.95 Opportunity for Cooperative Arrangement .....6

**Section 00130 - Award and Execution of Contract**

00130.10 Award of Contract .....7

00130.15 Right to Protest Award .....8

00130.50 Execution of Contract and Bonds.....8

00130.90 Notice to Proceed.....8

**Section 00140 - Scope of Work**

00140.90 Final Trimming and Cleanup .....9

**Section 00150 - Control of Work**

00150.01 Project Manager’s Authorities and Duties ..... 10

00150.05 Cooperative Arrangements ..... 10

00150.10 Coordination of Contract Documents ..... 10

00150.15 Construction Stakes, Lines, and Grades..... 10

00150.35 Plans, 3D Engineered Models, Working Drawings, and 3D Construction Models ..... 11

00150.36 Project Record Drawings (“As-Builts”) ..... 12

00150.37 Equipment Lists and Other Submittals ..... 12

00150.60 Construction Equipment Restrictions ..... 13

00150.70 Detrimental Operations ..... 13

00150.75 Protection and Maintenance of Work During Construction ..... 13

00150.90 Final Inspection ..... 13

00150.95 Final Acceptance..... 13  
 00150.96 Maintenance Warranties and Guaranties..... 13

**Section 00160 - Source of Materials**

00160.10 Ordering, Producing, and Furnishing Materials..... 15  
 00160.50 Agency-Controlled Land; Limitations and Requirements ..... 15  
 00160.60 Contractor-Furnished Materials and Sources ..... 15

**Section 00165 - Quality of Materials**

00165.03 Testing by Agency..... 18  
 00165.04 Costs of Testing ..... 18  
 00165.05 Sampling and Testing ..... 18  
 00165.06 Costs of Sampling and Testing ..... 18  
 00165.35 Nonfield-Tested Materials ..... 19  
 00165.40 Statistical Analysis ..... 19  
 00165.50 Statistical Acceptance Sampling and Testing ..... 19  
 00165.70 Use of Materials without Acceptable Materials Conformance Documents..... 19

**Section 00170 - Legal Relations and Responsibilities**

00170.02 Permits, Licenses, and Taxes .....20  
 00170.03 Furnishing Right-of-Way and Permits .....20  
 00170.08 Electronic Document Management .....20  
 00170.60 Safety, Health, and Sanitation Provisions .....20  
 00170.70 Insurance .....21  
 00170.80 Responsibility for Damage to Work .....22  
 00170.82 Responsibility for Damage to Property and Facilities .....22  
 00170.89 Protection of Utility, Fire-Control, and Railroad Property and Services; Repair;  
 Roadway Restoration.....23  
 00170.94 Use of Explosives.....24

**Section 00180 - Prosecution and Progress**

00180.40 Limitation of Operations .....25  
 00180.50 Contract Time to Complete Work .....25  
 00180.80 Adjustment of Contract Time.....25

**Section 00195 - Payment**

00195.50 Progress Payments and Retained Amounts .....26  
 00195.90 Final Payment .....26

**PART 00200 - TEMPORARY FEATURES AND APPURTENANCES**

**Section 00210 - Mobilization**

00210.40 Mobilization .....27  
 00210.90 Payment .....27

**Section 00220 - Accommodations for Public Traffic**

00220.01 General .....28

00220.02 Public Safety and Mobility .....28

00220.03 Work Zone Notifications .....28

00220.40 General Requirements .....29

**Section 00221 - Common Provisions for Work Zone Traffic Control**

00221.02 General Requirements .....31

00221.04 Traffic Control Outside Project Site .....31

00221.06 Traffic Control Plan .....31

**Section 00222 - Temporary Traffic Control Signs**

00222.40 Temporary Signs .....32

**Section 00224 - Temporary Traffic Channelizing Devices**

00224.46 Pavement Edge Delineation .....33

**Section 00225 - Temporary Pavement Marking**

00225.40 Temporary Pavement Markers .....34

**Section 00227 - Temporary Traffic Signals and Illumination**

00227.12 Temporary Traffic Signals .....35

**Section 00280 - Sediment Control Materials**

00280.00 Scope .....36

00280.16 Sediment Control Materials .....36

00280.46 Sediment Controls .....36

**Section 00290 - Environmental Protection**

00290.20 Waste, Hazardous Waste, and Hazardous Substances .....37

00290.32 Noise Control .....37

**PART 00300 - ROADWORK**

**Section 00320 - Clearing and Grubbing**

00320.02 Definitions .....39

00320.40 Clearing Operations .....39

00320.41 Grubbing Operations .....39

**Section 00330 - Earthwork**

00330.41 Excavations .....40

00330.42 Embankment, Fills, and Backfills .....40

00330.43 Earthwork Compaction Requirements .....41

**Section 00335 - Blasting Methods and Protection of Excavation Backslopes** .....42

**Section 00340 - Watering**

00340.10 Water.....43  
 00340.80 Measurement .....43

**Section 00370 - Finishing Roadbeds**

00370.40 Within Roadbed Cross Section .....44

**PART 00400 - DRAINAGE AND SEWERS**

**Section 00405 - Trench Excavation, Bedding, and Backfill**

00405.02 Definitions .....45  
 00405.11 Trench Foundation .....45  
 00405.12 Bedding .....45  
 00405.41 Trench Excavation .....45  
 00405.43 Dewatering .....46  
 00405.46 Backfilling .....47  
 00405.48 Surface Removal.....47  
 00405.90 Payment .....47

**Section 00406 - Tunneling, Boring and Jacking**

00406.43 Boring and Jacking.....48  
 00406.47 Cradles for Cased or Tunneled Pipe .....48

**Section 00411 - Pipe Bursting and Slip Lining**

00411.00 Scope .....49  
 00411.01 Submittals .....49  
 00411.10 Pipe .....50  
 00411.11 Service Connections .....51  
 00411.15 Shipping, Handling, and Storage .....51  
 00411.20 Pipe Bursting, Fusion, and Pipe Assembly Equipment .....52  
 00411.30 Personnel Qualifications .....52  
 00411.40 Pipe Joining.....52  
 00411.41 Receiving and Insertion Pits.....53  
 00411.42 Installation .....54  
 00411.43 Connections .....56  
 00411.70 Manhole Base Reconstruction .....57  
 00411.71 Testing .....57  
 00411.80 Measurement .....57  
 00411.90 Payment .....57  
 00411.95 Statement of Experience Forms.....57

**Section 00430 - Subsurface Drains**

00430.10 Materials.....61

**Section 00431 - Stormwater Quality Facilities**

00431.00 Scope .....62  
 00431.01 Definitions and Descriptive Terms .....62

00431.10 Materials..... 62  
 00431.40 General ..... 62  
 00431.41 Laying Swale Liner..... 62  
 00431.43 Laying Pipe ..... 64  
 00431.44 Tracer Wire ..... 65  
 00431.45 Placing Rock ..... 65  
 00431.46 Placing Treatment Media ..... 65  
 00431.56 Cleanup During Construction ..... 65  
 00431.80 Measurement ..... 65  
 00431.90 Payment..... 65

**Section 00440 - Commercial Grade Concrete**

00440.14 Acceptance Sampling and Testing..... 67

**Section 00445 - Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe**

00445.02 Contractor’s Options ..... 68  
 00445.11 Materials..... 68  
 00445.40 General ..... 68  
 00445.48 Tracer Wire ..... 68  
 00445.72 Pipe Testing ..... 69  
 00445.73 Deflection Testing for Flexible Pipe..... 69  
 00445.74 Video Inspection of Sanitary and Storm Sewers ..... 69

**Section 00470 - Manholes, Catch Basins, and Inlets**

00470.10 Materials..... 70  
 00470.41 Precast Concrete Manholes ..... 70  
 00470.45 Steps ..... 70  
 00470.71 Sanitary Manhole Acceptance Testing..... 70  
 00470.90 Payment..... 70

**Section 00475 - Restoration and Sealing of Concrete and Brick Structures**

00475.00 Scope ..... 71  
 00475.01 Submittals ..... 71  
 00475.10 Materials..... 72  
 00475.11 Product Delivery, Handling, and Storage ..... 72  
 00475.20 Equipment ..... 72  
 00475.30 Personnel Qualifications ..... 72  
 00475.40 General ..... 72  
 00475.41 Pre-Application Coordination Meeting..... 73  
 00475.43 Environmental Conditions ..... 73  
 00475.45 Preliminary Work..... 73  
 00475.47 Installation of Composite Liner ..... 74  
 00475.70 General ..... 74  
 00475.71 Post-Installation Documentation ..... 74  
 00475.72 Material Sampling and Testing..... 75  
 00475.73 Repairs..... 75



00475.75	Contractor Warranty.....	75
00475.80	Measurement .....	76
00475.90	Payment .....	76
<b>Section 00490 - Work on Existing Sewers and Structures</b>		
00490.40	General .....	77
00490.42	Service Line Connections to Existing Sanitary Sewers.....	77
00490.43	Abandoning Pipe In Place .....	77
00490.44	Filling Abandoned Pipes, Manholes, and Catch Basins.....	77
00490.46	Adjusting Manholes.....	78
00490.90	Payment.....	78
<b>Section 00495 - Trench Resurfacing</b>		
00495.40	General .....	79
<b>PART 00600 - BASES</b>		
<b>Section 00620 - Cold Plane Pavement Removal</b>		
00620.40	Pavement Removal.....	81
<b>Section 00641 - Aggregate Subbase, Base and Shoulders</b>		
00641.10	Materials.....	82
<b>PART 00700 - WEARING SURFACES</b>		
<b>Section 00730 - Emulsified Asphalt Tack Coat</b>		
00730.90	Payment.....	83
<b>Section 00744 - Asphalt Concrete Pavement</b>		
00744.00	Scope .....	84
00744.11	Asphalt Cement, Additives, and Aggregate Treatment .....	84
00744.40.5	Preparation of Underlying Surfaces .....	84
00744.43	Hauling, Depositing, and Placing .....	85
00744.44	Longitudinal Joints .....	85
00744.45	Transverse Joints.....	86
00744.49	Compaction .....	86
00744.60	Correction of Defects .....	86
00744.75	Correction of Pavement Roughness .....	87
00744.80	Measurement .....	87
00744.83	Other Items .....	87
00744.90	Payment.....	87
00744.95	Price Adjustments .....	88
<b>Section 00745 - Asphalt Concrete Pavement - Statistical Acceptance</b>		
00745.00	Scope .....	90
00745.11	Asphalt Cement, Additives, and Aggregate Treatment .....	90
00745.42	Preparation of Underlying Surfaces .....	90
00745.44	Asphalt Concrete Pavement Storage.....	90

00745.46 Hauling, Depositing, and Placing ..... 90  
 00745.47 Longitudinal Joints ..... 91  
 00745.48 Transverse Joints ..... 91  
 00745.49 Compaction ..... 92  
 00745.50 Temporary Surfacing Course ..... 93  
 00745.60 Correction of Defects ..... 93  
 00745.75 Correction of Pavement Roughness ..... 94  
 00745.80 Measurement ..... 94  
 00745.83 Other Items ..... 94  
 00745.90 Payment ..... 94  
 00745.95 Price Adjustments ..... 95

**Section 00749 - Miscellaneous Asphalt Concrete Structures**

00749.13 Asphalt Concrete ..... 97  
 00749.42 Foundations ..... 97

**Section 00755 - Continuously Reinforced Concrete Pavement**

00755.04 Aggregate Production and Prepaving Conference ..... 98  
 00755.41 Preparation of Base ..... 98  
 00755.47 Test Strip ..... 98

**Section 00756 - Plain Concrete Pavement**

00756.04 Aggregate Production and Prepaving Conference ..... 99  
 00756.41 Preparation of Base ..... 99  
 00756.47 Test Strip ..... 99

**PART 00800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES**

**Section 00815 - Bollards**

00815.11 Posts and Sleeves ..... 101  
 00815.14 PVC Pipe ..... 101

**Section 00850 - Common Provisions for Pavement Markings**

00850.46 Placement Tolerance ..... 102

**Section 00867 - Transverse Pavement Markings - Legends and Bars**

00867.45 Installation ..... 103

**PART 00900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS**

**Section 00930 - Metal Sign Supports**

00930.02 Working Drawings ..... 105  
 00930.10 Materials ..... 105  
 00930.90 Payment ..... 106

**Section 00940 - Signs**

00940.43 Plywood Sign Fabrication..... 107

**Section 00962 - Metal Illumination and Traffic Signal Supports**

00962.10 Materials..... 108

**PART 01000 - RIGHT-OF-WAY DEVELOPMENT AND CONTROL**

**Section 01040 - Planting**

01040.14 Topsoil..... 109  
 01040.24 Treatment Media ..... 109  
 01040.57 Placing Treatment Media ..... 110  
 01040.80 Measurement ..... 111

**PART 01100 - WATER SUPPLY SYSTEMS**

**Section 01140 - Potable Water Pipe and Fittings**

01140.40 Trench Work..... 113  
 01140.44 Thrust Restraint..... 113  
 01140.45 Marking Tape and Wire ..... 114  
 01140.47 Connections to Existing Mains ..... 114  
 01140.51 Hydrostatic Testing ..... 115  
 01140.80 Measurement ..... 115  
 01140.90 Payment..... 115

**Section 01160 - Hydrants and Appurtenances**

01160.49 Salvage of Existing Hydrants ..... 117  
 01160.90 Payment..... 117

**Section 01170 - Potable Water Service Connections, 2 Inch and Smaller**

01170.10 Materials..... 118  
 01170.40 General ..... 118  
 01170.41 Reconnecting Existing Services ..... 118  
 01170.43 Meter Installation ..... 118  
 01170.90 Payment..... 118

**PART 02000 - MATERIALS**

**Section 02070 - Bonding Agents**

02070.30 Two-Part Epoxy Surfacer ..... 121  
 02070.40 Epoxy Coating..... 121  
 02070.50 Flexible Joint Seal ..... 121

**Section 02080 - Grout**

02080.60 Hydraulic Cement Mortar ..... 122  
 02080.70 Restoration Mortar ..... 122

**Section 02325 - High Density Polyethylene Liners**

02325.00	Scope .....	123
02325.01	Definitions .....	123
02325.20	HDPE Property Values.....	123

**Section 02415 - Plastic Pipe**

02415.10	Corrugated Polyethylene Pipe .....	124
02415.20	Solid-Wall Polyethylene Pipe .....	124
02415.50	Polyvinyl Chloride Pipe .....	124

**Section 02470 - Potable Water Pipe Materials**

02470.20	Ductile Iron Pipe.....	125
----------	------------------------	-----

**Section 02475 - Potable Water Fitting Materials**

02475.10	General .....	126
02475.20	Ductile Iron Pipe Fittings .....	126
02475.50	Restrained Joints .....	126

**Section 02480 - Potable Water Valve Materials**

02480.20	Gate Valves.....	127
02480.22	Butterfly Valves .....	127
02480.25	Valve Boxes .....	127

**Section 02485 - Hydrant and Appurtenance Materials**

02485.10	Hydrants.....	128
02485.20	End Connections.....	128
02485.30	Hydrant Dimensions and Nozzle Features.....	128

**Section 02490 - Potable Water Service Connection Materials, 2 inch and Smaller**

02490.10	General .....	129
02490.20	Saddles .....	129
02490.30	Service Connection Valves .....	129
02490.40	Service Pipe and Fittings .....	129
02490.65	Meter Assemblies.....	130
02490.70	Meter Boxes .....	130
02490.75	Meter Types .....	130

**Section 02650 - Gravel Ballast**

02650.10	Aggregate.....	131
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**PART 03000 - MATERIALS****Section 03020 - Erosion Materials**

03020.10	Commercially Manufactured Compost.....	133
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## PREFACE

The City of Lebanon (referred to in this document as ‘City’ or ‘Agency’) uses the Oregon ODOT/APWA *2021 Standard Specifications for Construction* as a base guideline for all civil construction done within City jurisdiction. This manual, the *City of Lebanon 2021 Supplemental Standard Specifications*, includes the *Agency Supplemental Standard Drawings* and is intended to supplement or modify the General Conditions and Technical Specifications provided in the ODOT Specifications.

This document is intended to be used in conjunction with the Agency’s *Engineering Design Standards for Public Improvements*, which governs design aspects of both private and public construction.

The order of precedence of Construction or Contract Documents, as defined in 00150.10 of this document, is as follows:

- Contract Change Orders;
- Special Provisions;
- Stamped Agency-prepared drawings specifically applicable to the Project and bearing the Project title;
- Reviewed and accepted, stamped Working Drawings;
- 3D Engineered Models and supplemental Agency-prepared line, grade, and Cross Section data applicable to the Project;
- Agency Supplemental Standard Drawings;
- Standard Drawings;
- Approved unstamped Working Drawings and 3D Construction Models;
- Agency Supplemental Standard Specifications;
- Agency Engineering Design Standards for Public Improvements;
- Standard Specifications; and
- All other Contract Documents not listed above.

All Contractors performing work within City jurisdiction are responsible for obtaining and complying with all requirements in the documents listed above.

The ODOT/APWA *2021 Standard Specifications for Construction* are available for purchase or download at [https://www.oregon.gov/odot/Business/Pages/Standard\\_Specifications.aspx](https://www.oregon.gov/odot/Business/Pages/Standard_Specifications.aspx).

The *City of Lebanon 2021 Supplemental Standard Specifications*, *Supplemental Standard Drawings*, and associated *Engineering Design Standards for Public Improvements* are available for purchase from the Agency's Community Development Office or download from the City website at <https://www.ci.lebanon.or.us/es/page/construction-specifications>.

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**List and Descriptions of August 2023 Edits**

**Specifications**

Cover Page

Added the language '(Amended August 2023)' to the cover page and updated the City Engineer's stamp.

00170.03 Furnishing Right-of-Way and Permits ..... 20  
 Removed the deletion of this section (i.e., reinstated ODOT 00170.03).

00411.40 Pipe Joining..... 53  
 Rewrote the second to last sentence in the last paragraph to clarify the use of electrofusion couplers.

00411.42 Installation ..... 55  
 (c) Pipe Bursting - Added "and grade" to last sentence of fourth paragraph.

00411.43 Connections ..... 56  
 (b) Connection to Service Lines - Added the following:

- "or laterals" to first sentence of second and fourth paragraphs.
- "watertight" in second sentence of second paragraph to describe temporary flexible connections.
- "main" to describe HDPE pipe referenced in first sentence of fourth paragraph.
- language clarifying lateral connections and allowing hard couplers from HDPE to laterals to fourth sentence of fifth paragraph.
- Language clarifying the use of hard and shielded couplers from main to existing lateral connection.

language regarding connection to existing laterals; referred to ODOT 00490.42

00470.10 Materials..... 70  
 Added "Lining Materials" to this Subsection.

00470.41 Precast Concrete Manholes ..... 70  
 (b) Removed this Subsection referencing Mainstay® product and exterior hole sealing.

00470.45 Steps ..... 70  
 Removed language referring to Mainstay® and replaced with "approved non-shrink grout conforming to ODOT Subsection 2080.30".

00470.71 Sanitary Manhole Acceptance Testing..... 70  
 (c) Visual Inspection - Added this Subsection.

00470.90 Payment ..... 70  
 Added Pay Item (I) Interior Manhole Sealing/Lining per Square Foot.

02475.10 General ..... 126  
 Added "All brass valves and fittings shall be marked 'NL'." to this Subsection.



**Drawings**

Typical Utility Locations .....00300-02  
 Increased vertical separation between Zones 1 and 4 in the water/sewer separation detail to 1.5’ instead of 2” to meet OAR 333-061-0050.

24” Shallow Manhole Cast-In-Place.....00400-15  
 Deleted reference to external manhole sealing and added the following note:  
 “12. Following construction, modification, or repair, all sanitary sewer manholes shall be cleaned and lined with an approved epoxy corrosion barrier coating. See City Supplemental Specifications Section 00475.”

Standard Manhole Base Section (48”).....00400-16  
 Added the following note:  
 “13. Following construction, modification, or repair, all sanitary sewer manholes shall be cleaned and lined with an approved epoxy corrosion barrier coating. See City Supplemental Specifications Section 00475.”

Large Manhole Base Section (54” And Larger) .....00400-17  
 Added the following notes:  
 “12. All interior pick and step holes, section joints and large voids shall be sealed with non-shrink grout conforming to 02080.30, per 00470.42(b)(2).  
 13. Following installation and prior to being put into service, all sanitary manholes shall be cleaned and lined with an approved epoxy corrosion barrier coating. See City Supplemental Specifications Section 00475.”

Live Sewer Cast-In-Place Manhole Base .....00400-19  
 Added the following note:  
 “9. Following installation and prior to being put into service, all sanitary manholes shall be cleaned and lined with an approved epoxy corrosion barrier coating. See City Supplemental Specifications Section 00475.”

Manhole Risers & Tops.....00400-21  
 Deleted reference to external manhole sealing.

Flow Control Manhole .....00400-27  
 Redesigned this drawing.

Typical Curb & Gutter .....00700-03  
 Added a detail for a mountable curb & gutter section, modified the text for gutter cross slopes and added language to note 4 regarding placement of weepholes.

Bollards .....00800-01  
 Renamed this drawing “Bollards, Urban Installation”.

Bollards, Field Installation.....00800-02  
 Added this drawing.

Typical Striping .....00800-03  
Renumbered this drawing to 00800-03 and added language specifying yellow curbing requirements for mailbox installations.

Sign Mounting .....00900-01  
Added a note requiring private street signs to have a blue background with an additional sign mounted above all other signs, mounted above all other signs, and labeled "PRIVATE".

Combination Air-Release Valve Assy. (2" & Smaller) .....01100-07  
Added the sentence "All brass valves and fittings shall be of domestic origin and stamped 'NL'." to note 4.

Water Sampling Station .....01100-08  
Added the sentence "All brass valves and fittings shall be of domestic origin and stamped 'NL'." to note 2.

Fire Hydrant Assembly .....01100-12  
Changed "Hydra-Shield Storz pumper nozzle adapter" to "Hydra-Storz™ pumper nozzle adapter".

Standard Water Meter Assembly (5/8" x 3/4" to 2") .....01100-14  
Added the sentence "All brass valves and fittings shall be stamped 'NL'." to note 4.

Water Service Manifold .....01100-15  
Added the sentence "All brass valves and fittings shall be stamped 'NL'." to note 2.

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**00165.35 Nonfield-Tested Materials:**

**(d) Certificate of Origin of Steel Materials** - Delete the last paragraph in this Subsection and replace with the following:

Materials will be subject to acceptance testing in accordance with 00165.05 if the Engineer so elects. The Engineer may reject damaged or non-Specification Materials regardless of the Materials Conformance Documents furnished in Submittals.

**00165.40 Statistical Analysis** - Delete this Subsection.

**00165.50 Statistical Acceptance Sampling and Testing** - Delete this Subsection.

**00165.70 Use of Materials without Acceptable Materials Conformance Documents:**

**(a) General** - Delete this Subsection and replace with the following:

The Contractor shall not incorporate Materials into the Project prior to submittal and review of Materials Conformance Documentation in accordance with 00160.60(d). The Engineer may waive this requirement temporarily if Materials are necessary for immediate traffic safety.

**(c) Contractor's Request for Testing Assistance** - Delete this Subsection.

## Section 00170 - Legal Relations and Responsibilities

The Legal Relations and Responsibilities Section shall be administered in conformance with Section 00170 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

### Description

**00170.02 Permits, Licenses, and Taxes** - Delete this Subsection and replace with the following:

Except as specified in the Special Provisions, the Contractor shall do the following as required to accomplish the Work:

- Obtain all necessary permits and pay all applicable charges, including but not limited to the following:
  - All necessary Rights-of-Way;
  - Permits required for crossing or encroaching upon navigable streams;
  - Permits required for removing materials from or depositing materials in waterways;
  - Permits required for operating in privately owned or Agency-controlled sources of Materials or waste disposal areas;
  - System development fees charged by local units of government;
  - Building construction permits, to include specialty work such as heating, ventilation, air conditioning, or electrical; and
  - Cost of referencing and replacing endangered survey monuments;
- Pay all applicable charges, fees, and taxes;
- Give all notices required by applicable Laws, or under the terms of the Contract;
- Comply with ORS 274.530 relating to lease of stream beds by Oregon Division of State Lands;
- License, in the State of Oregon, all vehicles subject to licensing;
- Comply with ORS 477.625 and ORS 527.670 relating to clearing and fire hazards on forest lands;
- Comply with all orders and permits issued by a governmental authority, whether local, State, or federal; and
- Pursuant to ORS 468A.720, obtain a valid DEQ asbestos abatement license for any Project Work involving asbestos abatement.

**00170.08 Electronic Document Management** - Delete this Subsection.

**00170.60 Safety, Health, and Sanitation Provisions** - Delete this Subsection and replace with the following:

**(a) General** - The Contractor shall comply with all Laws concerning safety, health, and sanitation standards. The Contractor shall not require workers to perform Work under conditions that are hazardous, dangerous, or unsanitary.

Workers that are exposed to traffic shall wear upper body garments or safety vests that are highly visible and meet the requirements of 00221.20.

Workers exposed to falling or flying objects or electrical shock shall wear approved hard hats.

All workers shall have access to adequate hearing protection and eye protection.

Workers exposed to concrete dust or other sources of silica-based particulates shall have access to approved respirators.

According to ORS 468A.715 and ORS 468A.720, the Contractor or a Subcontractor who performs Project Work involving asbestos abatement shall possess a valid DEQ asbestos abatement license.

**(b) Sanitary Accommodations** - The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of employees as may be necessary to comply with requirements and regulations of the State Department of Health and of other bodies or officers having jurisdiction thereover. The Contractor shall permit no public nuisance.

**(c) First Aid and Accident Reporting** - The Contractor shall maintain at the work site all articles necessary for giving first aid to the injured and establish procedures for the immediate removal of employees or other persons injured on the job site to a hospital or doctor's care.

All accidents causing death, serious injuries, or damages shall be reported immediately to the Engineer. The Contractor shall promptly report, in writing, to the appropriate authorities all accidents arising out of, or in connection with, the performance of the work. If any claim is made against the Contractor and/or Subcontractor on account of any accident, the Contractor shall promptly report the facts, in writing, to the Engineer.

**(d) Compliance and Inspection** - Upon their presentation of proper credentials, the Contractor shall allow inspectors of the U.S. Occupational Safety and Health Administration (OSHA) and the Oregon Occupational Safety and Health Division (OR-OSHA) to inspect the Work and Project Site without delay and without an inspection warrant.

#### **00170.70 Insurance:**

**(a) Insurance Coverages** - Delete the first and second bulleted items in this Subsection and replace with the following:

- **Commercial General Liability** – The Contractor shall provide Commercial General Liability Insurance written on an occurrence basis and covering the Contractor's liability for bodily injury and property damage. This insurance shall include personal and advertising injury liability, products and completed operations coverage, and contractual liability coverage. Coverage may be written in combination with Commercial Automobile Liability Insurance with separate limits for Commercial General Liability and Commercial Automobile Liability. Combined single limit per occurrence shall not be less than \$2,000,000. The annual aggregate limit shall not be less than \$3,000,000. The policy shall be endorsed to state that the annual aggregate limit of liability shall apply separately to the Contract.

When Work to be performed includes operations or activity within 50 feet of any railroad property, bridge, trestle, track, roadbed, tunnel, underpass or crossing, the Contractor shall provide the Contractual Liability – Railroads CG 24 17 endorsement, or equivalent, on the Commercial General Liability policy.

The Agency reserves the right to require additional Commercial General Liability coverage if conditions warrant.

- **Commercial Automobile Liability** – The Contractor shall provide Commercial Automobile Liability Insurance covering all owned, non-owned, and hired vehicles for bodily injury and property damage. This coverage may be written in combination with the Commercial General Liability Insurance with separate limits for Commercial Automobile Liability and Commercial

General Liability. Combined single limit per occurrence shall not be less than \$2,000,000. If this coverage is written in combination with the Commercial General Liability, the policy shall be endorsed to state that the Commercial General Liability annual aggregate limit shall apply separately to the Contract.

**00170.80 Responsibility for Damage to Work:**

**(d) Vandalism and Theft** - Delete the second sentence in this Subsection and replace with the following:

The Contractor shall provide reasonable protection of the Work from vandalism until Certification of Work Completion and Acceptance has been issued.

**00170.82 Responsibility for Damage to Property and Facilities:** Delete this Subsection and replace with the following:

**(a) In General** - As used in this Subsection, the term "Contractor" shall include the Contractor's agents, Subcontractors, and all workers performing Work under the Contract; the term "damage" shall include without limitation soiling or staining surfaces by tracking or splashing mud, asphalt, and other materials, as well as damage of a more serious nature.

The Contractor shall be solely responsible for damages arising from:

- The Contractor's operations;
- The Contractor's negligence, gross negligence, or intentional wrongful acts; and
- The Contractor's failure to comply with any Contract provision.

The Agency may withhold funds due the Contractor or the Contractor's Surety until all lawsuits, actions, and claims for injuries or damages are resolved, and satisfactory evidence of resolution is furnished to the Agency.

**(b) Protection and Restoration of Agency Property and Facilities** - The following requirements apply to streets, roads, structures, and other improvements that are existing, under construction or completed. The Contractor shall:

- Provide adequate protection to avoid damaging Agency property and facilities;
- Be responsible for damage to Agency property and facilities caused by or resulting from the Contractor's operations; and
- Clean up and restore such damage by repair, rebuilding, replacement, or compensation, as determined by the Engineer.

**(c) Protection and Restoration of Non-Agency Property and Facilities** - Prior to commencing any Project Work, the Contractor shall determine the location of properties that could be damaged or otherwise adversely affected by the Contractor's operations and shall protect them from damage.

The Contractor shall give at least 14 Calendar Days' notice to owners of property that may be affected to permit removal, salvage and relocation of items including but not limited to plants, trees, fences, landscaped areas, or sprinkler systems. The Contractor shall restore property or facilities damaged by its operations to the condition that existed before Construction at no additional compensation.

The Contractor shall provide temporary facilities when needed to maintain normal service for services including, but not limited to garbage pickup and mail/package delivery as directed by the Engineer.

Mailboxes removed during the course of Work shall be relocated as specified by the Engineer and in accordance with the Postal Service requirements.

The Contractor shall protect specific service signs, e.g. business logos and tourist-oriented directional signs (TODS) from damage, whether the signs are to remain in place or be placed on temporary supports. The Contractor shall repair or replace damaged signs at no cost to the Agency or Agency. Liquidated Damages will be assessed against the Contractor in the amount of \$200 per Calendar Day for each sign out of service for more than 5 Calendar Days because of Contractor's operations.

**(d) Protection of Permanent Survey Markers** - The Contractor shall notify the Engineer not less than 14 Calendar Days prior to starting Work so that the Engineer may take necessary measures to ensure the preservation of affected survey monumentation, property corners, stakes, and benchmarks. The Contractor shall not disturb permanent survey monuments, stakes, or benchmarks without the consent of the Engineer and shall notify the Engineer and bear the expense of replacing any that are disturbed without permission or proper notification. Replacement of damaged or disturbed monumentation shall be done by a Professional Land Surveyor registered in the state of Oregon pursuant to ORS 209.150-155.

When a change is made in the finished elevation of the pavement of any roadway in which a permanent survey monument is located, the monument cover shall be adjusted to the new grade without disturbing the underlying monument.

**(e) Protection and Preservation of Historic Objects** - If objects of archeological or paleontological nature, including ruins, sites, buildings, artifacts, fossils, and other objects of antiquity are encountered within the Project Site, the Contractor shall cease construction operations in the area, preserve the objects from disturbance or damage, and immediately notify the Engineer of their existence and location.

#### **00170.89 Protection of Utility, Fire-Control, and Railroad Property and Services; Repair; Roadway Restoration -**

**(a) Protection of Utility, Fire-Control, and Railroad Property and Services; Coordination** - Delete this Subsection and replace with the following:

The Contractor shall avoid damaging the properties of Utilities, Railroads, railways, and fire-control authorities during performance of the Work. The Contractor shall cooperate with and facilitate the relocation or repair of all Utilities and Utility services, as required under 00150.50, and of Railroad and fire-control property and railways.

Whenever the Work involves the crossing of, or encroachment on, any railway or any Railroad right-of-way, the Contractor shall submit a schedule of proposed operations within the Railroad right-of-way which has been reviewed and approved by the appropriate Railroad authority to the Engineer. The Contractor shall comply with all requirements of the Railroad at no cost to the Agency.

When indicated in the Contract Documents, the Contractor shall give bond or insurance of the kind and in the amount specified to each corporation, company, partnership, or individual owning or operating any of the properties affected by construction. Any extension of time granted the Contractor to complete the Work shall not relieve the Contractor or the Contractor's Surety from this responsibility.

The Contractor shall conduct no activities of any kind around fire hydrants until the local fire-control authority has approved provisions for continued service.

The Contractor shall immediately notify the Engineer and any Utility, Railroad, or fire-control authority whose facilities have been damaged by Contractor operations.



If an Entity has a valid permit from the proper authority to construct, reconstruct, or repair Utility, Railroad, or fire-control service in the Roadway, the Contractor shall allow the permit holder to perform the work.

**00170.94 Use of Explosives** - Delete this Subsection and replace with the following:

Unless otherwise noted in the Special Provisions, the use of explosives is prohibited.

A fire retardant bag or suitable enclosure shall be used with the heater plate to facilitate control of heating process and to protect the heater plate surfaces from dirt and other debris when not in use. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

The inside and outside of pipe ends shall be cleaned with a cotton or non-synthetic cloth and detergent as necessary to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square, dry, and carefully aligned just prior to heating.

Butt fusion joints shall conform to ASTM D2657 and the pipe manufacturer's criteria for that type of joining. The butt-fused joint shall be in true alignment and shall have uniform roll-back beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All joints shall be subject to acceptance by the Engineer prior to insertion.

Perform trial fusion welds in the field and provide samples to the Engineer before installation of the pipe. Use the same fusion machine used for the trial welds for the final welds incorporated into the Work.

After achieving the proper melt pattern, the pipe ends shall be brought together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8-inch to 3/16-inch in height) around and inside the entire circumference of the pipe.

The bead shall be removed from the inside circumference of all 4-inch, 6-inch, 8-inch, 10-inch and 12-inch diameter HDPE pipe by means of a mechanical cutting head. The cut shall be made flush with the inside circumference of the pipe.

All defective joints shall be cut out and replaced at no cost to the Agency. Any section of pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than 10% of the wall thickness shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedure stated above. In addition, any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling as determined by the Engineer shall be discarded and not used.

Any make-up pieces needed to connect HDPE installed by pipe bursting to a manhole or to another segment of sewer shall also be HDPE SDR 17 of the same diameter. Make-up pieces shall be connected to the previously installed HDPE pipe by use of a heat fusion coupling. Electrofusion couplings may be used for field closures only as permitted by the Engineer and shall be reamed with a mechanical cutting head. If required, only Romac 501 or approved equal mechanical couplings shall be allowed.

**00411.41 Receiving and Insertion Pits** - Pit location and size shall be verified in the field prior to construction and are subject to the Engineer's approval. Pits shown on the Plans are approximate. Actual locations are to be field verified by the Contractor prior to construction.

Use existing manholes where practicable. Remove manhole inverts, benches, and channels to permit access for installation Equipment. Enlarge the input and output pipe openings if required to accommodate the maximum outside diameter size of the insertion Equipment. Do not put undue stress on existing Structures. Reinstall inverts and reconstruct benches and channels after pipe liners have been installed.

In areas where new manholes are not being installed or existing manholes are not available, excavate and backfill pits at no additional cost to the Agency.

Insertion pits shall generally be excavated at or near the upstream end of each line segment to be replaced unless otherwise required. Pits shall be centered over the existing sewer line. The Contractor

shall minimize the number of pits; however, sufficient number of pits shall be utilized to properly construct the project. Receiving pits, if needed, shall be at or near the downstream end of each segment to be replaced, unless otherwise required or directed by the Engineer.

Dimensions of the pits shall be of sufficient size and length to accommodate the depth of the sewer system shown on the Plans and to meet the requirements of manufacturer's allowable bending radius and installation requirements for new pipe to be installed. Minimum insertion pit length shall be equal to 2 times the depth + 8 feet or as approved by the Engineer, based on the pipe manufacturer's allowable pipe bending radius.

All pits shall be prepared and backfilled in accordance with sound bedding practices and in accordance with ASTM D2774 and D2321. All pits shall be adequately braced to ensure safe work areas. Payment for shoring shall be incidental to pipe bursting or slip lining pay items. The pits shall be covered with steel plates when not in use to prevent unauthorized entry. At the end of each work day, the Contractor shall ensure all steel plates are securely fastened with cold mix to any paved surface surrounding the pit or by other means acceptable to the Engineer if the surrounding surface is unpaved. Any holes in the steel plates shall be sealed.

The Contractor shall maintain, restore, and protect all existing utilities, pipes or structures located within or adjacent to the pits.

**00411.42 Installation** - All liner pipe shall be installed conforming to the requirements of ASTM D2321 and F585.

**(a) Crossing Adjacent Utilities** - The Plans will indicate utilities located within the Project limits. It shall be the Contractors' sole responsibility to determine from utility information available if the sewer can be pipe burst without damaging adjacent and crossing utilities. If the Contractor determines they cannot successfully pipe burst in the area of the crossing or adjacent utility, the Contractor shall replace such portions by open cut excavation. Work necessary for the open cut replacement of the sewer, including excavation and backfill, shall be paid for at the unit contract price for pipe bursting at the specified diameter. Surface restoration shall be measured and paid for according to 00495 or as called out in the Project Plans and Special Provisions.

If the Contractor elects to burst the sewer in the area of a crossing/adjacent utility, the Contractor shall be responsible for all costs associated with repair of the utility, including excavation and backfill, surface restoration, and any resulting damage claims caused by the bursting operation.

If the crossing utility is a water main or gas line, the Contractor shall contact the Engineer and the affected utility at least 48 hours prior to starting the bursting operation. In addition, the Contractor shall excavate and expose any water or gas main crossing prior to the start of the bursting operation. The excavation shall remain open until the bursting head has successfully passed the utility crossing. Excavation and backfill shall be considered incidental; Surface restoration shall be measured and paid for according to 00495 or as called out in the Project Plans and Special Provisions.

**(b) Temporary Sewage Bypass** - The work specified in this section includes all costs for labor, materials, accessories, equipment, and tools for performing all operations required to bypass pump sewage and stormwater around a manhole or sewer section in which work is to be performed. This work shall consist of furnishing, installing, operating, and maintaining all power, primary and standby pumps, appurtenances, and bypass piping required to provide a fully functional bypass system for maintaining existing flows and services without interruption. After the work is completed, flow shall be returned to the reconstructed sewer. The area affected by the bypass installation shall be fully restored.

All bypassing systems shall be approved by the Engineer. A written proposal for bypassing the existing sanitary sewer system shall be submitted by the Contractor for review. The Contractor's plan for bypass pumping shall be satisfactory to the Engineer before the Contractor commences bypass pumping. The review of the bypassing system and equipment by the Engineer in no way relieves the Contractor of his/her responsibility and public liability.

Bypass pumping shall be scheduled for continuous duty from the start of the operation with back-up equipment available for periods of maintenance and refueling. Bypass pumping shall be done in such a manner as not to damage private or public property, or create a nuisance or public menace. The pumped sewage/stormwater shall be in an enclosed hose or pipe that is adequately protected from traffic, and shall be redirected into the sanitary sewer system. The discharge of raw sewage to private property, City streets, sidewalks, storm drains, or any location other than an approved sanitary sewer is prohibited. The Contractor shall be liable for all cleanup, damages, regulatory agency reporting, and resultant fines should the Contractor's operation cause any backups or overflows.

Except for the segment(s) being worked on, the existing sanitary sewer system shall be maintained throughout the duration of the Contract without any interruption of sewer service. The Contractor shall transfer the flow around the segment(s) of pipe to be replaced. Working Days will be paid when flows are within the capacity of the existing pipe (gravity flow; not surcharged), whether or not the Contractor is working. If flows are surcharged, these Days will be considered non-working Days and will not be paid for, whether or not the Contractor is working. No pay adjustments will be made for any increase in the Contractor's cost for sewage bypass caused by surcharged conditions.

**(c) Pipe Bursting** - The pipe bursting tool shall be designed and manufactured to force its way through existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soil as it progresses. The bursting unit shall generate sufficient force to burst and compact the existing pipe.

The new sewer main shall be installed on the same line and grade as the existing sewer main.

The bursting tool shall be of dimensions such that the design maximum diameter of the tunnel shall not exceed the maximum outside diameter of the new pipe plus 1-inch. The Contractor shall take extreme care to protect facilities, such as adjacent utilities, above ground terrain, or improvements from damage caused by the pipe bursting equipment. Should the Contractor's equipment/operation cause such damage, the Contractor shall stop work immediately and modify his equipment and/or methods to the satisfaction of the Engineer to prevent further damage.

The pulling machine shall provide a constant tension to the burster so that it may operate in an efficient and consistent manner. The machine shall ensure directional stability in keeping the unit on line and grade.

Extend the slip lined pipe 12 inches into manholes or concrete Structures to allow for contraction and relaxation after installation. The Contractor shall allow the polyethylene pipe to return to its original length and shape in an unstressed state before making any permanent connections to laterals or trimming any excess liner in the manhole before making the connection to the manhole. The liner pipe manufacturer's recommendations shall be followed regarding the relief and normalization of stress and strain due to temporary stretching or elongation after pulling operations are completed. Time allowed for stress and strain relief shall not be less than 24 hours.

**(d) Slip Lining** - Do not score or damage the liner pipe during the installation process. Fill annular space between the new liner and the host pipe according to 00406.

**00411.43 Connections:**

**(a) Connection to Manholes** - The Contractor is required to reconnect all new and existing pipes to new manholes as well as to any existing manhole that is not called out for replacement.

The Contractor shall connect new polyethylene pipe to new manholes by installation of a flexible pipe-to-manhole connector which shall provide a watertight joint between the pipe and the manhole. A non-shrink grout shall be used to fill the annular space. The connector shall be Kor-N-Seal® with Wedge Korband (Type 1 or II as required for pipe diameter) as manufactured by NPC, Inc., or approved equal. The connectors shall be installed per the manufacturer's recommendations.

Make all connections to existing manholes, Structures, and pipelines according to 00470.40 (b). Use slip-on sanded adaptors and non-shrink grout where manufactured watertight connectors are unable to be used.

**(b) Connection to Service Lines** - The Plans indicate the approximate locations of existing tees, wyes, and taps. It shall be the Contractor's responsibility to determine the exact locations of connections and whether or not they are active. The Contractor shall TV inspect each tee, wye, and tap in advance to determine whether it is active using a camera launched from the main up each service lateral a minimum of 10 feet or until a plug is found. The Contractor shall videotape this inspection and provide a copy of the videotape and hard copy inspection log to the Engineer prior to any service lateral excavation in a given segment.

The Contractor shall excavate, expose, and completely disconnect all active side sewers or laterals in a given run before pipe bursting operations commence. The Contractor shall install temporary flexible and watertight pipe between the mainline and the side sewer so that all services remain connected to the sewer main line at all times. The Contractor shall excavate at each active side sewer connection to a depth equal to 1 times the outside diameter of the main under the invert of the existing main to allow free movement of the bursting head.

If any side sewer cannot be disconnected for the time necessary to install the HDPE pipe and reconnect the side sewer, the Contractor shall bypass pump the side sewer to a sanitary sewer main. The method of bypassing the side sewer shall be submitted by the Contractor to the Engineer for review and the method of bypass pumping shall not be allowed until the method is approved by the Engineer. In the event sewage backs up and enters a dwelling, the Contractor shall be responsible for cleanup, repair and property damage costs and claims.

Upon installation of the HDPE main and successful completion of required testing, the Contractor shall reconnect active side sewers or laterals per ODOT Subsection 00490.42. The Contractor shall install temporary flexible (e.g., corrugated) and watertight pipe between the mainline and the side sewers immediately following bursting, and during the relaxation period of the HDPE pipe, which shall not be less than 24 hours. The pipe manufacturer's recommendations shall be followed regarding the relief and normalization of stress and strain due to temporary stretching or elongation after pulling operations are completed.

After the HDPE main has been allowed to relax, the Contractor shall make the permanent connections to the side sewers. Laterals shall be reconnected to the new sanitary sewer pipe by open excavation using SDR35 gasketed bells as manufactured by Inserta Tee® or approved equal. On 8 inch or smaller mainlines, approved HDPE fusion saddles or hard couplers shall be used. No adjustment from Bid Item unit price shall be made for use of fusion saddles. Only hard couplers shall be used within right-of-way to cleanout location. Connection from cleanout to existing lateral pipe shall be made with a shielded flexible coupler such as a Fernco® Strong Back RC 1000 or approved equal.

Lateral connections shall be watertight and installed in accordance with the manufacturer's recommendations. The Contractor shall be responsible for promptly restoring, correcting, and paying any costs resulting from failure to properly reconnect any service lateral shown on the Plans.

**Finishing, Clean-up and Testing**

**00411.70 Manhole Base Reconstruction** - Reconstruct manhole bases by removing the existing base channeling and constructing a new base channel with a finished surface according to Supplemental Standard Drawing 00400-16. Shape new smooth, depression-free channels to the elevations shown. Remove manhole steps as required for the new base and channeling. Do not damage existing manhole walls or existing pipes. Repair all cracks and holes with non-shrink grout.

**00411.71 Testing** - The Contractor shall perform testing according to 00445.72. Testing shall include mainline and fused service connection saddles. Contractor is required to schedule testing so that the mainline and saddles can be tested prior to connecting permanent services to the new main.

**Measurement**

**00411.80 Measurement** - Liner pipes and related Work performed under this Section will be measured by the length and depth of liner pipe, number of connections and time required for bypass pumping.

- **Length** - The length will be measured, with no deduction for Structures or fittings, along the pipe flow line from center to center of manholes, inlets, or special sections; or the ends of pipe or end sections, whichever is applicable.
- **Depth** - The depth will be used to determine the maximum depth range and Pay Item for each pipe. The maximum depth range, to the flow line, for each pipe will be "5 feet", "10 feet", "20 feet", and "over 20 feet" as applicable. The depth in excavation areas will be the maximum measured vertical distance between the liner pipe flow line and the surface of the original ground.

**Payment**

**00411.90 Payment** - The accepted quantities of Work performed under this Section will be paid for at the Contract unit price, per unit of measurement, for the following items:

<b>Pay Item</b>	<b>Unit of Measurement</b>
(a) Pipe Bursting, ___ Inch, ___ Depth .....	Foot
(b) Slip Lining, ___ Inch.....	Foot
(c) Service Line Reconnections.....	Each
(d) Service Cleanouts .....	Each
(e) Service Laterals, Bored or Open Cut .....	Foot
(d) Bypass Pumping .....	Lump Sum

In item (a), the nominal liner pipe diameter will be inserted in the first blank. The appropriate flow line depth range will be inserted in the second blank.

In item (b), the nominal liner pipe diameter will be inserted in the blank.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

There will be no additional payment for excavation, shoring, and backfill of insertion or receiving pits, service laterals and connections, or exposed utility crossings.

**00411.95 Statement of Experience Forms:**

**STATEMENT OF EXPERIENCE REQUIREMENTS FOR PIPE BURSTING**

This form shall be completed in its entirety and submitted with the bid. In addition to this form the Prime Contractor shall attach pipe bursting certification and documentation verifying that they are a licensed installer of the manufacturer’s pipe bursting system. Failure to submit and meet the requirements as stated in 00411.30 will be grounds for rejection of the bid.

The Agency will be the sole judge in determining if the prospective Contractor meets the minimum experience requirements.

**Prime Contractor:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_

Contact Person: \_\_\_\_\_

List 3 successfully completed projects totaling a minimum of 2,000 linear feet of 8-inch and larger mainline HDPE pipe using the proposed pipe bursting technology:

#1 Project Name: \_\_\_\_\_

Owner: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Size of Pipe (Existing and New): \_\_\_\_\_

Total Length Installed: \_\_\_\_\_

Completion Date: \_\_\_\_\_

#2 Project Name: \_\_\_\_\_

Owner: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Size of Pipe (Existing and New): \_\_\_\_\_

Total Length Installed: \_\_\_\_\_

Completion Date: \_\_\_\_\_

#3 Project Name: \_\_\_\_\_

Owner: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Size of Pipe (Existing and New): \_\_\_\_\_

Total Length Installed: \_\_\_\_\_

Completion Date: \_\_\_\_\_

subjected to pinching, crushing, or other damage. Pinched, damaged, or crushed wire shall be replaced prior to backfill.

### **Finishing, Cleaning Up, and Testing**

#### **00445.72 Pipe Testing:**

**(a) General** - Delete this Subsection and replace with the following:

After completing installation of the system, including all service connections, backfilling, and compaction, conduct a low-pressure air test. The Contractor shall provide all equipment and personnel required for the test. Conduct tests during normal working hours. The Engineer may require testing of manhole-to-manhole sections as they are completed in order to expedite the acceptance of the system and allow for lateral connections.

When sanitary sewer lines are replaced in-place, pipe and joint testing shall be visual and performed by the Agency's authorized representative. If adequate construction is questionable, the Contractor may be required to provide testing of part or all sanitary sewer pipe and/or services as described in this Subsection.

The method, equipment and personnel used in testing shall be subject to approval of the Engineer. The Engineer may, at any time, require a calibration check of the instrumentation used.

**(1) Safety Precautions** - Only qualified personnel will be permitted to conduct the test. All plugs used to close the system for the testing shall be capable of resisting the expected internal pressures. Securely brace plugs, if necessary. Testing equipment shall be placed above ground and personnel will not be permitted to enter a manhole or trench while a line is pressurized. The air or water pressure shall be released before the plugs are removed.

**(2) Ground Water** - The presence of groundwater will affect the results of the test. Determine the average height of groundwater over the lines immediately before starting the test, using an approved method.

**(b) Hydrostatic Testing** - Delete this Subsection. Hydrostatic testing will not be allowed.

**00445.73 Deflection Testing for Flexible Pipe** - Delete the second paragraph of this Subsection and replace with the following:

Conduct testing on a manhole-to-manhole basis after the line has been completely flushed out with water. Conduct the tests after the trench backfill and compaction have been completed, but prior to final surfacing. The test may be conducted concurrently with television inspection. If conducted concurrently, pull the mandrel in front of the camera so that the deflection testing is clearly recorded on the video tape unless approved by the Engineer. Provide a water depth gauge, located on the video camera side of the mandrel with the following characteristics:

- Graduated with marks at 0.50-inch increments clearly visible during video inspection.
- Capable of measuring water depth in 0.50-inch increments from 0.50 inch to 2.50 inches.
- Designed so that it will remain plumb regardless of the rotation of the mandrel or video camera.

**00445.74 Video Inspection of Sanitary and Storm Sewers** - Add the following to this Subsection:

Video/audio recording for review and approval shall be delivered to the Agency on a flash/thumb drive or other media approved by the Engineer.



**Section 00470 - Manholes, Catch Basins, and Inlets**

The Manholes, Catch Basins and Inlets Section shall be administered in conformance with Section 00470 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

**Materials**

**00470.10 Materials** - Delete the following items:

- Corrugated Metal Pipe
- Lining Materials

**Construction**

**00470.45 Steps** - Delete this Subsection and replace with the following:

Manhole steps shall not be installed in any new manhole. Fill any step holes with an approved non-shrink grout conforming to ODOT Subsection 2080.30.

**00470.71 Sanitary Manhole Acceptance Testing** -

(a) **Hydrostatic Testing** - Delete this Subsection. Hydrostatic testing will not be allowed.

(b) **Vacuum Testing** - Add the following to this Subsection:

The Engineer may, at any time, require a calibration check of the instrumentation used.

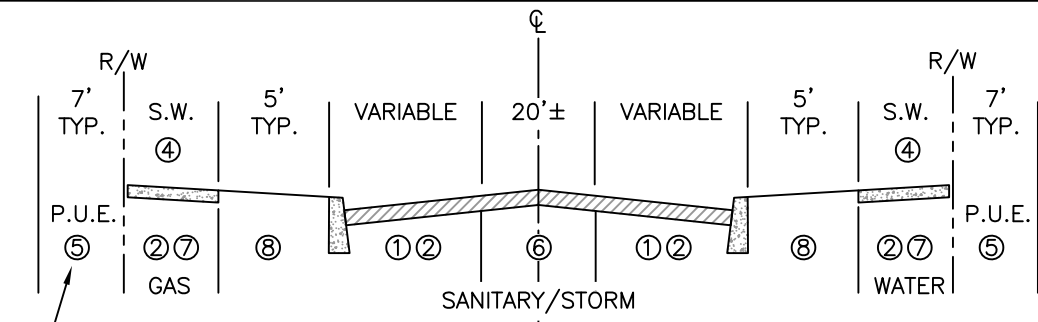
(c) **Visual Inspection** - Add the following Subsection:

Following vacuum testing and prior to sealing per 00475, the manhole shall be visually inspected by Agency personnel for discoloration, damp areas, or other signs of groundwater infiltration.

**Payment**

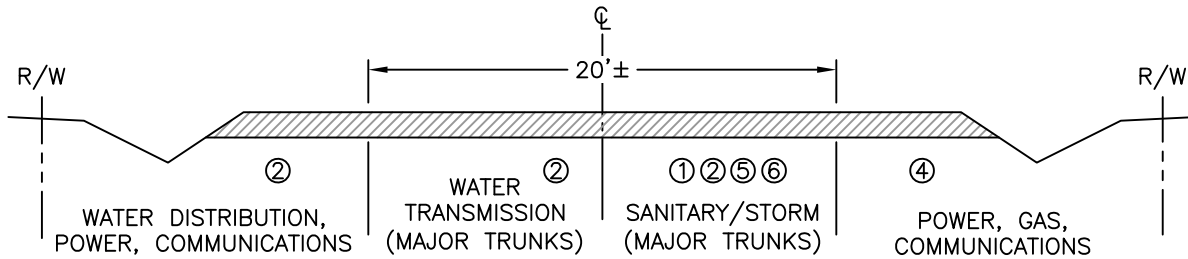
**00470.90 Payment** - Add the following item.

<b>Pay Item</b>	<b>Unit of Measurement</b>
(I) Interior Manhole Sealing/Lining.....	Square Foot

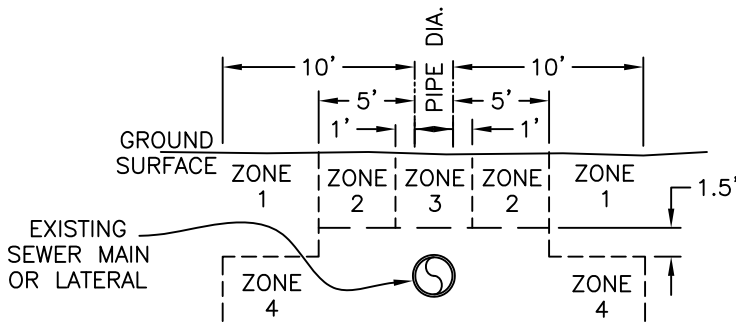


COMMUNICATIONS, SIGNALS,  
ILLUMINATION, POWER

NEW SUBDIVISION STREETS  
(SEE APPLICABLE NOTE NUMBER BELOW)



NEW SUBDIVISION STREETS  
(SEE APPLICABLE NOTE NUMBER BELOW)



- ZONE 1: ONLY CROSSING RESTRICTIONS APPLY
- ZONE 2: CASE-BY-CASE DETERMINATION
- ZONE 3: PARALLEL WATER LINE PROHIBITED
- ZONE 4: PARALLEL WATER LINE PROHIBITED

**ATTENTION:**  
VERTICAL AND HORIZONTAL SEPARATION DISTANCES  
ARE CONTROLLED BY THE DEPARTMENT OF  
ENVIRONMENTAL QUALITY, DEPARTMENT OF  
COMMERCE, STATE HEALTH DIVISION, AND LOCAL  
UTILITY COMPANIES.

WATER LINE-SEWER LINE SEPARATION  
(AS REQUIRED BY OAR 333-061-0050)

**LEGEND:**

- ① MANHOLE LIDS SHALL NOT BE INSTALLED IN VEHICLE WHEEL PATHS.
- ② A 4' MINIMUM COVER IS REQUIRED FOR DISTRIBUTION FACILITIES TO CROSS OVER PIPE.
- ③ SEWER MAINS SHALL BE LOCATED UNDER PAVED AREAS.
- ④ ISSUES CONCERNING VAULTS, HYDRANTS, CATCH BASINS, PEDESTALS, MAILBOXES, ETC. SHALL BE RESOLVED WITH THE INVOLVED UTILITIES PRIOR TO CONSTRUCTION.
- ⑤ RECOMMENDED FOR RIGHTS-OF-WAY LESS THAN 60'.
- ⑥ LATERALS ARE TO BE INSTALLED FROM THE SANITARY SEWER MAIN TO RIGHT-OF-WAY DURING INITIAL CONSTRUCTION. SEE SUPP. STD. DWG. 00400-12 FOR SERVICE LATERAL MARKER DETAILS.
- ⑦ WATER AND GAS UTILITIES SHALL BE INSTALLED ON OPPOSITE SIDES OF THE RIGHT-OF-WAY, OR WITH A 5 FOOT MINIMUM SEPARATION.
- ⑧ PLACEMENT OF SIDEWALK AGAINST THE CURB WILL ONLY BE ALLOWED WITH APPROVAL OF THE ENGINEER.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



APPROVED

*San Whittaker*

CITY ENGINEER

Dec., 2021

DATE

Aug, 2023

REVISIONS

**TYPICAL UTILITY  
LOCATIONS**

DRAWING NO:

00300-02

### **Section 02470 - Potable Water Pipe Materials**

The Potable Water Pipe Materials Section shall be administered in conformance with Section 02470 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

#### **02470.20 Ductile Iron Pipe:**

**(a) General** - Delete this Subsection and replace with the following:

Use domestically produced centrifugally cast ductile iron pipe meeting the requirements of AWWA C151. Ductile iron pipe shall have a cement-mortar lining and seal coating meeting the requirements of AWWA C104. All ductile iron pipe shall be Class 52, unless otherwise shown or specified.

## Section 02475 - Potable Water Fitting Materials

The Potable Water Fitting Materials Section shall be administered in conformance with Section 02475 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

### Materials

**02475.10 General** - Add the following to this Subsection:

Hardware for all flanged and mechanical joints shall be domestically produced high strength, low alloy steel only, meeting the current provisions of American National Standard ANSI/AWWA C111/A2.11-90 for rubber gasket joints for ductile iron pressure pipe and fittings. Bolt manufacturer's certifications of compliance must accompany each shipment.

Pipe fittings shall be at least equal in class to the pipe on which they are used. Joint materials shall be compatible with the adjacent pipe.

All Ductile Iron Pipe and Ductile Iron Fittings shall be of domestic origin. No pipe or fittings of foreign origin will be allowed.

Main line tapping sleeves shall be either an all ductile M.J. tapping sleeve or an all stainless-steel Ford Fast or JCM tapping sleeve.

All brass valves and fittings shall be marked 'NL'.

**02475.20 Ductile Iron Pipe Fittings** - Delete this Subsection and replace with the following:

Fittings for ductile iron pipe shall meet the requirements of AWWA C110 or AWWA C153 and shall have a minimum working pressure rating of 250 psi. Joints shall meet the requirements of AWWA C111. Fittings shall be cement mortar lined and seal coated, meeting the requirements of AWWA C104.

Gaskets for ductile iron flanged joints shall be American Toruseal® or approved equal and shall conform to ANSI/AWWA C111/A21.1. Full face red rubber gaskets are not permitted. Ring gaskets will be permitted only where specified or shown. The type, material and identification mark for bolts and nuts shall be provided.

**02475.50 Restrained Joints** - Delete this Subsection and replace with the following:

Mechanical restraints for ductile iron pipe, fittings and valves shall be EBAA Iron Series 1100 Megalug® restraint, US Pipe Field Lok® / MJ Field Lok®, American Flow Control Alpha™ Single Bolt Restraint, or approved equal. Restraint devices shall conform to ANSI/AWWA C111/A21.11.

Bolted mechanical restraint systems shall incorporate a follower gland and ductile iron heat-treated wedges conforming to ASTM A536-84. Wedges shall have a minimum hardness of 370 BHN and shall incorporate a torque-limiting twist-off nut. No device utilizing round point set screws will be permitted. The device shall be rated to operate at a minimum working pressure of 250 psi for all sizes.

**TABLE OF CONTENTS - SUPPLEMENTAL STANDARD DRAWINGS**

**PART 00200 - TEMPORARY FEATURES AND APPURTENANCES**

Temporary (Construction) Signing .....00200-01  
 Temporary (Construction) Barricades .....00200-02

**PART 00300 - ROADWORK**

Typical Street Sections .....00300-01  
 Typical Utility Locations .....00300-02

**PART 00400 - DRAINAGE AND SEWERS**

Trench Backfill, Pipe Bedding and Pipe Zone.....00400-01  
 Standard Street Cut .....00400-02  
 Modified Type CG-3 Inlet.....00400-03  
 Modified Type G-1 Inlet .....00400-04  
 Type D Ditch Inlet .....00400-05  
 Modified Type G-2MA Inlet for Traffic Areas.....00400-06  
 Area Drainage Basin for Non-Traffic Areas .....00400-07  
 Catch Basin for Private Development.....00400-08  
 Catch Basin Frame and Grate .....00400-09  
 Paved End Slope .....00400-10  
 Modified Type M-O Outfall Structure .....00400-11  
 Sanitary Service Connection .....00400-12  
 Service Cleanout .....00400-13  
 Main Line Cleanout.....00400-14  
 24" Shallow Manhole Cast-In-Place.....00400-15  
 Standard Manhole Base Section (48").....00400-16  
 Large Manhole Base Section (54" And Larger) .....00400-17  
 Large Manhole Base Section Reinforcing.....00400-18  
 Live Sewer Cast-In-Place Manhole Base .....00400-19  
 Manhole Pipe Alignment.....00400-20  
 Manhole Risers & Tops.....00400-21  
 Manhole Covers and Frames.....00400-22  
 Manhole Adjustment Rings & Cutouts .....00400-23  
 Manhole Marker Post.....00400-24  
 Inside Drop Connection for Manholes.....00400-25  
 Outside Drop Connection for Manholes.....00400-26  
 Flow Control Manhole .....00400-27  
 Pollution Control Manhole.....00400-28  
 Bore Casing and Spacers .....00400-29  
 Storm Water Swale Inlet .....00400-30  
 Beehive Overflow Inlet.....00400-31  
 Storm Water Quality Planter .....00400-32  
 Storm Water Quality Swale.....00400-33

Storm Water Quality Feature Check Dam .....00400-34

**PART 00700 - WEARING SURFACES**

Contraction Joint Pattern for P.C.C. Paving.....00700-01  
 P.C.C. Paving Joints.....00700-02  
 Typical Curb & Gutter .....00700-03  
 Curb Knock-Outs .....00700-04  
 P.C.C. Valley Gutter.....00700-05  
 Valley Gutters Across Driveways & Intersections .....00700-06  
 Standard P.C.C. Sidewalk and Jointing .....00700-07  
 A.D.A. Sidewalk Access Ramps .....00700-08  
 Sidewalk Obstructions .....00700-09  
 Typical Driveway and Alley Approaches.....00700-10  
 Typical Alley Section.....00700-11

**PART 00800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES**

Bollards, Urban Installation .....00800-01  
 Bollards, Field Installation .....00800-02  
 Typical Striping .....00800-03

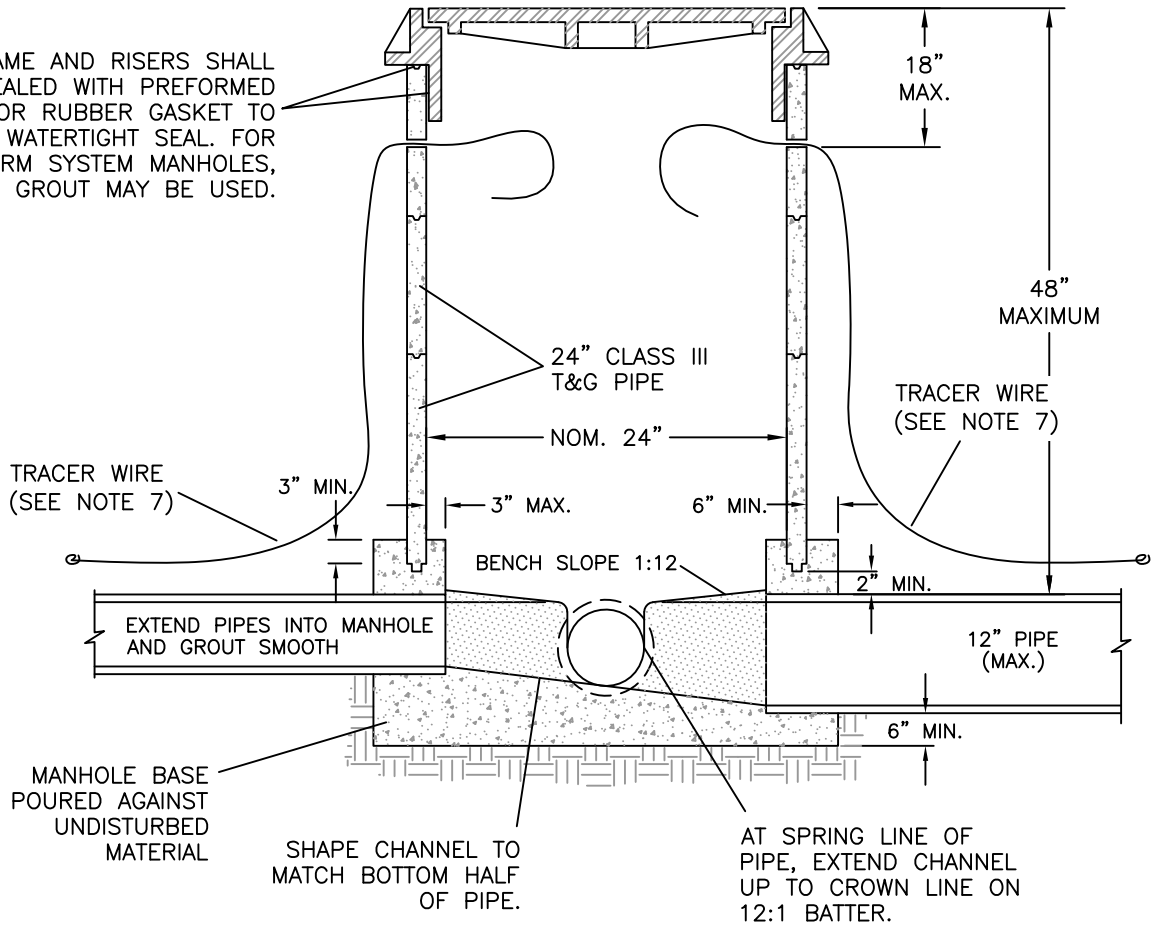
**PART 00900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS**

Sign Mounting .....00900-01  
 Permanent Type III Barricade .....00900-02  
 Anchored Display Sign .....00900-03  
 Unanchored Display Sign .....00900-04

**PART 01100 - WATER SUPPLY SYSTEMS**

Gas Line Crossing Cathodic Protection .....01100-01  
 Water/Storm Line Crossing.....01100-02  
 Thrust Blocking .....01100-03  
 Existing Water Line Extension (with Valve) .....01100-04  
 Valve Box & Operator Extension Assy.....01100-05  
 Typical Main Dead End Blow-Off Assembly .....01100-06  
 Combination Air-Release Valve Assy. (2" & Smaller).....01100-07  
 Water Sampling Station .....01100-08  
 Standard Double Check Detector Assembly.....01100-09  
 Reduced Pressure Double Check Detector Assy. ....01100-10  
 Meter Vault with Remote Read (Larger than 2").....01100-11  
 Fire Hydrant Assembly .....01100-12  
 Fire Hydrant Operating Nut & Nozzles.....01100-13  
 Standard Water Meter Assembly (5/8" x 3/4" to 2") .....01100-14  
 Water Service Manifold.....01100-15

MANHOLE FRAME AND RISERS SHALL BE SEALED WITH PREFORMED PLASTIC OR RUBBER GASKET TO FORM A WATERTIGHT SEAL. FOR STORM SYSTEM MANHOLES, NON-SHRINK GROUT MAY BE USED.



**NOTES:**

1. 24" MANHOLE ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
2. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 PSI (MIN).
3. CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII TO OUTLET.
4. PIPE CONNECTIONS SHALL CONFORM TO SECTION 00445.
5. BASE MAY BE PRECAST OR CAST-IN-PLACE.
6. ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
7. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF MANHOLE RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
8. SEE SUPP. STD. DWG. 00400-16 FOR MANHOLE BASE SECTION.
9. SEE SUPP. STD. DWG. 00400-22 FOR MANHOLE COVERS AND FRAMES.
10. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
11. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
12. FOLLOWING CONSTRUCTION, MODIFICATION, OR REPAIR, ALL SANITARY SEWER MANHOLES SHALL BE CLEANED AND LINED WITH AN APPROVED EPOXY CORROSION BARRIER COATING. SEE CITY SUPPLEMENTAL SPECIFICATIONS SECTION 00475.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



APPROVED

*[Signature]*

CITY ENGINEER

Dec., 2021

DATE

Aug., 2023

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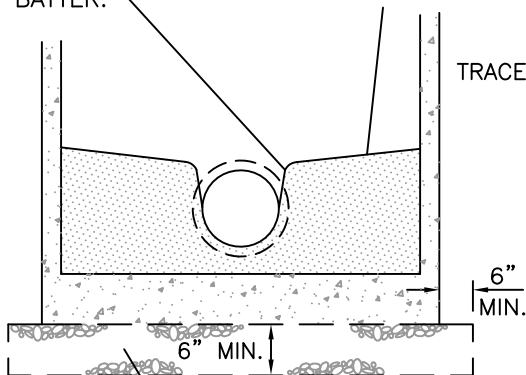
**24" SHALLOW  
MANHOLE  
CAST-IN-PLACE**

DRAWING NO:

**00400-15**

AT SPRING LINE OF PIPE EXTEND CHANNEL UP TO CROWN LINE ON 12:1 BATTER.

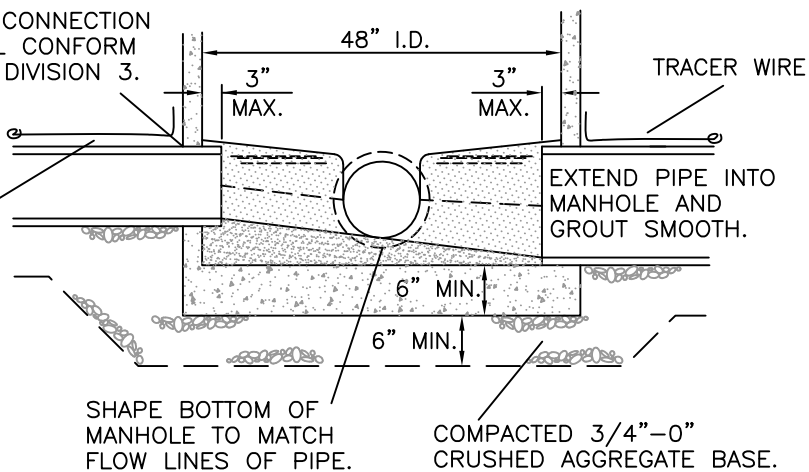
CONCRETE BENCH, SLOPE VARIES: 0.5"/FT. MIN.



COMPACTED 3/4"-0 CRUSHED AGGREGATE BASE

SECTION B-B

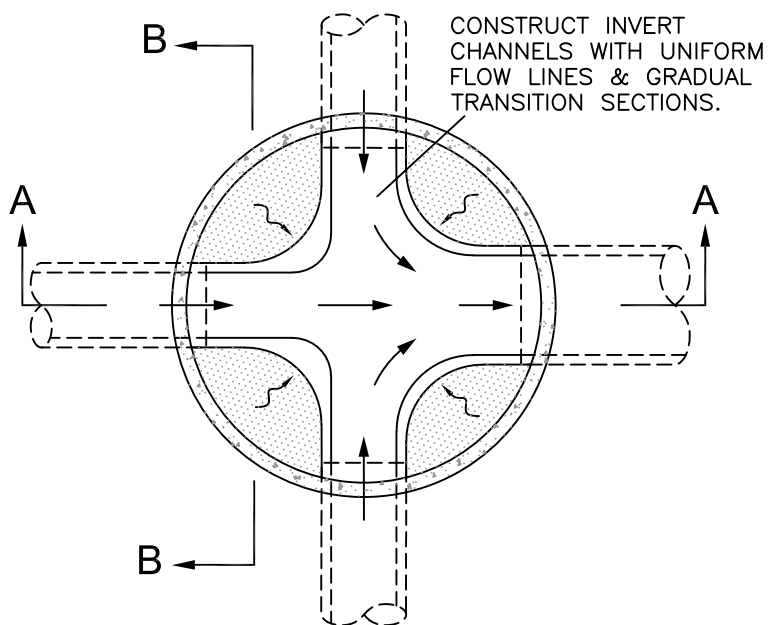
PIPE CONNECTION SHALL CONFORM WITH DIVISION 3.



SECTION A-A

NOTES:

1. BASES SHALL BE PRECAST.
2. CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII TO OUTLET PIPE.
3. KOR-N-SEAL® BOOT OR APPROVED EQUAL REQUIRED.
4. THIS MANHOLE BASE SECTION SHALL BE USED FOR PIPE SIZES UP TO AND INCLUDING 24", UNLESS OTHERWISE SPECIFIED.
5. GROUT MAY BE USED FOR CREATING CHANNELS. THE PRECAST BASE SHALL BE SCARIFIED PRIOR TO PLACING A 2" THICK (MIN.) GROUT CHANNEL.
6. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 4000 PSI (MIN).
7. EXTEND PIPE INTO MANHOLE AND GROUT SMOOTH. PIPE(S) MAY EXTEND 3" MAX. BEYOND THE INTERIOR MANHOLE WALL.
8. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
9. A MINIMUM OF 0.10 FEET FALL BETWEEN INLET PIPES AND OUTLET ELEVATION IS REQUIRED UNLESS OTHERWISE SHOWN IN THE PROJECT PLANS.
10. ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
11. AT SPRING LINE OF PIPE, EXTEND CHANNEL UP TO CROWN LINE ON 12:1 BATTER.
12. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
13. FOLLOWING CONSTRUCTION, MODIFICATION, OR REPAIR, ALL SANITARY SEWER MANHOLES SHALL BE CLEANED AND LINED WITH AN APPROVED EPOXY CORROSION BARRIER COATING. SEE CITY SUPPLEMENTAL SPECIFICATIONS SECTION 00475.



PLAN

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING



APPROVED

*San Whittaker*

CITY ENGINEER

Dec., 2021

DATE

Aug., 2023

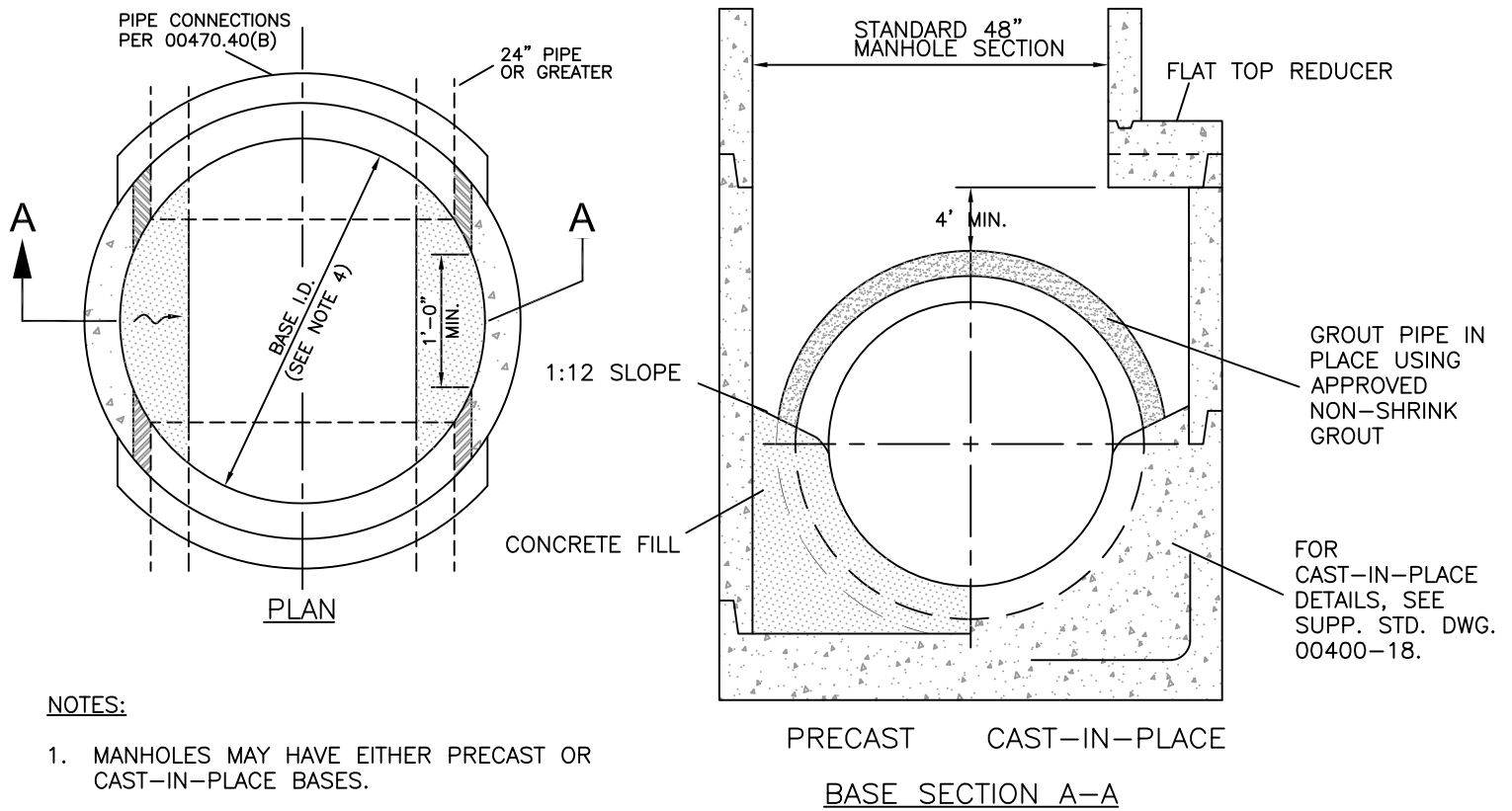
REVISIONS

STANDARD  
MANHOLE BASE  
SECTION (48")

DRAWING NO:

00400-16





**NOTES:**

1. MANHOLES MAY HAVE EITHER PRECAST OR CAST-IN-PLACE BASES.
2. ALL CONCRETE SHALL BE CLASS 4000. ALL PRECAST PRODUCTS SHALL CONFORM TO REQUIREMENTS OF ASTM C478.
3. LARGE CONCRETE MANHOLE BASES SHALL BE USED FOR PIPE SIZES LARGER THAN 24".
4. BASE INSIDE DIAMETER SHALL BE CALCULATED USING THE SIZE AND NUMBER OF PIPES AND THE MINIMUM SPACING REQUIREMENTS (SEE SUPP. STD. DWG. 00400-20).
5. ALL REINFORCING STEEL SHALL CONFORM TO ASTM SPECIFICATION A706 OR AASHTO M31 (ASTM A615) GRADE 60.
6. ALL REINFORCING SHALL BE PLACED 2" CLEAR OF THE NEAREST FACE OF THE CONCRETE UNLESS OTHERWISE SHOWN.
7. ECCENTRIC REDUCING CONES OR ECCENTRIC REDUCING FLAT SLABS DESIGNED IN ACCORDANCE WITH AASHTO M199 SHALL BE PLACED ON TOP OF THE BASE RISER AS REQUIRED BY THE CONTRACT PLANS. ECCENTRIC REDUCING FLAT SLABS SHALL BE DESIGNED TO SUPPORT A LOAD OF 120 LB/SF IN ADDITION TO THE DEAD LOAD OF THE SLAB, THE RISER ABOVE THE SLAB, AND THE EARTH OVERBURDEN ABOVE THE SLAB.
8. BASE RISER TO BE PRE-CAST UNLESS OTHERWISE SHOWN ON THE PLANS.
9. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
10. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
11. NO MANHOLE STEPS SHALL BE INSTALLED IN ANY MANHOLE.
12. ALL INTERIOR PICK AND STEP HOLES, SECTION JOINTS AND LARGE VOIDS SHALL BE SEALED WITH NON-SHRINK GROUT CONFORMING TO 02080.30, PER 00470.42(B)(2).
13. FOLLOWING CONSTRUCTION, MODIFICATION, OR REPAIR, ALL SANITARY SEWER MANHOLES SHALL BE CLEANED AND LINED WITH AN APPROVED EPOXY CORROSION BARRIER COATING. SEE CITY SUPPLEMENTAL SPECIFICATIONS SECTION 00475.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



APPROVED

CITY ENGINEER

Dec., 2021

DATE

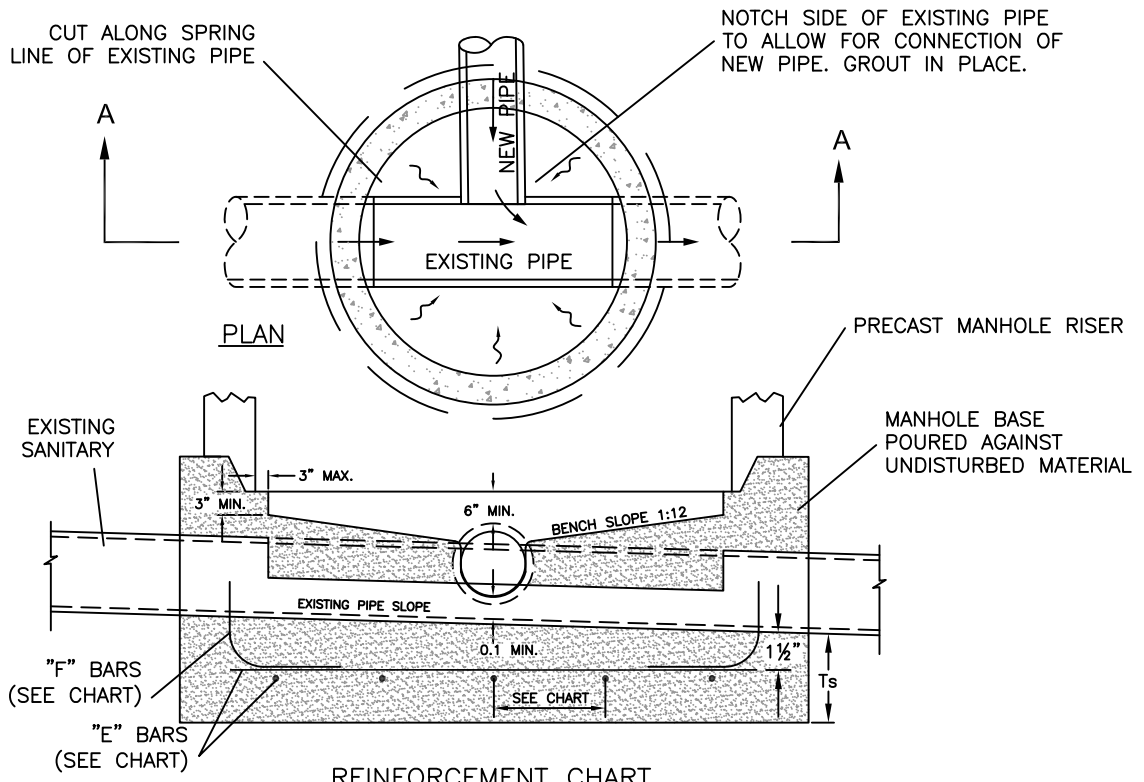
Aug., 2023

REVISIONS

**LARGE MANHOLE  
BASE SECTION  
(54" AND LARGER)**

DRAWING NO:

**00400-17**



BASE DR	54" & 60"		72"		84"		96"	
DEPTH*	0'-15'	15'-30'	0'-15'	15'-30'	0'-15'	15'-30'	0'-15'	15'-30'
Ts	7.0"	9.0"	7.0"	9.0"	8.0"	10.0"	9.0"	11.0"
E BARS	#4 @ 12"	#4 @ 9"	#4 @ 9"	#4 @ 6"	#4 @ 8"	#5 @ 9"	#4 @ 7"	#5 @ 8"
F BARS	#4 @ 12"	#4 @ 9"	#4 @ 9"	#4 @ 6"	#4 @ 8"	#5 @ 9"	#4 @ 7"	#5 @ 8"

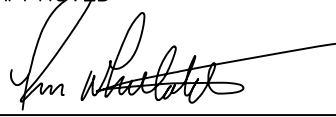
\*INVERT TO STREET GRADE

**NOTES:**

- FOR USE ON 48" AND LARGER DIAMETER MANHOLES; 24" MANHOLE ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
- ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 4000 PSI (MIN.).
- CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII FROM INLET TO OUTLET.
- PIPE CONNECTIONS SHALL CONFORM TO SECTION 00400 IN THE SUPPLEMENTAL STANDARD SPECIFICATIONS. PIPE(S) MAY EXTEND 3" MAX. BEYOND INTERIOR MANHOLE WALL.
- MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
- LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
- ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
- AT SPRING LINE OF PIPE, EXTEND CHANNEL UP TO CROWN LINE ON 12:1 BATTER.
- FOLLOWING CONSTRUCTION, MODIFICATION, OR REPAIR, ALL SANITARY SEWER MANHOLES SHALL BE CLEANED AND LINED WITH AN APPROVED EPOXY CORROSION BARRIER COATING. SEE CITY SUPPLEMENTAL SPECIFICATIONS SECTION 00475.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



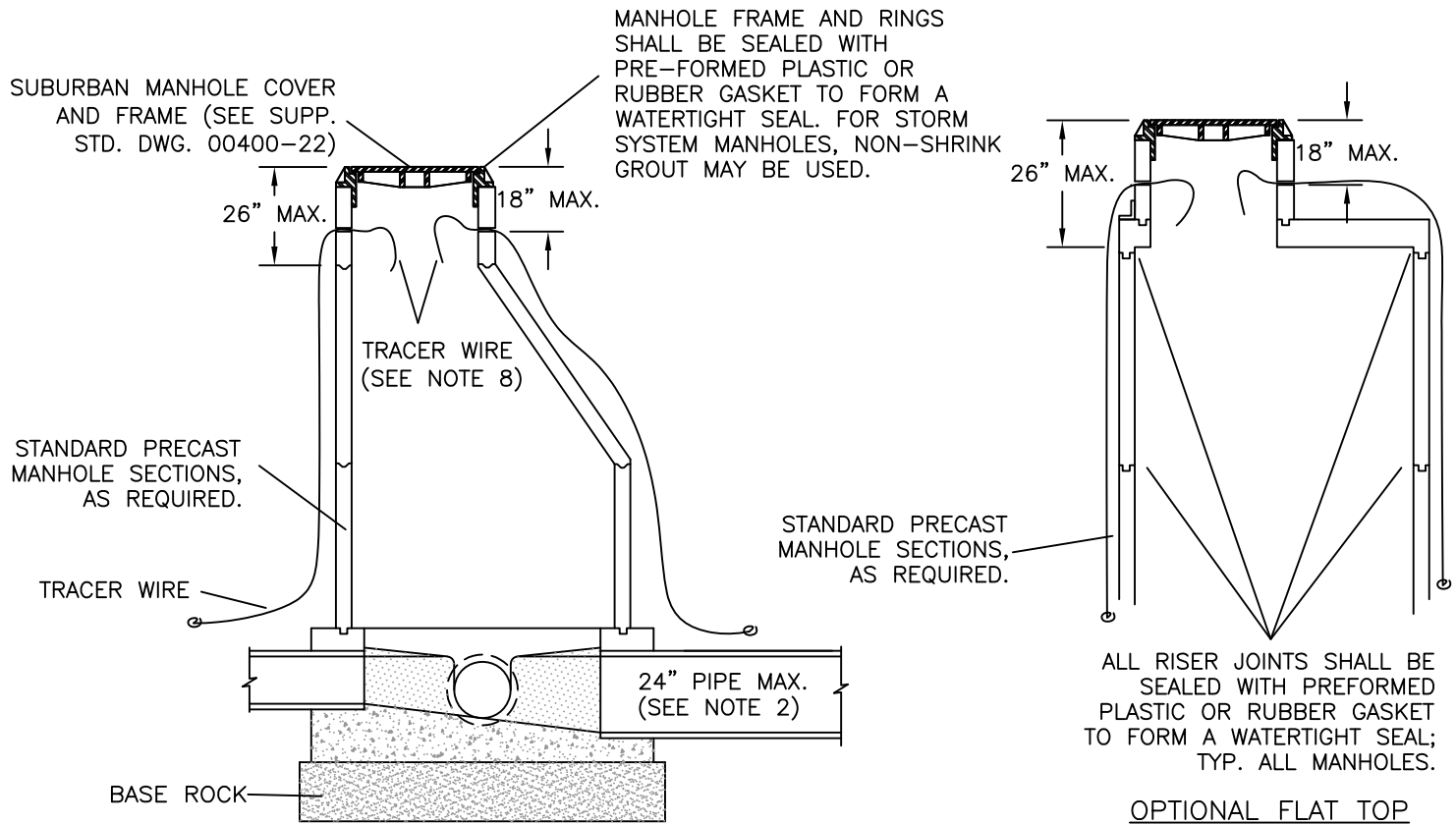
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 CITY ENGINEER

Dec., 2021  
 DATE

Aug., 2023  
 REVISIONS

**LIVE SEWER  
 CAST-IN-PLACE  
 MANHOLE BASE**

DRAWING NO: 00400-19



**NOTES:**

1. STANDARD PRECAST MANHOLE SECTION DIAMETER SHALL BE 48".
2. SEE SUPP. STD. DWG. 00400-17, 18 & 20 FOR PIPE SIZES GREATER THAN 24".
3. REPLACE CONE WITH 8" THICK FLAT TOP SLAB AS REQUIRED FOR DEPTH.
4. NO MANHOLE STEPS SHALL BE INSTALLED IN ANY MANHOLE.
5. ROTATE CONE OR SLAB TO POSITION MANHOLE COVER AND FRAME OUT OF WHEEL PATH. DO NOT PLACE FRAMES WITHIN 12 INCHES OF CENTERLINE AT AN INTERSECTION OR CHANGE IN STREET ALIGNMENT (ORS 092.060 (2)). WHEN MANHOLE IS NOT LOCATED IN A TRAFFIC AREA, POSITION COVER AND FRAME OVER A FLOW CHANNEL BENCH.
6. ALL PRECAST PRODUCTS SHALL CONFORM TO ASTM C478 REQUIREMENTS.
7. SEE SUPP. STD. DWGS. 00400-16 THROUGH 19 FOR MANHOLE BASE SECTION DETAILS.
8. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF MANHOLE RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
9. SEE SUPP. STD. DWG. 00400-22 & 23 FOR MANHOLE COVERS, FRAMES, AND ADJUSTMENT RINGS.
10. MAXIMUM PIPE DIAMETER VARIES WITH PIPE MATERIAL.
11. SEE SUPP. STD. DWG. 00400-15 FOR SHALLOW MANHOLES.
12. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
13. THIS DETAIL LIMITED TO INTERIOR DROP OF 24" OR LESS. SEE SUPP. STD. DWG. 00400-25 OR 00400-26 FOR DROPS IN EXCESS OF 24".

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



APPROVED

*San Prudhomme*

CITY ENGINEER

Dec., 2021

DATE

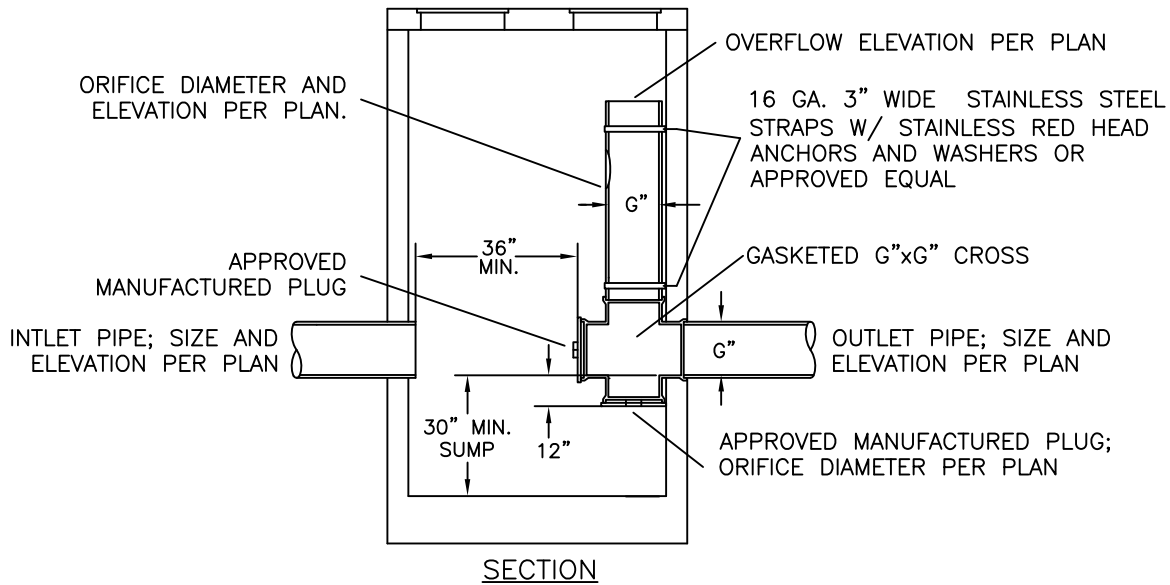
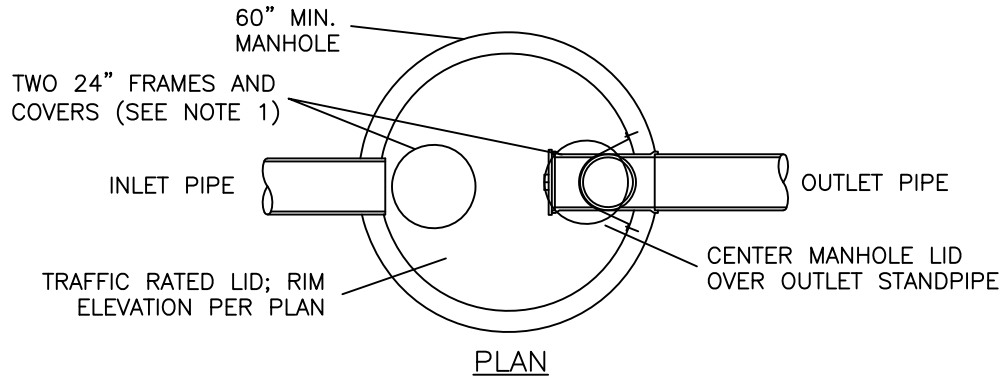
Aug., 2023

REVISIONS

**MANHOLE  
RISERS & TOPS**

DRAWING NO:

**00400-21**



**NOTES:**

1. MINIMUM FLOW CONTROL MANHOLE DIAMETER IS 60". PROVIDE A PRECAST FLAT TOP MANHOLE LID WITH TWO ACCESS OPENINGS FOR FRAMES AND COVERS. ONE OPENING SHALL BE PLACED OVER THE OVERFLOW STAND PIPE, THE OTHER OVER THE INLET ON THE OPPOSITE SIDE.
2. 36" OF CLEARANCE MUST BE PROVIDED BETWEEN THE MECHANICAL PLUG AND THE OPPOSITE MANHOLE WALL OR INLET PIPE.
3. USE APPROVED FASTENERS FOR STAINLESS STEEL STRAPS. STRAP ANCHORS MUST BE EMBEDDED 3" MINIMUM.
4. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS FOR PIPE MATERIAL.
5. CARRY THROUGH PIPE OR SLEEVE SHALL BE DUCTILE IRON, CLASS AS SPECIFIED. NO JOINTS ALLOWED ON THE CARRY THROUGH PIPE OR SLEEVE INSIDE THE MANHOLE.
6. PIPE ZONES VARY, SEE SUPP. STD. DWG. 00400-01.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



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CITY ENGINEER

Dec., 2021

DATE

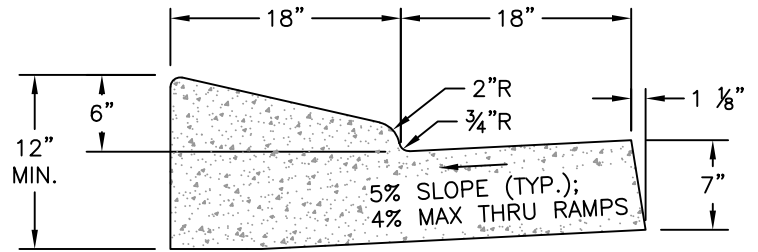
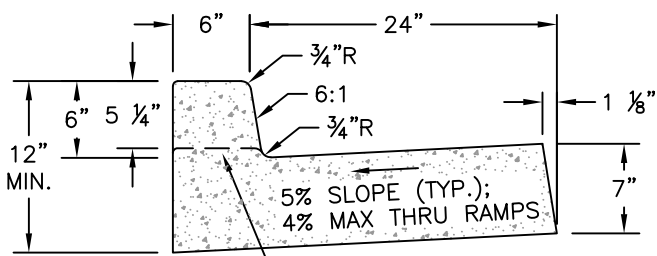
Aug., 2023

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**FLOW CONTROL  
MANHOLE**

DRAWING NO:

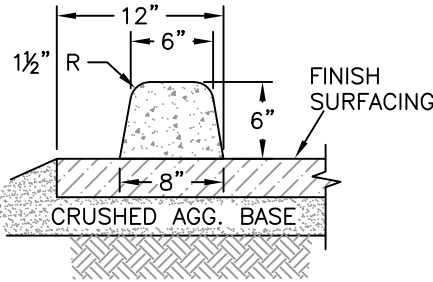
**00400-27**



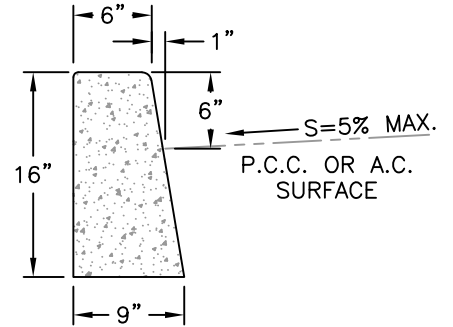
CURB FOR DRIVEWAY ACCESS  $\frac{3}{4}$ " TYP.  
 CURB FOR SIDEWALK ACCESS RAMP 0" TYP.  
 SLOPE=5% NORMAL OR 4% MAX. AT CURB RAMPS  
 2 FOOT WIDTH MINIMUM A.C.P. PATCH

MOUNTABLE CURB & GUTTER

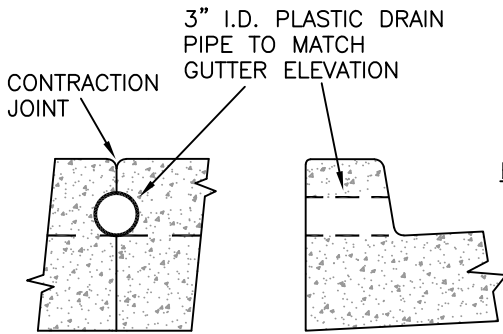
STANDARD CURB & GUTTER



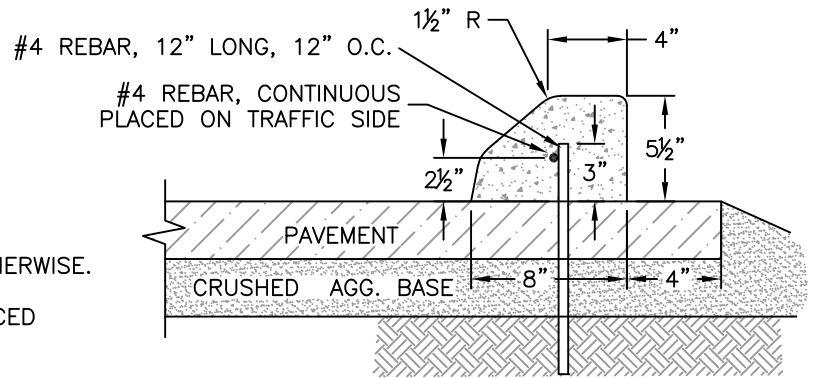
EXTRUDED P.C.C. BONDED CURB



TYPICAL STRAIGHT CURB



STANDARD WEEPHOLE



DOWEL REINFORCED CURB

NOTES:

1. ALL RADII SHALL BE  $\frac{3}{4}$ " UNLESS SPECIFIED OTHERWISE.
2. ISOLATION AND EXPANSION JOINTS SHALL BE PLACED ONLY AS SPECIFIED.
3. CONTRACTION JOINTS SHALL BE PLACED AT 15' INTERVALS AND OVER WEEPHOLE LOCATIONS UNLESS SPECIFIED OTHERWISE. JOINTS SHALL EXTEND AT LEAST 50% THROUGH THE CURB OR CURB & GUTTER SECTION.
4. WEEPHOLES SHALL BE PLACED WITHIN 10' OF PROPERTY LINES AND SHALL NOT EXCEED 100 FOOT SPACING. WEEPHOLES SHALL NOT BE PLACED WITHIN 1.0' OF ANY DRIVEWAY OR SIDEWALK RAMP SECTION AND SHALL BE ACCOMPANIED BY A TOOLED CONTRACTION JOINT.
5. CONSTRUCT EXPANSION JOINTS AT 200' MAXIMUM SPACING, AT POINTS OF TANGENCY, AND AT EACH END OF DRIVEWAYS.
6. CURB INSTALLATIONS WITHIN EXISTING ROADWAYS REQUIRE A 2.0' MINIMUM REMOVAL AND REPLACEMENT OF ADJACENT PAVEMENT (SEE SUPP. STD. DWG. 00400-02).
7. STANDARD P.C.C. CURBING SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I. (MIN).
8. REINFORCED P.C.C. CURBING SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. (MIN.) AND SHALL BE USED ONLY WHEN SPECIFIED.
9. REFER TO SUPP. STD. DWG. 00300-01 FOR ADDITIONAL INFORMATION.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



APPROVED

*[Signature]*

CITY ENGINEER

Dec., 2021

DATE

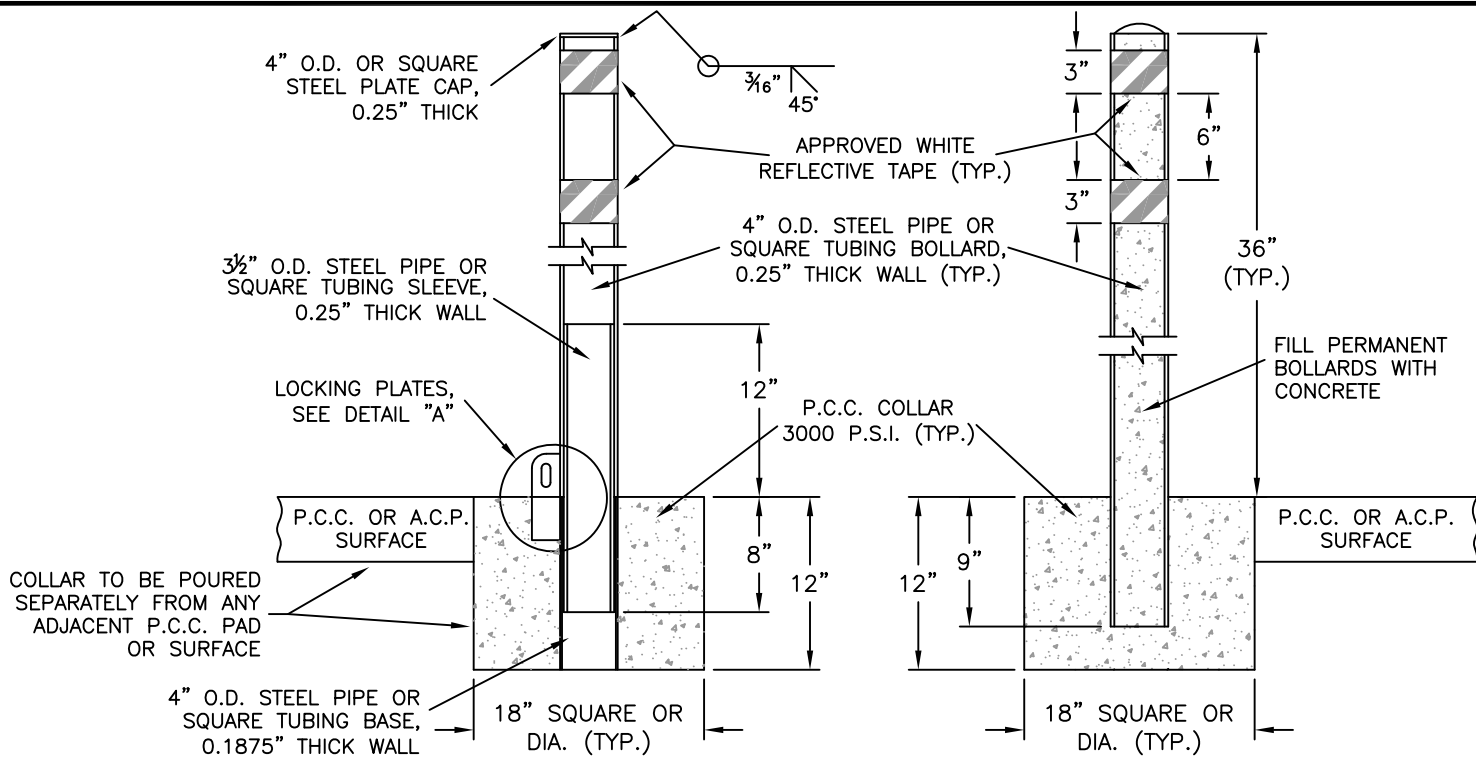
Aug., 2023

REVISIONS

**TYPICAL  
CURB & GUTTER**

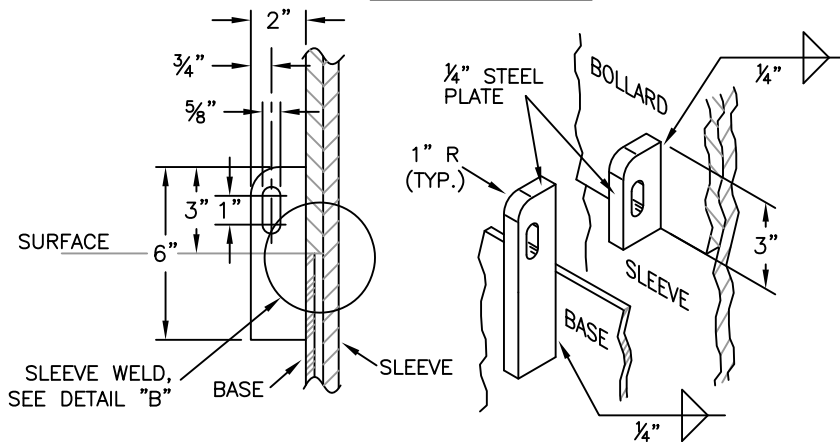
DRAWING NO:

**00700-03**

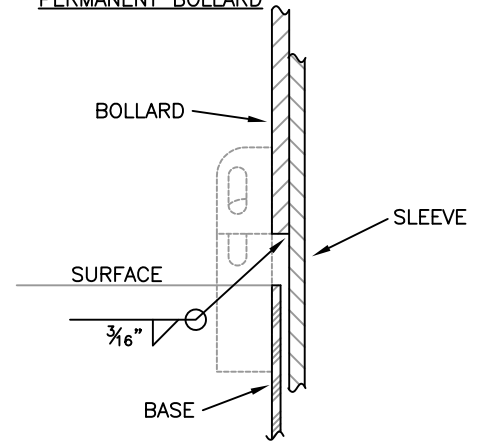


REMOVABLE BOLLARD

PERMANENT BOLLARD



DETAIL "A": LOCKING PLATES



DETAIL "B": SLEEVE WELD

NOTES:

1. ALL BOLLARDS (REMOVABLE AND PERMANENT) SHALL HAVE A FINISHED HEIGHT OF 3'-0".
2. LOCKS FOR REMOVABLE BOLLARDS SHALL BE PURCHASED BY THE CONTRACTOR AND SUPPLIED BY THE ENGINEER.
3. FINISHED BOLLARDS SHALL BE PAINTED WHITE AND AFFIXED WITH TWO BANDS OF APPROVED 3" WIDE WHITE REFLECTIVE TAPE. TAPE BANDS SHALL BE PLACED AT THE TOP OF EACH BOLLARD AND 6" APART (EDGE-EDGE).
4. GRIND SMOOTH ALL METAL EDGES.
5. HOT-DIP GALVANIZE BASE ASSEMBLY AFTER FABRICATION.
6. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN.).
7. ORIENT LOCK ASSEMBLY PARALLEL WITH PEDESTRIAN TRAFFIC.

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CITY ENGINEER

Dec., 2021

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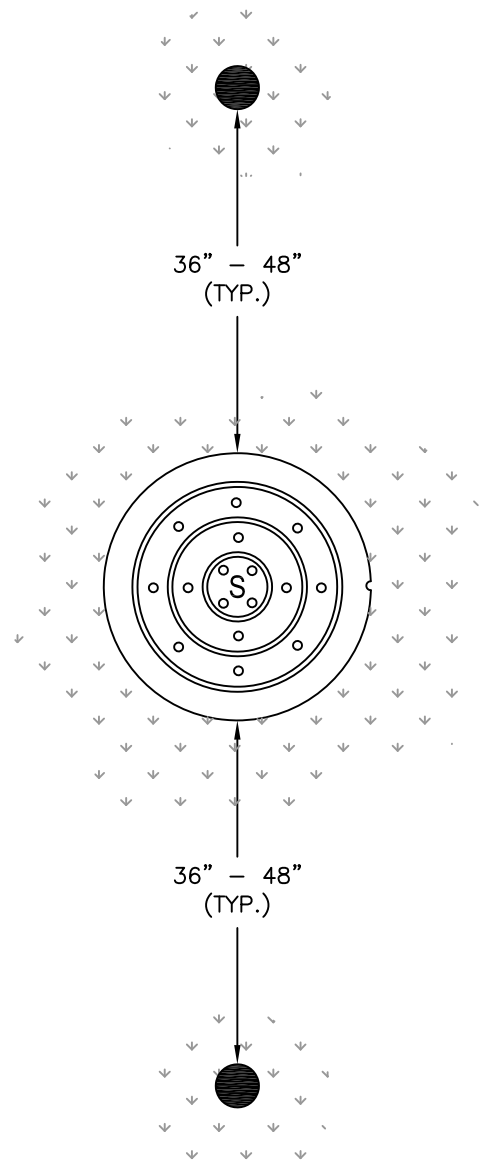
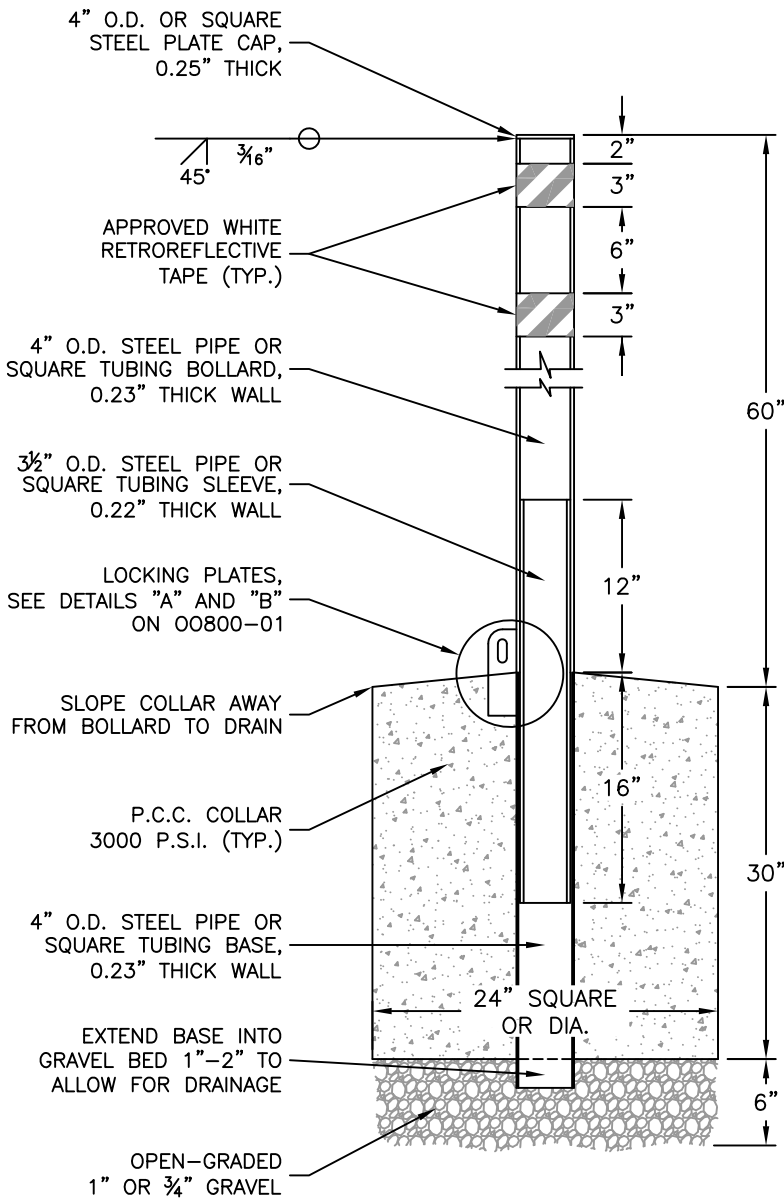
Aug., 2023

REVISIONS

BOLLARDS, URBAN  
INSTALLATION

DRAWING NO:

00800-01



**NOTES:**

1. ALL BOLLARDS SHALL HAVE A FINISHED HEIGHT OF 5'-0" UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.
2. LOCKS FOR REMOVABLE BOLLARDS SHALL BE PURCHASED BY THE CONTRACTOR AND SUPPLIED BY THE ENGINEER.
3. FINISHED BOLLARDS SHALL BE PAINTED WHITE AND AFFIXED WITH TWO BANDS OF APPROVED 3" WIDE WHITE RETROREFLECTIVE TAPE. TAPE BANDS SHALL BE PLACED AT THE TOP OF EACH BOLLARD AND 6" APART (EDGE-EDGE) AS SHOWN.
4. GRIND SMOOTH ALL METAL EDGES AND HOT-DIP GALVANIZE BASE ASSEMBLY AFTER FABRICATION.
5. ALL CONCRETE SHALL BE 3000 P.S.I. (MIN.) COMMERCIAL GRADE.
6. POSITION BOLLARDS IN LINE WITH SEWER LINE (IF APPLICABLE) AND AT A UNIFORM DISTANCE FROM THE MANHOLE TO AVOID CONFLICT WITH THE STRUCTURE (36" - 48"). ORIENT LOCK ASSEMBLIES TOWARDS MANHOLE.

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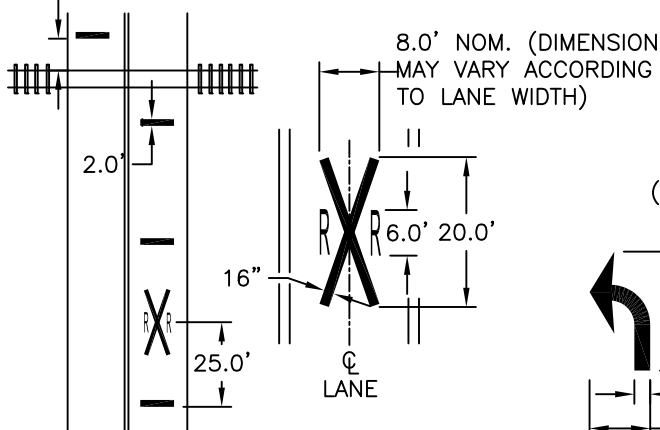
REVISIONS

**BOLLARDS, FIELD  
INSTALLATION**

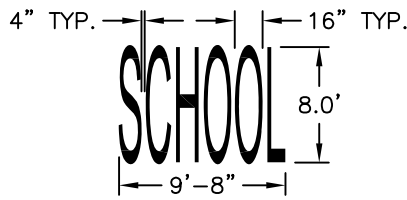
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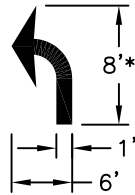
STOP LINE 1.0'  
FROM GATE (IF PRESENT)  
15' FROM NEAREST RAIL



**RR CROSSING PAVEMENT MARKING DETAIL**  
(TYPICAL BOTH DIRECTIONS; SEE NOTE 3)

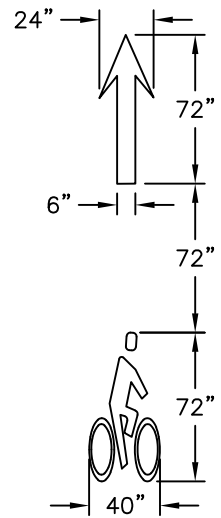


**SCHOOL SYMBOL DETAIL**  
(REFER TO F.H.W.A. LETTERING GUIDE)

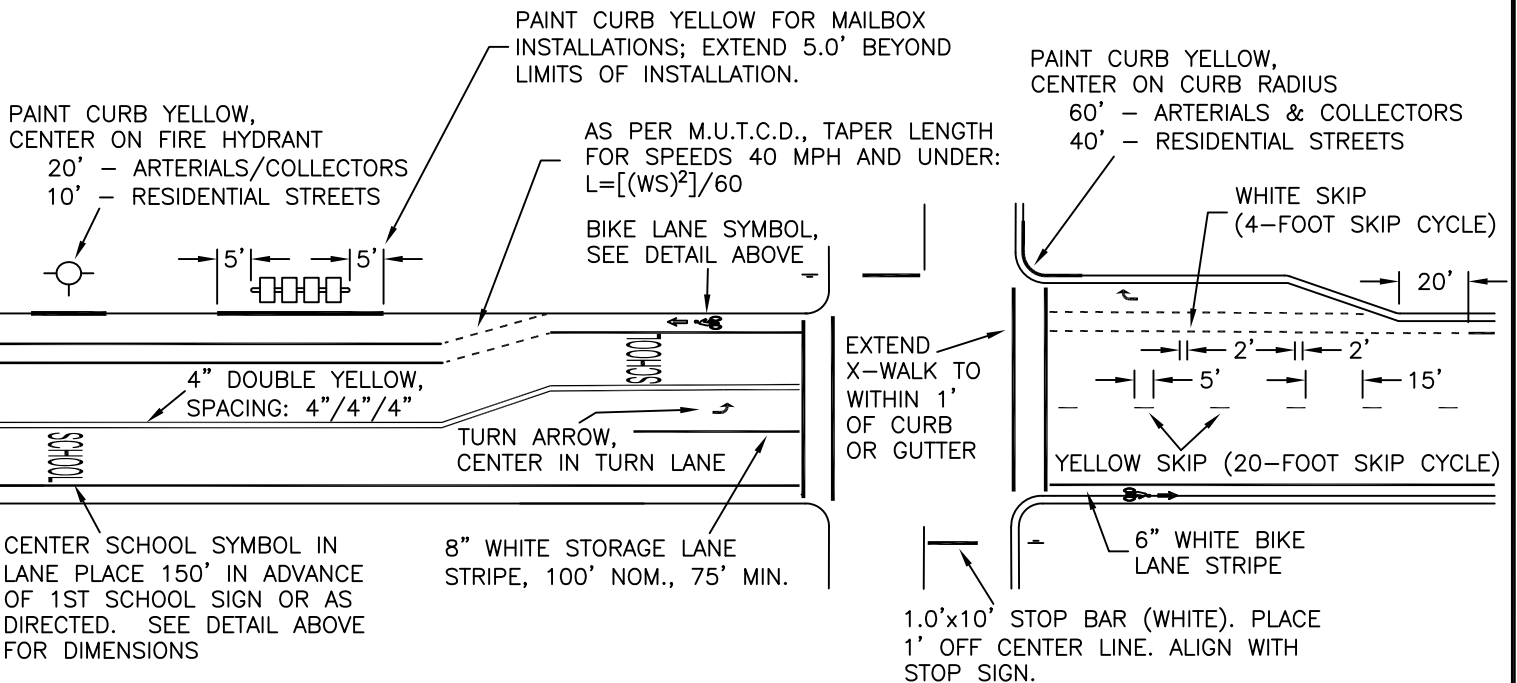


\*STANDARD SIZES MAY BE  
REDUCED UP TO 1/3 FOR  
LOW-SPEED (URBAN)  
CONDITIONS

**TURN ARROW DETAIL**



**BIKE SYMBOL DETAIL**



**NOTES:**

1. ALL TURN ARROWS, CROSSWALK BARS, STOP BARS, SCHOOL MARKINGS, BIKE SYMBOLS AND R.R. CROSSING MARKINGS SHALL BE TYPE "B" THERMOPLASTIC.
2. ALL CROSSWALK STRIPING SHALL BE 1.0' WIDE. HIGH-INTENSITY CROSSWALKS SHALL HAVE 2.0' WIDE STRIPES WITH 2.0' GAPS ONLY AT LOCATIONS DESIGNATED BY THE ENGINEER. SEE SUPP. DWG. 00700-08 FOR CROSSWALK WIDTH INFORMATION.
3. RAILROAD CROSSING MARKINGS SHOWN HERE FOR REFERENCE ONLY. MARKINGS SHALL BE IN ACCORDANCE WITH PART 8 OF THE CURRENT M.U.T.C.D.
4. FOR DIMENSION TOLERANCES, SEE SUPP. STD. SPECIFICATION 00850.46.

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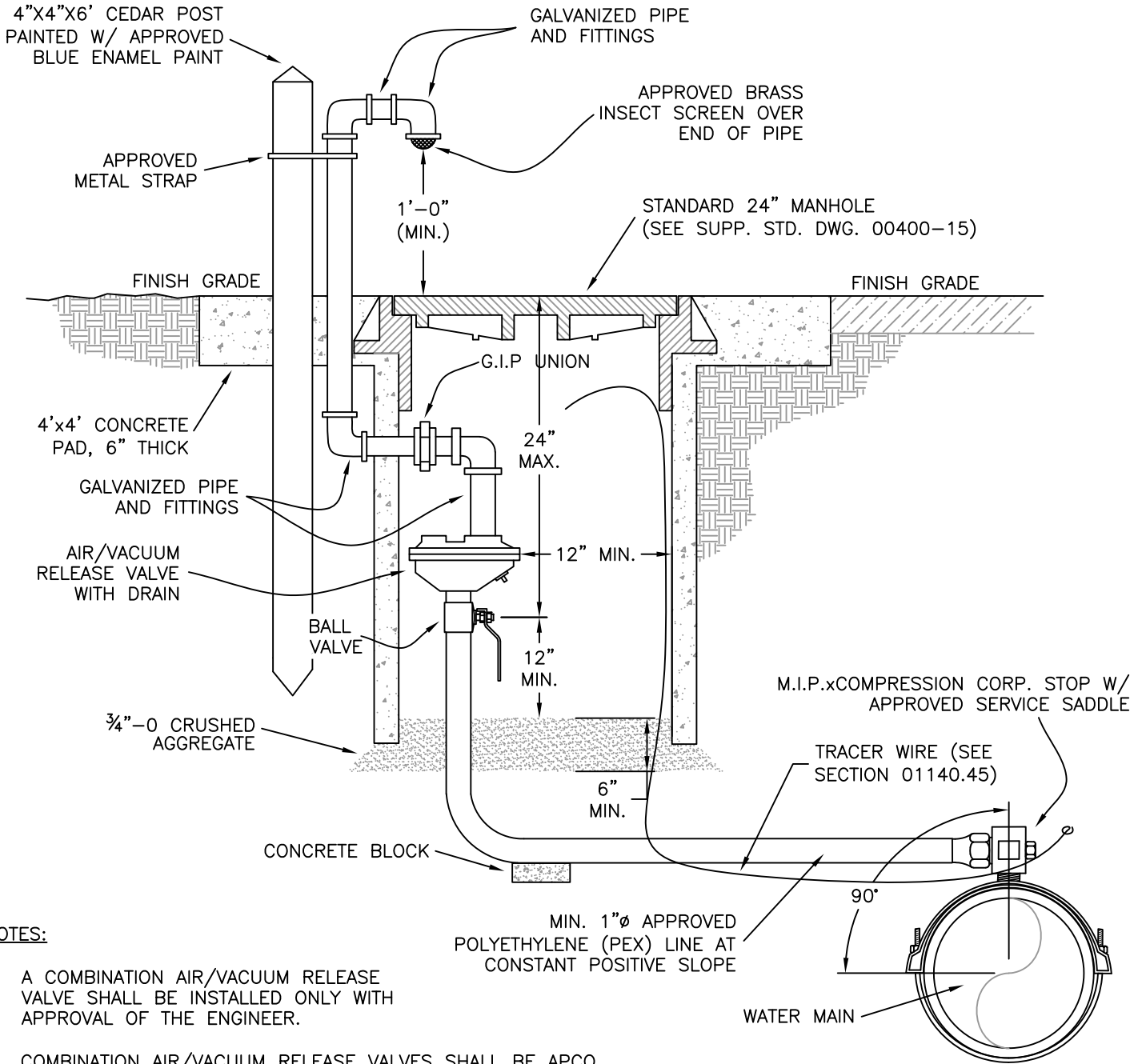
REVISIONS

**TYPICAL  
STRIPING**

DRAWING NO:

**00800-03**





**NOTES:**

1. A COMBINATION AIR/VACUUM RELEASE VALVE SHALL BE INSTALLED ONLY WITH APPROVAL OF THE ENGINEER.
2. COMBINATION AIR/VACUUM RELEASE VALVES SHALL BE APCO SERIES 140 C OR APPROVED EQUAL, FITTED WITH AN APPROVED DRAIN VALVE.
3. ASSEMBLIES SHALL BE INSTALLED AT HIGH POINTS IN WATER LINE. BREATHER TUBE MUST EXTEND ABOVE FINISH GRADE LEVEL (AS SHOWN ABOVE), FACE DOWNWARDS AND BE FITTED WITH AN APPROVED BRASS INSECT SCREEN.
4. SHUT OFF BALL VALVE SHALL BE LOCATED A MAXIMUM OF 24" BELOW FINISHED GRADE, A MINIMUM OF 12" ABOVE AGGREGATE BASE OF MANHOLE, AND WITH A 12" MINIMUM ACCESS WIDTH BETWEEN AIR/VACUUM RELEASE VALVE AND SIDE OF MANHOLE. ALL BRASS VALVES AND FITTINGS SHALL BE OF DOMESTIC ORIGIN AND STAMPED 'NL'.
5. PIPE AND VALVE SIZES SHALL BE SPECIFIED BY THE ENGINEER.
6. PROVIDE INSULATION AND ADDITIONAL DEPTH WHERE SPECIFIED FOR FREEZE PROTECTION.

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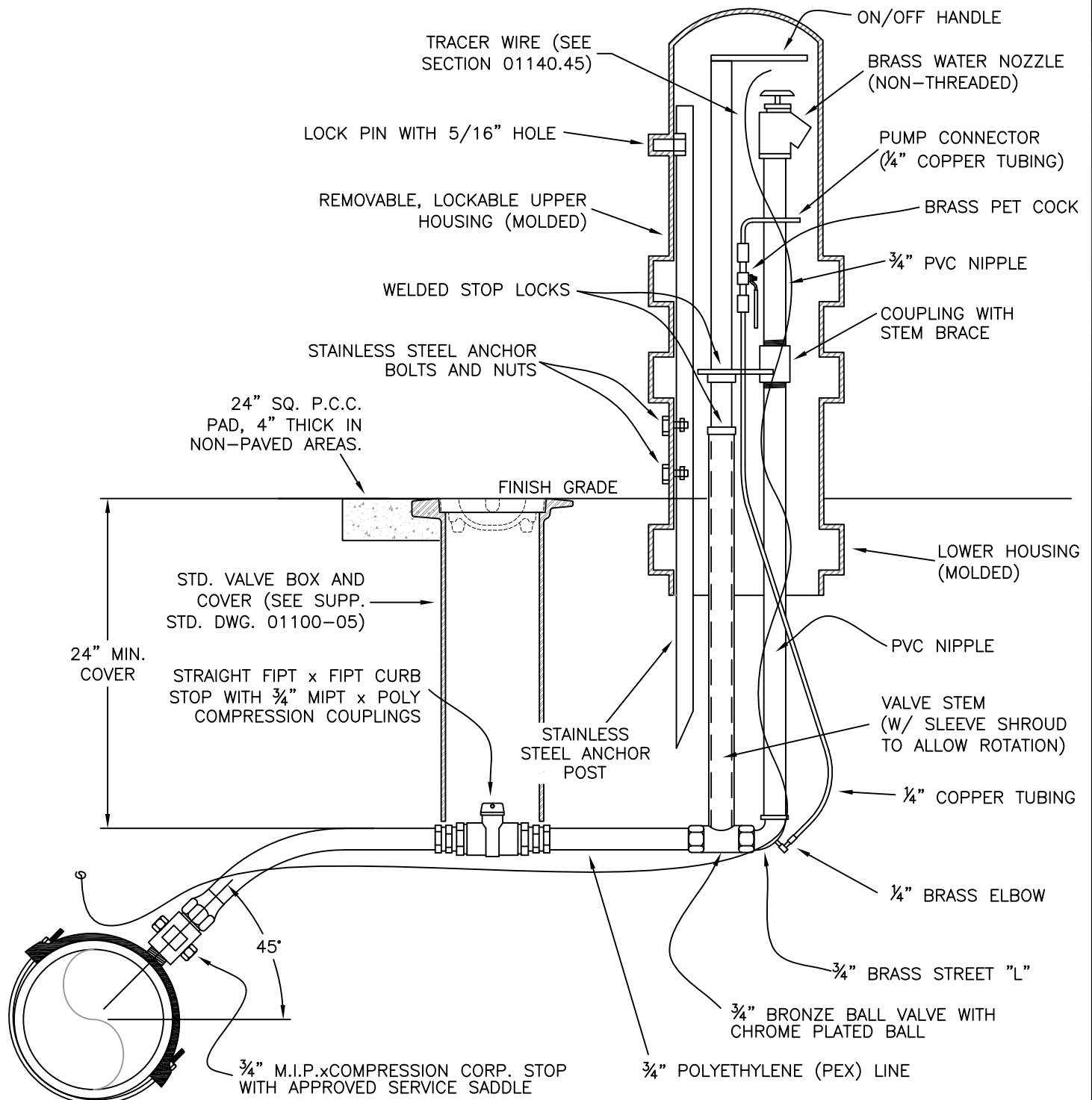
Aug., 2023

REVISIONS

**COMBINATION  
AIR-RELEASE VALVE  
ASSY. (2" & SMALLER)**

DRAWING NO:

**01100-07**



**NOTES:**

1. USE THRUST BLOCKING STANDARDS FOR THRUST BEARING AREAS (SEE SUPP. STD. DWG. 01100-03).
2. ALL PIPE AND FITTINGS SHALL BE GALVANIZED IRON UNLESS OTHERWISE NOTED. ALL BRASS VALVES AND FITTINGS SHALL BE OF DOMESTIC ORIGIN AND STAMPED 'NL'.
3. PROVIDE INSULATION AND ADDITIONAL DEPTH WHERE SPECIFIED FOR FREEZE PROTECTION.

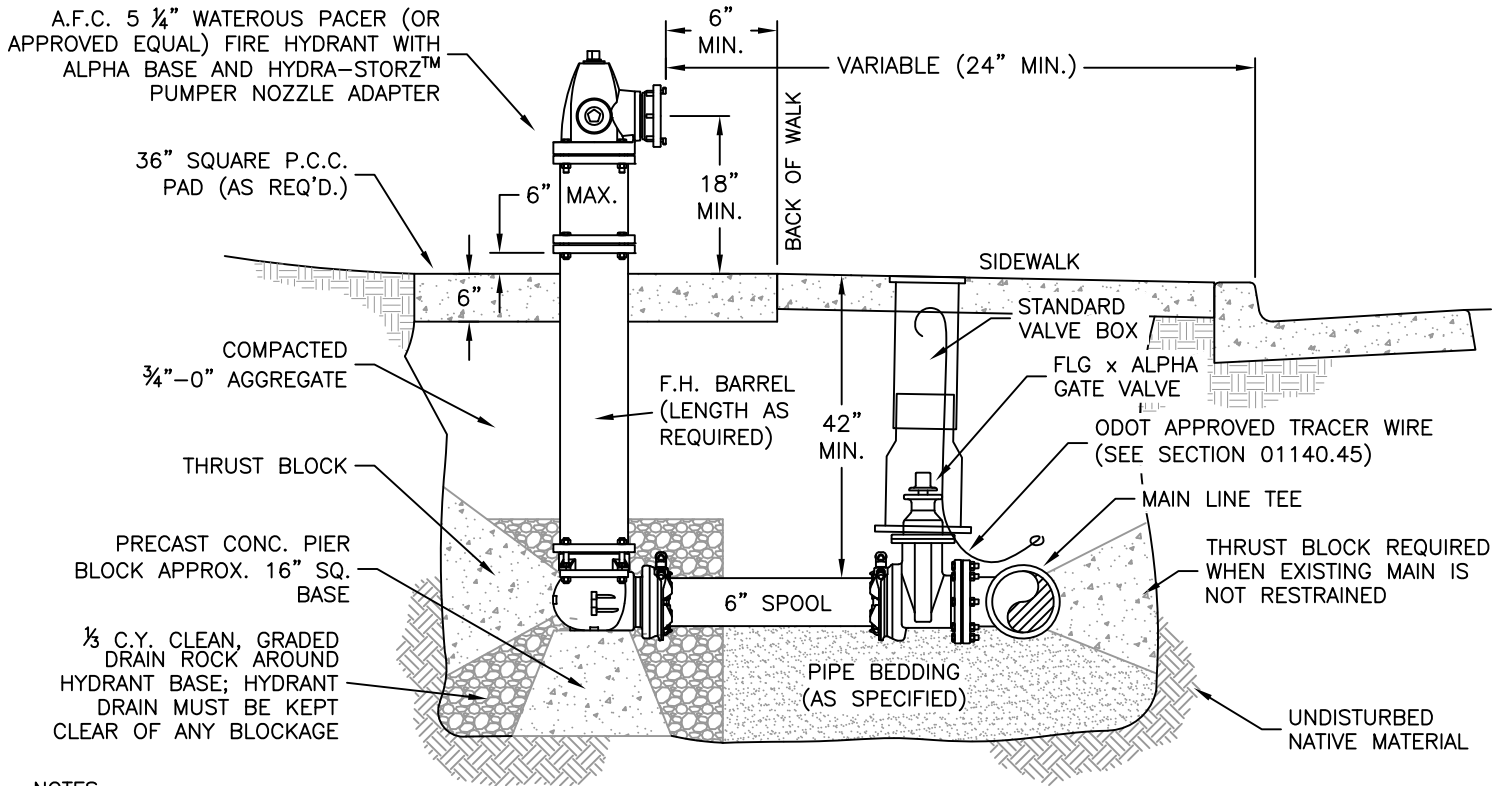
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 Aug., 2023

**WATER SAMPLING STATION**  
 DRAWING NO: 01100-08



**NOTES:**

- HYDRANTS SHALL BE 5 1/4" AMERICAN FLOW CONTROL WATEROUS PACER CONTEMPORARY FITTED WITH ALPHA JOINT RETAINER GLANDS, KENNEDY GUARDIAN, OR APPROVED EQUAL. SEE SUPP. STD. DWG. 01100-13 FOR NOZZLE AND OPERATING NUT DETAILS.
- ANY REQUIRED BARREL EXTENSIONS SHALL MEET MANUFACTURER SPECIFICATIONS FOR TYPE AND INSTALLATION.
- HYDRANT SHUTOFF VALVE SHALL BE A 6 INCH FLG-ALPHA RETAINER GLAND GATE VALVE, LOCATED AT THE MAIN LINE TEE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- HYDRANTS SHALL BE PLACED TO PROVIDE A MINIMUM OF 5' CLEARANCE FROM DRIVEWAYS, POLES, TREES AND OTHER OBSTRUCTIONS.
- WHEN PLACED ADJACENT TO THE CURB, THE PUMPER NOZZLE SHALL BE LOCATED A MINIMUM OF 24" FROM FACE OF CURB.
- ALL HYDRANT VALVES, FITTINGS AND ASSOCIATED PIPE JOINTS MUST BE MECHANICALLY RESTRAINED BY APPROVED METHOD. WHEN SPOOL LENGTH IS LESS THAN 18 FEET, NO INTERMEDIATE SPOOL JOINTS WILL BE ALLOWED.
- HYDRANT BASES MUST BE SUPPORTED ON COMPETENT SUBGRADE WITH AN APPROVED PRECAST P.C.C. PIER BLOCK.
- HYDRANT, VALVE AND PIPING SHALL BE PLUMB, LEVEL AND SQUARE PRIOR TO BACKFILL. HYDRANT SHALL BE HORIZONTALLY ADJUSTED TO ALIGN THE PUMPER NOZZLE PERPENDICULAR TO THE ADJACENT ROADWAY.
- A MINIMUM OF 1/3 CUBIC YARD OF CLEAN, GRADED DRAIN ROCK SHALL BE PLACED AROUND THE FOOT OF THE HYDRANT TO ALLOW PROPER DRAINAGE. HYDRANT DRAIN MUST BE KEPT CLEAR OF ANY BLOCKAGES.
- THRUST BLOCKING MUST BE USED AS SHOWN ABOVE (SEE SUPP. STD. DWG. 01100-03). ALL TEES, VALVES AND HYDRANT COMPONENTS SHALL BE ISOLATED FROM BLOCKING WITH PLASTIC SHEETING TO FACILITATE FUTURE MAINTENANCE.
- FOLLOWING HYDRANT INSTALLATION, A 36 INCH SQUARE X 6 INCH DEEP P.C.C. HOUSEKEEPING PAD SHALL BE POURED AROUND THE BASE OF THE HYDRANT AS SHOWN. HYDRANT SHALL BE CENTERED IN THE PAD AND PROTECTED FROM THE CONCRETE POUR WITH PLASTIC SHEETING.
- IF PROTECTIVE BOLLARDS ARE REQUIRED, THEY SHALL BE INSTALLED CLEAR OF THE PAD AND PLACED 45' OFF PORT POSITIONS OR AS DIRECTED BY THE ENGINEER (SEE SUPP. STD. DWG. 00800-01).
- FOLLOWING INSTALLATION, ADJUSTMENT AND TESTING, HYDRANTS (MINUS THE STORZ ADAPTER) SHALL BE REPAINTED WITH FEDERAL SAFETY YELLOW #31-E-551 OR APPROVED EQUAL.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



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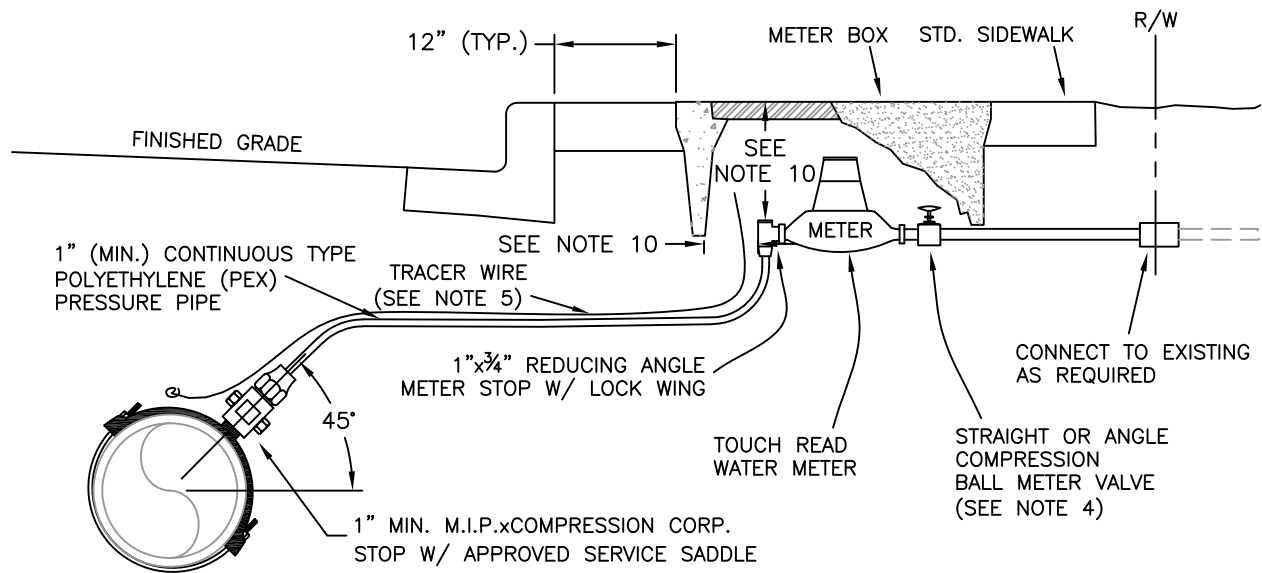
Aug., 2023

REVISIONS

**FIRE HYDRANT ASSEMBLY**

DRAWING NO:

**01100-12**



**NOTES:**

1. THE DETAIL SHOWN ABOVE REPRESENTS A STANDARD WATER SERVICE WITH A 5/8" x 3/4" METER ASSEMBLY. LARGER METERS AS NOTED ON PLANS REQUIRE PIPING AND FITTINGS EQUAL TO THE SIZE OF THE METER INSTALLED.
  2. ALL POLYETHYLENE PIPING PLACED WITHIN RIGHT-OF-WAY SHALL BE CONTINUOUS 1" MINIMUM POLYETHYLENE PIPE, FREE OF KINKS OR ABRUPT ANGLES. IN-LINE JOINTS ARE PROHIBITED. PIPE SHALL BE CERTIFIED AWWA C 904 CROSS-LINKED POLYETHYLENE (PEX) PRESSURE PIPE.
  3. PIPING PLACED WITHIN THE RIGHT-OF-WAY MUST HAVE A MINIMUM OF 24" COVER FROM FINISH GRADE OR BE PLACED A MINIMUM OF 12" BELOW SUBGRADE, WHICHEVER IS GREATER.
  4. METER VALVES SHALL BE DOMESTICALLY MADE FORD, MUELLER, McDONALD BRASS OR APPROVED EQUAL STRAIGHT OR ANGLE COMPRESSION BALL VALVES. ALL BRASS VALVES AND FITTINGS SHALL BE STAMPED 'NL'.
  5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 01140.45 FOR MORE INFORMATION.
  6. STANDARD WATER METERS SHALL BE SENSUS SR II "TOUCH READ" OR APPROVED EQUAL.
  7. METER BOX ASSEMBLIES SHALL BE ARMORCAST OR APPROVED EQUAL (SEE SUPP. STD. SPEC. 02490.70) WITH TOUCH READ LID.
  8. CONNECTIONS TO PRIVATE LINES SHALL BE MADE AT THE RIGHT-OF-WAY AS SHOWN ABOVE OR ON THE CUSTOMER SIDE OF THE EXISTING METER AS NOTED ON THE PLANS.
  9. METER SHALL BE CENTERED AND SET PLUMB INSIDE METER BOX. SET METER BOX 4" MINIMUM BEHIND CURB OR SIDEWALK. METER BOXES SET IN DRIVEWAYS SHALL HAVE TRAFFIC-RATED LIDS.
  10. ALL BRASS VALVES AND FITTINGS SHALL BE OF DOMESTIC ORIGIN AND STAMPED 'NL'.
  11. FOR 5/8" x 3/4" METERS:
    - A. METER STOPS MUST BE 6" TO 10" BELOW THE TOP OF THE METER BOX.
    - B. METER STOPS MUST BE 2 1/2" TO 4 1/2" FROM THE INSIDE WALL.
- FOR 1" METERS:
- A. METER STOPS MUST BE 6" TO 10" BELOW THE TOP OF THE METER BOX.
  - B. METER STOPS MUST BE 2 1/2" TO 3 1/2" FROM THE INSIDE WALL.
- FOR 1 1/2" & 2" METERS:
- A. METER STOPS MUST BE 9" TO 11" BELOW THE TOP OF THE METER BOX.
  - B. METER STOPS MUST BE 4" TO 6" FROM THE INSIDE WALL.

**CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING**



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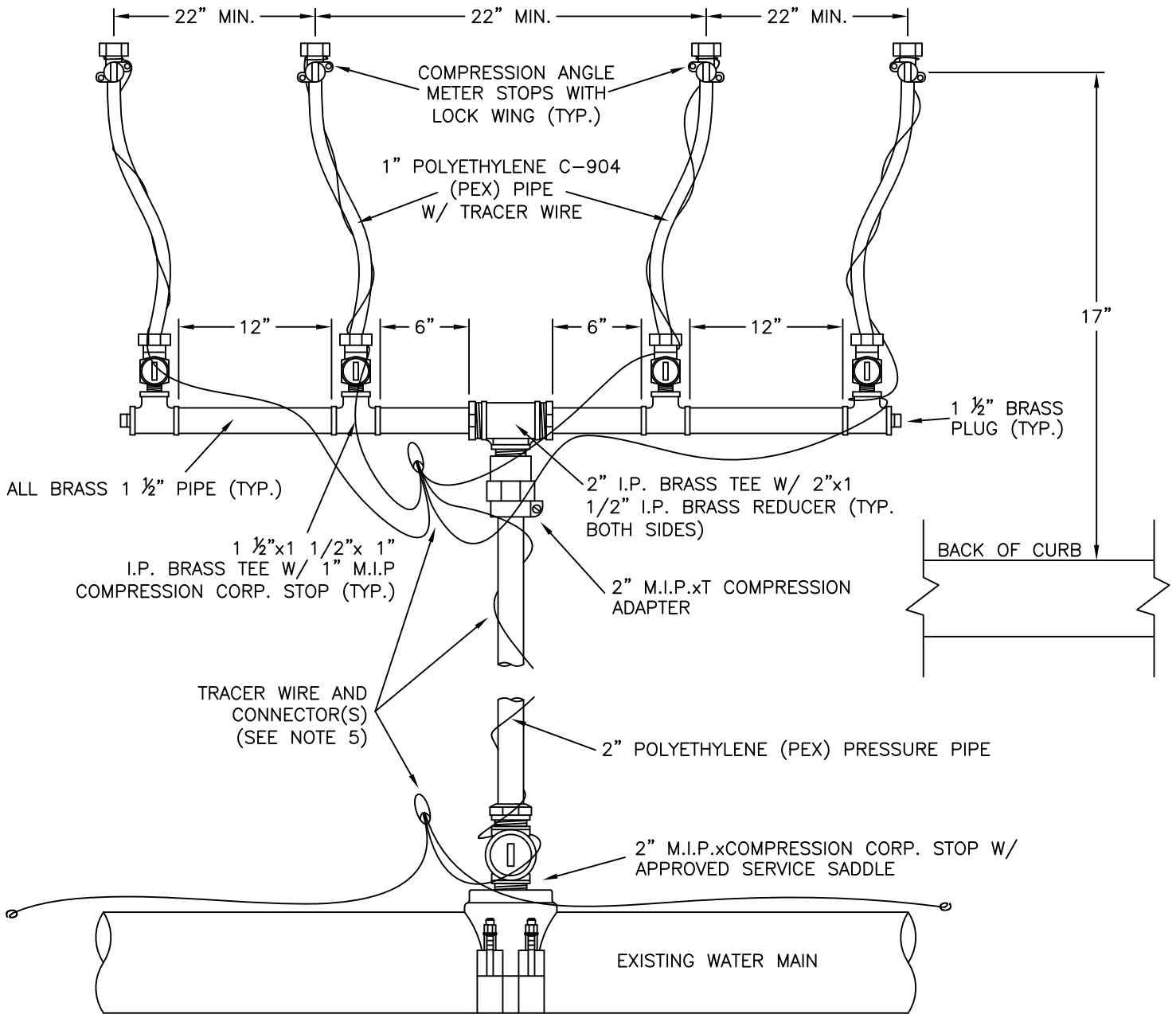
REVISIONS

**STANDARD WATER  
METER ASSEMBLY**

(5/8" x 3/4" TO 2")

DRAWING NO:

01100-14



MANIFOLD PLAN VIEW

NOTES:

1. MANIFOLD ASSEMBLIES ARE ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
2. ALL BRASS COMPRESSION FITTINGS MUST BE FORD, MUELLER, McDONALD BRASS OR APPROVED EQUAL. ALL BRASS FITTINGS SHALL BE STAMPED 'NL'.
3. WATER MAIN SERVICE SADDLE MUST BE ROMAC 202-N OR APPROVED EQUAL.
4. ALL PARTS SHALL BE DOMESTICALLY MANUFACTURED UNLESS OTHERWISE APPROVED.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 01140.45 FOR MORE INFORMATION.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING



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*Sam Whittaker*

CITY ENGINEER

Dec., 2021

DATE

Aug., 2023

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WATER SERVICE  
MANIFOLD

DRAWING NO:

01100-15