A BILL FOR AN ORDINANCE ADOPTING THE 2021 OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION AND THE CITY OF LEBANON SUPPLEMENTAL SPECIFICATIONS) **ORDINANCE BILL NO. 2022-01**

) **ORDINANCE NO. 2977**

WHEREAS, it is desirable and in the public interest that the construction of public improvements and the construction of private improvements within the city right-of-way conform to contemporary standards of engineering and safety; and

WHEREAS, construction standards not formally adopted through action by the governing body of a local agency may be subject to legal challenge by parties affected by the standards; and

WHEREAS, the City Engineer has recommended the 2021 Oregon Standard Specifications for Construction, APWA Oregon Chapter and the Oregon Department of Transportation as a widely recognized and appropriate standard to govern construction in Lebanon.

NOW, THEREFORE, the City of Lebanon ordains as follows:

Section 1. The 2021 Oregon Standard Specifications for Construction are hereby adopted as the standards for construction within the city.

Section 2. The City of Lebanon Supplemental Specifications and Standard Drawings attached and incorporated by this reference as Exhibit “A” are adopted to supplement the 2021 Oregon Standard Specifications for Construction.

Section 3. Except as otherwise provided by written contracts with the City or by supplemental specifications and plans authorized and maintained by the City Engineer, all public improvements, all private improvements located within or affecting city rights-of-way or easements, and all improvements affecting city-owned utilities shall be constructed, reconstructed, repaired and maintained in accordance with the 2021 Oregon Standard Specifications of Construction, APWA Oregon Chapter and the Oregon Department of Transportation, manual published jointly the American Public Works Association, Oregon Chapter.

Section 4. For the purpose of administration of the provisions of the manual, the term “Owner” shall refer to the city and the term “Contractor” shall refer to the person, persons, or firm responsible for the construction, reconstruction, repair, and maintenance of the improvements.

Section 5. Exceptions, modifications, alterations, additions and updates to the plans and specifications contained in this ordinance may be authorized or required by the City Engineer. With regards to a particular project or class of project, the City Engineer may disapprove any specification or material otherwise permitted if, in the City Engineer's opinion, the use of the specification or material would not be suitable or would not conform with the highest standards of safety, engineering and construction practice.

Passed by the Lebanon City Council by a vote of 6 for and 0 against and approved by the Mayor this 9th day of March 2022.

CITY OF LEBANON, OREGON

Paul R. Aziz, Mayor [X]
Jason Bolen, Council President [ ]

Attested:

Kim Scheafer, MMC, City Recorder

EXHIBIT A

2021 CITY OF LEBANON SUPPLEMENTAL STANDARD SPECIFICATIONS

MODIFYING THE

2021 Oregon Standard Specifications for Construction

Approved By:

RENEWS: June 30, 2022

City Engineer
City of Lebanon

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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.

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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PART 00100 - GENERAL CONDITIONS

Section 00110 - Organization, Conventions, Abbreviations and Definitions

The Organization, Conventions, Abbreviations and Definitions Section shall be administered in conformance with Section 00110 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Abbreviations

00110.10 Abbreviations - Add the following items to this Subsection:

A&R	-	Amend and Resubmit
CWCA	-	Certification of Work Completion and Acceptance
MCN	-	Make Corrections Noted
NET	-	No Exceptions Taken
R	-	Rejected
RFI	-	Request For Information
SPCC	-	Spill Prevention Control and Countermeasures

Definitions

00110.20 Definitions - Replace or add the following definitions to this Subsection:

As-Built Documents - A complete set of Contract Documents, which shall include a full-size set of construction drawings that has recorded in permanent red ink all changes, additions, deletions, or deviations made during construction. These documents are to be delivered to the Engineer upon completion of the Project and before final payment is made to the Contractor.

Bid Booklet - The bound paper version included in the Solicitation Documents, also known as the Bid Proposal, which can be accessed and printed from the Agency website at www.ci.lebanon.or.us under Doing Business / Bids, RFPs & RFQs.

Day - A Calendar Day including weekdays, weekends, and holidays, unless otherwise specified. For bid item measurement purposes, a Day is defined as 12 hours or more in any 24 hour (midnight to midnight) period.

Certification of Work Completion and Acceptance - See **Third Notification**.

Punch List - A detailed list of outstanding construction items issued to the Contractor once construction is substantially completed. This list may include, but is not limited to, construction omissions, damages, or other shortcomings that must be remedied before Final Payment or Notice of Final Acceptance.

Specifications - The Standard Specifications, Supplemental Standard Specifications and Special Provisions, together with all provisions of other documents incorporated therein by reference.

Submittal - Documentation provided by a Contractor relating to any substantial material or work installed or completed over the course of a project. They shall include, but not be limited to, all pertinent manufacturer's information, shop drawings, material certifications, test procedures, samples, etc.

Section 00120 - Bidding Requirements and Procedures

The Bidding Requirements and Procedures Section shall be administered in conformance with Section 00120 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00120.00 Prequalification of Bidders - Delete this Subsection and replace with the following:

The Agency will prequalify Bidders according to OAR Chapter 734, Division 10, and OAR 731-005-0025. A Bidder must file for prequalification and pay a non-refundable $50 application or renewal fee. Prequalification must be renewed on an annual basis; it is the responsibility of potential Bidders to maintain a current and accurate prequalification status. Bidders shall make application for prequalification by one of the following methods:

- City of Lebanon Contractor's Prequalification Application or Renewal Application. These forms are available at the following location:

  City of Lebanon
  925 Main Street
  Lebanon, OR 97355
  Telephone: (541) 258-4271
  Email: cdc@ci.lebanon.or.us

- Prequalification Application may be obtained at www.ci.lebanon.or.us under Inside City Hall / Engineering Services / Development & General Engineering Services / Application & Fees.
- ODOT Standard Prequalification Forms. These forms are available from the ODOT Procurement webpage at https://www.oregon.gov/odot/Business/Procurement/Pages/Bid_Award.aspx.

Bidders shall return or email completed forms to the City of Lebanon at the address listed above.

Contracts will only be awarded to Bidders who, prior to the time of Notice of Award, are prequalified in the Class or Classes of Work designated in the Special Provisions, except that a Bidder whose prequalification has been revoked or revised as provided in ORS 279C.430(4) may also be eligible for Award under that statute if the Project was advertised prior to the revocation or revision.

The Agency will regularly evaluate the performance of Contractors on its projects for purposes of responding to reference checks, future prequalification, and determinations of responsibility.

00120.01 General Bidding Requirements - Delete this Subsection and replace with the following:

Bidders may submit Bids by paper only.

The standard prequalification forms furnished by either the Agency or the ODOT Procurement Office shall be used by the Bidder to file authorized signatures with the Agency. Signatures shall be of personnel authorized to submit Bids, modify Bids, or withdraw Bids.

As and when applicable, the Contractor shall maintain the certifications required by ORS 279A.107.

00120.05 Requests for Plans, Special Provisions, and Bid Booklets: - Delete this Subsection and replace with the following:

(a) Informational Plans and Special Provisions - Informational Plans and Special Provisions may be obtained at www.ci.lebanon.or.us under Doing Business / Bids, RFPs & RFQs.

(b) Bidding Plans, Special Provisions, and Bid Booklets - Bidders shall submit Bids in accordance to the Advertisement for Bids for the project of interest.

Each request must include both the name of the person ordering or obtaining the Solicitation Documents and the name of the Entity intending to use them. (The Agency will add the name of the Entity intending to use the Solicitation Documents to the list of Holders of Bidding Plans.)

Bidders are cautioned that only Solicitation Documents obtained from the Agency's Community Development Office may be used to submit Bids. Informational Plans and Specifications (not for bidding) and copies of the Agency's Supplemental Specifications (based on Oregon Standard Specifications) may be purchased from the Agency's Community Development Office. Oregon Standard Specifications are available through the ODOT Doing Business webpage at: https://www.oregon.gov/odot/Business/Pages/Standard_Specifications.aspx.

00120.16 Material, Equipment, and Method Substitutions -

(a) Written Request - Add the following sentence to this Subsection:

Written requests are to be submitted on the Request for Information (RFI) form included in the Appendix of the Bid Booklet.

00120.30 Changes to Plans, Specifications, or Quantities Before Opening of Bids - Delete this Subsection and replace with the following:

The Agency reserves the right to issue Addenda making changes or corrections to the Plans, Specifications, or quantities. The Agency will provide Addenda by delivery service, mail, or an electronic update to a construction plan center for the Bidders to retrieve.

The Agency will not be responsible for failure of bidders to receive any issued addenda. Bids may be rejected if opened and found by the Agency to not be based on Addenda issued before Bid Closing.

00120.40 Preparation of Bids -

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

The Bidders shall not alter, in any manner, the paper documents bound within the Bid Section. Bidders shall complete the certifications and statements included in the Bid Section of the Bid Booklet according to the instructions. Signature of the Bidder's authorized representative thereon constitutes the Bidder's confirmation of and agreement to all certifications and statements contained in the Bid Booklet. Entries on the documents shall be in ink or typed. Signatures and initials shall be in ink.

The Bidder shall properly complete and bind all paper documents in the Bid Section, as specified in 00120.10, between the front and back covers of the Bid Booklet, except that the Bid Bond is not required if another permissible type of Bid guaranty is provided. (see 00120.40(e)).

(c) Bid Schedule Entries -

(2) Electronic Bid Schedule Entries - Delete this Subsection.

(d) Bidders Address and Signature Pages - Delete this Subsection and replace with the following:

Bidders shall include in the Bid the address to which all communications concerning the Bid and Contract should be sent. The Bid must be signed by a duly authorized representative of the Bidder.

(e) Bid Guaranty - Delete this Subsection and replace with the following:

All Bids shall be accompanied by a Bid guaranty in the amount of 10% of the total amount of the Bid. Acceptable Surety companies are limited to those authorized to do business in the State of Oregon. Forfeiture of Bid guaranties is covered by 00130.60 and return of guaranties is covered by 00130.70.

The Bid guaranty shall be either a Surety bond, irrevocable letter of credit issued by an insured institution as defined in ORS 706.008 or security in the form of a cashier's check made payable to the Agency. (see ORS 279C.365(4)).

If a Surety bond is submitted, Bidders shall use the Agency's standard Bid Bond form included with the Bid Booklet. Bidders shall submit the bond with original signatures and the Surety's seal affixed. The Bid guaranty shall be submitted by mail, delivery service, or hand delivered to the offices and addresses, and at the times given in the Bid Booklet.

(f) Disclosure of First-Tier Subcontractors - Delete this Subsection and replace with the following:

Without regard to the amount of a Bidder's Bid, if the Agency's cost range for a public improvement Project in the "Notice to Contractors", or in other advertisement or Solicitation Documents, exceeds $100,000, the Bidder shall, within 2 working hours of the time Bids are due to be submitted, submit to the Agency, on a form provided by the Agency, a disclosure identifying any first-tier Subcontractors that will furnish labor or labor and Materials, and whose contract value is equal to or greater than:

- 5% of the total Project Bid, but at least $15,000, or
- $350,000, regardless of the percentage of the total Project Bid.

For each Subcontractor listed, Bidders shall state:

- The name of the Subcontractor;
- The dollar amount of the subcontract; and
- The category of Work that the Subcontractor would be performing.

If no subcontracts subject to the above disclosure requirements are anticipated, a Bidder shall so indicate by entering "NONE" or by filling in the appropriate check box. For each Subcontractor listed, Bidders shall provide all requested information. Failure to submit a form or submission of a form that does not include the information required by ORS 279C.370 for each Subcontractor listed, specifically the name of each Subcontractor, the dollar amount of each subcontract and the category of Work that each Subcontractor will perform, will result in the rejection of the Bid. The Agency is not required to determine the accuracy or the completeness of the Subcontractor disclosure. See ORS 279C.370 and OAR 731-007-0260.

The Subcontractor Disclosure Form may be submitted by:

- Filling out the Subcontractor Disclosure Form included in the Bid Booklet and submitting it together with the Bid at the time and place designated for receipt of Bids; or
- Removing it from the Bid Booklet, filling it out and submitting it separately to the Agency at the address or email given in the Bid Booklet.

Subcontractor Disclosure Forms submitted by either method will be considered late if not received by the Agency within 2 working hours of the time designated for receiving Bids.

In the event that multiple Subcontractor Disclosure Forms are submitted, the last version received prior to the deadline will be considered to be the intended version.

(g) Disclosure of Conflict of Interest - Delete this Subsection and replace with the following:

Bidders shall review the Agency's Conflict of Interest Guidelines, and if any disclosures are required (with the exception of any required disclosures for Subcontractors, which are addressed under 00180.21), Bidders shall complete the Conflict of Interest Disclosure Form(s) and submit, before the time Bids are due to be submitted, by paper according to 00120.45(a). The ODOT Conflict of Interest Guidelines and Conflict of Interest Disclosure Form are available on the ODOT Procurement Office website (see 00110.05(e)).

00120.45 Submittal of Bids - Delete this Subsection and replace with the following:

Bids may be submitted to the Agency by mail, parcel delivery service, or hand delivery to the address given in the Bid Booklet in a sealed envelope. All Bids shall have the following information clearly marked on the outside of the envelope:

- The words "Bid" and "To Be Opened by Authorized Personnel Only"
- Project Name
- Bid Opening Time and Date
- Bidder's Name
- Contractor's License Number

If submitting Bids by mail or by parcel delivery service, the Bidder shall place the sealed envelope containing the paper Bid inside a separate sealed envelope or package.

Bids submitted after the time set for receiving Bids will not be opened or considered. The Agency assumes no responsibility for the receipt and return of late Bids.

00120.50 Submitting Bids for More than One Contract - Delete this Subsection.

00120.60 Revision or Withdrawal of Bids - Delete this Subsection and replace with the following:

Information provided by the Bidder and entered in the Bid Booklet may be revised or withdrawn after the Bid has been delivered to the Agency, with the following provisions:

- Changes are received at the same address and office identified in the paper Bid Booklet for submitting Bids;
- Revisions can only be made to unit prices and/or total prices.
- Revisions or Withdrawals shall be submitted in writing and signed by an authorized representative of the Bidder and must clearly show the following information:
    - The words "Bid Revision" or “Bid Withdrawal”
    - Project Name
    - Bid Opening Time and Date
    - Bidder's Name
- Revisions or Withdrawals may be delivered by mail, parcel delivery service, courier, email, or in person to the Agency but must be received no later than the time designated for receiving bids. Revisions or Withdrawals submitted after the time set for receiving Bids will not be considered by the Agency.

00120.65 Opening and Comparing Bids - Add the following to this Subsection:

The results of Bid comparisons and considerations will be made available to the public within a reasonable time after opening of the Bids.

00120.70 Rejection of Non-Responsive Bids - Delete the 5th and 20th bullets in this Subsection (related to eBIDS and/or BidExpress®) and add the following bullet:

- The Bid is submitted on documents not obtained directly from the Agency's Community Development Office, from the Agency website, or is submitted by a Bidder who has not been identified by the Agency as a "Holder of Bidding Plans" as required by 00120.05.

00120.95 Opportunity for Cooperative Arrangement - Delete this Subsection.

Section 00130 - Award and Execution of Contract

The Award and Execution of Contract Section shall be administered in conformance with Section 00130 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00130.10 Award of Contract - Delete this Subsection and replace with the following:

After the Bids are opened and a determination is made that a Contract is to be awarded, the Contract will be awarded to the lowest responsible Bidder. For the purposes of this Section, "lowest responsible Bidder" means the responsible Bidder who submitted the lowest responsive Bid, who is not on the list created by the Construction Contractors Board according to ORS Chapter 701, and who has:

- Substantially complied with all prescribed public bidding procedures and requirements.
- Available the appropriate financial, Materials, Equipment, facility and personnel resources and expertise, or ability to obtain the resources and expertise, necessary to indicate the capability of the prospective Bidder to meet all contractual responsibilities.
- A satisfactory record of performance. In evaluating a Bidder's record of performance, the Agency may consider, among other things, whether the Bidder completed previous contracts of a similar nature with a satisfactory record of performance. For purposes of evaluating a Bidder's performance on previous contracts of a similar nature, a satisfactory record of performance means that to the extent that the costs associated with and time available to perform a previous contract remained within the Bidder's control, the Bidder stayed within the time and budget allotted for the procurement and otherwise performed the contract in a satisfactory manner. Satisfactory performance of the Contract also includes compliance with the requirements for records in 00170.07 for Contracts with the Agency.
- A satisfactory record of integrity. In evaluating a Bidder's record of integrity, the Agency may consider, among other things, whether the Bidder has previous criminal convictions for offenses related to obtaining or attempting to obtain a contract or subcontract or in connection with the Bidder's performance of a contract or subcontract.
- Qualified legally to contract with the Agency.
- Supplied all necessary information in connection with the inquiry concerning responsibility. If a prospective Bidder fails to promptly supply information requested by the Agency concerning responsibility, the Agency will base the determination of responsibility upon any available information, or may find the prospective Bidder not to be responsible.
- Not been disqualified by the public contracting agency under ORS 279C.440.
- An unexpired certificate issued by the Oregon Department of Administrative Services (under ORS 279A.167) upon completion of the curriculum and assessment that the Bidder understands the prohibitions set forth in ORS 652.220 and in other laws or rules that prohibit discrimination in compensation or wage payment. The certificate is only required if the Bidder employs 50 or more full-time workers and submitted a Bid for a procurement with an estimated contract price that exceeds $500,000.

If the Bidder is found not to have a satisfactory record of performance or integrity, the Agency will document the record and the reasons for the unsatisfactory finding.

In determining whether the Bidder is responsible, the Agency may also consider whether the Bidder has liquidated and delinquent debt owed to the State of Oregon or any department or agency of the State.

The Agency will provide Notice of Intent to Award on the Agency website (see 00110.05(e)).

The Award will not be final until the later of the following:

- The Agency Council has approved the Intent to Award, or
- The Agency has provided a written response to each timely protest, denying the protest, and affirming the Award.

If the Agency accepts a Bid and awards a Contract, the Agency will send the successful Bidder written notice of acceptance and Award.

Notice of Award and Contract booklets ready for execution will be sent within 30 Calendar Days of the opening of Bids or within the number of Calendar Days specified in the Special Provisions or a written mutual agreement.

00130.15 Right to Protest Award - Delete this Subsection and replace with the following:

Adversely affected or aggrieved Bidders, limited to the three apparent lowest Bidders and any other Bidder directly in line for Contract Award, may submit to the Agency a written protest of the Agency's intent to Award within 3 working days following posting of the Notice of Intent to Award on the Agency website (see 00110.05(e)). The protest shall specify the grounds upon which it is based.

The Agency will not consider late protests.

00130.50 Execution of Contract and Bonds:

(a) By the Bidder - Replace the first sentence in the first paragraph of this Subsection with the following:

The successful Bidder shall deliver the required number of Contract booklets with the properly executed Contract, Performance Bond, Payment Bond, certification of workers' compensation coverage, and the required certificates of insurance, to the Agency within 10 Calendar Days after the date on which the Contract booklets are sent or otherwise conveyed to the Bidder under 00130.10.

00130.90 Notice to Proceed - Delete this Subsection and replace with the following:

Notice to Proceed will be issued within 10 Calendar Days after the Contract is executed by the Agency, or as otherwise indicated in the Project Special Provisions.

Should the Agency fail to issue the Notice to Proceed within 10 Calendar Days of Contract execution, or as otherwise indicated in the Project Special Provisions, the Contractor may apply for an adjustment of Contract Time according to 00180.80(c).

Section 00140 - Scope of Work

The Scope of Work Section shall be administered in conformance with Section 00140 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00140.90 Final Trimming and Cleanup - Add the following to this Subsection:

If the Contractor fails to adequately trim and clean the project site as specified, the Agency reserves the right to perform these tasks with Agency personnel and/or equipment and deduct incurred costs from monies due or to become due to the Contractor under the Contract (see 00180.15).

Section 00150 - Control of Work

The Control of Work Section shall be administered in conformance with Section 00150 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00150.01 Project Manager's Authorities and Duties - Delete the second paragraph in this Subsection and replace with the following:

The Contractor shall direct all requests for clarification or interpretation of the Contract in writing to the Engineer. All requests shall be in writing and submitted on a Request for Information (RFI) form, which is included in the Contract Documents. The Engineer will respond within a reasonable amount of time. Contract clarification or interpretation obtained from persons other than the Engineer will not be binding on the Agency.

00150.05 Cooperative Arrangements - Delete this Subsection.

00150.10 Coordination of Contract Documents -

(a) Order of Precedence - Delete the bulleted list in this Subsection and replace with the following:

- 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.

00150.15 Construction Stakes, Lines, and Grades:

(a) General - Add the following paragraph to this Subsection:

Should the Contract Documents specify that the Contractor is responsible for setting field controls, the Contractor will be solely responsible for work outlined in 00150.15(b-c).

(b) Agency Responsibilities - Delete this Subsection and replace with the following:

The Engineer will:

- Lay out clearing and removal limits for existing work;

- Lay out and set construction stakes and marks to establish the lines, grades, Slopes, Cross Sections, and curve super-elevations for roadwork, to include:
    - Base work,
    - Curb and Gutter,
    - ADA ramp and driveway access locations,
    - Sidewalks and multi-use paths,
    - Striping,
    - Signs, bollards, fences, and other items specifically called out in the plans;
- Lay out and set construction stakes and marks to establish the lines, grades, and Slopes for
    - Water lines, valves, services, and meters, and other appurtenances specifically called out in the plans,
    - Sanitary and drainage lines, manholes, laterals, and other appurtenances specifically called out in the plans;
- Provide one set of construction stakes for line and grade for each additional phase of Work;
- Set bench marks and stakes for centerline of Bridges and bents;
- Calculate and provide finish deck grades; and
- Deduct from payments due the Contractor all costs incurred to replace stakes and marks negligently or intentionally damaged, removed, or destroyed by the Contractor. The Agency will provide a fee schedule at the preconstruction conference. The minimum charge for replacement staking will be $100 per occurrence.

Any additional staking the Contractor deems necessary which is not included in the list above shall be provided and paid for at no additional expense to the Agency.

(c) Contractor Responsibilities - Delete the first bulleted item in this Subsection and replace with the following:

- Inform the Engineer of staking requirements at least 3 Working Days before the staking needs to begin. Staking requests shall be submitted in writing. When request is submitted to the Agency's contracted firm, a copy of the request shall be delivered to the Agency.
- Additional staking not covered by 00150.15(b) shall be the sole responsibility of the Contractor and performed at no additional expense to the Agency.

00150.35 Plans, 3D Engineered Models, Working Drawings, and 3D Construction Models:

(b) Working Drawings and 3D Construction Models - Add the following to this Subsection:

All working drawings, stamped or unstamped, shall be submitted in accordance with 00160.60(d).

(c) Number, Size, and Format of Working Drawings and 3D Construction Models -

(1) Paper Submittal - Delete the first sentence in this Subsection and replace with the following:

The Contractor shall submit to the Engineer 4 copies of Working Drawings for steel Structures and 3 copies of Working Drawings for other Structures.

(d) Processing Working Drawings and 3D Construction Models - Delete this Subsection and replace with the following:

(1) Stamped Working Drawings - Stamped Working Drawings will be designated by the Engineer on the accompanied Submittal Transmittal Form as "No Exceptions Taken" (NET), "Make Corrections Noted" (MCN), "Amend and Resubmit" (A&R) or "Rejected" (R). If stamped Working Drawings are returned for correction by the Engineer, the Contractor shall address all comments and resubmit the stamped Working Drawings.

(2) Unstamped Working Drawings - Unstamped Working Drawings will be designated by the Engineer on the accompanied Submittal Transmittal Form as "No Exceptions Taken" (NET), "Make Corrections Noted" (MCN), "Amend and Resubmit" (A&R) or "Rejected" (R). If unstamped Working Drawings are returned for correction by the Engineer, the Contractor shall address all comments and resubmit the unstamped Working Drawings.

(3) 3D Construction Models - 3D Construction Models will be designated by the Engineer on the accompanied Submittal Transmittal Form as "No Exceptions Taken" (NET), "Make Corrections Noted" (MCN), "Amend and Resubmit" (A&R) or "Rejected" (R). If 3D Construction Models are returned for correction by the Engineer, the Contractor shall address all comments and resubmit the 3D Construction Models.

The Contractor shall not fabricate or construct any structural components until the stamped or unstamped Working Drawings are returned by the Engineer with a written designation of "No Exceptions Taken" or "Make Corrections Noted" as applicable for the Working Drawings.

The Contractor shall not begin construction activities that will utilize a 3D Construction Model until the Engineer has processed the model and designated it as "No Exceptions Taken" or "Make Corrections Noted". The Engineer's processing of the Working Drawings and 3D Construction Models does not amend any contractual obligations of the parties.

The Engineer will process and return Working Drawings and 3D Construction Models within 21 Calendar Days (65 Calendar Days if Railroad approval is required) after receipt by the Engineer. If the Engineer fails to return such drawings or models within this period of time, the Engineer will consider granting a Contract Time extension according to 00180.80. If the Contractor is required to resubmit Working Drawings or 3D Construction Models to the Engineer, the Engineer will process and return the Working Drawings or 3D Construction Models within 21 Calendar Days (65 Calendar Days if Railroad approval is required) after receipt of the resubmitted Working Drawings or 3D Construction Models by the Engineer.

00150.36 Project Record Drawings ("As-Builts") - Add the following Subsection:

The Contractor shall maintain at the job site one full size set of the Contract drawings for recording as-built conditions. Mark (in red) changes, additions, or deletions made during the course of construction. These drawings shall be available to the Engineer for review at any time during construction. Upon completion of the project, the Contractor shall turn over the marked-up set of prints to the Engineer.

Requests for partial payment will not be approved if the marked prints are not kept current; request for final payment will not be approved until accurate and complete as-builts are delivered to the Engineer.

00150.37 Equipment Lists and Other Submittals - Delete the first sentence in this Subsection and replace with the following:

The Contractor shall submit Equipment lists, and other required submittals for approval by the Engineer (see 00160.60(d)).

00150.60 Construction Equipment Restrictions:

(a) Load and Speed Restrictions for Construction Vehicles and Equipment - Delete the second bulleted item in this Subsection and replace with the following:

- The Contractor shall restrict weights to legal loads and shall travel at speeds of no more than 25 mph or the posted construction speed, whichever is less, at any location of the Project Site, to include areas adjacent to Site accesses and exits.

00150.70 Detrimental Operations - Add the following after the first paragraph in this Subsection:

Noise levels within and adjacent to the Project Site shall comply with all applicable local, state, and federal regulations (see 00290.32).

00150.75 Protection and Maintenance of Work During Construction - Delete the first paragraph in this Subsection and replace with the following:

The Contractor shall protect and maintain the Work and Project Site during construction and until Certification of Work Completion and Acceptance (CWCA) has been issued, unless otherwise provided in the Contract. For the purposes of this Subsection, “maintenance” shall include measures to prevent deterioration of Roadway and Structures at the Project Site, and to keep them in good condition at all times during the prosecution of the Work.

The Contractor shall maintain the Project Site in a neat, orderly manner and immediately clear away debris, garbage, and other materials deemed unsightly or hazardous by the Engineer. The Contractor shall continuously allocate sufficient Equipment and workers to achieve such maintenance.

00150.90 Final Inspection:

(a) On-Site Construction Work - Delete the second paragraph in this Subsection and replace with the following:

When all On-Site Work on the Project is completed, including but not limited to Change Order Work and Extra Work, the Engineer will develop and issue a Punch List as needed and issue it to the Contractor.

(b) All Contract Work - Delete the first sentence in this Subsection and replace with the following:

The Engineer will issue a CWCA when the Contractor has satisfactorily accomplished all of the following:

00150.95 Final Acceptance - Delete this Subsection and replace with the following:

When all work by the Contractor has been completed and accepted, the Agency will issue a CWCA, which will contain the date of final acceptance of the Project.

00150.96 Maintenance Warranties and Guaranties - Delete this Subsection and replace with the following:

(a) Project Warranty - The work is guaranteed by the Contractor for a specified period from the date of final acceptance by the Agency. If no warranty period is specified, the work shall be guaranteed for a period of one year from the date of final acceptance by the Agency. If the Contract contains a warranty clause, the CWCA will indicate when that warranty period will expire.

If, within the warranty period, repairs or changes are required in connection with the work, the Contractor shall promptly, without expense to the Agency:

(1) Place in satisfactory condition all guaranteed work;

(2) Correct all damage to structures, sites, equipment, or contents thereof which is the result of the use of materials, equipment or workmanship that is inferior, defective, or not in accordance with the terms of the Contract; and,

(3) Correct any damage to structures, sites, equipment, or contents thereof sustained during the fulfillment of corrective work.

Repairs, replacements, or changes made under the warranty requirements shall be warranted for the warranty period as specified in this Section, beginning on the date of the acceptance of the repairs, replacements, or changes.

If the Contractor fails within 10 days to proceed to comply with the terms of the specified warranty, the Agency may have the defects corrected with Agency personnel and equipment or by independent contract. The Contractor and Contractor's surety shall be liable for all expenses incurred. In case of an emergency where delay would cause serious loss or damage, repairs may be made without notice to the Contractor and the Contractor or Contractor's surety shall be responsible for all costs incurred.

(b) Manufacturers' Warranties - Before the CWCA will be issued, the Contractor shall transfer to the Agency all unexpired manufacturers' warranties and guarantees for Materials and Equipment installed on the Project. Such warranties and guarantees shall indicate that they are enforceable by the Agency.

Section 00160 - Source of Materials

The Source of Materials Section shall be administered in conformance with Section 00160 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00160.10 Ordering, Producing, and Furnishing Materials:

(a) Contractor's Duties - Delete this Subsection and replace with the following:

The Contractor shall not place orders for or produce full quantities of Materials anticipated to be required to complete the Work until the Work has advanced to a stage that allows the quantities to be determined with reasonable accuracy.

It is the sole responsibility of the Contractor to ensure that full quantities of Materials are available to complete the required Work. Quantity estimates by the Engineer are approximate and should be verified by the Contractor before bidding.

00160.50 Agency-Controlled Land; Limitations and Requirements:

(b) Waste, Excess, and By-Product Materials - Delete this Subsection and replace with the following:

All waste, excess, and by-product materials, collectively referred to in this Subsection as "By-Products", from the manufacture or production of Materials shall become the property and responsibility of the Contractor, unless specifically stated otherwise in the Contract Documents.

By-Products shall be removed from Agency-Controlled Land in such a manner as to avoid fouling areas containing useable materials or interfering with future plant setups to use materials from the property.

There will be no additional payment for removal of waste, excavation spoils and by-product materials unless otherwise indicated in the Contract Documents.

00160.60 Contractor-Furnished Materials and Sources:

(c) Additional Requirements - Add the following Subsection:

(3) Provided all required product certification as required in 00160.60(d).

(d) Materials Conformance Documentation - Add the following Subsection:

The Contractor shall provide the Engineer documentation and certification for all substantial Materials installed over the course of the Project. Required Submittals shall include manufacturer's information, shop drawings, test procedures and results, samples, substitution requests, and other miscellaneous work-related items.

The Contractor shall furnish all drawings, specifications, data, test results, certificates, manufacturer's recommended installation procedures, as well as other information specifically required by the Contract Documents that is needed to demonstrate that the submitted materials, equipment, and procedures comply with the provisions and intent of the Contract Documents.

(1) Contractor Responsibility - The Contractor shall be responsible for the accuracy and completeness of the information contained in the required Submittals and shall assure that the material, equipment, and methods of work shall be as described in the Submittal. The Contractor

shall verify that all product features conform to the Specifications. All Submittals shall be clearly edited to indicate only those items that pertain to the material or equipment.

The Contractor is responsible for ensuring that all submitted materials, equipment and procedures are compatible and do not adversely affect the work of the Agency or other contractors.

The Contractor shall coordinate Submittals in such a manner that review, and processing of those Submittals shall not adversely affect construction scheduling. No extensions will be allowed due to improperly scheduled Submittals. The Contractor shall not proceed with any work covered by a Submittal until the Submittal process is completed and documented. This requires that Submittals have been returned to the Contractor marked either No Exceptions Taken (NET) or Make Corrections Noted (MCN) as defined in this Subsection.

The Contractor shall certify on each Submittal that he has reviewed and verified that the materials, equipment, or methods meet specifications or the intent thereof.

(2) Transmittal Procedures - Unless otherwise specified in the Contract Documents, all Submittals shall be accompanied by the Submittal Transmittal form included in the Contract Documents. A separate form shall be used for each specific class of equipment, materials, or procedures required. Submittals for various items constituting one manufacturer's package or closely related materials, equipment, and procedures may be included in a single Submittal.

All Submittals shall be identified by project name and number and shall include the Contractor's name, Submittal date, and revision date. In addition, shop drawings, product data, and samples shall include names of the subcontractor, supplier, and applicable specification Section number. The Contractor's stamp must be initialed or signed to certify review of Submittal, verification of field measurements and compliance with the Contract Documents.

The Contractor shall assign a unique, sequential number to each Submittal. Resubmittals shall be assigned the original Submittal number with the addition of an appropriate sequential suffix. An example would be "Submittal 005 - Rock Materials". Should the Submittal need to be amended or resubmitted, subsequent Submittals shall be numbered "Submittal 005-A", "Submittal 005-B", etc. The Contractor shall supply four (4) complete copies of all required Submittals.

If the Contractor proposes a deviation from the specified materials, equipment, or procedures, the Submittal shall clearly indicate and describe the deviation. Incomplete Submittals or undocumented deviations shall be returned to the Contractor without review.

(3) Review Procedure - Submittals are called out for Materials, equipment, or procedures that may be selected by the Contractor using his best judgment regarding their conformance with Specifications. The review procedure is based on the Contractor's verification that the materials will meet Specifications. Review does not extend to methods, techniques, or fabrication processes unless specifically called out. Acceptance of any particular item does not indicate approval of improper implementation or installation of that item.

Unless otherwise specified, the Engineer shall review, complete, and return two (2) copies of a Submittal within 15 Working Days of receipt with one of the following marks:

(a) No Exceptions Taken (NET) - If the Submittal is marked "No Exceptions Taken" (NET), this indicates that the material, equipment, or procedures meet project specifications and the Contractor may implement materials covered by that Submittal.

(b) Make Corrections Noted (MCN) - If the submittal is marked "Make Corrections Noted" (MCN), this indicates that limited corrections are required. The Contractor may implement

materials covered by that Submittal, provided that the needed corrections have been made prior to work on that item.

(c) Amend and Resubmit (A&R) - If the Submittal is marked "Amend and Resubmit" (A&R), this indicates that the Submittal is insufficient or contains incorrect information. The Contractor shall not proceed with any work covered by such a Submittal until it has been revised, resubmitted, and approved.

If the Engineer fails to return any Submittal within 15 Working Days of receipt, the Contractor may submit for a Contract Time extension in accordance with 00180.80.

(4) Effect of Submittal Review - A mark of 'NET' or 'MCN' on a Submittal indicates that the Agency has no objections to the Contractor, under his own responsibility, using the material, equipment, or procedures proposed. Engineering review of a Submittal shall not relieve the Contractor of his responsibility to provide material, equipment, or procedures that meet project Specifications. The Agency does not assume any risk or liability associated with insufficient, incomplete, or unacceptable work on the part of the Contractor. The Contractor shall have no claim under the Contract because of the failure or partial failure of the material, equipment, or procedures reviewed under any Submittal.

(5) Shop Drawings - All submitted drawings shall be in accordance with 00150.35 unless otherwise specified in the Contract Documents.

Section 00165 - Quality of Materials

The Quality of Materials Section shall be administered in conformance with Section 00165 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00165.03 Testing by Agency - Delete this Subsection.

00165.04 Costs of Testing - Delete this Subsection.

00165.05 Sampling and Testing - Add this Subsection:

The Contractor shall be responsible for process control testing necessary to ensure that Materials comply with the Specifications. The Engineer reserves the right to require additional samples and testing of Materials for compliance regardless of prior certification. All testing of Materials will be made in accordance with the methods described or designated in the Specifications or as required and may be conducted at any time during the production, fabrication, preparation, and use of the Materials.

The Contractor shall furnish and make available the required samples without charge and shall provide suitable facilities for collecting samples in accordance with 00150.20. The Contractor shall withhold from use the Materials represented by the samples until tests have been made and the Materials found to comply with the Specifications. Testing results shall be made available in English Units to the Engineer in ample time to permit review prior to use. The Contractor shall have no claim for any delay caused by awaiting test results.

All required testing shall be performed by an independent laboratory designated by the Contractor and approved by the Engineer, even though certain ASTM, AASHTO, AWWA and other Materials specifications may require testing to occur at the location and time of manufacture. Test methods shall be the most current method used by ODOT for the test specified. In the absence of any reference specification, Materials shall meet the specifications and requirements of the ASTM, AASHTO, or AWWA.

When there is no coverage under ASTM, AASHTO, or AWWA, Materials shall meet the commercial standards of the Commodity Standards Division of the U.S. Department of Commerce. Lacking such coverage, the Materials shall meet requirements established by reputable industry for high quality products of the kind involved.

00165.06 Costs of Sampling and Testing - Add this Subsection:

All Materials sampling and testing required as part of the Materials submittals process (00160.60(d) of the Agency Supplemental Specifications) shall be the responsibility of the Contractor.

If the Engineer determines that additional sampling and testing is necessary, such sampling and testing shall be performed by the Contractor and paid for as follows:

- The Agency shall reimburse the Contractor for all incurred costs associated with such sampling and testing. No allowance shall be made for markup or profit.
- Contractor Expense - If the Materials tested are found to be out of compliance with the Specifications, all associated costs shall be the sole responsibility of the Contractor.

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.

00170.03 Furnishing Right-of-Way and Permits - Delete this Subsection.

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.

Section 00180 - Prosecution and Progress

The Prosecution and Progress Section shall be administered in conformance with Section 00180 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00180.40 Limitation of Operations: Add the following to this Subsection:

(c) Work Limits - The Contractor shall comply with the following:

The Contractor shall confine construction activities within rights-of-way, easements, or limits of construction permits. Prior to the use of any property outside these specified boundaries, the Contractor shall, by written request, obtain permission of temporary use of private property by the property owner. The Contractor shall file with the Engineer the approved request for temporary use of property. Upon terminating such usage, the Contractor shall file, with the Engineer, a release from all damages signed by the property owner.

00180.50 Contract Time to Complete Work:

(g) End of Contract Time - Delete the phrase “Second Notification” throughout this Subsection and replace it with “Substantial Completion Notice”.

00180.80 Adjustment of Contract Time:

(c) Contractor’s Request Required - Replace the second bulleted item of this Subsection with the following:

- Are not otherwise deemed waived and are submitted within 21 Calendar Days after the “Substantial Completion Notice” has been issued.

Section 00195 - Payment

The Payment Section shall be administered in conformance with Section 00195 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

00195.50 Progress Payments and Retained Amounts:

(b) Retainage: Delete the first paragraph of this Subsection and replace with the following:

The Agency reserves the right in its sole discretion to not withhold retainage from progress payments or to begin withholding retainage at any time. If the Agency withholds retainage from progress payments, the amount to be retained from progress payments will be 5.0% of the value of Work accomplished and will be retained in one of the forms specified in Subsection (c) below. If the Agency determines that satisfactory progress is not being made on the Work, the Agency may withhold up to 7.5% of the value of Work accomplished from subsequent progress payments. No retainage will be withheld from Work performed as Force Account Work, escalation/de-escalation, bonuses, or other items decided by the Agency.

00195.90 Final Payment:

(b) Final Payment - In the third paragraph of this Subsection, replace the text “of Third Notification” with the following:

“that the Certification of Work Completion and Acceptance has been executed…”

PART 00200 - TEMPORARY FEATURES AND APPURTENANCES

Section 00210 - Mobilization

The Mobilization Section shall be administered in conformance with Section 00210 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00210.40 Mobilization - Delete the last bulleted item in this Subsection.

Payment

00210.90 Payment - Delete the last paragraph in this Subsection.

Section 00220 - Accommodations for Public Traffic

The Accommodations for Public Traffic Section shall be administered in conformance with Section 00220 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00220.01 General: Add the following to this Subsection:

The Agency may provide the Contractor with a traffic control plan that outlines minimum requirements for the TCM. These requirements are to be incorporated into the Contractor's TCM and do not constitute a complete plan for traffic control. The Contractor must submit, in writing, a TCP five days before the pre-construction conference. If modifying or if not using the Agency TCP, submit the following:

- Proposed TCP showing all TCM and quantities of all TCD
- Proposed order and duration of the TCM
- Two copies of a sketch map of the Project showing all existing tourist-oriented directional (TOD) and business logo signs and a written narrative describing how these signs will be kept in service and protected throughout all the construction stages.
- A detailed temporary striping plan, if required
- Dimensioned drawings for any signs not covered by 00225.11

00220.02 Public Safety and Mobility -

(a) General Requirements - Add the following bulleted items to this Subsection:

- If construction involves encroachment onto a state highway or designated truck route, the following applies: When narrowing the roadway to less than 18 feet for one lane between positive barriers or reducing vertical clearance, the Contractor must notify the Engineer, in writing, at least 30 days before this work begins. Include the reduced lane width dimension of each stage and the anticipated duration of the reduction. The reduction will not be permitted without the Engineer’s approval.
- For construction across a roadway having a pre-construction posted speed greater than 35 mph, backfill the excavation, install temporary surfacing, and open the roadway to traffic by the end of each work shift. If this requirement is not met, maintain all necessary lane closures, and provide additional Traffic Control Measures, which may include flagging, at the Contractor’s expense. Use of temporary steel plating shall not be allowed.
- Do not stop or hold vehicles on local streets within the Project Site for more than 20 minutes.

00220.03 Work Zone Notifications -

(b) Closures -

- **Roads -** Delete this Subsection and replace with the following:

  A minimum of 14 Calendar Days before closure. Road closures are only approved for active installation of utilities, trench patching and paving.

  The Contractor shall provide an approved Notice of Construction to all affected residents, businesses, and agencies before performing any work, to include implementation of any Traffic Control Measures. The notice shall contain the following information:

- Project Name;
- Date and time of anticipated commencement and completion of the work;
- Names of affected streets, alleys, intersections, or other areas of work;
- Type of work that is being done;
- Routes of detours where possible;
- Contractor Contact Information to include name and phone number;
- Language assuring residents and businesses that reasonable property access will be provided (per 00220.40 (c))

The Contractor shall submit the Notice of Construction to the Engineer for review and approval before notices are distributed. The Agency will concurrently issue a press release with this information.

Closures affecting the following entities must be coordinated to allow for access:

Service	**Agency**	**Contact**
Railroad	Albany & Eastern Railroad Co.	541-259-6470
Mail Delivery	U.S. Postal Service	541-451-5648
School Busing	Lebanon School District	541-259-8931
Community Busing	City of Lebanon	541-258-4920
Garbage/Recycling	Republic Services	450dispatch@republicservices.com
City Police	Lebanon Police Department	541-451-1751
County Police	Linn Co. Sheriff's Department	541-967-3911
Fire/Medical	Lebanon Fire Department	541-451-1901
County Roads[1]	Linn County Road Department	541-967-3919

[1] Any proposed closures involving Linn County rights-of-way must be submitted to that Agency for approval.

The Contractor shall be responsible for re-notifying affected businesses, residents, and public service agencies if the schedule of work is changed. Damages or claims resulting from improper or insufficient notification shall be the sole responsibility of the Contractor (see 00220.02).

Construction

00220.40 General Requirements -

(e) Lane Restrictions - Delete this Subsection and replace with the following:

Unless prior written authorization has been provided by the Engineer, the following restrictions apply:

The Contractor shall not close any public thoroughfares between:

- 3:00 p.m. on Fridays and midnight on Sundays.
- 12:00 p.m. on the Thursday prior to the first full weekend in June and midnight on the following Sunday in conjunction with the Lebanon Strawberry Festival.

- 12:00 p.m. on the day preceding legal holidays or holiday weekends and midnight on legal holidays or the last day of holiday weekends. For the purposes of this Section, legal holidays are as follows:
    - New Year's Day on January 1st
    - Memorial Day on the last Monday in May
    - Independence Day on July 4th
    - Labor Day on the first Monday in September
    - Thanksgiving on the fourth Thursday in November
    - Christmas Day on December 25th

When a holiday falls on Sunday, the following Monday shall be recognized as a legal holiday. When a holiday falls on a Saturday, the preceding Friday shall be recognized as a legal holiday.

Roadways and sidewalks shall be free of barricades or other obstructions and all lanes opened to traffic during the restricted periods as listed above.

Section 00221 - Common Provisions for Work Zone Traffic Control

The Work Zone Traffic Control Section shall be administered in conformance with Section 00221 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00221.02 General Requirements - Delete the first paragraph in this Subsection and replace with the following:

The Contractor shall be responsible for providing and maintaining all TCM 24 hours per day, 7 days per week, including holidays. The Engineer may verbally or in writing require immediate changes to the TCM being used on the Project, to include the use of flaggers. Immediately make these changes as directed. Submit all proposed TCM revisions to the Engineer for approval prior to implementation.

All TCM must meet permitting requirements of the Agency, County and State.

00221.04 Traffic Control Outside Project Site - Delete this Subsection and replace with the following:

Provide TCM outside the Project Site when required. The Contractor is responsible for coordinating traffic control with adjacent work by utilities, Agency or other contractors working in the Project area.

00221.06 Traffic Control Plan:

(b) Contractor Modified Traffic Control Plan - Add the following bullets to this Subsection:

- Construction sign locations
- Dimensioned drawings for any signs not covered by 00221.01(c)

Section 00222 - Temporary Traffic Control Signs

The Temporary Traffic Control Signs Section shall be administered in conformance with Section 00222 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00222.40 Temporary Signs:

(c) Inconsistent Temporary Signs - Add the following bullet to the second paragraph in this Subsection:

- FLAGGER AHEAD (W20-7a) signs are to be deployed or obscured by flaggers immediately prior to or following a flagging operation. At no time shall a FLAGGER AHEAD sign be displayed when flaggers are not on station and directing traffic.

Section 00224 - Temporary Traffic Channelizing Devices

The Temporary Traffic Channelizing Devices Section shall be administered in conformance with Section 00224 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00224.46 Pavement Edge Delineation - Delete the second bulleted item in the third paragraph of this Subsection and replace with the following:

- Space markers as shown for traffic delineators on the Standard Drawings at a maximum spacing of 25 feet.

Section 00225 - Temporary Pavement Marking

The Temporary Pavement Marking Section shall be administered in conformance with Section 00225 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00225.40 Temporary Pavement Markers - Delete the first bulleted item in this Subsection and replace with the following:

- Two single markers spaced 5 feet apart to simulate a 5-foot skip line with a gap of 15 feet to the next skip line.

(a) Reflective Pavement Markers - Delete this Subsection and replace with the following:

Install reflective pavement markers when shown according to Section 00855. Establish alignment with control points at 100 foot intervals on tangents and at 25 foot intervals on curves.

Use a string line or other appropriate means to maintain proper alignment of the markers. Misaligned markers shall be removed and replaced at the Contractor's expense.

Section 00227 - Temporary Traffic Signals and Illumination

The Temporary Traffic Signals and Illumination Section shall be administered in conformance with Section 00227 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00227.12 Temporary Traffic Signals -

(e) Traffic Signal Control Devices - Delete this Subsection and replace with the following:

The controller program and monitor programming shall be furnished by the Contractor.

Section 00280 - Sediment Control Materials

The Sediment Control Materials Section shall be administered in conformance with Section 00280 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00280.00 Scope - Add the following to this Subsection:

The Agency will provide a nominal plan to assist the Contractor in drafting a final ESCP. This ESCP must be submitted for Agency review 14 Calendar Days prior to the project preconstruction conference.

Materials

00280.16 - Sediment Control Materials:

(e) Sediment Barriers - Add the following bulleted item:

- **Type 10: Pump Discharge Preliminary Filter -** Provide as required an approved bag filter attached to discharge pump lines. Filter bags shall be manufactured from tightly knit burlap or woven geotextile fabric.

Construction

00280.46 Sediment Controls -

(e) Sediment Barriers - Add the following item:

(1) Pump Discharge Preliminary Filter - Install approved filter bags to outlet lines on discharge pumps as shown in project plans or according to manufacturer's recommendations. Filters shall be attached to discharge pump lines in such a manner as to prevent leakage of unfiltered effluent from the pipe attachment point.

Section 00290 - Environmental Protection

The Environmental Protection Section shall be administered in conformance with Section 00290 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00290.20 Waste, Hazardous Waste, and Hazardous Substances -

(c) Waste Management:

(3) Reuse, Recycle, Compost and Dispose of Materials -

b. Woody Matter - Delete this Subsection and replace with the following:

Woody matter may be burned according to 00290.30(c)(3) or may be chipped to a size of no more than 2 inches in any direction then uniformly spread over selected landscape areas, as directed, in loose layers not more than 3 inches thick. Burying wood, stumps, or other woody material is not allowed.

f. Off-Site Disposal - Add the following paragraph:

Retain landfill disposal receipts for all non-inert solid waste generated from the Project site for at least one year after completion of the Project. Provide landfill disposal receipts to the Engineer if requested.

00290.32 Noise Control - Add the following bullet to this Subsection:

- Low Noise pumps, generators, and other equipment are required in areas adjacent to hospitals, residences, places of business, or other areas identified by the Agency.

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PART 00300 - ROADWORK

Section 00320 - Clearing and Grubbing

The Clearing and Grubbing Section shall be administered in conformance with Section 00320 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00320.02 Definitions:

(c) Clear Zone - Delete this Subsection and replace with the following:

See 00110.20. For purposes of this Section, the minimum Clear Zone line is 30 feet from the edge of the Traveled Way, or the established right-of-way (ROW) line in the project area.

Construction

00320.40 Clearing Operations:

(b) Preserving Vegetation and Other Natural Materials:

(4) Salvaging Vegetation and Natural Materials - add the following to this Subsection:
Unless otherwise indicated in the Special Provisions, all merchantable timber shall become the property of the Contractor and shall be removed from the project area immediately following the salvage operation.

(c) Tree and Vegetation Trimming -

(3) Tree Trimming - Delete the bulleted items in this Subsection and replace with the following:

- Do not leave unsound branches of trees in place.
- Trim branches over Roadways and Bridges to provide at least 14 feet of clearance above the Roadway surface.
- Trim branches over walks to provide at least 8 feet of clearance above the walk surface.
- Trim branches obstructing site distance at intersections or impairing visibility of signs.

00320.41 Grubbing Operations - Delete this Subsection and replace with the following:

Within excavation and embankment limits, remove tree stumps, roots, and other vegetation to a depth of at least 12 inches below excavation Subgrade or sloped surfaces.

Section 00330 - Earthwork

The Earthwork Section shall be administered in conformance with Section 00330 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00330.41 Excavations -

(a) General:

(6) Excavation of Existing Surfaces - Add the following paragraph to this Subsection:

When excavating existing roadways, no rubber-tired equipment such as scrapers, graders, front-end loaders, or dump trucks will be allowed on the subgrade due to possible unstable subgrade conditions and/or the proximity of underground utilities to the subgrade elevation.

(7) Abandoned Pipes and Miscellaneous Matter - Delete the last paragraph in this Subsection and replace with the following:

For abandoned pipes up to 12 inches in diameter, place watertight caps or plugs in inlets and outlets. Pipe ends must be buried a minimum of 3 feet below finish grade. Shape and finish the affected area so no evidence of their existence is apparent upon completion of the work.

For abandoned pipes 12 inches and larger, place watertight caps or plugs in inlets and outlets and fill with controlled low-strength material meeting the requirements of 00442.

Asbestos Cement (AC) pipe may be encountered during construction. The Contractor shall note the condition of the pipe and follow all applicable DEQ and OSHA guidelines for handling, removal, and disposal of asbestos-containing materials.

(9) Excavation Below Grade:

c. Unstable Subgrade Material - Delete this Subsection and replace with the following:

Where unstable material is encountered below subgrade in Roadbed excavations, excavate such material below Subgrade as directed by the Engineer. Dispose of these unstable materials according to 00330.41(a)(5). Install an approved subgrade geotextile fabric prior to backfilling excavations below subgrade. Backfill material shall be in accordance with 00331.

00330.42 Embankment, Fills, and Backfills -

(a) Embankment Foundation Preparation -

(2) Ends of Abandoned Pipe - Delete this Subsection and replace with the following:

Refer to 00330.41(a)(7).

(c) Embankment Construction:

(3) Embankment Slope Protection - Add the following paragraph to this Subsection:

Construct the outer 12 inches of embankments with suitable materials to establish slope stabilization through permanent seeding. If suitable material is not available, provide suitable

materials from a Contractor-provided source which conforms to the requirements of 00330.11 or 00330.13 and provides favorable conditions for germination of seed and growth of grass.

00330.43 Earthwork Compaction Requirements:

(a) General - Add the following to this Subsection:

If the specified compaction is not obtained, the Contractor shall notify the Engineer. The Contractor may be required to use a modified compaction procedure or apply additional compactive effort. If approved materials meeting the specifications cannot be compacted to the required density regardless of compactive effort or method, the Engineer may reduce the required density or direct that alternate materials be used. In no case shall earthwork operations proceed until the Contractor is able to compact the material to the satisfaction of the Engineer.

Section 00335 - Blasting Methods and Protection of Excavation Backslopes

The Blasting Methods and Protection of Excavation Backslopes Section shall be administered in conformance with Section 00335 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Delete this Section. Blasting is not permitted within Agency limits.

Section 00340 - Watering

The Watering Section shall be administered in conformance with Section 00340 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00340.10 Water - Add the following to this Subsection:

The Contractor must request the installation of, or access to, an Agency supplied hydrant meter water supply if needed. The Contractor shall notify the Agency a minimum of 3 Working Days in advance as to the desired location of the metered water source. Contractor shall provide Agency access to the metered water supply at all times.

Measurement

00340.80 Measurement - Delete the first paragraph of this Subsection and replace with the following:

If Agency water is not available, the pay quantities of Contractor supplied water shall be determined by the following methods:

Section 00370 - Finishing Roadbeds

The Finishing Roadbeds Section shall be administered in conformance with Section 00370 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00370.40 Within Roadbed Cross Section -

(c) Slopes: Delete the first bullet in this Subsection and replace with the following:

Remove all exposed roots, debris, and all stones which are loose or could become loosened.

PART 00400 - DRAINAGE AND SEWERS

Section 00405 - Trench Excavation, Bedding, and Backfill

The Trench Excavation, Bedding and Backfill Section shall be administered in conformance with Section 00405 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00405.02 Definitions:

Rock Excavation - Add the following paragraph to this Subsection:

None of the following shall be considered rock excavation:

- Soft or disintegrated rock
- Hard-pan or cemented gravel that can be removed with a hand pick, or power operated excavator or shovel
- Loose shaken rock
- Previously blasted rock
- Broken stone in rock filings or elsewhere
- Rock outside of the minimum limits of measurement which may fall in the excavation

Wetland Excavation - Add the following definition:

The area from the top of the existing wetland surface to a point not less than 18 inches below the existing surface that requires alternate methods and materials for storage and reuse of the excavated wetland materials.

Materials

00405.11 Trench Foundation - Delete first bulleted item from this Subsection.

00405.12 Bedding - Delete this Subsection and replace with the following:

Pipe bedding shall be commercially available 3/4” - 0 or 1” - 0 aggregate.

Construction

00405.41 Trench Excavation -

(c) Trench Width - Delete this Subsection and replace with the following:

Trench width at ground surface shall be kept to the minimum necessary to install the pipe in a safe manner, but not less than 24 inches. In all cases, make trenches of sufficient width to allow for shoring and to permit proper jointing of the pipe and backfilling of material along the sides of the pipe. The minimum trench width in the pipe zone must provide a minimum clear working space of 10 inches outside the maximum outside diameter of the pipe. Make excavations for manholes and other Structures wide enough to provide a minimum of 12 inches between the Structure surface and the sides of the excavation. Keep the top of the trench within Right-of-Way or permit limits.

(h) Root Pruning - Add the following Subsection:

Tree roots may be encountered during trench excavation. The Contractor may do his own root pruning but shall have a licensed arborist as a subcontractor to provide advice on root pruning. The arborist will supply written guidelines on root pruning procedures prior to any pruning. These will include proper methods for cutting roots, maximum root size that may be cut without review (in inches or a percentage of caliper), and a list of tools required to be kept on-site for pruning.

Roots will be properly removed prior to placing new materials. If the Contractor does not follow the guideline, the Engineer may require that the arborist does the required pruning at no additional cost to the Agency. If root pruning will endanger the life or stability of a tree, the arborist will supply a brief written description of the problem and indicate possible options. Options may include, but are not limited to, realigning the facility, deflecting the facility, or removal of the tree. The Contractor will notify the Engineer immediately and forward the arborist's report.

If any option requires work in addition to defined bid items, the Contractor will provide a proposed cost for the additional work. If the Contractor is directed to do additional work, a change order to compensate the contractor will be executed prior to performing the work. No additional payment will be made for realignment or deflection to a facility.

(i) Wetland Soil - Add the following Subsection:

Place excavated wetland soil on a geotextile fabric mat as outlined in the wetland report for the current work zone. The storage location for the excavated wetland soil shall not create a hazard or interfere with construction activities. Stored wetland soil shall be protected from construction activities until needed for top 18-inches of trench backfill within the wetland area.

00405.43 Dewatering - Delete this Subsection and replace with the following:

The Contractor shall be responsible for the design and selection of methods and equipment appropriate to the ground and construction conditions. These methods may involve removal of water outside the excavation or construction of facilities to control water movement into the excavation from other sources.

All applicable laws and regulations shall be followed, including those pertaining to the use of drilled wells.

Pumps discharging contaminated groundwater to the sanitary sewer system shall be equipped with totalizing flow meters to accurately determine flow rates and the quantity of water pumped.

Effluent Filter Bags must be of an approved design and manufactured from a tightly knit burlap or geotextile fabric. They are not intended to provide complete filtration of suspended solids; other erosion control devices may need to be employed in conjunction with these devices. The Contractor shall remove and replace these devices when they are completely silted or otherwise incapable of providing an adequate preliminary filter for dewatering effluent.

Promptly remove and dispose of all water entering the trench during the time the trench is being prepared for the pipe laying, during the laying of the pipe and until the backfill at the pipe zone has been completed. Dispose of water in closed conduits to an existing storm system which has sufficient capacity for the flow.

Control groundwater to prevent softening of the bottom of excavations or formation of "quick" conditions or "boils". Design and operate dewatering systems to prevent removal of the natural Soils and so that the groundwater level outside the excavation is not reduced to the extent that would damage or endanger adjacent Structures or property.

When dewatering near a river, lake, or stream, conform to the requirements of 00290.30(a) and Section 00280. When the presence of water or other conditions in the excavated area would be detrimental to the purpose of the Work, obtain approval of the Engineer for the temporary measures required to correct or care for the condition.

The Contractor shall be responsible for the continuous control of water during the course of construction, including weekends, holidays, and periods of work stoppages. Make available equipment, machinery, and piping, including standby power and pumps in good working condition and of adequate capacity. to continue dewatering operations in an emergency.

Contractor shall modify dewatering procedures that cause or threaten to cause damage to:

- Adjacent structures, facilities, or utilities;
- Operations of other contractors;
- Pedestrian or vehicular access or traffic
- Public safety or health

The Contractor shall be responsible for determining and making necessary modifications at no cost to the Agency. The Engineer reserves the right to require additional or different methods of dewatering if required.

If water or other conditions encountered require permanent correction or care not anticipated by the Contract and not due to the Contractor's neglect or method of operation, perform the Work according to 00140.60.

00405.46 Backfilling -

(c) Trench Backfill -

(2) Class A, B, C, or D Backfill - Add the following to the second paragraph of this Subsection:

Trench backfill lifts shall not exceed 1 foot depths. Contractor shall be required to take compaction tests every 25 feet along the trench line, or as directed by the Engineer.

00405.48 Surface Removal:

(b) Topsoil - Delete this Subsection and replace with the following:

Where trenches cross lawns, garden areas, pastures, cultivated fields or other areas on which Topsoil exists, replace the top 12 inches of backfill with approved imported Topsoil at no additional cost to the Agency.

00405.90 Payment - Add the following to the bulleted list in this Subsection:

- Trench widths that are larger than required due to improper shoring techniques and/or poor trench wall conditions.

Section 00406 - Tunneling, Boring, and Jacking

The Tunneling, Boring, and Jacking Section shall be administered in conformance with Section 00406 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00406.43 Boring and Jacking - All the following to the first paragraph of this Subsection:

Do not vary from established casing line and grade by more than 1/32 inch per inch of casing diameter. Variance shall not exceed 1/2 inch.

The Contractor shall take extreme care to protect facilities, such as adjacent utilities and above ground terrain or improvements from damage by forces generated by the boring. Should the Contractor's equipment/operation cause such damage, the Contractor shall stop work and modify his equipment and/or methods to the satisfaction of the Engineer to prevent further damage.

00406.47 Cradles for Cased or Tunneled Pipe - Delete this Subsection and replace with the following:

Where cradles are shown, provide the following cradles under the barrel of the carrier pipe:

(a) Aboveground Casings - Use Advanced Products & Systems Model S18 casing spacers or approved equal. Spacers shall be placed per manufacturer's recommendations or at 8'-0" maximum spacing, whichever is less.

(b) Subsurface Casings - Use Advanced Products & Systems Model SS18 casing spacers or approved equal. Spacers shall be placed per manufacturer's recommendations or at 8'-0" maximum spacing, whichever is less.

Section 00411 - Pipe Bursting and Slip Lining

The Pipe Bursting and Slip Lining Section shall be administered in conformance with Section 00411 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Delete this Section and replace with the following:

Description

00411.00 Scope - This Work consists of furnishing and installing high density polyethylene (HDPE) pipe in gravity sewer pipe by the pipe bursting and slip lining methods.

For pipe bursting, pipe replacement shall be accomplished by bursting the existing pipe and simultaneously inserting a high density polyethylene (HDPE) pipe of diameter shown on the Plans.

All materials used shall conform to the requirements of 02415.20.

The Contractor shall provide all materials, labor, equipment, and services necessary for contained bypass pumping of sanitary and storm water flows, excavation of access pits, installation and operation of pulley systems to pull through existing sewer manholes, sanitary sewer and storm drain pipe bursting and installation of HDPE pipe, testing, backfilling of access pits, reconnection of sanitary sewer and storm drain service laterals, restoration of pavement and landscaping, final television inspection, and all other related work.

The Contractor is fully responsible for determining whether existing site conditions are suitable for pipe bursting and selecting the people, methods, and equipment required to successfully perform the work.

00411.01 Submittals - Submit the following items with the Bid. Failure to submit and meet the requirements outlined here will be grounds for rejection of the bid, at the discretion of the Agency.

- Statements of Experience: Personnel must meet the requirements of 00411.30 and provide Statement of Experience forms. These forms can be found 00411.95 and shall be completed in their entirety.
- The Contractor shall be certified, authorized, or licensed by the manufacturer or licensor of the pipe-bursting method that the Contractor will use or employ on this project. The Contractor shall provide proof of license or deliberation documentation to the Engineer to substantiate the above with his bid. The unit price for pipe-bursting shall include the cost of any fees and royalties due to the patent holder of the pipe-bursting method.

Submit the following at least 10 Calendar Days before the preconstruction conference:

- Method of pipe bursting, including listed Equipment by size, make, model and manufacturer. Include Shop drawings, catalog data, manufacturer's technical data, dimensioned drawings, and installation details/sketches and other pertinent information for the HDPE pipe bursting installation work.
- Method of slip lining, including listed Equipment by size, make, model and manufacturer.
- Certification that the HDPE pipe meets requirements in ASTM F714.
- Certification that all HDPE pipe and fittings fully conform to these Specifications.
- Contingency repair plan including methods and Equipment to be used to repair or replace unacceptable defects.
- Stamped Working Drawings according to 00150.35, to include the structural design, final design, and associated calculations.

- Installation plan that includes the following:
    - Method of installation,
    - Sequencing,
    - Host pipe preparation,
    - Type of lubricant to be used,
    - Temporary modifications to existing Structures.

  Submit marked up Plans indicating all of the excavation locations and excavation dimensions required for the pipe bursting and installation of the HDPE pipe. Narrative text must be included describing how utilities and other improvements are to be protected at each excavation. Pit locations shown on the Plans may be approximate. Contractor shall verify the suitability of pit locations in the field.
- Property notification fliers.
- Schedule identifying proposed work hours and dates for each installation.
- Host pipe point repair plan, including methods and Equipment.
- Sewer bypass and flow diversion plan according to 00490.40.
- Complete Video Pipe Inspection per Section 00415.

Materials

00411.10 Pipe - Furnish high molecular weight, high-density polyethylene pipe and fittings that are made from only virgin grade material to the diameter specified, and to tolerances meeting the requirements of ASTM F714 with a minimum ratio of 0.95 for orthogonal diameters before installation.

Materials used for the manufacture of HDPE pipe and fittings shall be extra high molecular weight, high density ethylene/hexene copolymer PE 3408 polyethylene resin meeting the specified physical property and pipe performance requirements of 02415.20.

The pipe and fittings shall be homogeneous throughout and free from visible cracks, holes, voids, foreign inclusions, or other deleterious defects.

(a) Markings - Provide pipe Materials that are legibly marked, by the pipe manufacturer, with the following information:

- Name and trademark of manufacturer.
- Nominal pipe size.
- Dimension ratio.
- The letters PE followed by the polyethylene grade according to ASTM D1248, followed by the hydrostatic design basis in hundreds of psi.
- Manufacturing standard reference.
- A production code from which the date and place of manufacture can be determined.

(b) Pipe Color - Provide uniformly colored black or gray pipe with a matte finish.

(c) Dimension Ratio - Provide piping with a Standard Dimension Ratio (SDR) of 17 with the following dimensions:

Table 00411-1 HDPE Pipe Dimensions

Existing Sewer Approximate Inside Diameter (Inches)	HDPE Nominal O.D. (Inches)	HDPE Nominal I.D. (Inches)	Minimum Wall Thickness (Inches)
4	4.500	3.940	0.265
6	6.625	5.800	0.390
8	8.625	7.611	0.507
10	10.750	9.486	0.632
12	12.750	11.250	0.750
15	16	14.118	0.941
18	18	15.882	1.059
21	22	19.412	1.294
24	24	21.176	1.412
30	30	26.470	1.765

00411.11 Service Connections - Furnish lateral service connections to the sewer main with manufactured gasket tees, electrofusion saddle tees, or approved equal that provide water-tight connections between the rehabilitated sewer main and the service line connection.

If used, Inserta-Tees® or approved equal shall have a SDR of 35 for 4-inch or 6-inch outlets as required for each service lateral.

Heat fusion saddles shall have a SDR of 17 for 4-inch or 6-inch outlets as required for each service lateral.

00411.15 Shipping, Handling, and Storage - Packaging and shipping shall be done in accordance with the manufacturer's instructions. Each standard and random length of pipe shall be marked according to 00411.10 (a).

Package the pipe in a manner designed to deliver the pipe to the project neatly, intact, and without physical damage. The transportation carrier shall use an appropriate method and intermittent checks to ensure the pipe is properly supported, stacked, and restrained during transport such that the pipe is not nicked, gouged, or physically damaged.

It shall be the Contractor's responsibility to locate and secure a staging area at which to stockpile pipe and store equipment and materials. Stockpiling of pipe in Agency right-of-way (ROW) is prohibited unless approved by the Engineer.

The Contractor shall exercise care during the unloading, handling, and storage of all HDPE pipe to ensure that the pipe is not cut, gouged, scored, or otherwise damaged. Any pipe segment which has cuts in the pipe wall exceeding 10% of the wall thickness shall be cut out and removed from the site at no cost to the Agency.

Fused segments of pipe shall be handled so as to avoid damage to the pipe and joints. Nylon slings shall be used for lifting. Lifting chains or cable chokers are not permitted. Spreader bars are recommended when lifting long fused sections. Care shall be exercised to avoid cutting or gouging the pipe.

All pipe damaged before, during, or after installation shall not be used and shall be immediately removed from the site by the Contractor at no cost to the Agency. Inspect the pipe prior to installation to ensure that there is no damaged pipe.

Store pipe on clean, level ground to prevent undue scratching or gouging. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations.

Where necessary due to ground conditions, store the pipe on wooden sleepers, spaced suitably, and of such width as to not allow deformation of the pipe at the sleepers or between supports.

Limit stacking of the pipe to a height that will not cause deformation of the bottom layers of pipes under anticipated temperature conditions.

Equipment

00411.20 Pipe Bursting, Fusion, and Pipe Assembly Equipment - Use Equipment, approved by the pipe manufacturer and the Engineer, designed for pipe bursting, butt fusion, and saddle fitting welding. Use heating faces that have a non-stick coating. Provide joining Equipment capable of attaining appropriate fusion temperature, alignment, and pressure.

Use manufacturer's recommended pipe bursting tools for the diameter of pipe to be installed, as well as the diameter and material of pipe to be replaced.

Heat fusion equipment used must come with a data logging device that records fusion temperature, fusion pressure, heating time, and cooling time for each joint. The Contractor shall submit this recorded data for each joint to the Engineer prior to pipe-bursting.

Labor

00411.30 Personnel Qualifications - The Contractor shall have a minimum of 3 successfully completed projects totaling at least 2,000 linear feet of 8-inch and larger diameter HDPE pipe bursting using the proposed pipe bursting technology.

The Superintendent shall have a minimum of 3 successfully completed projects totaling at least 2,000 linear feet of 8-inch and larger diameter HDPE pipe bursting using the proposed pipe bursting technology and shall possess the same certifications as the Technicians.

Technicians shall be certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment and shall have a minimum of 500 linear feet of experience fusion welding 8-inch or larger diameter HDPE pipe within the last 2 years.

Construction

00411.40 Pipe Joining - The Contractor shall be allowed to lay out and fuse within the ROW the amount of pipe that will be installed in the next two immediate pipe bursting runs. The Contractor shall not transport additional pipe into the ROW until the previous section has been installed. Fused pipe stored within the ROW shall not block any streets, driveway, and sidewalk or create a safety hazard at any time.

Sections of polyethylene pipe shall be joined into continuous lengths on the job site above ground. The joining method shall be the butt fusion method to provide a leak proof joint. Socket fusion, threaded, or solvent-cement joints and connections are not permitted. All equipment and procedures shall be used in strict compliance with the pipe manufacturer's recommendations. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to, fusion temperature, alignment, and fusion pressure.

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 as permitted by the Engineer. 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 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.

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 in a given run before pipe bursting operations commence. The Contractor shall install temporary flexible (e.g., corrugated) 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 pipe and successful completion of required testing, the Contractor shall reconnect active side sewers. The Contractor shall install temporary flexible (e.g., corrugated) pipe between the mainline and the side sewers immediately following bursting, and during the relaxation period of the HDPE pipe. 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 pipe has been allowed to relax, the Contractor shall make the permanent connections to the side sewers. Time allowed for stress and strain relief shall not be less than 24 hours. The side sewers 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 shall be used. No adjustment from Bid Item unit price shall be made for use of fusion saddles.

The 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:

Pay Item	Unit of Measurement
(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: _____

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 Superintendent shall attach pipe bursting certification and documentation verifying that they are a certified 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 Superintendent meets the minimum experience requirements.

Superintendent:

Name: _____

Address: _____

Phone: _____

Certified By: _____

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: _____

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 Technician shall attach pipe bursting certification and documentation verifying that they are a certified 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 Technician meets the minimum experience requirements.

Technician:

Name: _____

Certified By: _____

List 3 successfully completed projects totaling a minimum of 500 linear feet of 8-inch and larger mainline HDPE pipe using the proposed pipe bursting technology within the last 2 years:

#1 Project Name: _____

Owner: _____

Size of Pipe (Existing and New): _____

Total Length Installed: _____

Completion Date: _____

#2 Project Name: _____

Owner: _____

Size of Pipe (Existing and New): _____

Total Length Installed: _____

Completion Date: _____

#3 Project Name: _____

Owner: _____

Size of Pipe (Existing and New): _____

Total Length Installed: _____

Completion Date: _____

Section 00430 - Subsurface Drains

The Subsurface Drains Section shall be administered in conformance with Section 00430 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00430.10 Materials - Delete the following two items:

Perforated Corrugated Aluminum Alloy Pipe
Perforated Corrugated Steel Pipe

Section 00431 - Stormwater Quality Facilities

Add the following Section:

Description

00431.00 Scope - This work consists of constructing facilities designed to reduce impervious surface areas, provide preliminary treatment and filtration of stormwater runoff, and discharge to an off-site location and/or infiltrate into subgrade.

Materials

00431.01 Definitions and Descriptive Terms - The following terms have the meanings presented below when used in this Section:

Stormwater Quality Swale - a filter comprised of plantings, soil, rock, and geotextile or impervious liner materials whose purpose is to remove pollution from stormwater runoff before discharging to a stormwater drainage system.

Treatment Media - A blend of topsoil, sand, and compost designed to act as a substrate for swale vegetation and provide primary filtration of stormwater runoff.

00431.10 Materials - Furnish materials meeting the following requirements:

Drainage Geotextile, Type 2	02320.20
High Density Polyethylene Liner	02325
Perforated Polyvinyl Chloride Pipe	02415.50
Perforated Corrugated Polyethylene Pipe	02415.10
Tracer Wire	00445.11
Granular Drain Backfill Material, 1 1/2" - 3/4"	00430.11
Single Size Medium Aggregate	00710.10
Treatment Media	01040.24
Beehive Overflow Inlet	02450.30
Concrete Pipe	02410.10(g)

Construction

00431.40 General - Excavate trench, prepare bedding, backfill, except as noted in 00430.46, according to 00405 and dispose of excavated materials according to 00330. Excavate Rock, hardpan, or other unyielding materials a minimum of 3 inches below established grade of the liner.

Geosynthetic and Liner rolls shall be shipped to the job site in a manner that will not damage the rolls. The rolls shall be stored and protected from puncture, dirt, grease, excessive heat, or other damage. They shall be stored on a smooth prepared surface (not wooden pallets) and shall be stacked no more than two rolls high.

00431.41 Laying Swale Liner - Liner installation must be performed under the direction of an experienced installer. Installer needs to possess the technical expertise and authority to direct and certify all work related to the installation of the liner.

Liner rolls shall be installed using a spreader bar assembly attached to a front-end loader bucket or by other methods approved by the liner manufacturer.

(a) Surface Preparation - Subgrade soil shall be compacted to provide a firm, unyielding foundation for the liner. All surfaces shall be smooth, free of foreign material, rocks larger than 3/8 inch, any angular rocks, and any sharp objects. Standing water or excessive moisture shall not be allowed.

(b) Weather Requirements - The liner shall not be placed during fog, precipitation, in the presence of excessive wind, or in temperatures less than 50 degrees or greater than 90 degrees Fahrenheit. Manufacturer's installation and seaming guidelines regarding ambient air and liner surface temperature (both extreme high and low) must be followed during installation.

(c) Placement - The liner shall be loosely laid over the subgrade foundation with sufficient slack (approximately 2 percent) to accommodate thermal expansion and contraction encountered during construction. Each panel shall be laid out and positioned to minimize the number and length of field joints and to be consistent with accepted installation practice. The methods used to place panels shall minimize wrinkles, especially along field seams.

No construction equipment shall be allowed directly on the liner. Avoid unnecessary foot traffic to avoid the possibility of tearing the fabric.

(d) Attachment to Grade - Liner shall be mechanically anchored with aluminum bar. Aluminum bar shall be 2" by ¼" and shall conform to ASTM B211.

(e) Field Seams - All welds for seaming of HDPE panels shall be made according to manufacturer's recommendations. The primary method of seaming shall be hot shoe fusion welding. Fillet extrusion welding shall be used for repairs, T-seams, and detail work. Before fusion welding or extrusion welding, all areas that are to become seam interfaces shall be cleaned of dust and dirt. Seam joining shall not take place unless the sheet is clean and dry.

(1) Seam Overlap - Liner panels shall have a minimum overlap of 4 inches for hot shoe welding and 3 inches for extrusion welding. Upslope panels shall overlap downslope to provide a shingle effect for drainage.

(2) Hot Shoe Welding - Hot shoe welding shall be accomplished by a double-wedge fusion welder that produces a double track weld. All accessories shall be approved by the liner manufacturer. To produce acceptable seams for the site-specific condition, the welder shall be calibrated at the beginning of each seaming period. Seaming procedures shall be in accordance with liner manufacturer specifications.

(3) Fillet Extrusion Welding - Extrusion welding equipment and accessories shall be approved by liner manufacturer. To produce acceptable seams for the site-specific condition, the extrusion welder shall be calibrated once per day at the beginning of each seaming period. Seaming procedures shall be in accordance with liner manufacturer specifications.

(4) Seam Testing - Seams shall be tested under field conditions at the beginning of each seaming period, once in the morning and once in the afternoon. Three specimens shall be tested by a tensiometer in shear and peel modes. Test seams shall meet the requirements of 02325. Each specimen shall be 1 inch wide with the grip separation rate of 2 inches per minute. All peel tests shall result in a film tear bond (FTB) value. The FTB is defined as a failure of one of the bonded sheets before compete separation in the bonded area.

a. Nondestructive Testing - Air pressure tests shall be performed on all double wedge fusion seams. The air pressure test equipment and procedures shall conform to this

specification and the liner manufacturer's specifications. Seal both ends of the seam to be tested. Insert the pressure needle into the seam's air channel. Pressurize the air channel through the needle to 25 to 30 pounds per square inch.

Monitor any pressure drops for 5 minutes. A loss of pressure in excess of 4 pounds per square inch or a continuous loss of pressure is an indication of a leak. Terminate the test by relieving the pressure from the opposing end of the seam. The pressure shall immediately drop to zero upon opening the opposing end of the seam. If this does not occur, the seam channel shall be checked for obstructions and retested. All defects shall be marked for repair.

Vacuum box tests shall be performed on all extrusion welds. The vacuum box equipment and test procedure shall conform to this specification and the liner manufacturer's specifications. Apply soapy water solution to the seam area to be tested. The vacuum box, equipped with a transparent viewing window, shall be centered over the seam area and a vacuum of 3 pounds per square inch shall be drawn. The seam area shall be visually monitored for any soap bubbles for 15 seconds. Seam testing shall continue by overlapping a minimum of 3 inches between each test interval. All defects shall be marked for repair.

b. Destructive Testing - If required, seam samples shall be cut at no more than one sample per 500 feet of weld for destructive seam testing. All destructive seam samples shall be tested by a tensiometer in shear and peel modes to verify seams meet the requirements of 02325.

(5) Repairs - All defective liner areas and bad seams shall be repaired and tested before the installation is completed.

a. Tears, Punctures and Material Defects - All tears, punctures, and material defects in liner shall be repaired by installing a patch over the defective area. Surfaces of the liner to be patched shall be cleaned before the repair. To ensure proper bonding of the extrusion weld, edges of the patch material and the adjacent liner shall be properly abraded by light grinding. This operation shall be done no more than 15 minutes before the welding operation. The abrasion shall remove no more than 10 percent of the material thickness. All patches shall be of the same liner material and extend a minimum of 6 inches beyond the edges of the defect area. All patches shall have rounded corners and shall be extrusion welded to the liner. Alternatively, a bead of extrudate shall be placed over all holes that are less than 0.25 inch in diameter.

b. Seam Repair - All failed seams shall be repaired by installing a cap strip over the entire length of failed seam. The cap strip shall be of the same liner material and shall extend the failed seam a minimum of 6 inches in all directions. Alternatively, the seam along the upper flap can be extrusion welded to the liner along the entire length of the failed seam.

(6) Pipe Penetrations - Pipe penetrations, including beehive overflow assembly pipe installations, shall be made with the use of manufactured pipe boots of the same material and thickness as the liner provided. All boots shall be appropriately sized to the dimensions of the pipe and fit snugly with no wrinkles. Boots shall provide a continuously bonded seal to the liner. Pipe boots shall provide a chemically bonded or mechanical seal to the pipe to prevent passage of water or soils at the point of pipe penetration. When stainless steel pipe bands are used to clamp the boot to the pipe, the straps shall not be placed in direct contact with the pipe boot material. A neoprene gasket, or other material specified by the manufacturer shall be placed between the liner and pipe band.

00431.43 Laying Pipe - Lay the pipe according to Section 00445. Place pipe with perforations down unless otherwise directed. Unless otherwise indicated in the Project Plans, all perforated drain pipe shall be laid flat (no slope). Fasten pipes together with appropriate coupling fittings, bands or solvent as

specified for the type of pipe used. Close upstream ends of perforated drain pipe with manufactured plugs, caps, or cleanouts suitable to prevent entry of Soil or Rock materials.

00431.44 Tracer Wire - Place tracer wire according to 01140.45 directly over the drain pipe centerline and on top of the Granular Drain Backfill Material. Place a branch tracer wire over each pipe connected to the main drain.

Make tracer wire splices according to 00445.48. Terminate tracer wire at flow control structures as shown in the Project Plans. Test all tracer wire with locating Equipment prior to acceptance.

00431.45 Placing Rock - Place rock to the line and grade indicated in the Project Plans. Use moderate compactive effort to avoid fracturing or otherwise damaging drain pipe.

00431.46 Placing Treatment Media - Place mixture according to 1040.57 to the line and grade indicated in the Project Plans. The Contractor should overfill the swale area approximately 20 percent to account for consolidation of the loose soil once wetting occurs. Any small irregularities in the designed finished grade should be worked out with hand tools.

00431.56 Cleanup During Construction - Maintain the Project in a neat, orderly condition. Remove unsightly construction materials at the end of each working shift. Clean all Pavement surfaces of mud, debris, or other materials that may, in the opinion of the Agency, cause problems. If material is not removed, the Agency reserves the right to have the cleanup Work performed by Agency personnel and deduct the value of this Work from the monies otherwise due the Contractor.

Measurement

00431.80 Measurement - The quantities of Work performed under this Section will be measured according to one of the following:

(a) Length Basis - Perforated Drain Pipe shall be measured on the length basis, horizontally from the end or cleanout of the line to the Overflow Assembly.

(b) Unit Basis - Beehive Inlet Overflow Assemblies shall be measured on the unit basis, for each location where an assembly is installed. Assemblies include all bases, pipe material, castings, boots or other materials necessary to complete an Overflow Assembly installation.

(c) Area Basis - Stormwater Quality Swales shall be measured on the area basis. The area will be the nominal area determined by multiplying the overall width times the length. No deductions will be made for corners or irregular shapes.

Payment

00431.90 Payment - The accepted quantities of work performed under this Section will be paid at the Contract unit price, per unit of measurement, for the following items:

Pay Item	**Unit of Measurement**
(a) ____ Inch ____ Perforated Drain Pipe	Foot
(b) Beehive Inlet Overflow Assembly	Each
(c) Stormwater Quality Swale	Square Yard

In item (a), the nominal pipe diameter will be inserted in the first blank. The type of pipe will be inserted in the second 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.

Drainage geotextile will be paid for according to 00350.90.

No separate or additional payment will be made for trench excavation, backfill, liner installation, seaming and testing, special filter Material or granular drain backfill Material and placement, tracer wire, cleanouts, or fittings and special pipe sections.

Section 00440 - Commercial Grade Concrete

The Commercial Grade Concrete Section shall be administered in conformance with Section 00440 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00440.14 Acceptance Sampling and Testing:

(d) Hardened CGC - Delete this Subsection and replace with the following:

Acceptance of the hardened CGC will be according to 00440.12. Cast one set of cylinders per 20 cubic yards, with a minimum of one set per day.

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

The Sanitary, Storm, Culvert, Siphon, and Irrigation Pipe Section shall be administered in conformance with Section 00445 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00445.02 Contractor's Options - Delete this Subsection.

Materials

00445.11 Materials - Delete the following two items:

Corrugated or Spiral Rib Aluminum Alloy Pipe
Corrugated or Spiral Rib Steel Pipe and Pipe Arches

Construction

00445.40 General -

(a) Line and Grade - Add the following to this Subsection:

Variations exceeding the limits set here shall be corrected by the Contractor at no cost to the Agency prior to placement of any affected base surfacing.

The Contractor shall coordinate alignment and grade of new sewer service lines to avoid conflicts with existing and/or new utilities and shall maintain proper clearances with all potable water lines.

(f) Installation of Sanitary Sewer Services Tees and Wyes - Delete this Subsection and replace with the following:

Provide a compacted Base of pipe bedding material under all tees, wyes, and branch fittings, extending to the springline of the fittings.

The last length of all service lines shall be a manufactured sweeping tee with pipe extended to the ground surface as a cleanout as required or specified. The cleanout, and the building side service of the tee, on service lines not connecting to an existing sewer, shall be plugged with a removable watertight cap. No additional length of pipe shall be added beyond the tee unless otherwise specified.

Cap all service lines for sanitary sewers with watertight plug suitable for resisting the pressures of air testing. The maximum line or grade change accomplished with any one fitting shall not exceed 45 degrees and shall be accomplished with long radius curves or bends.

Sewer service connections to the main shall have a minimum of 18 inches clearance between connections and a minimum of 18 inches clearance from any joint or fitting in the main.

00445.48 Tracer Wire - Add the following paragraph to this Subsection:

Tracer wire to all lateral connections (inlets, area drains, cleanouts, etc.) shall be terminated within 18 inches of finish grade with a minimum of 12 inches of tracer wire above ground or vault lid level to allow for connection to locating equipment. Where necessary, install tracer wire through a hole drilled in the riser, inlet, slab, etc. Do not place tracer wire through riser joints or other locations where wire will be

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 item:

Corrugated Metal Pipe

Construction

00470.41 Precast Concrete Manholes -

(b) Precast Manhole Sections - Replace the first paragraph in this subsection with the following:

Thoroughly wet all lift holes and completely fill with a microsilica -based restoration mortar such as Mainstay® ML-10™ or approved equal.

(1) Sanitary Manholes - Delete this Subsection and replace with the following:

Use preformed plastic or rubber gaskets on all joints between manhole sections, to include the cone or flat top section.

All manhole barrel joints, pick holes and other penetrations below 18 inches of finish grade shall be externally sealed prior to backfill and testing by the following method:

- Ensure areas within 12 inches of each joint, pick hole, or penetration is clean and clear of dirt, dust, mud, or other deleterious material. Use a wire brush to clean areas to be covered with mastic wrap.
- Install an external 10 inch wide butyl-based joint wrap seal (Trelleborg Bidco BW-10T or approved equal) centered on the joint line for the full circumference of the manhole per the manufacturer's instructions. Cut wrap to form a smooth butt joint. Ensure wrap is fully bonded to both sides of the joint with no wrinkles, kinks, air gaps or obstructions that may cause groundwater leakage.
- For pick holes, center a 10 inch square section of butyl wrap seal on the hole; ensure that all edges and corners of the patch are firmly bonded to the manhole surface.

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 a microsilica -based restoration mortar such as Mainstay® ML-10™ or approved equal per the manufacturer's instructions.

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.

Section 00475 - Restoration and Sealing of Concrete and Brick Structures

Add the following Section:

Description

00475.00 Scope - This work consists of the cleaning, preparation, restoration, and installation of restoration mortar, epoxy corrosion barrier, and flexible joint seal composite liner (Composite Liner) for concrete and brick structures for the purposes of repair, corrosion protection, and sealing structures from water infiltration/exfiltration.

00475.01 Submittals - Submit the following at least 10 Calendar Days before the preconstruction conference:

- Certification by the Composite Liner system manufacturer that the installer is currently licensed and certified as competent to perform the Work and a list of the qualified personnel who are assigned to Work on this Project.
- List of 3 successful Composite Liner installation projects completed within the last 3 years, including project names and locations, name of the Agency and Engineer, and a description of the products used, substrate conditions, and application procedures.
- List of all products to be used in the Composite Liner installation process, including physical properties of the products, substrate surface preparation requirements, and application/curing procedures.
- Certification that manufacturing processes operate under a quality management system according to recognized industry standards.
- Manufacturer's technical data showing complete information on material composition and physical properties. Include manufacturer's recommendation for handling, storage, installation, curing, finishing, and repair of a damaged Liner.
- Certification that all products used in the Composite Liner process originate from a single source/ manufacturer and are designed to be compatible with the substrate and each other.
- Certification that all products used are designed to be installed consecutively (within the same day or work period).
- Independent third party certification of test results confirming that the Composite Liner system meets structural properties according to 00475.10.
- Field sampling and testing plan for physical properties according to 00475.10.
- Contingency repair plan including methods and Equipment to be used to repair or replace unacceptable Composite Liner defects identified in 00475.73.

Materials

00475.10 Materials - Furnish materials meeting the following requirements:

Water 02020
Epoxy Putty 02070.30
Hydraulic Cement Mortar 02080.60
Restoration Mortar 02080.70
Corrosion Barrier Coating 02070.40
Flexible Joint Seal 02070.50

00475.11 Product Delivery, Handling, and Storage - Deliver materials to the site in the manufacturer's original, unopened packaging with labels clearly identifying the product and manufacturer. Protect materials during handling to prevent damage. Store materials in accordance with the manufacturer's instructions and keep containers sealed until ready for use. Any products that have expired or are delivered in a damaged condition shall be removed and replaced in kind at no cost to the Agency. If requested, provide any manufacturer's literature to the Agency.

Equipment

00475.20 Equipment - Use Equipment approved by the manufacturer to apply the Composite Liner.

Labor

00475.30 Personnel Qualifications - Provide installers who:

- Are trained and approved by the manufacturer in the application of Composite Liners.
- Employ persons trained for the application of Composite Liners.
- Have installed at least a cumulative of 10,000 square feet of Composite Liner installation by hand trowel, low to medium velocity shotcrete application, centrifugal applicator, or other approved application process.

or

- Provide a manufacturer's representative with at least five years' experience with Composite Liners.
- Ensure the manufacturer's representative is on-site during the installation. When the representative is not on-site, provide to the Superintendent and the Engineer the telephone number of the manufacturer's representative, or alternate, who is available on a 24-hour basis throughout the Project duration.
- Provide a supervisor for the Composite Liner installation who is assigned to the Project full time during the installation Work and has supervised at least 15,000 square feet of Composite Liner installation by hand trowel, low to medium velocity shotcrete application, centrifugal applicator, or other approved application process.

Construction

00475.40 General - Field verify structure locations, application areas, and condition prior to ordering Composite Liner Materials.

00475.41 Pre-Application Coordination Meeting - Hold a coordination meeting at least 2 weeks before the start of any Work. Those attending the meeting shall include the Engineer, Contractor, applicator, and manufacturer's representative. Topics for discussion shall include traffic control, structure condition and preparation, application, curing, field quality control, and coordination with other work.

00475.43 Environmental Conditions:

(a) Hot Weather Application - High temperatures, wind, or low humidity can cause rapid evaporation of surface moisture prior to application of restoration mortar, which may lead to plastic shrinkage cracking. Under these conditions, the Contractor shall use an approved curing compound immediately following placement of the restoration mortar to prevent cracking. Do not apply Composite Liner materials at temperatures above the manufacturer's recommended allowable limit.

(b) Cold Weather Application - Place the restoration mortar at a minimum ambient temperature of 55° F and protect the mortar from freezing for a minimum period of 3 days. Do not apply Composite Liner materials at temperatures below the manufacturer's recommended allowable limit.

Do not apply any Composite Lining materials in a dusty or smoke-laden atmosphere or in areas of overflowing water.

00475.45 - Preliminary Work:

(a) Examination - Examine all surfaces to receive a Composite Liner. Notify the Engineer in writing if the surfaces are unacceptable. Do not begin surface preparation or Liner application until unacceptable conditions have been corrected.

(b) Preparation and Inspection - Refer to ICRI Technical Guideline No. 03730 - Surface Preparation Guidelines for the Repair of Deteriorated Concrete Resulting From Reinforcing Steel Corrosion.

Clean all surfaces in accordance with the manufacturer's instructions. Use low pressure water cleaning (LP, WC, 4,000 psi minimum), abrasive blasting, or manual/power tools as required to remove all unsound concrete, contaminants, dirt, debris, and deteriorated reinforcing steel. Prepared surfaces should have a minimum ICRI Concrete Surface Profile (CSP) #4 (preferably with aggregate exposed).

Inspect all prepared surfaces for soundness and to identify and mark corroded reinforcing steel, cracks, leaks, and joints.

(c) Video/Photographic Documentation - Following cleaning of the structure, perform a pre-installation video or provide photographic documentation of the structure, to include any deficiencies found during inspection. Video or images must be in color and must clearly show any defects or deficiencies found. Use an independent light source if necessary. Provide documentation to the Engineer in an acceptable digital format at least 5 business days before beginning Composite Lining installation Work.

(d) Pre-Installation Repair - Replace or treat corroded reinforcing steel, repair cracks and leaks, and treat joints in accordance with the manufacturer's instructions and as approved by the Engineer. Repair visible leaks with the application of an approved and compatible hydraulic cement mortar following the manufacturer's instructions. Inject flowing leaks with an approved polymer gel or foam. Following repair procedures, remove excess or spilled materials from all areas being prepared for Composite Liner installation.

When requested by the Engineer, perform a new or supplemental pre-installation video/photographic inspection of the structure after the repairs have been completed. Provide documentation to the Engineer prior to installation of Composite Liner.

00475.47 Installation of Composite Liner:

(a) Preparation:

(1) Exposed Steel - Any exposed reinforcing or other steel must be coated with an approved and compatible epoxy putty to reduce the likelihood of galvanic corrosion. Do not apply coating to metal manhole frames or risers.

(2) Brick or Concrete - Saturate all surfaces to be treated with clean water. Restoration mortar may be applied as soon as water sheen is no longer visible (saturated surface dry).

(b) Restoration Mortar - Apply restoration mortar to the substrate according to manufacturer's instructions. Mortar may be applied by hand trowel, low to medium velocity shotcrete application, centrifugal applicator, or other approved application process. Do not trap air in corners, behind exposed reinforcing steel, or between application lifts. Do not apply to manhole steps, frames or risers.

Apply the mortar to the substrate in uniform lifts to the specified thickness (minimum of 1/2 inch above peaks of existing surface profile). Plastic indicator tabs may be attached on the Structure to verify the design thickness is achieved. Position the tabs height just below the specified Liner thickness. Smooth the final lift with a steel trowel with rounded corners and finish with a sponge or brush to produce a smooth, lightly-textured surface upon which to apply the following epoxy corrosion barrier coating.

(c) Epoxy Corrosion Barrier - Apply the epoxy corrosion barrier in accordance with the manufacturer's instructions as soon as possible after finishing the restoration mortar. Do not allow surface contamination of the finished restoration mortar before application of the epoxy. Apply the epoxy over the mortar to the specified thickness (minimum of 100 mils).

Protect the restoration mortar and epoxy corrosion barrier from freezing as specified in 00475.43 (b). Protect from flowing water for a period of 1 to 3 hours after application of the epoxy barrier, depending on substrate temperature. Epoxy should reach a tack-free condition prior to exposure to immersion.

(d) Flexible Joint Seal - Apply the flexible joint seal in accordance with the manufacturer's instructions. Flexible sealant should be applied by hand or trowel to the joint between the grade rings and the manhole frame at a width of 6 inches and a minimum thickness of 1/8 inch.

Finishing, Cleaning Up, and Testing

00475.70 General - Ensure the cured Composite Lining is continuous and free from visual defects such as foreign inclusions, delamination, and cracking at any location. Verify the Liner is impervious and free of any leakage from water infiltration or exfiltration from the Lined structure.

Remove temporary dams or filtration measures after Work is complete and structure is clean and restored.

00475.71 Post-Installation Documentation - After Work is completed, perform a post-installation video/photographic inspection according to 00475.45(c). Provide documentation to the Engineer prior to final payment.

00475.72 Material Sampling and Testing:

(a) Pre-Placement Samples - Obtain two samples of Material on the first and last days of construction, for a total of four samples. Additional samples during the application may be taken at the request of the Engineer. Agency shall employ an independent third party ACI certified testing agency to properly obtain and transport the test samples and perform Material testing according to 00475.10. Individually label and log each sample with the following information:

- Project Name
- Name of Contractor
- Sampler's name
- Product batch number(s)
- Sample number
- Liner installation date
- Date and time of sample
- Location of sample within structure
- Name and location of third party laboratory

(b) Electrical Inspection - High-voltage holiday detection may be performed in accordance with NACE RP 0188 or as recommended by the manufacturer. This testing shall only be performed by qualified personnel. Extreme caution should be used when this process is being performed in damp or potentially explosive environments.

(c) Core Samples - When requested by the Engineer, core the Composite Liner at three different clock positions at established intervals through the structure at no additional expense to the Agency. The measurement of the actual Liner thickness will equal the average core thickness of all core samples taken. Repair the core holes in the structure Liner according to the manufacturer's recommendations at no additional cost to the Agency.

00475.73 Repairs - Repair defective areas to meet the requirements of the Plans and Specifications. Before making repairs, provide the manufacturer's recommendations for Liner repairs, subject to approval by the Engineer. Repair or replace Liners that have:

- Installed thickness less than 90 percent of the specified design thickness.
- 28 Day compressive strength less than 10,000 psi, as determined by ASTM C109.
- 28 Day minimum flexural strength less than 1,505 psi as determined by ASTM C293.
- Infiltration or exfiltration of water through the Composite Liner.
- Cracks larger than 0.032 inches wide.
- Separation of the Liner from the host structure.

00475.75 Contractor Warranty - The Contractor unconditionally warrants to the Agency the product and installation under this Section against failure, according to this Subsection and 00170.85(b)(1).

"Unconditionally warrant" means that the warranty covers all failures, regardless of the source or cause of the failure, including, without limitation, whether the source or cause is or may be related to workmanship, inspection, or choice of Materials.

The Agency inspection of any portion of the Work during the Contract and during the product installation, the Agency acceptance of the Work, corrections under the warranty, or expiration of the warranty shall not relieve the obligations under this warranty.

(a) Warranty Period - The warranty period shall be for 10 years.

(b) Failure - For purposes of the warranty, failure is defined as one or more of the following:

- Infiltration or exfiltration of water through the Composite Liner.
- Cracks larger than 0.032 inches wide.
- Separation of the Liner from the host structure.
- Failure to prevent internal deterioration or corrosion of the structure.

Failure excludes damages resulting from mechanical or chemical abuse or Act of God or Nature. Mechanical or chemical abuse is defined as exposure of the Liner surface to any mechanical force or chemical substance not customarily present or used in connection with structures of the type involved.

(c) Remedy - Upon notification by the Engineer of a failure as defined above, implement the following remedy at no additional cost to the Agency:

- Provide a Composite Liner repair plan and written timeline of when the Work will be completed within 10 Calendar Days of the Agency's written notification of failure.
- Provide one of the following, as approved:
    - Removal of the failed Liner and install a full-thickness Liner,
    - Installation of a Composite Liner repair.
- Complete one of the approved remedies within 60 Calendar Days of the Agency's written notification of failure.
- Use Materials and procedures meeting the Specifications.
- Coordinate timing of repair Work with the Engineer.

Measurement

00475.80 Measurement - The quantity of installed Composite Liner will be measured on the square foot basis. The area will be measured as the total interior structure area that has been sealed, including underside areas of flattop lids and channeled areas, and deducting the areas of any pipe penetrations or other unsealed areas of the structure.

Payment

00475.90 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:

Pay Item	Unit of Measurement
(a) Structural Composite Liner	Square Foot

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.

Section 00490 - Work on Existing Sewers and Structures

The Work on Existing Sewers and Structures Section shall be administered in conformance with Section 00490 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00490.40 General - Add the following to this Subsection:

Contractor is required to submit an approved plan to deal with live sewage flows in the existing sanitary line during construction of the new line. The plan shall include but not be limited to the following requirements:

- The Contractor shall outline methods of controlling main pipeline flow, including location where stormwater and sewage is to be diverted, type of pipe to be used for bypass, and the method of service lateral flow control.
- At the end of each workday, weekends, holidays, or when the Contractor does not plan to be on site the following day, the existing sewer line shall be connected to the newly installed sewer line. The method of connection shall be watertight so as not to allow contamination of the surrounding trench.
- The Contractor is responsible at all times for monitoring existing flows in the system during operations that block, inhibit, or reroute sanitary flows. Surcharging of the new or existing system will not be allowed under any circumstances.
- If necessary, the Contractor shall provide a bypass pumping plan that provides alarms that will notify the Contractor of pumping issues at all times. If required, standby or secondary equipment shall be available to be used during emergencies or failure of primary pumps.
- The Contractor shall ensure that any bypass piping does not leak or impede vehicular access.

00490.42 Service Line Connections to Existing Sanitary Sewers - Add the following to this Subsection:

Previous use of the service line or building sewer for septic tank or other application, or absence of usable cleanouts for accessing the building sewer, shall not excuse the requirement for testing except as may be authorized by the state building codes inspector.

Service connections shall be made as quickly as possible. The Contractor shall sequence construction and provide a temporary service so as not to interrupt sewer service or flows. Any costs incurred due to a failure of the temporary service shall be the responsibility of the Contractor. Flow shall be through the existing or new sewer pipe only. In no case shall sewer flow be allowed into any excavation. Contractor shall also verify that any sanitary sewer service line to be abandoned is out of service.

00490.43 Abandoning Pipe in Place - Delete the second paragraph in this Subsection and replace with the following:

For filling of abandoned pipe, refer to 00330.41(a)(7).

00490.44 Filling Abandoned Pipes, Manholes, and Catch Basins - Delete this Subsection and replace with the following:

Cap or plug all connecting pipes to manholes, catch basins or other structures that are scheduled to be abandoned. Remove the manhole cone or flat top and manhole sections, the catch basin frame, or other

obstructions to a minimum depth of 3 feet below finish grade and fill the remaining manhole barrel, catch basin or structure with one of the following:

(a) Improved Roadway Sections - For abandoned structures partially or fully within improved roadway sections, backfill with controlled low-strength material meeting the requirements of 00442.

(b) Unimproved Roadway Sections or Landscaped Areas - For abandoned structures fully within landscaped areas or unimproved roadway section areas, backfill with Granular Material meeting the requirements of 02630. Compact the Granular Material to 90 percent of maximum density according to AASHTO T 99. For landscaped areas, place Topsoil meeting the requirements of 00330.11 for the last 1 foot of backfill.

For filling of abandoned pipe, refer to 00330.41(a)(7).

00490.46 Adjusting Manholes:

(a) Metal Steps - Delete this Subsection.

(b) Concrete and Masonry Manholes -

(2) Delete this Subsection and replace with the following:

Major adjustments of manholes include the following work:

- Infringing upon or involving removal of the cone or flat top section,
- Cutting an opening into the manhole for installation of new pipe(s),
- Rechanneling inverts
- Retesting

Payment

00490.90 Payment - Add the following item and description to the first (lettered) list in this Subsection.

Pay Item	**Unit of Measurement**
(i) Bypass Pumping	Lump Sum

Item (i) includes all equipment, labor, and materials required to perform bypass pumping as required throughout the Project limits, to include temporary connections to the existing system.

Delete the last item in the last (bulleted) list in this Subsection and replace with the following:

- All work required to abandon existing mains, including placement of flowable grout and installation of necessary plugs.

Section 00495 - Trench Resurfacing

The Trench Resurfacing Section shall be administered in conformance with Section 00495 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00495.40 General -

(k) Landscaping - Add the following to this Subsection:

Restore all landscaping, including grass, damaged during construction to as good or better than existing prior to construction.

Where landscaping is to be restored, the uppermost twelve (12) inches of trench backfill shall be topsoil.

(l) Utility Work - Add this Subsection:

Prior to placement of any permanent trench resurfacing, all utility work, including sanitary sewer, storm drainage, water distribution, and any private utilities shall be completed, inspected, and accepted by the Agency.

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PART 00600 - BASES

Section 00620 - Cold Plane Pavement Removal

The Cold Plane Pavement Removal Section shall be administered in conformance with Section 00620 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00620.40 Pavement Removal:

(a) General - Add the following to this Subsection:

All areas of Base repair must be completed prior to beginning the Cold Plane Pavement Removal process.

(f) Repaving - Add this Subsection:

The Contractor shall construct ACP Wearing Course within 48 hours of finishing the cold plane pavement removal process.

Section 00641 - Aggregate Subbase, Base, and Shoulders

The Aggregate Subbase, Base, and Shoulders Section shall be administered in conformance with Section 00641 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00641.10 Materials:

(a) Base and Shoulder Aggregate - Delete the first paragraph in this Subsection and replace with the following:

Aggregate for bases and shoulders shall be either Dense Graded 1” - 0 or 3/4” - 0 as the Contractor elects. Base aggregate shall be dense-graded.

(b) Subbase Aggregate - Delete the first paragraph in this Subsection and replace with the following:

Aggregate for subbase and any necessary subgrade stabilization shall be 3” - 0 open graded, clean, durable, angular quarry rock with less than 5% fines passing the #200 sieve. The rock shall have a minimum specific gravity of 2.55. Flat or elongated rock will not be accepted unless individual pieces have a minimum thickness of 1/3 the length.

(c) Open-Graded Aggregates - Add the following Subsection:

The specified percent of relative maximum density for open-graded aggregates will not be required. Compact the surface of each layer of material using rollers conforming to 00641.24. Roll until there is no appreciable reaction or yielding under the compactor.

PART 00700 - WEARING SURFACES

Section 00730 - Emulsified Asphalt Tack Coat

The Emulsified Asphalt Tack Coat Section shall be administered in conformance with Section 00730 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Payment

00730.90 Payment - Add the following sentence to this Subsection:

When not listed in the Schedule of Items, emulsified asphalt tack coat shall be considered incidental.

Section 00744 - Asphalt Concrete Pavement

The Asphalt Concrete Pavement Section shall be administered in conformance with Section 00744 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00744.00 Scope - Add the following to this Subsection:

This Section is intended for paving on small quantity projects requiring 2,500 or fewer tons and requiring a Level 3 or lower mix design. It shall not be used on projects requiring more than 2500 tons or a Level 4 mix design. Project specifications shall not include both 00744 and 00745; if both types of paving are present, then 00745 shall be specified for all paving.

Prior to placement of any base course surfacing, all utility work, including sanitary sewer, storm drainage, water distribution, and private utilities shall be completed by the Contractor and inspected and accepted by the Agency.

The Contractor shall notify and obtain permission from the Engineer prior to placement of any final wearing course.

Materials

00744.11 Asphalt Cement, Additives, and Aggregate Treatment -

(a) Asphalt Cement - Delete this Subsection and replace with the following:

Use PG 64-22 or PG 70-22 asphalt unless otherwise specified in the Contract Documents. Provide asphalt cement conforming to ODOT's publication *Standard Specifications for Asphalt Materials*. This publication is available on ODOT's website. The applicable specifications are those contained in the current publication on the date the project is advertised.

Construction

00744.40.5 Preparation of Underlying Surfaces - Add the following Subsection:

All bases and foundations on which the Pavement is to be constructed shall meet the applicable Specifications and be approved before the start of paving. Recondition existing bases and foundations according to Section 00610. Trim broken or ragged edges to firm material when directed.

Remove existing pavement markers, recessed markers, and pavement legends before paving. Remove pavement lines, bars, and pavement legends as shown or directed and according to 00225.45.

All cuts in existing pavement shall be clean, straight and a minimum depth of 2 inches or half the thickness of the pavement, whichever is greater. Pavement cuts damaged by construction equipment or other means shall be recut at no expense to the Agency prior to the start of paving.

All cracks in existing underlying pavement shall be cleaned and repaired according to 00746 prior to the start of any paving operation.

Level and compact depressed areas with ACP as specified or directed. Perform the Leveling Work as a separate operation and at the locations and to the extent as shown or directed. Spread the Leveling material with a paving machine, unless otherwise directed.

Treat all paved surfaces on and against which ACP is to be placed with an asphalt tack coat, according to Section 00730.

Treat all waterproofing membranes on and against which ACP is to be placed with an asphalt tack coat meeting the requirements of 00745.11(a) or as recommended by the membrane manufacturer. Protect all existing Structures from the overlay operation and check and clean as necessary after the overlay.

00744.43 Hauling, Depositing, and Placing -

(a) Hauling - Add the following to this Subsection:

Each load of mixture delivered to the project shall have a weigh memo provided by the Contractor to be collected by the Engineer.

Storage or holding of ACP in open stockpiles will not be permitted.

(c) Placing - Delete this Subsection and replace with the following:

Alternative equipment and means may be allowed by the Engineer if the use of a paver is impractical.

Do not place ACP during rain or other adverse weather conditions, unless allowed by the Engineer. ACP in transit at the time adverse conditions occur may be placed if:

- It has been covered during transit.
- The ACP temperature is satisfactory.
- It is placed on a foundation free from pools or flow of water.
- All other requirements are met.

When leveling irregular surfaces and raising low areas, do not exceed 2 inches actual compacted thickness of any one Lift. This may require portions of the mixture to be laid in two or more Lifts.

Place the mixture in the number of lifts and courses, and to the compacted thickness for each Lift and Course as shown. Place each Course in one Lift unless otherwise specified. Do not exceed a compacted thickness of 3 inches for any lift. Limit the minimum Lift thickness to four times the nominal maximum Aggregate size in the mix.

Do not intermingle ACP produced from more than one JMF. Each Base Course Panel placed during a working shift shall conform to a single JMF. The wearing Course shall conform to a single JMF, except for adjustments in the JMF according to 00745.16 (b)(1).

00744.44 Longitudinal Joints -

(a) Location -

(2) Wearing Course - Delete this sentence and replace with the following:

Construct longitudinal joints at either lane lines or face of gutter, or as shown or directed. The placement of ACP along existing concrete gutters shall be in such a manner that the compacted pavement does not vary more than 1/4 inch from the top face of gutter.

00744.45 Transverse Joints:

(a) Travel Lanes -

(1) Temporary End Panel - Delete the first two bulleted items in this list and replace with the following:

- For wedges that will be under traffic for less than 24 hours, construct a 4-foot-long wedge (1V:24H taper rate).
- For wedges that will be under traffic for 24 hours or longer, construct an 8-foot-long wedge (1V:48H taper rate).

(d) Matching Existing Pavements - Add this Subsection:

Where new ACP is constructed to join or overlay existing pavements, the Contractor shall seal the joints and taper edges with SS-1 emulsion and sand.

00744.49 Compaction - Add the following after the second paragraph in this Subsection:

When a Contract indicates placement of less than one sublot (1000 ton), random compaction tests shall be conducted at one per every two hundred ton placed unless otherwise indicated in the Special Provisions.

Maintenance

00744.60 Correction of Defects -

(g) Non-specification Compaction - Add the following Subsection:

Areas of ACP with less than 88% compaction shall, at the Engineer’s discretion, be removed and replaced at no additional cost to the Agency.

(h) Pavement Thickness - Add the following Subsection:

The Engineer may select locations for non-destructive measurement or core samples of in-place ACP to determine pavement thickness.

If non-destructive measurement indicates a pavement section is less than the thickness shown on the plans or is otherwise out of specification, the Contractor may take cores at the locations in question to verify the Engineer's measurements. If the pavement section is found to comply with specification requirements, coring and restoration will be paid for as extra work. Pavement found to be out of specification shall be subject to remedial work, adjusted payment, or replacement in accordance with 00745.96(b).

In determining deficient or excessive thickness in ACP overlays, the Engineer may adjust the cross-section measurement sequence, average series of measurements or take other appropriate steps to allow for the desirable leveling of low or high areas on the existing pavement.

In determining payment adjustment for deficient or excessive pavement thickness, a section of pavement will normally be one full roadway section (100 feet). For non-roadway paving and in other situations where the Engineer determines the above section is inappropriate, the Engineer may establish a different unit of work on which to calculate average thicknesses and price adjustments according to 00745.96(b).

Where a deficiency is found, and the Engineer determines the deficiency or excess serious enough to impair the traffic service expected from the pavement, the area in question shall be removed by the Contractor and replaced with pavement meeting specification requirements at no expense to the Agency.

When pavement thickness, as determined by the Engineer's measurements or test cores, is found deficient by more than the thickness of the specified wearing course of ACP, the Engineer may allow the Contractor to place an additional lift (overlay) of ACP to bring the total thickness of the pavement into conformance with specifications. Overlays shall be subject to all applicable specification requirements.

Finishing and Cleaning Up

00744.75 Correction of Pavement Roughness -

(c) Other Action - Add this Subsection:

Where surface irregularities are localized or where the Engineer determines corrective work would not be in the Agency's best interests, the Engineer may deduct from payment due the Contractor amounts equivalent to the Engineer's estimate or work costs had the corrective work been done.

Measurement

00744.80 Measurement - Delete this Subsection and replace with the following:

The accepted quantities of ACP will be measured on the weight basis according to 00190 with no separate measurement being made for the asphalt concrete mixture and the asphalt cement contained in the mixture. No deduction will be made for lime or any other approved additive used in the mixture.

00744.83 Other Items - Add the following Subsection:

AC saw cutting shall be measured by the foot as marked in the field. If AC saw cutting is not listed in the Bid Schedule, it shall be considered incidental.

Payment

00744.90 Payment - Delete this Subsection and replace with the following:

The accepted quantities of ACP incorporated into the project will be paid for at the contract price on the weight basis for the following item:

Pay Item	Unit of Measurement
(a) Level ____ , ____ ____ ACP ____	Ton
(b) Saw Cutting	Foot

In item (a), the following information will be inserted in the blanks:

- The level(s) of ACP (1, 2, 3) will be inserted in the first blank.
- The type of ACP (3/4 inch, 1/2 inch, 3/8 inch), will be inserted in the second blank.
- The words "Lime Treated" will be inserted in the third blank when applicable.

- The words "in Leveling", "in Temporary", or "in Leveling and Temporary" will be inserted in the fourth blank when applicable.

Payment will be payment in full for furnishing and placing the materials and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for:

- Asphalt cement used in the mixture
- Reconditioning existing roadway
- Leveling Work
- Lime
- QC testing
- Sawing, cleaning, and filling joints on bridge deck overlays

When specified by other Pay Items in the Contract Schedule of Items, separate payment will be made for Work described in 00744.40.5, 00749.91 and 00749.92.

When a Panel consists of both temporary and permanent Courses, payment for the entire Panel will be based on the permanent Course.

Anti-stripping asphalt cement additives will be paid for at the Contractor's actual documented costs with no percentage allowance or markup allowed. No additional payment will be made for antistripping additives or treatments that are not anti-stripping asphalt cement additives.

00744.95 Price Adjustments - Delete this Subsection and replace with the following:

(a) Compaction - ACP pavement which does not comply with compaction requirements shall be removed and replaced at no additional cost to the Agency, or subject to a price reduction credited to the Agency at the discretion of the Engineer. Price reductions are determined from the following table:

Compaction Adjustment Schedule

% Maximum Density (ODOT TM 306)	% Pay for ACP Bid Item
91.0 and above	100
90.7 - 90.9	95
90.3 - 90.6	90
90.0 - 90.2	85
89.7 - 89.9	80
89.3 - 89.6	70
89.0 - 89.2	60
88.0 - 88.9	0 - 50 [1]
Below 88.0	0 [2]

[1] As determined by the Engineer.
[2] No payment will be made for any area of ACP with less than 88% compaction, even though the pavement may be allowed by the Engineer to remain in place.

(b) Thickness - When the pavement in any section of ACP is found deficient in thickness by less than the specified thickness of the wearing course and the Engineer allows the pavement to remain in place, payment for that pavement will be made at an adjusted price determined from the following table. The reduced payment shall be credited to the Agency.

Thickness Adjustment Schedule

% Deficiency in Thickness	**% Pay Reduction for ACP Bid Item**
0.0 - 5.0	No deduction
5.0 - 10.0	0.5 x Deficiency
10.0 - 15.0	1.0 x Deficiency
15.0 - 20.0	1.5 x Deficiency
20.0 - 25.0	2.0 x Deficiency
25.0 - 30.0	2.5 x Deficiency
30.0 and greater	100 [1]

[1] No payment will be made for any area of ACP found deficient in thickness by 30.0% or greater, even though the pavement may be allowed by the Engineer to remain in place.

When ACP in any section is found to exceed the specified thickness by more than ¼ inch, the Engineer shall calculate the tonnage of material in the excess thickness of the pavement and deduct that quantity from tonnage payment due under the Contract.

Section 00745 - Asphalt Concrete Pavement - Statistical Acceptance

The Asphalt Concrete Pavement - Statistical Acceptance Section shall be administered in conformance with Section 00745 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00745.00 Scope - Add the following to this Subsection:

This Section is intended for paving on projects requiring more than 2,500 tons or a Level 4 mix design. Project specifications shall not include both 00744 and 00745; if both types of paving are present, then 00745 shall be specified for all paving.

Prior to placement of any base course surfacing, all utility work, including sanitary sewer, storm drainage, water distribution, and private utilities shall be completed by the Contractor and inspected and accepted by the Agency.

The Contractor shall notify and obtain permission from the Engineer prior to placement of any final wearing course.

Materials

00745.11 Asphalt Cement, Additives, and Aggregate Treatment -

(a) Asphalt Cement - Delete this Subsection and replace with the following:

Use PG 64-22 or PG 70-22 asphalt unless otherwise specified in the Contract Documents. Provide asphalt cement conforming to ODOT's publication *Standard Specifications for Asphalt Materials*. This publication is available on ODOT's website. The applicable specifications are those contained in the current publication on the date the project is advertised.

Construction

00745.42 Preparation of Underlying Surfaces - Add the following paragraphs after the second paragraph in this Subsection:

All cuts in existing pavement shall be clean, straight and a minimum depth of 2 inches or half the thickness of the pavement, whichever is greater. Pavement cuts damaged by construction equipment or other means shall be recut at no expense to the Agency prior to the start of paving.

All cracks in existing underlying pavement shall be cleaned and repaired according to 00746 prior to the start of any paving operation.

00745.44 Asphalt Concrete Pavement Storage - Add the following item to this Subsection:

(f) Open Stockpiles - Storage or holding of ACP in open stockpiles will not be permitted.

00745.46 Hauling, Depositing, and Placing -

(a) Hauling - Add the following sentence to this Subsection:

Each load of mixture delivered to the project shall have a weigh memo provided by the Contractor to be collected by the Engineer.

(c) Placing - Delete this Subsection and replace with the following:

Alternative equipment and means may be allowed by the Engineer if the use of a paver is impractical.

Do not place ACP during rain or other adverse weather conditions, unless allowed by the Engineer. ACP in transit at the time adverse conditions occur may be placed if:

- It has been covered during transit.
- The ACP temperature is satisfactory.
- It is placed on a foundation free from pools or flow of water.
- All other requirements are met.

When leveling irregular surfaces and raising low areas, do not exceed 2 inches actual compacted thickness of any one Lift. This may require portions of the mixture to be laid in two or more Lifts.

Place the mixture in the number of lifts and courses, and to the compacted thickness for each Lift and Course as shown. Place each Course in one Lift unless otherwise specified. Do not exceed a compacted thickness of 3 inches for any lift. Limit the minimum Lift thickness to four times the nominal maximum Aggregate size in the mix.

Do not intermingle ACP produced from more than one JMF. Each Base Course Panel placed during a working shift shall conform to a single JMF. The wearing Course shall conform to a single JMF, except for adjustments in the JMF according to 00745.16 (b)(1).

00745.47 Longitudinal Joints -

(a) Location -

(2) Wearing Course - Delete this sentence and replace with the following:

Construct longitudinal joints at either lane lines or face of gutter, or as shown or directed. The placement of ACP along existing concrete gutters shall be in such a manner that the compacted pavement does not vary more than 1/4 inch from the top face of gutter.

00745.48 Transverse Joints:

(a) Travel Lanes -

(1) Temporary End Panel - Delete the first two bulleted items in this list and replace with the following:

- For wedges that will be under traffic for less than 24 hours, construct a 4-foot-long wedge (1V:24H taper rate).
- For wedges that will be under traffic for 24 hours or longer, construct an 8-foot-long wedge (1V:48H taper rate).

(d) Matching Existing Pavements - Add this Subsection:

Where new ACP is constructed to join or overlay existing pavements, the Contractor shall seal the joints and taper edges with SS-1 emulsion and sand.

00745.49 Compaction:

(b) Normal Pavement (Nominal Thickness 2 Inches or Greater) - Delete this Subsection heading and replace with the following:

(b) Normal Pavement (Nominal Thickness 1 1/2 inches or Greater)

(2) Random Testing - Add the following to this Subsection:

When a Contract indicates placement of less than one sublot (1000 ton), random compaction tests shall be conducted at one per every two hundred ton placed unless otherwise indicated in the Special Provisions.

b. Core Correlation of Nuclear Gauge Readings - Add the following to this Subsection:

Cut the required cores and patch the core holes with dense graded ACP to match grade. Seal cored pavement with SS-1 emulsion and sand.

c. Aggregate Gradation and Asphalt Content Sampling - Add this Subsection:

The Contractor shall take samples from the grade, unless otherwise directed by the Engineer, on a random basis determined by the Engineer. The samples for acceptance testing shall be taken in the presence of the Engineer. Take one sample per 500 ton , with a minimum of three samples per project of each JMF.

When samples are not obtained as required, the Engineer may require the gradation and asphalt content to be determined by core samples. Core samples shall be taken and tested according to 00745.49 (5).

(5) Compaction Standard Testing - Add this Subsection:

The Engineer may test any areas that appear defective in compaction. If the areas are found deficient, the Engineer may require the Contractor to bring the areas into conformance with the Specifications.

Acceptance will not be made for mixture compacted to less than 88% of theoretical maximum density (Rice Density), or 94% of target density. The Engineer may decide to allow the deficient pavement to remain in place. In that case, the Engineer and Contractor shall agree in writing that the pavement will remain in place.

If the Contractor takes core samples to verify the densities, core holes shall be filled with dense graded ACP to match grade. Seal cored pavement with SS-1 emulsion and sand. The density of the core samples shall be tested by an independent testing laboratory in accordance with ASTM 2726. All verifying work shall be performed by the Contractor at no expense to the Agency.

Where placed pavement fails to meet minimum compaction standards, the Engineer may accept the pavement and adjust Contractor payment according to 00745.96(a).

In addition to adjusted payment, if the in-place compaction of more than 25% of the top pavement lift is 90% or less of Rice Density, the Engineer may require the Contractor to fog coat the top lift of paving in the affected area according to 00705 and as directed. This treatment will be at no expense to the Agency.

Additional remedial work or replacement of ACP compacted to 88% or less of Rice Density may be required by the Engineer. Remedial work or replacement shall be at no expense to the Agency.

Temporary

00745.50 Temporary Surfacing Course - Delete the last sentence in this Subsection.

Maintenance

00745.60 Correction of Defects -

(f) Non-specification Compaction - Add the following to this Subsection:

Areas of ACP with less than 88% compaction shall, at the Engineer's discretion, be removed and replaced at no additional cost to the Agency.

(h) Pavement Thickness - Add the following Subsection:

The Engineer may select locations for non-destructive measurement or core samples of in-place ACP to determine pavement thickness.

If non-destructive measurement indicates a pavement section is less than the thickness shown on the plans or is otherwise out of specification, the Contractor may take cores at the locations in question to verify the Engineer's measurements. If the pavement section is found to comply with specification requirements, coring and restoration will be paid for as extra work. Pavement found to be out of specification shall be subject to remedial work, adjusted payment, or replacement in accordance with 00745.96(b).

In determining deficient or excessive thickness in ACP overlays, the Engineer may adjust the cross-section measurement sequence, average series of measurements or take other appropriate steps to allow for the desirable leveling of low or high areas on the existing pavement.

In determining payment adjustment for deficient or excessive pavement thickness, a section of pavement will normally be one full roadway section (100 feet). For non-roadway paving and in other situations where the Engineer determines the above section is inappropriate, the Engineer may establish a different unit of work on which to calculate average thicknesses and price adjustments according to 00745.96(b).

Where a deficiency is found, and the Engineer determines the deficiency or excess serious enough to impair the traffic service expected from the pavement, the area in question shall be removed by the Contractor and replaced with pavement meeting specification requirements at no expense to the Agency.

When pavement thickness, as determined by the Engineer's measurements or test cores, is found deficient by more than the thickness of the specified wearing course of ACP, the Engineer may allow the Contractor to place an additional lift (overlay) of ACP to bring the total thickness of the pavement into conformance with specifications. Overlays shall be subject to all applicable specification requirements.

Finishing and Cleaning Up

00745.75 Correction of Pavement Roughness -

(c) Other Action - Add this Subsection:

Where surface irregularities are localized or where the Engineer determines corrective work would not be in the Agency's best interests, the Engineer may deduct from payment due the Contractor amounts equivalent to the Engineer's estimate or work costs had the corrective work been done.

Measurement

00745.80 Measurement - Delete this Subsection and replace with the following:

The accepted quantities of ACP will be measured on the weight basis according to 00190 with no separate measurement being made for the asphalt concrete mixture and the asphalt cement contained in the mixture. No deduction will be made for lime or any other approved additive used in the mixture.

00745.83 Other Items - Add the following Subsection:

AC saw cutting shall be measured by the foot as marked in the field. If AC saw cutting is not listed in the Bid Schedule, it shall be considered incidental.

Payment

00745.90 Payment - Delete this Subsection and replace with the following:

The accepted quantities of ACP incorporated into the project will be paid for at the contract price on the weight basis for the following item:

Pay Item	Unit of Measurement
(a) Level ____ , ____ ____ ACP ____	Ton
(b) Saw Cutting	Foot

In item (a), the following information will be inserted in the blanks:

- The level(s) of ACP (1, 2, 3, 4) will be inserted in the first blank.
- The type of ACP (3/4 inch, 1/2 inch, 3/8 inch), will be inserted in the second blank.
- The words "Lime Treated" will be inserted in the third blank when applicable.
- The words "in Leveling", "in Temporary", or "in Leveling and Temporary" will be inserted in the fourth blank when applicable.

Payment will be payment in full for furnishing and placing the materials and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for:

- Asphalt cement used in the mixture
- Reconditioning existing roadway
- Leveling Work
- Lime

- QC testing
- Sawing, cleaning, and filling joints on bridge deck overlays

When specified by other Pay Items in the Contract Schedule of Items, separate payment will be made for Work described in 00745.42, 00749.91 and 00749.92.

When a Panel consists of both temporary and permanent Courses, payment for the entire Panel will be based on the permanent Course.

Anti-stripping asphalt cement additives will be paid for at the Contractor's actual documented costs with no percentage allowance or markup allowed. No additional payment will be made for antistripping additives or treatments that are not anti-stripping asphalt cement additives.

00745.95 Price Adjustments - Delete this Subsection and replace with the following:

(a) Compaction - ACP pavement which does not comply with compaction requirements shall be removed and replaced at no additional cost to the Agency, or subject to a price reduction credited to the Agency at the discretion of the Engineer. Price reductions are determined from the following table:

Compaction Adjustment Schedule

% Maximum Density (ODOT TM 306)[1]	% Pay for ACP Bid Item
92.0 and above	100
91.5 - 91.9	95
91.0 - 91.4	90
90.5 - 90.9	85
90.0 - 90.4	80
89.5 - 89.9	70
89.0 - 89.4	60
88.0 - 88.9	0 - 50 [2]
Below 88.0	0 [3]

[1] For first ACP lifts less than 3 inches placed on aggregate base, use Compaction Adjustment Schedule listed in 00744.95.
[2] As determined by the Engineer.
[3] No payment will be made for any area of ACP with less than 88% compaction, even though the pavement may be allowed by the Engineer to remain in place.

(b) Thickness - When the pavement in any section of ACP is found deficient in thickness by less than the specified thickness of the wearing course and the Engineer allows the pavement to remain in place, payment for that pavement will be made at an adjusted price determined from the following table. The reduced payment shall be credited to the Agency.

Thickness Adjustment Schedule

% Deficiency in Thickness	% Pay Reduction for ACP Bid Item
0.0 - 5.0	No deduction
5.0 - 10.0	0.5 x Deficiency
10.0 - 15.0	1.0 x Deficiency
15.0 - 20.0	1.5 x Deficiency
20.0 - 25.0	2.0 x Deficiency
25.0 - 30.0	2.5 x Deficiency
30.0 and greater	100 [1]

[1] No payment will be made for any area of ACP found deficient in thickness by 30.0% or greater, even though the pavement may be allowed by the Engineer to remain in place.

When ACP in any section is found to exceed the specified thickness by more than ¼ inch, the Engineer shall calculate the tonnage of material in the excess thickness of the pavement and deduct that quantity from tonnage payment due under the Contract.

Section 00749 - Miscellaneous Asphalt Concrete Structures

The Miscellaneous Asphalt Concrete Structures Section shall be administered in conformance with Section 00749 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00749.13 Asphalt Concrete - Delete this Subsection and replace with the following:

Unless another class is shown, provide level of ACP specified in the Contract Documents for wearing surfaces according to 00745. Statistical analysis will not apply.

Construction

00749.42 Foundations - Delete this Subsection and replace with the following:

Construct foundations or other bedding using selected granular backfill material according to 00330 or using aggregate base according to 00749 when shown or directed. Salvage and reuse of in-place materials will not be allowed unless otherwise directed by the Engineer.

Section 00755 - Continuously Reinforced Concrete Pavement

The Continuously Reinforced Concrete Pavement Section shall be administered in conformance with Section 00755 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00755.04 Aggregate Production and Prepaving Conference - Delete this Subsection and replace with the following:

Supervisory and QC personnel of the Contractor and any subcontractors who are to be involved in the concrete paving work shall meet with the Engineer at a mutually agreed time to discuss methods of accomplishing all phases of the paving Work.

Construction

00755.41 Preparation of Base:

(a) Condition - Add the following to this Subsection:

All cuts in existing pavement shall be clean, straight and to a minimum depth of 2 inches or half the thickness of the pavement, whichever is greater. Pavement cuts damaged by construction equipment or other means shall be recut at no expense to the Agency prior to the start of paving.

00755.47 Test Strip - Delete this Subsection and replace with the following:

At the beginning of paving operations, construct one initial test strip of concrete pavement at least 300 feet, but not more than 500 feet in length at the specified paving width. Use the same equipment for the remainder of the paving. Do not perform further paving until the test strip is evaluated according to 00755.55. An additional test strip will be required when:

- The Contractor proposes using different paving equipment.
- Any portion of a test strip fails to meet the smoothness requirements of 00755.55.

Change methods and/or equipment and construct additional test strips until a test strip meets smoothness requirements without grinding or other corrective work. Limit these additional test strips to 300 feet.

If three test strips fail to meet smoothness requirements before grinding, remove all three strips at the Contractor's expense and construct additional test strips.

Section 00756 - Plain Concrete Pavement

The Plain Concrete Pavement Section shall be administered in conformance with Section 00756 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00756.04 Aggregate Production and Prepaving Conference - Delete this Subsection and replace with the following:

Supervisory and QC personnel of the Contractor and any subcontractors who are to be involved in the concrete paving work shall meet with the Engineer at a mutually agreed time to discuss methods of accomplishing all phases of the paving Work.

Construction

00756.41 Preparation of Base - Add the following to this Subsection:

All cuts in existing pavement shall be clean, straight and a minimum of 2 inches or half the thickness of the pavement, whichever is greater. Pavement cuts damaged by construction equipment or other means shall be recut at no expense to the Agency prior to the start of paving.

00756.47 Test Strip - Delete this Subsection and replace with the following:

At the beginning of paving operations, construct one initial test strip of concrete pavement at least 300 feet, but not more than 500 feet in length at the specified paving width. Use the same equipment for the remainder of the paving. Do not perform further paving until the test strip is evaluated according to 00756.55. An additional test strip will be required when:

- The Contractor proposes using different paving equipment.
- Any portion of a test strip fails to meet the smoothness requirements of 00756.55.

Change methods and/or equipment and construct additional test strips until a test strip meets smoothness requirements without grinding or other corrective work. Limit these additional test strips to 300 feet.

If three test strips fail to meet smoothness requirements before grinding, remove all three strips at the Contractor's expense and construct additional test strips.

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PART 00800 - PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES

Section 00815 - Bollards

The Bollards Section shall be administered in conformance with Section 00815 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00815.11 Posts and Sleeves - Delete this Subsection and replace with the following:

Use 4 inch steel Schedule 40 pipe for posts and 3 1/2 inch steel Schedule 80 steel pipe for sleeves. All piping shall be ASTM A53, Type E, Grade A.

3 1/2 inch square tubing may also be used for sleeves. All tubing shall be ASTM A513 or A500.

00815.14 PVC Pipe - Delete this Subsection. The use of PVC pipe will not be allowed.

Section 00850 - Common Provisions for Pavement Markings

The Common Provisions for Pavement Markings Section shall be administered in conformance with Section 00850 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00850.46 Placement Tolerance - Delete this Subsection and replace with the following:

Allowable tolerances for installation are:

- **Lateral location on roadway:** 1/2 inch on tangents; 1 inch on curves
- **20-foot skip cycle length:** ± 1 inch for skip length, ± 1 inch for gap length (See Supp. Std. Dwg. 00800-02)
- **4-foot skip cycle length:** ± 1/2 inch for skip length, ± 1/2 inch for gap length (See Supp. Std. Dwg. 00800-02)
- **Skip Cycle:** A tolerance of 1/10 of the skip line length on the first skip line of a run, but it shall be on cycle within one skip. When applying adjacent to an existing section of skip cycle, ensure that the skip and gap tolerances match the existing markings

Section 00867 - Transverse Pavement Markings - Legends and Bars

The Transverse Pavement Markings - Legends and Bars Section shall be administered in conformance with Section 00867 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00867.45 Installation - Delete all bulleted items in this Subsection with the exception of:
Type B: Preformed, Fused Thermoplastic Film. This is the only type of Transverse Marking allowed.

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PART 00900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS

Section 00930 - Metal Sign Supports

The Metal Sign Supports Section shall be administered in conformance with Section 00930 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Description

00930.02 Working Drawings - Delete this Subsection and replace with the following:

Submit 4 copies of unstamped Working Drawings, plans, details, and calculations according to 00150.35 for all structural metal work. Any material ordered, or work done before the review of working drawings shall be at the Contractor's risk. All engineered details and drawings that are not prepared by the Agency but are required in the Contract Documents and Specifications for the Project shall be submitted for review prior to fabrication.

In addition to the working drawings, submit 4 copies of all available data including Manufacture's pamphlets and brochures, technical bulletins, Working Drawings and other technical information relative to products used on the Project. After installation, submit corrected Working Drawings that represent the material as installed and in operation. Include sufficient information to enable the Agency's maintenance personnel to replace all or part of the commercially manufactured sign Structures, under routine or emergency maintenance, by direct reference to the information furnished by the Contractor.

Working drawings are not required for the following types of steel supports:

- Single Post Breakaway Sign Supports
- Triangular Base Breakaway Sign Supports
- Multi-Post Breakaway Sign Supports

Working Drawings for these supports will be provided by ODOT's Sign Design Unit or Agency Supplemental Standard Drawings.

Materials

00930.10 Materials - Delete this Subsection and replace with the following:

Provide structural steel materials conforming to the applicable portions of 02530, with weights and sizes as shown or specified.

Provide galvanized bolts, nuts, hardened washers, and direct tension indicators meeting the requirements of 02560.

All components of steel sign structures shall be galvanized after fabrication and before assembly. Galvanizing shall conform to the requirements of 02530.

(a) Sign Posts - All signposts shall be round, 2 3/8 inch, 16-gauge galvanized post, 10 feet, 6 inches in length unless otherwise specified.

(b) Sign Supports - All sign mounting supports shall be V-Loc® Socket System or an approved equal. Soil bearing or pavement supported V-loc® anchors shall be installed as per manufacture's specifications.

(c) Sign Mounting Hardware - All sign mounting hardware shall be clamp-on U-brackets or approved equal. Single or double clamp-on U-brackets shall be installed as per manufacture's specifications. Use ½ inch wide hex nut bolts with a rubber or neoprene washer to mount signs to bracket. Metal washers will not be accepted.

Payment

00930.90 Payment - Amend the list in this Subsection with the following:

Unit of Measurement for Pay Items (k) through (q) shall be "Each"

Section 00940 - Signs

The Signs Section shall be administered in conformance with Section 00940 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

00940.43 Plywood Sign Fabrication - Delete this Subsection. No plywood substrate will be allowed.

Section 00962 - Metal Illumination and Traffic Signal Supports

The Metal Illumination and Traffic Signal Supports Section shall be administered in conformance with Section 00962 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

00962.10 Materials - Add the following to this Subsection:

Provide aluminum poles meeting prevailing utilities approval in commercial/industrial areas, or as directed by the Engineer.

Provide wood poles meeting prevailing utilities approval in residential areas, or as directed by the Engineer.

PART 01000 - RIGHT OF WAY DEVELOPMENT AND CONTROL

Section 01040 - Planting

The Planting Section shall be administered in conformance with Section 01040 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

01040.14 Topsoil -

(b) Imported Topsoil - Add the following to this Subsection:

Topsoil shall be obtained from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep. It shall not be obtained from bogs, wetlands, or marshes.

01040.24 Treatment Media - Add the following Subsection:

A blend of topsoil, sand, and compost. It shall be well mixed and homogenous. The blended material shall be loose and friable, giving good tilth and aeration. The Treatment Media shall be a blend that is 30 to 40 percent commercially manufactured compost by volume.

(a) Gradation - A particle gradation analysis of the blended material, including compost, shall be conducted in conformance with ASTM C1 17/C136 (AASHTO T11/T27). The analysis shall include the following sieve sizes with the material meeting the gradation criteria indicated herein.

Sieve Size	Percent Passing (by weight)
1 inch	100
# 4	75 -100
# 10	40-100
# 40	15-50
# 100	7-25
# 200	7-15

The Treatment Media blend shall have a Coefficient of Uniformity (D60/D10) equal to or greater than 6 to ensure that it is well graded (has a broad range of particle sizes). The coefficient is the ratio of two particle diameters on a grain-size distribution curve; it is the particle diameter at 60 percent passing divided by the particle diameter at 10 percent passing.

(b) Acidity and Alkalinity - The blended material shall have a pH of 6 to 8.

(c) Deleterious Materials - Includes, but is not limited to: manure, wood pieces, including root material; plastic; plant material not conforming to 601.01.02; clods or lumps of clay; pockets of unmixed component materials; hydrocarbons (diesel, gasoline, paint thinner, etc.); building materials; paint; concrete slurry or washout; or any other material determined by the Engineer to be harmful to stormwater quality or to the promotion of plant growth.

Materials shall be free of weeds including but not limited to:

- Cirsium arvense (Canadian Thistle),
- Convolvulus spp. (Morning Glory),

- Cytisus scoparus (Scotch Broom),
- Dipsacus sylvestris (Common Teasel),
- Festuca arundinaceae (Tall Fescue),
- Hedera helix (English Ivy),
- Holcus canatus (Velvet Grass),
- Lolium spp. (Rye Grasses),
- Lotus corniculatus (Bird's Foot Trefoil),
- Lythrium salicaria (Purple Loose Strife),
- Melilotus spp. (Sweet Clover),
- Myriophyllum spicatum (Eurasian Milfoil),
- Phalaris arundinaceae (Reed Canary Grass),
- Rubus discolor (Himalayan Blackberry),
- Solanum spp. (Nightshade),
- Trifolium spp. (Clovers).

Materials shall not contain nematodes, grubs, other pests, pest eggs, or other undesirable organisms and disease-causing plant pathogens.

At least 10 working days in advance of the construction of vegetated stormwater facilities the Contractor shall submit the following:

(a) Samples - Provide two five-gallon buckets of the blended material, upon request.

(b) Documentation - Submit documentation of conformance to the requirements for particle gradation with calculated coefficient of uniformity, content of organic compost, and pH. The analyses shall be performed by an accredited laboratory with current certification. The date of the analyses shall be no more than 90 calendar days prior to the date of the submittal. The report shall include the following information:

- Supplier of blended material
- Name, address, phone number and email of the testing laboratory
- Test data, including the date and name of the test procedure

(A list of soil testing labs serving Oregon can be found through the Oregon State University Extension Services, Department of Crop and Soil Sciences.)

The City may, at its sole discretion, take a representative soil sample on site to check for conformance of the blended material with the requirements of this specification. Where tests indicate non-compliance, soil shall be amended to meet the requirements or replaced, as determined by the Engineer. Plants will be replanted or replaced at the discretion of the Engineer.

Construction

01040.57 Placing Treatment Media - Add the following Subsection:

Place Treatment Media according to the following:

(a) Conditions - The Treatment Media shall not be placed when the ground or Treatment Media is frozen or water saturated, nor when standing water exists within the stormwater quality facility. The Treatment Media shall not be placed when it is raining, or if rain is forecast within 12 hours of placement. The blended Treatment Media shall have no visible, free water at time of placement.

(b) Preparation - The bottom of the excavated stormwater quality facility shall be surface roughened to facilitate water permeation into the native material. Lined facilities do not require surface roughening.

(c) Placement - Treatment Media shall be placed in even lifts no greater than 8 inches in depth, as measured loosely. Lifts shall be moderately compacted by use of a sand- or water-filled lawn roller. Mechanical means of compaction ("jumping jacks," "plate whackers," etc.) shall not be used on Treatment Media. The finished, settled product shall be no less than 18 inches in depth unless otherwise shown on the project plans.

(d) Protection - The Treatment Media shall be protected from all sources of contamination, including weed seeds, while at the supplier, in conveyance, and at the project site.

Following placement of the Treatment Media and vegetation, vegetated stormwater facilities shall be protected from pedestrian, vehicular, and equipment traffic. Traffic upon facilities shall be cause for removal and reinstallation of Treatment Media and such other features as determined necessary by the Engineer.

Surface drainage shall be prevented from entering the facility during construction until surface treatments are fully installed. Facilities shall be protected from sedimentation during construction of other improvements draining to the facility.

The specified surface treatment shall be applied on the same day the Treatment Media is placed in the facilities.

Measurement

01040.80 Measurement - Add the following Subsection:

(h) Treatment Media - No measurement of quantities will be made for work performed to install Treatment Media. Work shall be incidental to specified bid items, unless otherwise identified in the Contract Documents.

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PART 01100 - WATER SUPPLY SYSTEMS

Section 01140 - Potable Water Pipe and Fittings

The Potable Water Pipe and Fittings Section shall be administered in conformance with Section 01140 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

01140.40 Trench Work -

(c) Grade and Alignment Changes - Delete this Subsection and replace with the following:

The Contractor shall coordinate alignment and grade of new waterlines to avoid conflicting with other utilities. The Contractor shall deflect the water pipe as required to maintain proper clearances under existing structures and major tree roots as recommended by the Contractor's licensed arborist and approved by the Engineer.

Minimum Cover over new water mains shall be 36 inches below finished grade. Minimum cover over new water services shall be 24 inches from finished grade.

01140.44 Thrust Restraint - Delete this Subsection and replace with the following:

(a) Mechanical Restraints, 4" to 10" Lines - All horizontal or vertical deflections, tees, reducers, and dead-end lines on new installations shall be mechanically restrained for a sufficient length to offset the hydrostatic forces generated by alignment deflections or terminations. See Table 01140-1 below. Polyethylene encased pipe shall be mechanically restrained according to the Engineer's specific installation requirements. All Mechanical restraints shall conform to 02475.50.

Table 01140-1 Fitting and Dead End Thrust Restraint for 4" to 10" Lines

	Pipe Size			
	10"	**8"**	**6"**	**4"**
Fitting Type	**All Joints Within the Distance Shown From Horizontal Fittings Shall Be Mechanically Restrained by Approved Method**			
11 ¼° - 45° Bends	20'	20'	20'	20'
90° Bend	56'	38'	38'	20'
Dead End	92'	74'	56'	38'

(b) Mechanical Restraints, 12" and Larger Lines - All pipe joints, including horizontal and vertical runs, horizontal or vertical deflections, tees, reducers, and dead-end lines on new installations shall be mechanically restrained. Mechanical restraints shall conform to 02475.50.

(c) Thrust Blocks - Thrust blocks shall be used for work on existing systems in areas where installation of mechanical joint restraint is not a viable option. All thrust block design and placement shall be approved by the Engineer prior to placement.

Place concrete thrust blocks as shown in Supplemental Standard Drawing 01100-03 at bends, tees, dead ends, and crosses. Pour concrete thrust blocks in place against solid, undisturbed earth at the sides and bottom of the trench excavation. Shape the blocks so as not to obstruct access to the joints of the pipe, fittings, or bolts. Use an approved plastic wrap as necessary to protect fittings and bolts.

No tie-rods or alternate thrust restraints shall be used unless approved by the Engineer. Retainer glands may be used in addition to specified thrust blocks at no expense to the Agency.

01140.45 Marking Tape and Wire:

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

Install marking tape and tracer wire along the top of all water lines (both metallic and nonmetallic), including service connections, hydrants, and vaults. Use cable ties to secure the copper wire to the top of the pipe or service at a maximum spacing of 10 feet. Place a branch tracer wire over all service lines connected to the main. Place the marking tape approximately 1 foot above the top of pipe or service line for its full length.

Make tracer wire splices using a solderless connection kit that effectively moisture-seals two or more conductors for direct burial and securely joins the wires both mechanically and electrically. Insulate splices to be moisture-proof. Splices wrapped with tape will not be accepted as waterproof. Have all splice kits approved prior to backfilling. The result of this installation shall be a continuous wire circuit electrically isolated from ground. Do not place tracer wire through riser or vault joints or other locations where wire will be subjected to pinching, crushing, or other damage. Pinched, damaged, or crushed wire shall be replaced prior to backfill.

(b) Accessibility - Delete this Subsection and replace with the following:

Make ends of tracer wire accessible at all water meter boxes, valve boxes or casings, hydrants and meter or backflow prevention vaults. Provide wire access at locations no more than 500 feet apart. Wires shall be accessible without having to enter vaults or other structures. Provide no less than 12 inches of tracer wire above ground or vault lid level to allow for connection to locating equipment.

01140.47 Connections to Existing Mains -

(b) Permission - Delete this Subsection and replace with the following:

At no time shall the Contractor operate a live (in service) valve on the existing system. Only the Engineer or authorized representative may operate live valves. The Contractor shall coordinate with the Engineer prior to working with live valves.

All connections to existing main lines and existing service lines shall be made under the direct supervision of the Engineer. The Contractor shall notify the Engineer and all affected water customers, in writing, 3 working days prior to any scheduled connection.

(d) Uninterrupted Service - Add the following to this Subsection:

The maximum length of interrupted service on existing lines due to connection work shall be 6 hours per day. The Contractor shall pay to the Agency, as liquidated damages, $100.00 per hour for each hour elapsed beyond the 6 hours allowed for connections.

Service connections shall be made as quickly and safely as possible. The Contractor shall notify and coordinate with each customer before making a service connection. Following the service connection, the Contractor shall flush the new service line.

Field Testing

01140.51 Hydrostatic Testing:

(a) General -

(5) Loss Formula - Add the following to this Subsection:

If the pipeline under test contains sections of various diameters, the testing allowance will be the sum of the testing allowance for each size.

Measurement

01140.80 Measurement - Delete items (a) and (d) from this Subsection and add the following:

(a) Fittings and Couplings - All fittings and couplings shall be measured on a per-item basis as described in the Schedule of Bid Items and/or Special Provisions.

Payment

01140.90 Payment - Delete this Subsection and replace with the following:

The accepted quantities of work performed under this Section will be paid at the Contract unit price, per unit of measurement, for the following items:

Pay Item	Unit of Measurement
(a) ____ Inch Potable Water Pipe and Couplings with Class ____ Backfill	Foot
(b) ____ Inch Potable Water Pipe and Couplings with Restrained Joints and Class ____ Backfill	Foot
(c) Extra Trench Excavation with Class ____ Backfill	Cubic Yard
(d) Blow off Assembly, ____ Inch	Each
(e) ____ Inch (type) ____ Fitting	Each

The Contract unit price for the appropriate pay items reflect plan requirements or the Contractor's choice from the applicable options listed on the Pipe Data Sheets (if shown).

In items (a) and (b), the nominal diameter of pipe and couplings will be inserted in the first blank. The class of backfill will be inserted in the second blank. The quantities include the pipe and coupling plus the allowance for the couplings.

In items (c), the class of backfill will be inserted in the blank.

In item (d), the nominal diameter of assembly will be inserted in the blank.

In item (e), the nominal diameter of pipe will be inserted in the first blank. The type of fitting will be inserted in the second 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 specified.

Trench resurfacing will be paid for according to 00495.90

Installation under pavement by tunneling, jacking, or boring methods will be paid for according to 00406.90.

Valves will be paid for according to 01150.90.

No separate or additional payment will be made for

- trench excavation
- bedding
- pipe zone material
- backfill work
- polyethylene encasement
- mechanical restraints
- concrete thrust blocks
- detectable marking tape and wire
- flushing, hydrostatic testing and disinfection, and water for testing
- exposing, cleaning, cutting, removing, draining, refilling, and disinfecting existing mains
- All work required to abandon existing mains, including placement of flowable grout

Section 01160 - Hydrants and Appurtenances

The Hydrants and Appurtenances Section shall be administered in conformance with Section 01160 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Construction

01160.49 Salvage of Existing Hydrants - Add the following Subsection:

Excavate, disconnect, and salvage all hydrants designated for removal. Coordinate with the Engineer to deliver hydrants to the Agency maintenance facility at 1155 2nd Street, Lebanon, Oregon. The Contractor shall coordinate delivery dates and times with the Engineer.

Payment

01160.90 Payment - Add the following item to the list and definitions:

	Pay Item	**Unit of Measurement**
(f)	Removing and Salvaging Existing Hydrant	Each

Item (f) includes excavation, disconnect, main line capping, salvage and delivery of hydrant and barrel to Agency maintenance facility.

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

The Potable Water Service Connections, 2 Inch and Smaller Section shall be administered in conformance with Section 01170 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

01170.10 Materials - Add the following item to the list in this Subsection:

Meter Assemblies..... 02490.65

Construction

01170.40 General - Delete the first paragraph in this Subsection and replace with the following:

Make all service connections to water mains using saddles as specified and of the size and type suitable for use with both the water main and the pipe being installed. No direct taps to water mains shall be allowed. Install service pipelines perpendicular to the main, unless otherwise shown.

(b) Installation - Add the following paragraph to this Subsection:

Water service connections to the main shall have a minimum of 18 inches clearance between connections and a minimum of 18 inches clearance from any joint or fitting in the main.

01170.41 Reconnecting Existing Services - Delete this Subsection and replace with the following:

Where shown, reconnect existing service connections to new mains. Verify the location of existing service connections in the field. Notify affected customers of the service interruption, in writing, at least 3 working days prior to service interruption. All fittings, appurtenances, and other miscellaneous materials attached to sections of existing pipe that have been removed become the property of the Contractor.

01170.43 Meter Installation - Add the following Subsection:

Meters shall be installed per the manufacture's recommendation unless otherwise specified.

The top of the meter shall be a minimum of 3 inches and a maximum of 8 inches below the finish grade of the top of the meter box and centered in the box. Fill around meter with enough topsoil to cover the meter body but expose the meter stop and the customer's hand valve handle and shaft.

Payment

01170.90 Payment - Delete this Subsection and replace with the following:

The accepted quantities of work performed under this Section will be paid for at the Contract unit price, per unit measurement, for the following items:

Pay Item	Unit of Measurement
(a) ____ Inch Water Service Connections	Each
(b) Reconnecting Existing Services, ____ Inch	Each
(c) Water Sampling Stations	Each
(d) ____ Inch Cross-Linked Polyethylene Service Line	Foot

(e) ____ Inch Water Meter Assembly ..... Each

(f) Relocate ____ Inch Water Meter Assembly ..... Each

In items (a), (b) and (d), the nominal pipe diameter will be inserted in the blank.

Items (a) and (d) includes excavating, tapping the main, laying and jointing the pipe and fittings and appurtenances, backfilling, testing, flushing and disinfection of the service connection.

Item (b) includes excavating, tapping the main, laying and jointing the pipe and fittings and appurtenances, backfilling, testing, flushing and disinfection of the reconnected service connection.

Item (c) includes excavating, tapping the main, laying and jointing the pipe and fittings and appurtenances, backfilling, concrete pad, testing, flushing and disinfection of the sampling station.

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.

In items (e) and (f), the nominal size will be inserted in the blank. The pay item includes all fittings, hand valves, meter boxes and main line saddles. Item (f) also includes abandoning existing service lines at the main line. Excavation and backfill shall be done according to 00405.

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PART 02000 - MATERIALS

Section 02070 - Bonding Agents

The Bonding Agents Section shall be administered in conformance with Section 02070 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

02070.30 Two-Part Epoxy Surfacer - Furnish a 100% solids two-part epoxy putty for use in filling minor surface irregularities in concrete or steel. Product shall be Madewell® 1312P™ or approved equal.

02070.40 Epoxy Coating - Furnish a 100% solids modified, no-solvent epoxy coating for use as a corrosion barrier topcoat application over a restoration mortar. Product shall be Mainstay® DS-5™ or approved equal.

02070.50 Flexible Joint Seal - Furnish a 100% solids no-solvent epoxy/urethane hybrid designed for use in expansion joints in concrete work. Product shall be Madewell® 806™ or approved equal.

Section 02080 - Grout

The Grout Section shall be administered in conformance with Section 02080 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

02080.60 Hydraulic Cement Mortar - Furnish a fast-setting cement-based filler used to stop leaks through cracks and holes in underground concrete and brick structures. Product shall be Mainstay® ML-10™ or approved equal.

	ASTM Standard	Value
Compressive Strength	C-109	3,500 psi at 24 Hours 4,900 psi at 7 Days 5,500 psi at 28 Days
Tensile Strength	C-190	290 psi at 7 Days 575 psi at 28 Days
Shrinkage	C-490	0.04% at 28 Days @ 90% Rh

02080.70 Restoration Mortar - Furnish a low-shrinkage, high-strength sprayable microsilica restoration mortar used to restore and seal deteriorated concrete and brick structures. Product shall be Mainstay® ML-72™ or approved equal.

	ASTM Standard	Value
Compressive Strength	C-109	3,000 psi at 24 Hours 10,000 psi at 28 Days
Flexural Strength	C-293	535 psi at 24 Hours 1,505 psi at 28 Days
Tensile Strength	C-496*	330 psi at 24 Hours 910 psi at 28 Days
Freeze/Thaw	C-666	323 Cycles with No Visible Damage
Shrinkage	C-596	0% at 28 Days @ 90% Rh
Bond Strength	C-882*	3,440 psi
Density		135 lbs/ft^3

* Uniaxial tensile bond strength should achieve a minimum of 145 psi over a sound, properly prepared substrate. However, bond is highly dependent on degree of surface preparation and substrate strength.

Section 02325 - High Density Polyethylene Liners

Description

Add the following Section:

02325.00 Scope - This Section includes the requirements for High density polyethylene (HDPE) liners used in various applications.

02325.01 Definitions - Geosynthetic terms are defined in 00350.01.

02325.20 HDPE Property Values:

The HDPE liner shall be manufactured from virgin polymer material and shall have a nominal thickness of 30 mils, 40 mils, or 60 mils, as specified. The liner shall be manufactured to be suitable for use in either exposed or buried conditions. It shall conform to the requirements of this specification as shown in the following table:

Table 02325-1 HDPE Property Values for Drainage Liners

Property	**Test Method**	**Values***		
Thickness	ASTM 5199	30 Mil	40 Mil	60 Mil
Density, g/cc	ASTM D792,B	0.940	0.940	0.940
Yield Stress, lb/in	ASTM D6693,IV	66	88	132
Break Stress, lb/in	ASTM D6693, IV	120	160	240
Yield Elongation, %	ASTM D6693, IV	13	13	13
Break Elongation, %	ASTM D6693, IV	700	700	700
Tear Resistance, lb	ASTM D1004, C	23	30	45
Puncture Resistance, lb	ASTM D4833	60	80	120
Carbon Black Content, %	ASTM D4218	2-3	2-3	2-3
Carbon Black Dispersion	ASTM D5596	Cat 1-2	Cat 1-2	Cat 1-2
Seam Properties	ASTM D4437 (1 inch wide at 2 in/min)			
Shear Strength, lb/in		60	80	120
Peel Strength, lb/in**		39/FTB	52/FTB	78/FTB

* All values, unless specified otherwise, are minimum average roll values as reported by the specified test methods.

** Film Tear Bond (FTB): A failure of one of the bonded sheets by tearing prior to complete separation in the bonded area.

Section 02415 - Plastic Pipe

The Plastic Pipe Section shall be administered in conformance with Section 02415 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

02415.10 Corrugated Polyethylene Pipe - Add the following to the first list in this Subsection:

Perforated corrugated polyethylene drain pipe .....AASHTO M 252, Class 2

02415.20 Solid-Wall Polyethylene Pipe - Add the following bulleted item to this Subsection:

- The following references apply to materials used in the manufacture of solid-wall polyethylene pipe and fittings:
    - ASTM D1238 Measuring Flow Rates of Thermoplastics by Extrusion Plastometer
    - ASTM D1248 Polyethylene Plastics Molding and Extrusion Materials
    - ASTM D1505 Density of Plastics by the Density-Gradient Technique
    - ASTM D1599 Test for Short Term Rupture Strength of Plastic Pipe, Tubing and Fittings
    - ASTM D1693 Environmental Stress Cracking of Ethylene Plastics
    - ASTM D1928 Preparation of Compression Molded Polyethylene Test Samples
    - ASTM D2657 Heat Joining of Thermoplastic Pipe and Fittings
    - ASTM D3035 Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter
    - ASTM D3261 Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for PE Plastic Pipe and Tubing
    - ASTM D1.1 AWS Standard Qualification Procedure

02415.50 Polyvinyl Chloride Pipe - Add the following to this Subsection:

For perforated PVC pipe, unless otherwise specified or shown, joint systems shall be solvent-cement type. Perforations shall be circular, on 3 1/4” centers. Hole size shall be a minimum of 3/16” and a maximum of 3/8” arranged in four rows along the full length of pipe below the spring line (midpoint height) of the pipe.

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.

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.

Section 02480 - Potable Water Valve Materials

The Potable Water Valve Materials Section shall be administered in conformance with Section 02480 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

02480.20 Gate Valves - Delete this Subsection and replace with the following:

(a) Minimum Pressure - Provide gate valves that meet the requirements of AWWA C500, AWWA C509, or AWWA C515. The minimum design working pressure shall be 200 psi for pipe 2 inches to 8 inches in diameter.

(b) Installation - Gate valves shall only be installed on water lines 2 inches to 8 inches in diameter.

(c) Valves - Provide gate valves that are resilient seat, non-rising stem type, open counterclockwise, are equipped with an O-ring stuffing box, and have standard 2 inch operating nuts.

02480.22 Butterfly Valves - Add the following item to this Subsection:

(d) Installation - Butterfly valves shall only be installed on water lines 12 inches in diameter and larger.

02480.25 Valve Boxes - Delete this Subsection and replace with the following:

Install valve boxes on all buried valves. The valve box components shall be East Jordan or approved equal with an embedded magnet and weighted lid. The cover shall have the letter “W” cast in it. Align valve box with the direction of the main line the valve is associated with. If the valve box has no factory alignment indicators, notch the box casting following installation to indicate direction of controlled main.

Section 02485 - Hydrant and Appurtenance Materials

The Hydrant and Appurtenance Materials Section shall be administered in conformance with Section 02485 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

02485.10 Hydrants - Add the following to the first paragraph in this Subsection:

Hydrants shall be American Flow Control Waterous Pacer (Contemporary), Kennedy Guardian, or approved equal.

02485.20 End Connections - Delete this Subsection and replace with the following:

The end connections shall be mechanical joint, flanged, or an American Flow Control® Alpha™ hydrant inlet meeting the requirements of AWWA C110 and AWWA C111, as applicable. The end connection shall have a minimum of 3 1/2 foot bury.

02485.30 Hydrant Dimensions and Nozzle Features:

(a) Hydrant Dimensions - Add the following to this Subsection:

Hydrants shall be furnished with pentagonal top operation nut.

(b) Nozzle Features - Delete the first paragraph of this Subsection and replace with the following:

Hydrants shall have two 2½ inch hose nozzles and one 4 1/2 inch steamer nozzle configured per Agency Supplemental Standard Drawings. A Hydra-Shield HYST-5045-ST CAP or approved equal Storz adaptor cap shall be installed on the steamer nozzle.

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

The Potable Water Service Connection Materials, 2 Inch and Smaller Section shall be administered in conformance with Section 02490 of the 2021 Oregon Standard Specifications for Construction supplemented and/or modified as follows:

Materials

02490.10 General - Delete this Subsection and replace with the following:

Service line materials shall conform to AWWA C800 and these Specifications. Service line materials shall be designed for a working pressure of 150 psi. All materials in contact with potable water shall conform to NSF/ANSI Standard 61, Drinking Water System Components - Health Effects, or equivalent.

For meters greater than 1 inch, the service saddle, corporation stop, and meter stop shall be sized according to the size of meter to be installed.

02490.20 Saddles - Delete this Subsection and replace with the following:

All service saddles shall have a nylon coated ductile iron body with a minimum 1 inch diameter female iron pipe thread outlet. Saddles used for 3/4 inch and 1-inch services shall be a single strap Romac 101NS or approved equal. Saddles used for 1 1/2 inch and 2-inch services shall be a double strap Romac 202NS or approved equal.

02490.30 Service Connection Valves -

(a) Corporation Stops - Add the following to this Subsection:

Corporation stops shall be a minimum size of 1 inch in diameter.

(b) Angle Meter Valves - Add the following to this Subsection:

Meter Stops shall be angle type, Ford, McDonald, or Mueller, with a lock wing. The pipe coupling side of the meter stop shall be a minimum size of 1 inch in diameter.

(c) Customer Service Valves - Add the following to this Subsection:

The hand valve on the customer side of the water meter shall be either a straight or angled, Ford, McDonald, or Mueller globe meter valve.

02490.40 Service Pipe and Fittings:

(a) Copper Tubing and Service Pipe - Delete this Subsection and replace with the following:

No copper tubing or service pipe will be allowed.

(b) Polyethylene Tubing Service Pipe - Add the following to this Subsection:

Tubing shall be continuous and free of kinks or abrupt angles.

02490.65 Meter Assemblies - Add the following Subsection:

Meters up to 1 1/2 inches shall be Sensus SR II Touch Read. Meters 2 inches or larger shall be Sensus Omni C2 with a test bypass provided. All meters shall include a touch read pit lid (TR/PL) sensor with the registers automated reading in 100 cubic feet per rotation.

02490.70 Meter Boxes - Delete this Subsection and replace with the following:

Installed meters shall be housed with the following Armorcast® parts or approved equal. All covers shall be solid and manufactured with a radio hole.

Table 02490-1 - Water Meter Boxes

	Traffic Area	Non-Traffic Area
5/8” - 1” Meter Box	RPM A6000485	Rotocast P6000485
5/8” - 1” Meter Cover	20K A6000484TH7	10K A6000484H7
1 1/2" - 2” Meter Box	RPM A6001640PCX12	Rotocast P6001534X12
1 1/2" - 2” Meter Cover	20K A6001947TH7	10K A6001643H7

02490.75 Meter Types - Add the following Subsection:

Meters shall be Sensus SR II TouchRead® or approved equal with a test bypass provided for meters 2 inches and larger.

Section 02650 - Gravel Ballast

Add the following Section:

Materials

02650.10 - Aggregate:

(a) Grading - Aggregates shall be comprised of 2” to 4” rock, open graded. Aggregate shall be washed free of fine materials.

(b) Fracture - Aggregate shall be crushed with 100% fractured faces.

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PART 03000 - MATERIALS

Section 03020 - Erosion Materials

Materials

03020.10 Commercially Manufactured Compost - Add the following to this Subsection:

Supply a compost technical data sheet from the vendor of the compost. The analysis shall be performed and reported by an approved independent US Composting Council STA program participant laboratory.

End of Supplemental Standard Specifications

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PART 00200 - TEMPORARY FEATURES AND APPURTENANCES

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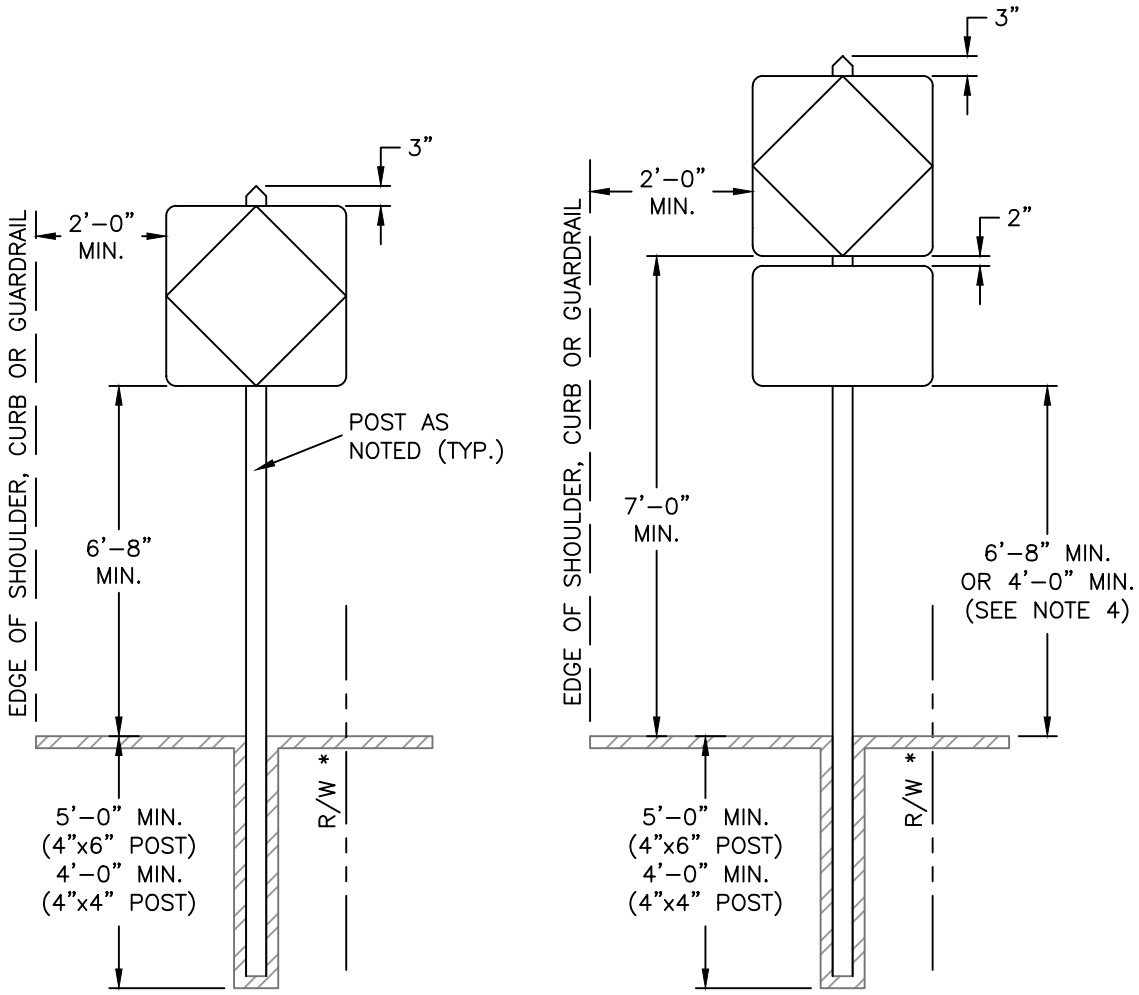
PART 00900 - PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS

PART 01100 - WATER SUPPLY SYSTEMS



TYPICAL CONSTRUCTION SIGN INSTALLATIONS

NOTES:

1. SIGNING DETAILS SHOWN ON THIS SHEET ARE INTENDED TO CONVEY TYPICAL CONDITIONS ONLY. SPECIFIC LOCATIONS MAY REQUIRE INSTALLATIONS DIFFERENT FROM THOSE SHOWN HERE.
2. IF THE MAXIMUM DIMENSION OF A SIGN IS 36" OR LESS, USE A 4"x4" POST. IF THE MAXIMUM DIMENSION EXCEEDS 36", USE A 4"x6" POST. FOR MOUNTING PLYWOOD OR SHEET ALUMINUM SIGNS ON WOODEN POSTS, USE 3/8"x3" GALVANIZED LAG BOLTS WITH STAINLESS STEEL OR NEOPRENE WASHERS.
3. STOP SIGNS SHALL ALWAYS BE INSTALLED AT 6.0'–8.0' VERTICAL CLEARANCE.
4. USE 4.0' MINIMUM VERTICAL CLEARANCE ONLY IF SECONDARY SIGN IS 24" OR LESS IN WIDTH.
5. FOR INSTALLATION IN HARD–SURFACED AREAS, ALTERNATIVE POST INSTALLATIONS MAY BE USED WITH APPROVAL OF THE ENGINEER.
6. IF BOTTOM OF SIGN IS INSTALLED LESS THAN 7' ABOVE THE SIDEWALK, IT MAY EXTEND A MAXIMUM OF 4" INTO PEDESTRIAN PATHWAY.
7. FOR ADDITIONAL INFORMATION REGARDING LOCATION AND INSTALLATION OF SIGNS AND POSTS, CONSULT THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND OREGON TEMPORARY TRAFFIC CONTROL HANDBOOK.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

OREGON Lebanon

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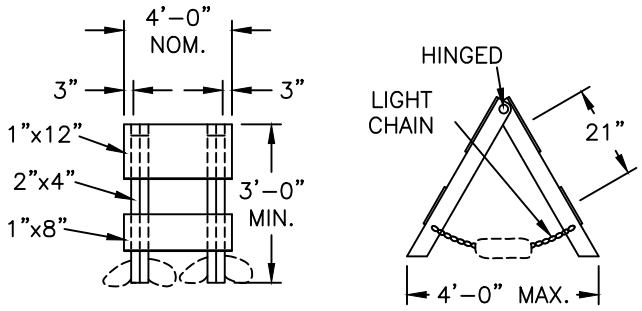
CITY ENGINEER

December, 2021

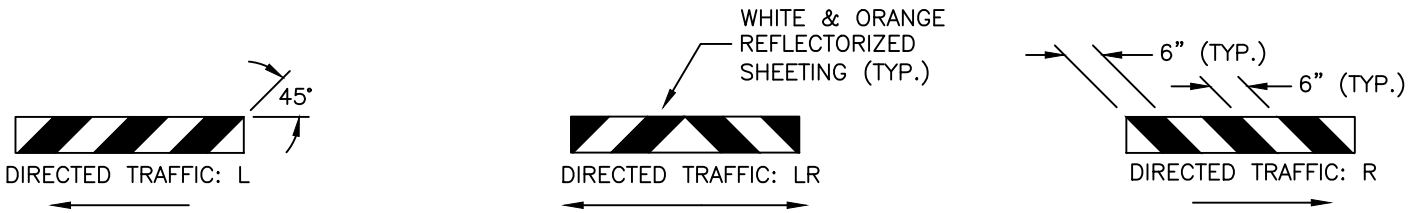
DATE

TEMPORARY (CONSTRUCTION) SIGNING

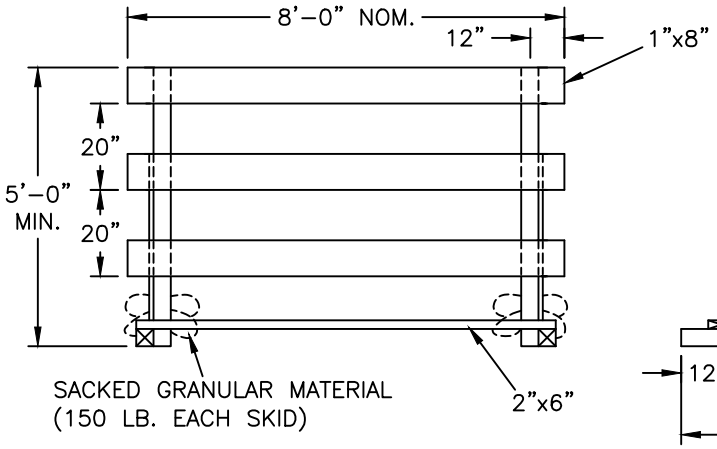
DRAWING NO: 00200-01

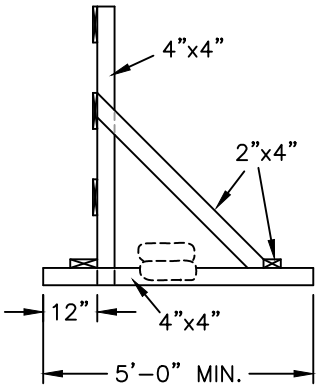


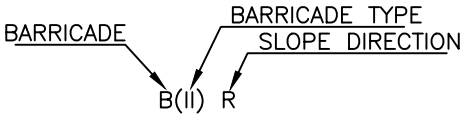
BARRICADE – TYPE II



SLOPE DIRECTION DIAGRAM FOR BARRICADE MARKING







TYPICAL BARRICADE DESIGNATION
AS SHOWN ON PLANS

BARRICADE – TYPE III

NOTES:

1. REFLECTORIZED STRIPING ON BARRICADE RAILS SHALL SLOPE DOWNWARD AT A 45° ANGLE IN THE DIRECTION TRAFFIC IS TO PASS. WHERE BARRICADES EXTEND ENTIRELY ACROSS A ROADWAY, STRIPING SHALL SLOPE DOWNWARDS IN THE DIRECTION TRAFFIC IS TO DETOUR. WHERE TRAFFIC IS PERMITTED TO DETOUR IN MULTIPLE DIRECTIONS, STRIPING SHALL SLOPE IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE.
2. ALTERNATE METHODS AND MATERIALS MAY BE PERMITTED WITH APPROVAL OF THE ENGINEER.
3. ALL BARRICADES SHALL BE WEIGHTED AS SHOWN OR AS DIRECTED BY THE ENGINEER. BARRICADES MANUFACTURED FROM STEEL POSTS WITH PLASTIC BARRICADE RAILS SHALL BE WEIGHTED ON BOTH SIDES OF THE BARRICADE FACE TO PREVENT KNOCK–DOWN.
4. FOR RAIL LENGTHS LESS THAN 3 FEET, 4" WIDE STRIPES MAY BE SUBSTITUTED.
5. BARRICADE DIMENSIONS ARE AS SHOWN, UNLESS OTHERWISE INDICATED IN THE PROJECT PLANS & SPECIFICATIONS.
6. FOR FULL ROADWAY CLOSURES, THE LR BARRICADE MAY BE USED. EXTEND BARRICADES COMPLETELY ACROSS ROADWAY UNLESS ACCESS IS REQUIRED FOR LOCAL ACCESS.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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TEMPORARY (CONSTRUCTION) BARRICADES

DRAWING NO: 00200-02

Lebanon OREGON

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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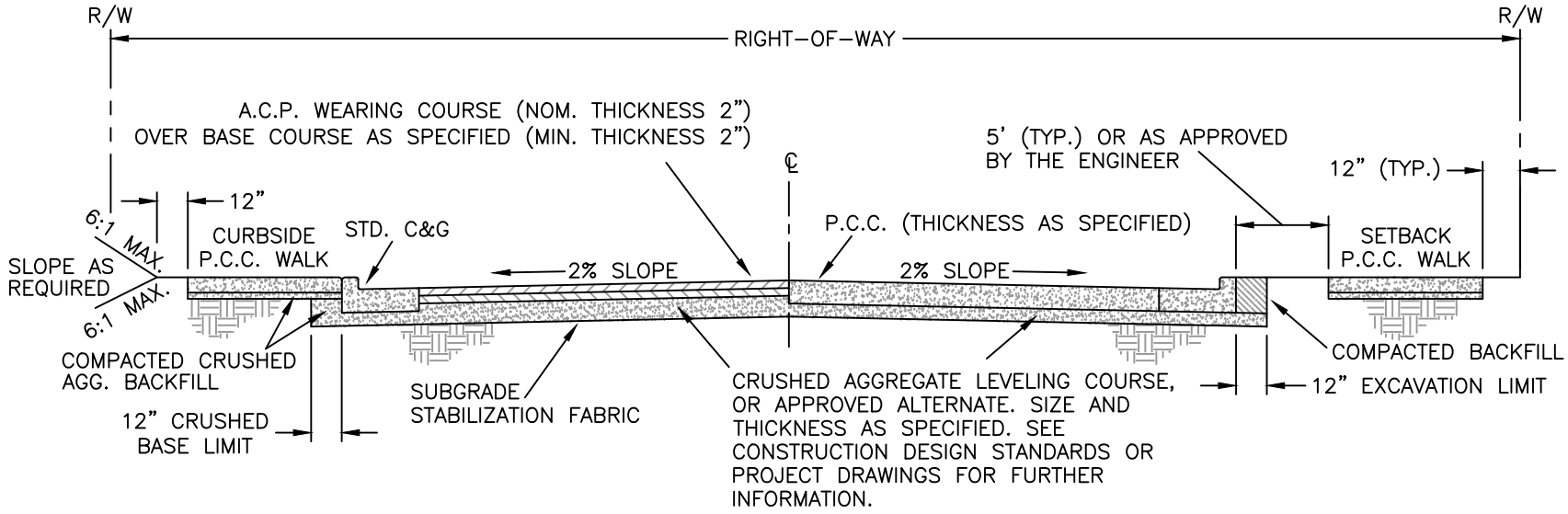
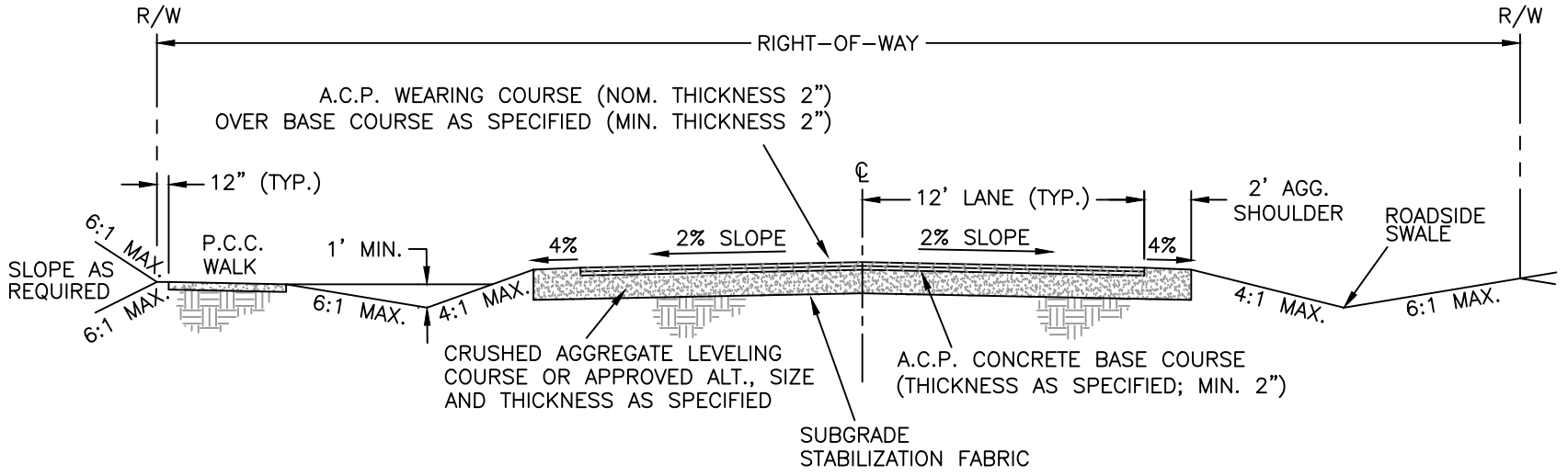
TYPICAL STREET SECTIONS

DRAWING NO: 00300-01

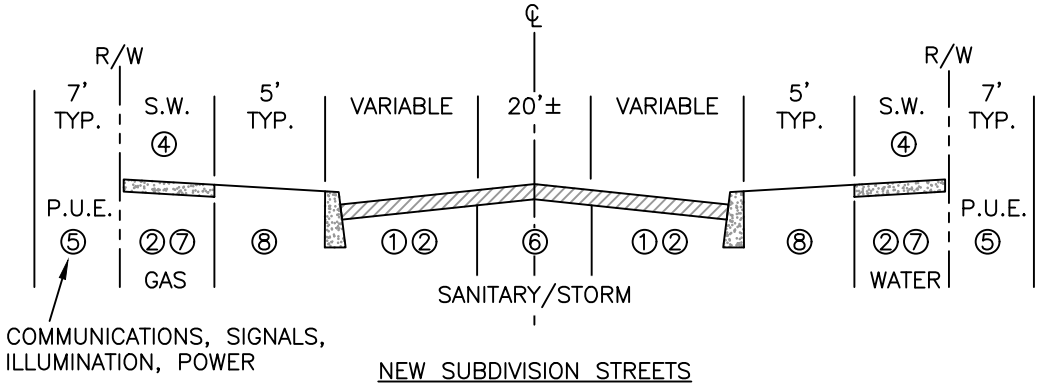


TYPICAL ASPHALT CONCRETE PAVEMENT (A.C.P.) PAVING SECTION

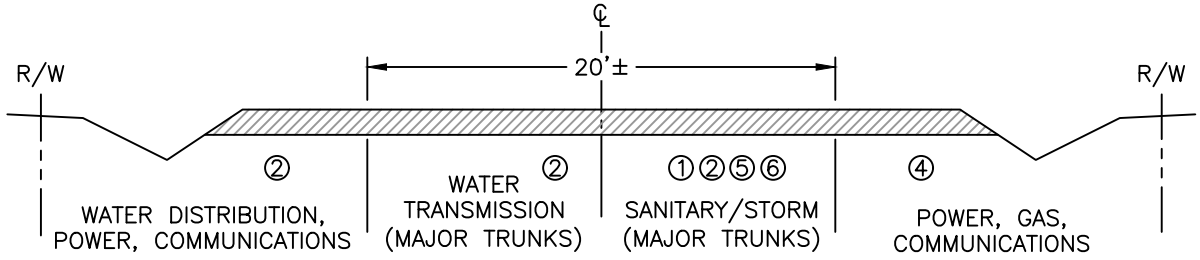
TYPICAL PORTLAND CEMENT CONCRETE (P.C.C.) PAVING SECTION



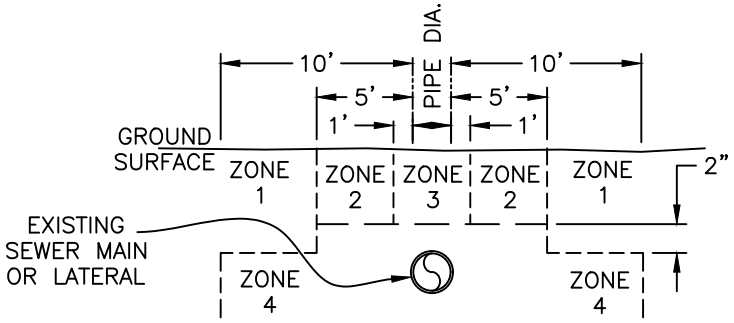
ALTERNATIVE RESIDENTIAL STREET SECTION
(WITH APPROVAL OF THE ENGINEER)



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

OREGON Lebanon

APPROVED

CITY ENGINEER

December, 2021
DATE

TYPICAL UTILITY LOCATIONS

DRAWING NO: 00300-02

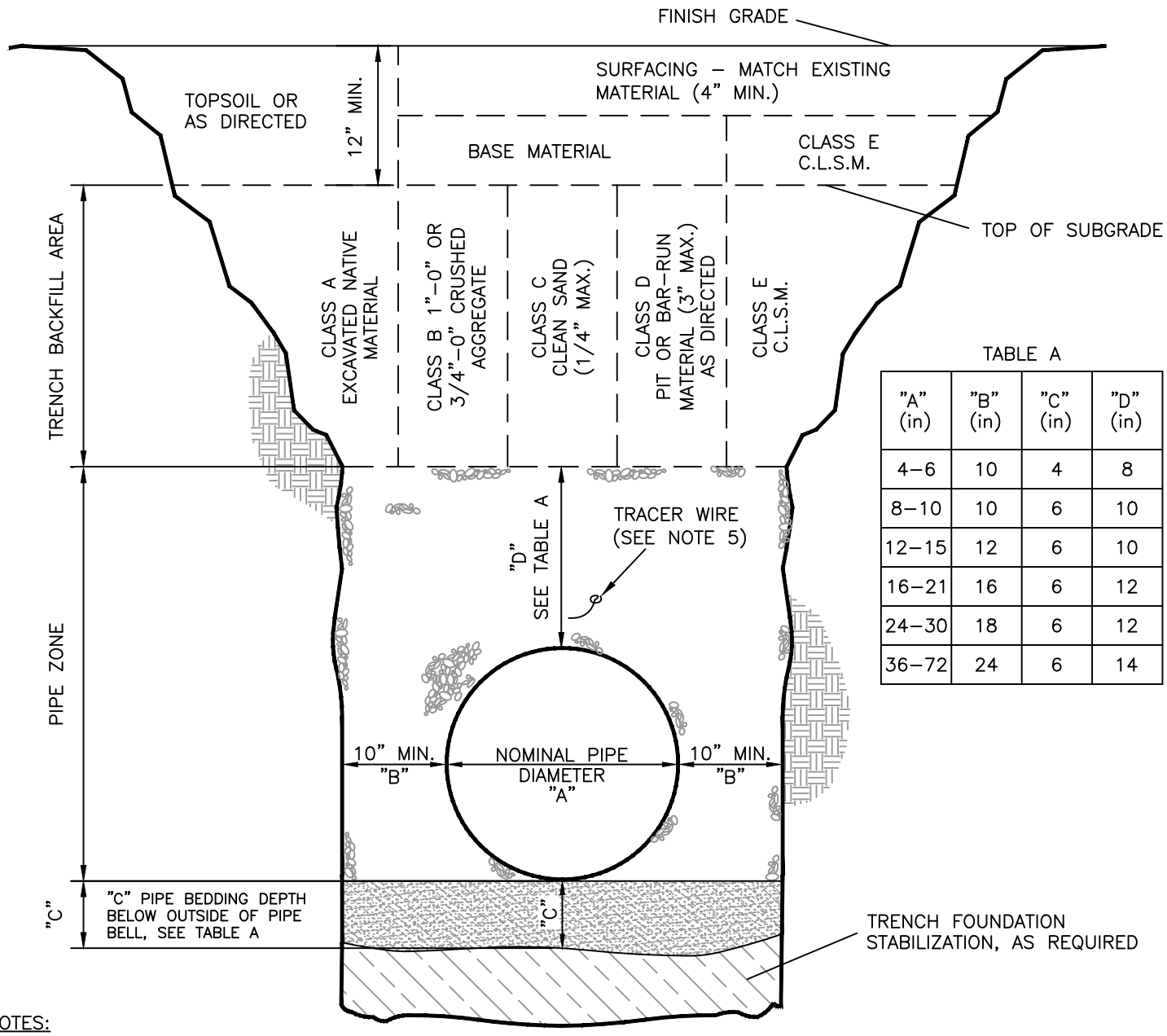


TABLE A

"A" (in)	"B" (in)	"C" (in)	"D" (in)
4–6	10	4	8
8–10	10	6	10
12–15	12	6	10
16–21	16	6	12
24–30	18	6	12
36–72	24	6	14

NOTES:

1. BACKFILL IN PIPE ZONE SHALL NOT EXCEED 6 INCH LIFTS NOR SHALL SUBSEQUENT LIFTS EXCEED 12 INCHES.
2. TWO COMPACTION TESTS SHALL BE PERFORMED FOR EVERY 25 LINEAR FEET OF TRENCH. A MINIMUM OF ONE TEST IS REQUIRED FOR TRENCH LENGTHS LESS THAN 25 LINEAR FEET.
3. SURFACING OF PAVED AREAS SHALL COMPLY WITH STREET CUT (SEE SUPP. STD. DWG. 00400–02).
4. FOR PIPE INSTALLATION IN EMBANKMENT AREAS WHERE THE TRENCH METHOD WILL NOT BE USED AND THE PIPE IS GREATER THAN OR EQUAL TO 36" DIAMETER, INCREASE DIMENSION "B" TO NOMINAL PIPE DIAMETER.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 00445.48 FOR MORE INFORMATION.
6. ALL PUBLIC AND PRIVATE UTILITY INSTALLATIONS WITHIN ROADWAY SECTIONS REQUIRE CLASS "B" TRENCH BACKFILL.
7. PIPES OVER 72" DIAMETER ARE CONSIDERED STRUCTURES, AND ARE NOT COVERED BY THIS DRAWING.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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December, 2021

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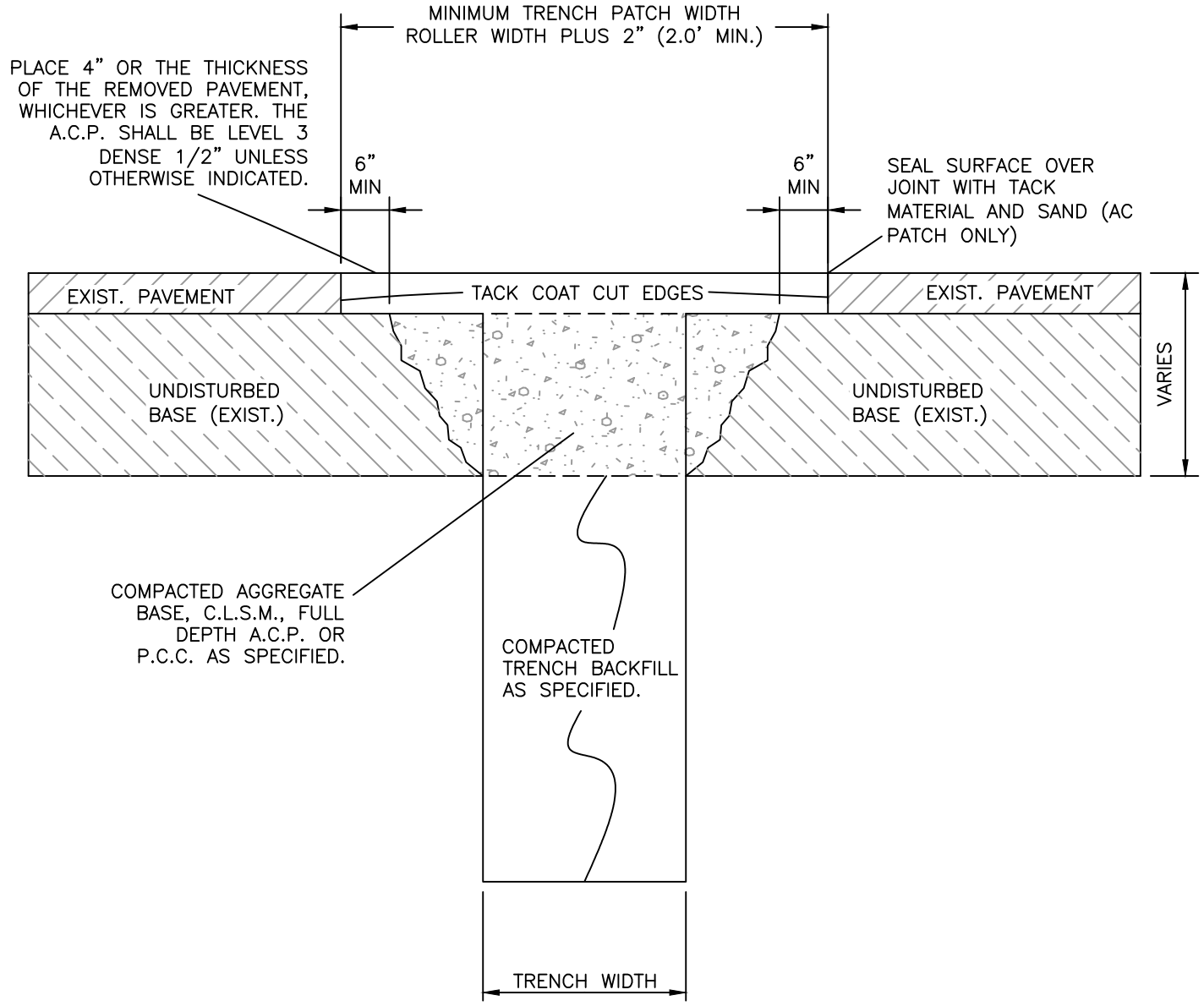
TRENCH BACKFILL, PIPE BEDDING AND PIPE ZONE

DRAWING NO: 00400-01



NOTES:

1. ALL EXISTING A.C.P. OR P.C.C. PAVEMENT SHALL HAVE A CLEAN, SAWCUT EDGE PRIOR TO REPAVING.
2. FOR P.C.C. PAVING, PAVEMENT SHALL BE REPLACED TO THE NEAREST FULL PANEL. A MINIMUM THICKNESS OF 6", OR THE THICKNESS OF THE EXISTING PAVEMENT (WHICHEVER IS GREATER) IS REQUIRED. REPLACEMENT P.C.C. PANELS SHALL BE DOWELED TO THE EXISTING P.C.C. PAVEMENT (SEE SUPP. STD. DWG. 00700–02).
3. ASPHALT PAVEMENT SHALL BE PLACED WITHIN 30 DAYS OF WORK COMPLETION. COLD MIX SHALL BE PLACED WITHIN 24 HOURS AS A TEMPORARY MEASURE ONLY.
4. TWO ROCK COMPACTION TESTS SHALL BE PERFORMED FOR EVERY 25 LINEAR FEET OF TRENCH BACKFILL, OR AS DIRECTED BY THE ENGINEER. A MINIMUM OF ONE TEST IS REQUIRED FOR STREET CUTS LESS THAN 25 LINEAR FEET IN LENGTH.
5. PLACE A.C.P. MIX A MINIMUM THICKNESS OF 4 INCHES OR THE THICKNESS OF THE REMOVED PAVEMENT, WHICHEVER IS GREATER. COMPACT AS SPECIFIED.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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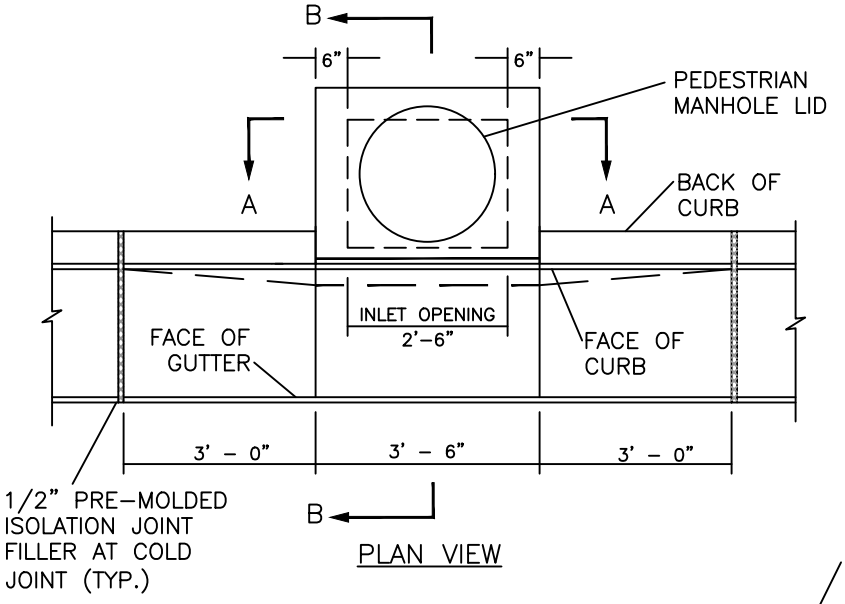
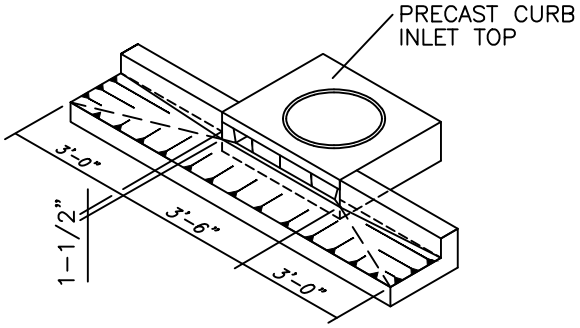
STANDARD STREET CUT

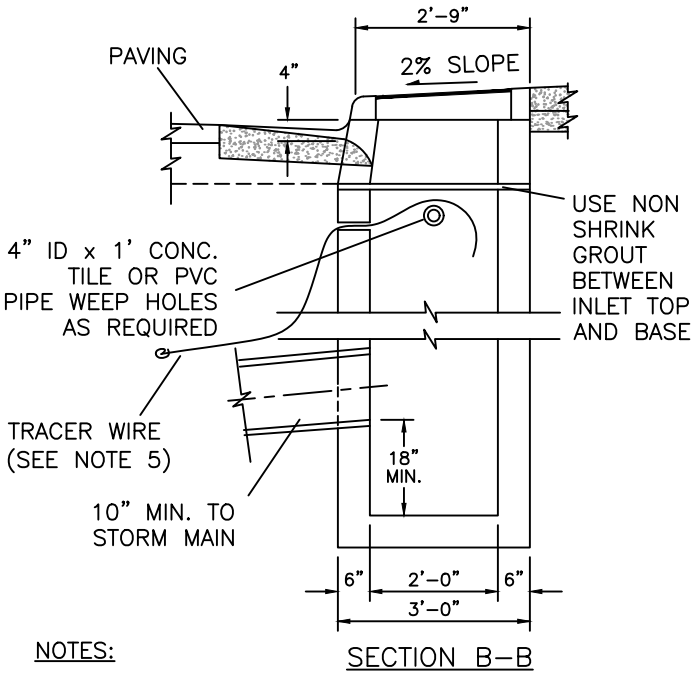
DRAWING NO: 00400-02



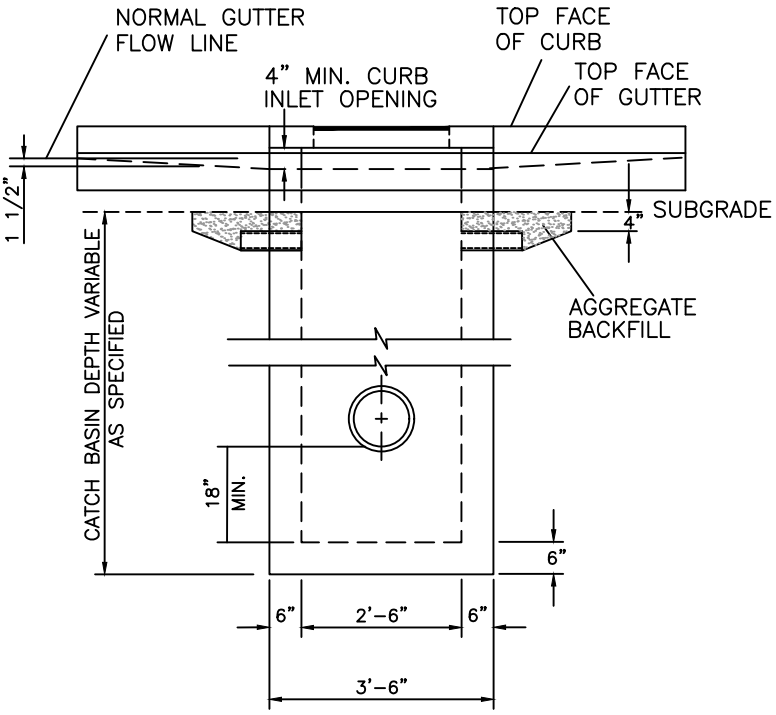
PLAN VIEW



PERSPECTIVE VIEW SHOWING DEPRESSED GUTTER AT CURB INLET



SECTION B–B



SECTION A–A

NOTES:

1. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 PSI (MIN.).
2. ALL FABRICATED METAL PARTS SHALL BE HOT–DIPPED GALVANIZED AFTER FABRICATION.
3. INLET BASE MAY BE CAST IN PLACE OR PRECAST. ALL PRECAST INLETS SHALL CONFORM TO REQUIREMENTS OF A.S.T.M. C913.
4. IF PRECAST INLET BASE IS TO BE USED AS AN ALTERNATE, A 4" COMPACTED LEVELING BED OF SAND OR 1/4"–0" CRUSHED AGGREGATE SHALL BE PROVIDED.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF CATCH BASIN RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
6. ALL REINFORCING SHALL BE PLACED 2" CLEAR OF THE NEAREST FACE OF CONCRETE, UNLESS OTHERWISE SHOWN.

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OREGON Lebanon

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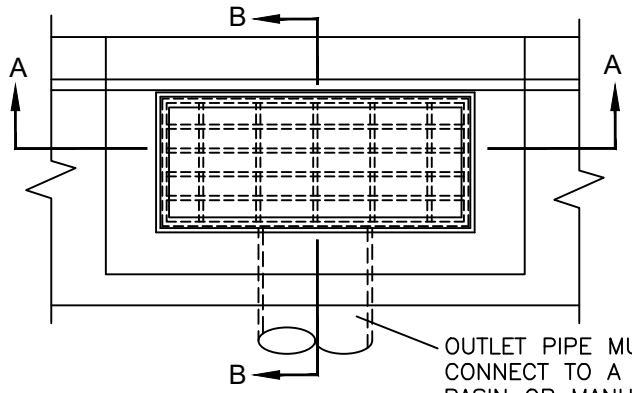
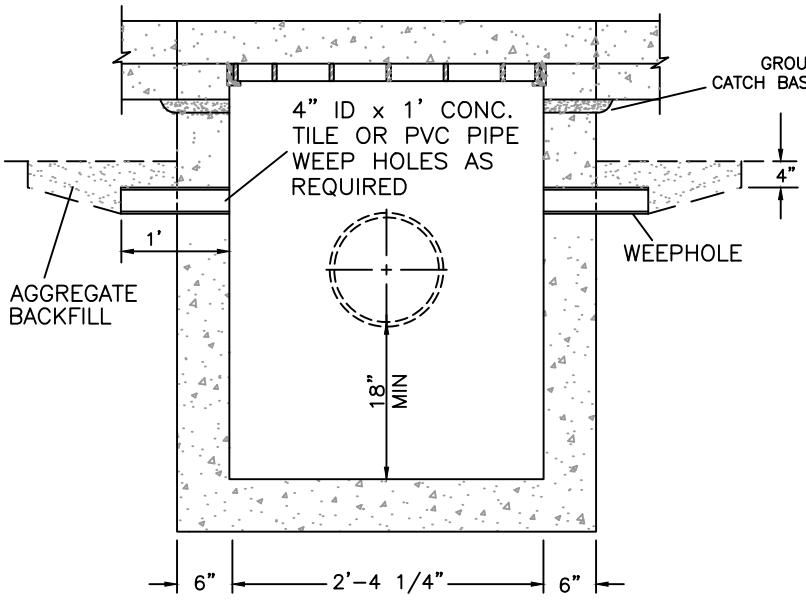
MODIFIED TYPE CG-3 INLET

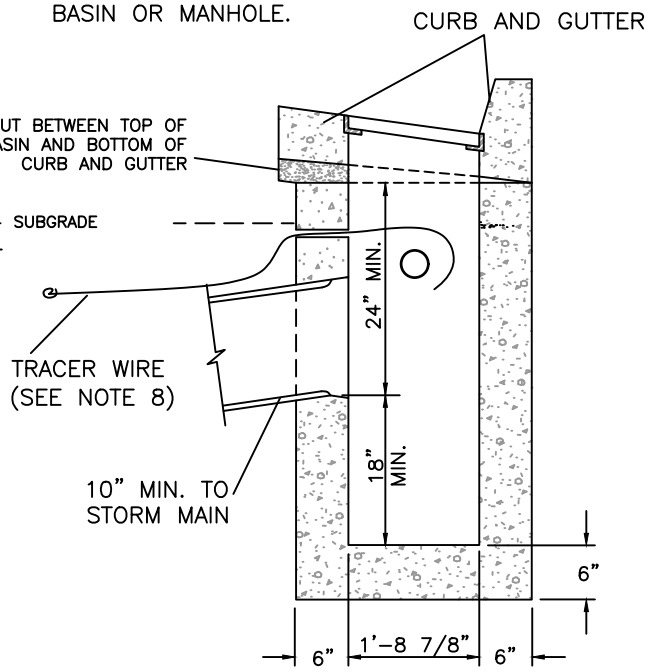
DRAWING NO: 00400-03



PLAN



SECTION A–A



SECTION B–B

NOTES:

1. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN).
2. ALL FABRICATED METAL PARTS SHALL BE HOT–DIPPED GALVANIZED AFTER FABRICATION.
3. INLET BASE MAY BE CAST–IN–PLACE OR PRECAST. WHERE PRECAST INLET BASE IS TO BE USED AS AN ALTERNATE, A 4" COMPACTED LEVELING BED OF SAND OR 1/4"–0" CRUSHED AGGREGATE SHALL BE PROVIDED.
4. SEE SUPP. STD. DWG. 00400–09 FOR FRAME AND GRATE DETAILS.
5. SEE SUPP. STD. DWG. 00700–03 FOR CURB DETAILS.
6. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
7. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
8. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF CATCH BASIN RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
9. 3/4" PREFORMED FILLER (IN CONCRETE PAVEMENT OR GUTTER ONLY) TO EXTEND THROUGH THICKNESS REQUIRED.

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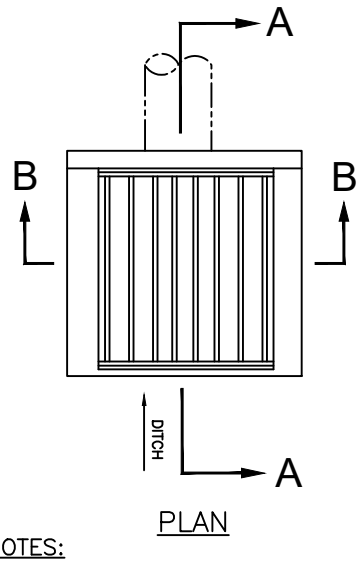
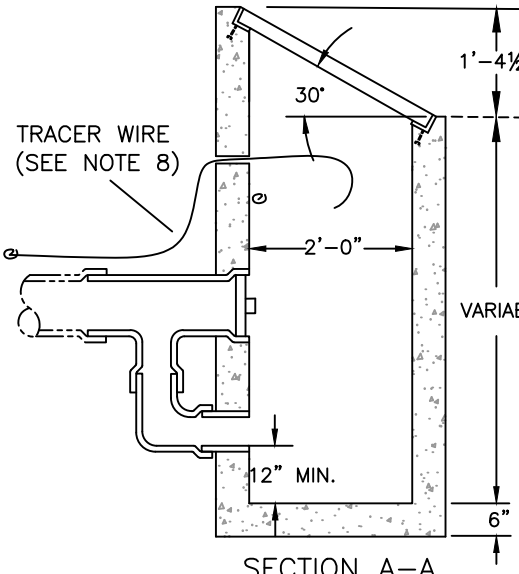
MODIFIED TYPE G-1 INLET

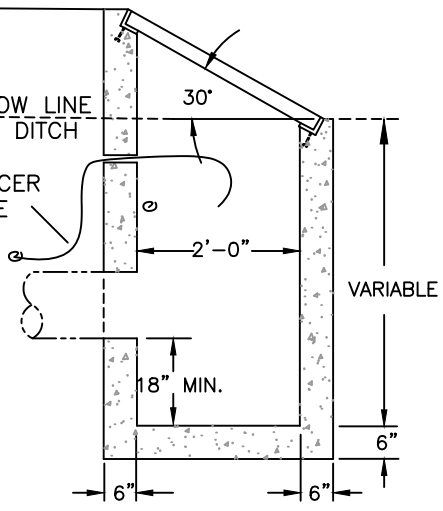
DRAWING NO: 00400-04



PLAN



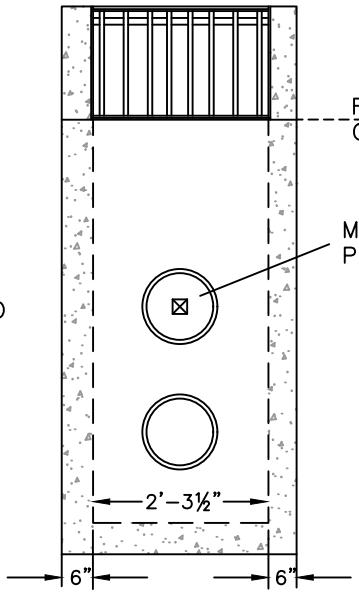
SECTION A–A
POLLUTION CONTROL



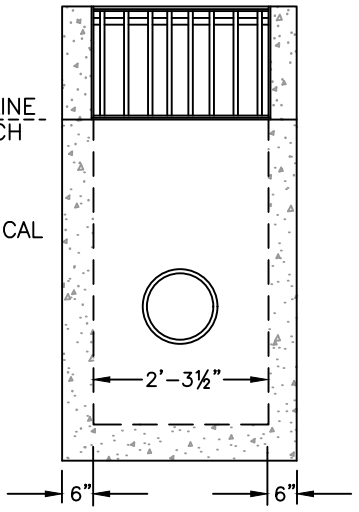
SECTION A–A

NOTES:

1. CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN.).
2. PRECAST CONCRETE CATCH BASINS MAY BE USED WHEN SPECIFIED OR APPROVED.
3. USE POLLUTION CONTROL INLET AS REQUIRED OR DIRECTED.
4. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
5. INLET BASE MAY BE CAST–IN–PLACE OR PRECAST. WHERE PRECAST INLET BASE IS USED AS AN ALTERNATE, A 4" COMPACTED LEVELING BED OF SAND OR 1/4"–0" CRUSHED AGGREGATE SHALL BE PROVIDED.
6. SEE SUPP. STD. DWG. 00400–09 FOR GRATE DETAILS.
7. CATCH BASIN, FRAME, AND GRATES SHALL MEET H20 LOADING.
8. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF CATCH BASIN RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
9. 5/8" CROSS BARS SHALL BE FLUSH WITH THE GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.
10. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
11. DO NOT USE IN LOCATIONS WHERE INLET CAN BE STRUCK BY AN ERRANT VEHICLE, OR PROVIDE SHIELDING OF INLET.
12. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.



SECTION B–B
POLLUTION CONTROL



SECTION B–B

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

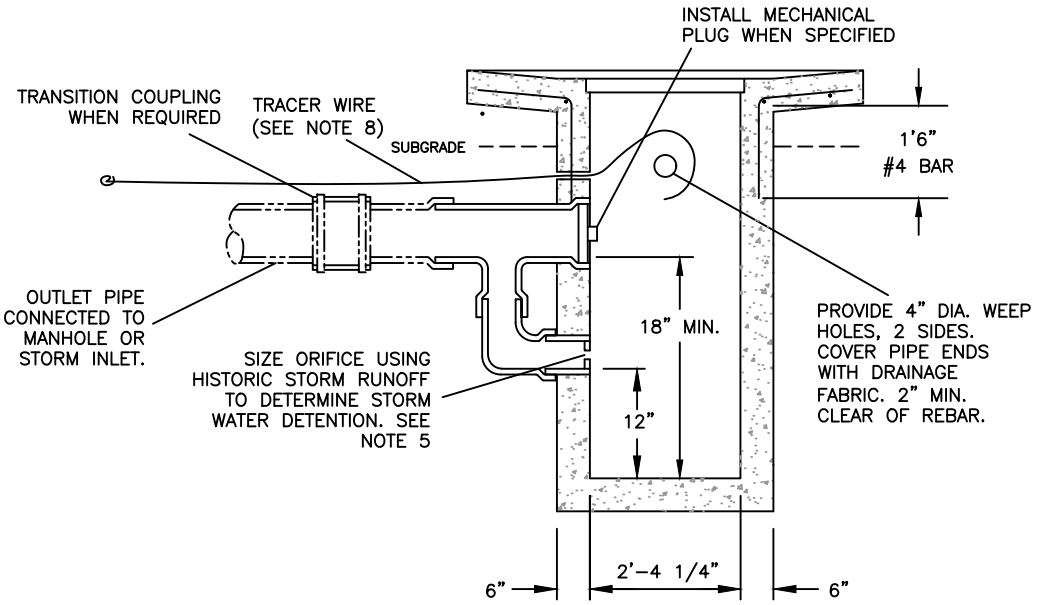
APPROVED

CITY ENGINEER

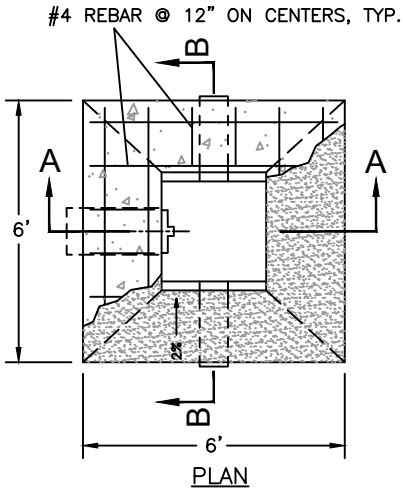
December, 2021
DATE

TYPE D DITCH INLET

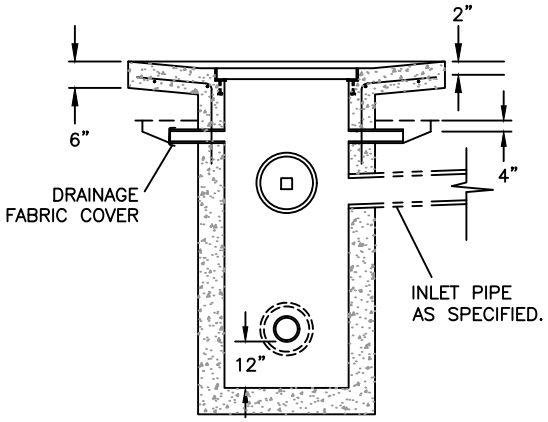
DRAWING NO: 00400-05



SECTION A–A



PLAN



SECTION B–B

NOTES:

1. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN.).
2. PRECAST CONCRETE CATCH BASINS MAY BE USED WHEN SPECIFIED OR APPROVED.
3. FOR GRATE DETAILS SEE SUPP. STD. DWG. 00400–09.
4. APRON REINFORCEMENT SHALL CONSIST OF #4 REBAR @ 12" ON CENTER (TYP.) MAINTAIN 2" COVER ON ALL BARS.
5. RUNOFF DETENTION REQUIRED ON PRIVATE INLETS CONNECTED DIRECTLY TO THE CITY STORM SYSTEM.
6. INLET BASE MAY BE CAST–IN–PLACE OR PRECAST. WHERE PRECAST INLET BASE IS USED AS AN ALTERNATE, A 4" COMPACTED LEVELING BED OF SAND OR 1/4"–0" CRUSHED AGGREGATE SHALL BE PROVIDED.
7. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
8. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF CATCH BASIN RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
9. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
10. SEE SUPP. STD. DWG. 00700–03 FOR CURB DETAILS.
11. 3/4" PREFORMED FILLER (IN CONCRETE PAVEMENT OR GUTTER ONLY) TO EXTEND THROUGH THICKNESS OF CONCRETE.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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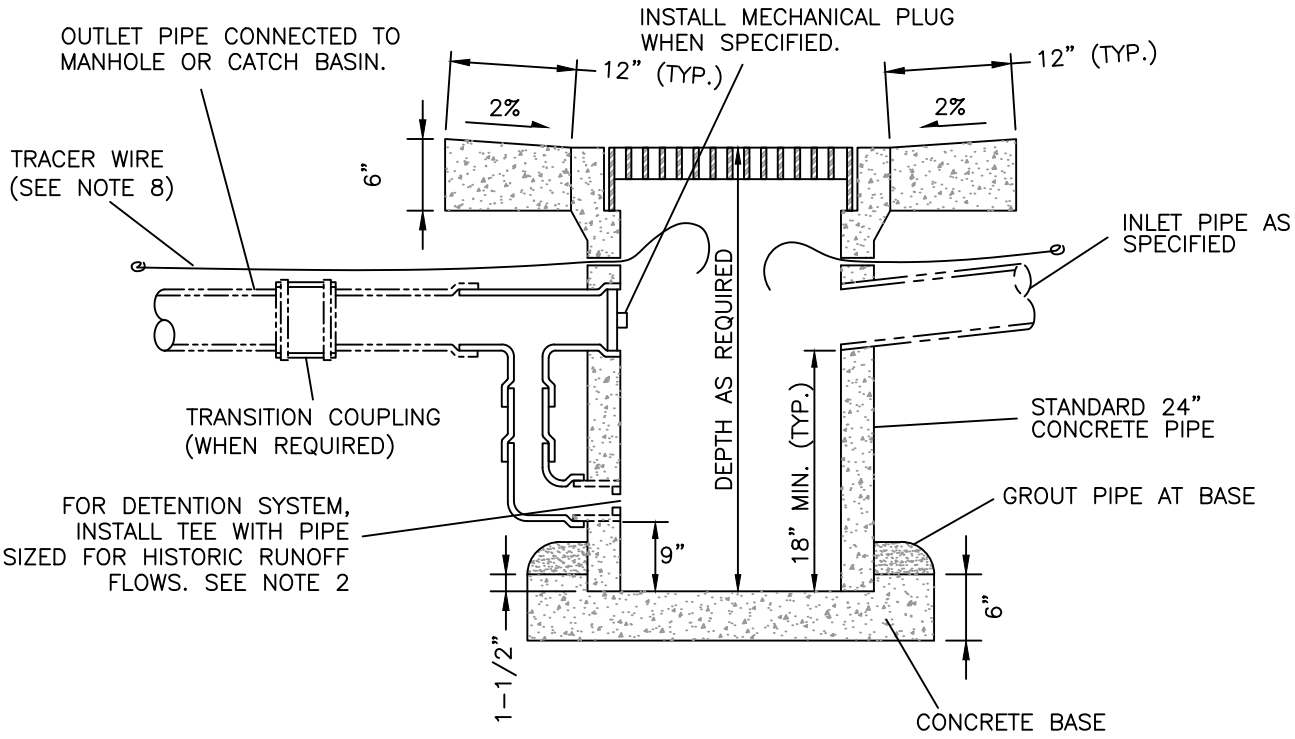
CITY ENGINEER

December, 2021

DATE

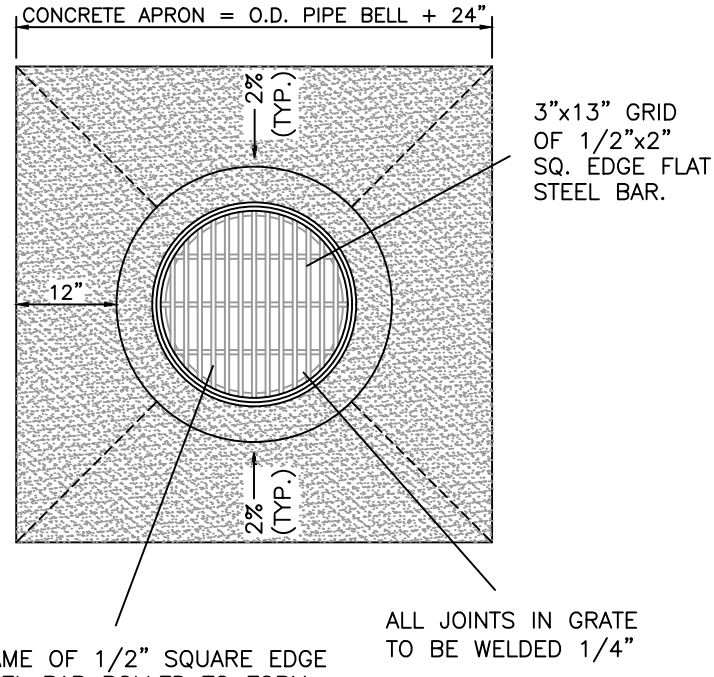
MODIFIED TYPE G-2MA INLET FOR TRAFFIC AREAS

DRAWING NO: 00400-06



NOTES:

1. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN.).
2. RUNOFF DETENTION REQUIRED ON PRIVATE INLETS CONNECTED DIRECTLY TO THE CITY STORM DRAINAGE SYSTEM.
3. PRECAST CONCRETE INLETS MAY BE USED WHEN SPECIFIED OR APPROVED. ALL PRECAST INLETS SHALL CONFORM TO REQUIREMENTS OF ASTM C913.
4. ANCHOR VERTICAL LEG OF INLET PIPE IF JOINTS ARE NOT GLUED.
5. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
6. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
7. GRATES SHALL BE BICYCLE-SAFE.
8. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF CATCH BASIN RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.
9. ALL REINFORCEMENTS SHALL BE 2" CLEAR OF THE NEAREST FACE OF CONCRETE UNLESS OTHERWISE SHOWN.



CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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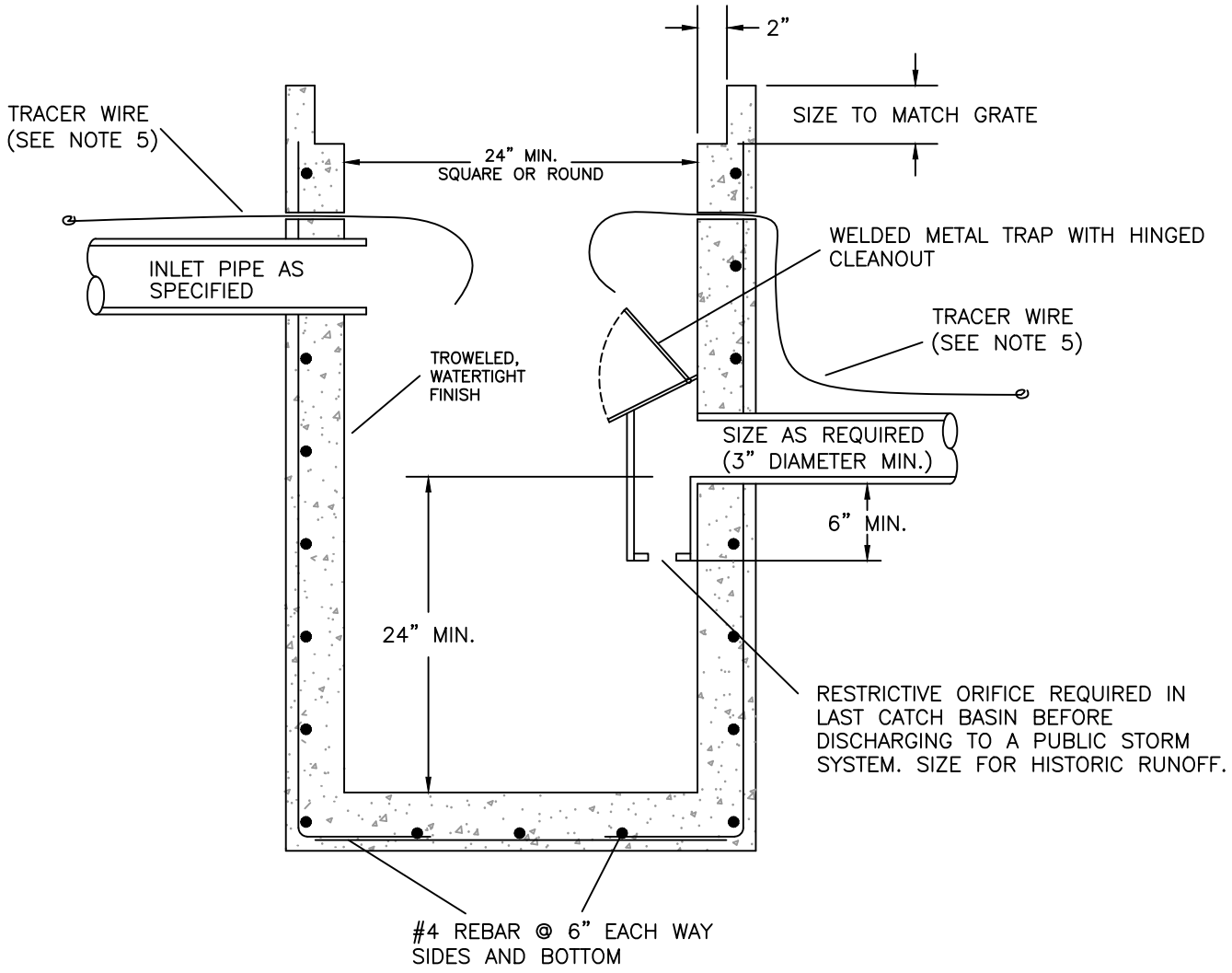
AREA DRAINAGE BASIN FOR NON-TRAFFIC AREAS

DRAWING NO: 00400-07



NOTES

1. THIS DRAWING PROVIDES BASIC REQUIREMENTS FOR PRIVATE CATCH BASIN CONSTRUCTION IN COMPLIANCE WITH SECTION 1408 OF THE UNIFORM PLUMBING CODE.
2. THE ABOVE DETAIL APPLIES TO CONCRETE CATCH BASINS. CAST IRON AND STEEL ARE ALSO APPROVED MATERIALS. SEE INTERNATIONAL CODE FOR DETAILS.
3. GRATES SHALL BE MADE OF APPROVED MATERIALS AND SHALL BE CAPABLE OF SUPPORTING THE ANTICIPATED LOAD. GRATE TO BE DESIGNED TO PREVENT WHEELS AND TIRES FROM BECOMING ENTRAPPED.
4. DETENTION SYSTEM REQUIRED ON PRIVATE INLETS CONNECTED DIRECTLY TO THE CITY STORM SYSTEM.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE TERMINATED WITHIN 18 INCHES OF CATCH BASIN RIM. SEE SECTION 00445.48 FOR MORE INFORMATION.

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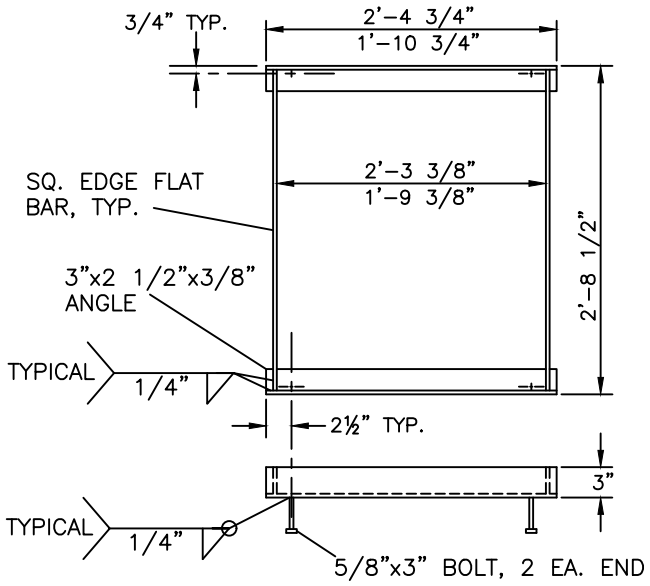
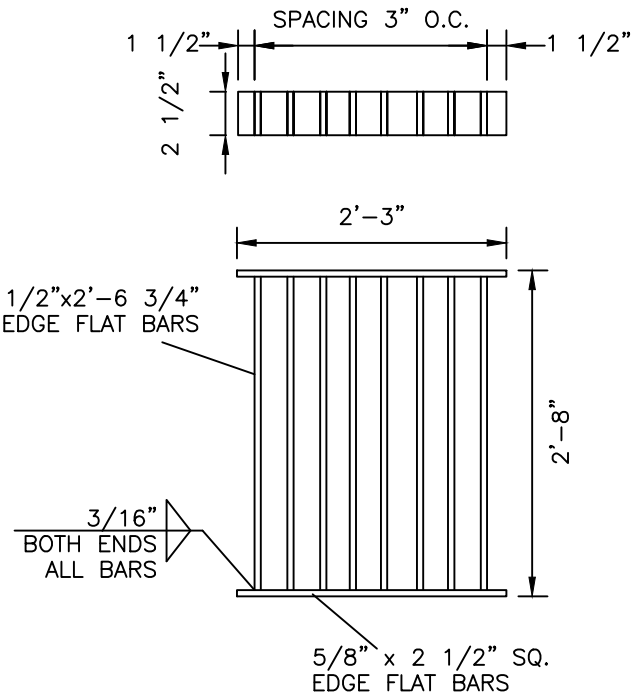
CATCH BASIN FOR PRIVATE DEVELOPMENT

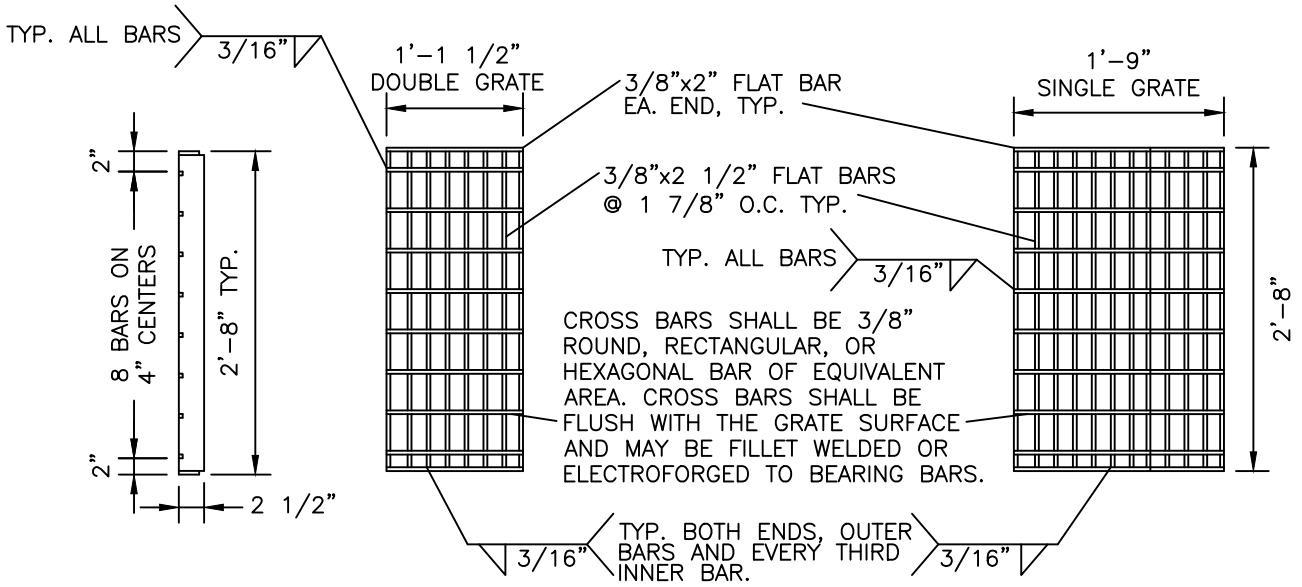
DRAWING NO: 00400-08



CATCH BASIN FRAME
TYPE 1 & TYPE 2 GRATES



GRATE – TYPE 1



GRATE – TYPE 2

NOTES:

1. FOR INLET DETAILS, SEE SUPP. STD. DWG. 00400–04, 00400–05 & 00400–06.
2. TYPE 1 GRATE ALLOWED ONLY IN LOCATIONS NOT SUBJECT TO BICYCLE OR PEDESTRIAN USE.
3. HOT DIP GALVANIZE AFTER FABRICATION.
4. CAST IRON GRATES AND FRAMES ARE ACCEPTABLE ALTERNATIVES.

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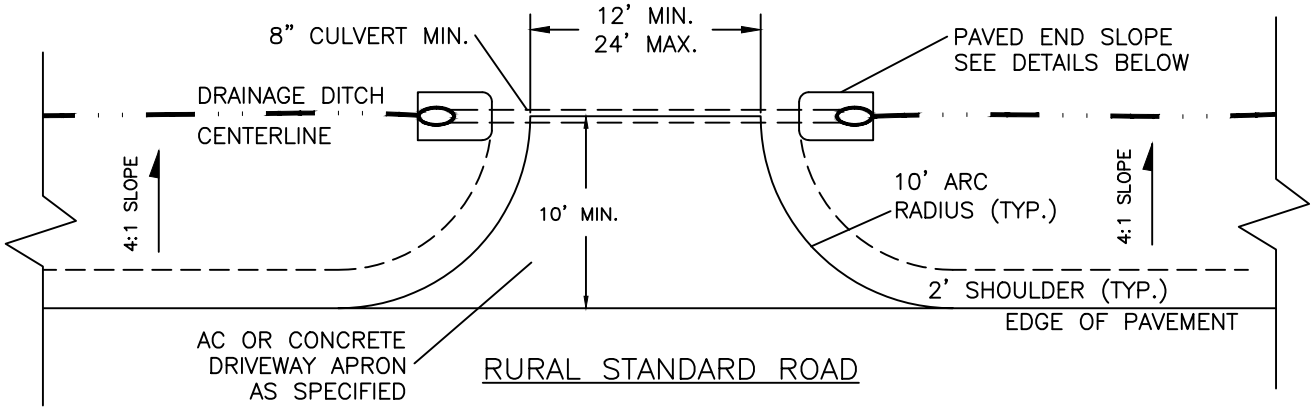
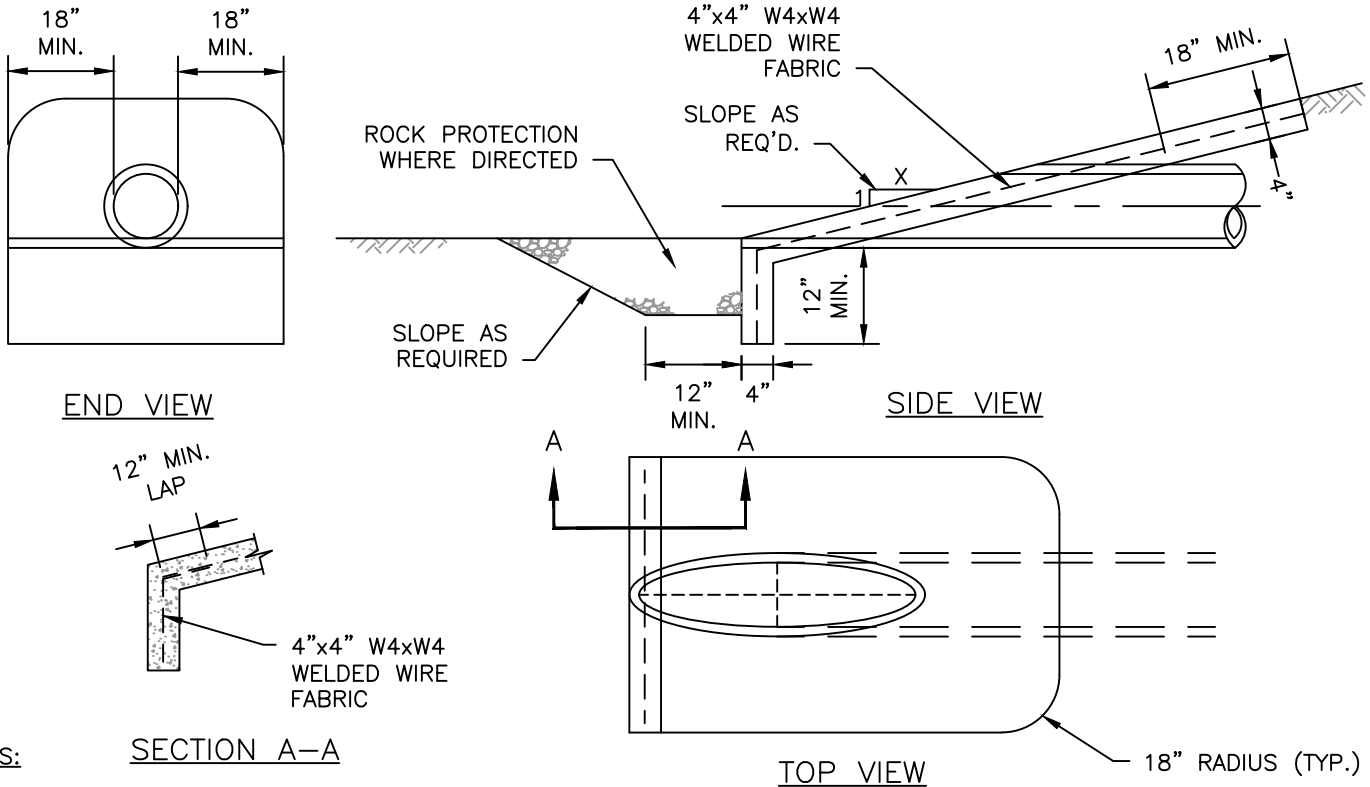
CATCH BASIN FRAME AND GRATE

DRAWING NO: 00400-09



RURAL STANDARD ROAD



END VIEW

SIDE VIEW

SECTION A–A

TOP VIEW

NOTES:

1. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE. SLOPE PAVING SURFACE VARIATIONS SHALL NOT EXCEED 3/8" IN 10'.
2. ALL METAL REINFORCEMENT SHALL BE PLACED 2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS SHOWN OR NOTED OTHERWISE.
3. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN.).
4. CLEAR SPACING FOR MULTIPLE PIPE INSTALLATIONS SHALL BE ONE HALF THE DIAMETER OF SPAN BUT NOT LESS THAN 18".
5. WHEN ROCK IS ENCOUNTERED, CUT OFF WALL DEPTH D/2 OR SPAN/2 MAY BE REDUCED TO ROCK LINE BUT NOT LESS THAN 12".
6. WHEN USING PERVIOUS BEDDING AND BACKFILL, PREVENT SEEPAGE AND PIPING BY PLACING IMPERVIOUS MATERIAL AT THE INLET. CUTOFF COLLARS MAY BE USED IN LIEU OF IMPERVIOUS MATERIAL.
7. OPEN ENDS OF PIPES NORMALLY REQUIRE A SITE SPECIFIC DESIGN, AND MAY REQUIRE SPECIAL TREATMENT.

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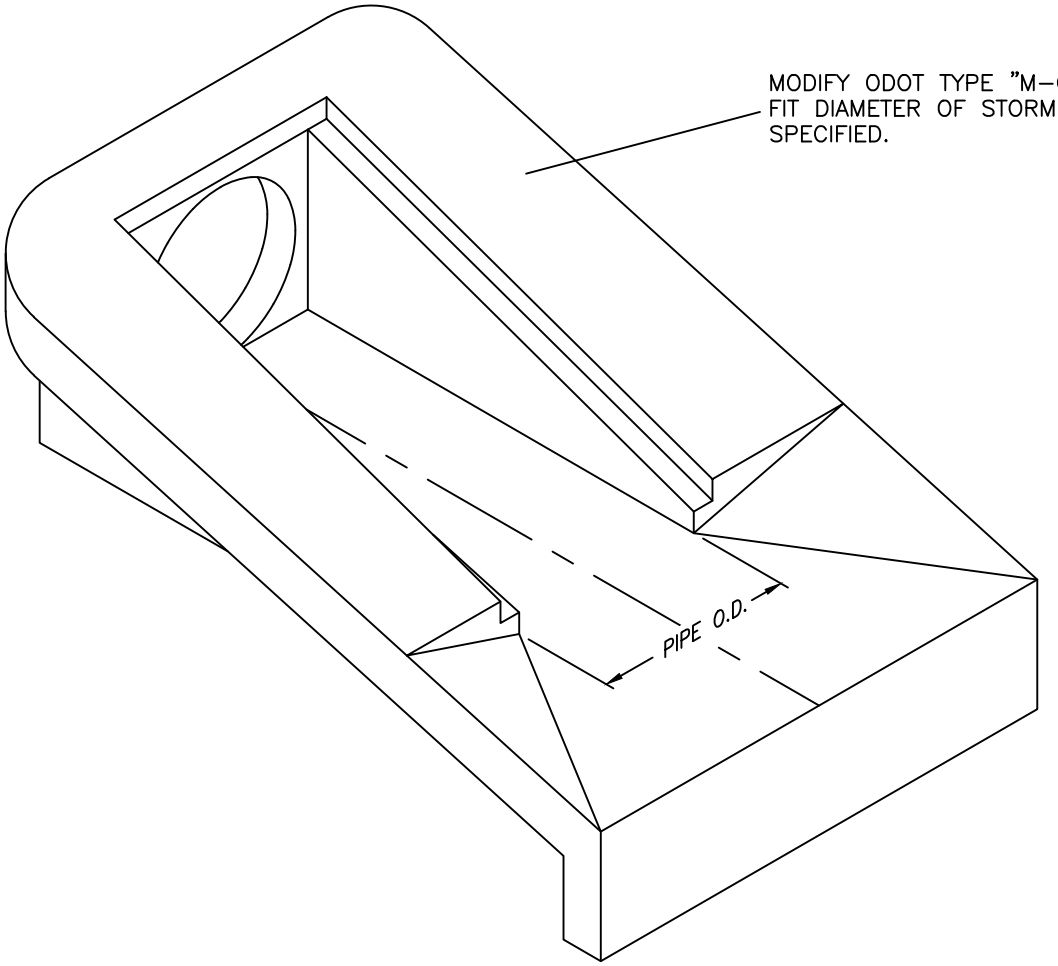
PAVED END SLOPE

DRAWING NO: 00400-10



NOTES:

1. CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 P.S.I. (MIN.).
2. PRECAST CONCRETE STRUCTURES MAY BE USED WHEN SPECIFIED OR APPROVED.
3. SEE ODOT STD. DWG. RD368 (TYPE M–O) FOR ADDITIONAL DETAILS.
4. SIZE GRATES AND FRAMES AS NECESSARY.
5. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
6. ALL REINFORCEMENT TO BE PLACED A MINIMUM OF 2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS OTHERWISE SHOWN OR NOTED. REINFORCEMENT TO BE LAPPED 20 BAR DIAMETERS AT SPLICES.
7. ALL PRECAST STRUCTURES SHALL CONFORM TO REQUIREMENTS OF ASTM C913.
8. WHEN UNCOATED METAL PIPE OR ARCH PIPE IS USED, AN ASPHALTIC OR SIMILAR TYPE PROTECTIVE COATING SHALL BE APPLIED TO THE EXTERIOR SURFACE.

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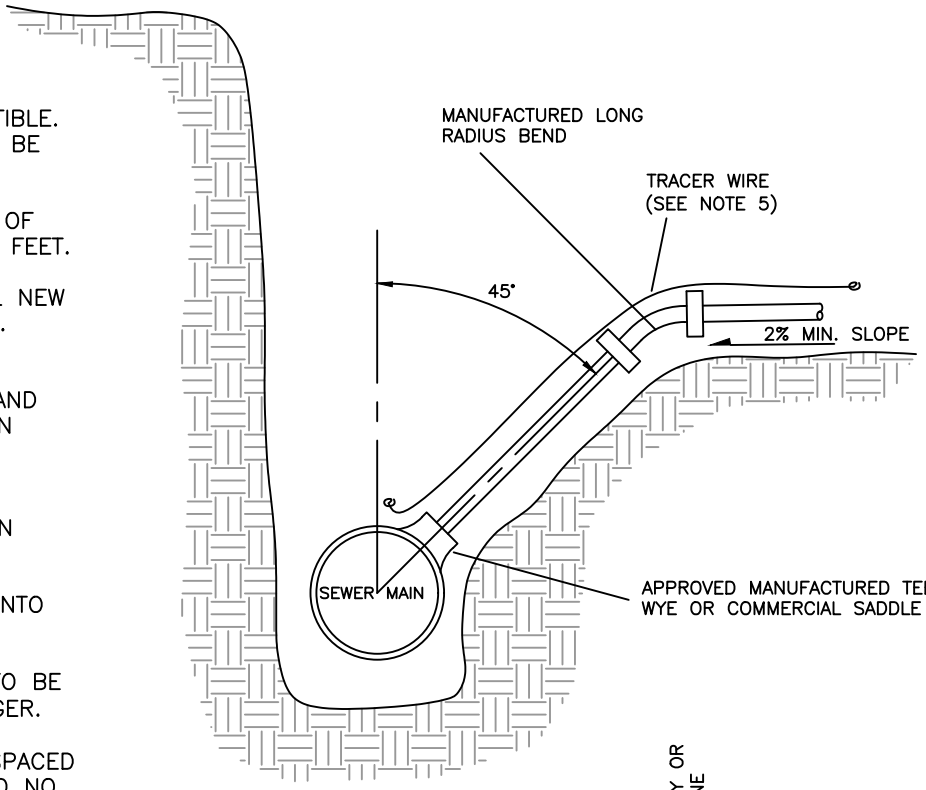
MODIFIED TYPE M-O OUTFALL STRUCTURE

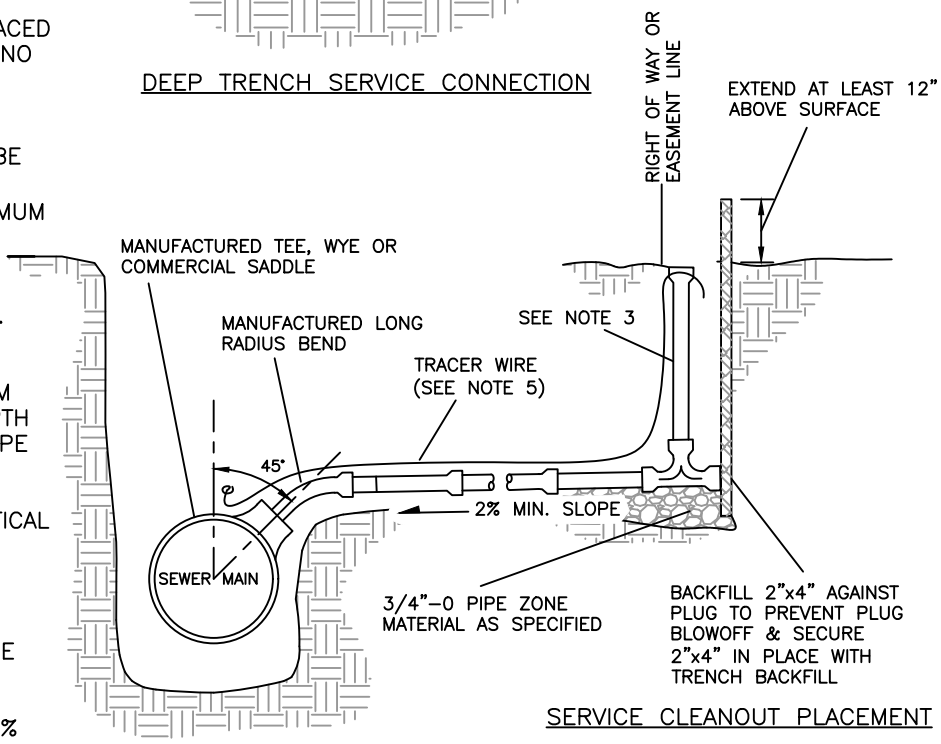
DRAWING NO: 00400-11

NOTES:

1. PIPE AND FITTINGS SHALL BE COMPATIBLE. ONLY MANUFACTURED FITTINGS SHALL BE USED.
2. MINIMUM DEPTH OF COVER AT RIGHT OF WAY OR EASEMENT LINE SHALL BE 4 FEET.
3. SERVICE CLEANOUT REQUIRED ON ALL NEW CONSTRUCTION. SEE SUPP. STD. DWG. 00400–13.
4. TAPPING TEE SHALL BE WATERTIGHT AND CONFORM TO STANDARD SPECIFICATION REQUIREMENTS.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 00445.48 FOR MORE INFORMATION.
6. TAPPING TEE SHALL NOT PROTRUDE INTO THE SANITARY MAIN.
7. INSERTA TEE® OR APPROVED EQUAL TO BE USED ON SEWER MAINS 12" OR LARGER.
8. TAPS OR INSERTA TEE®S SHALL BE SPACED A MINIMUM OF 18 INCHES APART AND NO LESS THAN 18 INCHES FROM ANY PIPE JOINT OR FITTING.
9. MARKER POSTS AND BLOCKING SHALL BE TREATED WOOD. POST SHALL BE 2"x4" (NOM.) FIR. POST TO EXTEND 12" MINIMUM ABOVE FINISH GRADE; EXPOSED AREA SHALL BE PAINTED GREEN.
10. FOR BEDDING AND BACKFILL SEE SUPP. STD. DWG. 00400–01.
11. LAY BUILDING SEWER AT MAX. 45° FROM HORIZONTAL TO ACHIEVE REQUIRED DEPTH AT PROPERTY LINE WHEN MINIMUM SLOPE RESULTS IN EXCESSIVE DEPTH.
12. FOR DEEP SERVICE CONNECTIONS, VERTICAL TRENCH WALLS ARE REQUIRED. IF IT IS NOT POSSIBLE TO MAINTAIN VERTICAL TRENCH WALLS, USE ALTERNATE CONNECTION METHOD TO MAINTAIN 6" MAXIMUM DISTANCE BETWEEN RISER PIPE AND TRENCH WALLS. REPLACE ALL EXCAVATED MATERIAL WITH FULL DEPTH GRANULAR BACKFILL COMPACTED TO 95% RELATIVE DENSITY.
13. WHERE DEEP CONNECTION IS AT AN ANGLE LESS THAN 45° FROM VERTICAL, DUCTILE IRON PIPE AND FITTINGS SHALL BE USED.



DEEP TRENCH SERVICE CONNECTION



SERVICE CLEANOUT PLACEMENT

SHALLOW TRENCH SERVICE CONNECTION

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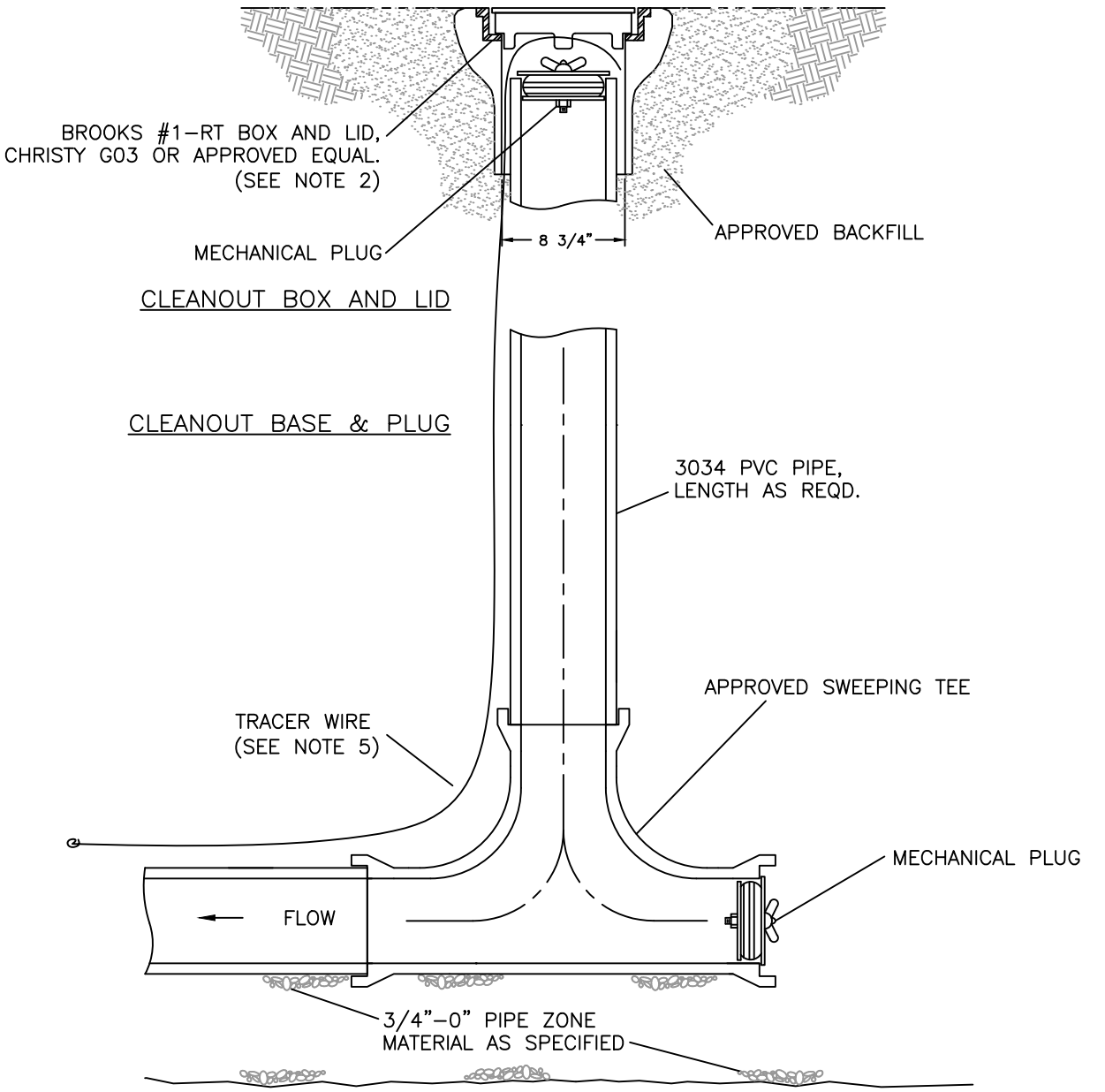
CITY ENGINEER — DATE

SANITARY SERVICE CONNECTION

DRAWING NO: 00400-12



NOTES:

1. ALL CLEANOUT FITTINGS SHALL BE THE SAME MATERIAL AS THE CARRIER PIPE.
2. PROVIDE A BROOKS #1–RT BOX, CHRISTY G03 OR APPROVED EQUAL, WITH A CAST IRON COVER MARKED "CO" OR "SEWER".
3. CLEANOUT LOCATION SHALL BE PLACED BEHIND RIGHT OF WAY OR EASEMENT LINE.
4. MECHANICAL PLUG TO BE DESIGNED FOR END OF PIPE INSTALLATION TO PREVENT PLUG FROM FALLING INTO PIPE.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 00445.48 FOR MORE INFORMATION.

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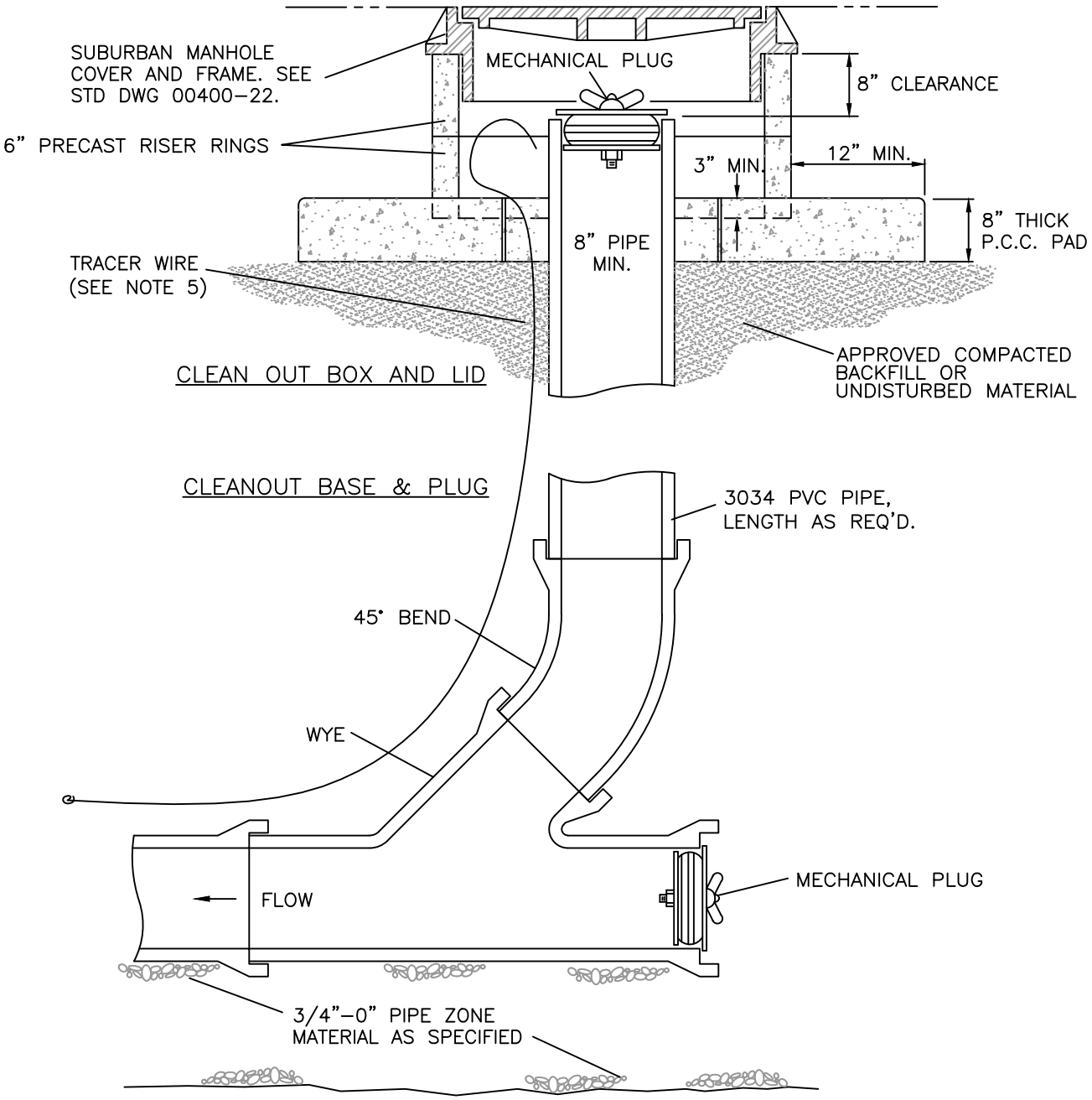
SERVICE CLEANOUT

DRAWING NO: 00400-13



NOTES:

1. CLEANOUT ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
2. MANHOLE FRAME AND RISERS SHALL BE SEALED WITH NON-SHRINK GROUT.
3. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 PSI (MIN.).
4. MECHANICAL PLUGS SHALL BE DESIGNED FOR END OF PIPE INSTALLATION TO PREVENT PLUG FROM FALLING INTO PIPE.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 00445.48 FOR MORE INFORMATION.

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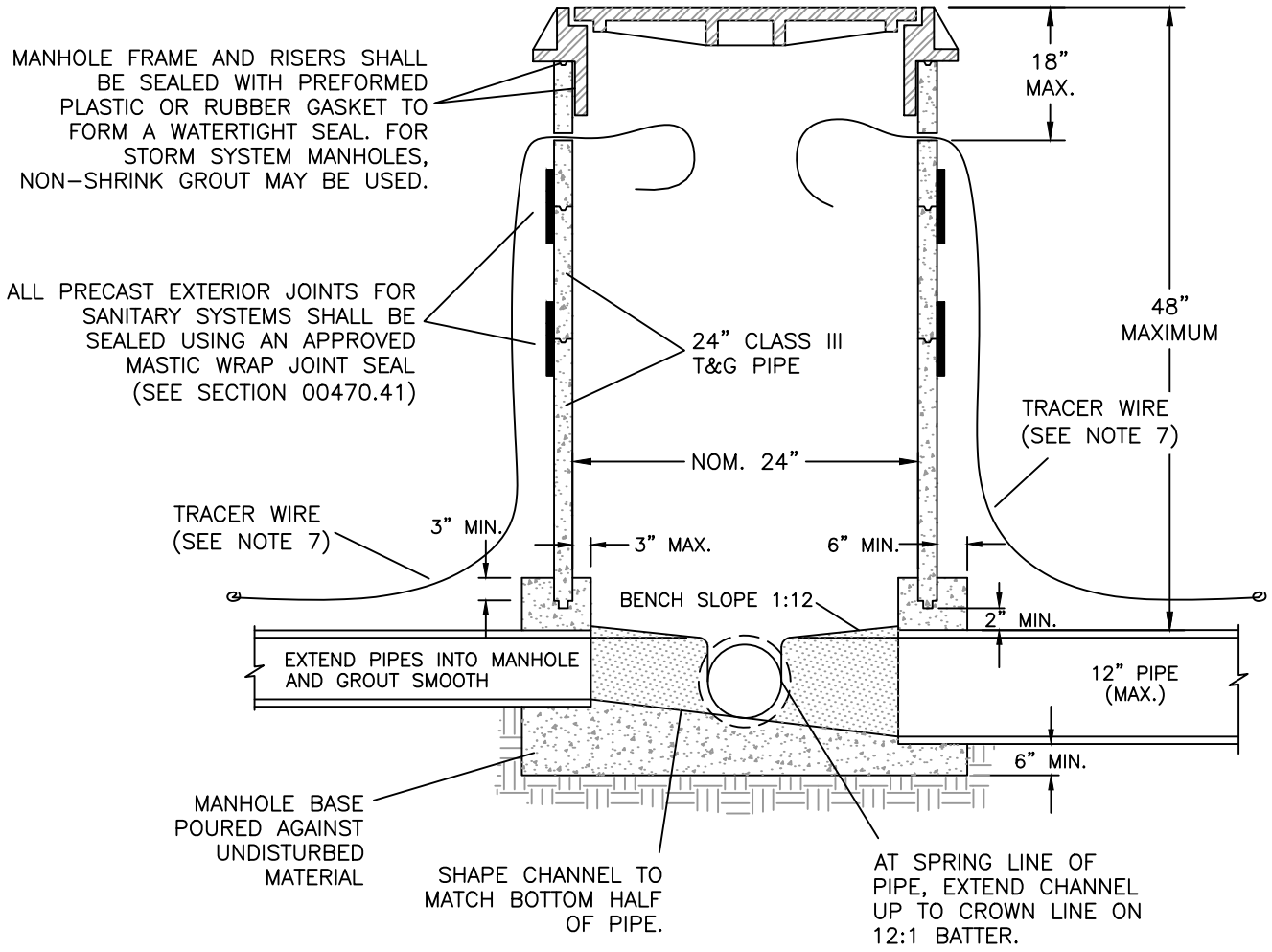
MAIN LINE CLEANOUT

DRAWING NO: 00400-14



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.

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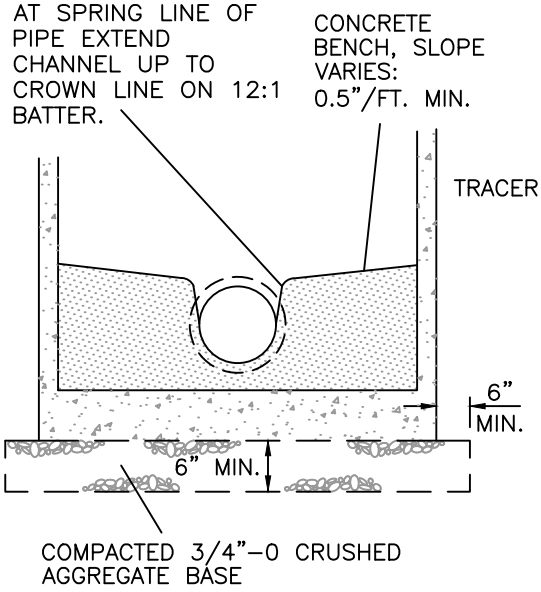
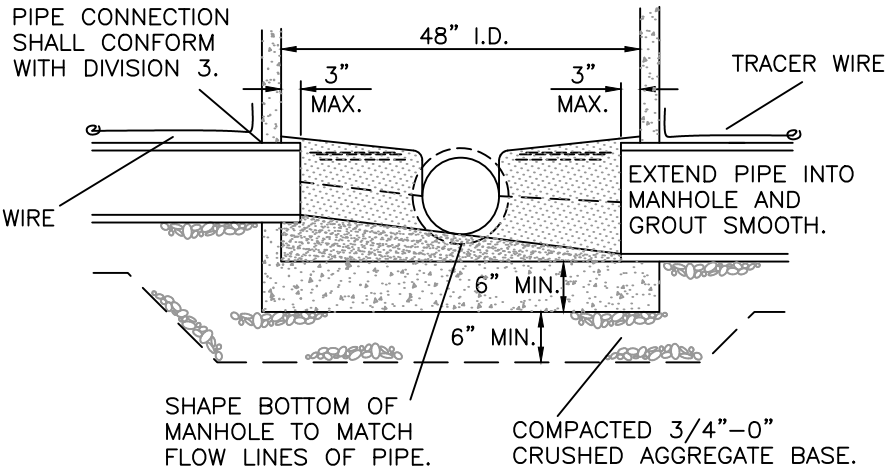
24" SHALLOW MANHOLE CAST-IN-PLACE

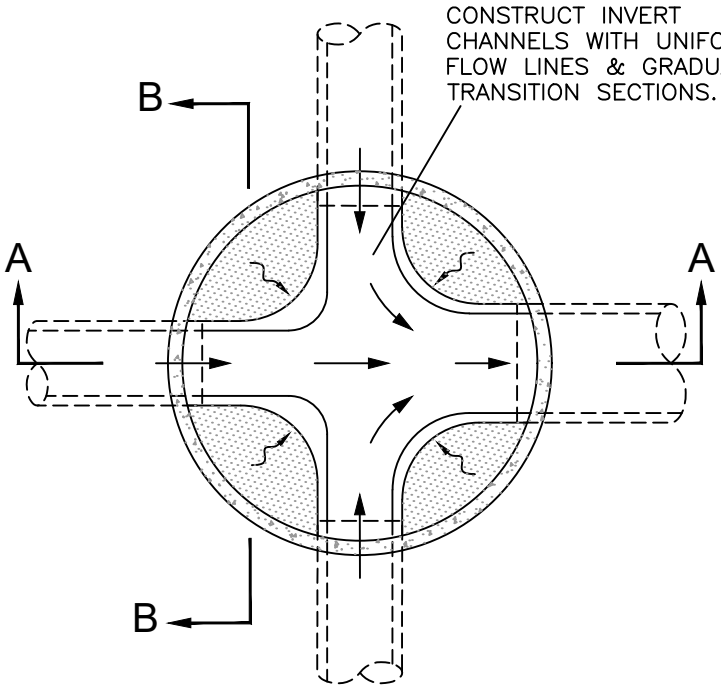
DRAWING NO: 00400-15



SECTION B–B



SECTION A–A



PLAN

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.

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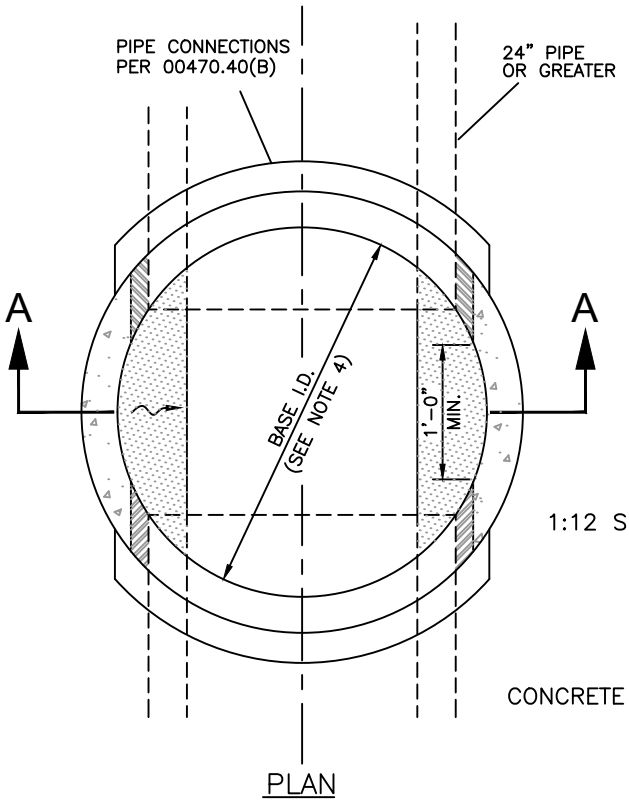
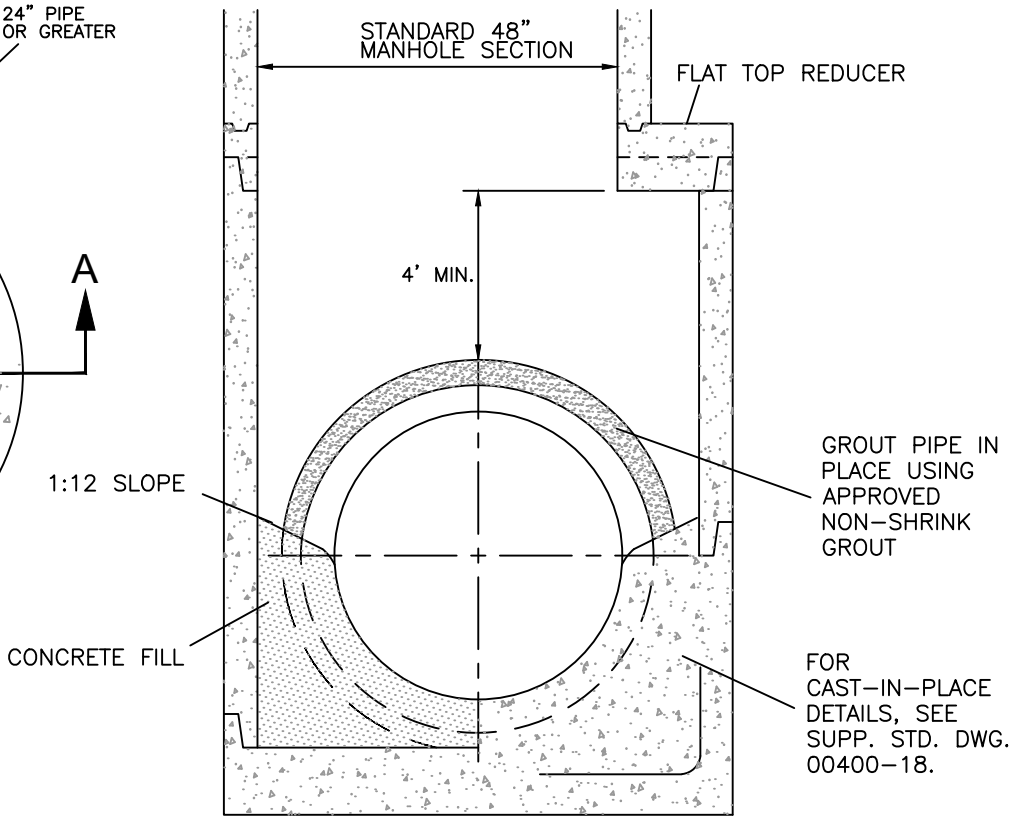
STANDARD MANHOLE BASE SECTION (48")

DRAWING NO: 00400-16



PLAN



BASE SECTION A–A

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.

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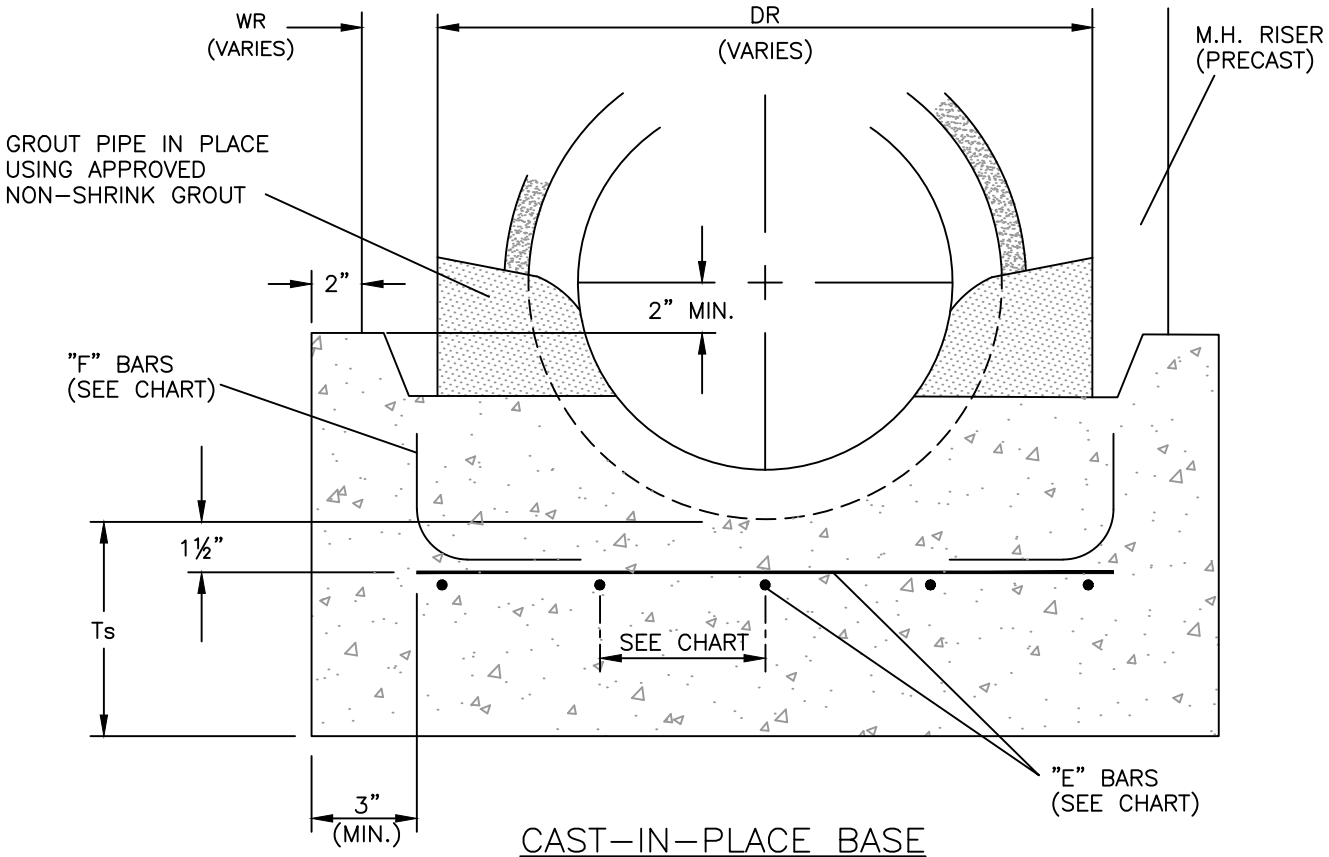
LARGE MANHOLE BASE SECTION (54" AND LARGER)

DRAWING NO: 00400-17



CAST–IN–PLACE BASE

REINFORCEMENT CHART

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:

1. CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 4000 PSI (MIN).
2. REINFORCING STEEL SHALL BE GRADE 60.
3. ALL REBAR SPACING IS MEASURED CENTER TO CENTER.
4. FOR DETAILS NOT SHOWN HERE, SEE SUPP. STD. DWG. 00400–17.

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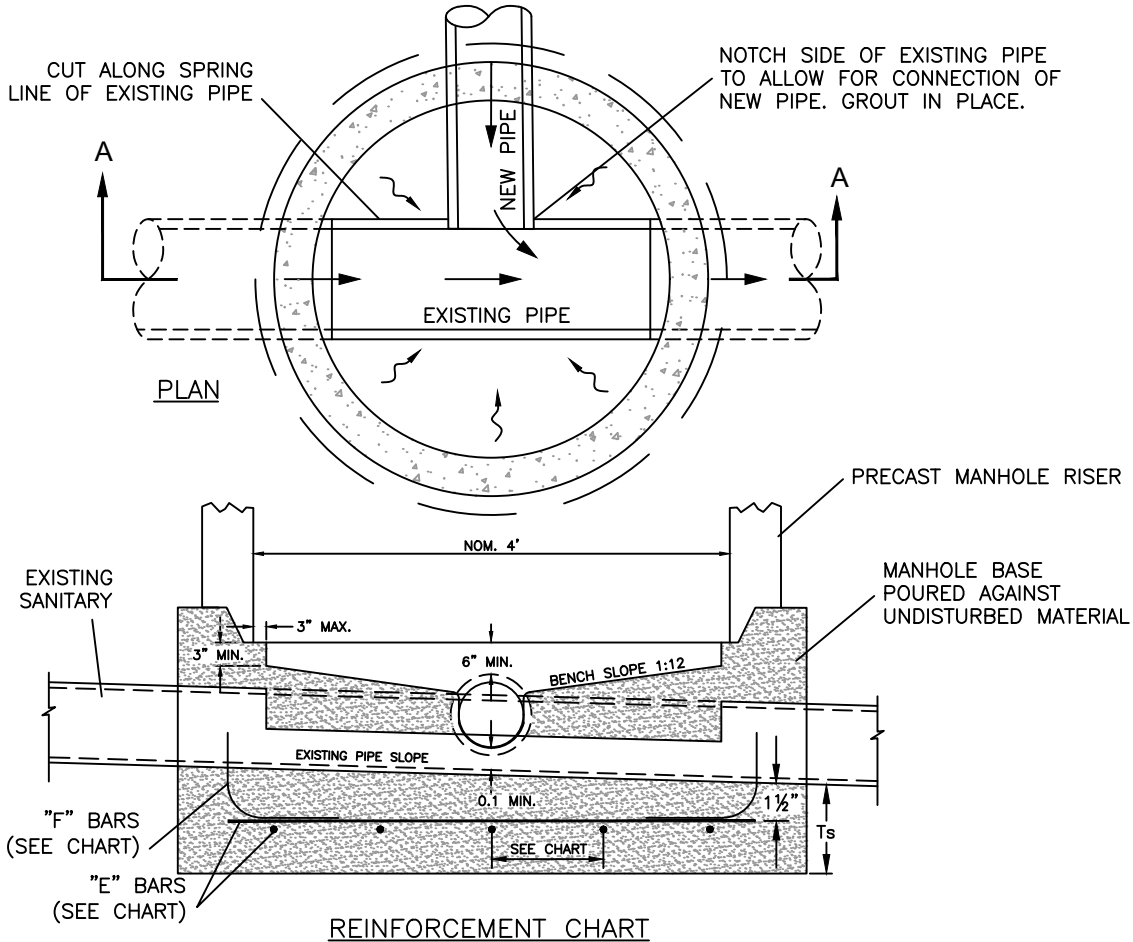
LARGE MANHOLE BASE SECTION REINFORCING

DRAWING NO: 00400-18



REINFORCEMENT CHART

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:

1. FOR USE ON 48" AND LARGER DIAMETER MANHOLES; 24" MANHOLE ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
2. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 4000 PSI (MIN.).
3. CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII FROM INLET TO OUTLET.
4. PIPE CONNECTIONS SHALL CONFORM TO SECTION 00400 IN THE SUPPLEMENTAL STANDARD SPECIFICATIONS. PIPE(S) MAY EXTEND 3" MAX. BEYOND INTERIOR MANHOLE WALL.
5. MAX. PIPE DIAMETER VARIES WITH PIPE MATERIAL.
6. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.
7. ALL PRECAST PRODUCTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C478.
8. AT SPRING LINE OF PIPE, EXTEND CHANNEL UP TO CROWN LINE ON 12:1 BATTER.

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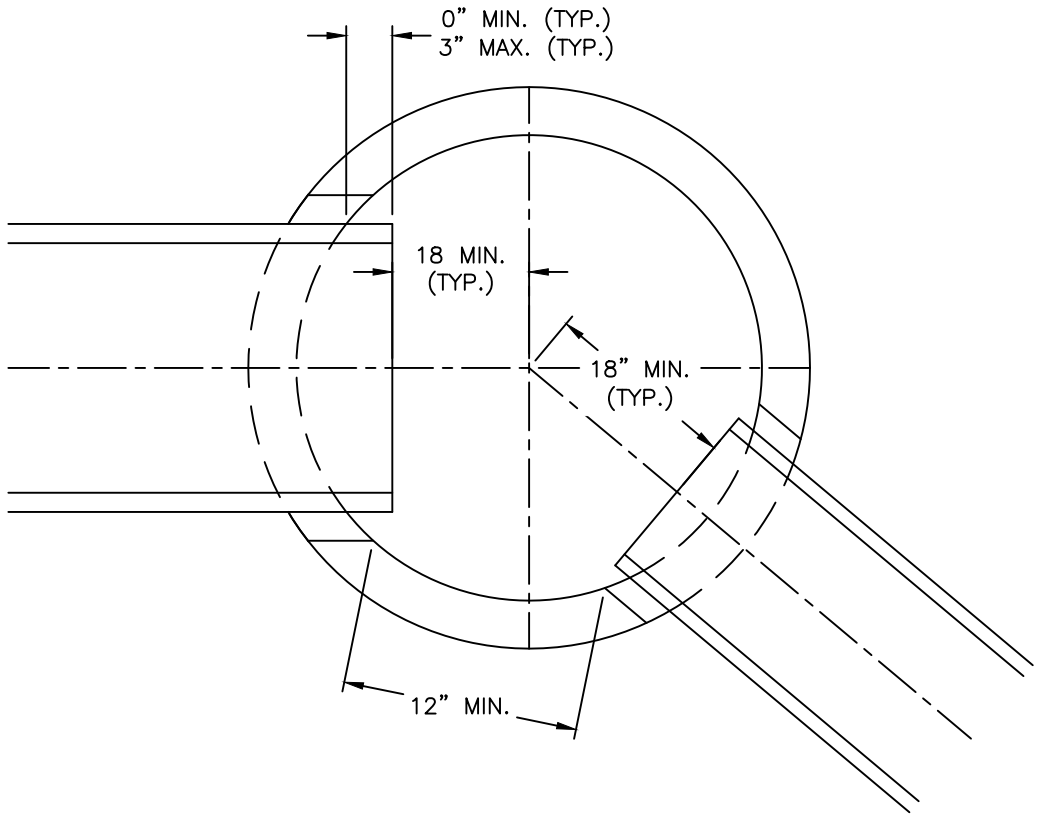
LIVE SEWER CAST-IN-PLACE MANHOLE BASE

DRAWING NO: 00400-19



NOTES:

1. MANHOLES SHALL BE SIZED TO ENSURE ALL CORES FOR PIPE PENETRATIONS SHALL HAVE A 12" MINIMUM SEPARATION (BOTH HORIZONTAL AND VERTICAL).
2. MANHOLE BASES MAY BE PRECAST OR CAST–IN–PLACE. PRECAST SECTIONS SHALL CONFORM TO ASTM C478. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 4000 PSI (MIN.).
3. PIPE ENDS SHALL BE, AT MINIMUM, FLUSH WITH THE INTERIOR FACE OF THE MANHOLE AT THE 3 AND 9 O'CLOCK POSITIONS. MAXIMUM PENETRATION INTO THE MANHOLE AT THESE LOCATIONS IS 3".
4. PIPE ENDS SHALL BE POSITIONED A MINIMUM OF 18" FROM CENTER OF MANHOLE.
5. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS.

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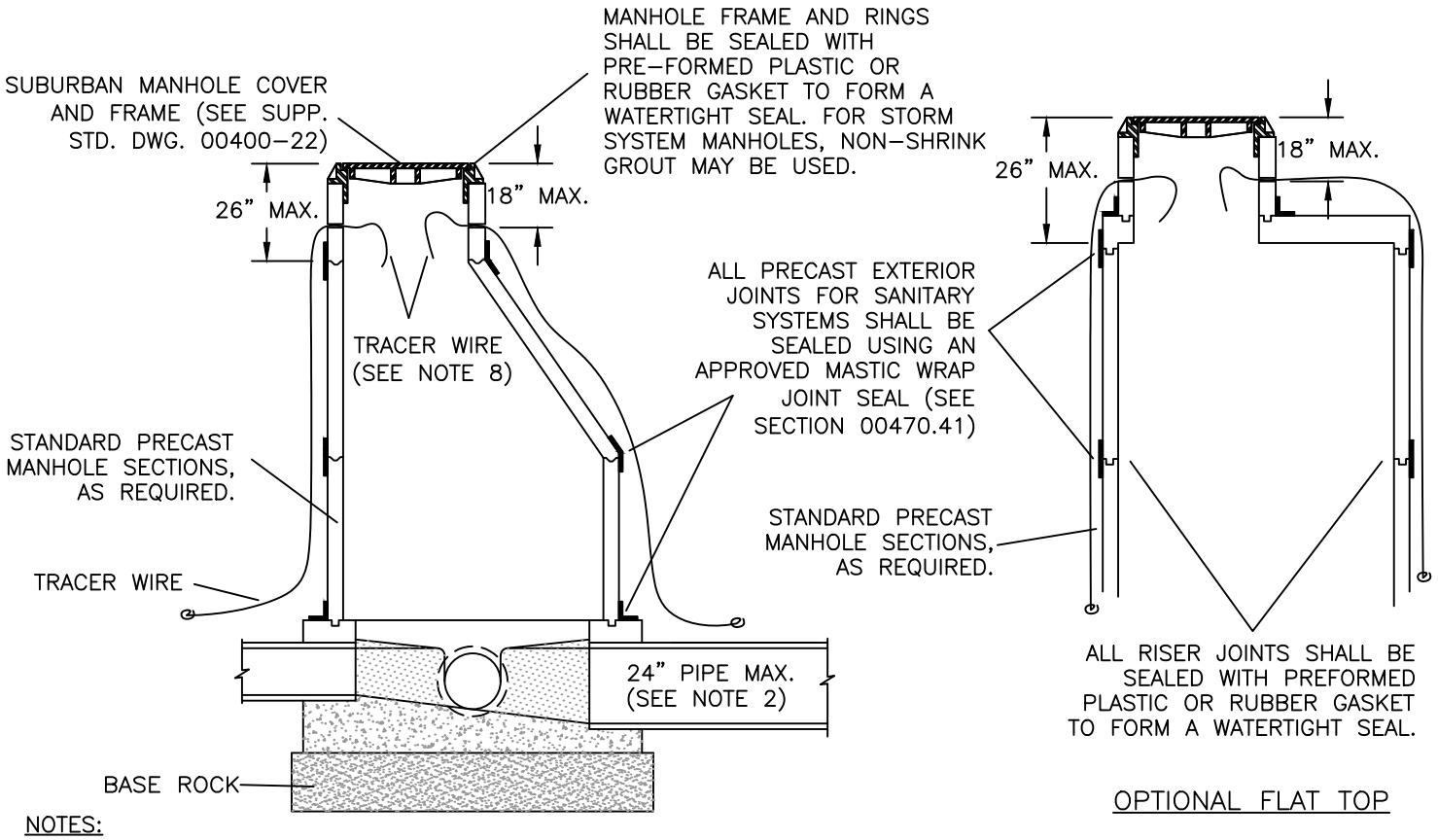
MANHOLE PIPE ALIGNMENT

DRAWING NO: 00400-20



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

OREGON Lebanon

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CITY ENGINEER

December, 2021

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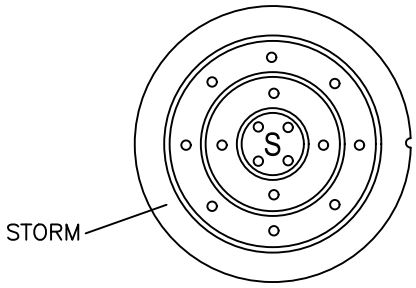
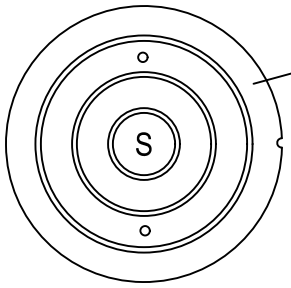
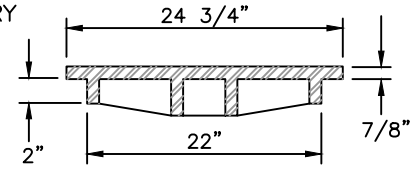
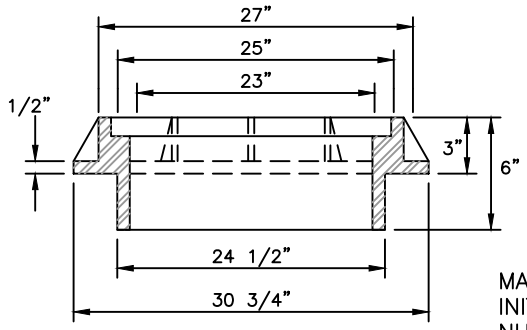
MANHOLE RISERS & TOPS

DRAWING NO: 00400-21

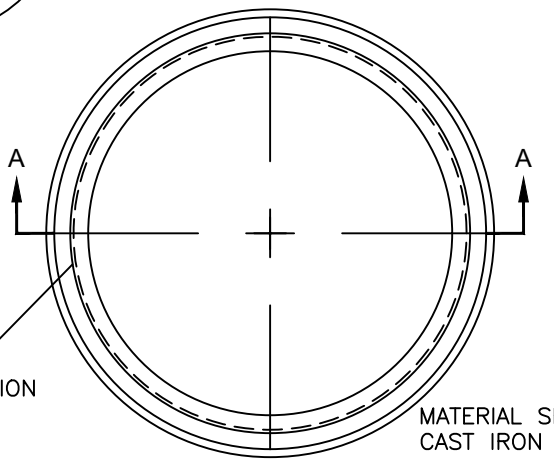




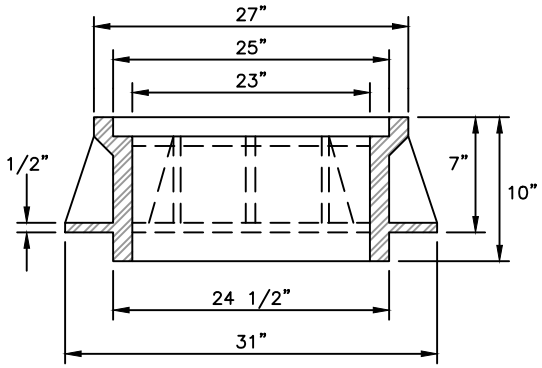




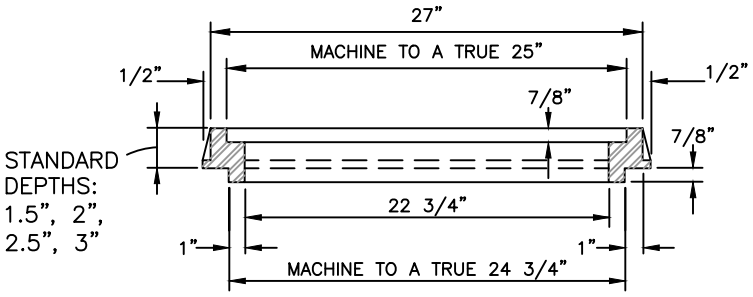
CAST IRON SUBURBAN
(APPROX. WT. – 305 LBS.)



MANHOLE ADJUSTMENT RINGS



CAST IRON STANDARD
(WITH APPROVAL OF THE ENGINEER)
(APPROX. WT. – 387 LBS.)



SECTION A–A

NOTES:

1. MANHOLE ADJUSTMENT RINGS ALLOWED ONLY WHEN PROPERLY SEATED INTO EXISTING MANHOLE. APPLY APPROVED BONDING AGENT TO SECURE RINGS PROPERLY TO MANHOLE.
2. CAST IRON COVERS AND FRAMES ARE TO BE DOMESTIC OR AN APPROVED EQUAL.
3. IF MANHOLE ADJUSTMENT RINGS ARE USED, PROVIDE A 1/4 INCH FILLET WELD AROUND INSIDE OF RIM.
4. TAMPERPROOF COVERS REQUIRED ON SANITARY OR STORM DRAIN MANHOLES WHERE LOCATED IN PEDESTRIAN OR EASEMENT AREAS.
5. COVERS FOR SANITARY MANHOLES SHALL HAVE 2 HOLES MAXIMUM.
6. WATERTIGHT COVERS (NO HOLES) REQUIRED IF LOCATED WHERE COVERS MAY BE SUBMERGED.
7. COVER AND FRAMES SHALL BE STAMPED WITH MANUFACTURER'S INITIALS, HEAT NUMBER AND POINT OF ORIGIN.
8. MANHOLE GRATES ALLOWED ONLY IN LOCATIONS NOT SUBJECT TO BICYCLE OR PEDESTRIAN USE.

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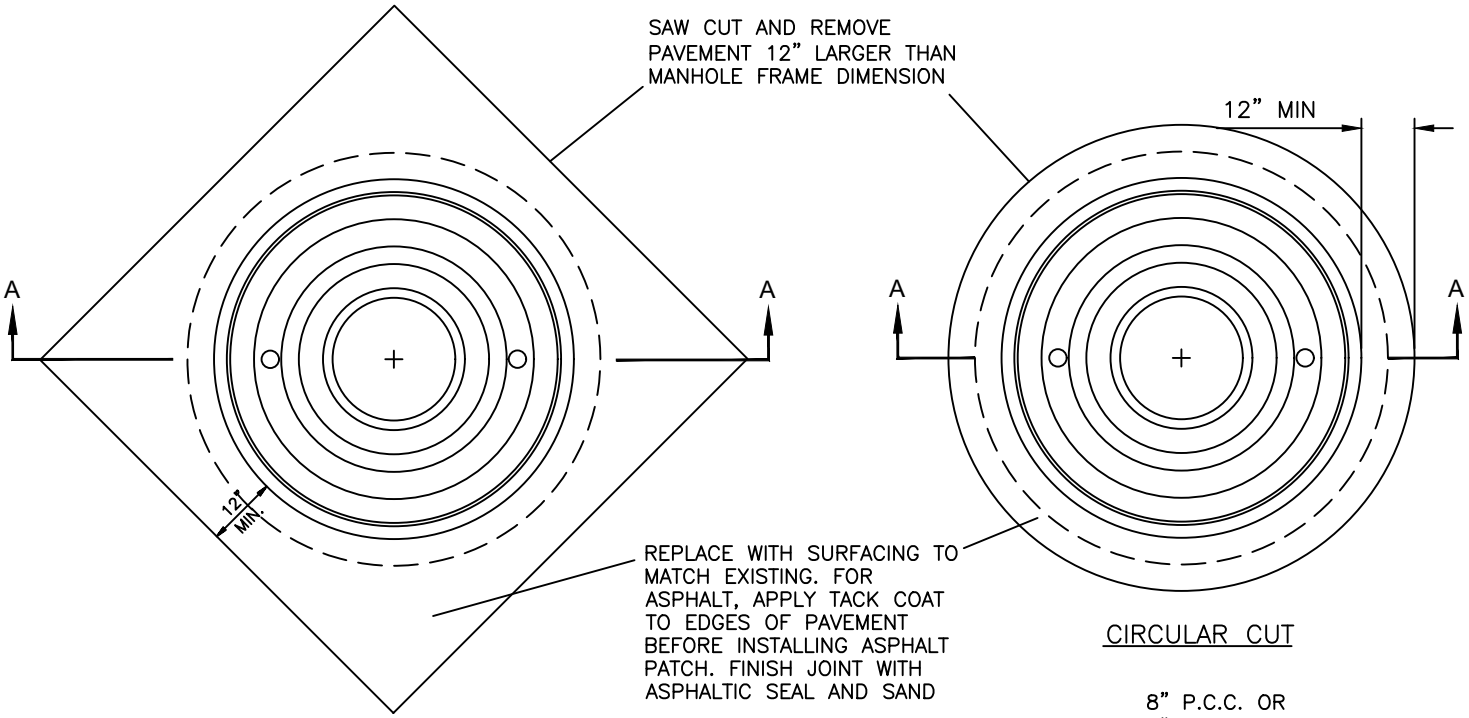
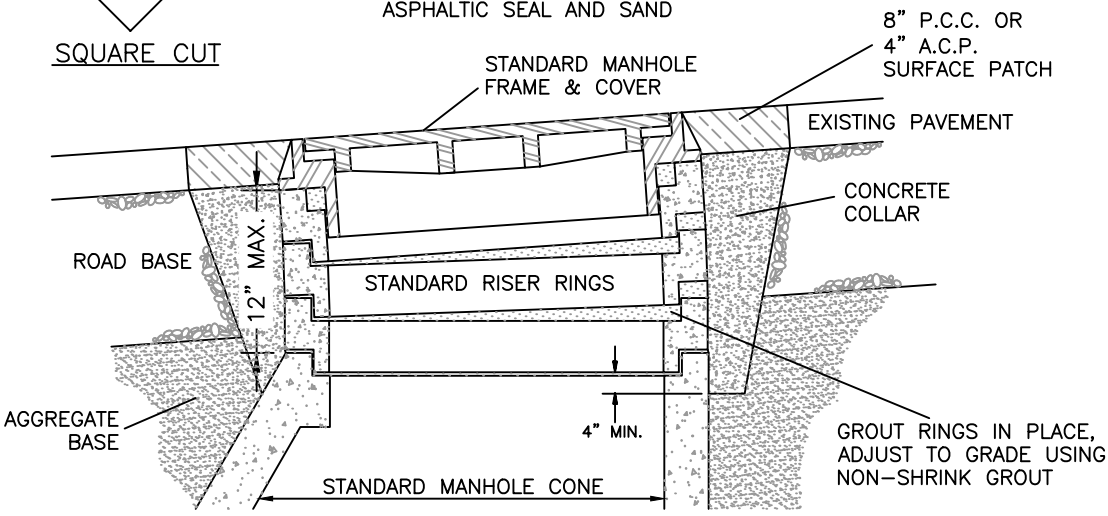
MANHOLE COVERS AND FRAMES

DRAWING NO: 00400-22



SQUARE CUT

CIRCULAR CUT



MANHOLE STREET GRADE ADJUSTMENT
SECTION A–A

NOTES:

1. COVER MANHOLE WITH BUILDING PAPER AND CONSTRUCT A.C.P. BASE COURSE AND WEARING COURSES.
2. RAISE MANHOLE COVER AND FRAME TO FINISH GRADE BY INSTALLING CONCRETE MANHOLE ADJUSTMENT RINGS AND LEVELING MORTAR.
3. BACKFILL WITH EARLY STRENGTH P.C.C.; ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE 3000 PSI (MIN.).
4. PROTECT FROM TRAFFIC LOADING UNTIL CONCRETE HAS FULLY CURED.
5. SEE SUPP. STD. DWG. 00400–22 FOR MANHOLE COVERS AND FRAMES.
6. USE EPOXY FOR SYNTHETIC GRADE RINGS.

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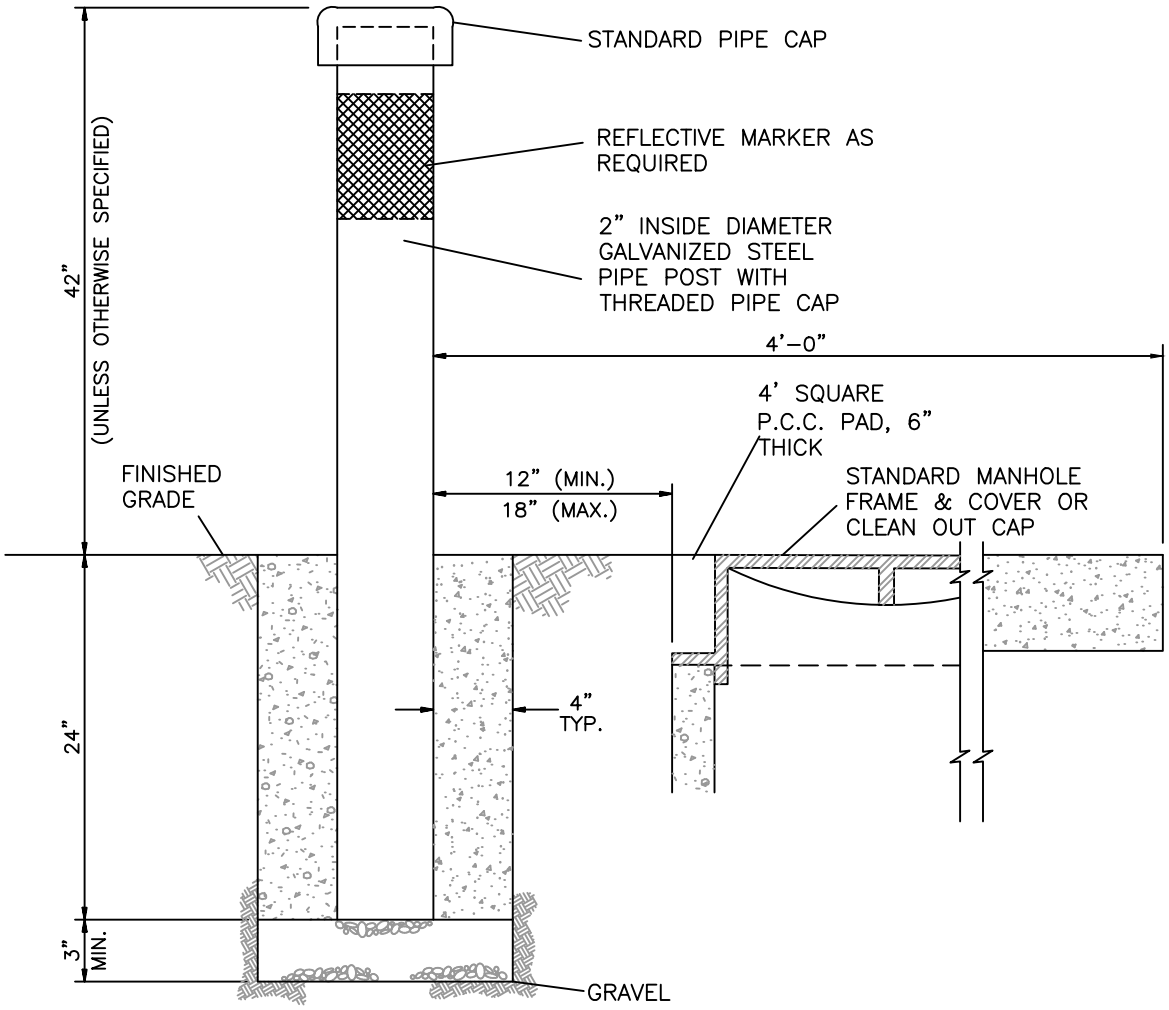
MANHOLE ADJUSTMENT RINGS & CUTOUTS

DRAWING NO: 00400-23



MARKER POST AT MANHOLE OR CLEANOUT

NOTES:

1. POSTS SHALL BE LOCATED ON THE NORTH SIDE OF MANHOLE LIDS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. POSTS SHALL BE SET IN COMMERCIAL GRADE CONCRETE 3000 PSI (MIN).
3. WITH ENGINEER'S APPROVAL, A TREATED 4"x4" POST WITH TAPERED TOP, A 4" CONCRETE FILLED PVC PIPE POST OR A FLEXIBLE, DURABLE, PLASTIC MARKER MAY BE SUBSTITUTED.
4. POSTS/MARKERS SHALL BE PAINTED WHITE.

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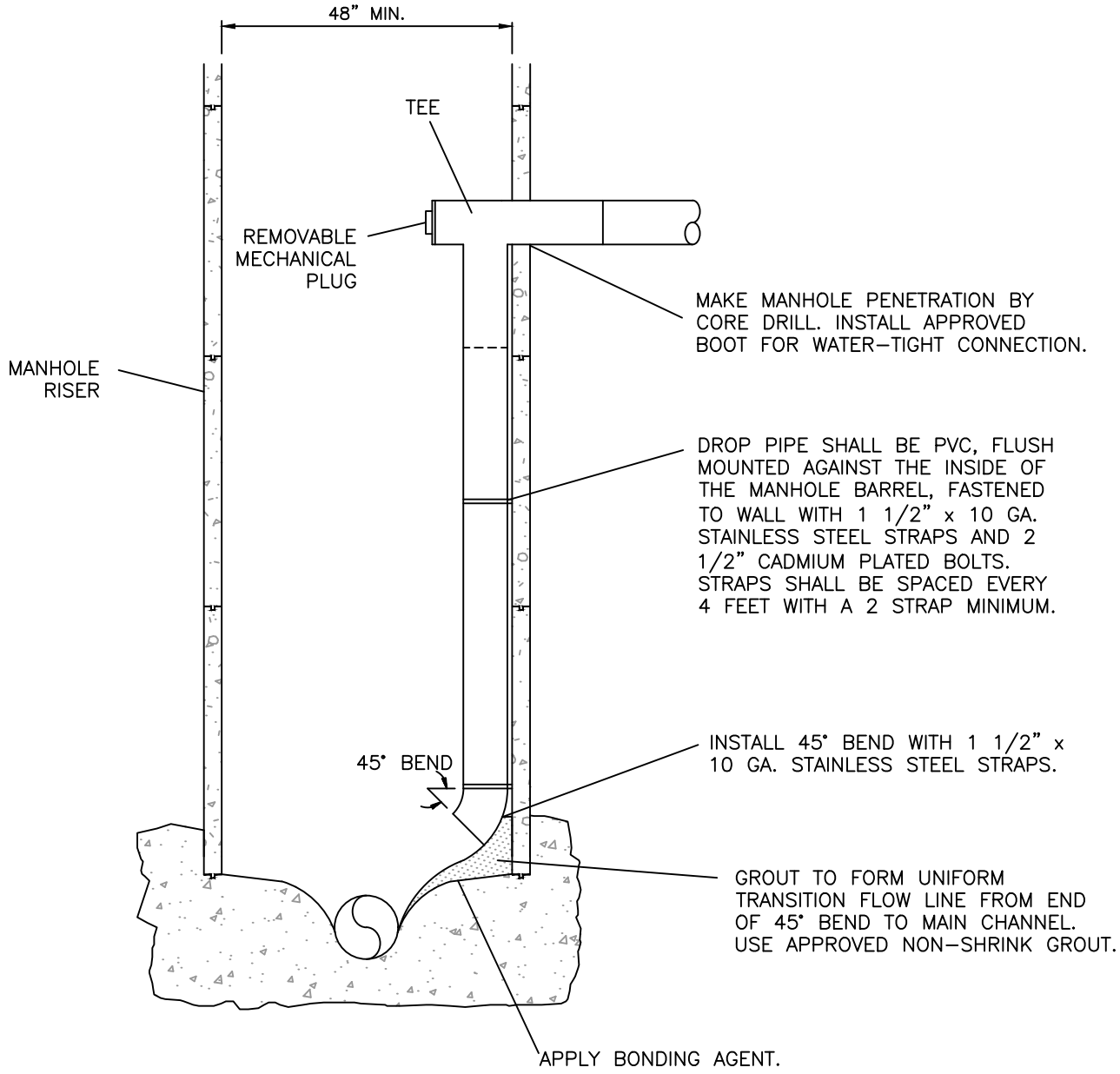
MANHOLE MARKER POST

DRAWING NO: 00400-24



NOTES:

1. ONLY ONE INSIDE DROP CONNECTION ALLOWED PER MANHOLE.
2. INSIDE DROP MANHOLES ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
3. ALL PVC SHALL CONFORM TO ASTM D3034 SDR35.
4. MAX. INCOMING PIPE DIAMETER IS 8". DROP PIPE AND FITTINGS SHALL MATCH INCOMING PIPE SIZE.
5. LOCATION, ELEVATION, DIAMETER, AND SLOPE OF INCOMING PIPE VARIES, SEE PROJECT PLANS.

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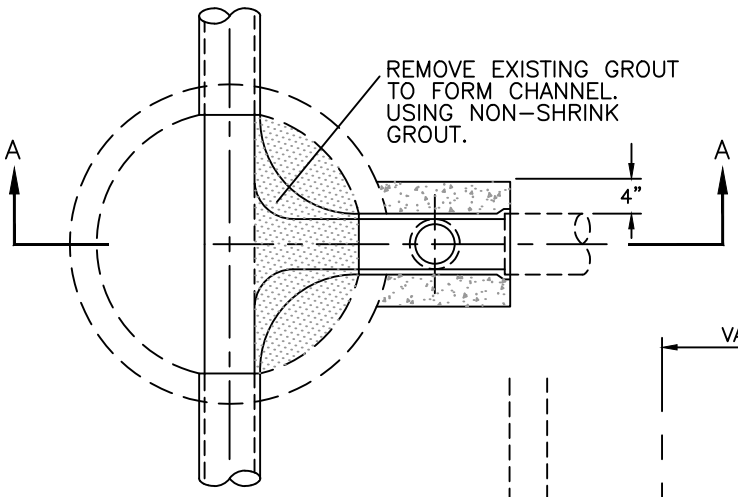
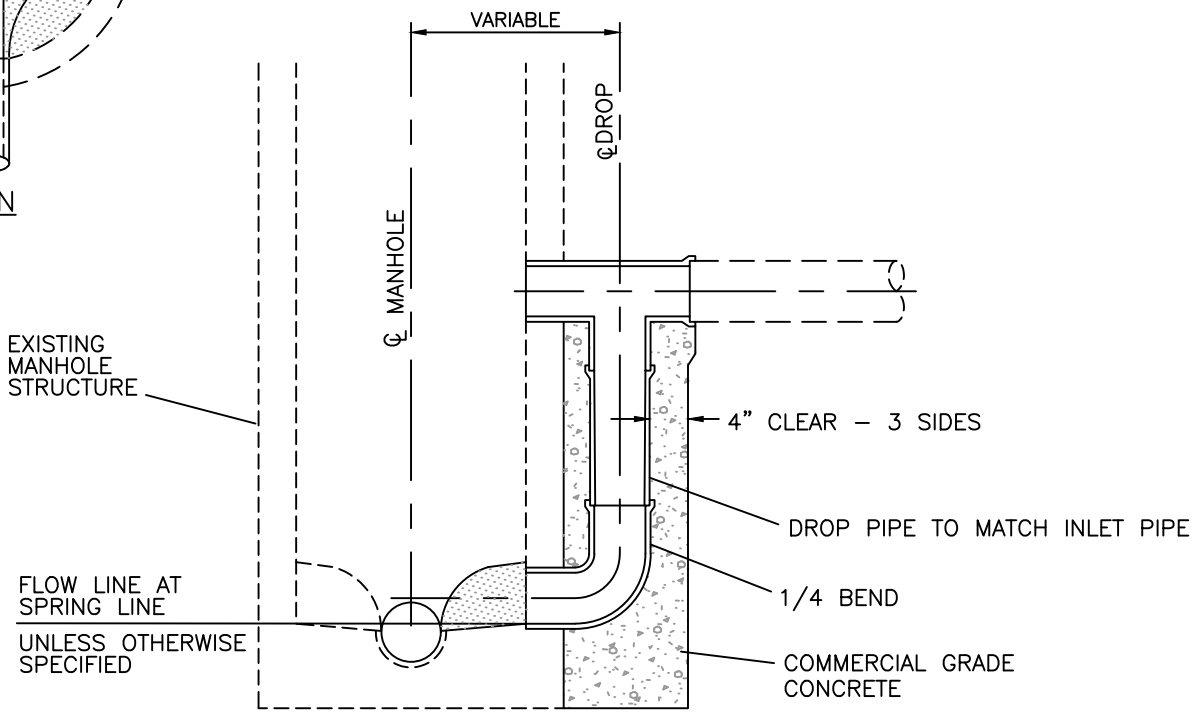
INSIDE DROP CONNECTION FOR MANHOLES

DRAWING NO: 00400-25



PLAN



SECTION A–A

NOTES:

1. OUTSIDE DROP MANHOLES ALLOWED ONLY WITH APPROVAL OF THE ENGINEER.
2. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS. ONLY ONE OUTSIDE DROP PIPE ALLOWED PER MANHOLE. SEE PROJECT PLANS FOR PIPE MATERIAL.
3. INLET PIPE MAY BE RIGID OR FLEXIBLE, WITH A MAXIMUM DIAMETER OF 18". THE CONNECTING PIPE SHALL HAVE A FLEXIBLE, GASKETED AND UNRESTRAINED JOINT WITHIN 18" OF PIPE TEE.
4. DROP PIPE, TEE, AND ELBOW MATERIAL SHALL MATCH THE INLET PIPE.
5. OUTLET PIPE(S) MAY BE RIGID OR FLEXIBLE, SEE PROJECT PLANS. MAXIMUM OUTLET PIPE DIAMETER VARIES WITH PIPE.
6. CONCRETE ENCASEMENT SHALL BE COMMERCIAL GRADE CONCRETE. PROVIDE 4" MINIMUM COVER OVER OUTERMOST PARTS OF PIPE FITTINGS.
7. PIPE ZONE VARIES, SEE SUPP. STD. DWG. 00400–01.
8. INVERT CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII TO THE OUTLET PIPE.

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December, 2021

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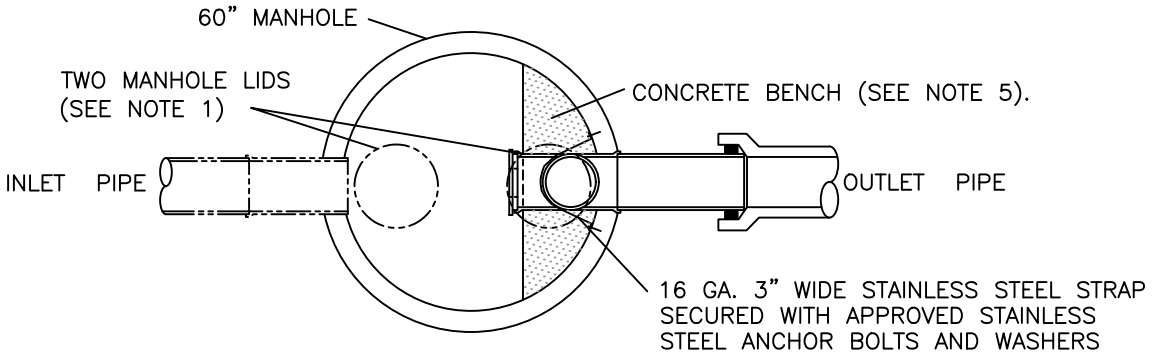
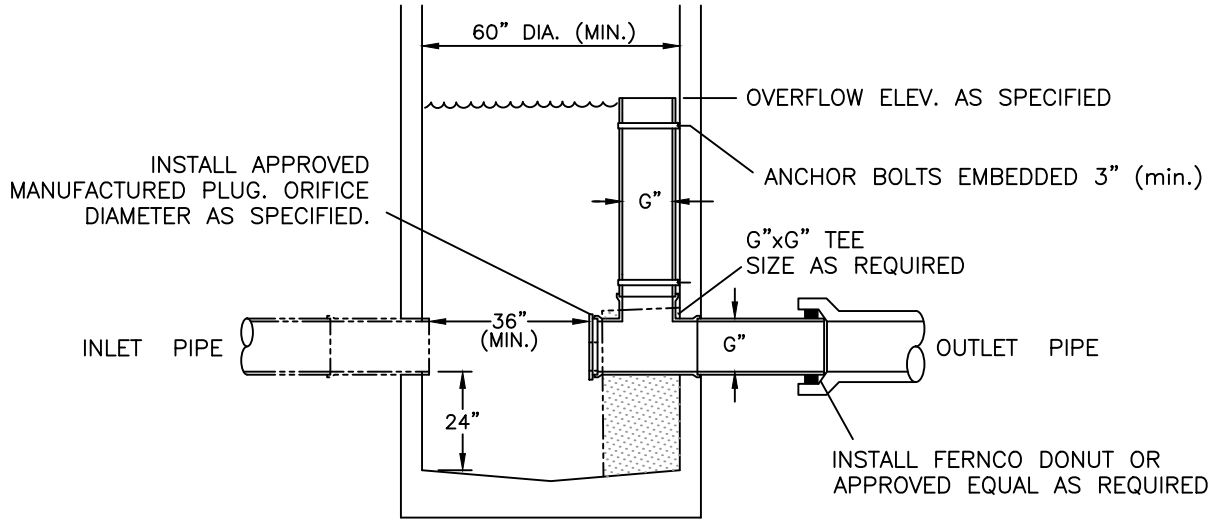
OUTSIDE DROP CONNECTION FOR MANHOLES

DRAWING NO: 00400-26



PLAN



SECTION

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/ORIFICE AND THE OPPOSITE MANHOLE WALL OR INLET PIPE.
3. USE APPROVED FASTENERS FOR STAINLESS STEEL STRAPS. STRAP ANCHORS MUST BE EMBEDDED 3" MINIMUM.
4. PROVIDE A CONCRETE BENCH LEVEL WITH THE TOP OF THE OUTLET PIPE AND FINISHED ACCORDING TO SUPP. STD. DWG. 00400–16.
5. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS. SEE PROJECT PLANS FOR PIPE MATERIAL.
6. 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.
7. THE MANHOLE DESIGN SHALL BE USED ONLY AS DIRECTED BY THE ENGINEER TO MITIGATE UNAVOIDABLE GRADE CONFLICTS.
8. PIPE ZONES VARY, SEE SUPP. STD. DWG. 00400–01.
9. INVERT CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII TO OUTLET PIPE.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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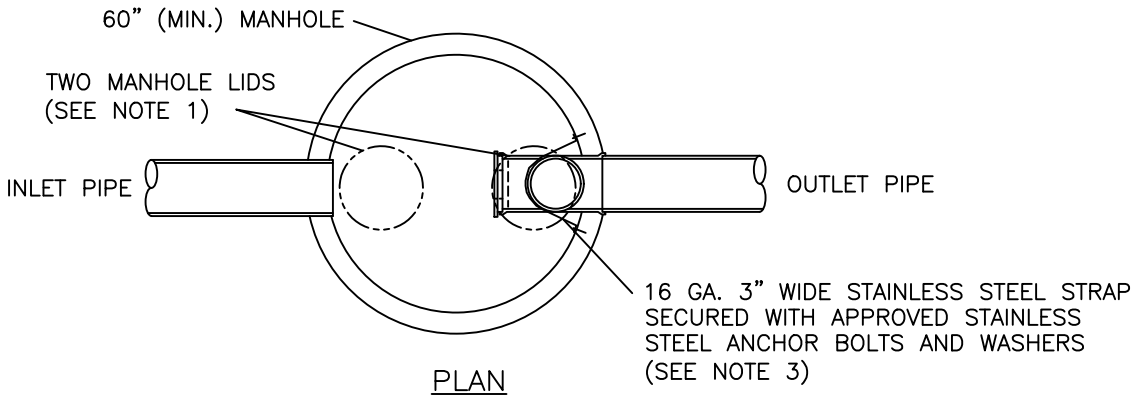
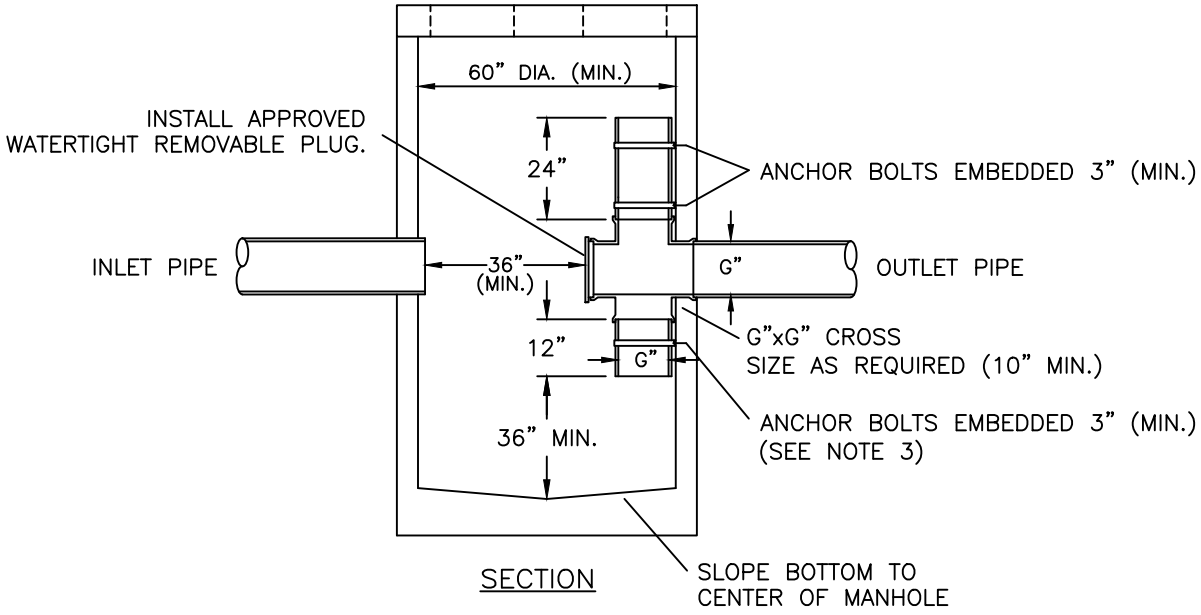
FLOW CONTROL MANHOLE

DRAWING NO: 00400-27



PLAN



SECTION

NOTES:

1. MINIMUM POLLUTION 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/ORIFICE AND THE OPPOSITE MANHOLE WALL OR INLET PIPE.
3. USE APPROVED FASTENERS AND STAINLESS STEEL STRAPS. STRAPS SHALL BE A MINIMUM OF 3" DIAMETER, 16 GA STAINLESS STEEL. FASTENERS SHALL BE 3" X 1/2" EXPANSION ANCHORS, MINIMUM OF 2 ANCHORS PER STRAP.
4. LOCATION, ELEVATION, DIAMETER, SLOPE, AND NUMBER OF PIPE(S) VARIES, SEE PROJECT PLANS. SEE PROJECT PLANS FOR PIPE MATERIAL.
5. MAINTAIN 0.10' DROP BETWEEN LOWEST INLET AND OUTLET INVERTS.
6. PIPE ZONES VARY, SEE SUPP. STD. DWG. 00400–01.

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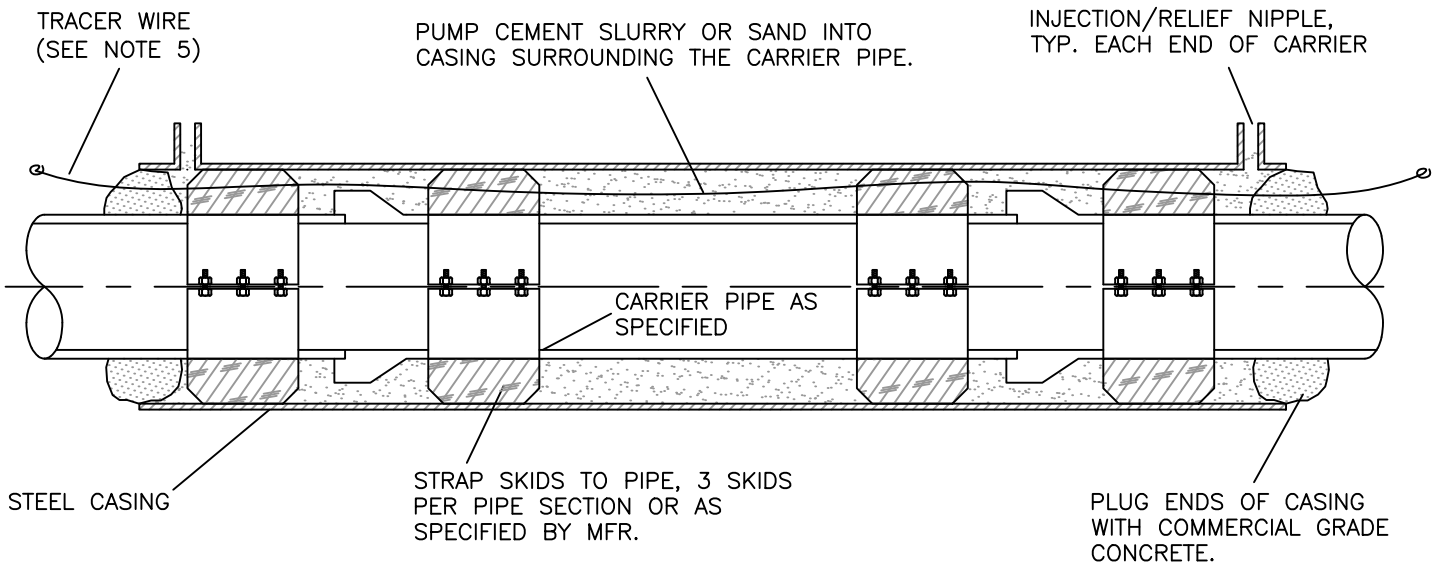
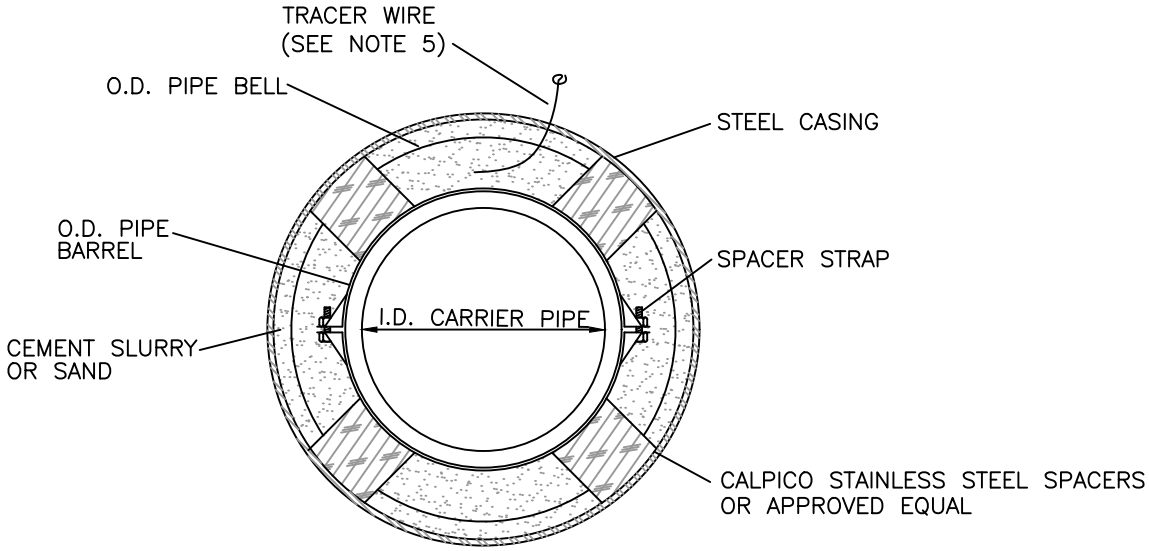
POLLUTION CONTROL MANHOLE

DRAWING NO: 00400-28



PROFILE



SECTION

NOTES:

1. TYPE, SIZE, AND LOCATION(S) OF CASING, CARRIER PIPE, SKIDS, PIPE NIPPLES, ETC. ARE AS REQUIRED BY THE ENGINEER TO MEET SITE CONDITIONS.
2. BORE CASING DESIGNS TO BE APPROVED BY THE ENGINEER.
3. BLOCK CARRIER PIPE DOWN OR FLOOD TO RESIST FLOTATION WHEN FILLING ANNULAR SPACE.
4. PROVIDE PIPE NIPPLE AT TOP OF CASING AT EACH END OF CASING, FOR FILLING AND RELIEF. SIZE TO ACCOMMODATE VOLUME OF GROUT OR SAND AND SITE CONDITIONS (4" DIAMETER MINIMUM).
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 00445.48 FOR MORE INFORMATION.

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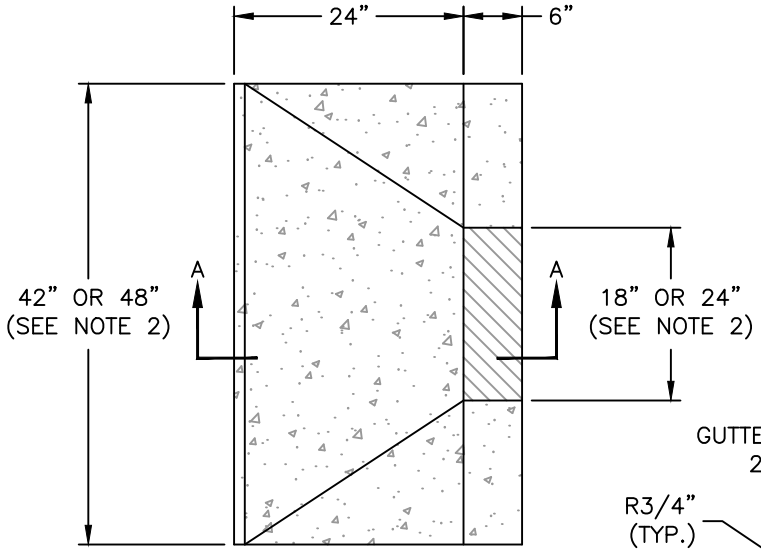
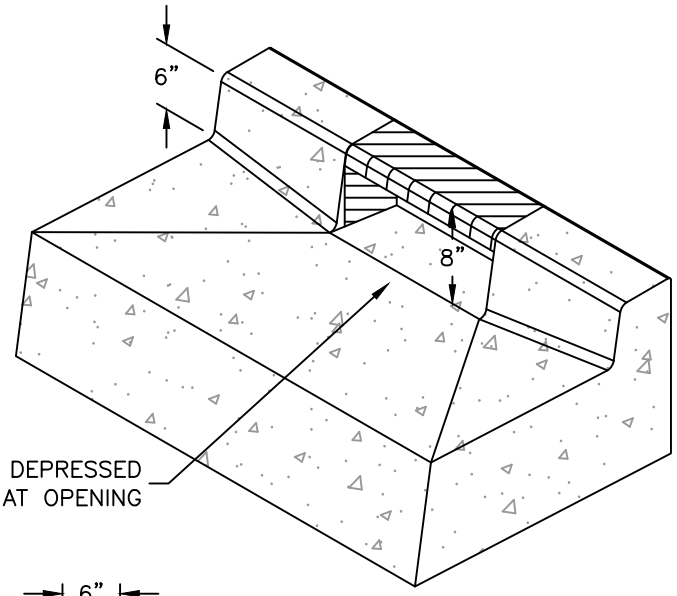
BORE CASING AND SPACERS

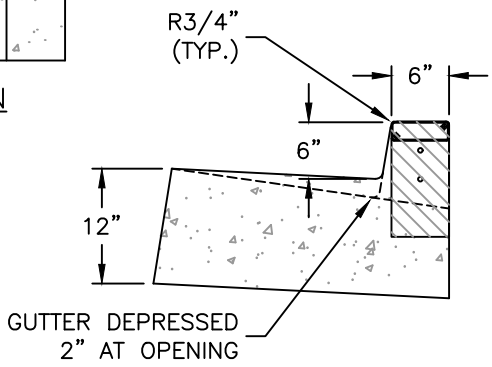
DRAWING NO: 00400-29



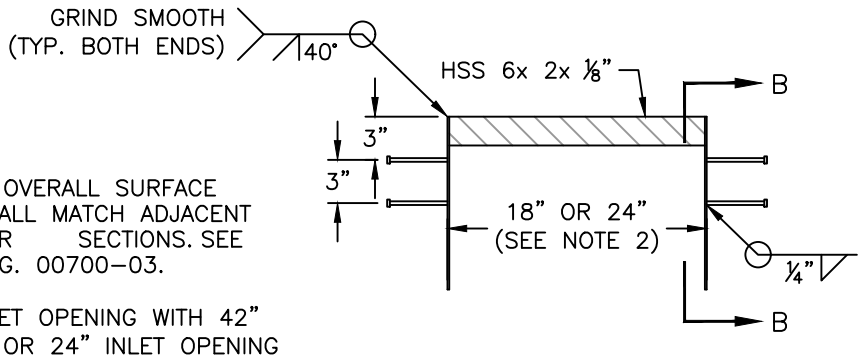
CURB PLAN



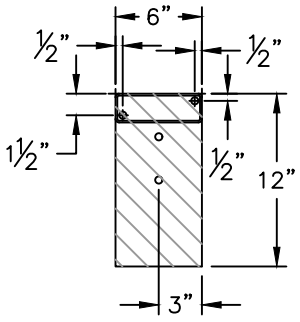
CURB ISOMETRIC



CURB SECTION A–A



INLET ELEVATION



INLET SECTION B–B

NOTES:

1. CURB SECTION OVERALL SURFACE DIMENSIONS SHALL MATCH ADJACENT CURB & GUTTER SECTIONS. SEE SUPP. STD. DWG. 00700–03.
2. EITHER 18" INLET OPENING WITH 42" CURB SECTION OR 24" INLET OPENING WITH 48" CURB SECTION SHALL BE REQUIRED, DEPENDING ON PROJECT REQUIREMENTS.
3. HEADED CONCRETE ANCHORS SHALL BE 1/2" X 4" F500 HEADED CONCRETE ANCHORS, MEETING ASTM A–108 REQUIREMENTS.
4. HSS 6" X 2" X 1/8" TUBE STEEL SHALL MEET ASTM A–500 GRADE B REQUIREMENTS.
5. END PLATES SHALL MEET ASTM A–36 REQUIREMENTS
6. ENTIRE INLET ASSEMBLY SHALL BE HOT–DIP GALVANIZED TO MEET ASTM A–123 REQUIREMENTS.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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December, 2021

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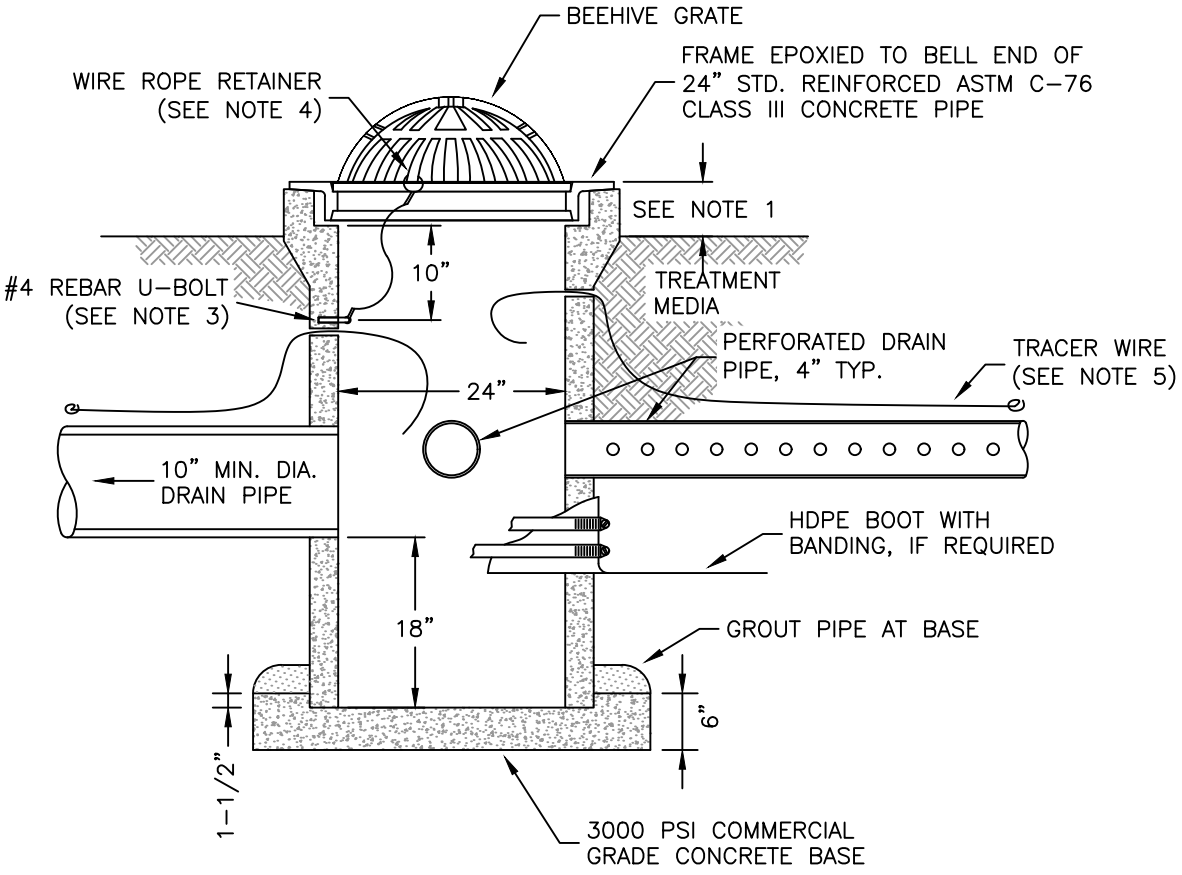
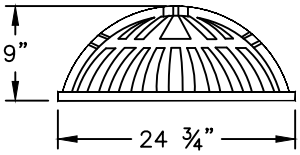
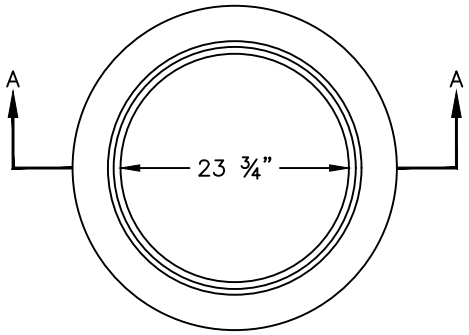
STORM WATER SWALE INLET

DRAWING NO: 00400-30

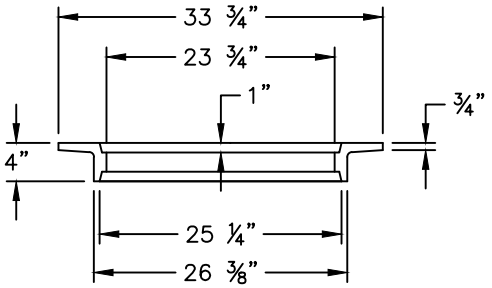




BEEHIVE GRATE



24"X4" REVERSIBLE MANHOLE FRAME



SECTION A-A

NOTES:

1. RIM ELEVATION MUST PROVIDE FOR DESIGN PONDING DEPTH BEFORE ALLOWING OVERFLOW AND WILL BE SPECIFIED IN THE PLANS.
2. CASTING SHALL BE PACIFIC MARINE MODEL R-2510-A BEEHIVE GRATE WITH MODEL R-1761 HEAVY DUTY FRAME, OR APPROVED EQUAL.
3. DRILL 2" DEEP HOLES INTO PIPE WALL AND EPOXY #4 REBAR U-BOLT (2"X4") IN HOLES.
4. SECURE GRATE IN PLACE WITH 54" OF 3/16" DIA. STAINLESS STEEL WIRE ROPE. LOOP ENDS OF WIRE ROPE AROUND U-BOLT AND GRATE. CRIMP EACH END OF WIRE ROPE WITH 3" OVERLAP.
5. ALL PIPES SHALL HAVE AN ODOT APPROVED TRACER WIRE. SEE SECTION 00445.48 FOR MORE INFORMATION.

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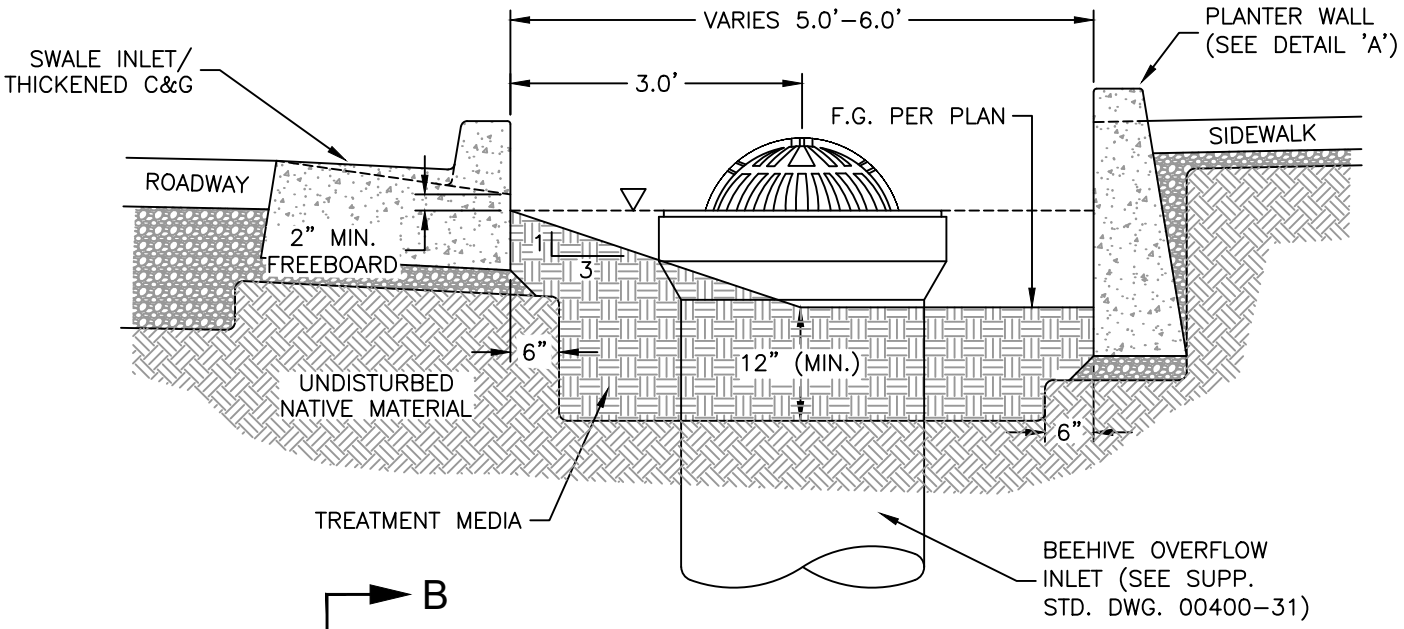
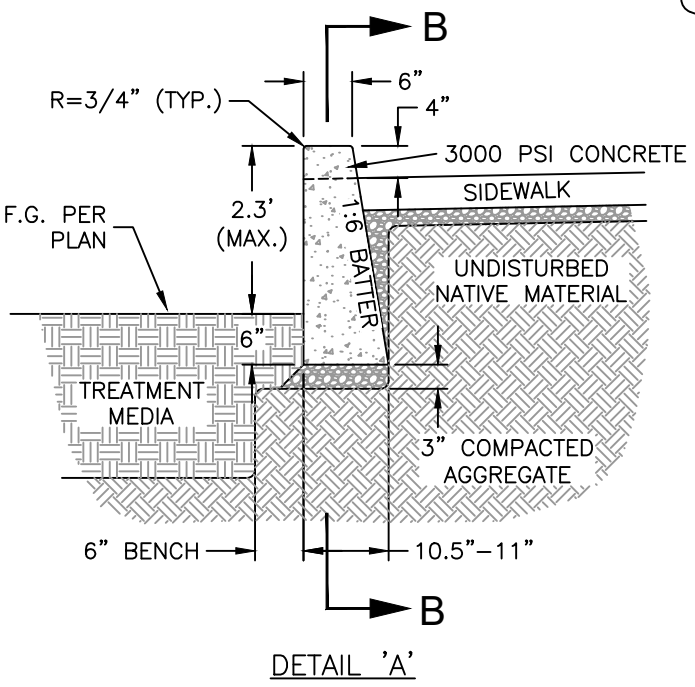
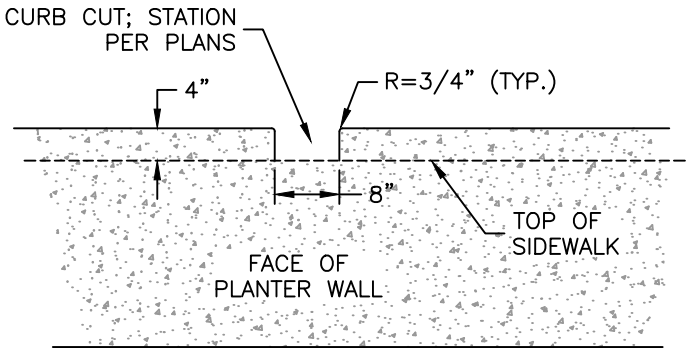
BEEHIVE OVERFLOW INLET

DRAWING NO: 00400-31





DETAIL 'A'



SECTION B–B – SIDEWALK CURB NOTCH

NOTES:

1. OVERFLOW AND SWALE INLETS ARE REQUIRED AT INTERVALS SPECIFIED IN THE PROJECT PLANS. SEE SUPP. STD. DWG. 00400–30 AND 31.
2. A MINIMUM OF 2" OF FREEBOARD MUST BE MAINTAINED BETWEEN THE LOW POINT OF THE SWALE INLET AND THE OVERFLOW ELEVATION OF BEEHIVE INLETS.
3. TREATMENT MEDIA SHALL MEET APPLICABLE SPECIFICATION REQUIREMENTS; SEE SUPP. STD. SPECIFICATION 00431.
4. UNLESS OTHERWISE INDICATED IN THE PROJECT PLANS, TREATMENT MEDIA SHALL BE PLACED AT A FLAT GRADE (LONGITUDINALLY) WITH CHECK DAMS AS REQUIRED (SEE SUPP. STD. DWG. 00400–34). TREATMENT MEDIA SHALL BE SLOPED TO CENTER OF THE SWALE AS SHOWN ABOVE.
5. THE STORM WATER QUALITY FEATURE SHOWN HERE IS ONE EXAMPLE OF A STORM WATER QUALITY FEATURE. OTHER FEATURES SUCH AS SPECIALIZED CATCH BASINS OR MANHOLES MAY BE ACCEPTED ON A CASE BY CASE BASIS.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

OREGON Lebanon

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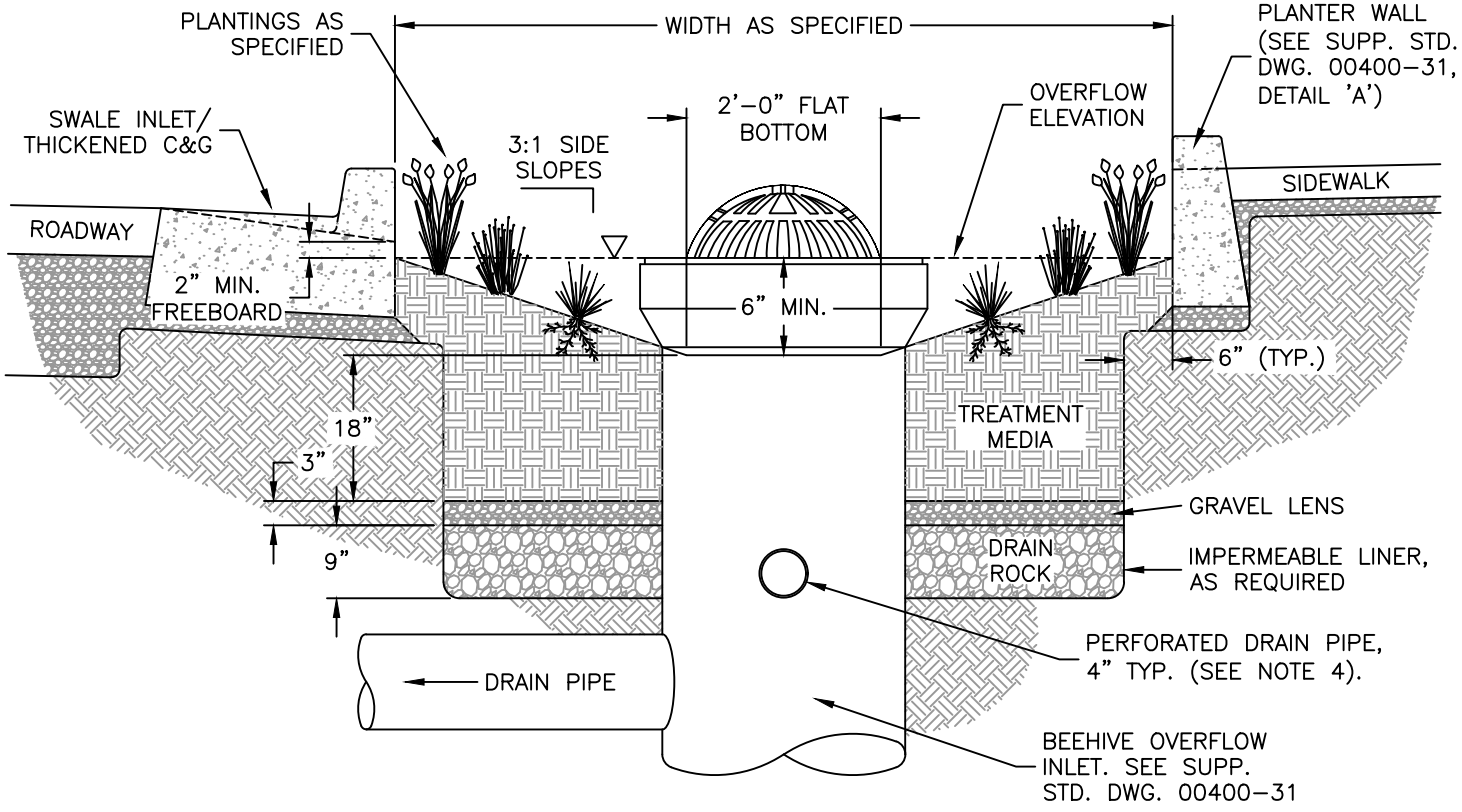
CITY ENGINEER

December, 2021

DATE

STORM WATER QUALITY PLANTER

DRAWING NO: 00400-32



NOTES:

1. OVERFLOW AND SWALE INLETS ARE REQUIRED AT INTERVALS SPECIFIED IN THE PROJECT PLANS. SEE SUPP. STD. DWG. 00400-30 AND 31.
2. A MINIMUM OF 2" OF FREEBOARD MUST BE MAINTAINED BETWEEN THE LOW POINT OF THE SWALE INLET AND THE OVERFLOW ELEVATION OF THE BEEHIVE INLET.
3. ALL MATERIALS USED (PLANTINGS, TREATMENT MEDIA, GRAVEL LENS, DRAIN ROCK AND IMPERMEABLE LINER) SHALL MEET APPLICABLE SPECIFICATION REQUIREMENTS. SEE SUPP. STD. SPECIFICATION 00431.
4. IN UNLINED SWALES, THE BOTTOM OF THE PERFORATED DRAIN PIPE SHALL BE SET AT 2 1/2" ABOVE BOTTOM OF DRAIN ROCK LAYER. FOR LINED SWALES, THE PERFORATED PIPE SHALL BE SET AT THE BASE OF THE DRAIN ROCK LAYER.
5. UNLESS OTHERWISE INDICATED IN THE PROJECT PLANS, TREATMENT MEDIA, DRAIN ROCK, AND PERFORATED DRAIN PIPE SHALL BE PLACED AT A FLAT GRADE (LONGITUDINALLY) WITH CHECK DAMS AS REQUIRED (SEE SUPP. STD. DWG. 00400-34). TREATMENT MEDIA SHALL BE SLOPED TO CENTER OF THE SWALE AS SHOWN ABOVE.
6. THE STORM WATER QUALITY FEATURE SHOWN HERE IS ONE EXAMPLE OF A STORM WATER QUALITY FEATURE. OTHER FEATURES SUCH AS SPECIALIZED CATCH BASINS OR MANHOLES MAY BE ACCEPTED ON A CASE BY CASE BASIS.

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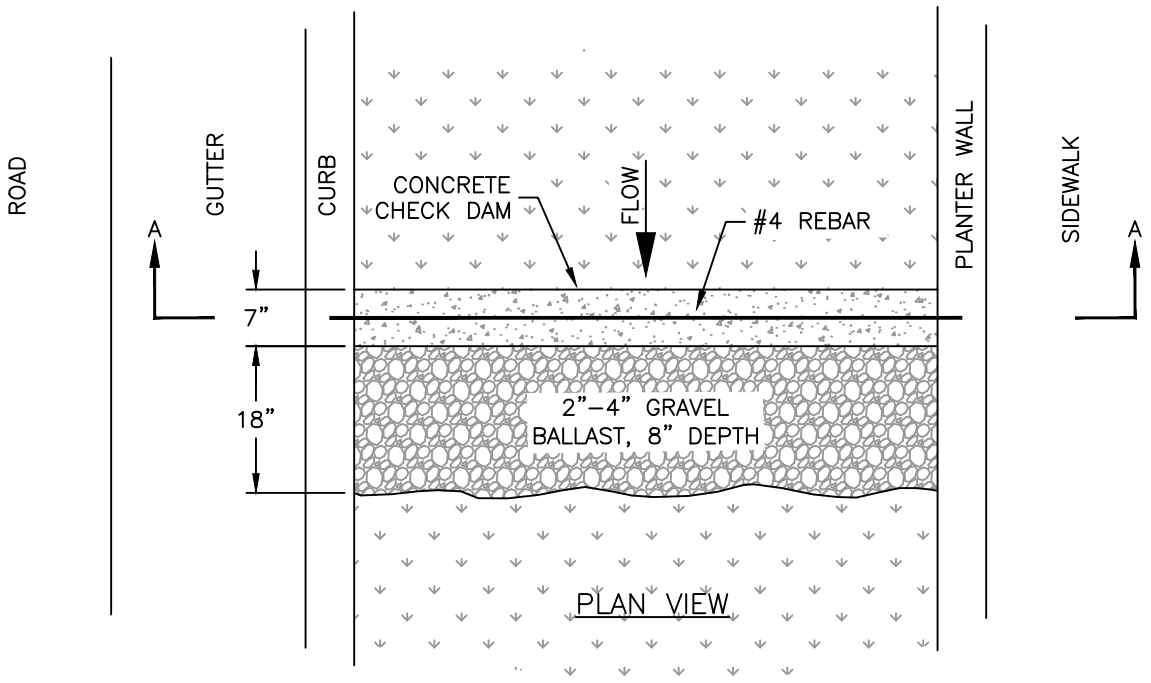
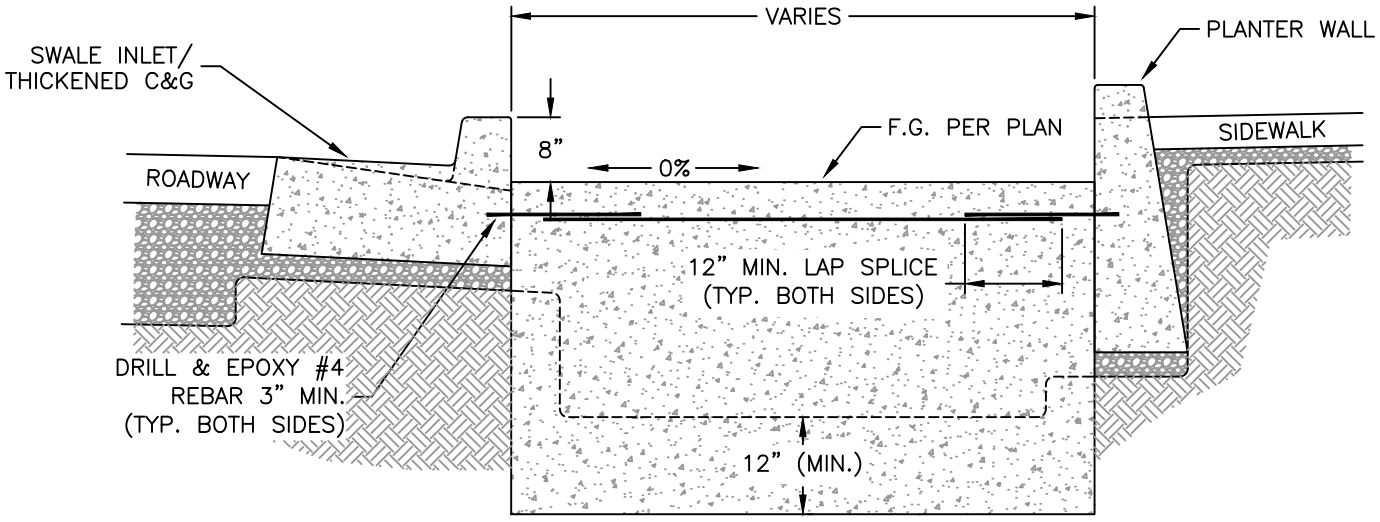
STORM WATER QUALITY SWALE

DRAWING NO: 00400-33





SECTION A–A

NOTES:

1. CONCRETE SHALL BE 3000 PSI (SEE SECTION 00440).
2. REBAR SHALL BE GRADE 60 (SEE SECTION 02510).
3. GRAVEL BALLAST SHALL BE CRUSHED, OPEN GRADED 2"–4" (SEE SECTION 02650).
4. STATIONING AND FINISH GRADE ELEVATION FOR CHECK DAMS WILL BE PER PLANS.

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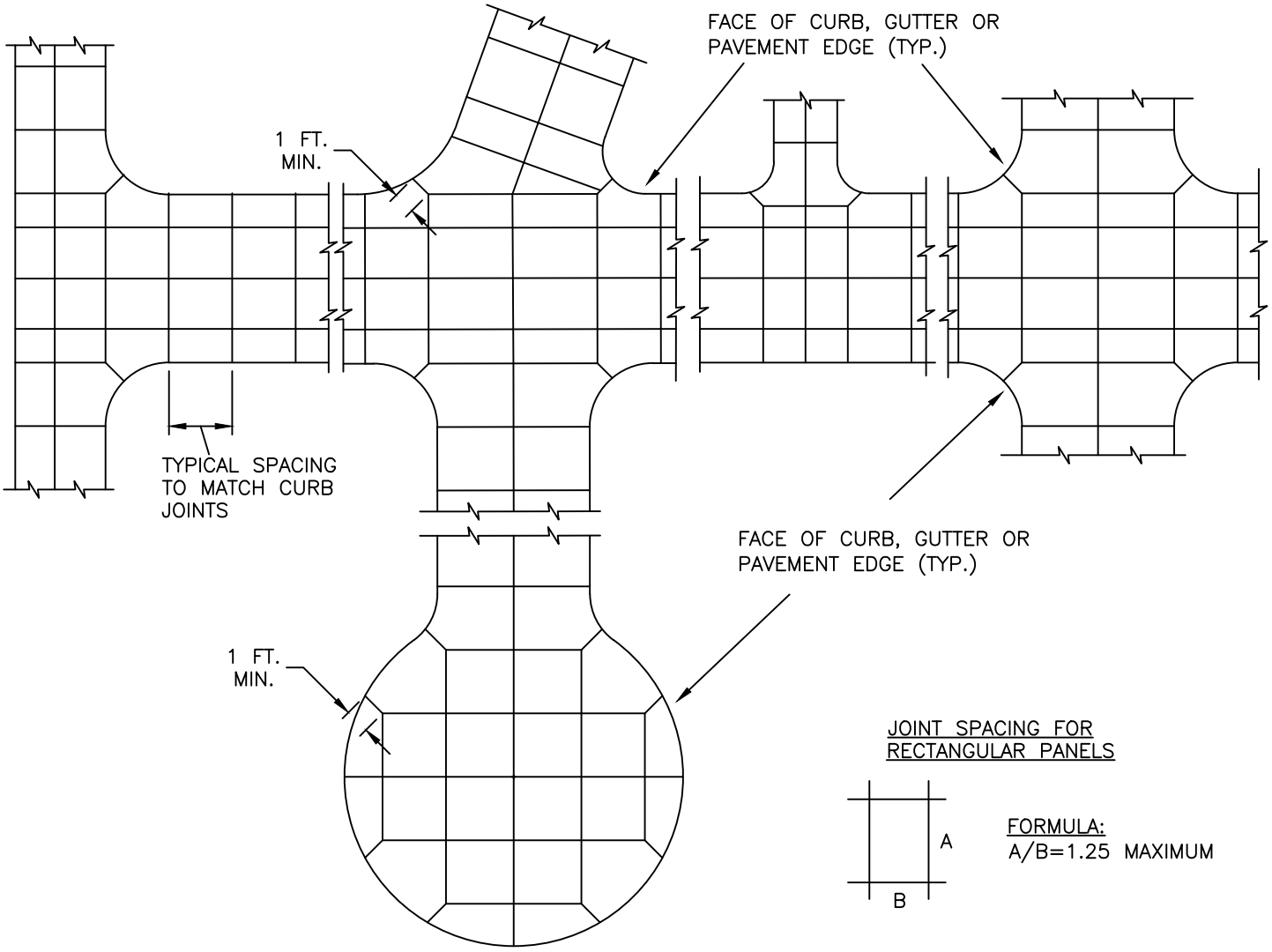
STORM WATER QUALITY FEATURE CHECK DAM

DRAWING NO: 00400-34



JOINT SPACING FOR RECTANGULAR PANELS

FORMULA:
A/B=1.25 MAXIMUM

NOTES:

1. ALL TRANSVERSE CONTRACTION JOINTS SHALL MATCH AND ALIGN WITH JOINTS IN CURB AND GUTTER UNLESS PAVING AND CURBS ARE SEPARATED BY AN ISOLATION JOINT. JOINTS IN CUL–DE–SAC CURBS SHOULD BE PLANNED TO MATCH JOINT PATTERN IN PAVING.
2. MAXIMUM JOINT SPACING, IN FEET, SHALL BE 2 ½ TIMES THE PAVEMENT THICKNESS IN INCHES. (EXAMPLE: 8" THICKNESS x 2.5 = 20' SPACING).
3. SPECIAL TREATMENT WILL BE REQUIRED FOR JOINTING ADJACENT TO MANHOLES, VAULTS OR OTHER STRUCTURES INCORPORATED INTO THE PAVING SURFACE.
4. USE APPROVED FLEXIBLE CRACK SEALANT TO FILL ALL CONTRACTION JOINTS FLUSH WITH PAVEMENT SURFACE.
5. SEE SUPP. STD. DWG. 00700–02 FOR JOINT DETAILS.

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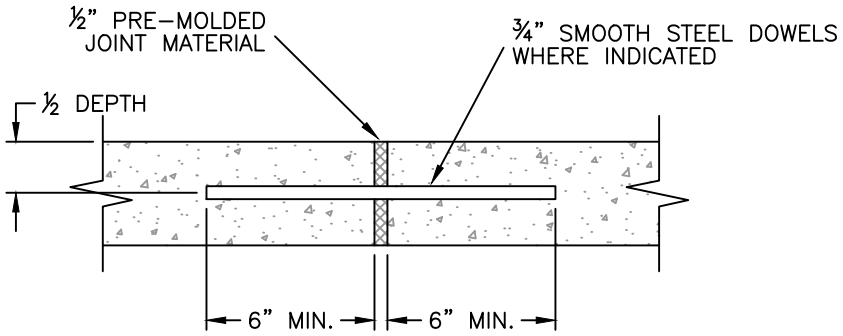
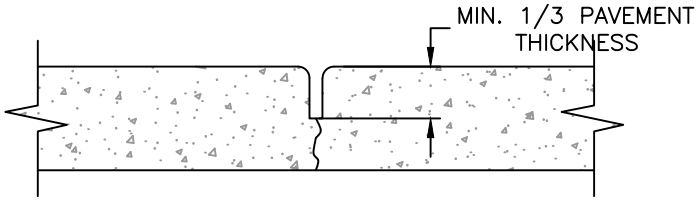
CONTRACTION JOINT PATTERN FOR P.C.C. PAVING

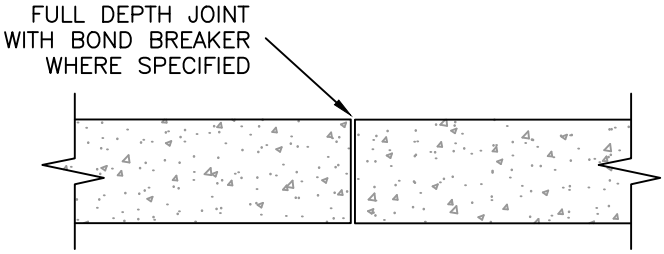
DRAWING NO: 00700-01



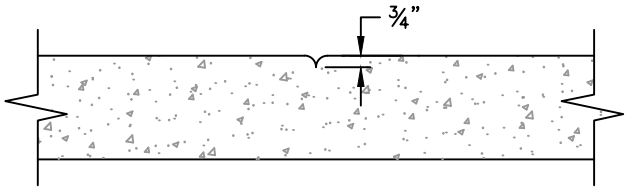
TYPICAL EXPANSION JOINT
(WITH DOWELS WHERE SPECIFIED)



TYPICAL CONTRACTION JOINT



TYPICAL ISOLATION (COLD) JOINT



TYPICAL TOOLED (DUMMY) JOINT

NOTE:

1. ALL JOINTS SHALL BE TOOLED WITH 3/4" RADIUS UNLESS SAWCUT.

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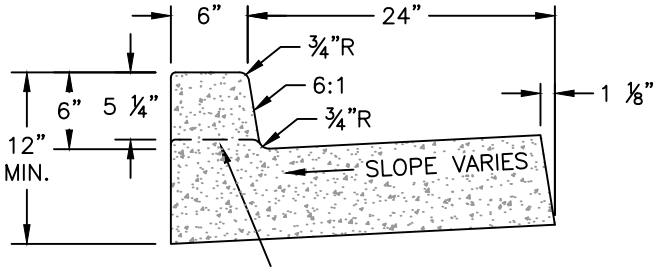
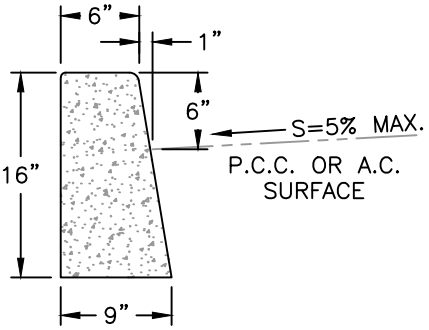
P.C.C. PAVING JOINTS

DRAWING NO: 00700-02

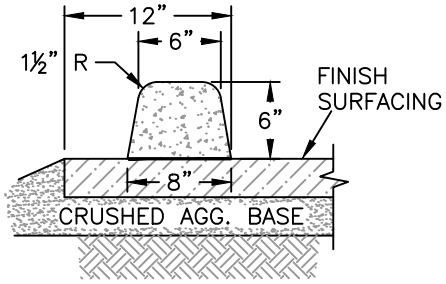


CURB FOR DRIVEWAY ACCESS ¾" TYP.
CURB FOR SIDEWALK ACCESS RAMP 0" TYP.
SLOPE=5% NORMAL OR 4% MAX. AT CURB RAMPS
2 FOOT WIDTH MINIMUM A.C.P. PATCH

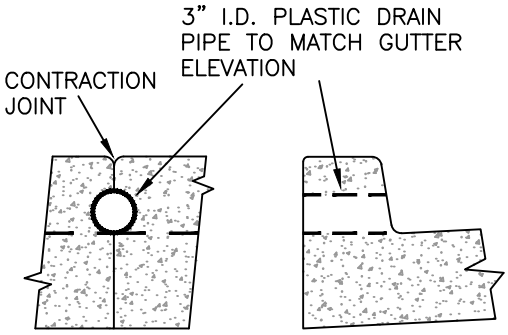
STANDARD CURB & GUTTER



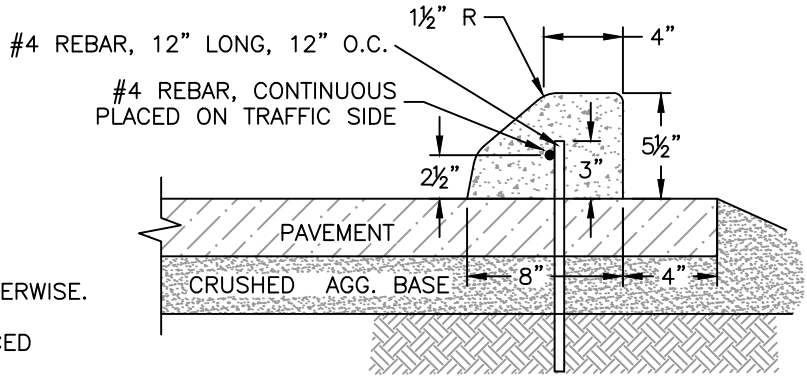
TYPICAL STRAIGHT CURB



EXTRUDED P.C.C. BONDED CURB



STANDARD WEEPHOLE



DOWEL REINFORCED CURB

NOTES:

1. ALL RADII SHALL BE 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.
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.

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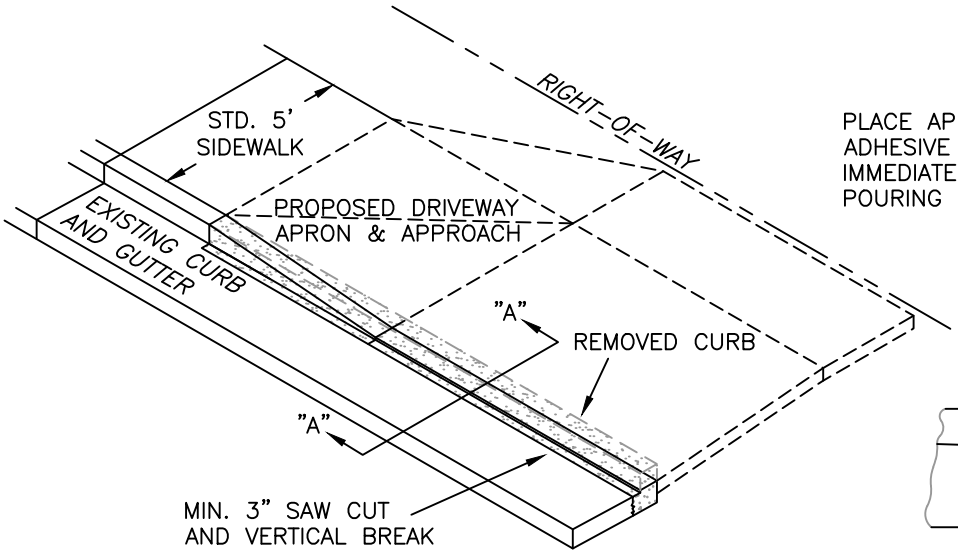
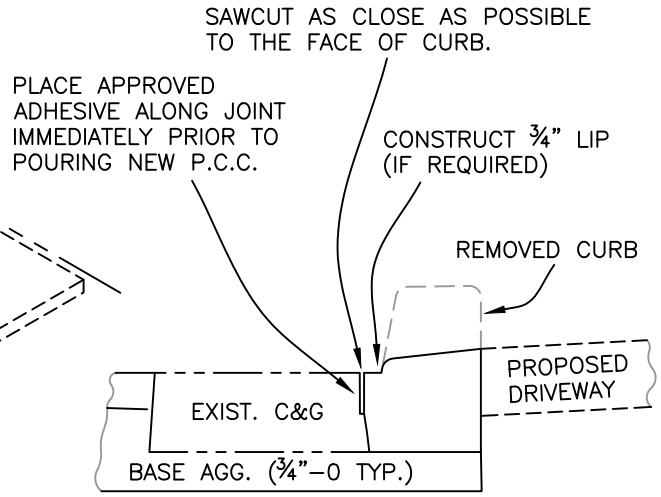
TYPICAL CURB & GUTTER

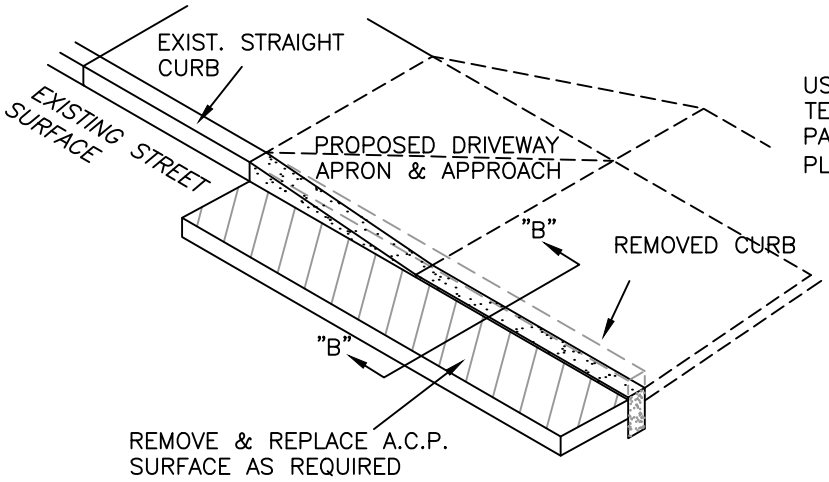
DRAWING NO: 00700-03



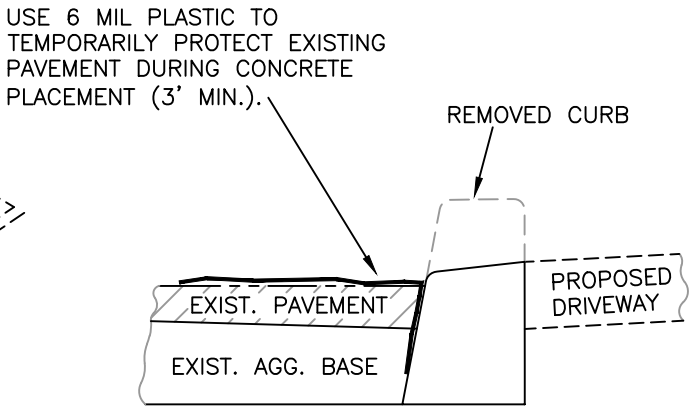
STANDARD CURB & GUTTER KNOCK–OUT



SECTION "A–A"



ALTERNATE STRAIGHT CURB KNOCK–OUT
(WITH APPROVAL OF THE ENGINEER)



SECTION "B–B"

NOTES:

1. SAWCUT THROUGH GUTTER BAR SHALL BE MADE AS CLOSE AS POSSIBLE TO THE EXISTING FACE OF CURB.
2. WHEN STRAIGHT CURB IS TO BE REPLACED, REMOVE AND REPLACE PAVEMENT WITH APPROVAL OF THE ENGINEER.
3. WHEN EXISTING GUTTER SLOPE EXCEEDS 5.0% ON SIDEWALK ACCESS RAMPS, REMOVE AND REPLACE ENTIRE CURB AND GUTTER SECTION. COMPLETE CURB AND GUTTER REMOVAL FOR GUTTER SLOPES LESS THAN 5.0% REQUIRES APPROVAL OF THE ENGINEER.
4. MINIMUM LENGTH OF CURB SECTION TO BE REPLACED IS 5.0 FEET OR AS DIRECTED BY THE ENGINEER.
4. SEE SUPP. STD. DWGS. 00700–07, 00700–08 AND 00700–10 FOR SIDEWALK AND DRIVEWAY ACCESS DETAILS.

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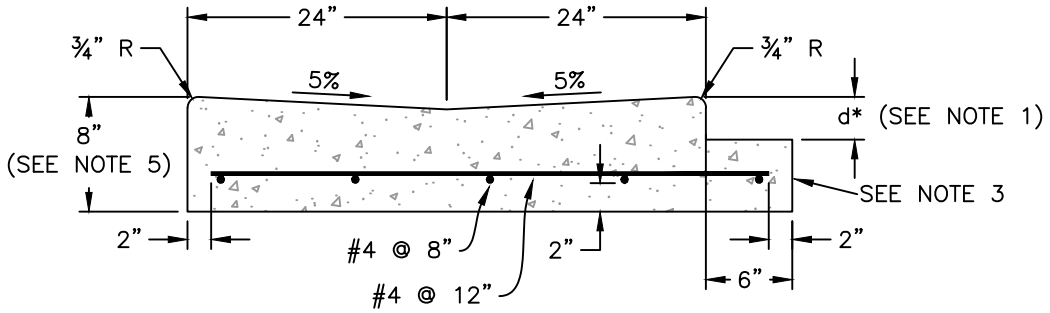
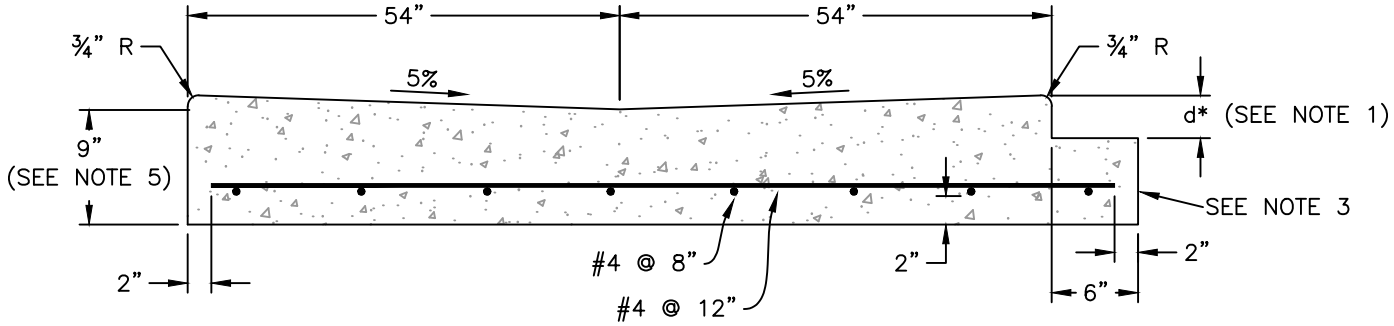
CURB KNOCK-OUTS

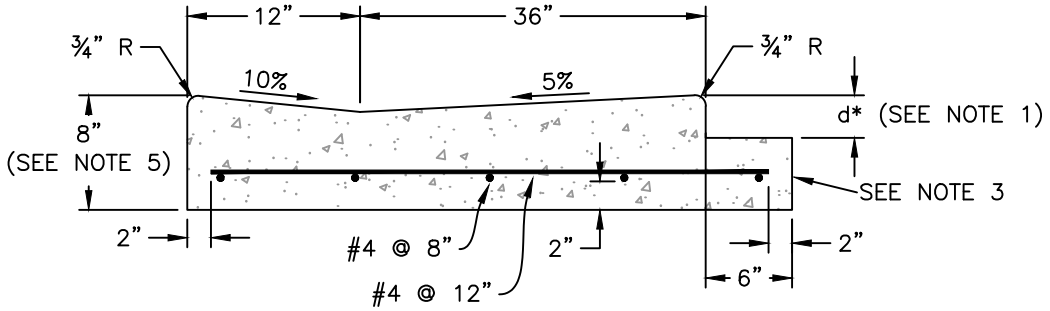
DRAWING NO: 00700-04



SYMMETRICAL "V" TYPE GUTTER



WIDE VALLEY GUTTER



NON–SYMMETRICAL "V" GUTTER

NOTES:

1. d* = THICKNESS OF A.C.P. WEARING COURSE.
2. STANDARD P.C.C. SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. (MIN.).
3. CONSTRUCT 6" BENCHES MONOLITHICALLY WITH THE VALLEY GUTTER TO MATCH DEPTH OF A.C.P. WEARING COURSE ("d").
4. WHERE BENCHING IS NOT REQUIRED, CONSTRUCT A 1" BATTER ON VERTICAL FACES ABUTTING A.C. PAVEMENT.
5. PLACE APPROVED PRE–MOLDED FILLER AGAINST VERTICAL FACES ABUTTING P.C.C. PAVEMENT.
6. ALL VALLEY GUTTER INSTALLATIONS REQUIRE A MINIMUM OF 2.0" COMPACTED AGGREGATE BASE.

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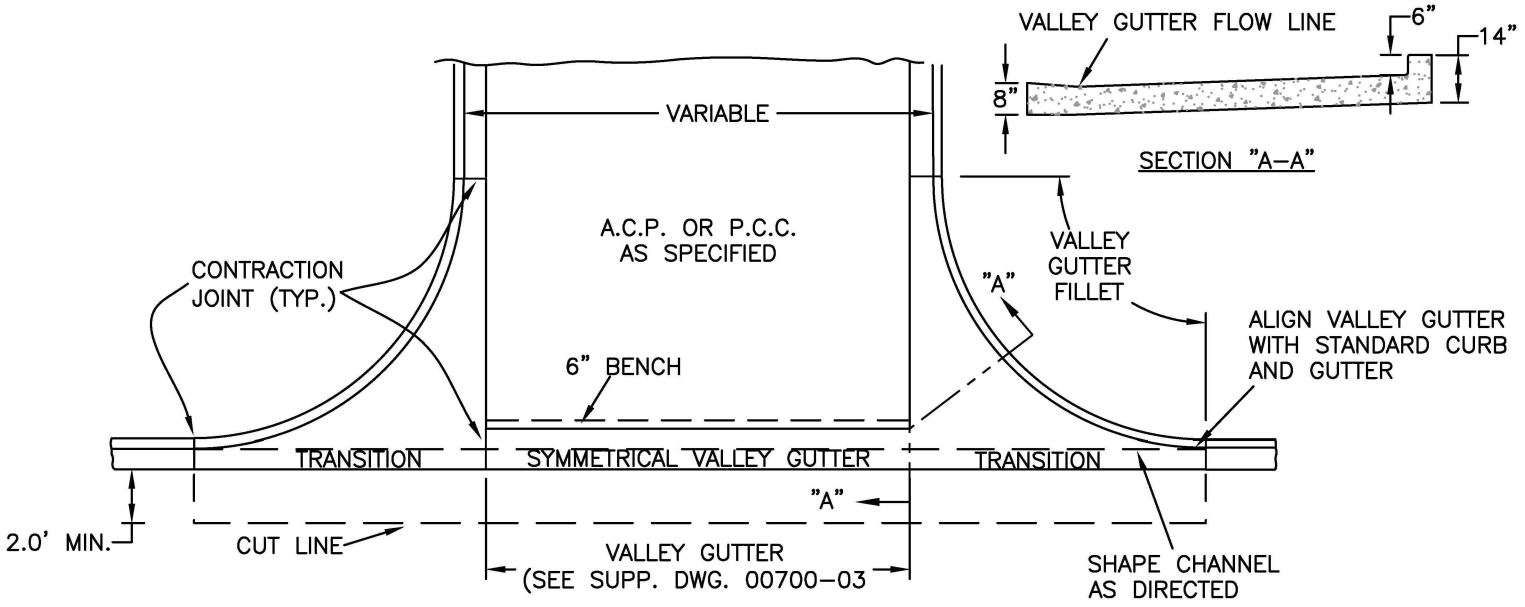
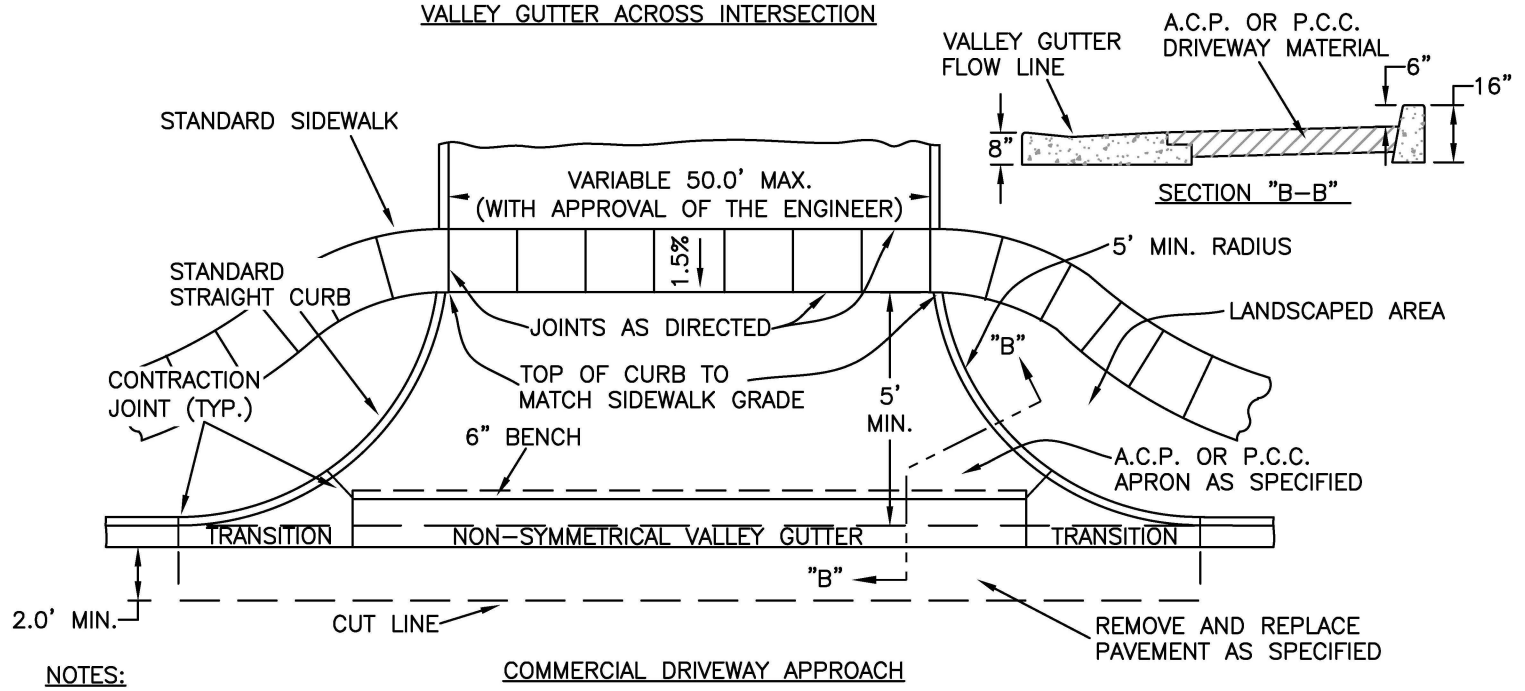
P.C.C. VALLEY GUTTER

DRAWING NO: 00700-05



VALLEY GUTTER ACROSS INTERSECTION



COMMERCIAL DRIVEWAY APPROACH

NOTES:

1. COMMERCIAL DRIVEWAY ORDER OF CONSTRUCTION:
   A. CONSTRUCT P.C.C. VALLEY GUTTER AND TRANSITION SECTIONS. TRANSITION SECTIONS SHALL MATCH MAXIMUM THICKNESS OF VALLEY GUTTER SECTION (SEE SUPP. STD. DWG. 00705).
   B. CONSTRUCT 8" THICK P.C.C. SIDEWALK ACROSS DRIVEWAY AREA.
   C. CONSTRUCT DRIVEWAY APRON. P.C.C. APRONS SHALL BE JOINTED AS DIRECTED (SUPP. STD. DWG. 00700–02).
2. STANDARD P.C.C. SHALL HAVE 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. (MIN.).
3. CONSTRUCT CURBING MONOLITHICALLY WITH FILLET AND TRANSITION SECTIONS.
4. SEE STANDARD SIDEWALK ACCESS RAMP DETAILS (SUPP. STD. DWG. 00700–08) FOR ACCESS RAMP REQUIREMENTS AT INTERSECTIONS.

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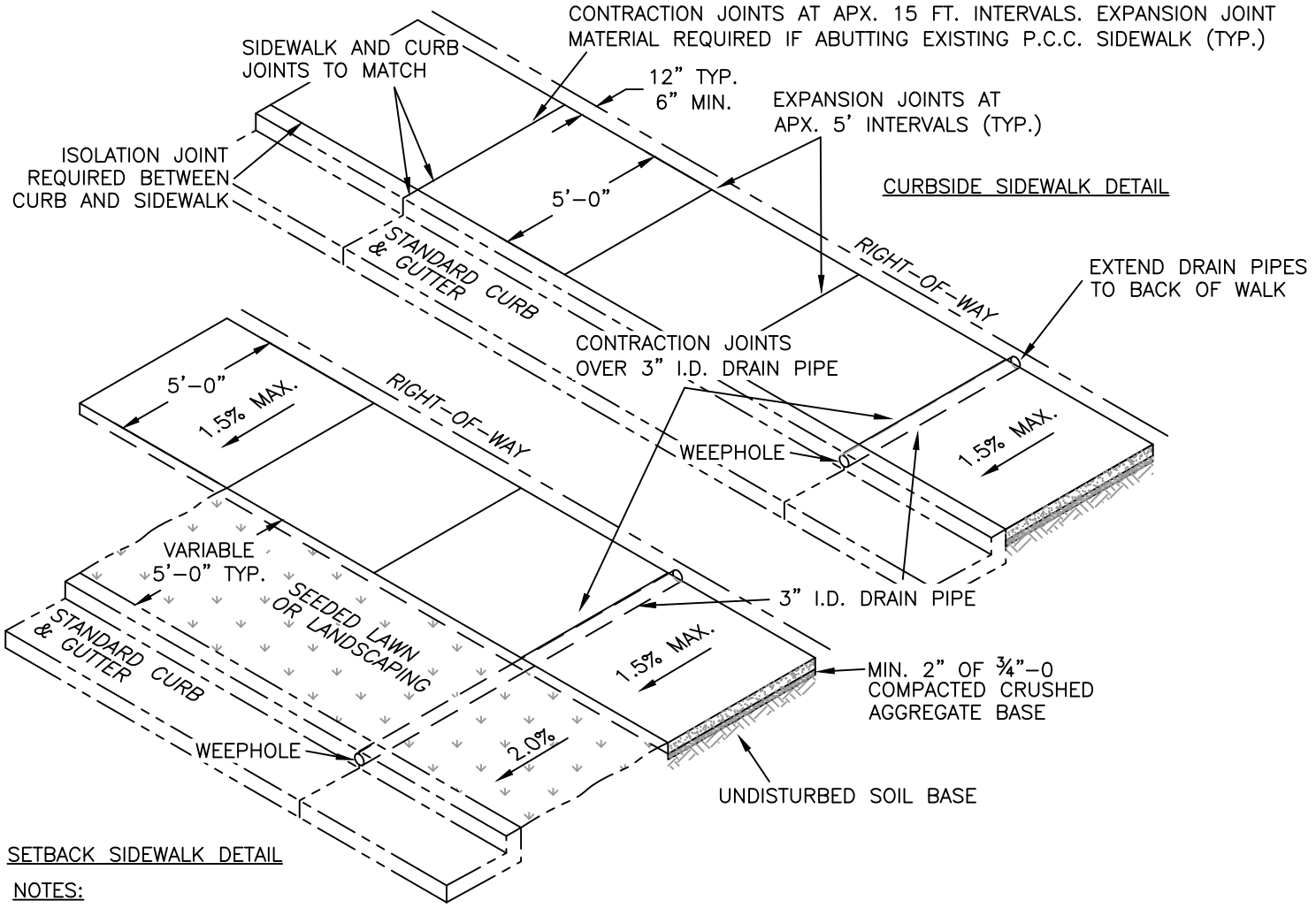
VALLEY GUTTERS ACROSS DRIVEWAYS & INTERSECTIONS

DRAWING NO: 00700-06



NOTES:

1. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 1.5%. WHEN ADJOINING LOT IS BELOW THE TOP OF CURB AND SLOPES AWAY FROM THE CURB, A NEGATIVE (AWAY FROM STREET) 1.5% SLOPE MAY BE REQUIRED.
2. SIDEWALK NOMINAL DEPTH IS 4.0"; P.C.C. SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I. (MIN.).
3. UNDER NO CIRCUMSTANCES SHALL SIDEWALK WIDTH BE LESS THAN 5.0' FOR MORE THAN 200 LINEAL FEET.
4. FULL DEPTH EXPANSION JOINTS WITH PRE-MOLDED FILLER SHALL BE INSTALLED BETWEEN DRIVEWAYS AND SIDEWALKS, AROUND ALL SIDEWALK OBSTRUCTIONS, AT POINTS OF TANGENCY, AT ENDS OF EACH DRIVEWAY, AND AT 200' MAX. SPACING (SEE SUPP. STD. DWGS. 00700-09 & 00700-10).
5. ISOLATION JOINTS (FULL DEPTH) SHALL BE INSTALLED BETWEEN BACK OF CURB AND FRONT OF SIDEWALK.
6. CONTRACTION JOINTS (1/3 DEPTH OF CONCRETE) SHALL BE INSTALLED AT 15' INTERVALS.
7. TOOLED JOINTS (3/4" DEPTH) SHALL BE INSTALLED AT APX. 5' INTERVALS IN UNCURED CONCRETE WITH A JOINTER TOOL. TOOLED JOINTS SHALL MATCH CURB CONTRACTION JOINTS WHERE POSSIBLE. SIDEWALKS 8' AND WIDER SHALL HAVE A LONGITUDINAL TOOLED JOINT AT MIDPOINT. (SEE SUPP. STD. DWG. 00700-02 FOR JOINT DETAILS).
8. WEEP HOLES AND PIPING SHALL EXTEND TO BACK OF SIDEWALK AND REQUIRE A COUPLER AT R.O.W. TERMINATION.
9. SIDEWALK SECTIONS MUST BE REPLACED AS FULL PANELS. PARTIAL REMOVAL/REPLACEMENT OF PANELS IS PROHIBITED.

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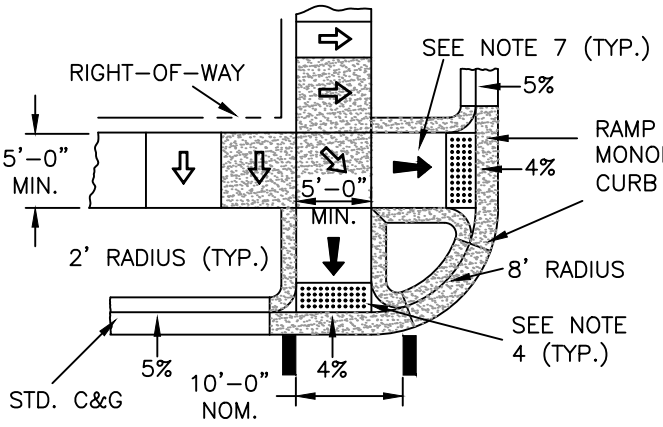
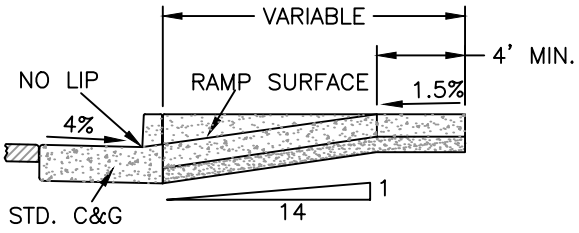
STANDARD P.C.C. SIDEWALK AND JOINTING

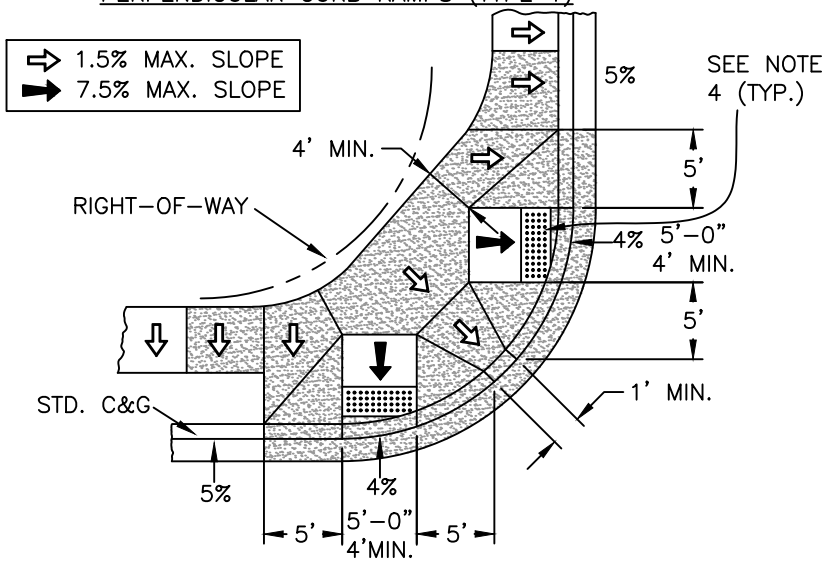
DRAWING NO: 00700-07



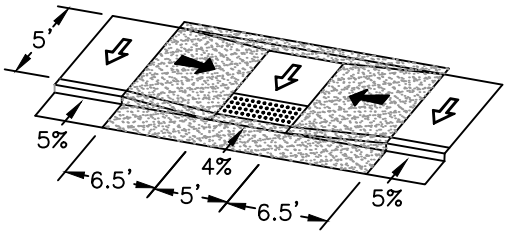
PERPENDICULAR CURB RAMPS (TYPE 1)



TYPICAL SECTION THROUGH RAMP



PERPENDICULAR CURB RAMPS (TYPE 2)



PARALLEL CURB RAMP
(WITH APPROVAL OF THE ENGINEER)

NOTES:

1. THE AMERICANS WITH DISABILITIES ACT (A.D.A.) REQUIRES THAT ALL ACCESS RAMPS TO SIDEWALKS CONFORM TO APPLICABLE FEDERAL GUIDELINES.
2. UTILITY POLES ARE NOT PERMITTED WITHIN RAMPS OR LANDING AREAS.
3. 1.5% (MAX.) 20 SF MIN. TURN SPACE SHALL BE PLACED AT THE JUNCTION OF EACH RAMP. GUTTER PANS SHALL NOT EXCEED 4.0% SLOPE THROUGH RAMP THROATS.
4. APPROVED SAFETY YELLOW TRUNCATED DOME DETECTABLE WARNING SURFACES SHALL BE USED WHEREVER RAMP ACCESSES MEET THE STREET (SEE ODOT STD. DWG. RD902).
5. RAMPS FOR BIKEWAYS SHALL EXTEND FULL WIDTH OF THE BIKEWAY (8' WIDTH TYP.).
6. SIDEWALK ACCESS RAMP SLOPES MAY ONLY BE REDUCED FROM 1:14 (MAX.) TO 1:8 (MAX.) WHEN MODIFYING EXISTING FACILITIES, WITH APPROVAL OF THE ENGINEER.
7. RAMP THROATS MUST BE PERPENDICULAR TO THE STREET AND IN LINE WITH THE OPPOSITE ACCESS RAMP.
8. WHEN INSTALLING RAMPS ADJACENT TO AN EXISTING ROADWAY, REMOVE AND REPLACE EXISTING PAVEMENT AS REQUIRED (2.0' MIN.; SEE SUPP. STD. DWG. 00400-02).

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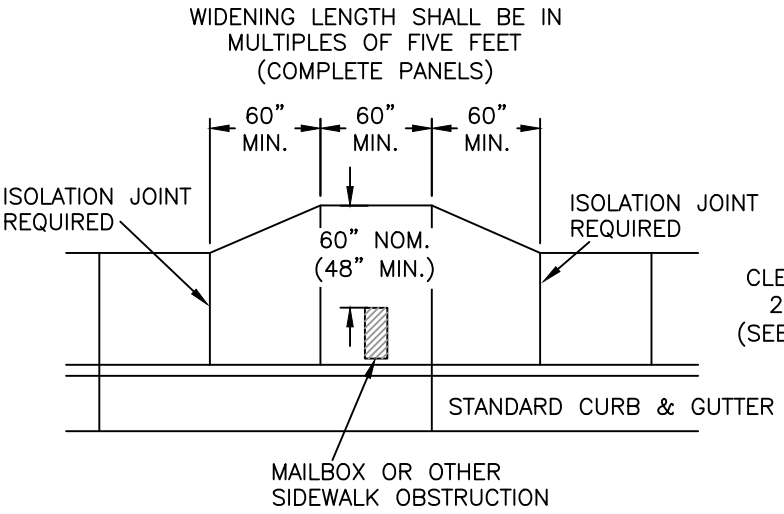
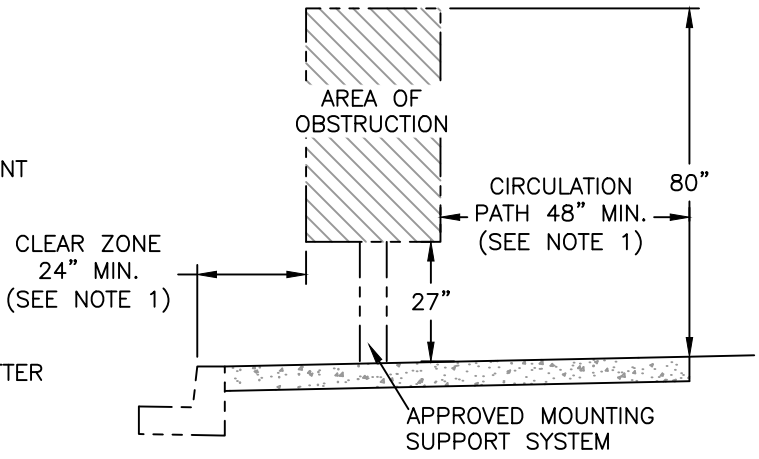
A.D.A. SIDEWALK ACCESS RAMPS

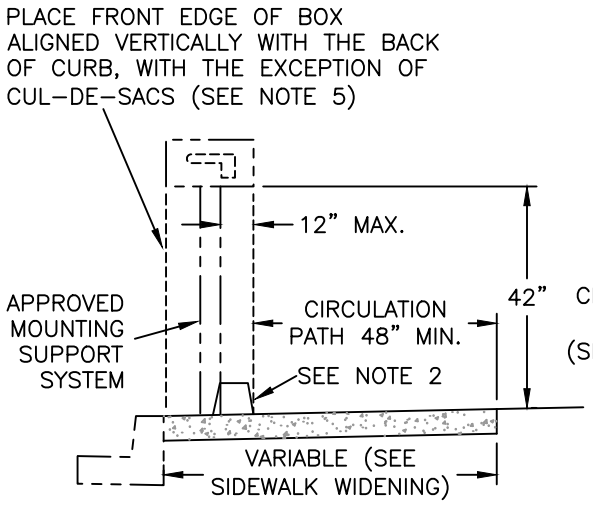
DRAWING NO: 00700-08



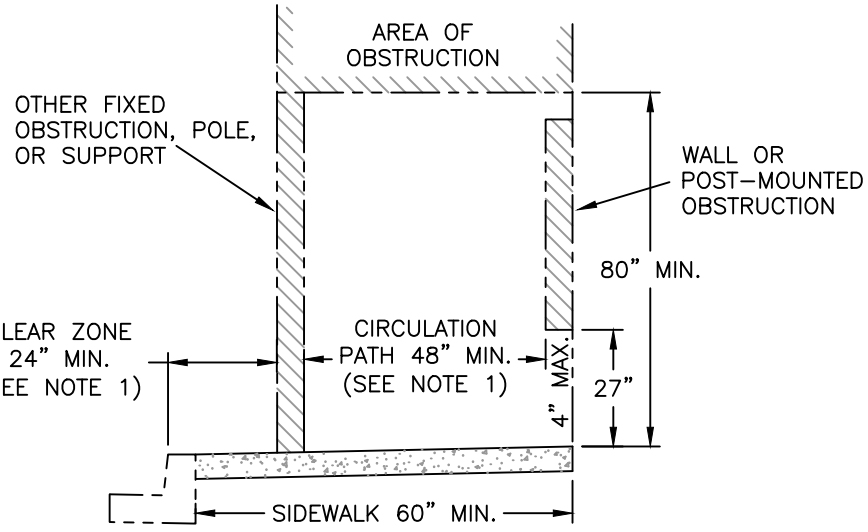
SIDEWALK WIDENING AROUND OBSTRUCTIONS



POST MOUNTED OBSTRUCTION WITHIN SIDEWALK



TYPICAL MAILBOX INSTALLATION



PROTRUDING OBJECTS AND OTHER OBSTRUCTIONS

NOTES:

1. THE CLEAR ZONE AND CIRCULATION PATH MAY BE COMBINED, PROVIDED A 48" MINIMUM SIDEWALK WIDTH IS MAINTAINED.
2. DEFLECT SIDEWALKS AROUND AREAS OF OVERHANGING OBSTRUCTIONS WHEN OVERHANGS EXCEED ALLOWABLE LIMITS. CURBING MAY BE PLACED ON THE SIDEWALK AS AN ALTERNATIVE TO DEFLECTION WITH APPROVAL OF THE ENGINEER (SEE SUPP. STD. DWG. 00700–03).
3. DETAILS SHOWN HERE SHOW TYPICAL CONFIGURATIONS; ALL OBSTRUCTIONS AND PROTRUDING OBJECTS WITHIN THE SIDEWALK AREA MUST BE APPROVED BY THE ENGINEER.
4. INSTALL FULL–DEPTH EXPANSION JOINT MATERIAL AROUND ALL SIDEWALK OBSTRUCTIONS.
5. IN CUL–DE–SACS, PLACE THE FRONT EDGE OF MAILBOXES 6" BEHIND THE BACK OF CURB.

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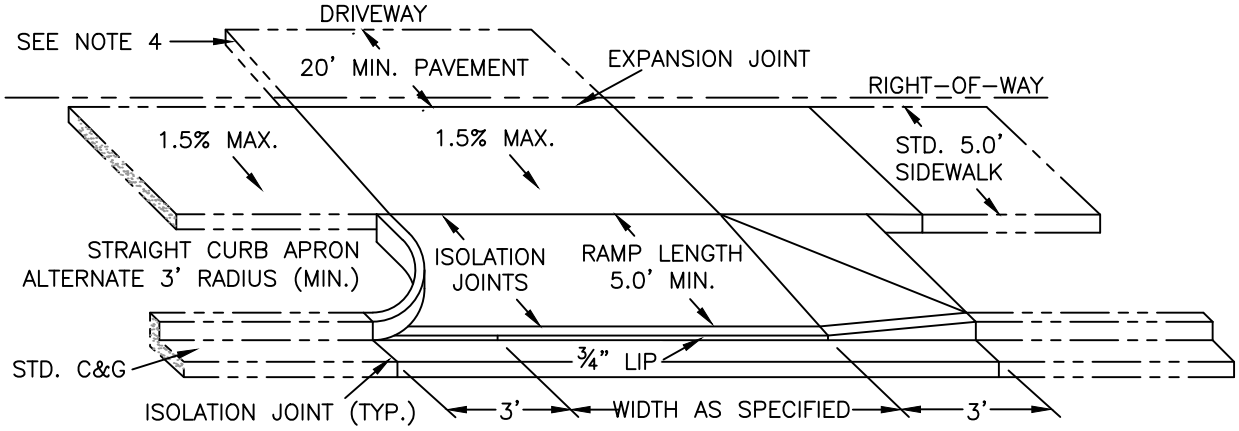
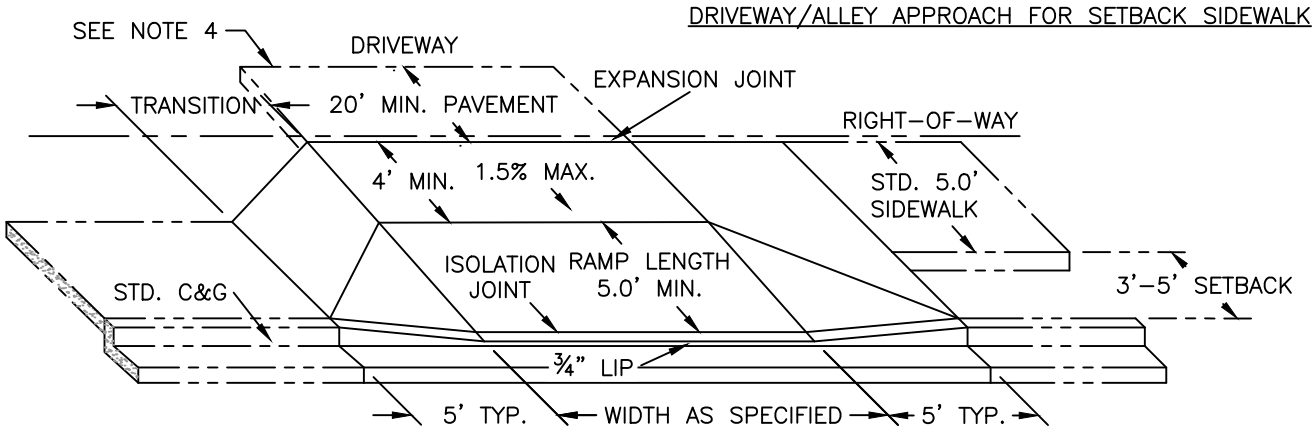
SIDEWALK OBSTRUCTIONS

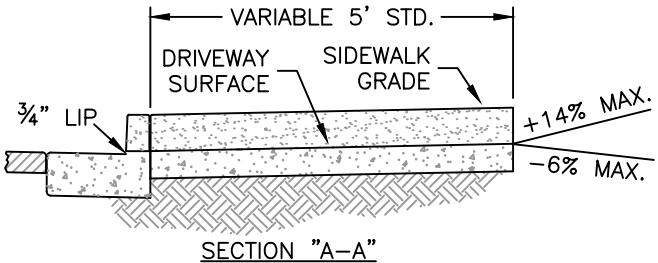
DRAWING NO: 00700-09



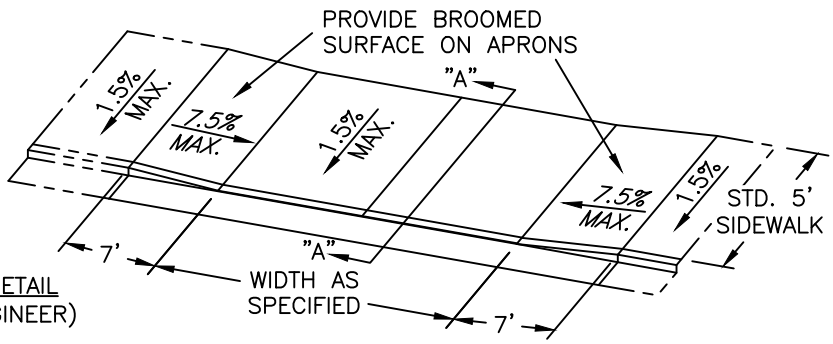
DRIVEWAY/ALLEY APPROACH FOR SETBACK SIDEWALK



DRIVEWAY/ALLEY APPROACH FOR CURBLINE & PARTIALLY SETBACK SIDEWALKS



SECTION "A-A"



ALTERNATE DRIVEWAY DETAIL
(WITH APPROVAL OF ENGINEER)

NOTES:

1. ALL RESIDENTIAL DRIVEWAYS AND INCLUDED SIDEWALKS, TRANSITIONS AND WINGS SHALL HAVE A NOMINAL P.C.C. THICKNESS OF 6.0" AND A 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I. (MIN.). ALLEY APPROACHES AND COMMERCIAL DRIVEWAYS, INCLUDING TRANSITIONS AND WINGS, SHALL HAVE A NOMINAL P.C.C. THICKNESS OF 8.0" AND A 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. (MIN.).
2. CONSTRUCT ONE OR MORE TOOLED JOINTS (SEE SUPP. STD. DWG. 00700-07).
3. IF THE APPROACH OR DRIVEWAY IS TO BE USED AS A SIDEWALK ACCESS, THE 3/4" LIP SHALL BE OMITTED. (SEE SUPP. STD. DWG. 00700-08).
4. APPROACHES SHALL BE PAVED A MINIMUM OF 20' FROM BACK OF WALK PER ENGINEERING DESIGN STANDARDS.
5. WHEN INSTALLING APPROACHES ADJACENT TO AN EXISTING ROADWAY, REMOVE AND REPLACE EXISTING PAVEMENT AS REQUIRED (2.0' MIN.; SEE SUPP. STD. DWG. 00400-02).

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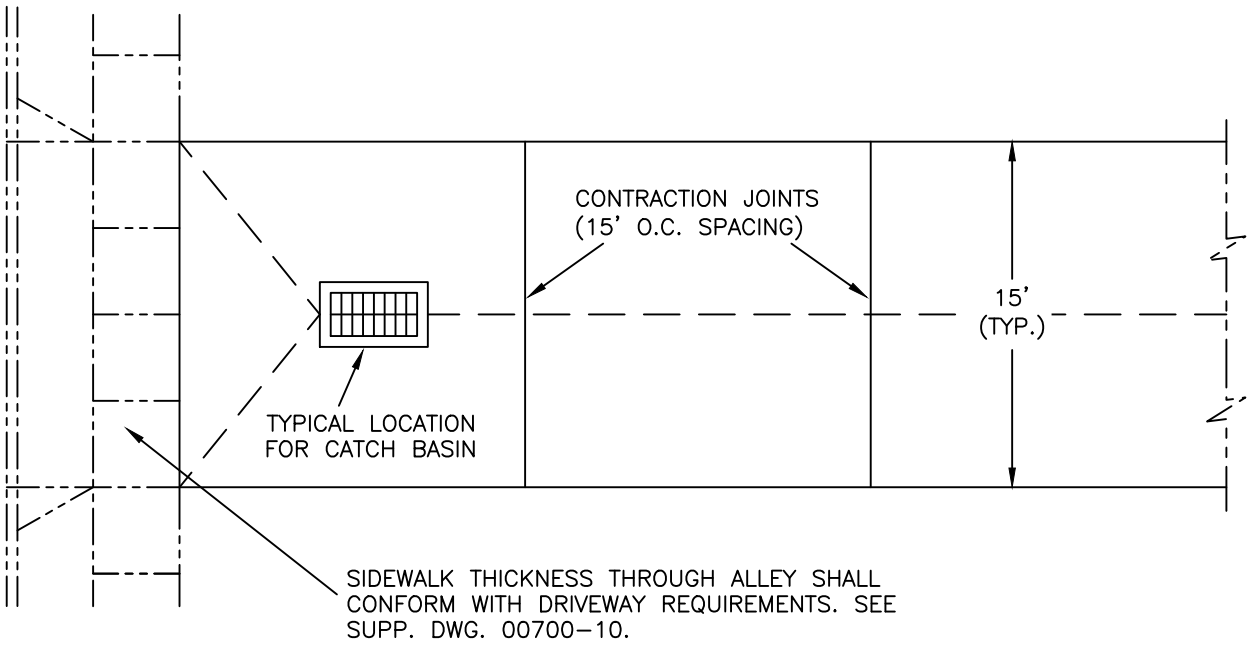
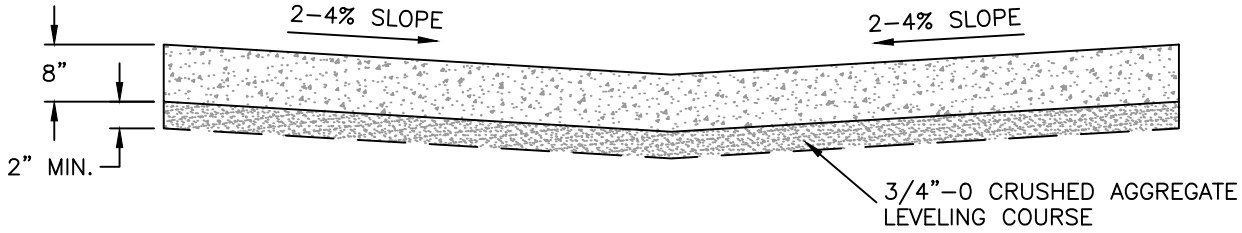
TYPICAL DRIVEWAY AND ALLEY APPROACHES

DRAWING NO: 00700-10



TYPICAL ALLEY (PLAN VIEW)



TYPICAL ALLEY SECTION (INVERTED CROWN)

NOTES:

1. ALL EDGES SHALL BE TOOLED WITH 3/4" RADIUS.
2. ALL P.C.C. SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. (MIN.).
3. SEE SUPP. STD. DWG. 00700-10 FOR APPROACH DETAILS..

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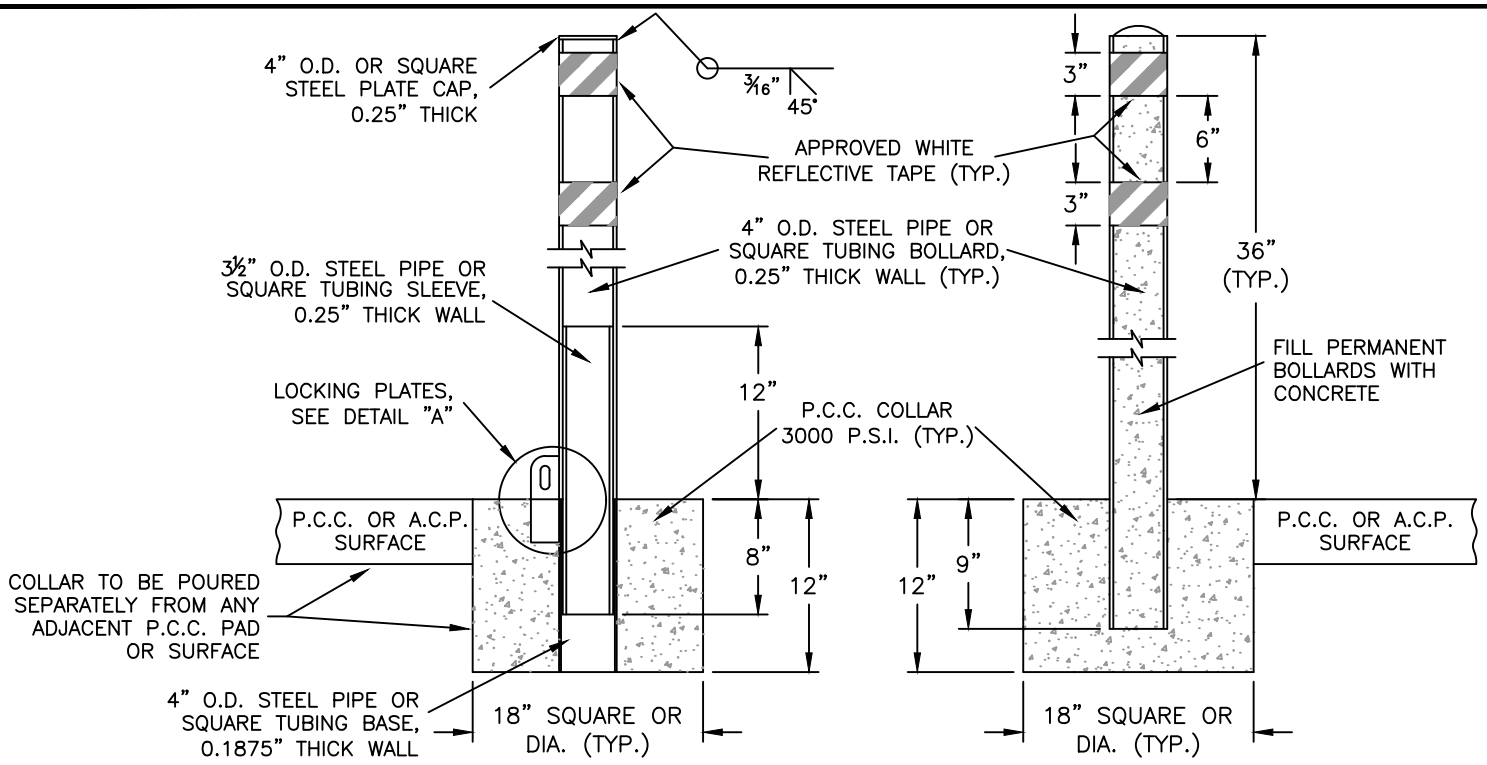
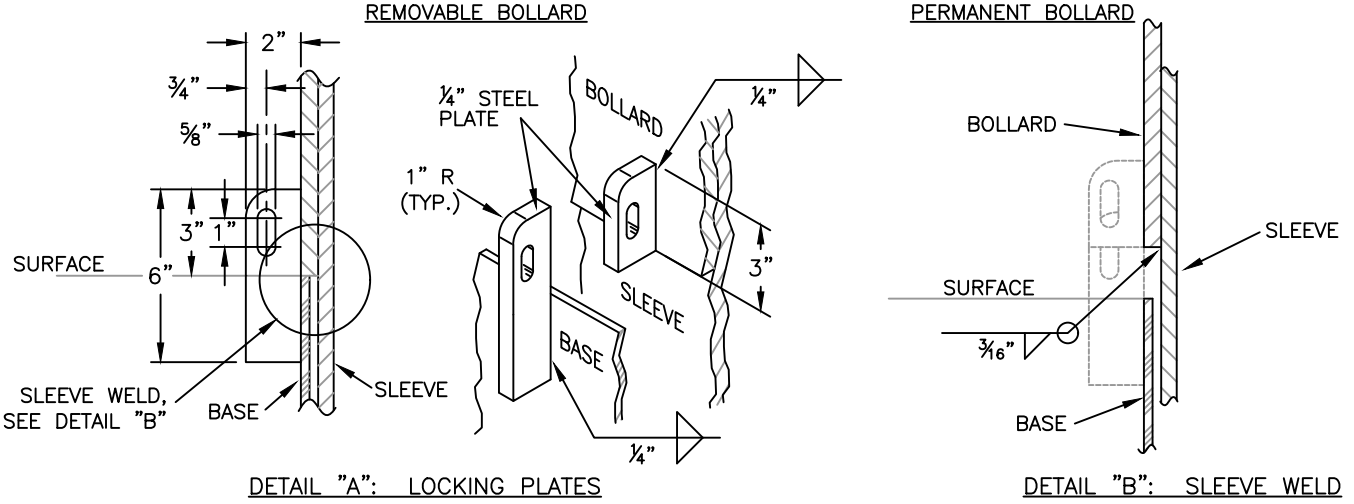
TYPICAL ALLEY SECTION

DRAWING NO: 00700-11





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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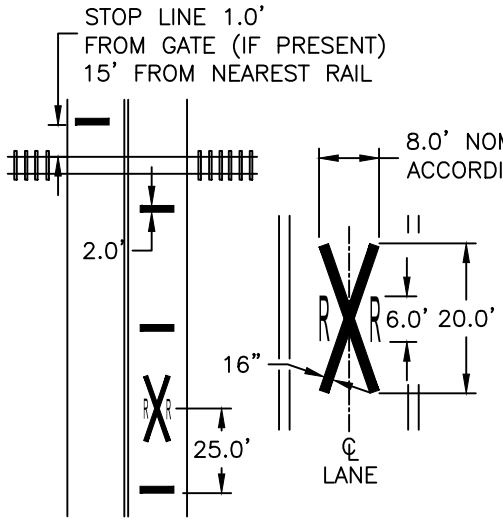
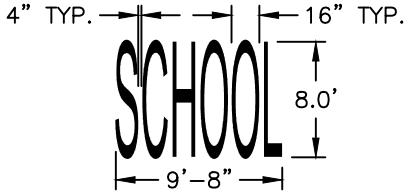
BOLLARDS

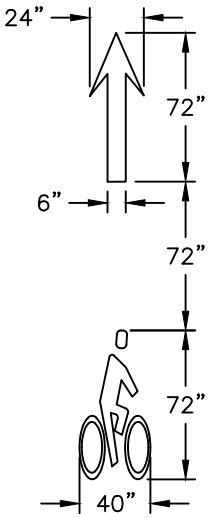
DRAWING NO: 00800-01



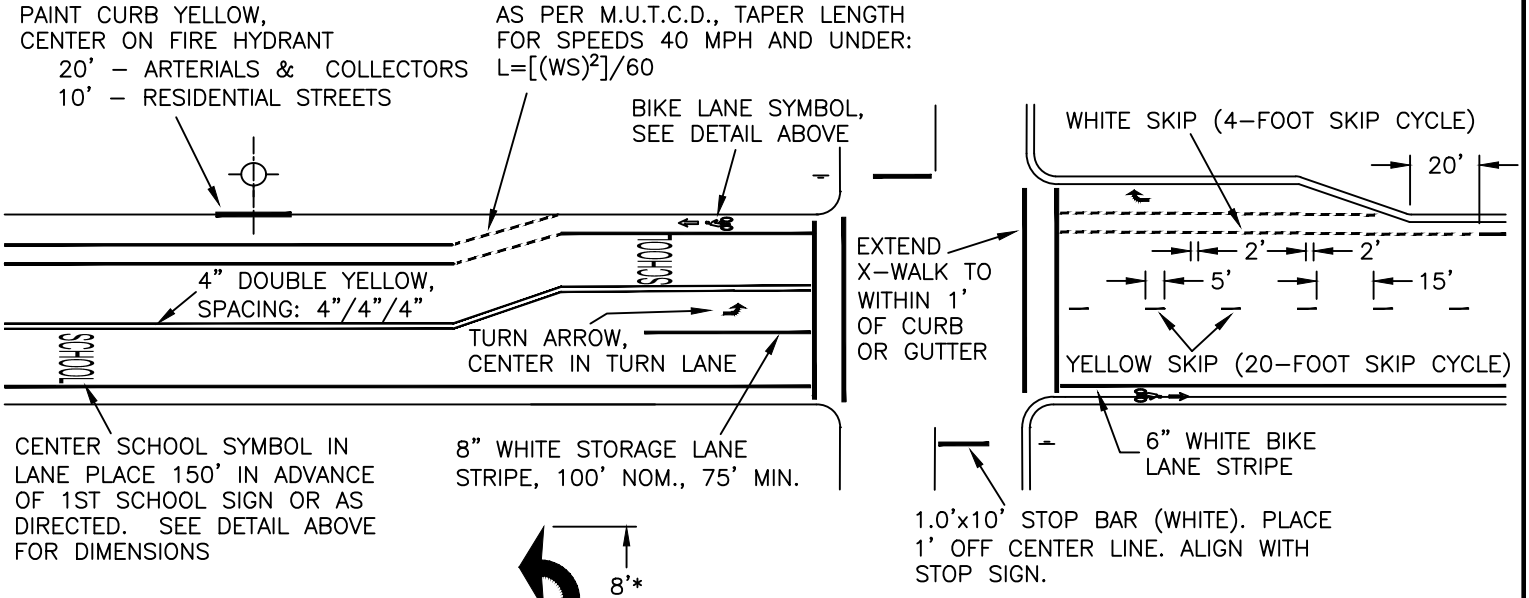
RR CROSSING PAVEMENT MARKING DETAIL
(TYPICAL BOTH DIRECTIONS; SEE NOTE 3)



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



BIKE SYMBOL DETAIL



NOTES:

*STANDARD SIZES FOR NORMAL INSTALLATION; MAY BE REDUCED UP TO ⅓ FOR LOW-SPEED (URBAN) CONDITIONS

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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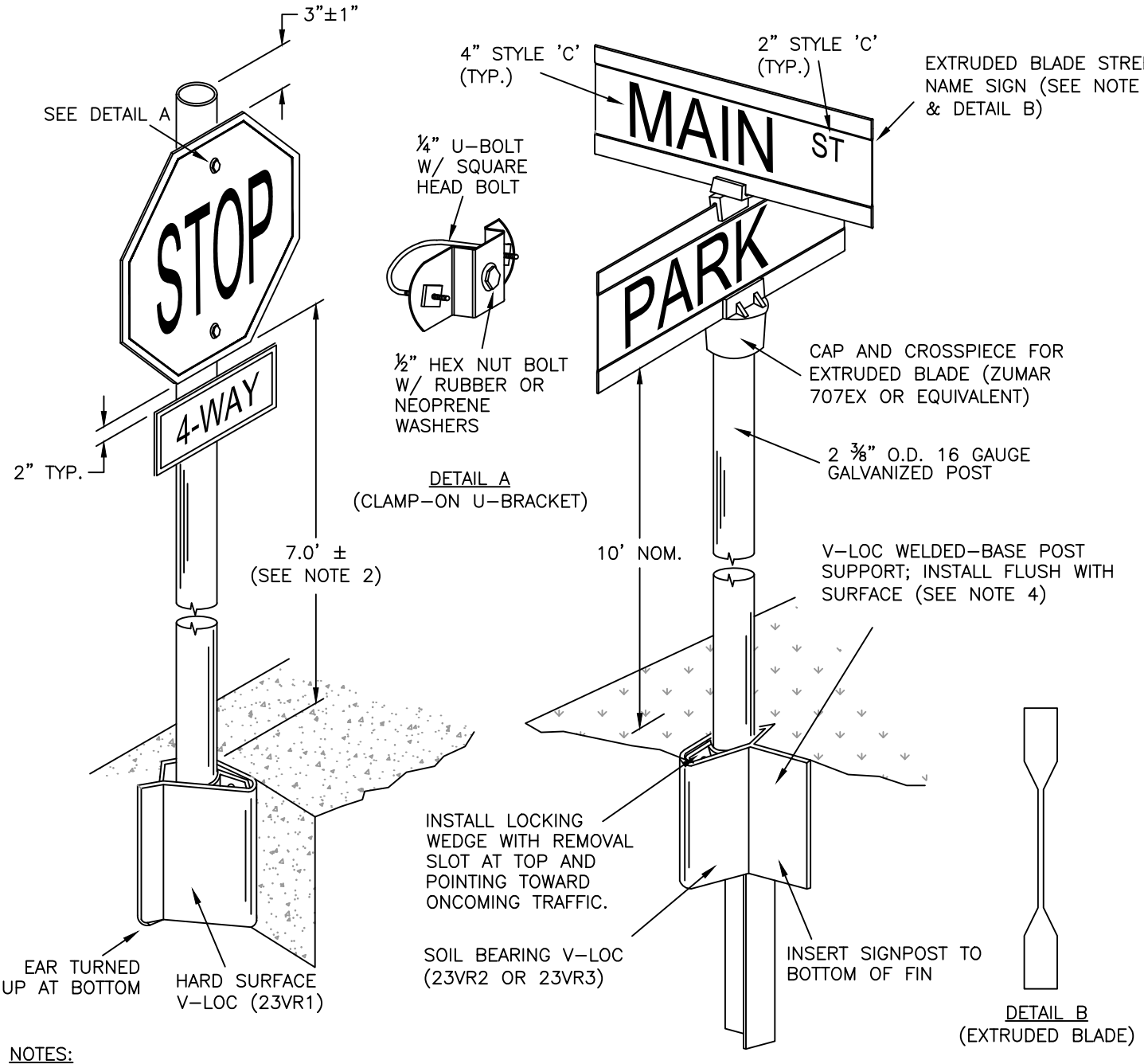
TYPICAL STRIPING

DRAWING NO: 00800-02



NOTES:

1. DOUBLE-FACED STREET NAME SIGNS SHALL BE CITY OF LEBANON TYPE "G1" OR "G2". STANDARD SIGN SIZE: 6"Hx24"W (30" WIDTH IF NEEDED).

2. PRIMARY SIGN MOUNTING HEIGHT IS 6'-8" (MIN.), 4'-0" FOR SECONDARY SIGNS (SEE SUPP. STD. DWG. 00200-01).

3. V-LOC SIGN POST SUPPORTS (OR APPROVED EQUAL) SHALL BE APPROPRIATE TO THE INSTALLATION SITE:
   TYPE 23VR1 -- HARD SURFACE MOUNT
   TYPE 23VR2 -- NATIVE SOIL BEARING MOUNT
   TYPE 23VR3 -- LOOSE SOIL BEARING MOUNT

4. POSITION V-LOC AS SPECIFIED BY MANUFACTURER WITH LOCKING WEDGE FACING ONCOMING TRAFFIC. USE APPROVED DRIVER TO INSTALL LOCKING WEDGE.

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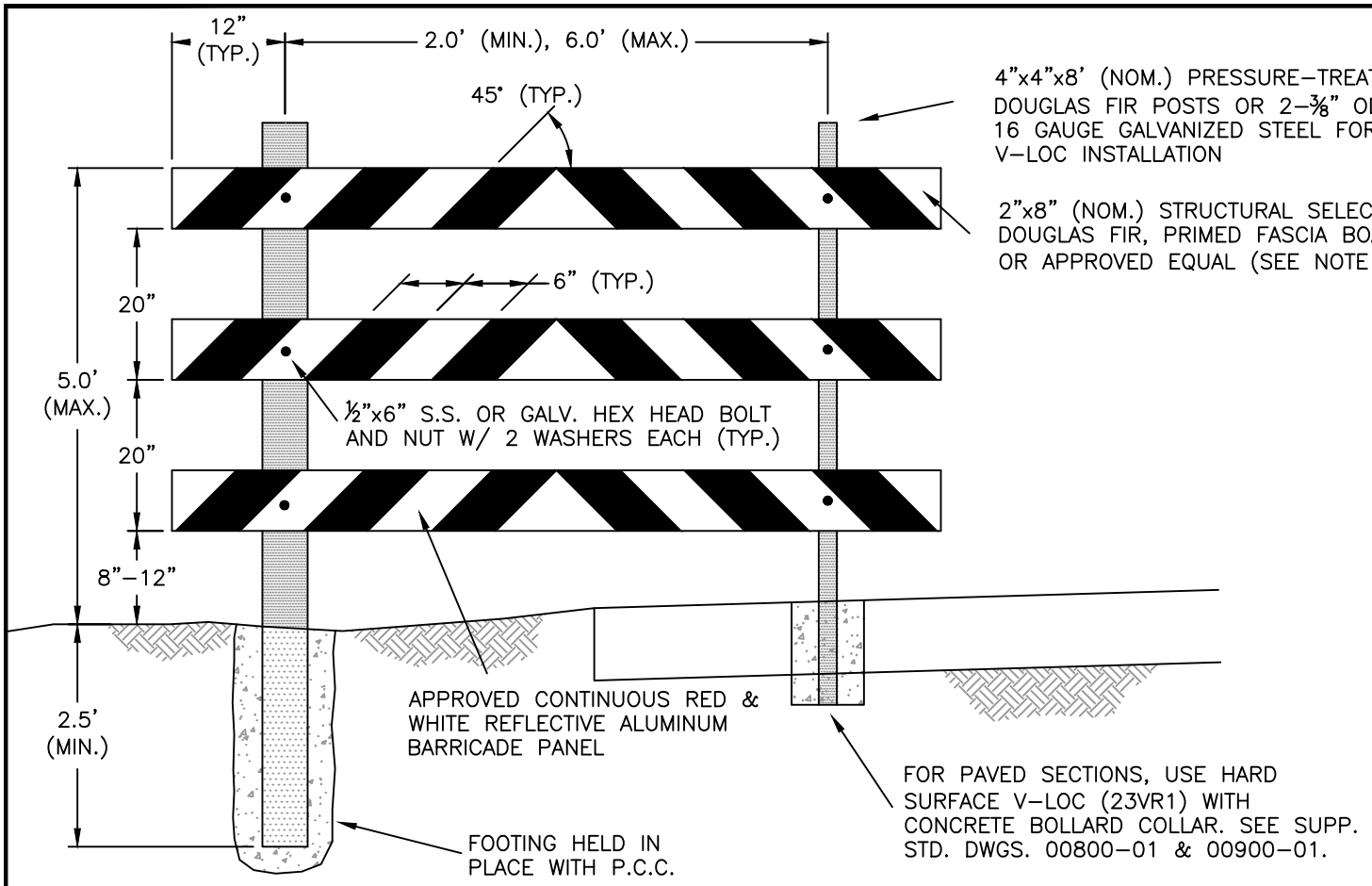
SIGN MOUNTING

DRAWING NO: 00900-01



NOTES:

1. SLOPE REFLECTORIZED STRIPING ON BARRICADE RAILS DOWNWARD AT A 45° ANGLE IN THE DIRECTION TRAFFIC IS TO PASS. WHERE BARRICADES EXTEND ACROSS AN ENTIRE ROADWAY, SLOPE STRIPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO DETOUR. WHERE TRAFFIC IS PERMITTED TO DETOUR IN MULTIPLE DIRECTIONS, SLOPE STRIPING IN BOTH DIRECTIONS FROM THE CENTER OF THE BARRICADE (AS SHOWN ABOVE).
2. PAINT KILN-DRIED LUMBER AND PRIMED FASCIA BOARDS ON ALL SIDES WITH AN APPROVED WHITE LATEX PAINT PRIOR TO INSTALLATION/ASSEMBLY.
3. ATTACH BARRICADE PANELS TO 2"x8" RAILS USING 1" SELF-TAPPING METAL ROOFING SCREWS. POSITION SCREWS 1" FROM PANEL EDGES AT EACH CORNER AND AT 12" ON CENTER.
4. PROVIDE A 3' LEVEL CLEAR ZONE AROUND BARRICADES AND A 6" THICK CRUSHED AGGREGATE GROUND COVER FOR UNPAVED AREAS.
5. FOR ROAD CLOSURES, BLOCK THE ENTIRE ROADWAY FROM CURB TO CURB. CLOSURES REQUIRE INSTALLATION OF A GATE WITH 8' WIDE CLEAR OPENING, INSTALLED AS CLOSE TO THE SIDE OF THE ROAD AS POSSIBLE.
6. FOR RAILS LESS THAN 36' LONG, 4' WIDE STRIPES SHALL BE USED.
7. USE 4' TYPE III BARRICADES WHERE HORIZONTAL SPACE IS LIMITED.
8. DO NOT BLOCK BIKE LANES OR SHOULDERS UNLESS THEY ARE PROPERLY CLOSED AND SIGNED.

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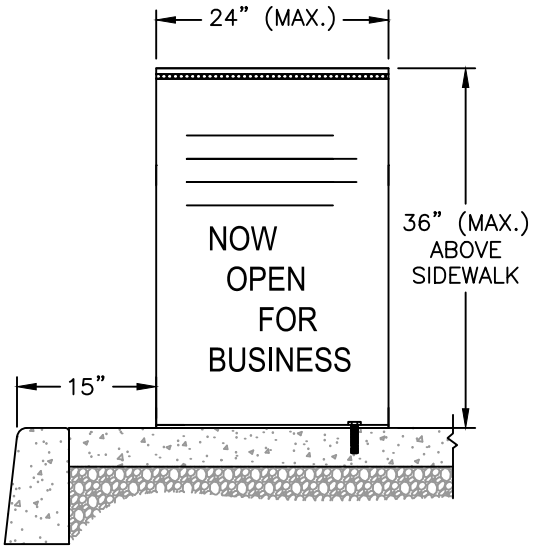
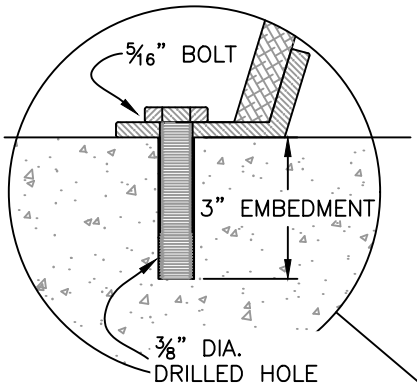
PERMANENT TYPE III BARRICADE

DRAWING NO: 00900-02

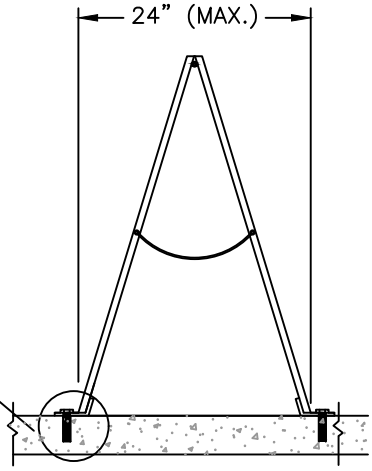


SIGN DIMENSIONS

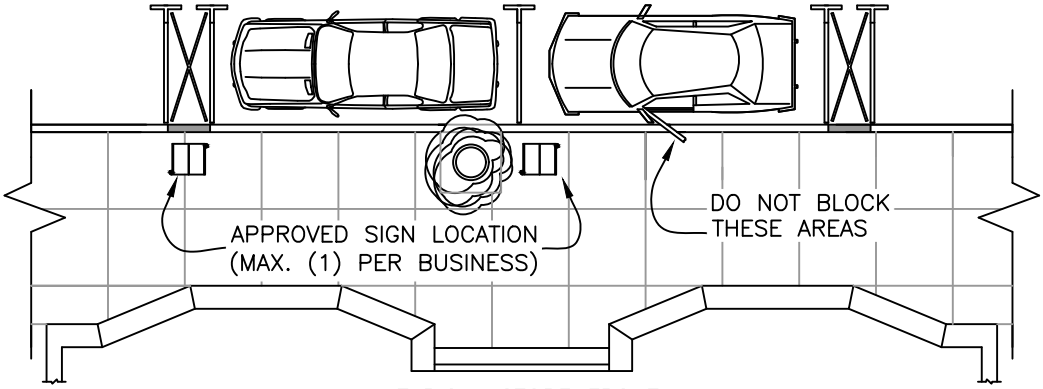


DETAIL NOTES

1. SIGN ANCHORS TO BE TEMPORARY IN NATURE.
2. BOLTS ARE FOR PINNING ONLY.
3. DIAGONAL BOLT PLACEMENT (1) PER SIDE.
4. ALTERNATIVES FOR ANCHORING MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.



BASE WIDTH



TYPICAL STORE FRONT

NOTES:

1. A CITY RIGHT–OF–WAY PERMIT IS REQUIRED FOR ALL DAILY DISPLAY SIGNS. POSSESSION OF A PERMIT IS NOT INTENDED TO APPROVE SIGN CONTENT.
2. THE SIGN SHALL BE PLACED BEHIND THE CURB AND MEET THE FOLLOWING REQUIREMENTS:
   - SIGN MAY NOT INTERFERE WITH ON–STREET PARKING,
   - PLACEMENT MUST PROVIDE A 5.0' MINIMUM PEDESTRIAN THOROUGHFARE AND
   - SIGN SHALL NOT BE PLACED WITHIN 20' OF AN INTERSECTION OR WITHIN A 5.0' RADIUS OF A FIRE HYDRANT.
3. THE SIGN MUST BE SECURELY ATTACHED TO THE SIDEWALK WHEN IN PLACE (SEE DETAIL ABOVE). ATTACHMENT POINTS SHALL NOT CONSTITUTE A SIDEWALK TRIPPING HAZARD WHEN THE SIGN IS REMOVED.
4. SIGN DIMENSIONS SHALL NOT EXCEED A MAXIMUM WIDTH OF 24" AND MAXIMUM HEIGHT OF 36".
5. NO MORE THAN ONE SIGN PER BUSINESS WILL BE ALLOWED.
6. SIGNS MAY BE DISPLAYED IN THE RIGHT–OF–WAY ONLY DURING BUSINESS HOURS.

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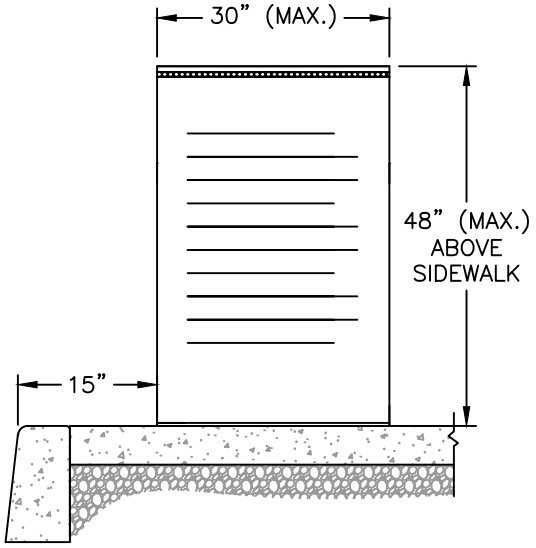
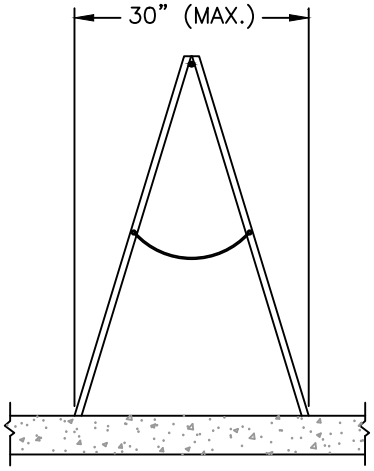
ANCHORED DISPLAY SIGN

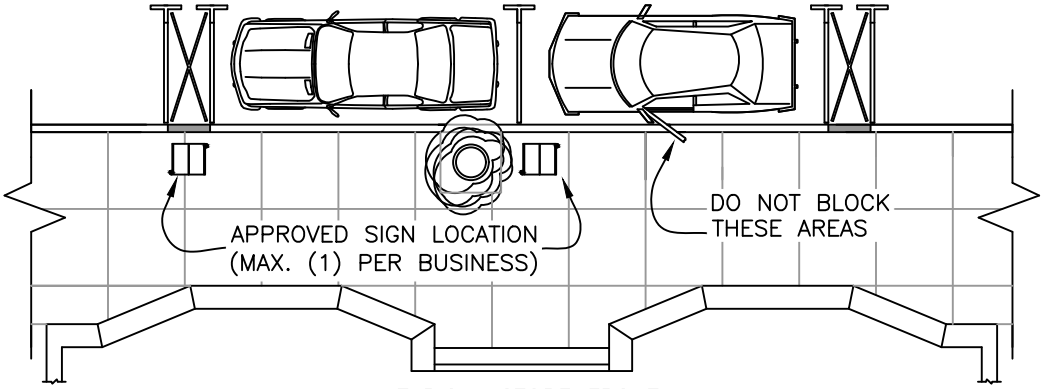
DRAWING NO: 00900-03



SIGN DIMENSIONS



BASE WIDTH



TYPICAL STORE FRONT

NOTES:

1. A CITY RIGHT–OF–WAY PERMIT IS REQUIRED FOR ALL DAILY DISPLAY SIGNS. POSSESSION OF A PERMIT IS NOT INTENDED TO APPROVE SIGN CONTENT.

2. THE SIGN SHALL BE PLACED BEHIND THE CURB AND MEET THE FOLLOWING REQUIREMENTS:
   - SIGN MAY NOT INTERFERE WITH ON–STREET PARKING,
   - PLACEMENT MUST PROVIDE A 5.0' MINIMUM PEDESTRIAN THOROUGHFARE AND
   - SIGN SHALL NOT BE PLACED WITHIN 20' OF AN INTERSECTION OR WITHIN A 5.0' RADIUS OF A FIRE HYDRANT.

3. SIGN DIMENSIONS SHALL NOT EXCEED A MAXIMUM WIDTH OF 30" AND MAXIMUM HEIGHT OF 48".

4. NO MORE THAN ONE SIGN PER BUSINESS WILL BE ALLOWED.

5. SIGNS MAY BE DISPLAYED IN THE RIGHT–OF–WAY ONLY DURING BUSINESS HOURS.

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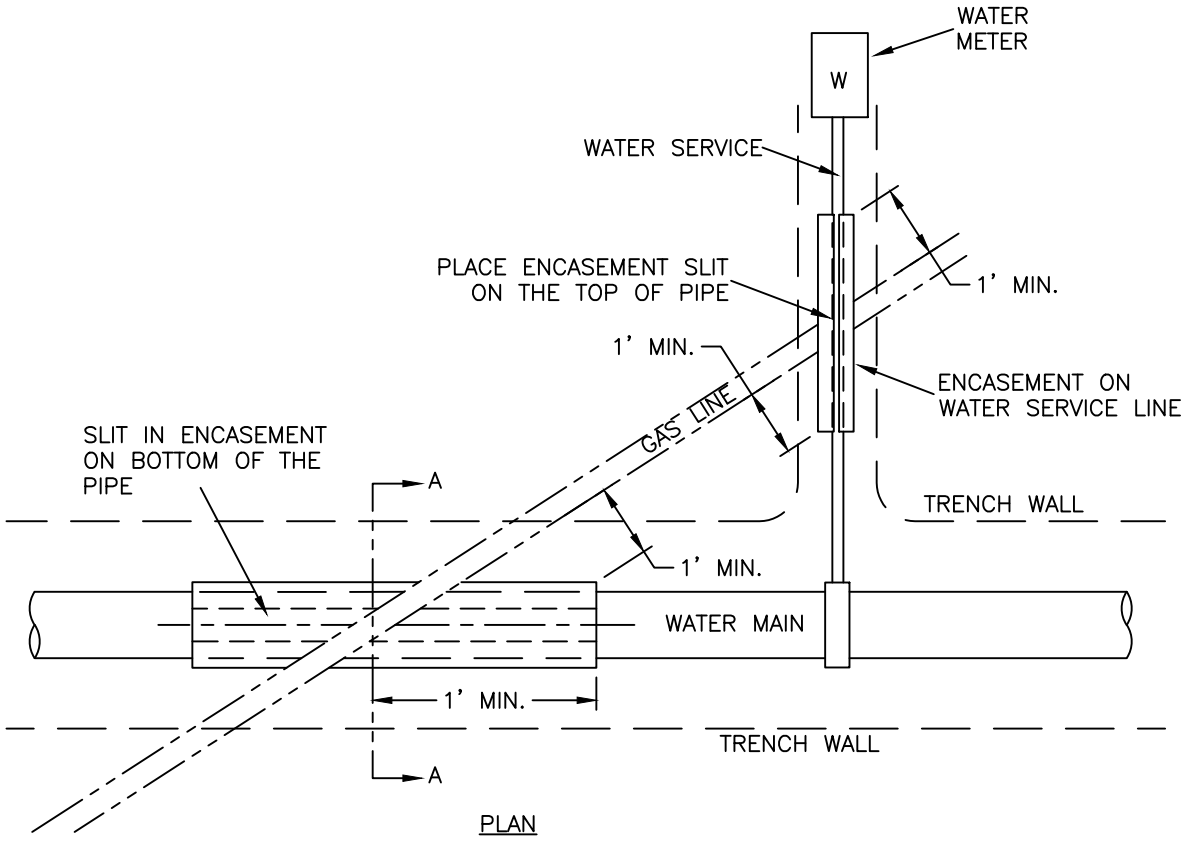
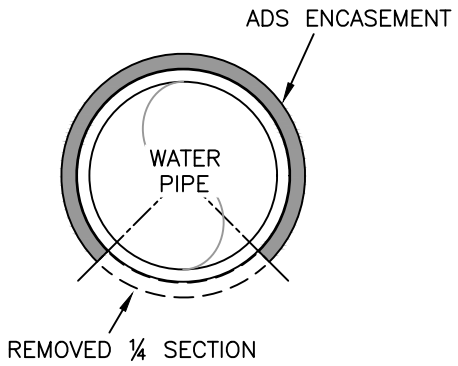
UNANCHORED DISPLAY SIGN

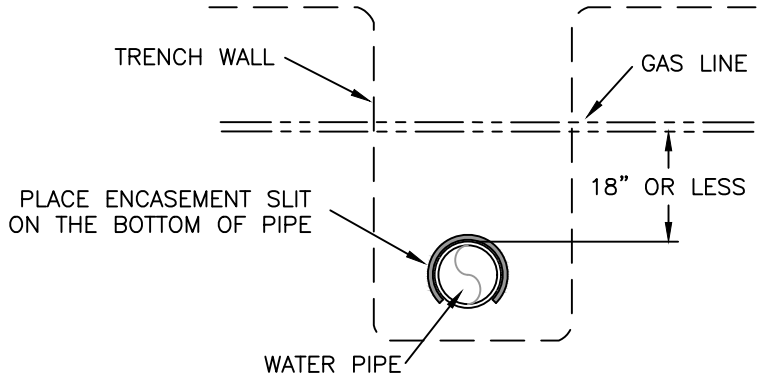
DRAWING NO: 00900-04



PLAN



ENCASEMENT DETAIL



SECTION A–A

NOTES:

1. ENCASEMENT SHALL BE A.D.S. PIPE (OR APPROVED EQUAL) AND SHALL BE PLACED AROUND THE WATER AND GAS LINE AS SHOWN ABOVE. THE ENCASEMENT I.D. MUST BE GREATER THAN THE WATER PIPE O.D.

2. REMOVE ¼ SECTION OF ENCASEMENT AND PLACE OVER THE WATER PIPE WITH OPENING AT THE BOTTOM OR AWAY FROM THE GAS LINE.

3. ENCASEMENT IS NOT REQUIRED FOR NON–METALLIC GAS LINE CROSSINGS.

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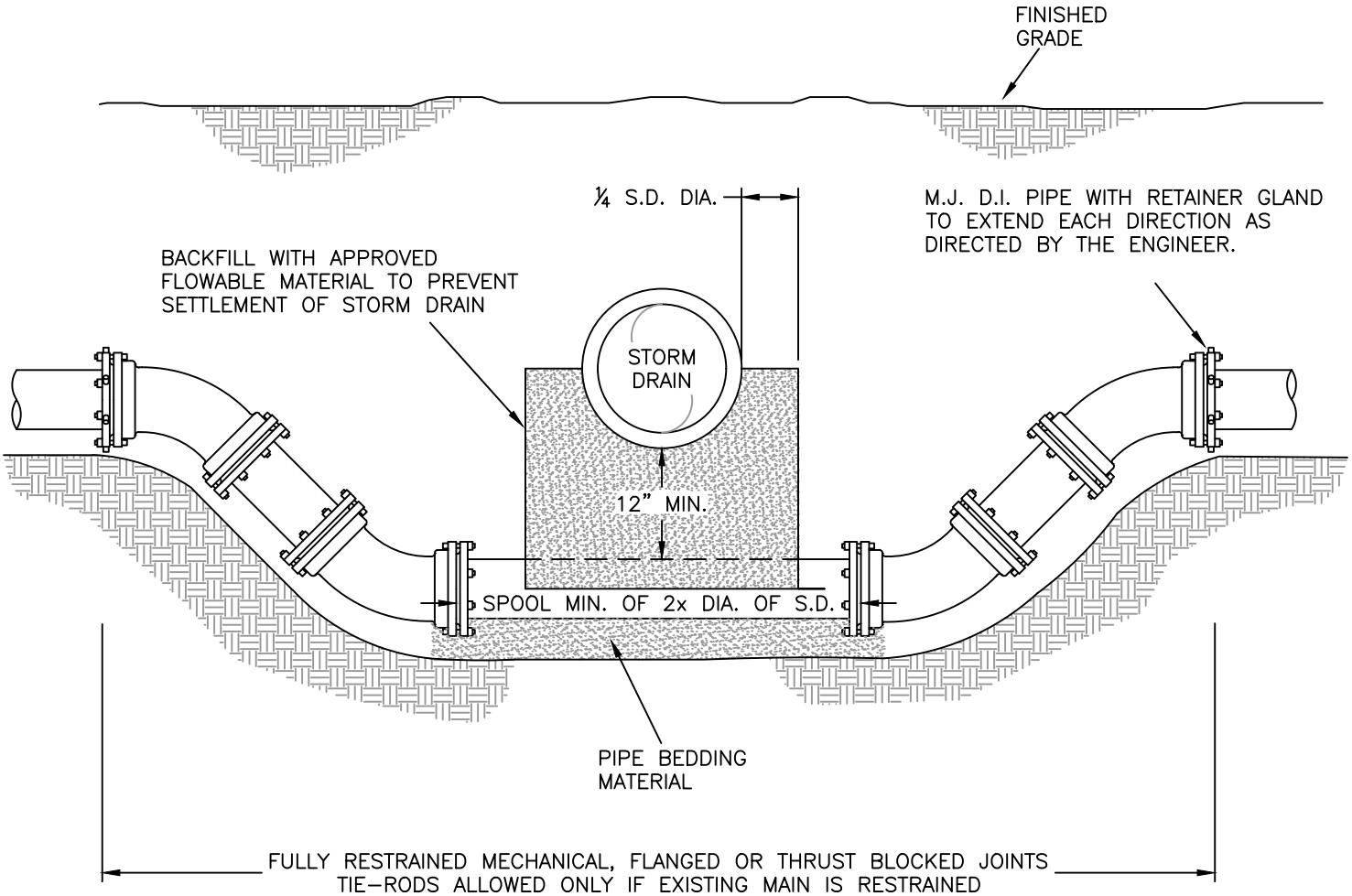
GAS LINE CROSSING CATHODIC PROTECTION

DRAWING NO: 01100-01



NOTES:

1. SEE SUPPLEMENTAL STANDARD DRAWING 01100–03 FOR INFORMATION ON THRUST BLOCKS.
2. IN LIEU OF THRUST BLOCKS, WATER MAIN DEFLECTIONS MAY BE RESTRAINED BY MEG–A–LUG RETAINER GLANDS OR FLANGED JOINTS. SEE CITY SUPP. STD. SPEC. 01140.44 FOR INFORMATION ON REQUIRED RESTRAINT LENGTHS.

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WATER/STORM LINE CROSSING

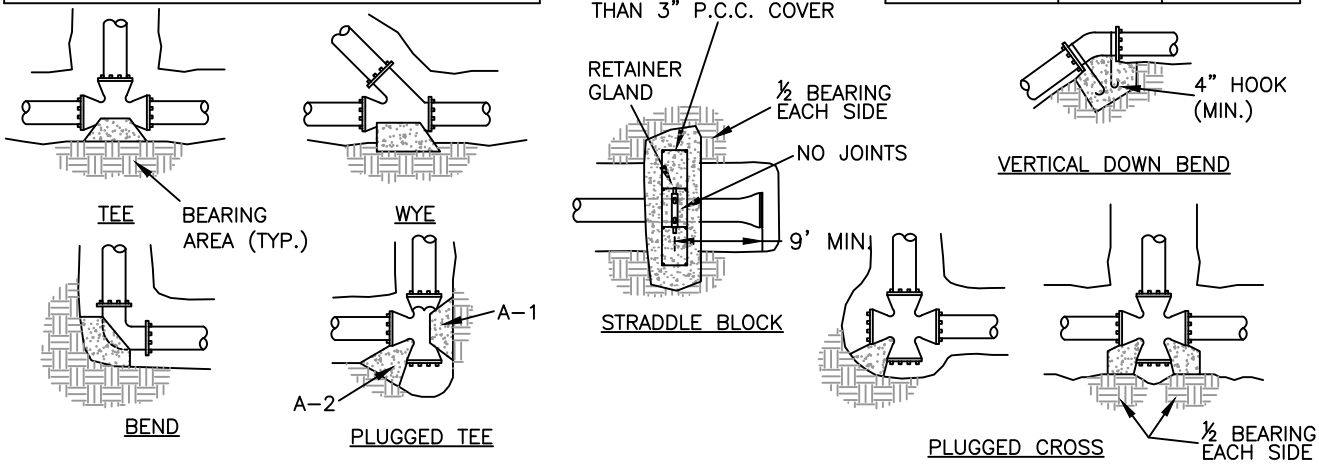
DRAWING NO: 01100-02

HORIZONTAL THRUST BLOCK BEARING AREA (S.F.)									(VERTICAL DOWN) THRUST BLOCK VOLUME (C.Y.)			
FITTING SIZE	TEE, WYE, DEAD END AND HYDRANT	STRADDLE BLOCK	90° BEND PLUGGED CROSS	TEE PLUGGED ON RUN		45° BEND	22½° BEND	11¼° BEND	90° BEND	45° BEND	22½° BEND	11¼° BEND
				A–1	A–2							
6"	2.1	3.2	3.0	4.2	3.0	1.6	RG*	RG*	1.5	RG*	RG*	RG*
8"	3.8	5.7	5.3	7.6	5.3	2.9	1.5	RG*	2.6	1.4	RG*	RG*
12"	8.5	12.8	12.0	17.0	12.0	6.5	3.3	1.7	5.9	3.2	1.6	RG*
16"	15.1	22.7	21.3	30.2	21.3	11.6	5.9	3.0	10.5	5.7	2.9	1.5
BEARING AREAS BASED ON STANDARD TEST PRESSURE OF 150 P.S.I. AND ASSUMED ALLOWABLE SOIL BEARING STRESS OF 2000 P.S.F. COMPUTE BEARING AREAS FOR DIFFERENT SOIL BEARING STRESSES BY USING THE EQUATION: AREA=(2000/SOIL BEARING STRESS)x(TABLE VALUE).									VOLUMES BASED ON STD. TEST PRESSURE (150 P.S.I.) AND WEIGHT OF CONCRETE.			

*RG = MEG–A–LUG RETAINER OR APPROVED EQUAL.

THRUST BLOCK WIDTH TO HEIGHT RATIO
THRUST BLOCK HEIGHT (H) PIPE DIAMETER < H < 1/2 TRENCH DEPTH
THRUST BLOCK WIDTH (B): H < B < 2H

RODS FOR VERTICAL DOWN BENDS		
FITTING SIZE	ROD SIZE	EMBEDMENT
6"	#4	24"
8" AND 12"	#6	30"
16"	#8	36"



NOTES:

1. ALL THRUST BLOCKING MUST BE COMMERCIAL GRADE CONCRETE POURED AGAINST UNDISTURBED EARTH AND HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I.
2. CONCRETE SHALL BE KEPT CLEAR OF ALL JOINTS AND ACCESSORIES. INSTALL ISOLATION MATERIAL BETWEEN PIPES AND/OR FITTINGS BEFORE POURING THRUST BLOCKS. WRAP PIPE AND/OR FITTINGS WITH 2 LAYERS OF POLYETHYLENE FILM WHERE IN CONTACT WITH CONCRETE.
3. TIE RODS SHALL BE DEFORMED GALVANIZED COLD–ROLLED STEEL (MIN. 40,000 P.S.I. TENSILE STRENGTH). EPOXY COATED BARS MAY BE USED IN LIEU OF GALVANIZED PROVIDED EPOXY COATING IS APPLIED AFTER FABRICATION.
4. MEG–A–LUG SYSTEM (OR APPROVED EQUAL) MAY BE USED ON ALL M.J. FITTINGS IN PLACE OF THRUST BLOCKING.
5. ALL THRUST BLOCKING (EXCEPT VERTICAL DOWN) MUST MEET THE WIDTH–TO–HEIGHT RATIO SHOWN ABOVE.
6. SEE TABLE IN SECTION 01140.44 OF THE CITY SUPPLEMENTAL STANDARD SPECIFICATIONS FOR JOINT RESTRAINT LENGTH REQUIREMENTS.
7. STRADDLE BLOCKS MUST ENCASE AN APPROVED PIPE RETAINER GLAND UNLESS THE EXISTING LINE MATERIAL IS ASBESTOS CONCRETE OR STEEL PIPE.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

OREGON Lebanon

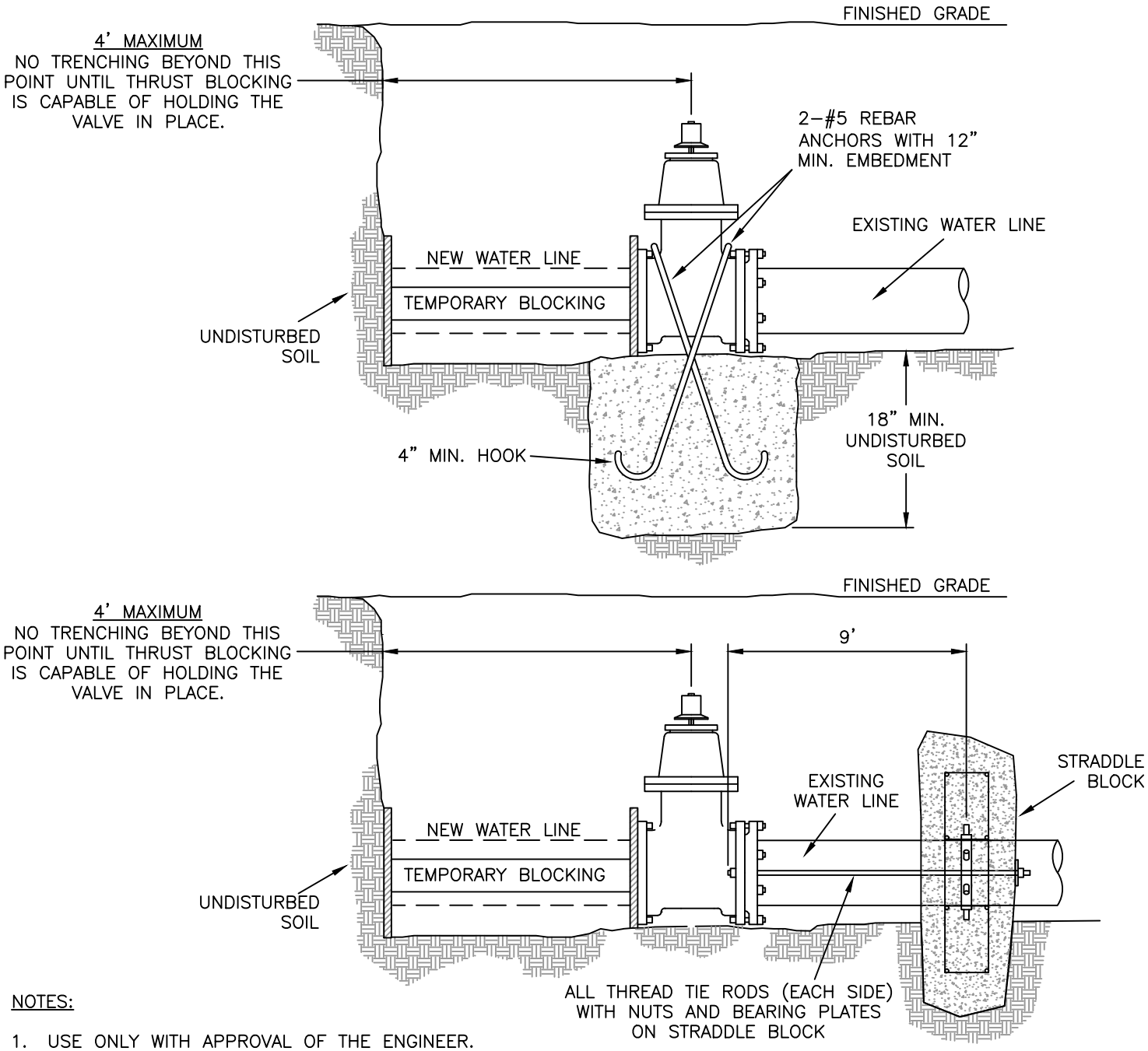
APPROVED

CITY ENGINEER

December, 2021
DATE

THRUST BLOCKING

DRAWING NO: 01100-03



NOTES:

1. USE ONLY WITH APPROVAL OF THE ENGINEER.
2. USE THRUST BLOCKING STANDARDS FOR BEARING AREAS (SEE SUPP. STD. DWG. 01100–03).
3. THE FOLLOWING MAIN LINE TERMINATION METHODS ARE RECOMMENDED:
   A. INSTALL A M.J. VALVE WITH AN APPROVED RETAINER GLAND ON DUCTILE IRON OR C–900 P.V.C. PIPE. ENCASE WITH A STRADDLE BLOCK ON THE EXISTING PIPE A MINIMUM OF 9' FROM THE VALVE. NON–RESTRAINED PIPE JOINTS WILL NOT BE ALLOWED BETWEEN THE STRADDLE BLOCK AND THE VALVE.
   B. INSTALL A M.J. VALVE ON AN A.C. OR STEEL PIPE WITH ALL–THREAD TIE RODS ANCHORED TO A STRADDLE BLOCK (MINUS THE RETAINER GLAND).
   C. INSTALL A FLG.xM.J. VALVE ON A FLG.xP.E. DUCTILE IRON SPOOL WITH A STRADDLE BLOCK.

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December, 2021
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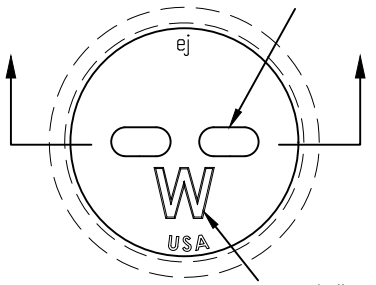
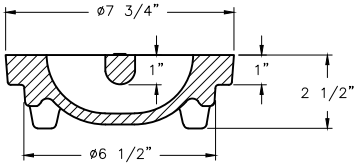
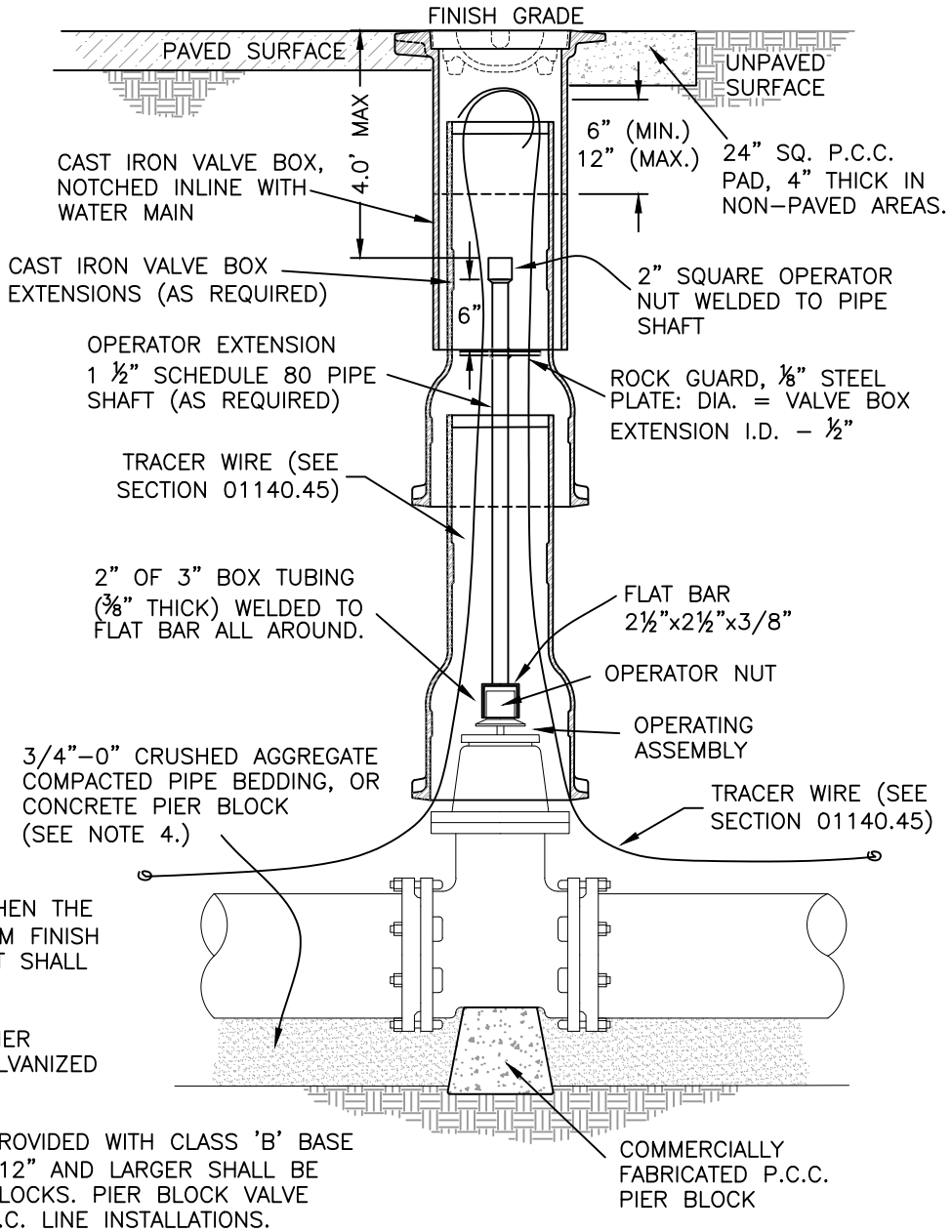
EXISTING WATER LINE EXTENSION (WITH VALVE)

DRAWING NO: 01100-04





EAST JORDAN
VALVE BOX LID DETAIL



NOTES:

1. VALVE BOX MUST BE CENTERED ON OPERATING NUT AXIS AND SHALL NOT REST ON THE OPERATING ASSEMBLY.
2. OPERATOR EXTENSION IS REQUIRED WHEN THE VALVE NUT IS DEEPER THAN 4.0' FROM FINISH GRADE. TYPICALLY, THE OPERATOR NUT SHALL BE 28"–30" FROM GRADE.
3. OPERATOR EXTENSIONS SHALL BE EITHER STAINLESS STEEL OR HOT–DIPPED GALVANIZED FOLLOWING FABRICATION.
4. VALVES 8" AND SMALLER SHALL BE PROVIDED WITH CLASS 'B' BASE ON UNDISTURBED SUBGRADE. VALVES 12" AND LARGER SHALL BE INSTALLED ON PRECAST P.C.C. PIER BLOCKS. PIER BLOCK VALVE SUPPORTS ARE REQUIRED ON ALL P.V.C. LINE INSTALLATIONS.
5. VALVE BOXES SHALL BE CLEAR OF ROCKS OR OTHER DEBRIS.
6. VALVE BOX COMPONENTS SHALL BE EAST JORDAN, CHRISTY, OR APPROVED EQUAL. LID SHALL BE STAMPED WITH "W" OR "WATER".
7. WELDS SHALL BE MINIMUM 1/4" ALL AROUND.
8. CASTINGS SHALL MEET H20 LOAD REQUIREMENTS.
9. PROVIDE P.C.C. PAD (24" SQUARE, 4" THICK), WHERE REQUIRED.
10. VALVE BOXES SHALL INDICATE THE DIRECTION OF THE CONTROLLED MAIN. IF THE BOX HAS NO FACTORY ALIGNMENT INDICATORS, NOTCH THE BOX CASTING ON BOTH SIDES FOLLOWING INSTALLATION TO INDICATE DIRECTION OF CONTROLLED MAIN.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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December, 2021
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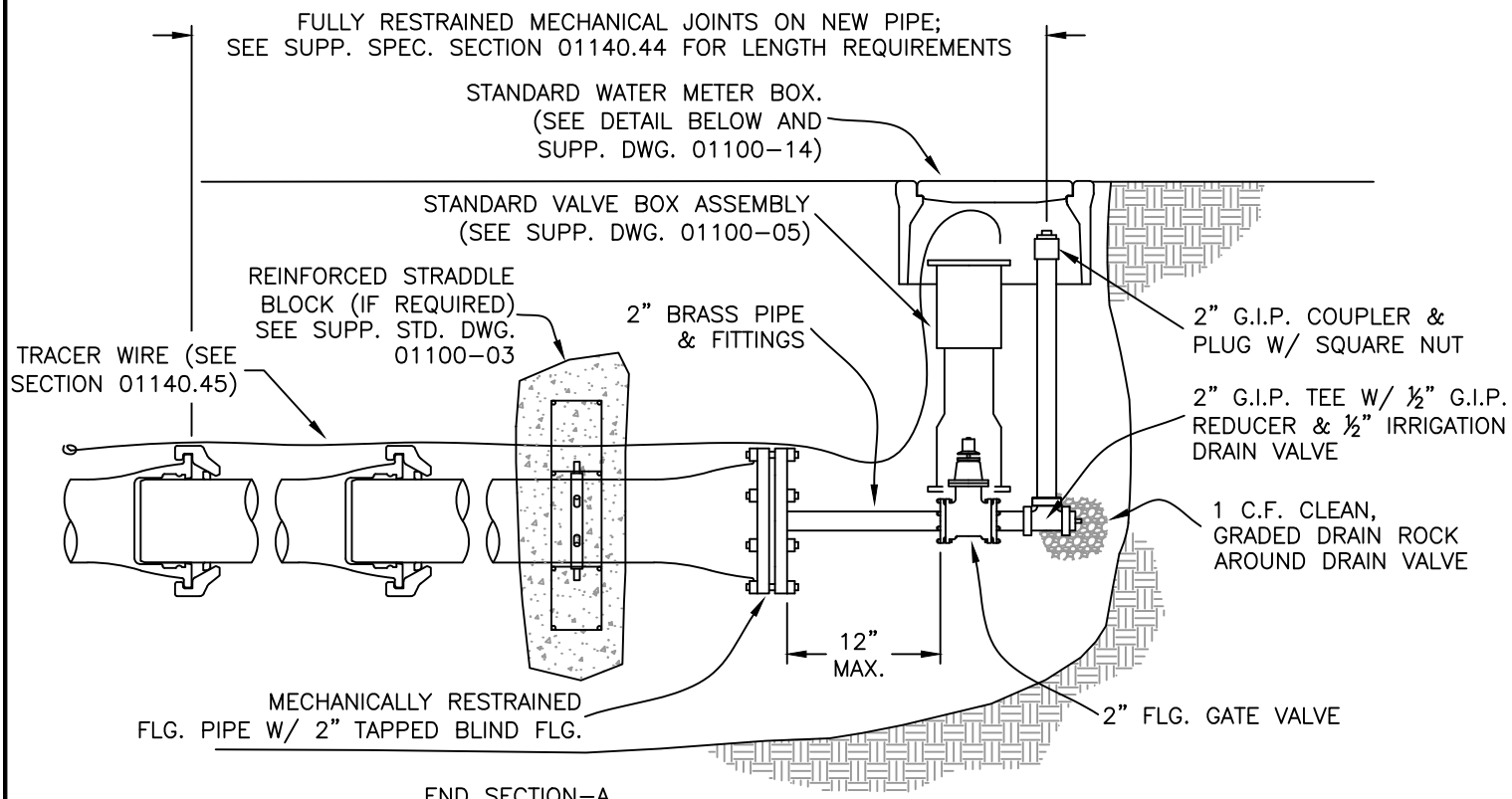
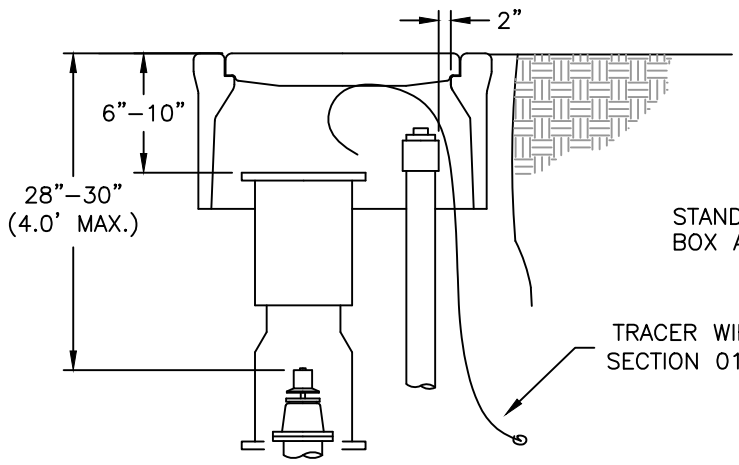
VALVE BOX & OPERATOR EXTENSION ASSY.

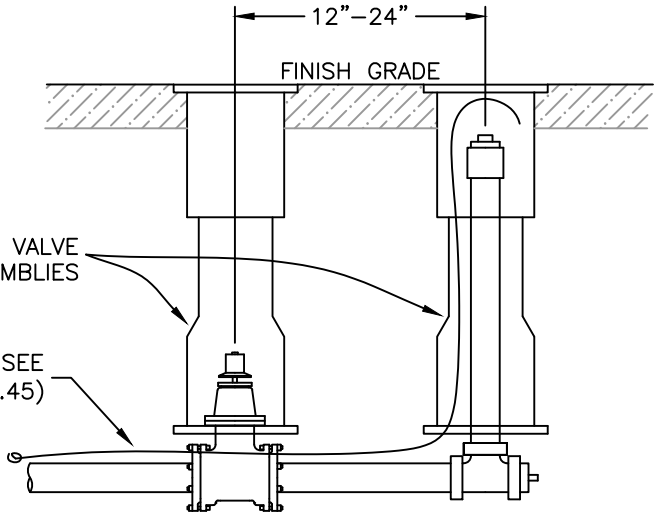
DRAWING NO: 01100-05



END SECTION–A
(NON–TRAFFIC AREAS)



WATER METER & VALVE BOX CLEARANCES
(TYP. FOR ALL INSTALLATIONS)



END SECTION–B
(PAVED/TRAFFIC AREAS)

NOTES:

1. IF EXISTING WATER MAIN IS UNRESTRAINED, USE THRUST BLOCKING AS REQUIRED (SEE SUPP. DWG. 01100–03).
2. ALL PIPE AND FITTINGS SHALL BE GALVANIZED IRON PIPE (G.I.P.) UNLESS OTHERWISE NOTED.
3. WRAP MAIN AND FITTING IN THRUST BLOCK ZONE WITH TWO LAYERS OF POLYETHYLENE FILM TO FACILITATE FUTURE REMOVAL.
4. IN LIEU OF CONCRETE THRUST BLOCKING, RESTRAIN PIPE MECHANICALLY BY APPROVED METHOD.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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December, 2021
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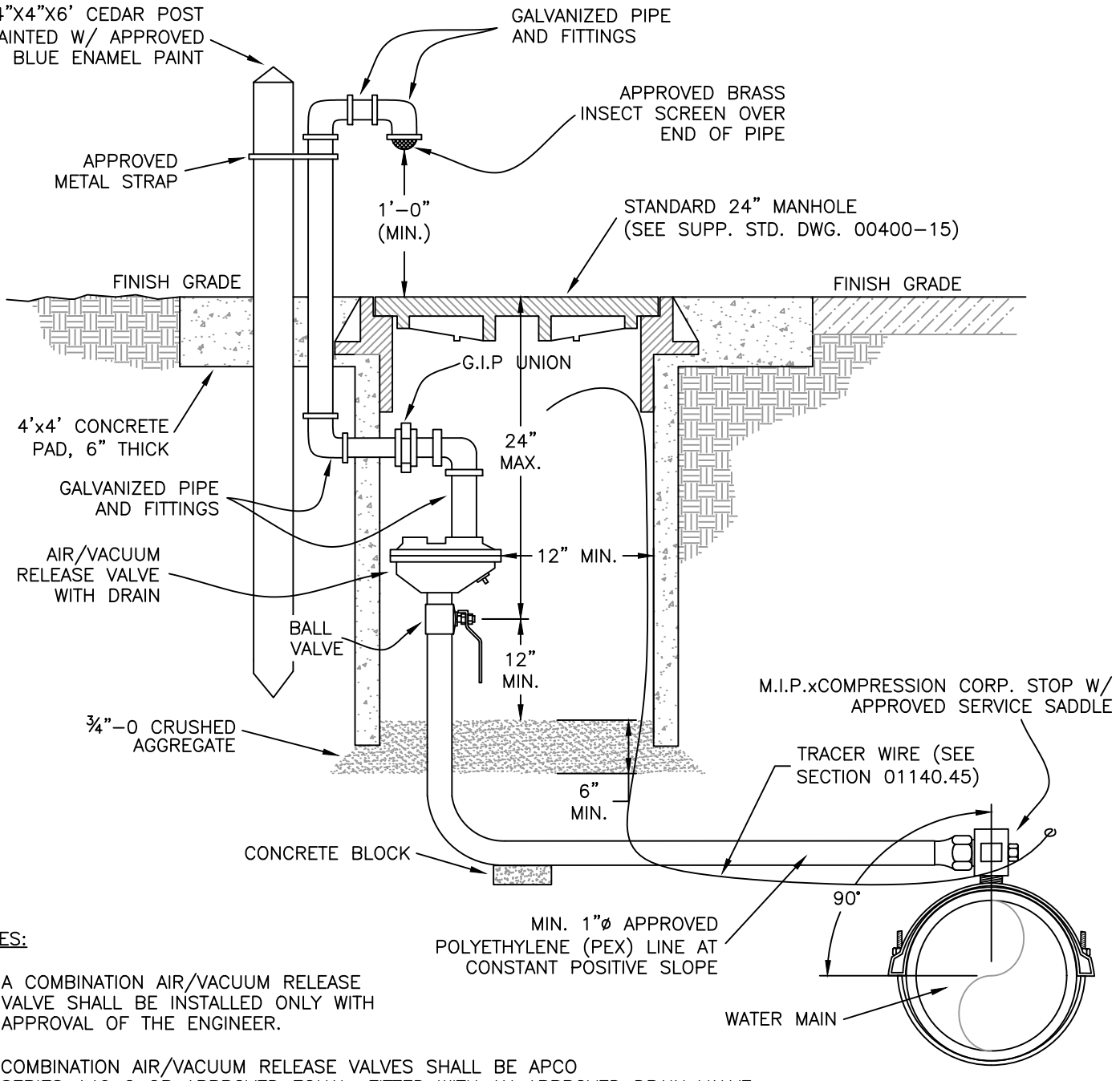
TYPICAL MAIN DEAD-END BLOW-OFF ASSEMBLY

DRAWING NO: 01100-06



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.
5. PIPE AND VALVE SIZES SHALL BE SPECIFIED BY THE ENGINEER.
6. PROVIDE INSULATION AND ADDITIONAL DEPTH WHERE SPECIFIED FOR FREEZE PROTECTION.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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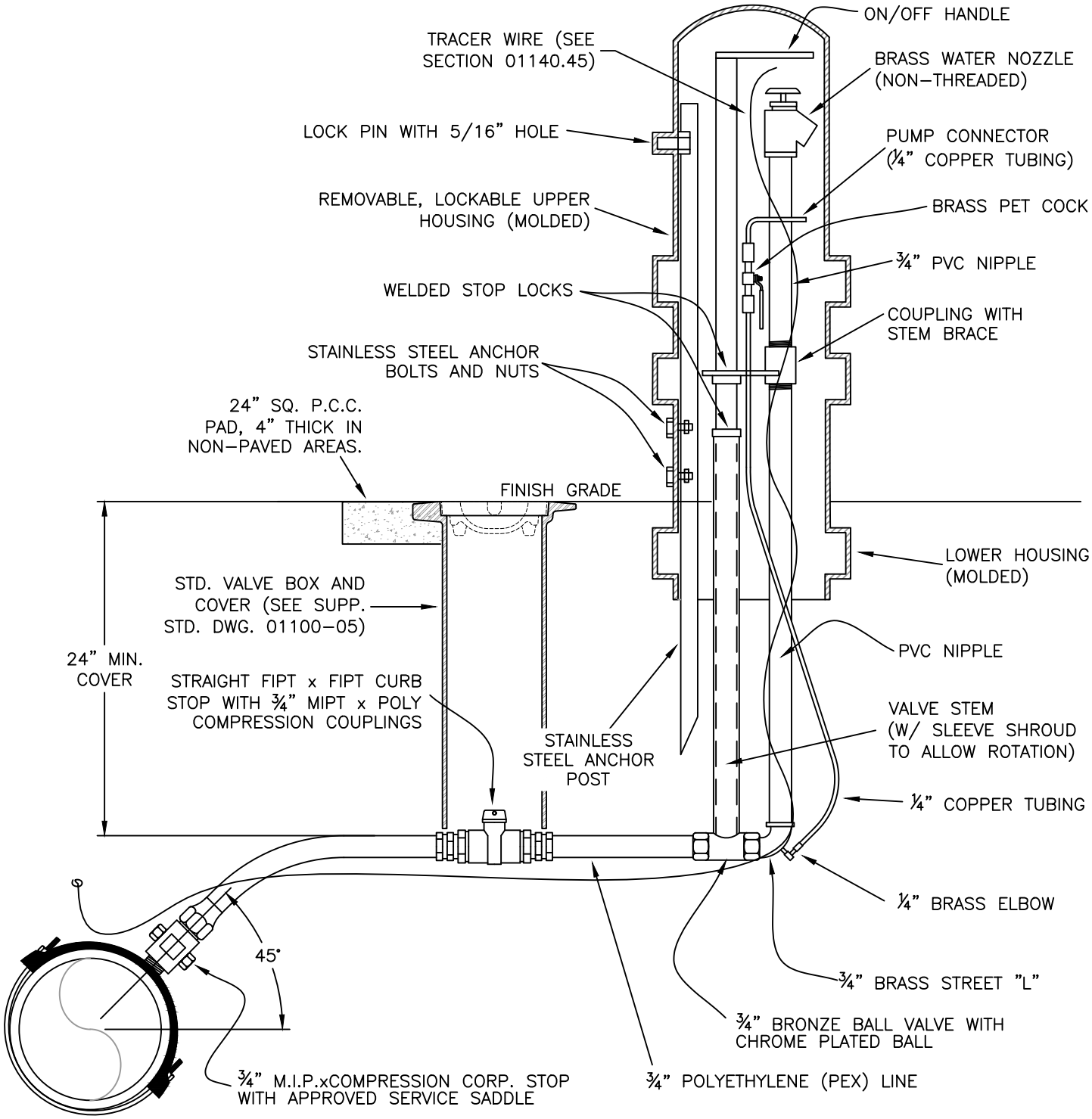
December, 2021

DATE

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.
3. PROVIDE INSULATION AND ADDITIONAL DEPTH WHERE SPECIFIED FOR FREEZE PROTECTION.

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December, 2021

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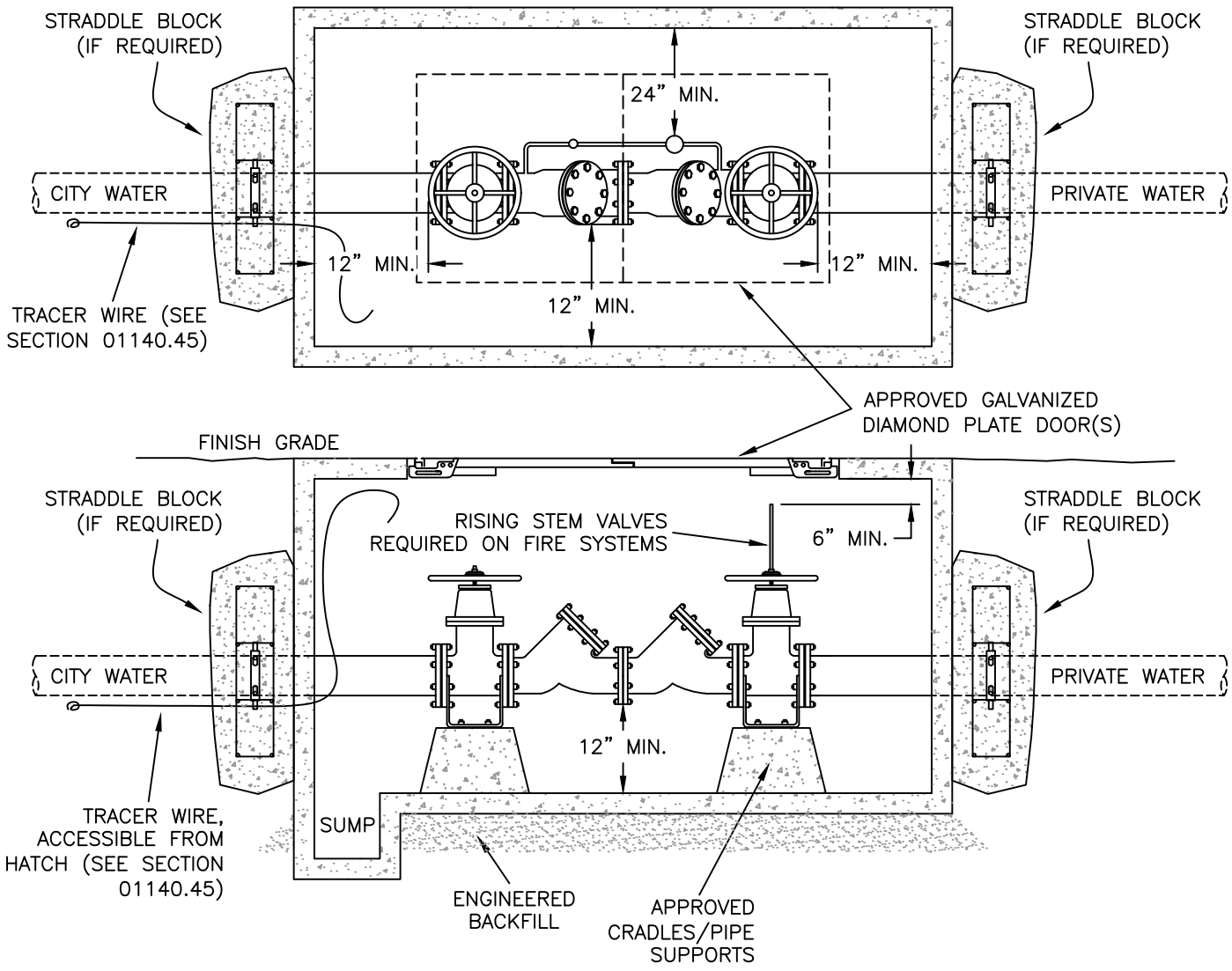
WATER SAMPLING STATION

DRAWING NO: 01100-08



NOTES:

1. VAULTS SHALL BE SIZED TO MEET SPECIFICATION AND MINIMUM CLEARANCES SHOWN HERE. VAULT DEPTH SHALL PROVIDE A MINIMUM OF 6" CLEARANCE TO VAULT LID WHEN VALVES ARE FULLY OPEN.
2. ALL VAULTS AND ASSEMBLIES SHALL BE ADEQUATELY SUPPORTED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STATE PUBLIC HEALTH DIVISION REQUIREMENTS.
3. WHEN REQUIRED, VAULTS SHALL BE DESIGNED FOR SITE-SPECIFIC CONDITIONS BY A LICENSED STRUCTURAL ENGINEER. APPROVED PRECAST VAULTS MAY BE USED IF SPECIFIED SIZES ARE AVAILABLE.
4. TO ACCOMMODATE VALVE MAINTENANCE AND REMOVAL, VAULT DOORS SHALL BE PLACED DIRECTLY ABOVE DEVICES AND VALVES/FITTINGS SHALL BE SUPPORTED AND RESTRAINED WITH APPROVED CRADLES AND/OR PIPE SUPPORTS.
5. A SUMP PUMP MAY BE REQUIRED TO CONTROL WATER INFILTRATION.
6. ALL DOUBLE CHECK DETECTOR ASSEMBLIES SHALL BE SUPPLIED WITH AN APPROVED REMOTE READ BYPASS METER. REMOTE READ SHALL BE LOCATED IN AN APPROVED METER BOX INSIDE OF RIGHT-OF-WAY.
7. ALL PIPES, VALVES AND FITTINGS SHALL BE DUCTILE IRON UNLESS OTHERWISE SPECIFIED.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

OREGON Lebanon

APPROVED

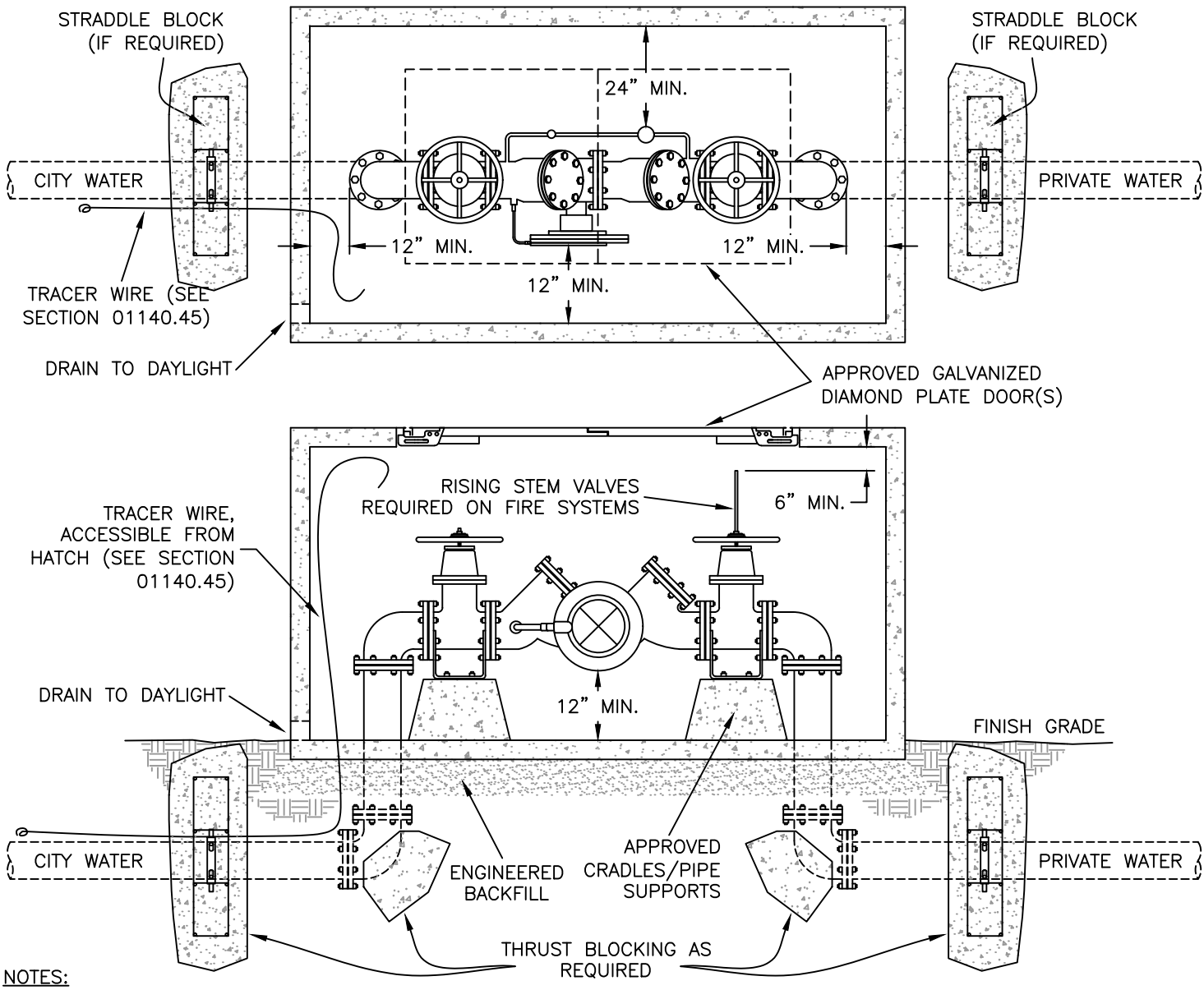
CITY ENGINEER

December, 2021

DATE

STANDARD DOUBLE CHECK DETECTOR ASSEMBLY

DRAWING NO: 01100-09



NOTES:

1. VAULTS SHALL BE SIZED TO MEET SPECIFICATION AND MINIMUM CLEARANCES SHOWN HERE. VAULT DEPTH SHALL PROVIDE A MINIMUM OF 6" CLEARANCE TO VAULT LID WHEN VALVES ARE FULLY OPEN.
2. ALL VAULTS AND ASSEMBLIES SHALL BE ADEQUATELY SUPPORTED AND CONSTRUCTED IN ACCORDANCE WITH APPLICABLE STATE PUBLIC HEALTH DIVISION REQUIREMENTS.
3. WHEN REQUIRED, VAULTS SHALL BE DESIGNED FOR SITE–SPECIFIC CONDITIONS BY A LICENSED STRUCTURAL ENGINEER. APPROVED PRECAST VAULTS MAY BE USED IF SPECIFIED SIZES ARE AVAILABLE.
4. TO ACCOMMODATE VALVE MAINTENANCE AND REMOVAL, VAULT DOORS SHALL BE PLACED DIRECTLY ABOVE DEVICES AND VALVES/FITTINGS SHALL BE SUPPORTED AND RESTRAINED WITH APPROVED CRADLES AND/OR PIPE SUPPORTS.
5. ALL DOUBLE CHECK DETECTOR ASSEMBLIES SHALL BE SUPPLIED WITH AN APPROVED REMOTE READ BYPASS METER. REMOTE READ SHALL BE LOCATED IN AN APPROVED METER BOX INSIDE OF RIGHT–OF–WAY.
6. ALL PIPES, VALVES AND FITTINGS SHALL BE DUCTILE IRON UNLESS OTHERWISE SPECIFIED.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

OREGON Lebanon

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CITY ENGINEER

December, 2021

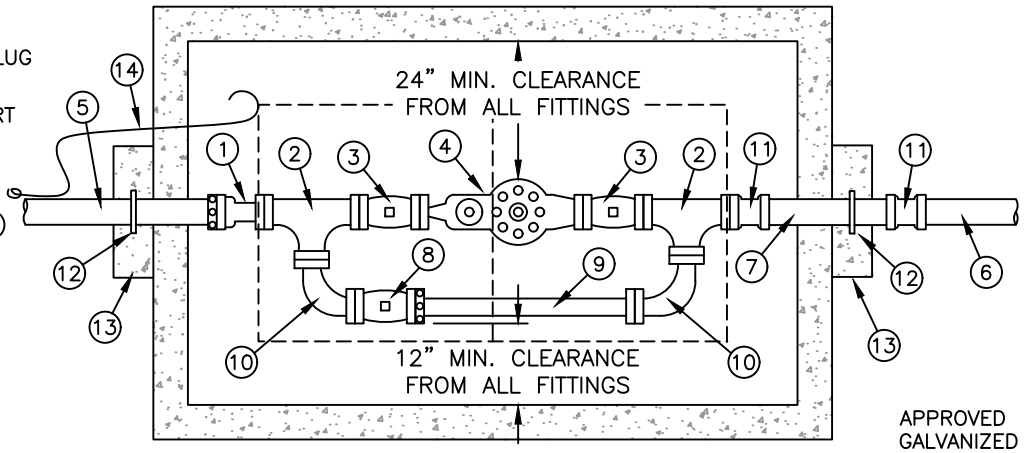
DATE

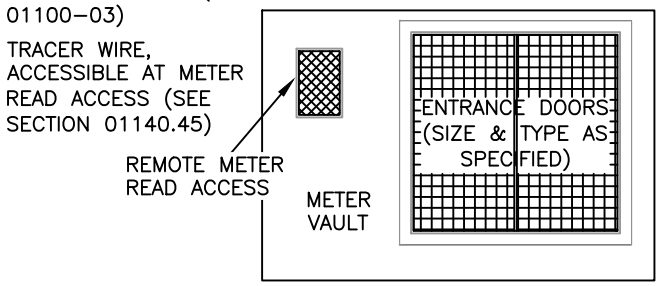
REDUCED PRESSURE DOUBLE CHECK DETECTOR ASSY.

DRAWING NO: 01100-10

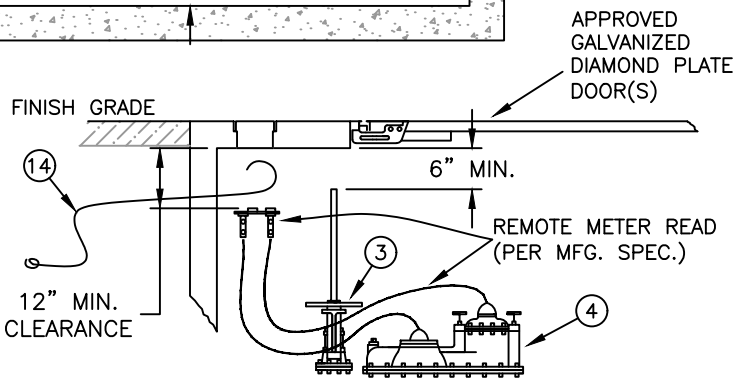
LEGEND:

1. M.J.xFLG. ADAPTER WITH MEG-A-LUG RETAINER GLAND
2. FLG. TEE WITH APPROVED SUPPORT
3. FLG. GATE VALVE
4. COMPOUND METER (DOMESTIC)
5. DUCTILE IRON SERVICE (CITY SIDE)
6. EXISTING SERVICE (PRIVATE SIDE)
7. AS SPECIFIED
8. FLG.xM.J. GATE VALVE
9. FLG.xP.E. SPOOL
10. FLG. 90° ELBOW
11. ADAPTER
12. RETAINER GLAND (TYP.)
13. STRADDLE BLOCK (SEE SUPP. STD. DWG. 01100-03)
14. TRACER WIRE, ACCESSIBLE AT METER READ ACCESS (SEE SECTION 01140.45)





PLAN VIEW



ELEVATION VIEW

NOTES:

1. VAULTS SHALL BE SIZED TO MEET SPECIFICATION AND MINIMUM CLEARANCES SHOWN HERE. VAULT DEPTH SHALL PROVIDE A MINIMUM OF 6" CLEARANCE TO VAULT LID WHEN VALVES ARE FULLY OPEN.
2. ALL VAULTS SHALL BE ADEQUATELY SUPPORTED, WATER-TIGHT AND DESIGNED TO PREVENT BUOYANCY DUE TO GROUNDWATER CONDITIONS.
3. WHEN REQUIRED, VAULTS SHALL BE DESIGNED FOR SITE-SPECIFIC CONDITIONS BY A LICENSED STRUCTURAL ENGINEER. APPROVED PRECAST VAULTS MAY BE USED IF SPECIFIED SIZES ARE AVAILABLE.
5. TO ACCOMMODATE VALVE MAINTENANCE AND REMOVAL, VAULT DOORS MUST BE PLACED DIRECTLY ABOVE DEVICES AND VALVES/FITTINGS SHALL BE SUPPORTED AND RESTRAINED WITH APPROVED CRADLES AND/OR PIPE SUPPORTS.
6. A SUMP PUMP MAY BE REQUIRED TO CONTROL WATER INFILTRATION.
7. ALL PIPES, VALVES AND FITTINGS SHALL BE DUCTILE IRON UNLESS OTHERWISE SPECIFIED.
8. STANDARD BYPASS SIZE IS 2" DIA.; SERVICE LINE SIZE MAY VARY ACCORDING TO NEED.
9. METER ASSEMBLIES MAY BE ELIMINATED ON STATIC PRESSURE FIRE SUPPRESSION SYSTEMS, PROVIDED A DETECTION LOOP IS INSTALLED WITH THE BACKFLOW PREVENTION DEVICE.
10. BACKFLOW PREVENTION DEVICES SHALL BE INSTALLED ON ALL IRRIGATION LINES, SERVICES 2" AND LARGER OR AS OTHERWISE REQUIRED (SEE SUPP. STD. DWG. 01100-09 & 01100-10).
11. TEES AND VALVES SHALL BE SUPPORTED WITH CONCRETE BLOCKS, JACKS OR ADJUSTABLE PIPE SUPPORTS.
12. PROVIDE FLEXIBLE CONNECTIONS ON EXTERIOR PIPING WITHIN 18" OF VAULT WALL.
13. PROVIDE OPENING AND LADDER LOCATIONS, VAULT DRAINAGE AND PIPE PENETRATIONS IN ACCORDANCE WITH SPECIAL PROVISIONS AND CONTRACT DRAWINGS.
14. PROVIDE 12" CLEARANCE FROM ALL FITTINGS & VALVES TO FLOOR AND WALLS.

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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December, 2021

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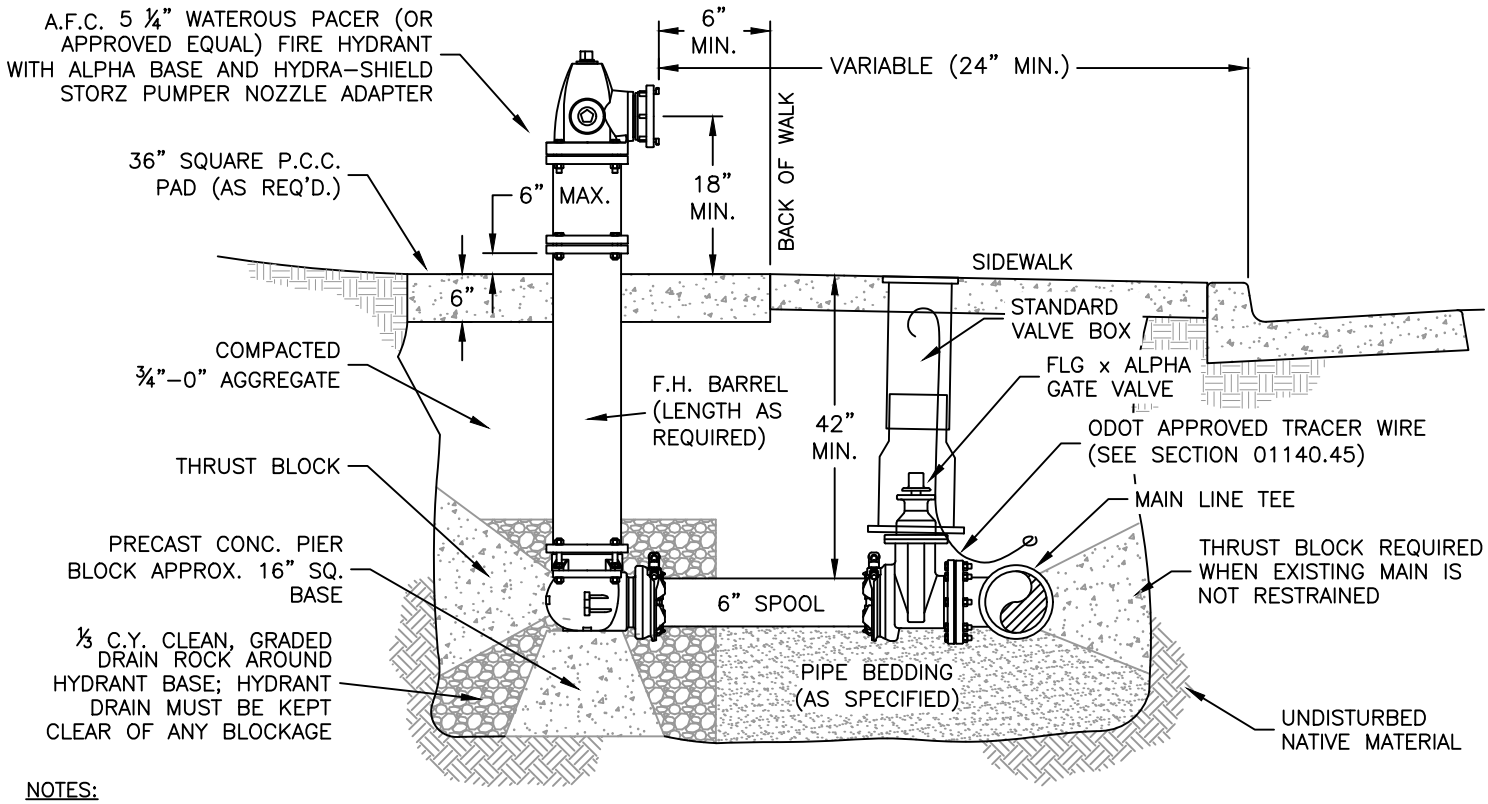
METER VAULT WITH REMOTE READ (LARGER THAN 2")

DRAWING NO: 01100-11



NOTES:

1. HYDRANTS SHALL BE 5 ¼" 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.
2. ANY REQUIRED BARREL EXTENSIONS SHALL MEET MANUFACTURER SPECIFICATIONS FOR TYPE AND INSTALLATION.
3. 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.
4. HYDRANTS SHALL BE PLACED TO PROVIDE A MINIMUM OF 5' CLEARANCE FROM DRIVEWAYS, POLES, TREES AND OTHER OBSTRUCTIONS.
5. WHEN PLACED ADJACENT TO THE CURB, THE PUMPER NOZZLE SHALL BE LOCATED A MINIMUM OF 24" FROM FACE OF CURB.
6. 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.
7. HYDRANT BASES MUST BE SUPPORTED ON COMPETENT SUBGRADE WITH AN APPROVED PRECAST P.C.C. PIER BLOCK.
8. 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.
9. A MINIMUM OF ⅓ 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.
10. 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.
11. 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.
12. IF PROTECTIVE BOLLARDS ARE REQUIRED, THEY SHALL BE INSTALLED CLEAR OF THE PAD AND PLACED 45° OFF PORT POSITIONS OR AS AS DIRECTED BY THE ENGINEER (SEE SUPP. STD. DWG. 00800-01).
13. 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

OREGON Lebanon

APPROVED

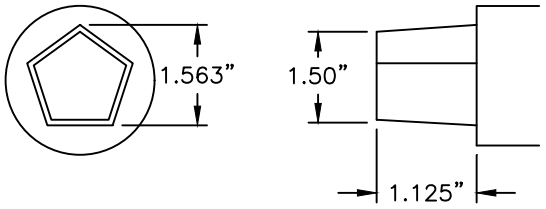
CITY ENGINEER

December, 2021

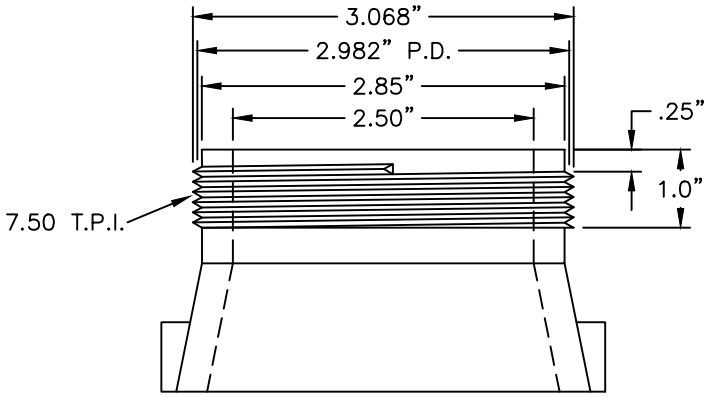
DATE

FIRE HYDRANT ASSEMBLY

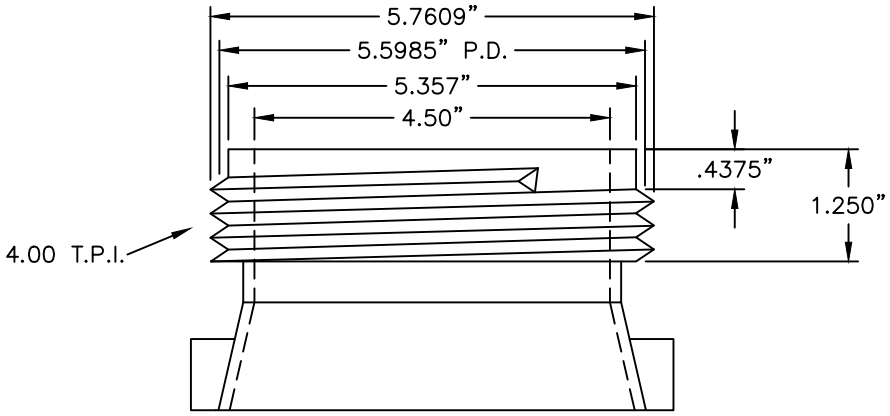
DRAWING NO: 01100-12



1 ½" OPERATING NUT



2 ½" HOSE NOZZLE
(NATIONAL STANDARD)



4 ½" PUMPER OUTLET (STEAMER) NOZZLE
(NATIONAL STANDARD)

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

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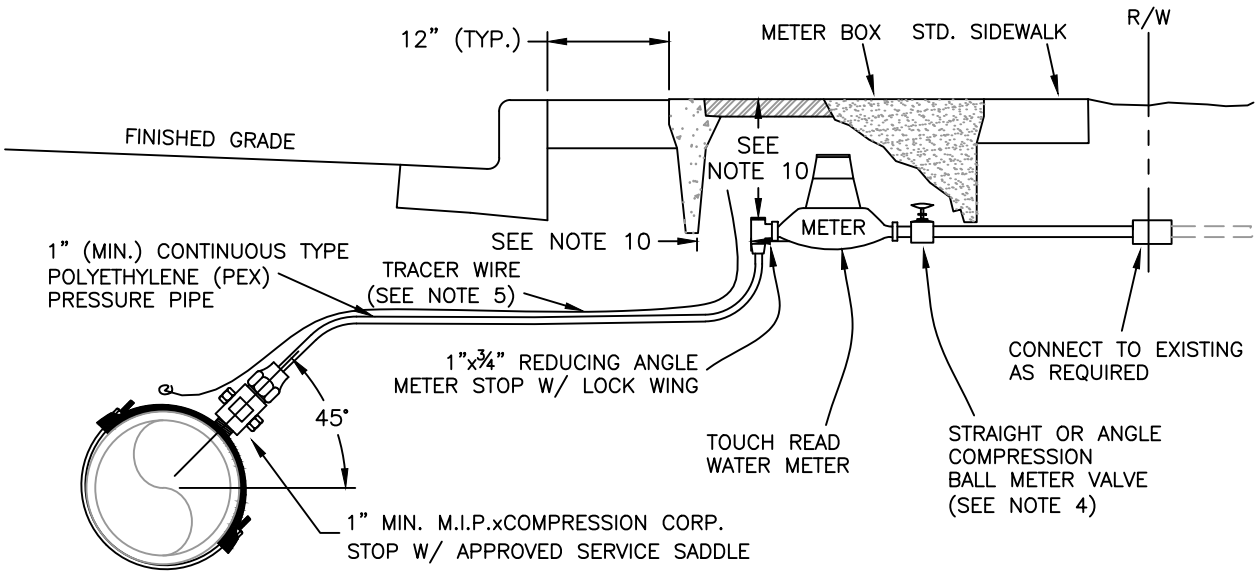
December, 2021
DATE

FIRE HYDRANT OPERATING NUT & NOZZLES

DRAWING NO: 01100-13

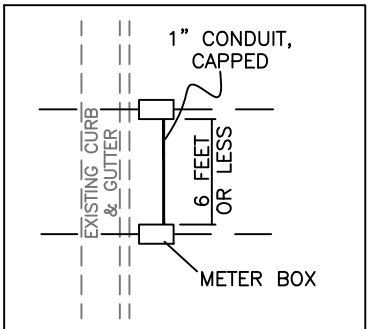


NOTES:

1. THE DETAIL SHOWN ABOVE REPRESENTS A STANDARD WATER SERVICE WITH A ⅝" x ¾" 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.
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. WHEN A NEIGHBORING BOX IS WITHIN 6 FEET, A 1 INCH CAPPED CONDUIT IS REQUIRED TO CONNECT THE METER BOX ASSEMBLIES. SEE DETAIL BELOW.
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. FOR ⅝" x ¾" METERS:
    - A. METER STOPS MUST BE 6" TO 10" BELOW THE TOP OF THE METER BOX.
    - B. METER STOPS MUST BE 2 ½" TO 4 ½" 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 ½" TO 3 ½" FROM THE INSIDE WALL.

    FOR 1 ½" & 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.



METER BOX ASSEMBLY DETAIL

CITY of LEBANON 2021 SUPPLEMENTAL STANDARD DRAWING

APPROVED

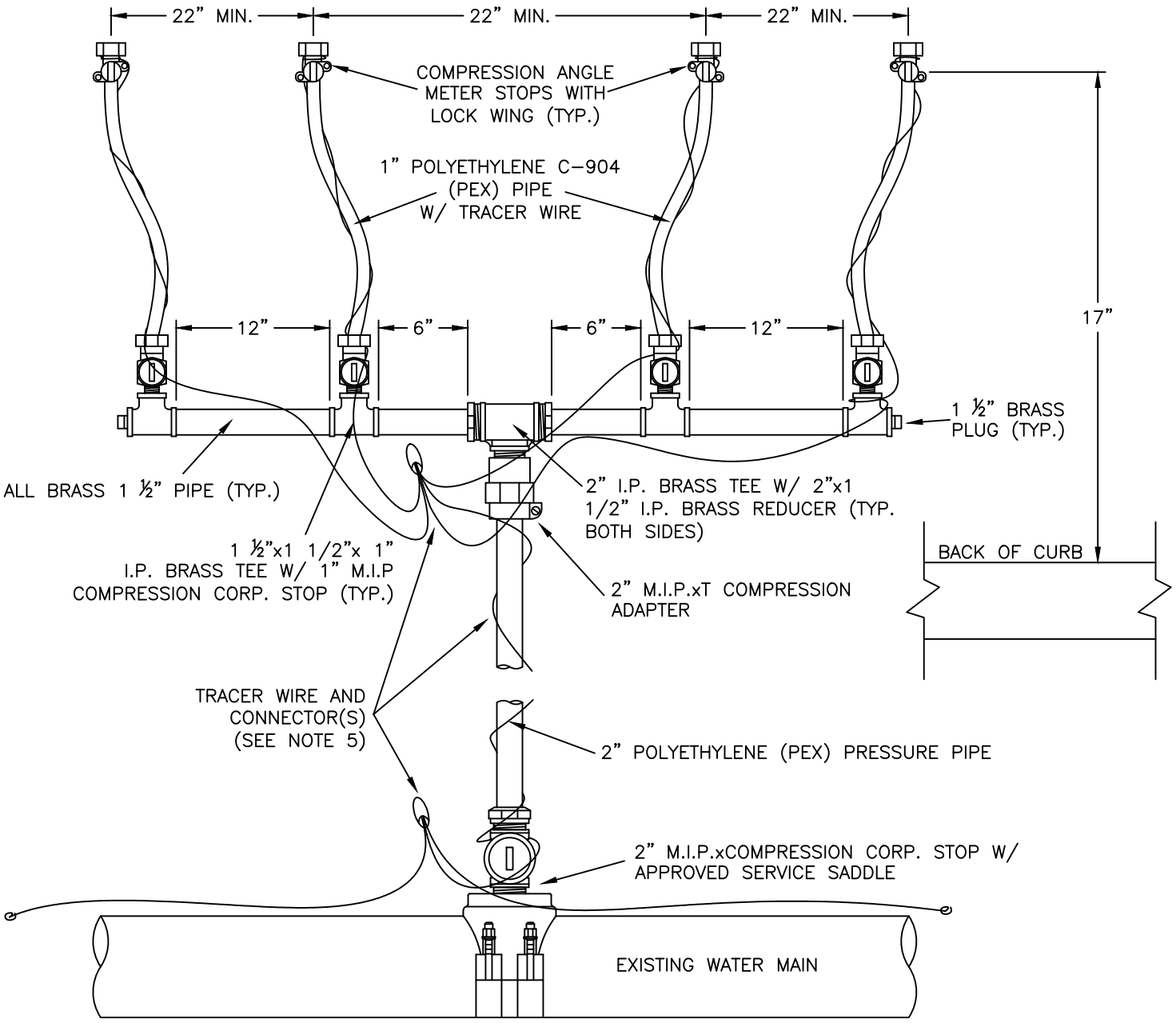
CITY ENGINEER

December, 2021

DATE

STANDARD WATER METER ASSEMBLY (⅝" x ¾" 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.
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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WATER SERVICE MANIFOLD

DRAWING NO: 01100-15