



MODIFICATIONS TO MONTANA PUBLIC WORKS

STANDARD SPECIFICATIONS

AND

STANDARD DRAWINGS

FOR

UTILITY IMPROVEMENTS

Adopted May 13, 2008

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FOREWORD

Because the Town of Manhattan has unique requirements which are not addressed in the “Montana Public Works Standard Specifications” (MPWSS), Fifth Edition, March, 2003, the “Town of Manhattan Modifications To Montana Public Works Standard Specifications” was created. This document addresses those specific requirements which the Town of Manhattan has pertaining to Public Works projects which are not addressed in the MPWSS. All Public Works Projects for the Town of Manhattan shall be done in accordance with MPWSS and the Town of Manhattan Modifications to MPWSS.

Where a Town of Manhattan modification to MPWSS does not exist for a particular Section of MPWSS it shall be assumed the work is to be completed in accordance with the appropriate MPWSS Section. When a Town of Manhattan modification to the MPWSS does exist the requirements of that modification supersede the related MPWSS requirement. The same holds true for Town of Manhattan Standard Drawings; however, there are some Town of Manhattan Standard Drawings which do not replace or supersede the MPWSS Standard Drawing but are additional drawings created specifically for the Town of Manhattan.

Each Section of the MPWSS that has been modified is listed in the Table of Contents of the “Town of Manhattan Modifications To Montana Public Works Standard Specifications.” The entire Section from the MPWSS has not been rewritten for these modifications. Instead, modifications are indicated for a specific subsection, paragraph, sentence or drawing.

REVIEW, SUBMITTAL AND INSPECTION REQUIREMENTS

1. A pre-design meeting will be held with the Town prior to beginning design to discuss design standards, project coordination issues with the Town, and the project in general.
2. Plans and Specifications shall be submitted to the Town of Manhattan for review and approval at least 60 days prior to the desired advertising date. Two copies of the complete set of Contract documents shall be submitted for review. Complete plans and specifications shall be submitted to the Town and to the Montana Department of Environmental Quality for projects involving public water and sewer. All documents shall be sealed by a professional Engineer.
3. The Town of Manhattan will try to review all submittals and return comments within 30 days. Two copies of the complete revised documents shall be submitted to the Town for final review and approval. If approved one copy of the approved documents will be kept by the Town. One approved copy will be returned to the submitter.
4. A pre-construction conference with representatives of the Town, Project Engineers, Developer and Contractor shall be held at least 10 days prior to construction of any project.
5. The Project Engineer is responsible for observing the work in progress and assuring compliance with the approval plans and specifications. The Town will determine if the Project Engineer will have a project representative or inspector on site at all times construction is in progress.
6. The project representative or inspector is subject to approval by the Town. The Town will determine if the Project Engineer will submit qualifications of the proposed project representative or inspector to the Town for approval at least 10 days prior to the pre-construction conference. No construction shall proceed until the Town has approved a project representative or inspector.
7. Upon completion of the work, the Project Engineer shall certify in writing that the work has been completed in accordance with the approved plans and specifications. The Project Engineer or Developer shall provide the Town of Manhattan with one complete set of mylar drawings and two paper copies of the As-Constructed drawings. Drawings shall be stamped by the Project Engineer. One complete set of the Project Engineer's daily inspection notes, compaction tests, bacteriological tests, concrete and asphalt test results, pressure and leakage tests, warranties, and certifications shall be submitted concurrently, with the As-Constructed drawings. Failure to provide adequate

record demonstrating compliance with the approved plans and specifications is grounds for the Town to not accept the completed project.

8. No streets will be disturbed for reconstruction or utility installation after October 15th or before April 15th without express written permission by the Town of Manhattan. All streets must be completely restored and paved before November 1st.

INCORPORATION OF MONTANA PUBLIC WORKS TECHNICAL SPECIFICATIONS

The following Technical Specifications as found in Montana Public Works, Fifth Edition, March 2003; are hereby incorporated by reference without modification except for deletion of PART 4 – MEASUREMENT AND PAYMENT.

SECTION 01041 -	Project Coordination
SECTION 01090 -	References
SECTION 01500 -	Construction and Temporary Facilities
SECTION 01570 -	Construction Traffic Control
SECTION 02110 -	Geotextiles
SECTION 02113 -	Adjusting Existing Manholes, Lampholes, Inlets, Water Valve Boxes, and Fire Hydrants to Grade
SECTION 02114 -	Relocating or Removing Utility Poles, Street Sign and Mailboxes
SECTION 02504 -	Asphalt Seal Coat
SECTION 02505 -	Construction Seal
SECTION 02515 -	Portland Cement Concrete Pavement
SECTION 02910 -	Seeding
SECTION 02920 -	Hydraulic Seeding
SECTION 03210 -	Reinforcing Steel
SECTION 03310 -	Structural Concrete

Incorporation of Town of Manhattan Technical Specifications and Modifications to MPW Technical Specifications.

In addition to the above listed MPW Standard Specifications are the following Town of Manhattan Technical Specifications and Modifications to MPW Standard Specifications.

INSTRUCTION TO BIDDERS SPECIAL PROVISIONS

SECTION 01005 -	Permits and Fees
SECTION 01010 -	Summary of Work
SECTION 01011 -	Measurement and Payment
SECTION 01050 -	Field Engineering
SECTION 01300 -	Submittals
SECTION 01400 -	Contractor Quality Control and Owner Quality Assurance
SECTION 01700 -	Contract Closeout
SECTION 02112 -	Removal of Existing Pavement, Concrete Curb, Sidewalk, Driveway, and/or Structures
SECTION 02221 -	Trench Excavation and Backfill for Pipelines and Appurtenant Structures
SECTION 02225 -	Flowable Fill
SECTION 02230 -	Street Excavation, Backfill and Compaction
SECTION 02234 -	Sub-Base Course
SECTION 02235 -	Crushed Base Course
SECTION 02502 -	Asphalt Prime and/or Tack Coat
SECTION 02510 -	Asphalt Concrete Pavement

SECTION 02528 - Concrete Curb and Gutter
SECTION 02529 - Concrete Sidewalks, Driveways, Approaches, Curb Turn Fillets, Valley Gutters,
and Miscellaneous New Concrete Construction
SECTION 02581 - Pavement Markings and Markers (Pre-Formed Plastic, Paints and Enamels)
SECTION 02582 - Reflective Thermoplastic Pavement Markings
SECTION 02585 - Gravel Roadway and Parking Lots
SECTION 02660 - Water Distribution
SECTION 02679 - Water Service Meters and Meter Pits
SECTION 02720 - Storm Drain Systems
SECTION 02730 - Sanitary Sewer Main Materials
SECTION 02913 - Street Signs

**NOTE: Measurement and Payment provisions included in these sections are superseded
by Section 01011.**

INSTRUCTION TO BIDDERS

Any contract documents for which the Town of Manhattan acts as the contracting agent, (i.e., signatory to the contract), shall include the following additions or changes to the Montana Public Works Standard Specifications.

BID QUANTITIES Bidders must satisfy themselves by personal examination of the locations of the proposed work and by such other means as they may prefer as to the correctness of any quantities.

The estimated unit quantities of the various classes of work to be done under this contract are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. The Contractor agrees that, during progress of the work, the Owner may find it advisable to omit portions of the work, to increase or decrease the quantities as may be deemed necessary or desirable, that the actual amount of work to be done and materials to be furnished may differ from the estimated quantities, and that the basis for payment under this contract shall be the actual amount of work done and the materials furnished.

The Contractor agrees that he will make no claim for damages, anticipated profits or otherwise on account of any difference which may be found between quantities of work actually done and the estimated quantities.

BID REQUIREMENTS The Bidder is expected to base his bid on materials and equipment complying fully with the plans and specifications and, in the event he names in his bid materials or equipment which do not conform, he will be responsible for furnishing materials and equipment which fully conform at no change in his bid price.

Before submitting a proposal, each Contractor should read the complete Contract Documents (including all addenda), specifications and plans, including all related documents contained herein, all of which contain provisions applicable not only to the successful Bidder, but also to his subcontractors.

EXAMINATION Examine documents and conditions at existing site carefully. No extra payments will be given for conditions which can be determined by examining documents and existing conditions.

QUESTIONS Submit to Engineer. Replies will be issued to Bidders of record as addenda. Engineer and Owner shall not provide nor be responsible for any oral clarification.

PROPOSAL

1. The Bidder shall submit his proposal on the forms bound in these Contract Documents. Neither the proposal nor any other pages bound herein or attached hereto shall be detached.

2. Proposals shall be in a sealed envelope and addressed to:

Town Hall
120 West Main
Manhattan, Montana 59741

The envelope shall also contain the following information:

- a. Name of Project
 - b. Name of Contractor
 - c. Montana Certificate of Contractor Registration Number
 - d. Acknowledge Receipt of Addendum No.: __, __, __,
 - e. In the lower left-hand corner of the envelope print or type: BID DOCUMENTS – DO NOT OPEN UNTIL _____ p.m., on _____, 20__.
3. Proposals shall be made in accordance with the following instructions:
- a. Submit one copy of the complete bound documents in an opaque sealed envelope. DO NOT REMOVE THE PROPOSAL NOR ANY OTHER PAGES FROM THE BOUND CONTRACT DOCUMENT.
 - b. Bids shall be made in ink upon the unaltered Bid Proposal Form supplied with these documents.
 - c. All blank spaces must be properly filled.
 - d. The total bid price must be stated in both writing and in figures. In case of a discrepancy between unit price and total bid price, the unit prices or lump sum prices shall be used in computing the total bid price.
 - e. The proposal form shall contain no addition, conditions, stipulations, erasures, or other irregularities. The proposal form shall be printed or typed.
 - f. The proposal must acknowledge receipt of all addenda issued.
 - g. The proposal must be signed in ink and display the Bidder's name, address, and correct Montana Contractor's Registration Number.
 - h. The Town's contact person is _____.

SIGNING OF BIDS

- a. Bids which are not signed by individuals making them shall have attached thereto a Power of Attorney evidencing authority to sign the bid in the name of the person for whom it is signed.
- b. Bids which are signed for a co-partnership shall be signed by all of the co-partners or by an attorney-in-fact. If signed by an attorney-in-fact, there shall be attached to the bid a Power of Attorney evidencing authority to sign the bid.

- c. Bids which are signed for a corporation shall have the correct corporate name thereof signed in handwriting or in typewriting and the signature of the president or other authorized officer of the corporation shall be manually written below the written or typewritten corporate name following the work:

By:

Corporate Seal:

Title:

- d. If bids are signed for any other legal entity, the authority of the person signing for such legal entity should be attached to the bid.

TELEGRAPHIC MODIFICATION Any Bidder may modify his bid by telegraphic communication at any time prior to the scheduled closing time for receipt for bids. The telegraphic communication shall not reveal the bid price, but shall only provide the addition or subtraction from the original proposal. Telegraphic proposal modifications must be verified by letter. This written confirmation shall be received no later than three (3) working days following the bid opening or no consideration will be given to the telegraphic modification.

LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT The successful Bidder, upon his failure or refusal to execute and deliver the contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the Owner as liquidated damages for such failure or refusal, the security deposited with his bid, as provided in Chapter 5, Section 6-501, Revised Codes of Montana, 1947.

GROSS RECEIPTS WITHHOLDING In accordance with Section 15-50-206, Montana Code Annotated, the Town of Manhattan must withhold one percent (1%) of incremental payments due the Contractor for remittance to the Department of Revenue for any contracts greater than \$5,000.00.

TOWN OF MANHATTAN All Contractors conducting work within the Town of Manhattan are required to have a current Business License. Applications for Business Licenses may be obtained at Town Hall, 120 West Main, Manhattan, Montana, 59741.

END OF SECTION

SPECIAL PROVISIONS

Any contract documents for which the Town of Manhattan acts as the contracting agent, (i.e., signatory to the contract), shall include the following additions or changes to the Montana Public Works Standard Specification.

1. GENERAL

All work shall be performed in accordance with these specifications. Applicable sections of the Montana Public Works Standard Specifications, Fifth Edition (MPWSS-5th), published March, 2003, including all addenda, which by this reference are hereby included as part of this specifications as modified herein by the Town of Manhattan.

Plans and specifications shall be submitted to the Town of Manhattan for review and approval at least 60 days prior to advertising any project.

At the completion of a street or utility project the project engineer or the developer shall provide the Town of Manhattan with one complete set of reproducible Mylar and two paper copies of the as-built drawings.

2. AWARD OF CONTRACT

The award of the contract, if awarded, will be made in the best interest of the Town of Manhattan within the period specified in the Invitation to Bid. Award will be made to the lowest responsible Bidder whose bid complies with all the requirements prescribed herein. The successful Bidder will be notified by letter, mailed to the address shown on the bid, that his bid has been accepted and that he has been awarded a contract. The bid schedules may be awarded as a single total combined contract, may be awarded singly as separate contracts, or in any combination of schedules which result in the lowest project cost to the Owner.

3. TIME OF COMMENCEMENT AND COMPLETION DATE

The beginning of the contract time shall be stated in a written NOTICE TO PROCEED written by the Project Engineer to the Contractor. In establishing the date when contract time begins, the Project Engineer will consider that the contract time begins following delivery of the NOTICE TO PROCEED. The contract time will expire automatically at the end of the number of calendar days stated for contract time, except as the contract time may be extended by change order. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement.

4. LIQUIDATED AND OTHER DAMAGES

Subject to the provisions of the contract documents, the Owner shall be entitled to liquidated and other damages for failure of the Bidder to complete the work within the specified contract time.

The Bidder agrees to pay liquidated damages for compensation to the Owner for unspecified expenses incurred by the Owner during the contract time overrun. The Bidder also agrees to pay all costs the Owner incurs for additional construction administration, engineering, inspection, and legal costs that the Town incurs due to the Contractor failing to complete the work within the specified contract time.

As compensation for expenses incurred, the Contractor shall be assessed a liquidated damage of \$200.00 per calendar day plus all the costs the Town incurs due to added construction administration, engineering, inspection and legal costs for each day that the work remains uncompleted beyond the contract period. Specific damages, liquidated damages, construction administration, engineering, inspection and legal costs shall be paid by deduction from monthly progress payments and the final payment.

5. COST LIMITATIONS

The Owner reserves the right to eliminate or reduce certain proposal items from the project following the bid opening to make the project financially feasible within the limitations of the funds allocated for this project. The determination of which items shall be eliminated shall be the responsibility of the Owner. If the overall contract price changes more than 15 percent, the Bidder may elect to withdraw his bid with no penalty.

6. NAMES, PRODUCTS AND SUBSTITUTIONS

Where products or materials are specified by manufacturer, trade name, or brand, such designations are intended to indicate the required quality, type, utility, and finish. Requests for proposed substitution shall include complete specifications and descriptive data to prove the equality of proposed substitutions. Substitutions shall not be made without the written approval of the Owner. No substitutions will be considered until after contract award.

7. APPROVAL OF EQUIPMENT AND MATERIAL

Upon request by the Owner, the Contractor shall furnish to the Owner or its Engineer for approval the name of the manufacturer of any equipment or material which he contemplates using in execution of the work, together with the performance capacities and such other information which may be pertinent or required by the Owner.

8. BIDDER'S QUALIFICATIONS

The Contractor shall show evidence that he has the finances, organization, and equipment to perform the work with a limited number of subcontractors. The Contractor will be required to have a full-time resident General Superintendent on the job at all times while the work is in progress. He shall be in a position to direct the work and make decisions either directly or through immediate contact with his superior. Absence or incompetence of the Superintendent shall be reason for the Owner to stop all work on the project.

9. WARRANTY

If, within one year after acceptance of the work by the Owner, any of the work is found to be defective or not in accordance with the Contract Documents, and upon written notice from the Owner, the Contractor shall correct any work beginning within seven (7) calendar days of said written notice. Should the Contractor fail to respond to the written notice within the designated time, the Owner may correct the work at the expense of the Contractor.

10. SCHEDULING

Prior to or at the PRECONSTRUCTION CONFERENCE, the Contractor shall provide the Owner the following schedules:

- A. A practicable CONSTRUCTION PROGRESS SCHEDULE showing the order, timing and progress in which the Contractor proposes to prosecute the work. This schedule shall be in bar graph, CPM or PERT format. The schedule shall be updated and re-submitted as necessary to reflect project changes.
- B. A PAYMENT SCHEDULE showing the anticipated amount of each monthly payment that will become due the Contractor in accordance with the Construction Progress Schedule.

11. PRECONSTRUCTION CONFERENCE

After the contract(s) have been awarded, but before the start of construction, a preconstruction conference will be held at the site of the project for the purpose of discussing requirements on such matters as project supervision, on-site inspection, coordination with city staff, progress schedules and reports, payrolls, payment to contractors, contract change orders, insurance, safety, and any other items pertinent to the project. The Contractor shall arrange to have all supervisory personnel and a representative from each of the affected utility companies connected with the project on hand to meet with a representative of the Owner to discuss the project and any problems anticipated.

12. SHOP AND FABRICATION DRAWINGS

The Contractor shall prepare and submit fabrication drawings, design mix information, material testing compliance data, and other data in accordance with the General Conditions. Shop drawings shall be submitted for all materials to be utilized in the work. Following review, the Contractor shall resubmit copies of any drawings which required revision or correction.

Any review by the Owner will not relieve the Contractor from responsibility for errors or omissions, inadequate design performance requirements, schedule requirements, and proper operations of any item required under the Contract. Notwithstanding any such review, Contractor shall remain solely responsible for full and complete performance in accordance with the terms, conditions, provisions, drawings and specifications set forth in the Contract Documents.

13. PERMITS, LICENSES, AND FEES

The Contractor shall procure and pay for all fees, permits, licenses and bonds necessary for the prosecution of the work and/or required by Municipal, State and Federal regulations, laws, and ordinances including those that pertain to permits for transportation of materials and equipment or other operations which are not a specific requirement of these specifications. A City Business License and Safety Inspection Certificate must be obtained prior to contract execution. All costs related to fees, permits, licenses and bonds shall be merged and included in the Contractor's bid price for the related work.

14. INSPECTION BY PUBLIC OFFICIALS

Authorized representatives of the Owner and the Montana Department of Environmental Quality shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities, equipment, and safety measures required for safe access and inspection by authorized representatives of these agencies.

15. UNDERGROUND UTILITIES

The Contractor shall be responsible for checking with the Owners of the underground utilities such as the Town, County, power and telephone companies, etc., as to location of their underground installations in the project area. The Contractor shall be solely responsible for any damage done to these installations due to failure to locate them or to properly protect them when their location is known.

It shall be solely the responsibility of the Contractor to fully coordinate his work with the agencies and to keep them informed of his construction activities so that these vital installations are fully protected at all times.

A Montana One-Call system (1-800-424-5555) has been established to facilitate requests for underground facility location information. The Contractor is cautioned that all utilities may not be on this system.

16. EASEMENTS, RIGHT-OF-WAYS, ADJOINING PROPERTY

The Contractor shall contain all of his construction operations within the easements and right-of-way unless written approval is secured from the Owner of the adjoining property or written approval is given by the Owner to utilize the adjacent land area.

17. TRAFFIC CONTROL

A. GENERAL The Contractor shall at all times conduct his operations so that there is a minimum interruption in the use of Town streets affected by the work. Exact procedures in this respect shall be established in advance of construction with Owner.

Barricade function, design and construction shall conform to the latest edition of the Manual on Uniform Traffic Control Devices and the Standard Specifications for Road and Bridge Construction of the State Highway Commission of Montana, latest edition.

Should construction of the project require the closure of any streets, roads or highways or require night-time or long-term traffic control, the Contractor shall be required to prepare a detailed TRAFFIC CONTROL PLAN to address the methods and means of controlling traffic under the specific conditions. In regards to closures, the plan shall include specific details on traffic detours and estimated duration of the closures. Details of signing, barricades, flagging and other traffic control devices shall be included, and the TRAFFIC CONTROL PLAN shall be approved by the Owner or his designated representative prior to construction.

B. TRAFFIC ACCESS Construction work shall be programmed by the Contractor so that local traffic will have continuous access within one block of any given property. It shall be the responsibility of the Contractor to notify all residents in the area of programmed work of street closures, parking requirements and restriction, and any other conditions, a minimum of twenty-four (24) hours prior to beginning work within the affected area. All signing, barricades, and other traffic control measures shall be provided by the Contractor. Emergency vehicle access shall be provided at all times.

C. WARNING SIGNALS All streets, roads, highways and other public thoroughfares which are closed to traffic shall be protected by means of effective barricades on which shall be placed, mounted or affixed acceptable warning signs. Barricades shall be located at the nearest intersecting public highway or street on each side of the blocked section.

All open trenches and other excavations within the construction area shall be provided with suitable barriers, signs and lights to the extent that adequate public protection is provided. All abrupt grade changes greater than one inch which traffic is required to pass over, and obstructions, including but not limited to material stockpiles and equipment, shall be similarly protected.

All barricades and obstructions shall be illuminated by means of warning lights at night. All lights used for this purpose shall be kept burning from sundown to sunrise.

18. DISPOSAL, EROSION, WATER POLLUTION, AND SILTATION CONTROL

The Contractor is responsible for proper disposal of all waste soils and materials unless otherwise directed herein. Where waste materials are disposed on private property not owned by the Contractor, evidence of property owner's written permission shall be obtained and provided to the Owner. Contractor shall comply with all local, state, and federal laws and regulations pertaining to erosion control, fill in wet lands, and floodplains. The Contractor shall dispose of all refuse and discarded material in an approved location.

The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent pollution or siltation of rivers, streams or impoundments. Pollutants such as chemicals, fuels, lubricants, bitumen's, raw sewage, and other harmful wastes shall not be discharged into or

alongside rivers, streams, impoundments or into natural or manmade channels leading thereto. In addition, the Contractor shall conduct and schedule his operations to avoid muddying or silting of rivers, streams or impoundments. The Contractor shall meet the requirements of the applicable regulations of the Department of Fish, Wildlife and Parks, Department of Environmental Quality, Environmental Protection Agency and other State or Federal regulations relating to the prevention or abatement of water pollution and siltation.

The Contractor's specific attention is directed to the Montana Water Pollution Control Act and the Montana Stream Preservation Act. The Contractor shall be responsible for obtaining any required discharge permits associated with erosion control and groundwater dewatering operations. Contractor's responsibility shall include all cleanup, restoration, ect., of any detention or discharge areas.

19. PROTECTION OF EXISTING PAVEMENT

All equipment shall be fitted with pads on the outriggers and other accessories as necessary to prevent damage to existing pavement during the course of the project. Any damages to pavement shall be corrected by the Contractor, at his expense, in a manner directed by the Engineer.

20. OPERATION OF EXISTING AND NEW VALVES

All existing Town of Manhattan water main valves shall be operated by authorized personnel of the Town of Manhattan only. The Contractor shall not operate any existing valves without the written consent of the Town of Manhattan. When new or existing valves are used to take water from the Town of Manhattan water distribution system, they shall be operated by Town of Manhattan personnel only.

21. SALVAGEABLE ITEMS

Any items removed from the existing system under the terms of this contract shall remain the property of the Town of Manhattan and shall be delivered to a site specified by the Town of Manhattan. Should the Town of Manhattan choose not to accept any salvageable items, then the Contractor shall dispose of those items at his expense at a site or landfill acceptable to the Engineer. Any costs for the above work shall be at the Contractor's expense.

22. ACCESS TO RECORDS

The Contractor shall allow access to any books, documents, papers or records which are directly pertinent to this Contract by the Owner, State or Federal agencies, or any of their duly authorized representatives for the purpose of making an audit, examination, excerpts or transcriptions.

23. INSURANCE

Insurance coverages required under this contract shall extend, at a minimum, to the end of the contract time.

24. MATERIAL STORAGE SITES

The Contractor shall select and procure material storage sites. Permission to store materials on private property shall be secured in writing, with a copy provided to the Project Engineer.

25. SANITARY PROVISIONS

The Contractor shall provide and maintain such sanitary accommodations for the use of his employees and those of his subcontractors as may be necessary to comply with the requirements and regulations of the local and State Department of Health.

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01005 PERMITS AND FEES

1. GENERAL.

The Contractor is responsible for paying all fees, purchasing all required permits and fees that may be assessed under the contract. The Contractor shall carefully review the General Conditions and shall be cognizant of all fees and permits required under this contract. A list of some specific fees and permits for which the Contractor is responsible is included in this section. This list, however, is not all inclusive. The Contractor is responsible for obtaining and paying for all permits, royalties, and taxes even though not specifically listed herein.

2. PERMITS.

2.1 Town of Manhattan. The Contractor shall obtain a right-of-way permit and a city business license.

2.2 Stormwater Discharge Permit. The Contractor shall obtain a Stormwater Discharge Permit.

2.3 Building Permit. For projects involving structures, electrical work, or plumbing, the Contractor shall obtain a permit from the Building Codes Bureau of the Montana Department of Commerce.

2.4 Zoning Permit. Contractor shall obtain a zoning permit from the Town prior to construction.

3. FEES.

3.1 General. The Contractor must reimburse the Owner for fees and charges of engineers, architects, attorneys, and other professionals under conditions as defined and required by the General Conditions and specified herein. These fees and charges shall be automatically deducted as they occur from the Contractor's next progress payment and ultimately from the final contract amount.

3.2 Surveys. Fees shall be assessed for replacement of control points and other survey markers damaged or obliterated by the Contractor.

3.3 Overtime, Weekends, and Holidays. The Contractor shall reimburse the Owner for costs incurred as a result of the Contractor working overtime, weekends, or holidays. Overtime is any time in excess of 8 hours per day or 40 hours per week.

3.4 Evaluation of Substitutes. Fees shall be assessed for evaluation of substitutes as described in General Conditions.

3.5 Shop Drawings and Sample Review Fee. Fees shall be assessed for review of shop drawings and samples beginning with the second re-submittal.

3.6 Work Beyond Contract Time Limits. The Contractor shall reimburse the Owner for all costs incurred as a result of the Contractor's failure to complete the work within the time period specified in the contract unless modified by a Change in Contract Time as described in the General Conditions. The Owner shall have one or more representatives observing the work at all times work is taking place. The Contractor shall reimburse the Owner for the cost of engineers, architects, attorneys, construction field representatives, and other professionals that are incurred due to the Contractor's failure to complete the work within the contract time period.

4. LIQUIDATED DAMAGES.

If the Contractor fails to complete the Work within the Contract Time or extension of time granted by the Owner, then the Contractor shall pay to the Owner specified and unspecified damages as described herein for each calendar day the work is incomplete and not accepted by the Owner. Total liquidated damages including unspecified damages shall not exceed two hundred dollars (\$200) per calendar day.

4.1 Unspecified Damages. Owner and Contractor recognize that time is of the essence for this contract and that the Owner will suffer financial loss if the work is not completed within the specified contract time period plus any contract extensions. They also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the Owner if the work is not completed on time. Accordingly, the Owner and Contractor agree that the Contractor shall pay the Owner two hundred dollars (\$200.00) per day, unspecified damages for each calendar day the work is incomplete and not accepted by the Owner.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010 SUMMARY OF WORK (Reference MPWSS Section 01010)

Modifications:

PART 1: GENERAL

DELETE: Paragraph B. as written.

ADD: Contract Documents are defined on Article 1, paragraph 1.01.A.12, General Conditions as modified by the Supplementary Conditions and specifications contained herein and Article 9 of the Agreement Form.

DELETE: Paragraph D, Items 2 through 7.

- ADD:
2. Supplementary Conditions, which will govern over:
 3. General Conditions, which will govern over:
 4. Section 01000: Special Procedures, which will govern over:
 5. Project Drawings, which will govern over:
 6. These specifications and standard drawings.

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01011 MEASUREMENT AND PAYMENT

1. GENERAL.

The following items shall constitute all pay items for the work to be done under these specifications. Payment for these items shall be full compensation for the completed item of work and the cost of any incidental work or materials required to complete the item, even though not specifically mentioned herein, shall be merged with and become a part of the applicable pay items.

The Bid Form is part of the contract documents. If a Bid item specifies a type of material, then that type of material is to be used without substitution. Payment will not be made for other material types unless approved by Change Order.

1.1 Incidental Items. The following items shall be considered incidental to related construction items: dewatering, excavation, backfill, compaction, thrust blocks, erosion control, water treatment, cleanup, surveying, disinfection, and testing. No payment will be made for incidental items.

2. SPECIFIC BID ITEMS.

(To be filled out for each project.)

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01050 FIELD ENGINEERING (Reference MPWSS Section 01050)

Modifications:

PART 1: GENERAL

DELETE: 1.1 ENGINEERING SURVEYS.

ADD: 1.1 SURVEYS

1.1.1 SURVEY MARKERS AND MONUMENTS.

The Contractor shall carefully protect from disturbance all monuments, property pins, block corners and other survey monuments or markers. If the markers are specifically called out for removal and replacement on the drawings, the Contractor shall notify the Owner in writing at least 10 days in advance of the marker or monument being removed. The Owner shall arrange and pay for the proper referencing of the monument prior to removal and for its proper installation after trenching and backfill are completed by the Contractor. The Contractor shall use extreme care to protect all reference points during construction. Any survey marker or monument that is disturbed or destroyed by the Contractor without specific written approval of the Owner, shall be replaced at the Contractor's expense by a licensed land surveyor. When the survey is complete, each corner must be marked by lot pins.

1.1.2 CONSTRUCTION SURVEYS.

The Contractor is solely responsible for construction surveys and staking of all water, sanitary sewer, storm drains, concrete curb and gutter, and street subgrade, base, leveling course, and asphaltic concrete pavement. The Contractor is also responsible for preserving and protecting all control points and monuments at all times during the construction period. Any stakes obliterated, removed, or otherwise lost during construction shall be replaced by the Contractor at the Contractor's expense. Owner has provided control points and benchmarks listed on the drawings for survey control.

1.1.3 SURVEY ERRORS

Any claim by the Contractor for extra compensation by reason of alterations or reconstruction work allegedly due to error in the Engineer's control points, will not be allowed unless the original control points set by the Engineer still exist, or unless other satisfactory substantiating evidence to prove the error is furnished the Engineer.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

4.1 PAYMENT

ADD: No separate measurement or payment will be made for surveys. The cost for surveys shall be merged and included in the bid item for the related work.

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01300

SUBMITTALS

(Reference MPWSS Section 01300)

Modifications:

PART 1: GENERAL

1.2 ADD: Submit shop drawings on all materials utilized in the work.

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01400 CONTRACTOR QUALITY CONTROL AND OWNER QUALITY ASSURANCE (Reference MPWSS Section (01400))

Modifications:

PART 1: GENERAL

DELETE: Paragraph 1.2

PART 3: EXECUTION

DELETE: Paragraph 3.1.C as written.

ADD:

1. Soil density quality assurance tests will be performed by the Owner's Representative at no cost to the Contractor.
2. Concrete quality assurance tests for slump and air content will be performed by the Owner's Representative at no cost to the Contractor, as per MPWSS Section 03310, 3.7 - Testing.
3. Concrete compression test cylinders shall be taken by the Owner's Representative and shipped to and tested by an independent testing agency by the Contractor at the Contractor's expense. Cylinders for compression testing shall be as per MPWSS Section 03310, 3.7 - Testing.
4. Asphalt core samples and stability tests, where required, shall be taken and tested by the Contractor at the Contractor's expense.
5. Bedding material and gravel road aggregates, gradations and quality control tests are to be provided by the Contractor at the Contractor's expense.
6. Asphalt and concrete mix designs and aggregate quality tests are to be provided by the Contractor at the Contractor's expense.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Paragraph 4.1.A as written.

ADD: Contractor shall pay for all testing as specified in subsection 3.1 above. Testing costs are incidental to the work and to be included in the unit bid price for the respective item.

DELETE: Paragraph 4.1.B.

DELETE: Paragraph 4.2 – Retesting.

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01700 CONTRACT CLOSEOUT (Reference MPWSS Section 01700)

All applicable portions of this specification section in the MPW standard specification shall apply with the following additions, deletions and/or modifications.

PART 1: GENERAL

ADD

1.5 SUBSTANTIAL COMPLETION

Substantial completion for Contract shall not occur until the Owner has beneficial use of the work on a full time basis without interruption. Substantial completion will also not be granted until the project is at a minimum 98 percent completed based on progress payments, recommended by the Engineer and approved by the Town of Manhattan.

1.6 FINAL SUBMITTALS

- A. No Contract will be finalized until all of the following have been submitted as required by submittals:
 - 1. Record drawings.
- B. No Contract will be finalized until all guarantees, bonds, certifications, licenses, and affidavits required for work or equipment as specified are satisfactorily filed with the Owner.

1.7 RELEASE OF LIENS OR CLAIMS

No Contract will be finalized until satisfactory evidence of release of liens has been submitted to Owner as required by the General Conditions.

- 1.8 After all items in this Section 01700 have been completed to the satisfaction of the Owner, the Contract will be considered finalized and Retainage will be released.

PART 2: PRODUCTS – NOT USED

PART 3: EXECUTION

3.1 FINAL CLEANING

- A. At completion of work and immediately prior to final inspection, clean entire project according to the following provisions:

- 1 Remove debris.
 - 2 Should Contractor not remove rubbish or debris or not clean the site as specified above, the Owner reserves the right to have final cleaning done at the sole expense of the Contractor.
- B. The Contractor shall:
1. Employ experienced workers or professional cleaners for final cleaning.
 2. Conduct final inspection of exterior surfaces in preparation for substantial completion.
 3. Rake clean surfaces.
 4. Remove from the Owner's property temporary structures and materials, equipment, and appurtenances not required as part of, or appurtenant to, the completed work.
 5. Leave water courses, gutters, and ditches open and in condition satisfactory to Engineer.
- C. Owner will assume responsibility for cleaning as of the date of substantial completion.

3.2 FINAL INSPECTION

- A. After final cleaning and upon written notice from Contractor that work is completed, Engineer will make preliminary inspection with the Owner and Contractor present. Upon completion of preliminary inspection, Engineer will notify Contractor in writing of particulars in which the completed work is defective or incomplete.
- B. Upon receiving written notice from Engineer, Contractor shall immediately undertake work required to remedy defects and complete the work to the satisfaction of Engineer and Owner.
- C. After the items as listed in Engineer's written notice are corrected or completed, inform Engineer in writing that required work has been completed. Upon receipt of this notice, Engineer, in the presence of Owner and Contractor, will make final inspection of the project.
- D. Should the Engineer find all work satisfactory at the time of final inspection, Contractor will be allowed to make application for final payment in accordance with provisions of the General Conditions. Should Engineer still find deficiencies in the work, Engineer will notify Contractor in writing of deficiencies and will not approve Contractor's request for final payment until such time as Contractor has satisfactorily completed the required work.

END OF SECTION 01700

DIVISION 2 – SITE WORK

SECTION 02112

**REMOVAL OF EXISTING PAVEMENT, CONCRETE CURB,
SIDEWALK, DRIVEWAY AND/OR STRUCTURES**

(Reference MPWSS Section 02112)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1: GENERAL

ADD: B. Exercise care in removal of existing tree roots that conflict with the work. Tree roots shall be removed by sawcutting the roots to a neat line at the extent of the excavation. Remove only the minimum amount of roots necessary in order to complete the work.

PART 4: MEASUREMENT AND PAYMENT

DELETE. Entire Section

DIVISION 2 - SITE WORK

**SECTION 02221
TRENCH EXCAVATION AND BACKFILL FOR
PIPELINES AND APPURTENANT STRUCTURES**
(Reference MPWSS Section 02221)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1: GENERAL

1.2 TESTING.

DELETE: Reference to AASHTO T191 (ASTM D1556), Sand Cone Method.

1.3 STANDARD DRAWINGS.

DELETE Standard Drawing 02221-2 Pipe Bedding Alternative

PART 2: PRODUCTS

A. TYPE 1 PIPE BEDDING.

DELETE: Entire Section.

ADD: Type 1 Pipe Bedding includes the material placed from 4 inches below the bottom of the pipe to the springline of the pipe. Type 1 bedding shall consist of a sandy gravel or fine gravel conforming to the following gradation when tested in accordance with AASHTO Method T-88:

<u>Sieve Opening</u>	<u>% Passing by Weight</u>
1"	100
1/2"	60-95
No. 4	40-70
No. 10	25-55
No. 200	0-10

The coefficient of uniformity shall be 4 or greater. The coefficient of curvature shall be between 1 and 3.

The maximum plasticity index of the portion passing the No. 200 sieve is 6 when tested in accordance with AASHTO Methods T-89 and T-90.

The coefficient of uniformity is defined as:

$$C_u = \frac{D_{60}}{D_{10}}$$

The coefficient of curvature is defined as:

$$C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

B. SELECT TYPE 1 BEDDING.

DELETE: Second sentence.

ADD: Select Type 1 Bedding shall consist of soil, sand, or fine gravel free from clods, lumps of frozen material, or rock exceeding $\frac{3}{4}$ -inches in its greatest dimensions. No more than 35 percent of the material shall pass the 200 sieve. The portion of the material passing the No. 40 sieve shall have a maximum liquid limit of 40 and a maximum plasticity index of 10. All material shall be inorganic.

C. PIPE BEDDING ALTERNATE.

DELETE: Entire section.

2.2.A MATERIALS FROM TRENCH EXCAVATION.

ADD: Stones larger than 6 inches in their greatest dimension shall be excluded from the backfill and removed from the project site.

PART 3: EXECUTION

A. GENERAL.

ADD to second paragraph: Contact all utilities including those not represented by One Call.

3.3 TRENCH EXCAVATION.

A. GENERAL.

ADD: Trenches shall be constructed in strict accordance with the requirements of the Occupational Safety and Health Act (OSHA).

3.6 B. PIPE BEDDING PLACEMENT

ADD: Compact Type 1 pipe bedding to at least 90 percent of the maximum dry density as determined by AASHTO T-180.

3.6 B.2. SELECT TYPE 1 BEDDING

ADD: Compact select Type 1 bedding to a minimum 90 percent of the maximum dry density as determined by AASHTO T-180.

3.6 B 3. TYPE 2 BEDDING

ADD: Compact select Type 2 bedding to a minimum 90 percent of the maximum dry density as determined by AASHTO T-180.

3.6 B.4. DELETE: PIPE BEDDING ALTERNATE

ADD: Special Pipe Bedding. Special pipe bedding shall have all of the same requirements as Type 1 pipe bedding.

3.6.C. TRENCH BACKFILL

ADD: Utilize Type A trench backfill at all locations. Compact Type A trench backfill to a minimum 90 percent of the maximum dry density as determined by AASHTO T-180.

ADD: Water from the Town of Manhattan's municipal system may only be obtained from a metered service. The Contractor shall reimburse the City Water Department for the use of water used at a rate determined by the water department.

3.6.F DETECTABLE BURIED WARNING TAPE

DELETE: "The use of warning tape is optional."

ADD: Detectable warning tape is required.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02225 FLOWABLE FILL

(Reference MPWSS Section 02225)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 2: PRODUCTS

2.2 MATERIALS.

B. Flyash. DELETE.

C. Coarse Aggregate. DELETE.

ADD: Course aggregate shall meet the requirements of Montana Department of Transportation (MDT) Standard Specifications No. 57, 1 inch max. size.

ADD: D. Fine Aggregate. Fine aggregate shall meet ASTM C-33 gradation and quality standards.

2.3 PROPORTIONS

DELETE: Paragraphs A. and B.

ADD: Non-Shrink Backfill Mix Proportions. The flowable fill shall meet the following mix requirements per cubic yard.

Cement:	0.42 sacks/c.y.
Water:	30 gallons/c.y.
Coarse Aggregate:	1700 lbs/c.y.
Fine Aggregate:	1835 lbs/c.y.
Total Weight:	3837 lbs/c.y.

2.4 COMPRESSIVE STRENGTH

DELETE: 2nd sentence referencing excavatable mixes.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02230
STREET EXCAVATION, BACKFILL AND COMPACTION
(Reference MPWSS Section 02230)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1: GENERAL

1.2 REFERENCES

DELETE: Reference to AASHTO T191 Density of Soil In-Place by the Sand-Cone Method

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 – SITE WORK

**SECTION 02234
SUBBASE COURSE**

(Reference MPWSS Section 02234)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications

Modifications:

PART 1: GENERAL

1.2 REFERENCES

DELETE: Reference to AASHTO T191 Density of Soil In-Place by Sand Cone Method.

PART 2: PRODUCTS

2.4 GRADATION

ADD: Subbase course shall be 6” minus OR one half the thickness of the base course, whichever is less.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02235
CRUSHED BASE COURSE
(Reference MPWSS Section 02235)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications

Modifications:

PART 1: GENERAL

1.2 REFERENCES

DELETE: Reference to AASHTO T191 Density of Soil In-Place by Sand Cone Method.

PART 2: PRODUCTS

2.3 GRADATION

ADD: Crushed leveling base course shall be 1.5” minus.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 - SITE WORK

SECTION 02502 ASPHALT PRIME AND/OR TACK COAT (Reference MPWSS Section 02502)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications

Modifications:

PART 2: PRODUCTS

2.1 GENERAL.

ADD: Tack coat shall conform to Table 2 – Cationic emulsified asphalt Type CRS – 2. Anionic tack coats shall not be utilized.

PART 3: EXECUTION

3.3 ASPHALT TACK COAT.

ADD: Existing pavement to be overlaid, vertical surfaces of existing pavements, and all structures to be in actual contact with the asphalt aggregate mixture shall be given a thin, even coating of asphalt tack coat. Care shall be taken to prevent splattering with asphalt surfaces that will not be in contact with the asphalt aggregate mixture. Asphalt tack coat shall be applied between asphalt concrete lifts when the previous lift has set more than 6 hours. No additional payment will be made for tack coat.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section.

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02510 ASPHALT CONCRETE PAVEMENT (Reference MPWSS SECTION 02510)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications. No asphalt concrete pavement shall be constructed when temperatures are less than the weather limitations specified in this section.

Modifications:

PART 2: PRODUCTS

2.1 GENERAL

ADD: Furnish performance graded asphalt binder 58-28 meeting Table 3. Asphalt mix design reports shall be submitted at the pre-construction meeting. The asphalt materials listed below shall conform to the requirements of the specification tables except as may be herein supplemented or modified:

(1) 2.2 Table 2 – Surface Course Aggregate shall be Type S-3

(2) 2.3 Asphalt Binder Material - Asphalt cement shall be performance grade 58-28
Table 3

PART 3: EXECUTION

3.10 WEATHER LIMITATIONS

REVISE TO READ: Do not place asphalt surface course or base course mixtures when the air temperature is less than 50° F and falling. Do not place asphalt on a surface that is frozen or that has a temperature less than 40° F. Do not place asphalt paving during rain, snow or in standing water.

3.11 SURFACE PREPARATION

ADD: Pavement edges shall be trimmed as necessary and have a neat, straight edge free of loose asphalt, and be primed before paving.

3.14 PATCHING

b. Surface Preparation

3.d. Tack coat all existing asphalt edges prior to placing new asphalt concrete.

- e. If hot plant mix asphalt is not available, temporarily patch the pavement using a cold mix asphalt or a 2-sack flowable fill mix. Remove temporary patches and replace with hot mix asphalt when it becomes available.
- f. Thickness of the pavement patch will equal that of the existing pavement, unless otherwise approved.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 – SITE WORK

**SECTION 02528
CONCRETE CURB AND GUTTER
(Reference MPWSS Section 02528)**

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications

Modifications:

PART 1: GENERAL

1.1 DESCRIPTION

DELETE: Standard Drawings

ADD: Town of Manhattan Standard Drawing 02611-01 combined concrete Curb and Gutter

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 – SITE WORK

**SECTION 02529
CONCRETE SIDEWALKS, DRIVEWAYS, APPROACHES,
CURB TURN FILLETS, VALLEY GUTTERS AND
MISCELLANEOUS NEW CONCRETE CONSTRUCTION
(Reference MPWSS Section 02529)**

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1: GENERAL

DELETE: 1.2.A Standard Drawings

02529-1	Double Gutter Detail for Street Inspection
02529-2	Standard Fillet
02529-5A	Boulevard Drive Approach
02529-5B	Curb Walk Drive Approach
02529-7A	Boulevard Alley Approach
02529-7B	Curb Walk Alley Approach
02529-8	Accessibility Ramp
02529-9	Swale Crossing

ADD: Town of Manhattan Standard Drawings:

02529-6A	Curb and Sidewalk Section for Driveways, Option #1
02529-6B	Curb and Sidewalk Section for Driveways, Option #2
02529-7A	Boulevard Alley Approach Detail
02529-7B	Curb Walk Alley Approach Detail
02611-10	Wheelchair Ramp
02611-11	Wheelchair Ramp
02611-13	Concrete Valley Gutter
02750-26	Sidewalk Trench Drain Detail

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire section.

END OF SECTION

DIVISION 2- SITE WORK

PAVING AND SURFACING

SECTION 02581

PAVEMENT MARKINGS AND MARKERS

(PREFORMED PLASTIC, PAINTS, AND ENAMELS)

(Reference MPWSS Section 02581)

4.2 Equipment. The mechanical marker shall be an approved atomizing spray-type marking machine suitable for application of traffic paint. The painting to be accomplished will require spray painting in single applications.

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02582 REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS (Reference MPWSS Section 02582)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1: GENERAL

1.1 DESCRIPTION

DELETE: D.

ADD: Furnish thermoplastic that is hydrocarbon based. Furnish thermoplastic material that, while on the roadway surface and at any natural ambient temperature, will exist in a hard solid state with cold ductility that permits normal movement with the road surface without chipping and or cracking.

PART 3: EXECUTION

3.4 APPLICATION

ADD: A. 2. Extruded (inlaid) – Unless otherwise specified in the contract documents, all transverse pavement markings and words and symbols shall be 400 mils thick, and all longitudinal lines shall be 270 mils thick.

PART 4: MEASUREMENT & PAYMENT

DELETE: Entire Section

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 2 - SITE WORK

SECTION 02585

GRAVEL ROADWAY AND PARKING LOTS

1. GENERAL.

The work covered by this section of the specifications shall consist of furnishing, placing, watering, shaping and compacting gravel to provide a firm and stable roadway. Gravel roadways and parking lots shall be constructed in accordance with the requirements of these specifications and to the typical cross sections shown on the drawings. If not defined otherwise on the drawings, the gravel section shall have a minimum in place crushed gravel base course depth of 8 inches and an in place surface course depth of 3 inches.

2. APPLICABLE PUBLICATIONS.

The publications listed below form a part of these specifications to the extent referenced. The publications are referred to in the text by the basic designation only.

2.1 American Association of State Highway and Transportation Officials (AASHTO).

AASHTO T-84	Specific Gravity and Absorption of Fine Aggregate
AASHTO T-89	Determining Liquid Limit of Soils
AASHTO T-90	Determining the Plastic Limit and Plasticity Index of Soils
AASHTO T-96	Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine
AASHTO T-176	Plastic Fines in Graded Aggregate and Soils by Use of the Sand Equivalent Test
AASHTO T-180	Moisture-Density Relations of Soils Using a 10-lb. Rammer and an 18-In. Drop

3. MATERIALS.

3.1 Crushed Gravel Base Course. The crushed gravel base course shall consist of clean, hard, durable particles which have been screened and crushed to the following gradation prior to compaction:

<u>Sieve Size</u>	<u>% Passing by Weight</u>	
	<u>Min.</u>	<u>Max.</u>
2"	100	---
1"	50	70
No. 4	20	40
No. 40	10	25
No. 200	5	12

The material shall have a sand equivalent of 25+ as determined by AASHTO T-176.

That portion of the crushed gravel passing a No. 40 sieve shall have a plasticity index of not more than 6, as determined by AASHTO T-90, and a liquid limit of not more than 25 as determined by AASHTO T-89.

The crushed gravel shall have a percentage of wear of not more than 30 percent when tested in accordance with AASHTO T-96.

At least 25 percent by weight of the crushed gravel particles retained on the No. 4 sieve shall have one or more mechanically fractured faces.

The fraction of crushed gravel retained on a 3/8 inch sieve shall have a maximum water absorption of 3.0 percent as determined by AASHTO T-84.

The gravel shall be free of lumps or balls of clay and contain a maximum of 5 percent of soft particles that can be disintegrated between the fingers.

3.2 Crushed Gravel Surface Course. The top 3 inches of the gravel roadways and parking lots construction shall consist of hard, durable particles which have been screened and crushed to the following gradation prior to compaction:

<u>Sieve Size</u>	<u>% Passing by Weight</u>	
	<u>Min.</u>	<u>Max.</u>
1"	100	---
3/8"	65	85
No. 4	40	60
No. 10	30	50
No. 40	15	30
No. 200	8	15

The aggregate, including any binder or filler, shall meet the following requirements:

Dust Ratio - The portion passing the No. 200 sieve shall not be greater than 2/3 of the portion passing the No. 40 sieve. The aggregate materials shall have a sand equivalent of 30+ as determined by AASHTO T-176.

The liquid limit of the material passing the No. 40 sieve shall not be greater than 35 and the plasticity index shall not be greater than 9 as determined by AASHTO T-89 and T-90.

The crushed gravel shall have a percentage of wear of not more than 30 percent when tested in accordance with AASHTO T-96.

At least 35 percent by weight of the crushed gravel particles retained on the No. 4 sieve shall have one or more mechanically fractured faces.

The fraction of crushed gravel retained on a No. 4 sieve shall have a maximum water absorption of 3.0 percent as determined by AASHTO T-84.

3.3 Water. Water shall be applied to the gravel to facilitate compaction.

4. CONSTRUCTION.

4.1 Crushing and Stockpiling. When crushing gravel, the Contractor will be required to crush all material which will pass a 9 inch square opening. The crushing plant shall be equipped with rolls, or any combination of rolls, jaws or other crushing devices which will produce the required material.

Materials deposited in stockpiles in advance of placing shall be handled and stored on an approved site in such a manner as to avoid a separation of the coarse and fine particles and contamination by foreign materials. Sites for stockpiles shall be prepared and maintained in such a manner as to prevent the mixing of deleterious materials with aggregate. Stockpiles shall be built in layers not to exceed three feet in height and each layer shall be completed before beginning the next layer. Coning or building up stockpiles by depositing the materials in one place will not be permitted. Aggregates shall be stored in stockpiles adjacent to the source of production.

4.2 Subgrade Preparation. The subgrade shall be prepared in accordance with Section 02205 of the specifications which includes subgrade preparation. Immediately prior to placing the base course material, the subgrade shall be true to line and grade and shall be smooth, dense and free from ruts, depressions and irregularities. The base course shall not be placed until the subgrade has been approved by the Engineer.

4.3 Placing. The gravels shall be placed on the previously prepared subgrade at the locations and in the proper quantities to conform to the typical cross sections as shown on the drawings. The gravel shall be placed without segregation and in lifts not exceeding six inches in final thickness. Where the gravel course thickness will exceed six inches in final thickness, the course shall be constructed in approximately equal lifts. Any segregated areas shall be removed and replaced with uniformly

graded material at the Contractor's expense. Placing and spreading shall be accomplished by means of spreading machines, moving vehicles, motor graders or any other approved equipment and methods.

4.4 Laying and Compaction. After the gravel material has been placed and uniformly spread over the prepared subgrade, or base course, compaction shall be accomplished by means of multiple-wheel, pneumatic-tired roller, tandem or three-wheel steel rollers, and/or vibratory compactors. If additional water is needed to facilitate compaction and bonding of the material, it shall be applied.

The gravel shall be compacted to 95 percent of maximum dry density as determined by the requirements of AASHTO T-180.

The base course and surface course surface shall be finished with a tolerance of 1/2 inch, measured as the vertical ordinate from the face of a 10 foot straightedge.

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02660 WATER DISTRIBUTION (Reference MPWSS Section 02660)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1 – GENERAL

DELETE: 1.4.A Standard Drawings:

02660-4 Fire Hydrant Setting
02660-5 Hydrant Location Detail
02660-7 Blowoff Valve

ADD: Town of Manhattan Standard Drawings

02660-02 Fire Hydrant With Remote Auxiliary Valve
02660-06 Hydrant Barrier Posts
02660-09 Marker Post
02660-12 Water Service Line for Sizes 4” and Larger
02660-13 Standard Fire Service Line Installation, Class I, II, III
02660-14 Standard Fire Service Line Installation, Class IV, V
02660-15 Water Service Line From Curb Stop to Building
02660-16 Water and Sewer Service Main and Service Location Standards
02660-31 Blow-Off/Air Release Valve (4” Thru 12” Mains)
02660-32 Blow-Off Valve 6” and 4” Mains
02660-42 Utility Trench Hydrant (Encased)
02660-43 Utility Pipe Trench (Top Only)

PART 2: PRODUCTS

2.2.B.2 DELETE.

ADD: Use underground pipe and fittings having push-on joints meeting AWWA C-111 unless noted on the drawings.

2.2.B.4 DUCTILE IRON PIPE FITTINGS

ADD: Furnish push on style fittings unless otherwise shown on the drawings. Mechanical joint fittings are not permitted unless specifically called out on the drawings. Utilize compact fittings meeting the requirements of AWWA C153. Use all push-on type fittings, cement mortar lined

meeting AWWA C104 or fusion bonded epoxy lined meeting AWWA C550 with thrust blocking except where specifically stated otherwise on the plans.

2.2 C. POLYVINYL CHLORIDE (PVC) PRESSURE PIPE. DELETE.

ADD: 2.2 POLYVINYL CHLORIDE (PVC) PRESSURE PIPE. For pipe diameters 12 inches or less, furnish water pipe meeting AWWA C-900 requirements made to ductile iron O.D.'s for "Push-On" joints. Use DR 18, Class 150 pipe conforming to AWWA C-900 for pipe diameters 12" or smaller. For pipe larger than 12" in diameter, furnish water pipe meeting AWWA C-905 DR 18 requirements made to ductile iron O.D.'s for "push-on" joints. Assure pipe joints for all size pipes are bell and spigot push-on having an elastomeric gasket.

2.2.D. DELETE: Concrete cylinder pipe

2.2.E. DELETE: Polyethylene Service Pipe

2.4 CORPORATE STOPS.

ADD: Corporation stops shall be bronze ball type stops, Mueller 300 corporation ball valves Minneapolis pattern or equal rated for a minimum 250 psi working pressures.

2.6 CURB STOPS.

ADD: Curb stops shall be ball type curb stops rated for a minimum of 250 psi working pressure. Curb stops shall be Mueller 300 ball curb stops or equal.

2.8 A. GATE VALVES.

DELETE: Entire section

ADD: For gate valves furnish iron body gate valves, resilient seat with design, construction and pressure rating of 250 psig meeting AWWA C500 or AWWA C509 requirements and following:

Use push-on joint valves that open counter clockwise. Furnish gate valves for underground installation with a 2 inch square operating nut, fusion bonded epoxy exterior and interior coating and double wrapped with polyethylene encasement in accordance with AWWA C105. Assure stem seals are double "O" ring seals capable of replacing the seal above the stem collar with the valve under pressure in full open position. Valves shall be Mueller or equal.

2.8.B. DELETE: Butterfly valves.

2.8.C. ADD: AUXILIARY VALVES FOR FIRE HYDRANTS. For fire hydrants, furnish 6-inch resilient seated gate valves as described in Section 2.8.A., with the exception that the valves have flange by push-on joint.

2.9 VALVE BOXES.

ADD: Use three piece screw type valve boxes double wrapped with polyethylene in accordance with AWWA C105. Use valve boxes by Tyler Model 6860 or approved equal.

2.10 FIRE HYDRANTS

2.10.B. DELETE: paragraph as written.

ADD: Furnish hydrants with 5¼-inch main valve, 6 inch shoe with push-on joint, one 4-inch pumper nozzle with NST #40484 gage, 2½-inch hose nozzles which meet ASA Specification B26 for National Standard Fire Hose Coupling Screw Threads, 7½ threads per inch, double wrapped with polyethylene in accordance with AWWA C105. Assure pumper nozzle size and threads match Owner's existing pattern. Furnish national standard operating nut. Furnish hydrants opening counter clockwise and having an arrow on the hydrant top designating opening direction. Drainage shall be provided at the base of the hydrant by placing clean, washed, ¾" gravel under and around the base of the hydrant, a minimum of 1-foot on all sides from the base of the hydrant to the point at least 6-inches above the drain opening.

2.10.C. ADD: Furnish Mueller Super Centurion 250 Model A-423, painted red and silver with hydrant defenders.

DELETE: 2.10.D.

ADD: Furnish hydrants for 7.0 feet of bury from the bottom of the supply pipe or 6.5 feet of bury from the top of the supply pipe.

2.12 DELETE: SPECIAL FITTINGS

2.12 POLYETHYLENE ENCASEMENT

ADD: Double wrap all ductile iron or cast iron pipe and pipe fittings with polyethylene encasement in accordance with AWWA C105.

3.3 POLYETHYLENE ENCASEMENT

DELETE: as written.

ADD: Double wrap all direct bury cast or ductile iron pipe and fittings including hydrants, valves, valve boxes and all other metal parts and surfaces in polyethylene encasement. Wrapping shall be done in accordance with AWWA C105.

ADD: 3.4.A. and 3.4.D. LOCATION OF TEST TAP FOR BACTERIOLOGICAL AND PRESSURE TESTING. Locate test taps for bacteriological and pressure testing on the new water main within 5 feet of the beginning and end of the main, at end of main line valve, and at a minimum of 400 feet intervals along the main.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section.

END OF SECTION

CONSTRUCTION SPECIFICATIONS

DIVISION 2 - SITE WORK

SECTION 02679

WATER SERVICE METERS AND METER PITS

1. GENERAL.

Work included in this section includes providing water meters and meter pits.

1.1 Warranty. All meters shall be guaranteed by the manufacturer to meet AWWA new meter accuracy standards and for material and workmanship for a minimum of ten years from the date of initial operation.

2. APPLICABLE PUBLICATIONS.

American Water Works Association (AWWA).

AWWA C-700 Cold Water Meters – Displacement Type, Bronze Main Case

AWWA C-708 Cold Water Meters – Multijet Type

AWWA C-712 Cold Water Meters – Singlejet Type

3. MATERIALS.

3.1 Water Meter. The meters shall meet the minimum standard of the American Water Works Association standards above. The meters shall be $\frac{3}{4}$ inch x $\frac{3}{4}$ inch bronze bodied meters with a laying length of 7 $\frac{1}{2}$ inches, and must meet the applicable AWWA standard above in its most current revision. Meters shall have frost protection devices to prevent damage to any other part of the meter. All said meters shall be capable of interfacing with the Town of Manhattan's existing AMR RF radio read system. The meter provided must meet the following parameters:

1. Meter main case shall be cast bronze with cast-iron bottom plate designed to break in such a manner as not to damage the main case or internal parts of the meter should the water service become frozen.
2. Each meter shall incorporate a strainer to help prevent foreign matter from entering the measuring chamber.
3. Pressure loss through the $\frac{3}{4}$ inch meter shall not exceed 8 psi at 20 gpm.
4. If the meter runs continuously for 24 hours or more, the meter must send a message to the AMR at the next reading, alerting the system manager of a potential leak.

5. If the meter runs backward at any time, the meter must send a message to the AMR at the next reading, alerting the system manager of a potential back flow.

3.2 Electronic Register Requirements. The electronic encoder register shall provide a digital output produced. The register shall be pre-wired to the radio transponder and shall be potted at the factory to insure the quality of the seal. Field splicing of register and radio transponder should not be required.

3.3.2 Transmitter Requirements. The transmitter shall be compatible with the electronically encoded register and designed for meter pit installations where the system may be subjected to submergence. Transmitters must also be capable of operation if installed in basements, crawlspaces, or other locations inside buildings.

The transmitter antenna shall be integral with the meter, with no external wire connecting the meter to the transmitter.

Communication from the computers shall contain a sync-work command and its unique serial number for the transmitter. The transition from the transmitter includes current meter reading, tamper status, error detection and water audit/leak detection.

All internal electronic components shall be conformably sealed to provide environmental protection. Wire entrances are factory sealed. The pit transponder shall be specifically designed for harsh pit set environments with possible submergence in water and shall be pre-wired, potted, and randomly tested at the factory which manufactures the proposed components and system.

3.2.3 AMR Meter Pit Transmitters.

3.2.3.1 General. The manufacturer shall provide pit transmitter meter modules. The meter module shall be designed for through the lid installations subject to submergence, as well as installations inside buildings. All meter modules must be compatible with all sections of this specification.

3.2.3.2 Registration. All transmitters shall be connected to a register which shall provide for visual total flow volume registration at the meter. Registration capacity shall be 1,000,000 gallons. The register shall function in temperature variations from 32°F (0°C) to 110°F (43°C). The signal transmission assembly shall induce no drag that could result in accelerated wear of the meter or cause under registration.

3.2.3.3 Module Requirements. Batteries shall power the pit transmitter with a typical battery life exceeding 10 years in typical operating conditions. The pit transmitter enclosure shall be factory potted and factory wired to the meter register. The pit transmitter shall be stored and shall operate in temperature ranging from -30° to 140°F. The pit transmitter shall operate in atmospheres of

5% to 100% condensing humidity and be designed for submerged pit applications. Pit transmitter shall be designed to perform accurately and successfully transmit signals to the mobile receiver from beneath the meter pit lid, so the signal can be read from the AMR unit in a vehicle on the adjacent street. Mounting brackets shall be furnished with the transmitters. The brackets shall be suitable for mounting the transmitters beneath meter pit lids.

4. CONSTRUCTION.

All new ¾inch and 1 inch meter installations shall include installation of a Mueller Thermacoil meter pit. All new meters larger than 1 inch may be installed inside the building, unless the meter only services exterior water needs, such as irrigation, in which case the meter must include a Mueller meter pit.

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02720 STORM DRAIN SYSTEMS (Reference MPWSS 02720)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications:

PART 1: GENERAL

DELETE: 1.4 Standard Drawings

02720-1	30” Standard Storm Drain Inlet
02720-2	24” Standard Riser Inlet
02720-8	Standard Cast Iron Cover

ADD: Town of Manhattan Standard Drawings:

02720-03	Sanitary Sewer and Storm Drain Manhole
02750-01	Storm Drain Manhole
02750-11	Dry Well
02750-12	Driveway Curb and Gutter Storm Inlet
02750-13A	Curb Inlet Catch Basin
02750-13B	Standard Square Storm Drain Inlet
02750-13C	Combination Manhole and Curb Inlet
02750-16	Catch Basin

PART 2: PRODUCTS

2.2 PIPE MATERIALS

DELETE: C. Other Pipe Material

2.3 MANHOLES

A. GENERAL

ADD: Manholes over 5.5 feet shall have eccentric cones. No concentric cone manholes shall be utilized.

PART 4: MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02730 SANITARY SEWER COLLECTION SYSTEMS (Reference MPWSS Section 02730)

All applicable portions of this specification section in the MPW Standard Specifications shall apply with the following additions, deletions and/or modifications.

Modifications

PART 1 GENERAL

1.4 Standard Drawings

DELETE: 02720-8 Standard Cast Iron Cover

ADD: Town of Manhattan Standard Drawings

02700-18	Cleanout (Traffic Areas)
02700-19	Cleanout (Non-Traffic Areas)
02700-23	Field Connection
02720-03	Sanitary Sewer and Storm Drain Manhole

PART 2 – PRODUCTS

2.2 A 1. **ADD:** All pipe within 5 feet of a building foundation shall be PVC Schedule 40. All pipe within 18 inches of a water main or water service crossing shall be PVC meeting requirements of AWWA C900, DR 18. Double wrap all ductile iron or cast iron pipe and pipe fittings with polyethylene encasement in accordance with AWWA C105.

2.2A.3 **REVISE:** Pressure Sewer Pipe. Revise to read: “All pressure sewer pipe shall be PVC pipe conforming to the requirements of AWWA C900, DR 18, class 150 pressure pipe.

2.2 A.4. **ADD:** All standard pipe joint gaskets shall be rubber or Styrene Butadiene Copolymer (SBR) or an approved equal.

2.2 A. 5. **ADD:** All standard pipe fittings shall be PVC with rubber or SBR gasket.

2.2 B. **DELETE:** Concrete Pipe

2.2 C. **DELETE:** High Density Polyethylene (HDPE) Pipe

2.2 D. **DELETE:** Other pipe materials

2.3 D.1 REVISE: Frames and covers to read: "Furnish frames and covers meeting Standard Drawing No. 02720-03. There should be no through lift holes.

PART 3 – EXECUTION

ADD: Pipe sections shall be assembled using blocking, fork tools, or jack assemblies so that the pipe is not damaged by metal contact, excessive force, or inadequately controlled movement. Backhoes or other large construction equipment shall not be utilized to assemble the pipe joint. Alternative methods of assembly will be considered if recommended in writing by the pipe manufacturer, but the method must be approved by the Engineer.

3.4.G. T.V. Inspection

ADD: Sewer mains will be television inspected and accepted only after the roadway (gravel or asphalt pavement) is complete.

PART 4 - MEASUREMENT AND PAYMENT

DELETE: Entire Section

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02913 STREET SIGNS

PART 1 GENERAL

1.1 DESCRIPTION

- A. This section is furnishing, fabrication, installation and the removing and resetting of signs in accordance with these and other specifications, the Standard Drawings, and in the location as shown on the plans or as directed by the Engineer.

1.2 REFERENCES

MUTCD Manual of Uniform Traffic Control Devices

1.3 STANDARD DRAWINGS

Town of Manhattan Standard Drawings applicable to this section are as follows:

02913-1	Sign Installation Standard
02913-2	Dead End Barricade
02913-3	Typical Street Marker Sign Location

1.4 DEFINITIONS

- A. The following definitions define the signing work to be done when the respective terms are used in the Contract.
1. NEW Signs designated “New” are to be furnished new and erected at the locations specified.
 2. REUSE Signs designated “Reuse” are to be removed from the existing post or posts and remounted on a new post or posts at the locations specified.
 3. REPLACE Signs designated “Replace” are to be removed and replaced with the specified “New” standard signs, including new post or posts, at the existing or specified new locations.
 4. RESET Signs designated “Reset” are to be removed and reset at the locations specified using the existing sign faces and support.

5. REMOVE Signs designated “Remove” are to be removed, to include the sign or sign assembly and sign supports.

PART 2 – PRODUCTS

2.1 POSTS

- A. Use 2” perforated square tube 14 gauge galvanized steel posts for all sign posts unless otherwise specified on the plans. Use Telspar or approved equal sign posts. Anchor posts shown on Standard Drawing 09810-1.

2.2 STREET NAME MARKER SIGNS

- A. Provide street marker (D-3) signs which meet all applicable MUTCD Standards. Furnish flat-blade aluminum sign blanks, 0.08 inches thick. For local streets, use 6 inch sign blanks; for collector or arterial streets, use 9 inch sign blanks. Use engineer grade green reflective sheeting on the sign blanks. Provide a ¼” white border around the edge of the sign. Use white Series “C” letters for the street name. For local streets, assure that the prefix and suffix copy are 2 inch upper case letters, centered top to bottom, and that the primary copy is 4 inch letters all upper case. For collector and arterial streets, street names shall have 6 inch uppercase letters, and 3 inch letters for street abbreviations or city sections (e.g. Street, Avenue, Road). Attach signs back to back on sign post with two 3/8” drive rivets.

2.3 REGULATORY, WARNING, CONSTRUCTION, AND GUIDE SIGNS

- A. Assure that all signs meet applicable MUTCD Standards. Furnish construction grade aluminum sign blanks, 0.08 inches thick. Use engineer grade reflective sheeting for the facing. Attach signs to the posts with a minimum of two 3/8” drive rivets.

2.4 SIGN POST FOUNDATION SLEEVES

- A. Furnish 2 ¼” non-perforated 12 gauge galvanized steel square tube foundation sleeves for all sign posts. Use “Telspar Quik Punch” or approved equal. Install sleeves in concrete anchor as shown on Standard Drawing 09810-1.

PART 3 – EXECUTION

3.1 SIGN INSTALLATION

- A. Assure that all signs are installed according to MUTCD Standards. Locate signs where shown on the plans or as directed by the Engineer. Assure

that signs are installed plumb, at the correct height, and with the edge of the sign a minimum of two feet from the face of the curb or edge of pavement.

3.2 SIGN REMOVAL OR REPLACEMENT

- A. As directed by the Engineer, salvage existing signs designated to be removed or replaced to the site specified by the Town of Manhattan. Properly dispose of all signs designated for removal or replacement which have not been designated for salvage.

PART 4 – MEASUREMENT AND PAYMENT

DELETE: Entire Section

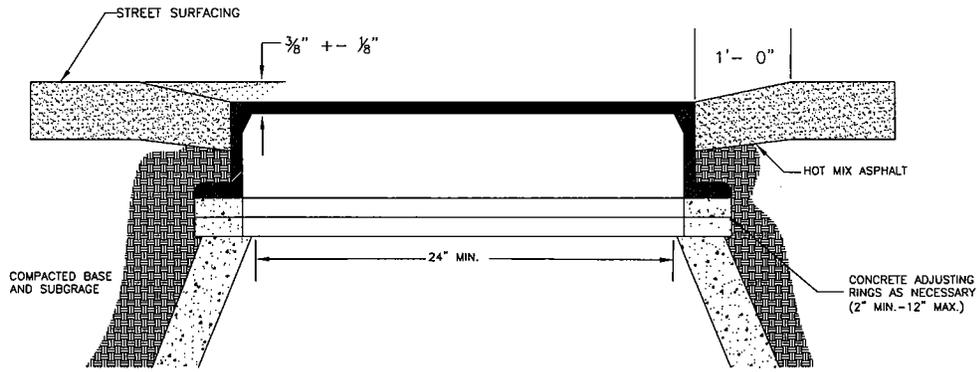
TOWN OF MANHATTAN

STANDARD DRAWINGS

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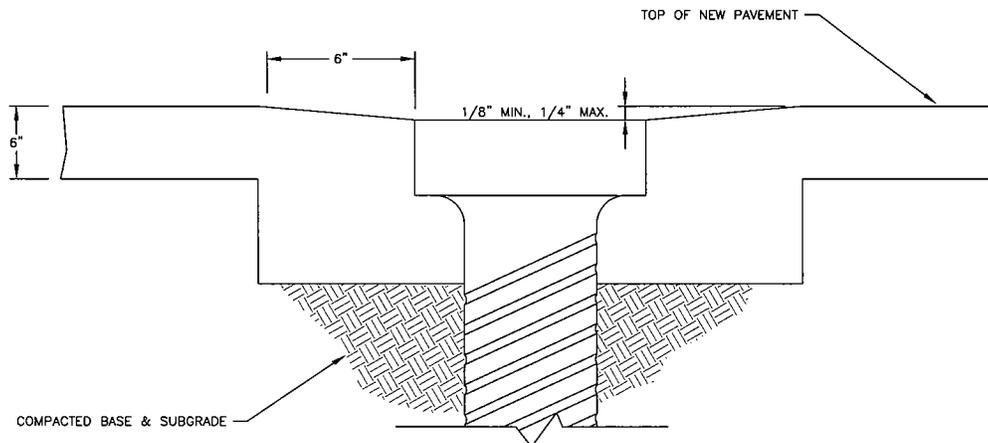
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TYPICAL STREET MARKER SIGN LOCATION	No. 02913-3



NOTES:

1. ADJUST MANHOLES UPWARD WITH ADJUSTING RINGS UNDER FRAME.
2. ADJUST MANHOLE DOWNWARD BY REMOVING CONE AND BARREL SECTIONS AS NECESSARY AND REPLACING WITH SECTIONS OF LENGTH REQUIRED TO MATCH GRADE.
3. SLOPE MANHOLE FRAME AS REQUIRED TO MATCH SLOPE OF STREET.
4. FINAL MANHOLE ADJUSTMENT SHALL BE MADE BEFORE PAVING.
5. ALL JOINTS BETWEEN MANHOLE SECTIONS, TOP CONE, ADJUSTING RINGS, AND MANHOLE RING SHALL BE WATERTIGHT. JOINT MATERIAL SHALL BE "RAM-NEK" OR APPROVED EQUAL.
6. MANHOLE RING AND COVER SHALL BE ADJUSTED TO MATCH FINAL CROWN AND GRADE OF STREET. USE ANDERSON PRECAST OR APPROVED EQUAL CONCRETE ANGLED ADJUSTMENT RINGS TO OBTAIN REQUIRED ANGLE.
7. MANHOLE RING AND COVER: USE MCI 305 FRAME, 305A COVER, IFCO 772 FRAME, 772-B COVER, OR DEETER 1025, OR D & L A-1172 WITH 1" COVER.



NOTES:

1. ADJUST WATER VALVES UPWARD OR DOWNWARD AS REQUIRED. FINAL ADJUSTMENT SHALL BE MADE AFTER PAVING AND BEFORE SEAL COATING.
2. MODEL NO. 69 8550 SERIES, EAST JORDAN IRON WORKS ADJUSTABLE SCREW-TYPE RISERS MAY BE USED TO RAISE OR ADJUST EXISTING VALVE BOXES ONLY.
3. VALVE BOX ADJUSTMENT SHOWN IS DESIGNATED AS TYPE II WATER VALVE ADJUSTMENT. TYPE I WATER VALVE ADJUSTMENT IS SIMILAR EXCEPT WITH A CONCRETE COLLAR.

Date: 9/2005

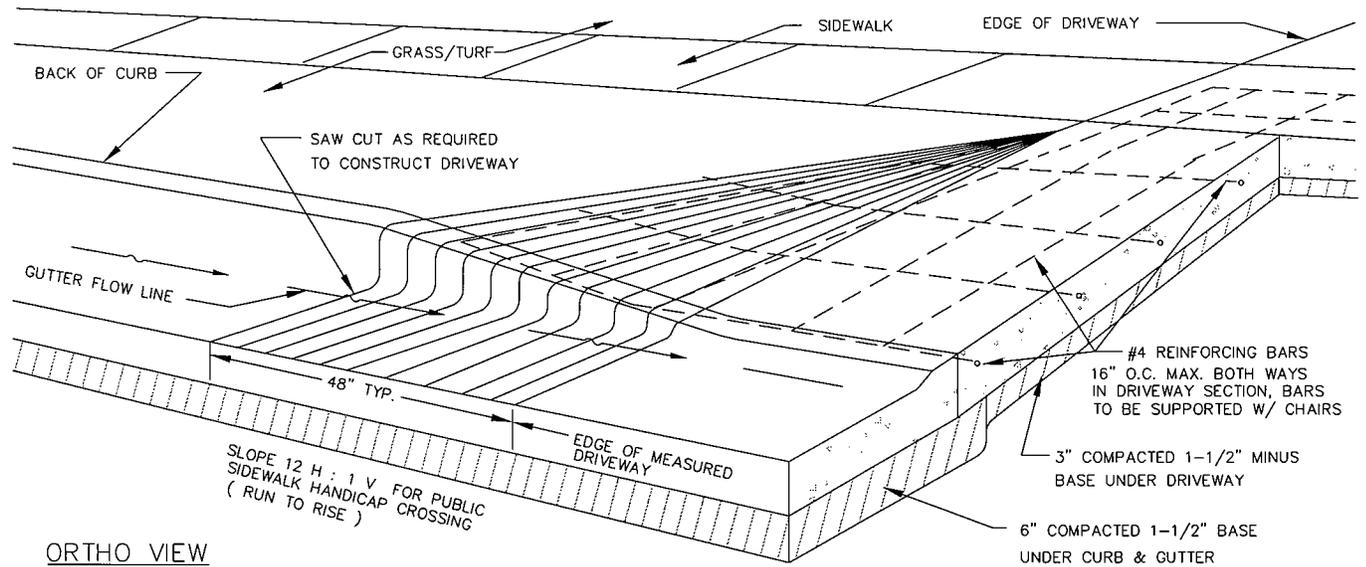
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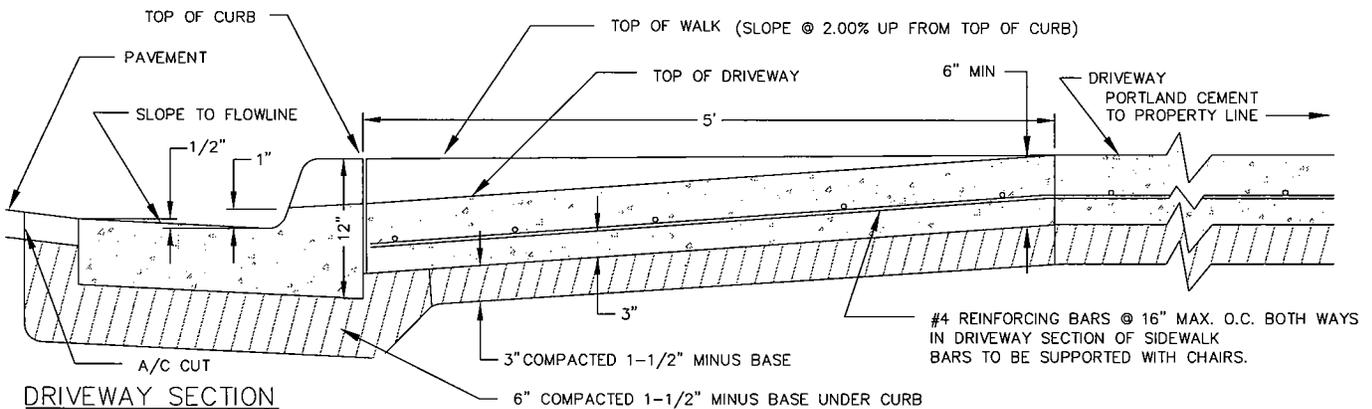
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TOWN OF MANHATTAN, MT.

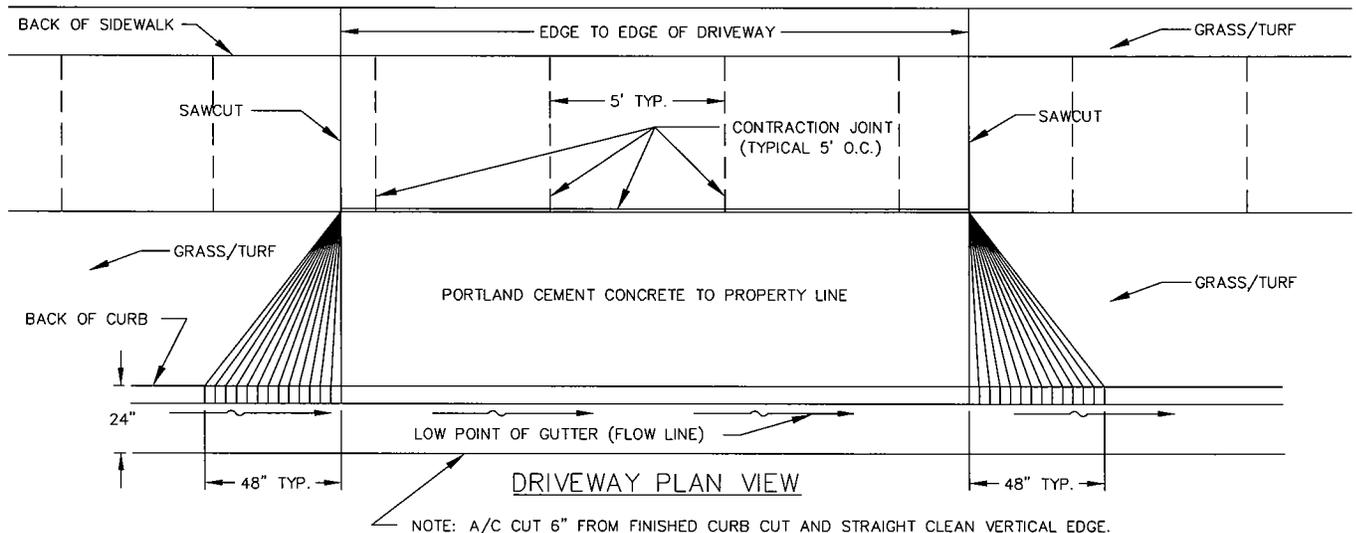
**MANHOLE AND VALVE BOX
ADJUSTMENT DETAIL**



ORTHO VIEW



DRIVEWAY SECTION



NOTE: A/C CUT 6" FROM FINISHED CURB CUT AND STRAIGHT CLEAN VERTICAL EDGE.

DRIVEWAY WIDTHS:

1. SINGLE-HOUSEHOLD DRIVE ACCESS OPENINGS SHALL NOT EXCEED 24 FEET IN WIDTH MEASURED AT THE RIGHT-OF-WAY LINE AND 34 FEET IN WIDTH MEASURED AT THE CURB LINE. ALL RESIDENTIAL COMPLEXES WITH FEWER THAN FIVE HOUSEHOLDS ARE CONSIDERED SINGLE-HOUSEHOLD RESIDENCES FOR THE PURPOSE OF DRIVEWAY WIDTHS.
2. COMMERCIAL AND INDUSTRIAL ACCESS WIDTHS SHALL BE A MAXIMUM OF 35 FEET AND 40 FEET RESPECTIVELY MEASURED AT THE INSIDE EDGE OF THE DRIVE ACCESS EXTENDED, AT ITS INTERSECTION WITH THE PROJECTED CURB LINE OF THE INTERSECTING STREET. TWO-WAY DRIVE ACCESS SHALL BE A MINIMUM OF 24 FEET AND ONE-WAY DRIVE ACCESS SHALL BE A MINIMUM OF 16 FEET. ALL RESIDENTIAL COMPLEXES WITH FIVE OR MORE HOUSEHOLDS ARE CONSIDERED COMMERCIAL ESTABLISHMENTS FOR THE PURPOSE OF DRIVEWAY WIDTHS.

Date: 9/2005

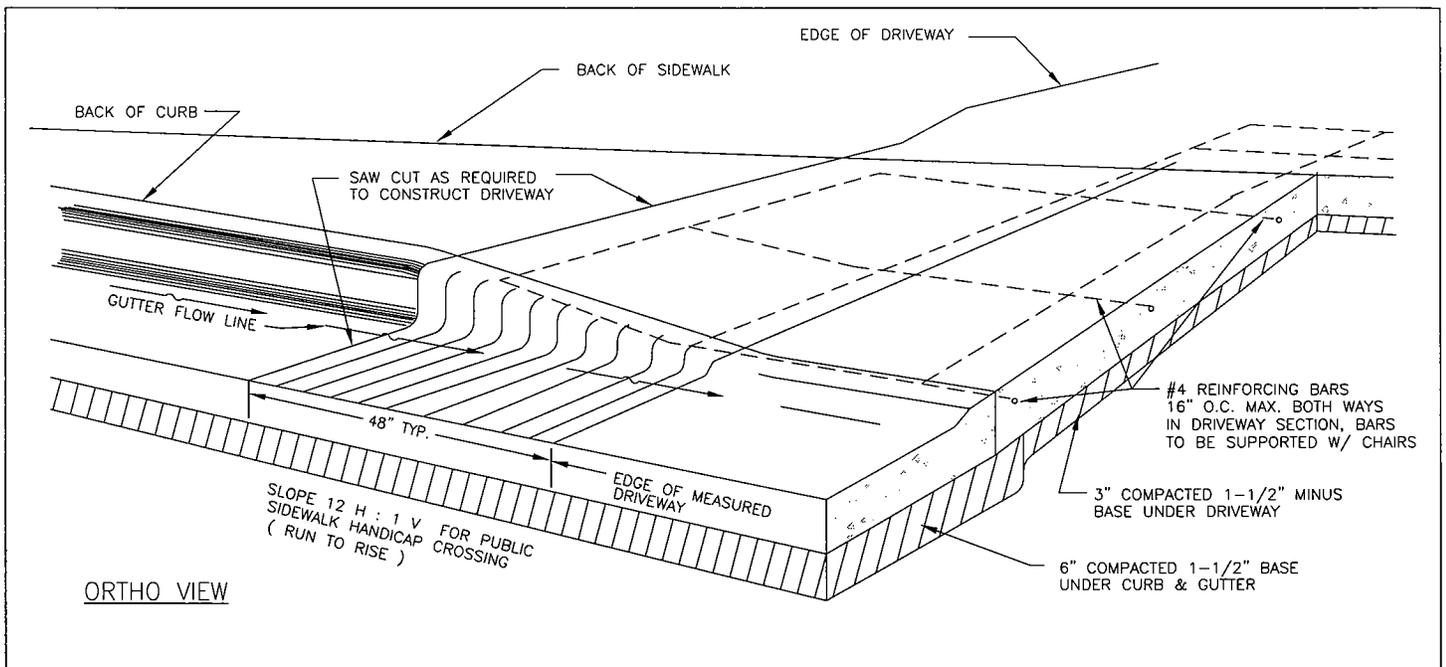
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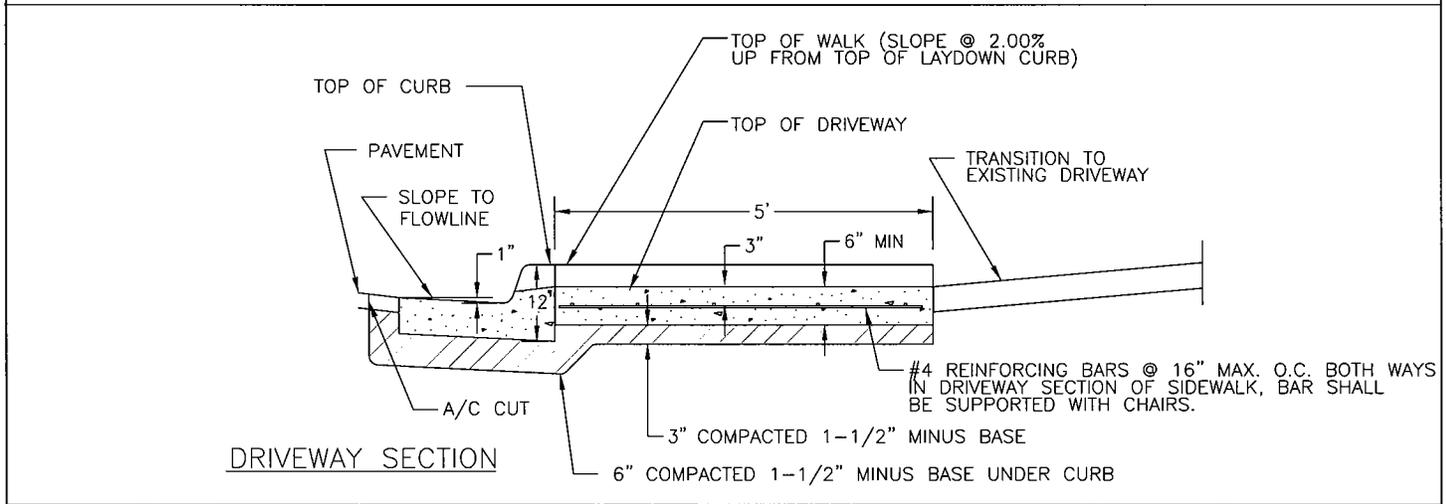
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TOWN OF MANHATTAN, MT.

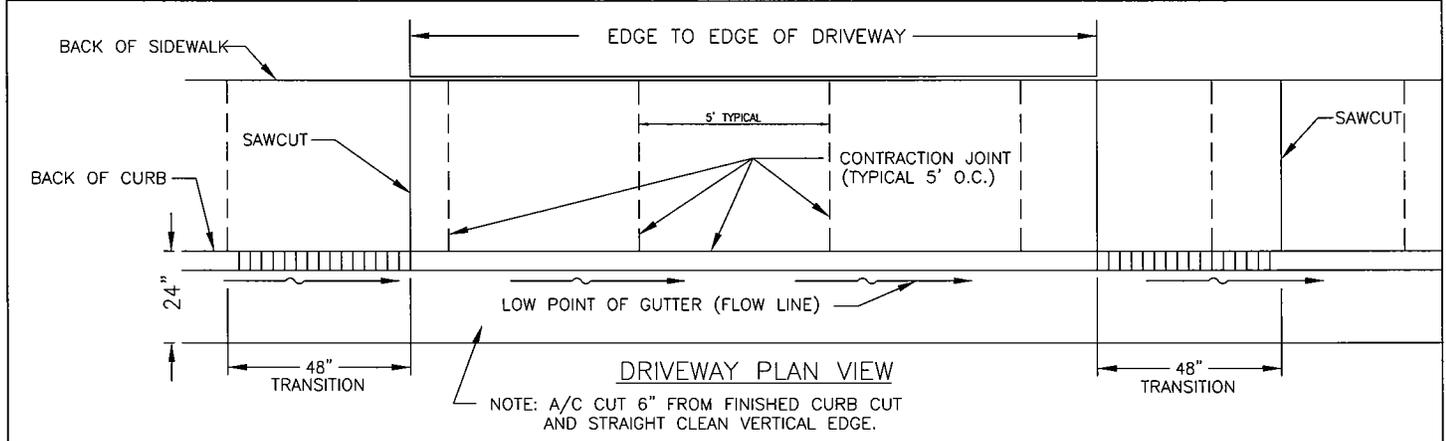
CURB AND SIDEWALK SECTION
FOR DRIVEWAYS, OPTION #1,
TWO POUR INSTALLATION



ORTHO VIEW



DRIVEWAY SECTION



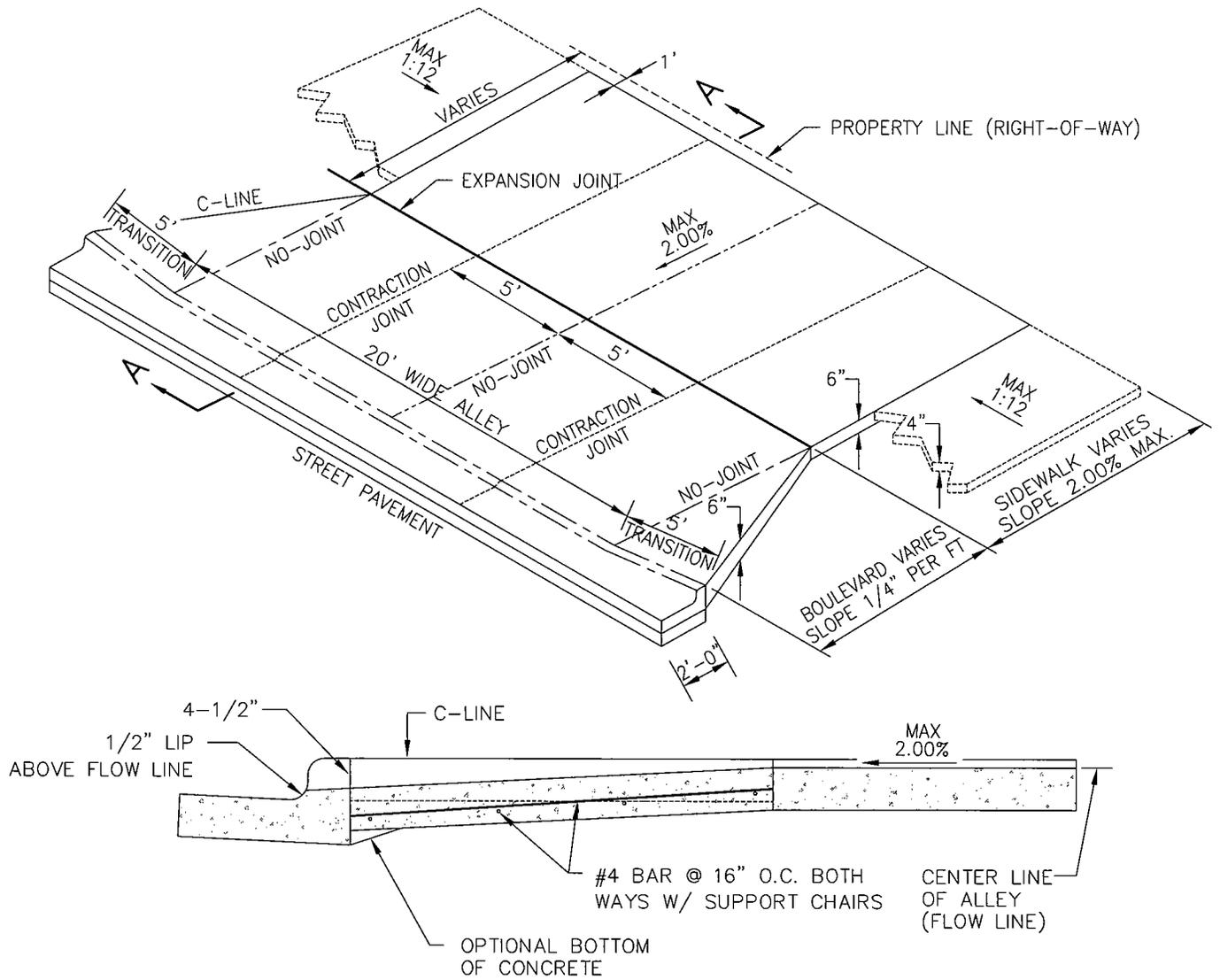
DRIVEWAY PLAN VIEW

NOTE: A/C CUT 6" FROM FINISHED CURB CUT AND STRAIGHT CLEAN VERTICAL EDGE.

DRIVEWAY WIDTHS:

1. SINGLE-HOUSEHOLD DRIVE ACCESS OPENINGS SHALL NOT EXCEED 24 FEET IN WIDTH MEASURED AT THE RIGHT-OF-WAY LINE AND 34 FEET IN WIDTH MEASURED AT THE CURB LINE. ALL RESIDENTIAL COMPLEXES WITH FEWER THAN FIVE HOUSEHOLDS ARE CONSIDERED SINGLE-HOUSEHOLD RESIDENCES FOR THE PURPOSE OF DRIVEWAY WIDTHS.
2. COMMERCIAL AND INDUSTRIAL ACCESS WIDTHS SHALL BE A MAXIMUM OF 35 FEET AND 40 FEET RESPECTIVELY MEASURED AT THE INSIDE EDGE OF THE DRIVE ACCESS EXTENDED, AT ITS INTERSECTION WITH THE PROJECTED CURB LINE OF THE INTERSECTING STREET. TWO-WAY DRIVE ACCESS SHALL BE A MINIMUM OF 24 FEET AND ONE-WAY DRIVE ACCESS SHALL BE A MINIMUM OF 16 FEET. ALL RESIDENTIAL COMPLEXES WITH FIVE OR MORE HOUSEHOLDS ARE CONSIDERED COMMERCIAL ESTABLISHMENTS FOR THE PURPOSE OF DRIVEWAY WIDTHS.

Date: 8/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02529-6B
TOWN OF MANHATTAN, MT.			CURB AND SIDEWALK SECTION FOR DRIVEWAYS, OPTION #2, TWO POUR INSTALLATION

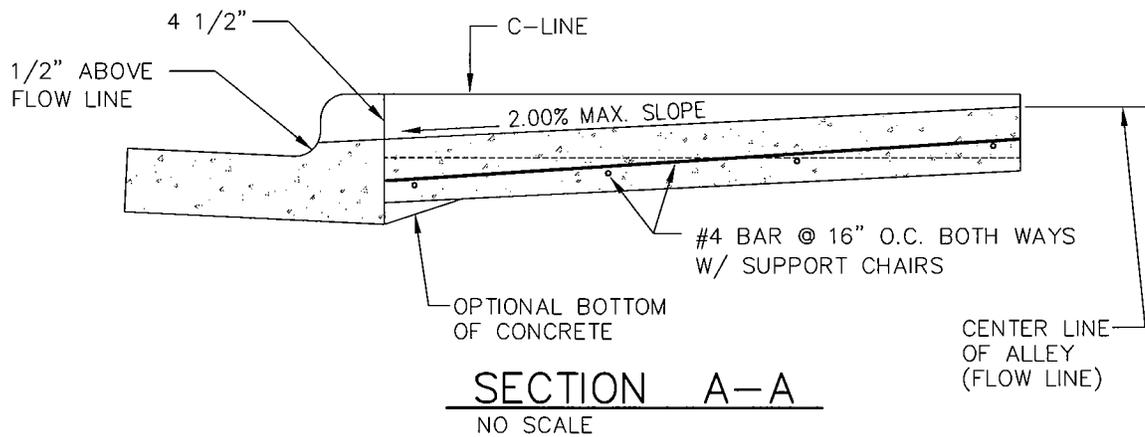
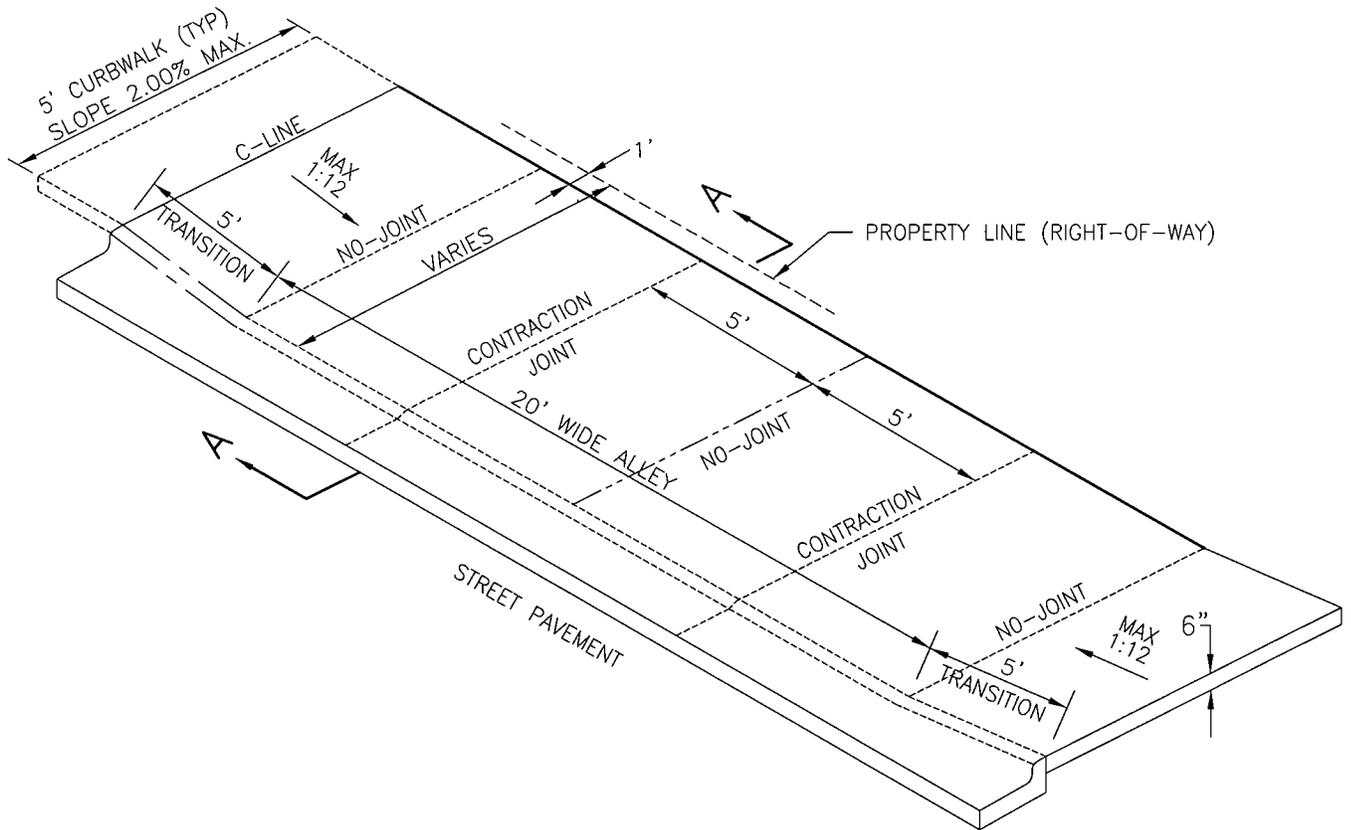


SECTION A-A
NO SCALE

NOTES:

1. APPROACH WILL BE PLACED MONOLITHICALLY.
2. BOULEVARDS THAT EXCEED 12 FT. IN DEPTH REQUIRE A TRANSVERSE JOINT.
3. JOINTS MAY VARY DEPENDING UPON WIDTH OF APPROACH AND WALK. JOINTS IN THE FLOWLINE ARE TO BE AVOIDED. BUT IF NECESSARY FLOWLINE JOINT SHALL BE SEALED WITH AN APPROVED JOINT SEALER.
4. MINIMUM ALLEY WIDTHS SHALL BE 20 FEET.

Date: 9/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02529-7A
TOWN OF MANHATTAN, MT.			BOULEVARD ALLEY APPROACH (WITH FLAIR SECTIONS)



NOTES:

1. APPROACH WILL BE PLACED MONOLITHICALLY.
2. TAPERS SHALL BE 5' IN LENGTH MINIMUM.
3. JOINTS MAY VARY DEPENDING UPON WIDTH OF APPROACH AND WALK. JOINTS IN THE FLOWLINE ARE TO BE AVOIDED. BUT IF NECESSARY FLOWLINE JOINT SHALL BE SEALED WITH AN APPROVED JOINT SEALER.
4. MINIMUM ALLEY WIDTHS SHALL BE 20 FEET.

Date: 9/2005

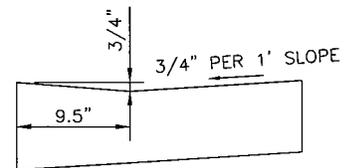
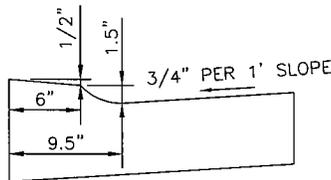
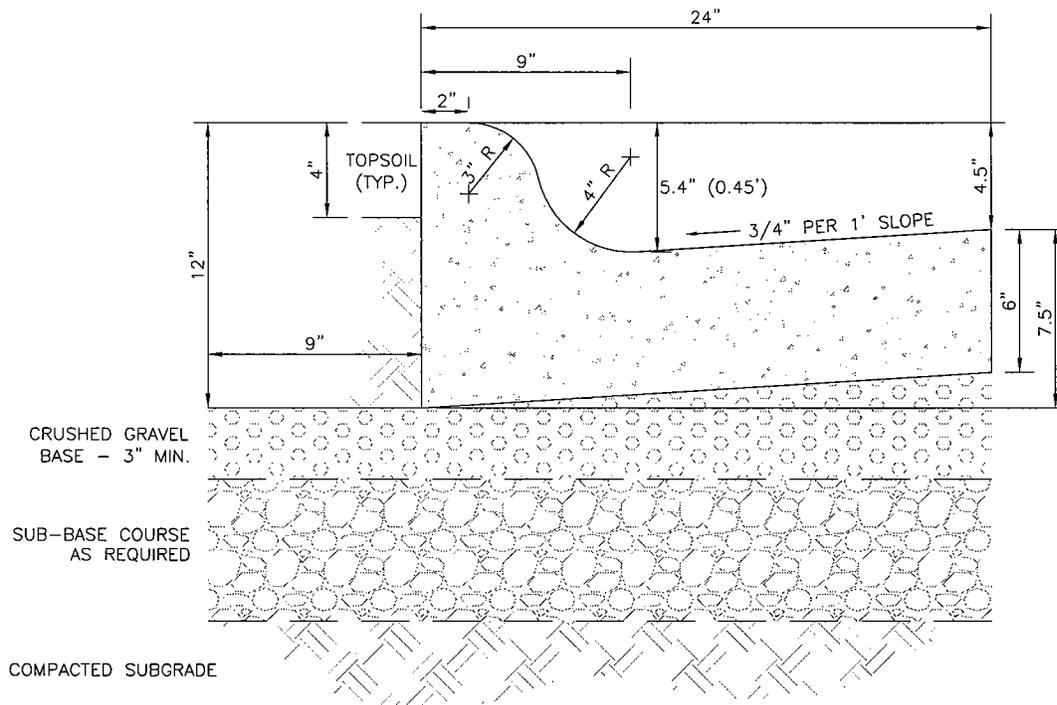
Revised:

By:

CONSTRUCTION STANDARD NO. 02529-7B

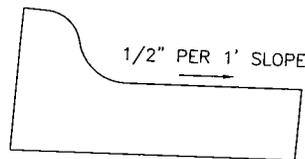
TOWN OF MANHATTAN, MT.

**CURB WALK ALLEY APPROACH
(WITH FLAIR SECTIONS)**



DROP CURB FOR DRIVEWAYS

DROP CURB FOR PEDESTRIAN RAMPS



SPILL CURB

NOTES:

1. SUBGRADE OR BASE COURSE COMPACTION SHALL CONFORM TO SECTION 02230 (M.P.W. SPECS., 1996 EDITION.)
2. CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS AND SHALL HAVE A MINIMUM DEPTH OF 3/4" AND MINIMUM WIDTH OF 1/8".
3. 1/2" EXPANSION JOINT MATERIAL SHALL BE PLACED AT ALL P.C.s, P.T.s, CURB RETURNS AND AT NOT MORE THAN 300' INTERVALS. THE EXPANSION MATERIAL SHALL EXTEND THROUGH THE FULL DEPTH OF THE CURB AND GUTTER.
4. NO CURB AND GUTTER SHALL BE PLACED WITHOUT FINAL FORM INSPECTION BY THE CITY ENGINEER OR HIS REPRESENTATIVE.
5. CONCRETE SHALL BE CLASS M-4000.
6. CRUSHED GRAVEL BASE SHALL MEET THE REQUIREMENTS OF SECTION 02235 (M.P.W SPECS, 2003 EDITION.) FOR CURB AND GUTTER REPLACEMENT PROJECTS, WASHED ROCK MAY BE USED FOR THE GRAVEL BASE.

Date: 3/2008

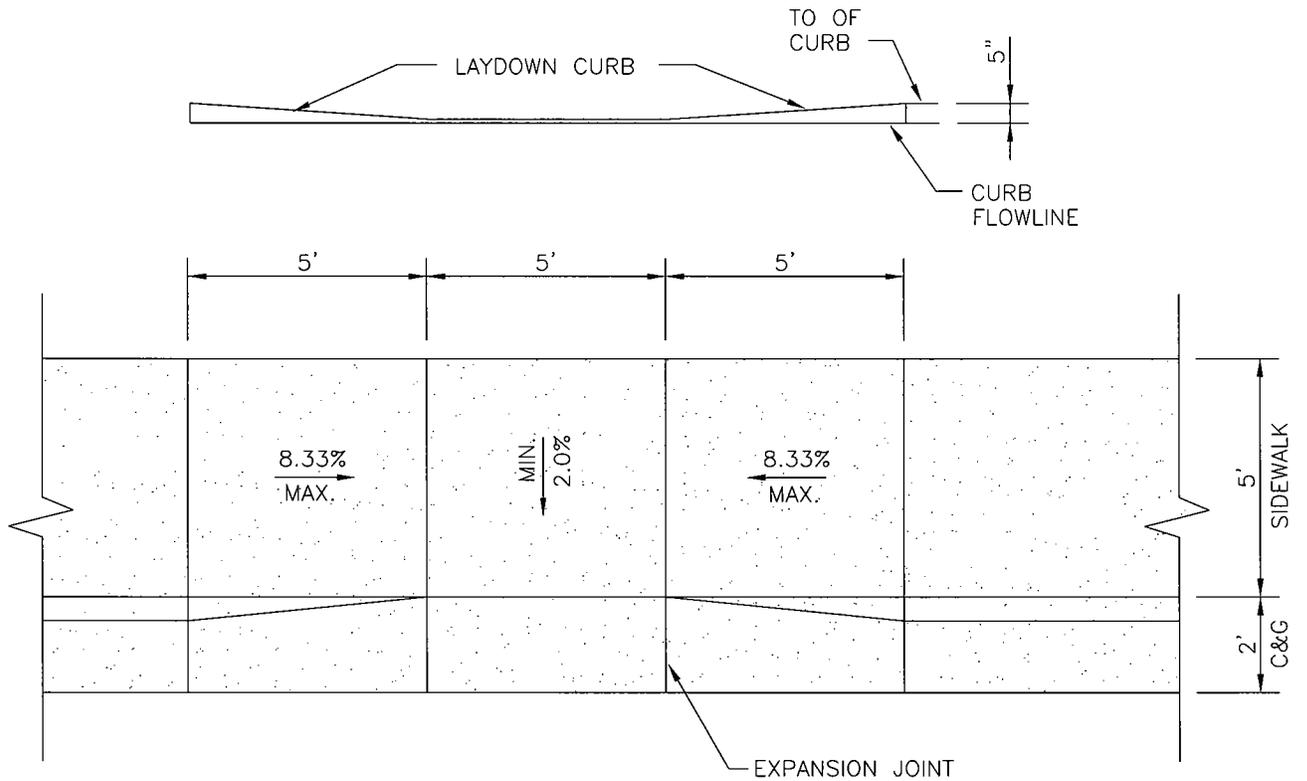
Revised:

By:

CONSTRUCTION STANDARD NO. 02611-01

TOWN OF MANHATTAN, MT.

CURB AND GUTTER SECTION



1. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF THE RAMP.
2. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP FREE OF SAGS AND SHORT GRADE CHANGES.
3. IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH THE RAMP EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION, LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE.
4. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
5. CROSSWALK AND STOP LINE MARKINGS, IF USED SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSING.
6. NO SLOPE SHALL EXCEED 1"=1'-0"(12:1) ON THE RAMP OR SIDEWALK.

Date: 9/2005

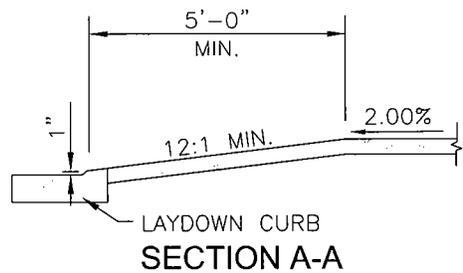
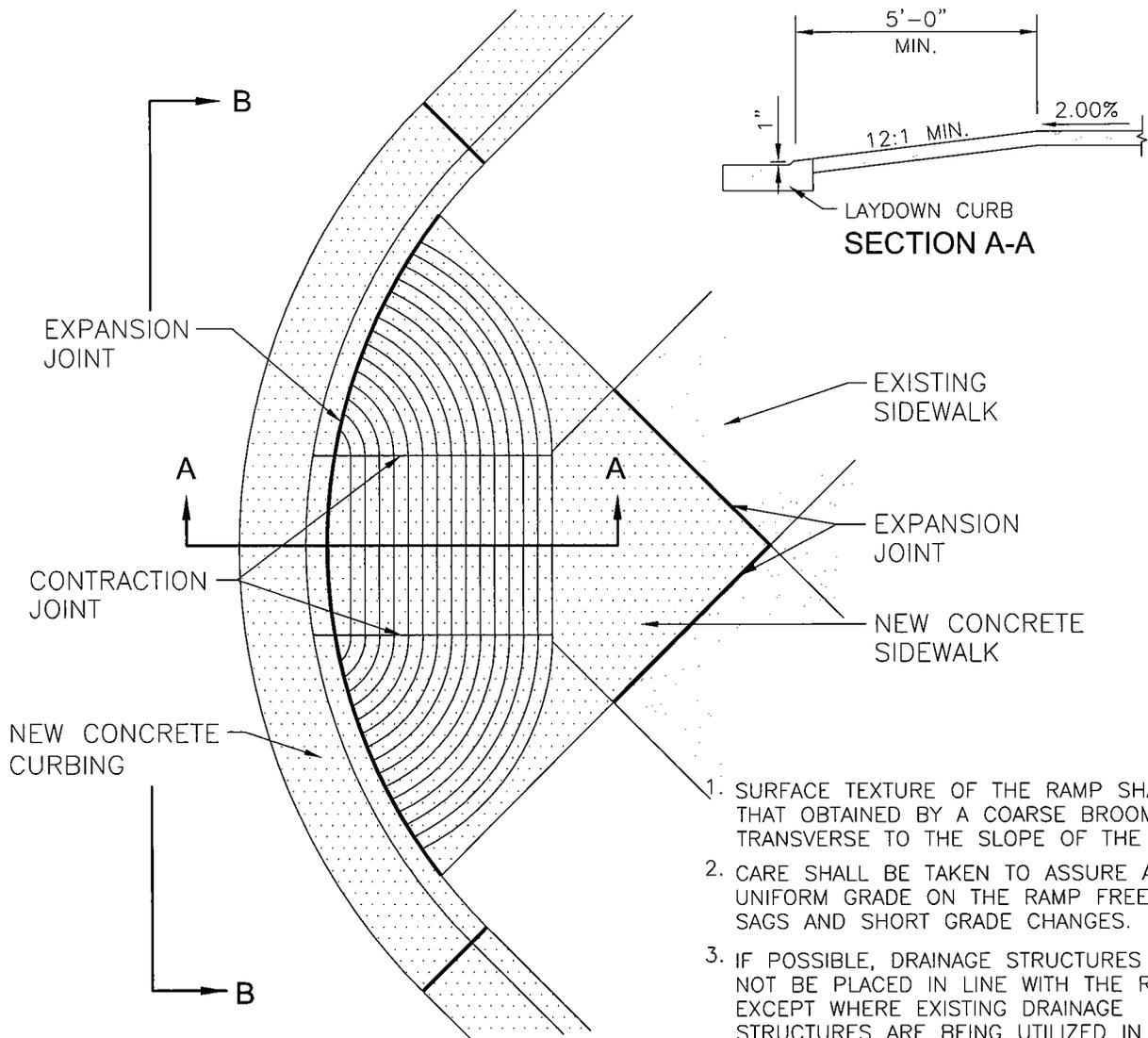
Revised:

By:

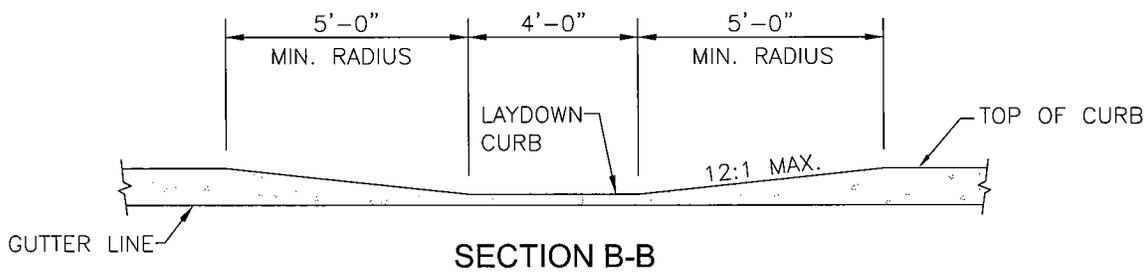
CONSTRUCTION STANDARD NO. 02611-10

TOWN OF MANHATTAN, MT.

WHEELCHAIR RAMP



1. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF THE RAMP.
2. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP FREE OF SAGS AND SHORT GRADE CHANGES.
3. IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH THE RAMP EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION, LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE.
4. THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
5. CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSING.
6. NO SLOPE SHALL EXCEED 1"=1'-0" (12:1) ON THE RAMP OR SIDEWALK.



Date: 9/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02611-11
TOWN OF MANHATTAN, MT.			WHEELCHAIR RAMP

INTEGRAL CURB PLACED ON VALLEY GUTTER SHALL HAVE SAME CROSS SECTION AS UPPER 6" OF CONCRETE CURB & GUTTER

NEW CONCRETE CURB & GUTTER

EXPANSION JOINT

RADIUS VARIES

CONTRACTION JOINT 2" MIN.

18" x 3/4" ϕ DOWEL BARS EVENLY SPACED

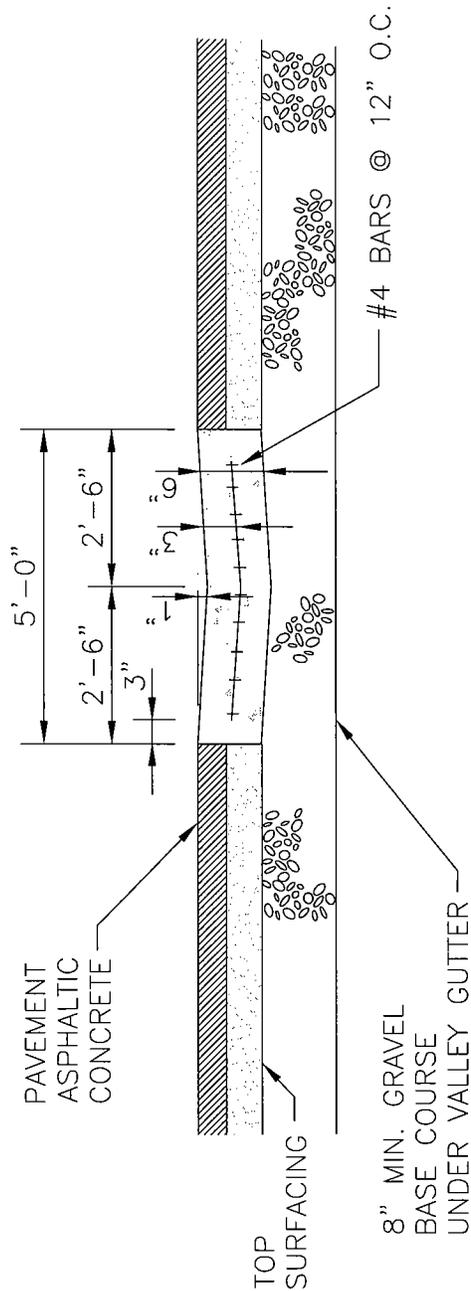
TOP OF GRADE

1/4" MIN.

12' MAX.

PLAN

CONTRACTION JOINT DETAIL



SECTION

Date: 8/2005

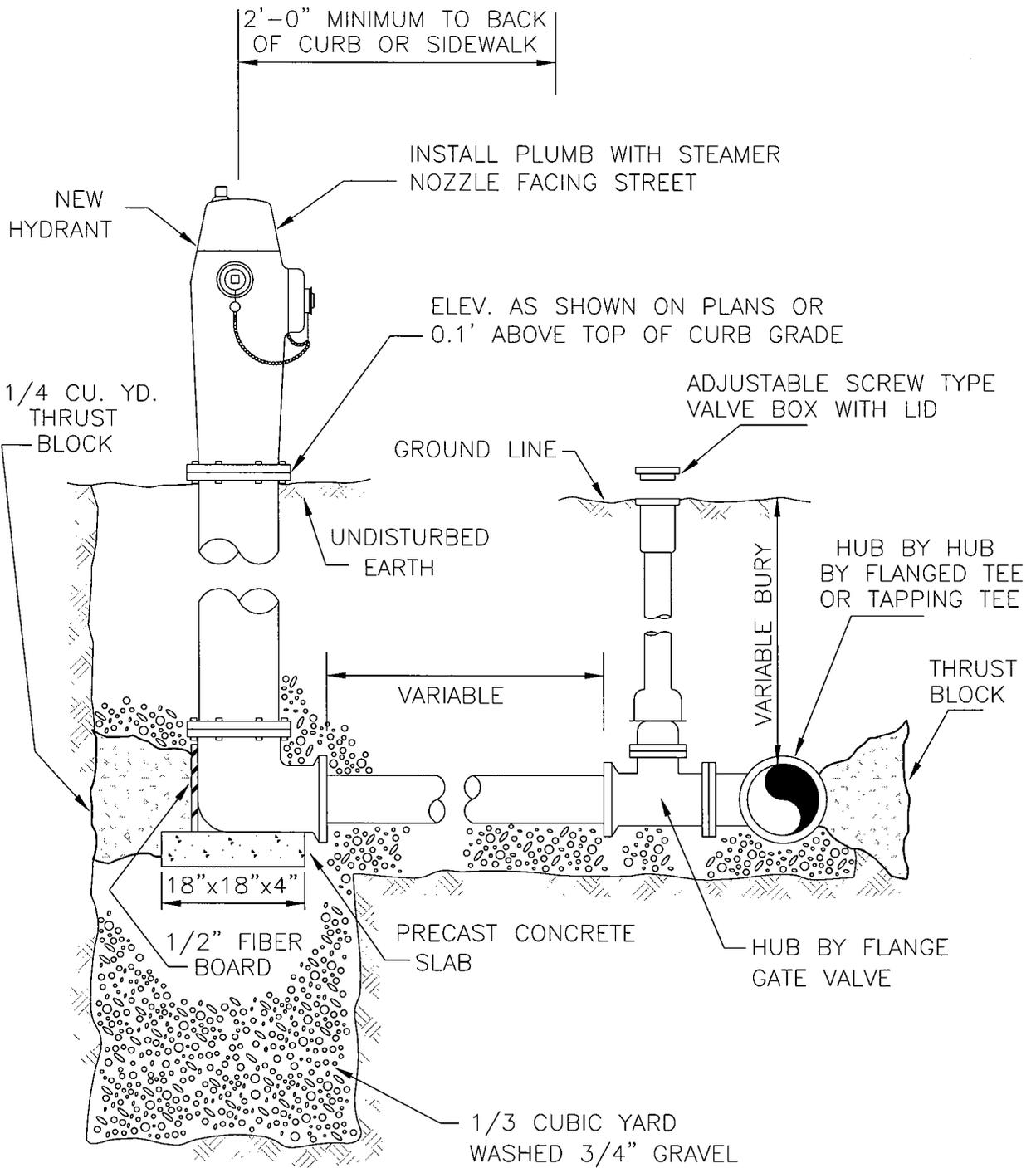
Revised:

By:

CONSTRUCTION STANDARD NO. 02611-13

TOWN OF MANHATTAN, MT.

CONCRETE VALLEY GUTTER



NOTE: WRAP ALL FITTINGS, VALVES, VALVE BOXES, DUCTILE IRON PIPE AND OTHER PIPELINE APPURTENANCES WITH POLYETHYLENE.

Date: 8/2005

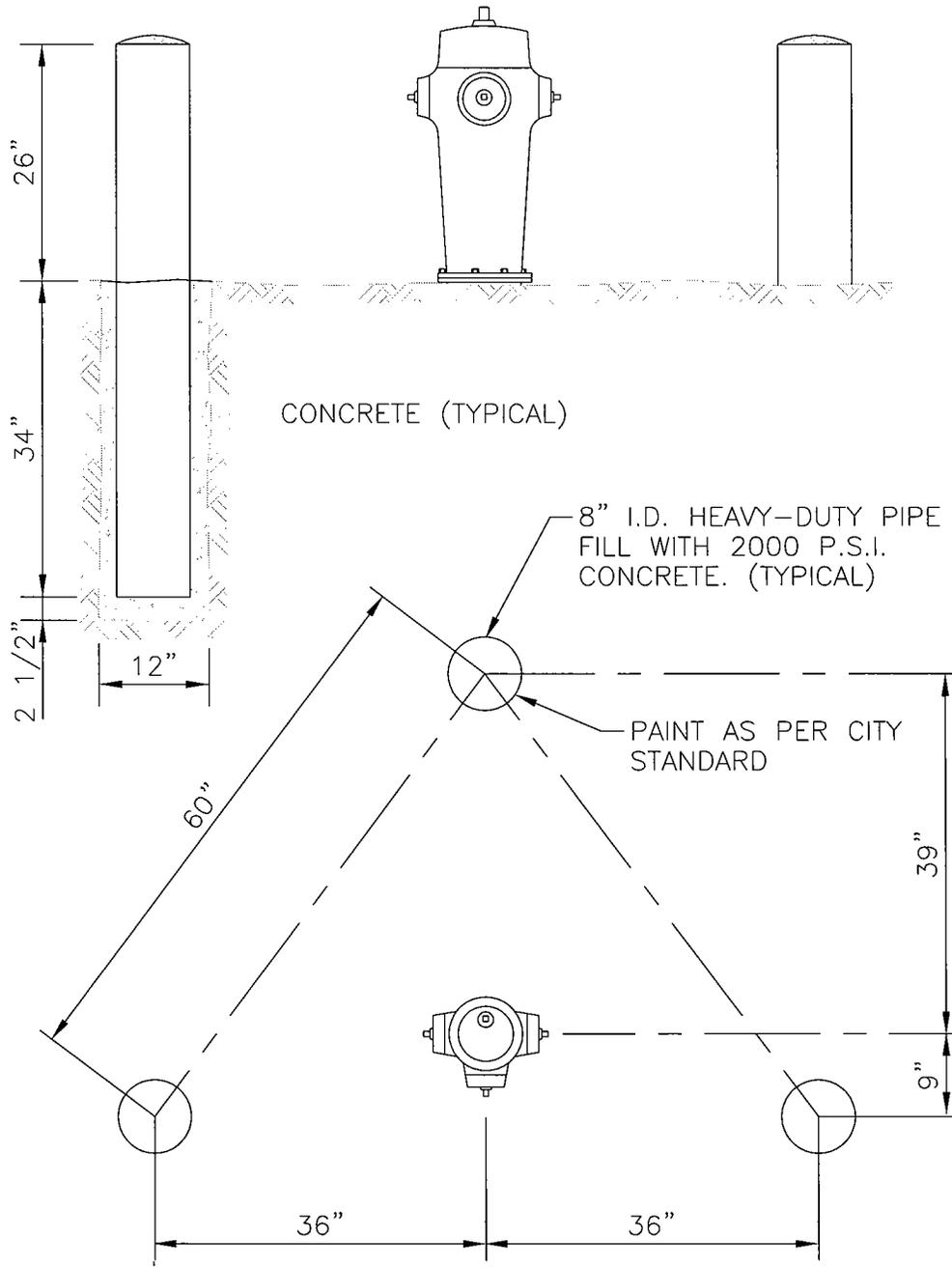
Revised:

By:

CONSTRUCTION STANDARD NO. 02660-02

TOWN OF MANHATTAN, MT.

**FIRE HYDRANT
(WITH REMOTE AUX. VALVE)**



NOTE:

1. POST NOT REQUIRED WHERE NATURAL BARRIERS EXIST.

Date: 8/2005

Revised:

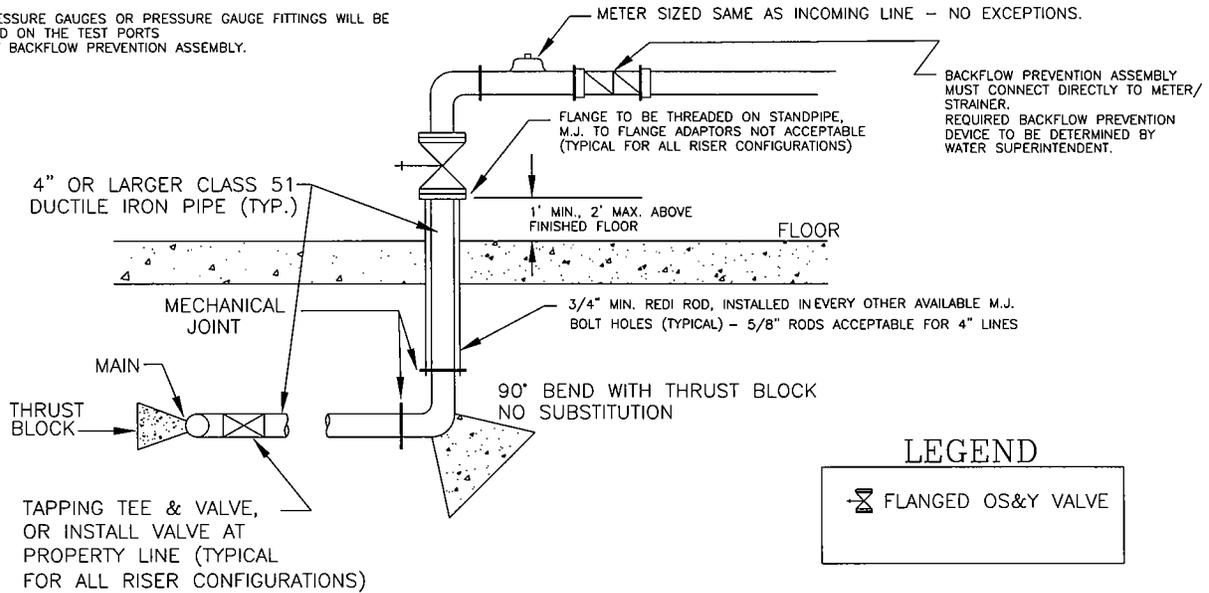
By:

CONSTRUCTION STANDARD NO. 02660-06

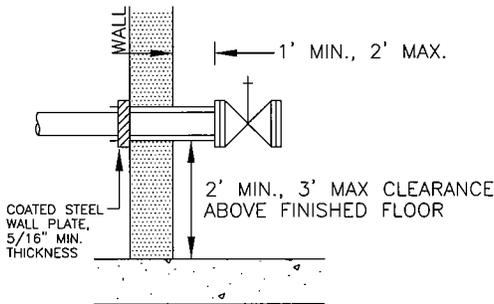
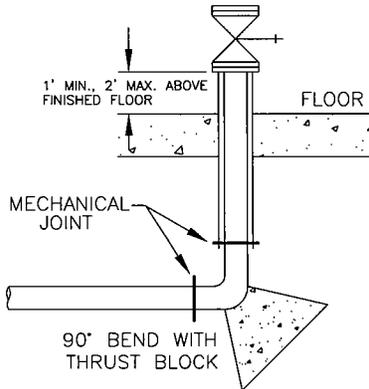
TOWN OF MANHATTAN, MT.

HYDRANT BARRIER POSTS

NO PRESSURE GAUGES OR PRESSURE GAUGE FITTINGS WILL BE ALLOWED ON THE TEST PORTS OF ANY BACKFLOW PREVENTION ASSEMBLY.



PROVIDE FLEXIBLE, WATER-TIGHT CONNECTION FOR ALL WALL OR FLOOR PIPE PENETRATION.



TOWN OF MANHATTAN REQUIREMENTS FOR INSTALLATION OF BACKFLOW PREVENTION ASSEMBLY

1. THE FIRST FITTING INSIDE OF THE BUILDING SHALL BE A UL LISTED FLANGED KENNEDY OR MUELLER OS&Y VALVE THE SAME SIZE AS THE SERVICE LINE. COMBINATION STRAINER/METER IMMEDIATELY FOLLOWING OS&Y VALVE OR ELBOW ATTACHED DIRECTLY TO OS&Y VALVE -- METER MUST SET HORIZONTAL.
2. ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE:
 - A. UL OR FM LISTED.
 - B. APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH (USCFCCCHR) FOR OPERATION IN THE PROPOSED POSITION (VERTICAL OR HORIZONTAL) AS SHOWN ON APPROVED PLANS.
 - C. INSTALLED AS SHOWN ON THE APPROVED PLANS.
3. HORIZONTAL INSTALLATIONS MUST BE A MINIMUM OF 2' ABOVE THE FINISHED FLOOR.
4. THE SERVICE RISER MUST BE A MINIMUM OF 2' FROM ANY OUTSIDE WALL.
5. THE INCOMING SERVICE LINE SHALL BE A MINIMUM 6.5', AND A MAXIMUM OF 7.5' BELOW THE FINISHED GRADE.
6. ALL SERVICE LINE APPURTENANCES SHALL HAVE A MINIMUM PRESSURE RATING OF 200 PSI.
7. ALL SERVICE LINES 4" AND LARGER SHALL BE CLASS 51 DUCTILE IRON PIPE.
8. LINE SIZING: THE BACKFLOW PREVENTION ASSEMBLY AND METER SHALL BE EQUAL IN SIZE TO BOTH THE INCOMING PIPE DIAMETER (UPSTREAM) AND OUTGOING PIPE DIAMETER (DOWNSTREAM). FOR EXAMPLE, A 4" SERVICE LINE SHALL HAVE A 4" METER AND BACKFLOW PREVENTION ASSEMBLY.

Date: 3/2008

Revised:

By:

CONSTRUCTION STANDARD NO. 02660-12

TOWN OF MANHATTAN, MT.

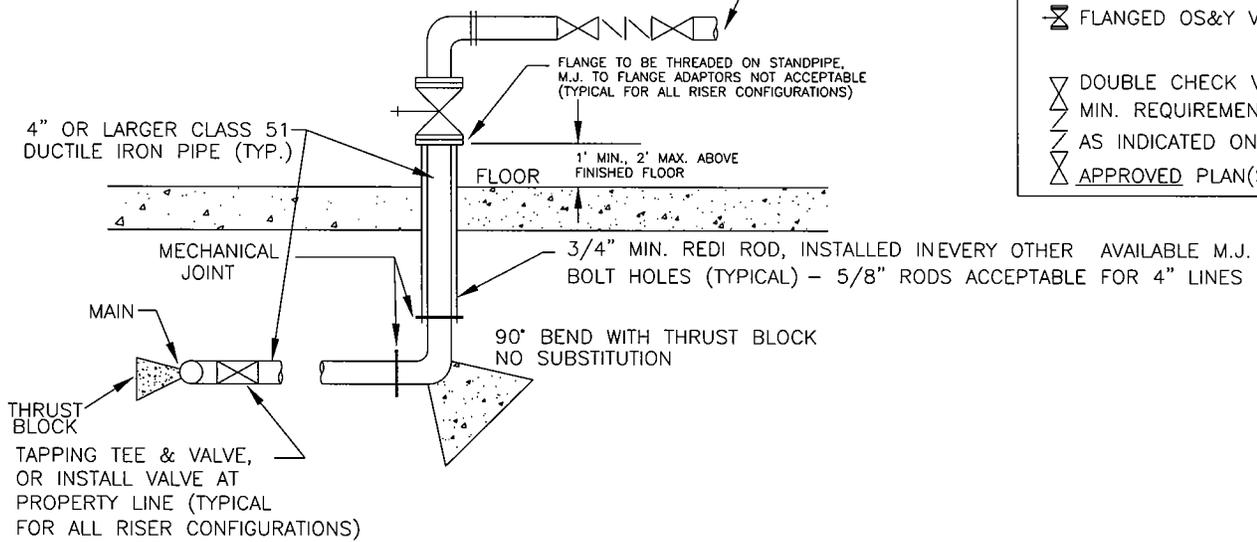
**WATER SERVICE LINE
FOR SIZES 4" AND LARGER**

ONLY FITTINGS ALLOWED BETWEEN FIRST OS&Y VALVE AND BACKFLOW ASSEMBLY TO BE 90° BEND.

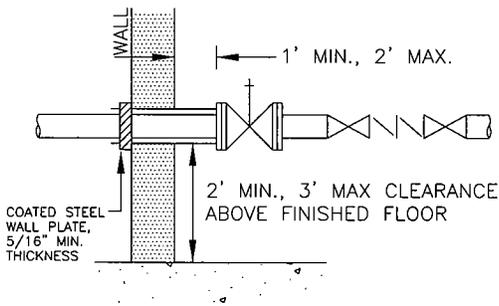
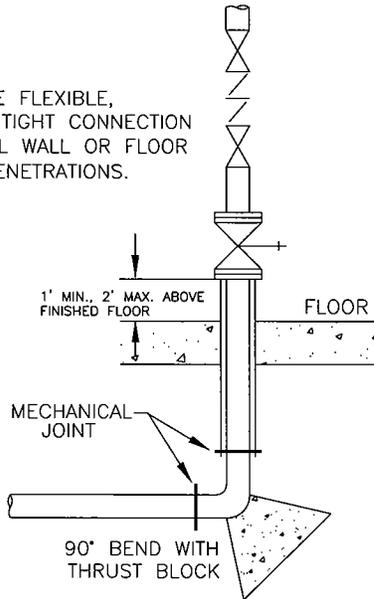
NO PRESSURE GAUGES OR PRESSURE GAUGE FITTINGS WILL BE ALLOWED ON THE TEST PORTS OF ANY BACKFLOW ASSEMBLY

LEGEND

-  FLANGED OS&Y VALVE
-  DOUBLE CHECK VALVE
-  MIN. REQUIREMENT)
-  AS INDICATED ON
-  APPROVED PLAN(S)



PROVIDE FLEXIBLE, WATER-TIGHT CONNECTION FOR ALL WALL OR FLOOR PIPE PENETRATIONS.



TOWN OF MANHATTAN REQUIREMENTS FOR INSTALLATION OF DOUBLE CHECK VALVE ASSEMBLY

1. THE FIRST FITTING INSIDE OF THE BUILDING SHALL BE A UL LISTED FLANGED KENNEDY OR MUELLER OS&Y VALVE THE SAME SIZE AS THE FIRE SERVICE LINE.
2. ALL DOUBLE CHECK VALVE ASSEMBLIES SHALL BE:
 - A. UL OR FM LISTED.
 - B. APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH (USCFCCCHR) FOR OPERATION IN THE PROPOSED POSITION (VERTICAL OR HORIZONTAL) AS SHOWN ON APPROVED PLANS.
 - C. INSTALLED AS SHOWN ON THE APPROVED PLANS.
3. A FLOW DETECTION DEVICE SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE DOUBLE CHECK VALVE ASSEMBLY (ALARM CHECK VALVE, FLOW SENSOR/ALARM, METER, ETC.) AS SHOWN ON THE APPROVED PLANS. PADDLE-TYPE FLOW ALARMS NOT PERMITTED ON DRY SYSTEMS.
4. A DOUBLE DETECTOR CHECK VALVE ASSEMBLY MAY BE USED WITH A STANDARD CITY OF BOZEMAN METER. THE METER LOOP OF THE DOUBLE DETECTOR CHECK VALVE SHALL HAVE A DOUBLE CHECK VALVE ASSEMBLY INSTALLED WHICH MEETS THE SAME INSTALLATION CRITERIA SPECIFIED ABOVE IN REQUIREMENT NUMBER TWO.
5. HORIZONTAL INSTALLATIONS MUST BE A MINIMUM OF 2' ABOVE THE FINISHED FLOOR.
6. THE FIRE SERVICE RISER MUST BE A MINIMUM OF 2' FROM ANY OUTSIDE WALL, AND A MINIMUM OF 1' FROM ANY INTERIOR WALL.
7. THE INCOMING FIRE SERVICE LINE SHALL BE A MINIMUM 6.5', AND A MAXIMUM OF 7.5' BELOW THE FINISHED GRADE.
8. ALL FIRE SERVICE LINE APPURTENANCES SHALL HAVE A MINIMUM PRESSURE RATING OF 200 PSI.
9. ALL FIRE SERVICE LINES 4" AND LARGER SHALL BE CLASS 51 DUCTILE IRON PIPE.
10. LINE SIZING: THE DOUBLE CHECK VALVE ASSEMBLY SHALL BE EQUAL IN SIZE TO BOTH THE INCOMING PIPE DIAMETER (UPSTREAM) AND OUTGOING PIPE DIAMETER (DOWNSTREAM).

Date: 3/2008

Revised:

By:

CONSTRUCTION STANDARD NO. 02660-13

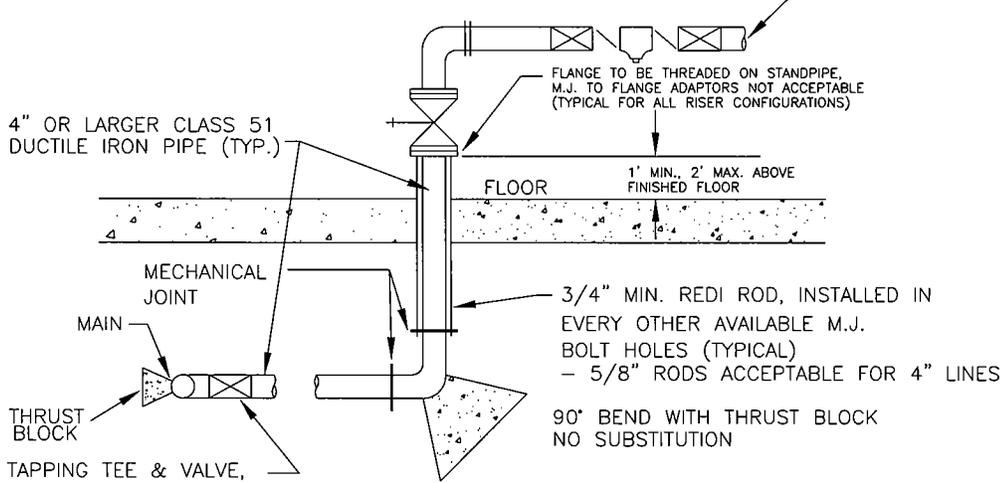
TOWN OF MANHATTAN, MT.

**STANDARD FIRE SERVICE LINE
INSTALLATION FOR CLASS
I, II & III SYSTEMS**

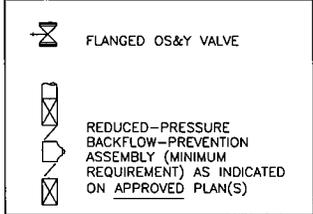
ONLY FITTINGS ALLOWED BETWEEN FIRST OS&Y VALVE AND BACKFLOW ASSEMBLY TO BE 90° BEND.

NO PRESSURE GAUGES OR PRESSURE GAUGE FITTINGS WILL BE ALLOWED ON THE TEST PORTS OF ANY BACKFLOW ASSEMBLY

4" OR LARGER CLASS 51 DUCTILE IRON PIPE (TYP.)

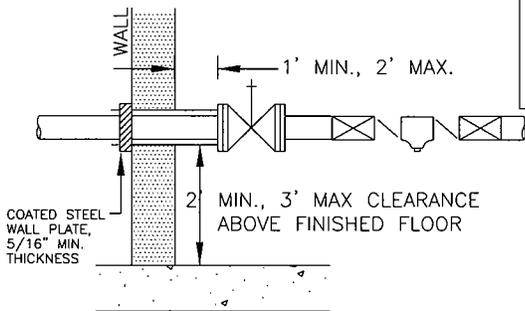
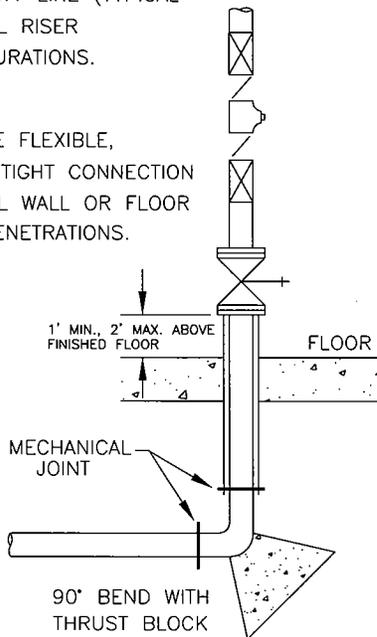


LEGEND



THRUST BLOCK
TAPPING TEE & VALVE, OR INSTALL VALVE AT PROPERTY LINE (TYPICAL FOR ALL RISER CONFIGURATIONS).

PROVIDE FLEXIBLE, WATER-TIGHT CONNECTION FOR ALL WALL OR FLOOR PIPE PENETRATIONS.



- TOWN OF MANHATTAN REQUIREMENTS FOR INSTALLATION OF REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY**
1. THE FIRST FITTING INSIDE OF THE BUILDING SHALL BE A UL LISTED FLANGED KENNEDY OR MUELLER OS&Y VALVE THE SAME SIZE AS THE FIRE SERVICE LINE.
 2. ALL REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLIES SHALL BE:
 - A. UL OR FM LISTED.
 - B. APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH (USCFCCCHR) FOR OPERATION IN THE PROPOSED POSITION (VERTICAL OR HORIZONTAL) AS SHOWN ON APPROVED PLANS.
 - C. INSTALLED AS SHOWN ON THE APPROVED PLANS.
 3. A FLOW DETECTION DEVICE SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY (ALARM CHECK VALVE, FLOW SENSOR/ALARM, METER, ETC.) AS SHOWN ON THE APPROVED PLANS. PADDLE-TYPE FLOW ALARMS NOT PERMITTED ON DRY SYSTEMS.
 4. HORIZONTAL INSTALLATIONS MUST BE A MINIMUM OF 2' ABOVE THE FINISHED FLOOR.
 5. THE FIRE SERVICE RISER MUST BE A MINIMUM OF 2' FROM ANY OUTSIDE WALL, AND A MINIMUM OF 1' FROM ANY INTERIOR WALL.
 6. THE INCOMING FIRE SERVICE LINE SHALL BE A MINIMUM OF 6.5', AND A MAXIMUM OF 7.5' BELOW THE FINISHED GRADE.
 7. ALL FIRE SERVICE LINE APPURTENANCES SHALL HAVE A MINIMUM PRESSURE RATING OF 200 PSI.
 8. ALL FIRE SERVICE LINES 4" AND LARGER SHALL BE CLASS 51 DUCTILE IRON PIPE.
 9. LINE SIZING: THE REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SHALL BE EQUAL IN SIZE TO BOTH THE INCOMING PIPE DIAMETER (UPSTREAM) AND OUTGOING PIPE DIAMETER (DOWNSTREAM).
 10. A DRAIN IS REQUIRED.

Date: 3/2008

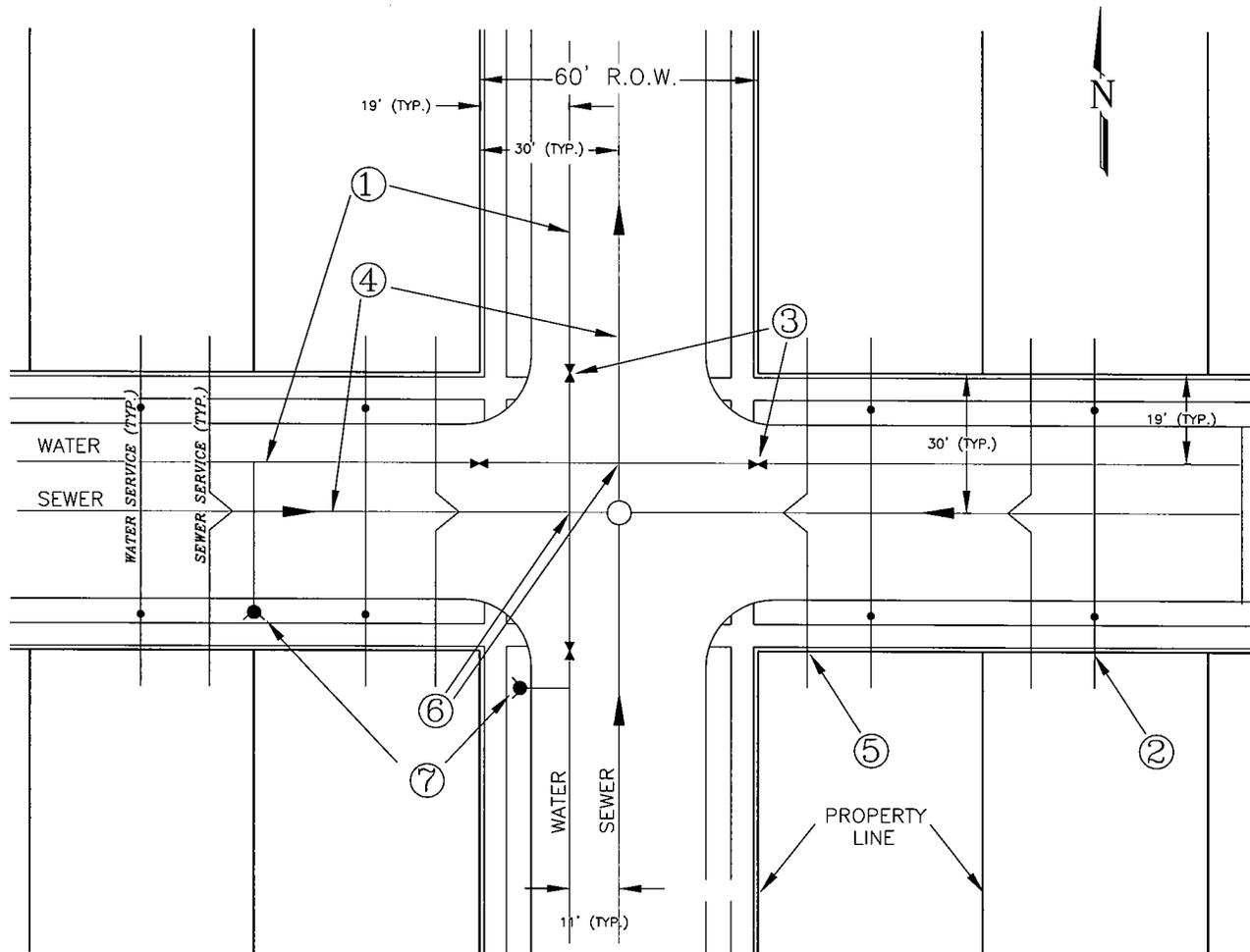
Revised:

By:

CONSTRUCTION STANDARD NO. 02660-14

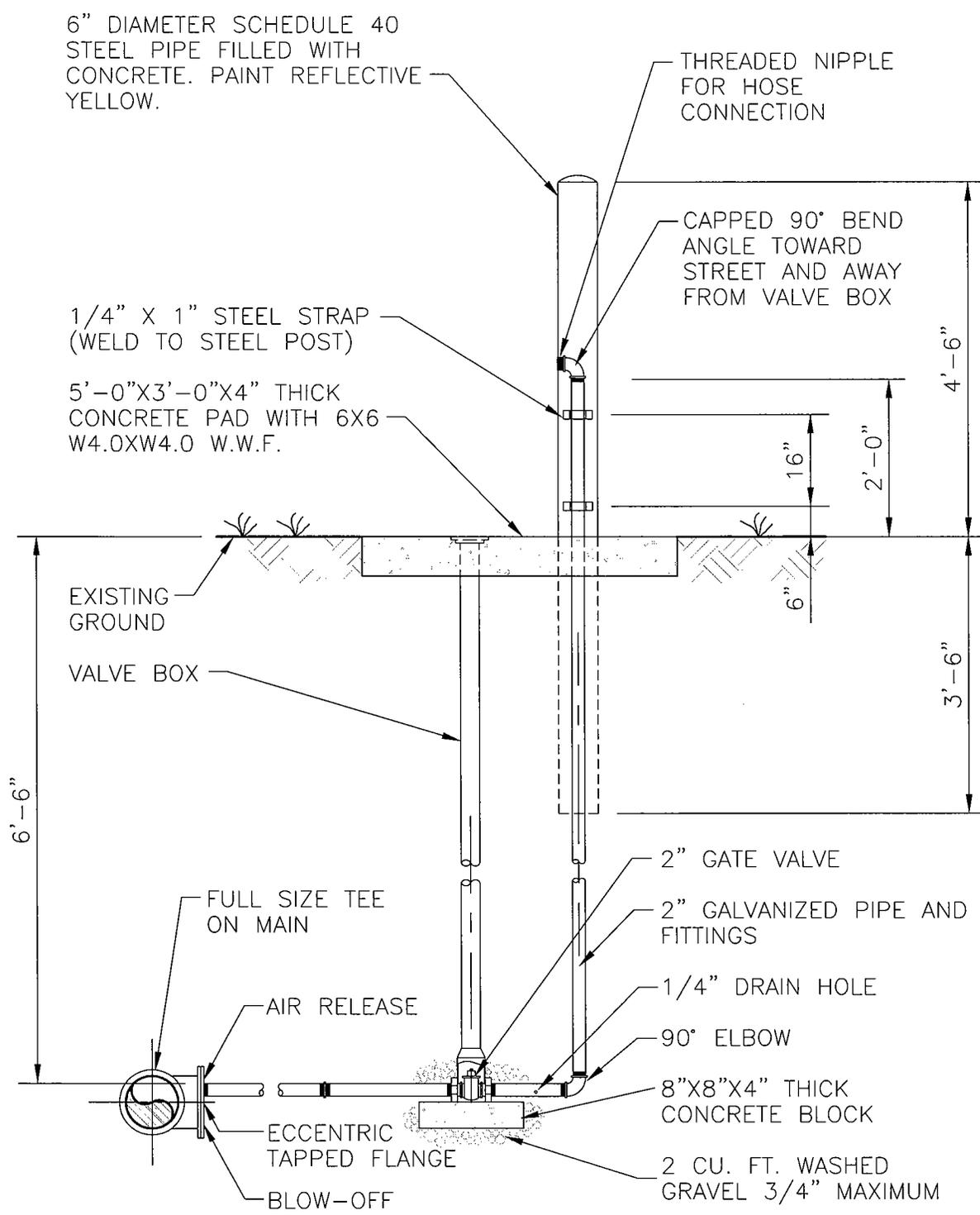
TOWN OF MANHATTAN, MT.

**STANDARD FIRE SERVICE LINE
INSTALLATION FOR CLASS
IV AND V SYSTEMS**



1. WATER MAINS LOCATED 19' FROM THE NORTH OR WEST RIGHT-OF-WAY PROPERTY LINE FOR STREETS 35' IN WIDTH OR GREATER. WATER MAINS LOCATED 5.5' WEST OR NORTH OF STREET CENTERLINE FOR STREETS LESS THAN 35' IN WIDTH (BACK OF CURB-BACK OF CURB)
2. WATER SERVICE STUB LOCATED AT CENTER OF LOT; SEE T.O.M. STANDARD DRAWING NO. 02679-1 FOR DETAILS.
3. WATER MAIN VALVES LOCATED AT PROPERTY LINE.
4. SEWER MAINS LOCATED ON STREET CENTERLINE FOR STREETS 35' IN WIDTH OR GREATER. SEWER MAINS LOCATED 5.5' EAST OR SOUTH OF STREET CENTERLINE FOR STREETS LESS THAN 35' IN WIDTH
5. SEWER SERVICE STUB LOCATED 15' UPSTREAM FROM DOWNSTREAM PROPERTY LINE.
6. WATER & SEWER MAIN CROSSING; SEE M.P.W. STANDARD DRAWING NO. 02660-2 FOR DETAILS.
7. HYDRANTS LOCATED 5' FROM VALVE OR ON PROPERTY LINES EXTENDED FOR MID-BLOCK LOCATIONS.

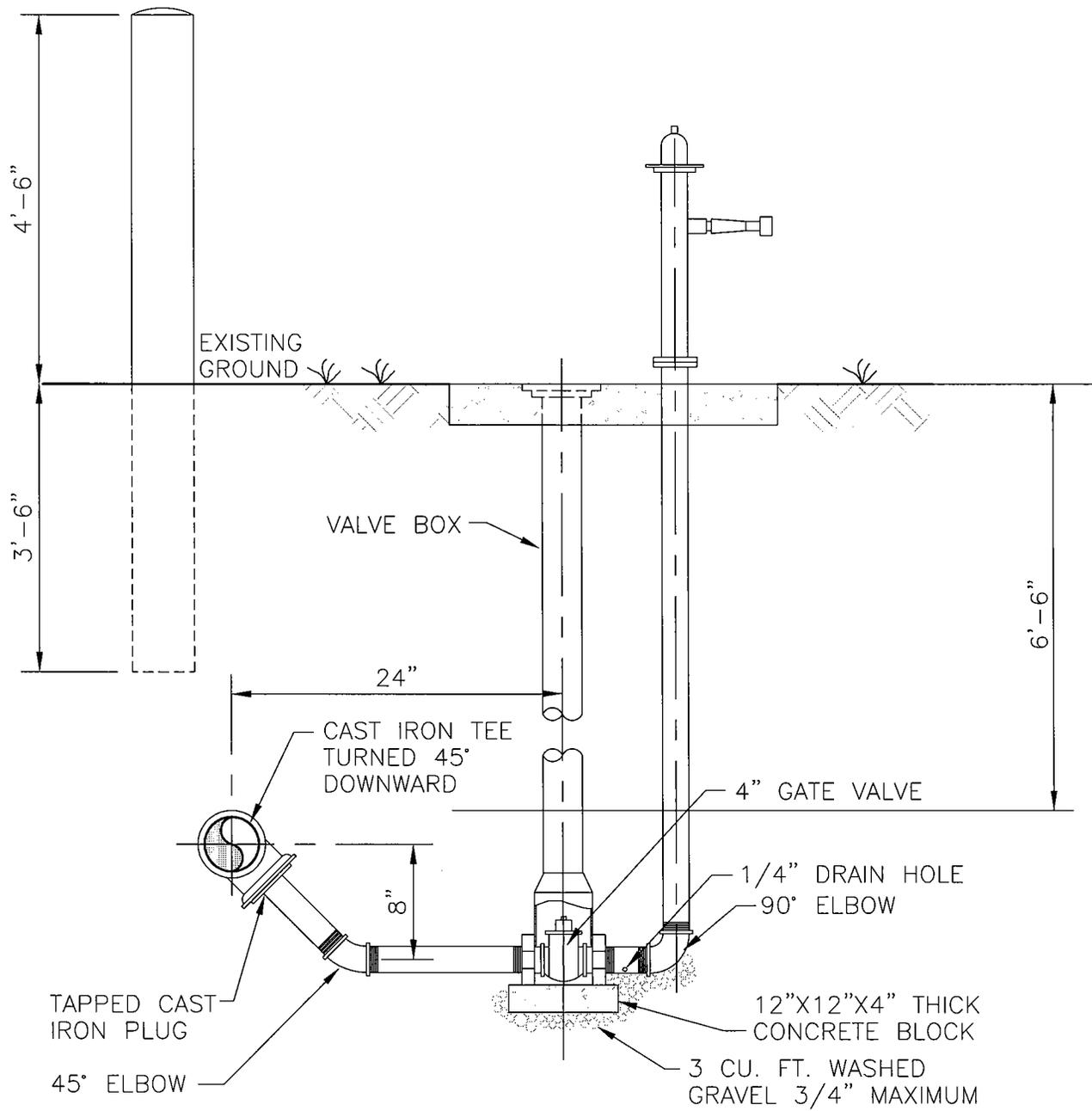
Date: 3/2008	Revised:	By:	CONSTRUCTION STANDARD NO. 02660-16
TOWN OF MANHATTAN, MT.			WATER AND SEWER MAIN AND SERVICE LOCATION STANDARDS



NOTE: WRAP VALVE, VALVE BOX AND GALVANIZED PIPE WITH POLYETHYLENE.

Date: 8/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02660-31
TOWN OF MANHATTAN, MT.			BLOW-OFF/AIR RELEASE VALVE (4" THRU 12" MAINS)

NOTE: WRAP ALL FITTINGS,
VALVES, VALVE BOXES AND
PIPE WITH POLYETHYLENE



Date: 8/2005

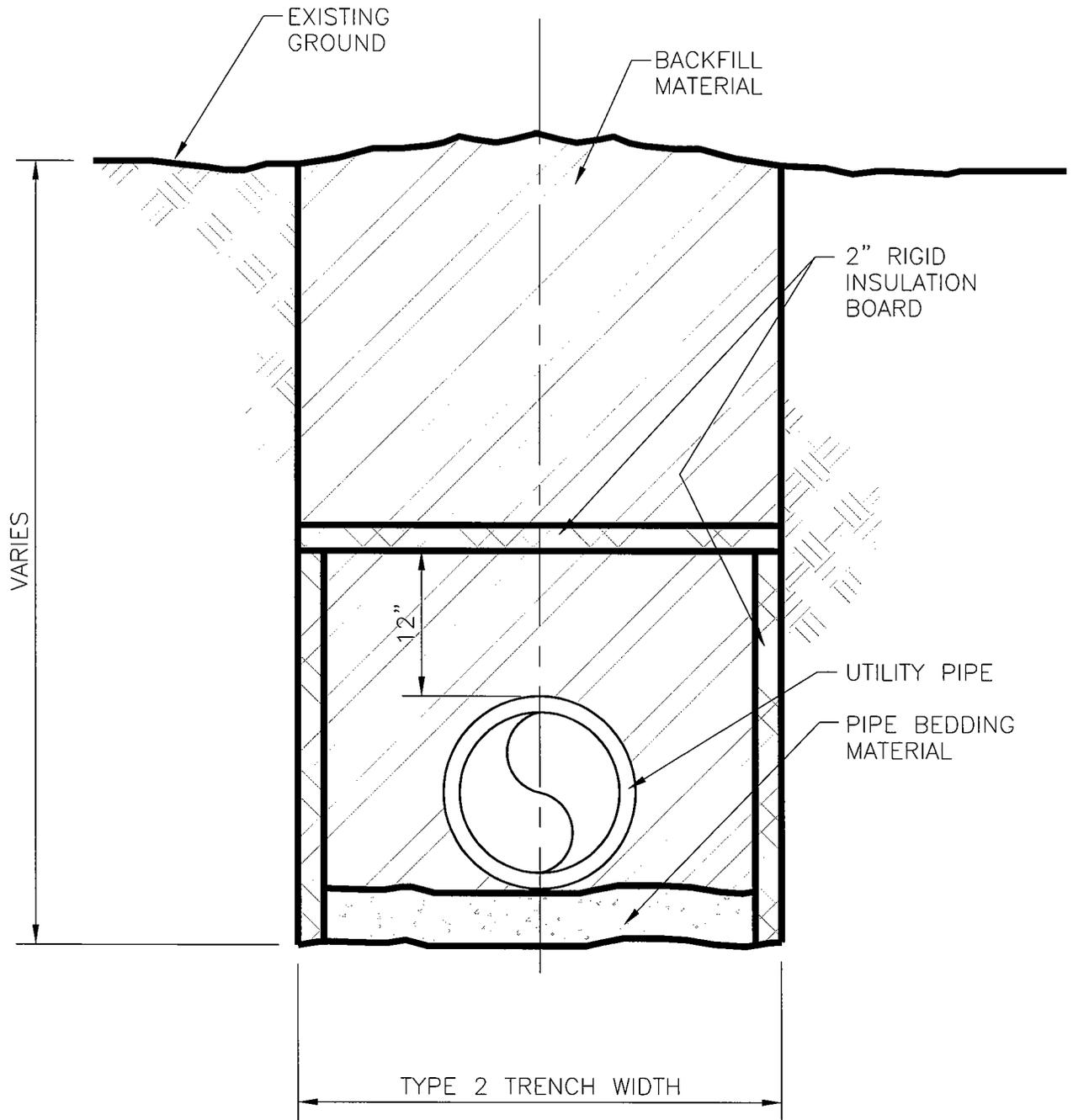
Revised:

By:

CONSTRUCTION STANDARD NO. 02660-32

TOWN OF MANHATTAN, MT.

**BLOW-OFF VALVE
6" & 4" MAINS**



Date: 8/2005

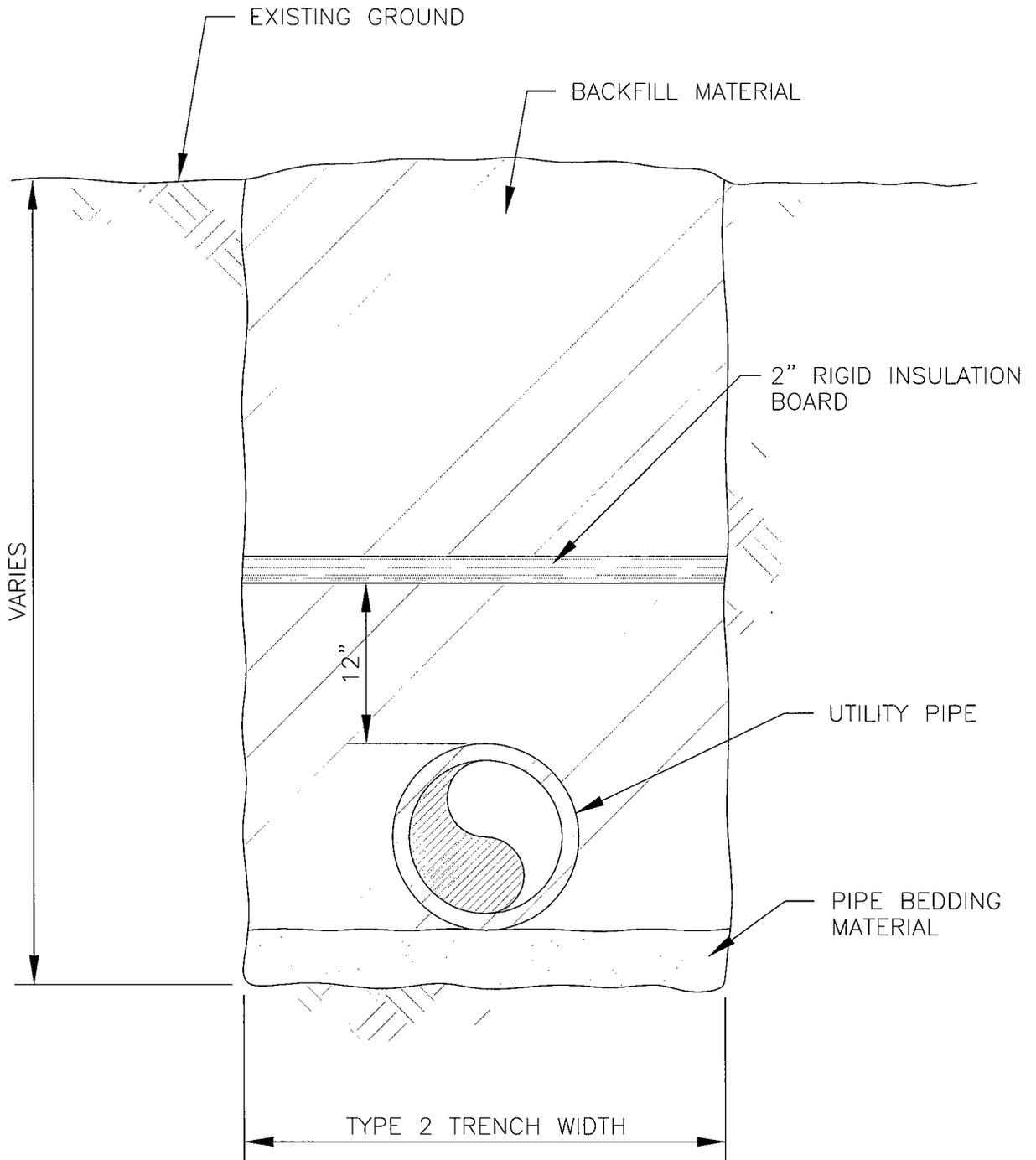
Revised:

By:

CONSTRUCTION STANDARD NO. 02660-42

TOWN OF MANHATTAN, MT.

**UTILITY PIPE TRENCH
INSULATION (ENCASED)**



Date: 8/2005

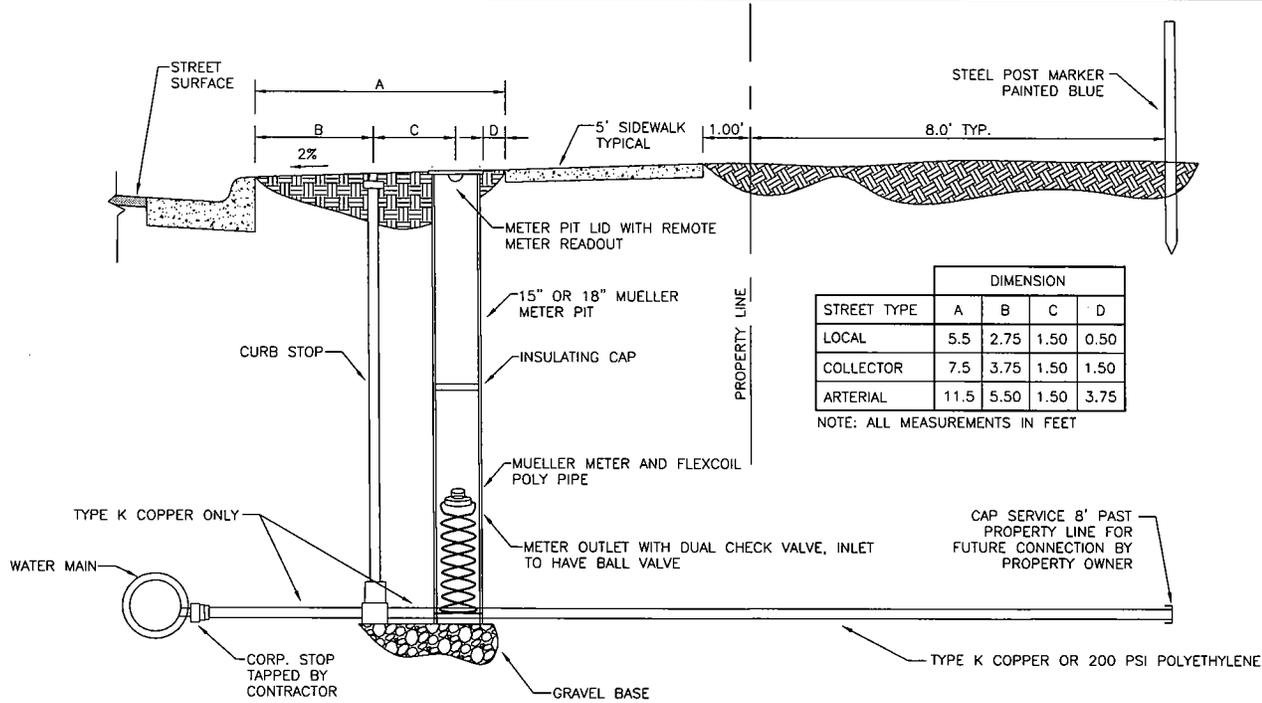
Revised:

By:

CONSTRUCTION STANDARD NO. 02660-43

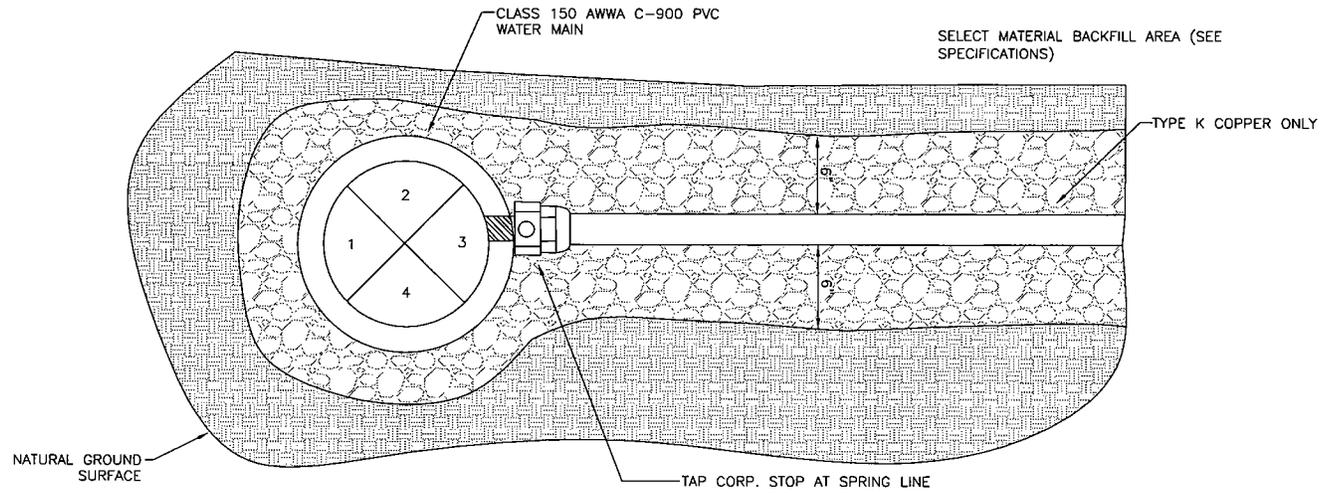
TOWN OF MANHATTAN, MT.

**UTILITY PIPE TRENCH
INSULATION (TOP ONLY)**

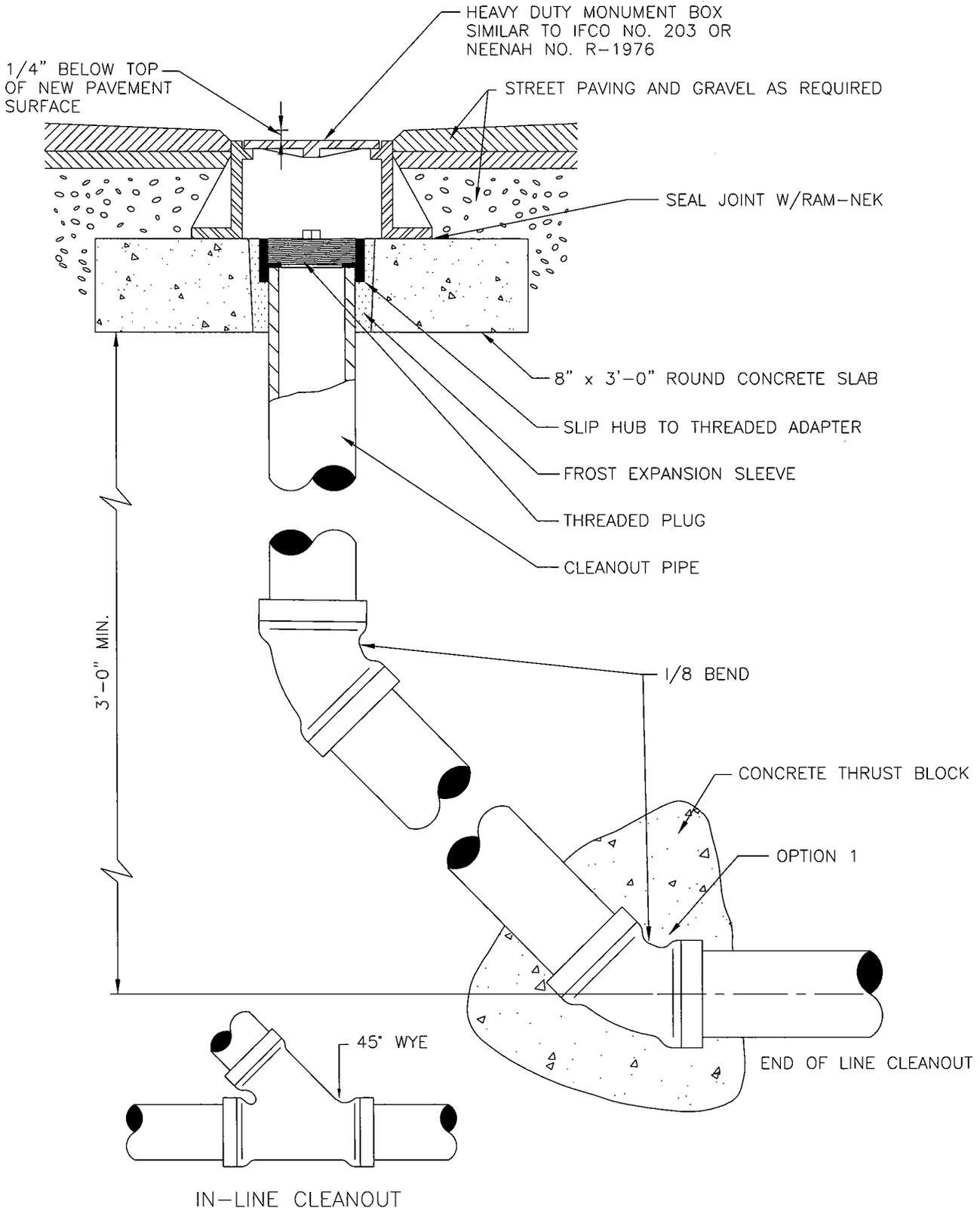


STREET TYPE	DIMENSION			
	A	B	C	D
LOCAL	5.5	2.75	1.50	0.50
COLLECTOR	7.5	3.75	1.50	1.50
ARTERIAL	11.5	5.50	1.50	3.75

NOTE: ALL MEASUREMENTS IN FEET



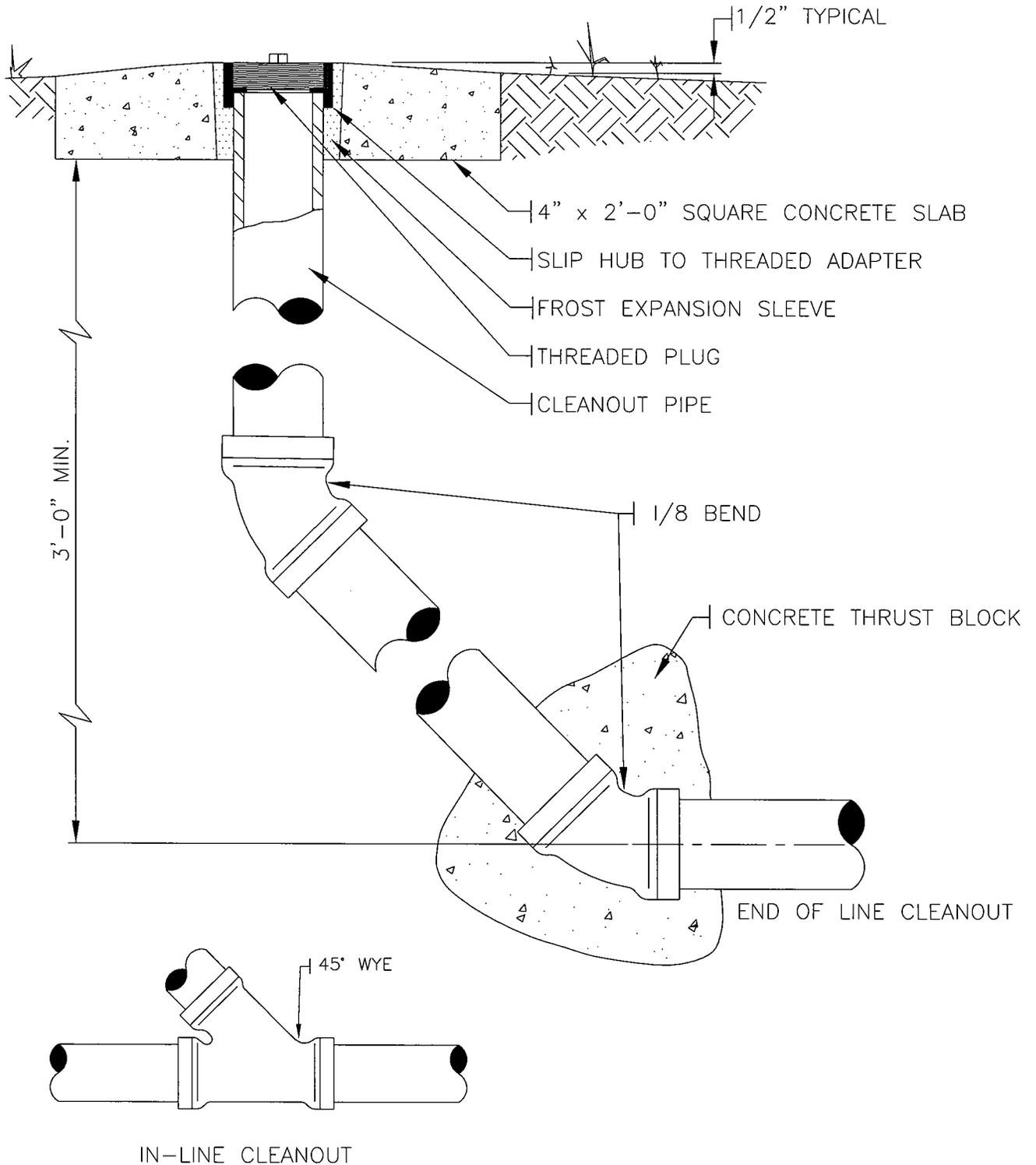
- GENERAL NOTES:**
1. WATER SERVICE LINES SHALL HAVE A MINIMUM 6 1/2' OF COVER MEASURED FROM THE EXISTING GROUND SURFACE, EXCEPT THAT COVER SHALL BE MEASURED FROM CENTER LINE STREET GRADE WHEN SERVICE LINES ARE LAID TO A STREET SIDE WHICH HAS AN UPHILL SLOPE. WATER SERVICE LINES SHALL HAVE A MAXIMUM 7 1/2' COVER AT CURB STOP.
 2. WATER SERVICE LINES SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS OR AS SPECIFIED, INSTALL CURB STOP SO THAT OPERATING KEY IS PARALLEL TO STREET IN OFF-POSITION.
 3. BEDDING SHALL BE 1" DIA. MAXIMUM WITHIN 6" OF SERVICE PIPE.
 4. WATER LINES SHALL BE TYPE K COPPER OR POLYETHYLENE PIPING. FOR SERVICE LINES 4" OR LARGER IN DIAMETER SEE STANDARD DRAWING NO. 02660-12. SERVICE LINES BETWEEN 2" AND 4" ARE NOT ALLOWED.
 5. PROVIDE FLEXIBLE, WATER TIGHT CONNECTIONS FOR ALL WALL OR FLOOR PIPE PENETRATIONS, WATER SERVICE LINES SHALL CONFORM TO THE REQUIREMENTS OF THE TOWN OF MANHATTAN WATER SUPERINTENDENT.
 6. METERS SHALL BE INSTALLED BY THE CONTRACTOR WITH THE SUPERVISION OF THE TOWN WATER DEPARTMENT AT THE CUSTOMERS EXPENSE, NO SERVICE LINE SHALL BE BACKFILLED UNTIL IT HAS BEEN INSPECTED AND APPROVED BY THE WATER DEPARTMENT.
 7. WATER SERVICE LINES MAY BE REDUCED TO A SMALLER SIZE THAN THE WATER SERVICE STUB. REDUCTION MUST BE MADE WITHIN 18" OF CURB STOP.
 8. WATER SERVICE ASSEMBLY FROM THE WATER MAIN TO A POINT 8' INSIDE THE PROPERTY LINE SHALL BE INSTALLED BY THE DEVELOPER'S CONTRACTOR.
 9. TOWN OF MANHATTAN SHALL OWN AND MAINTAIN WATER SERVICE UP TO AND INCLUDING CURBSTOP.
 10. TOWN OF MANHATTAN SHALL OWN AND MAINTAIN WATER METER EXCLUDING THE METER PIT.



Date: 9/2005 Revised: By: **CONSTRUCTION STANDARD NO. 02700-18**

TOWN OF MANHATTAN, MT.

**CLEANOUT
(TRAFFIC AREAS)**



Date: 8/2005

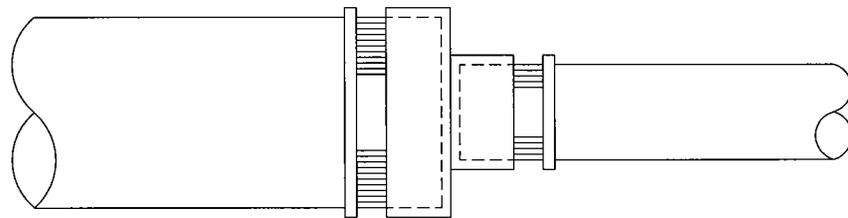
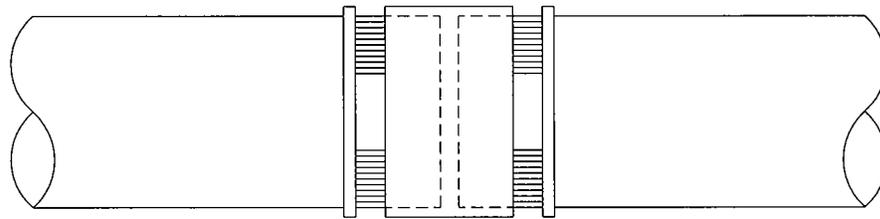
Revised:

By:

CONSTRUCTION STANDARD NO. 02700-19

TOWN OF MANHATTAN, MT.

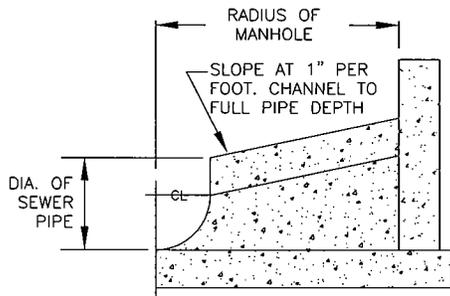
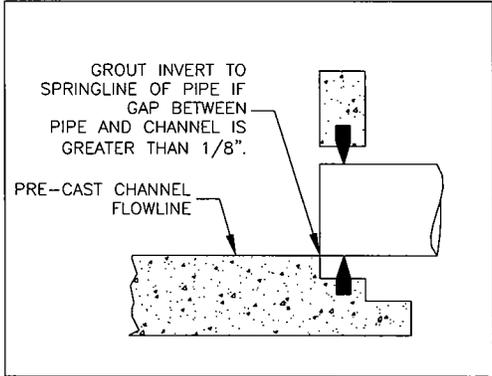
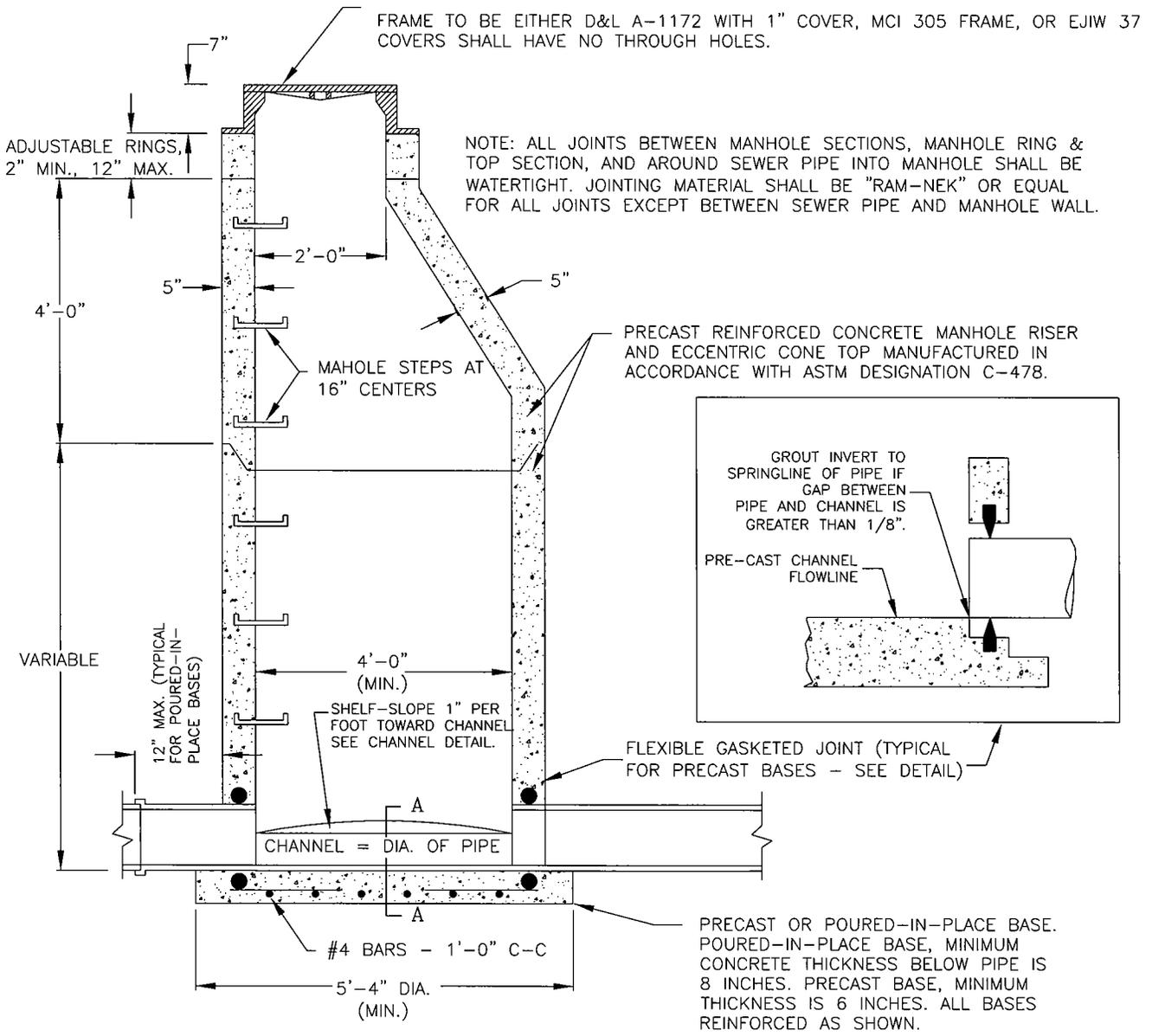
**CLEANOUT
(NON-TRAFFIC AREAS)**



NOTES:

- 1.) FIELD CONNECTION FOR NON-PRESSURE PIPE OF EQUAL OR UNEQUAL DIMENSIONS.
- 2.) COUPLING TO BE SIZED TO MATCH PIPE OUTSIDE DIMENSION.
- 3.) COUPLING TO BE MANUFACTURED FROM VIRGIN POLY VINYL CHLORIDE (PVC) SUPPLIED WITH #305 STAINLESS STEEL BANDS.
- 4.) COUPLING TO BE MANUFACTURED BY FERNCO JOINT SEALER CO. OR EQUAL.

Date: 8/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02700-23
TOWN OF MANHATTAN, MT.			FIELD CONNECTION



SECTION A-A

NOTE: STORM DRAIN MANHOLES SHALL NOT HAVE FORMED CHANNELS AND THE LOWEST PIPE INVERT SHALL BE 9" HIGHER THAN BOTTOM OF MANHOLE.

Date: 3/2008

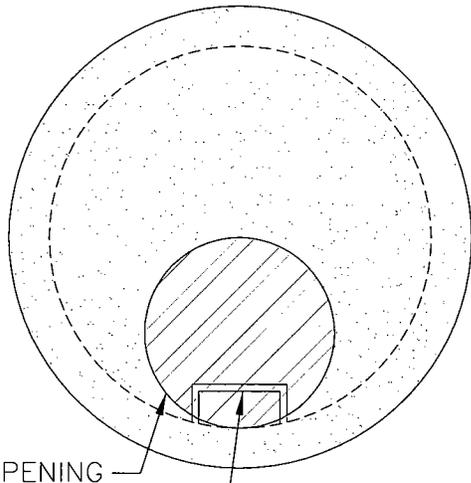
Revised:

By:

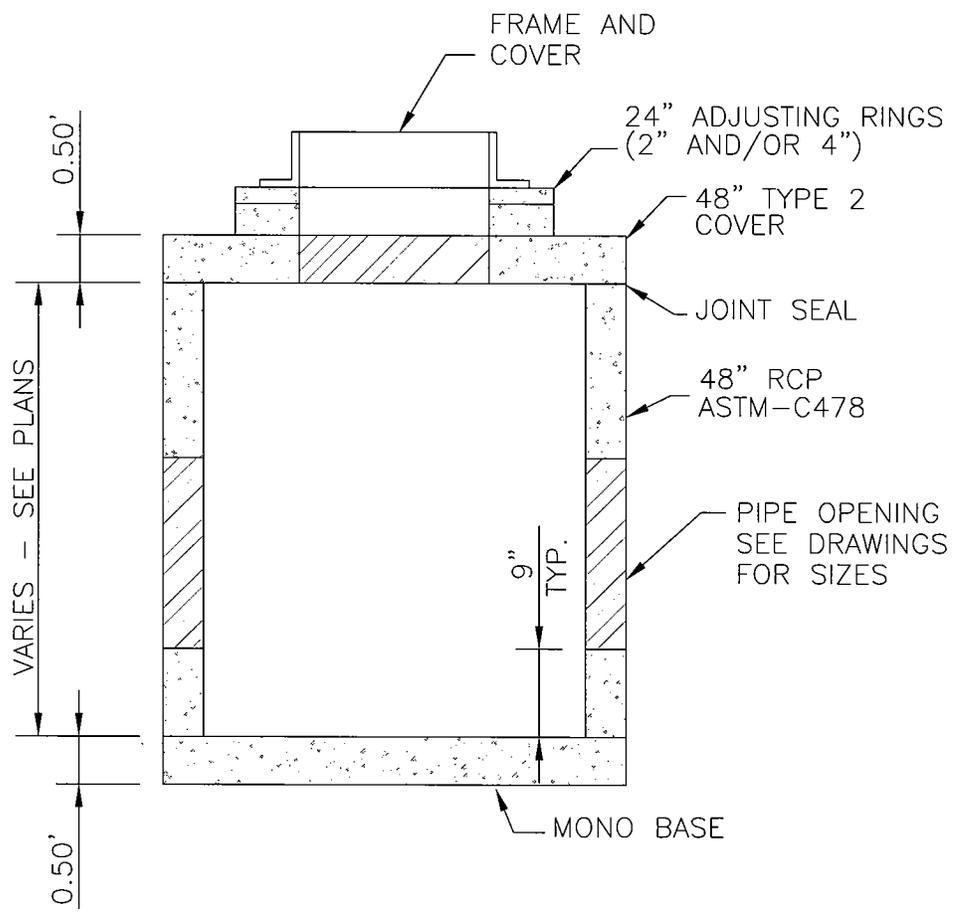
CONSTRUCTION STANDARD NO. 02720-03

TOWN OF MANHATTAN, MT.

**SANITARY SEWER AND
STORM DRAIN MANHOLE**



24" OPENING
STEPS



FRAME AND COVER
24" ADJUSTING RINGS (2" AND/OR 4")
48" TYPE 2 COVER
JOINT SEAL
48" RCP ASTM-C478
PIPE OPENING SEE DRAWINGS FOR SIZES
MONO BASE

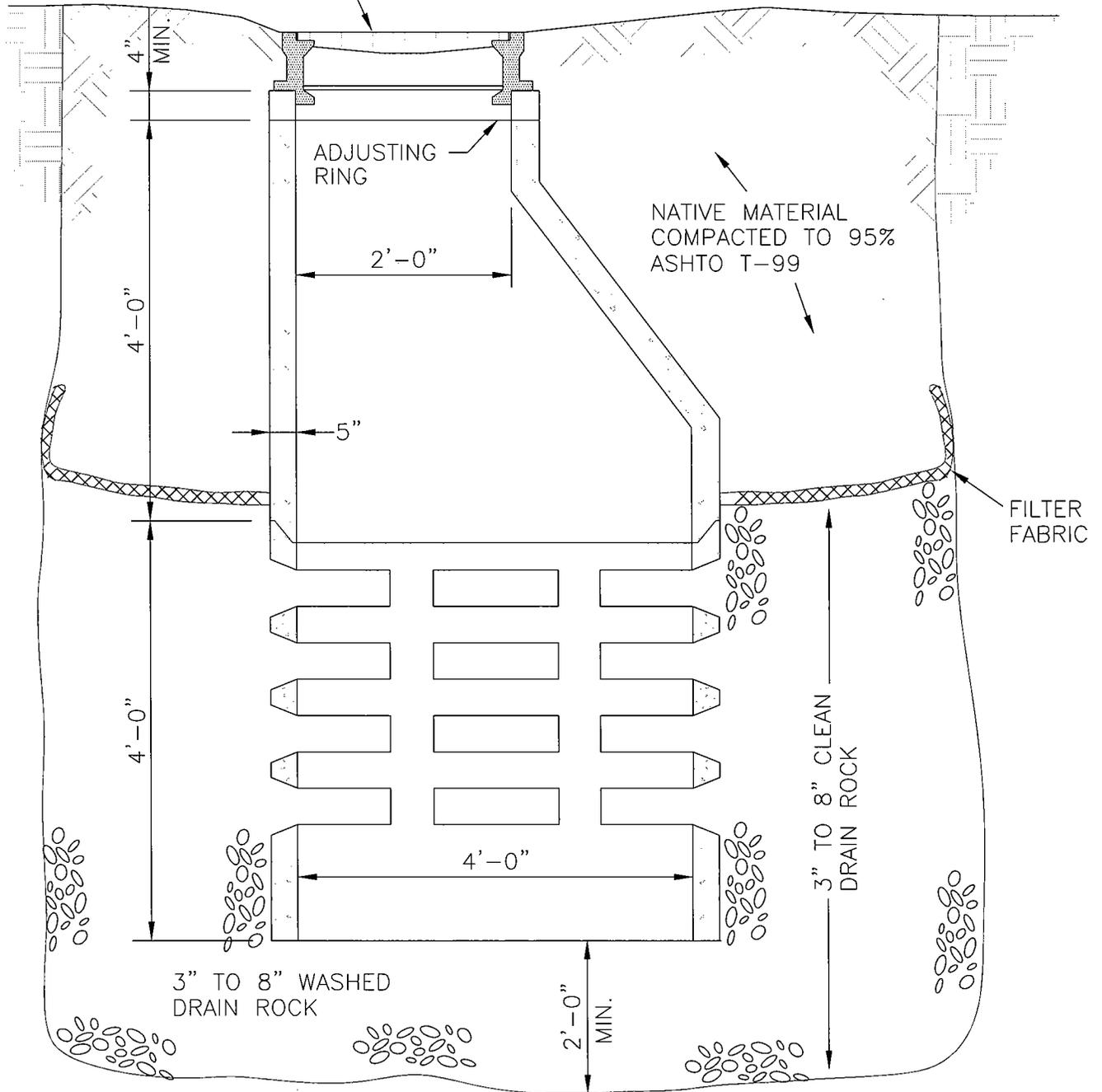
0.50'
VARIES - SEE PLANS
0.50'

Date: 8/2005 Revised: By: **CONSTRUCTION STANDARD NO. 02750-01**

TOWN OF MANHATTAN, MT.

STORM DRAIN MANHOLE

CATCH BASIN FRAME AND GRATE



Date: 8/2005

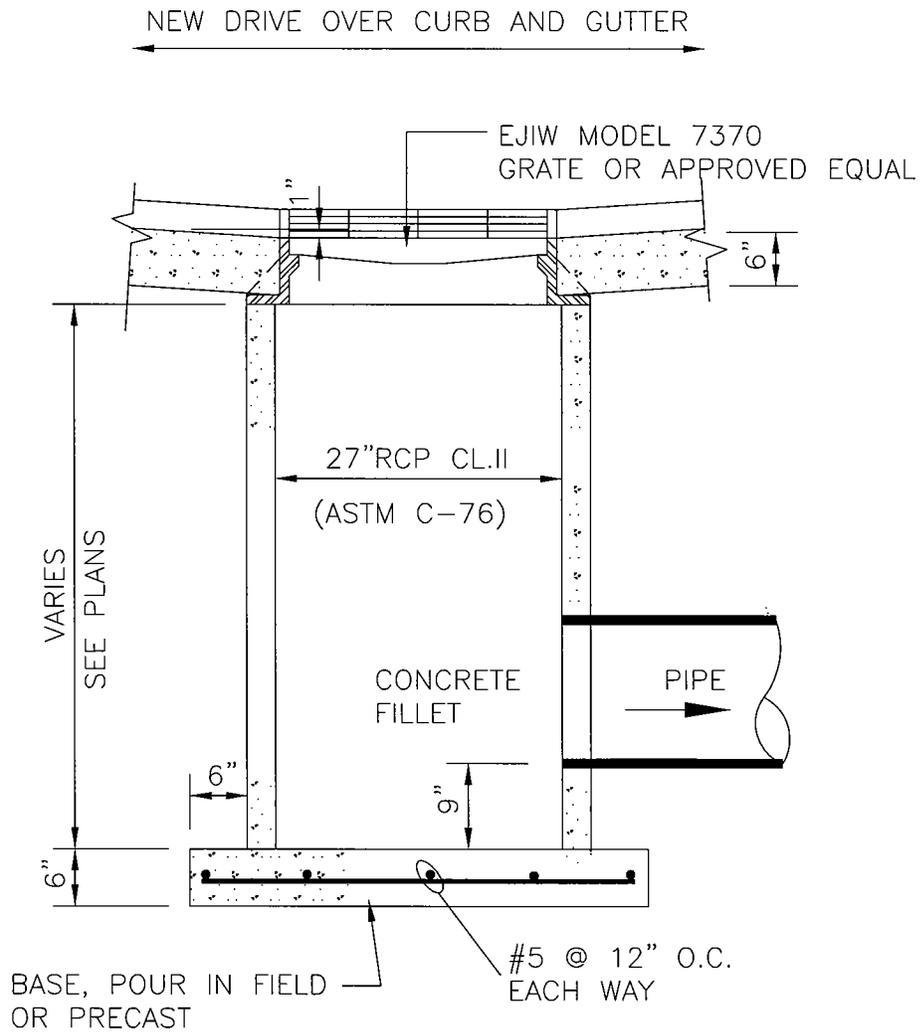
Revised:

By:

CONSTRUCTION STANDARD NO. 02750-11

TOWN OF MANHATTAN, MT.

DRYWELL



Date: 8/2005

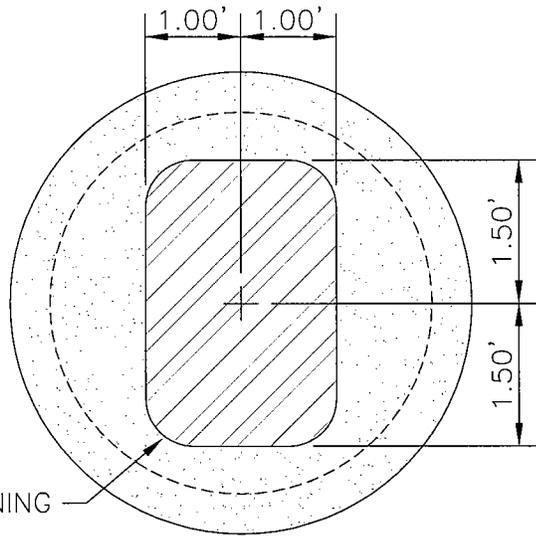
Revised:

By:

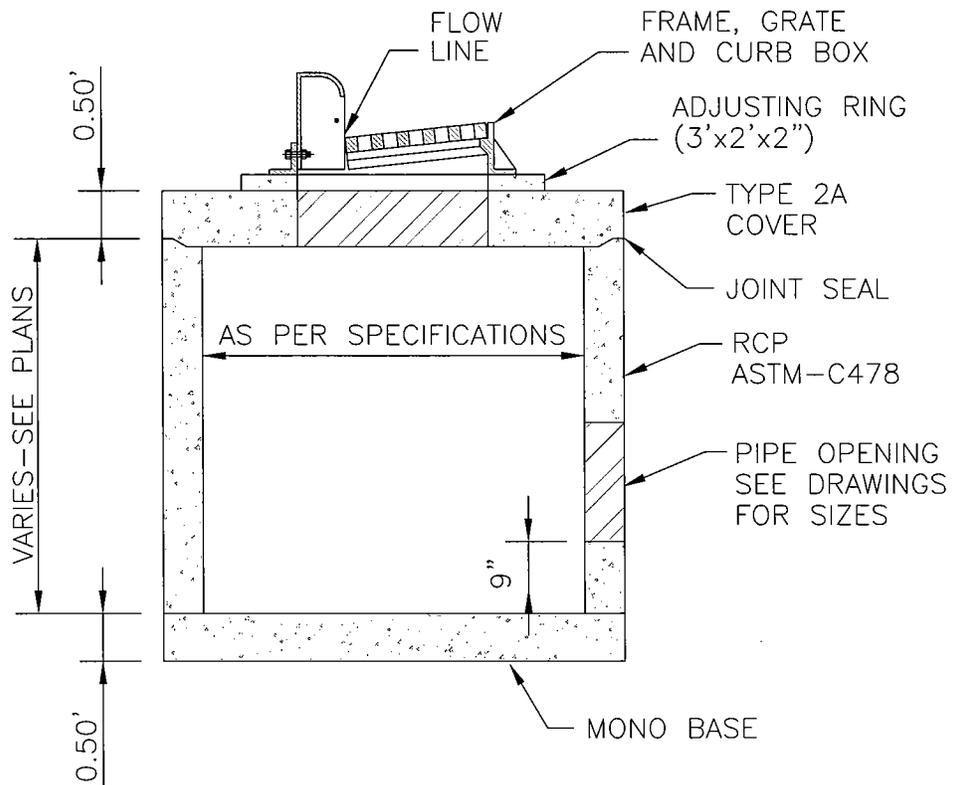
CONSTRUCTION STANDARD NO. 02750-12

TOWN OF MANHATTAN, MT.

DRIVEWAY CURB AND GUTTER
STORM INLET



24"x36" OPENING
W/RADIUS AT
CORNERS



Date: 8/2005

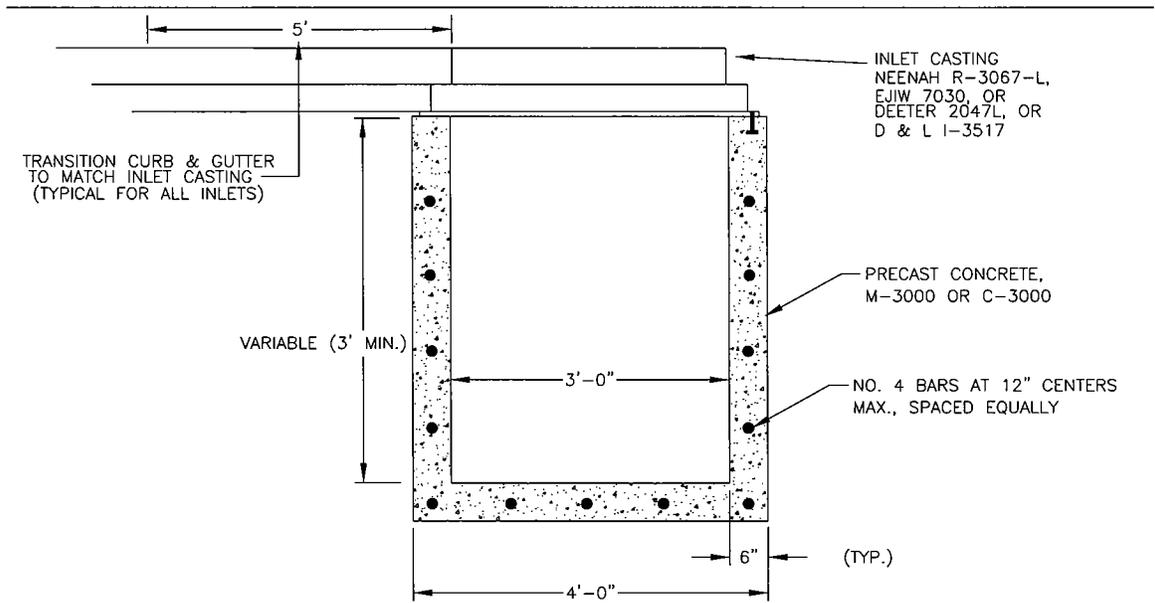
Revised:

By:

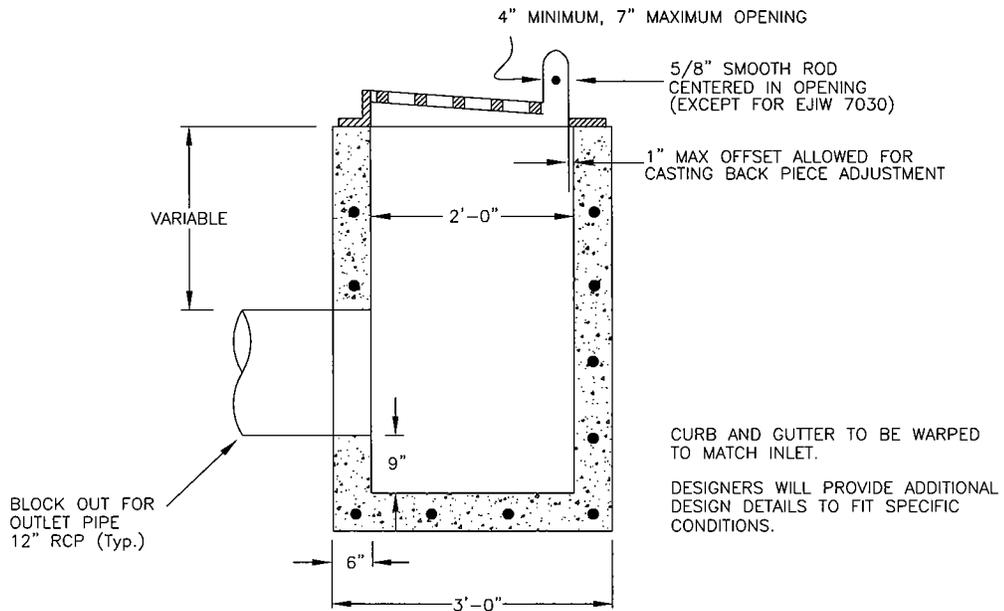
CONSTRUCTION STANDARD NO. 02750-13A

TOWN OF MANHATTAN, MT.

CURB INLET CATCH BASIN



FRONT VIEW



SIDE VIEW

Date: 3/2008

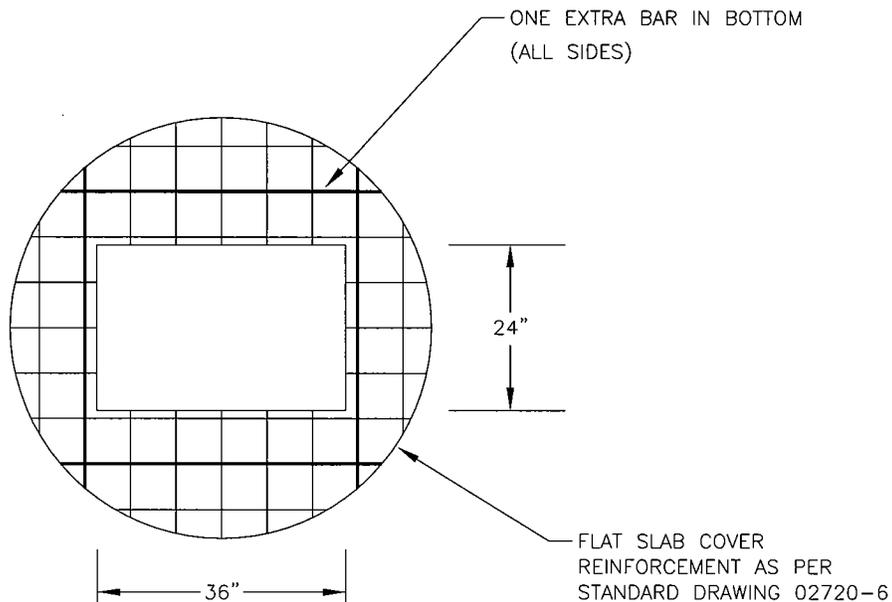
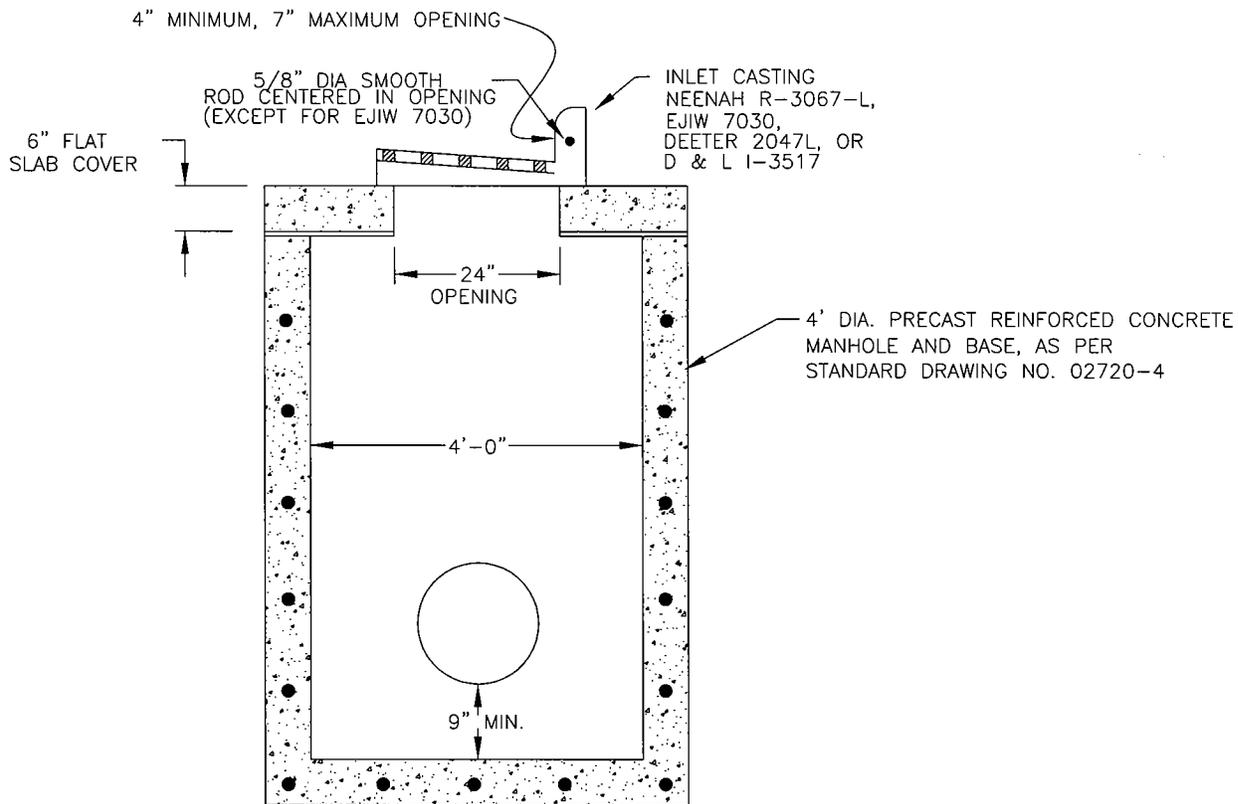
Revised:

By:

CONSTRUCTION STANDARD NO. 02750-13B

TOWN OF MANHATTAN, MT.

STANDARD SQUARE STORM
DRAIN INLET



Date: 3/2008

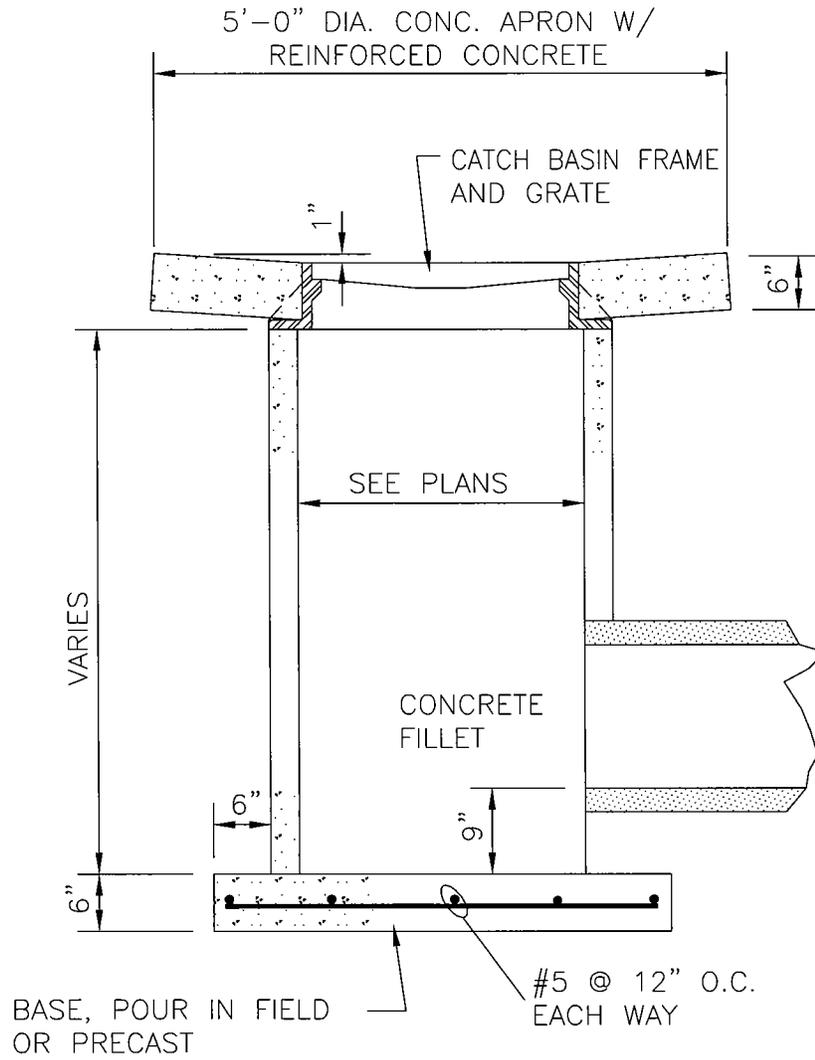
Revised:

By:

CONSTRUCTION STANDARD NO. 02750-13C

TOWN OF MANHATTAN, MT.

COMBINATION MANHOLE
AND CURB INLET



Date: 9/2005

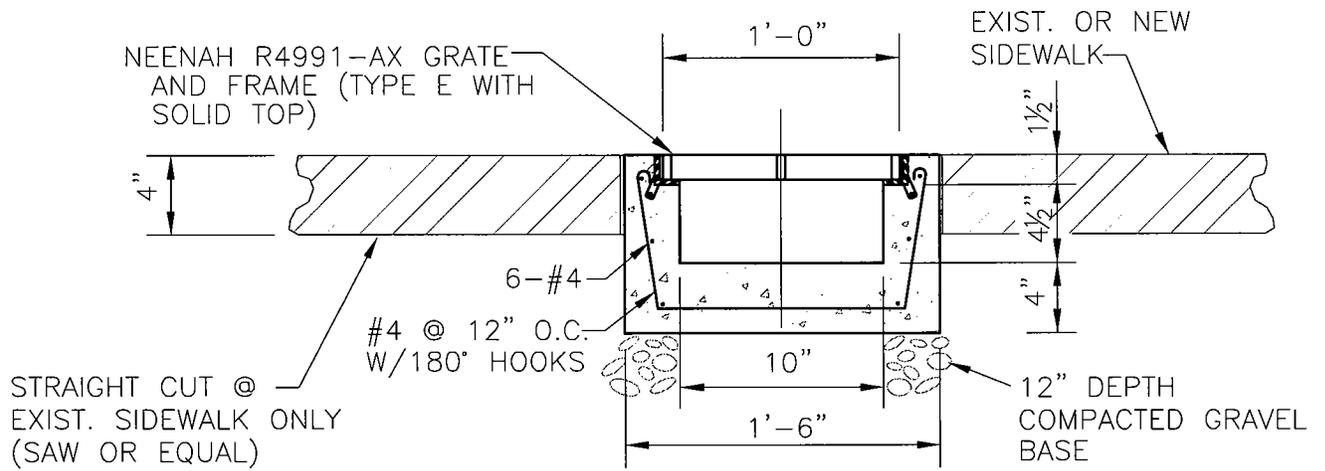
Revised:

By:

CONSTRUCTION STANDARD NO. 02750-16

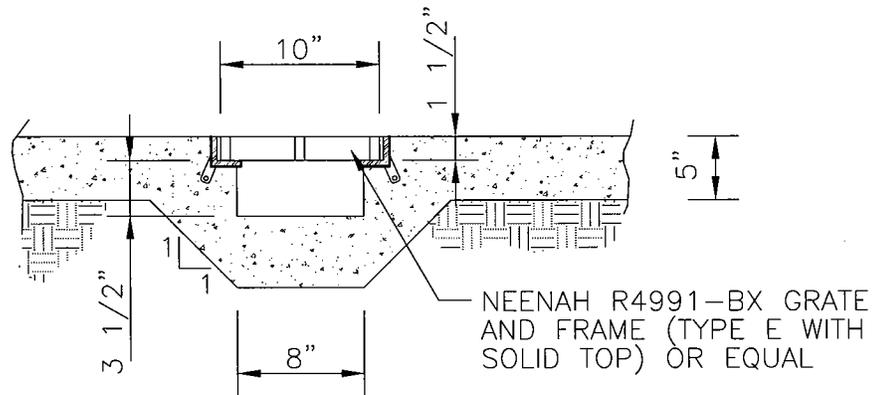
TOWN OF MANHATTAN, MT.

CATCH BASIN



EXISTING SIDEWALK TRENCH DRAIN DETAIL

NO SCALE



NEW SIDEWALK TRENCH DRAIN DETAIL

NO SCALE

Date: 9/2005

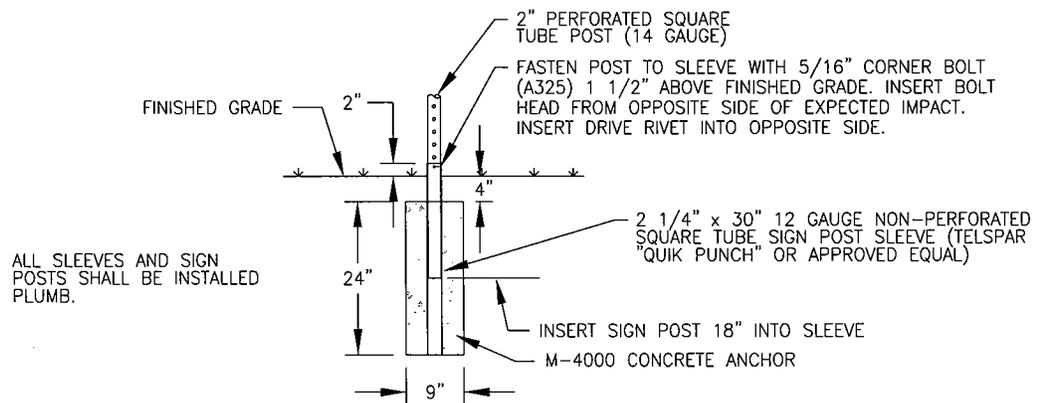
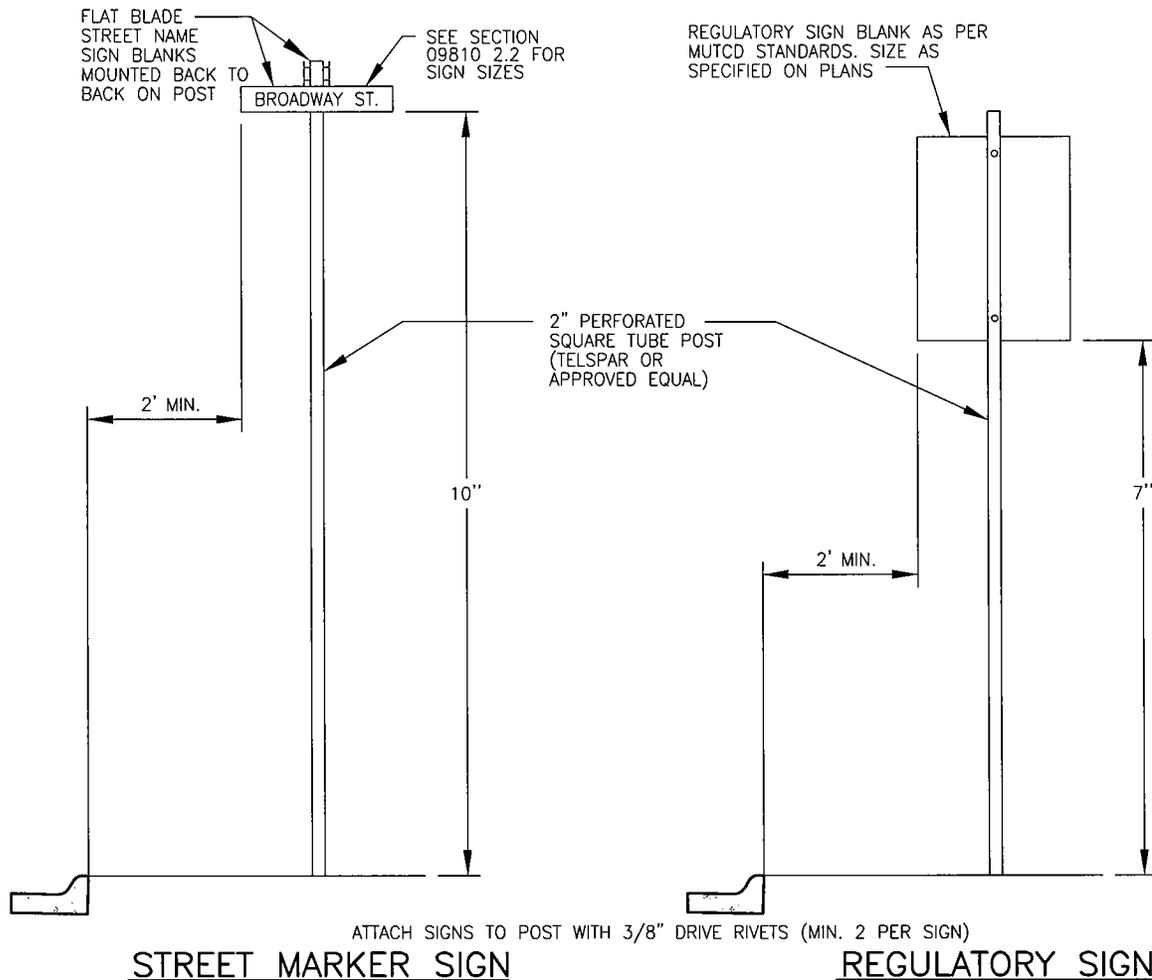
Revised:

By:

CONSTRUCTION STANDARD NO. 02750-26

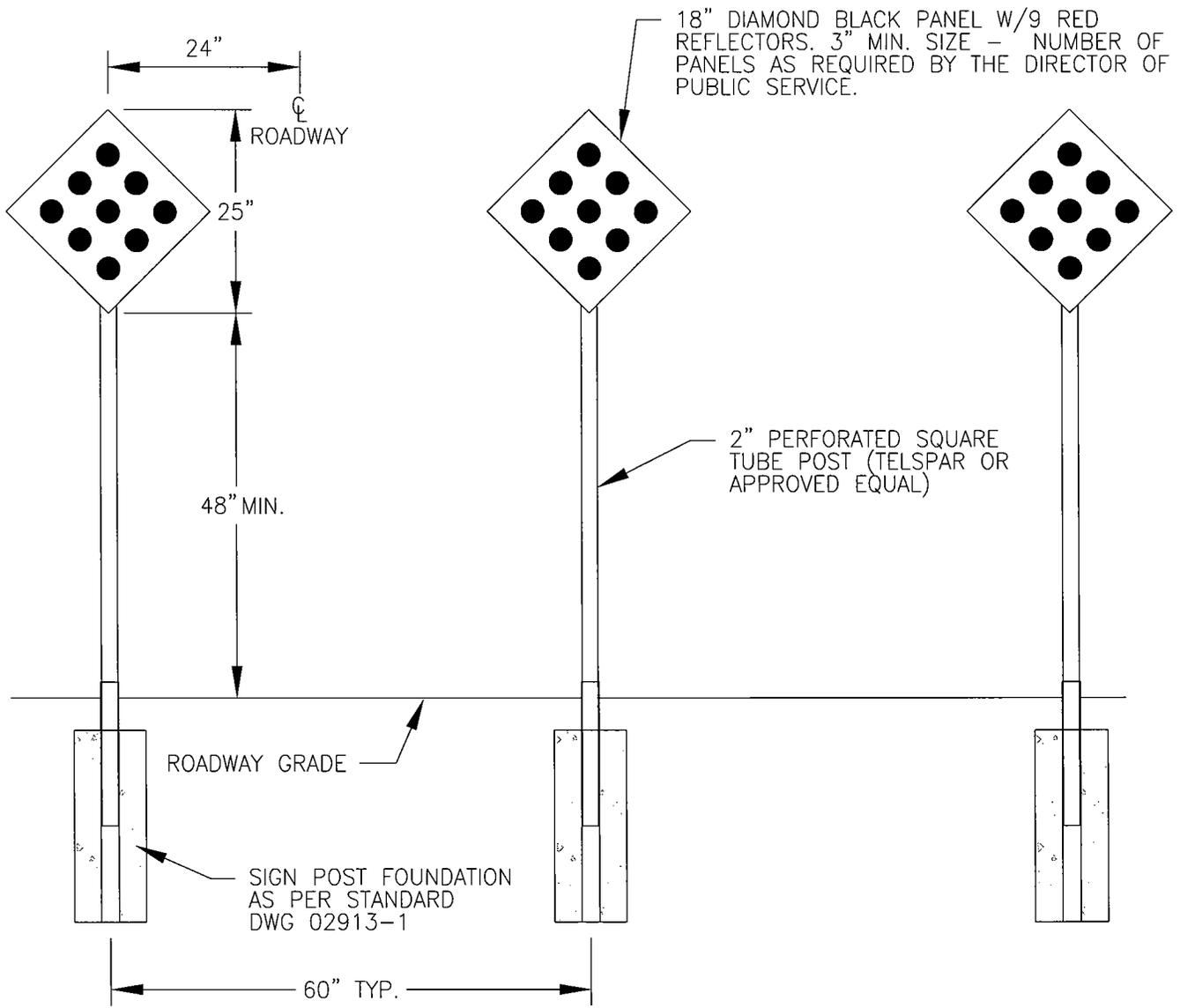
TOWN OF MANHATTAN, MT.

**SIDEWALK TRENCH
DRAIN DETAIL**



SIGN POST FOUNDATION DETAIL

Date: 8/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02913-1
TOWN OF MANHATTAN, MT.			SIGN INSTALLATION DETAIL



SIGN BLANKS SHALL BE CONSTRUCTION GRADE ALUMINUM, 0.08 INCH THICK, WITH ENGINEER GRADE REFLECTIVE SHEETING

Date: 8/2005	Revised:	By:	CONSTRUCTION STANDARD NO. 02913-2
TOWN OF MANHATTAN, MT.			DEAD END BARRICADE DETAIL

CROSSWALK ϕ

9' TYP.

STREET
MARKER
SIGN

5'

2' MINIMUM CLEARANCE
FROM FACE OF CURB
TO EDGE OF SIGN

Date: 8/2005

Revised:

By:

CONSTRUCTION STANDARD NO. 02913-3

TOWN OF MANHATTAN, MT.

**TYPICAL STREET MARKER
SIGN LOCATION**