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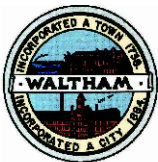
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CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

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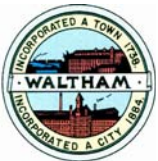
DETAIL NO:  
TOC

SCALE:  
N.T.S.

REV. DATE:  
JULY 2023

## GENERAL UTILITY PERMITTING REQUIREMENTS:

1. UTILITY PERMIT APPLICATION PACKAGES MAY BE OBTAINED FROM THE CONSOLIDATED PUBLIC WORKS OR ENGINEERING DEPARTMENTS. THE APPLICATION PACKAGE CAN ALSO BE FOUND ONLINE AT THE FOLLOWING ADDRESS:  
[HTTPS://WWW.CITY.WALTHAM.MA.US/ENGINEERING](https://www.city.waltham.ma.us/engineering).
2. ALL UTILITY PERMIT APPLICATIONS SHALL BE SUBMITTED TO THE CONSOLIDATED PUBLIC WORKS DEPARTMENT FOR PROCESSING. WORK MAY NOT BEGIN UNTIL THE UTILITY PERMIT APPLICATION HAS BEEN APPROVED.
3. COMMENTS AND NOTES FROM THE CITY WRITTEN ON THE FRONT PAGE OF THE PERMIT APPLICATION AND/OR THE PLANS SHALL BE CONSIDERED REQUIREMENTS OF THE PERMIT AND ALL WORK MUST CONFORM TO SUCH ADDITIONAL REQUIREMENTS.
4. A CONTRACTOR PERFORMING WORK WITHIN ANY PUBLIC OR PRIVATE RIGHT-OF-WAY SHALL FIRST MEET THE REQUIREMENTS AND SUCCESSFULLY BE PLACED ON THE "APPROVED CONTRACTORS LIST" WITH THE CONSOLIDATED PUBLIC WORKS DEPARTMENT.
5. PRIOR TO ANY EXCAVATION THE CONTRACTOR MUST CONTACT "DIG SAFE" -811 OR CUSTOMER SERVICE - (888) 344-7233 PER M.G.L. CHAPTER 82 SECTION 40.
6. THE CITY OF WALTHAM IS NOT A PART OF "DIG SAFE." CONTRACTOR MUST CONTACT WATER & SEWER DEPARTMENT AND WIRES DEPARTMENT FOR EXISTING UTILITIES MARK OUTS 72 HOURS PRIOR TO EXCAVATION.
7. APPLICANT MUST COORDINATE INSPECTIONAL SERVICES WITH THE CONSOLIDATED PUBLIC WORKS DEPARTMENT 72 HOURS IN ADVANCE OF ANY WATER, SEWER, OR DRAINAGE WORK, BOTH PUBLIC OR PRIVATE. CPW: 781-314-3800.
8. ANY WORK COMPLETED WITHOUT INSPECTION WILL NOT BE ACCEPTED BY THE CITY.
9. IN ADDITION TO THE UTILITY PERMIT: ALL WORK WITHIN A PUBLIC OR PRIVATE RIGHT-OF-WAY SHALL REQUIRE A STREET OPENING PERMIT ISSUED BY THE CONSOLIDATED PUBLIC WORKS DEPARTMENT. ALL EXCAVATION WORK ON PRIVATE PROPERTY SHALL REQUIRE A TRENCH PERMIT ISSUED BY THE BUILDING DEPARTMENT.
10. ALL WORK SHALL CONFORM TO THE APPROVED DESIGN PLANS AND THE CITY OF WALTHAM STANDARD DETAILS OF CONSTRUCTION. STANDARD DETAILS OF CONSTRUCTION ARE AVAILABLE ONLINE AT THE FOLLOWING ADDRESS:  
[HTTPS://WWW.CITY.WALTHAM.MA.US/ENGINEERING](https://www.city.waltham.ma.us/engineering)
11. AS-BUILT PLANS MUST BE NEATLY GENERATED AND SUBMITTED TO, AND APPROVED BY THE CITY ENGINEER PRIOR TO THE ISSUING OF A CERTIFICATE OF OCCUPANCY.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

GENERAL PERMITTING  
REQUIREMENTS

SHEET 1

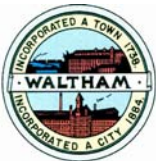
DETAIL NO:  
PR.1

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

## GENERAL CONSTRUCTION NOTES:

1. A CONTRACTOR PERFORMING WORK WITHIN ANY PUBLIC OR PRIVATE RIGHT-OF-WAY SHALL FIRST MEET THE REQUIREMENTS AND SUCCESSFULLY BE PLACED ON THE "APPROVED CONTRACTORS LIST" WITH THE CONSOLIDATED PUBLIC WORKS DEPARTMENT.
2. PRIOR TO ANY EXCAVATION THE CONTRACTOR MUST CONTACT "DIG SAFE" -811 OR CUSTOMER SERVICE - (888) 344-7233 PER M.G.L. CHAPTER 82 SECTION 40.
3. THE CITY OF WALTHAM IS NOT APART OF "DIG SAFE." CONTRACTOR MUST CONTACT WATER & SEWER DEPARTMENT AND WIRES DEPARTMENT FOR EXISTING UTILITIES MARK OUTS 72 HOURS PRIOR TO EXCAVATION.
4. CONTRACTOR MUST COORDINATE INSPECTIONAL SERVICES WITH THE CONSOLIDATED PUBLIC WORKS DEPARTMENT 72 HOURS IN ADVANCE OF ANY WATER, SEWER, OR DRAINAGE WORK (PUBLIC OR PRIVATE).
5. WORK WITHIN ANY PUBLIC OR PRIVATE RIGHT OF WAY SHALL BE LIMITED TO MONDAY THROUGH FRIDAY 7:00AM TO 7:00PM. WORK SHALL NOT BE PERMITTED OUTSIDE OF THESE TIMES OR ON SATURDAYS, SUNDAYS, OR HOLIDAYS UNLESS WRITTEN APPROVAL IS OBTAINED FROM THE DIRECTOR OF PUBLIC WORKS AND THE CHIEF OF POLICE.
6. IN ADDITION TO THE ABOVE RESTRICTIONS, NO WORK IS ALLOWED ON THE FOLLOWING "RESTRICTED" STREETS BETWEEN THE HOURS OF 7:00AM-9:00AM AND 4:00PM-6:00PM: BACON ST, BEAR HILL RD, BEAVER ST, HIGH ST, LEXINGTON ST, LINDEN ST, MAIN ST, MAPLE ST, MOODY ST, NEWTON ST, PINE ST, PROSPECT ST, RIVER ST, SECOND AVE, SMITH ST, SOUTH ST, STOW ST, TOTTEN POND RD, TRAPELO RD, WAVERLY OAKS RD, WESTON ST, WINTER ST, AND WYMAN ST.
7. CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH ALL WORK INCLUDING BUT NOT LIMITED TO SAFETY BARRIERS, SIGNS, BARRELS, AND THE LIKE, AS REQUIRED BY THE CONDUCT OF THE WORK FOR THE PROTECTION OF WORKERS AND NON-WORKERS ALIKE. THE CONTRACTORS ATTENTION IS DIRECTED TO THE MOST CURRENT OSHA REQUIREMENTS.
8. CONTRACTOR SHALL COORDINATE WITH THE POLICE DEPARTMENT PRIOR TO PERFORMING WORK WITHIN ANY PUBLIC OR PRIVATE RIGHT-OF-WAY OR IN AREAS SUBJECT TO VEHICULAR TRAFFIC.
9. CONTRACTOR IS RESPONSIBLE TO MAINTAIN TRAFFIC FLOW IN A MANNER SATISFACTORY TO THE CITY OF WALTHAM.
10. ALL CONSTRUCTION SIGNING SHALL CONFORM TO THE REQUIREMENTS OF MASSDOT AND MUTCD.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DETAIL NO:  
GN.1

GENERAL NOTES

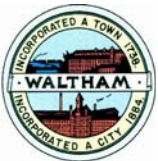
SCALE:  
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SHEET 1

REV. DATE:  
OCT. 2020

## GENERAL CONSTRUCTION NOTES:

11. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SETTLEMENT AND MAINTAIN ALL TRENCH PAVEMENT AND / OR SURFACE RESTORATION FOR A PERIOD OF 1 YEAR.
12. ALL CONSTRUCTION MATERIAL, DEBRIS, ASPHALT, SOIL, ETC. THAT IS REMOVED FROM THE SITE SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.
13. CONTRACTOR SHALL TAKE SPECIAL CARE NOT TO DAMAGE TREES WITHIN THE SITE INCLUDING DAMAGE TO ROOT SYSTEMS FROM EXCAVATION.
14. CONTRACTOR IS RESPONSIBLE TO NOTIFY AND COORDINATE SUPPORT WITH OWNERS OF UTILITY POLES WITHIN 10 FEET OF THE PROPOSED EXCAVATION OR AS DIRECTED BY THE CITY.
15. CONTRACTOR IS RESPONSIBLE TO NOTIFY AND COORDINATE SUPPORT WITH OWNERS OF ANY UTILITY OF WHICH THE PROPOSED WORK WILL ENCROACH UPON OR UNDERMINE.
16. MATERIALS SHALL NOT BE STOCKPILED WITHIN THE RIGHT-OF-WAY OR IN PUBLIC PARKING AREAS.
17. EQUIPMENT SHALL NOT BE PARKED OR STORED WITHIN THE RIGHT-OF-WAY OR IN PUBLIC PARKING AREAS WHEN NOT IN USE.
18. DAMAGE TO ANY UTILITY WILL BE REPAIRED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, IN A TIMELY MANNER SO THAT DISRUPTION OF SERVICE TO ANY UTILITY WILL NOT BE LONGER THAN PRACTICALLY NECESSARY TO REPAIR THE DAMAGE.
19. CONTRACTOR SHALL NOT OPERATE ANY VALVES, HYDRANTS, OR OTHER APPURTENANCES OF THE CITY WATER SYSTEM.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING ANY DEBRIS, SEDIMENT, OR SILTY WATER FROM ENTERING ANY DRAINAGE SYSTEM DURING ALL PHASES OF CONSTRUCTION.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR RESETTling ALL EXISTING PROPERTY MONUMENTATION THAT IS DISTURBED BY THEIR OPERATIONS. THIS WORK IS TO BE DONE BY A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS.
22. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE GENERAL DRAIN, WATER, SEWER, ROADWAY, AND EROSION CONTROL NOTES ALONG WITH DETAILS INCLUDED IN THIS PACKET FOR FURTHER INFORMATION.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DETAIL NO:  
GN.2

GENERAL NOTES

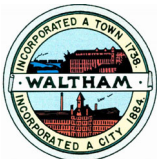
SCALE:  
N.T.S.

SHEET 2

REV. DATE:  
OCT. 2020

## GENERAL DRAINAGE NOTES:

1. ALL PROPOSED DRAINAGE PIPE LOCATED WITHIN THE RIGHT-OF-WAY SHALL BE REINFORCED CONCRETE PIPE WITH SUFFICIENT COVER TO SUPPORT H<sub>2</sub>O LOADING.
2. CATCH BASIN LATERALS AND MAINS SHALL HAVE A MINIMUM PIPE DIAMETER OF 12 INCHES.
3. ALL PROPOSED DRAINAGE STRUCTURES SHALL BE PRECAST CONCRETE STRUCTURES.
4. ALL STRUCTURES LOCATED WITHIN THE RIGHT-OF-WAY SHALL BE CAPABLE OF SUPPORTING H-20 LOADING.
5. ALL DRAINAGE MANHOLES AND CATCH BASINS SHALL BE A MINIMUM OF 4 FEET IN DIAMETER. ALL CATCH BASINS SHALL HAVE A MINIMUM 4 FOOT SUMP.
6. CATCH BASIN GUTTER INLETS ARE TO BE USED ONLY AT THE DIRECTION OF THE CITY ENGINEER. GUTTER INLETS SHALL NOT BE PLACED OVER EXISTING CITY OWNED UTILITIES.
7. ALL CATCH BASINS OR SUMP STRUCTURES SHALL UTILIZE A TRAP ON ALL OUTLET PIPES. STRUCTURES LOCATED WITHIN THE RIGHT-OF-WAY OR ON COMMERCIAL SITES SHALL UTILIZE "THE ELIMINATOR" MANUFACTURED BY GROUND WATER RESCUE. STRUCTURES LOCATED ON RESIDENTIAL SITES MAY UTILIZE SCH-40 PVC.
8. IF CONNECTING INTO ANY EXISTING STRUCTURE, THE EXISTING STRUCTURE SHALL BE MADE FREE OF DEBRIS UPON COMPLETION OF THE WORK REGARDLESS OF EXISTING CONDITION.
9. ALL PIPE CONNECTIONS TO STRUCTURES WITHIN THE RIGHT-OF-WAY SHALL BE CORED. FOR RCP CONNECTIONS A WATERTIGHT SEAL SHALL BE MADE USING HYDRAULIC CEMENT NO SHRINK GROUT. FOR ALL OTHER PIPE MATERIALS A FLEXIBLE WATERTIGHT CONNECTION SHALL BE USED.
10. CATCH BASIN TO CATCH BASIN CONNECTIONS WILL NOT BE PERMITTED.
11. ALL PRIVATE SUBSURFACE INFILTRATION SYSTEMS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS ALONG WITH ANY ADDITIONAL REQUIREMENTS GIVEN BY THE CITY DURING PERMIT REVIEW.
12. CRUSHED STONE USED WITHIN ALL SUBSURFACE INFILTRATION SYSTEMS SHALL BE DOUBLE WASHED AND SHALL BE 3/4-INCH OR LARGER AS NOTED IN THE SYSTEM DESIGN.
13. FOR RESIDENTIAL DRAINAGE DESIGN, ALL STRUCTURE OUTLET PIPES SHALL HAVE A MINIMUM DIAMETER OF 6 INCHES. ALL PIPING UNDERNEATH DRIVEWAYS OR AREAS REASONABLY EXPECTED TO RECEIVED VEHICULAR TRAFFIC SHALL BE SCH-40 PVC OR GREATER. PIPES OUTSIDE OF SUCH AREAS MAY BE SCH-20 PVC.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

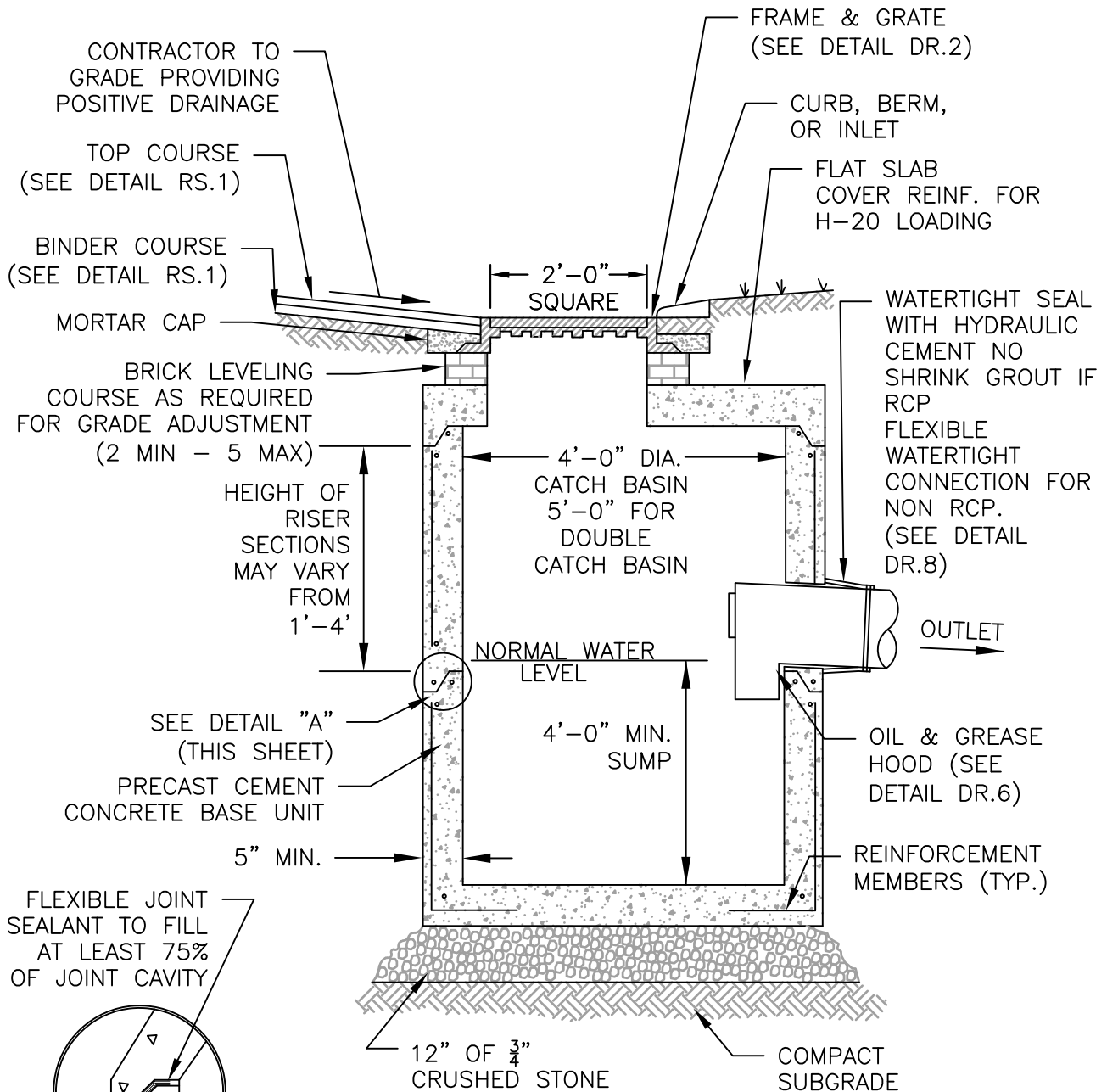
DETAIL NO:  
DR.0

DRAINAGE

SCALE:  
N.T.S.

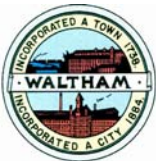
GENERAL  
DRAINAGE NOTES

REV. DATE:  
FEB. 2022



DETAIL "A"  
NOT TO SCALE

**NOTE:**  
PRECAST REINFORCED CONCRETE CATCH BASIN TO BE CAPABLE OF SUPPORTING H-20 LOADING.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

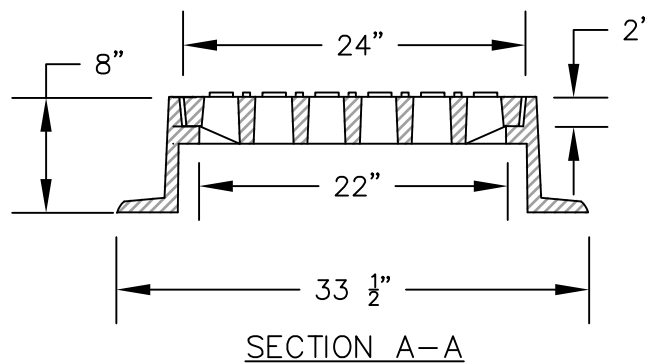
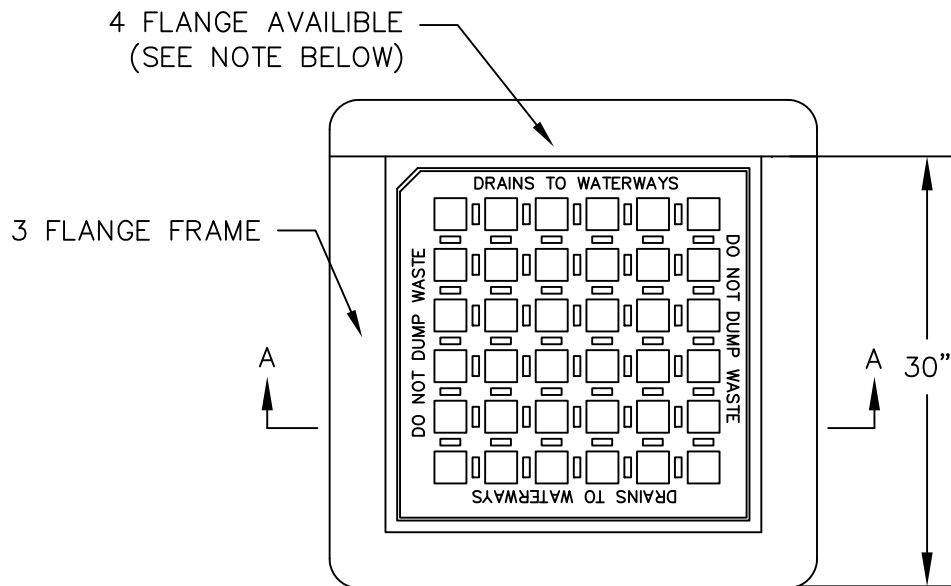
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DRAINAGE

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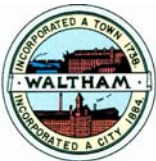
STANDARD CATCH BASIN

REV. DATE:  
OCT. 2020



NOTES:

1. FRAME EJ CATALOG NO. 5546Z  
GRATE EJ CATALOG NO. 5520M5  
OR APPROVED EQUAL.
2. 3 FLANGE FRAMES TO BE USED WHERE INLET IS ADJACENT TO  
CURB STONES, 4 FLANGE FRAME TO BE USED ELSEWHERE.
3. "DO NOT DUMP WASTE, DRAINS TO WATERWAYS" SHALL BE  
FORGED INTO THE GRATE.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DRAINAGE

CATCH BASIN  
FRAME & GRATE

DETAIL NO:  
DR.2

SCALE:  
N.T.S.

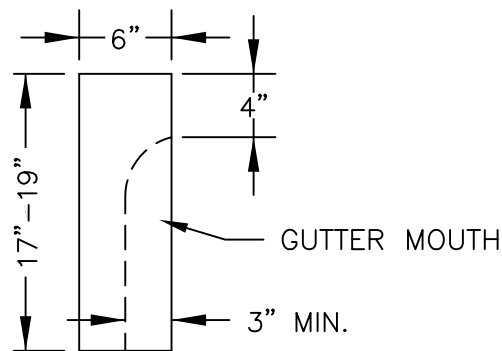
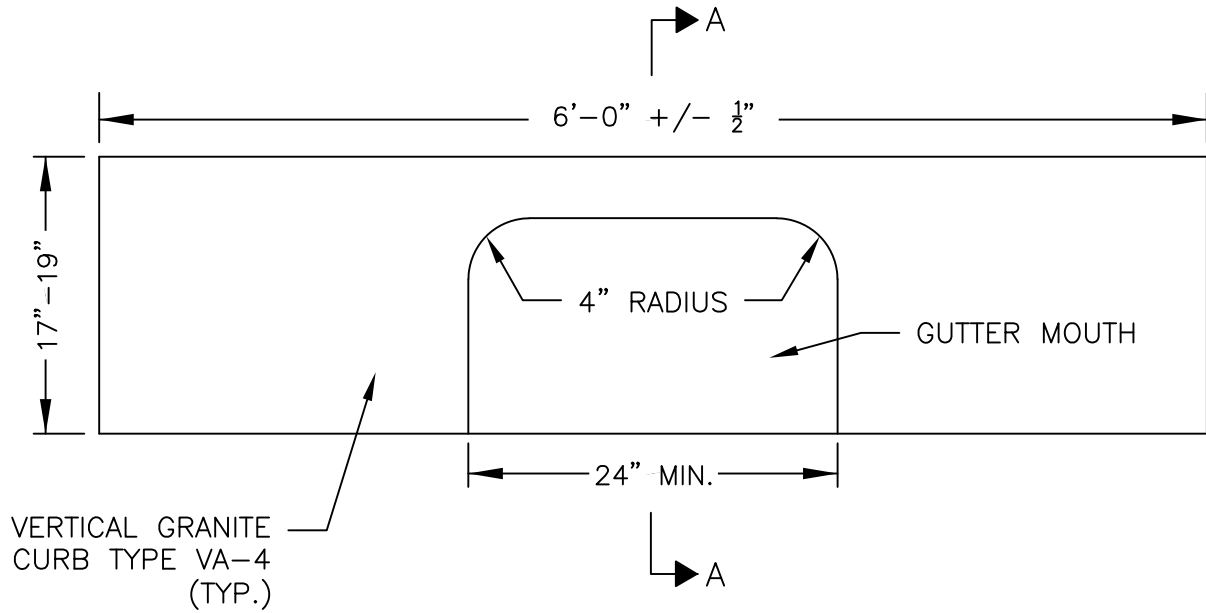
REV. DATE:  
OCT. 2020





STANDARD DETAILS	DETAIL NO: DR.3
DRAINAGE	SCALE: N.T.S.
CATCH BASIN GUTTER INLET	REV. DATE: OCT. 2020

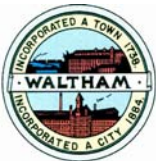




SECTION A-A

NOTES:

1. REFER TO DETAIL RS.2 FOR ADDITIONAL REQUIREMENTS TO SET INLET STONE.
2. PRECAST CONCRETE INLET STONES MAY BE USED ONLY IF AUTHORIZED IN WRITING BY THE CITY ENGINEER.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

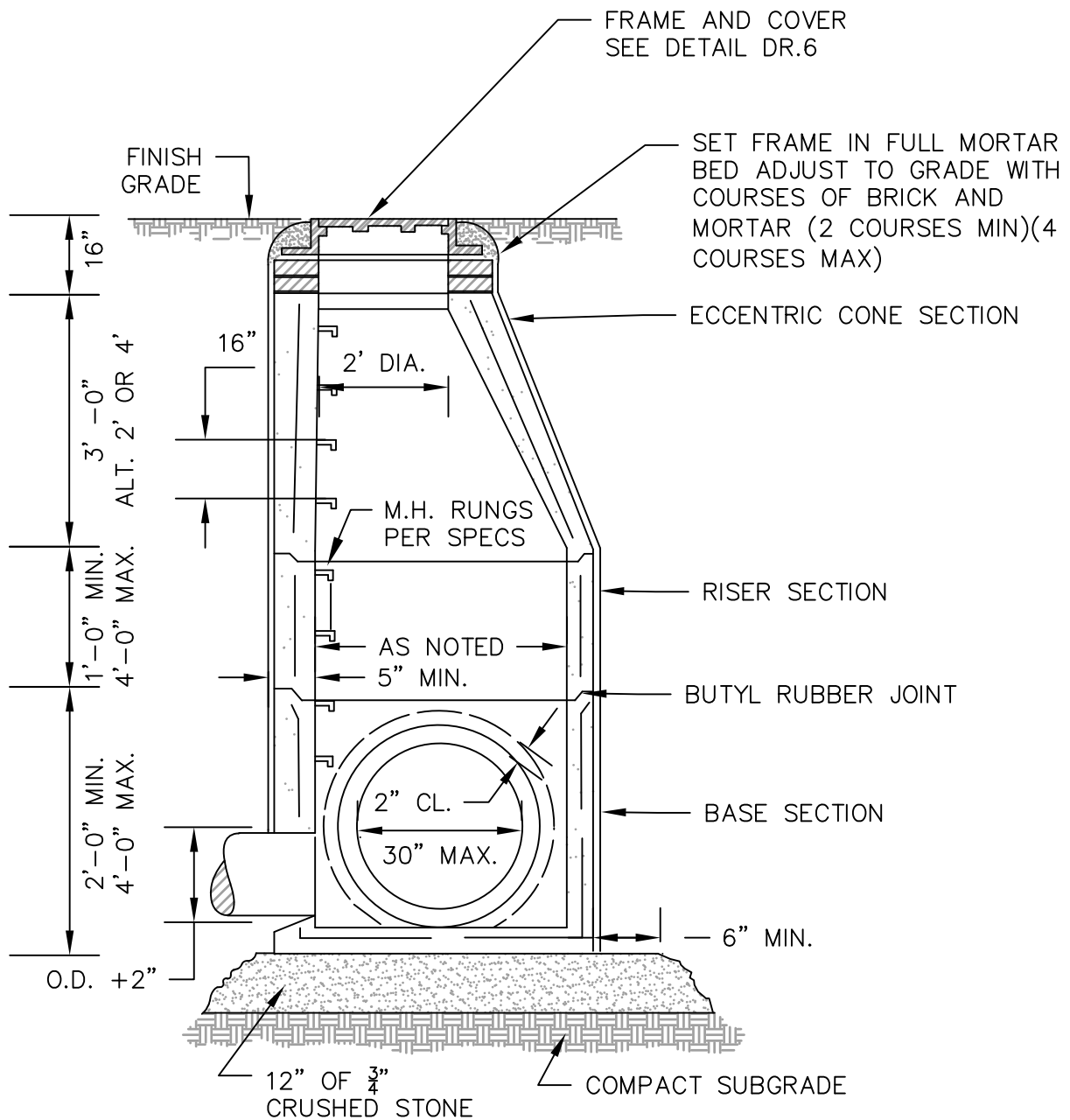
DRAINAGE

GRANITE CURB INLET

DETAIL NO:  
DR.4

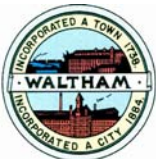
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N.T.S.

REV. DATE:  
OCT. 2020



**NOTES:**

1. PRECAST REINFORCED CONCRETE MANHOLE TO BE CAPABLE OF SUPPORTING H-20 LOADING.
2. ALL CONNECTIONS TO BE CORED. WATERTIGHT SEAL TO BE MADE WITH HYDRAULIC CEMENT NON SHRINK GROUT FOR RCP. USE FLEXIBLE WATERTIGHT COUPLING FOR ALL OTHER PIPE.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

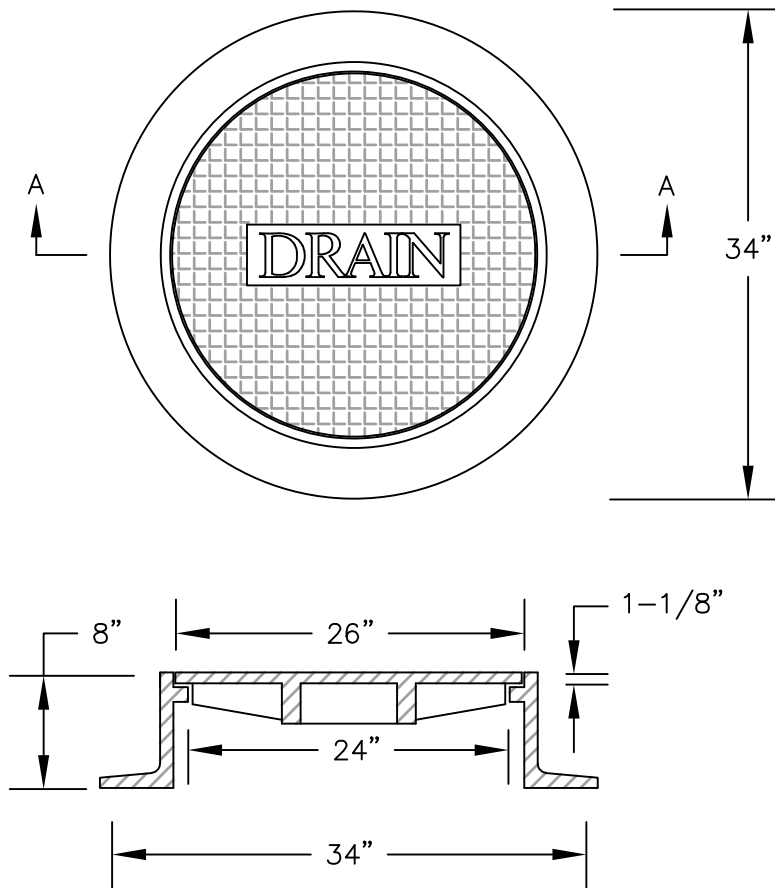
DRAINAGE

STANDARD PRECAST  
DRAIN MANHOLE

DETAIL NO:  
DR.5

SCALE:  
N.T.S.

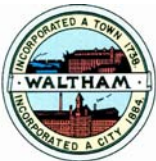
REV. DATE:  
OCT. 2020



SECTION A-A

NOTES:

FRAME EJ CATALOG NO. 12462  
COVER EJ CATALOG NO. 1248A  
OR APPROVED EQUAL.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

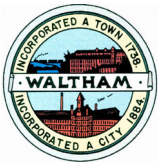
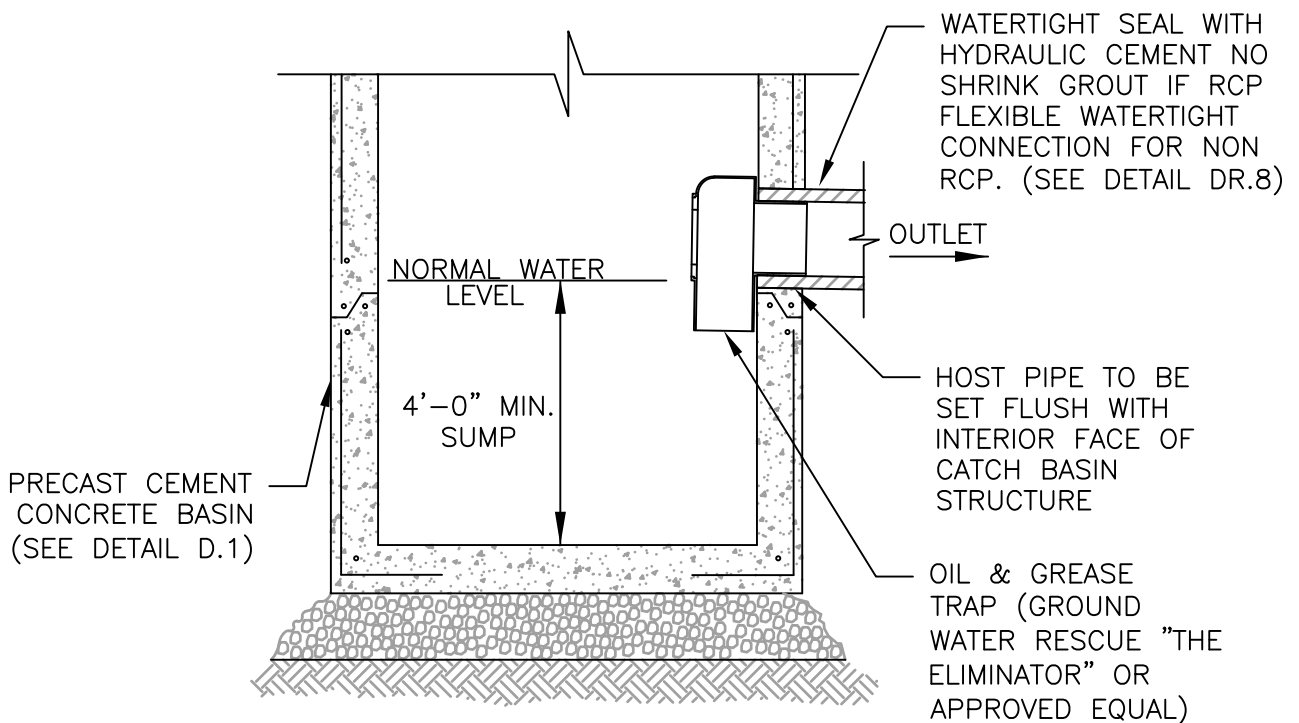
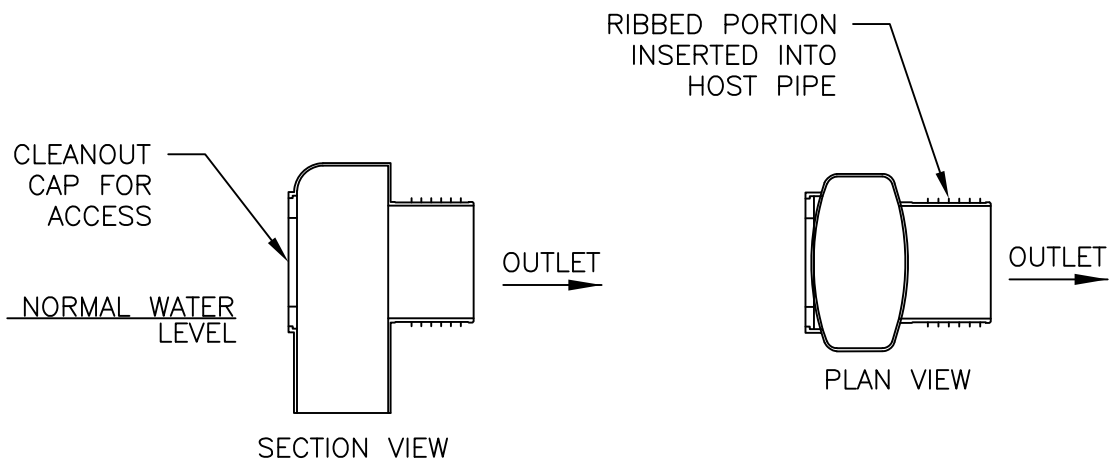
DETAIL NO:  
DR.6

DRAINAGE

SCALE:  
N.T.S.

DRAIN MANHOLE  
FRAME & COVER

REV. DATE:  
OCT. 2020



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

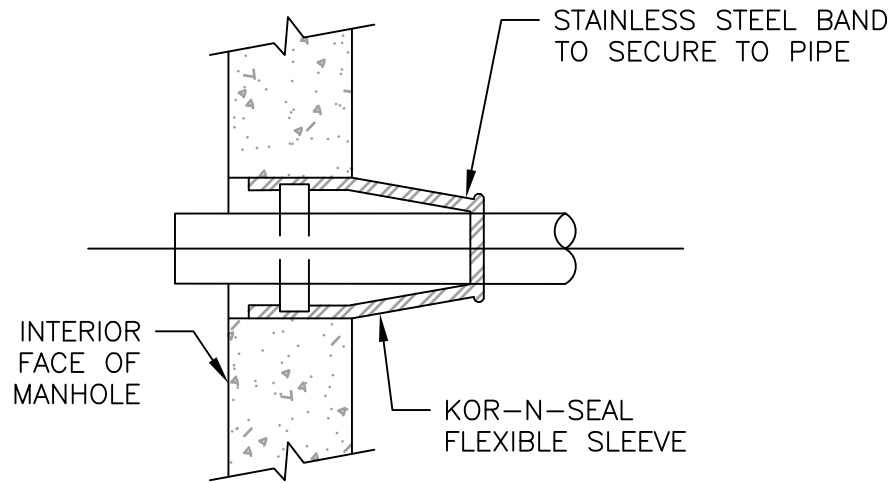
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DRAINAGE

SCALE:  
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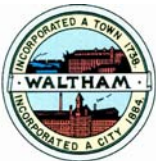
OIL & GREASE HOOD

REV. DATE:  
FEB. 2022



NOTE:

FLEXIBLE WATERTIGHT PIPE CONNECTION ONLY TO BE USED WITH PIPE MATERIALS OTHER THAN REINFORCED CONCRETE. RCP CONNECTIONS SHALL BE MADE WATERTIGHT WITH HYDRAULIC CEMENT NON SHRINK GROUT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

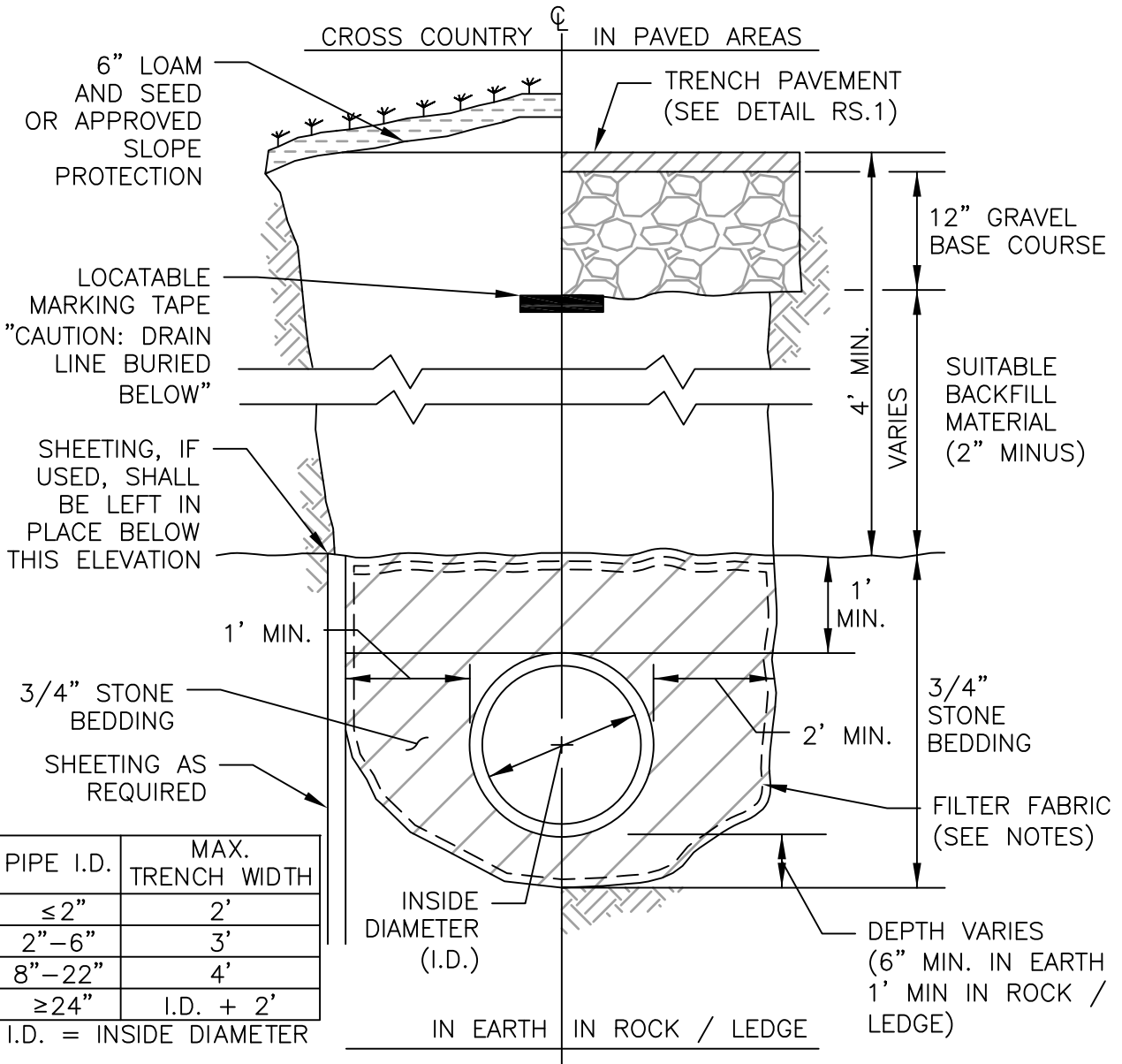
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DRAINAGE

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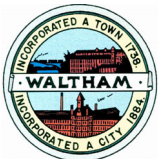
FLEXIBLE WATERTIGHT  
PIPE CONNECTION

REV. DATE:  
OCT. 2020



#### NOTES:

1. WHEN EXCAVATION IS IN SILT AND / OR CLAY, AND BELOW GROUNDWATER TABLE, WRAP PIPE BEDDING WITH FILTER FABRIC. FILTER FABRIC SHALL HAVE A MIN. OF 2' OVERLAP.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

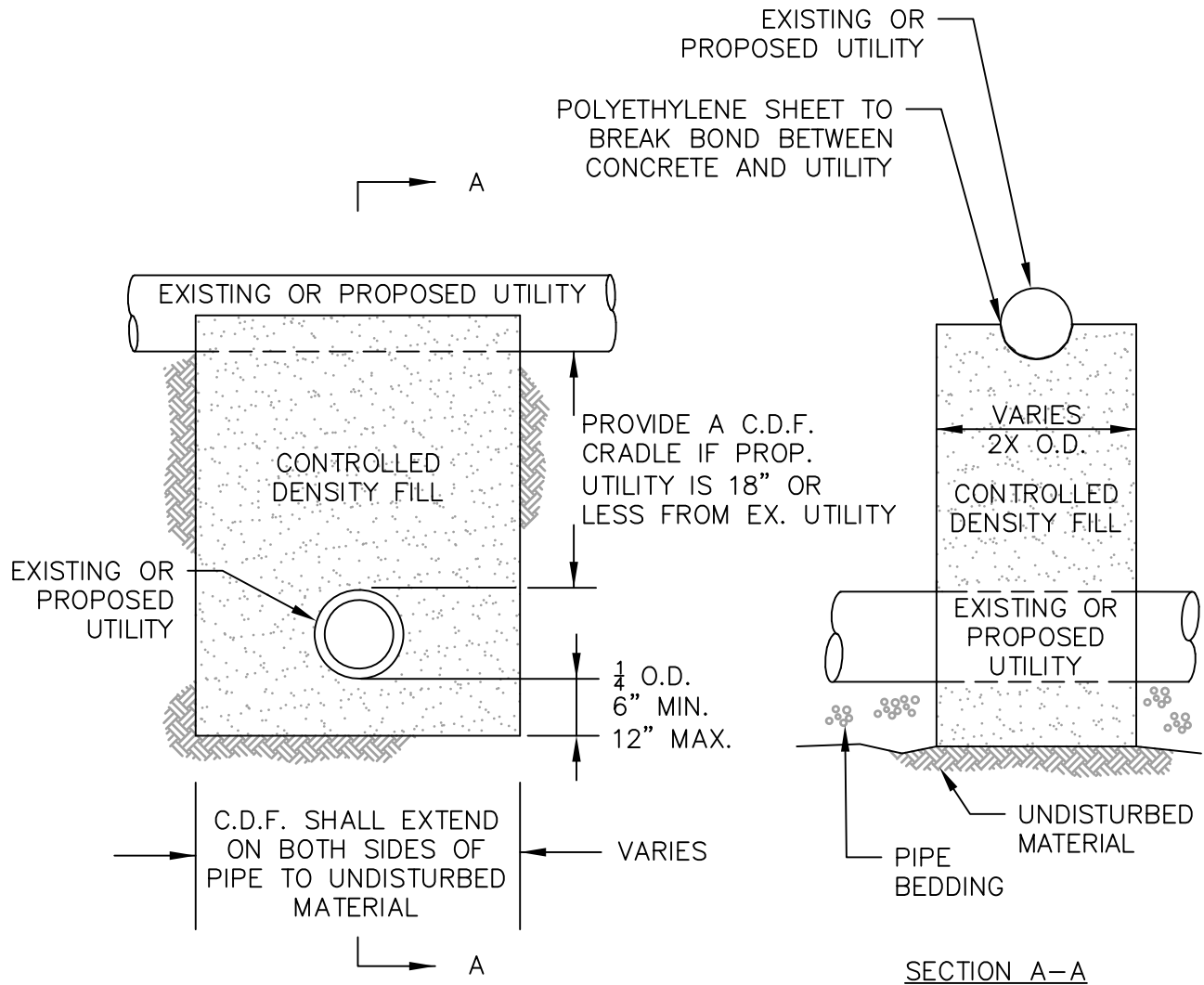
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DRAINAGE

SCALE:  
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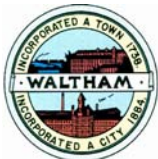
TYPICAL DRAIN TRENCH

REV. DATE:  
DEC. 2022



**NOTES:**

1. CONTROLLED DENSITY FILL CRADLES SHALL NOT BE USED ON ANY UTILITY OWNED OR MAINTAINED BY NATIONAL GRID. CONTRACTOR SHALL CONTACT NATIONAL GRID FOR ADDITIONAL UTILITY SUPPORT REQUIREMENTS.



CITY OF WALTHAM, MA  
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STANDARD DETAILS

DRAINAGE

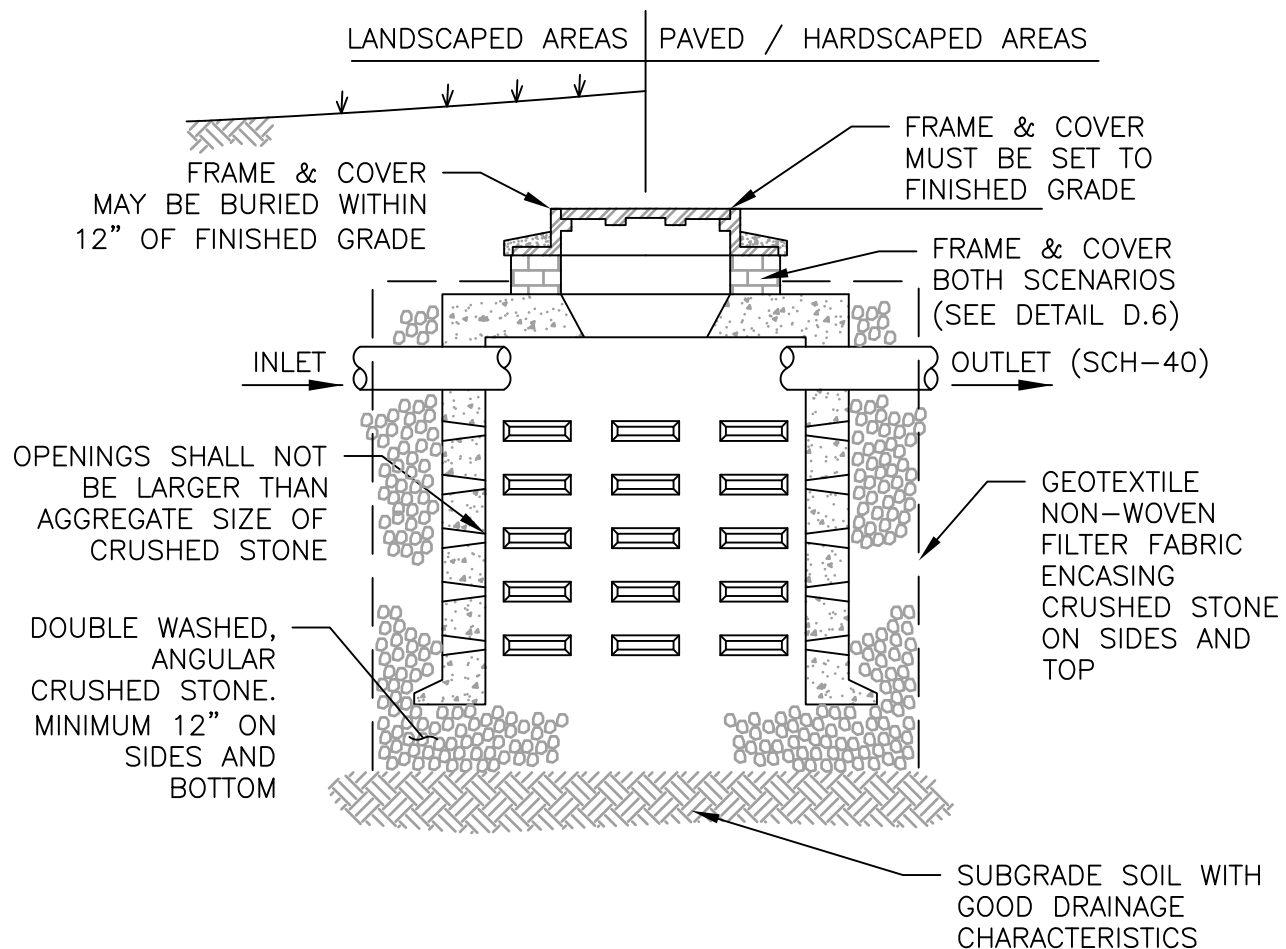
UTILITY SUPPORT

DETAIL NO:  
DR.10

SCALE:  
N.T.S.

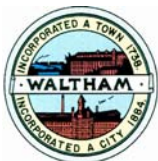
REV. DATE:  
OCT. 2020





**NOTES:**

1. ALL PRIVATE SUBSURFACE INFILTRATION SYSTEMS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN MASSACHUSETTS AND BUILT ACCORDING TO DESIGN AND THESE MINIMUM REQUIREMENTS. DESIGN PLANS SHALL SHOW SYSTEM SPECIFIC DETAILS.
2. OTHER INFILTRATION SYSTEMS MAY BE PROPOSED FOR REVIEW SUCH AS STORM-TECH CHAMBERS.
3. TEST PIT AND PERCOLATION TEST MUST BE PREFORMED WITHIN AREA OF PROPOSED SYSTEM.
4. INLET PIPE TO ALL SUBSURFACE INFILTRATION SYSTEMS MUST COME FROM A STRUCTURE WITH 4 FOOT SUMP.
5. OUTLET PIPE, IF REQUIRED, SHALL BE SCH-40 PVC, MIN. DIAMETER OF 6 INCHES.
6. UNDER PAVED / HARDSCAPED AREAS INFILTRATION SYSTEM SHALL BE CAPABLE OF SUPPORTING H-20 LOADING.
7. INFILTRATIONS SYSTEMS SHALL HAVE A MINIMUM OF ONE INSPECTION PORT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

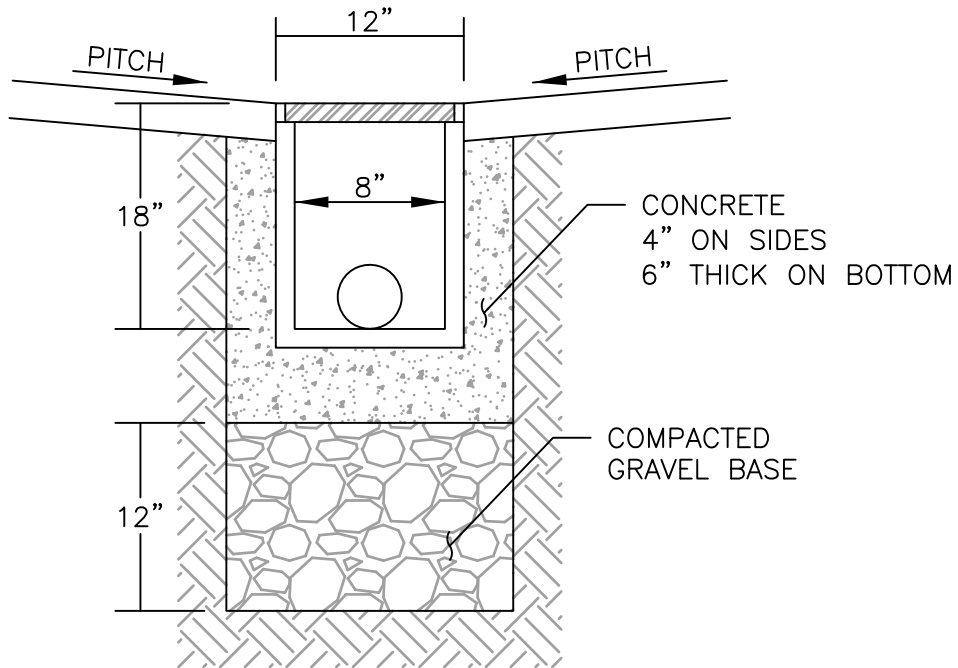
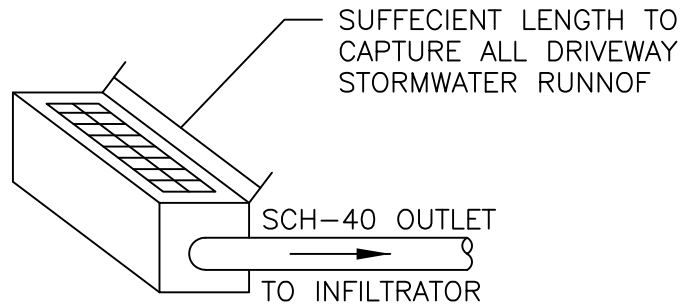
DRAINAGE

DRAINAGE LEACHING  
BASIN DETAIL

DETAIL NO:  
DR.11

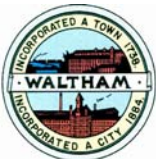
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



**NOTES:**

1. ALL PRIVATE DRAINAGE SYSTEMS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN MASSACHUSETTS AND BUILT ACCORDING TO DESIGN AND THESE MINIMUM REQUIREMENTS. DESIGN PLANS SHALL SHOW SYSTEM SPECIFIC DETAILS.
2. ALL DIMENSIONS GIVEN IN THIS DETAIL ARE MINIMUM REQUIREMENTS.
3. ALL DRIVEWAY TRENCH DRAINS SHALL BE CAPABLE OF SUPPORTING H-20 LOADING.
4. STORMWATER SHALL NOT BE SHED FROM ANY DRIVEWAY OR PROPERTY ONTO THE SIDEWALK OR ROADWAY. TRENCH DRAIN AND DRIVEWAY SHALL BE INSTALLED TO PROVIDE DRAINAGE AWAY FROM SIDEWALK AND ROADWAY.
5. PRIVATE DRIVEWAY TRENCH DRAINS SHALL NOT BE INSTALLED WITHIN THE RIGHT-OF-WAY OF ANY PUBLIC OR PRIVATE WAY.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

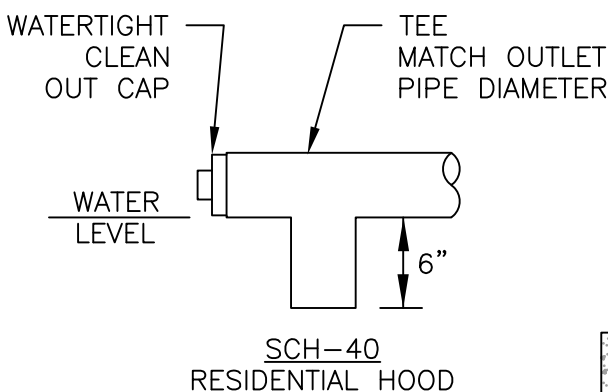
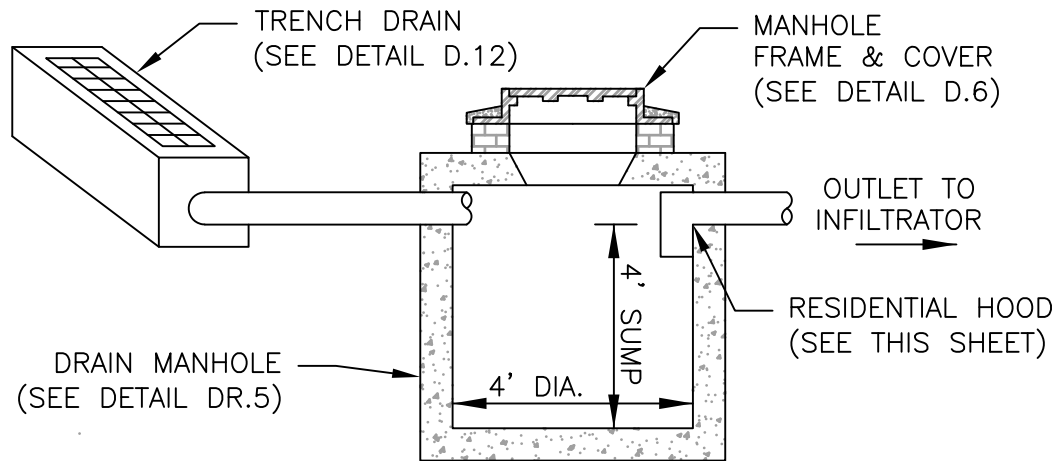
DRAINAGE

DRIVEWAY TRENCH  
DRAIN DETAIL

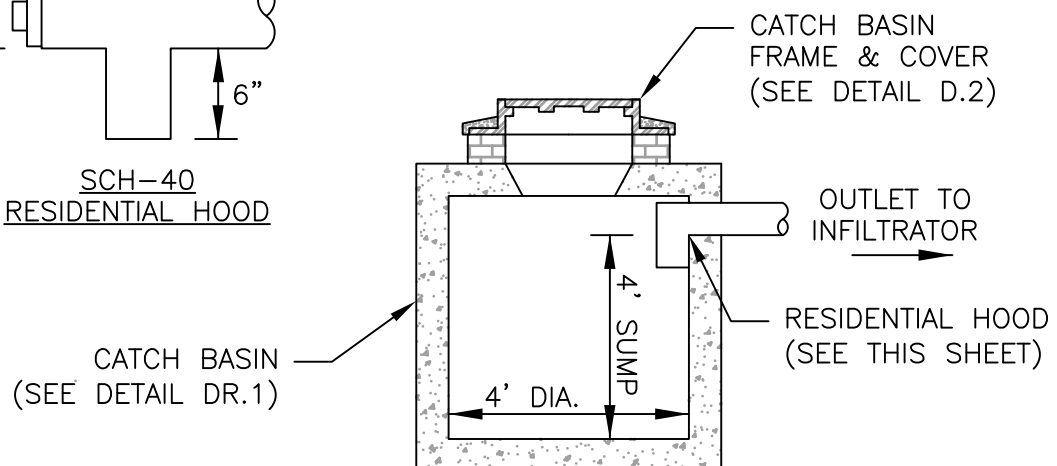
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DR.12

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

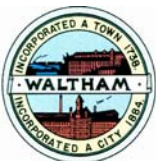


OR



#### NOTES:

1. ALL PRIVATE SUBSURFACE INFILTRATION SYSTEMS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN MASSACHUSETTS AND BUILT ACCORDING TO DESIGN AND THESE MINIMUM REQUIREMENTS. DESIGN PLANS SHALL SHOW SYSTEM SPECIFIC DETAILS.
2. INLET PIPE TO ALL SUBSURFACE INFILTRATION SYSTEMS MUST COME FROM A STRUCTURE WITH 4 FOOT SUMP.
3. UNDER PAVED / HARDCAPED AREAS INFILTRATION SYSTEM SHALL BE CAPABLE OF SUPPORTING H-20 LOADING.
4. DRAINAGE DESIGN SHALL NOTE PROPER MAINTENANCE PROCEDURES FOR ALL SUMP STRUCTURES.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DRAINAGE

RESIDENTIAL DRAINAGE  
COLLECTION DETAIL

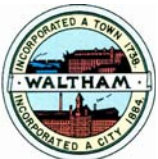
DETAIL NO:  
DR.13

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

## GENERAL WATER NOTES:

1. HYDRANTS, VALVES, CURB STOPS, OR CORPORATIONS SHALL BE OPERATED BY CITY PERSONNEL ONLY.
2. NO CONTRACTOR MAY DRAW WATER FROM THE SYSTEM WITHOUT SPECIFIC, WRITTEN APPROVAL OF WATER & SEWER SUPERINTENDENT OR HIS/HER DESIGNEE.
3. ANY WORK THAT WILL AFFECT WATER SERVICE TO CUSTOMERS SHALL BE COORDINATED WITH THE WATER & SEWER SUPERINTENDENT. THE CONTRACTOR SHALL NOTIFY ALL CUSTOMERS REGARDING THE DISRUPTION OF SERVICE A MINIMUM OF 48 HOURS PRIOR TO COMMENCING THE WORK.
4. ALL PROPOSED WATER MAIN PIPING 4" OR GREATER IN DIAMETER SHALL BE DOUBLE CEMENT LINED DUCTILE IRON CLASS 56 ZINC COATED PIPE.
5. ALL DOMESTIC SERVICES SHALL BE A MINIMUM OF 1" DIAMETER, TYPE K COPPER TUBING.
6. ALL HYDRANTS LOCATED WITHIN THE RIGHT-OF-WAY SHALL BE FACTORY PAINTED "WALTHAM COLORS" (YELLOW BARREL WITH BLACK CAPS AND BONNET).
7. ALL GATE VALVES LOCATED WITHIN THE RIGHT-OF-WAY SHALL BE MUELLER RESILIENT SEAT WEDGE OPEN RIGHT. ALL GATE VALVES LOCATED WITHIN THE RIGHT OF WAY SHALL HAVE A VALVE BOX ALIGNER UNDER THE OPERATING NUT. ALIGNER TO BE SUPPLIED BY CITY, INSTALLED BY CONTRACTOR.
8. ALL CURB STOPS OR SERVICE GATE VALVES SHALL BE PLACED AT THE EDGE OF THE RIGHT-OF-WAY UNLESS OTHERWISE DIRECTED BY THE WATER & SEWER SUPERINTENDENT.
9. ALL WATER MAIN FITTINGS AND VALVES SHALL BE DUCTILE IRON ZINC COATED MECHANICAL JOINT AND RESTRAINED WITH MECHANICAL JOINT RESTRAINTS (MEGALUG OR EQUAL).
10. ALL VERTICAL BENDS SHALL BE RODDED USING 4 - 5/8" THREADED RODS IN ADDITION TO CONCRETE THRUST BLOCKS.
11. ALL NEW RESIDENTIAL WATER SERVICE CONNECTIONS SHALL BE MADE BY MEANS OF A DIRECT TAPPED CONNECTION UNLESS THE SIZING EXCEEDS THE LIMITS SPECIFIED IN THE WATER SERVICE DETAIL (SEE DETAIL W.3).
12. THE MINIMUM GATE VALVE SIZE FOR NEW CONNECTIONS WITHIN THE RIGHT-OF-WAY SHALL BE 6". PROPOSED 4" SERVICES SHALL REDUCE TO 4" AFTER THE 6" GATE VALVE.
13. ALL NEWLY INSTALLED LINES 10 FEET OR GREATER IN LENGTH SHALL BE PRESSURE TESTED AT 200 PSI FOR A DURATION OF 2 HOURS AND THEN DISINFECTED AND SAMPLED IN ACCORDANCE WITH AWWA C651. ALL TESTING / SAMPLING MUST BE DONE BY AN INDEPENDENT TESTING COMPANY.
14. SOLID SLEEVE FITTINGS SHALL BE USED AT ALL CONNECTIONS BETWEEN PROPOSED AND EXISTING WATER MAINS. IF EXISTING WATER MAINS ARE FOUND TO BE OVER-SIZED CAST IRON, HI-MAX OR DRESSER COUPLINGS MAY BE SUBSTITUTED UPON SPECIFIC APPROVAL FROM THE CITY OF WALTHAM WATER & SEWER SUPERINTENDENT.
15. PROPOSED WATER SYSTEM SHALL BE INSTALLED TO MAINTAIN 10 FEET OF HORIZONTAL SEPARATION AND/ OR 18 INCHES OF VERTICAL SEPARATION FROM ANY EXISTING OR PROPOSED SANITARY SEWER SYSTEM. IF 10 FEET OF HORIZONTAL SEPARATION CANNOT BE ACHIEVED THE PROPOSED WATER MAIN SHALL BE ENCASED IN CONCRETE (SEE DETAIL W.10).



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DETAIL NO:  
W.O

WATER

SCALE:  
N.T.S.

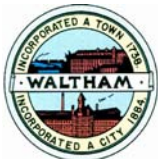
GENERAL WATER NOTES

REV. DATE:  
OCT. 2020

# STANDARD PARTS LIST

For the purposes of standardization only the following appurtenances will be permitted to be used within the City of Waltham water system

Water Main	Cement Lined Ductile Iron Class 56 Zinc Coated
Water Gate Valves	Mueller Resilient Seat OPEN RIGHT
Fire Hydrant	5 $\frac{1}{4}$ " American Darling B-62-B-5 OPEN RIGHT
Water Main Fittings	Ductile Iron Class 56 Zinc Coated MJ Restrained
Water Service	Copper Tubing Type K (1" Minimum)
Corporation Stop	Mueller H15008N
Curb Stop	Mueller B25209N OPEN RIGHT w/no drain
Water Service Box	Erie Style w/ Stainless Service Box Rod (base adapter required for 2" curb stops)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

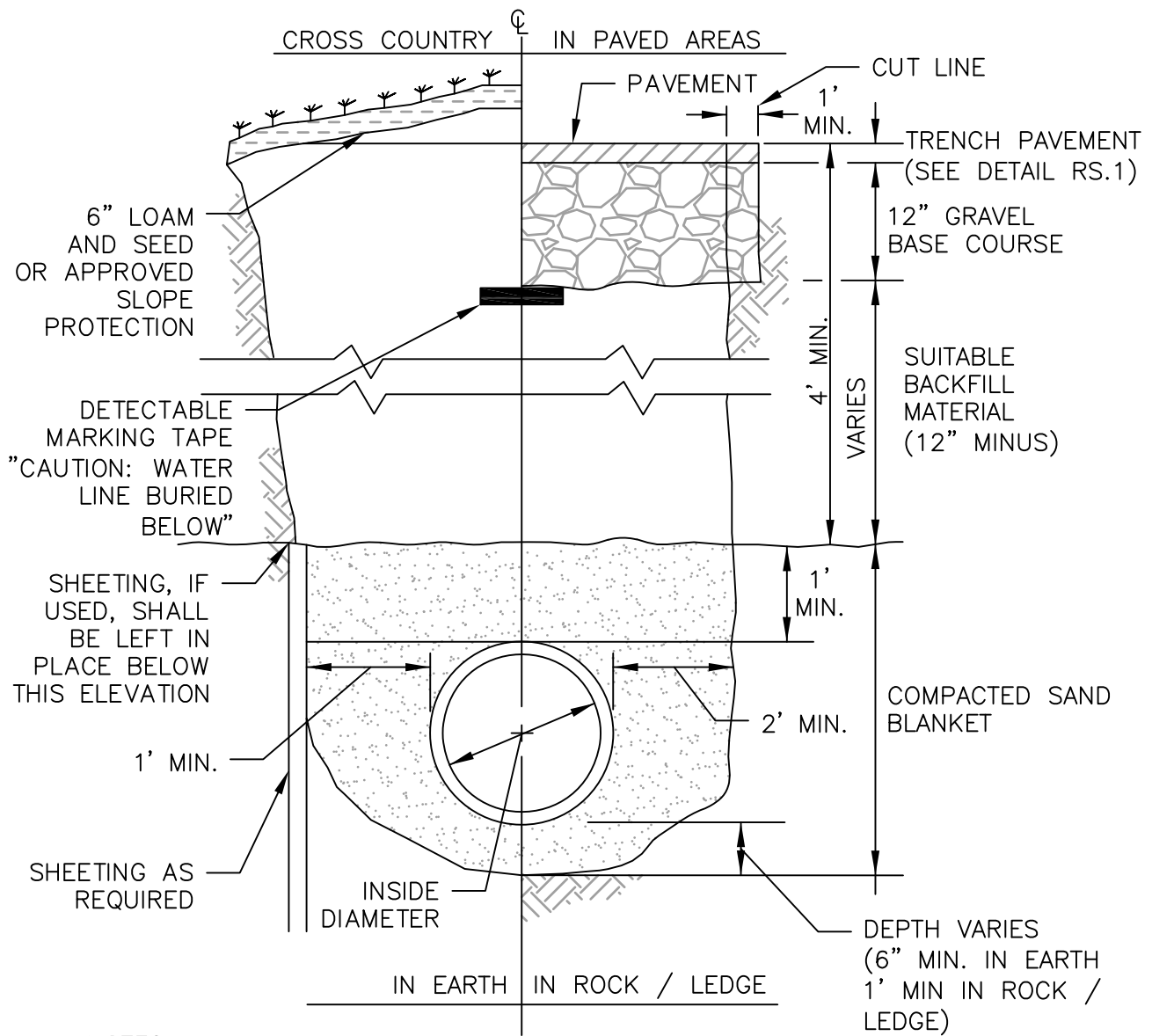
DETAIL NO:  
W.1

WATER

SCALE:  
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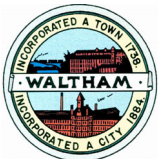
STANDARD PARTS LIST

REV. DATE:  
OCT. 2020



**NOTES:**

1. WATER PIPE SHALL BE ZINC COATED CLASS 56 C.L.D.I. PIPE – DOUBLE CEMENT LINED.
2. ALL TRENCHES SHALL BE SAW CUT. NO OTHER METHOD OF CUTTING THE EXISTING PAVEMENT SHALL BE ACCEPTABLE.
3. DETECTABLE WATER MARKING TAPE SHALL BE PLACED UNDERNEATH 12" GRAVEL BASE COURSE.
4. WATER MAIN INSTALLED IN AREAS WITH HIGH GROUNDWATER SHALL BE WRAPPED IN POLYETHYLENE ENCASEMENT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

WATER

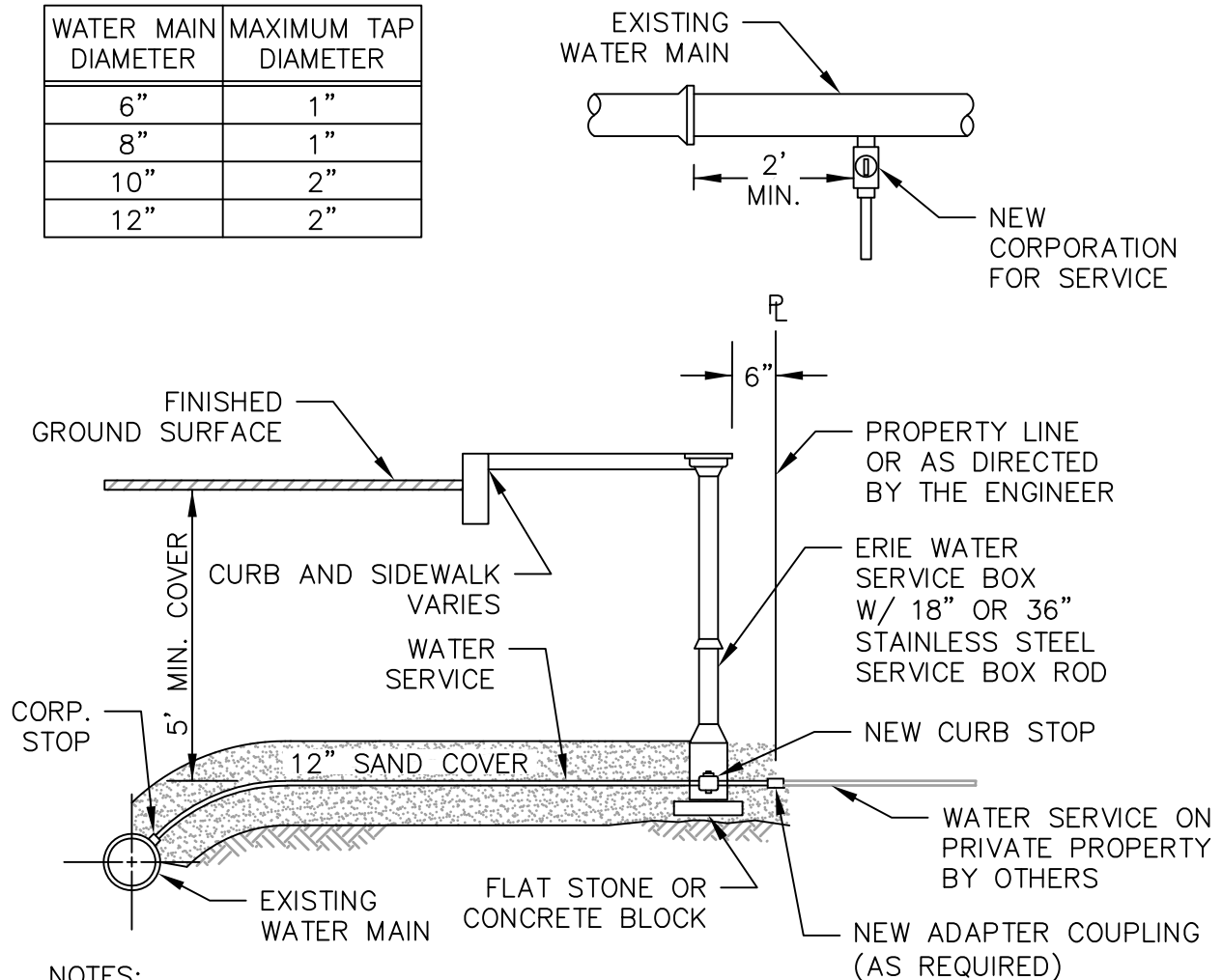
TYPICAL WATER TRENCH

DETAIL NO:  
W.2

SCALE:  
N.T.S.

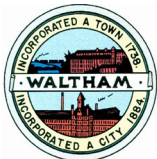
REV. DATE:  
DEC. 2022

WATER MAIN DIAMETER	MAXIMUM TAP DIAMETER
6"	1"
8"	1"
10"	2"
12"	2"



**NOTES:**

1. ALL WATER SERVICES SHALL BE 1" DIA. TYPE K COPPER TUBING UNLESS OTHERWISE NOTED. SERVICE SHALL BE ONE CONTINUOUS LENGTH FROM MAIN TO CURB STOP.
2. WHERE THE SIZE OF THE CONNECTION EXCEEDS THAT GIVEN IN THE TABLE, THE CONNECTION SHALL BE MADE BY MEANS OF A TAPPED SADDLE OR TEE CONNECTION.
3. WHERE GATE BOX IS NEAR OBSTRUCTION SUCH AS FENCE OR WALL, PLACE TO ALLOW SUFFICIENT ROOM TO OPERATE VALVE WITH WRENCH.
4. NEW TAPPED CONNECTIONS SHALL NOT BE ALLOWED CLOSER THAN 2' FROM A BELL JOINT ON THE EXISTING WATER MAIN.
5. INSULATION TO BE USED AS REQUIRED BY THE WATER & SEWER SUPERINTENDENT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

WATER

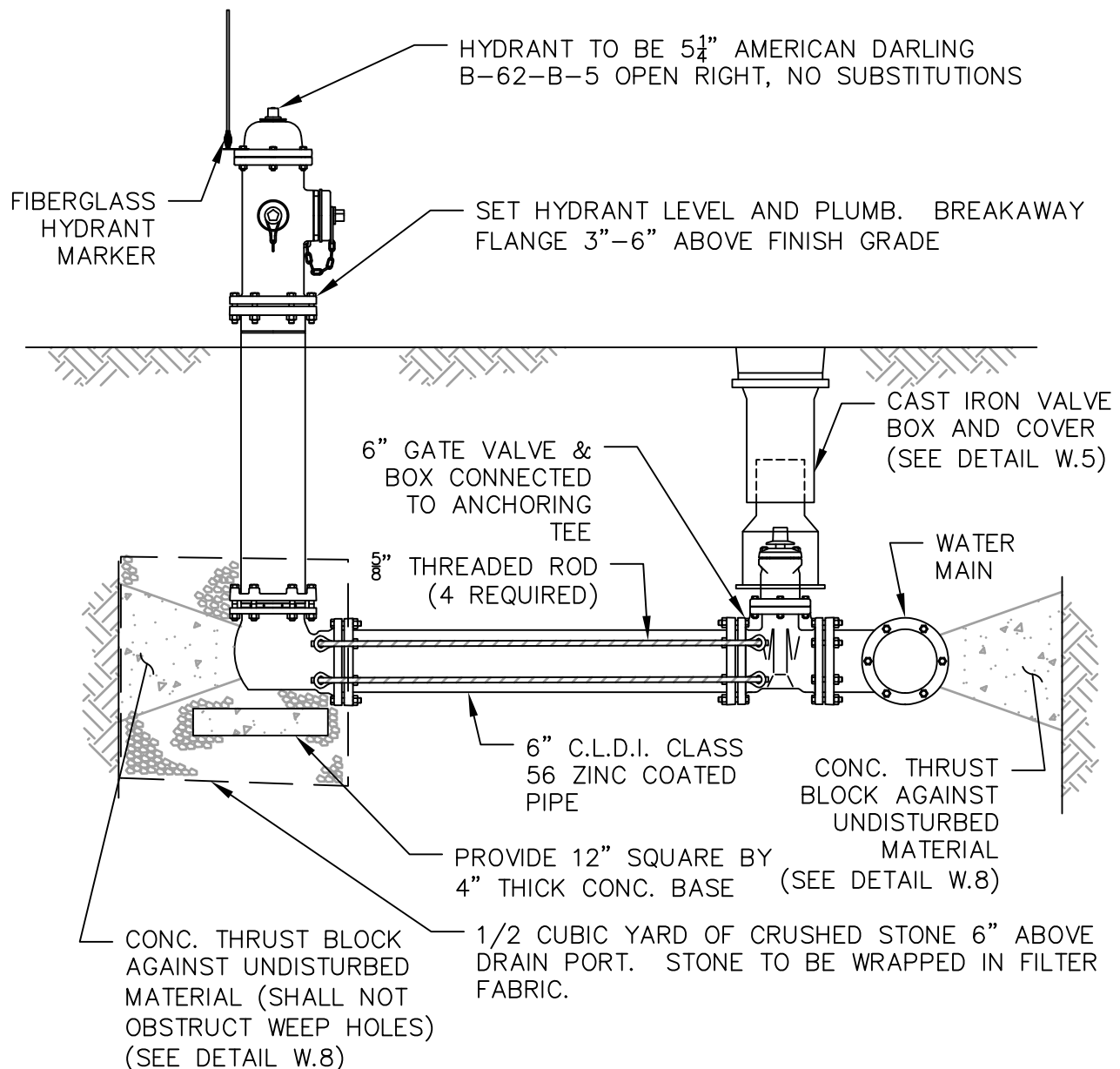
TYPICAL WATER  
SERVICE

DETAIL NO:  
W.3

SCALE:  
N.T.S.

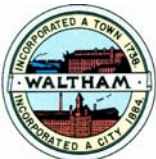
REV. DATE:  
JULY 2022





NOTES:

1. CITY OWNED HYDRANTS SHALL BE FACTORY PAINTED "WALTHAM COLORS" YELLOW BARREL AND BLACK CAPS AND BONNET.
2. HYDRANT AND VALVE SHALL BE RODDED TOGETHER.
3. ALL HYDRANTS AND VALVES OPEN RIGHT
4. ALL HYDRANTS SHALL BE PLACED AT BACK OF SIDEWALK WHERE POSSIBLE WITH REFLECTIVE 6 FOOT SPRING LOADED FIBERGLASS HYDRANT MARKER.
5. HYDRANT SHALL HAVE CAP CHAINS.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

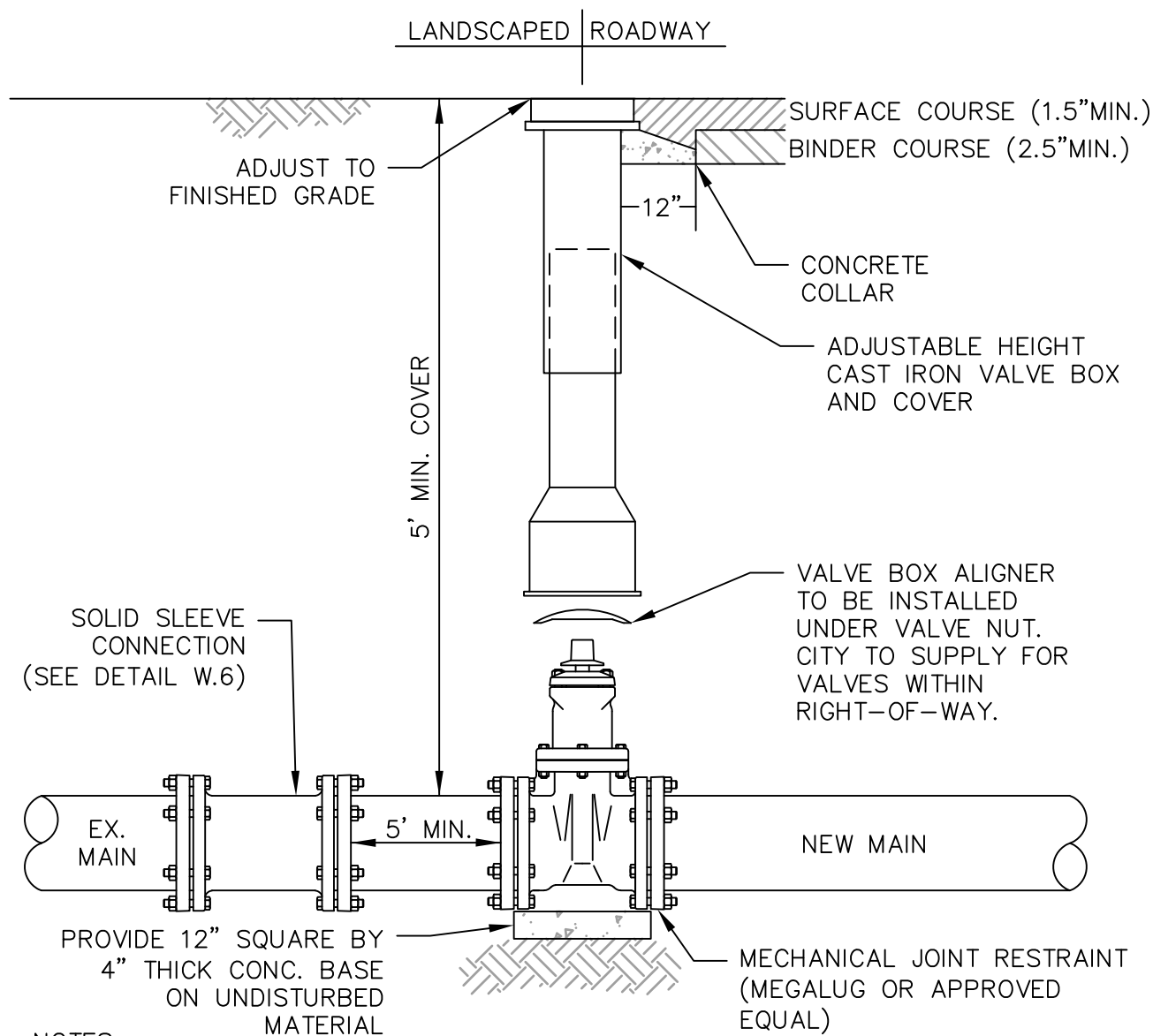
DETAIL NO:  
W.4

WATER

SCALE:  
N.T.S.

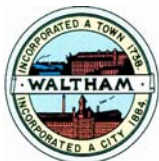
TYPICAL FIRE HYDRANT

REV. DATE:  
OCT. 2020



**NOTES:**

1. ALL WATER GATE VALVES WITHIN THE RIGHT-OF-WAY SHALL BE MUELLER RESILIENT SEAT WEDGE AND OPEN RIGHT. NO SUBSTITUTIONS.
2. VALVE BOX SHALL NOT BE INSTALLED DIRECTLY ON VALVE GATE. PROVIDE COMPACTED SOIL BASE FOR VALVE BOX.
3. WHEN INSTALLING A NEW VALVE ON AN EXISTING WATER MAIN THE CONTRACTOR SHALL REPLACE 5 FEET OF MAIN ON EACH SIDE OF THE NEW VALVE.
4. CONTRACTOR SHALL TAKE THREE (3) TIES TO EACH NEW GATE VALVE AND PROVIDE FIELD SKETCH TO WATER & SEWER DEPARTMENT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

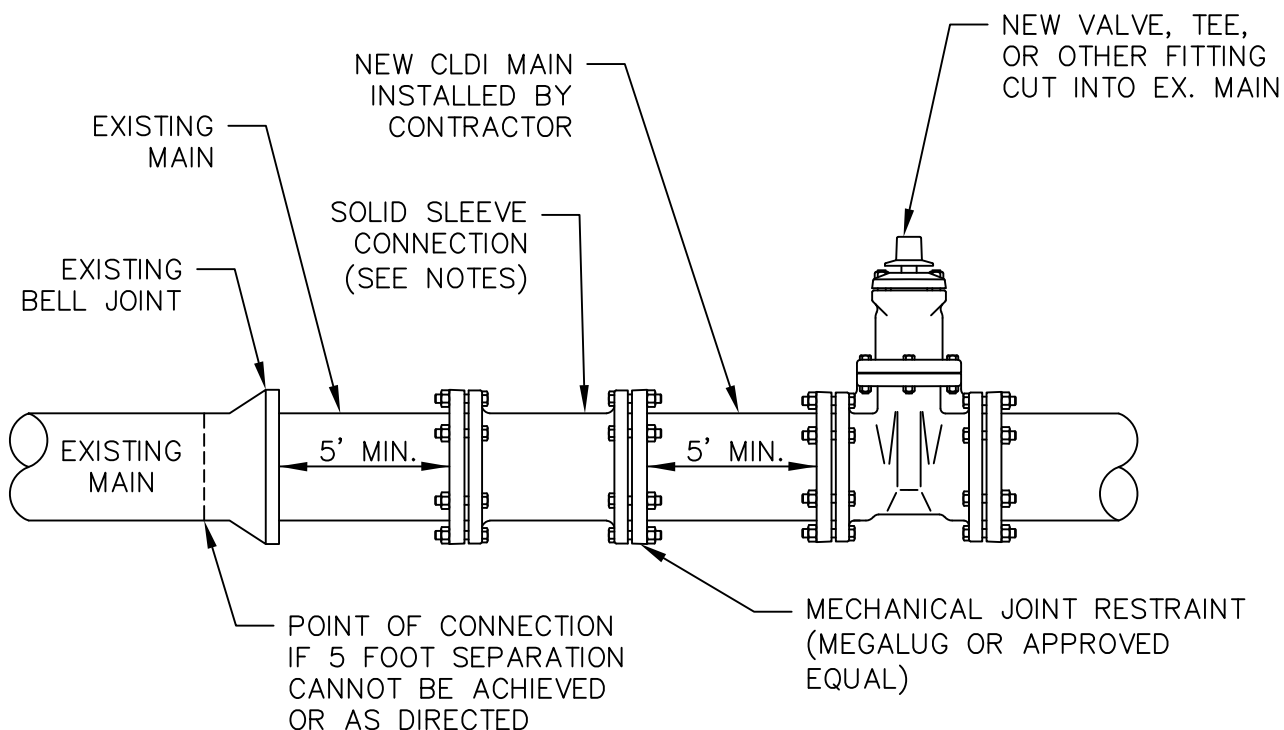
DETAIL NO:  
W.5

WATER

SCALE:  
N.T.S.

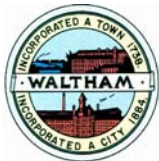
TYPICAL WATER  
GATE VALVE & BOX

REV. DATE:  
OCT. 2020



NOTES:

1. ALL NEW CONNECTIONS TO THE CITY OF WALTHAM WATER SYSTEM MUST BE APPROVED BY THE WATER & SEWER SUPERINTENDENT.
2. WHEN CUTTING IN A NEW VALVE, TEE, OR OTHER FITTING, THE CONTRACTOR SHALL REPLACE A MINIMUM OF 5 FEET OF MAIN ON EACH SIDE OF THE NEW APPURTENANCE UNLESS OTHERWISE DIRECTED BY THE WATER & SEWER SUPERINTENDENT.
3. NEW CONNECTIONS MUST BE MADE 5 FEET OR MORE FROM BELL JOINTS ON EXISTING MAINS. IF CONNECTION IS MADE LESS THAN 5 FEET FROM EXISTING BELL JOINT, THE CONTRACTOR SHALL REMOVE BELL AND CONNECT TO EXISTING MAIN AT THIS LOCATION OR AS DIRECTED BY THE WATER & SEWER SUPERINTENDENT.
4. SOLID SLEEVE FITTINGS SHALL BE USED AT ALL CONNECTIONS BETWEEN PROPOSED AND EXISTING WATER MAINS. IF EXISTING WATER MAINS ARE FOUND TO BE OVER-SIZED CAST IRON, HI-MAX OR DRESSER COUPLINGS MAY BE SUBSTITUTED UPON SPECIFIC APPROVAL FROM THE WATER & SEWER SUPERINTENDENT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

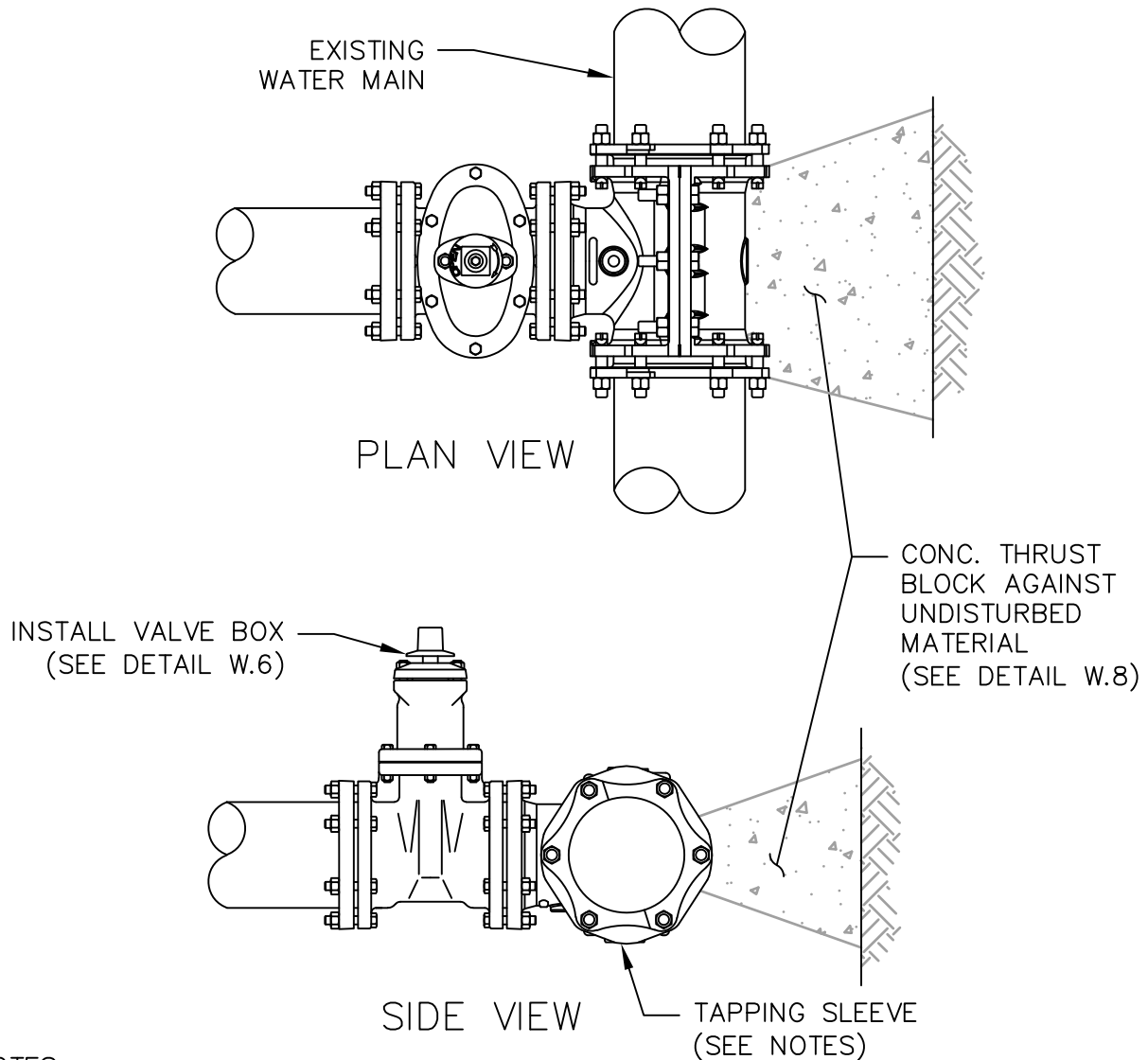
DETAIL NO:  
W.6

WATER

SCALE:  
N.T.S.

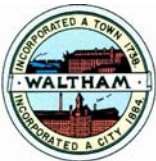
CONNECTIONS TO  
EXISTING MAINS

REV. DATE:  
OCT. 2020



NOTES:

1. TAPPED CONNECTION DIAMETERS MAY NOT EXCEED 1/2 THE DIAMETER OF THE EXISTING MAIN UNLESS SPECIFICALLY APPROVED BY THE WATER & SEWER SUPERINTENDENT.
2. TAPPING SLEEVE SHALL BE DUCTILE IRON, FULLY ENCAPSULATING SPLIT TAPPING SLEEVE WITH MECHANICAL JOINT FLANGES.
3. TAPPING SLEEVE IS TO BE COMPLETELY WRAPPED WITH 8 MIL POLYETHYLENE ENCASEMENT.
4. TAPPING SLEEVE BE TESTED AT A MINIMUM OF 175 PSI FOR A MINIMUM OF 15 MINUTES WITH NO VISIBLE LEAKAGE.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

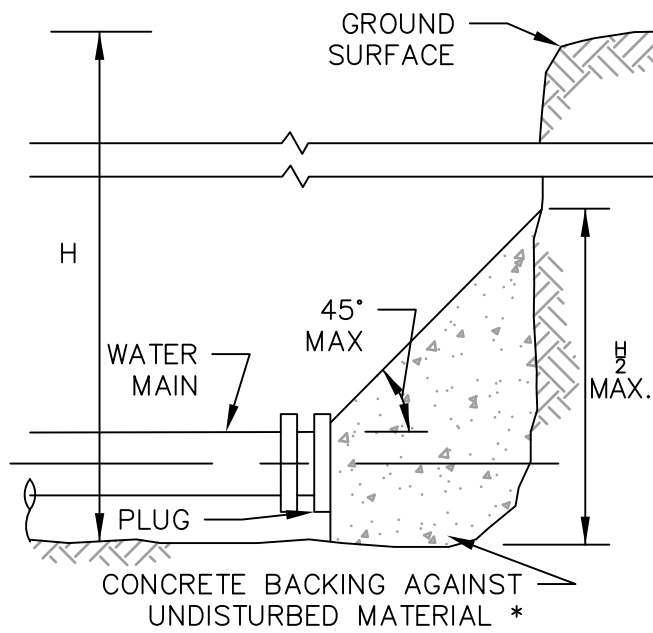
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W.7

WATER

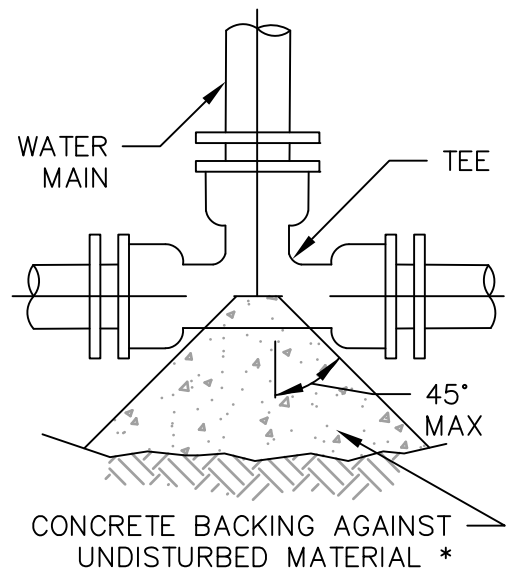
SCALE:  
N.T.S.

TAPPING SLEEVE  
AND VALVE

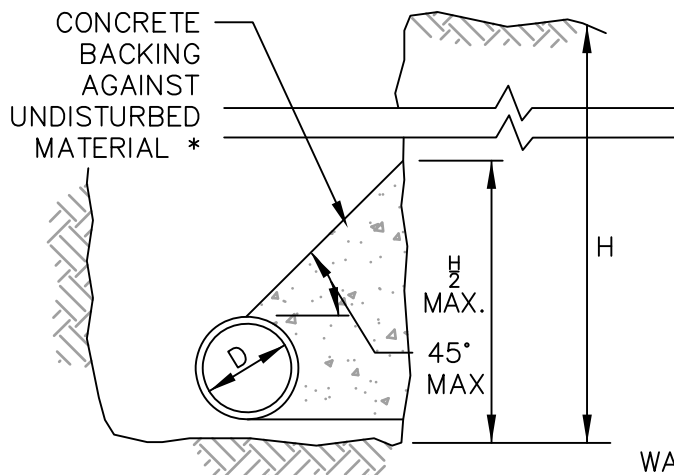
REV. DATE:  
OCT. 2020



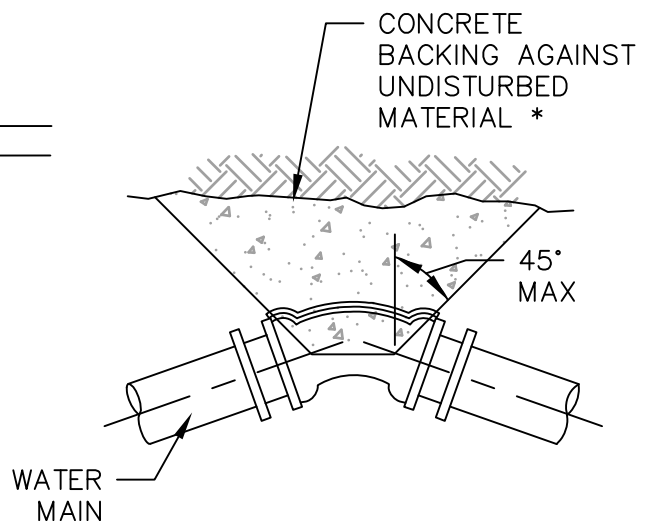
TYPICAL WATER MAIN PLUG THRUST BLOCK



TYPICAL WATER MAIN TEE THRUST BLOCK



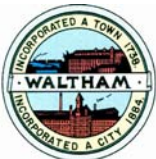
TYPICAL WATER THRUST BLOCK SECTION



TYPICAL WATER MAIN BEND THRUST BLOCK

NOTES:

1. SEE DETAIL W.9 ON THRUST BLOCK BEARING AREAS FOR THE AREA OF CONCRETE REQUIRED.
2. INSTALL 8 MIL POLYETHYLENE WRAP BARRIER BETWEEN CONCRETE AND WATER MAIN.
3. VERTICAL BENDS SHALL BE RODDED TOGETHER USING 4 - 5/8" THREADED RODS IN ADDITION TO CONCRETE THRUST BLOCK.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DETAIL NO:  
W.8

WATER

SCALE:  
N.T.S.

TYPICAL THRUST  
BLOCK DETAILS

REV. DATE:  
OCT. 2020

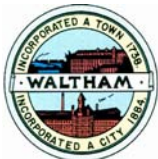
## THRUST BLOCK BEARING AREAS FOR WATER PIPE

TABLE OF BEARING AREAS IN SQUARE FEET (SQ. FT.) AGAINST UNDISTURBED MATERIAL FOR WATER MAIN FITTINGS *			
SIZE OF MAIN (IN.)	90° BEND	TEES AND PLUGS	45° BEND
6	4	2.5	2
8	6	4	3
12	12	9	7
16	21	16	12

\* TYPE OF SOIL IS MEDIUM CLAYEY, 6 OR MORE BLOWS PER FOOT, OR LOOSE GRANULAR, 9 OR MORE BLOWS PER FOOT. SOIL CONDITIONS OTHER THAN THOSE GIVEN WILL REQUIRE LARGER BEARING AREAS.

### NOTES:

1. FOR FITTINGS WITH LESS THAN 45° DEFLECTION, USE BEARING AREAS FOR 45° BEND.
2. BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 POUNDS PER SQUARE FOOT (PSF) AND INTERNAL WATER PRESSURE OF 150 POUNDS PER SQUARE INCH GAUGE (PSIG). JOINTS SHALL NOT BE ENCASED IN CONCRETE. BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND THE ROCK FACE.
3. ALL FITTINGS AND VALVES SHALL BE ZINC COATED DUCTILE IRON MECHANICAL JOINT AND RESTRAINED WITH MJ RESTRAINTS (MEGALUG OR EQUAL).
4. WATER MAINS SHALL BE ZINC COATED C.L.D.I. CLASS 56 – DOUBLE CEMENT LINED.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

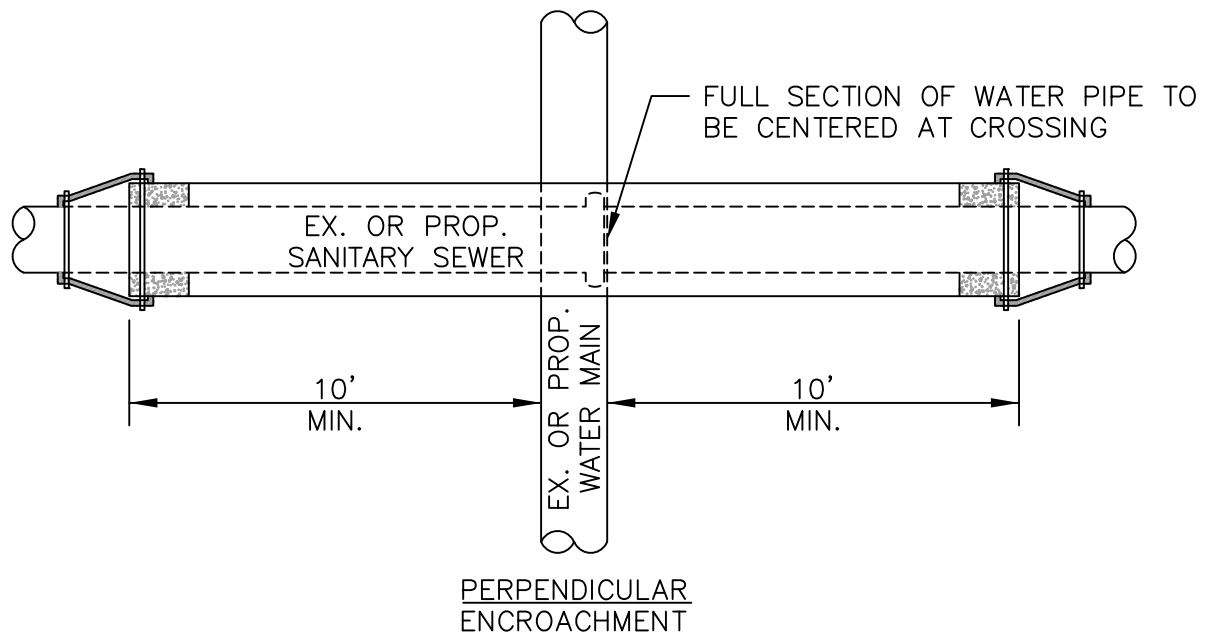
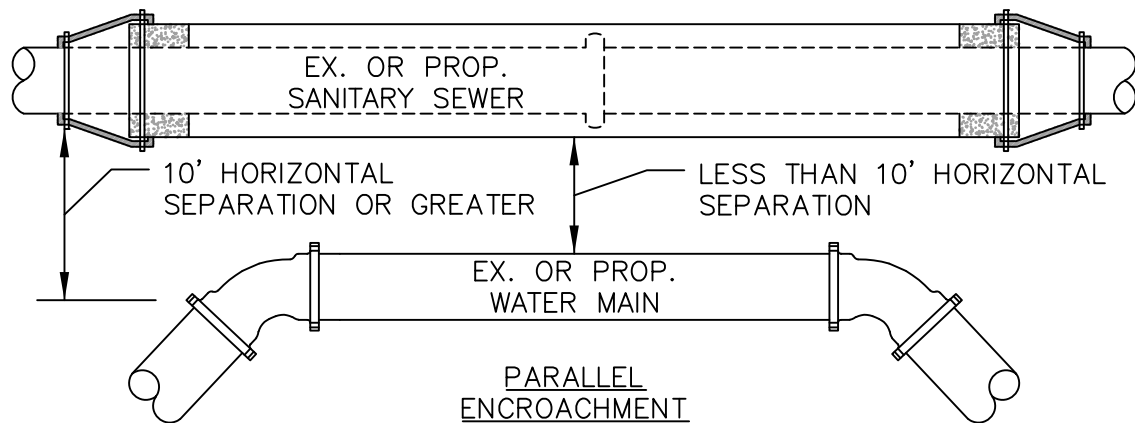
WATER

THRUST BLOCK  
BEARING AREAS

DETAIL NO:  
W.9

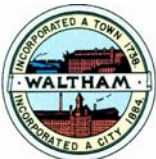
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



NOTES:

1. IF 10 FEET OF HORIZONTAL SEPARATION OR 18 INCHES OF VERTICAL SEPARATION CANNOT BE ACHIEVED THE SEWER MAIN MUST BE SLEEVED.
2. PIPE CROSSINGS SHALL BE LAID USING FULL LENGTHS OF PIPE
3. PIPE SHALL BE PLACED AS SUCH THAT THE JOINTS ARE AS FAR AS POSSIBLE FROM THE CENTERLINE OF THE CROSSING.
4. THE PIPE SLEEVE SHALL EXTEND 10 FEET ON EACH SIDE FROM THE CENTERLINE OF THE CROSSING.
5. IF INSTALLING NEW SEWER OVER WATER MAIN PIPE SLEEVING SHALL BE REQUIRED REGARDLESS OF VERTICAL SEPARATION.
6. SEE DETAIL S.10 FOR ADDITIONAL REQUIREMENTS FOR PIPE SLEEVING.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

WATER

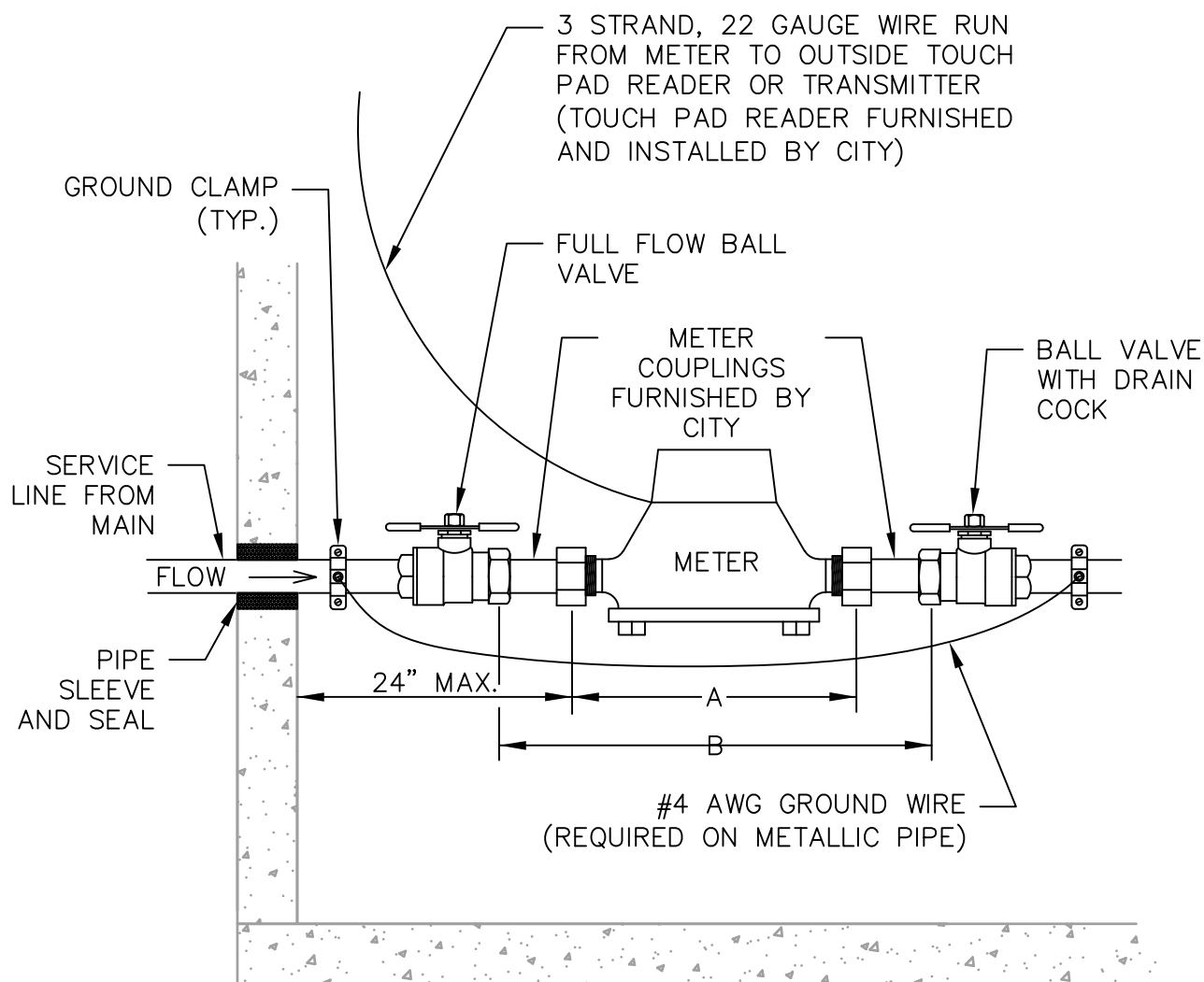
ENCROACHMENT  
OF SEWER LINE

DETAIL NO:  
W.10

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

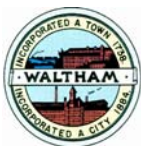




ELEVATION

NOTES:

1. METER IS FURNISHED AND INSTALLED AND OWNED BY THE CITY OF WALTHAM.
2. THERE SHALL BE NO CONNECTIONS PRIOR TO THE METER.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

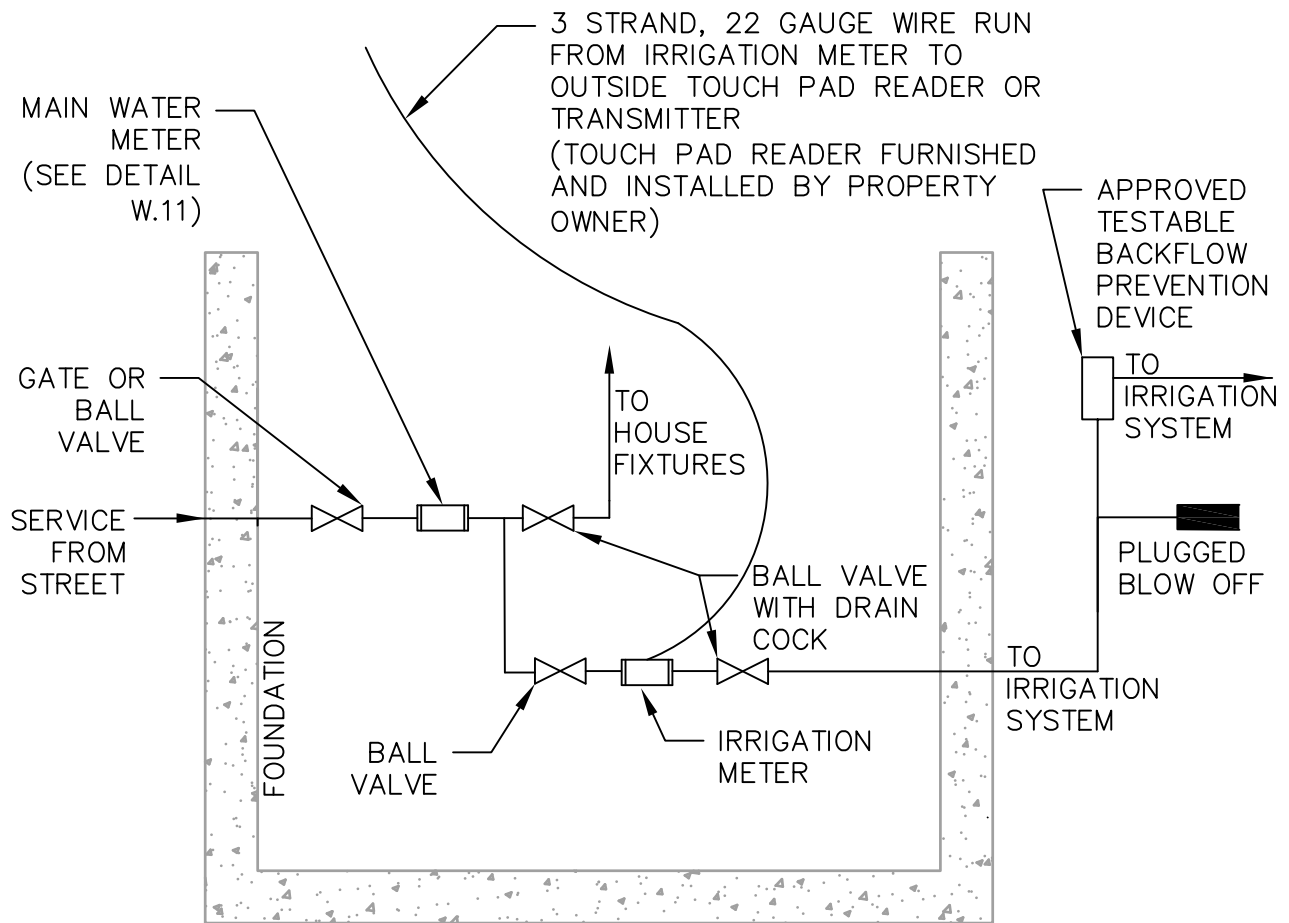
DETAIL NO:  
W.11

WATER

SCALE:  
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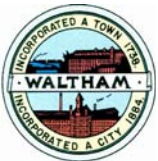
RESIDENTIAL  
METER LAYOUT

REV. DATE:  
OCT. 2020



## BACKFLOW PREVENTION DEVICE REQUIREMENTS:

1. ATMOSPHERIC VACUUM BREAKER – FOR APPLICATIONS WHERE THE BACKFLOW DEVICE IS NOT UNDER CONTINUOUS PRESSURE, THE BOTTOM OF THE DEVICE MUST BE LOCATED A MINIMUM OF 6 INCHES ABOVE THE HIGHEST SPRINKLER HEAD OR OUTLET.
2. PRESSURE VACUUM BREAKER – FOR APPLICATIONS WHERE THE BACKFLOW DEVICE IS UNDER CONTINUOUS PRESSURE, THE BOTTOM OF THE DEVICE MUST BE LOCATED A MINIMUM OF 12 INCHES ABOVE THE HIGHEST SPRINKLER HEAD OR OUTLET.
3. REDUCED PRESSURE ZONE BACKFLOW PREVENTER – FOR APPLICATIONS WHERE BACKPRESSURE FROM PUMPS OR CHEMICAL FEEDERS MAY EXIST OR WHERE THE MINIMUM HEIGHT ALLOWANCES NOTED ABOVE FOR VACUUM BREAKERS ARE NOT OBTAINABLE.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

WATER

TYPICAL IRRIGATION METER  
INSTALLATION DETAIL

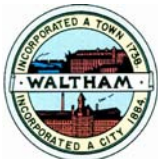
DETAIL NO:  
W.12

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

## GENERAL SEWER NOTES:

1. ALL NEW GRAVITY SEWER PIPE AND FITTINGS SHALL BE PVC PIPE, SDR-35 IN CONFORMANCE WITH ASTM D-3034.
2. ALL SEWER SERVICES SHALL BE A MINIMUM OF 6" IN DIAMETER.
3. ALL SEWER SERVICES SHALL HAVE A MINIMUM PITCH OF 2% AND A MAXIMUM PITCH OF 10%.
4. ALL SEWER SERVICES SHALL BE CONNECTED TO SEWER MAIN BY CUTTING IN A TEE-WYE ALONG THE MAIN. SADDLE TAPPED CONNECTIONS SHALL ONLY BE USED WITH SPECIFIC WRITTEN APPROVAL FROM THE SEWER & WATER SUPERINTENDENT. NO SERVICE CONNECTIONS TO EX. MANHOLES SHALL BE PERMITTED.
5. MANHOLES SHALL BE REQUIRED AT SERVICE CONNECTIONS WHERE SERVICE PIPE DIAMETER IS EQUAL TO THE DIAMETER OF THE MAIN.
6. CLEAN OUT ASSEMBLY SHALL BE INSTALLED ALONG ALL SEWER SERVICES A MINIMUM OF 10 FEET FROM THE BUILDING FOUNDATION (SEE DETAIL S.9).
7. ALL PRECAST CONCRETE MANHOLES SHALL CONFORM TO THE LATEST ASTM SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE SECTIONS (ASTM C478). CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING STEEL SHALL CONFORM TO THE LATEST ASTM A185 SPECIFICATIONS.
8. MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERT SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTERLINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO 1 INCH ABOVE THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARDS THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL BE 3000 PSI CONCRETE FILL AND BRICK MASONRY. BRICK INVERT SHALL BE SLOPED TO PROVIDE SMOOTH TRANSITION FROM INLET TO OUTLET. IF MAKING A MAIN CONNECTION INTO AN EXISTING SEWER MANHOLE THE INVERT SHALL BE REBUILT TO INCORPORATE THE NEW CONNECTION.
9. WHEN THE DIFFERENCE BETWEEN THE INLET PIPE AND OUTLET PIPE IS GREATER THAN 2 FEET AT MANHOLES, INSIDE DROP OR OUTSIDE DROP CONNECTIONS ARE REQUIRED.
10. TERMINUS MANHOLES SHALL BE REQUIRED AT THE END OF MAINLINES AND SHALL BE LOACTED 5' UPSTREAM OF THE LAST SERVICE CONNECTION.
11. PROPOSED SEWER SYSTEM SHALL BE INSTALLED TO MAINTAIN 10 FEET OF HORIZONTAL SEPARATION AND/ OR 18 INCHES OF VERTICAL SEPARATION FROM ANY EXISTING OR PROPOSED WATER SYSTEM. IF 10 FEET OF HORIZONTAL SEPARATION CANNOT BE ACHIEVED THE PROPOSED WATER MAIN SHALL BE ENCASED IN CONCRETE (SEE DETAIL W.10).
12. IF INSTALLING PROPOSED SEWER OVER AN EXISTING WATER MAIN (ANY DEPTH) THE PROPOSED SEWER SHALL BE SLEEVED (SEE DETAIL S.10). SEWER MAY ONLY BE INSTALLED OVER A WATER UTILITY WITH SPECIFIC APPROVAL FROM THE WATER & SEWER SUPERINTENDENT.
13. ANY WORK THAT WILL AFFECT SEWER SERVICE TO CUSTOMERS SHALL BE COORDINATED WITH THE WATER & SEWER SUPERINTENDENT. THE CONTRACTOR SHALL NOTIFY ALL CUSTOMERS REGARDING THE DISRUPTION OF SERVICE A MINIMUM OF 48 HOURS PRIOR TO COMMENCING THE WORK.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

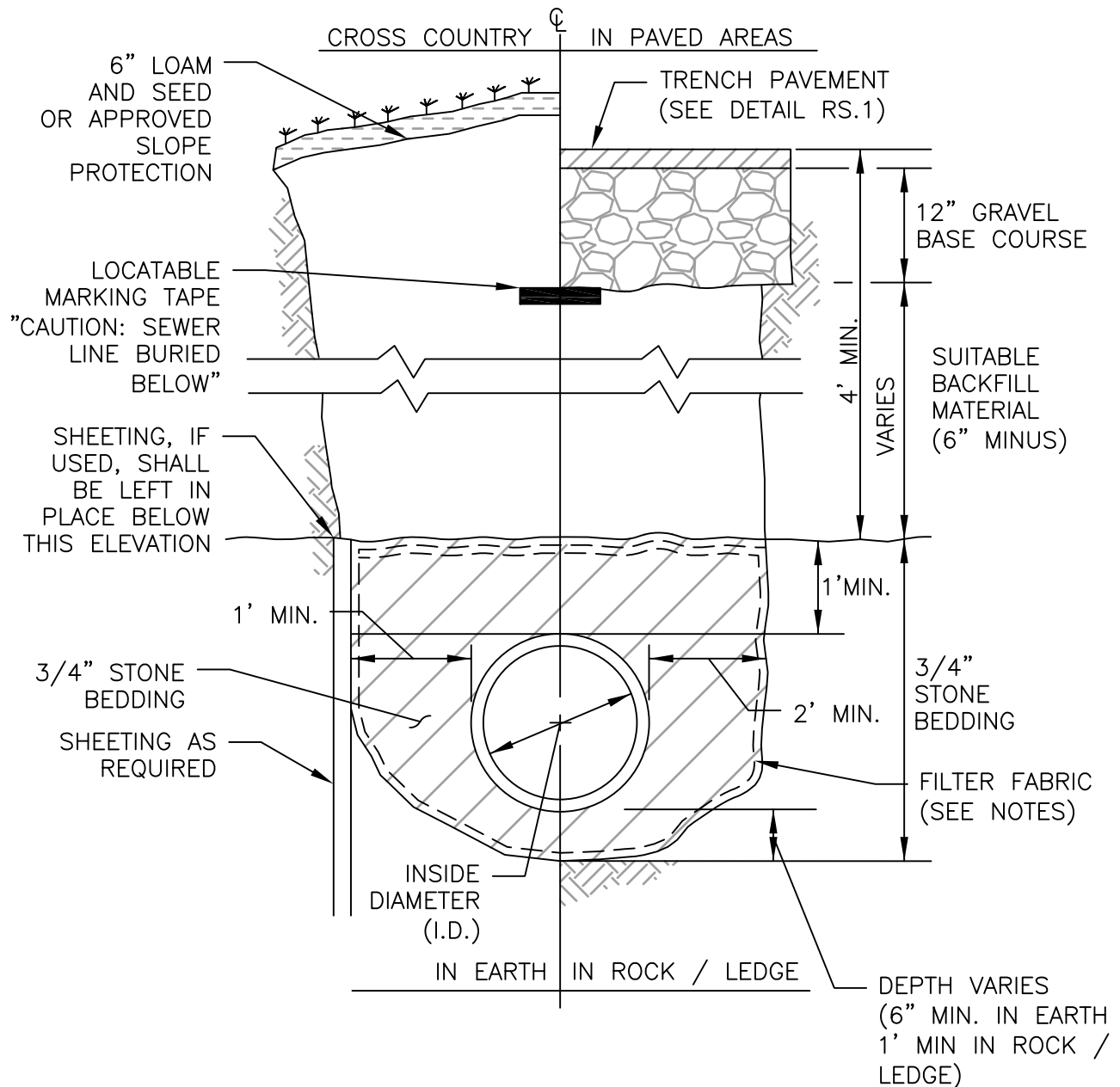
SEWER

GENERAL SEWER NOTES

DETAIL NO:  
S.O

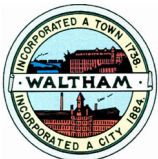
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



**NOTES:**

1. WHEN EXCAVATION IS IN SILT AND / OR CLAY, AND BELOW GROUNDWATER TABLE, WRAP PIPE BEDDING WITH FILTER FABRIC. FILTER FABRIC SHALL HAVE A MIN. OF 2' OVERLAP.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

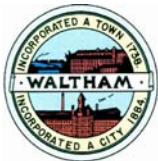
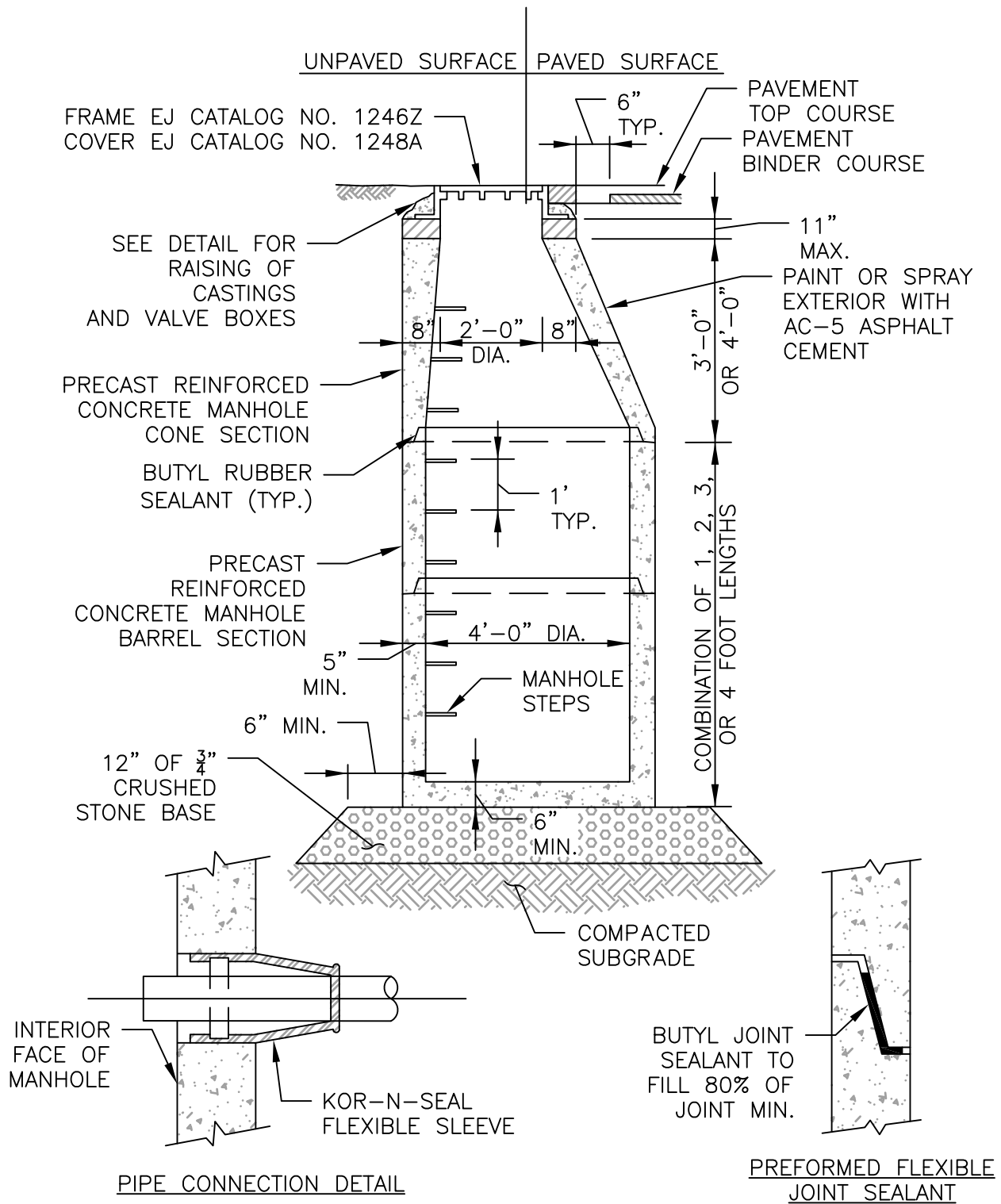
SEWER

TYPICAL SEWER TRENCH

DETAIL NO:  
S.1

SCALE:  
N.T.S.

REV. DATE:  
DEC. 2022



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

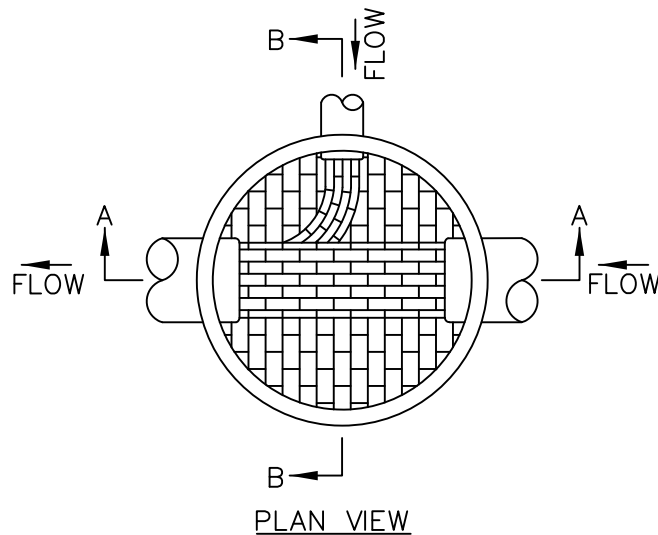
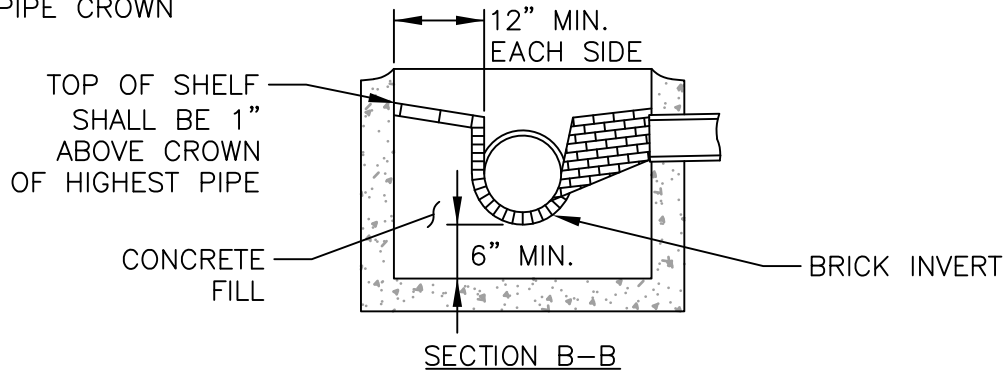
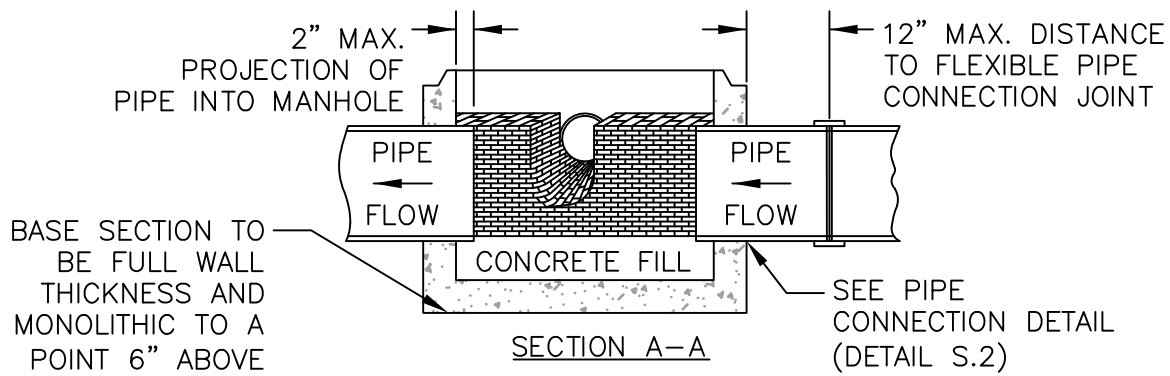
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SEWER

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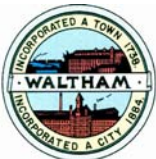
STANDARD PRECAST  
SEWER MANHOLE

REV. DATE:  
OCT. 2020



**NOTE:**

1. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
2. INVERT AND SHELF TO BE PLACED AFTER SUCCESSFUL VACUUM TEST.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

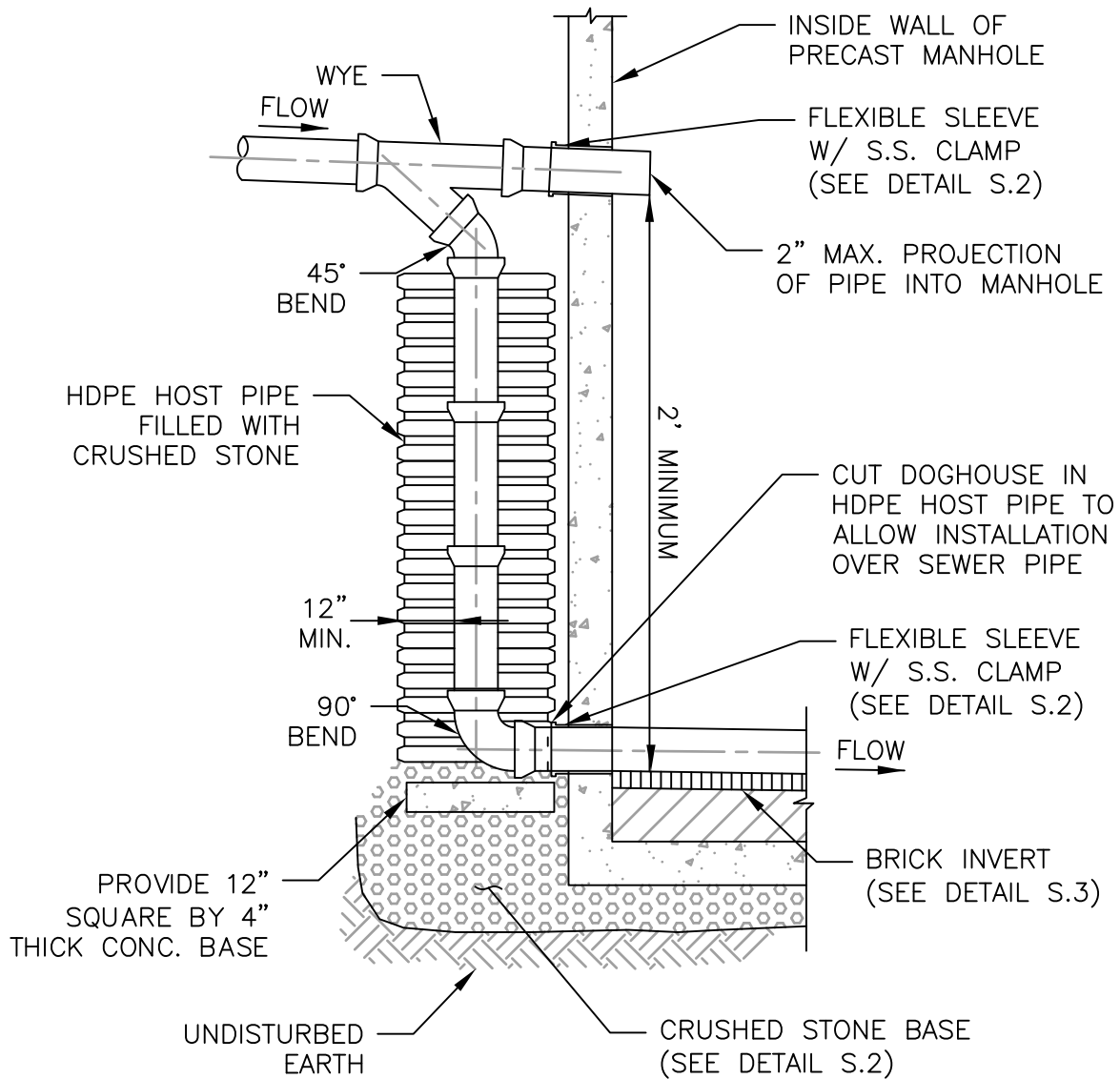
SEWER

SEWER MANHOLE INVERT

DETAIL NO:  
S.3

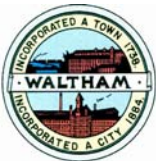
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



**NOTES:**

1. DIMENSIONS AND CONSTRUCTION OF EXTERIOR DROP MANHOLE TO MATCH TYPICAL PRECAST MANHOLE EXCEPT FOR VARIATIONS AS SHOWN.
2. TRENCH BACKFILL TO BE PLACED AND COMPACTED CONCURRENTLY TO SAME ELEVATION ON EACH SIDE OF DROP CONNECTION.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

SEWER

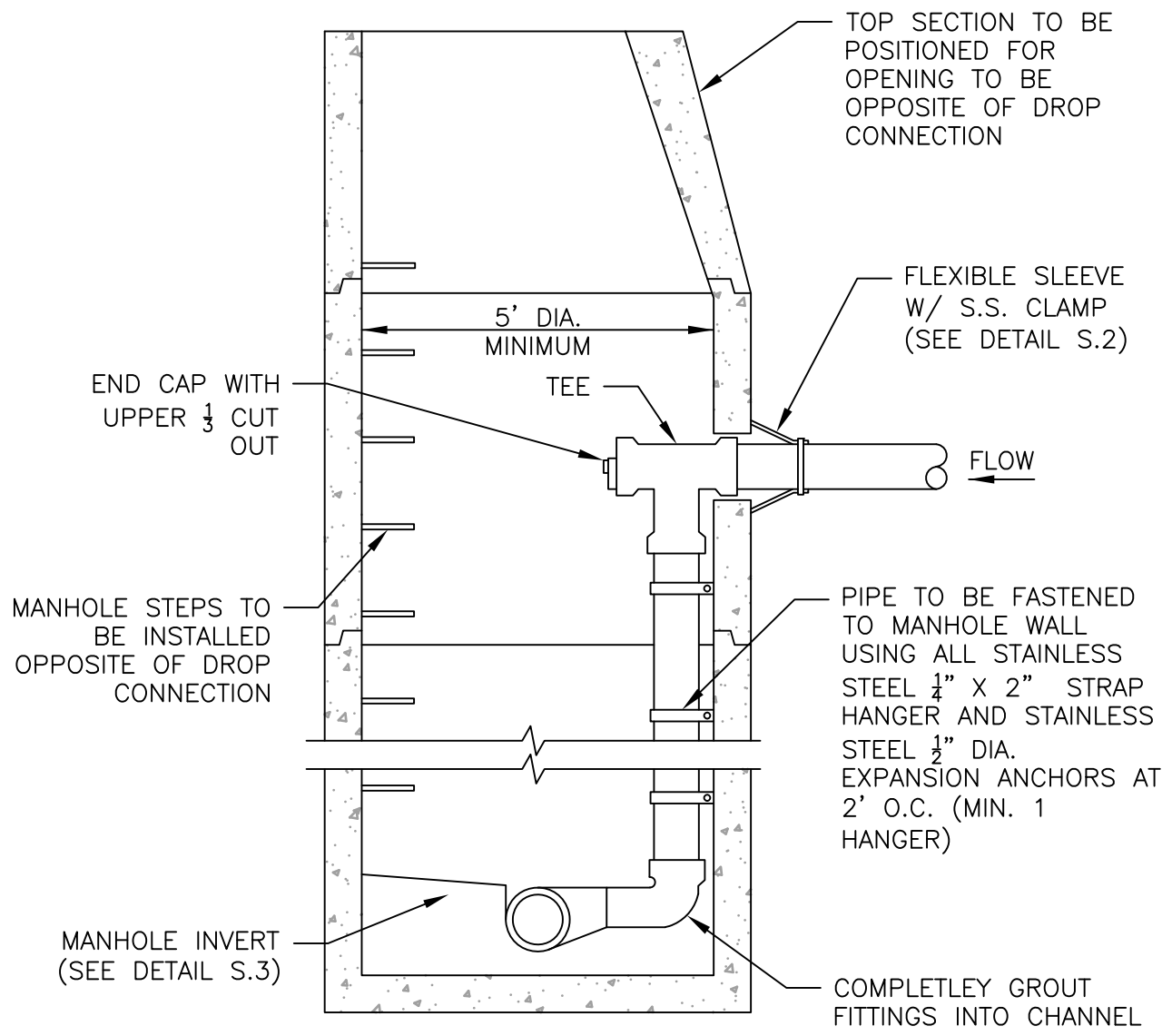
OUTSIDE DROP MANHOLE

DETAIL NO:  
S.4

SCALE:  
N.T.S.

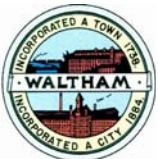
REV. DATE:  
OCT. 2020





**NOTES:**

1. INTERIOR DROP MANHOLE INSIDE DIAMETER IS TO BE A MINIMUM OF 5 FEET.
2. DIMENSIONS AND CONSTRUCTION OF INTERIOR DROP MANHOLE TO MATCH TYPICAL PRECAST MANHOLE EXCEPT FOR VARIATIONS AS SHOWN.
3. MANHOLE OPENING SHALL BE POSITIONED OPPOSITE THE DROP CONNECTION TO ALLOW UNOBSTRUCTED ACCESS TO THE INTERIOR OF THE MANHOLE.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

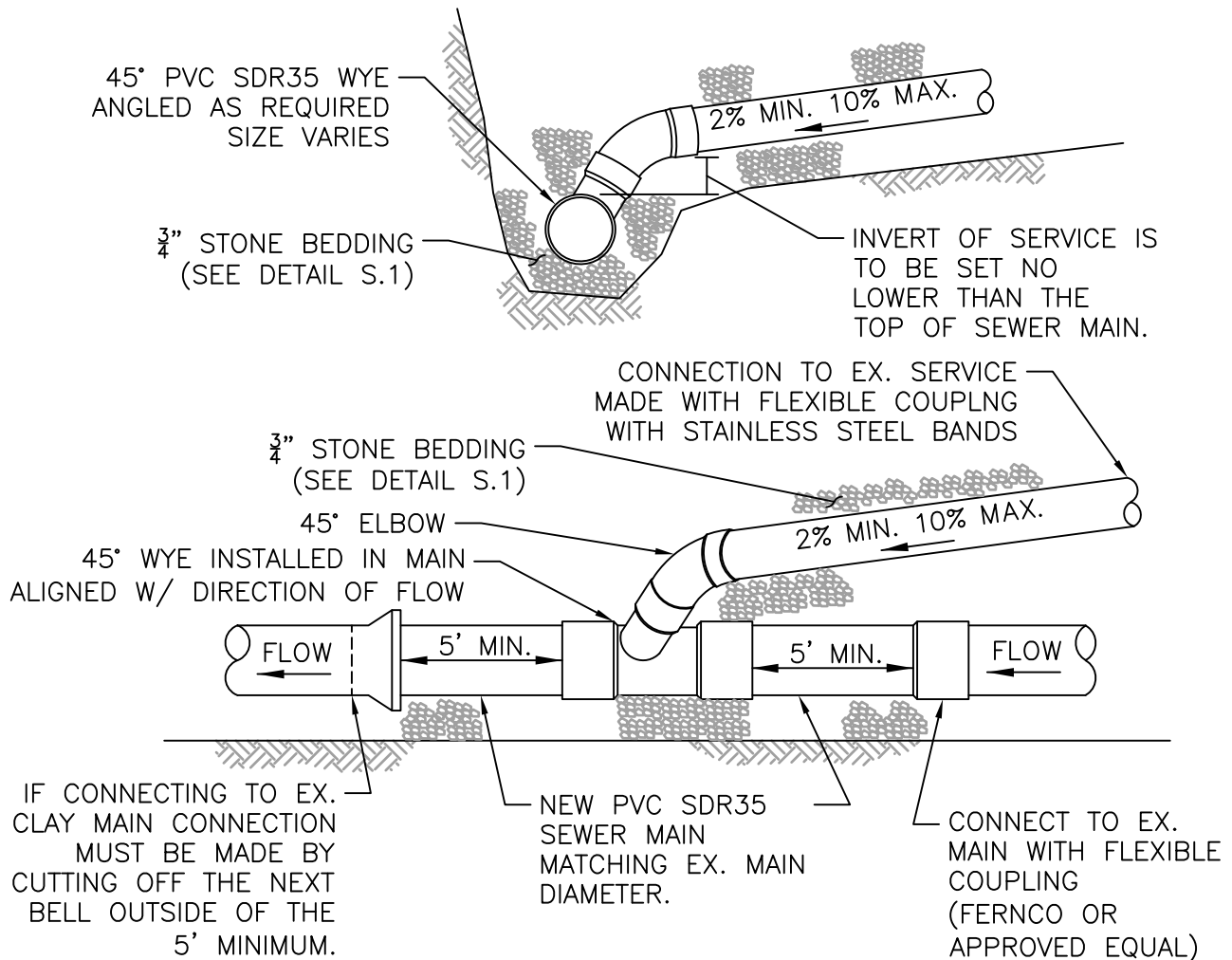
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SEWER

SCALE:  
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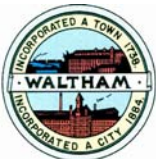
INSIDE DROP MANHOLE

REV. DATE:  
OCT. 2020



**NOTES:**

1. ALL NEW CONNECTIONS TO THE CITY OF WALTHAM SEWER SYSTEM MUST BE APPROVED BY THE WATER & SEWER SUPERINTENDENT.
2. ALL NEW SEWER SERVICES SHALL BE A MINIMUM DIAMETER OF 6" PVC SDR 35 PIPE. SERVICES SHALL HAVE A MINIMUM SLOPE OF 2% AND A MAXIMUM OF 10%.
3. WHEN REPLACING EXISTING SERVICES, PIPE DIAMETER SHALL MATCH EXISTING DIAMETER OR AS DIRECTED BY THE WATER & SEWER SUPERINTENDENT.
4. WHEN CUTTING IN A NEW CONNECTION, THE CONTRACTOR SHALL REPLACE A MINIMUM OF 5 FEET OF MAIN ON EACH SIDE OF THE NEW FITTING UNLESS OTHERWISE DIRECTED BY THE WATER & SEWER SUPERINTENDENT.
5. WHEN CONNECTING TO AN EXISTING CLAY MAIN, THE CONTRACTOR SHALL MAKE THE CONNECTION AT THE FIRST BELL OUTSIDE OF THE 5' REPLACEMENT AREA. THE CONTRACTOR SHALL REMOVE BELL AND CONNECT TO EXISTING MAIN AT THIS LOCATION OR AS DIRECTED BY THE WATER & SEWER SUPERINTENDENT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

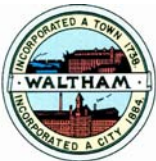
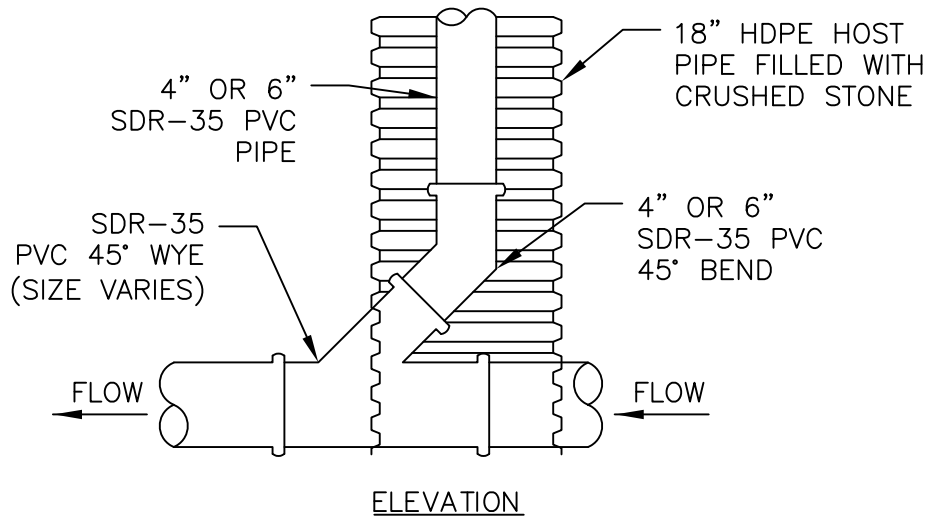
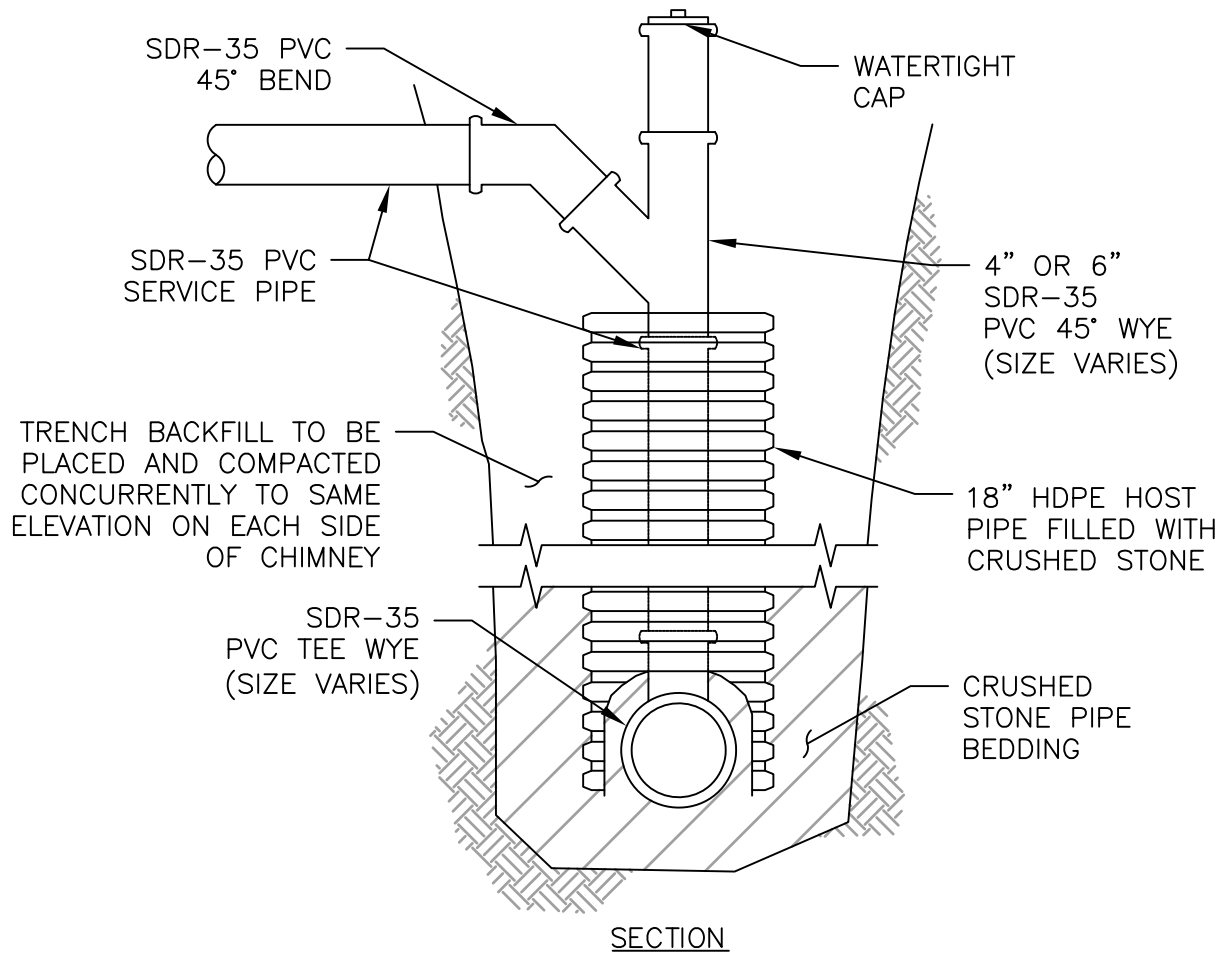
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S.6

SEWER

SCALE:  
N.T.S.

SEWER SERVICE  
CONNECTION

REV. DATE:  
OCT. 2020



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

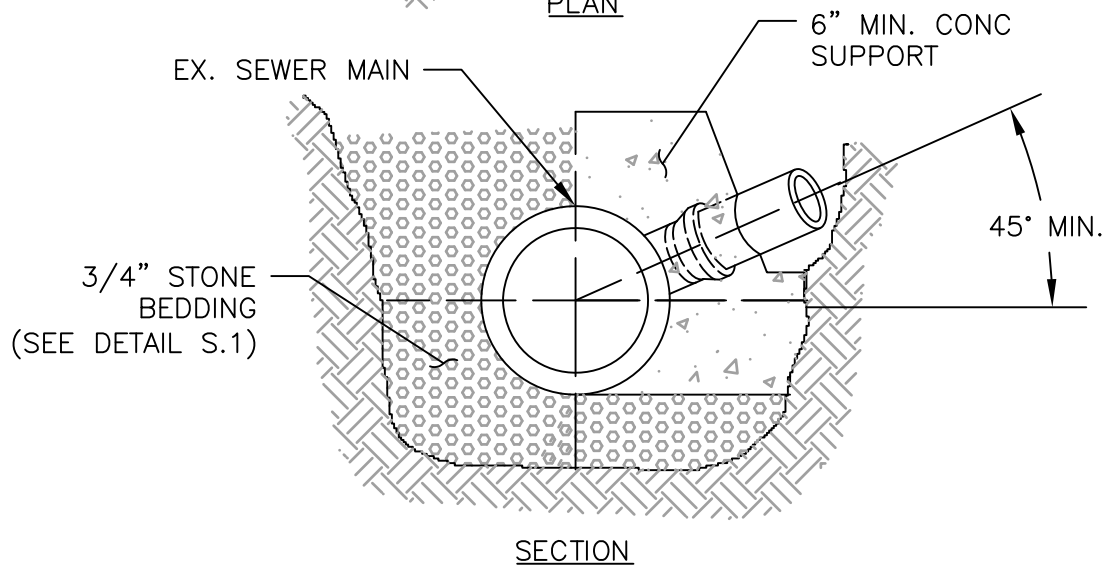
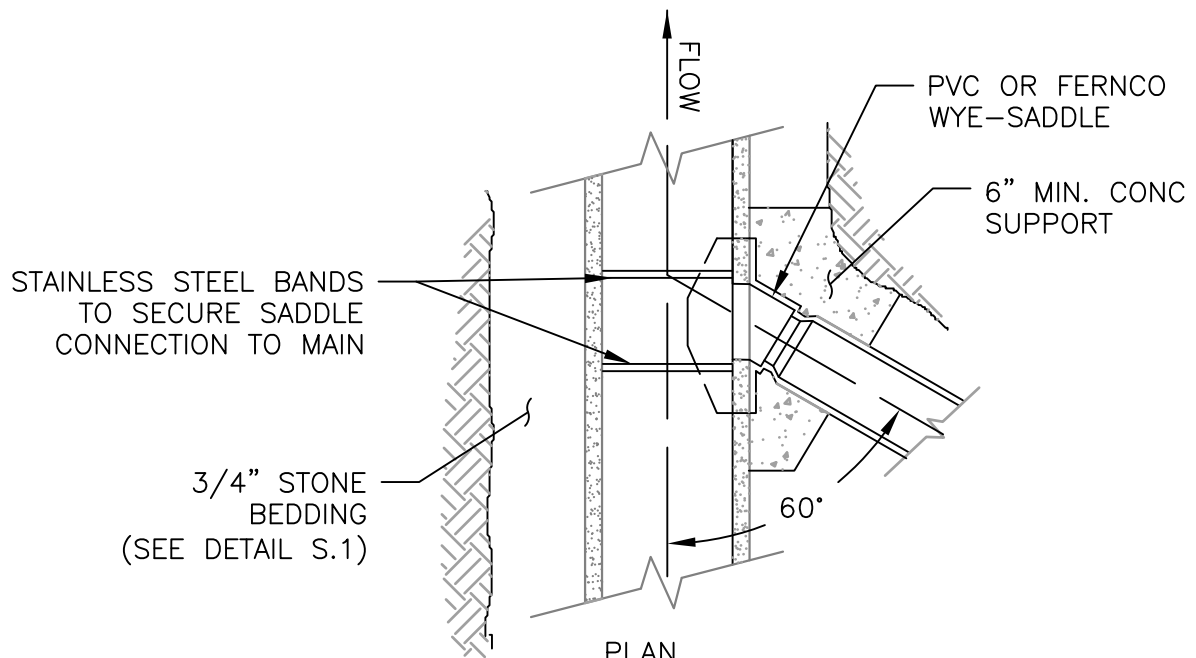
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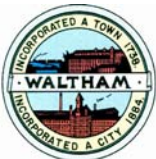
SEWER SERVICE  
CHIMNEY CONNECTION

REV. DATE:  
OCT. 2020



NOTES:

1. SADDLE CONNECTIONS SHALL ONLY BE USED WITH SPECIFIC APPROVAL FROM THE WATER & SEWER SUPERINTENDENT.
2. CONTRACTOR MUST FOLLOW MANUFACTURER'S INSTALLATION REQUIREMENTS.
3. NEW SADDLE CONNECTION MAY NOT BE GREATER THAN 1/2 OF THE DIAMETER OF THE EXISTING SEWER MAIN.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

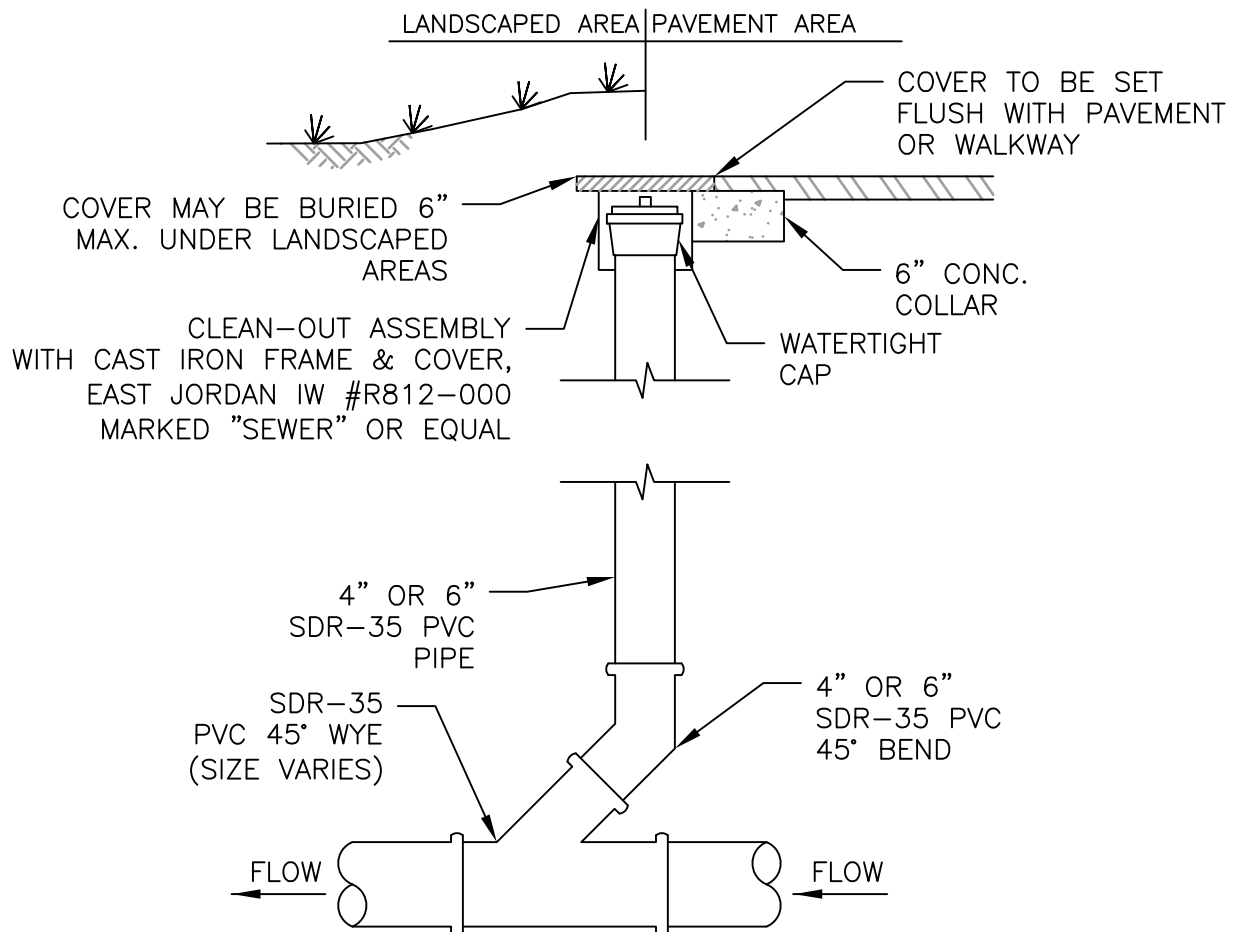
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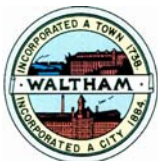
SEWER SERVICE  
SADDLE CONNECTION

REV. DATE:  
OCT. 2020



# NOTES:

1. CLEAN OUT ASSEMBLIES SHALL BE PLACED A MINIMUM OF 10' FROM FOUNDATION WALL OR AS DIRECTED BY THE WATER & SEWER SUPERINTENDENT.
2. CLEAN OUT ASSEMBLY PIPING SHALL MATCH THE DIAMETER OF THE SEWER SERVICE.
3. CLEAN OUT ASSEMBLY FRAME AND COVER SHALL BE CAPABLE OF SUPPORTING H-20 LOADING REQUIREMENTS.
4. BACKFILL TO BE PLACED AND COMPACTED IN LIFTS CONCURRENTLY TO THE SAME ELEVATION AROUND THE CLEAN OUT ASSEMBLY.
5. CONTRACTOR SHALL TAKE TIES FROM BUILDING CORNERS TO CLEAN ASSEMBLY AND PROVIDE THE WATER & SEWER SUPERINTENDENT WITH A FIELD SKETCH.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

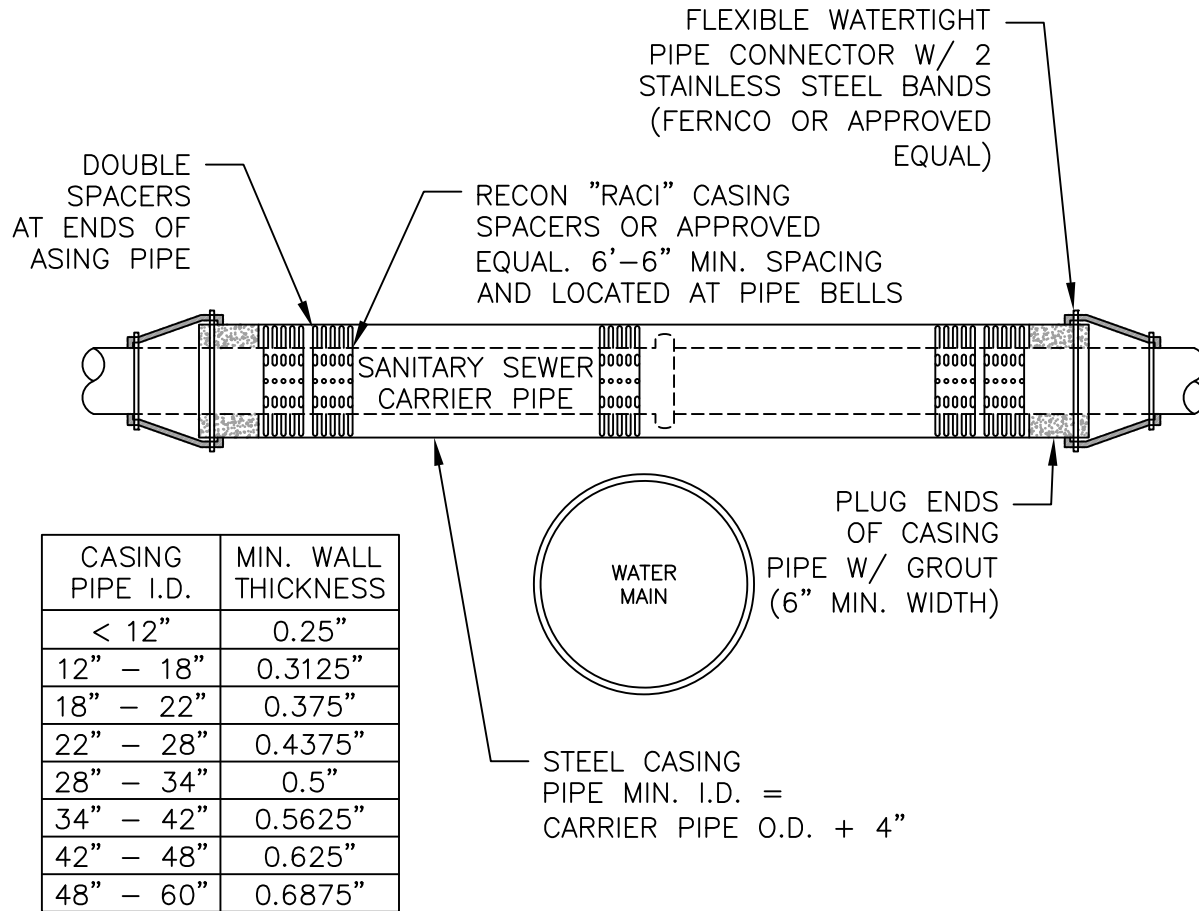
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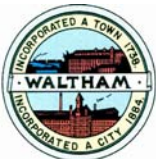
CLEAN OUT ASSEMBLY

REV. DATE:  
OCT. 2020



**NOTES:**

1. STEEL CASING PIPE SHALL BE CENTERED OVER THE CENTERLINE OF THE WATER MAIN CROSSING. THERE SHALL BE NO JOINTS IN THE CASING PIPE WITHIN 10 FEET EACH SIDE OF THE CENTERLINE OF THE WATER MAIN CROSSING.
2. STEEL CASING PIPE SHALL BE PLACED AT THE SAME SLOPE AS THE CARRIER PIPE TO ENSURE THAT THE CARRIER PIPE IS PLACED ALONG THE SPECIFIED GRADE. IF THE PROPER SLOPE CANNOT BE MAINTAINED, THE CASING SPACERS SHALL BE ADJUSTED SO THAT THE CARRIER PIPE IS PLACED AT THE SPECIFIED GRADE.
3. STEEL CASING PIPE SHALL HAVE A MINIMUM YIELD STRENGTH OF 35 KSI AND CAPABLE OF SUPPORTING H-20 LOADING.
4. REFER TO DETAIL W.10 FOR ADDITIONAL INFORMATION.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

SEWER

WATER MAIN CROSSING

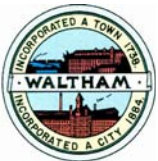
DETAIL NO:  
S.10

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

## GENERAL ROADWAY & SIDEWALK NOTES:

1. ALL WORK WITHIN ANY PUBLIC OR PRIVATE RIGHT-OF-WAY SHALL REQUIRE A STREET OPENING PERMIT ISSUED BY THE CONSOLIDATED PUBLIC WORKS DEPARTMENT.
2. ALL EXCAVATIONS SHALL BE MADE SAFE FOR VEHICULAR TRAFFIC AT THE END OF EACH WORKDAY.
3. ALL TRENCHES AND EXCAVATIONS SHALL BE SAWCUT. NO OTHER METHOD OF CUTTING PAVEMENT SHALL BE ACCEPTABLE.
4. ALL TRENCHES SHALL BE COMPACTED BY MECHANICAL EQUIPMENT. ALL TRENCHES SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR DENSITY. THE CONTRACTOR SHALL FURNISH MATERIAL SLIPS ALONG WITH SIEVE ANALYSIS AND PROCTOR TESTING INFORMATION FOR ALL MATERIAL USED WITHIN THE RIGHT-OF-WAY UPON REQUEST BY THE DIRECTOR OF PUBLIC WORKS.
5. THE CONTRACTOR SHALL PATCH ALL TRENCHES WITH PERMANENT PATCH AT THE CONCLUSION OF WORK. ALL JOINTS SHALL BE SEALED AND SANDED IMMEDIATELY AFTER COMPLETION OF TRENCH PATCH. REFER TO DETAIL RS.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRENCH SETTLEMENT FOR A PERIOD OF 1 YEAR AFTER COMPLETION OF THE PERMANENT TRENCH PATCH.
6. THE USE OF STEEL PLATES IN THE ROADWAY IS SUBJECT TO APPROVAL BY THE DIRECTOR OF PUBLIC WORKS. THE CONTRACTOR SHALL EXECUTE WORK IN A MANNER THAT WILL LIMIT THE USE OF STEEL PLATES TO BE LEFT IN THE ROADWAY OVERNIGHT.
7. ALL STEEL PLATES TO BE LEFT IN THE ROADWAY SHALL BE SHIMMED AND PINNED IN PLACE AND ALL EDGES SHALL BE COLD PATCHED, SEE DETAIL RS.17.
8. THE CONTRACTOR SHALL RESET AND ADJUST ALL UTILITY STRUCTURES LOCATED WITHIN PAVING AREA TO FINAL GRADE. SEE DETAIL RS.16.
9. THE CONTRACTOR SHALL REPLACE AND REPAIR SIDEWALKS WITH LIKE MATERIAL OF THE EXISTING SIDEWALK. CONTRACTOR SHALL REPLACE FULL PANELS OF CONCRETE SIDEWALKS.
10. ALL TRAFFIC STRIPING DISTURBED BY THE CONTRACTOR SHALL BE REPLACED UPON COMPLETION OF THE WORK.
11. ALL TRAFFIC MARKINGS SHALL BE THERMOPLASTIC WITH REFLECTORIZED TREATMENT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

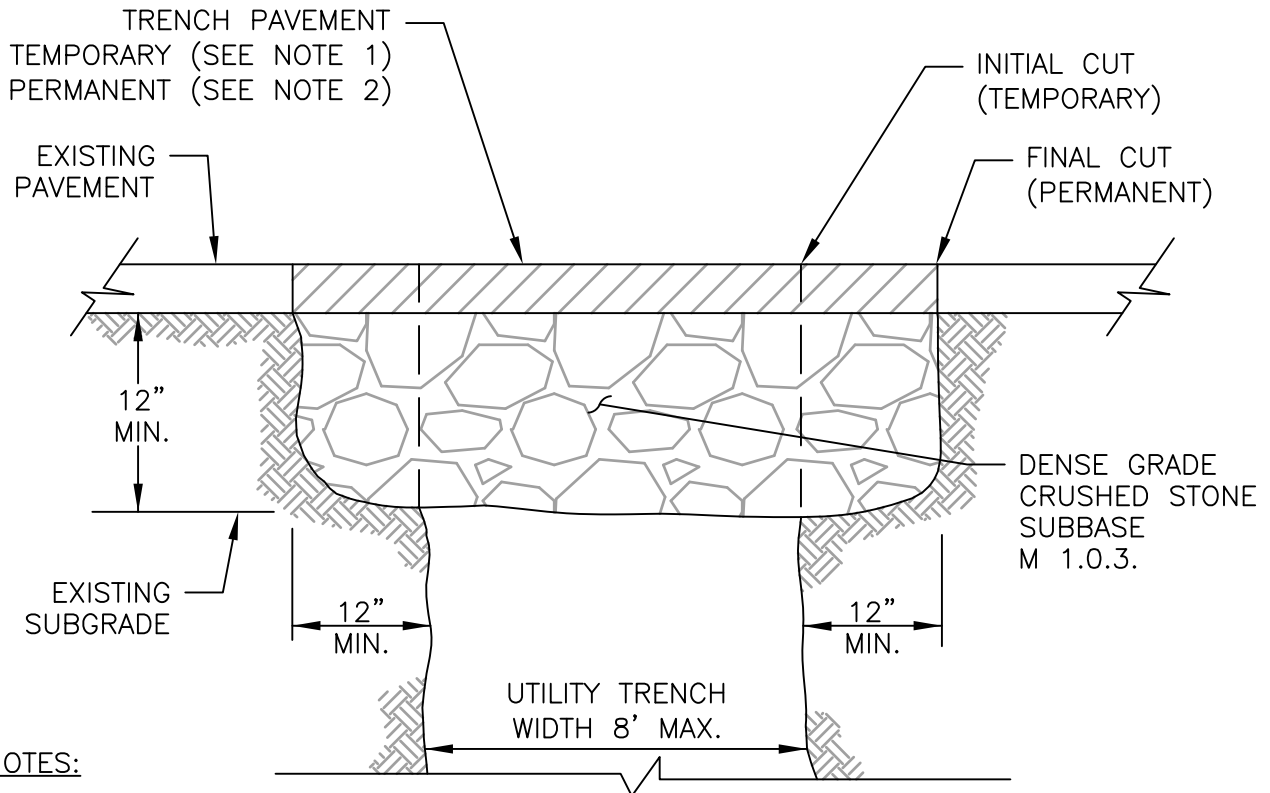
ROADWAYS & SIDEWALKS

GENERAL ROADWAY &  
SIDEWALK NOTES

DETAIL NO:  
RS.0

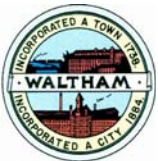
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



**NOTES:**

1. TEMPORARY TRENCH PAVEMENT: 3" OF HOT MIX ASPHALT TO BE USED AT THE END OF EACH WORK DAY TO STABILIZE TRENCHES. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR TEMPORARY TRENCH PAVEMENT. THE CONTRACTOR SHALL MAINTAIN THE TEMPORARY TRENCH PAVEMENT THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITY AT NOT ADDITIONAL COST TO THE CONTRACT.
2. PERMANENT TRENCH PAVEMENT: 5" OF HOT MIX ASPHALT TO BE PLACED AND COMPACTED IN TWO SEPARATE LIFTS – 3" BINDER COURSE AND 2" TOP COURSE. IF THE EXISTING PAVEMENT IS GREATER THAN 5" IN DEPTH, THE CONTRACTOR SHALL PLACE PERMANENT TRENCH MATCHING THE DEPTH OF THE EXISTING PAVEMENT. TRENCH EDGE SHALL BE CUT BACK A MINIMUM OF 12" PRIOR TO PLACING THE PERMANENT PAVEMENT. ALL EDGES SHALL BE SANDED AND SEALED. THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE FOR PERMANENT TRENCH PAVEMENT.
3. ALL TRENCHES SHALL BE SAW CUT ONLY. NO OTHER METHOD OF CUTTING THE EXISTING PAVEMENT SHALL BE ACCEPTABLE. THIS WORK SHALL BE INCLUDED IN THE ASSOCIATED TRENCH ITEM.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

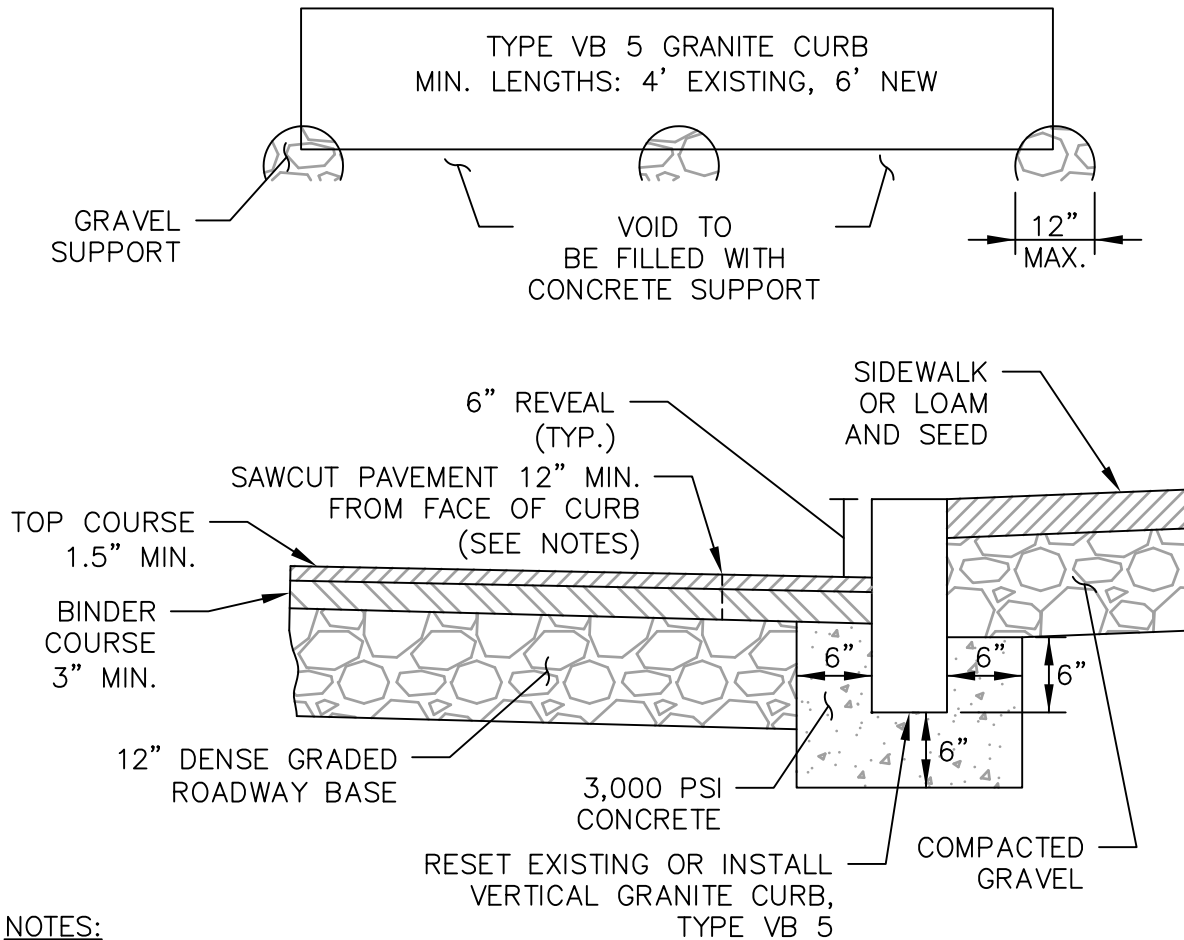
TRENCH PAVEMENT

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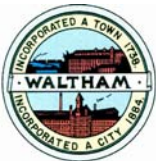
REV. DATE:  
OCT. 2020





NOTES:

1. CONTRACTOR SHALL SAWCUT EXISTING PAVEMENT 12" MIN. FROM THE FACE OF CURB.
2. ALL CURB JOINTS SHALL NOT BE GREATER THAN 1/2". JOINTS SHALL BE POINTED BEFORE THE WEARING COURSE OR PATCH IS PLACED. CURBING SHALL BE WIPED CLEAN IMMEDIATELY AFTER POINTING.
3. IF ROADWAY IS TO BE OVERLAID, ALL CURB WORK AND PLACEMENT OF BINDER COURSE SHALL BE COMPLETED PRIOR TO OVERLAY.
4. WHEN RESETTING OR INSTALLING GRANITE CURBING WITHIN A ROADWAY WITH EXISTING GRANITE CURBING THE CONTRACTOR SHALL MATCH THE AVERAGE REVEAL OF THE EXISTING CURB OR AS DIRECTED BY THE ENGINEER.
5. SEE WHEELCHAIR RAMP DETAILS FOR ADDITIONAL REQUIREMENTS WHEN SETTING CURBING WITHIN ACCESSIBLE AREAS.
6. VERTICAL CONCRETE CURBING MAY BE SUBSTITUTED FOR GRANITE CURBING ONLY WITH WRITTEN PERMISSION FROM THE DIRECTOR OF PUBLIC WORKS.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

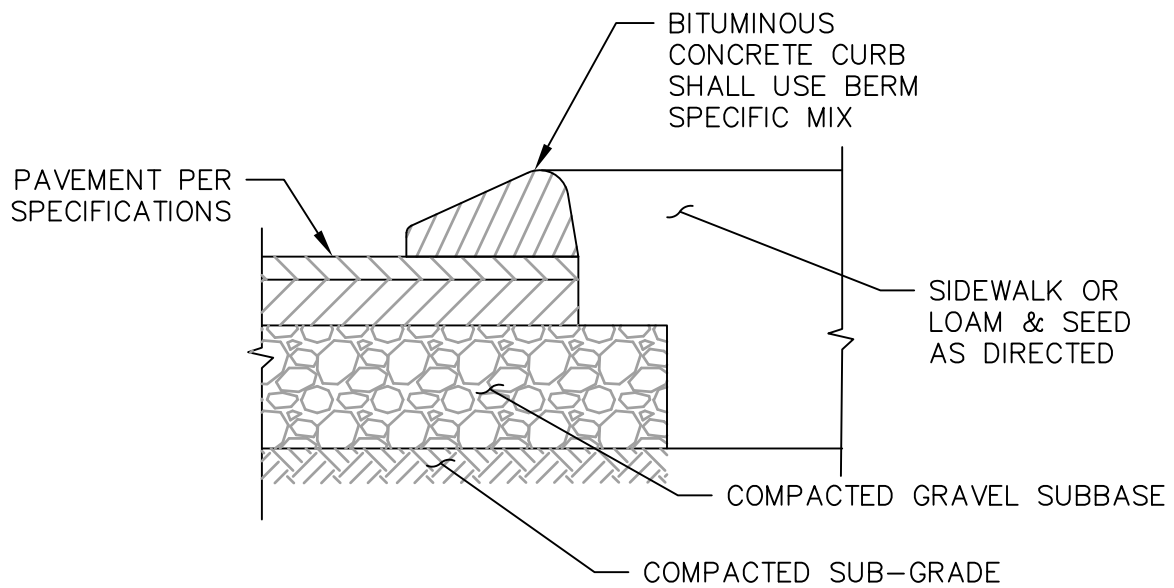
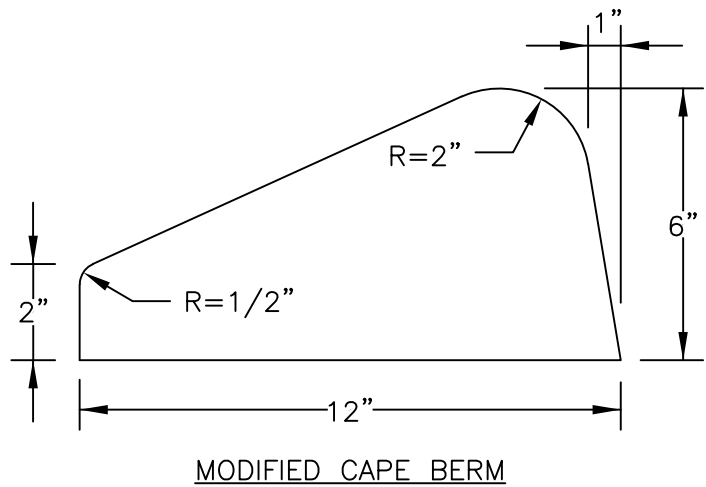
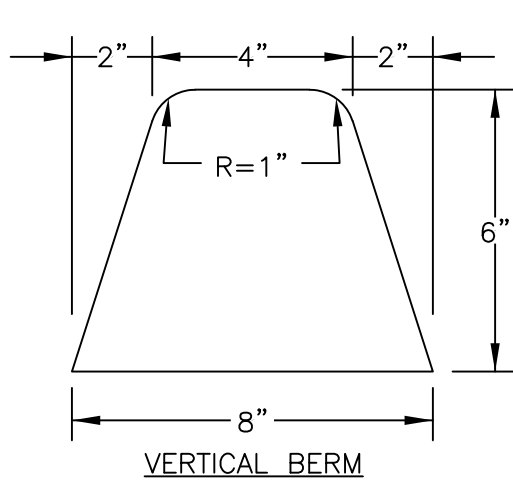
ROADWAYS & SIDEWALKS

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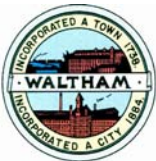
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SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



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CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

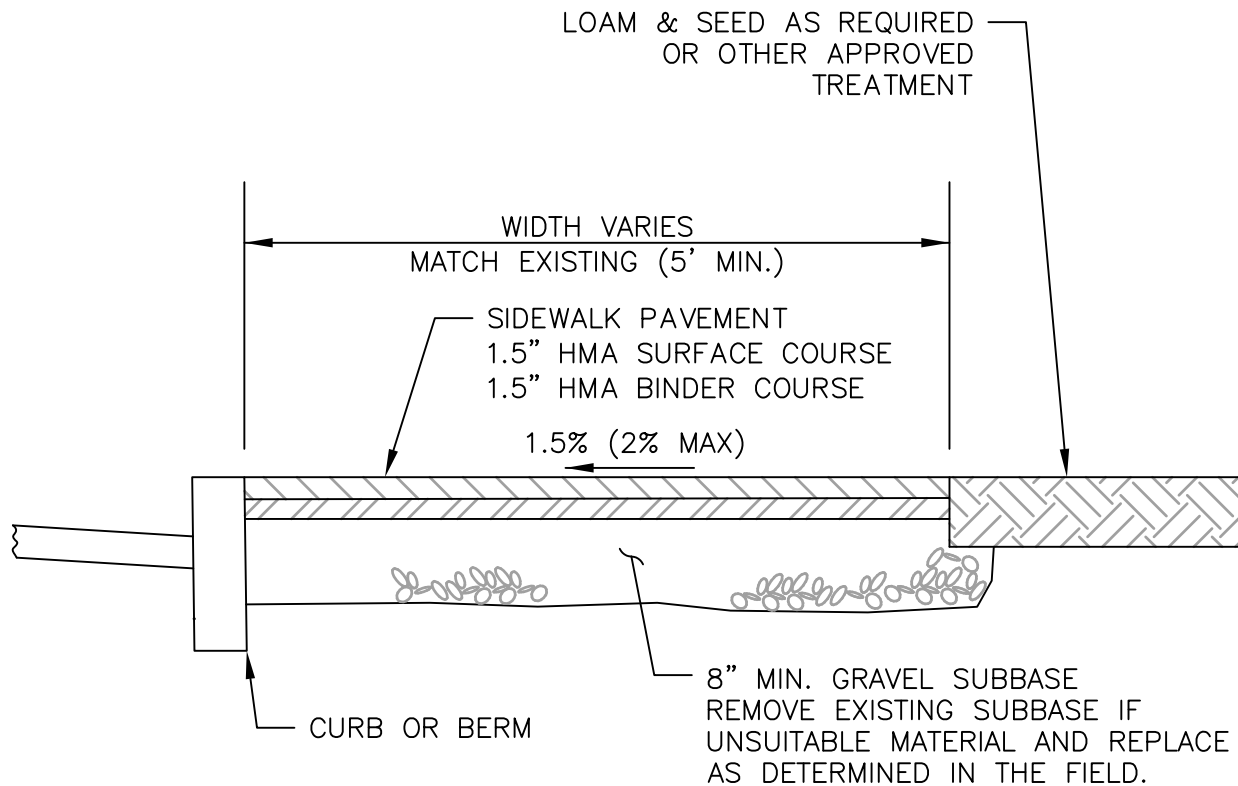
ROADWAYS & SIDEWALKS

HOT MIX ASPHALT CURB

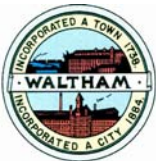
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SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



DWG FILE: S:\CAD\Standard Details\Details\RS.4 - Hot Mix Asphalt Sidewalk.dwg



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

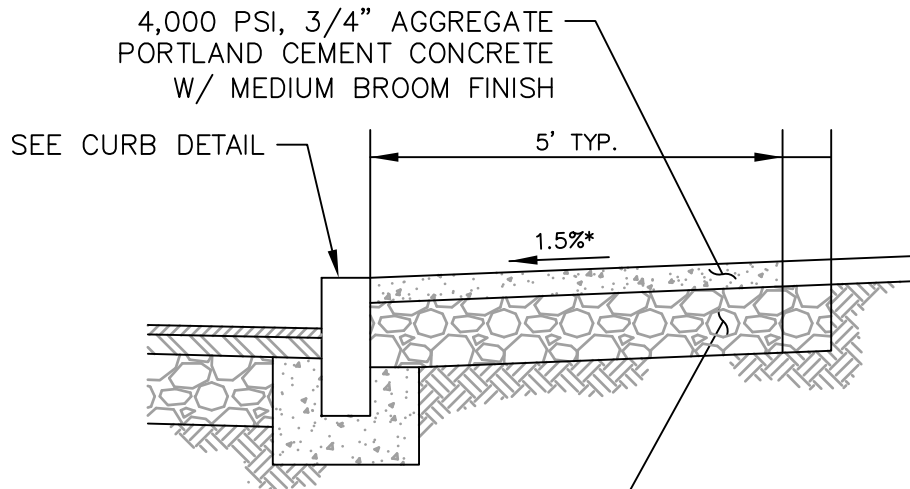
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ROADWAYS & SIDEWALKS

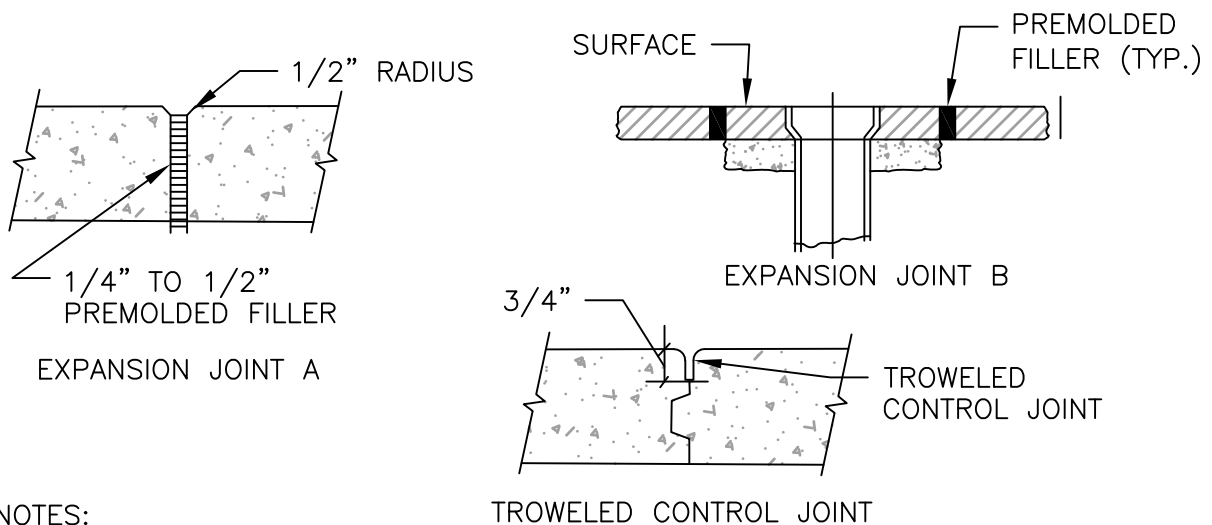
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HOT MIX ASPHALT  
SIDEWALK

REV. DATE:  
OCT. 2020

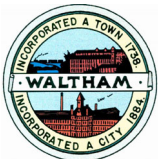


### CONCRETE SIDEWALK SECTION



#### NOTES:

1. SIDEWALK THICKNESS SHALL BE 4" FOR SIDEWALKS AND 6" FOR DRIVEWAYS & WHEELCHAIR RAMPS
2. EXPANSION JOINTS (TYPE A) TO BE PLACED EVERY 20'
3. EXPANSION JOINT B TO BE PLACED AT ALL CASTINGS, SIGNS, STRUCTURES, UTILITY POLES, HYDRANTS, ETC.
4. TROWELED CONTROL JOINTS TO BE PLACED EVERY 5'



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

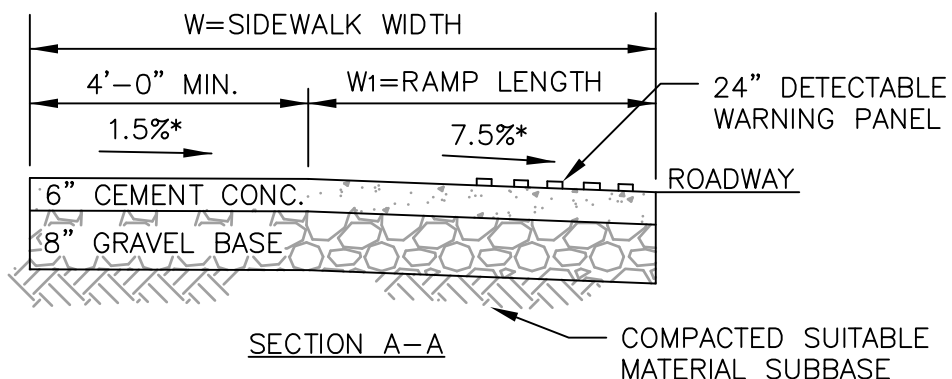
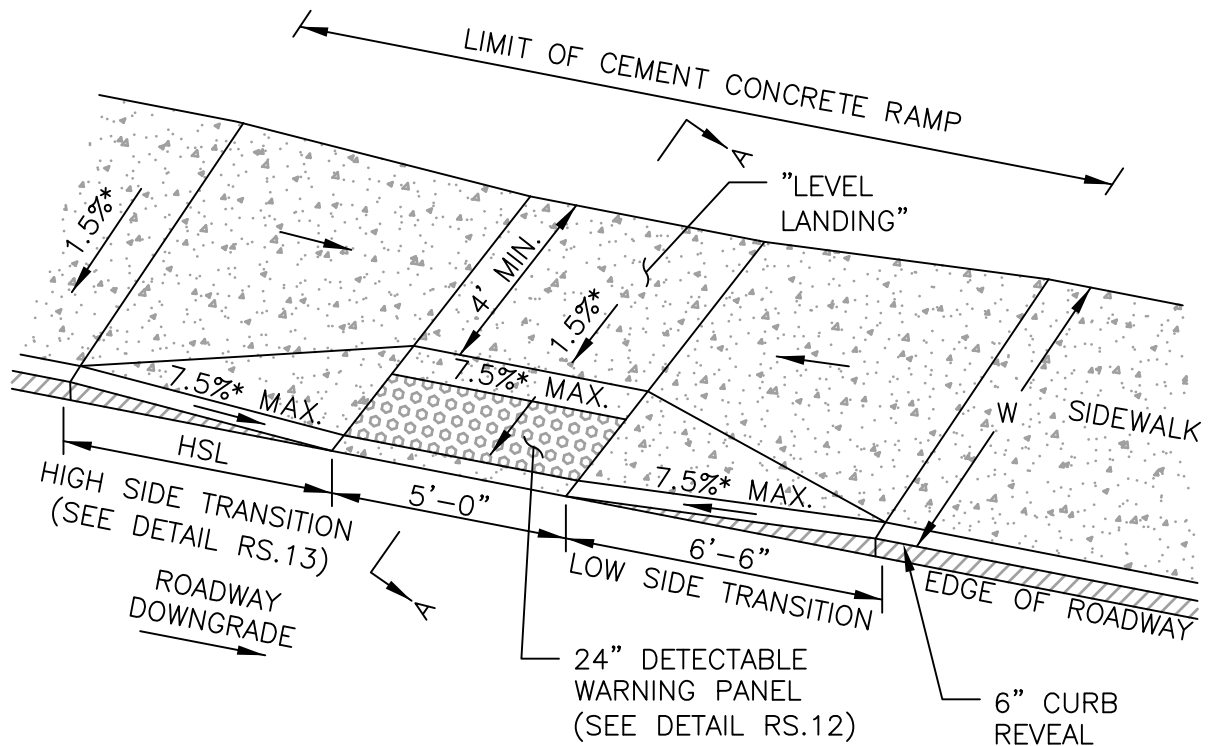
ROADWAYS & SIDEWALKS

CEMENT CONCRETE  
SIDEWALK

DETAIL NO:  
RS.5

SCALE:  
N.T.S.

REV. DATE:  
NOV. 2022



**LEGEND:**

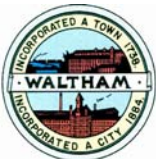
HSL = HIGH SIDE TRANSITION LENGTH (SEE DETAIL RS.13)

W = SIDEWALK LENGTH

W1 = PERPENDICULAR RAMP LENGTH

\* = CONSTRUCTION TOLERANCE  $\pm 0.5\%$

(SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

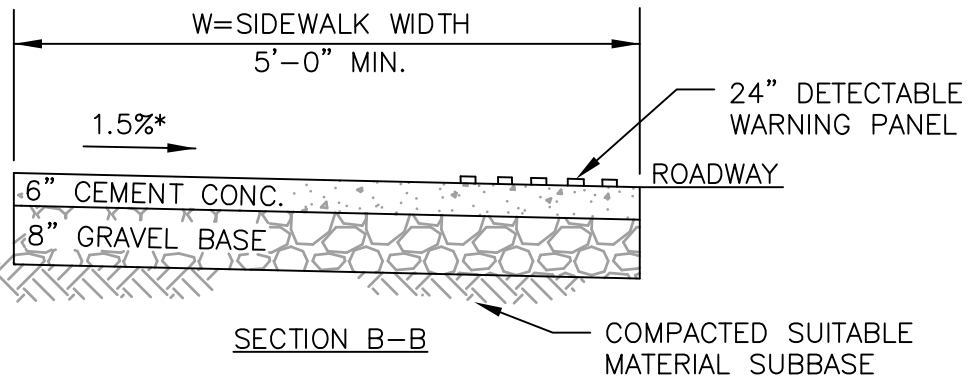
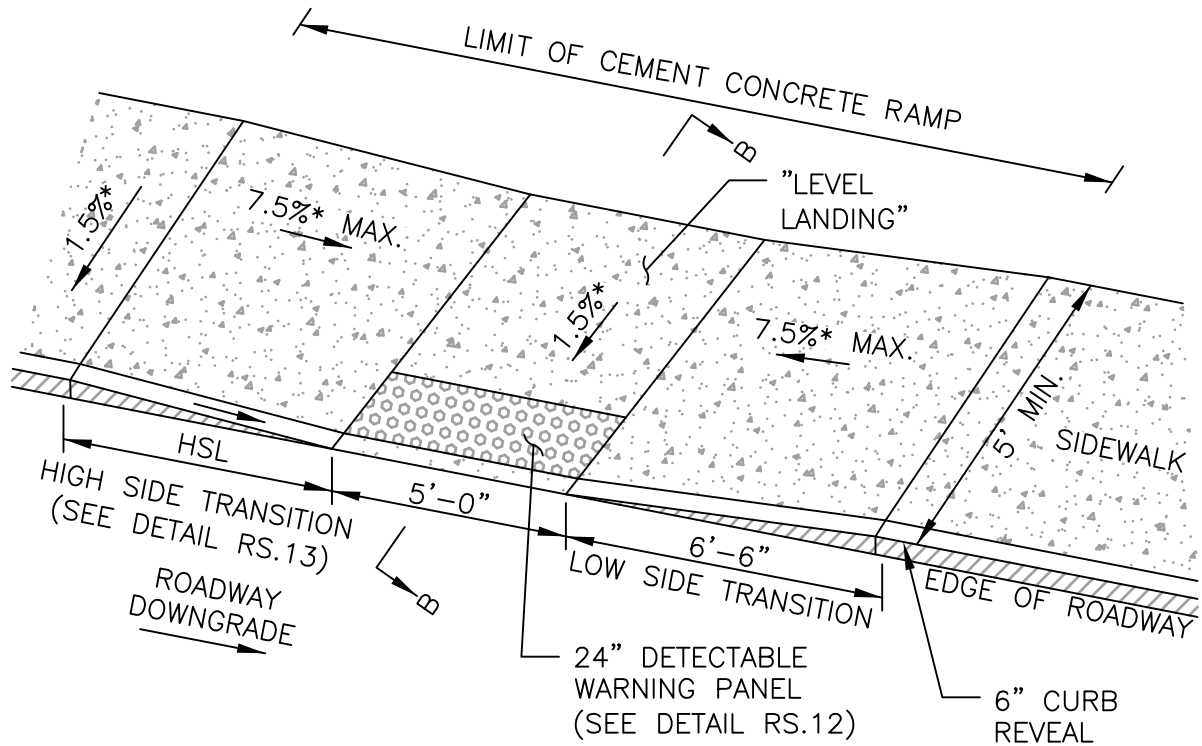
ROADWAYS & SIDEWALKS

WHEELCHAIR RAMP  
TYPE A

DETAIL NO:  
RS.6

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



**LEGEND:**

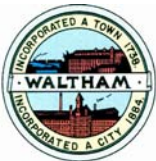
HSL = HIGH SIDE TRANSITION LENGTH (SEE DETAIL RS.13)

W = SIDEWALK LENGTH

W1 = PERPENDICULAR RAMP LENGTH

\* = CONSTRUCTION TOLERANCE  $\pm 0.5\%$

(SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

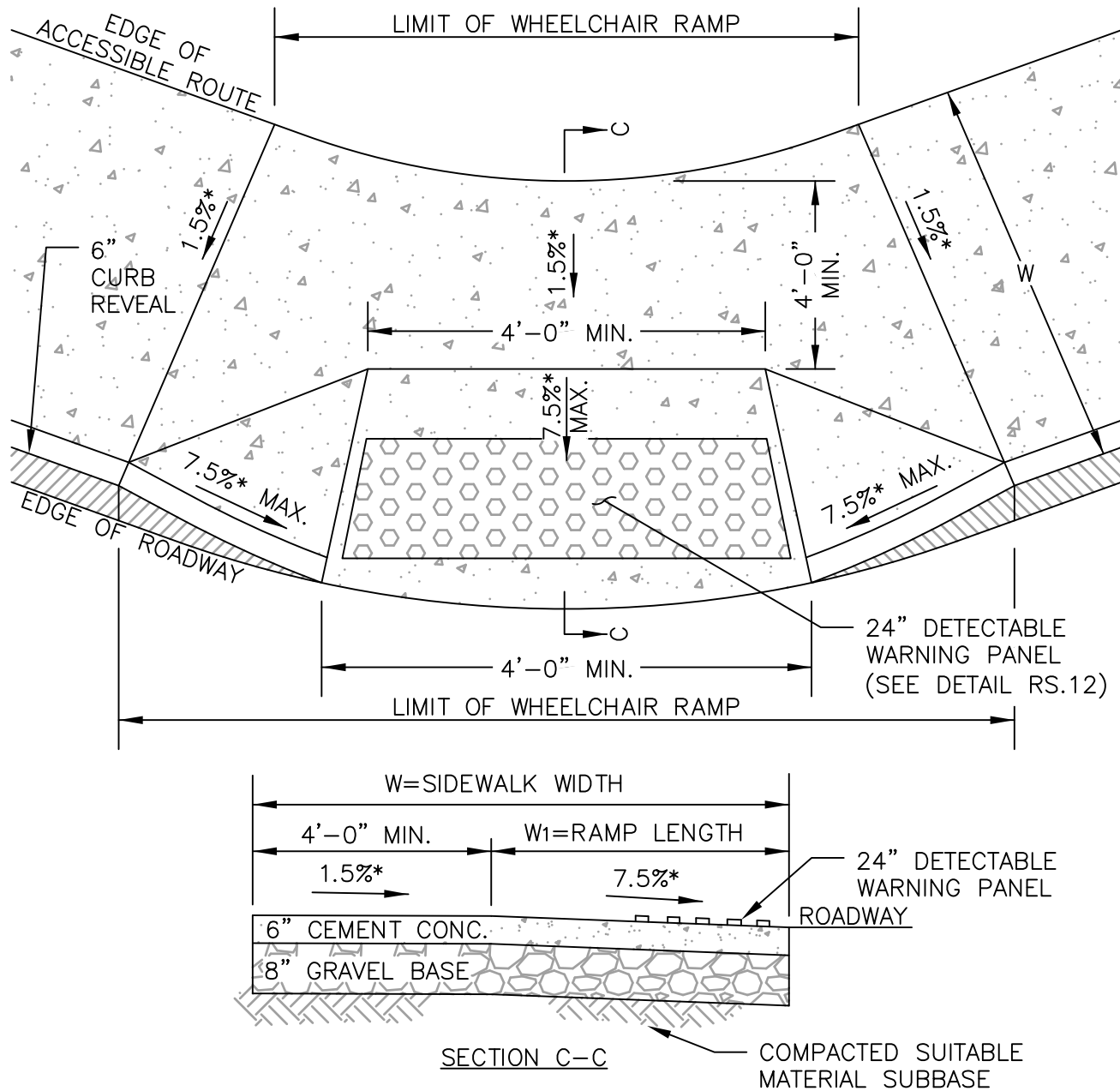
DETAIL NO:  
RS.7

ROADWAYS & SIDEWALKS

SCALE:  
N.T.S.

WHEELCHAIR RAMP  
TYPE B

REV. DATE:  
OCT. 2020



LEGEND:

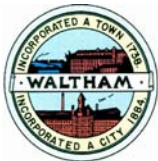
HSL = HIGH SIDE TRANSITION LENGTH (SEE DETAIL RS.13)

W = SIDEWALK LENGTH

W1 = PERPENDICULAR RAMP LENGTH

\* = CONSTRUCTION TOLERANCE  $\pm 0.5\%$

(SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

## STANDARD DETAILS

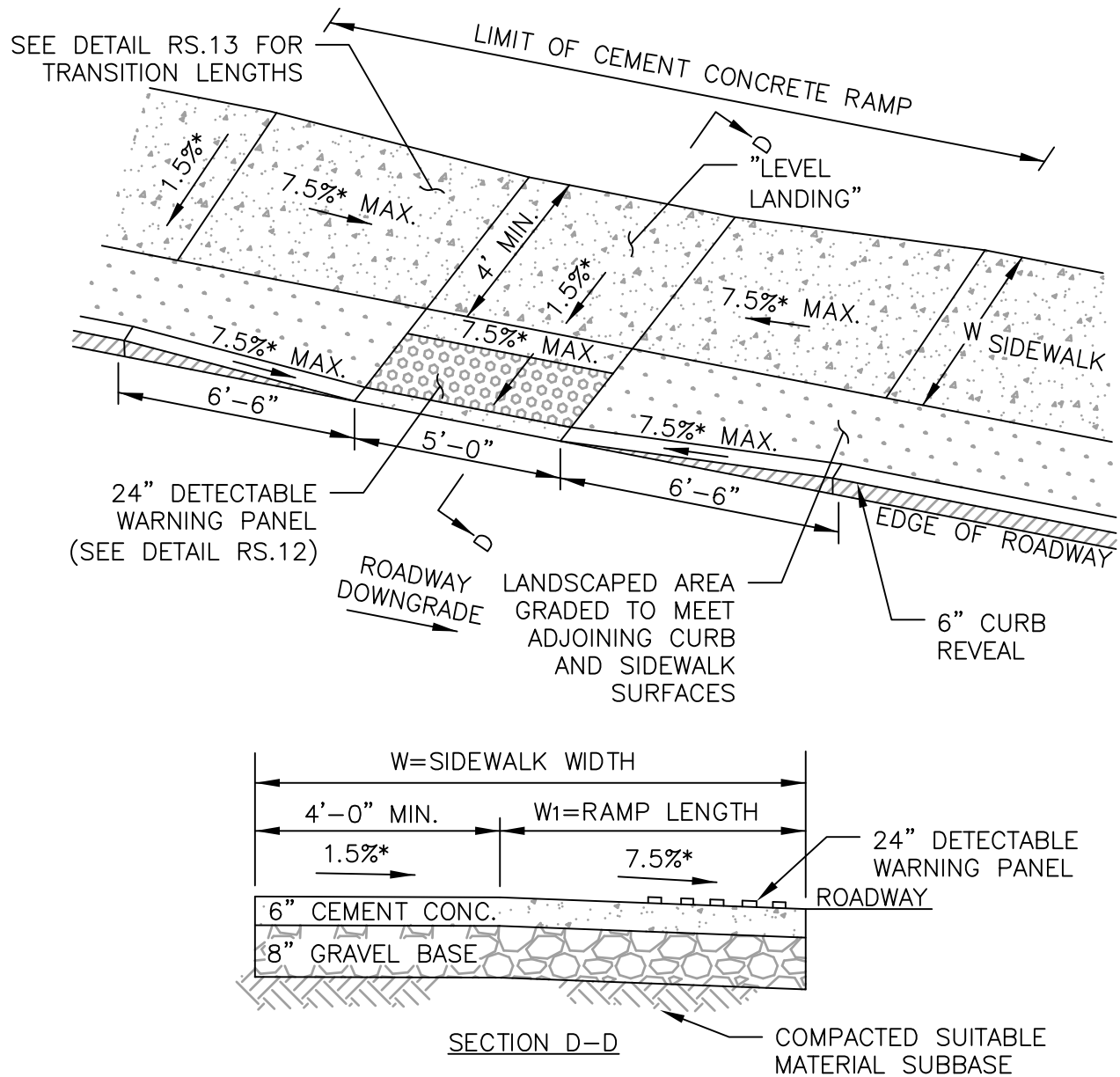
DETAIL NO:  
RS.8

## ROADWAYS & SIDEWALKS

SCALE:  
N.T.S.

# WHEELCHAIR RAMP TYPE C

REV. DATE:  
OCT. 2020



**LEGEND:**

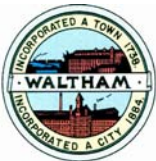
HSL = HIGH SIDE TRANSITION LENGTH (SEE DETAIL RS.13)

W = SIDEWALK LENGTH

W1 = PERPENDICULAR RAMP LENGTH

\* = CONSTRUCTION TOLERANCE  $\pm 0.5\%$

(SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

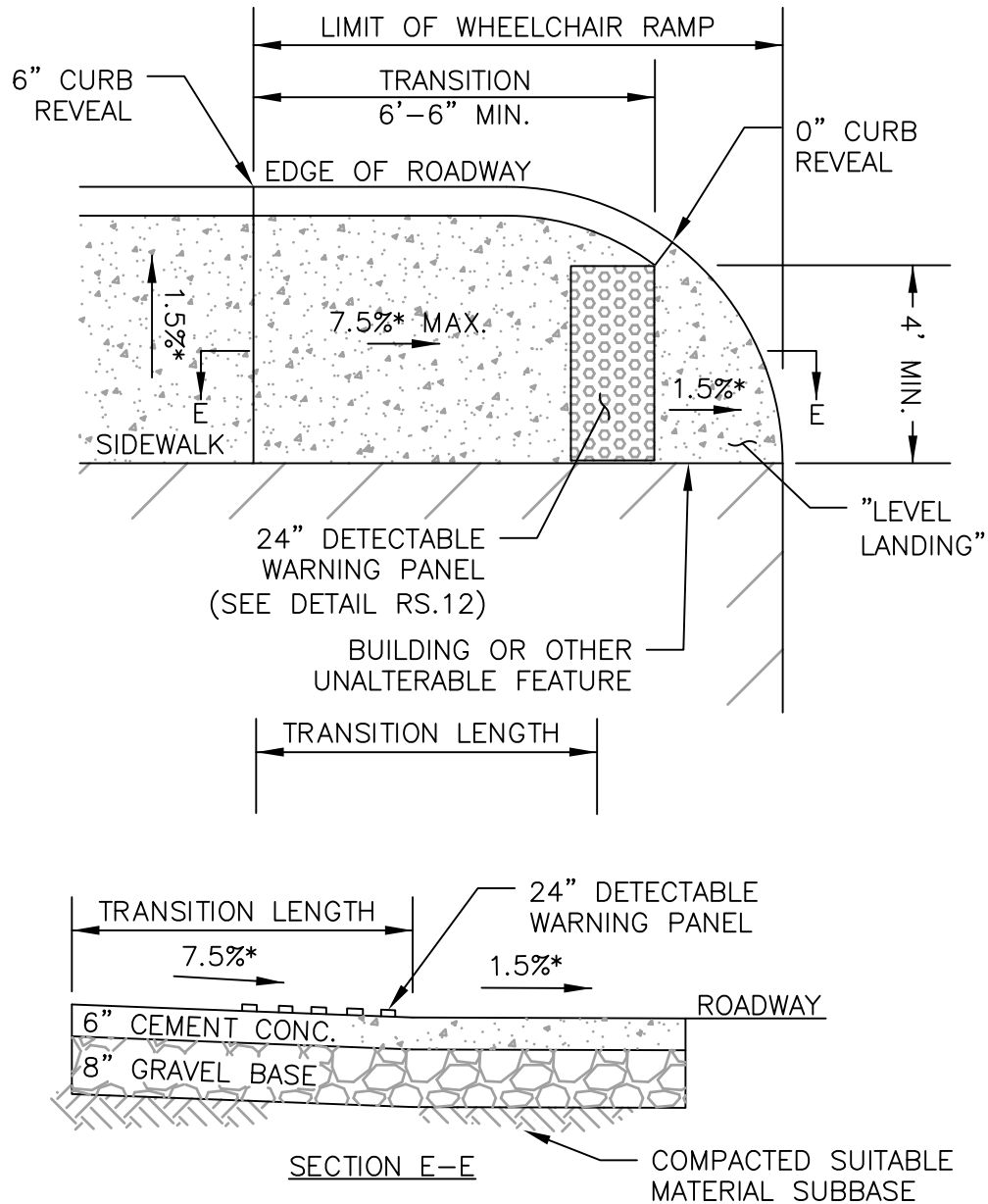
WHEELCHAIR RAMP  
TYPE D

DETAIL NO:  
RS.9

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020

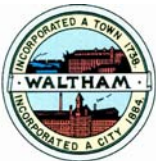




**LEGEND:**

\* = CONSTRUCTION TOLERANCE  $\pm 0.5\%$

(SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

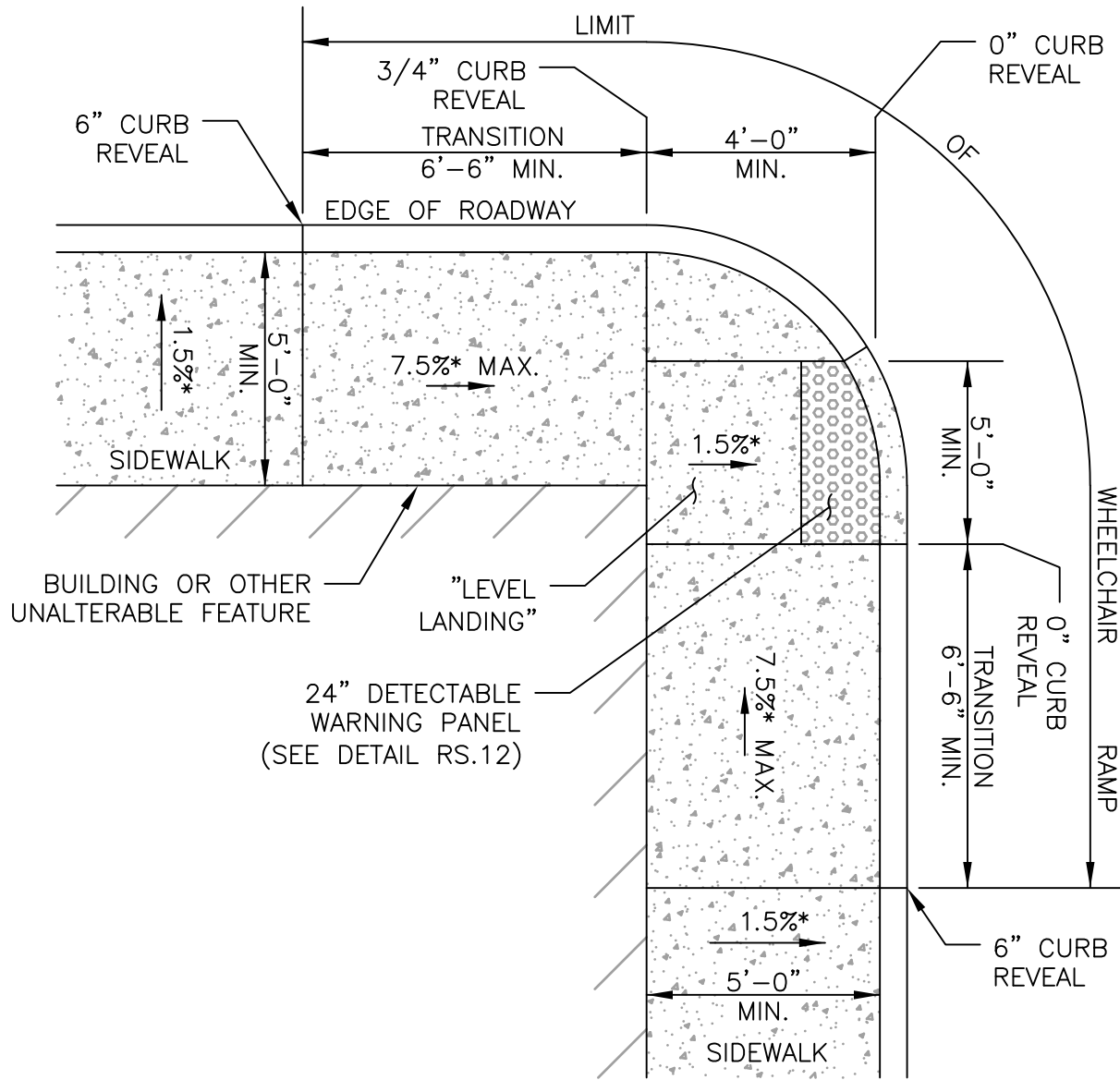
ROADWAYS & SIDEWALKS

WHEELCHAIR RAMP  
TYPE E

DETAIL NO:  
RS.10

SCALE:  
N.T.S.

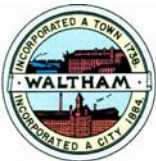
REV. DATE:  
OCT. 2020



**LEGEND:**

\* = CONSTRUCTION TOLERANCE  $\pm 0.5\%$

(SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES)



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

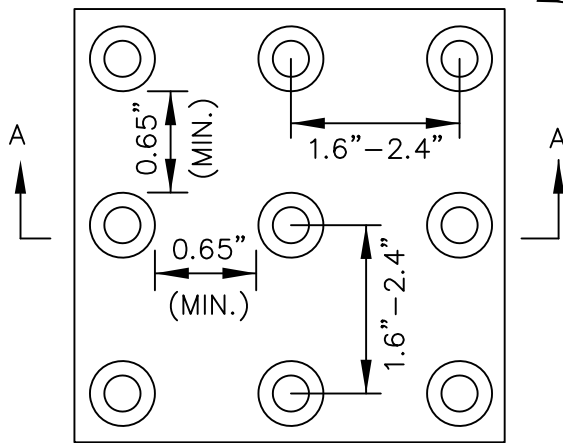
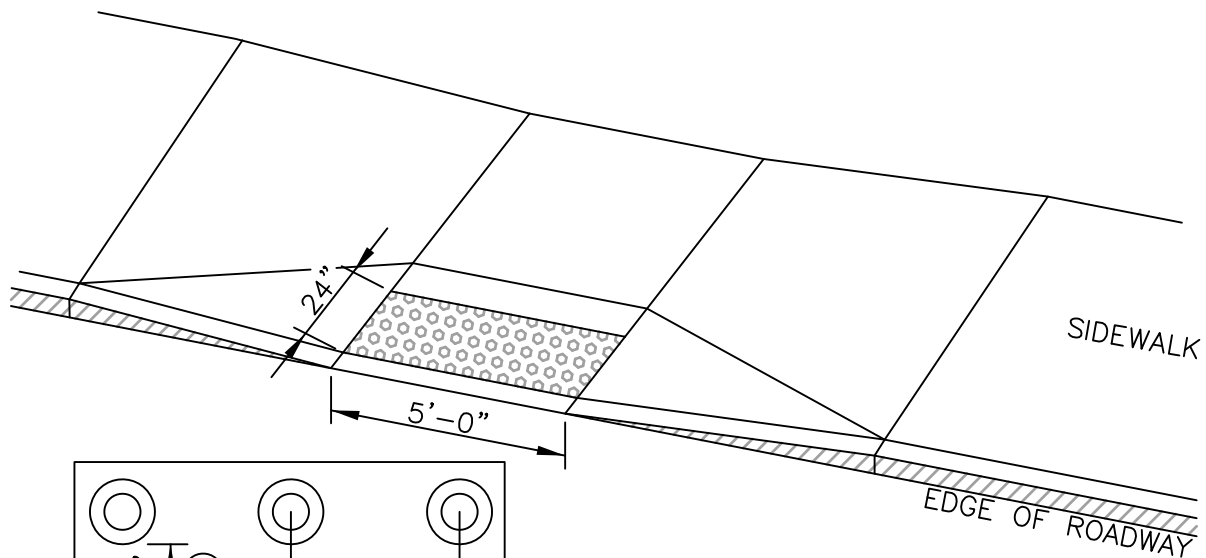
ROADWAYS & SIDEWALKS

WHEELCHAIR RAMP  
TYPE F

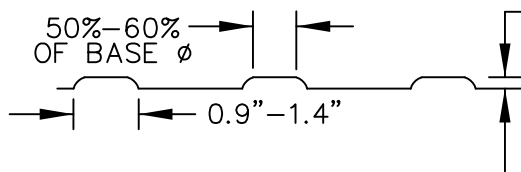
DETAIL NO:  
RS.11

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



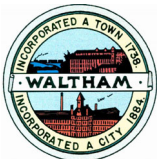
PLAN



SECTION A-A

NOTES:

1. PANELS SHALL BE WEATHERED CAST IRON AS MANUFACTURED BY NEENAH FOUNDRY COMPANY (CATALOG NO. 4984-24B, 4984-30B, 4984-36B) OR APPROVED EQUAL.
2. DETECTABLE PANEL SHALL SPAN THE LENGTH OF THE RAMP OPENING AND SHALL BE ORIENTED PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.
3. PANEL SHALL NOT BE LOCATED LESS THAN 6" NOR GREATER THAN 24" FROM THE EDGE OF ROADWAY.
4. PANEL SHALL BE SET FLUSH WITH CEMENT CONCRETE WHEELCHAIR RAMP.
5. SEE DETAIL RS.13 FOR ADDITIONAL WHEELCHAIR RAMP NOTES.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

DETECTABLE WARNING  
PANEL

DETAIL NO:  
RS.12

SCALE:  
N.T.S.

REV. DATE:  
APR. 2023

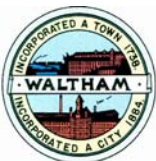
# WHEELCHAIR RAMP NOTES:

1. ALL ACCESSIBLE WHEELCHAIR RAMPS SHALL BE BUILT IN ACCORDANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD (AAB) AND THE AMERICANS WITH DISABILITIES ACT.
2. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED USING 4,000 PSI, 3/4" AGGREGATE, PORTLAND CEMENT WITH LAMP BLACK ADDITIVE CONCRETE AND BE A MINIMUM THICKNESS OF 6 INCHES.
3. RAMPS SHALL BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL WITH THE LENGTH OF THE RAMP.
4. CURBING FOR ALL WHEELCHAIR RAMPS SHALL BE VERTICAL GRANITE CURBING TYPE VB 5 (SEE DETAIL RS.2).
5. ALL WHEELCHAIR RAMPS SHALL HAVE A DETECTABLE WARNING PANEL AS SHOWN IN DETAIL RS.12.
6. CROSS SLOPES FOR ALL SURFACES SHALL BE 1.5%. A CONSTRUCTION TOLERANCE OF +/- 0.5% IS ACCEPTABLE. PER AAB REGULATIONS, CROSS SLOPES MAY NOT EXCEED 2.0%.
7. TRANSITION SLOPES SHALL BE A MAXIMUM OF 7.5% WITH AN ACCEPTABLE CONSTRUCTION TOLERANCE OF 0.5%. TRANSITION SLOPES CAN BE FLATTENED WHEN WARRANTED BY THE SURROUNDING CONDITIONS.
8. IF THE ROADWAY PROFILE EXCEEDS 4.0% THE HIGH SIDE TRANSITION SHALL NOT EXCEED 15' IN LENGTH. LOW SIDE TRANSITIONS SHALL BE A MINIMUM OF 6'-6" IN LENGTH REGARDLESS OF ROADWAY PROFILE.
9. FIXED OBJECTS (UTILITY POLES, HYDRANTS, SIGNS, SIGNAL FOUNDATIONS, ETC.) SHALL NOT ENCROACH UPON ANY PART OF THE WHEELCHAIR RAMP INCLUDING TRANSITION SLOPES.
10. WHEELCHAIR RAMPS SHALL NOT BE PLACED ON THE TRAFFIC APPROACH SIDE OF A STOP LINE OR SIGN.
11. WHEELCHAIR RAMP OPENING IS TO BE CENTERED IN THE CROSSWALK OR PATH OF PEDESTRIAN TRAVEL. NO PART OF THE RAMP, EXCLUDING CURB TRANSITIONS, IS TO BE LOCATED OUTSIDE OF THE CROSSWALK OR PATH OF PEDESTRIAN TRAVEL.
12. CATCH BASINS WITHIN THE VICINITY OF THE WHEELCHAIR RAMP SHALL BE LOCATED UPGRADE OF THE WHEELCHAIR RAMP ENTRANCE.
13. THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
14. WHEN TESTING WITH A STRAIGHTEDGE PLACED PARALLEL TO THE LINE OF SLOPE THERE SHALL BE NO DEVIATION FROM A TRUE SURFACE IN EXCESS OF 1/4".
15. RAMP DIMENSIONS ARE SUBJECT TO CHANGE IN THE FIELD IF EXISTING APPURTENANCES OR CONDITIONS WILL MAKE THE RAMP LOCATIONS IMPRACTICAL OR UNSAFE. DEVIATIONS MUST BE APPROVED IN WRITING BY THE CITY ENGINEER.

TABLE OF TRANSITION LENGTHS

ROADWAY PROFILE GRADE (%)	HIGH SIDE TRANSITION LENGTH (HSL)
0	6'-6"
0 < % ≤ 1	7'-8"
1 < % ≤ 2	9'-0"
2 < % ≤ 3	11'-0"
3 < % ≤ 4	14'-0"
4 < %	15'-0" (MAX.)

FIGURES BASED UPON A DESIGN SLOPE OF 7.5% AND A 6" CURB REVEAL



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

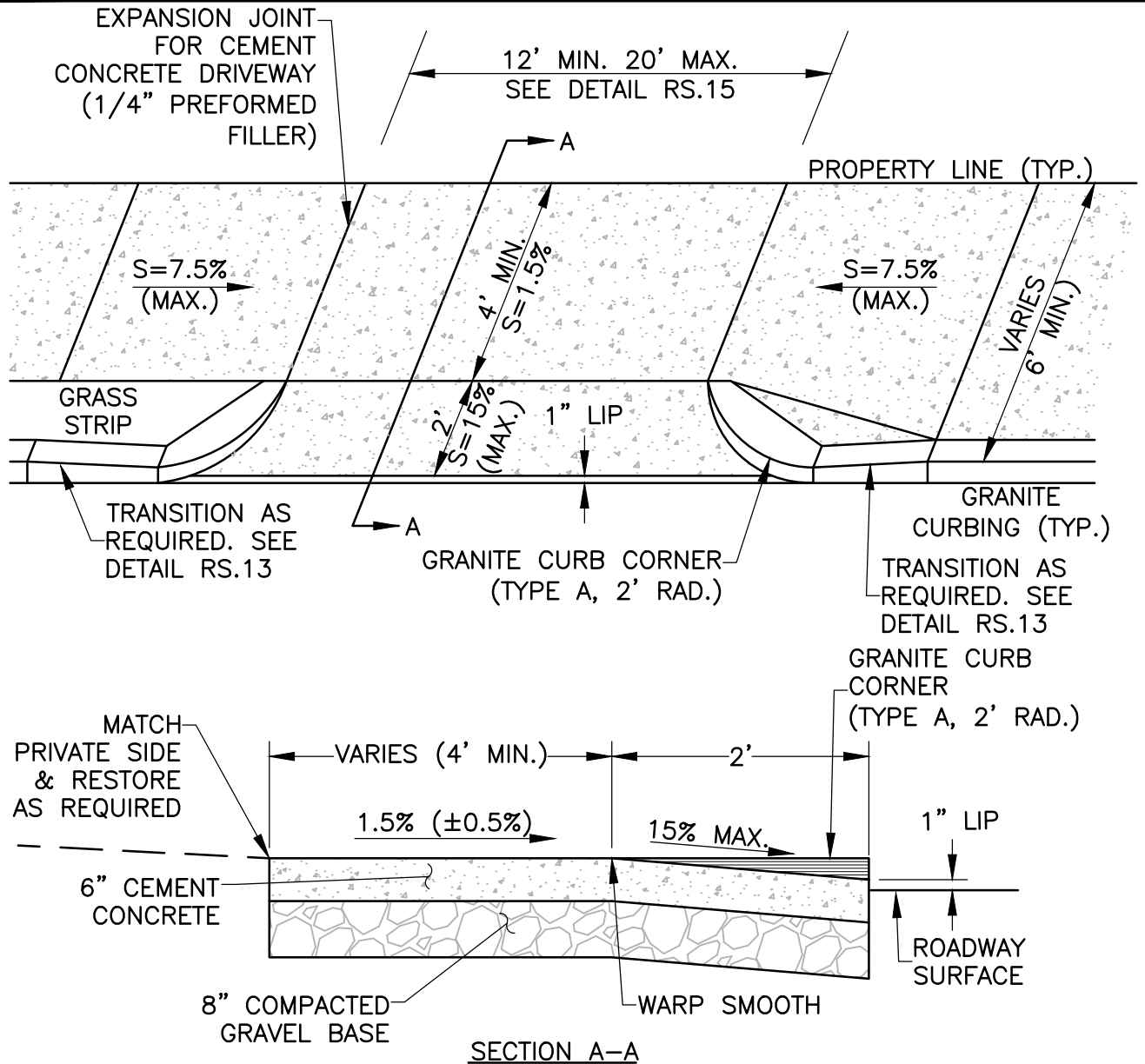
WHEELCHAIR  
RAMP NOTES

DETAIL NO:  
RS.13

SCALE:  
N.T.S.

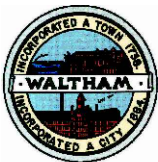
REV. DATE:  
OCT. 2020

File Name: RS.14 - Typical Driveway With Sidewalk-2023-07-05.dwg Saved: 7/5/2023 10:06:am Tab: RS.14A-LESS THAN 7 Plot Style: WALTHAM-2023-COLOR.ctb Plotted By: Getherall, John



**NOTES:**

1. CURB CUT PERMIT REQUIRED FOR NEW DRIVEWAY OPENINGS AND ALTERATIONS TO EXISTING DRIVEWAY OPENINGS.
2. IF THE EXISTING SIDEWALK MATERIAL IS ASPHALT, A HOT MIX ASPHALT DRIVEWAY MAY BE APPROVED BY THE PUBLIC WORKS DIRECTOR.
3. SEE DETAIL RS.4 FOR HOT MIX ASPHALT DRIVEWAY CROSS SECTION.
4. DRIVEWAYS WITHOUT SIDEWALKS SHALL BE UNIFORMLY SLOPED TOWARDS ROADWAY. 5% MIN. - 15% MAX.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

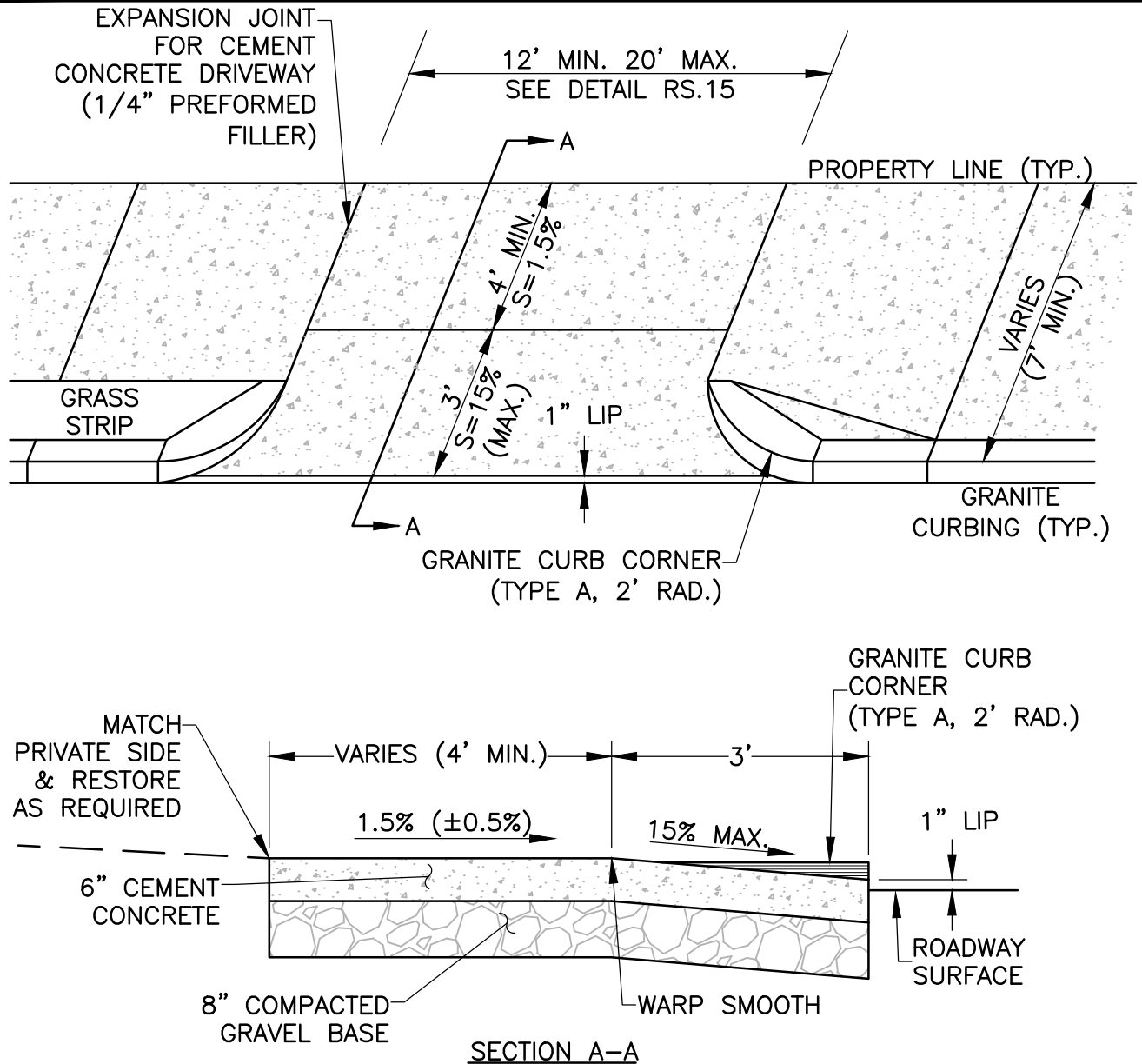
TYPICAL DRIVEWAY WITH SIDEWALK  
(LESS THAN 7 FEET WIDE)

DETAIL NO:  
RS.14A

SCALE:  
N.T.S.

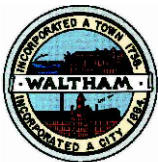
REV. DATE:  
JULY 2023

File Name: RS.14 - Typical Driveway With Sidewalk-2023-07-05.dwg Saved: 7/5/2023 10:06:am Tab: RS.14B-GREATER THAN 7 Plot Style: WALTHAM-2023-COLOR.ctb Plotted By: Catherall, John



**NOTES:**

1. CURB CUT PERMIT REQUIRED FOR NEW DRIVEWAY OPENINGS AND ALTERATIONS TO EXISTING DRIVEWAY OPENINGS.
2. IF THE EXISTING SIDEWALK MATERIAL IS ASPHALT, A HOT MIX ASPHALT DRIVEWAY MAY BE APPROVED BY THE PUBLIC WORKS DIRECTOR.
3. SEE DETAIL RS.4 FOR HOT MIX ASPHALT DRIVEWAY CROSS SECTION.
4. DRIVEWAYS WITHOUT SIDEWALKS SHALL BE UNIFORMLY SLOPED TOWARDS ROADWAY. 5% MIN. - 15% MAX.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

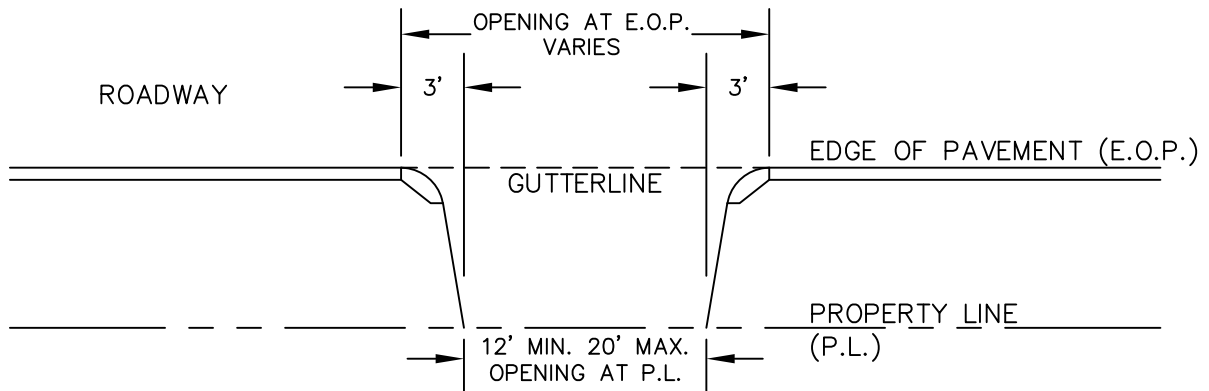
TYPICAL DRIVEWAY WITH SIDEWALK  
(GREATER THAN 7 FEET WIDE)

DETAIL NO:  
RS.14B

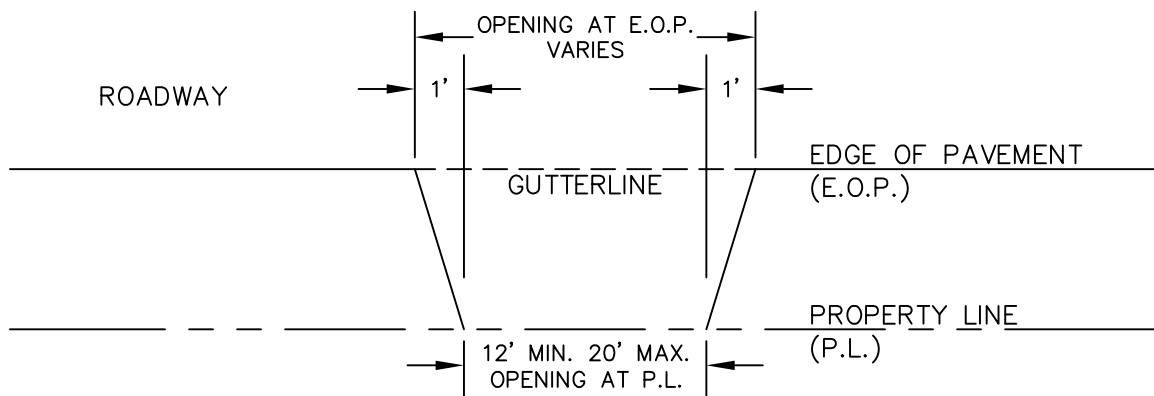
SCALE:  
N.T.S.

REV. DATE:  
JULY 2023

### DRIVEWAY OPENING WITH CURBING

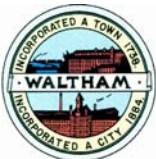


### DRIVEWAY OPENING WITHOUT CURBING



#### NOTES:

1. CURB CUT PERMIT REQUIRED FOR NEW DRIVEWAY OPENINGS AND ALTERATIONS TO EXISTING DRIVEWAY OPENINGS.
2. RESIDENTIAL PROPERTIES ARE ALLOWED EITHER TWO (2) DRIVEWAY OPENINGS THAT ARE 12' WIDE AT THE PROPERTY LINE OR ONE (1) DRIVEWAY OPENING THAT IS A MAXIMUM OF 20' WIDE AT THE PROPERTY LINE.
3. DRIVEWAY OPENINGS AT THE EDGE OF PAVEMENT SHALL NOT EXCEED THE TAPER DISTANCES SHOWN ABOVE.
4. DRIVEWAY OPENINGS SHALL BE PERPENDICULAR TO THE ROADWAY.
5. COMMERCIAL DRIVEWAY OPENINGS ARE SUBJECT TO APPROVAL BY THE DIRECTOR OF PUBLIC WORKS AND THE TRAFFIC COMMISSION.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

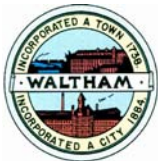
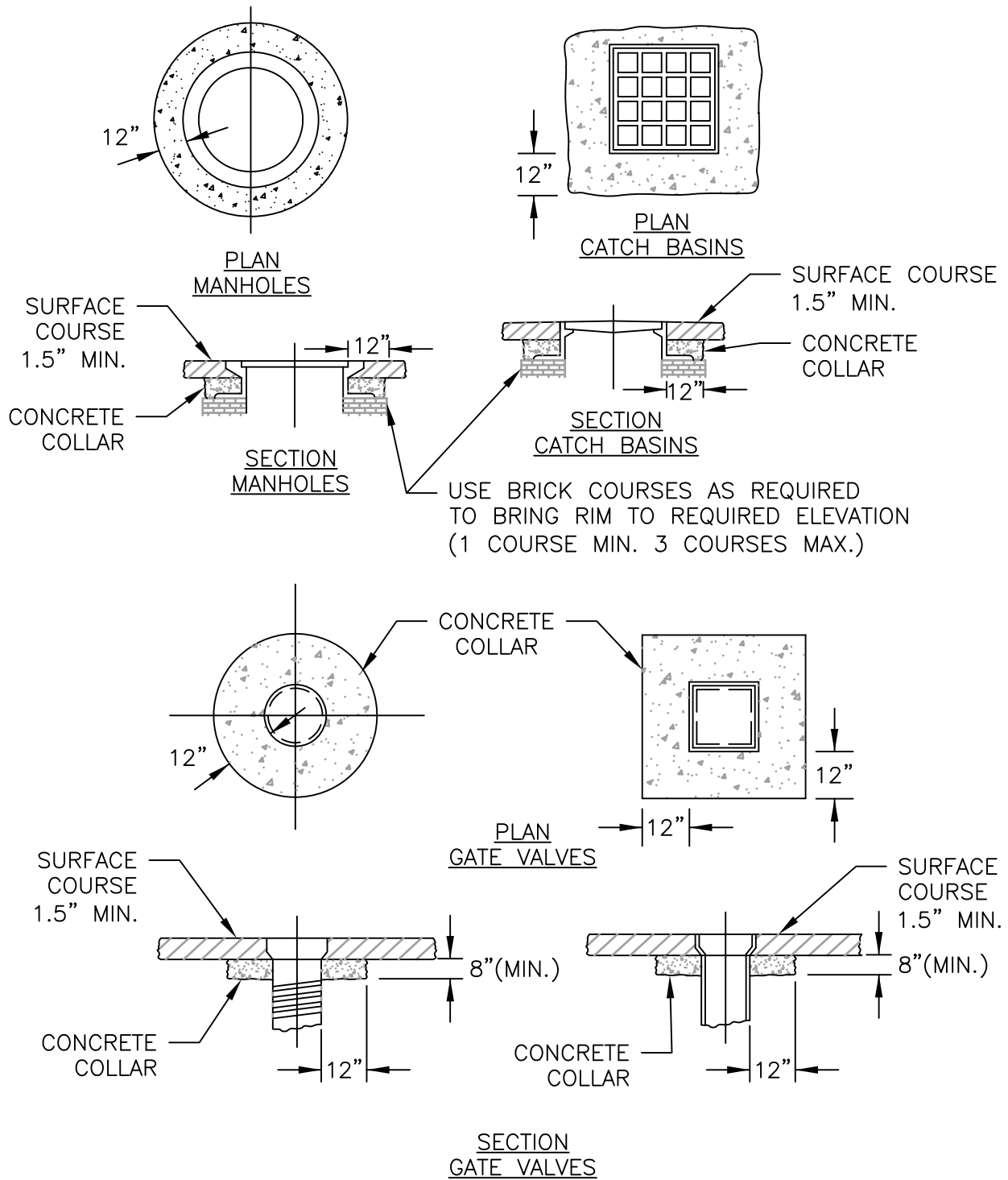
ROADWAYS & SIDEWALKS

DRIVEWAY OPENING  
DIMENSIONS

DETAIL NO:  
RS.15

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

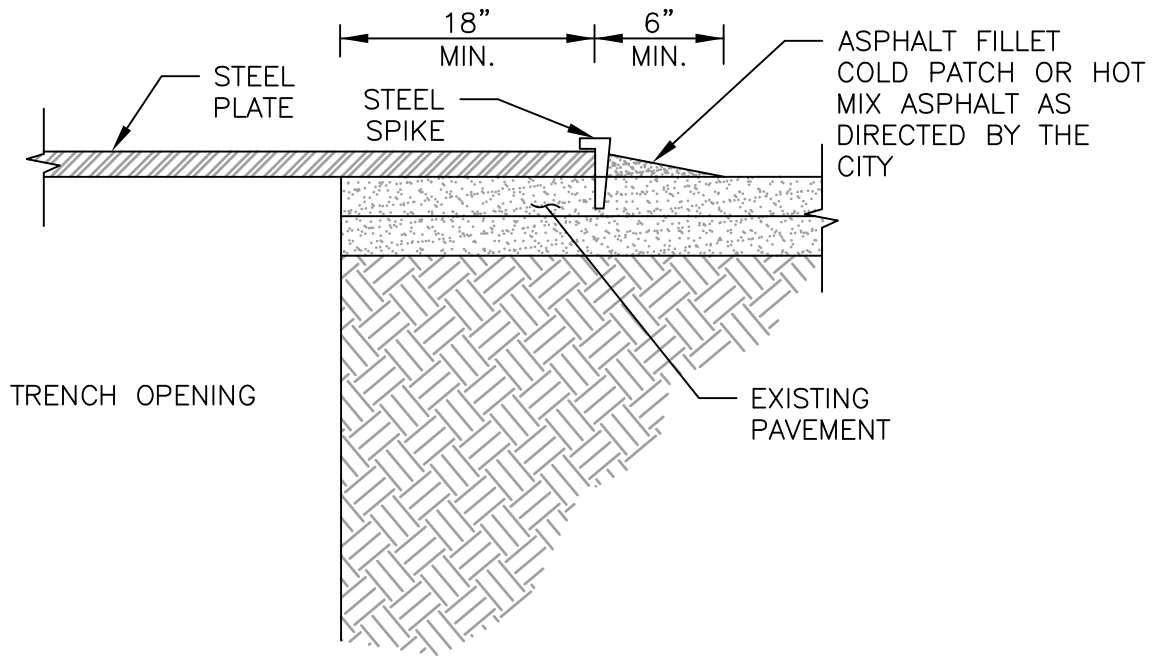
DETAILS FOR RAISING  
CASTINGS

DETAIL NO:  
RS.16

SCALE:  
N.T.S.

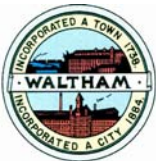
REV. DATE:  
OCT. 2020





NOTES:

1. USE OF STEEL PLATES ALLOWED ON A CASE BY CASE BASIS, PENDING WRITTEN APPROVAL BY CITY.
2. THE CONTRACTOR SHALL PERFORM WORK IN A MANNER THAT LIMITS THE USE OF STEEL PLATES WITHIN ROADWAYS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES OR CLAIMS RESULTING FROM THE USE OF STEEL PLATES.
4. CONTRACTOR SHALL PROVIDE A 24 HOUR EMERGENCY CONTACT NUMBER TO THE CITY PRIOR TO THE INSTALLATION OF STEEL PLATES WHICH WHEN CALLED SHALL RESPOND WITH SUFFICIENT RESOURCES TO ADDRESS ISSUE AND MAKE THE WORK ZONE SAFE.
5. MUTCD COMPLIANT RETROREFLECTIVE ORANGE CONSTRUCTION WARNING SIGNS (48"X48") WITH WORDING "STEEL PLATE AHEAD" SHALL BE INSTALLED IN ADVANCE OF STEEL PLATE INSTALLATION.
6. THE CONTRACTOR SHALL DESIGN AND UTILIZE STEEL PLATES OF ADEQUATE DIMMENSIONS AND THICKNESS FOR INTENDED USE AND VEHICLE LOADING. MAXIMUM ALLOWABLE DEFLECTION SHALL BE 0.025". IRON SPIKE FASTENERS SHALL BE INSTALLED AROUND THE PERIMETER OF THE STEEL PLATE.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

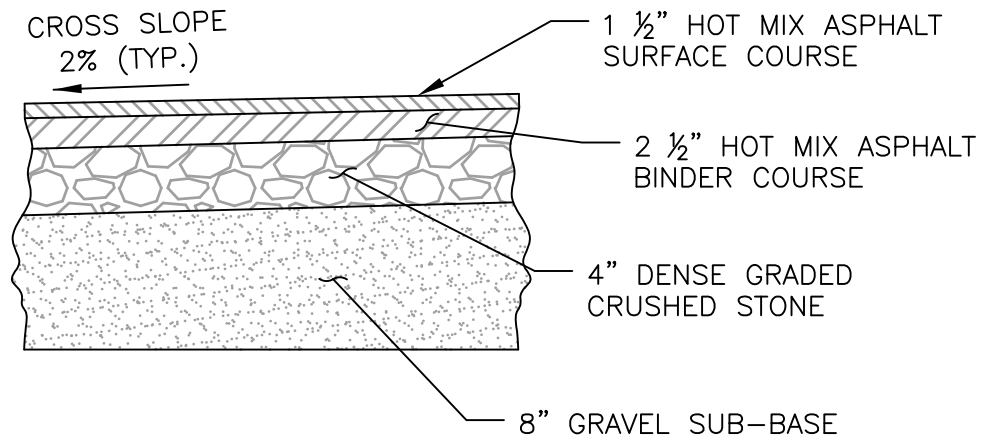
ROADWAYS & SIDEWALKS

STEEL PLATE INSTALLATION

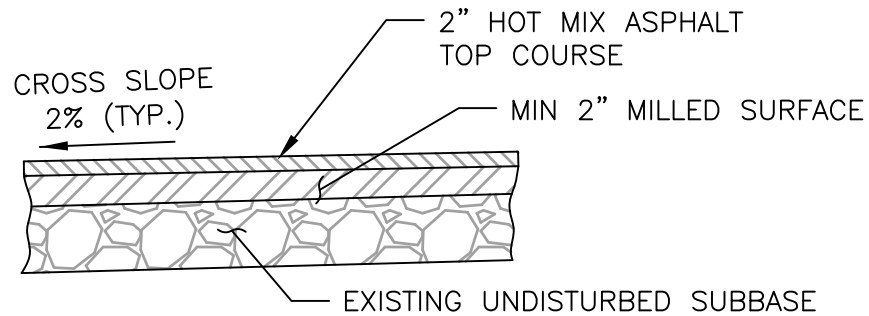
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RS.17

SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



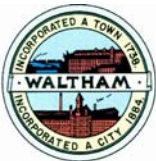
NEW ROADS & RECLAIMED ROADS



MILLED ROADS

NOTES:

1. MINIMUM PAVEMENT THICKNESS SHOWN IS FOR RESIDENTIAL STREETS, PROPOSED PAVEMENT DESIGNS FOR OTHER ROADWAYS TO BE APPROVED BY CITY ENGINEER.
2. RECLAIMED ASPHALT PAVEMENT MATERIAL MAY BE SUBSTITUTED FOR DENSE GRADED CRUSHED STONE AND GRAVEL SUB-BASE IF APPROVED BY CITY ENGINEER.
3. WHERE MILLED SURFACE IS LESS THAN 2", BINDER PATCH OVERLAY OR SHIM COURSE MAY BE REQUIRED.
4. WHERE BINDER COURSE IS DETERIORATED OR BROKEN AFTER MILLING WORK CONTRACTOR SHALL SAW CUT AND EXCAVATE AREAS AS DIRECTED BY THE ENGINEER. AREAS SHALL BE EXCAVATED AND COMPACTED TO ALLOW FOR PLACEMENT OF 3" HOT MIX ASPHALT BINDER COURSE FLUSH WITH THE MILLED SURFACE PRIOR TO THE SURFACE COURSE PAVING.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

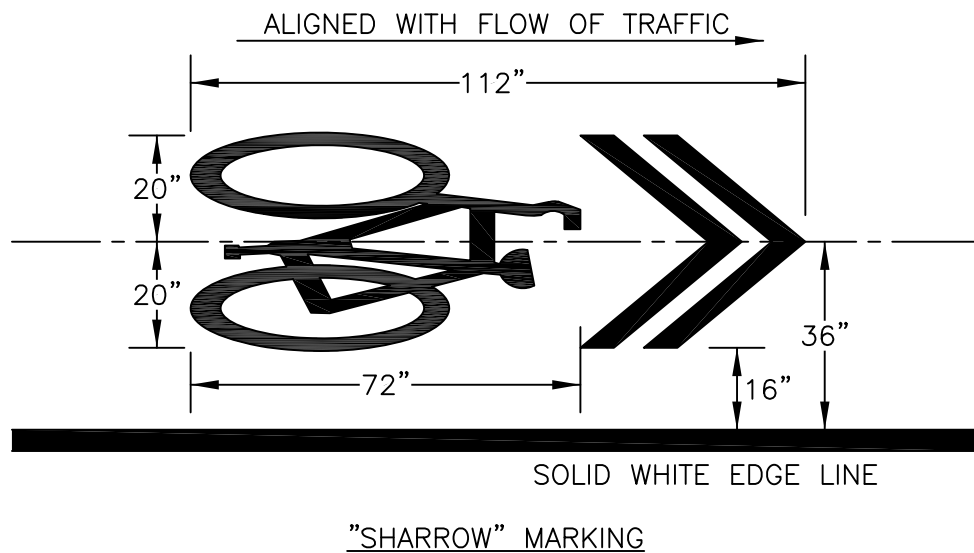
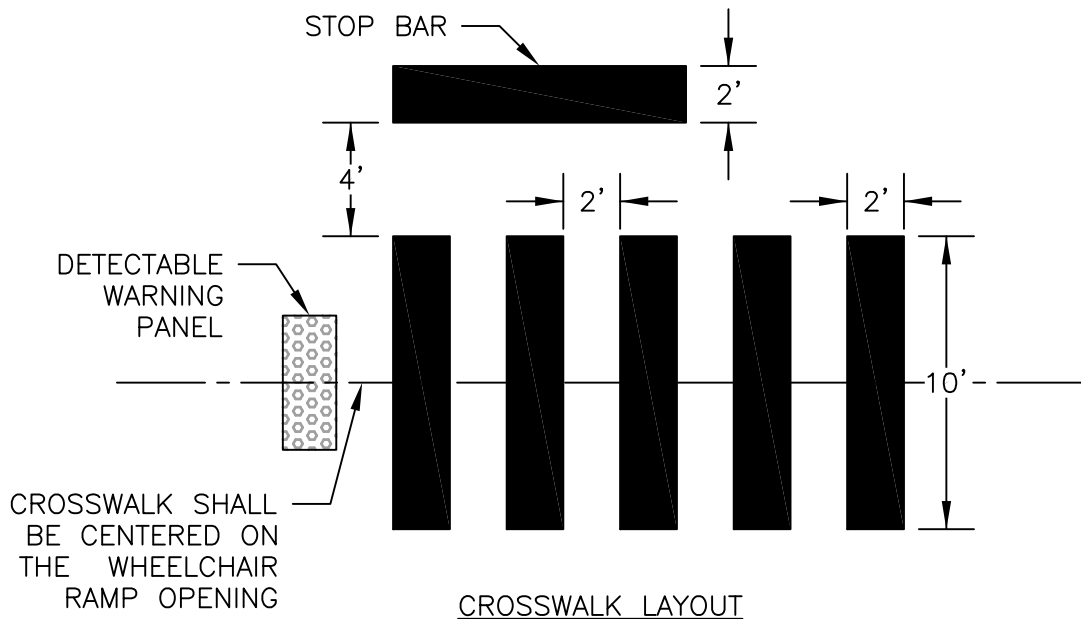
ROADWAYS & SIDEWALKS

TYPICAL PAVEMENT  
SECTION

DETAIL NO:  
RS.18

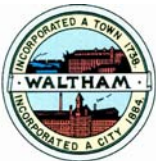
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



**NOTES:**

1. EXISTING PAVEMENT SHALL BE CLEANED AND POWER BRUSHED PRIOR TO THE APPLICATION OF THERMOPLASTIC PAVEMENT MARKINGS.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

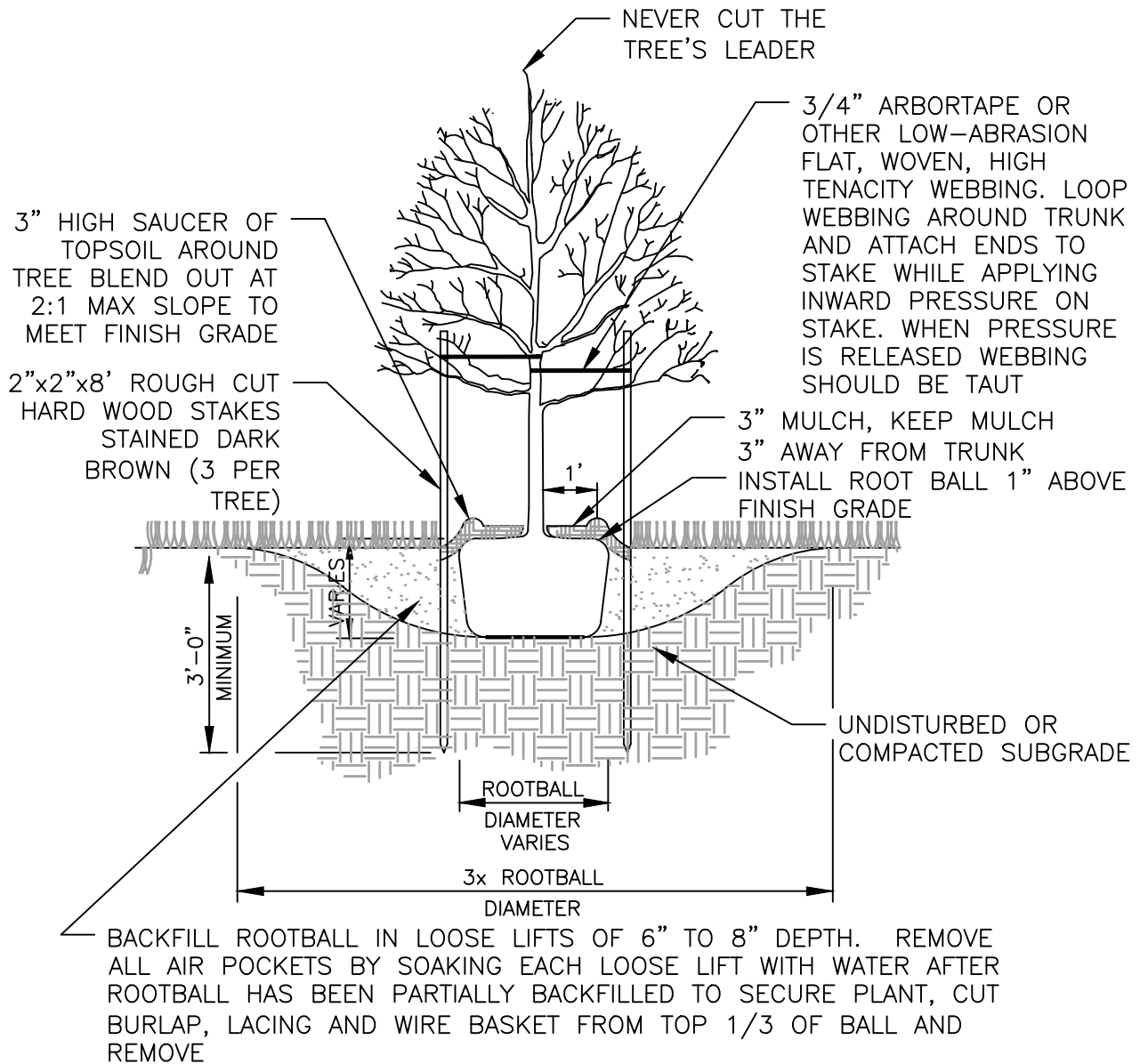
ROADWAYS & SIDEWALKS

TYPICAL CROSSWALK &  
"SHARROW" MARKINGS

DETAIL NO:  
RS.19

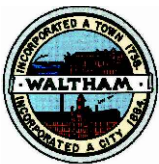
SCALE:  
N.T.S.

REV. DATE:  
OCT. 2020



NOTES:

1. FOR TREE PIT DETAIL SEE DETAIL RS.21 TREE PIT



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

ROADWAYS & SIDEWALKS

TYPICAL TREE PLANTING

DETAIL NO:  
RS.20

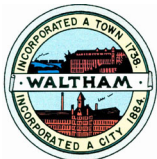
SCALE:  
N.T.S.

REV. DATE:  
NOV. 2020



## GENERAL SUMP PUMP NOTES:

1. SUMP PUMPS ARE NOT ALLOWED TO DISCHARGE OR SHED WATER TO THE SANITARY SEWER COLLECTION SYSTEM.
2. SUMP PUMPS ARE NOT ALLOWED TO DISCHARGE OR SHED WATER ONTO ANY STREET OR SIDEWALK OR ONTO ANY ABUTTING PROPERTY.
3. SUMP PUMPS CONNECTIONS TO THE CITY STORMWATER COLLECTION SYSTEM SHALL REQUIRE A SIGNED LETTER OF AGREEMENT FROM THE PROPERTY OWNER.
4. PROPERTY OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND REPAIR FOR ALL COMPONENTS OF THE SUMP PUMP AND DISCHARGE SYSTEM. THIS WILL INCLUDE ANY PARTS OF THE SYSTEM INSTALLED WITHIN PUBLIC AND / OR PRIVATE RIGHT-OF-WAYS.
5. PROPERTY OWNER SHALL BE RESPONSIBLE FOR WATER QUALITY OF SUMP PUMP DISCHARGE AND ALL CLEANUP AND MAINTENANCE FROM ANY CONTAMINATION.
6. BY INSTALLING SUMP PUMP DISCHARGE, PROPERTY OWNER SHALL ALLOW CITY PERSONNEL ACCESS TO SUMP PUMP FOR FUTURE TESTING AND INSPECTIONAL PURPOSES.
7. SUMP PUMPS SHALL PRIMARILY BE RETAINED ON-SITE. ONLY WITH WRITTEN APPROVAL FROM BOTH THE DIRECTOR OF CONSOLIDATED PUBLIC WORKS AND THE CITY ENGINEER SHALL SUMP PUMPS BE ALLOWED TO DISCHARGE TO THE CITY STORM WATER COLLECTION SYSTEM.
8. SUMP PUMPS DISCHARGING TO THE CITY STORM WATER COLLECTION SYSTEM SHALL BE MADE BY GRAVITY FROM THE PROPERTY WHENEVER POSSIBLE. ONLY WITH WRITTEN PERMISSION FROM THE DIRECTOR OF PUBLIC WORKS AND THE CITY ENGINEER SHALL DISCHARGES BE MADE BY PRESSURE PIPE WITHIN THE PUBLIC / PRIVATE RIGHT-OF-WAY.
9. CONNECTIONS MADE TO THE CITY STORM WATER SYSTEM SHALL BE CORED CONNECTIONS TO THE DRAIN MAIN ONLY. CONNECTIONS TO CATCH BASINS OR DRAIN MANHOLES SHALL NOT BE ALLOWED.
10. ROOF DRAINS AND / OR FLOOR DRAINS FROM A BUILDING SHALL NOT BE ALLOWED TO DISCHARGE TO THE CITY STORM WATER SYSTEM UNDER ANY CIRCUMSTANCE.
11. ALL SUMP PUMP DISCHARGES SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED WITHIN THE COMMONWEALTH OF MASSACHUSETTS.
12. DESIGNS FOR SUMP PUMPS DISCHARGING TO UNDERGROUND INFILTRATION SYSTEMS SHALL BE ACCOMPANIED BY DRAINAGE CALCULATIONS.
13. ALL SIDEWALKS AND ROADWAYS SHALL BE REPAIRED IN ACCORDANCE WITH ALL APPLICABLE CITY STANDARDS.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

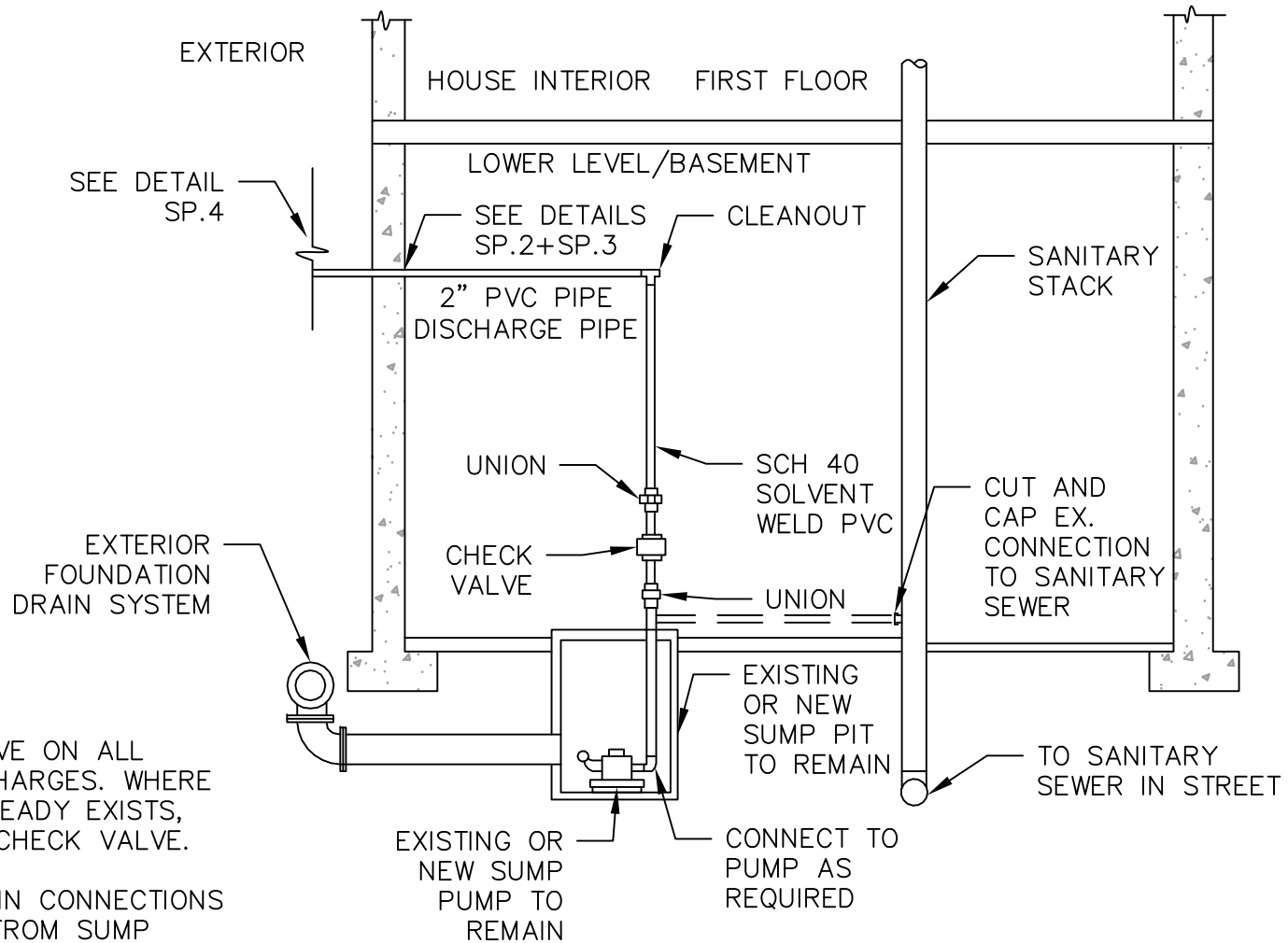
SUMP PUMP

GENERAL SUMP  
PUMP NOTES

DETAIL NO:  
SP.0

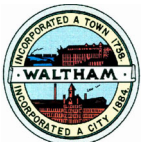
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N.T.S.

REV. DATE:  
03/01/2022



NOTES:

1. PROVIDE CHECK VALVE ON ALL EXISTING SUMP DISCHARGES. WHERE A CHECK VALVE ALREADY EXISTS, REPLACE WITH NEW CHECK VALVE.
2. EXISTING FLOOR DRAIN CONNECTIONS MUST BE REMOVED FROM SUMP PUMP AND PLUGGED.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

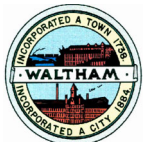
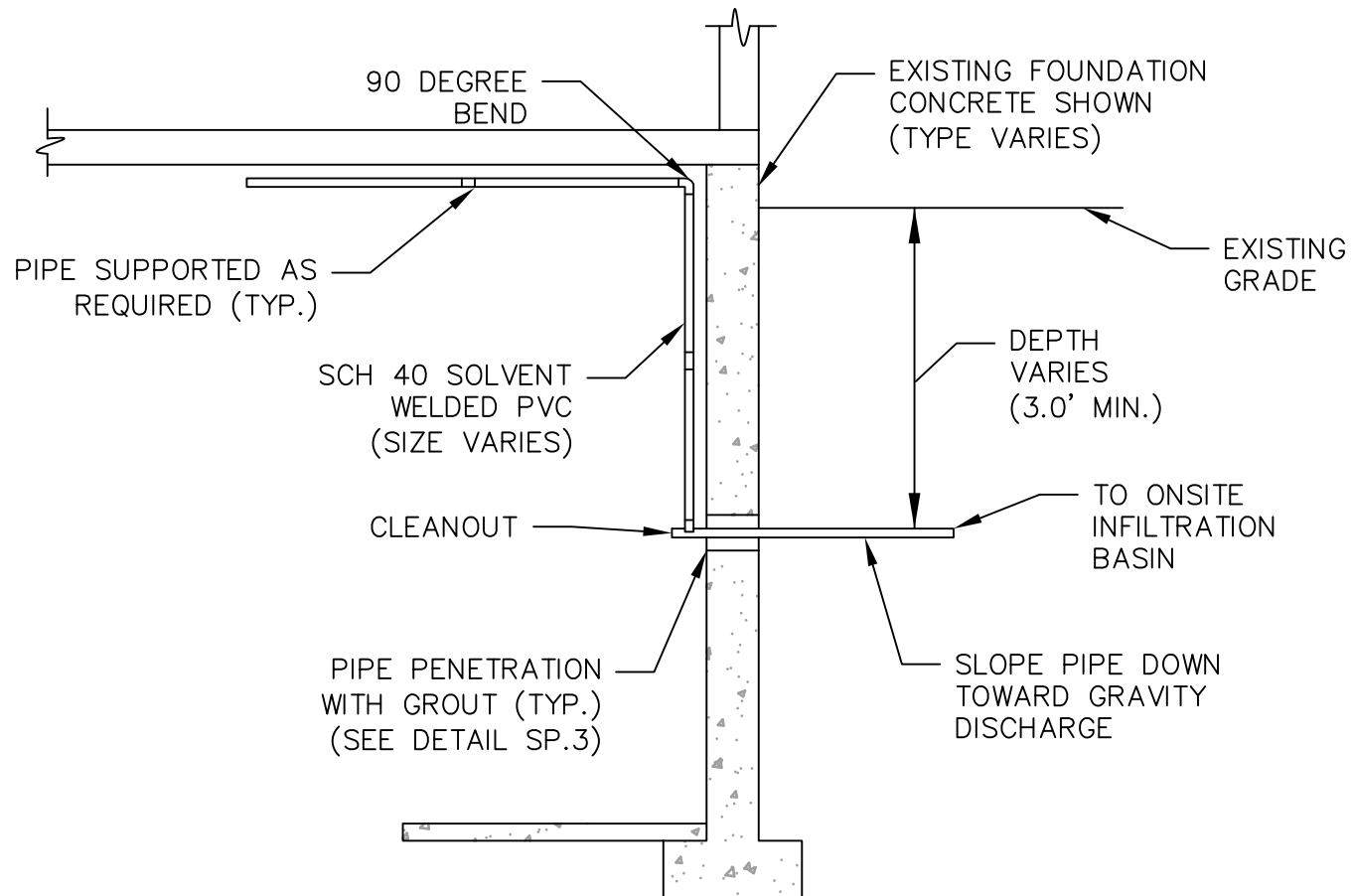
SUMP PUMP

SUMP PUMP INTERIOR SCHEMATIC

DETAIL NO: SP.1

REV. DATE: 03/01/2022

SCALE: N.T.S.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DETAIL NO: SP.2

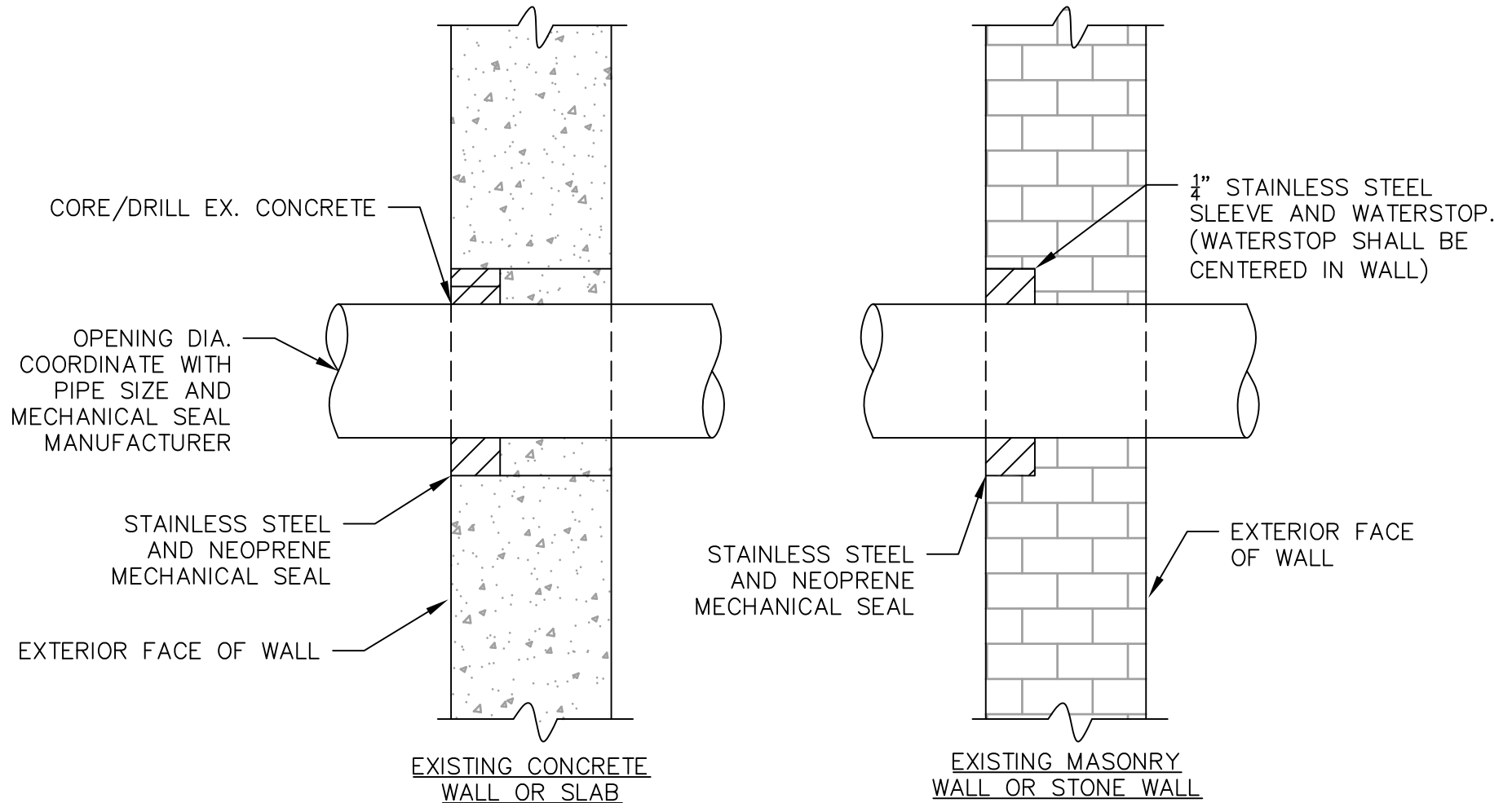
SUMP PUMP

REV. DATE: 03/01/2022

DISCHARGE TO ON-SITE SYSTEM

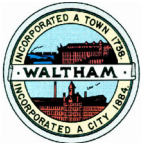
SCALE: N.T.S.





NOTES:

1. FOR CMU WALL PROVIDE MIN. 3" NON-SHRINK GROUT AROUND WATERSTOP.
2. COORDINATE SLEEVE SIZE AND O.D. OF PIPE WITH MECHANICAL SEAL MANUFACTURER.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

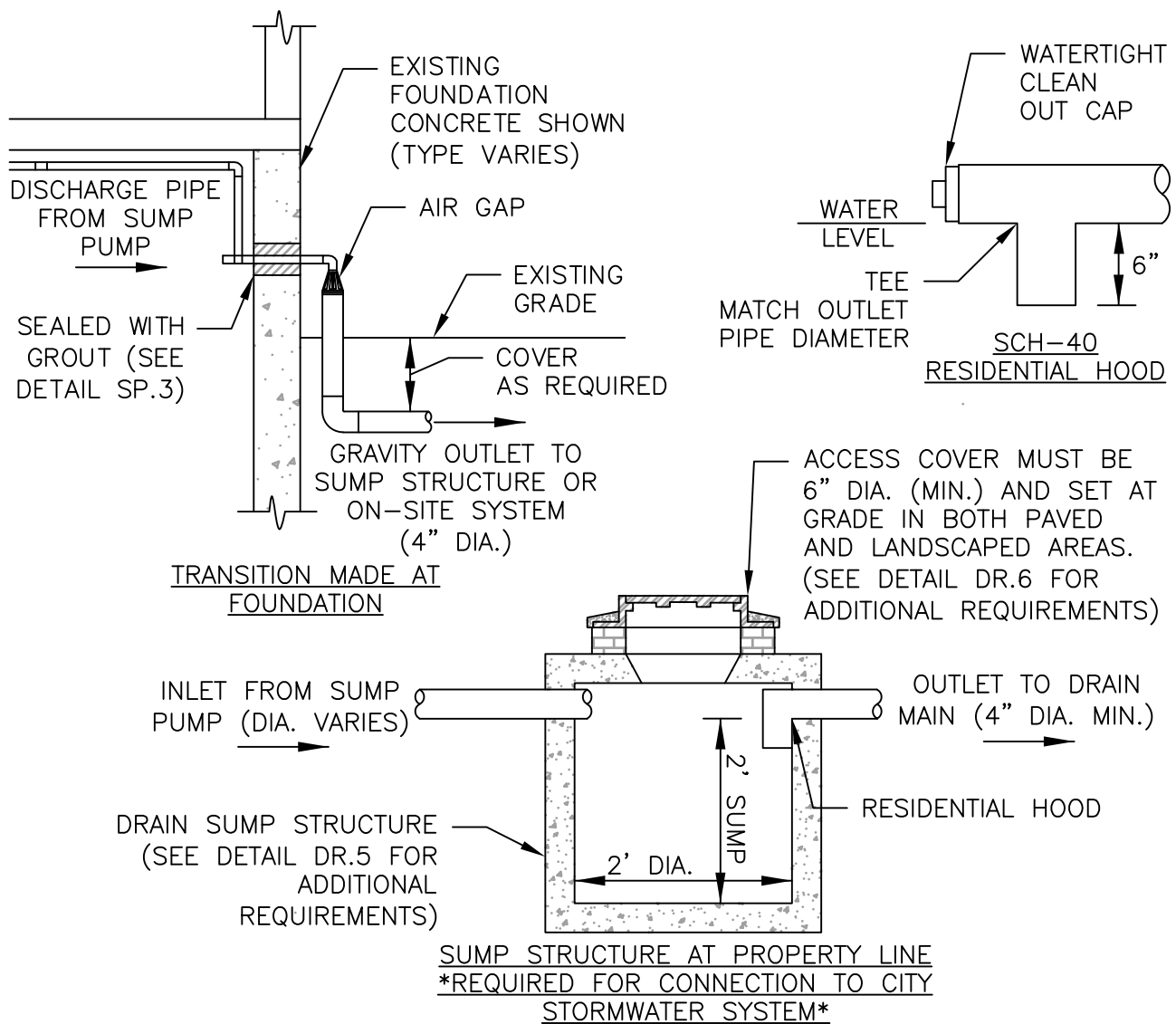
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SUMP PUMP

REV. DATE: 03/01/2022

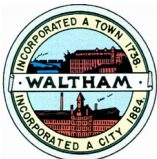
PIPE SLEEVE SCHEMATIC

SCALE: N.T.S.



#### NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS.
2. ACCESS COVER FOR SUMP STRUCTURE SHALL BE INSTALLED AT GRADE IN BOTH PAVED AREAS AND LANDSCAPED AREAS. LEAVING COVER BELOW GRADE SHALL NOT BE ALLOWED IN ANY CIRCUMSTANCE.
3. BY INSTALLING THE SUMP PUMP STRUCTURE, PROPERTY OWNER AGREES TO ALLOW THE CITY OF WALTHAM ACCESS TO INSPECT AND SAMPLE FROM THE STRUCTURE AT ALL TIMES.
4. UNDER PAVED / HARDESCAPED AREAS SYSTEM COMPONENTS SHALL BE CAPABLE OF SUPPORTING H-20 LOADING.
5. ALL CONNECTIONS TO STRUCTURE SHALL BE CORED. NO BREAK-IN CONNECTIONS SHALL BE ALLOWED. ALL CONNECTIONS SHALL BE MADE WATER TIGHT USING NON-SHRINK GROUT.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

SUMP PUMP

TRANSITION TO  
GRAVITY PIPE

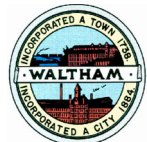
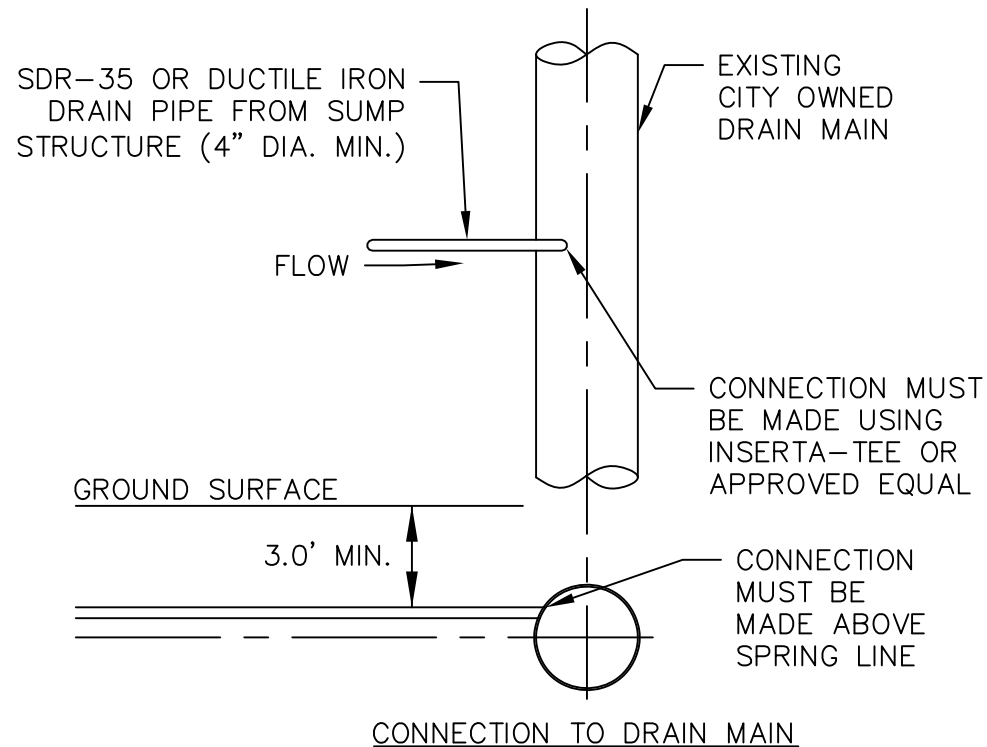
DETAIL NO:  
SP.4

SCALE:  
N.T.S.

REV. DATE:  
03/01/2022

NOTES:

1. ALL CONNECTIONS TO DRAIN SYSTEM MUST BE DRILLED/CORED. BREAK-IN OR CHIPPED CONNECTIONS SHALL NOT BE ALLOWED. CONNECTIONS MUST BE FLUSH WITH THE INSIDE OF PIPE AND SHALL NOT PROTRUDE INTO THE PIPE. CONNECTIONS SHALL BE MADE USING INSERTA-TEE CONNECTOR OR APPROVED EQUAL.
2. BACKFILL AROUND ALL EXISTING AND NEW DRAIN PIPE AND STRUCTURES SHALL BE  $\frac{3}{4}$ " STONE. SEE DETAIL DR.9.
3. PIPE SHALL BE PITCHED TO PROVIDE POSITIVE DRAINAGE BY GRAVITY FROM SUMP STRUCTURE TO DRAIN MAIN (1% SLOPE MINIMUM).
4. WHERE MINIMUM COVER OF 3' CANNOT BE MAINTAINED WITHIN THE RIGHT-OF-WAY, CLASS 52 DUCTILE IRON SHALL BE USED. ALL PIPE WITHIN THE RIGHT-OF-WAY SHALL HAVE SUFFICIENT COVER TO SUPPORT H-20 LOADING.
5. PROPERTY OWNER IS RESPONSIBLE FOR ALL MAINTENANCE AND REPAIR OF SUMP PUMP DISCHARGE PIPING WITHIN RIGHT-OF-WAY.



CITY OF WALTHAM, MA  
ENGINEERING DEPARTMENT

STANDARD DETAILS

DETAIL NO: SP.5

SUMP PUMP

REV. DATE: 03/01/2022

DISCHARGE PIPE CONNECTION

SCALE: N.T.S.