

Appendix A

Construction Details





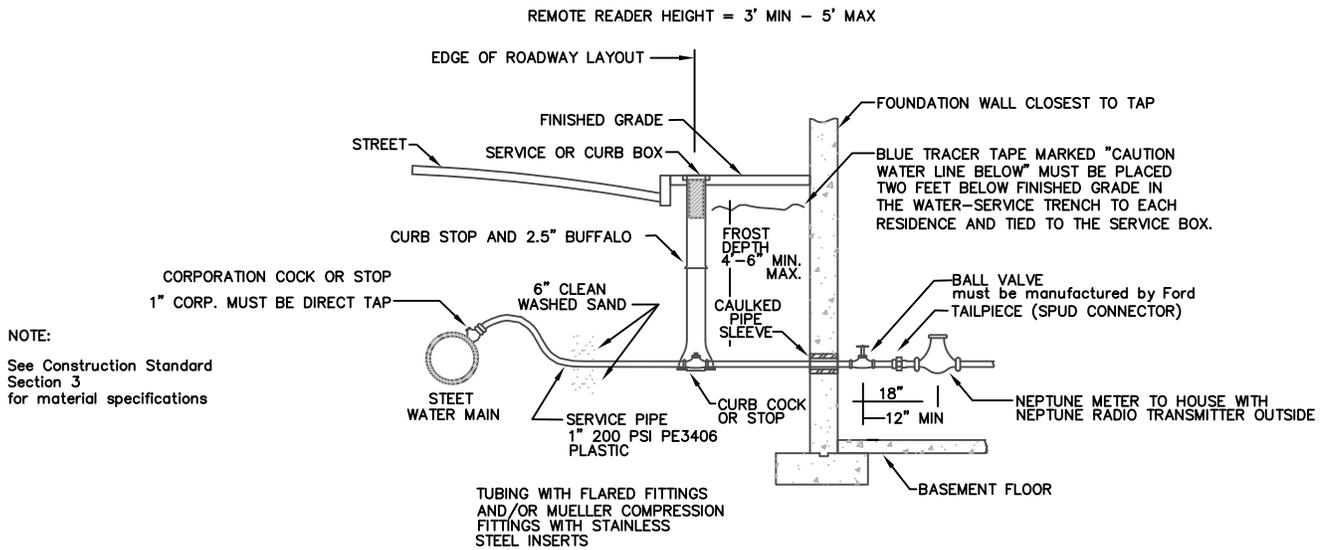
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Water Construction Details





NOTE:
See Construction Standard Section 3 for material specifications

TYPICAL WATER SERVICE CONNECTION

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

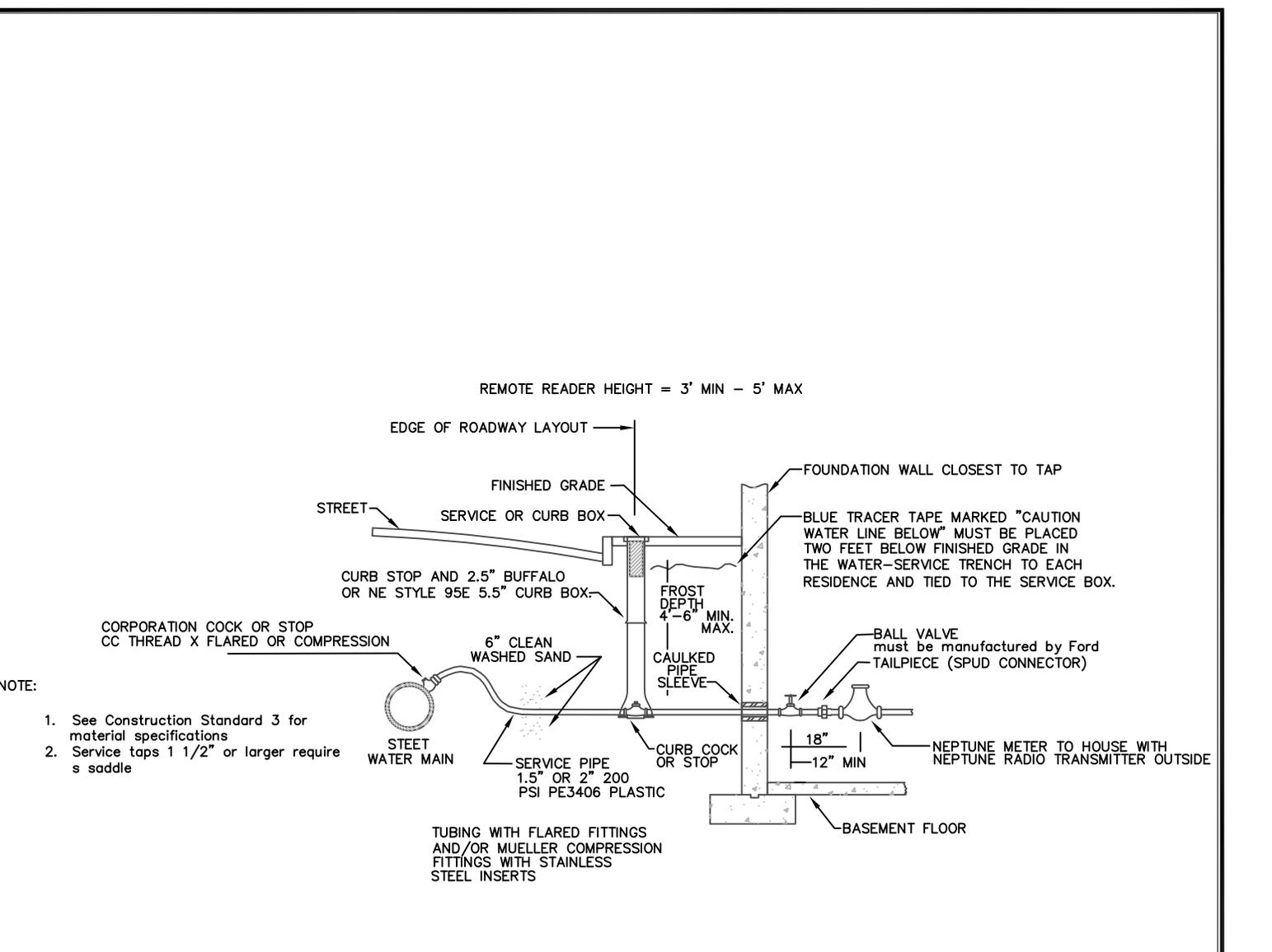
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
W-1.0

Detail Name:
Typical Water Connection for 1" Service

Date Last Updated:
03/01/2016



- NOTE:
1. See Construction Standard 3 for material specifications
 2. Service taps 1 1/2" or larger require a saddle

TYPICAL WATER SERVICE CONNECTION FOR
1-1/2" TO 2" SERVICE

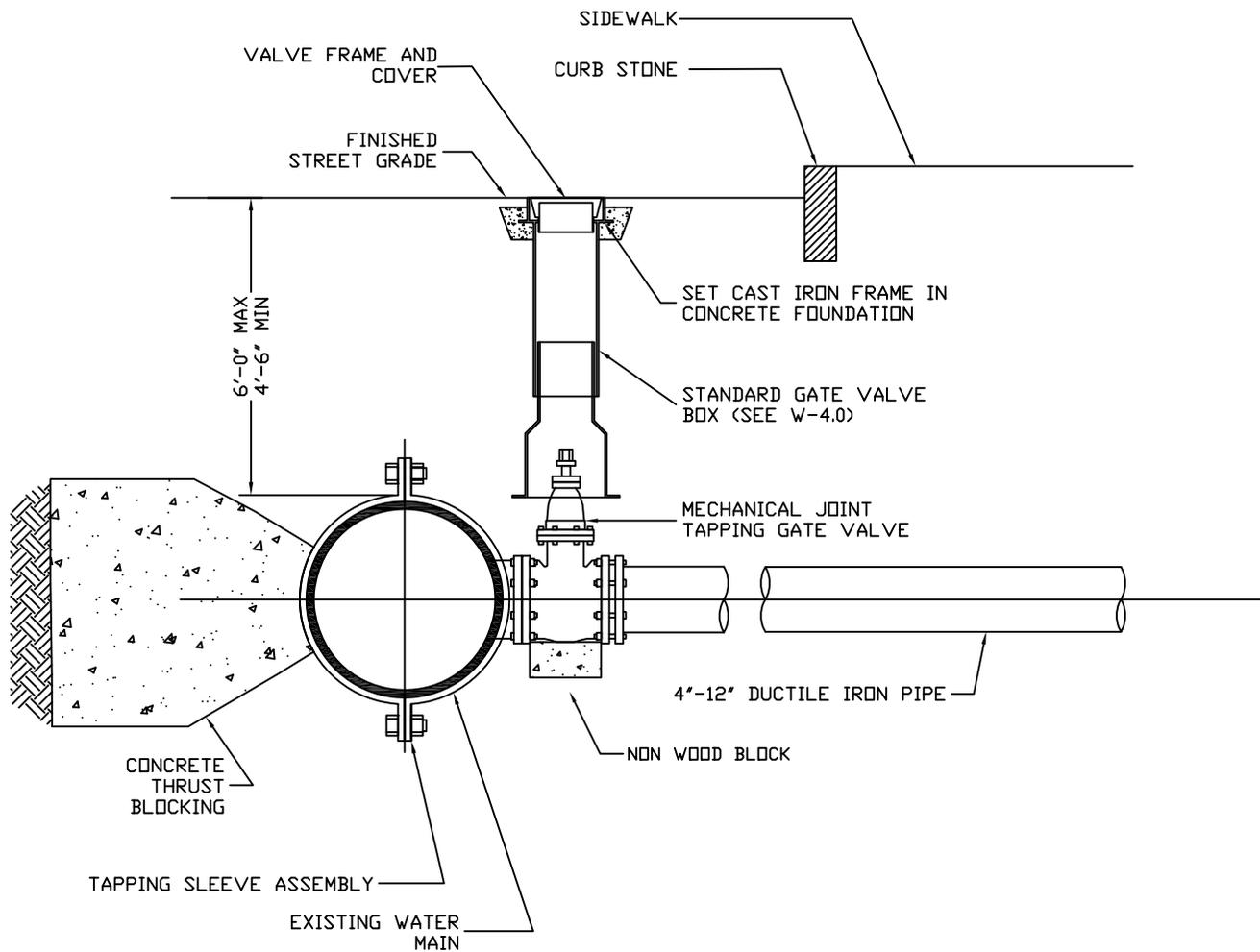
NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
75 WEST STREET NATICK, MA 01760

Detail Number:
W-1.1

Detail Name:
Typical Water Connection for 1.5" to 2" Service

Date Last Updated:
03/01/2016



NOTES:

1. MAXIMUM TAPPING SLEEVE SHALL NOT BE GREATER THAN $\frac{1}{2}$ DIAMETER OF CONNECTING MAIN. See Construction Standard Section 3 for additional requirements.
2. MEGA LUG RESTRAINTS ON ALL MECHANICAL JOINTS.
3. See Construction Standard Section 3 for material specifications.

TYPICAL CONNECTION (TAPPING SLEEVE)

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

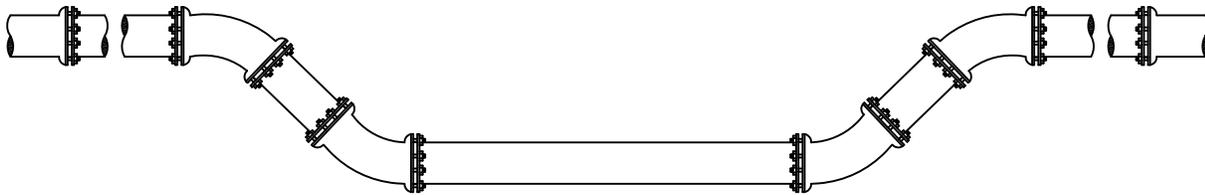
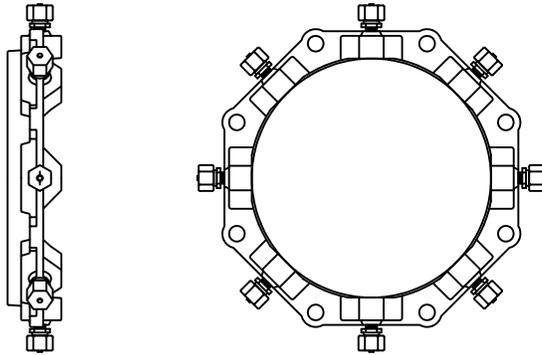
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75 WEST STREET NATICK, MA 01760

Detail Number:
W-1.2

Detail Name:
Typical Connection (Tapping Sleeve)

Date Last Updated:
03/01/2016



NOTES:

1. DEVICES NEED TO BE PLACED BEYOND THE AREA OF RESTRAINTS IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS AND CONSTRUCTION STANDARD SECTION 3
2. RESTRAINT GASKETS TO BE INSTALLED PER CONSTRUCTION STANDARD SECTION 3
3. SEE CONSTRUCTION STANDARD SECTION 3

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

W-2.0

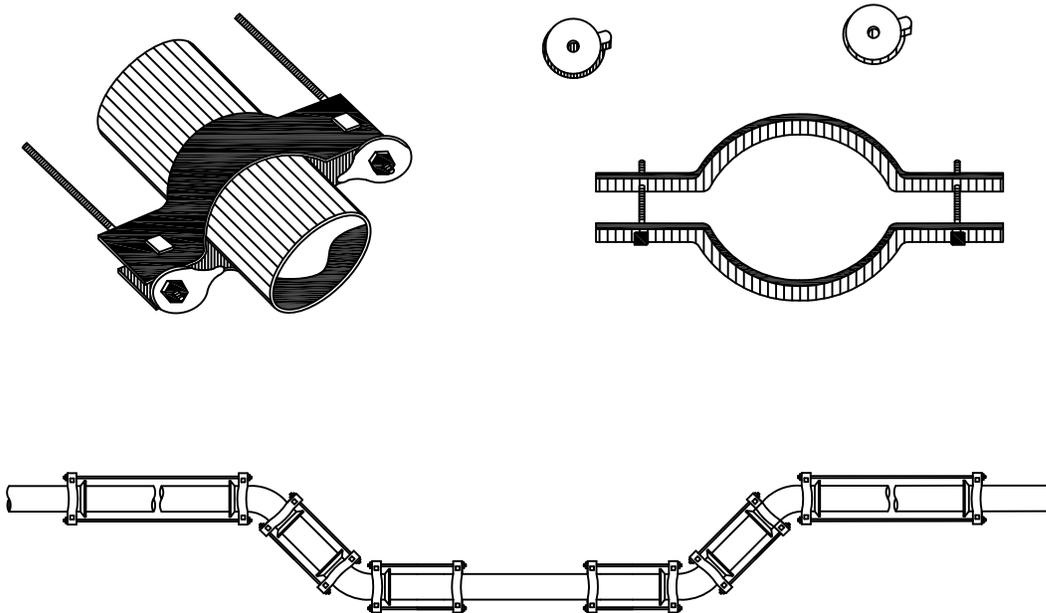
Detail Name:

Typical Thrust Restraint Wedge Action Type Joints

Date Last Updated:

03/01/2016

SCHEDULE OF TIE RODS		
PIPE SIZE	NUMBER OF RODS PER FITTING	DIAMETER OF RODS
4' - 12'	2	3/4"
16'	4	3/4"
20' - 24'	4	1 1/2"



Notes:

1. Town of Natick approved method for restraint is mechanical joint with retainer gland and thrust blocking as shown on detail W-2.0
2. If tie rod restraint is approved, restraint gaskets are required per Construction Standard Section 3

NOT TO SCALE

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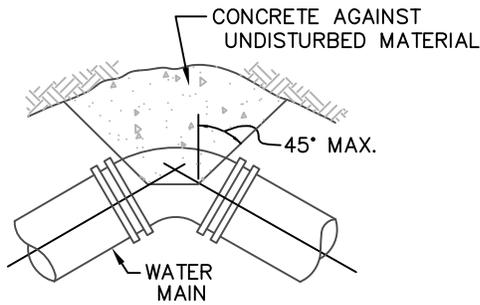
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75 WEST STREET NATICK, MA 01760

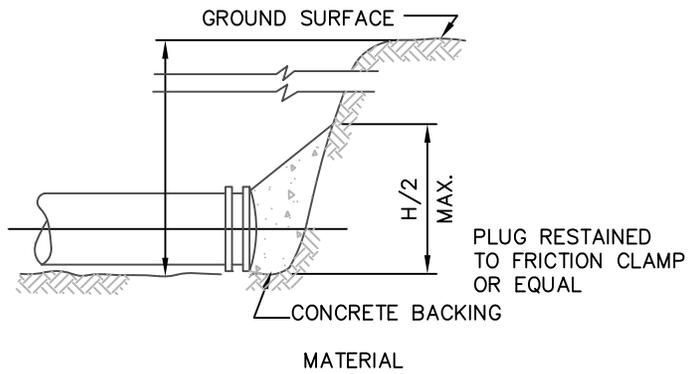
Detail Number:
W-2.1

Detail Name:
Typical Thrust Restraints using Tie Rods & Friction Clamps

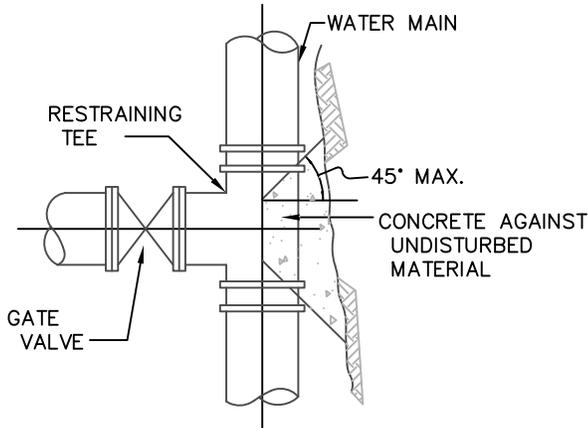
Date Last Updated:
03/01/2016



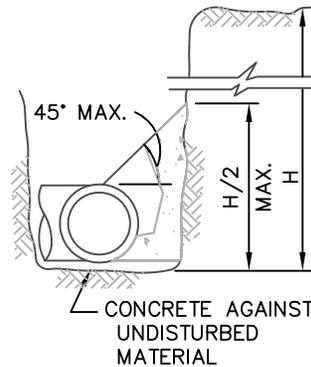
TYPICAL BEND



TYPICAL PLUG



TYPICAL TEE



TYPICAL SECTION

NOTE:

1. CONCRETE FOR THRUST BLOCKS SHALL BE NO LONGER THAN THE RATIO OF 2 1/2 : 5 1/2 AND SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 2000 PSI (SO THAT FLANGES AND BOLTS ARE ACCESSIBLE.)
2. USE FORMS FOR CAST-IN-PLACE THRUST BLOCKS TO PREVENT COVERING OF NUTS AND BOLTS WITH CONCRETE
3. MECHANICAL JOINT WITH RETAINER GLANDS ARE REQUIRED WITH THRUST BLOCK
4. SEE CONSTRUCTION STANDARD SECTION 3 FOR RESTRAINT REQUIREMENTS

BEARING AREAS OF THRUST BLOCKS (BEARING AREA IN SQUARE FT.)				
PIPE SIZE INCHES	1/4 BEND	1/8 BEND	1/16 BEND OR LESS	PLUG TEES
6 AND 8	8	8		8
10 AND 12	22	13	8	16

TYPICAL THRUST BLOCK DETAIL

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

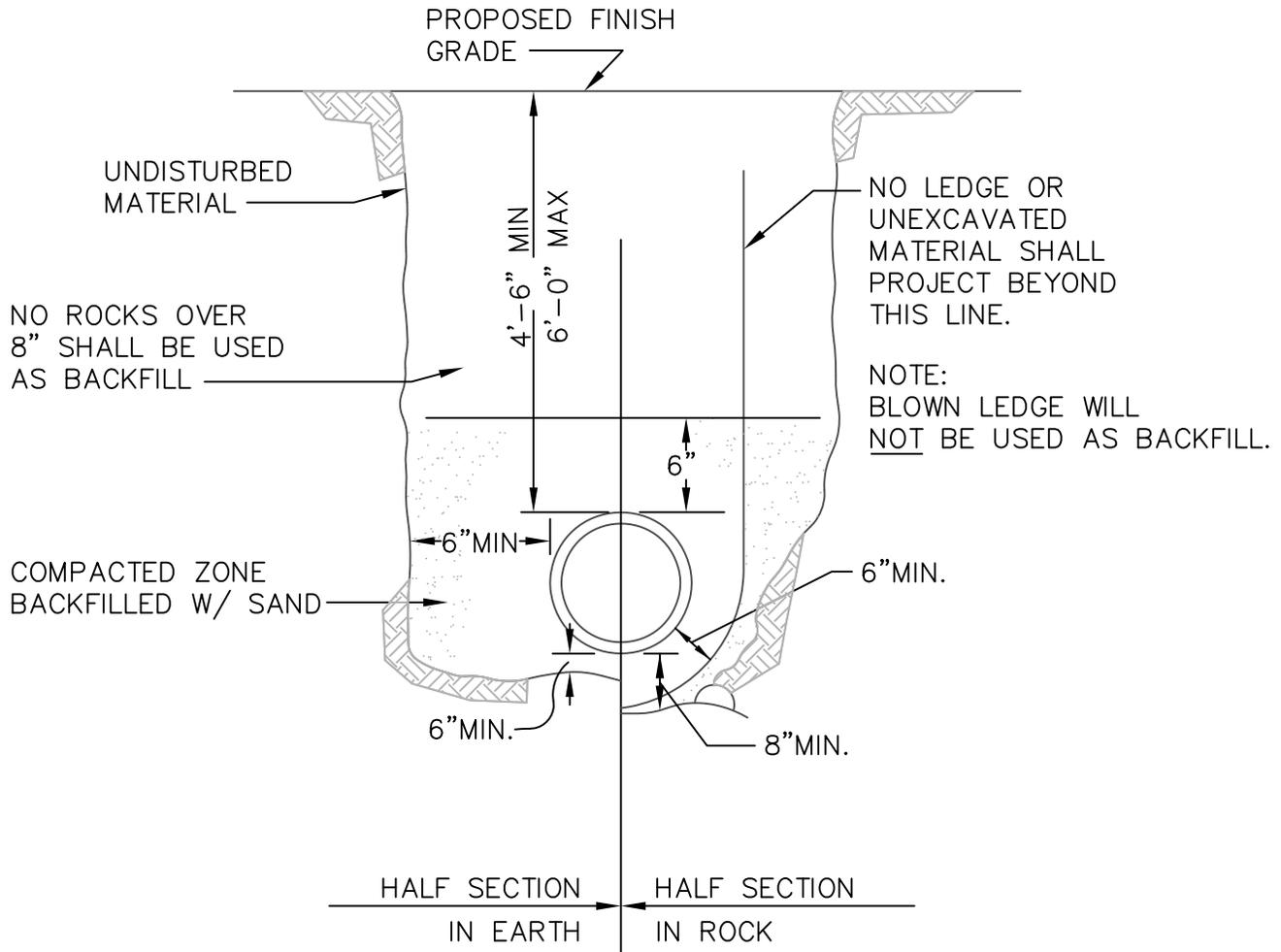
W-2.2

Detail Name:

Typical Thrust Block Detail

Date Last Updated:

03/01/2016



WATER MAIN TRENCH DETAIL

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

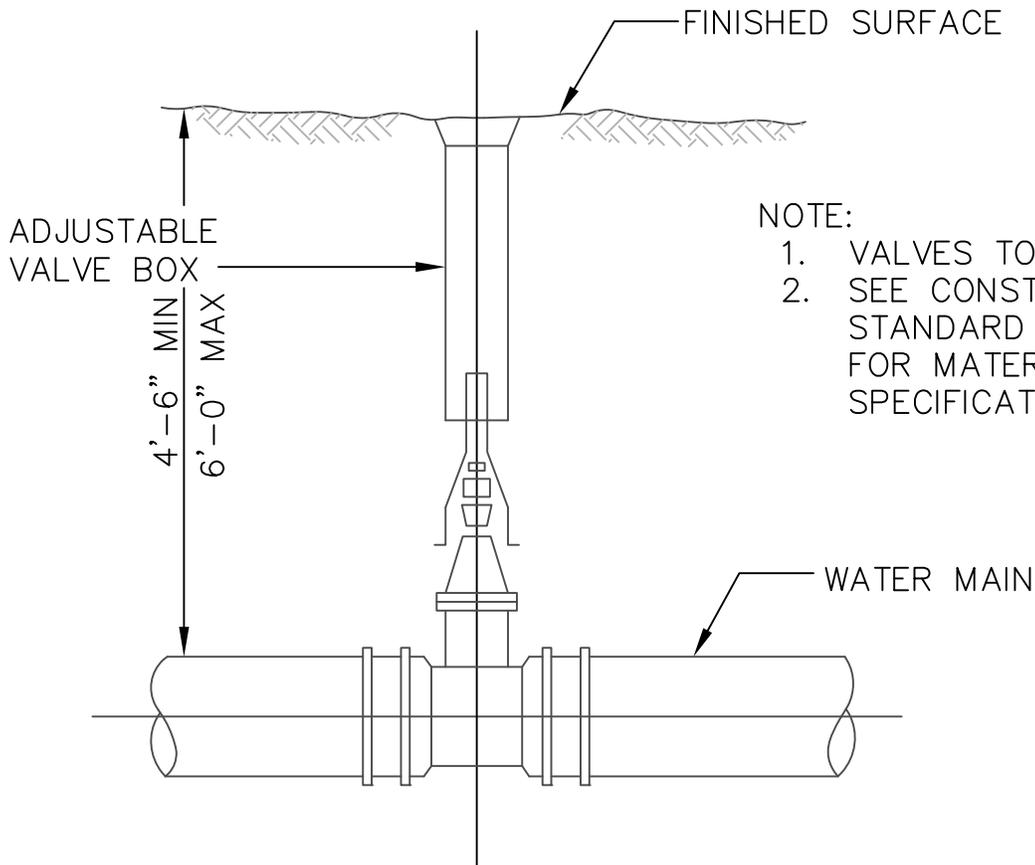
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
W-3.0

Detail Name:
Water Main Trench Detail

Date Last Updated:
03/01/2016



- NOTE:
1. VALVES TO OPEN RIGHT
 2. SEE CONSTRUCTION STANDARD SECTION 3 FOR MATERIAL SPECIFICATION

TYPICAL GATE VALVE

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

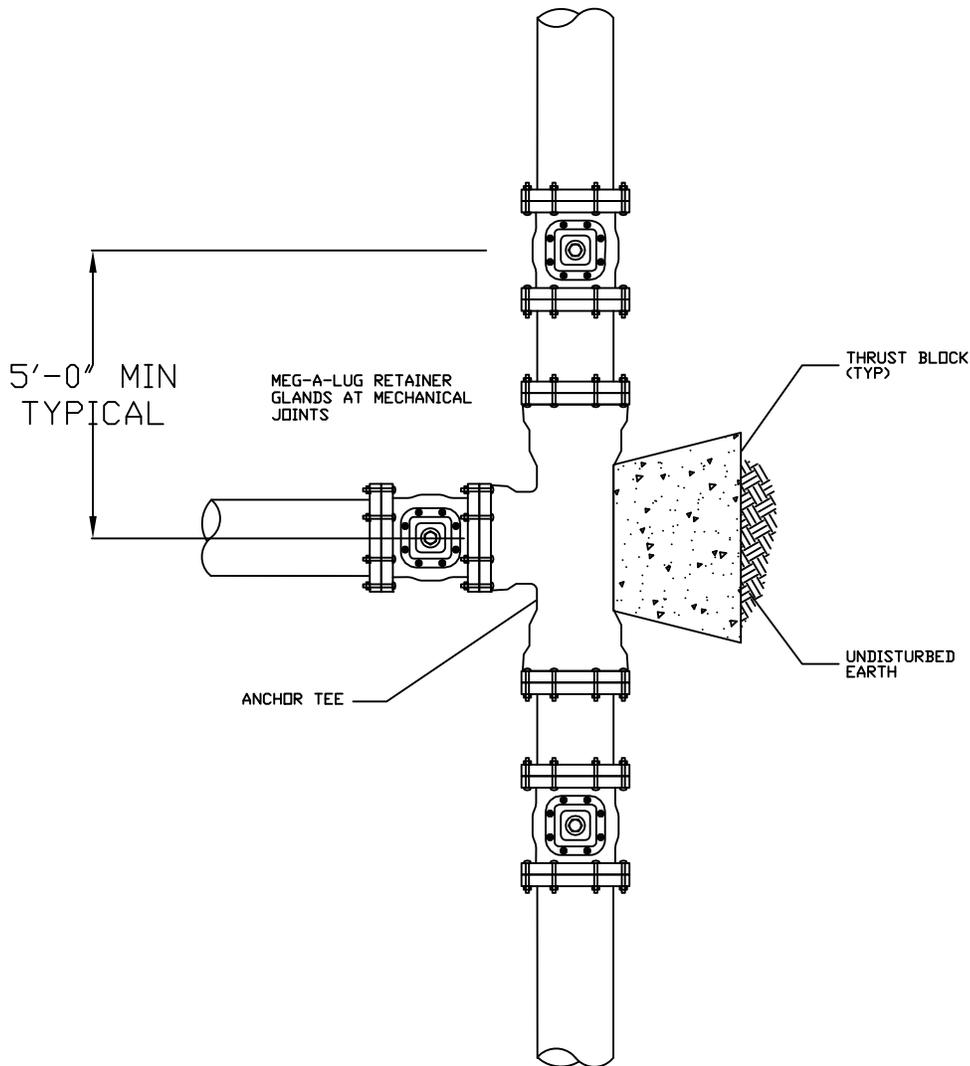
W-4.0

Detail Name:

Gate Valve

Date Last Updated:

03/01/2016



NOTES:

1. VALVE SPACING TO BE A MINIMUM OF 5'-0" TO ALLOW PROPER SOIL COMPACTION BETWEEN VALVE BONNETS AND BOXES
2. MECHANICAL JOINT WITH RETAINER GLANDS REQUIRED ON ALL FITTINGS AND VALVES, SEE CONSTRUCTION STANDARDS FOR ADDITIONAL RESTRAINTS REQUIREMENTS
3. SEE CONSTRUCTION STANDARD SECTION 3 FOR MATERIAL SPECIFICATIONS

TYPICAL ANCHOR TEE INSTALLATION

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

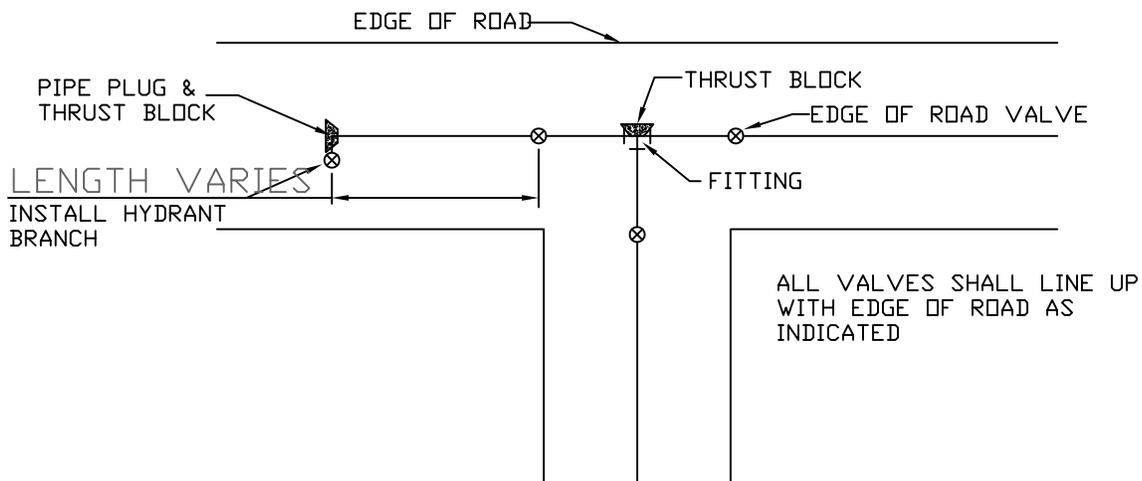
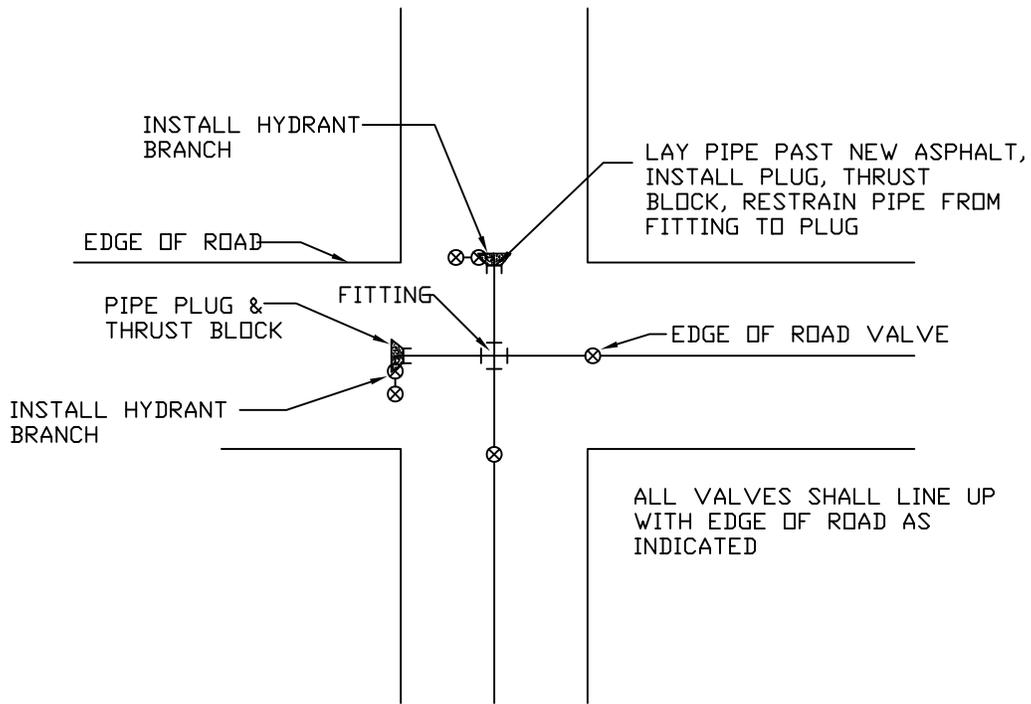
W-4.1

Detail Name:

Typical Anchor Installation & 3-WAY T CUT IN

Date Last Updated:

03/01/2016



TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

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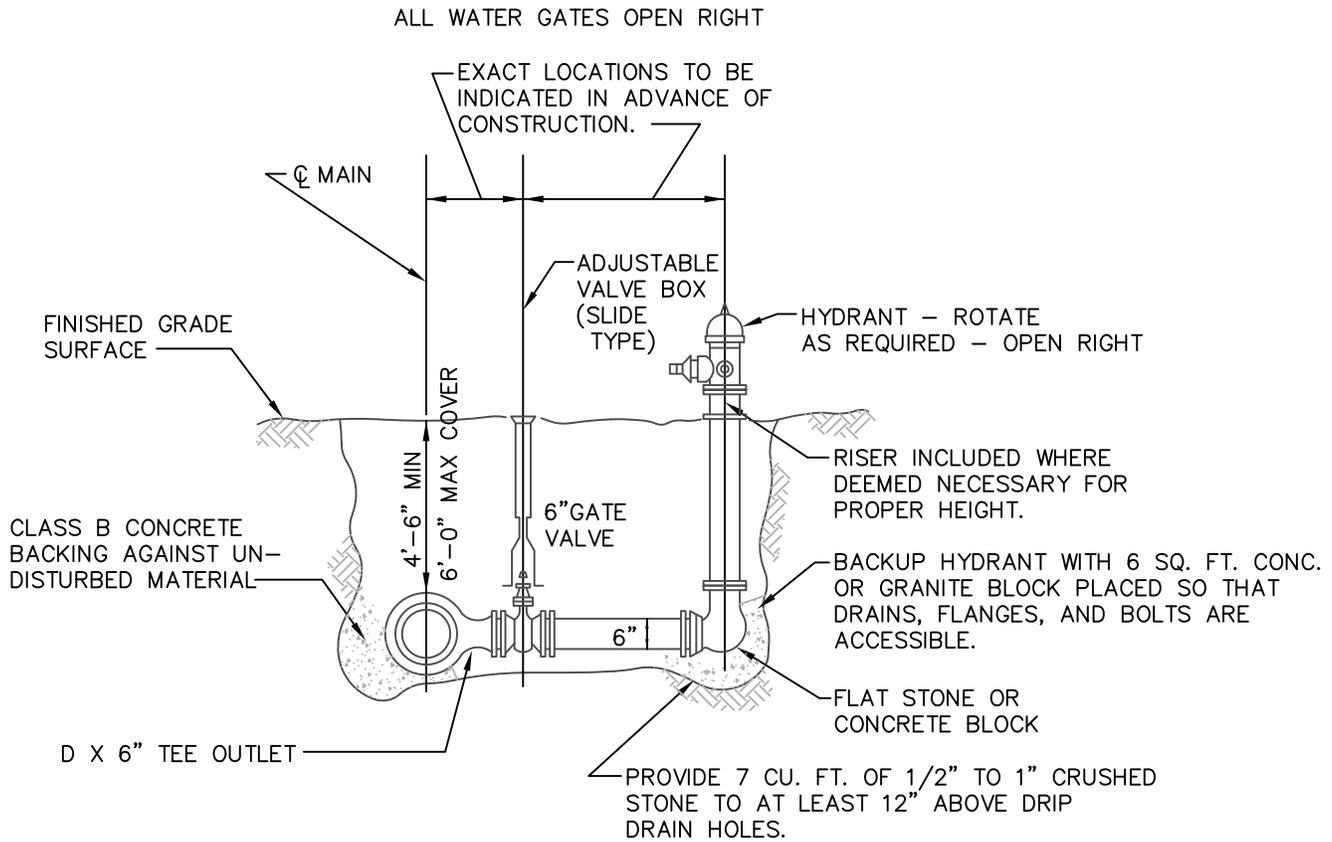
W-4.2

Detail Name:

Valve And Hydrant Location at Intersection

Date Last Updated:

03/01/2016



NOTES:

1. SEE ANCHOR TEE DETAIL AND CONSTRUCTION STANDARD SECTION 3 FOR RESTRAINT REQUIREMENTS
2. SEE CONSTRUCTION STANDARDS SECTION 3 FOR MATERIAL SPECIFICATIONS
3. HYDRANT BREAK-AWAY FLANGE SHALL BE SET FLUSH WITH FINISH GRADE FOR PROPER FUNCTIONALITY

TYPICAL HYDRANT ASSEMBLY DETAIL

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

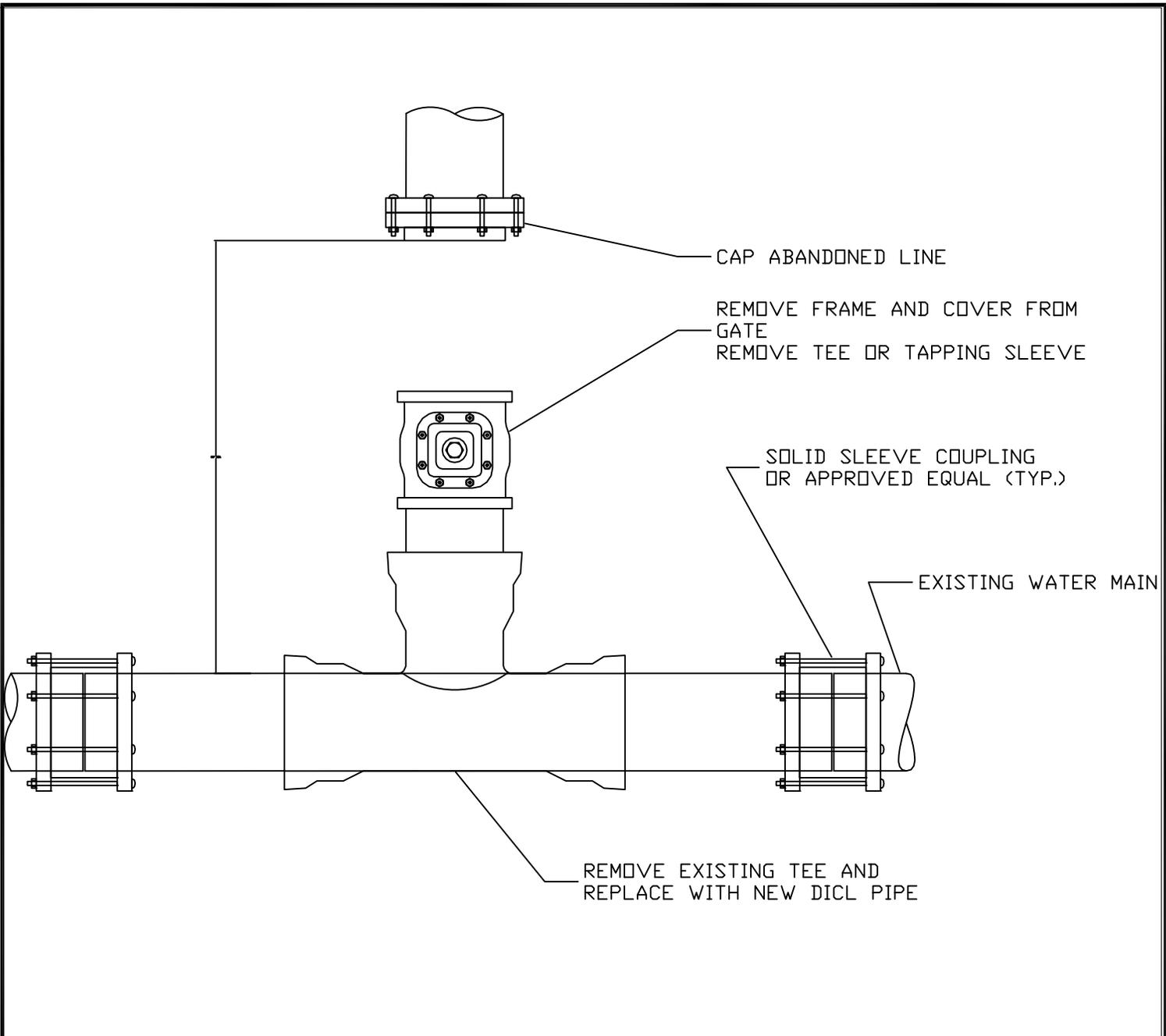
W-5.0

Detail Name:

Fire Hydrant Installation

Date Last Updated:

03/01/2016



NOTES:

1. THIS PROCEDURE WILL INVOLVE A MAIN LINE SHUT DOWN THAT THE CONTRACTOR WILL COORDINATE WITH NATICK D.P.W. WATER OPERATIONS DIVISION.
2. 48-HOUR PRIOR WRITTEN NOTIFICATION OF ALL AFFECTED CUSTOMERS MUST BE PERFORMED BY THE CONTRACTOR.

TOWN OF NATICK, MASSACHUSETTS

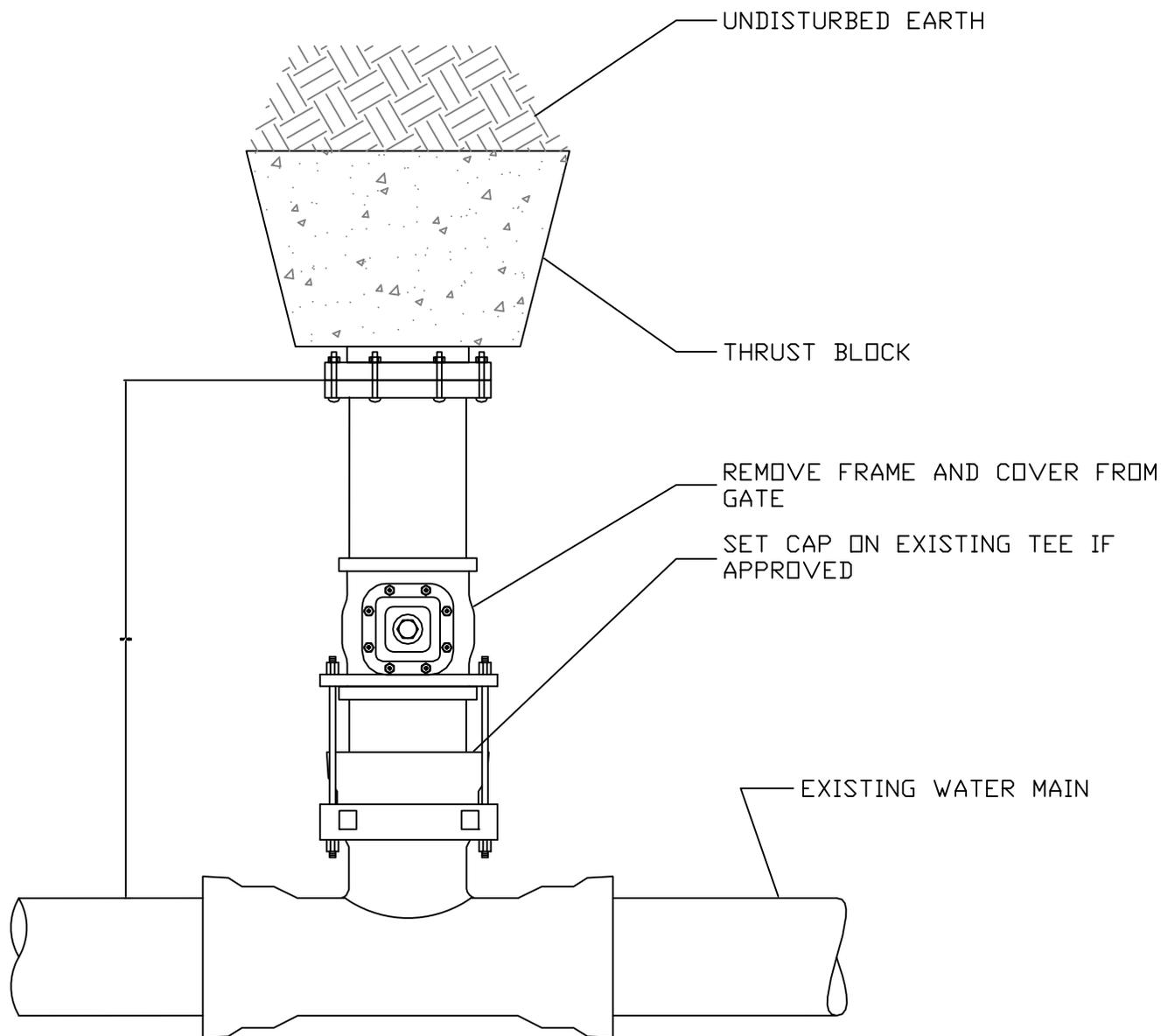
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
W-7.0

Detail Name:
Cut and Remove of Water Connection 4" and Over

Date Last Updated:
03/01/2016



NOTES:

1. CUT AND CAP TEE IS THE PREFERRED METHOD, AS SHOWN IN DETAIL NUMBER W-7.0. FOR ABANDONING A WATER MAIN CONNECTION
2. CAPPING AGATE WILL BE CONSIDERED ONLY UNDER SPECIAL CIRCUMSTANCES CONSIDERING ACCESS TO WATER MAIN AND IMPACT TO NATICK WATER CUSTOMERS

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

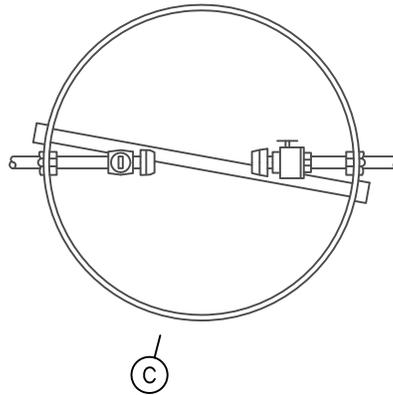
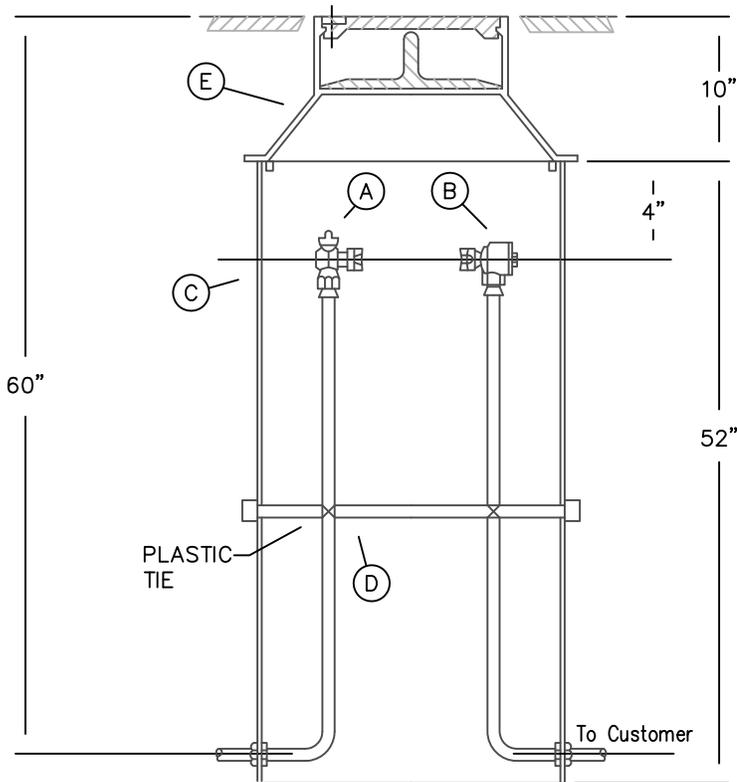
W-7.1

Detail Name:

Cut and Capping of Water Connection 4" and Over

Date Last Updated:

03/01/2016



NOTES:

1. ALL SERVICE SHALL ENTER THE PIT AT A 90° ANGLE TO THE STREET.
2. TO BE USED FOR DWELLINGS WHICH EXCEED A DISTANCE OF 200' FROM FRONT PROPERTY LINES AND OTHER LOCATIONS DETERMINED BY THE DPW
3. COVER TO INCLUDE THE LETTERS "WATER"
4. SEE CONSTRUCTION STANDARDS SECTION 3 FOR ADDITIONAL INFORMATION

ITEM	DESCRIPTION	
A	ANGLE BALL VALVE	
B	DUAL ANGLE CHECK VALVE	
C	20" I.D. PVC PIPE	
D	1/2" PVC SUPPORT & CAPS	
E	METER BOX COVER & LID	

METER PIT SPECIFICATIONS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

W-8.0

Detail Name:

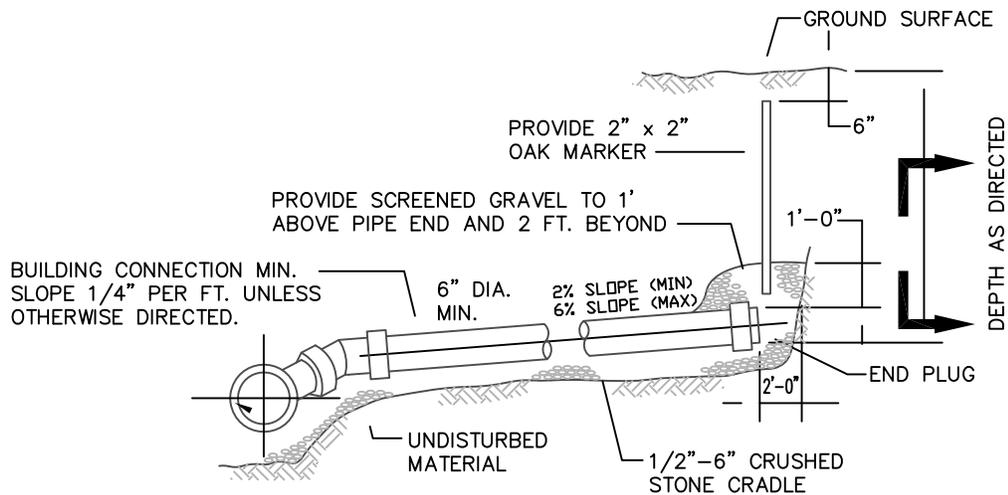
Meter Pit

Date Last Updated:

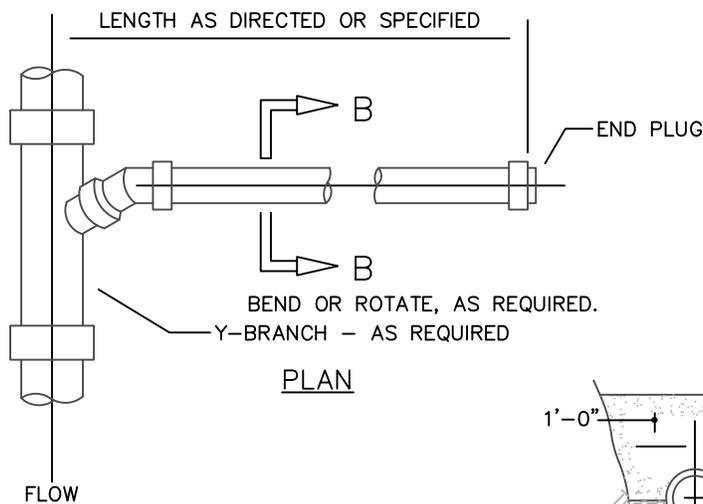
03/01/2016

Sewer Construction Details

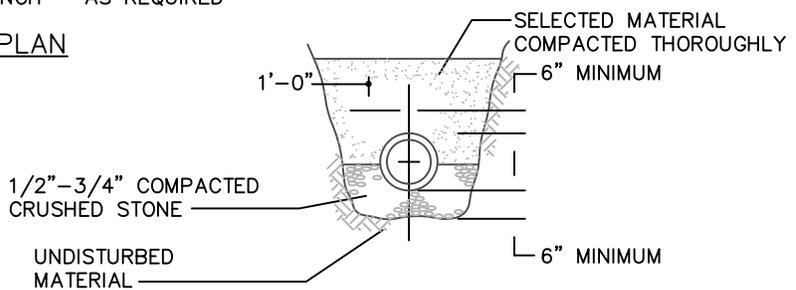




SECTION



PLAN



SECTION B-B

NOTES

1. SEE CONSTRUCTION STANDARDS SECTION 2 FOR ADDITIONAL DETAILS AND MATERIAL SPECIFICATIONS

TYPICAL SERVICE CONNECTION

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

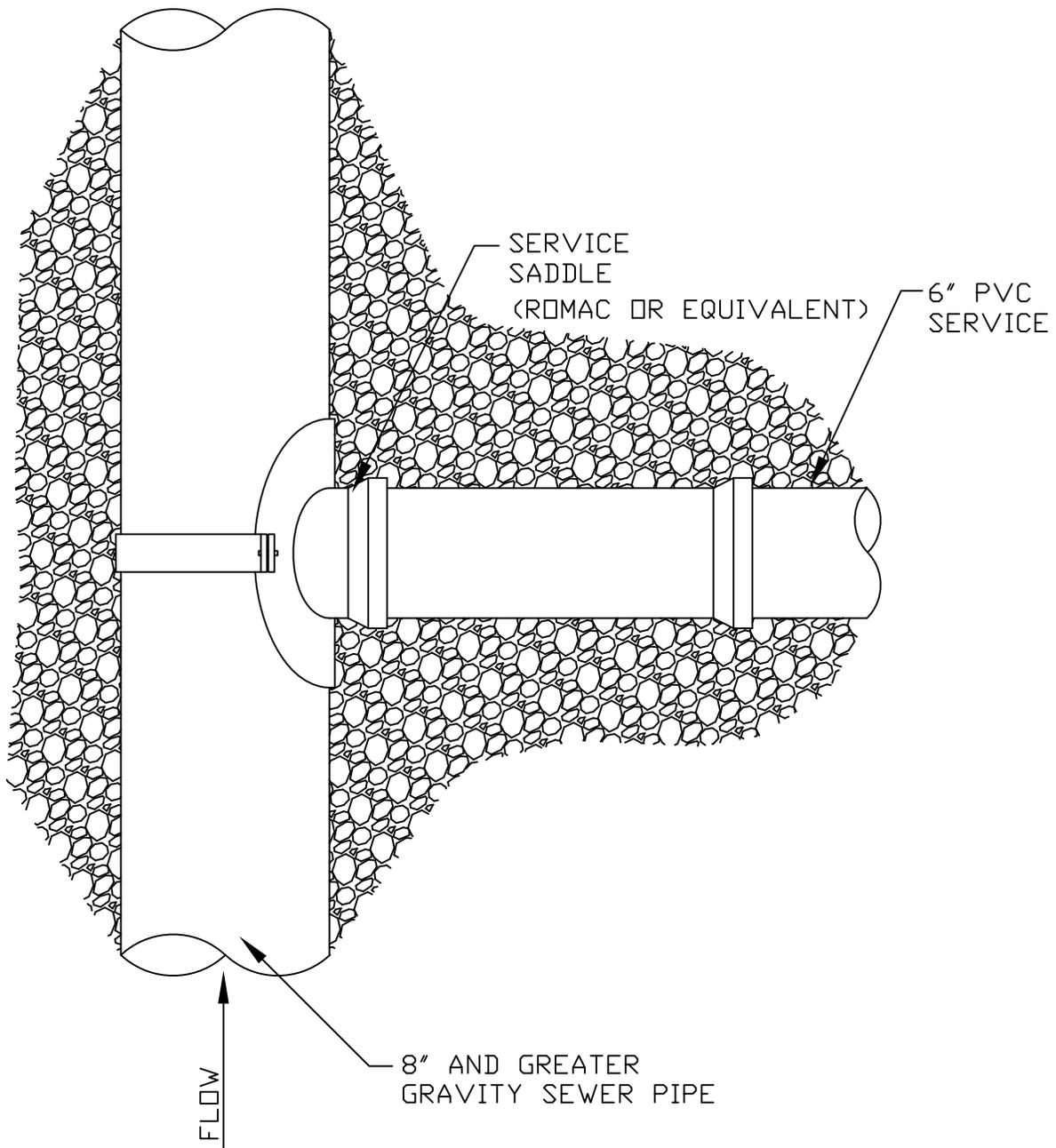
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-1.0

Detail Name:
Service Connection (Gravity)

Date Last Updated:
03/01/2016



NOTE:

1. INSTALL SADDLE FIRST, THEN CORE HOLE.

TOWN OF NATICK, MASSACHUSETTS

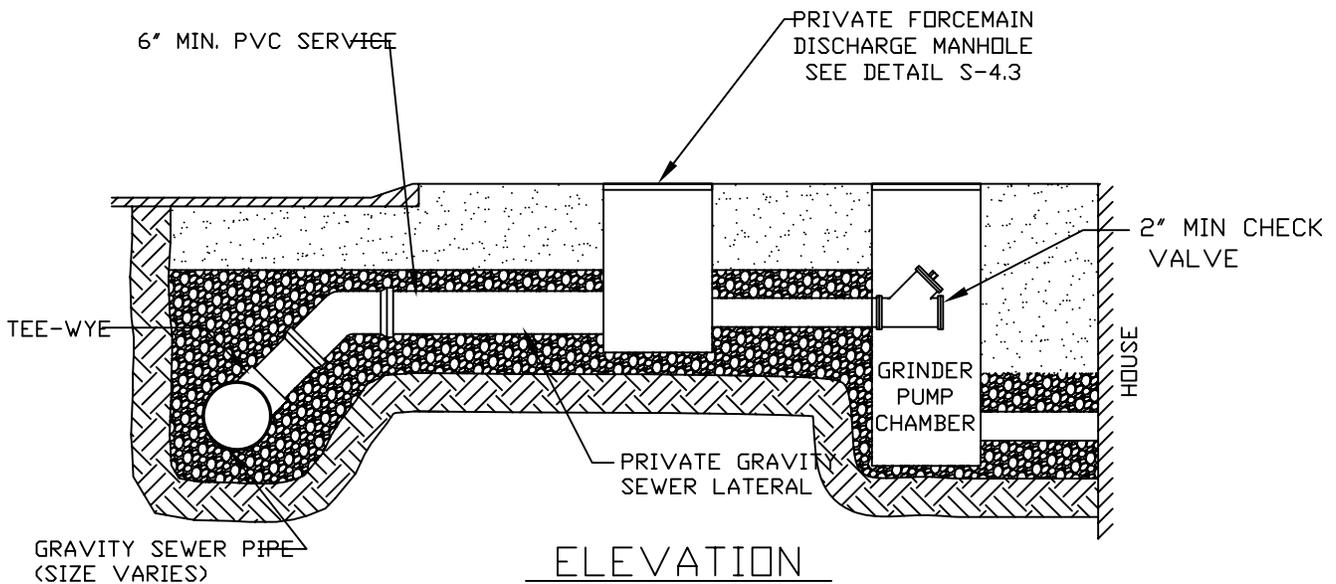
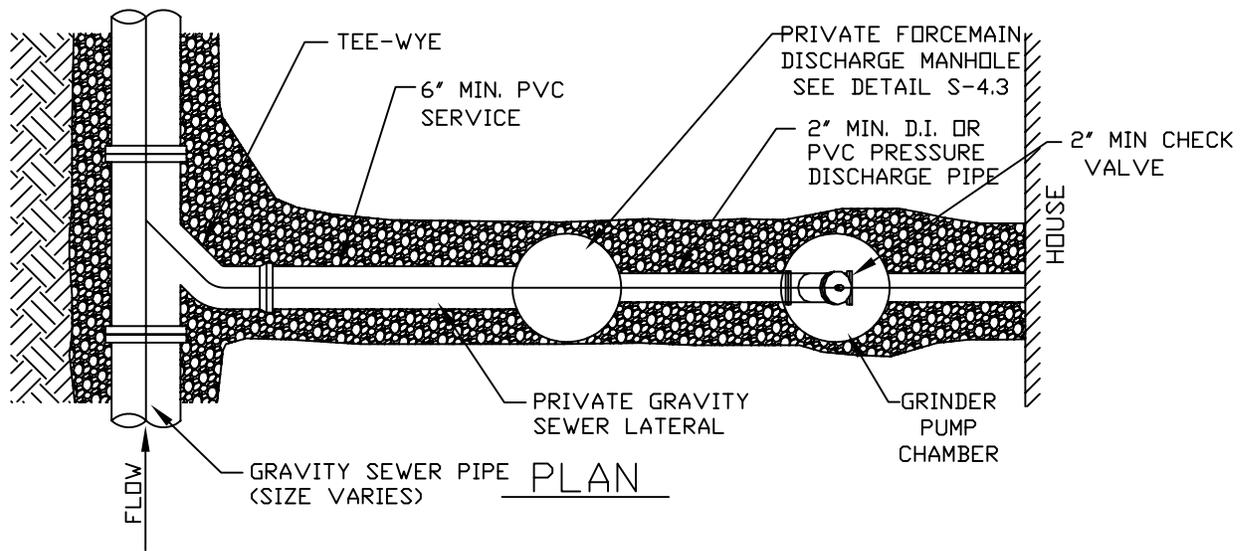
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-1.1

Detail Name:
Service Connection (Saddle)

Date Last Updated:
03/01/2016



NOTES:

1. PIPE SIZES AND DEPTHS VARY.
2. PREFERRED SEWER SERVICE CONNECTION TO NATICK SEWER SYSTEM IS GRAVITY SERVICE. DPW WILL REVIEW EACH CASE TO DETERMINE APPROPRIATE CONNECTION TYPE
3. SEE CONSTRUCTION STANDARDS SECTION 2 FOR ADDITIONAL REQUIREMENTS AND MATERIAL SPECIFICATIONS

TOWN OF NATICK, MASSACHUSETTS

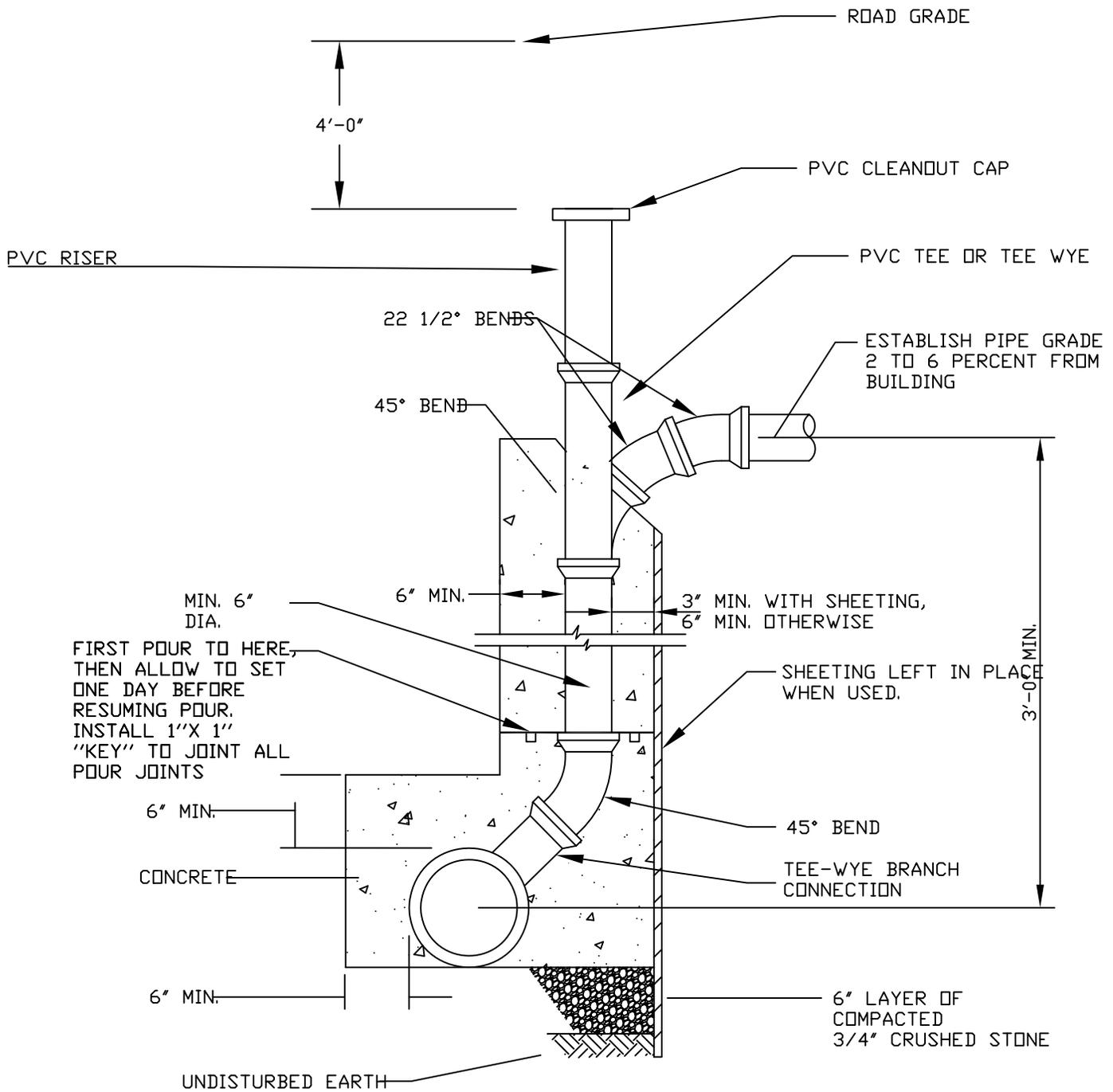
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75 WEST STREET NATICK, MA 01760

Detail Number:
S-1.2

Detail Name:
Service Connection (Grinder)

Date Last Updated:
03/01/2016



TOWN OF NATICK, MASSACHUSETTS

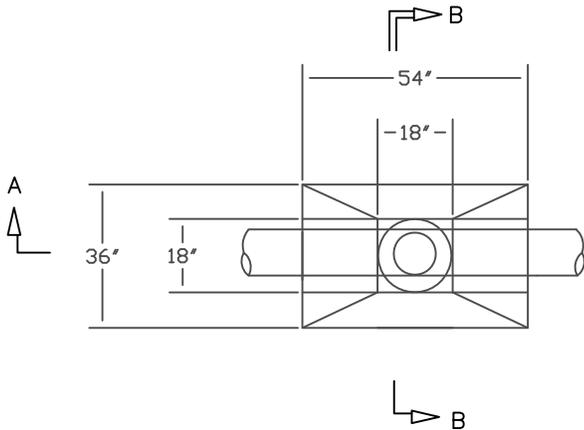
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75 WEST STREET NATICK, MA 01760

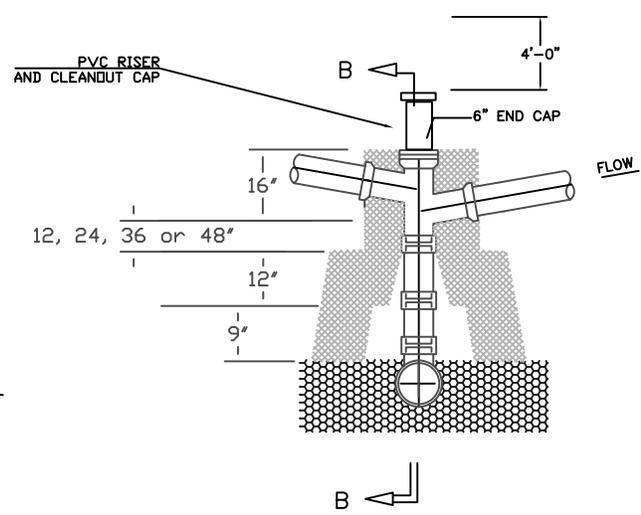
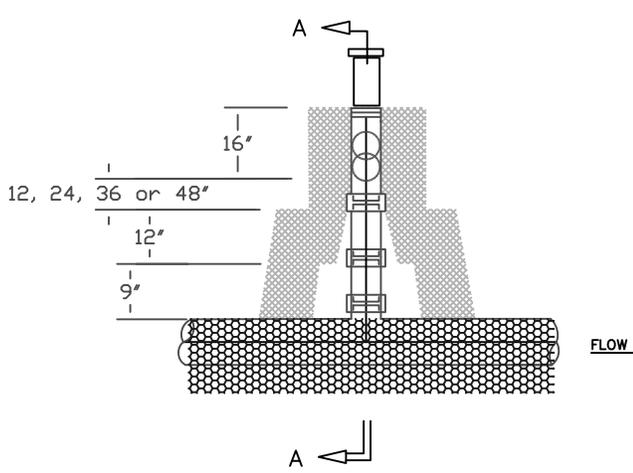
Detail Number:
S-1.3

Detail Name:
Sewer Chimney

Date Last Updated:
03/01/2016



Design Data:
 -Concrete Compressive Strength 5,000psi
 -Cement per ASTM C-150-81
 -Reinforcing per ASTM A615
 -Base Section designed to meet H-20 loading
 -Chimney design incorporates a "Triple Seal" System
 -Structure may also be used as a pipe weight.



TYPICAL PRECAST SEWER CHIMNEY DETAIL

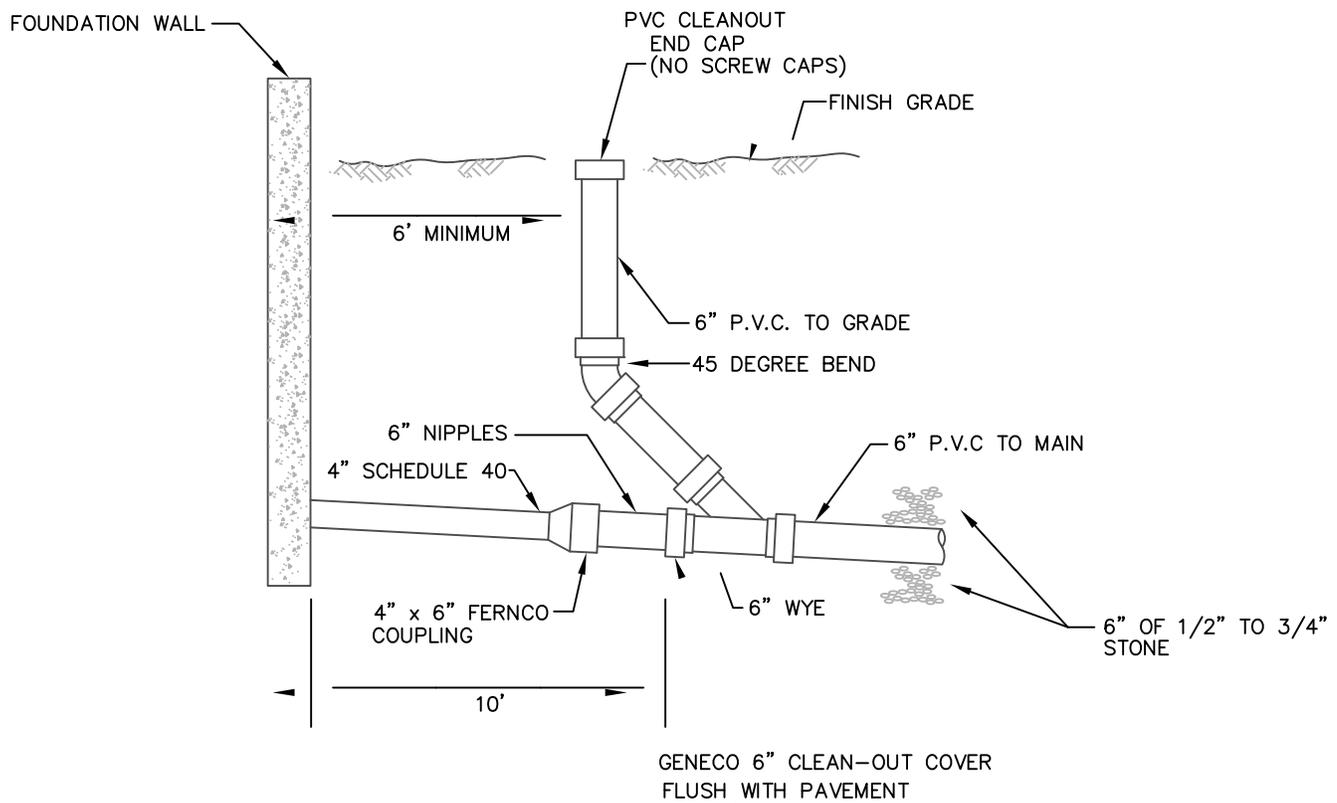
(FOR MAIN SEWER OVER 8'-0" DEEP)
 NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
 75 WEST STREET NATICK, MA 01760

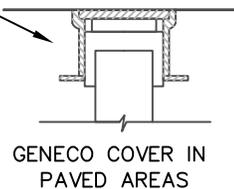
Detail Number:
 S-1.4

Detail Name:
 Precast Sewer Chimney

Date Last Updated:
 03/01/2016



NOTE:
 GREEN TRACER TAPE MARKED
 "CAUTION_SEWER LINE BELOW"
 MUST BE PLACED IN THE
 SEWER SERVICE TRENCH FROM
 THE MUNICIPAL MAIN TO EACH
 RESIDENCE 16" BELOW FINISH
 GRADE.



SEWER SERVICE LINES CLEANOUT & FITTINGS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

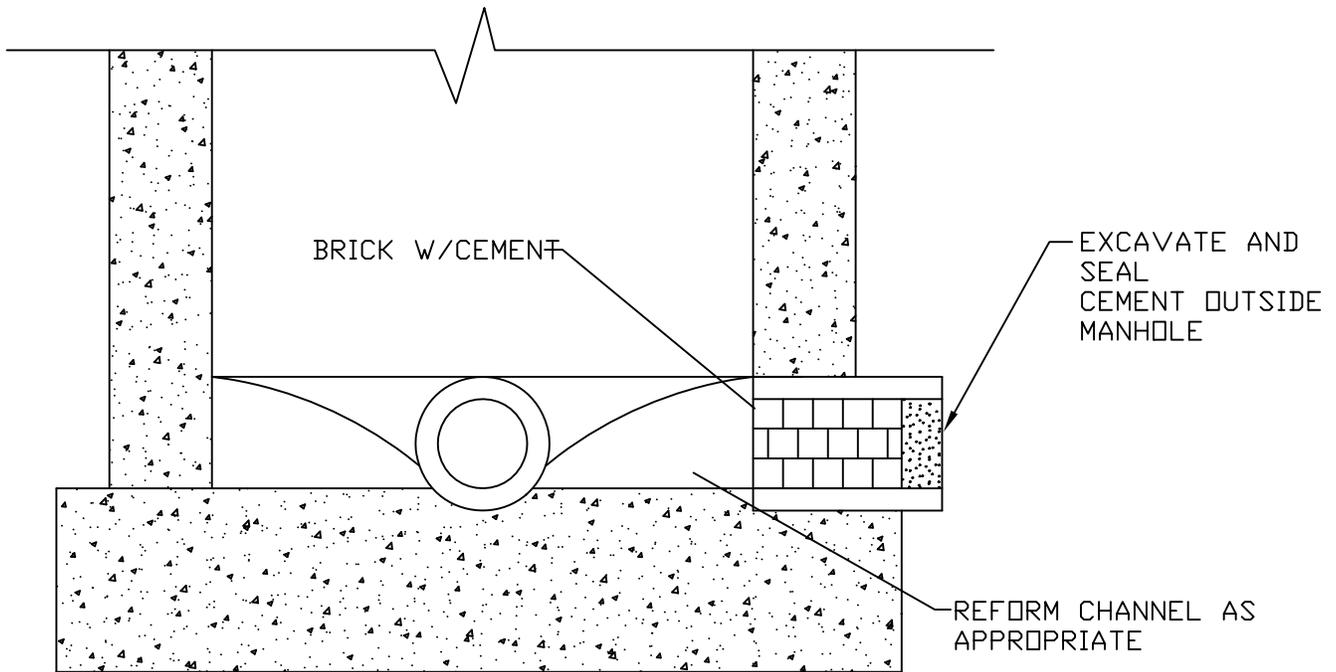
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-2.0

Detail Name:
Sewer Clean Out

Date Last Updated:
03/01/2016



NOTES:

1. THIS DRAWING DEPICTS CONCRETE PIPE.
2. USE MECHANICAL PLUGS WHEN ABANDONING PLASTIC PIPES.

TOWN OF NATICK, MASSACHUSETTS

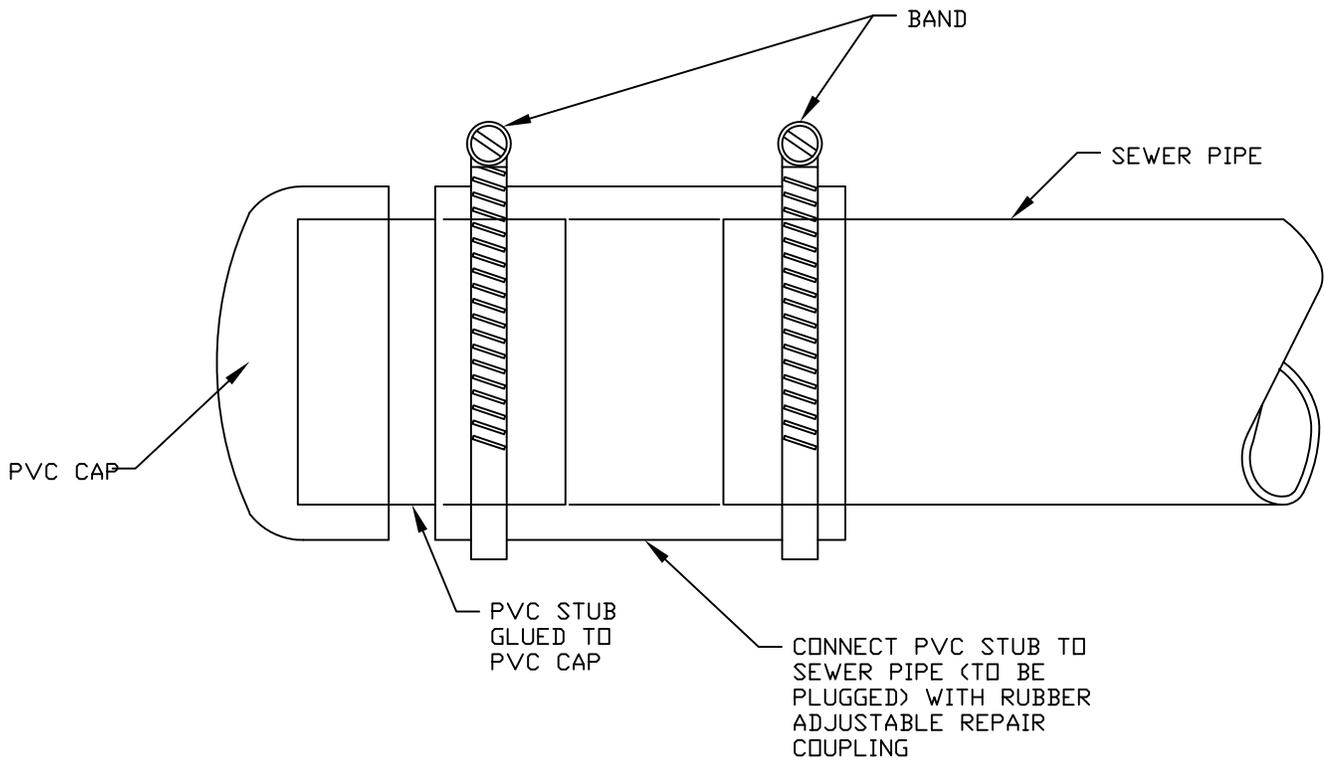
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75 WEST STREET NATICK, MA 01760

Detail Number:
S-3.0

Detail Name:
Plug for Abandoning Sanitary Sewer

Date Last Updated:
03/01/2016



TOWN OF NATICK, MASSACHUSETTS

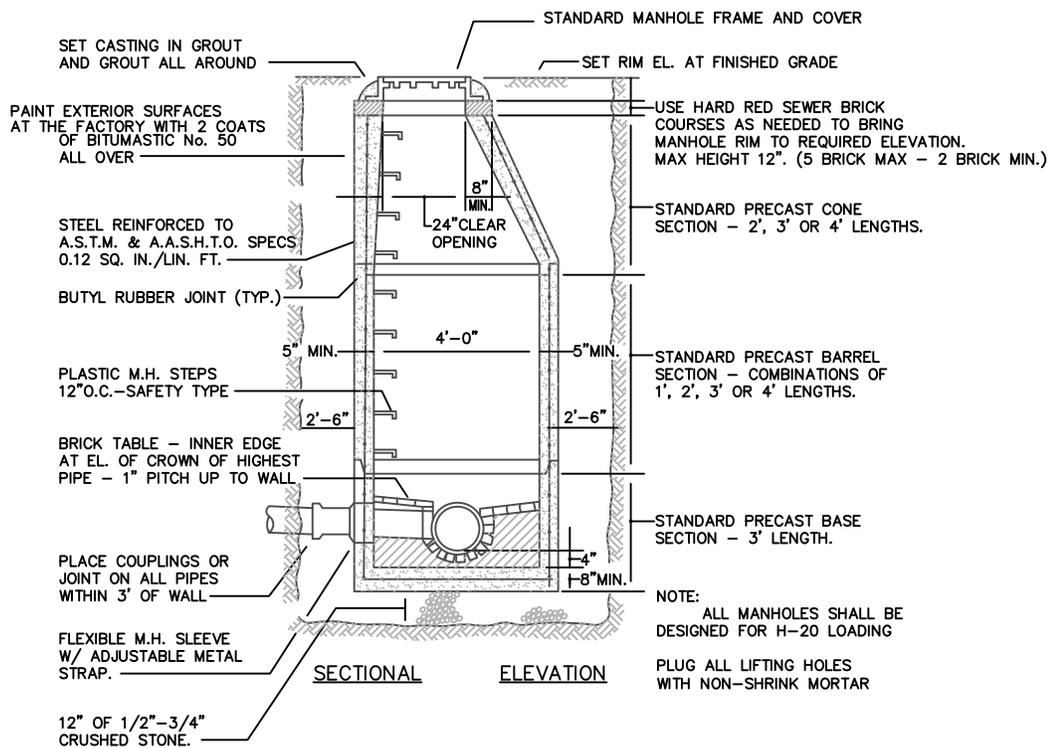
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75 WEST STREET NATICK, MA 01760

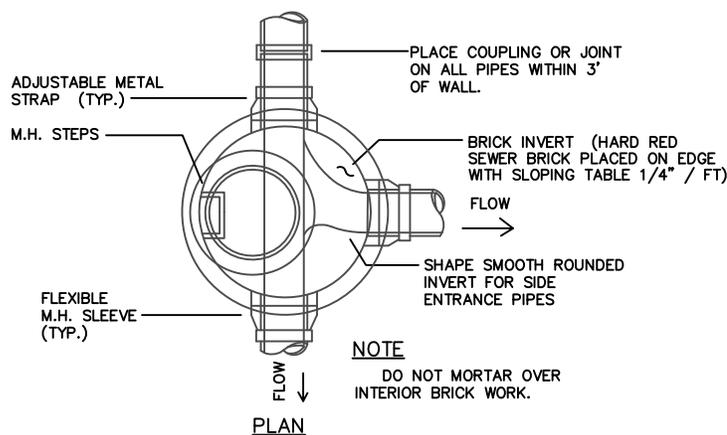
Detail Number:
S-3.1

Detail Name:
Plug for Sanitary Sewer

Date Last Updated:
03/01/2016



- NOTE:
1. SEE CONSTRUCTION STANDARDS SECTION 2 FOR ADDITIONAL INFORMATION AND MATERIAL SPECIFICATIONS
 2. WATERTIGHT COVER LOCATIONS TO BE DETERMINED BY DPW



TYPICAL PRECAST CONCRETE MANHOLE DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

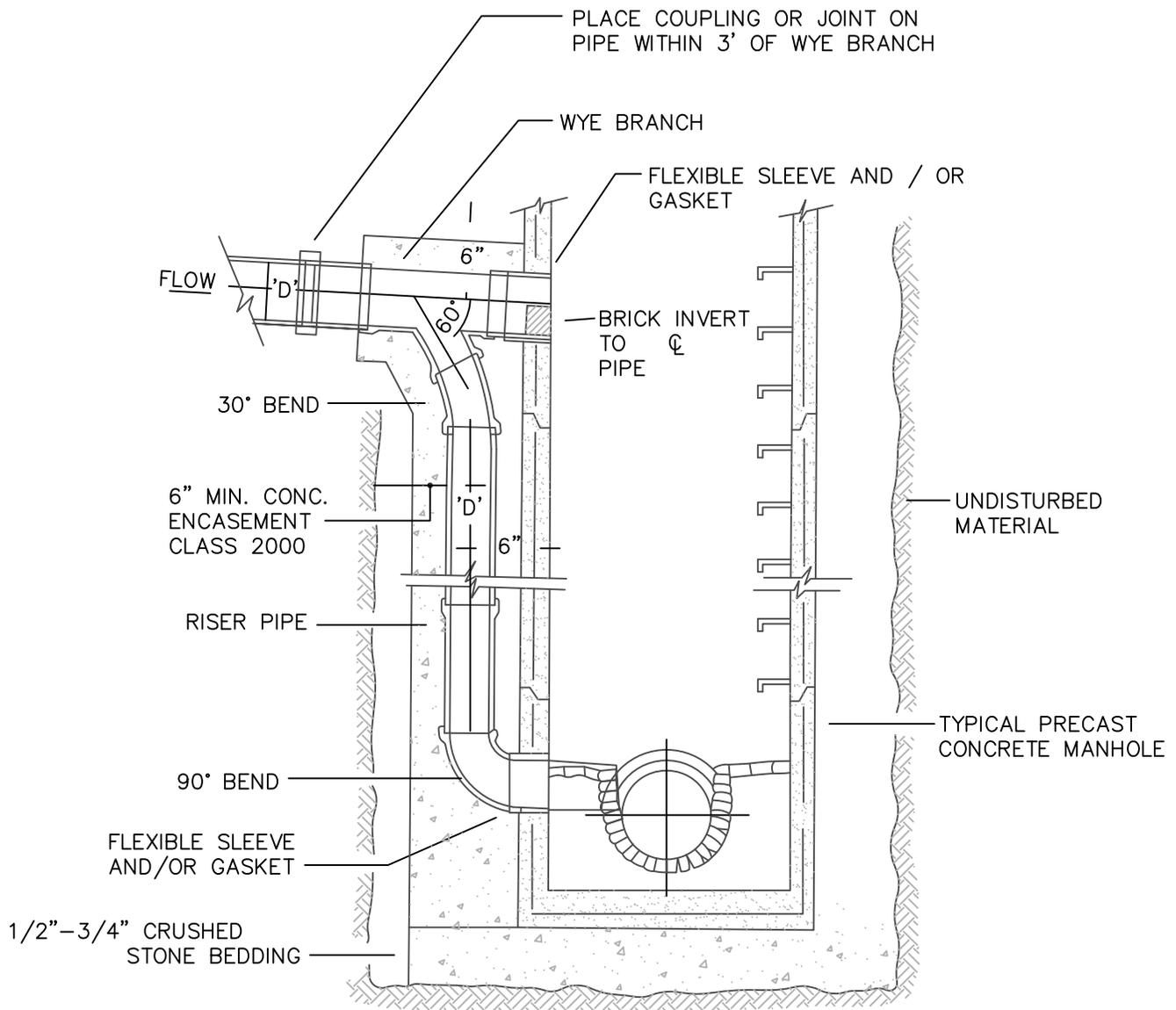
DEPARTMENT OF PUBLIC WORKS - ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-4.0

Detail Name:
Typical Sewer Manhole

Date Last Updated:
03/01/2016



TYPICAL DROP INLET MANHOLE DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

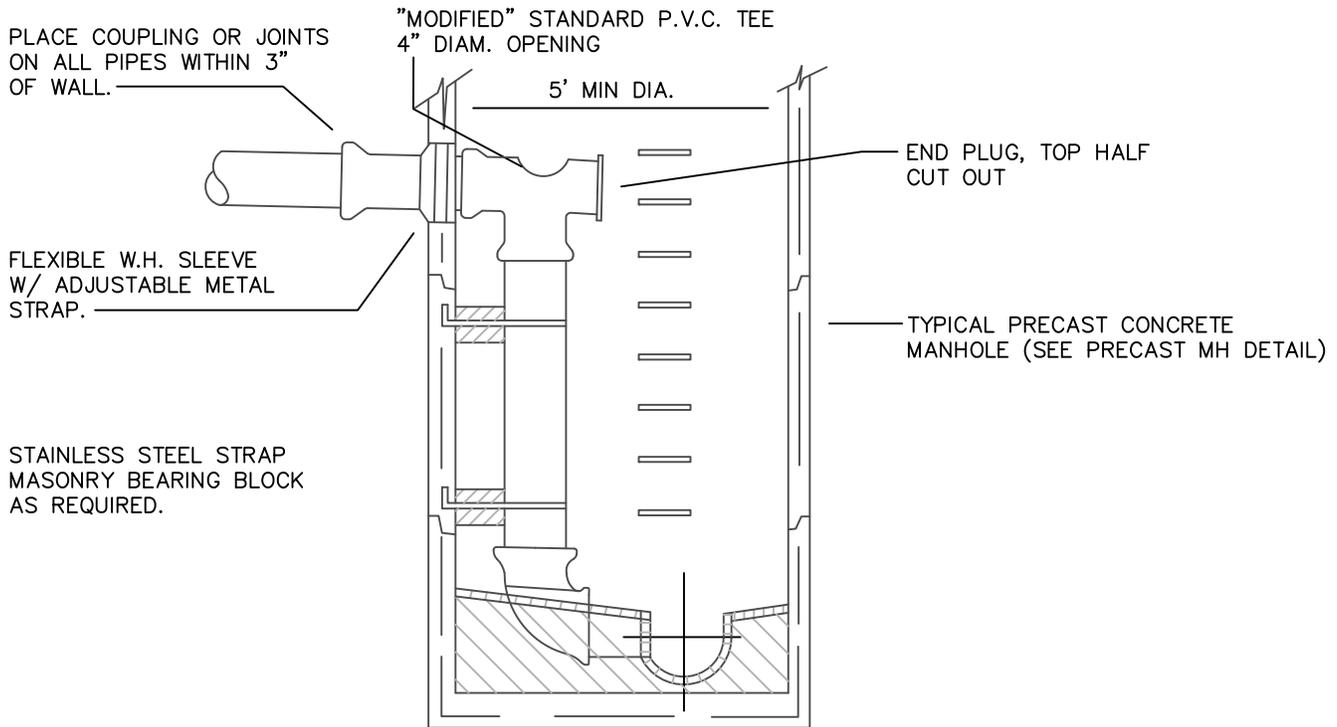
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-4.1

Detail Name:
Typical Drop Manhole (Outside)

Date Last Updated:
03/01/2016



TYPICAL INSIDE DROP INLET MANHOLE DETAILS

NOT TO SCALE

NOTES:

1. OUTSIDE DROP INLET IS THE PREFERRED METHOD
2. INSIDE DROP INLETS WILL BE CONSIDERED FOR EXISTING MANHOLES, PROVIDED THE MANHOLE IS 5'-0" OR GREATER IN DIAMETER AND APPROVED BY THE DPW

TOWN OF NATICK, MASSACHUSETTS

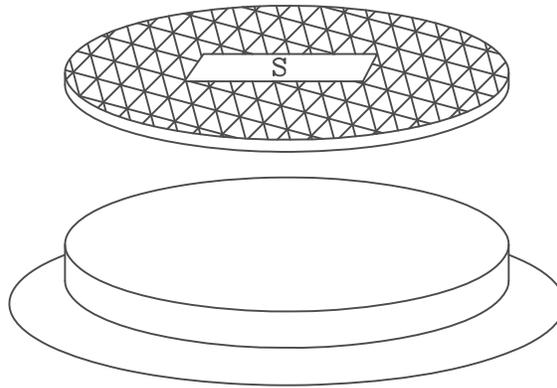
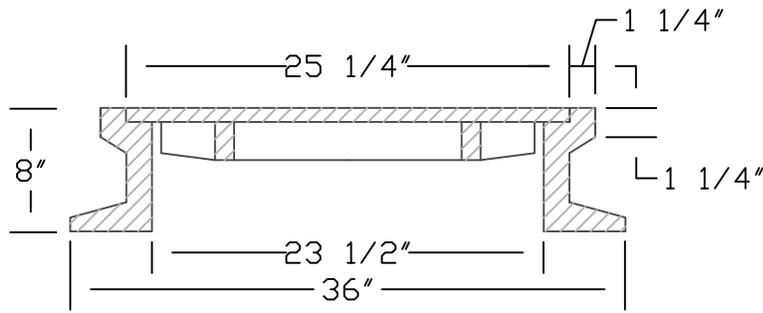
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-4.2

Detail Name:
Typical Drop Manhole (Inside)

Date Last Updated:
03/01/2016



NOTES:

1. SEE CONSTRUCTION STANDARDS SECTION 2 FOR MATERIAL SPECIFICATIONS
2. WATERTIGHT FRAME AND COVERS TO BE PROVIDED WHERE REQUIRED BY THE DPW
3. SEWER MAINS TO BE OWNED BY THE TOWN SHALL HAVE COVERS WITH THE LETTER "S". SEWER MAINS TO REMAIN PRIVATE SHALL HAVE A COVER WITH THE LETTERS "SEWER".

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

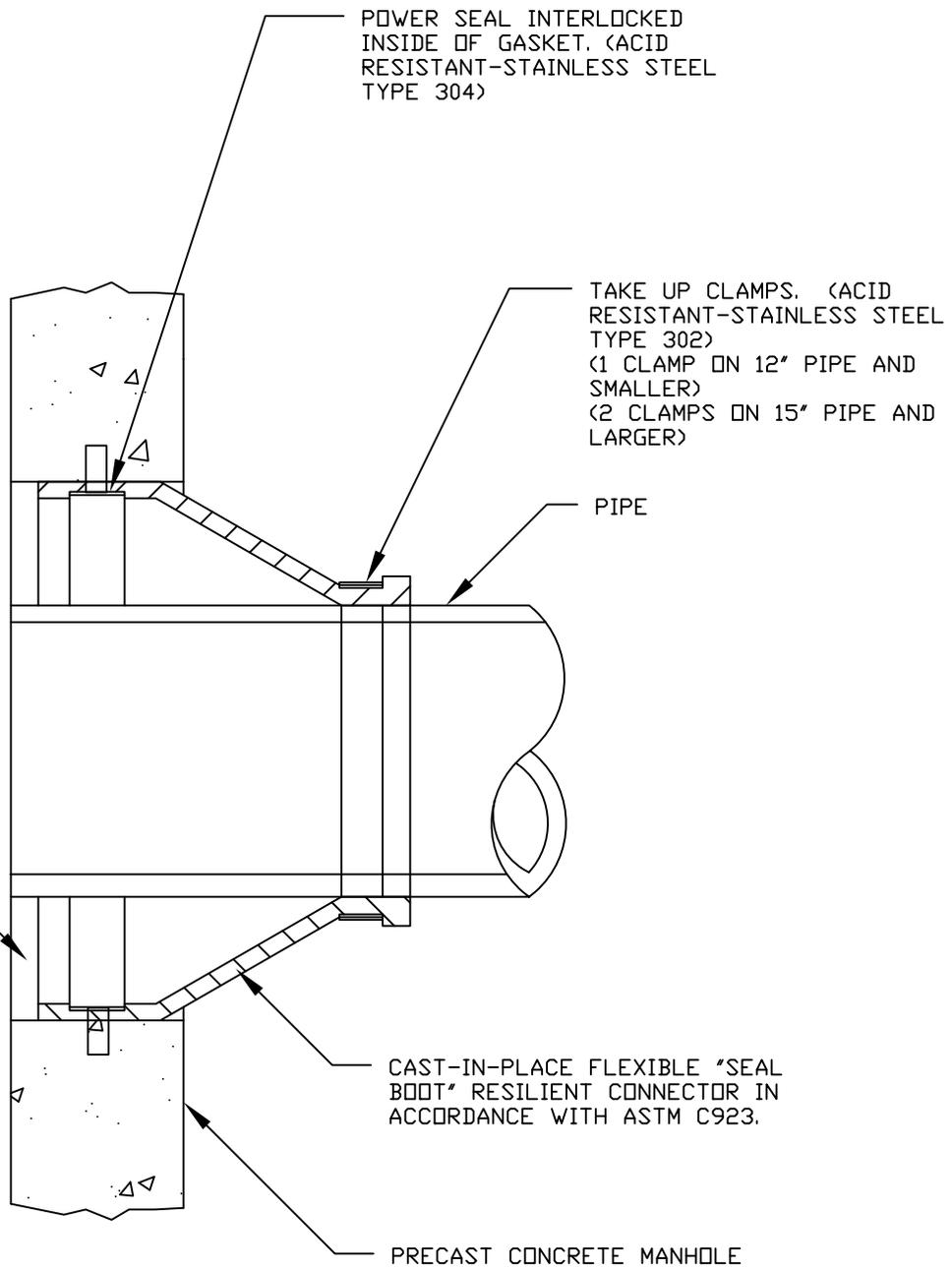
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-4.4

Detail Name:
Sewer Manhole Cover

Date Last Updated:
03/01/2016



TOWN OF NATICK, MASSACHUSETTS

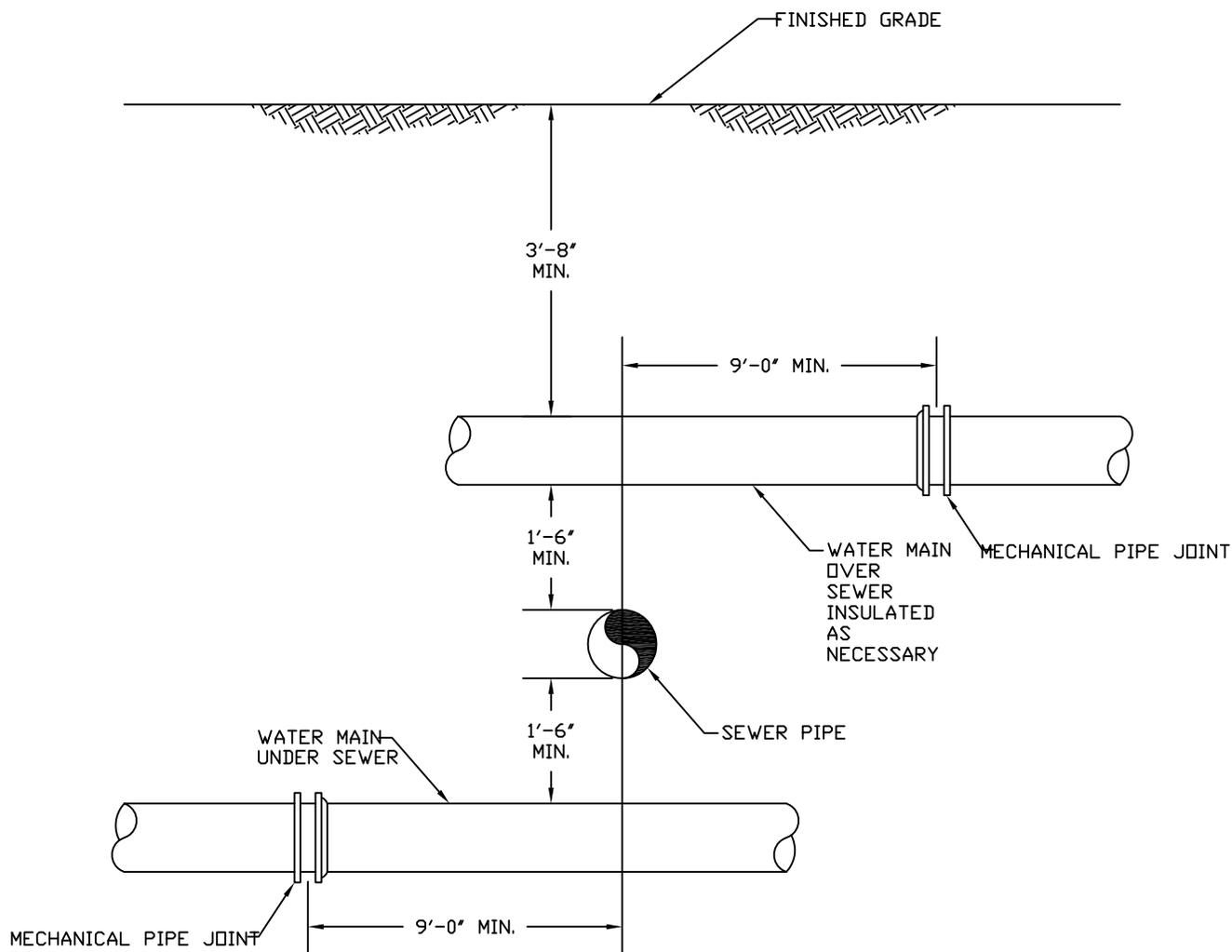
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-4.5

Detail Name:
Manhole Seal

Date Last Updated:
03/01/2016



NOTES:

1. SEWERS SHALL BE KEPT REMOTE FROM WATER SUPPLY PIPING AND STRUCTURES. WHEREVER FEASIBLE, SEWERS SHOULD BE LAID AT A MINIMUM HORIZONTAL DISTANCE OF 10 FEET FROM WATER MAINS. IF LOCAL CONDITIONS PREVENT THIS, THE WATER MAIN SHOULD BE LAID IN A SEPARATE TRENCH, AND THE ELEVATIONS OF THE CROWN OF THE SEWER PLACED AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN.
2. WHENEVER SEWERS MUST CROSS WATER MAINS, THE CROWN OF THE SEWER SHOULD BE PLACED A MINIMUM OF 18 INCHES BELOW THE INVERT OF THE WATER MAIN. IN ADDITION, THE WATER MAIN MUST BE CONSTRUCTED WITH ONE FULL LENGTH OF PIPE CENTERED ABOUT THE SEWER CROSSING. THE WATER PIPE SHALL HAVE MECHANICAL JOINTS FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE SEWER CROSSING.
3. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER AND THE SEWER SHOULD BE ENCASED IN CONTROL DENSITY FILL FOR A DISTANCE OF 10 FEET ON EITHER SIDE OF THE CROSSING.

TOWN OF NATICK, MASSACHUSETTS

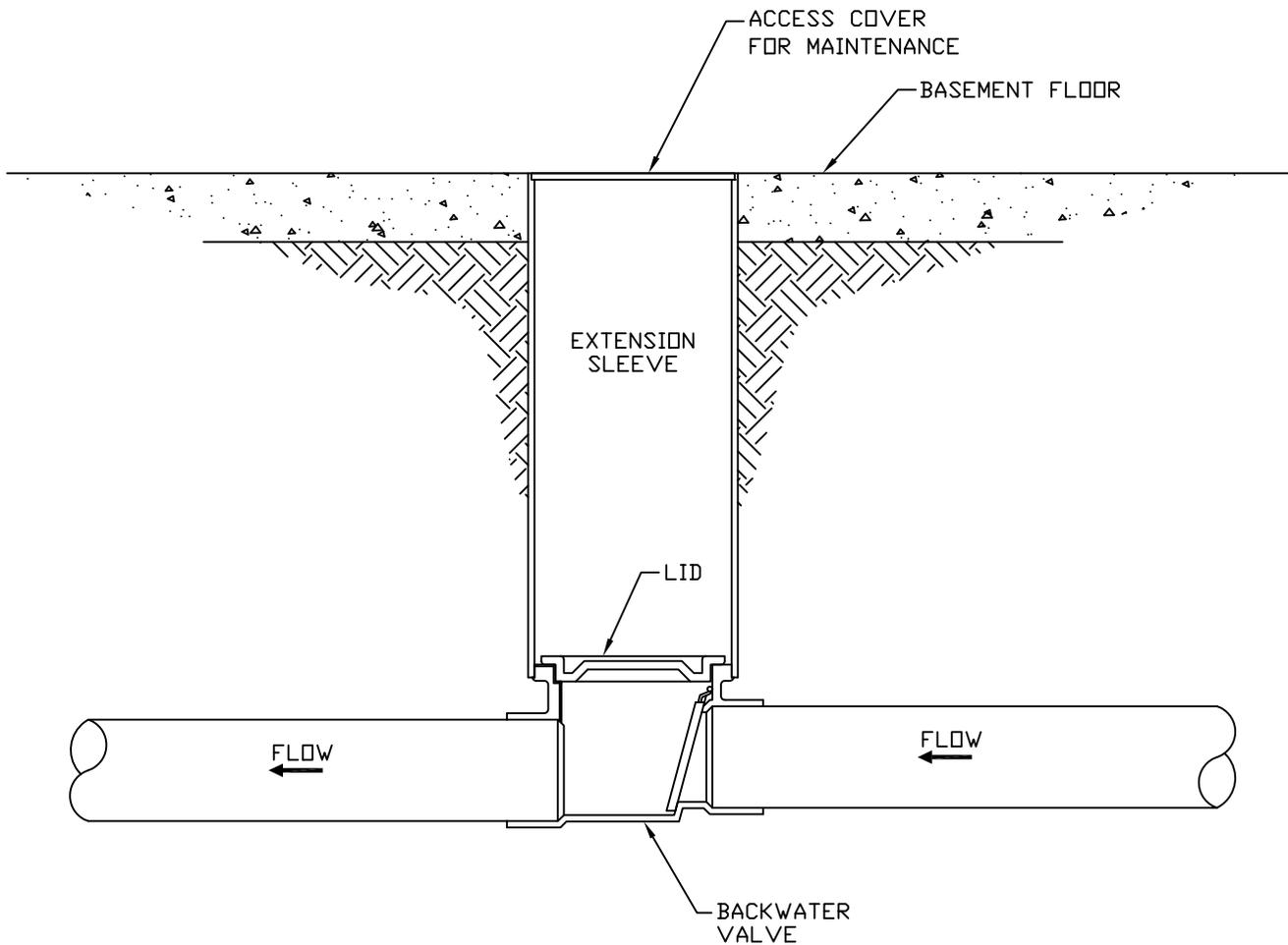
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
S-5.0

Detail Name:
Sewer Crossing

Date Last Updated:
03/01/2016



TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

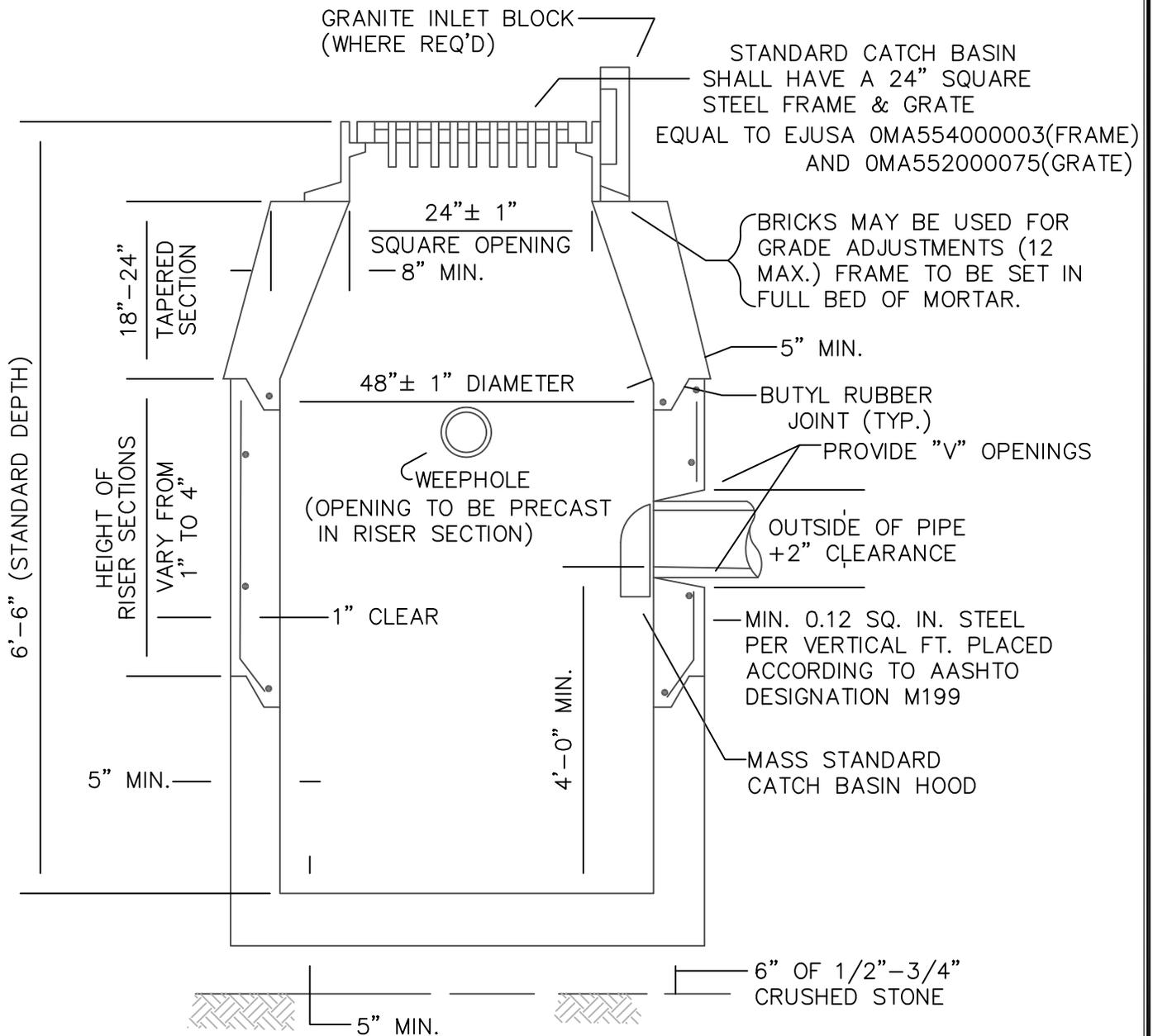
Detail Number:
S-6.0

Detail Name:
Backwater Valve Assembly

Date Last Updated:
03/01/2016

Drainage Construction Details





NOTE: NO BELL ENDS IN CATCH BASIN. CONNECTIONS TO BE TIGHTLY SEALED WITH MORTAR.

PRECAST CONCRETE CATCH BASIN DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS - ENGINEERING DIVISION

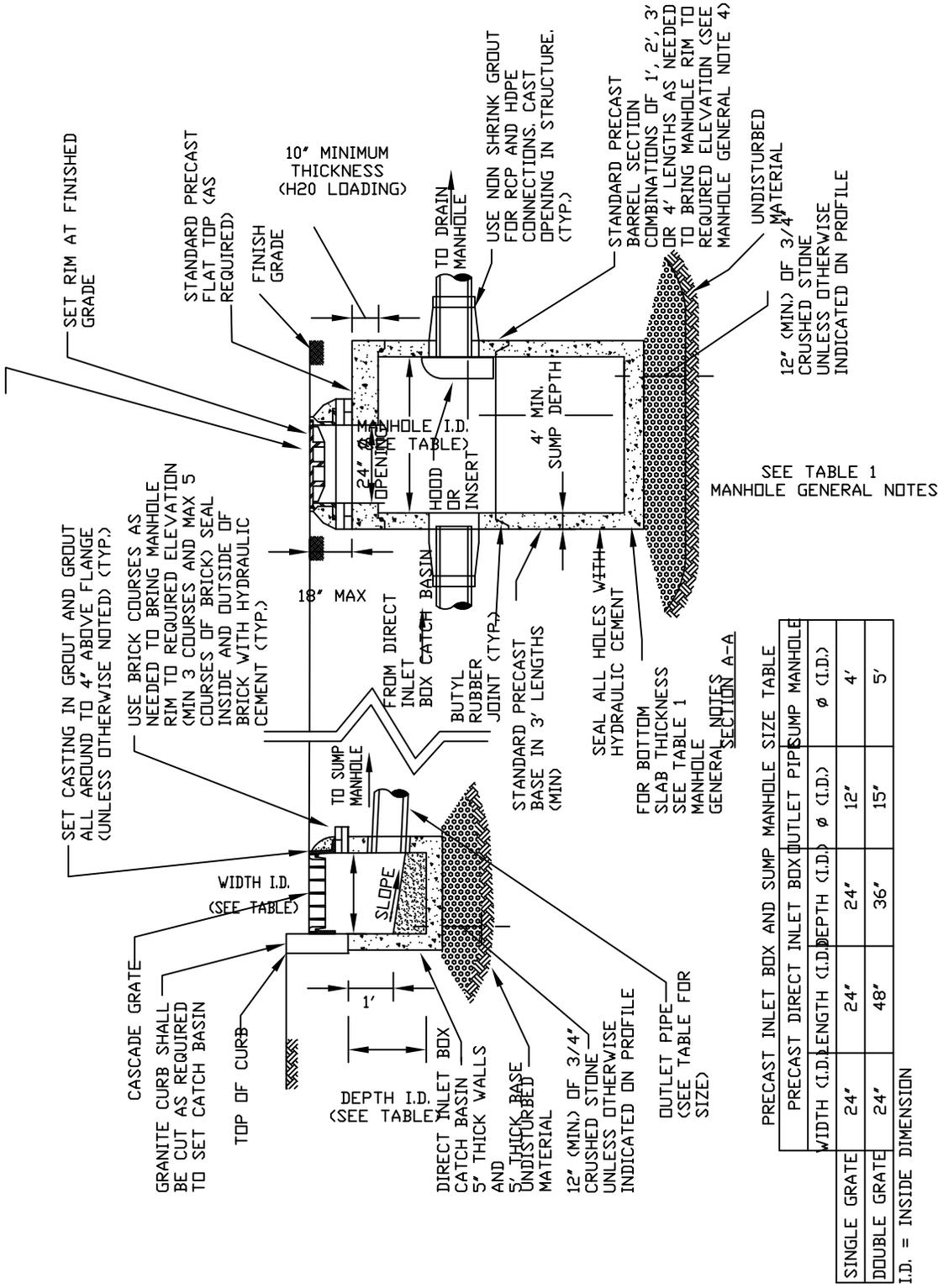
75 WEST STREET NATICK, MA 01760

Detail Number:
D-1.0

Detail Name:
Single Grate Catch Basin

Date Last Updated:
03/01/2016

26" CATCH BASIN FRAME & COVER EQUAL TO EUSA 0MA22600002(FRAME) AND 0MA211000005(COVER) (UNLESS OTHERWISE NOTED)



PRECAST INLET BOX AND SUMP MANHOLE SIZE TABLE

	PRECAST INLET BOX	OUTLET PIPE	SUMP	MANHOLE
WIDTH (I.D.)	24"	24"	24"	12"
DEPTH (I.D.)	24"	24"	36"	15"
Ø (I.D.)				4"
SINGLE GRATE	24"	24"	36"	15"
DOUBLE GRATE	24"	48"	36"	15"

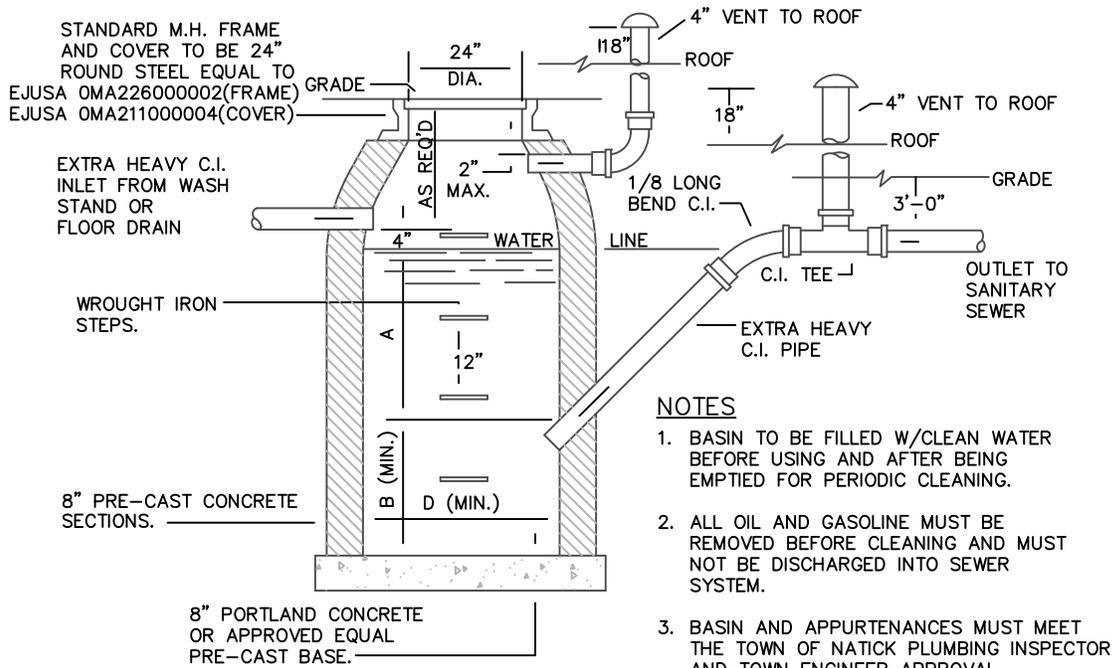
I.D. = INSIDE DIMENSION

TOWN OF NATICK, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
 75 WEST STREET NATICK, MA 01760

Detail Number: D-1.1

Detail Name: Direct Inlet Catch Basin

Date Last Updated: 03/01/2016



NOTE: OIL & GASOLINE TRAP BASIN SHALL ONLY BE USED WITH PRIOR APPROVAL OF TOWN ENGINEER.

INLET	D	A	B
4"	4'-0"	2'-3"	1'-11"
	3'-6"φ	3'-0"	2'-6"
5"	3'-6"φ	5'-0"	4'-0"
	3'-6"x3'-6"	4'-0"	3'-0"
	4'-0"φ	3'-6"	3'-0"
	4'-0"x4'-0"	3'-0"	2'-6"
6"	4'-6"φ	3'-0"	2'-6"
	4'-0"φ	5'-0"	4'-6"
	4'-0"x4'-0"	4'-0"	3'-6"
	4'-6"φ	4'-0"	3'-6"
	4'-6"x4'-6"	3'-6"	3'-0"
8"	5'-0"φ	3'-6"	3'-0"
	5'-0"x5'-0"	3'-0"	2'-6"
	5'-0"φ	6'-0"	5'-0"
	5'-6"x5'-6"	4'-6"	4'-0"
	6'-0"φ	4'-0"	3'-6"
8"	6'-0"x6'-0"	3'-0"	2'-6"
	6'-6"φ	3'-6"	3'-0"
	6'-6"φ	3'-0"	2'-6"
	6'-6"x6'-6"	3'-0"	2'-6"

NOTE:
FOR INLETS LARGER THAN
8", THE DESIGN AND DIMENSIONS
WILL BE DETERMINED FOR EACH
PARTICULAR CASE.

CIRCULAR BASINS ARE RECOMMENDED.

STANDARD OIL & GASOLINE TRAP BASIN DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

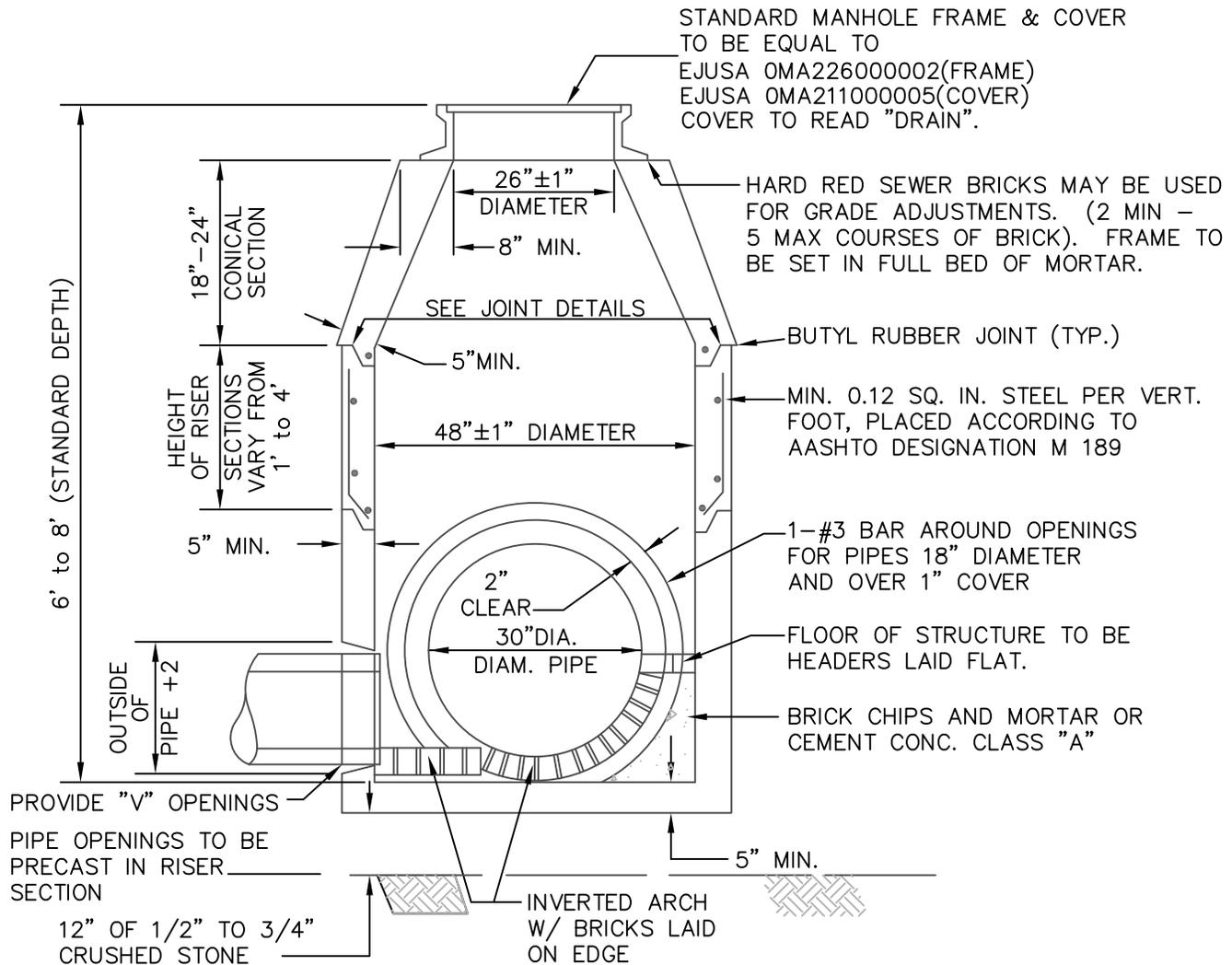
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
D-1.3

Detail Name:
Oil and Gas Trap Basin

Date Last Updated:
03/01/2016



PRECAST CONCRETE MANHOLE DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS - ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

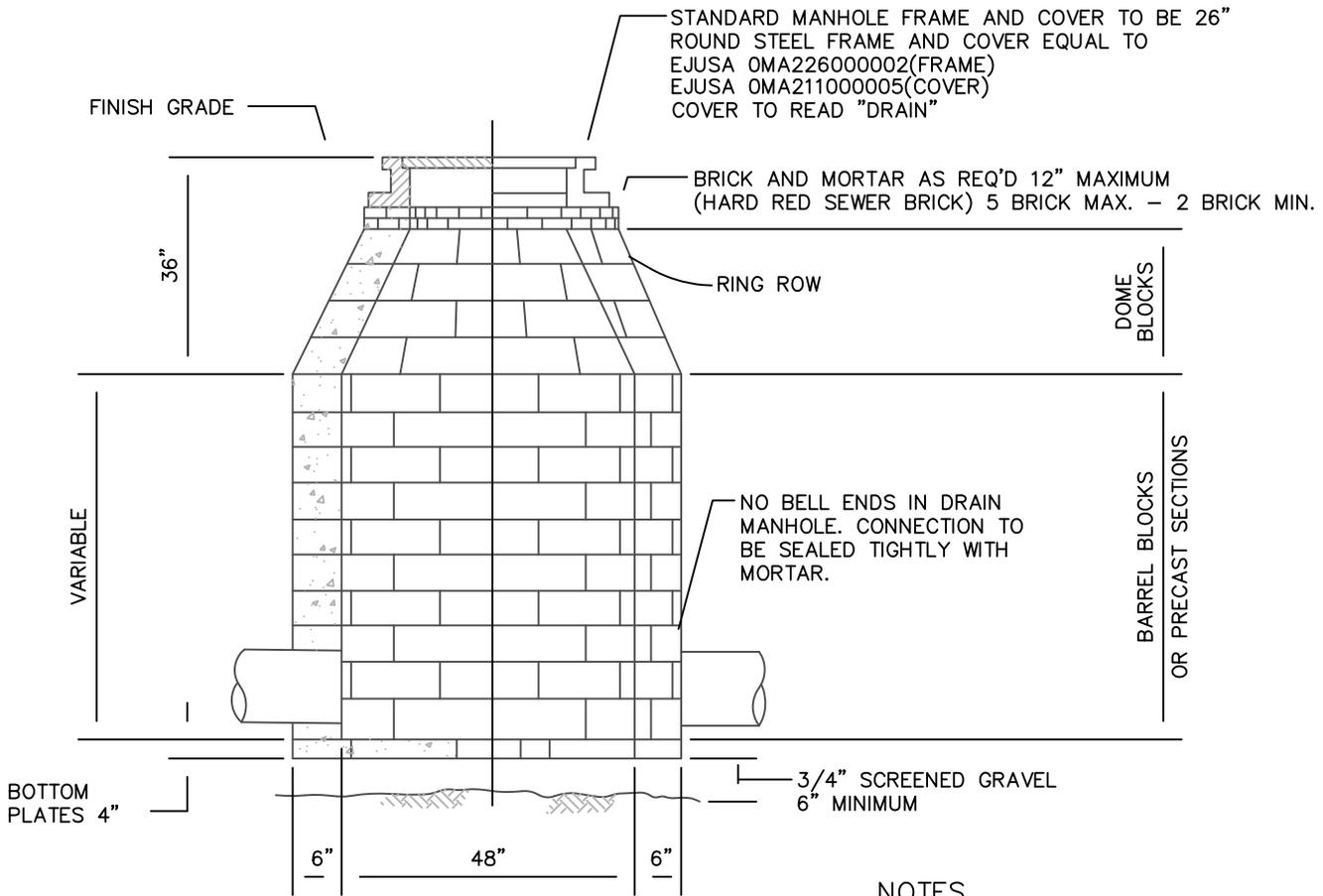
D-2.0

Detail Name:

Drain Manhole (Precast)

Date Last Updated:

03/01/2016



NOTES

1. ALL DRAIN MANHOLES TO HAVE BRICK INVERTS. SEE PRECAST MANHOLE DETAILS.
2. MANHOLE BLOCKS MORE THAN 9' IN DEPTH TO BE 8" BLOCK.

BARREL BLOCK DRAIN MANHOLE DETAILS

NOT TO SCALE

NOTE: BARREL BLOCK DRAIN MH ONLY TO BE USED WITH PRIOR APPROVAL OF THE TOWN ENGINEER.

TOWN OF NATICK, MASSACHUSETTS

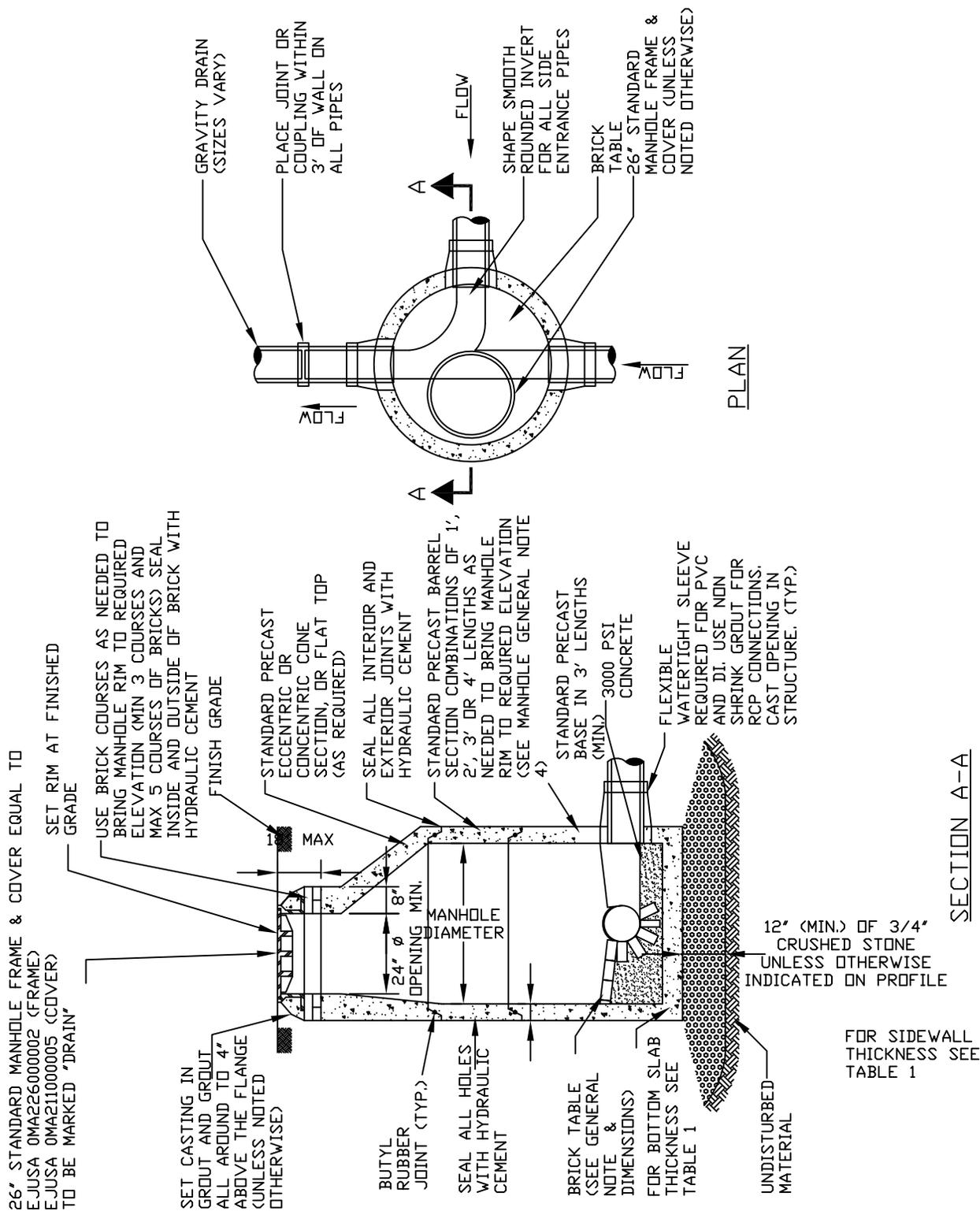
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
D-2.1

Detail Name:
Drain Manhole (Barrel Block)

Date Last Updated:
03/01/2016



TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

D-2.2

Detail Name:

Eccentric Manhole

Date Last Updated:

03/01/2016

26" STANDARD MANHOLE FRAME & COVER
 EQUAL TO E.JUSA 0MA22600002(FRAME)
 0MA211000005(COVER) TO BE MARKED
 "DRAIN"

SET RIM AT FINISHED
 GRADE

USE BRICK COURSES AS NEEDED
 TO BRING MANHOLE RIM TO
 REQUIRED ELEVATION (MIN 3
 COURSES AND MAX 5 COURSES
 OF BRICK) SEAL INSIDE AND
 OUTSIDE OF BRICK WITH
 HYDRAULIC CEMENT
 FINISH GRADE

SET CASTING IN
 GROUT AND GROUT
 ALL AROUND TO 4"
 ABOVE FLANGE
 UNLESS NOTED
 OTHERWISE)

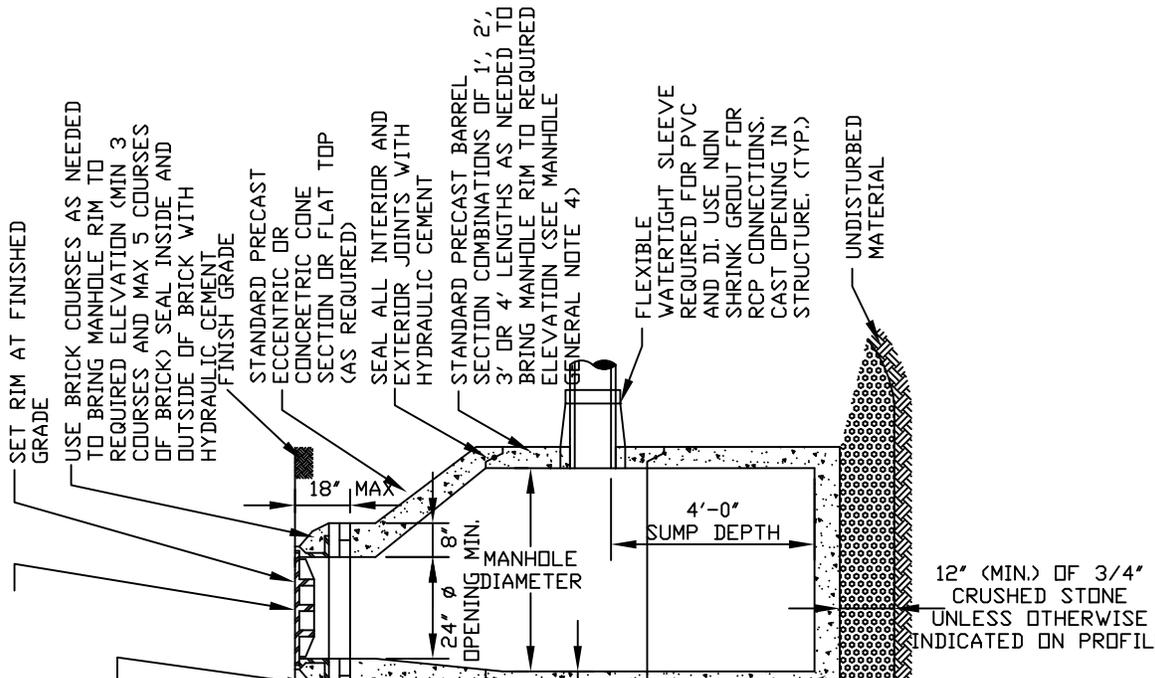
SEAL ALL HOLES
 WITH HYDRAULIC
 CEMENT

BUTYL
 RUBBER
 JOINT (TYP.)

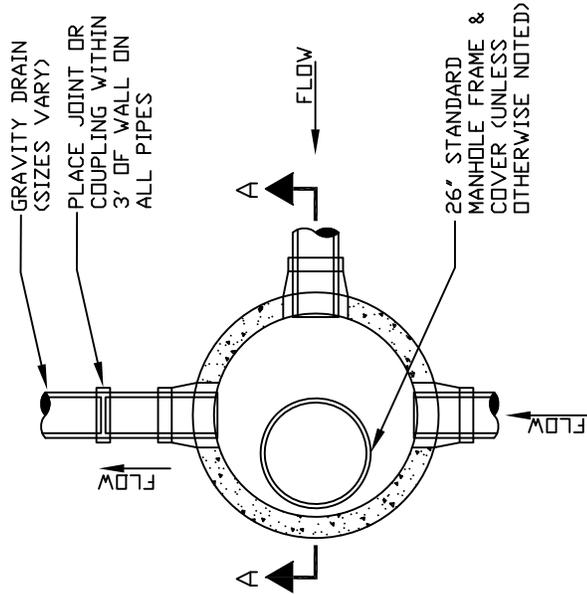
SEE
 TABLE 1

STANDARD
 PRECAST BASE IN
 3' LENGTHS (MIN)

FOR BOTTOM SLAB
 THICKNESS SEE
 TABLE 1



SECTION A-A



PLAN

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

D-2.3

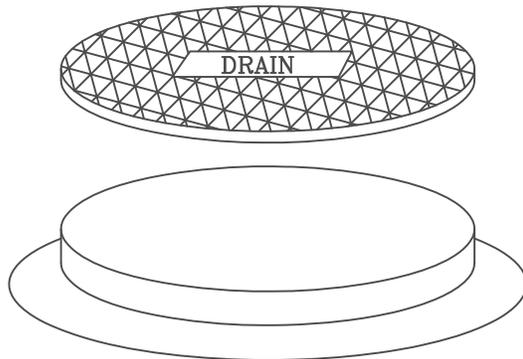
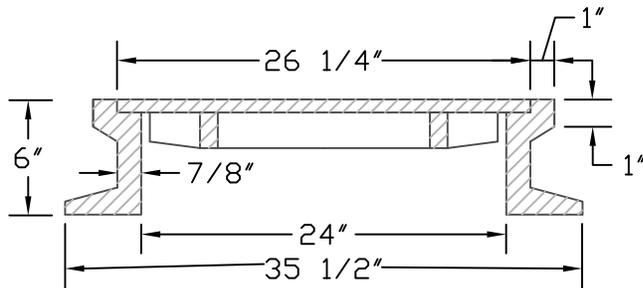
Detail Name:

Sump Manhole

Date Last Updated:

03/01/2016

FRAME & COVER EJUSA OMA226000002(FRAME)
EJUSA OMA211000005(COVER) OR APPROVED EQUAL



MASS. D.P.W. STANDARD DRAIN MANHOLE FRAME & COVER

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
D-2.4

Detail Name:
Drain Manhole Frame and Cover

Date Last Updated:
03/01/2016

TRENCH PAY LIMIT TABLE FOR MANHOLES AND CATCH
BASINS

WALL THICKNESS	MAX TRENCH WIDTH
LESS THAN 6"	I.D. + 5'-0"
6" TO 12"	I.D. + 6'-0"
13" TO 18"	I.D. + 7'-0"
19" & GREATER	O.D. + 6'-0"

I.D. = INSIDE DIMENSION
O.D. = OUTSIDE DIMENSION

FOR TRENCHES GREATER THAN 5' DEEP ADD
3' FOR TEMPORARY SUPPORT OF EXCAVATION

GENERAL CATCH BASIN NOTES:

1. FACE OF PIPE SHALL NOT PROJECT MORE THAN 4-INCHES FROM FACE OF WALL ALONG CENTERLINE OF PIPE.
2. DESIGN PRECAST SECTIONS WITH FRAME AND GRATE FOR AASHTO H20 LOADING UNLESS OTHERWISE NOTED.
3. PRECAST TOP SLAB OPENING CAN BE CENTERED OR OFFSET AS NECESSARY.
4. GRATE VANES SHALL BE INSTALLED IN DIRECTION TO RECEIVE FLOWS.

TABLE 1				
MANHOLE DIAMETER	SIDE WALL MIN. THICKNESS	BOTTOM SLAB MIN. THICKNESS	MAX PIPE DIAMETER RCP	MAX PIPE DIAMETER DI/PVC *
4'	5"	6"	24"	30"
5'	6"	8"	36"	42"
6'	6"	8"	48"	54"
8'	8"	8"	66"	72"
10'	10"	10"	72"	84"

* MAY VARY DEPENDING ON SIZE AND LOCATION OF ADDITIONAL PENETRATIONS OR RELATIONSHIP OF PENETRATIONS IN MANHOLE

MANHOLE GENERAL NOTES:

1. DRAIN MANHOLE DIAMETER SHALL BE 4', 5', 6', 8' OR 10' AS SHOWN ON PLAN/PROFILE VIEWS.
2. DESIGN PRECAST SECTIONS WITH FRAME AND COVER FOR AASHTO H20 LOADINGS UNLESS OTHERWISE NOTED.
3. MANHOLES LARGER THAN 4' IN DIAMETER AT THE BASE SHALL BE REDUCED IN DIAMETER TO 4' AT THE NEXT RISER SECTION UNLESS NOTED OTHERWISE ON PLANS.

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

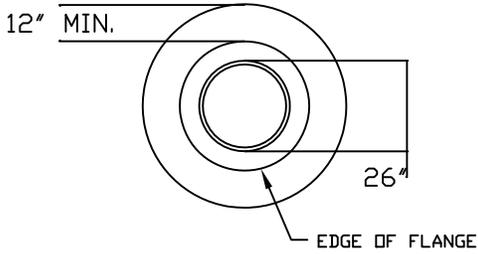
D-3.0

Detail Name:

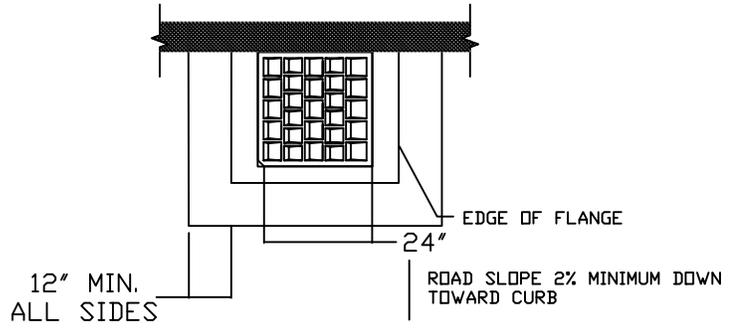
Manholes and Catch Basins General Notes and Dimensions

Date Last Updated:

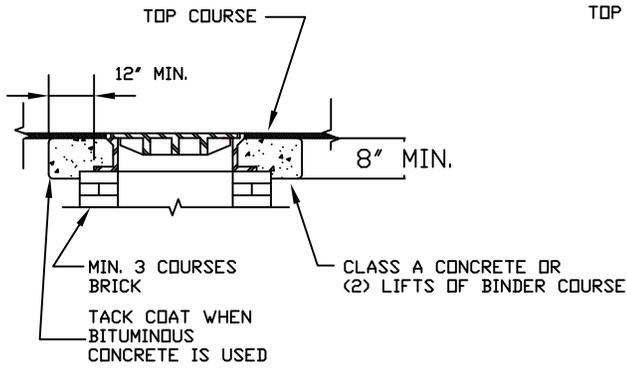
03/01/2016



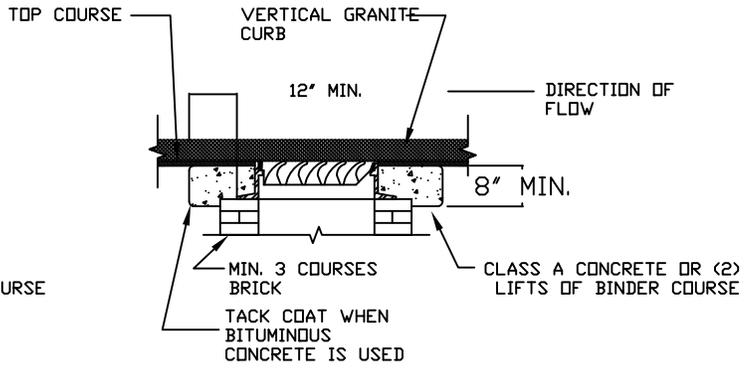
PLAN



PLAN



SECTION
MANHOLES



SECTION
CATCH BASINS

TOWN OF NATICK, MASSACHUSETTS

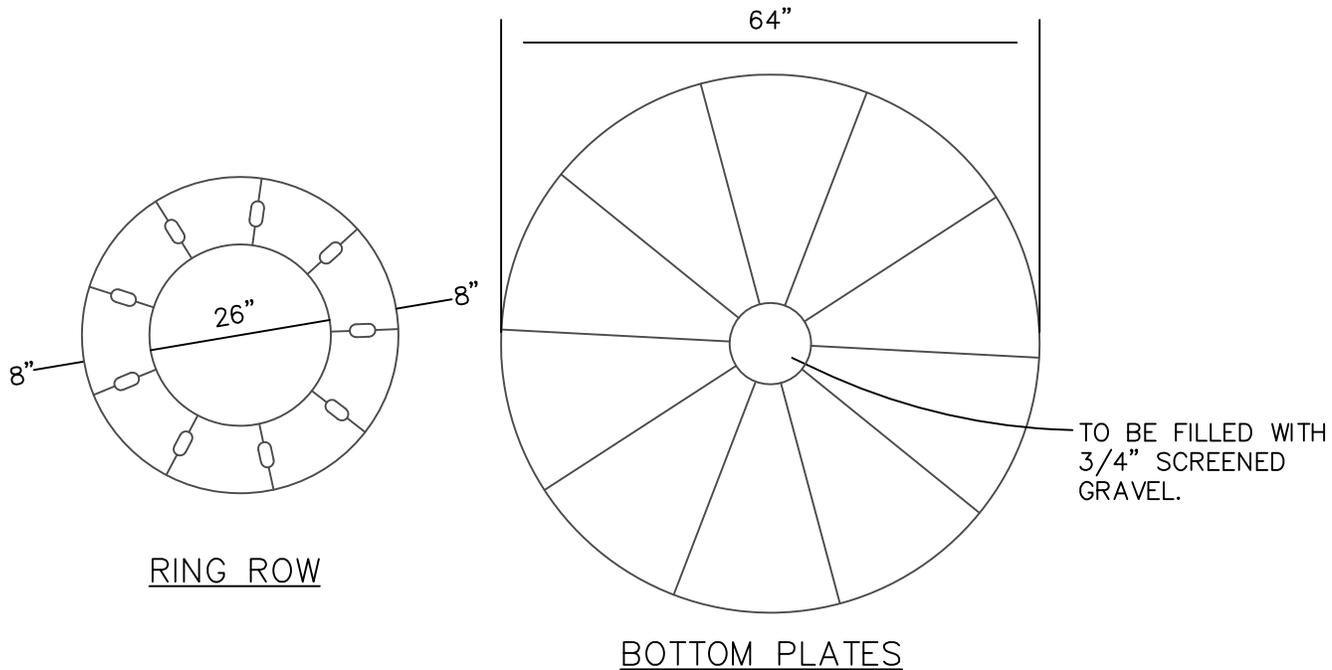
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
D-3.1

Detail Name:
Raising Castings

Date Last Updated:
03/01/2016



RING ROW

BOTTOM PLATES

CATCH BASIN & MANHOLE DETAILS

NOT TO SCALE

NOTE: FOR BARREL BLOCK CATCH BASINS AND MANHOLES ONLY.
NOT TO BE USED UNLESS APPROVED BY THE TOWN ENGINEER.

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

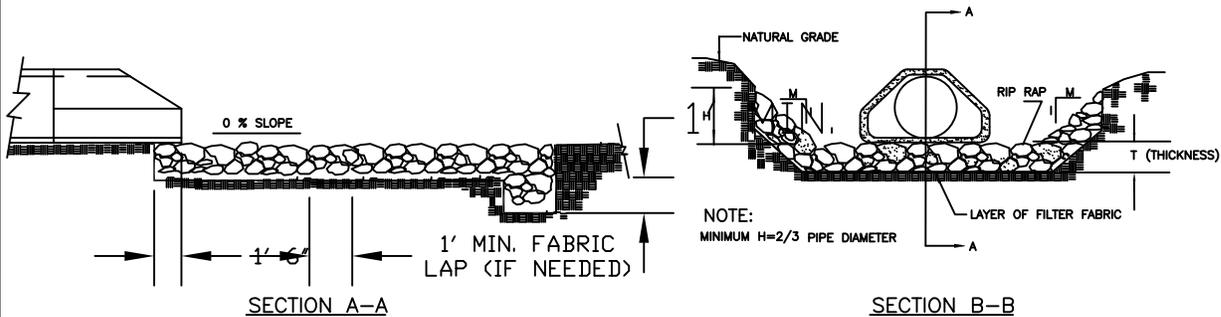
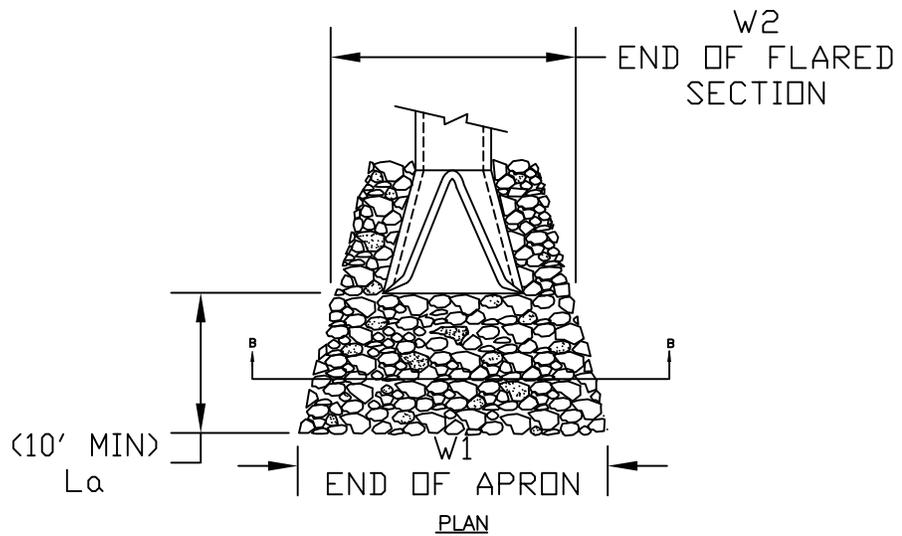
D-3.2

Detail Name:

CB and MH Ring and Plates

Date Last Updated:

03/01/2016



NOTES:

1. CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE DESIGNED BY THE ENGINEER.
2. REFER TO THE CONSTRUCTION STANDARDS FOR RIPRAP STANDARDS.
3. RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.
4. THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIPRAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL. THE APRON SHALL HAVE A CUTOFF OR TOE WALL AT THE DOWNSTREAM END.
5. THE WIDTH W-1 OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1.
6. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
7. THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.
8. NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.
9. FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
10. ANY DISTURBED AREA FROM END OF APRON TO RECEIVING CHANNEL MUST BE STABILIZED.

TOWN OF NATICK, MASSACHUSETTS

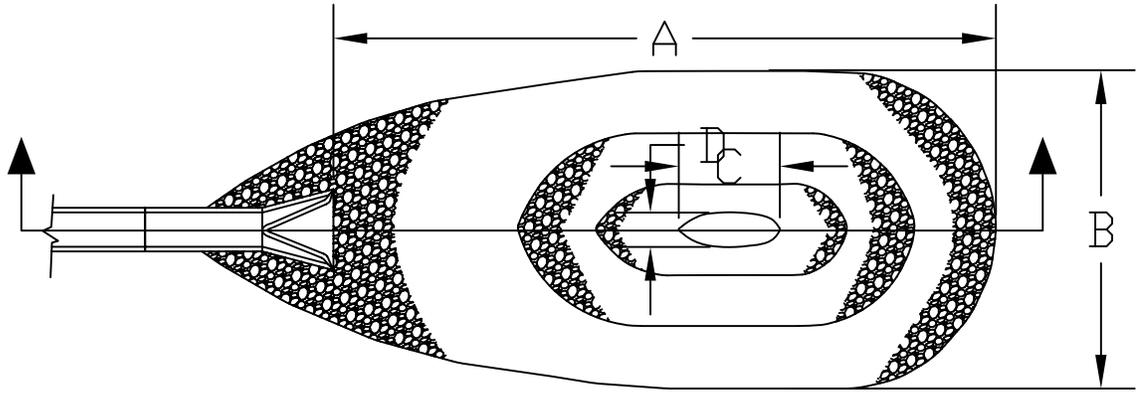
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

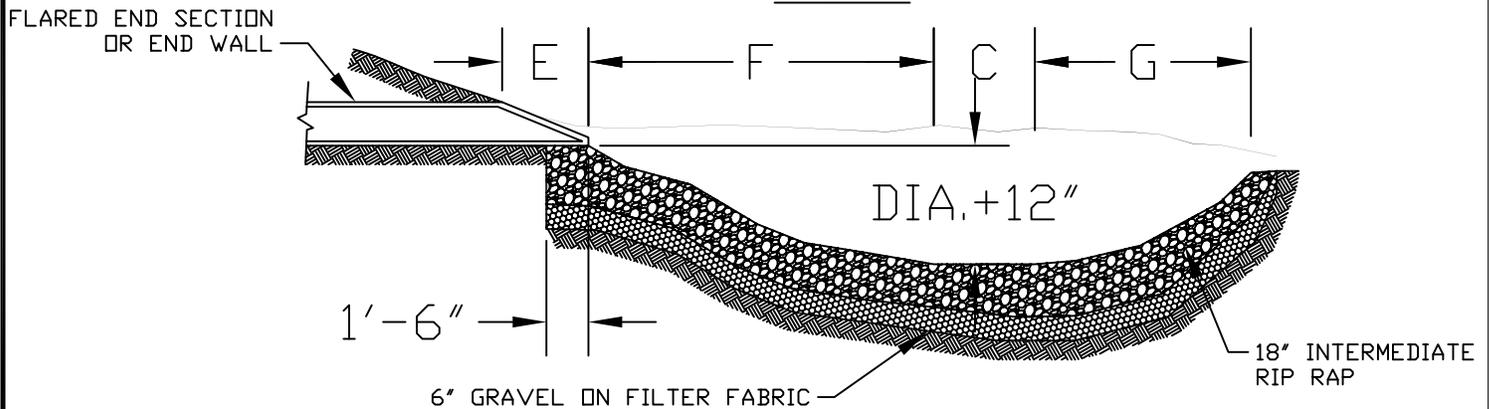
Detail Number:
D-4.0

Detail Name:
Rip Rap Apron at Pipe Outfalls

Date Last Updated:
03/01/2016



PLAN



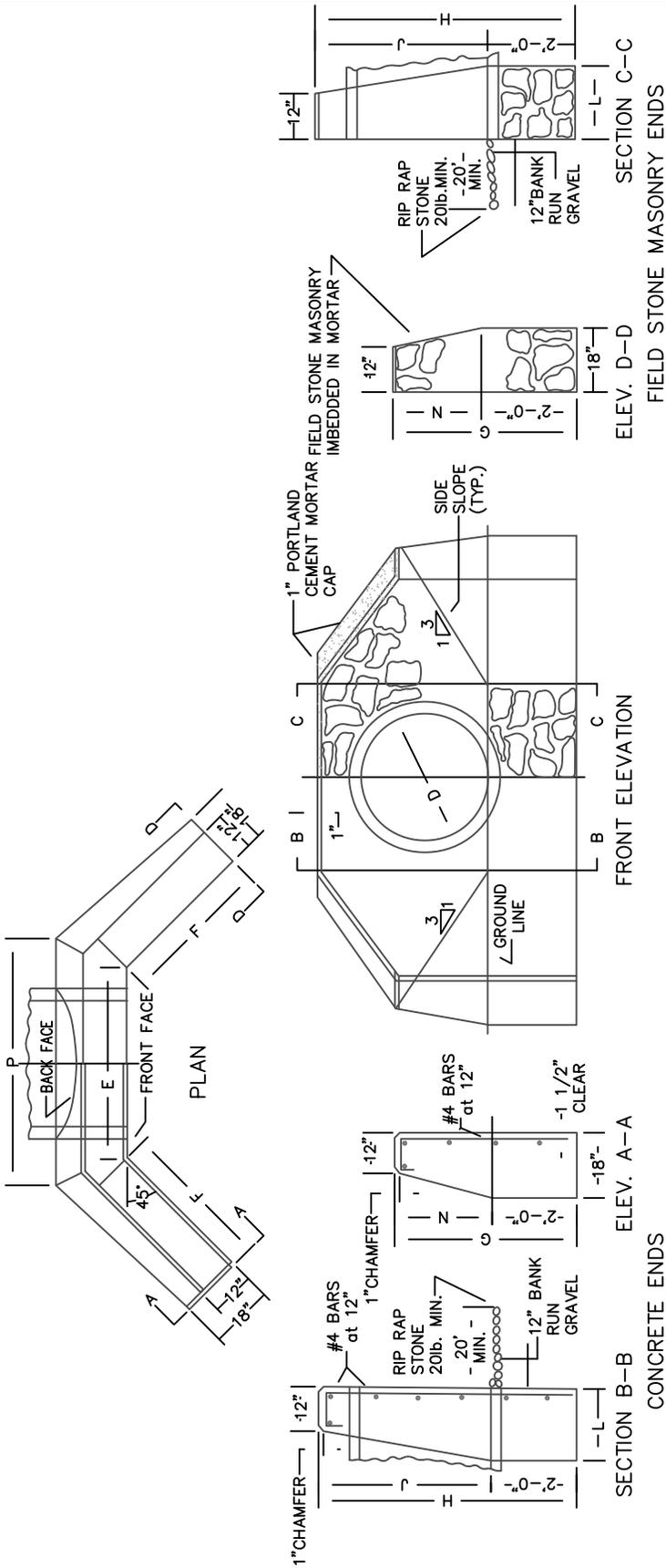
SECTION VIEW

PIPE SIZE	A	B	C	D	E	F	G	WT. RIP RAP IN TONS
15"	10'	7'	1 ½'	1'	1'	4 ½'	3'	6
18"	12'	8'	2'	1'	1'	5'	4'	8
21"	15'	9'	2 ½'	1 ½'	1'	7'	4 ½'	12
24"	17'	10'	2 ½'	1 ½'	1'	8'	5 ½'	15
30"	20'	13'	3'	2'	2'	9'	6'	22
36"	24'	16'	3 ½'	2'	2'	9 ½'	7'	33

NOTES:

1. THIS DETAIL IS TO ONLY BE USED WHEN OUTFALL HAS A CONTINUOUS FLOW OF WATER AND WITH PRIOR APPROVAL OF THE ENGINEERING DIVISION.

TOWN OF NATICK, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
 75 WEST STREET NATICK, MA 01760



D	E	F	G	H	J	L	N	P
12"	2'-6"	4'-8"	3'-2"	4'-0"	2'-0"	1'-6"	1'-2"	3'-5"
15"	2'-9"	5'-4"	3'-3"	4'-3"	2'-3"	1'-6"	1'-3"	3'-9"
18"	3'-0"	6'-4"	3'-6"	4'-6"	2'-6"	1'-6"	1'-6"	4'-1"
21"	3'-3"	7'-0"	3'-8"	4'-9"	2'-9"	1'-6"	1'-8"	4'-4"
24"	3'-6"	7'-5"	3'-9"	5'-0"	3'-0"	1'-6"	1'-9"	4'-7"
30"	4'-0"	8'-4"	4'-0"	5'-6"	3'-6"	1'-6"	2'-0"	5'-3"
36"	4'-6"	9'-6"	4'-3"	6'-0"	4'-0"	1'-8"	2'-3"	5'-11"
42"	5'-0"	10'-7"	4'-6"	6'-6"	4'-6"	1'-10"	2'-6"	6'-6"
48"	5'-6"	11'-8"	4'-9"	7'-0"	5'-0"	2'-0"	2'-9"	7'-2"

- 1.) ALL CONCRETE DIMENSIONS SHOWN ARE MINIMUM
- 2.) CONCRETE SHALL BE 4000 P.S.I. MINIMUM
- 3.) ALL REINFORCING SHALL BE #4 MINIMUM

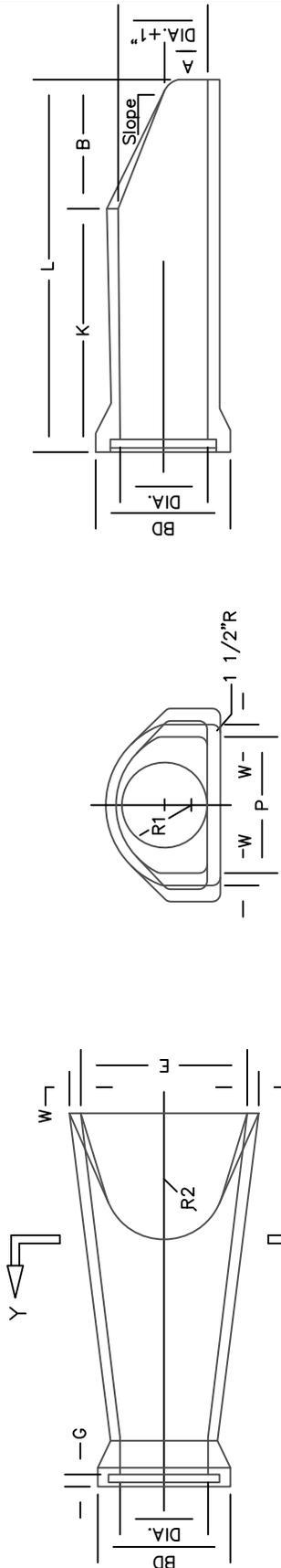
CONCRETE AND FIELD STONE MASONRY HEADWALL / WINGWALL DETAILS
NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
75 WEST STREET NATICK, MA 01760

Detail Number:
D-5.0

Detail Name:
RCP Headwall/Wingwall

Date Last Updated:
03/01/2016



PLAN

SECTION Y-Y

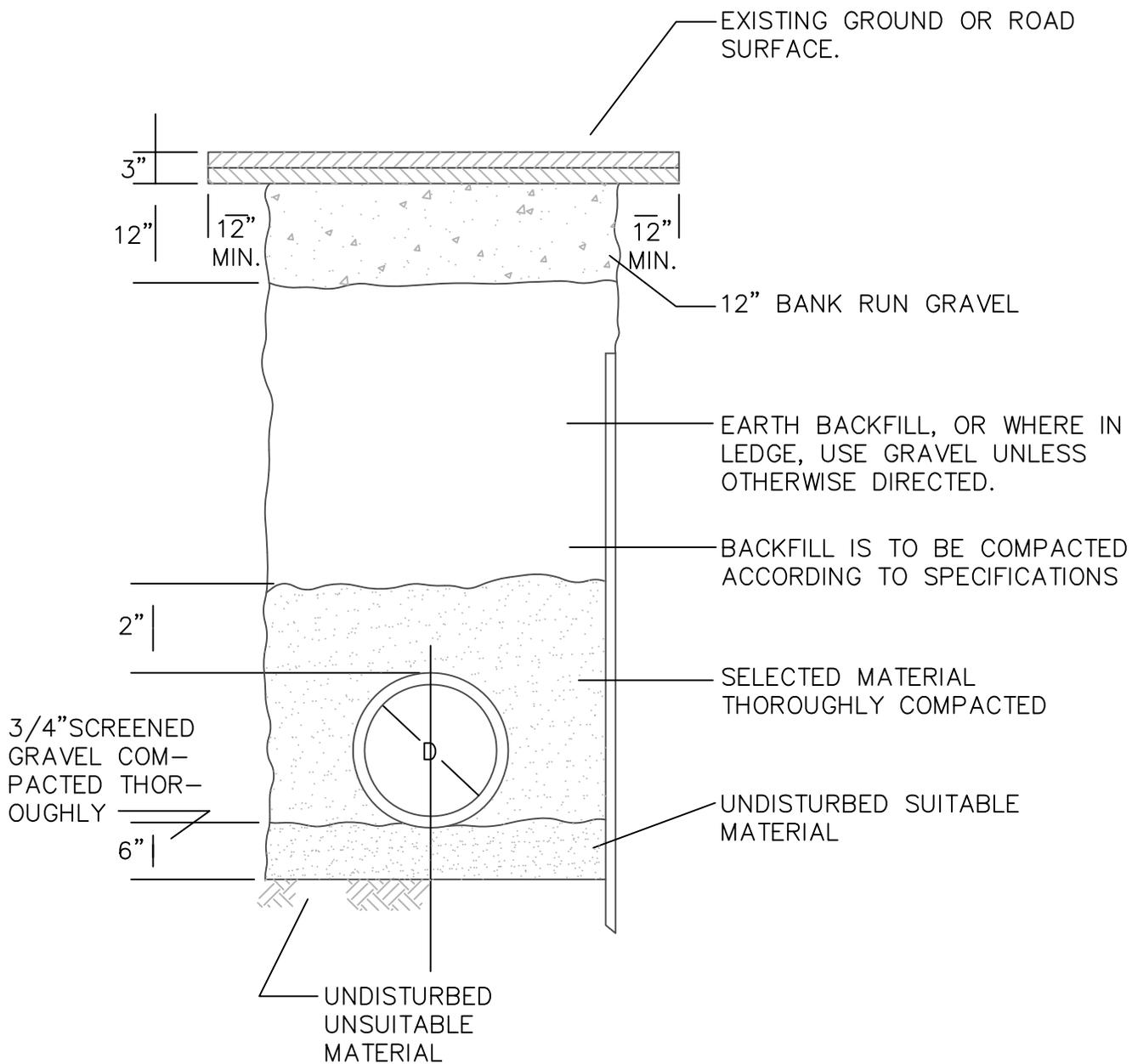
SECTION

DIA.	W	A	B	C	D	E	BD	K	L	P	DIA. +1"	R1	R2	S	G	Slope
12"	2"	4"	2'-0"	4'-0 7/8"	6'-1 3/8"	2'-0"	20"	4'-8 1/8"	6'-6 1/8"	19 15/16"	13"	10 1/8"	9"	4"	2 1/2"	3:1
15"	2 1/4"	6"	2'-3"	3'-10"	6'-1 1/2"	2'-6"	24"	4'-3 11/16"	6'-5 11/16"	24 5/16"	16"	12 1/2"	11"	4"	2 1/2"	3:1
18"	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	28"	4'-3 7/8"	6'-6 7/8"	29"	19"	15 1/2"	12"	4"	2 3/4"	3:1
21"	2 3/4"	9"	2'-11"	3'-2"	6'-1"	3'-6"	32"	3'-8 5/16"	6'-7 5/16"	31 5/8"	22"	16 1/8"	13"	4"	2 3/4"	3:1
24"	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1"	4'-0"	36"	3'-0 1/2"	6'-8"	33 3/16"	25"	16 13/16"	14"	4"	3"	3:1

R.C.P. FLARED END SECTION DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS
 DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
 75 WEST STREET NATICK, MA 01760



TYPICAL DRAIN TRENCH DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

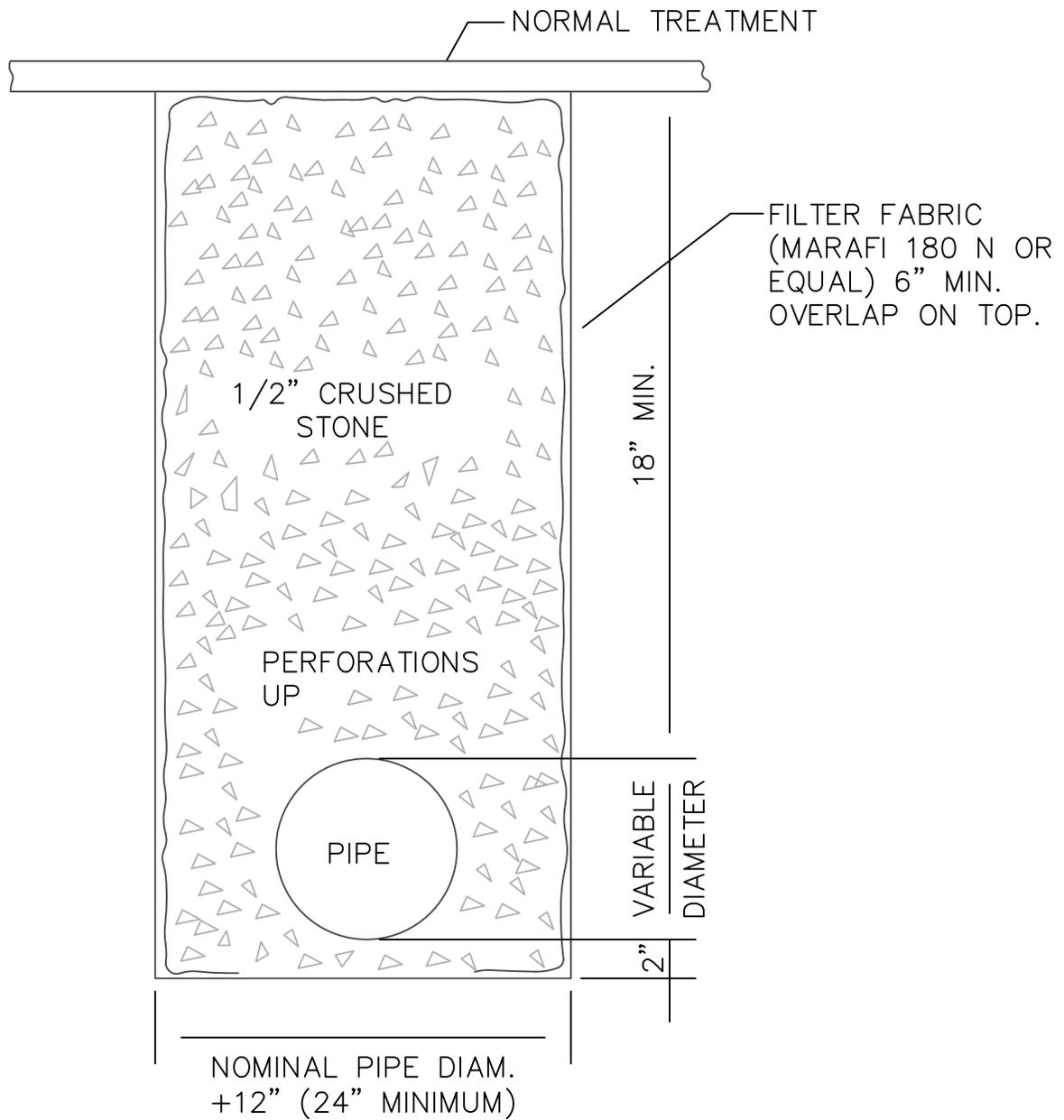
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
D-6.0

Detail Name:
Drain Trench

Date Last Updated:
03/01/2016



SUBDRAIN DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

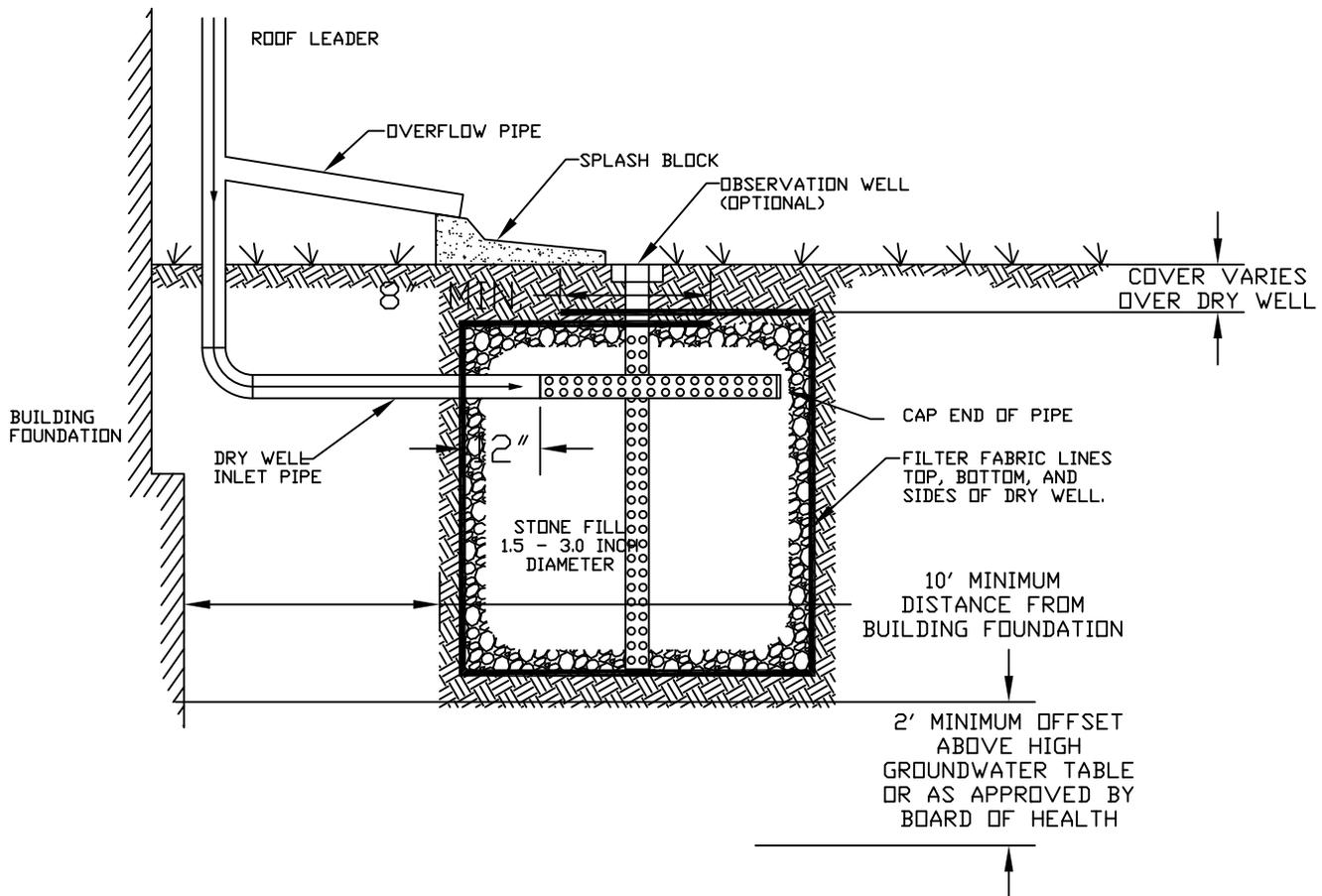
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
D-6.1

Detail Name:
Subdrain

Date Last Updated:
03/01/2016



NOTES:

1. DRY WELL TO BE SIZED BY DESIGN ENGINEER FOR PROPOSED CONDITIONS.
2. OPTIONAL: INSTALL REINFORCED CONCRETE CHAMBER WITH HOLES, SURROUNDED WITH STONE, AND WRAPPED IN FILTER FABRIC.

DRY WELL DETAIL

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

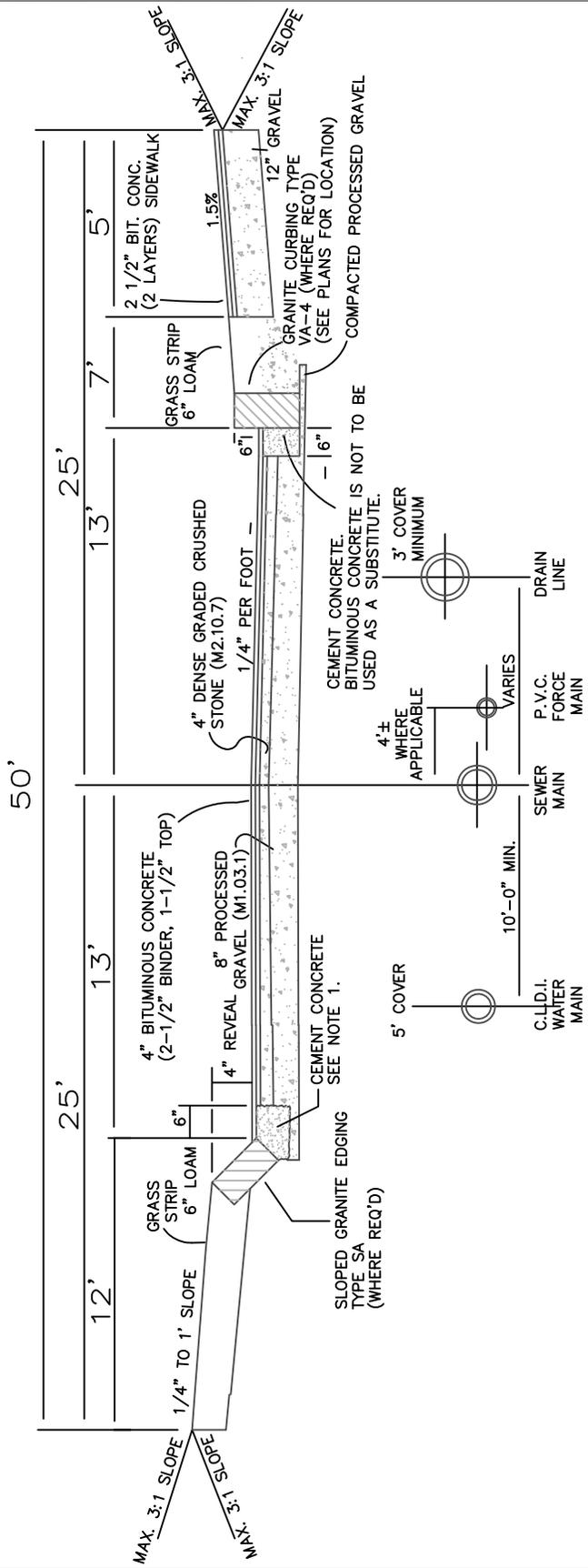
Detail Number:
D-7.0

Detail Name:
Dry Well

Date Last Updated:
03/01/2016

Roadway Construction Details





SLOPED GRANITE NOTES:

1. ANY CLASS CEMENT CONCRETE THAT IS ACCEPTABLE TO THE DEPARTMENT UNDER SECTION M4 OF THE 1973 STANDARD SPECIFICATIONS; ALL TEST REQUIREMENTS ARE WAIVED. BITUMINOUS CONCRETE IS NOT TO BE USED AS A SUBSTITUTE.
2. DIMENSIONS OF TYPE SA GRANITE EDGING:
 MINIMUM LENGTH - 3 FEET
 MAXIMUM LENGTH - 6 FEET
 THICKNESS - 6 INCHES

NOTE:
 ALL WATER SERVICES ARE TO BE SLEEVED UNDER THE ROADWAY AND ALL PAVED SURFACES.
 UNDERGROUND ELECTRIC, TELEPHONE, FIRE ALARM, CABLE TELEVISION, AND GAS ARE TO BE IN GRASS STRIP ON OPPOSITE SIDE OF THE WATER MAIN.

TYPICAL CROSS SECTION

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

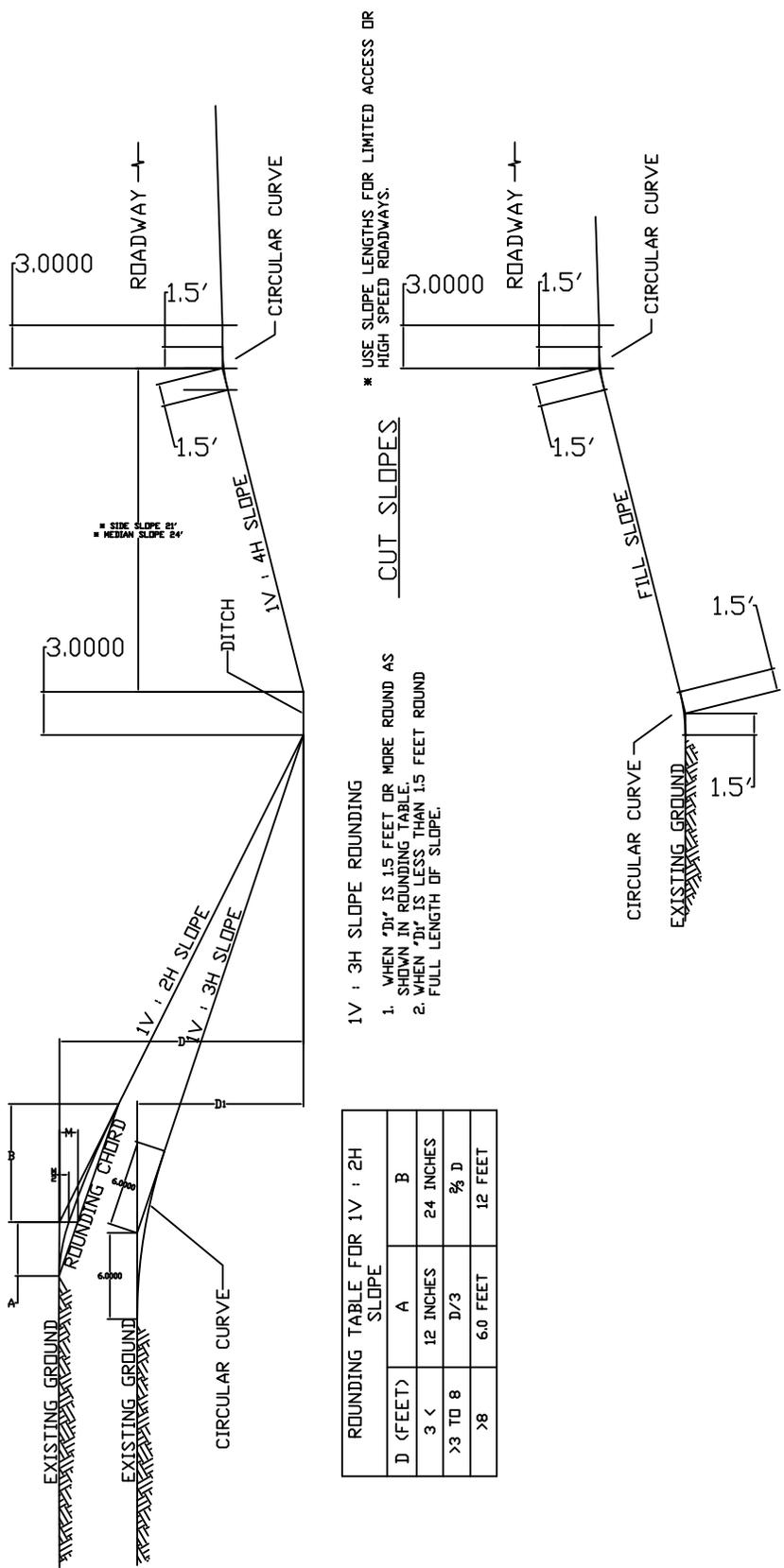
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.0

Detail Name:
Roadway Cross Section

Date Last Updated:
03/01/2016



ROUNDING TABLE FOR 1V : 2H SLOPE

D (FEET)	A	B
3 <	12 INCHES	24 INCHES
>3 TO 8	D/3	% D
>8	6.0 FEET	12 FEET

FILL SLOPES

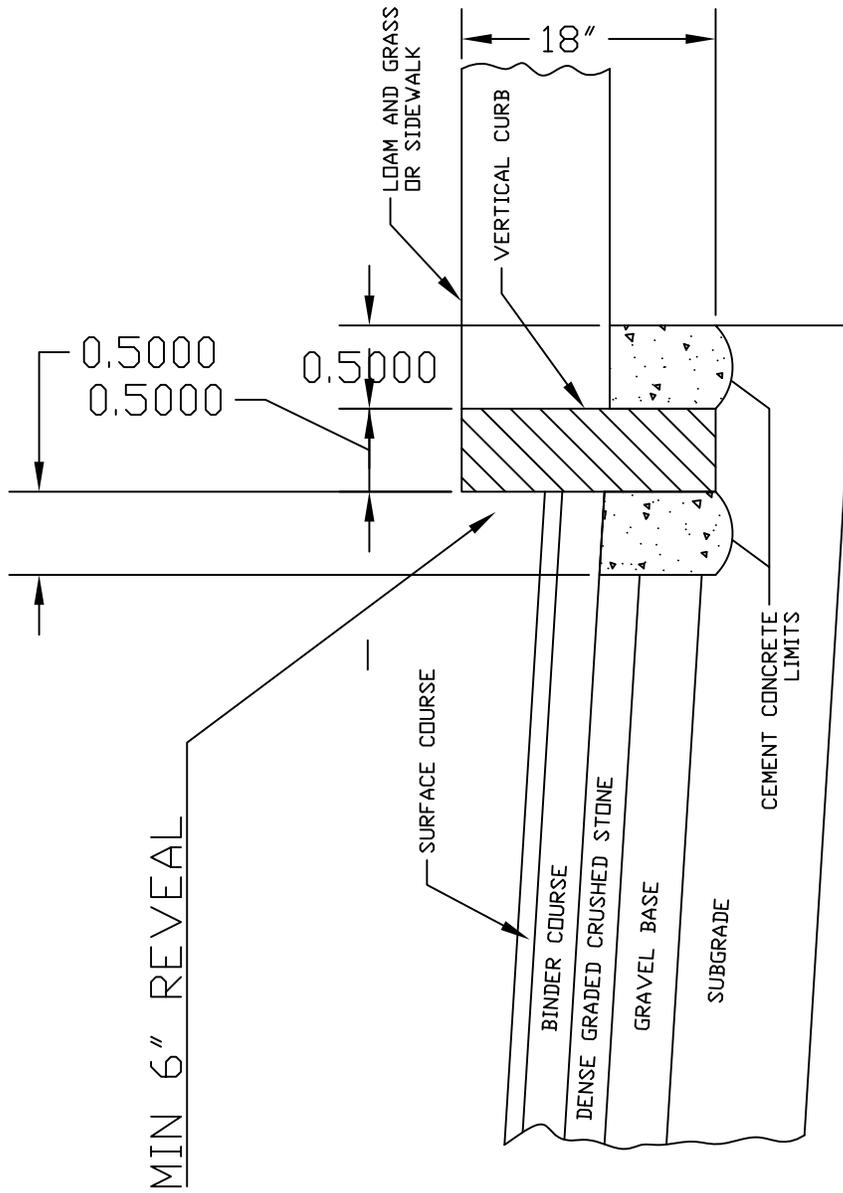
NOTE:
1. THE DIMENSIONS SHOWN FOR ROUNDING CUT AND FILL SLOPES ARE APPROXIMATE, THEY ARE TO BE USED AS GUIDES.

TOWN OF NATICK, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION
75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.1

Detail Name:
Cut and Fill Slopes

Date Last Updated:
03/01/2016



NOTES:

1. INSTALL BINDER COURSE, CUT NEAT LINE 6' FROM CURB LINE AND REMOVE BASE AND SUBGRADE, REPLACE WITH CEMENT CONCRETE. COVER TOP COURSE TO CURB.
2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD MHD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. BITUMINOUS CONCRETE SHALL NOT BE USED AS A SUBSTITUTE.

TOWN OF NATICK, MASSACHUSETTS

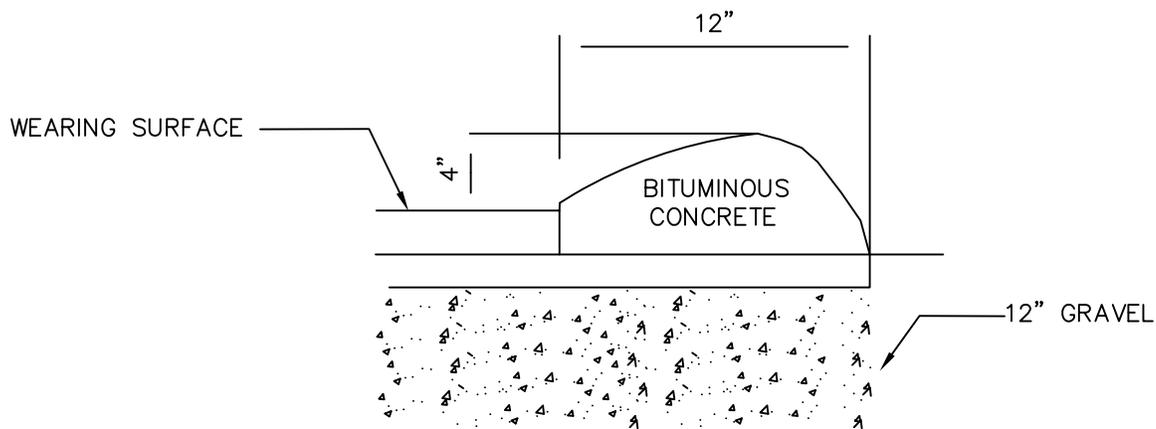
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.2

Detail Name:
Granite Curbs

Date Last Updated:
03/01/2016



MODIFIED CAPE COD BERM DETAIL

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

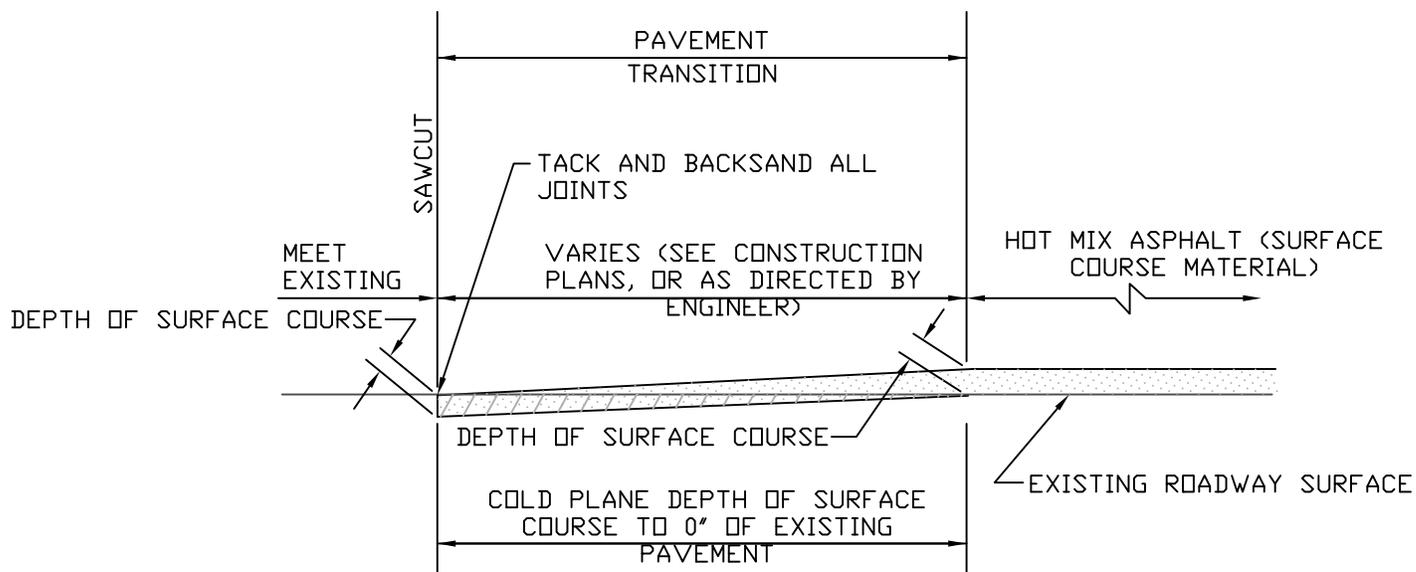
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.3

Detail Name:
Bituminous Berm

Date Last Updated:
03/01/2016



NOTE:
 CLEAN SURFACE AND APPLY ASPHALT EMULSION TACK COAT PRIOR TO PLACING HOT MIX ASPHALT SURFACE OVERLAY.

TOWN OF NATICK, MASSACHUSETTS

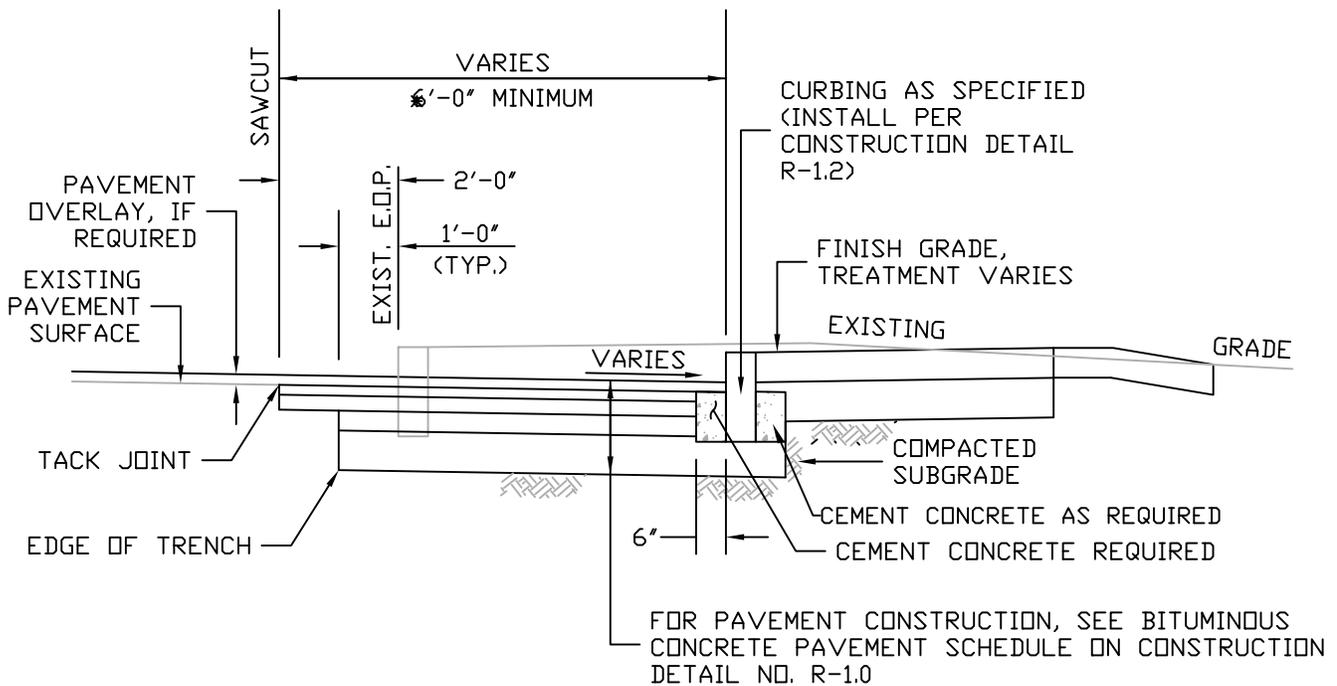
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.4

Detail Name:
Pavement Transitions

Date Last Updated:
03/01/2016



*NOTE: FOR PROPOSED WIDENING LESS THAN 6 FEET IN WIDTH, SEE CONSTRUCTION DETAIL R-1.6

TOWN OF NATICK, MASSACHUSETTS

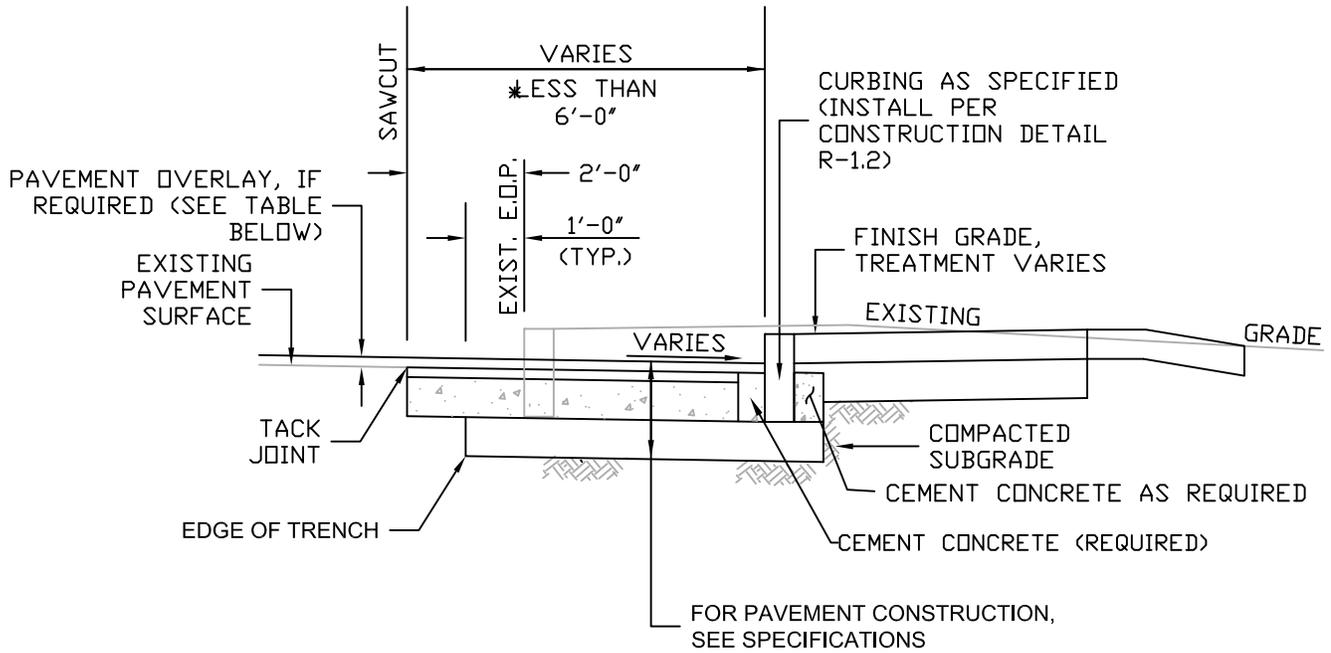
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.5

Detail Name:
Roadway Widening & Overlay 6' Wide or Greater

Date Last Updated:
03/01/2016



*NOTE: FOR PROPOSED WIDENING OF 6 FEET OR GREATER IN WIDTH, SEE CONSTRUCTION DETAIL R-1.5

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-1.6

Detail Name:
Roadway Widening & Overlay 6' Wide or Less

Date Last Updated:
03/01/2016

1. ROADWAY SIDEWALK CROSS SLOPES, FOR BRICK, CEMENT CONCRETE, AND BITUMINOUS CONCRETE, AS INDICATED IN THE CONSTRUCTION STANDARDS, WILL BE 1.5%. A CONSTRUCTION TOLERANCE OF ±0.5% IS ACCEPTABLE ON ROADWAY SIDEWALKS. SIDEWALKS ON BRIDGES WILL BE CONSTRUCTED TO A CROSS SLOPE OF 1.0% IN ACCORD WITH MASSDOT BRIDGE POLICY. IN ACCORDANCE WITH 521 CMR THE RULES AND REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD (AAB), THE SIDEWALK CROSS SLOPE CANNOT EXCEED 2.0%.
2. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-3" (PREFERRED MINIMUM WIDTH OF 5'-0" FOR SIDEWALK MAINTENANCE) SHALL BE MAINTAINED PAST ALL OBSTRUCTIONS (UTILITY POLES, SIGNS, SIGNAL FOUNDATIONS, MASTS, MAILBOXES, ALONG DRIVE OPENINGS, ETC.).
3. THE WHEELCHAIR RAMP SLOPES AND SIDE SLOPES (TRANSITIONS) WILL BE MAXIMUM OF 7.5% WITH A CONSTRUCTION TOLERANCE OF ±0.5%. HOWEVER THESE SLOPES MAY BE FLATTER WHEN WARRANTED BY SURROUNDING CONDITIONS.
4. WHERE THE ROADWAY PROFILE EXCEEDS 4%, THE HIGH SIDE TRANSITION LENGTH UNDER ANY CONDITIONS NEED NOT EXCEED 15'-0".
5. IN NO CASE WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED ON THE TRAFFIC APPROACH SIDE OF THAT STOP LINE.
6. FIXED OBJECTS (I.E. UTILITY POLES, HYDRANTS, SIGNS, SIGNAL FOUNDATIONS, ETC.) MUST NOT ENCRDACH ON ANY PART OF THE WHEELCHAIR RAMP INCLUDING TRANSITION SLOPES.
7. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP, EXCLUDING CURB TRANSITIONS TO BE LOCATED OUTSIDE THE CROSSWALK. THE WHEELCHAIR RAMP ENTRANCE IS TO BE CENTERED IN THE CROSSWALK WHENEVER POSSIBLE.
8. CATCH BASINS WHICH ARE TO BE LOCATED IN THE VICINITY OF A WHEELCHAIR RAMP SHALL BE LOCATED UPGRADE OF THE RAMP ENTRANCE.
9. THE ENTRANCE OF A WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.
10. TESTING SURFACE: WHEN TESTING WITH A STRAIGHTEDGE PLACED PARALLEL TO THE LINE OF THE SLOPE THERE SHALL BE NO DEVIATION FROM A TRUE SURFACE IN EXCESS OF ¼".
11. WHEELCHAIR RAMPS ON BRIDGES SHOULD BE AVOIDED. IF A WHEELCHAIR RAMP IS REQUIRED TO BE PLACED ON A BRIDGE, PRIOR WRITTEN APPROVAL IS REQUIRED. SPECIAL DETAILING OF THE REINFORCEMENT AND CURB SYSTEM WILL BE REQUIRED TO MAINTAIN THE PREFORMANCE OF THE RAILING/BARRIER SYSTEM.

CURB TRANSITION LENGTH FOR WHEELCHAIR RAMPS	
ROADWAY PROFILE GRADE	*HIGH SIDE TRANSITION LENGTH (HST)
%	
0	6'-6"
> 0 TO 1	7'-8"
> 1 TO 2	9'-0"
> 2 TO 3	11'-0"
> 3 TO 4	14'-0"
> 4	15'-0" MAX

* BASED ON A DESIGN SLOPE OF 7.5% AND A CURB REVEAL OF 6". VARIING CURB REVEAL MAY ALTER TRANSITION LENGTH.

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

R-2.0

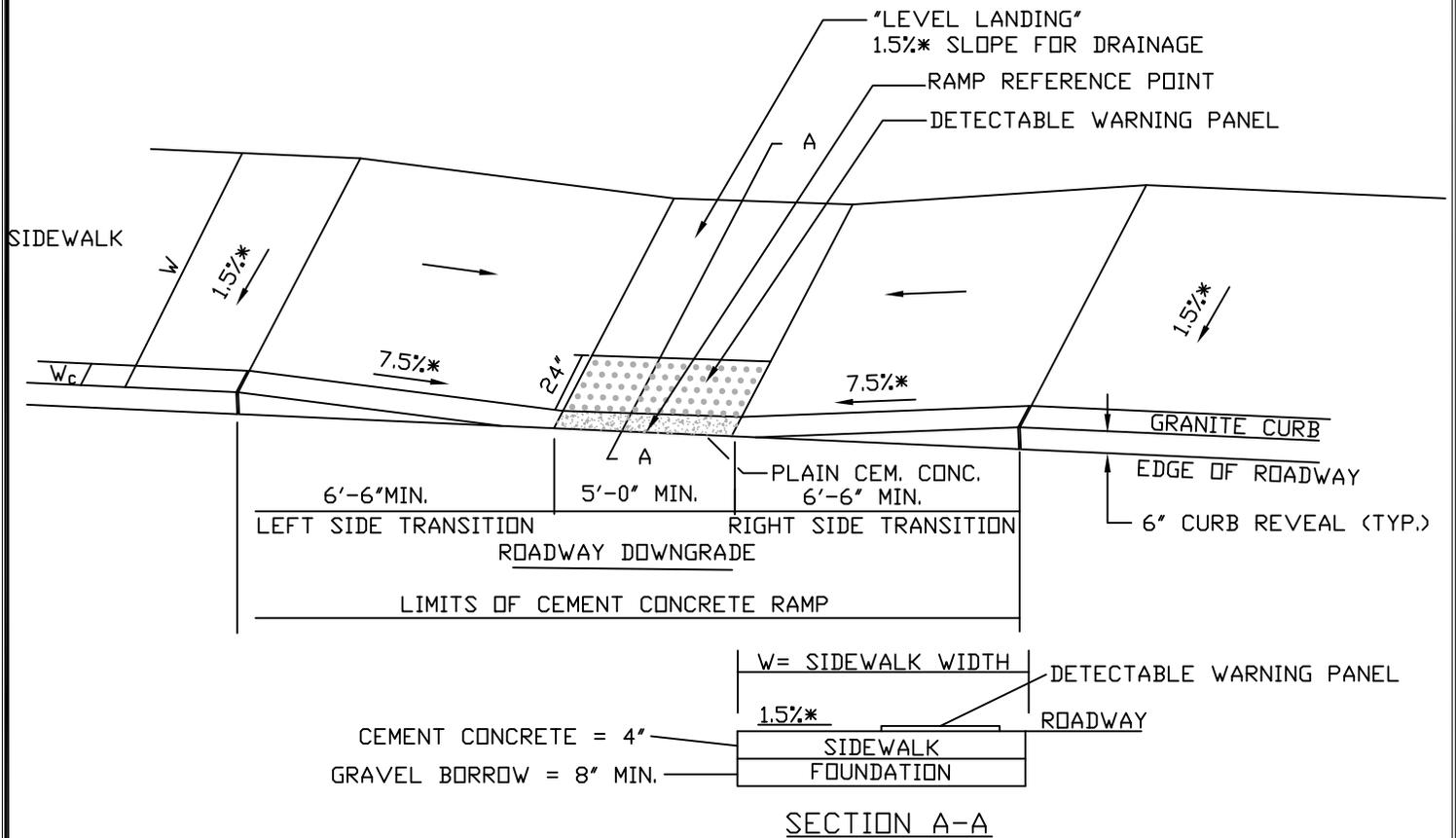
Detail Name:

Wheelchair Ramp Notes

Date Last Updated:

03/01/2016

WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.



SECTION A-A
WHEELCHAIR RAMP TYPE A
 NOT TO SCALE

LEGEND:

- HSL = HIGH SIDE TRANSITION LENGTH
- W = SIDEWALK WIDTH
- W_c = CURB WIDTH
- * = TOLERANCE FOR CONSTRUCTION ±0.5%
- USABLE SIDEWALK WIDTH PER AAB_c = W - W_c
- USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
- SEE M/E 107.6.5R FOR DETAILS OF DETECTABLE WARNING PANEL

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

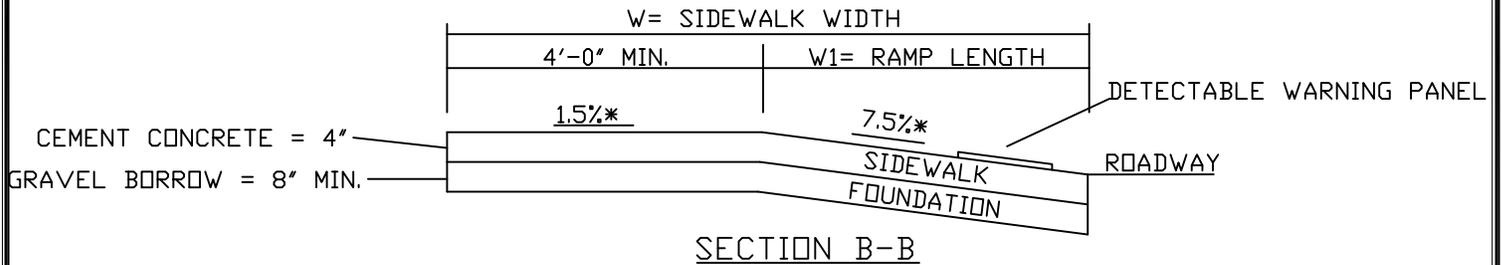
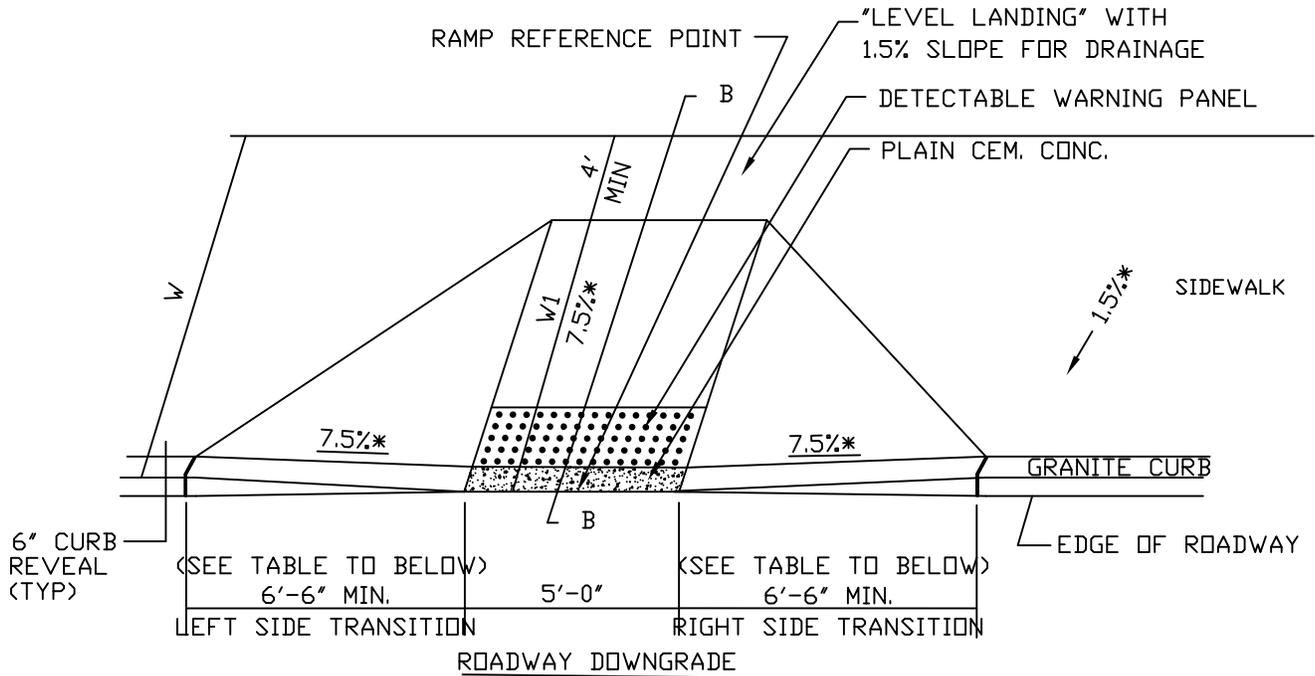
75 WEST STREET NATICK, MA 01760

Detail Number:
R-2.1

Detail Name:
Wheelchair Ramp Type A

Date Last Updated:
03/01/2016

WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.



SECTION B-B
WHEELCHAIR RAMP TYPE B
NOT TO SCALE

LEGEND:

HSL = HIGH SIDE TRANSITION LENGTH

W = SIDEWALK WIDTH

W1 = PERPENDICULAR RAMP LENGTH

* = TOLERANCE FOR CONSTRUCTION ±0.5%

USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"

SEE M/E 107.6.5R FOR DETAILS OF DETECTABLE WARNING PANEL

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

R-2.2

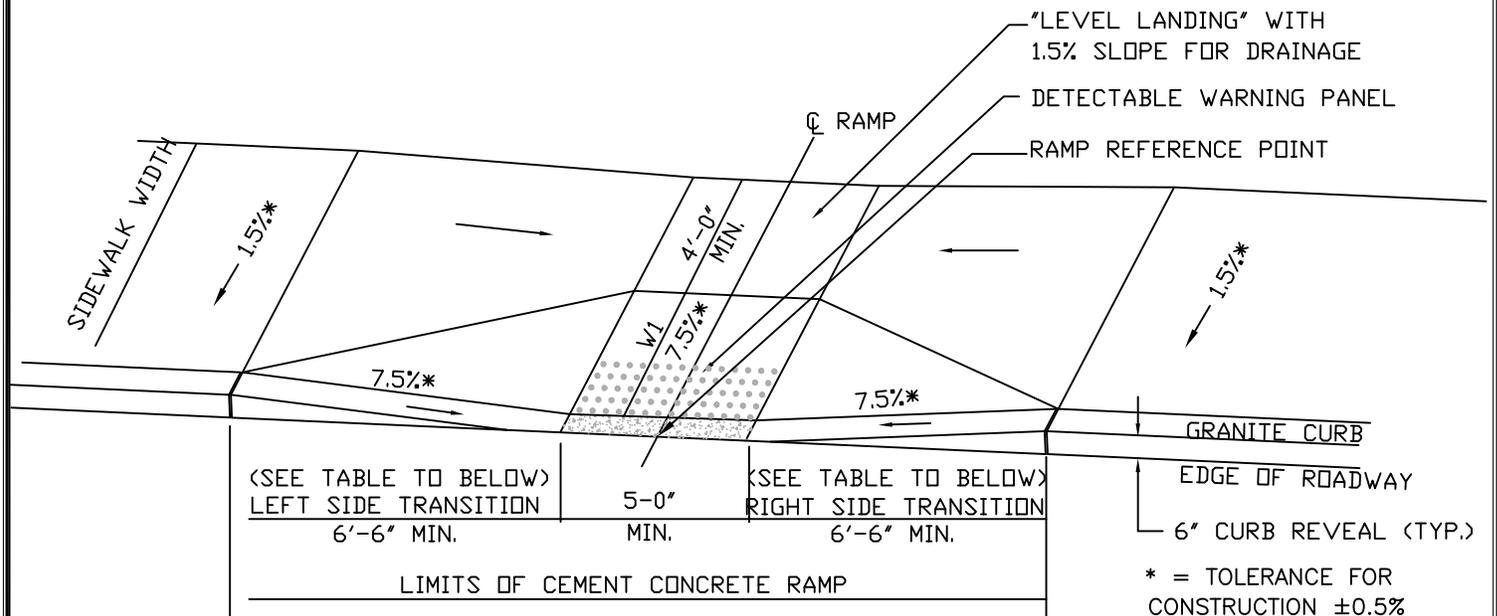
Detail Name:

Wheelchair Ramp Type B

Date Last Updated:

03/01/2016

WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.



WHEELCHAIR RAMP TYPE C
NOT TO SCALE

NOTE:
FOR DETECTABLE WARNING
PANEL DETAIL SEE
STANDARD DRAWING R-2.6

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

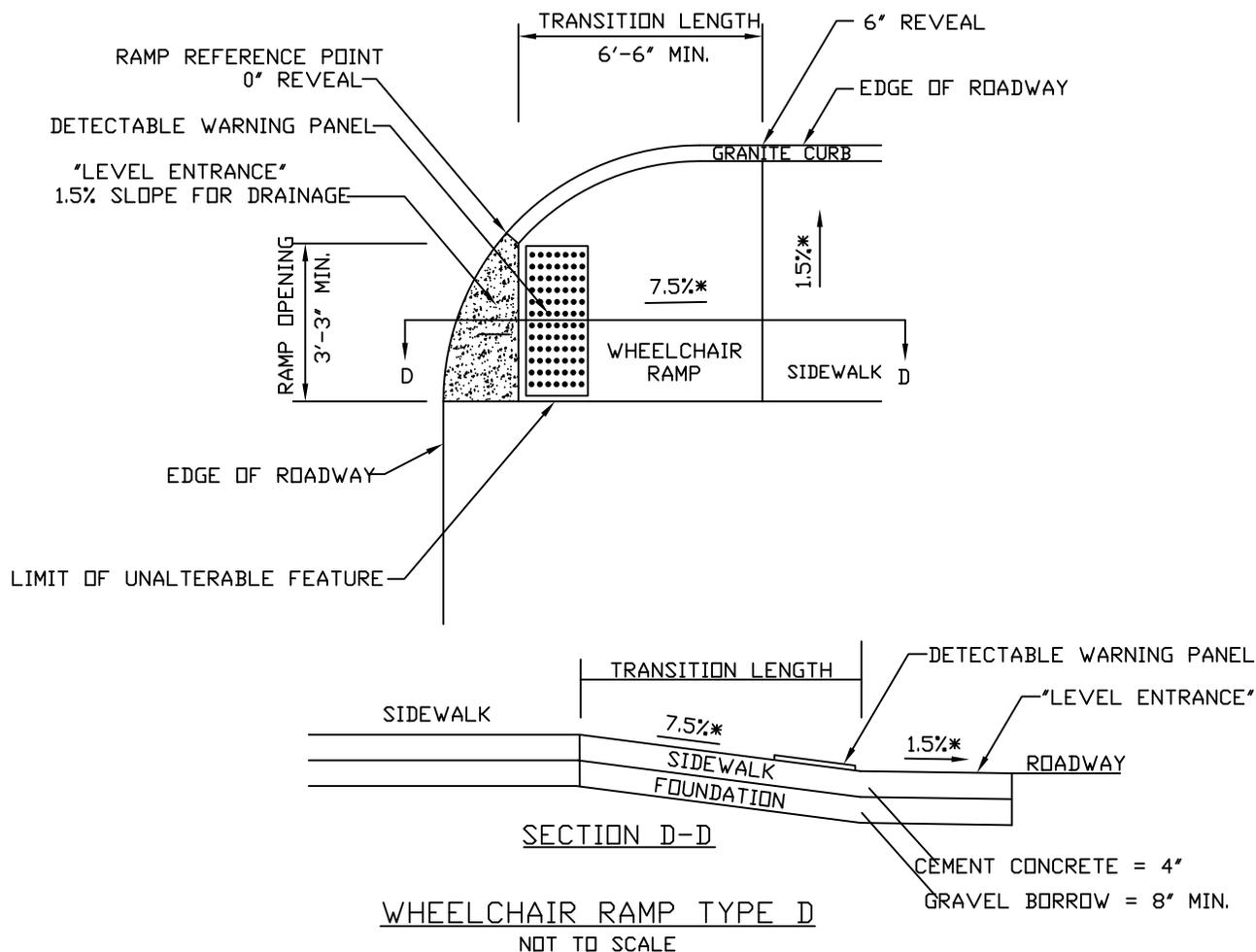
75 WEST STREET NATICK, MA 01760

Detail Number:
R-2.3

Detail Name:
Wheelchair Ramp Type C

Date Last Updated:
03/01/2016

WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.



LEGEND:

HSL = HIGH SIDE TRANSITION LENGTH

W = SIDEWALK WIDTH

W1 = PERPENDICULAR RAMP LENGTH

* = TOLERANCE FOR CONSTRUCTION ±0.5%

USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"

SEE M/E 107.6.5R FOR DETAILS OF DETECTABLE WARNING PANEL

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

R-2.4

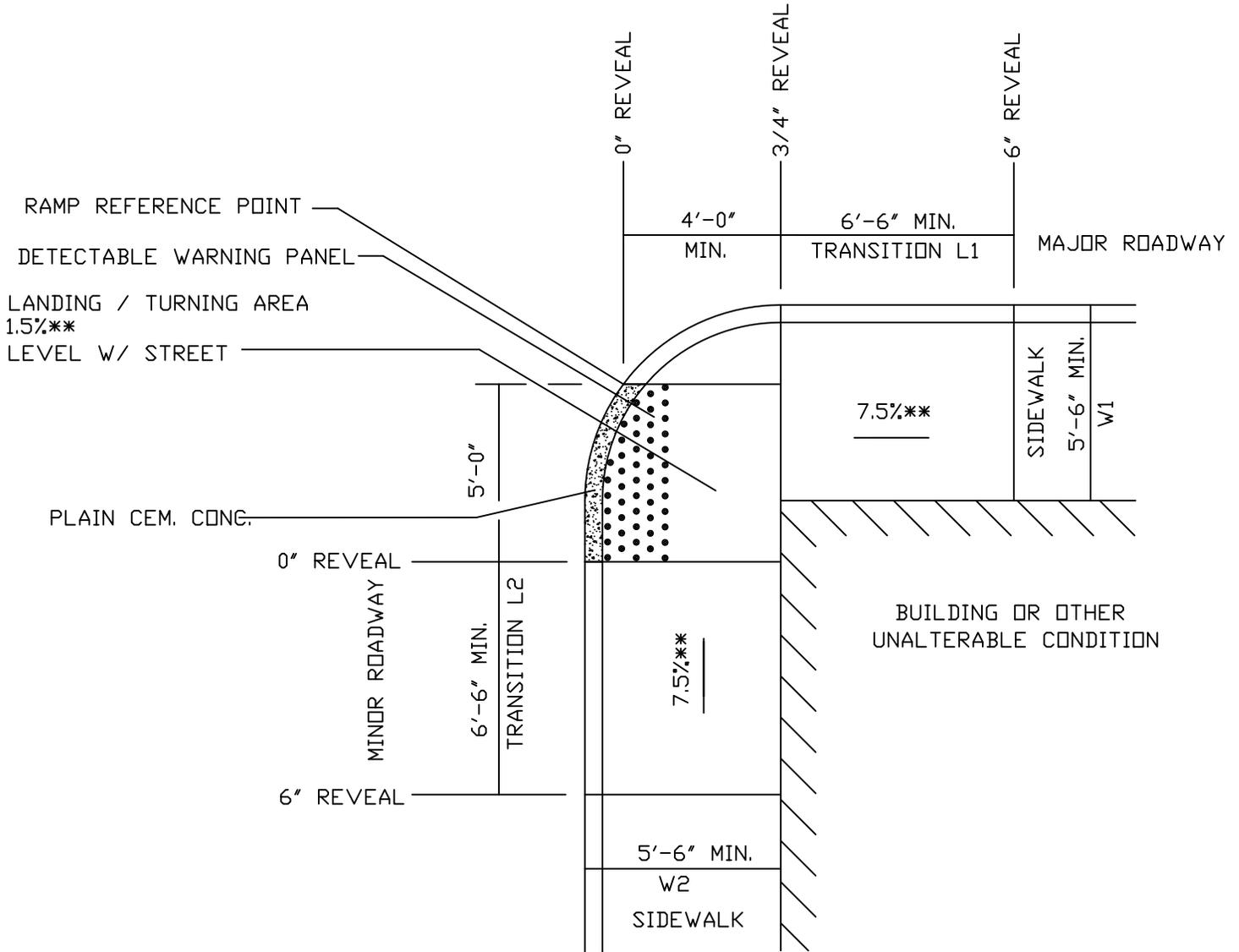
Detail Name:

Wheelchair Ramp Type D

Date Last Updated:

03/01/2016

WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.



WHEELCHAIR RAMP TYPE E
NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

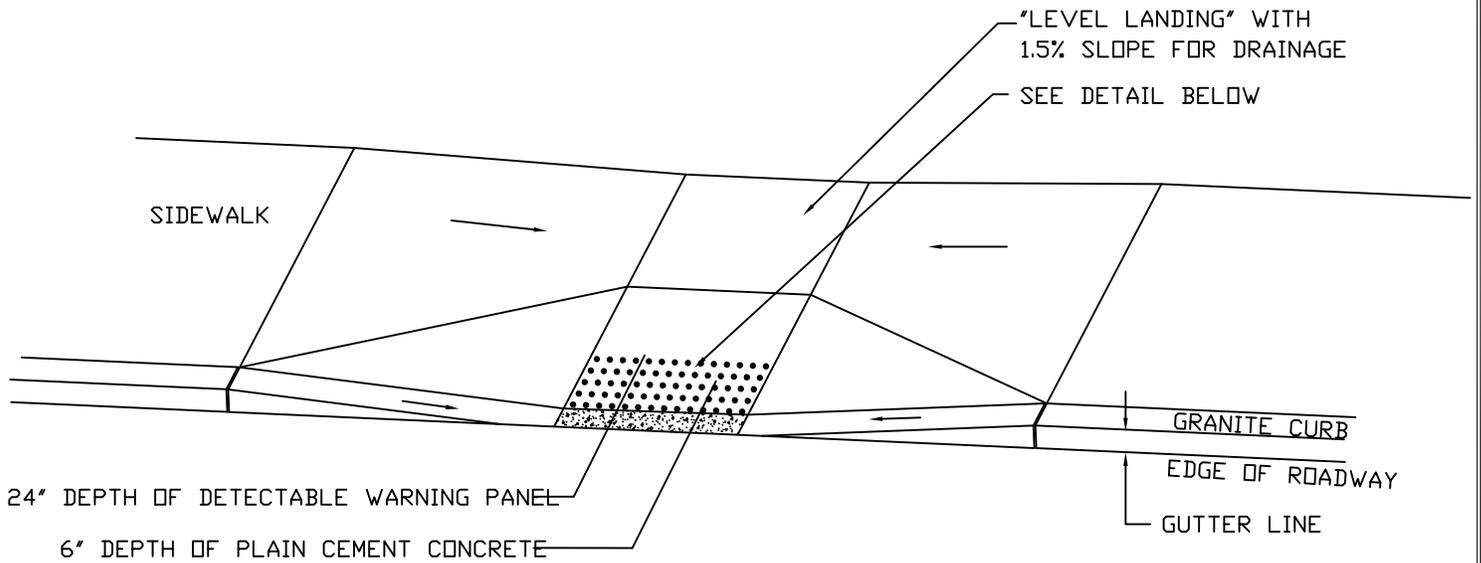
75 WEST STREET NATICK, MA 01760

Detail Number:
R-2.5

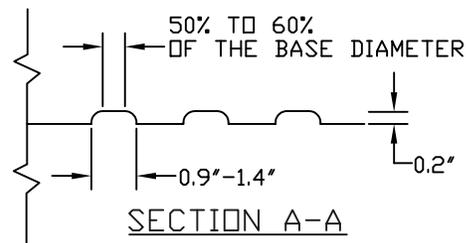
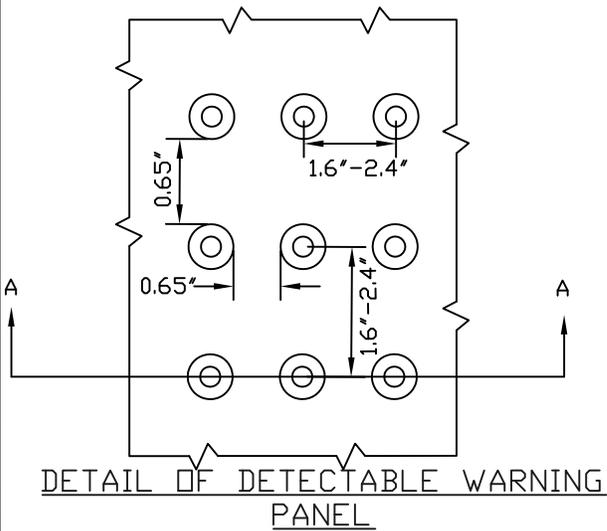
Detail Name:
Wheelchair Ramp Type E

Date Last Updated:
03/01/2016

WHEELCHAIR RAMP SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.



TYPICAL INSTALLATION



NOTE:
PANELS SHALL BE "BRICK RED" IN COLOR AND MAY BE PRECAST OR CAST-IN-PLACE PERMANENTLY APPLIED TO THE RAMP.

TOWN OF NATICK, MASSACHUSETTS

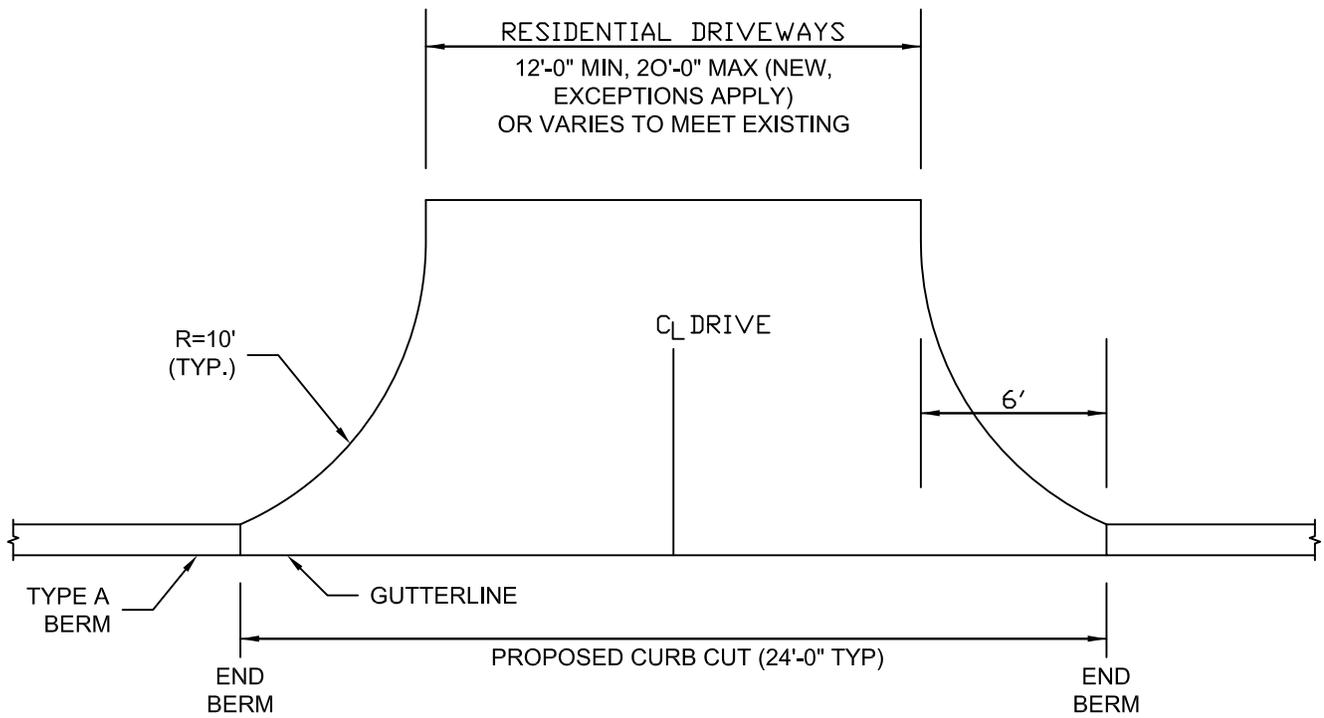
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

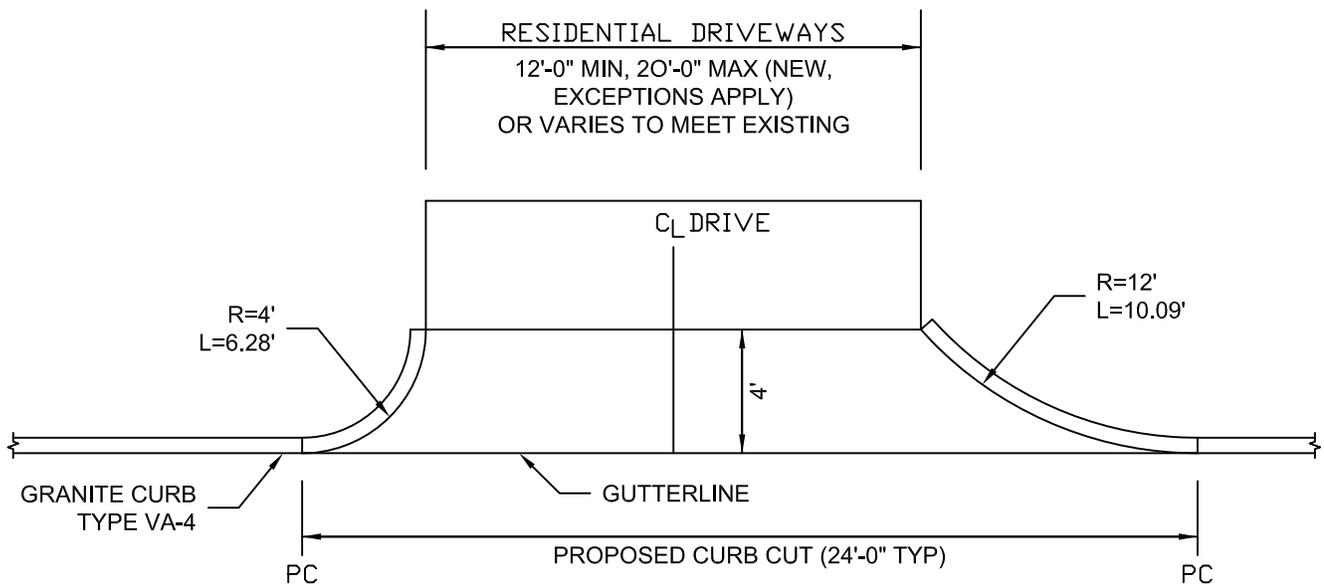
Detail Number:
R-2.6

Detail Name:
Detectable Warning Panel

Date Last Updated:
03/01/2016



TYPE "A" BITUMINOUS BERM



GRANITE CURB OR TYPE 2 BITUMINOUS BERM

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

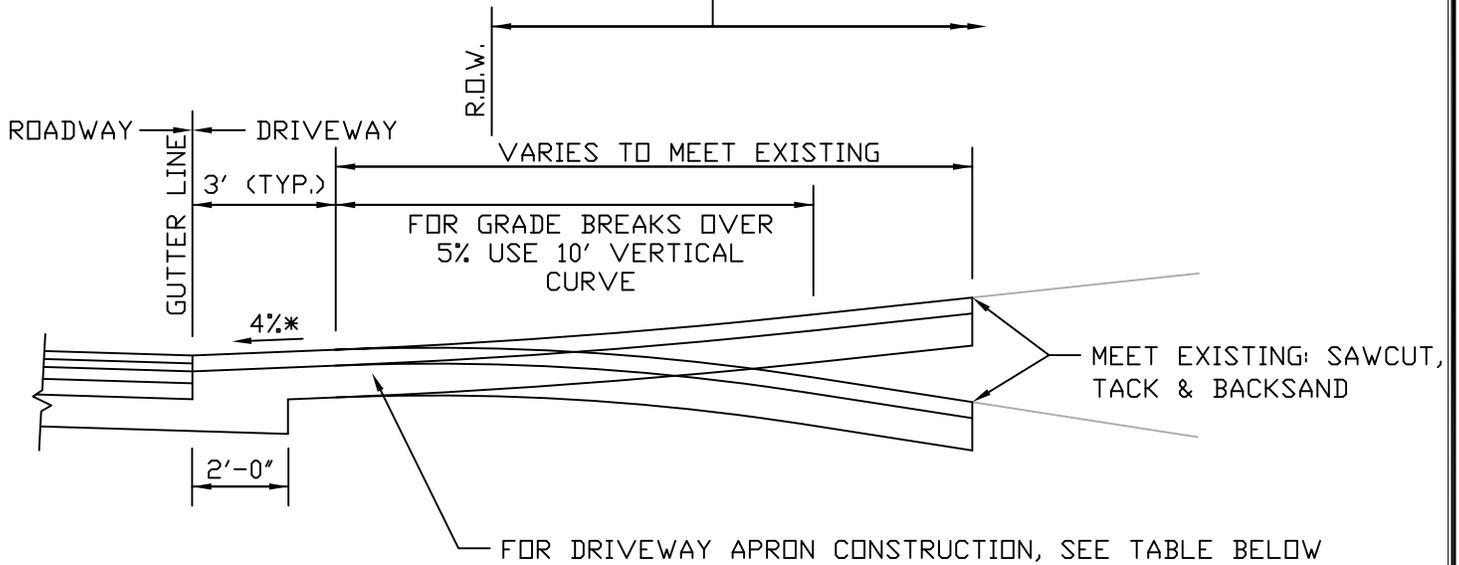
75 WEST STREET NATICK, MA 01760

Detail Number:
R-3.0

Detail Name:
Typical Curb Cut Plan, Residential Driveways, No Sidewalks

Date Last Updated:
03/01/2016

FOR TREATMENT OUTSIDE R.O.W. COORDINATE WITH ENGINEER & OBTAIN RIGHTS OF ENTRY



DRIVEWAY APRON CONSTRUCTION

	CEMENT CONCRETE CONSTRUCTION	HOT MIX ASPHALT
SURFACE:	6" CEMENT CONCRETE, 4,000 PSI, FIBER MESH PER CONSTRUCTION STANDARDS SECTION 5.2.10	4" HOT MIX ASPHALT (2" TOP COURSE MATERIAL OVER 2" BINDER COURSE MATERIAL)
SUBBASE:	8" GRAVEL BORROW (TYPE "B")	8" GRAVEL BORROW (TYPE "B")

R.O.W. = RIGHT OF WAY

* - DRIVEWAY APRON SLOPE TOWARDS ROADWAY MAY VARY TO MEET FIELD CONDITIONS; 1" LIP FOR CEMENT CONCRETE DRIVEWAYS

DRIVEWAY APRONS SHALL BE CONSTRUCTED OF HOT MIX ASPHALT OR CEMENT CONCRETE, UNLESS PRIOR WRITTEN APPROVAL IS GRANTED BY DPW.

TOWN OF NATICK, MASSACHUSETTS

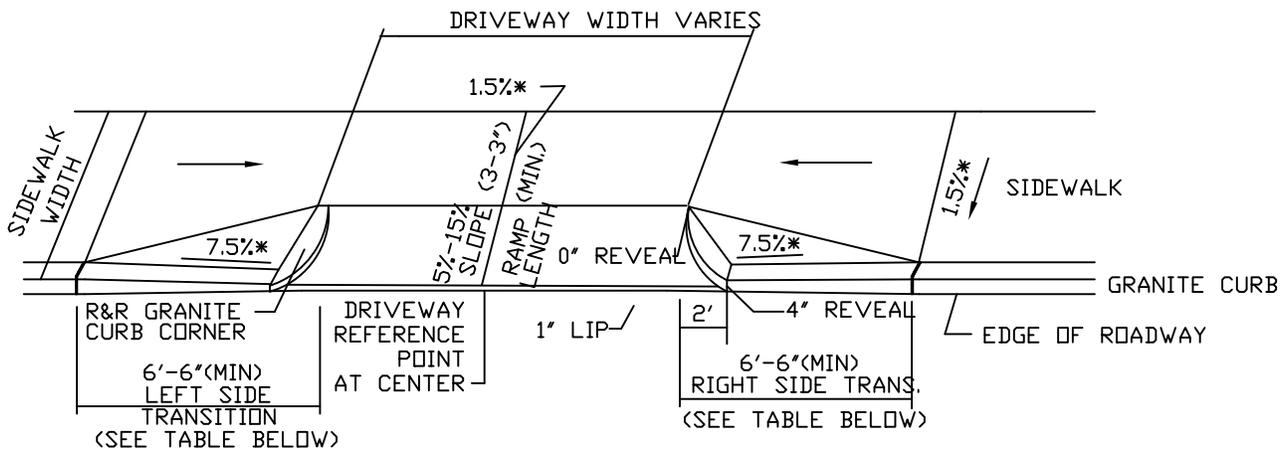
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-3.1

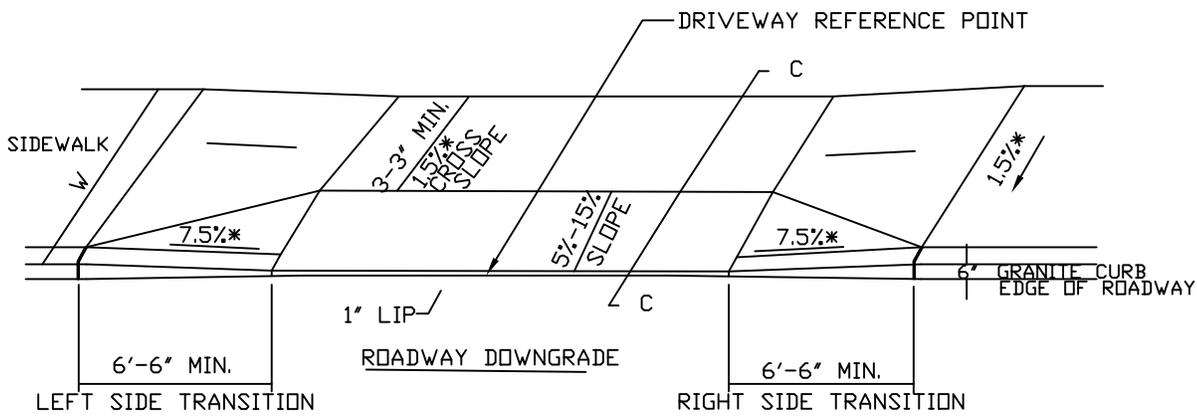
Detail Name:
Full Depth Driveway Apron – No Sidewalk

Date Last Updated:
03/01/2016



SIDEWALK THROUGH DRIVEWAYS WITH CURB RETURNS

NOT TO SCALE



SECTION C-C

SIDEWALK THROUGH DRIVEWAYS WITHOUT CURB RETURNS

NOT TO SCALE

LEGEND:

HSL = HIGH SIDE TRANSITION LENGTH (AS REQUIRED TO MEET 7.5% MAX

SLOPE)
W = SIDEWALK WIDTH

* = TOLERANCE FOR CONSTRUCTION ±0.5%

DRIVEWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE CURRENT REGULATIONS OF THE ARCHITECTURAL ACCESS BOARD, THE AMERICANS WITH DISABILITIES ACT AND THE CURRENT MASSHIGHWAY CONSTRUCTION STANDARDS.

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

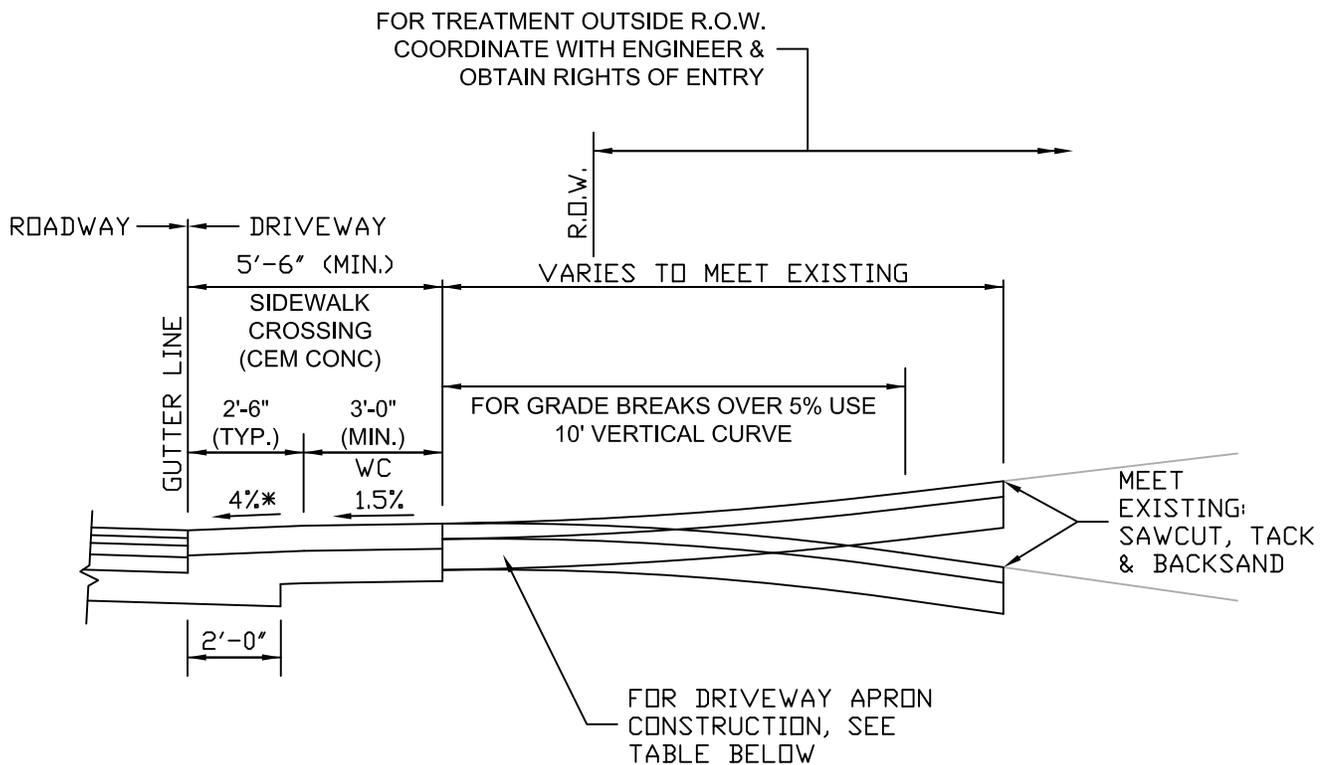
R-3.2

Detail Name:

Sidewalk through Driveway

Date Last Updated:

03/01/2016



NOTES:

1. FOR PLAN, SEE DRAWING R-3.2.
2. FOR CEMENT CONCRETE SIDEWALK SEE DRAWING R-3.2

DRIVEWAY APRON CONSTRUCTION	
SURFACE:	4" HOT MIX ASPHALT (2" TOP COURSE MATERIAL OVER 2" BINDER COURSE MATERIAL)
SUBBASE:	8" GRAVEL BORROW (TYPE "B")

WC = WHEELCHAIR (PATHWAY)

R.O.W. = RIGHT OF WAY

* - DRIVEWAY APRON SLOPE TOWARDS ROADWAY MAY VARY TO MEET FIELD CONDITIONS

DRIVEWAY APRONS SHALL BE CONSTRUCTED OF HOT MIX ASPHALT OR CEMENT CONCRETE, UNLESS PRIOR WRITTEN APPROVAL IS GRANTED BY DPW.

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

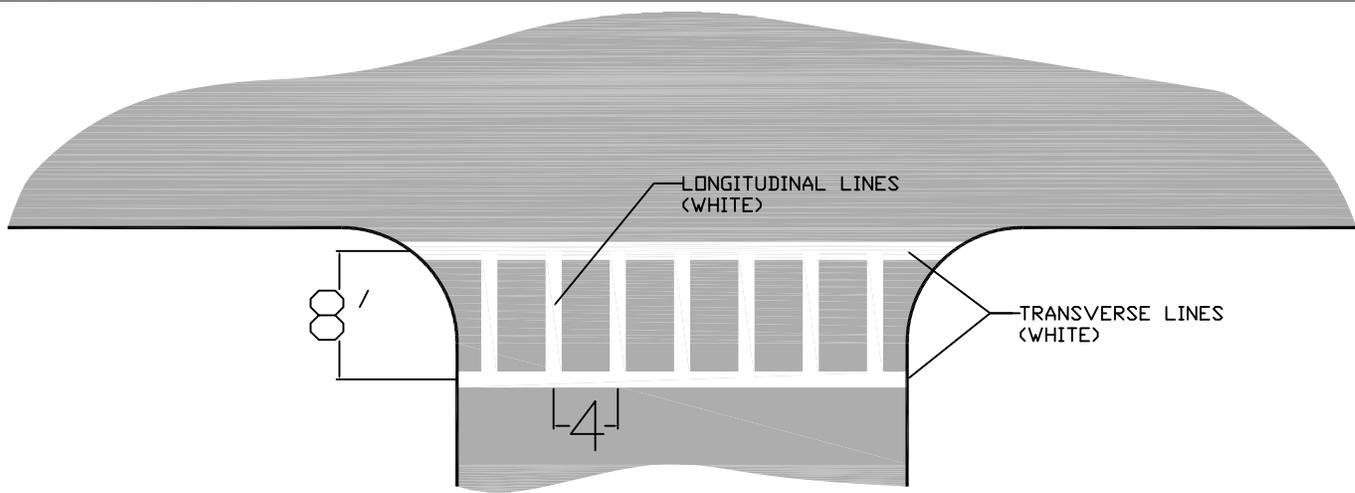
R-3.3

Detail Name:

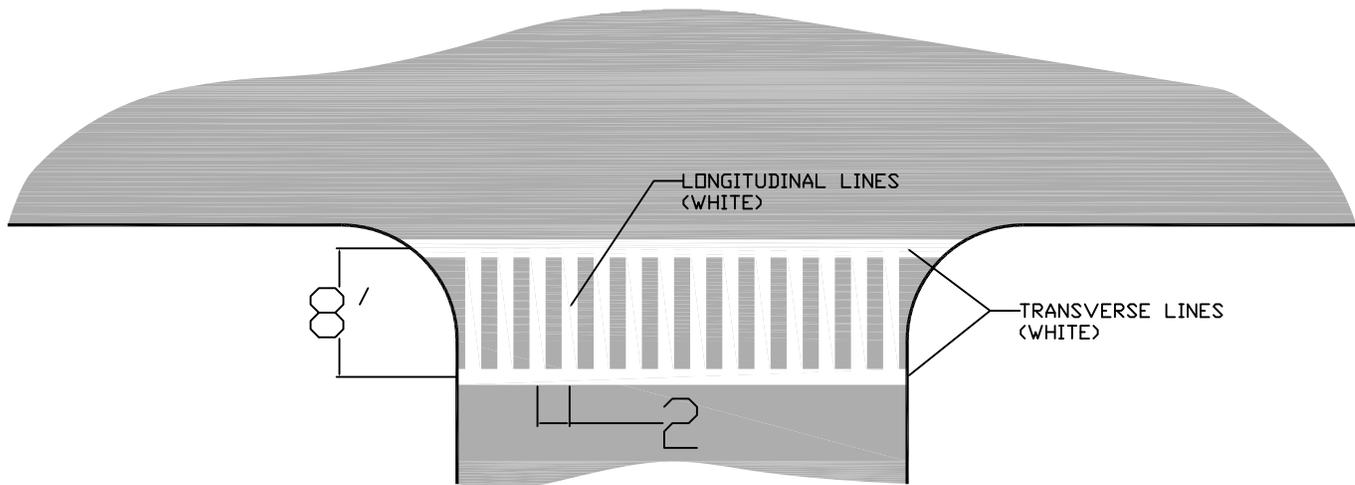
Full Depth Driveway – Cement Concrete Sidewalk Crossing

Date Last Updated:

03/01/2016



THERMOPLASTIC PAINT PAVEMENT MARKING



FAST DRYING WATER-BORNE TRAFFIC PAINT PAVEMENT MARKING

NOTES:

1. CROSSWALK MARKINGS SHALL CONSIST OF SOLID WHITE (AS INDICATED) LINES (BOTH TRANSVERSE AND LONGITUDINAL) 12 INCHES IN WIDTH.
2. CROSSWALKS SHALL BE 8 FEET WIDE.
3. LONGITUDINAL LINES SHALL BE SPACED 48" APART ON CENTER FOR NEW ROADWAYS, 24" APART ON CENTER FOR EXISTING ROADWAYS.
4. CROSSWALK LINES SHALL EXTEND ACROSS THE FULL WIDTH OF PAVEMENT OR TO THE EDGE OF THE INTERSECTING CROSSWALK.
5. CROSSWALKS SHALL BE MARKED AT ALL INTERSECTIONS WHERE THERE IS SUBSTANTIAL CONFLICT BETWEEN VEHICULAR AND PEDESTRIAN MOVEMENT.
6. CROSSWALK MARKINGS FOR NEW ROADWAYS SHALL BE INSTALLED USING THERMOPLASTIC PAVING MARKING MATERIAL TO MEET MHD SPECIFICATIONS M07.01.03 (WHITE) .
7. CROSSWALK MARKINGS FOR EXISTING ROADWAYS SHALL BE INSTALLED USING FAST DRYING WATER-BORNE TRAFFIC PAINT PAVING MARKING MATERIAL TO MEET MHD SPECIFICATIONS M07.01.23 (WHITE) .

TOWN OF NATICK, MASSACHUSETTS

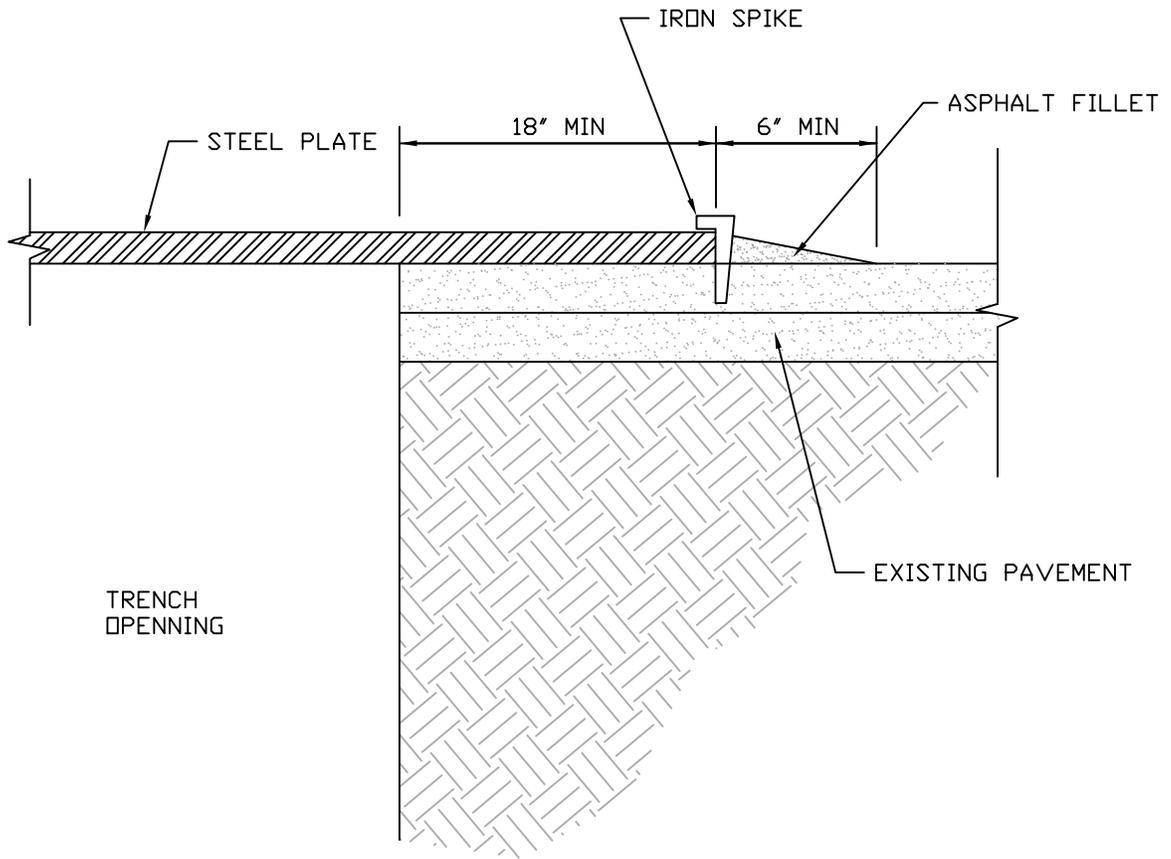
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-4.0

Detail Name:
Cross Walk

Date Last Updated:
03/01/2016



NOTES:

1. USE OF STEEL PLATES ALLOWED ON A CASE BY CASE BASIS, PENDING WRITTEN APPROVAL BY TOWN.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES OR CLAIMS RESULTING FROM THE USE OF STEEL PLATES.
3. MUTCD COMPLIANT RETROREFLECTIVE ORANGE CONSTRUCTION WARNING SIGNS (48"X48") WITH WORDING "STEEL PLATE AHEAD" SHALL BE INSTALLED IN ADVANCE OF STEEL PLATE INSTALLATION.
4. THE CONTRACTOR SHALL DESIGN AND UTILIZE STEEL PLATES OF ADEQUATE DIMMENSIONS AND THICKNESS FOR INTENDED USE AND VEHICLE LOADING. MAXIMUMUM ALLOWABLE DEFLECTION SHALL BE 0.025". IRON SPIKE FASTENERS SHALL BE INSTALLED AROUND THE PERIMETER OF THE STEEL PLATE.
5. SEE CONSTRUCTION STANDARDS SECTION 5.1.7. SPECIAL CONDITIONS FOR ADDITIONAL REQUIREMENTS.

TOWN OF NATICK, MASSACHUSETTS

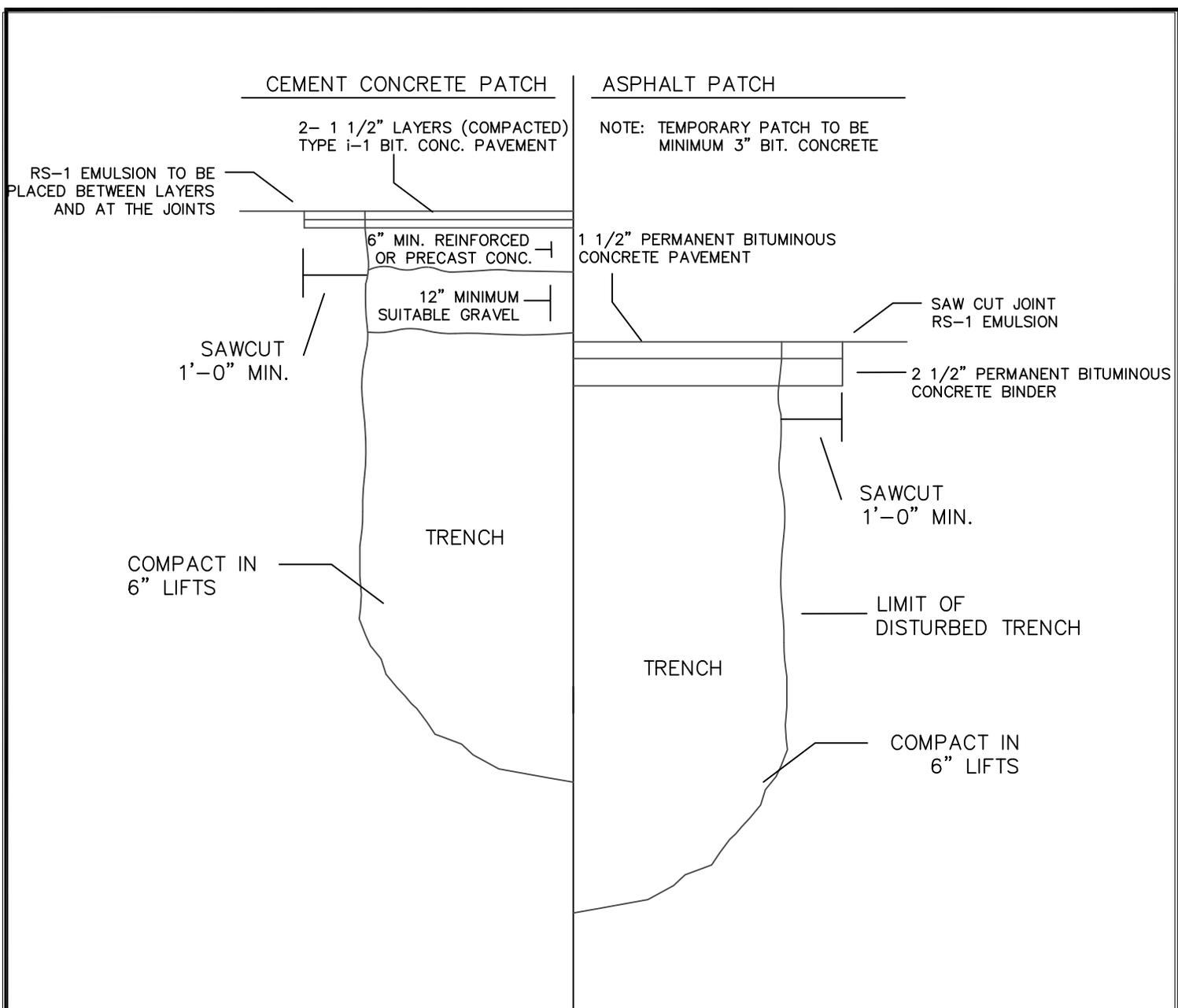
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-5.0

Detail Name:
Street Plate Installation

Date Last Updated:
03/01/2016



NOTE: BACKFILL

BACKFILL WITH SELECTED EXCAVATED MATERIALS WITH NO STONE LARGER THAN 2 INCHES OR GRAVEL BORROW. BITUMINOUS CONCRETE WILL NOT BE ALLOWED AS BACKFILL.

NOTE: FLOWABLE FILL

IF REQUIRED DURING BACKFILLING, FLOWABLE FILL SHALL BE INSTALLED PER THE TOWN OF NATICK STREET OPENING RULES AND REGULATIONS.

TYPICAL STREET REPLACEMENT DETAIL

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

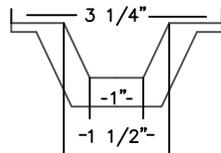
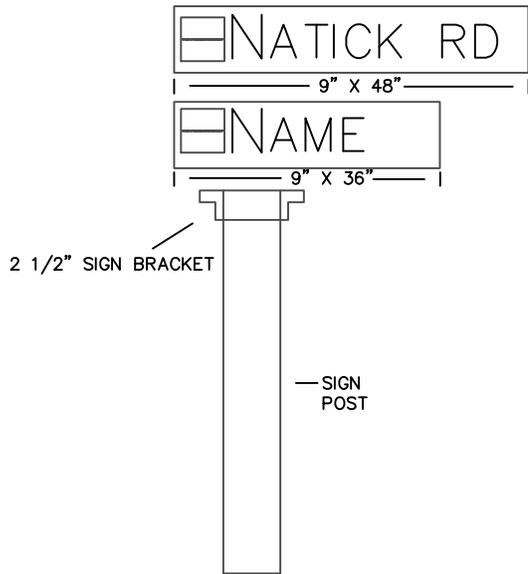
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-6.0

Detail Name:
Street Replacement Detail

Date Last Updated:
03/01/2016



U-CHANNEL POST DETAIL

NOTES:

FABRIC – SCOTCHLITE 3M BRAND REFLECTIVE SHEETING
 FLAT TOP HIGH INTENSITY GRADE GREEN 6"

SIGNS ARE MADE OF EXTRUDED ALUMINUM WITH GREEN
 FABRIC. FIRST LETTER OF STREET NAME MUST BE 6"
 WHITE LETTERING. REMAINING LETTERS MUST BE NO LARGER
 THAN 6" AND HAVE WHITE LETTERING.

TEXT TYPE – ARIAL BLACK

POST SIZE – GALVANIZED U-CHANNEL 10' POST

POST 7' FROM GROUND TO BOTTOM OF SIGN

ALL SIGNS MUST CONFORM TO MASS D.P.W. STANDARDS

SIZE OF SIGN DEPENDS ON STREET NAME.

TOWN SEAL – MUST BE 6" IN HEIGHT

STANDARD STREET SIGN DETAIL

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

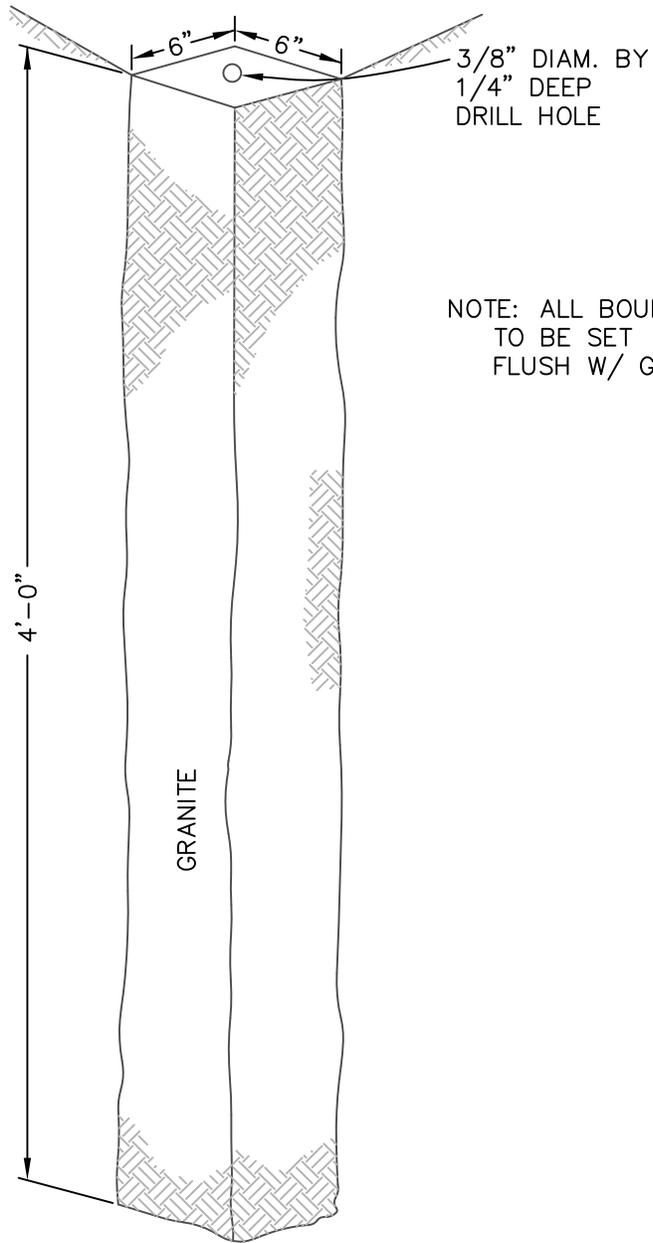
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
R-7.0

Detail Name:
Street Sign

Date Last Updated:
03/01/2016



NOTE: ALL BOUNDS
TO BE SET
FLUSH W/ GND.

STANDARD BOUND MONUMENT DETAIL

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

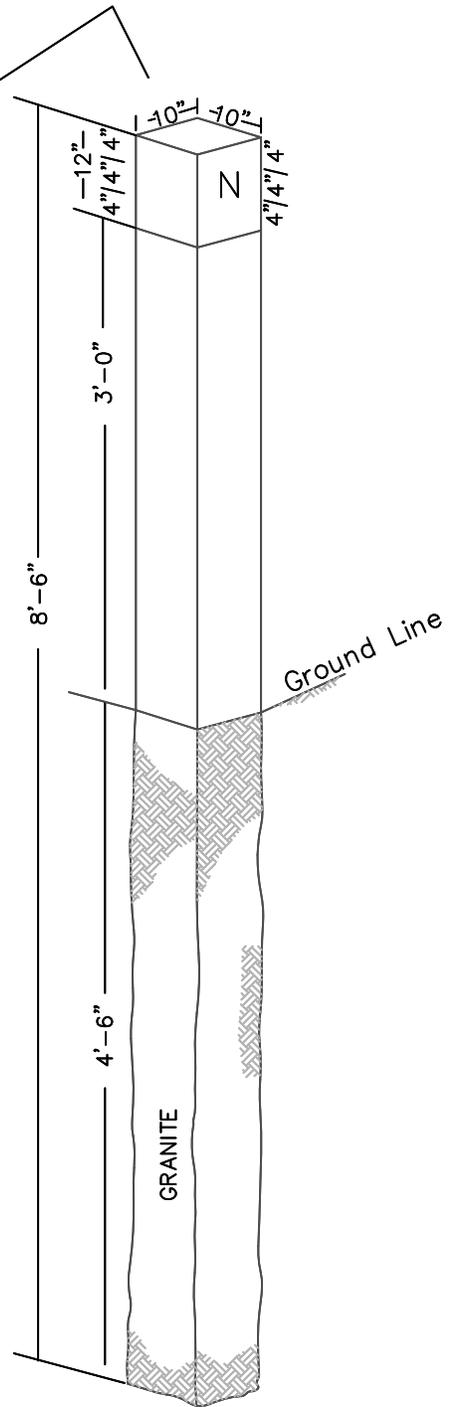
75 WEST STREET NATICK, MA 01760

Detail Number:
R-8.0

Detail Name:
Bound Monument

Date Last Updated:
03/01/2016

Opposite Face with "F,W,D or S"



Note:

- 1) All lettering to be 1/2" V Sunk Letters
- 2) Top and 4 sides to be sand blasted.
- 3) In specified locations, monuments may be hammered smooth on top and 4 sides above ground line.

STANDARD TOWN BOUND MONUMENT DETAIL

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

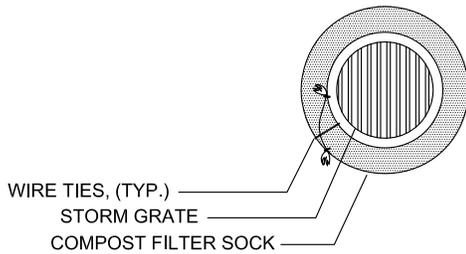
Detail Number:
R-9.0

Detail Name:
Town Bound

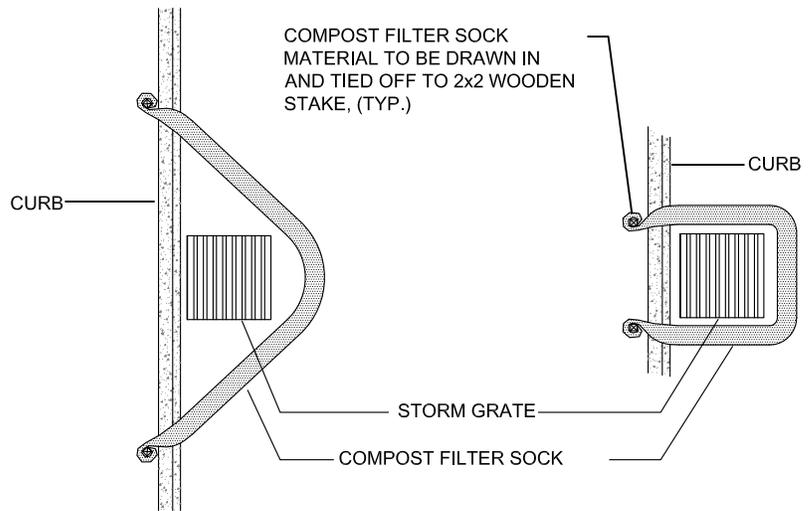
Date Last Updated:
03/01/2016

Environmental Construction Details



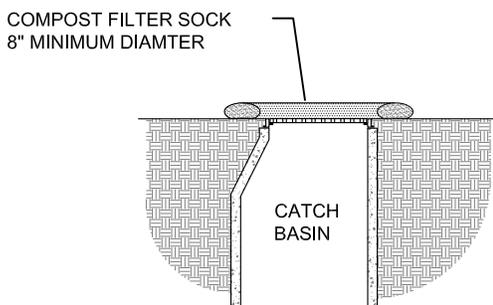


DRAIN INLET PLAN

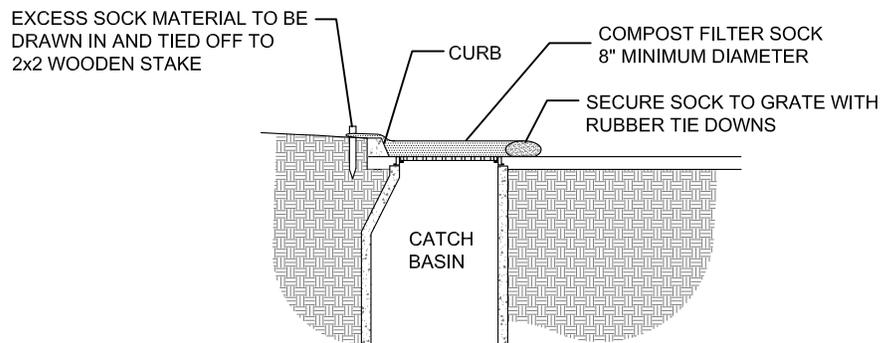


CURBSIDE OPTION "A" PLAN

CURBSIDE OPTION "B" PLAN



DRAIN INLET SECTION



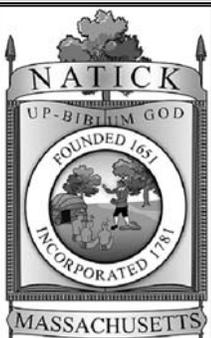
CURBSIDE SECTION

NOTES:

1. ALL MATERIAL TO MEET APPLICABLE SPECIFICATIONS.
2. COMPOST FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

INLET PROTECTION DETAIL

NOT TO SCALE



TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

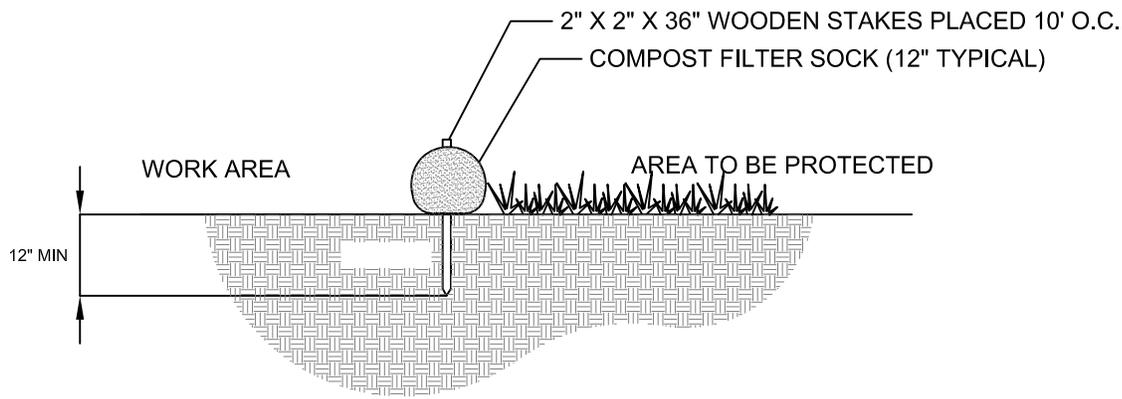
ENVIRONMENTAL CONSTRUCTION DETAILS

Detail Name:

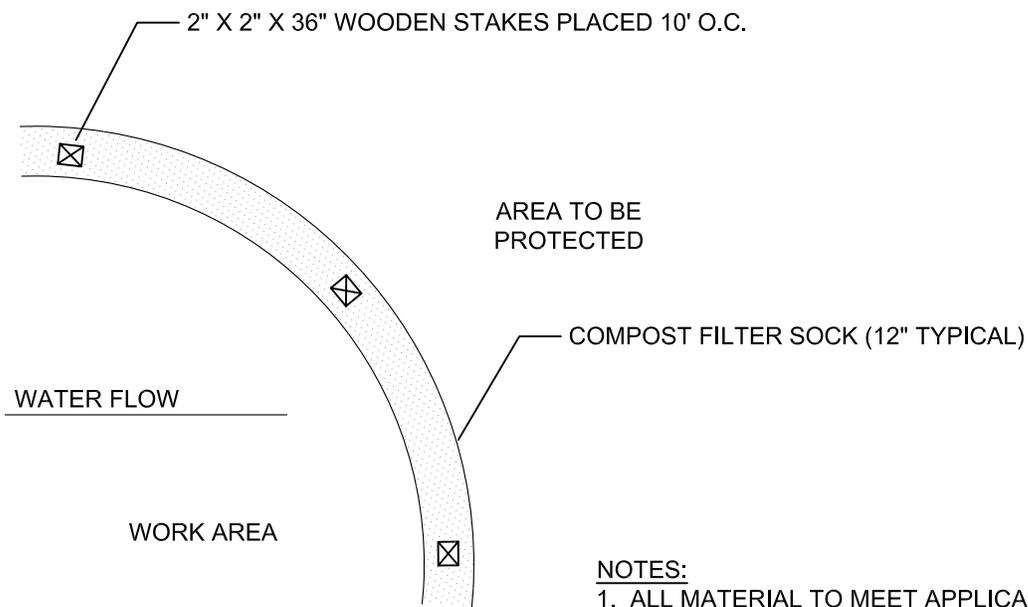
E-1.0 INLET PROTECTION

Date Last Updated:

03/01/2016



SECTION NTS



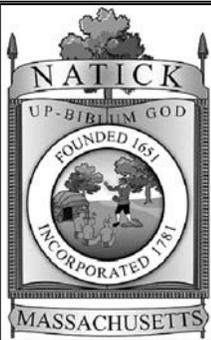
PLAN NTS

NOTES:

1. ALL MATERIAL TO MEET APPLICABLE SPECIFICATIONS.
2. COMPOST FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

SEDIMENT CONTROL BARRIER DETAIL

NOT TO SCALE



TOWN OF NATICK, MASSACHUSETTS

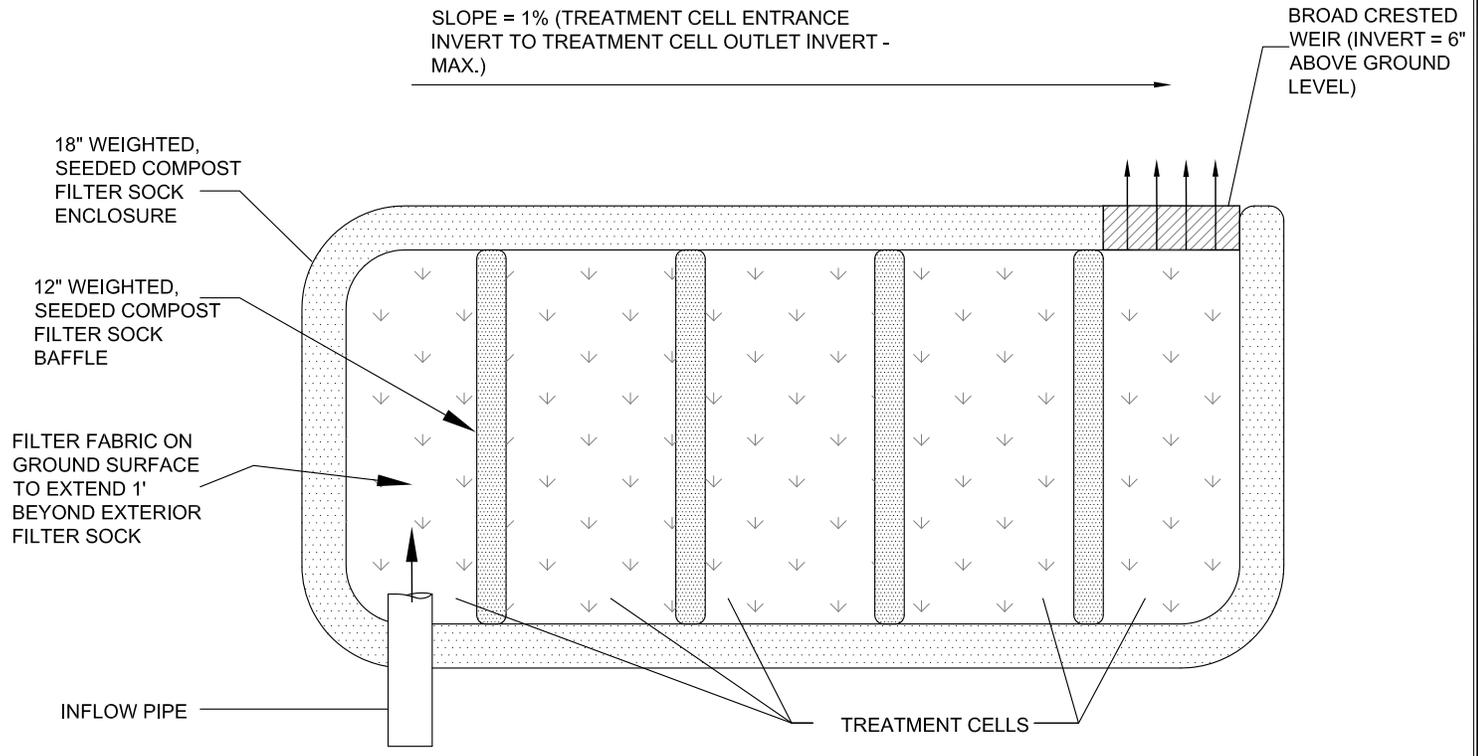
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

ENVIRONMENTAL CONSTRUCTION DETAILS

Detail Name:
E-2.0 SEDIMENT CONTROL BARRIER

Date Last Updated:
03/01/2016

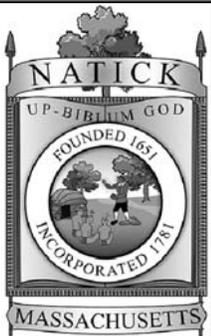


NOTES:

1. Enclosure dimensions and baffle/flow diverter quantities and spacings to be varied as necessary to accommodate site conditions and to meet the design flow rate and hydraulic residence time requirements.
2. All materials to meet applicable specifications.
3. All collected sediment shall be properly disposed of.
4. System can be modified for constant (point-source) discharge or intermittent (nonpoint-source, construction, site, etc.) discharges.

SEDIMENTATION BASIN

NOT TO SCALE



TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

ENVIRONMENTAL CONSTRUCTION DETAILS

Detail Name:

E-3.0 SEDIMENTATION BASIN

Date Last Updated:

03/01/2016

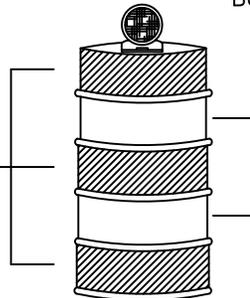
Traffic Construction Details



M.D.P.W. ITEM NO.	TYPE
859.	REFLECTORIZED DRUM
859.1	WITH FLASHER (TYPE A)
859.2	WITH LIGHT (TYPE C)

TYPE "A" FLASHING
OR TYPE "C" STEADY
BURN LIGHT

4-8" ORANGE
REFLECTIVE
SHEETING



4-8" WHITE
REFLECTIVE
SHEETING

NOTES:

PLASTIC DRUMS WITH TYPE C LIGHTS SHALL BE USED AS CHANNELIZING DEVICES IN HIGHWAY WORK ZONE.

PLASTIC DRUMS WITH "TYPE A" FLASHERS SHALL BE USED FOR HAZARD MARKINGS.

DRUM MATERIAL MUST BE APPROVED ULTRAVIOLET RESISTANT, LOW DENSITY, IMPACT RESISTANT LINEAR POLYETHYLENE (OR APPROVED EQUAL).

DRUM DESIGN AND DRUM APPLICATION MUST BE AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

MINIMUM DRUM WALL THICKNESS SHALL BE 3/32 IN.

SHEETING MUST BE APPROVED ORANGE AND WHITE TYPE IV REFLECTORIZED SHEETING CONFORMING TO M9.30.0

MINIMUM DRUM DIAMETER SHALL BE 18 IN. REGARDLESS OF ORIENTATION.

DRUMS SHALL BE APPROXIMATELY 36 IN. IN HEIGHT

WHEN A DRUM IS NO LONGER NEEDED AT A LOCATION, BUT IS REQUIRED FOR FUTURE USE WITHIN A 5 DAY PERIOD, IT MAY BE STORED ON LOCATION. OTHERWISE, IT SHALL BE STORED IN A DRUM STORAGE AREA AND RESET AT A FUTURE DATE.

ALL DRUMS SHALL BE MAINTAINED, INCLUDING REMOVAL OF DUST OR ROAD FILM, SO AS TO NOT REDUCE REFLECTIVE EFFICIENCY. WHEN DRUM LOSES TARGET VALUE IT SHALL BE REPLACED.

DRUMS SHALL NOT BE WEIGHTED WITH SAND, WATER OR ANY MATERIAL TO THE EXTENT THAT WOULD MAKE THEM HAZARDOUS TO MOTORISTS.

* METAL DRUMS ARE PROHIBITED FROM USE ON ALL STATE HIGHWAY PROJECTS

REFLECTORIZED DRUMS

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

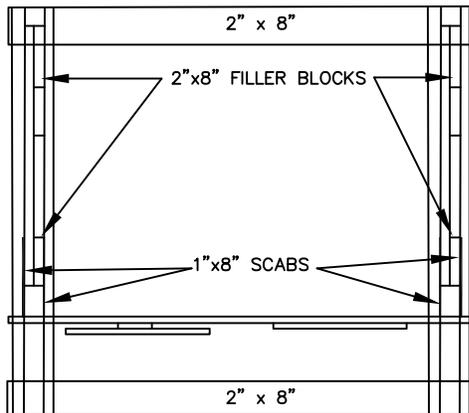
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
T-1.0

Detail Name:
Reflectorized Drums

Date Last Updated:
03/01/2016



PLAN

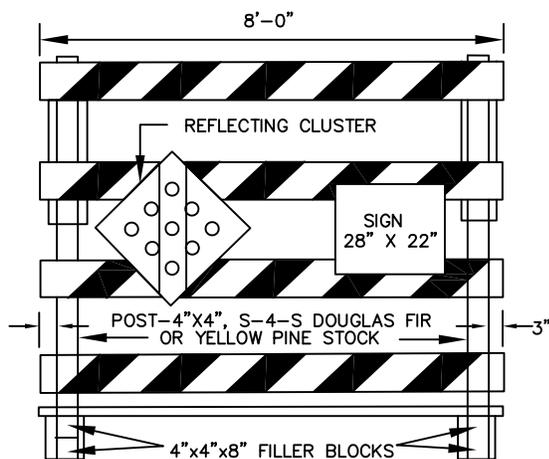
NOTES:

1. BRACES AND RAILS TO BE CONSTRUCTED FROM 2"x8", S-4-S SELECT DOUGLAS FIR OR YELLOW PINE STOCK; ALL LUMBER SIZES ARE NOMINAL.

2. PORTABLE BARRIER TO BE PAINTED MTH PRIMER. THE FRONT FACE TO BE FINISHED IN THE PATTERN SHOWN, ALTERNATING 6" WIDE STRIPES OF ORANGE AND WHITE.

3. SHAPE TOP AND BOTTOM OF STRAPPING TO CONFORM TO SHAPE OF CLUSTER.

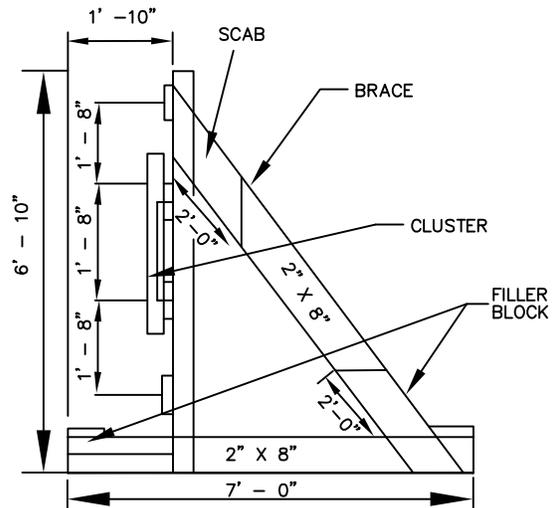
* REFLECTIVE SHEETING CONFORMING TO M9.30.0, TYPE III.



FRONT ELEVATION

CLUSTER

FILLER BLOCKS



END ELEVATION

PORTABLE BARRIER FENCE

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

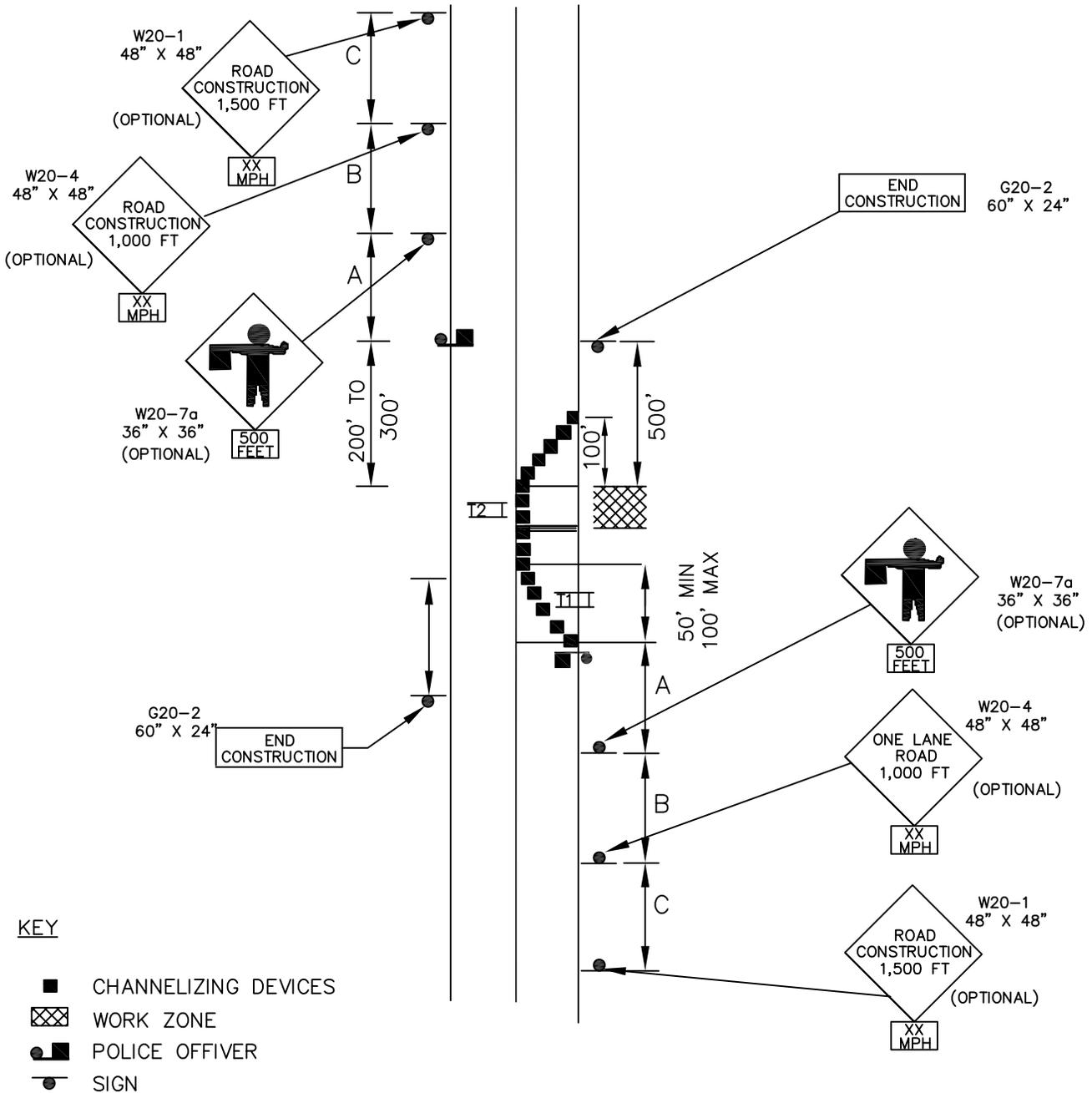
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
T-2.0

Detail Name:
Portable Barrier Fence

Date Last Updated:
03/01/2016



TYPICAL TRAFFIC MANAGEMENT PLAN 2 LANE ROAD W/ ALTERNATING ONE-WAY OPERATION

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
T-3.0

Detail Name:
Traffic Management

Date Last Updated:
03/01/2016

NOTES:

1. FLOOD LIGHTS SHOULD BE PROVIDED TO MARK POLICE DETAIL STATIONS AT NIGHT AS NEEDED.
2. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE POLICE DETAIL MAY BE USED.
3. WARNING LIGHTS SHOULD BE USED TO MARK CHANNELIZING DEVICES AT NIGHT AS NEEDED.
4. CHANNELIZING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
5. ALL DETAIL OFFICERS MUST BE IN COMMUNICATION WITH EACH OTHER.
6. EACH OFFICER SHOULD BE CLEARLY VISIBLE TO THE TRAFFIC WHICH IS BEING CONTROLLED.
7. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES IN A TAPER (T1) SHOULD BE APPROXIMATELY EQUAL IN FEET TO THE SPEED LIMIT.
8. THE MAXIMUM SPACING BETWEEN CHANNELIZING DEVICES ON THE TANGENT (T2) SHOULD BE APPROXIMATELY EQUAL IN FEET TO TWO TIMES THE SPEED LIMIT.
9. ALL DISTANCES MAY BE ADJUSTED SLIGHTLY TO MEET WITH FIELD CONDITIONS.
10. ADVISORY SPEED (W13-1) AT SITE TO BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE APPROPRIATE AUTHORITY WITH JURISDICTION OVER THE ROADWAY PRIOR TO COMMENCING WORK.

TABLE 1: ADVANCED WARNING SIGN PLACEMENT

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (LOW SPEED)*	200	200	200
URBAN (HIGH SPEED)*	350	350	350
RURAL	500	500	500
EXPRESSWAY/FREEWAY	1,000	1,600	2,600

TABLE 2: BUFFER LENGTHS

SPEED* (mph)	LENGTH (feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485

FORMULAS FOR L **

SPEED

FORMULA

40 mph or less

$$L = WS^2 / 60$$

40 mph or greater

$$L = W X S$$

L = TAPER LENGTH, IN FEET

W = WIDTH OF OFFSET, IN FEET

S = POSTED SPEED, THE OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED SPEED IN MPH.

NOTES FOR ALTERNATING ONE WAY OPERATION

(NO SCALE)

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

T-4.0

Detail Name:

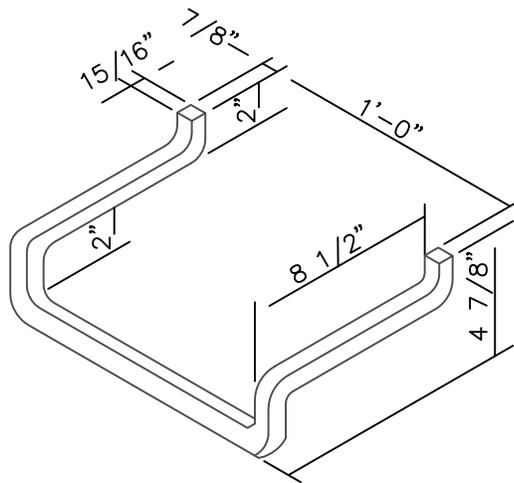
One Way Operation

Date Last Updated:

03/01/2016

General Construction Details





MANHOLE STEP DETAILS

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

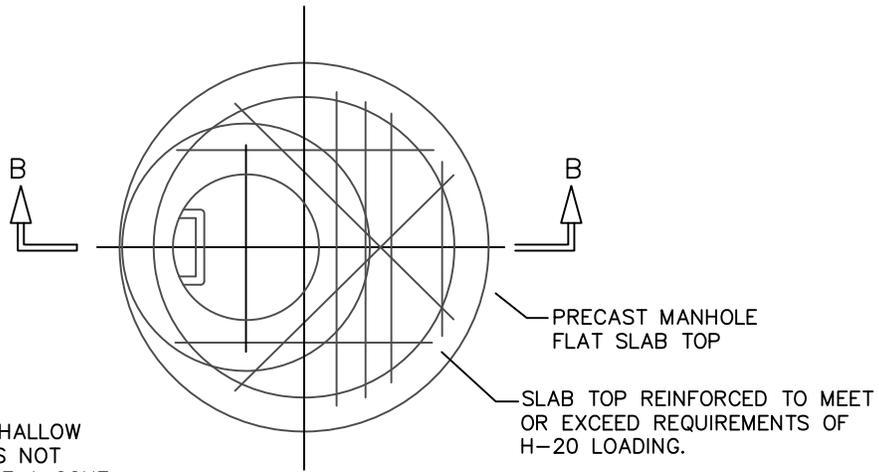
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
G-1.0

Detail Name:
MH Steps

Date Last Updated:
03/01/2016

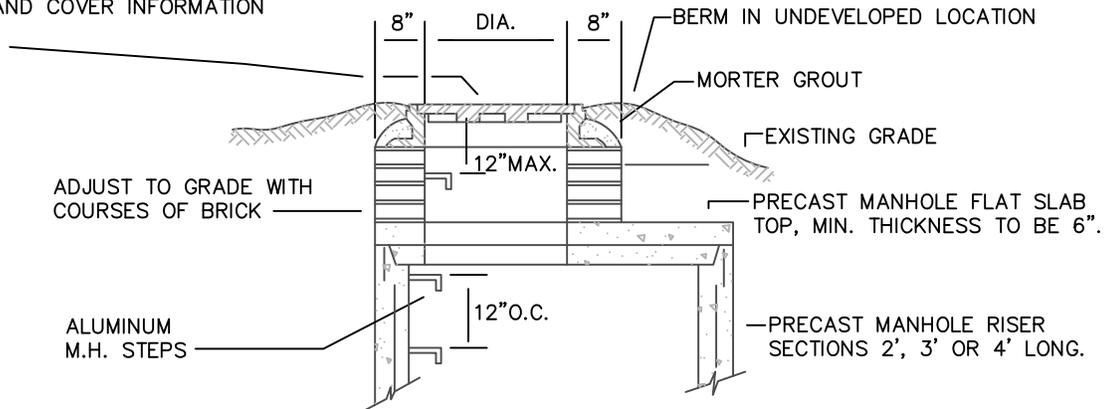


NOTE

FOR USE WHERE SHALLOW
INSTALLATION DOES NOT
PERMIT THE USE OF A CONE
TYPE SECTION OR AS DIRECTED.

PLAN

SEE SEWER AND DRAIN DETAILS
FOR FRAME AND COVER INFORMATION



SECTION B-B

FLAT TOP SECTION

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:

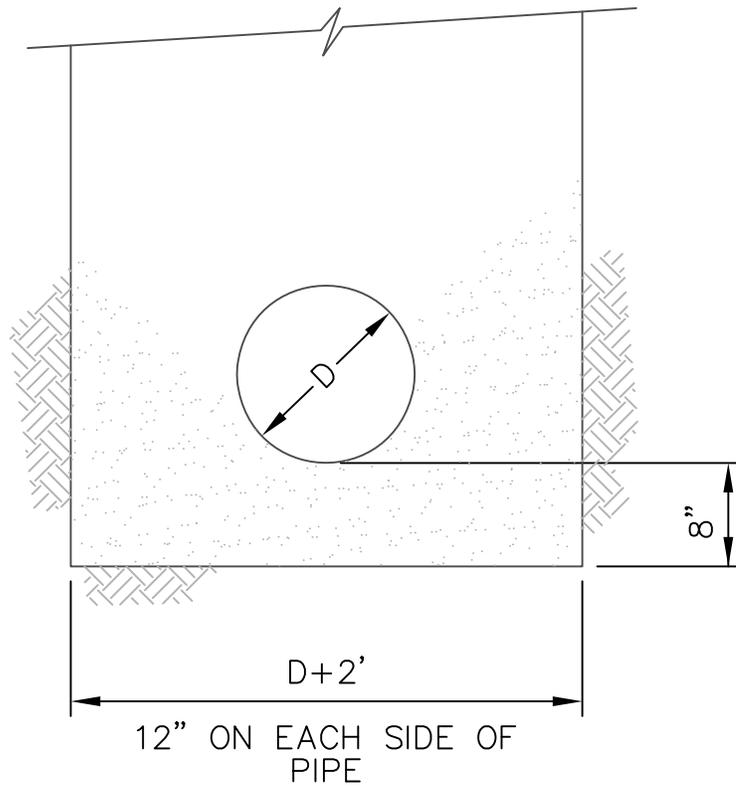
G-2.0

Detail Name:

MH Flat Top

Date Last Updated:

03/01/2016



PAYMENT LIMIT FOR LEDGE EXCAVATION

NOT TO SCALE

TOWN OF NATICK, MASSACHUSETTS

DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

75 WEST STREET NATICK, MA 01760

Detail Number:
G-3.0

Detail Name:
Ledge Excavation

Date Last Updated:
03/01/2016