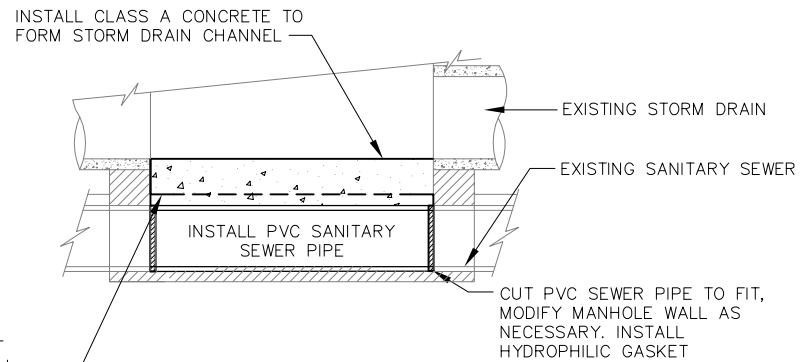


CROSS SECTION



SECTION A-A

REMOVE BRICK INVERT
AS NEEDED TO INSTALL
PVC SANITARY SEWER PIPE
TO APPROPRIATE ELEVATIONS

95% DETAILS
NOT FOR CONSTRUCTION

THE WORKS
CAMBRIDGE
DEPARTMENT
OF PUBLIC

COMMON MANHOLE SEPARATION - TYPE 2
COMMON MANHOLE CONVERTED TO DRAIN MANHOLE DETAIL

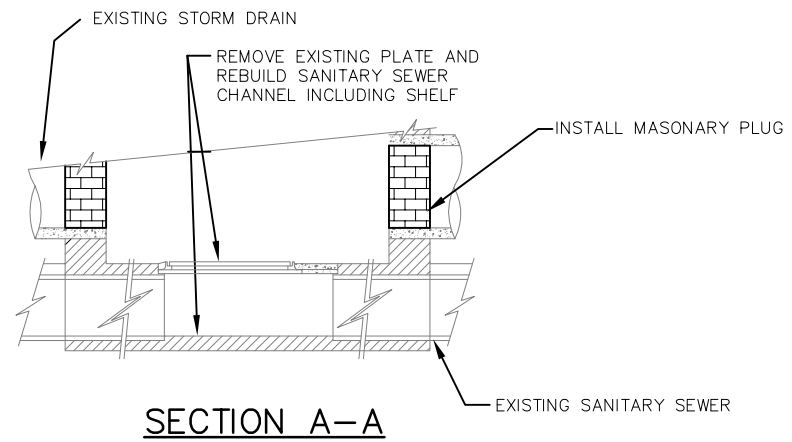
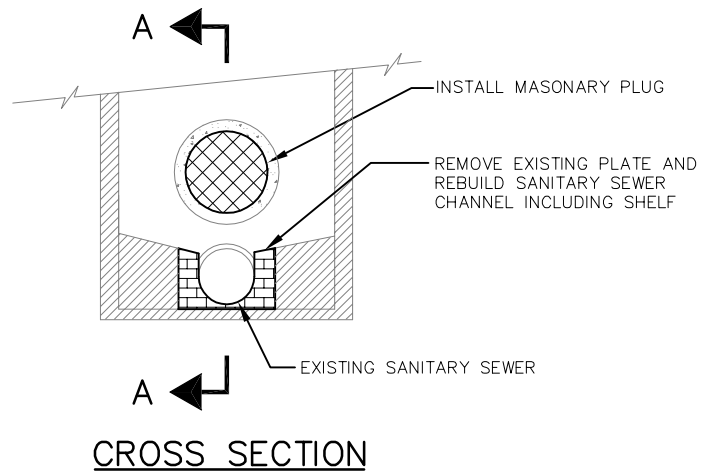
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.10



95% DETAILS
NOT FOR CONSTRUCTION

THE WORKS
CAMBRIDGE
DEPARTMENT
OF PUBLIC

COMMON MANHOLE SEPARATION - TYPE 5
COMMON MANHOLE CONVERTED TO SEWER MANHOLE DETAIL

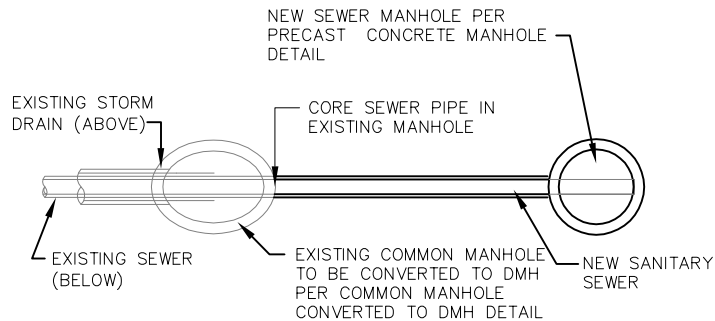
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
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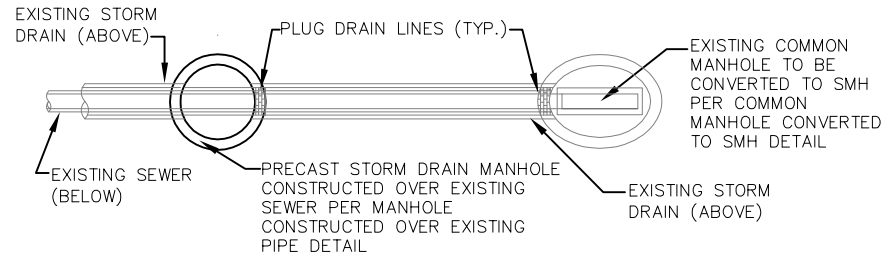
SPEC. SECTION REF#: 02252

2252.13



PLAN
**END OF LINE COMMON MANHOLE TO BE
 CONVERTED TO DMH DETAIL**

- NOTES:
1. UNLESS OTHERWISE NOTED, PROPOSED PIPE TO MATCH INSIDE DIAMETER OF EXISTING PIPE
 2. UNLESS OTHERWISE NOTED, PROPOSED SEWER SHALL BE PVC AND PROPOSED DRAIN SHALL BE RCP



PLAN
**END OF LINE COMMON MANHOLE TO BE
 CONVERTED TO SMH DETAIL**

- NOTES:
1. LOCATE ALL EXISTING STORM DRAIN CONNECTIONS WITHIN THE PORTION OF EXISTING STORM DRAIN THAT IS TO BE ABANDONED AND RECONNECT THOSE CONNECTIONS TO THE STORM DRAIN.
 2. ANY PORTION OF THE EXISTING STORM DRAIN THAT IS TO BE ABANDONED IN PLACE SHALL BE FILLED WITH FLOWABLE CONCRETE FILL AND PLUGGED.
 3. VERIFY ALL DRAIN CONNECTIONS TO THE PROPOSED ABANDONED SECTION OF DRAIN, IF ANY LIVE CONNECTIONS EXIST, COORDINATE WITH THE ENGINEER TO PROVIDE RECONNECTION. IF SERVICE IS NOT LIVE, THE CONNECTION AT THE STORM DRAIN SHALL BE PLUGGED

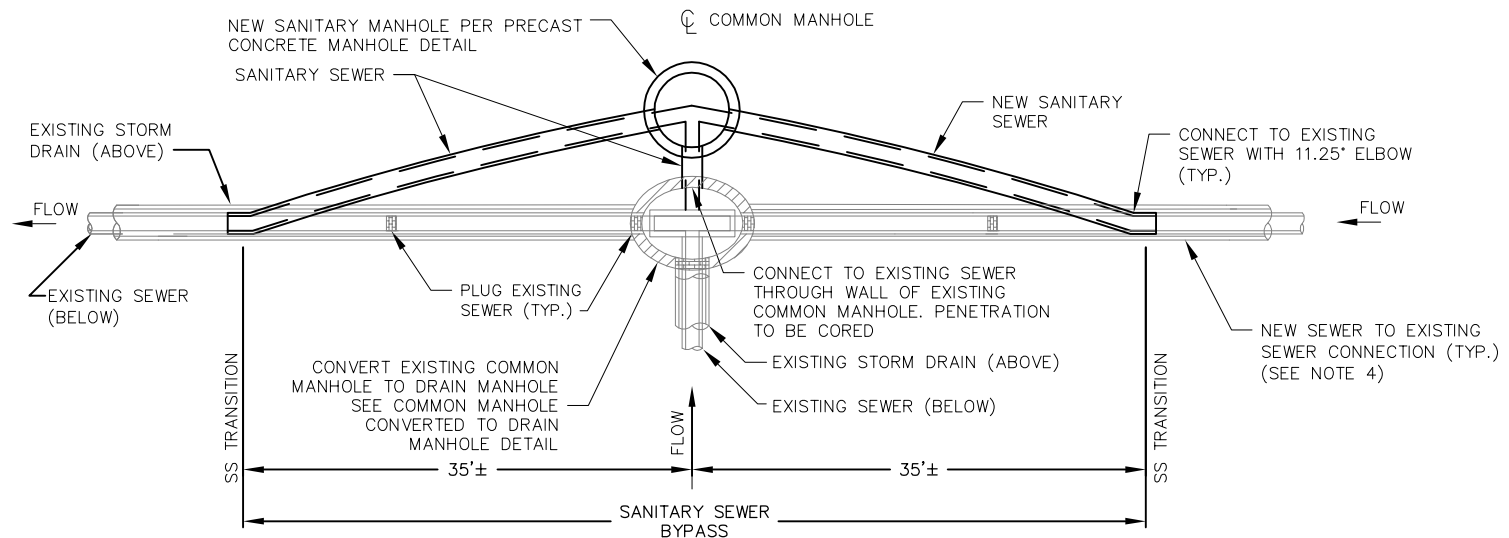
95% DETAILS
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THE WORKS
 CAMBRIDGE
 DEPARTMENT
 OF PUBLIC

**COMMON MANHOLE SEPARATION - TYPE 1
 END OF LINE CONVERSIONS**

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02252	2252.9
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NOTES:

1. LOCATE ALL EXISTING SEWER CONNECTIONS WITHIN THE PORTION OF EXISTING SEWER THAT IS TO BE ABANDONED AND RECONNECT THOSE CONNECTIONS TO THE SEWER.

2. ANY PORTION OF THE EXISTING SEWER THAT IS TO BE ABANDONED IN PLACE SHALL BE FILLED WITH FLOWABLE CONCRETE FILL AND PLUGGED.

3. VERIFY ALL SEWER CONNECTIONS TO THE PROPOSED ABANDONED SECTION OF SEWER, IF ANY LIVE CONNECTIONS EXIST, COORDINATE WITH THE ENGINEER TO PROVIDE RECONNECTION. IF SERVICE IS NOT LIVE, THE CONNECTION AT THE SEWER SHALL BE PLUGGED.

4. SEE THE APPROPRIATE SPECIFICATION OR STANDARD FOR THE PROPOSED SEWER MATERIAL FOR PIPE TO PIPE CONNECTION REQUIREMENTS.

95% DETAILS
NOT FOR CONSTRUCTION

THE WORKS
CAMBRIDGE
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**COMMON MANHOLE SEPARATION - TYPE 4
SANITARY SEWER BYPASS (WITH LATERAL)**

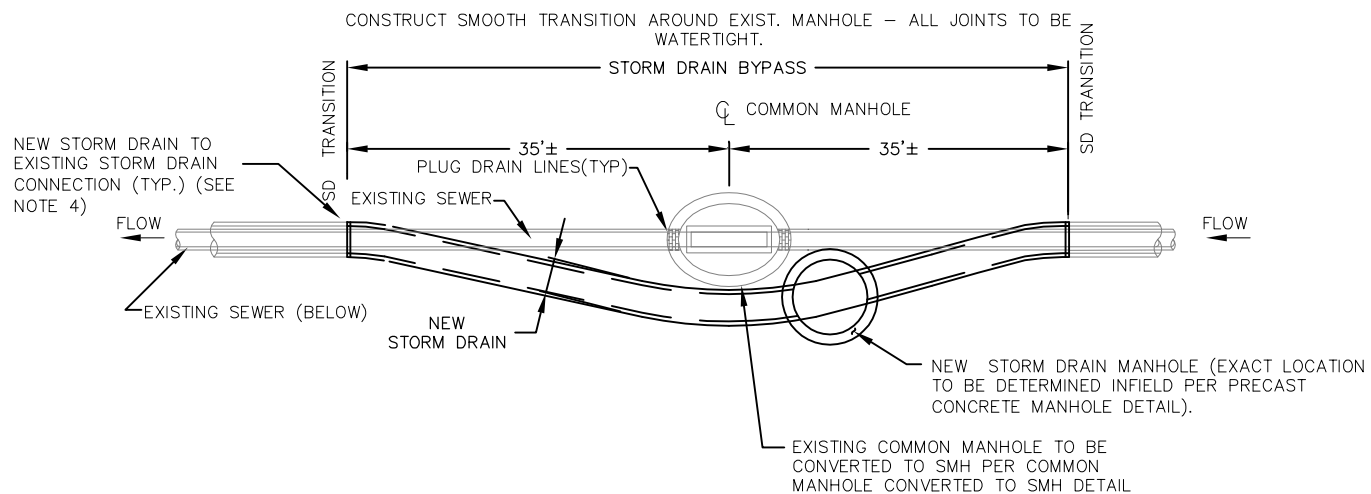
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

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SPEC. SECTION REF#: 02252

2252.12



NOTES:

1. LOCATE ALL EXISTING STORM DRAIN CONNECTIONS WITHIN THE PORTION OF EXISTING STORM DRAIN THAT IS TO BE ABANDONED AND RECONNECT THOSE CONNECTIONS TO THE STORM DRAIN.
2. ANY PORTION OF THE EXISTING STORM DRAIN THAT IS TO BE ABANDONED IN PLACE SHALL BE FILLED WITH FLOWABLE CONCRETE FILL AND PLUGGED.
3. VERIFY ALL DRAIN CONNECTIONS TO THE PROPOSED ABANDONED SECTION OF DRAIN, IF ANY LIVE CONNECTIONS EXIST, COORDINATE WITH THE ENGINEER TO PROVIDE RECONNECTION. IF SERVICE IS NOT LIVE, THE CONNECTION AT THE STORM DRAIN SHALL BE PLUGGED.
4. SEE THE APPROPRIATE SPECIFICATION OR STANDARD FOR THE PROPOSED STORM DRAIN MATERIAL FOR PIPE TO PIPE CONNECTION REQUIREMENTS.

95% DETAILS
NOT FOR CONSTRUCTION

CAMBRIDGE
DEPARTMENT
OF PUBLIC
THE WORKS

COMMON MANHOLE SEPARATION - TYPE 3
STORM DRAIN BYPASS

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

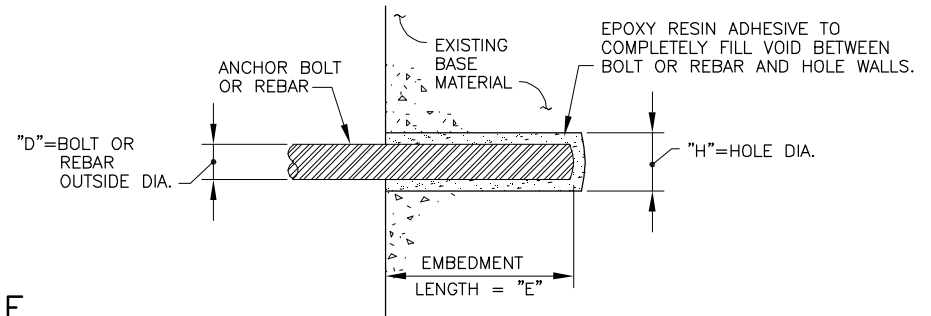
SCALE: N.T.S.

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2252.11

	BOLT OR REBAR OUTSIDE DIAMETER "D" (INCHES)	REQUIRED EMBEDMENT LENGTH "E" (INCHES)	REQUIRED HOLE DIAMETER "H" (INCHES)	REQUIRED ALLOWABLE ADHESIVE BOND STRENGTH IN 4,000 psi CONCRETE USING S.F. = 4.0
ANCHOR BOLTS	3/8	3 3/8	7/16	2,270
	1/2	4 1/2	9/16	4,360
	5/8	5 5/8	3/4	7,545
	3/4	6 3/4	7/8	9,735
	7/8	7 7/8	1	10,595
	1	9	1 1/8	14,890
	1 1/4	11 1/4	1 3/8	22,940
	1 1/2	13 1/2	1 5/8	32,360
REBAR	#3 BAR	4 1/2	1/2	3,970
	#4 BAR	6	5/8	6,590
	#5 BAR	7 1/2	3/4	9,825
	#6 BAR	9	7/8	13,735
	#7 BAR	10 1/2	1	18,210
	#8 BAR	12	1 1/8	23,465
	#9 BAR	13 1/2	1 3/8	32,015



TYPICAL EPOXY DOWELLING DETAIL & SCHEDULE

NOTES:

1. DRILL HOLES, CLEAN OUT AND INSTALL EPOXY AND BOLT OR REBAR IN STRICT CONFORMANCE WITH EPOXY MANUFACTURER'S WRITTEN RECOMMENDATIONS. REFER TO CAST IN PLACE CONCRETE FOR EPOXY REQUIREMENTS.
2. UNLESS OTHERWISE INDICATED ON DRAWINGS, PROVIDE THE EMBEDMENT LENGTH AND HOLE DIAMETER INDICATED IN THE SCHEDULE ABOVE, FOR THE BOLT OR REBAR SIZE REQUIRED.
3. REQUIRED EPOXY BOND STRENGTHS ARE BASED ON A SAFETY FACTOR (S.F.) OF 4.0.
4. PROVIDE STAINLESS STEEL SCREEN RODS IN HOLES IN HOLLOW BASE MATERIALS (MASONRY CAVITY WALLS).
5. UNLESS OTHERWISE INDICATED ALL ANCHOR BOLTS SHALL BE OF GALVANIZED A36 THREADED ROD STOCK. WHERE STAINLESS STEEL ANCHORS ARE REQUIRED THEY SHALL BE AISI TYPE 316 (ASTM A193).



EPOXY DOWELL DETAIL

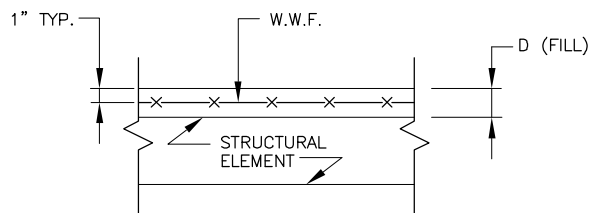
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
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3300.2



NOTE:
1. PROVIDE W.W.F. IN CONCRETE FILL, SIZE AS TABULATED, UNLESS OTHERWISE NOTED.

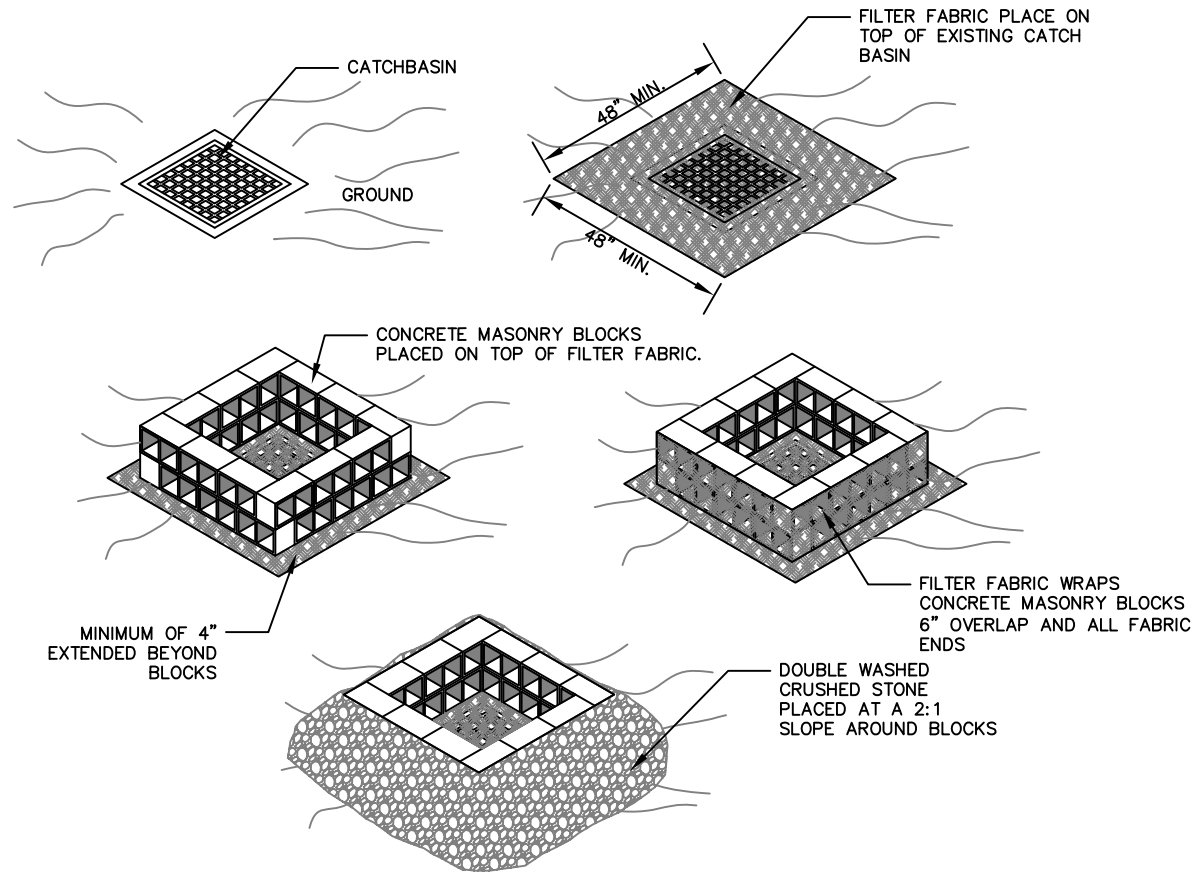
D	W.W.F.
2" TO 4"	6x6 - W 1.4 x W 1.4
5" TO 8"	6x6 - W 2.0 x W 2.0
9" PLUS	6x6 - W 2.9 x W 2.9



TYPICAL WELDED WIRE FABRIC FOR CONCRETE FILL DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 03300	3300.3
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THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE ANTICIPATED AND OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. FILTER FABRIC SHALL BE SWEEPED CLEAN WHEN NEEDED AND GRAVEL SHALL BE REPLACED WHEN A NOTICEABLE AMOUNT OF FINES HAVE COLLECTED IN BETWEEN THE CRUSHED GRAVEL.

CATCH BASIN W/ BLOCK AND GRAVEL INLET PROTECTION



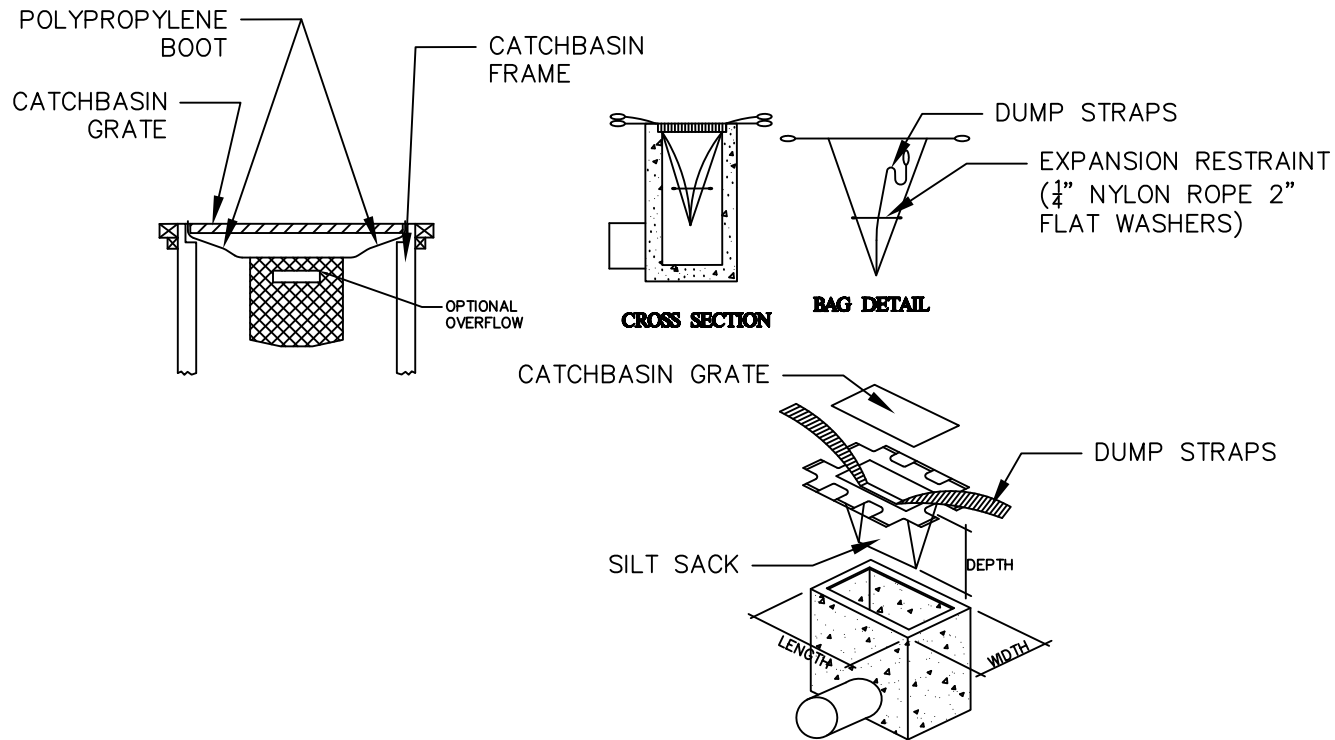
INLET PROTECTION 1

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 07/09

SPEC. SECTION REF#:



THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS SHEET, OVERLAND AND CONCENTRATED FLOWS (NOT GREATER THAN 1 CFS). THE METHOD CAN DRAIN FLAT AREA TO STEEP SLOPES. INLET CAPACITY WILL DECREASE WITH THIS METHOD AND CONTRACTOR SHALL EXPECT FLOODING TO OCCUR DURING HIGH FLOW EVENTS.

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT SACKS SHALL BE CLEANED ONCE THE BAG IS FILLED HALF WAY WITH DEBRIS. CONTRACTOR SHALL REMOVE SILT SACK AND PLACE NEW UNIT. DO NOT EMPTY SILT SACK CONTENTS INTO THE CATCHBASIN.

CATCH BASIN W/ SILT SACK INLET PROTECTION



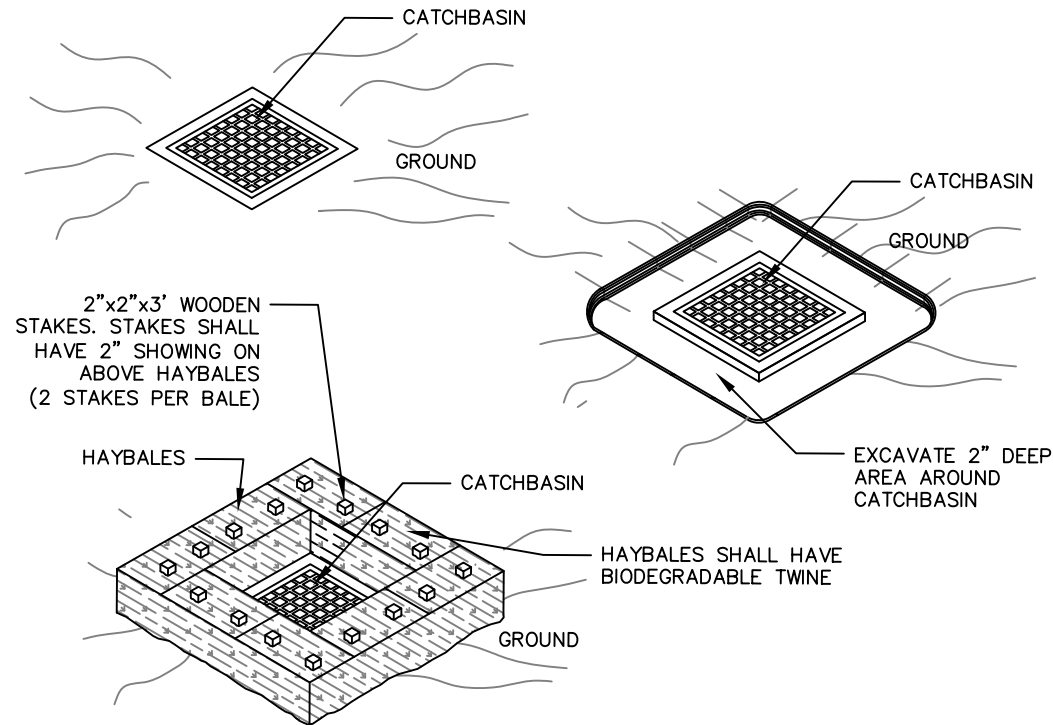
INLET PROTECTION 2

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 07/09

SPEC. SECTION REF#:



INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT. THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%). WHERE THE INLET ACCEPTS SHEET OR OVERLAND FLOWS (NOT GREATER THAN 1 CFS). THIS METHOD SHOULD NOT APPLY TO AN INLET ACCEPTING CONCENTRATED FLOW.

HAYBALES SHOULD BE MADE FROM REGIONALLY FARMED HAY TO REDUCE THE POSSIBILITY OF INVASIVE SPECIES. WHEN POSSIBLE STRAW BALES SHOULD BE USED.

HAYBALES SHOULD ONLY BE USED WHEN APPROVED BY THE CITY OF CAMBRIDGE. HAYBALES ARE ALLOWED FOR PROJECTS THAT HAVE A DURATION OF LESS THAN THREE MONTHS.

MAINTENANCE SHALL OCCUR WHEN NECESSARY. HAYBALES ARE HIGHLY IMPERVIOUS AND THE CONTRACTOR SHOULD EXPECT PONDING IN THE AREA. HAYBALES SHOULD BE REPLACED EVERY 1 TO 3 MONTHS DEPENDING ON CONDITIONS.

CATCH BASIN W/ HAYBALES INLET PROTECTION



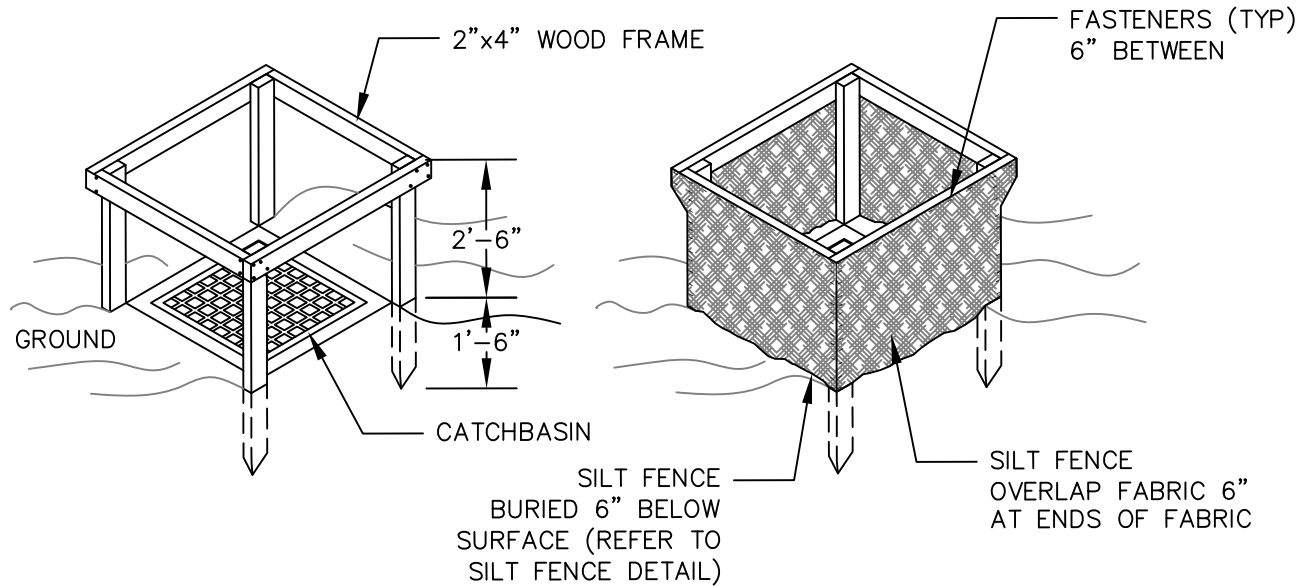
INLET PROTECTION 3

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 07/09

SPEC. SECTION REF#:



THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPE NO GREATER THAN 5%). WHERE THE INLET ACCEPTS SHEET OR OVERLAND FLOW (NOT GREATER THAN 1 CFS) ARE TYPICAL. THE METHOD SHALL NOT APPLY TO INLETS RECEIVING CONCENTRATED FLOWS

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACE EVERY 6 MONTHS AND STACKS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY.

CATCH BASIN W/ SILT FENCE INLET PROTECTION



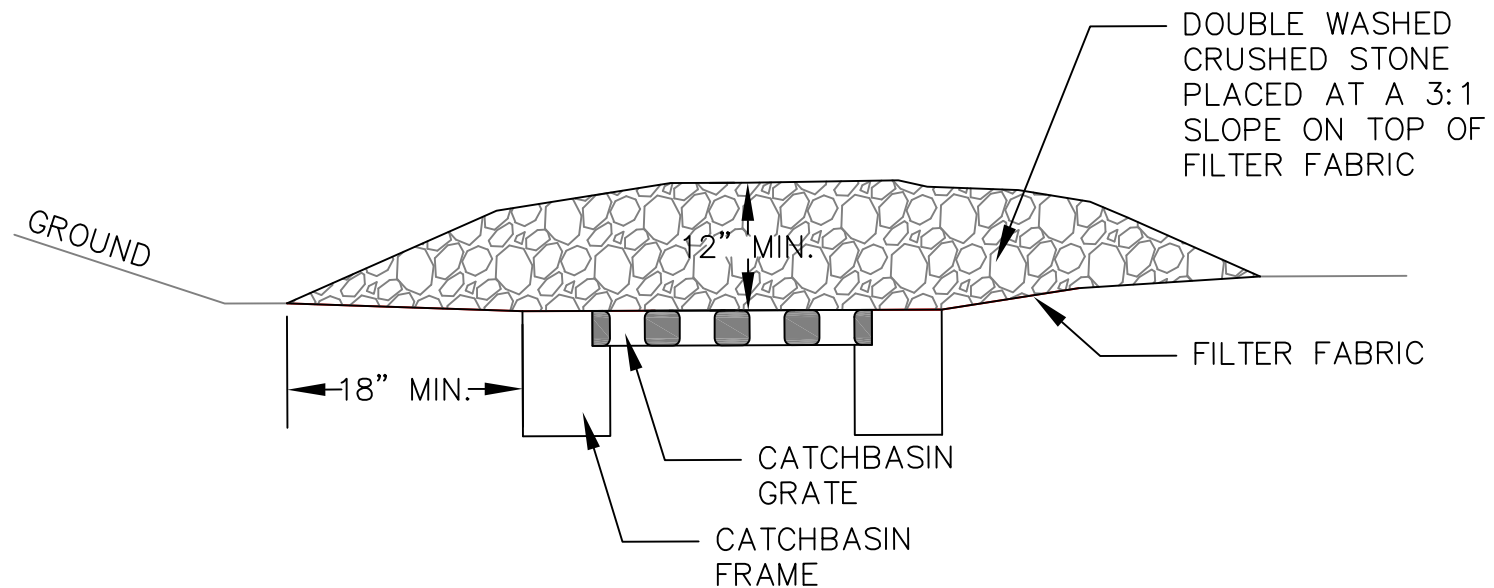
INLET PROTECTION 4

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 07/09

SPEC. SECTION REF#:



THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE ANTICIPATED BUT NOT WHERE PONDING AROUND THE STRUCTURE MIGHT CAUSE EXCESSIVE DAMAGE TO ADJACENT STRUCTURES AND UNPROTECTED AREAS.

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. GRAVEL SHALL BE REPLACED WHEN A NOTICEABLE AMOUNT OF FINES HAVE COLLECTED IN BETWEEN THE CRUSHED GRAVEL. FILTER FABRIC SHALL BE REPLACED EVERY 6 MONTHS.

CATCH BASIN W/ GRAVEL INLET PROTECTION



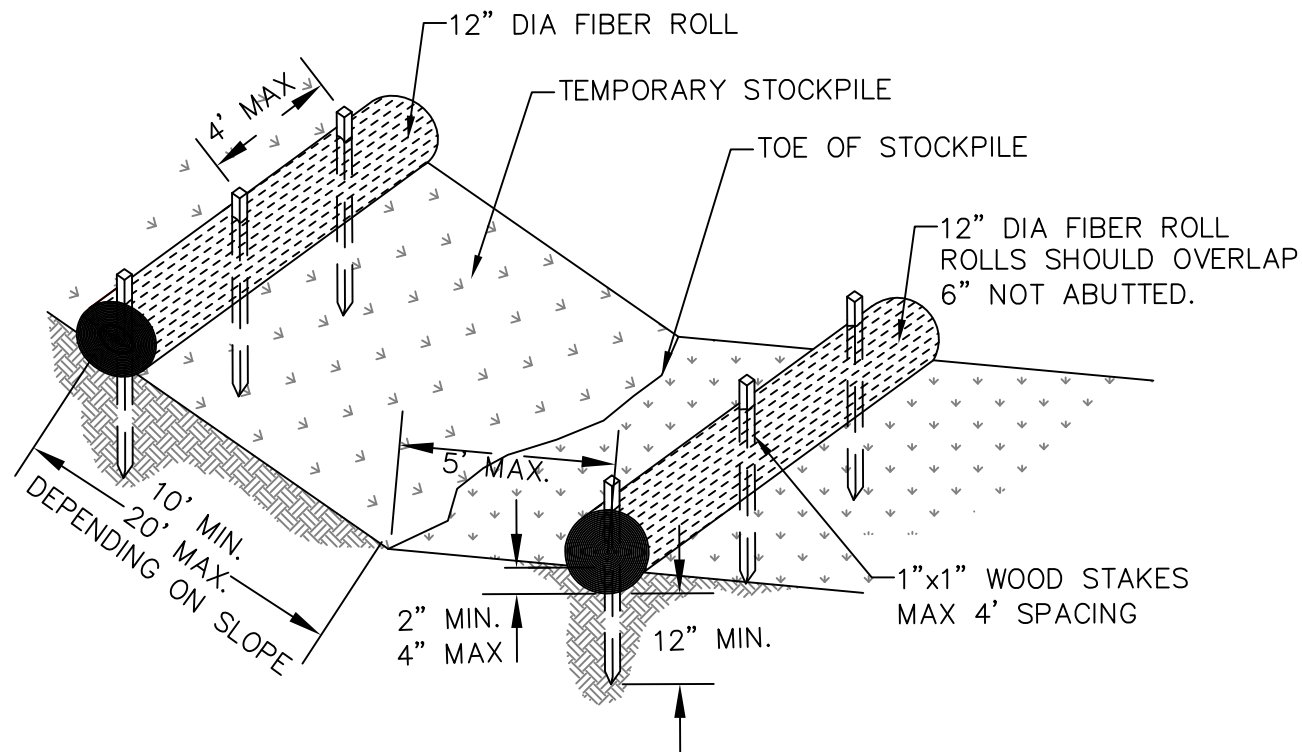
INLET PROTECTION 5

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 07/09

SPEC. SECTION REF#:



INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. FIBER ROLLS SHALL BE REPLACE EVERY 6 MONTHS AND STACKS SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. FIBER ROLLS SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECT AT THAT TIME.

TEMPORARY STOCKPILES ARE STOCKPILES THAT WILL BE USED WITHIN 14 DAYS FOR BEING PLACED. IF A STOCKPILE IS BEING LEFT UNDISTURBED FOR LONGER THAT 14 DAYS THEN PERMANENT STABILIZATION WILL BE REQUIRED



FIBER ROLL STOCKPILE PROTECTION

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

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EROSION AND SEDIMENT CONTROL NOTES

1. PRIOR TO ANY LAND DISTURBANCE ACTIVITIES COMMENCING ON THE SITE, THE DEVELOPER SHALL PHYSICALLY MARK LIMITS OF NO LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREAS TO BE PROTECTED. THE PHYSICAL MARKERS SHALL REMAIN IN PLACE UNTIL A CERTIFICATE OF COMPLETION HAS BEEN ISSUED.
2. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO SOIL DISTURBANCE. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
3. MINIMIZE TOTAL AREA OF DISTURBANCE AND PROTECT NATURAL FEATURES AND SOIL.
4. THE CONTRACTOR SHALL SEQUENCE ALL ACTIVITIES TO MINIMIZE SIMULTANEOUS AREAS OF DISTURBANCE. MASS CLEARINGS AND GRADING OF THE ENTIRE SITE SHALL BE AVOIDED.
5. MINIMIZE SOIL EROSION AND CONTROL SEDIMENTATION DURING CONSTRUCTION,
6. DIVERT UNCONTAMINATED WATER AROUND DISTURBED AREAS.
7. INSTALL AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND GOOD ENGINEERING PRACTICES OR THE 2008 EPA'S CONSTRUCTION GENERAL PERMIT.
8. PROTECT AND MANAGE ON AND OFF-SITE MATERIAL STORAGE AREAS (OVERBURDEN AND STOCKPILES OF DIRT, BORROW AREAS, OR OTHER AREAS USED SOLELY BY THE PERMITTED PROJECT ARE CONSIDERED A PART OF THE PROJECT).
9. COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS INCLUDING WASTE DISPOSAL, SANITARY SEWER OR SEPTIC SYSTEM REGULATIONS, AND AIR QUALITY REQUIREMENTS, INCLUDING DUST CONTROL.
10. SEDIMENT SHALL BE REMOVED ONCE THE VOLUME REACHES $\frac{1}{4}$ TO $\frac{1}{2}$ THE HEIGHT OF THE EROSION CONTROL DEVICE. SEDIMENT SHALL BE REMOVED FROM SILT FENCE PRIOR TO REACHING THE LOAD-BEARING CAPACITY OF THE SILT FENCE WHICH MAY BE LOWER THAN $\frac{1}{4}$ TO $\frac{1}{2}$ THE HEIGHT.
11. SEDIMENT FROM SEDIMENT TRAPS OR SEDIMENTATION PONDS SHALL BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT.
12. BMPS TO BE USED FOR INFILTRATION AFTER CONSTRUCTION SHALL NOT BE USED AS BMPS DURING CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE BOARD. MANY INFILTRATION TECHNOLOGIES ARE NOT DESIGNED TO HANDLE THE HIGH CONCENTRATIONS OF SEDIMENTS TYPICALLY FOUND IN CONSTRUCTION RUNOFF, AND THUS MUST BE PROTECTED FROM CONSTRUCTION RELATED SEDIMENT LOADINGS.
13. SOIL STOCKPILES MUST BE STABILIZED OR COVERED AT THE END OF EACH WORKDAY. STOCKPILE SIDE SLOPES SHALL NOT BE GREATER THAN 2:1. ALL STOCKPILES SHALL BE SURROUNDED BY SEDIMENT CONTROLS.
14. FOR ACTIVE CONSTRUCTION AREAS SUCH AS BORROW OR STOCKPILE AREAS, ROADWAY IMPROVEMENTS AND AREAS WITHIN 50 FEET OF A BUILDING UNDER CONSTRUCTION, A PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE INSTALLED AND MAINTAINED TO CONTAIN SOIL.
15. A TRACKING PAD OR OTHER APPROVED STABILIZATION METHOD SHALL BE CONSTRUCTED AT ALL ENTRANCE/EXIST POINTS OF THE SITE TO REDUCE THE AMOUNT OF SOIL CARRIED ONTO ROADWAYS AND OFF THE SITE.
16. ON THE CUT SIDE OF ROADS, DITCHES SHALL BE STABILIZED IMMEDIATELY WITH ROCK RIP-RAP OR OTHER NON-ERODIBLE LINERS, OR WHERE APPROPRIATE, VEGETATIVE MEASURES SUCH AS HYDROSEEDING OR JUTE MATTING.
17. PERMANENT SEEDING SHALL BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST TO OCTOBER 15. DURING THE PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15, WHEN SEEDING IS FOUND TO BE IMPRACTICAL, APPROPRIATE TEMPORARY STABILIZATION SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
18. ALL SLOPES STEEPER THAN 3:1 (H:V, 33.3%), AS WELL AS PERIMETER DIKES, SEDIMENT BASINS OR TRAPS, AND EMBANKMENTS MUST, UPON COMPLETION, BE IMMEDIATELY STABILIZED WITH SOD, SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES. AREAS OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST NOT BE DISTURBED.
19. TEMPORARY SEDIMENT TRAPPING DEVICES MUST NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTRIBUTORY DRAINAGE AREAS.
20. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS OF REMOVAL.
21. PROPERLY MANAGE ON-SITE CONSTRUCTION AND WASTE MATERIALS.
22. PREVENT OFF-SITE VEHICLE TRACKING OF SEDIMENTS.
23. DUST SHALL BE CONTROLLED AT THE SITE.
24. ALL PREVIOUSLY DISTURBED LAND SHALL BE STABILIZED BY APPROVED METHODS AFTER 14 DAYS IF LEFT UNDISTURBED. THIS INCLUDES STOCKPILES, CONSTRUCTION ENTRANCES, GRADED AREAS AND OTHER CONSTRUCTION ACTIVITY RELATED CLEARING.
25. IF WORK IS HALTED OVER WINTER MONTHS THE CONTRACTOR SHALL BE RESPONSIBLE FOR STABILIZING THE AREA THROUGH GROUND COVER PRACTICES..



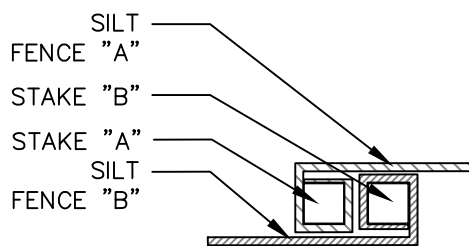
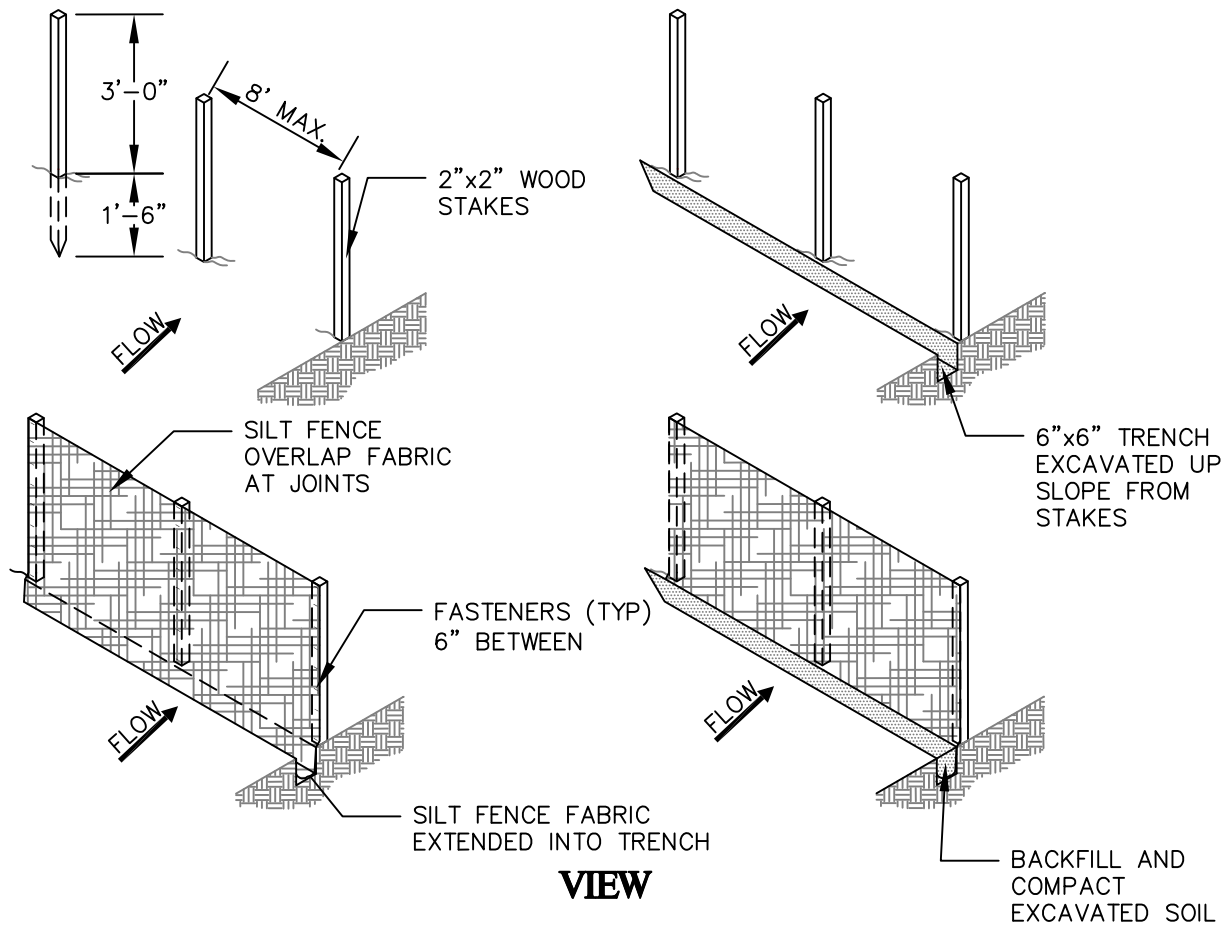
EROSION AND SEDIMENT CONTROL GENERAL NOTES

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

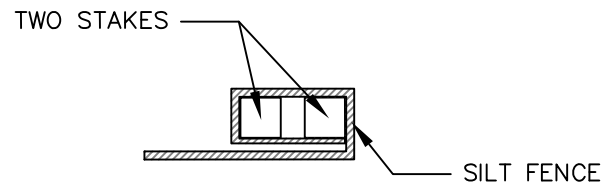
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JOINT DETAIL



END JOINT DETAIL

INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACED EVERY 6 MONTHS AND STAKES SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECT AT THAT TIME.



SILT FENCE

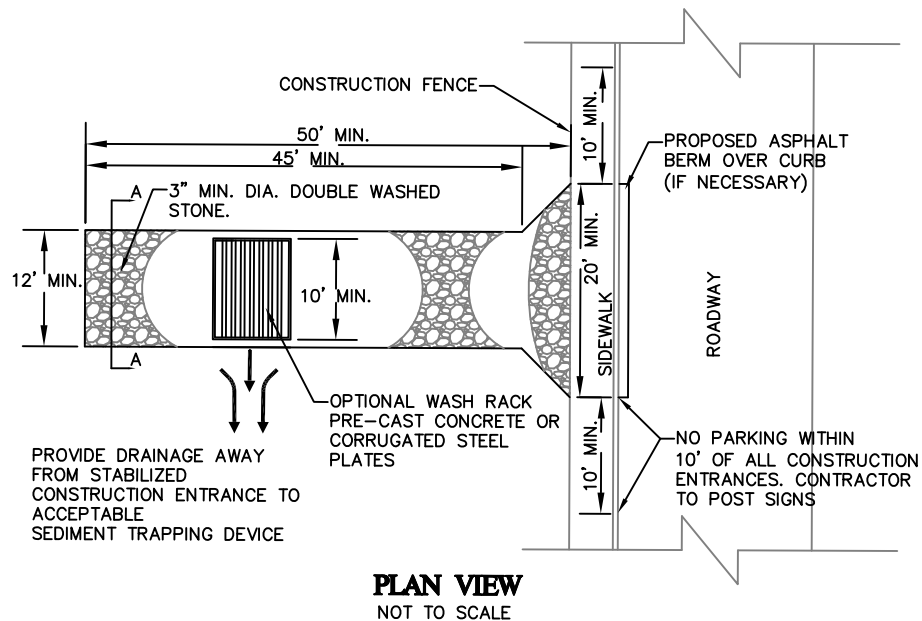
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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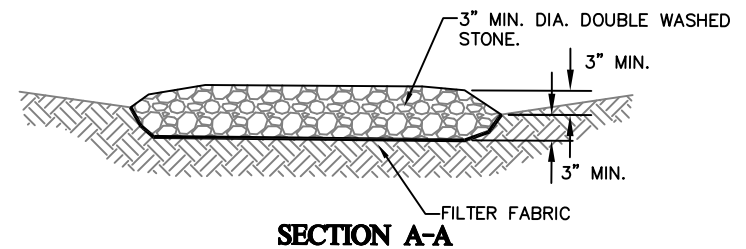
DATE
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CONTRACTOR TO PROVIDE A WATER SOURCE FOR A WASH STATION FOR ALL VEHICLES LEAVING THE SITE.



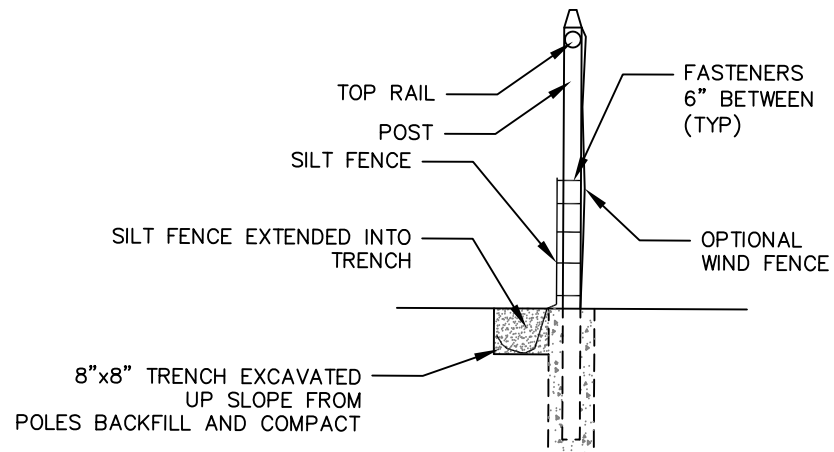
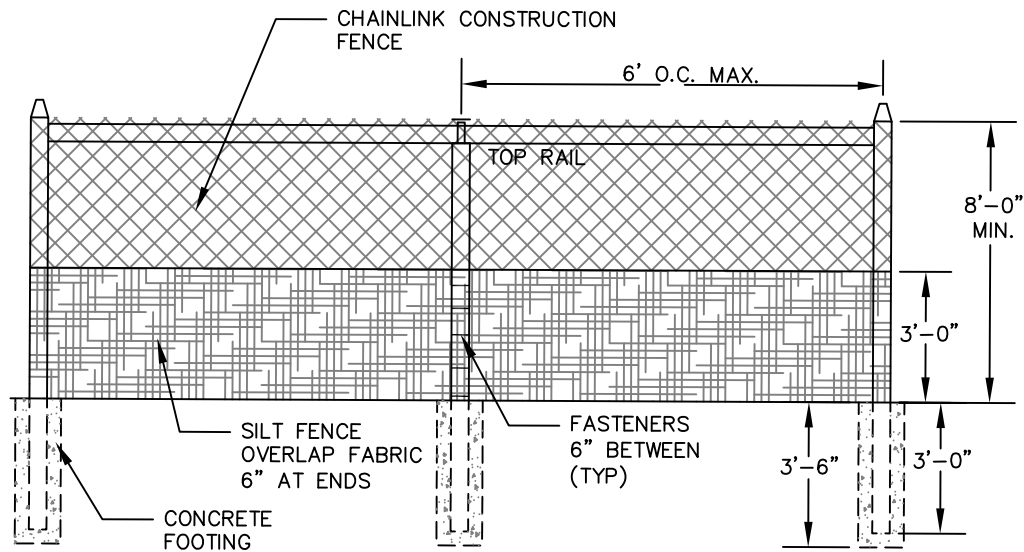
STABILIZED CONSTRUCTION ENTRANCE

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 07/09

SPEC. SECTION REF#:



INSPECTION SCHEDULE SHALL COMPLY WITH THE 2008 EPA CONSTRUCTION GENERAL PERMIT

MAINTENANCE SHALL OCCUR WHEN NECESSARY. SILT FENCE SHALL BE REPLACE EVERY 6 MONTHS AND POST SHALL BE INSPECTED TO ENSURE STRUCTURAL INTEGRITY. SILT FENCE SHALL BE INSPECTED WEEKLY AND ALL MAINTENANCE ISSUES SHALL BE CORRECT AT THAT TIME.



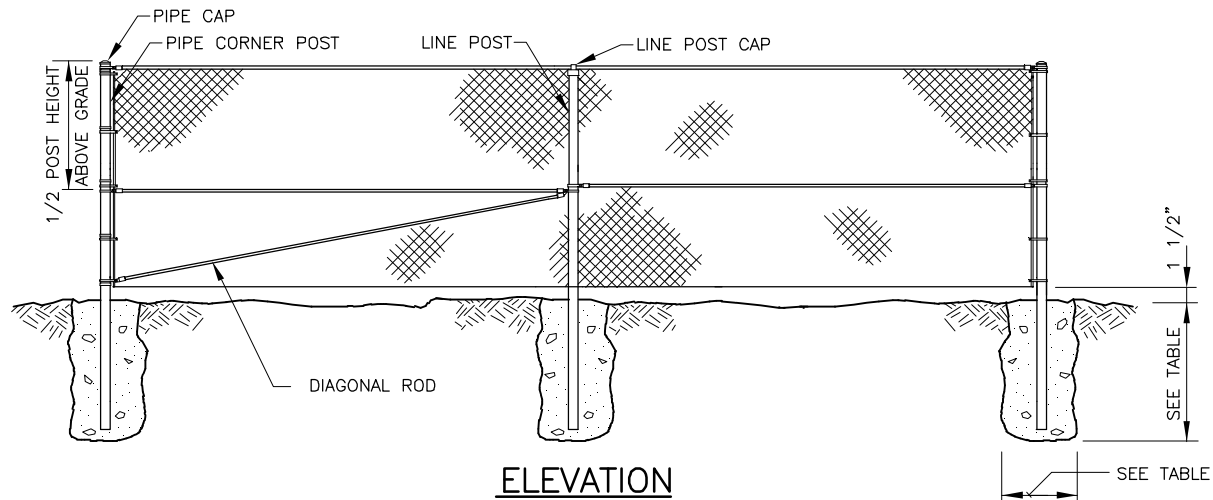
SUPER SILT FENCE

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

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OF ISSUE: 07/09

SPEC. SECTION REF#:



POST SETTING REQUIREMENT			
TYPE OF POST	HOLE DIA. AT TOP*	HOLE DEPTH	POST EMBEDMENT
LINE	9"	38"	36"
TERMINAL	12"	38"	36"

*MIN. HOLE DIAMETER IN SOFT OR LOOSE SOIL SHALL BE 18"

NOTES:

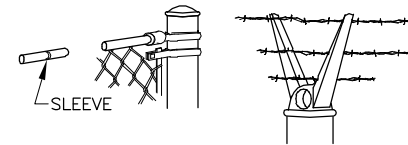
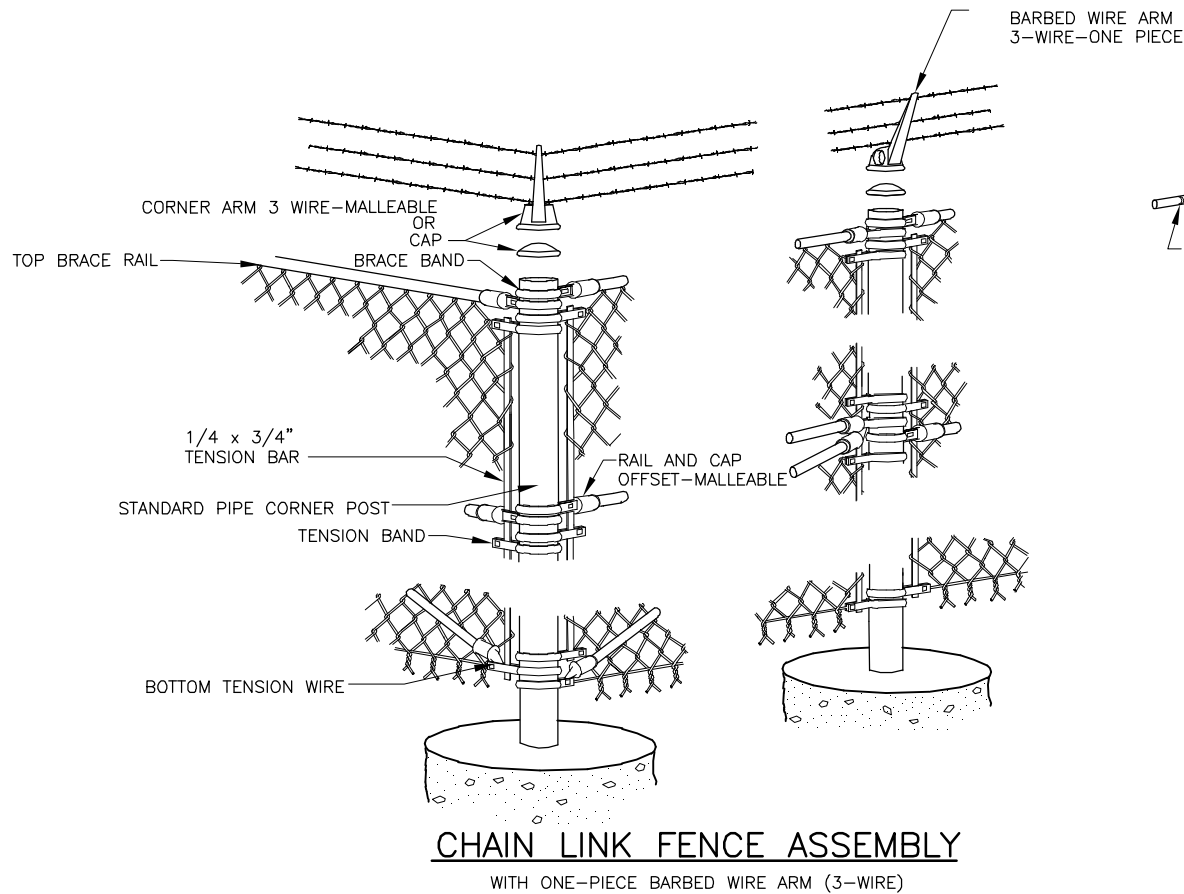
1. POST SPACING: LINE POSTS SHALL BE EVENLY SPACED, CENTER TO CENTER.
2. BARBED WIRE ARM WHERE REQUIRED SHALL BE PER CHAIN LINK FENCES AND GATES, AND CHAIN LINK FENCE DETAIL 2.
3. POST FOOTING SHALL HAVE A 1" CROWN FINISH
4. SEE CHAIN LINK FENCE DETAIL 2 FOR CHAIN LINK FENCE ASSEMBLY, ALTERNATE POSTS, AND FABRIC SELVAGE DETAILS.



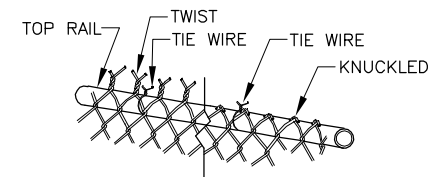
CHAIN LINK FENCE DETAIL 1

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

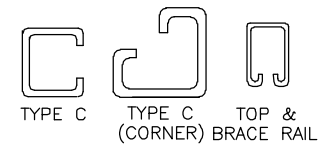
SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02830	2830.1
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BARBED WIRE ARM



FABRIC SELVAGE



ALTERNATE POSTS

SEE CHAIN LINK FENCES AND GATES



CHAIN LINK FENCE DETAIL 2

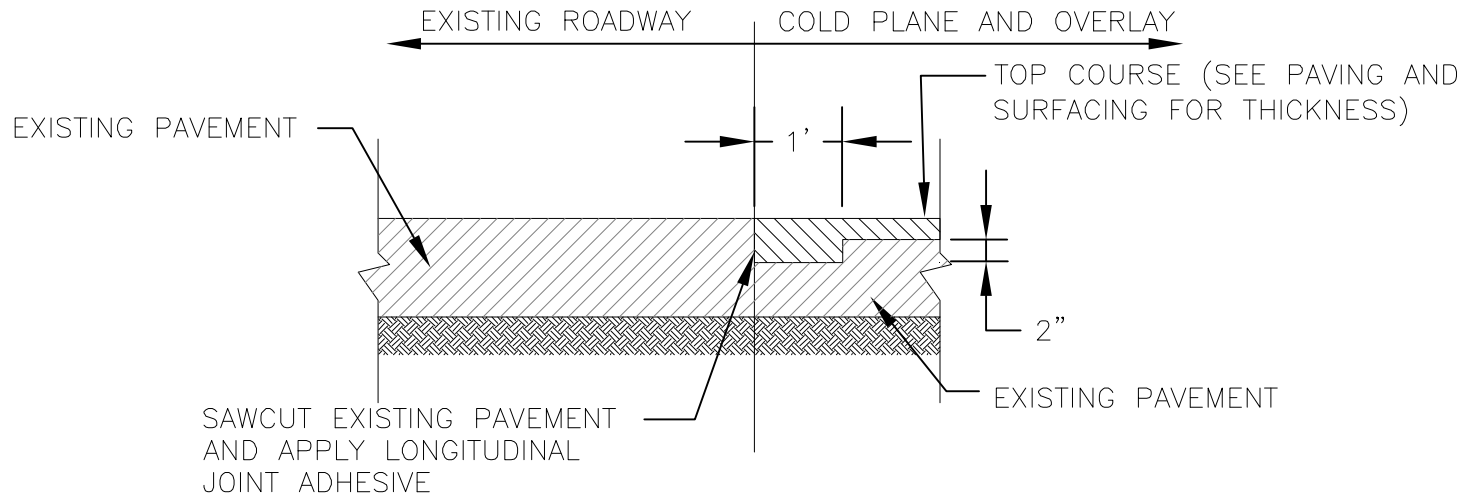
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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2830.2



NOTES:

1. CLEAN ALL COLD PLANED SURFACES BEFORE APPLYING JOINT ADHESIVE AND FINAL PAVEMENT



COLD PLANE AND OVERLAY JOINT DETAIL

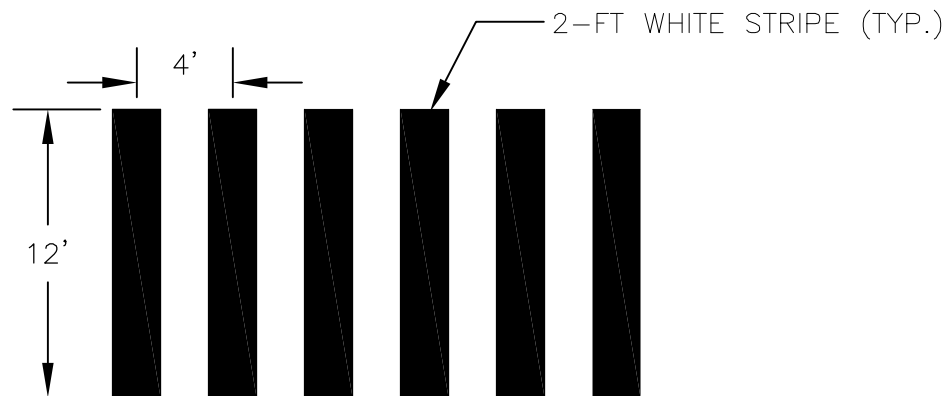
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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2500.2



CAMBRIDGE STANDARD CROSSWALK



CAMBRIDGE STANDARD CROSSWALK

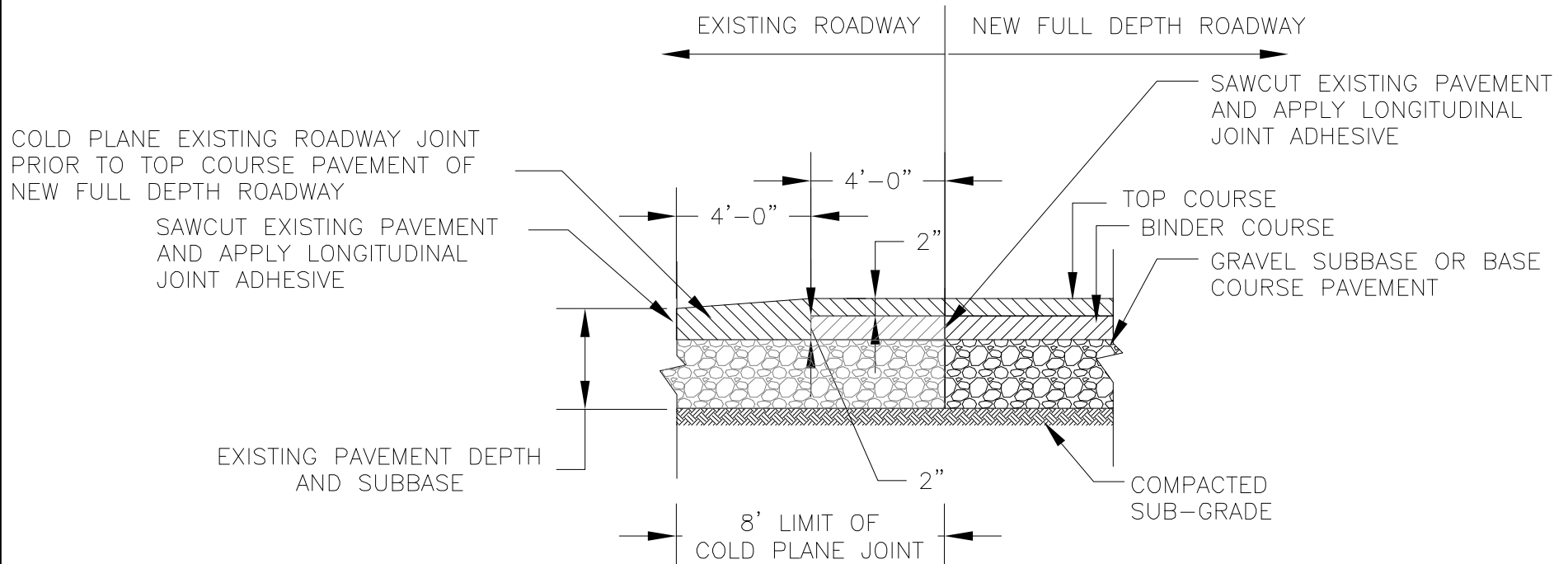
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02577

2577.1



NOTES:

1. CLEAN ALL COLD PLANED SURFACES BEFORE APPLYING JOINT ADHESIVE AND FINAL PAVEMENT



FULL DEPTH PAVEMENT JOINT DETAIL

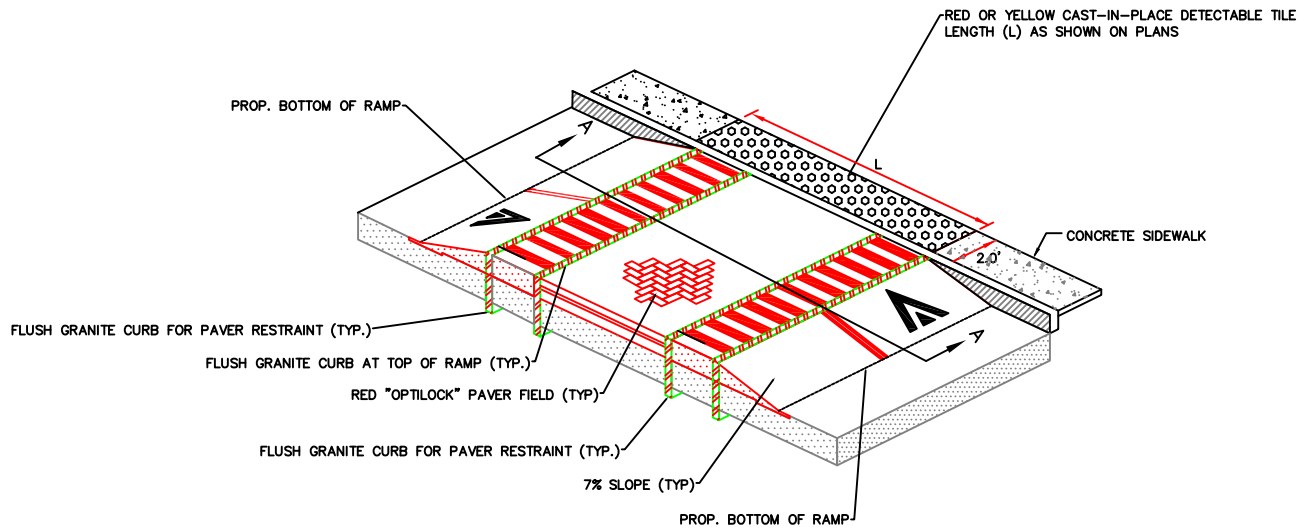
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

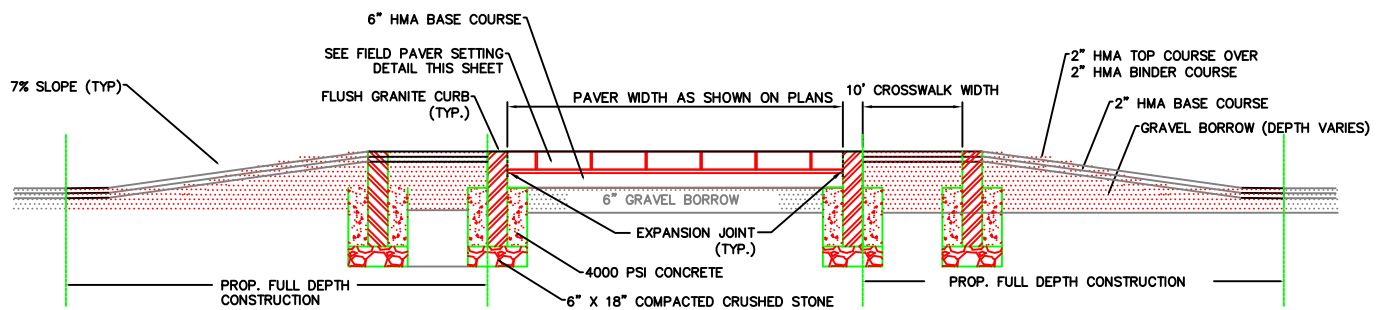
DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02500

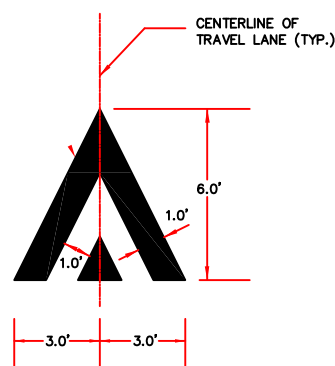
2500.3



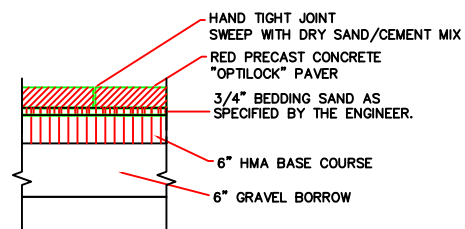
MID-BLOCK RAISED CROSSWALK ISOMETRIC PLAN
NTS



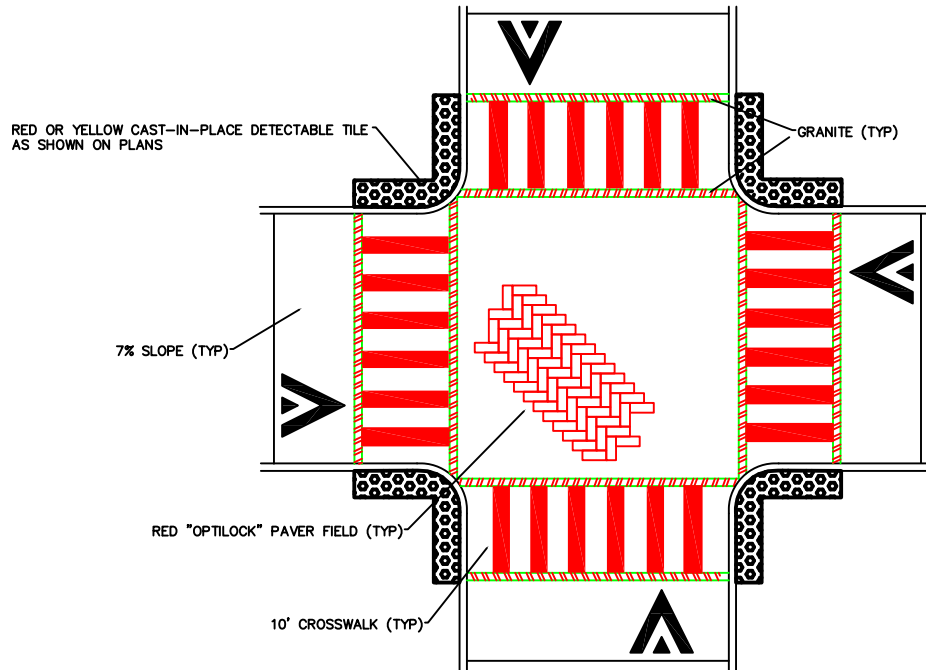
SECTION A-A



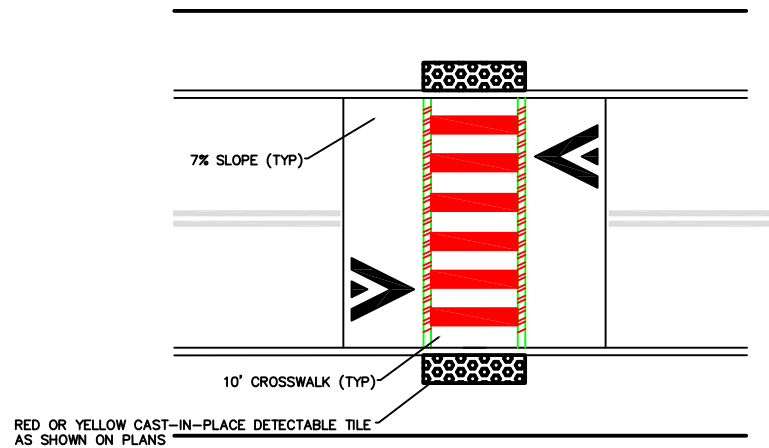
RAMP MARKING DETAIL
NTS



"FIELD" PAVER SETTING DETAIL
NTS



4-WAY RAISED INTERSECTION PLAN
NTS



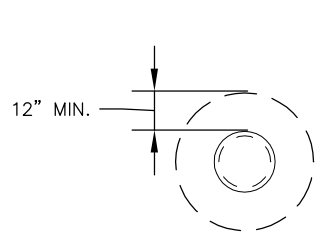
MID-BLOCK RAISED CROSSWALK DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

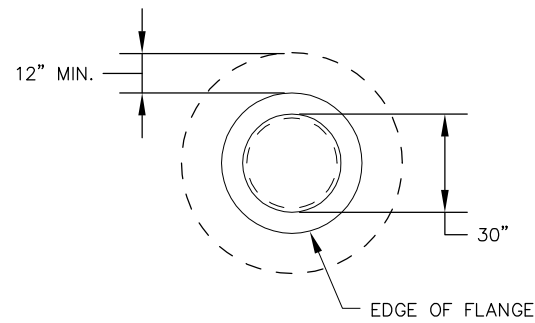
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DATE
OF ISSUE: 5/2010

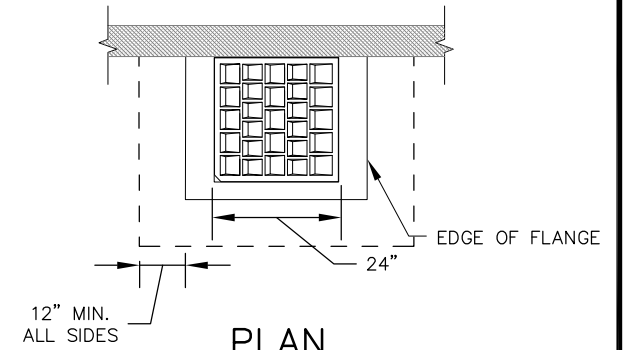
SPEC. SECTION REF#:



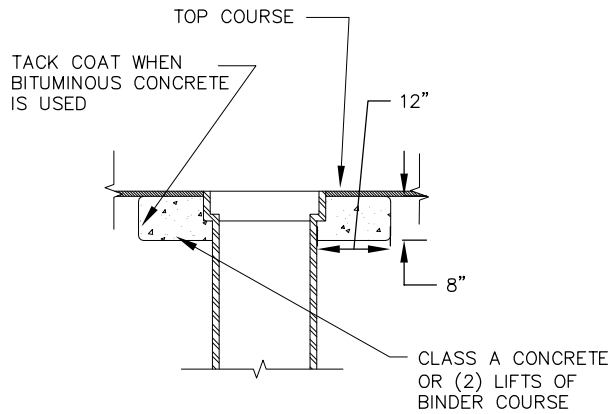
PLAN



PLAN

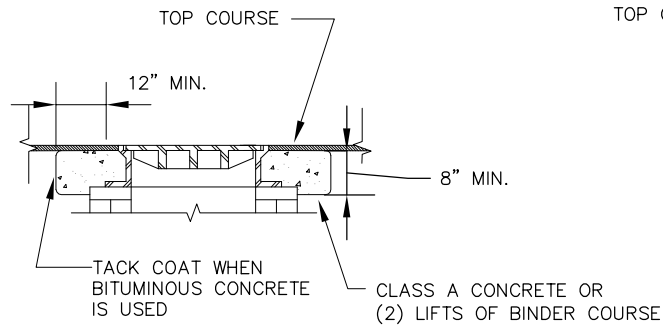


PLAN



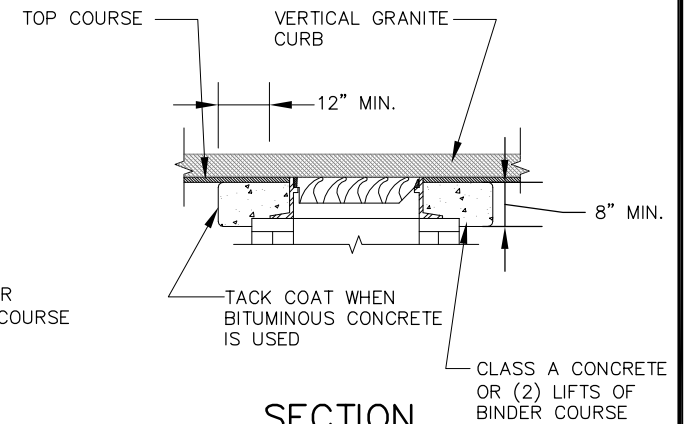
SECTION

GATE BOXES



SECTION

MANHOLES



SECTION

CATCH BASINS

95% DETAILS
NOT FOR CONSTRUCTION

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CAMBRIDGE
DEPARTMENT
OF PUBLIC
WORKS

RAISING CASTINGS DETAIL

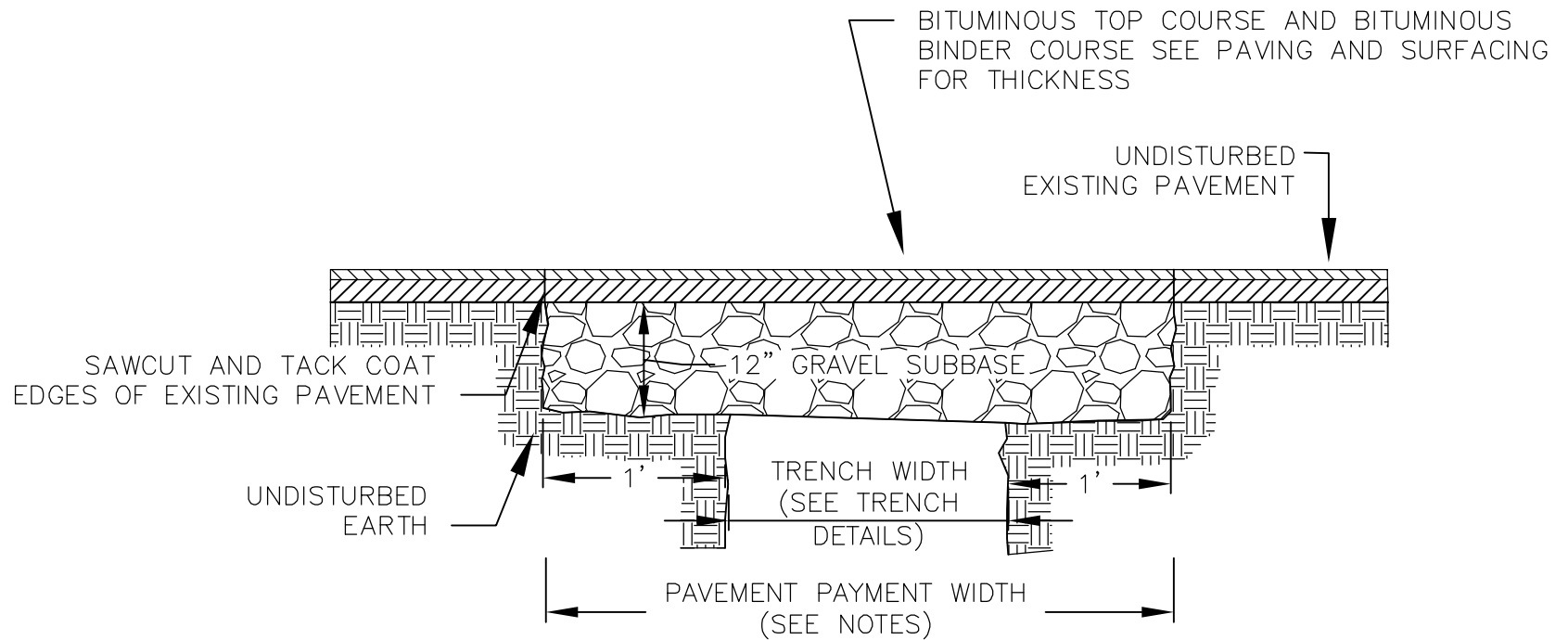
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.14



NOTES:

1. PERMANENT TRENCH PAVEMENT PAYMENT WIDTH SHALL BE THE TRENCH PAY LIMIT PLUS 2 FEET
2. TEMPORARY TRENCH PAVEMENT PAYMENT WIDTH SHALL BE EQUAL TO THE TRENCH PAYMENT LIMIT
3. REMOVE AND DISPOSE ALL TEMPORARY PAVEMENT AS REQUIRED. RESTORE AND COMPACT SUBBASE AS REQUIRED PRIOR TO PERMANENT TRENCH PAVEMENT.



TRENCH PAVEMENT DETAIL

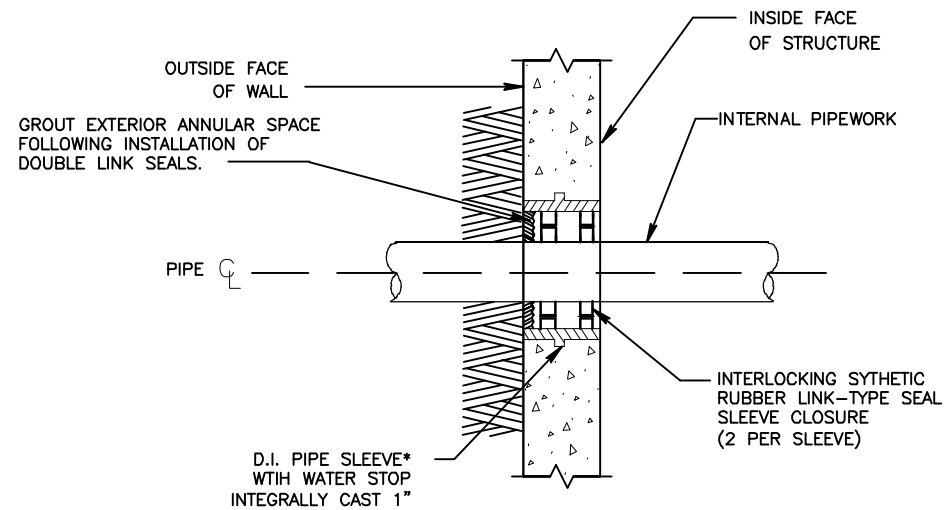
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02500

2500.1



*SIZE OF SLEEVE TO SUIT PIPE SIZE AND SEAL.

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BURIED WALL PIPE SLEEVE CLOSURE

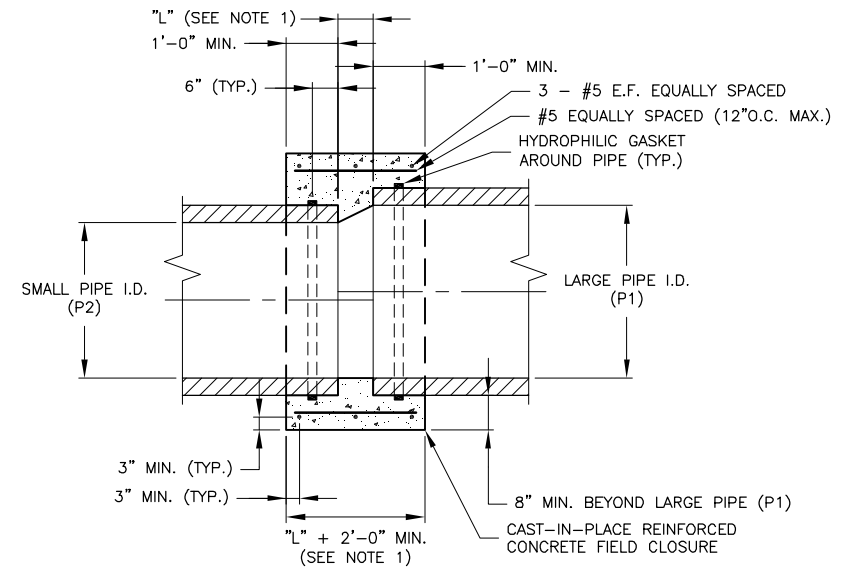
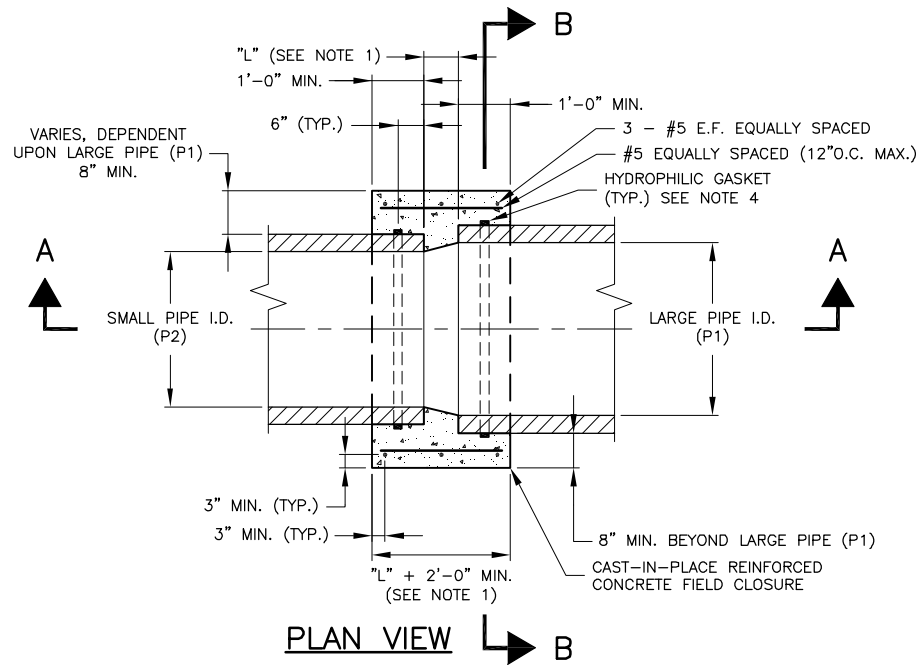
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

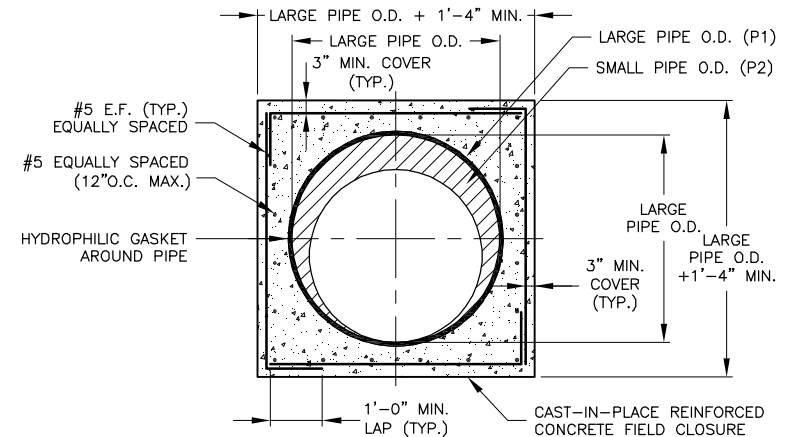
DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 03300

3300.4



- NOTES:
1. SPACING BETWEEN PIPES (L) DEPENDS ON PIPE SIZES, FOR PIPES OF THE SAME SIZE USE 4". THE DISTANCE "L" EQUALS THE LARGE PIPE I.D. MINUS THE SMALL PIPE I.D. TIMES TWO [$L = (P1 - P2) \times 2$] BUT NO LESS THAN 4".
 2. PROPOSED PIPE INVERT SHALL MATCH EXISTING PIPE INVERT UNLESS OTHERWISE NOTED.
 3. SAND BLAST EXISTING PIPE PERIMETER AND APPLY BONDING AGENT PRIOR TO CONCRETE ENCASEMENT.
 4. CONCRETE AND REBAR REQUIREMENTS SHALL CONFORM TO CAST-IN-PLACE CONCRETE.
 5. LOCATION OF FIELD CLOSURE SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.
 6. FOR NON-PRESSURE PIPES OF DIFFERENT MATERIALS OR SIZES.



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DEPARTMENT
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CAST IN PLACE FIELD CLOSURE

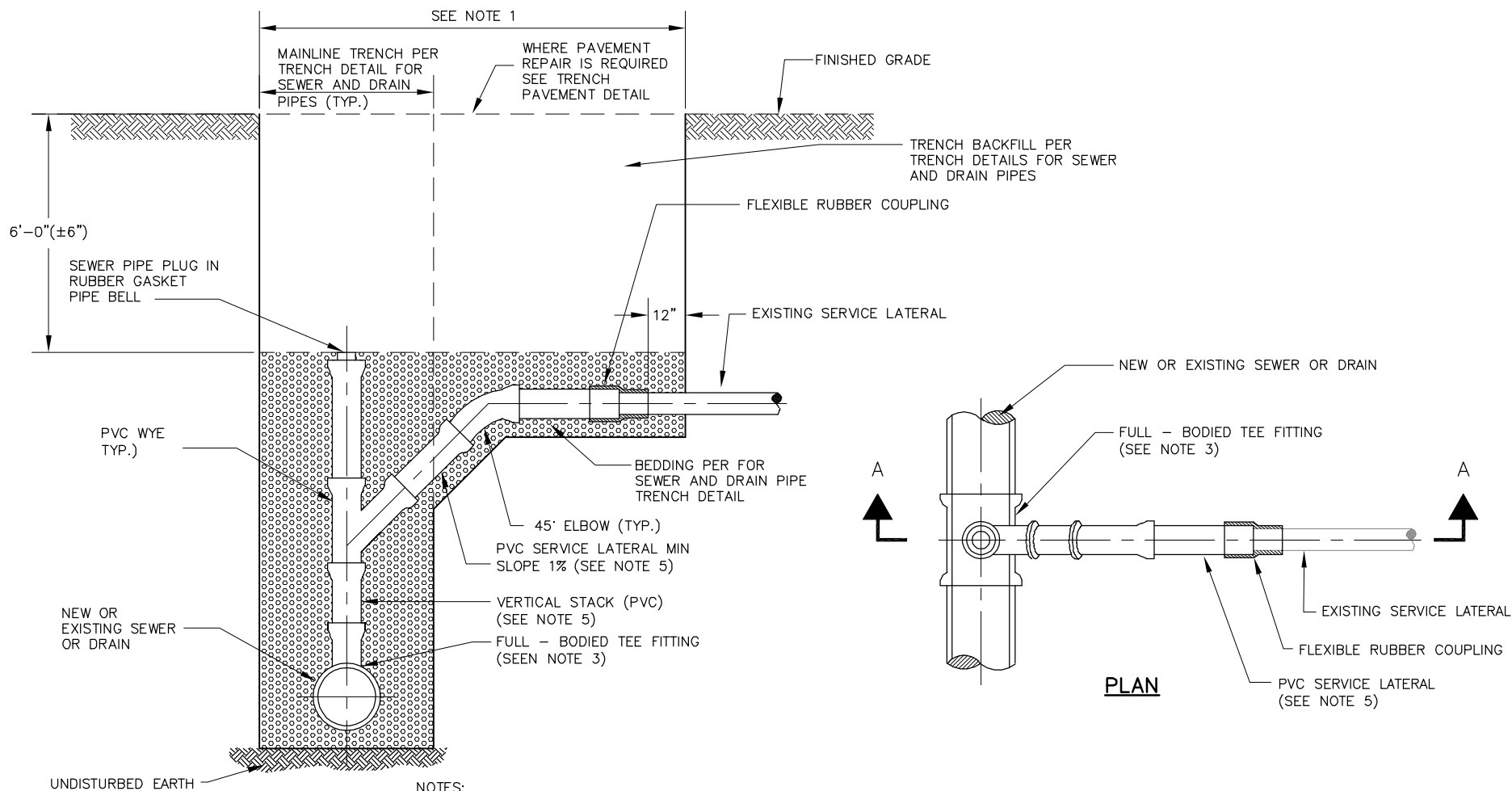
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 03300

3300.1



SECTION A-A

PLAN

- NOTES:
1. REPLACE EXISTING SERVICE LATERAL TO EXTENT REQUIRED.
 2. EXCAVATE AND REMOVE EXISTING LATERAL AS REQUIRED TO ALLOW RECONSTRUCTION.
 3. FOR SEWER AND DRAIN SERVICE CONNECTIONS 18" IN DIAMETER OR GREATER A TEE INSERT OR EQUAL MAY BE USED.
 4. FOR SERVICE CONNECTIONS < 12' DEEP FROM INVERT OF MAINLINE PIPE TO GRADE SEE SEWER OR DRAIN SERVICE CONNECTION DETAIL.
 5. SEWER AND DRAIN LATERALS SHALL BE SIZED TO FIT ANTICIPATED FLOWS BUT SHALL NOT BE LESS THAN 6" FOR SEWER AND 8" FOR DRAIN SERVICES.



SEWER OR DRAIN SERVICE CONNECTION WITH CHIMNEY > 12' DEEP

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02622

2622.2

NEW PIPE MATERIAL	EXISTING PIPE MATERIAL					
		BRICK	RCP	DI	VC	PLASTIC
	BRICK	1	1	1	1	1
	RCP	1	1	1	1	1
	DI	1	1	2	2	2
	VC	1	1	2	2	2
	PLASTIC	1	1	2	2	2

PIPE CONNECTION TABLE*

TYPE 1 = CONCRETE COLLAR

TYPE 2 = TRANSITION COUPLING (DRESSER OR EQUAL)

* SERVICE LATERALS 200mm [8"] OR LESS SHALL BE FERNCO-TYPE.



PIPE TO PIPE CONNECTIONS

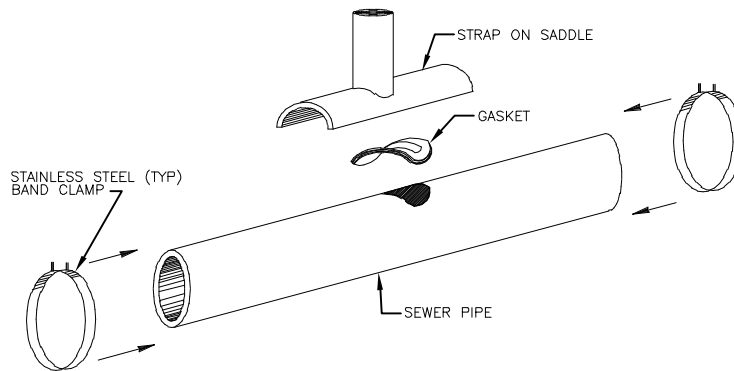
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

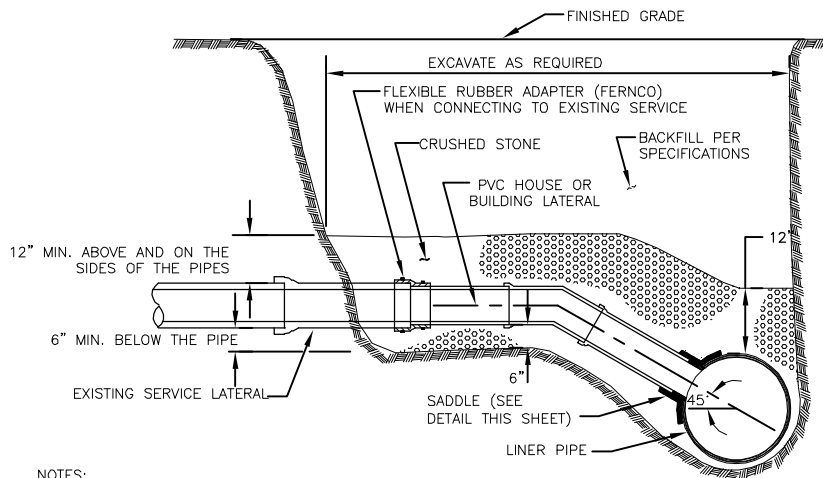
DATE
OF ISSUE: 4/04

SPEC. SECTION REF#: 02622

2622.4



SADDLE CONNECTION - PLAN
NOT TO SCALE



NOTES:
1. REPLACE EXISTING SERVICE LINE TO EXTENT SHOWN ON PLAN/PROFILES AND AS SPECIFIED.

SADDLE CONNECTION - SECTION
NOT TO SCALE



SEWER OR DRAIN SERVICE CONNECTION SADDLE CONNECTION

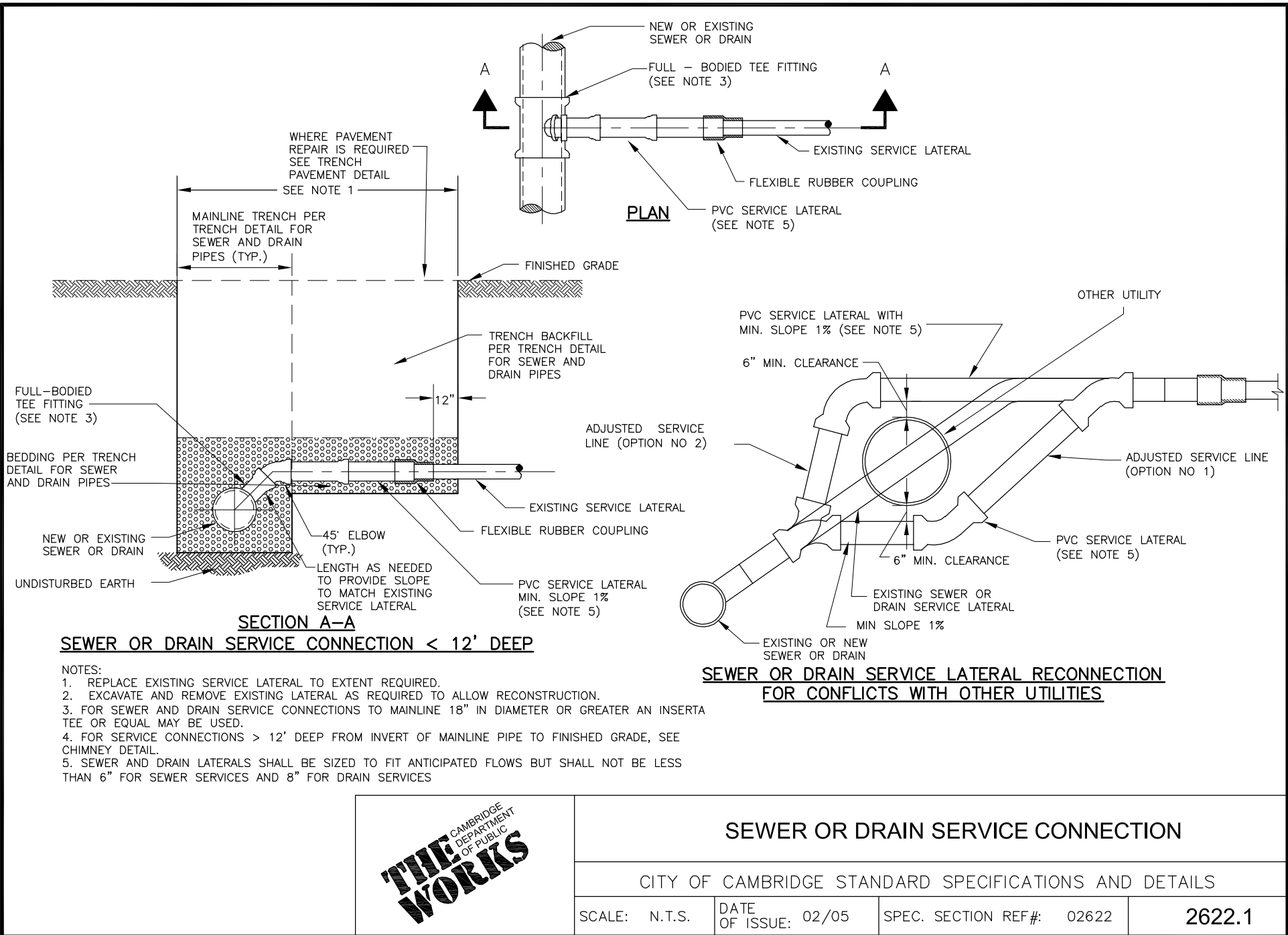
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 03/06

SPEC. SECTION REF#: 02622

2622.3



SECTION A-A
SEWER OR DRAIN SERVICE CONNECTION < 12' DEEP

- NOTES:
- 1. REPLACE EXISTING SERVICE LATERAL TO EXTENT REQUIRED.
 - 2. EXCAVATE AND REMOVE EXISTING LATERAL AS REQUIRED TO ALLOW RECONSTRUCTION.
 - 3. FOR SEWER AND DRAIN SERVICE CONNECTIONS TO MAINLINE 18" IN DIAMETER OR GREATER AN INSERTA TEE OR EQUAL MAY BE USED.
 - 4. FOR SERVICE CONNECTIONS > 12' DEEP FROM INVERT OF MAINLINE PIPE TO FINISHED GRADE, SEE CHIMNEY DETAIL.
 - 5. SEWER AND DRAIN LATERALS SHALL BE SIZED TO FIT ANTICIPATED FLOWS BUT SHALL NOT BE LESS THAN 6" FOR SEWER SERVICES AND 8" FOR DRAIN SERVICES

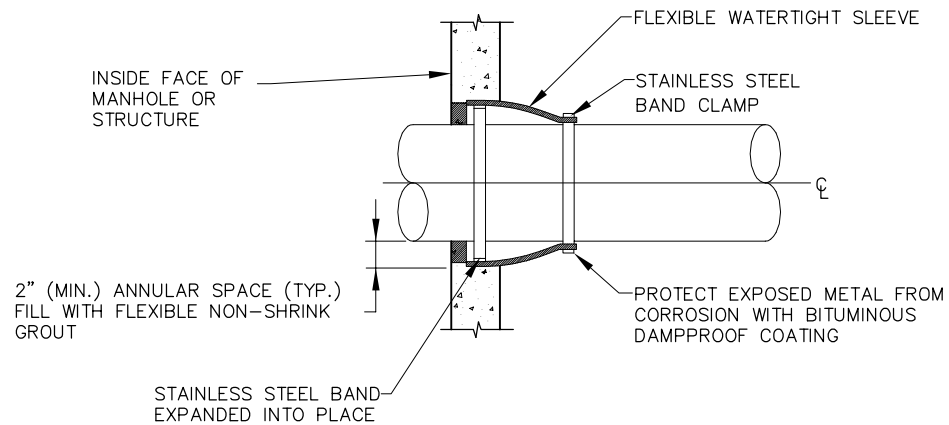
**SEWER OR DRAIN SERVICE LATERAL RECONNECTION
FOR CONFLICTS WITH OTHER UTILITIES**



SEWER OR DRAIN SERVICE CONNECTION

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02622	2622.1
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NOTE:

1. PRECAST OPENING OR CORE DRILLED INTO EXISTING STRUCTURE. SIZE VARIES TO ACCOMMODATE EXTENSION BONNET FLANGE DIAMETER OR PIPE.

95% DETAILS
NOT FOR CONSTRUCTION

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FLEXIBLE SLEEVE CONNECTION DETAIL

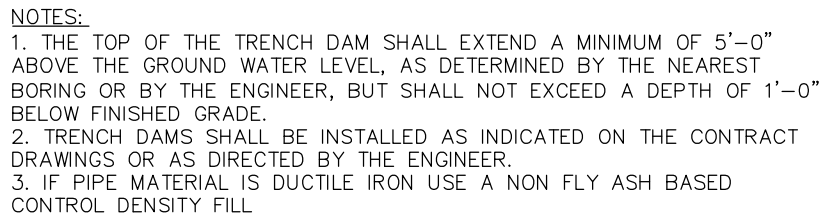
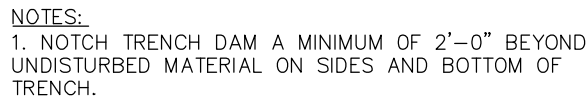
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

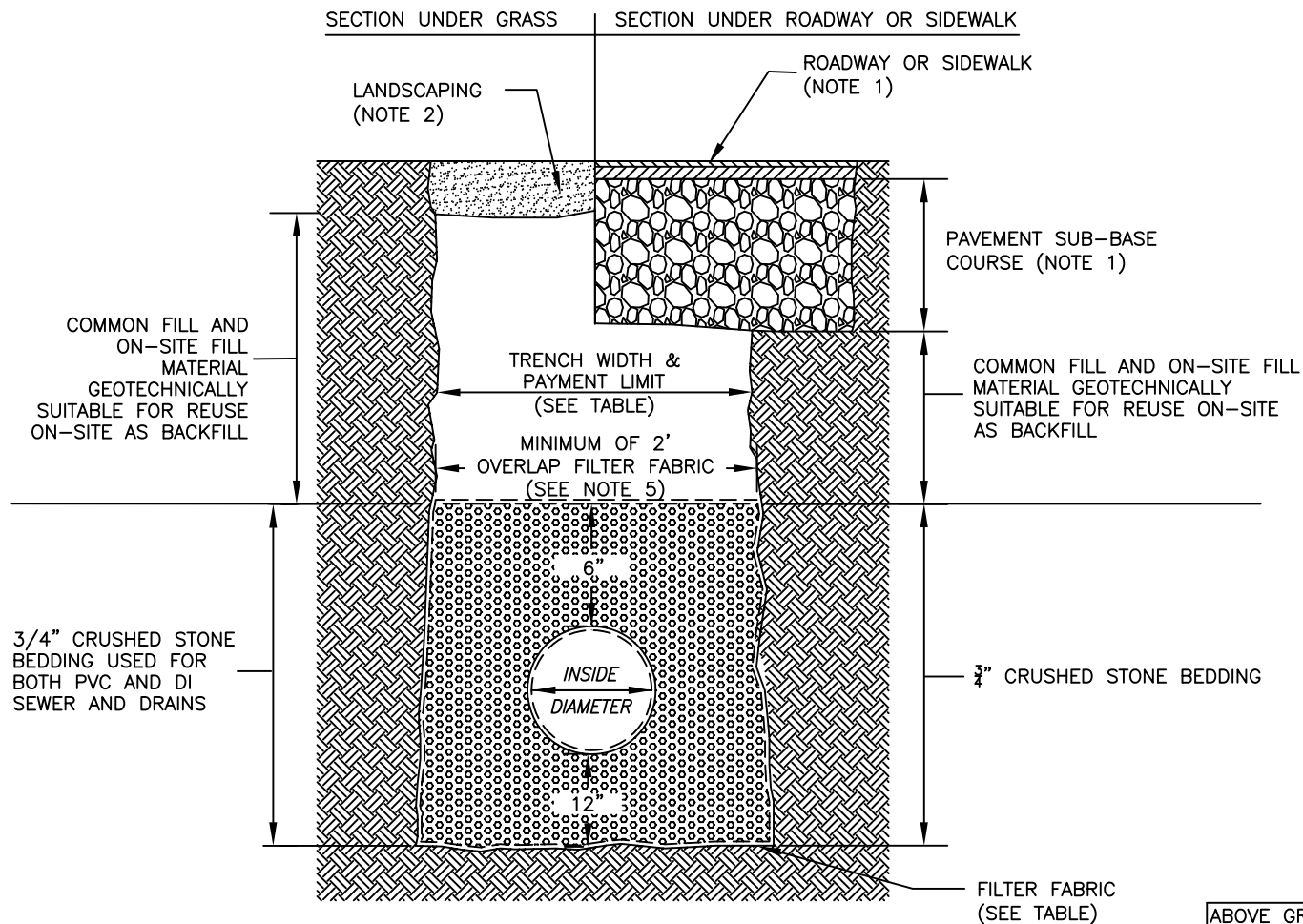
SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.15





- NOTES:
1. REFER TO PAVING AND SURFACING, AND CURBS, WALKS AND DRIVEWAYS REQUIREMENTS.
 2. REFER TO LANDSCAPING REQUIREMENTS
 3. REFER TO "TRENCH PAY LIMIT TABLE FOR PIPES" FOR PAYMENT OF ALL ITEMS IN WHICH PAY TRENCH WIDTH IS A VARIABLE FOR CALCULATIONS OF QUANTITIES EXCEPT FOR TRENCH PAVEMENT
 4. REFER TO TRENCH PAVEMENT DETAIL FOR PAVEMENT PAYMENT WIDTHS

TRENCH PAY LIMIT TABLE FOR PIPES

PIPE SIZE (DIA.)	MAX TRENCH WIDTH
LESS THAN 2"	2'-0"
2" TO 6"	3'-0"
8" TO 22"	4'-0"
24" & GREATER	I.D. + 2'-0"

I.D. = INSIDE DIMENSION

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

FILTER FABRIC USE

	SOIL TYPE	
	SILT OR CLAY	GRANULAR SOIL
ABOVE GROUND WATER	FILTER FABRIC NOT REQUIRED	FILTER FABRIC NOT REQUIRED
BELOW GROUND WATER	FILTER FABRIC REQUIRED	FILTER FABRIC NOT REQUIRED



TRENCH DETAIL FOR SEWER AND DRAIN PIPES

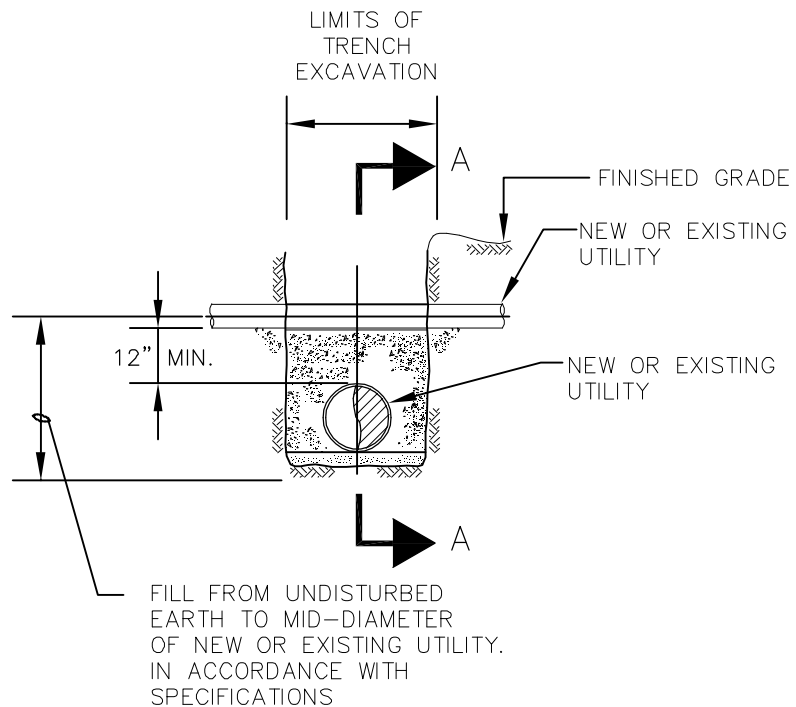
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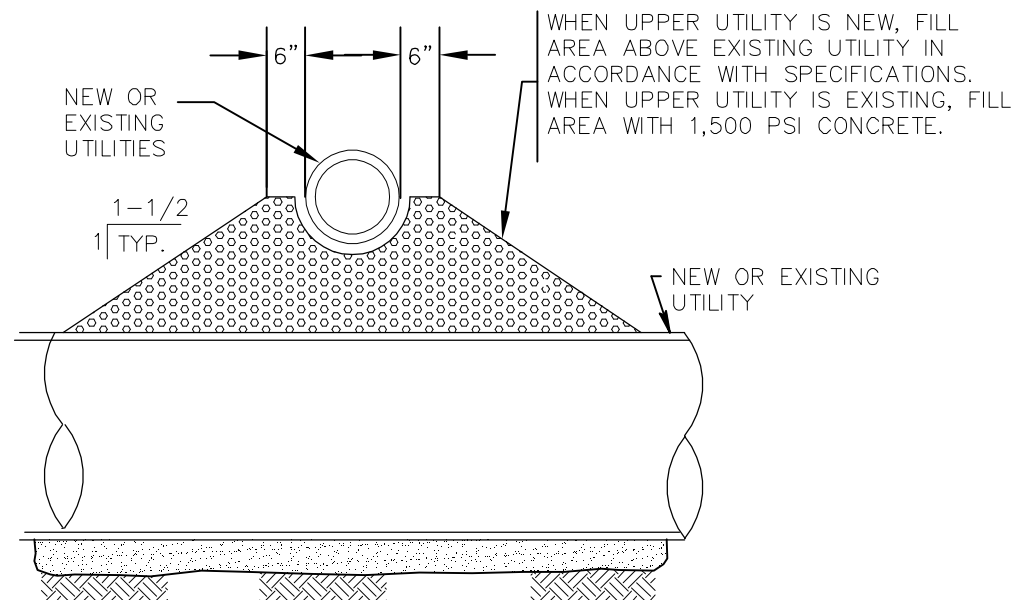
DATE OF ISSUE: 04/11

SPEC. SECTION REF#: 02210

2210.1



ELEVATION



SECTION A-A



UTILITY CROSSING DETAIL

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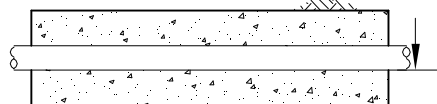
SCALE: N.T.S.

DATE
OF ISSUE: 03/06

SPEC. SECTION REF#: 02622

2622.5

SANITARY SEWER
OR STORM DRAIN

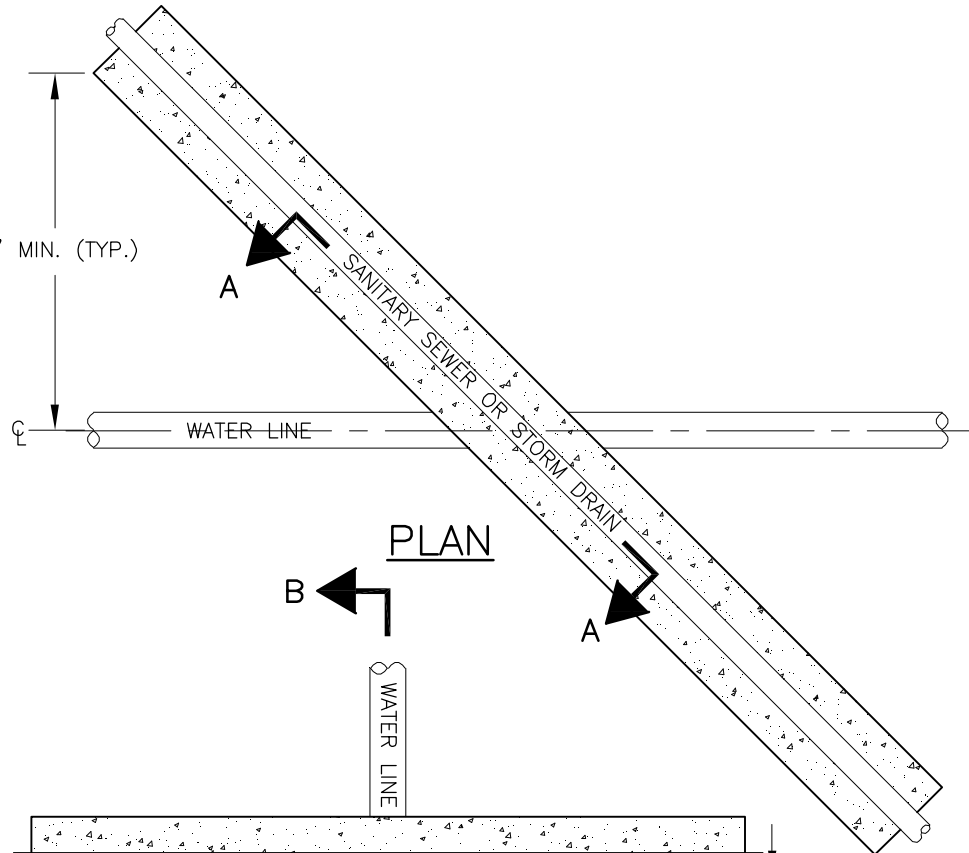


WATER LINE

12" (MIN)
CONCRETE
ENCASEMENT
TYP. ALL
AROUND

SECTION A-A

10' MIN. (TYP.)



PLAN

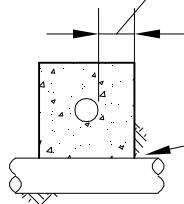


WATER LINE



PLAN

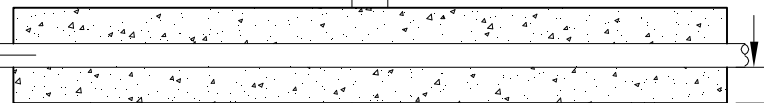
12" (MIN.)
CONCRETE ENCASEMENT
TYP. ALL AROUND



WATER LINE

PROTECT WATER MAIN WITH
30lb FELT ROOFING PAPER
PRIOR TO PLACING
CONCRETE

SANITARY SEWER
OR STORM DRAIN



10' MIN.
TYP.

12" (MIN) CONCRETE
ENCASEMENT TYP.
ALL AROUND

SECTION B-B

NOTE:

1. CONCRETE SHALL HAVE A MINIMUM 3,000 PSI STRENGTH

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STORM DRAIN AND SANITARY SEWER CROSSING ABOVE WATER MAIN

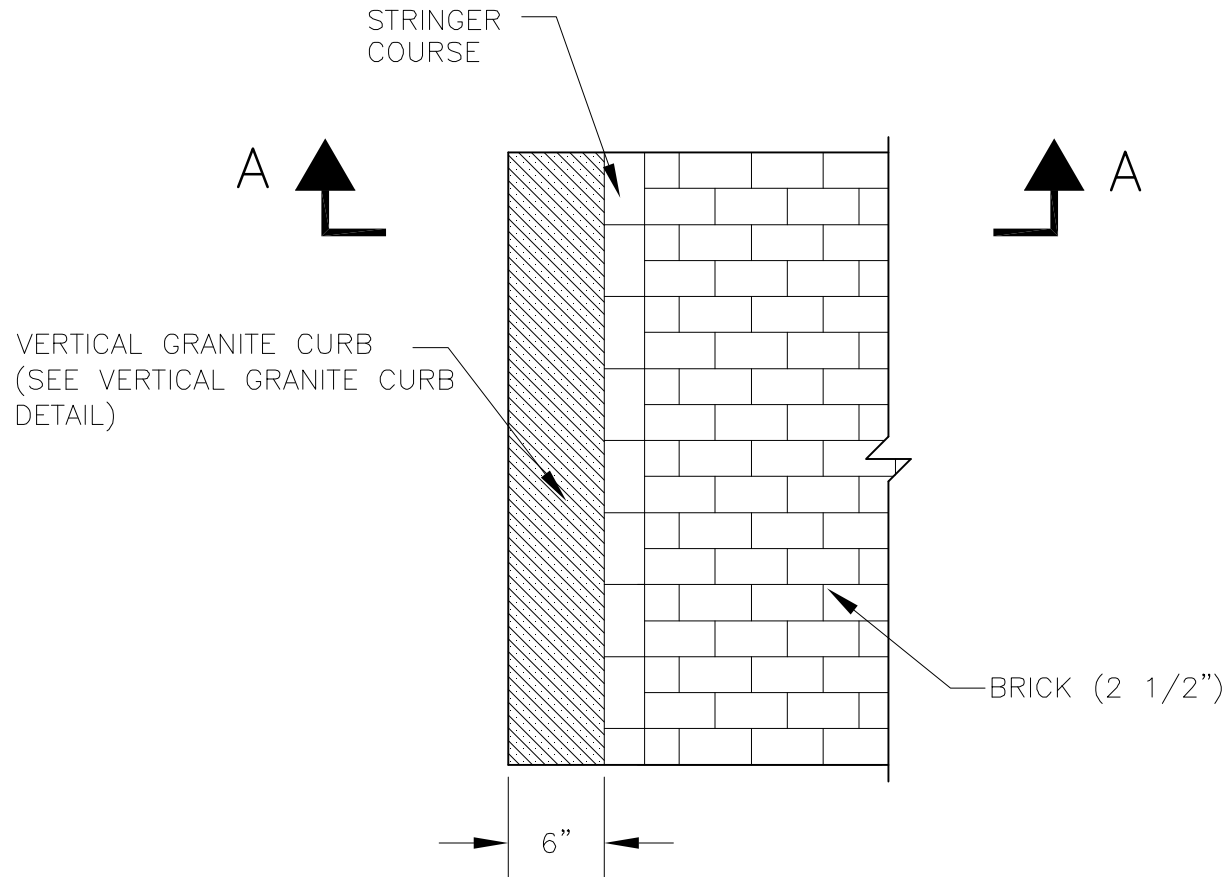
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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OF ISSUE: 02/05

SPEC. SECTION REF#: 02630

2630.1



NOTE:
AROUND HYDRANTS, UTILITY POLES SIGN POSTS ETC., SEE
EXPANSION JOINT DETAIL

PLAN



BRICK SIDEWALK DETAIL - PLAN

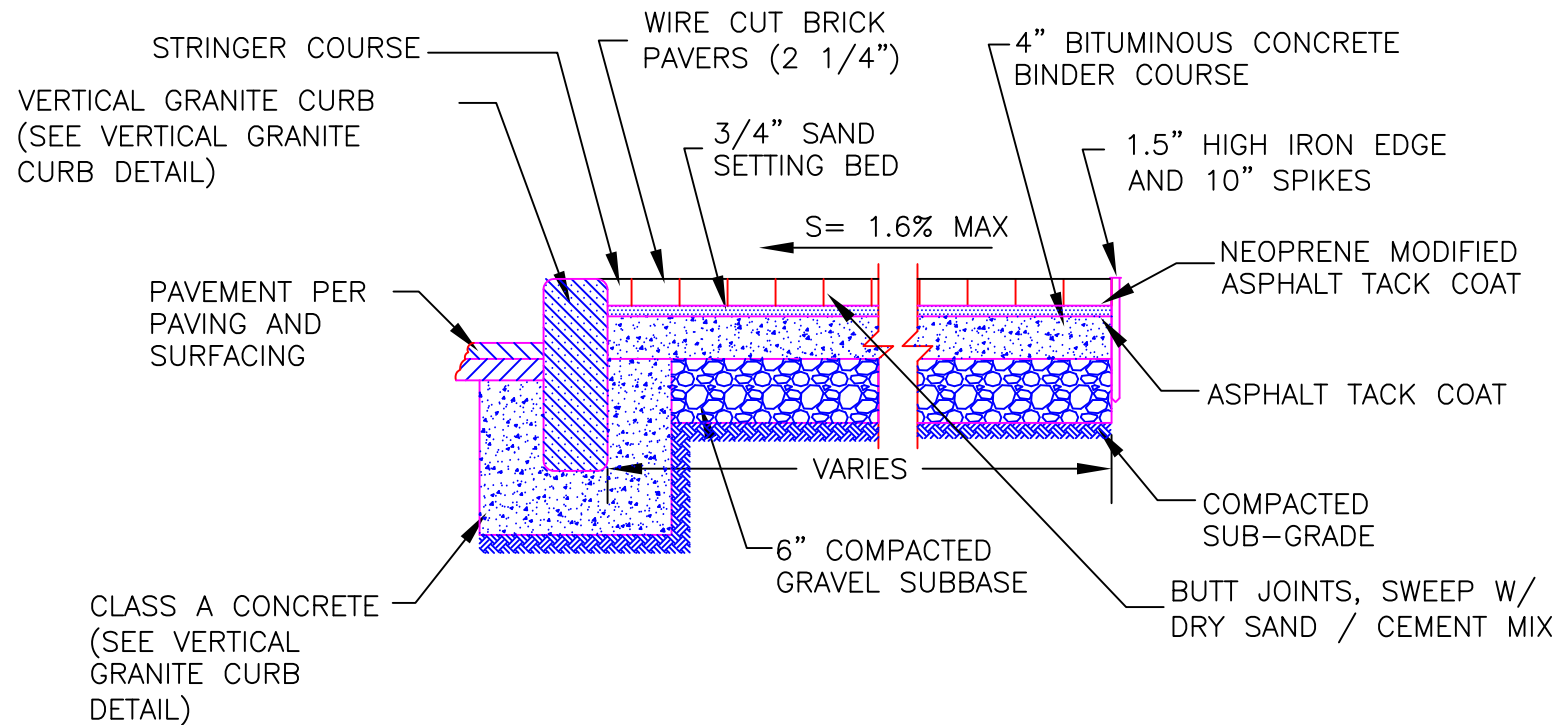
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

2524.8



SECTION A-A

NOTES:

1. SIDEWALKS SHALL MATCH WIDTH AND SLOPE OF EXISTING SIDEWALKS UNLESS OTHERWISE NOTED.
2. BITUMINOUS CONCRETE BINDER COURSE SHALL BE 6" DEPTH (IN TWO 3" COURSES) AT DRIVEWAYS. REFER TO PROJECT DRAWINGS OR ENGINEER'S INSTRUCTIONS FOR LOCATIONS
3. FOR BRICK LAYOUT PATTERN SEE PLAN VIEW DETAIL 2524.8



ASPHALT BASE BRICK SIDEWALK DETAIL - SECTION

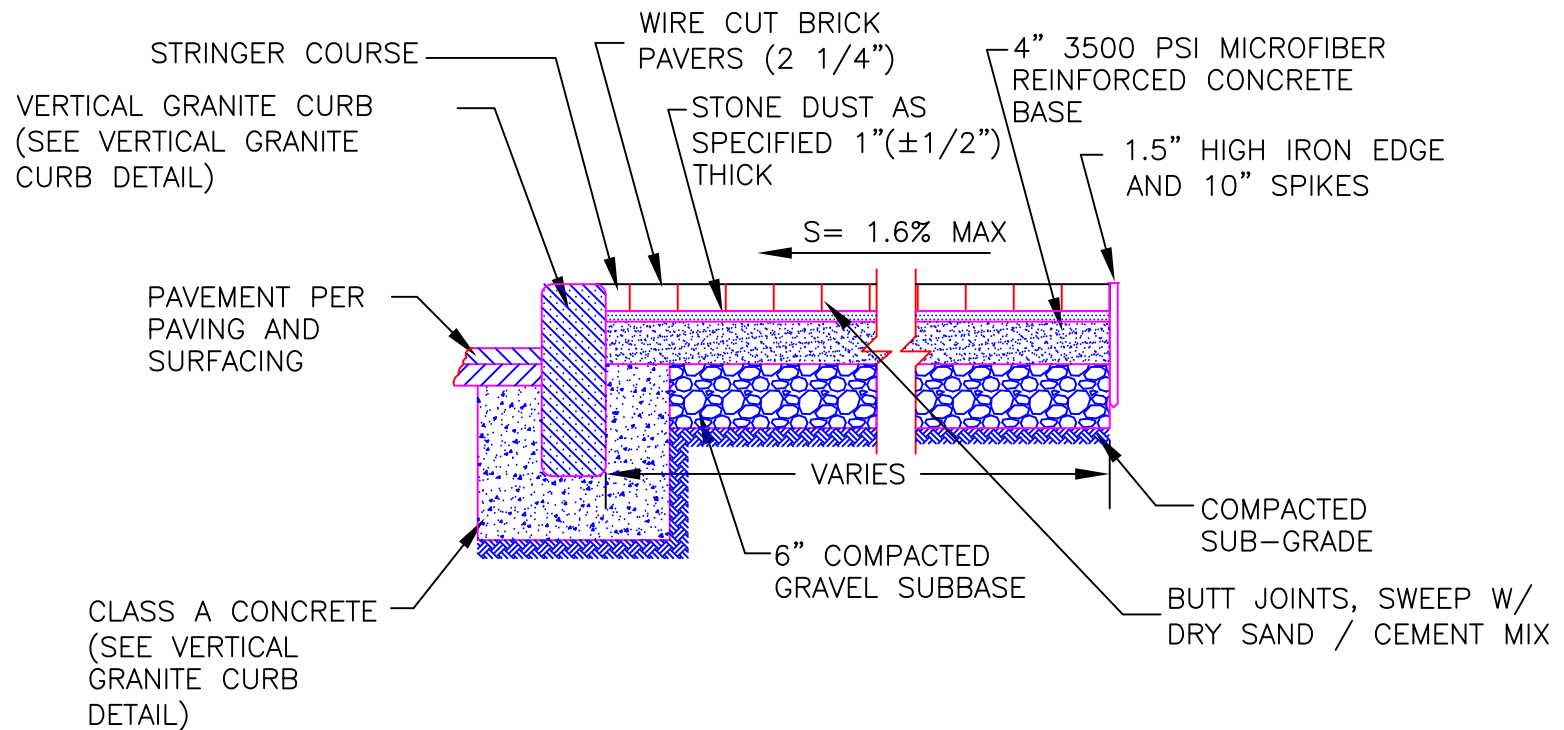
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

2524.9



SECTION A-A

NOTES:

1. SIDEWALKS SHALL MATCH WIDTH AND SLOPE OF EXISTING SIDEWALKS UNLESS OTHERWISE NOTED.
2. FOR BRICK LAYOUT PATTERN SEE PLAN VIEW DETAIL 2524.8



CONCRETE BASE BRICK SIDEWALK DETAIL - SECTION

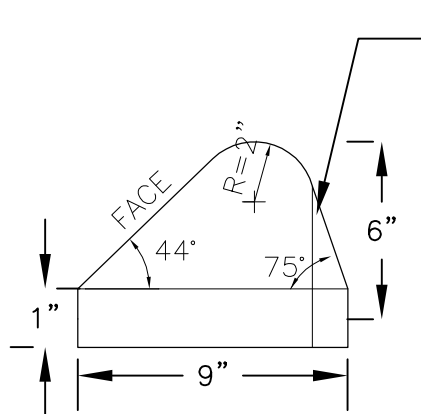
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

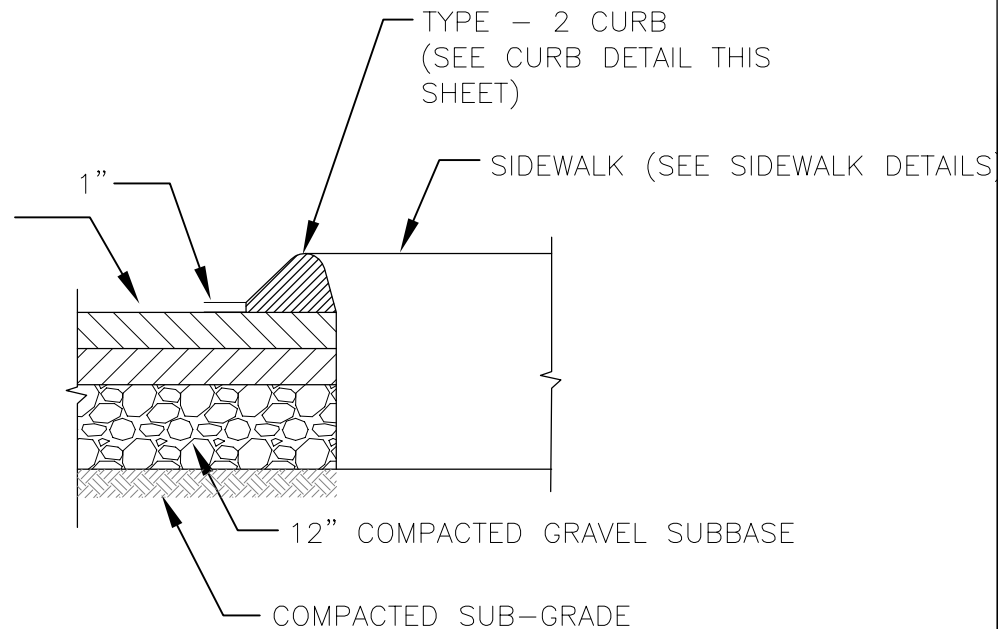
2524.9



CURB DETAIL

CURB IS TYPE-2 PER MHD CONSTRUCTION STANDARDS

PAVEMENT PER
PAVING AND
SURFACING



95% DETAILS
NOT FOR CONSTRUCTION

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BITUMINOUS CONCRETE CURB DETAIL

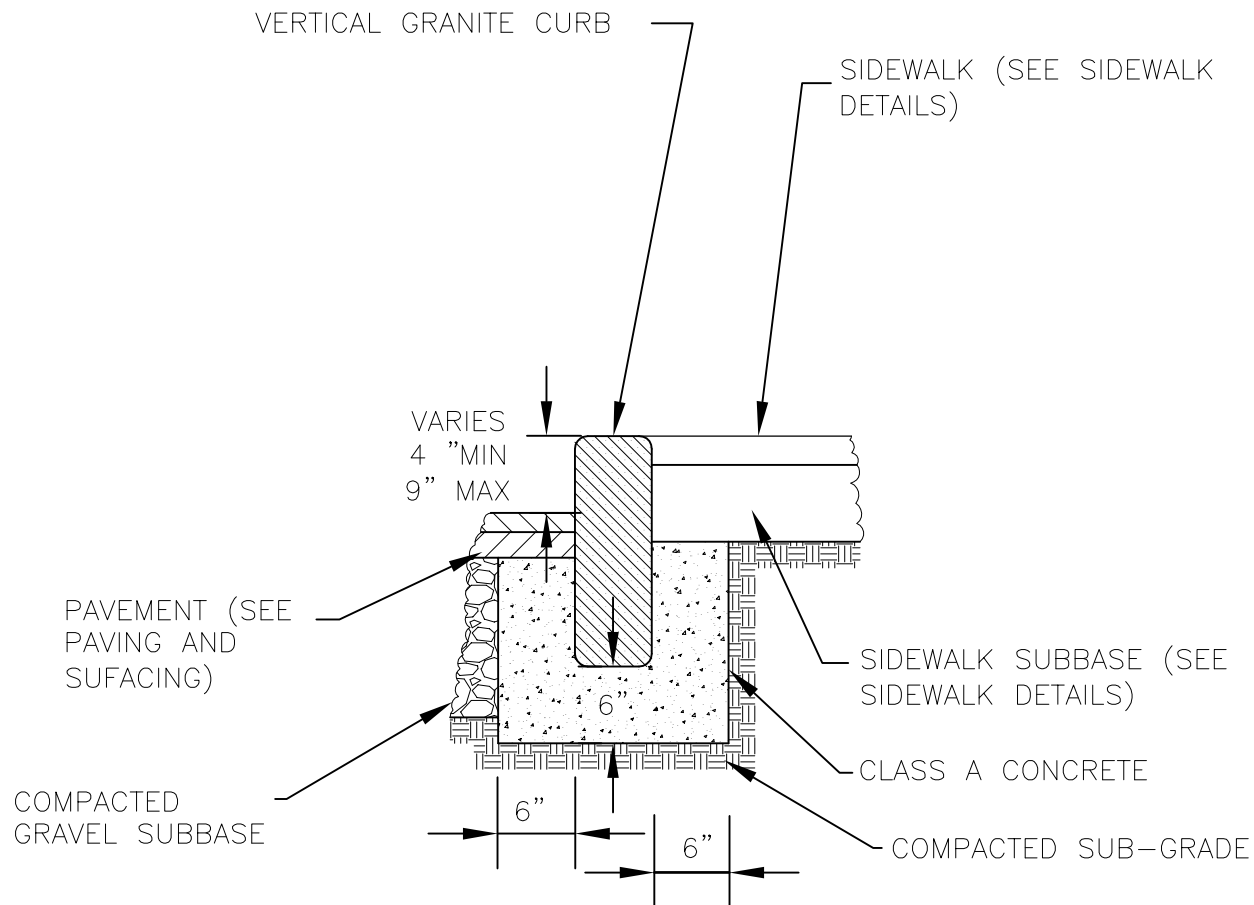
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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2524.9



95% DETAILS
NOT FOR CONSTRUCTION

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VERTICAL GRANITE CURB DETAIL

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02/05

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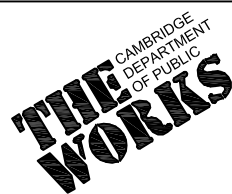
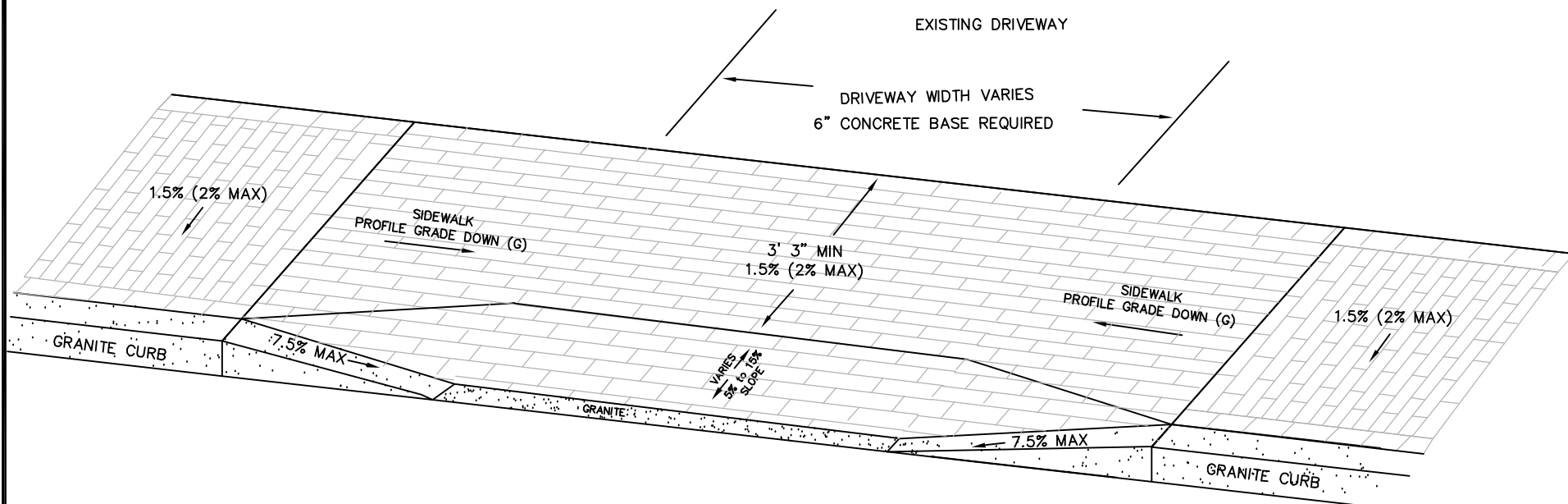
2524.1



THE CAMBRIDGE
DEPARTMENT
OF PUBLIC
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CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

2524.6



BRICK DRIVEWAY APRON DETAIL

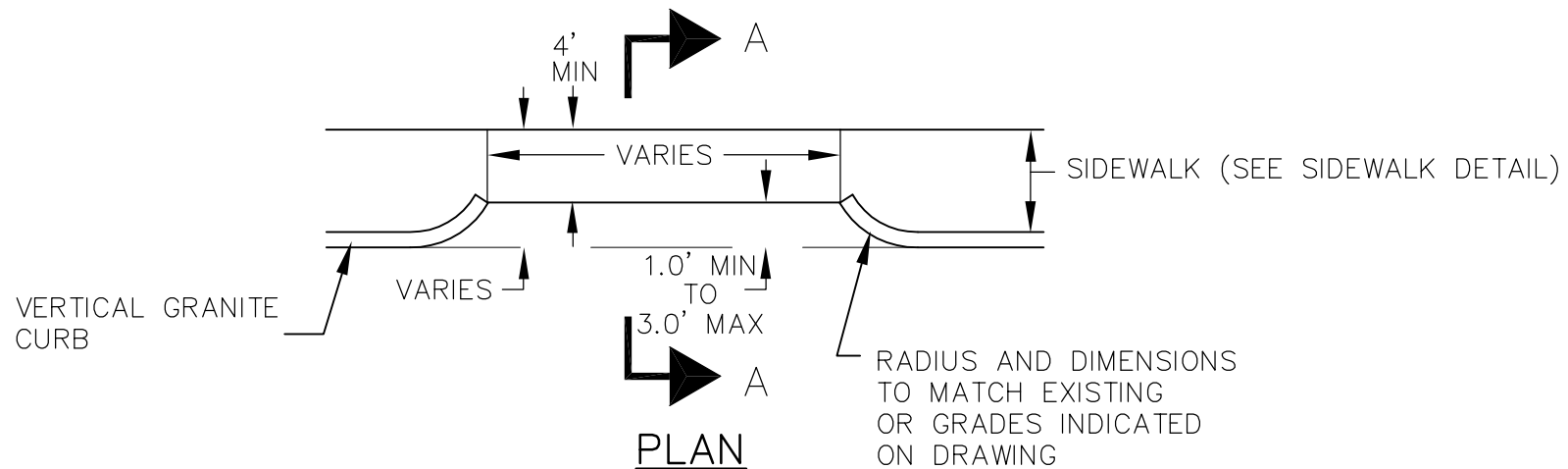
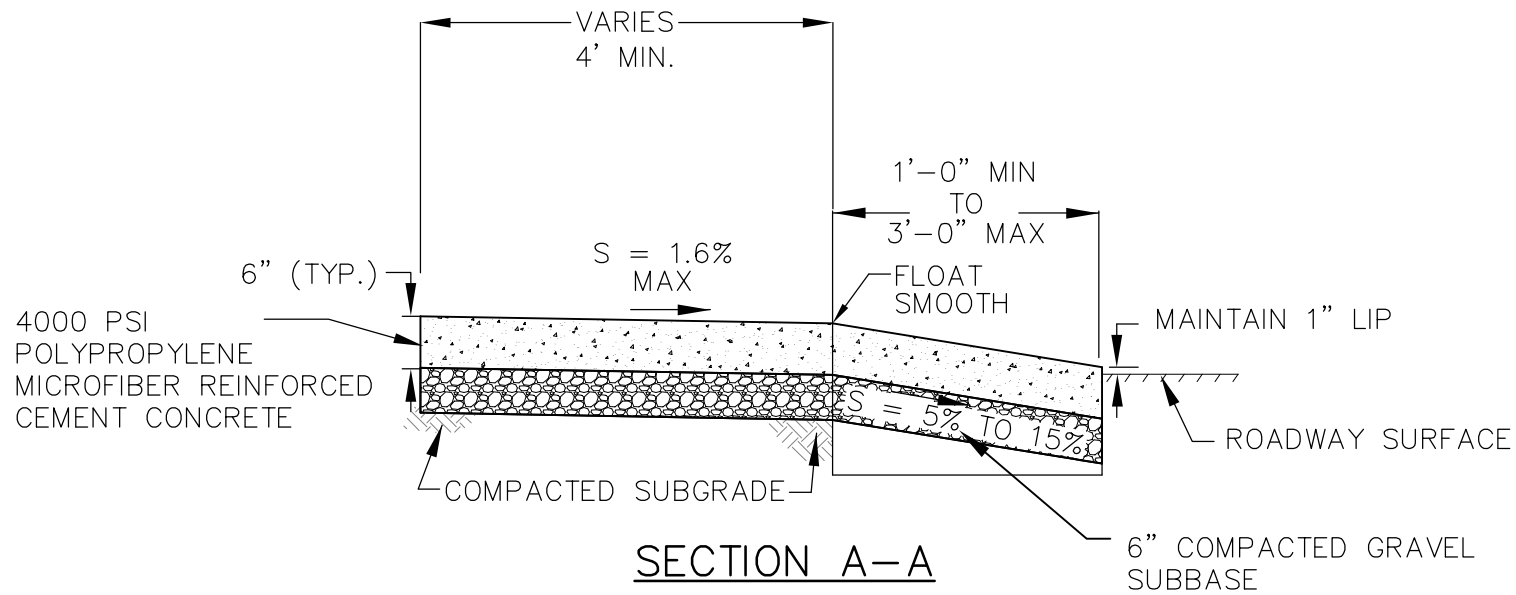
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 03/06

SPEC. SECTION REF#: 02524

2524.10



95% DETAILS
NOT FOR CONSTRUCTION

THE WORKS
CAMBRIDGE
DEPARTMENT
OF PUBLIC
WORKS

CEMENT CONCRETE DRIVEWAY APRON DETAIL

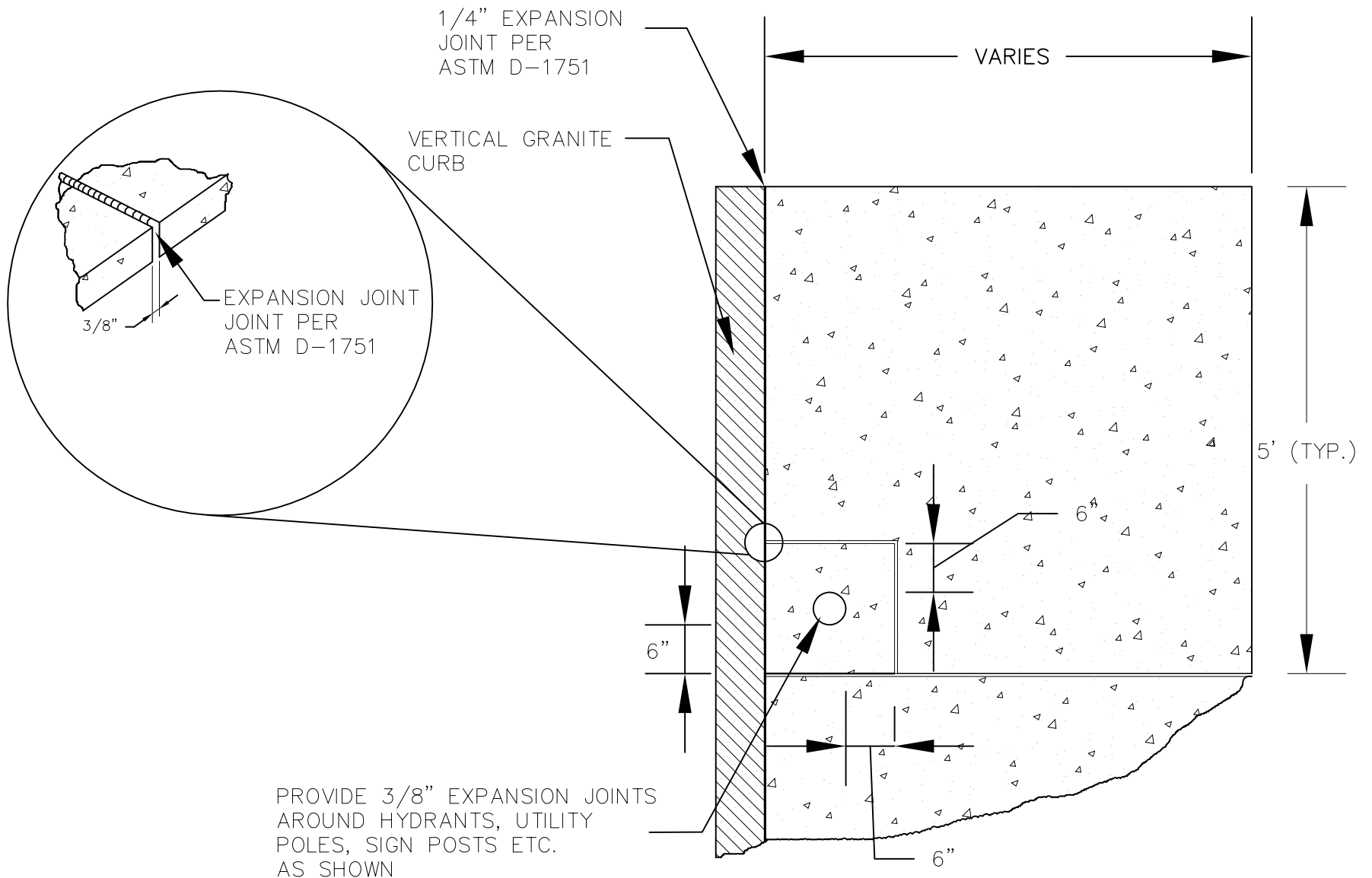
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

2524.5



95% DETAILS
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DEPARTMENT
OF PUBLIC

SIDEWALK EXPANSION JOINT DETAIL

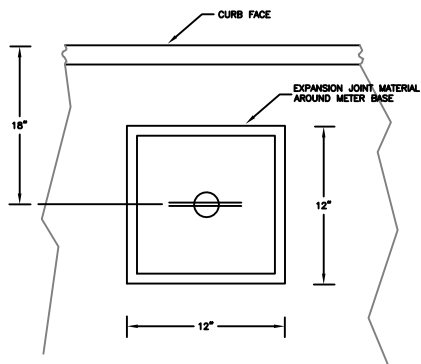
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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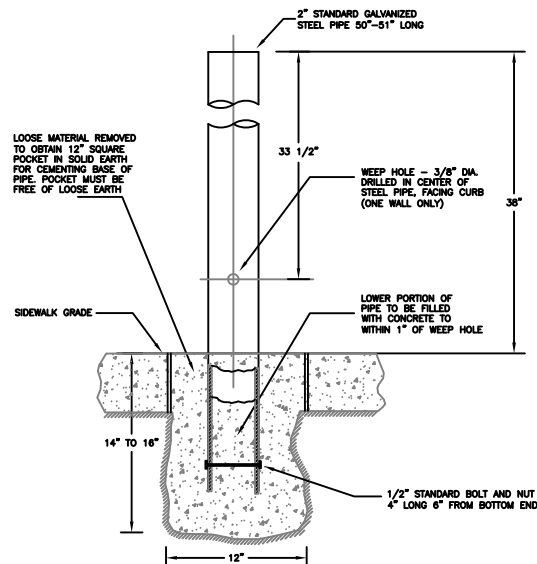
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OF ISSUE: 02/05

SPEC. SECTION REF#: 02524

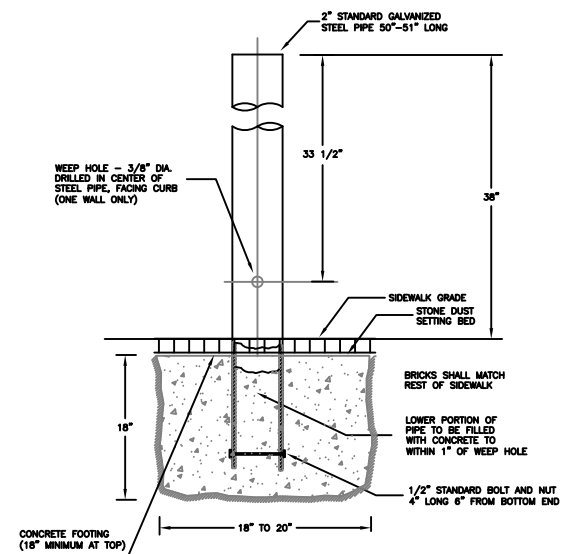
2524.4



PLAN — PARKING METER POST



SECTION — PARKING METER POST, CONCRETE SIDEWALK



SECTION — PARKING METER POST, BRICK SIDEWALK

CAMBRIDGE
DEPARTMENT
OF PUBLIC
THE WORKS

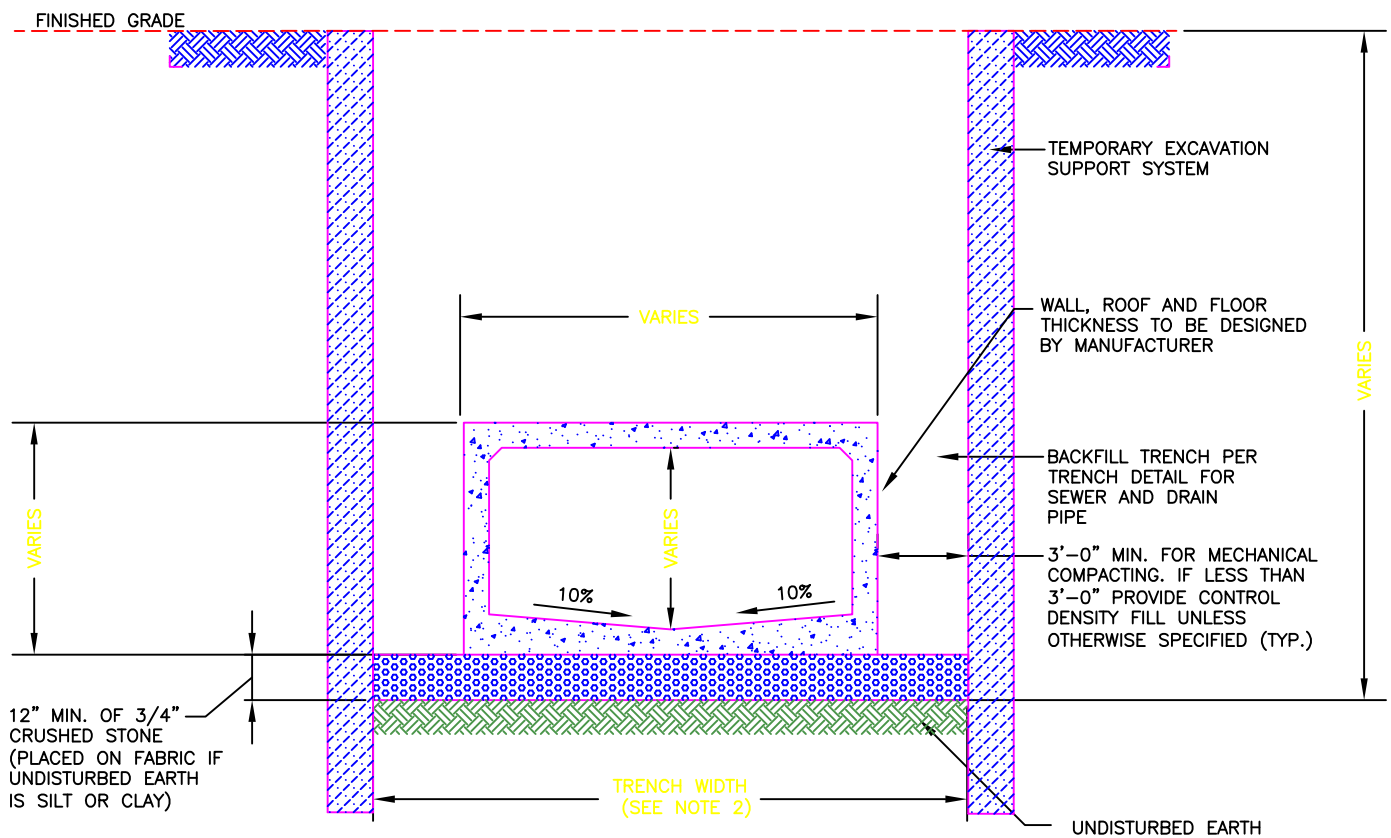
PARKING METER POST

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: NTS

DATE
OF ISSUE:

SPEC. SECTION REF#:



NOTES:

1. PRECAST REINFORCED CONCRETE BOX SECTIONS MANUFACTURED IN ACCORDANCE WITH PRECAST REINFORCED CONCRETE BOX CULVERT. WATERTIGHT GASKET JOINTS TO BE PROVIDED AS SPECIFIED.
2. TRENCH PAY LIMIT FOR BOX CULVERT IS OUTSIDE DIMENSION (WIDTH) PLUS 3' FOR TEMPORARY SUPPORT OF EXCAVATION PLUS SPACE BETWEEN CULVERT AND TEMPORARY SUPPORT OF EXCAVATION TO A MAXIMUM OF 6' TOTAL.

BOX CULVERT DETAIL - SECTION

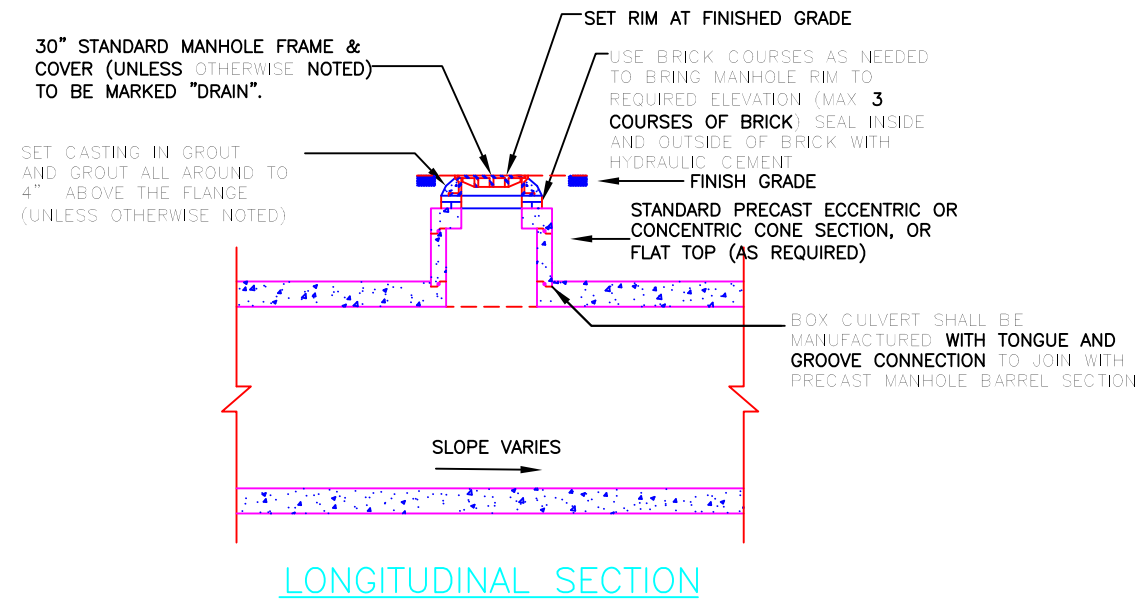
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02715

2715.1



BOX CULVERT DETAIL - SECTION 2

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

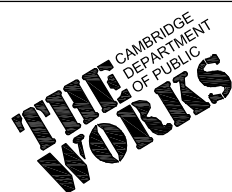
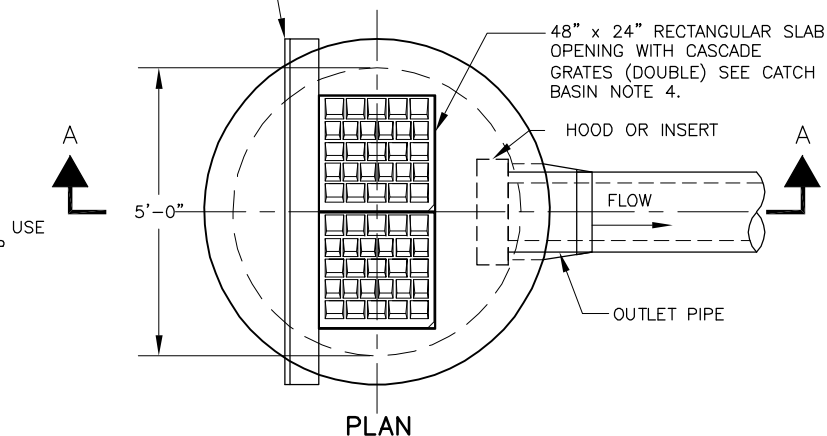
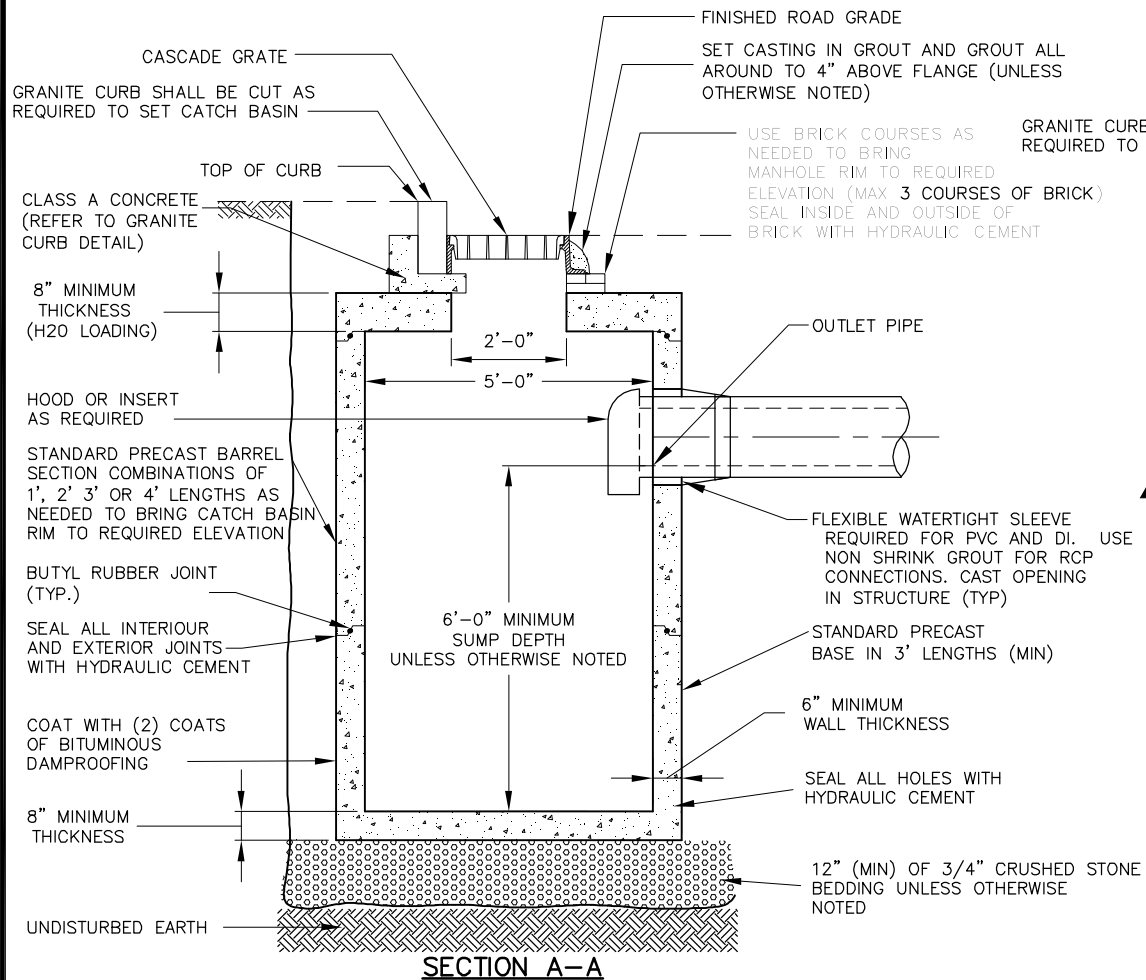
SCALE: N.T.S.

DATE
OF ISSUE:

02/05

SPEC. SECTION REF#: 02715

2715.2



TYPE 2 - DOUBLE GRATE CATCH BASIN

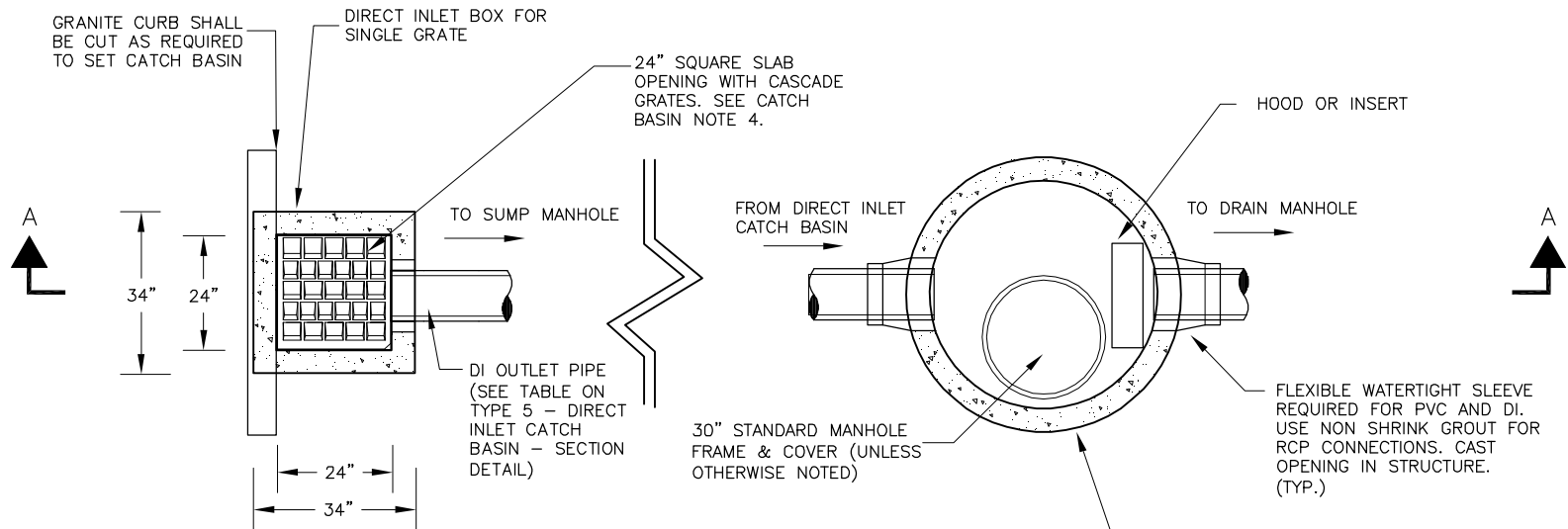
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

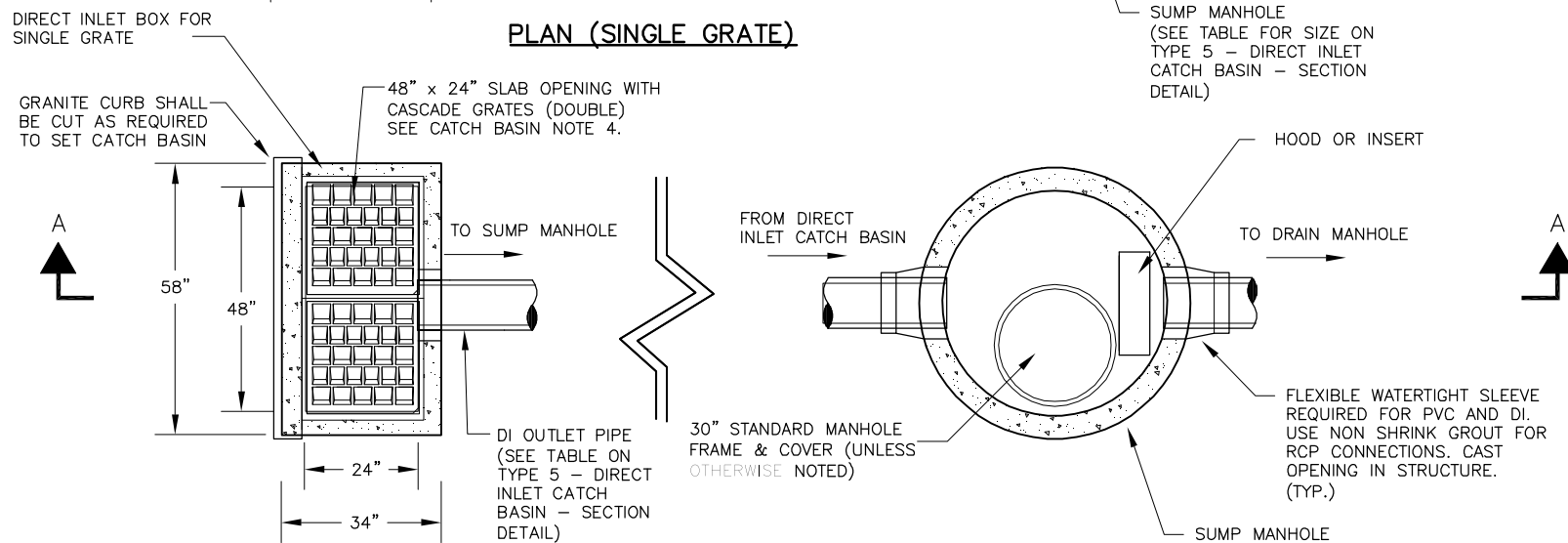
DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02604

2604.3



PLAN (SINGLE GRATE)



PLAN (DOUBLE GRATE)



TYPE 5 - DIRECT INLET CATCH BASIN - PLAN

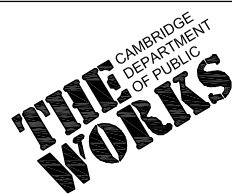
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.	DATE OF ISSUE: 02/05	SPEC. SECTION REF#: 02604	2604.6
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	PRECAST DIRECT INLET BOX			OUTLET PIPE	SUMP MANHOLE
	WIDTH (I.D.)	LENGTH (I.D.)	DEPTH (I.D.)	Ø (I.D.)	Ø (I.D.)
SINGLE GRATE	24"	24"	24"	12"	4'
DOUBLE GRATE	24"	48"	36"	15"	5'

CASCADE GRATE
 GRANITE CURB SHALL BE CUT AS REQUIRED TO SET CATCH BASIN
 TOP OF CURB
 COAT WITH (2) COATS OF BITUMINOUS DAMPPROOFING
 DEPTH I.D. (SEE TABLE)
 1'
 DIRECT INLET BOX CATCH BASIN - 5" THICK WALLS AND 5' THICK BASE
 UNDISTURBED MATERIAL
 12" (MIN.) OF 3/4" CRUSHED STONE UNLESS OTHERWISE INDICATED ON PROFILE
 OUTLET PIPE (SEE TABLE FOR SIZE)
 WIDTH I.D. (SEE TABLE)
 SLOPE
 TO SUMP MANHOLE
 FOR BOTTOM THICKNESS MANHOLE

SECTION A-A



TYPE 5 - DIRECT INLET CATCH BASIN - SECTION

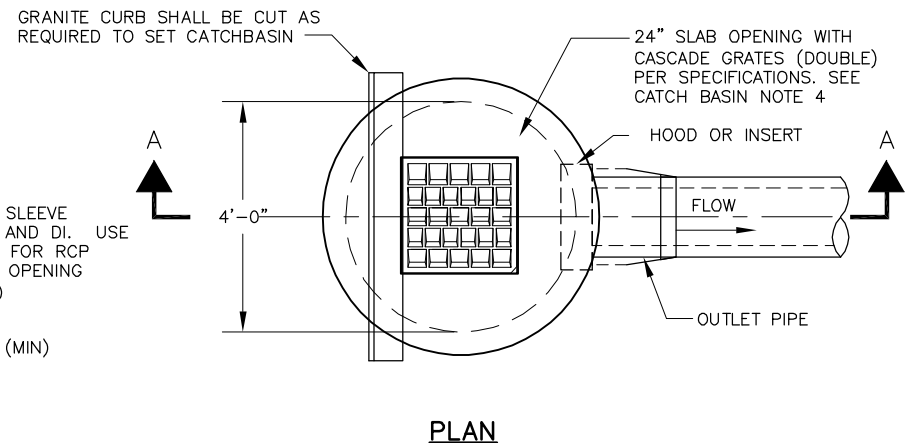
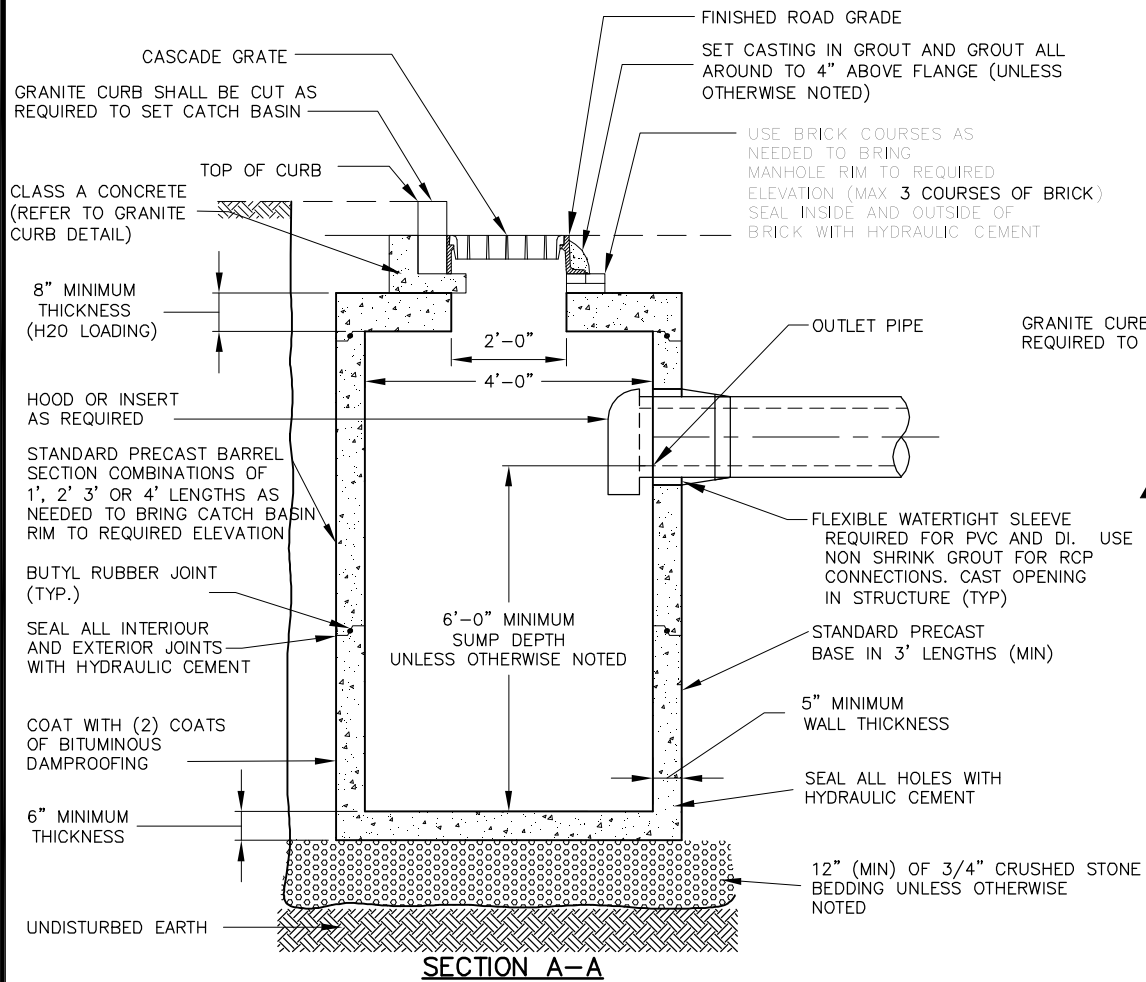
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02604

2604.5



THE WORKS
CAMBRIDGE
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TYPE 1 - SINGLE GRATE CATCH BASIN

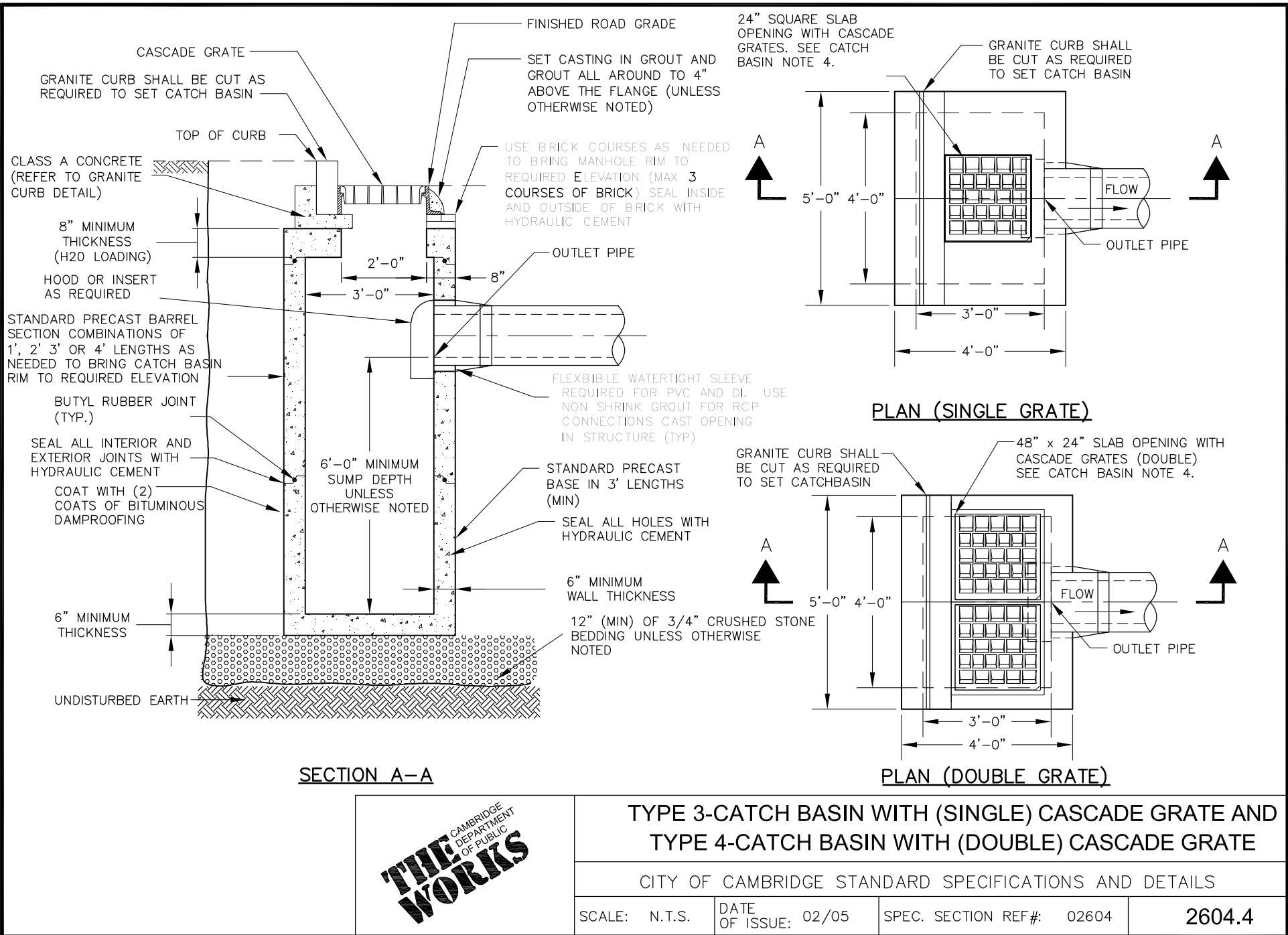
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

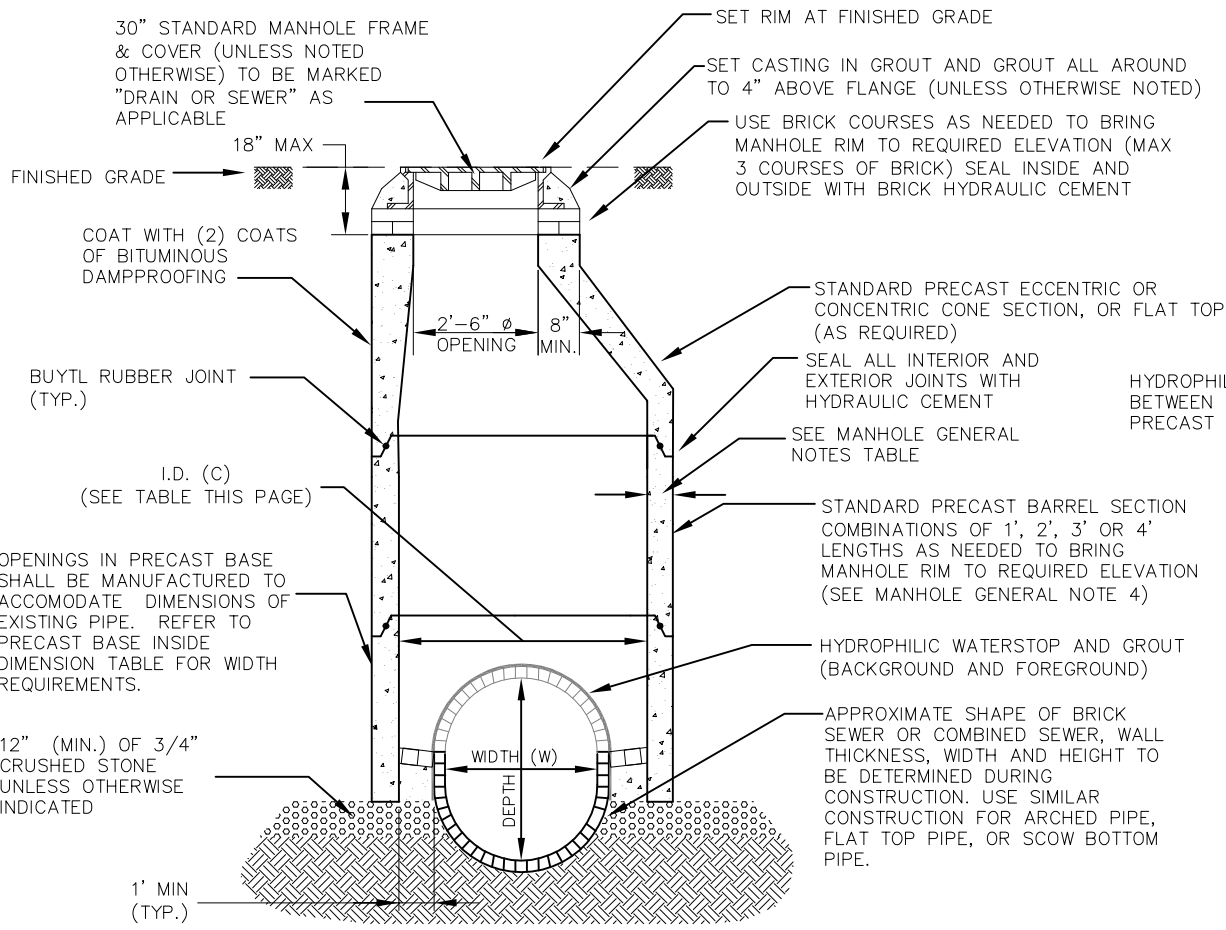
SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02604

2604.2



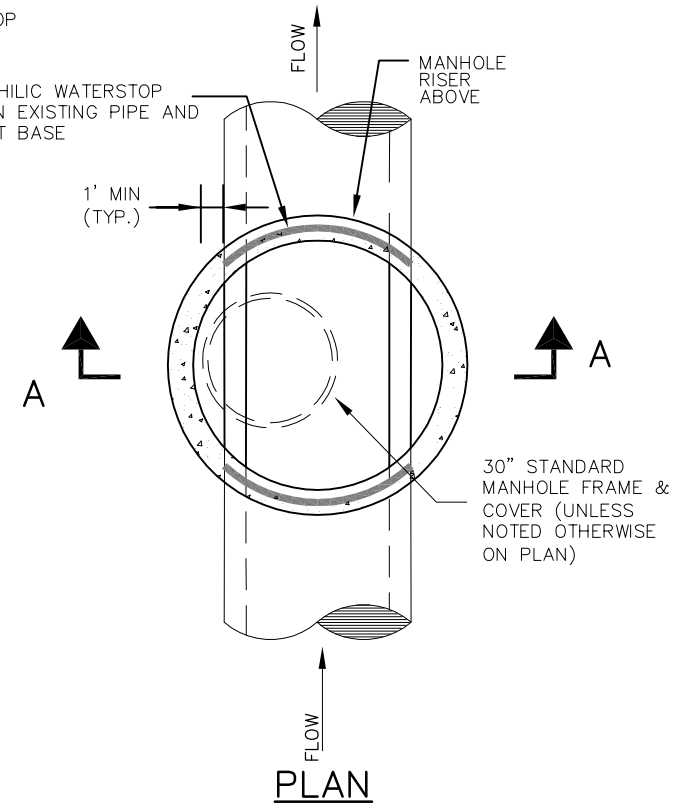


SECTION A-A

PRECAST BASE INSIDE DIMENSION TABLE

WIDTH (W)	I.D. (C)
8" TO 24"	4' ϕ
27" TO 36"	5' ϕ
48" TO 66"	6' ϕ
66" TO 72"	8' ϕ
> 72"	10' ϕ

I.D. = INSIDE DIMENSION



NOTES:

1. REMOVE EXISTING BRICK PIPE TO SPRING LINE WITHIN THE INSIDE OF THE PRECAST MANHOLE BASE AND CONSTRUCT THE INVERT TO THE SPRING LINE AS SHOWN.

95% DETAILS
NOT FOR CONSTRUCTION

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TYPE 2 - PRECAST DROP OVER MANHOLE DETAIL

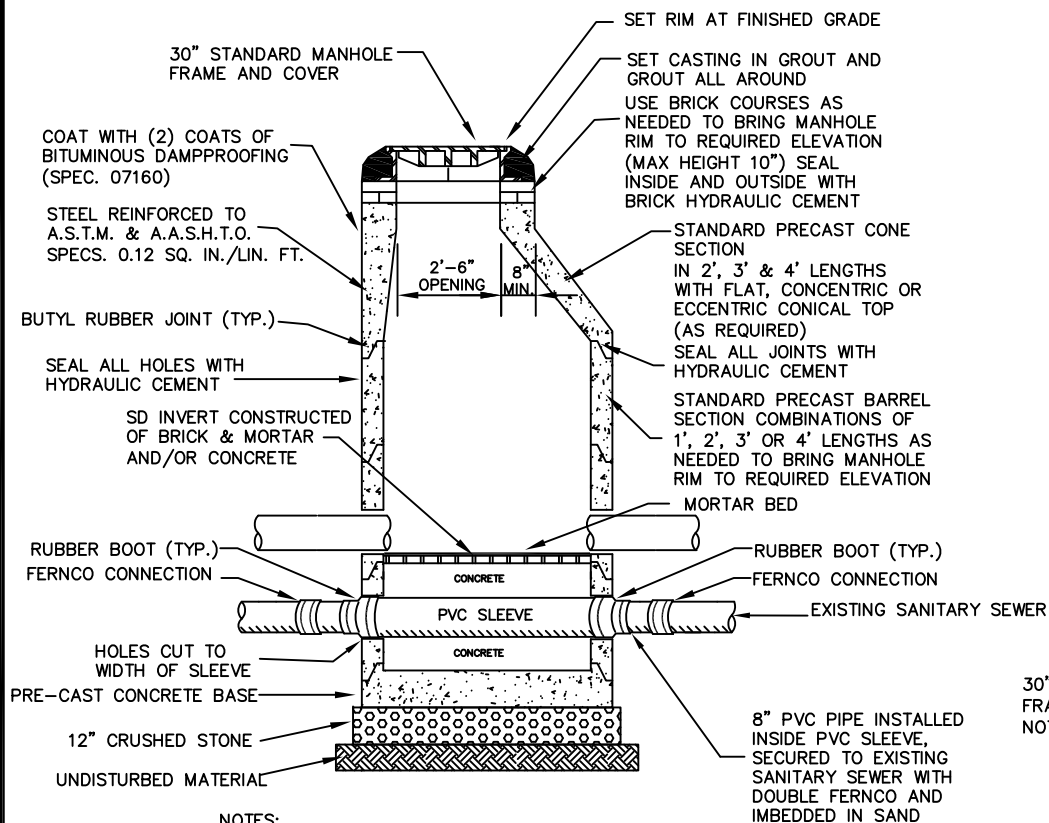
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

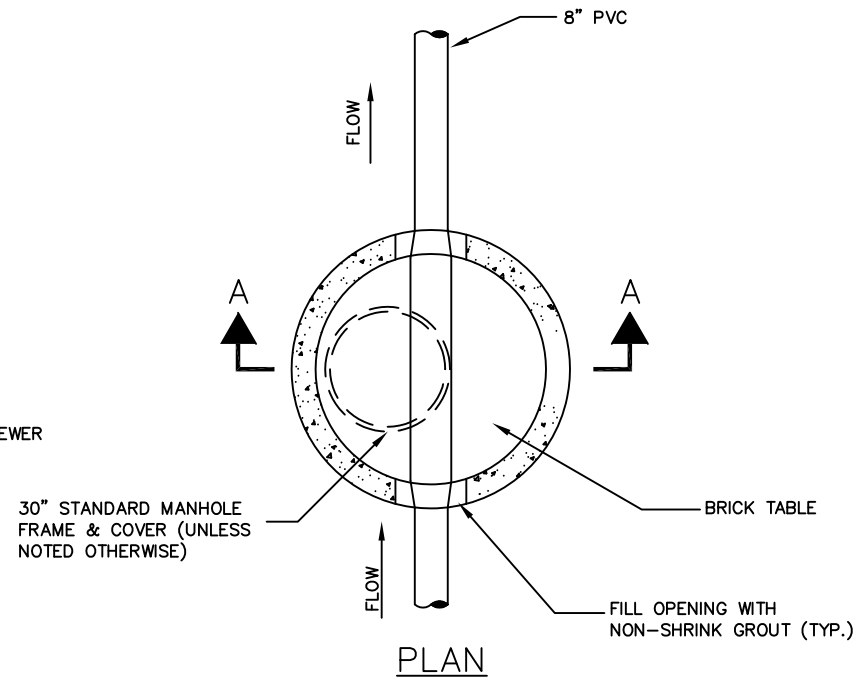
2252.3



NOTES:

1. SEWER OR DRAIN MANHOLE DIAMETER SHALL BE 4', 5', 6', OR 8' AS SHOWN ON PLAN VIEWS.
2. DESIGN PRECAST SECTIONS WITH FRAME AND COVER FOR AASHTO H20 LOADING.

SECTION A-A



TYPE 6 - MANHOLE CONSTRUCTED OVER EXISTING UTILITY - WITH BASE

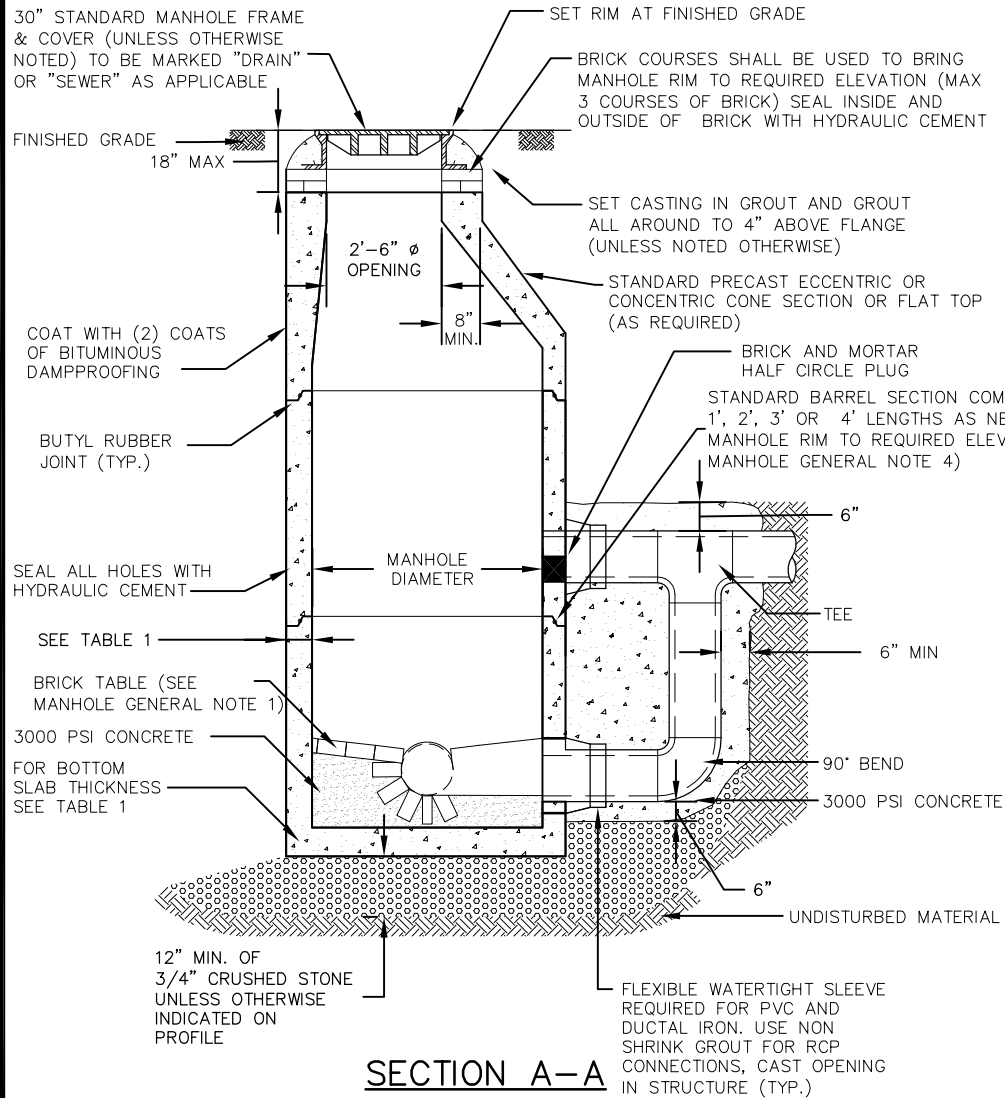
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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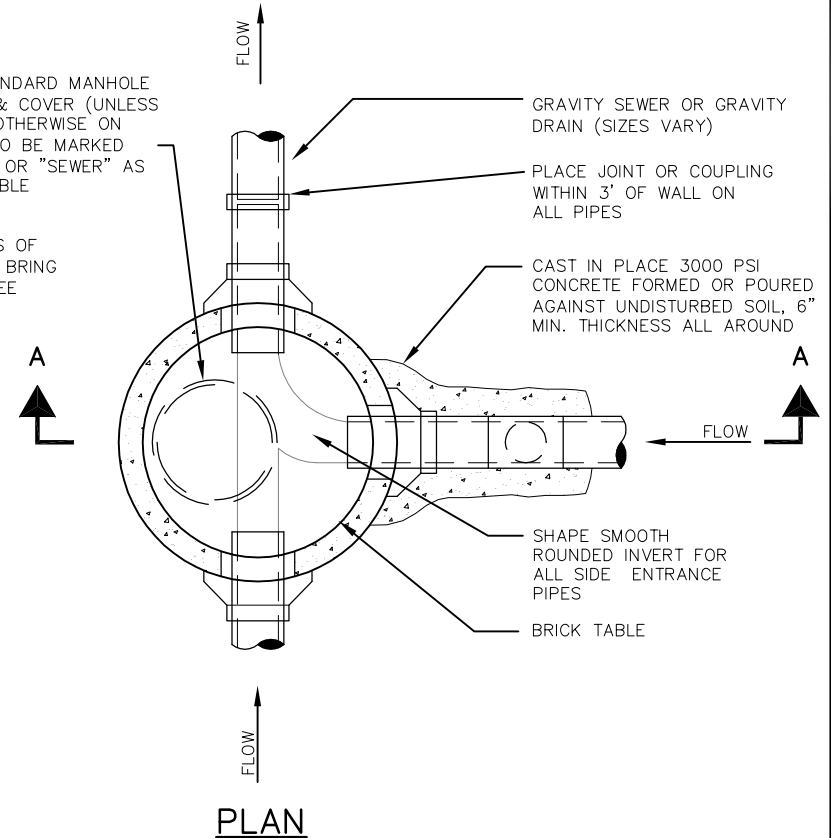
DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.7



30" STANDARD MANHOLE FRAME & COVER (UNLESS NOTED OTHERWISE ON PLAN) TO BE MARKED "DRAIN" OR "SEWER" AS APPLICABLE



95% DETAILS
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TYPE 3 - DROP MANHOLE

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.4

TABLE 1				
MANHOLE DIAMETER	SIDE WALL MIN. THICKNESS	BOTTOM SLAB MIN. THICKNESS	MAX PIPE DIAMETER *	
			RCP	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:

- HIGHEST POINT OF BRICK TABLE AT MANHOLE WALL, TO BE AT ELEV OF CROWN OF PIPE. TABLE TO SLOPE AT 8.3%.
- SEWER OR DRAIN MANHOLE DIAMETER SHALL BE 4', 5', 6', 8' OR 10' AS SHOWN ON PLAN/PROFILE VIEWS.
- DESIGN PRECAST SECTIONS WITH FRAME AND COVER FOR AASHTO H20 LOADINGS. UNLESS OTHERWISE NOTED
- 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.

TRENCH PAY LIMIT TABLE FOR MANHOLES

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

95% DETAILS
NOT FOR CONSTRUCTION

CAMBRIDGE
DEPARTMENT
OF PUBLIC
**THE
WORKS**

MANHOLES - GENERAL NOTES AND DIMENSIONS

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.1

30" STANDARD MANHOLE FRAME & COVER (UNLESS NOTED OTHERWISE) TO BE MARKED "DRAIN"

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

SET RIM AT FINISHED GRADE

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

18" MAX

FINISH GRADE
STANDARD PRECAST ECCENTRIC OR CONCRETE CONE SECTION OR FLAT TOP (AS REQUIRED)

COAT WITH (2) COATS OF BITUMINOUS DAMPPROOFING

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

2'-6" Ø
OPENING

8" MIN.

MANHOLE DIAMETER

4'-0" SUMP DEPTH

SEAL ALL INTERIOR AND EXTERIOR JOINTS WITH HYDRAULIC CEMENT

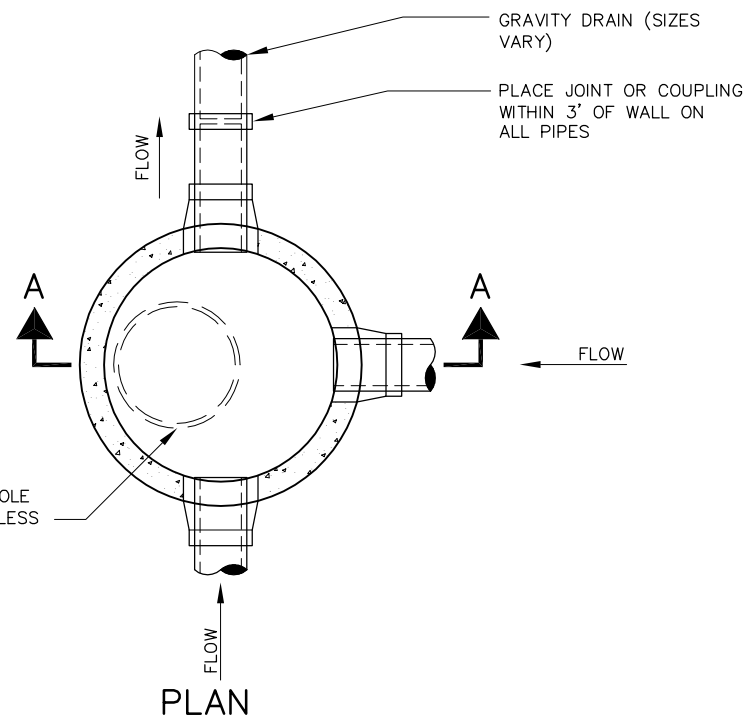
STANDARD PRECAST BARREL SECTION COMBINATIONS OF 1', 2', 3' OR 4' LENGTHS AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (SEE MANHOLE GENERAL NOTE 4)

FLEXIBLE WATERTIGHT SLEEVE REQUIRED FOR PVC AND DI. USE NON SHRINK GROUT FOR RCP CONNECTIONS. CAST OPENING IN STRUCTURE. (TYP.)

12" (MIN.) OF 3/4" CRUSHED STONE UNLESS OTHERWISE INDICATED ON PROFILE

UNDISTURBED MATERIAL

SECTION A-A



95% DETAILS
NOT FOR CONSTRUCTION

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TYPE 4 - SUMP MANHOLE DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.5

30" STANDARD MANHOLE FRAME & COVER (UNLESS NOTED OTHERWISE) TO BE MARKED "DRAIN" OR "SEWER" AS APPLICABLE

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

COAT WITH (2) COATS OF BITUMINOUS DAMPPROOFING

BUTYL RUBBER JOINT (TYP.)

SEAL ALL HOLES WITH HYDRAULIC CEMENT

SEE TABLE 1

BRICK TABLE (SEE MANHOLE GENERAL NOTE 1)

FOR BOTTOM SLAB THICKNESS SEE TABLE 1

SET RIM AT FINISHED GRADE

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

FINISH GRADE

STANDARD PRECAST ECCENTRIC OR CONCENTRIC CONE SECTION, OR FLAT TOP (AS REQUIRED)

SEAL ALL INTERIOR AND EXTERIOR JOINTS WITH HYDRAULIC CEMENT

STANDARD PRECAST BARREL SECTION COMBINATIONS OF 1', 2', 3' OR 4' LENGTHS AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (SEE MANHOLE GENERAL NOTE 4)

STANDARD PRECAST BASE IN 3' LENGTHS (MIN.)

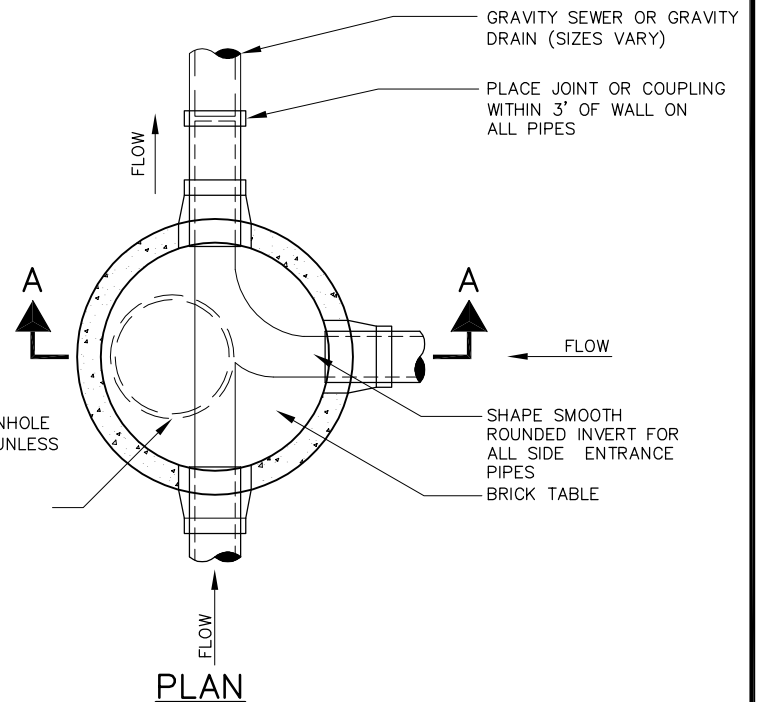
3000 PSI CONCRETE

FLEXIBLE WATERTIGHT SLEEVE REQUIRED FOR PVC AND DI. USE NON SHRINK GROUT FOR RCP CONNECTIONS. CAST OPENING IN STRUCTURE. (TYP.)

UNDISTURBED MATERIAL

12" (MIN.) OF 3/4" CRUSHED STONE UNLESS OTHERWISE INDICATED ON PROFILE

SECTION A-A



95% DETAILS
NOT FOR CONSTRUCTION

THE WORKS
CAMBRIDGE
DEPARTMENT
OF PUBLIC
WORKS

TYPE 1 - MANHOLE DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

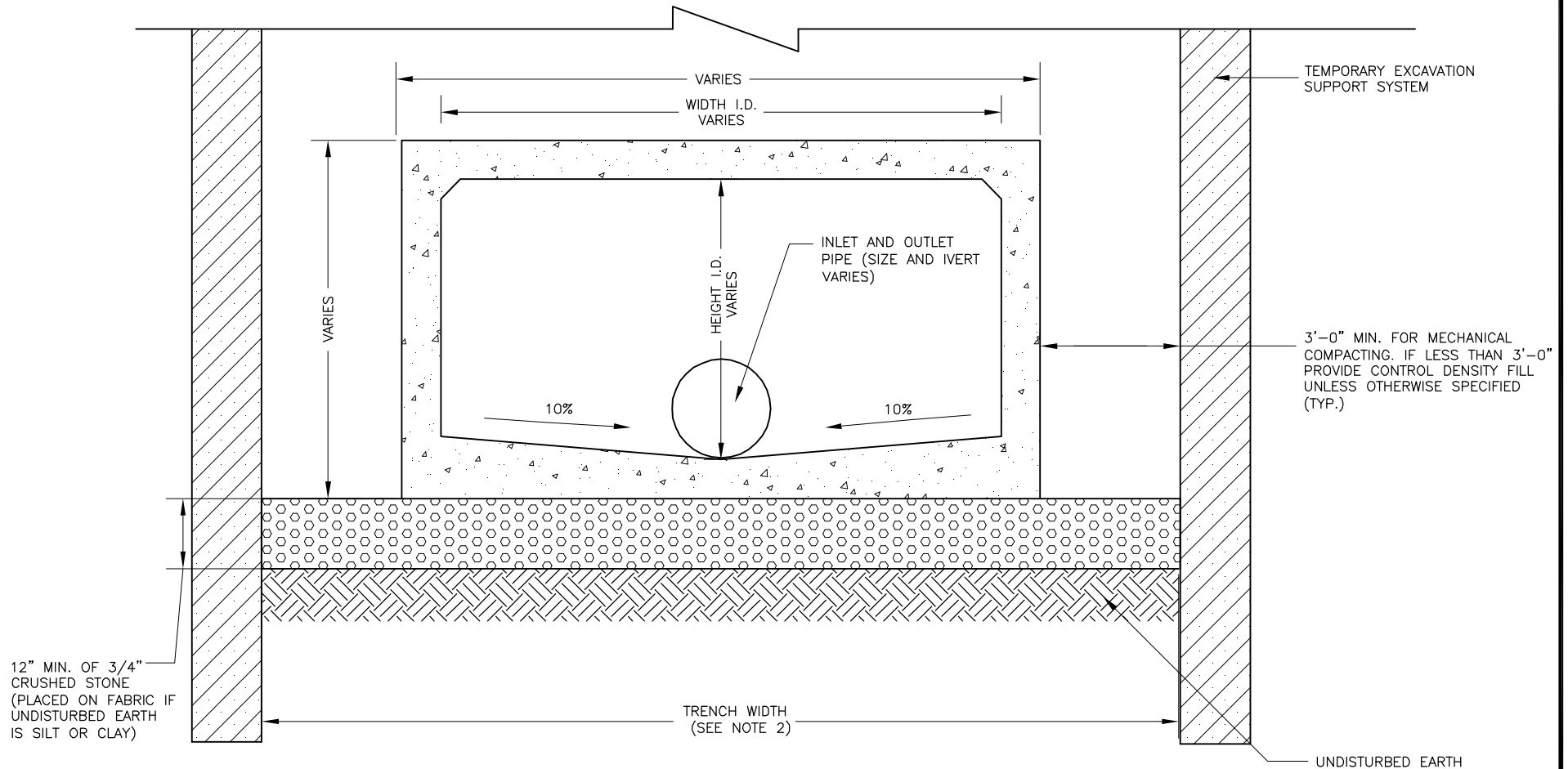
DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02252

2252.2

NOTES:

1. PRECAST REINFORCED CONCRETE BOX SECTIONS MANUFACTURED IN ACCORDANCE WITH PRECAST REINFORCED STORAGE TANK. WATERTIGHT GASKET JOINTS TO BE PROVIDED AS SPECIFIED.
2. TRENCH PAY LIMIT FOR STORAGE TANK IS OUTSIDE DIMENSION (WIDTH) PLUS 3' FOR TEMPORARY SUPPORT OF EXCAVATION PLUS SPACE BETWEEN CULVERT AND TEMPORARY SUPPORT OF EXCAVATION TO A MAXIMUM OF 6' TOTAL.
3. STORAGE TANK WALL, ROOF AND SLAB THICKNESS TO BE DESIGNED BY THE MANUFACTURER
4. FLOATATION SLABS TO BE DESIGNED AND SPECIFIED BY THE MANUFACTURER



STORAGE TANK DETAIL - SECTION

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

SPEC. SECTION REF#: 02720

2720.2

30" VENTED MANHOLE FRAME & COVER (UNLESS OTHERWISE NOTED) TO BE MARKED "DRAIN"

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

COAT WITH (2) COATS OF BITUMINOUS DAMPPROOFING

SEAL ALL HOLES WITH HYDRAULIC CEMENT

BUTYL RUBBER JOINT (TYP.)

5"

INLET PIPE (INVERT ELEVATIONS VARY)

SET RIM AT FINISHED GRADE

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

18" MAX

FINISH GRADE

STANDARD PRECAST ECCENTRIC OR CONCENTRIC CONE SECTION, OR FLAT TOP (AS REQUIRED)

SEAL ALL INTERIOR AND EXTERIOR JOINTS WITH HYDRAULIC CEMENT

2'-6" Ø OPENING

8" MIN.

4' DIAMETER

STANDARD PRECAST BARREL SECTION COMBINATIONS OF 1', 2', 3' OR 4' LENGTHS AS NEEDED TO BRING MANHOLE RIM TO REQUIRED ELEVATION (SEE MANHOLE GENERAL NOTE 4)

INV. EL. VARIES

VARIES

SLOPE 1%

STORAGE TANK SHALL BE MANUFACTURED WITH TONGUE AND GROOVE CONNECTION TO JOIN WITH PRECAST MANHOLE BARREL SECTION

BURIED WALL PIPE SLEEVE CLOSURES WITH DOUBLE LINK SEALS (TYPICAL OF ALL PENETRATIONS) (SEE BURIED WALL SLEEVE DETAIL)

OUTLET PIPE (INVERT ELEVATIONS VARY)

VARIES

SLOPE 1%



STORAGE TANK DETAIL - SECTION

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

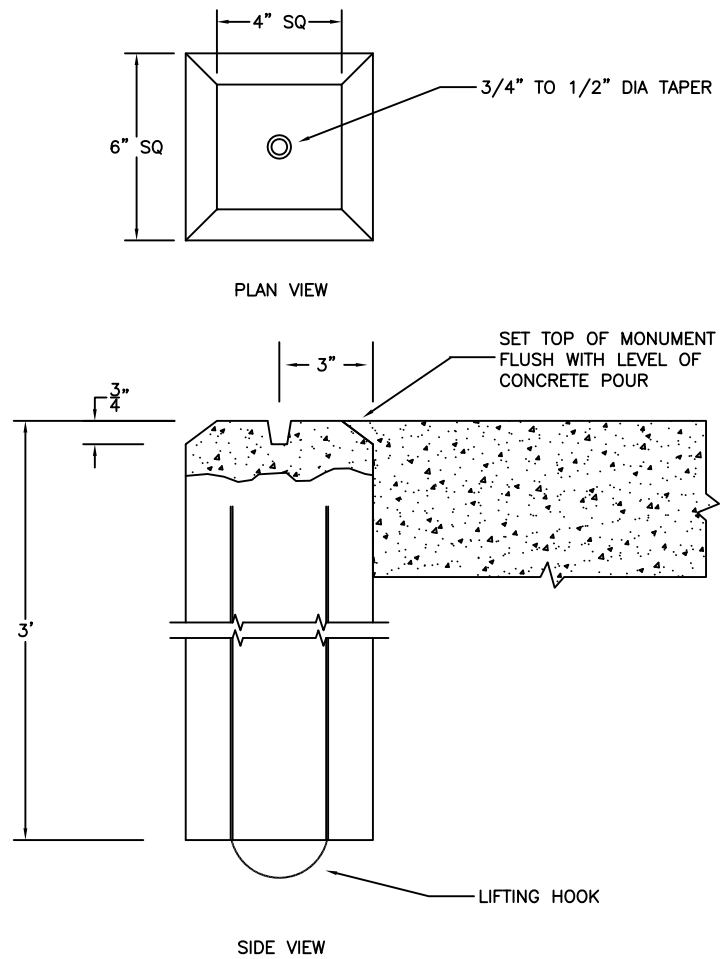
SCALE: N.T.S.

DATE OF ISSUE: 02/05

SPEC. SECTION REF#: 02720

2720.2

CITY OF CAMBRIDGE D.P.W.
ENGINEERING DEPARTMENT
SURVEY MONUMENT SPECIFICATION — 2008



NOTES:

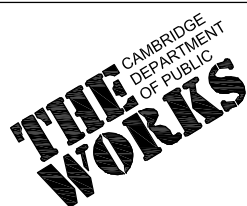
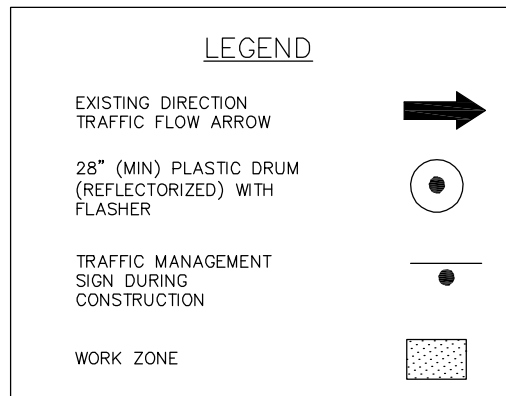
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS

E.F. SHEA ITEM NO. B-BM2	WT=110#
E.F. SHEA ITEM NO. B-BM3	WT=147#

E.F. SHEA, AMESBURY MA (978) 388-1509
E.F. SHEA, WILMINGTON MA (978) 658-2645
E.F. SHEA, NOTTINGHAM, NH (603) 942-5668

TRAFFIC MANAGEMENT GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D)
2. ALL SIGN LOCATIONS ON DETAILS ARE SHOWN SCHEMATICALLY. FINAL LOCATIONS SHALL BE DETERMINED BASED ON ACTUAL FIELD CONDITIONS AND CITY APPROVAL
3. ADDITIONAL TRAFFIC CONTROL DEVICES SHALL BE PROVIDED UPON THE CITY'S REQUEST
4. ALL TEMPORARY SIGNAGE AND TRAFFIC CONTROL DEVICES SHALL BE PROPERLY SECURED
5. ALL DRUMS NOT OTHERWISE SPECIFIED SHALL BE EQUIPPED WITH TYPE "C" -STEADY BURN WARNING LIGHTS
6. TEMPORARY TRAFFIC LANES WITHIN THE WORK ZONE SHALL BE A MINIMUM OF 11 FEET
7. ADVISORY SPEED LIMITS SHALL BE POSTED AS DIRECTED BY THE CITY
8. FLASHING ARROW BOARDS SHALL BE UTILIZED FOR LANE SHIFTS WHERE THE EXISTING SPEED LIMIT IS 35 M.P.H. OR GREATER
9. NON-ESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORK HOURS
10. ALL TRAVEL WAYS SHALL BE PROTECTED FROM DUST AND CONSTRUCTION DEBRIS AT ALL TIMES
11. TRAFFIC CONTROL INCLUDES NECESSARY STREET SWEEPING AND SNOW REMOVAL WITHIN THE WORK ZONE
12. VEHICULAR AND PEDESTRIAN SHALL BE ALLOWED ACCESS TO PRIVATE PROPERTY AT ALL TIMES DURING CONSTRUCTION
13. ALL TRAFFIC CONTROL DEVICES SHALL BE PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNAGE AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH WORK AREAS BOTH DURING AND AFTER WORK HOURS
14. EACH ABUTTER SHALL BE NOTIFIED BY THE CONTRACTOR AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS
15. CONSTRUCTION WORK ZONE SHALL BE STAGED AS TO ALLOW FOR CONTINUOUS ACCESS AT DRIVE ENTRANCES AND TO MINIMIZE DETOURS TO CAMBRIDGE ROADS
16. EXCAVATIONS SHALL BE PROTECTED BY STEEL PLATES OR BARRICADES DURING NON-WORK HOURS
17. GRADE SEPARATIONS IN EXCESS OF 2" DURING NON WORKING HOURS WILL REQUIRE DELINEATION BY DRUMS
18. EXCAVATION EDGES IN EXCESS OF 4" DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL COMPACTED TO A 4:1 SLOPE
19. SAFE PEDESTRIAN WALKWAYS SHALL BE PROVIDED AND ACCESS TO LOCAL BUSINESSES AND RESIDENCES. PUBLIC WALKWAYS SHALL REMAIN OPEN AND ACCESSIBLE UNLESS OTHERWISE DIRECTED BY CITY.
20. ALL EXISTING PEDESTRIAN CROSSINGS SHALL BE MAINTAINED. ALTERNATIVE CROSSING SHALL BE PROVIDED WHEN EXISTING CROSSINGS ARE DISRUPTED BY CONSTRUCTION ACTIVITY. TEMPORARY LOCATIONS, SAFETY SIGNAGE AND SAFETY CONTROLS SHALL BE APPROVED BY THE CITY PRIOR TO IMPLEMENTATION
21. PEDESTRIAN WALKWAYS SHALL BE PROTECTED ALONG WORK ZONE WITH CONCRETE BARRIERS AND FENCING
22. POLICE DETAILS SHALL BE SCHEDULED AND COORDINATED BY THE CONTRACTOR TO MAINTAIN THE SAFETY OF PEDESTRIAN AND VEHICULAR TRAFFIC
23. DETOURS TO SHALL ONLY BE ALLOWED AS INDICATED OR AS APPROVED BY THE CITY OF CAMBRIDGE TRAFFIC AND PARKING DEPARTMENT



TRAFFIC MANAGEMENT GENERAL NOTES AND LEGEND

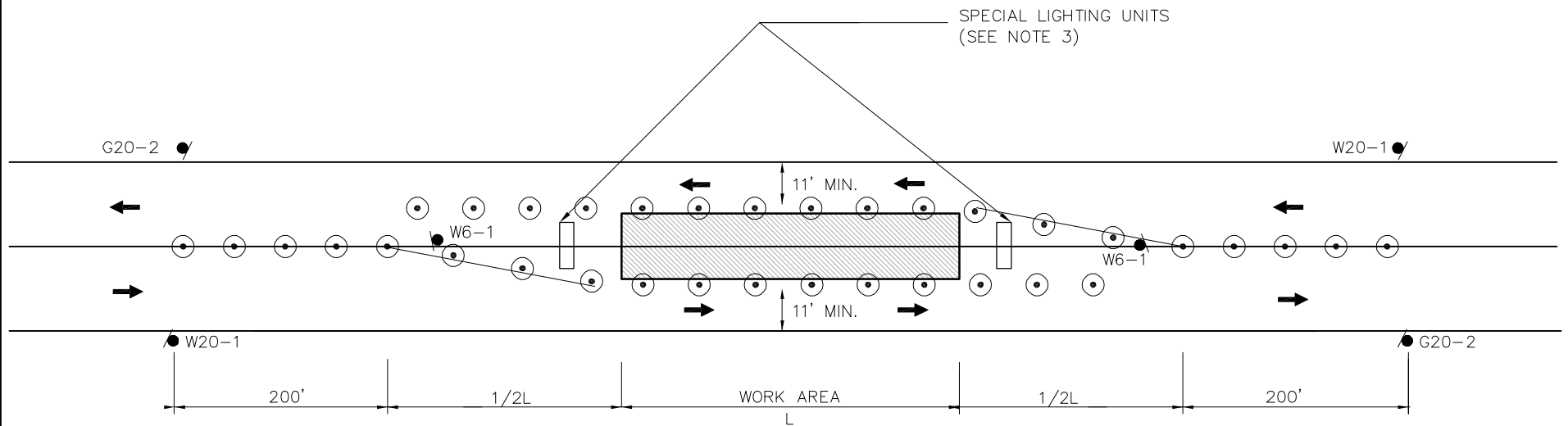
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

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1570.1



- NOTES:
1. ALL CONES AND DRUMS TO BE SPACED @ 20' O.C.
 2. L=AREA OF 1/2 DAY OF WORK (PER MUTCD MANUAL)
 3. SPECIAL LIGHTING UNITS (ARROW BOARDS) TO BE ADDED ON BOTH SIDES OF WORKZONE WHERE SPEED LIMIT MEETS OR EXCEEDS 35 M.P.H.



TYPICAL INTERIOR LANE CLOSURE

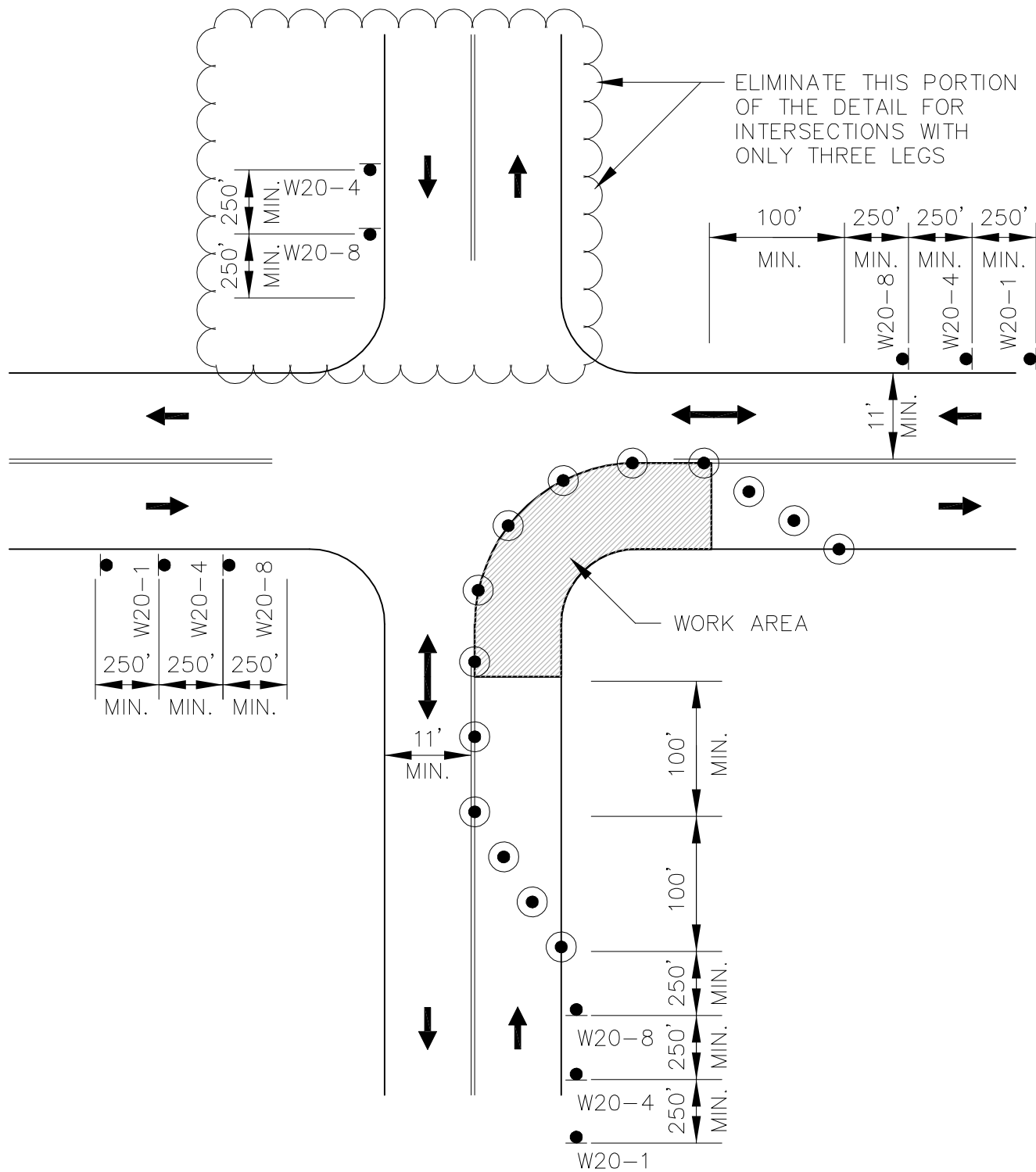
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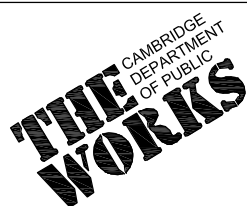
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1570.5



NOTES:

1. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY AND APPROVED BY THE CITY.
2. ALL DRUMS AND CONES TO BE SPACED @ 20' O.C.



ONE LANE BI-DIRECTIONAL
TRAFFIC AT INTERSECTIONS

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

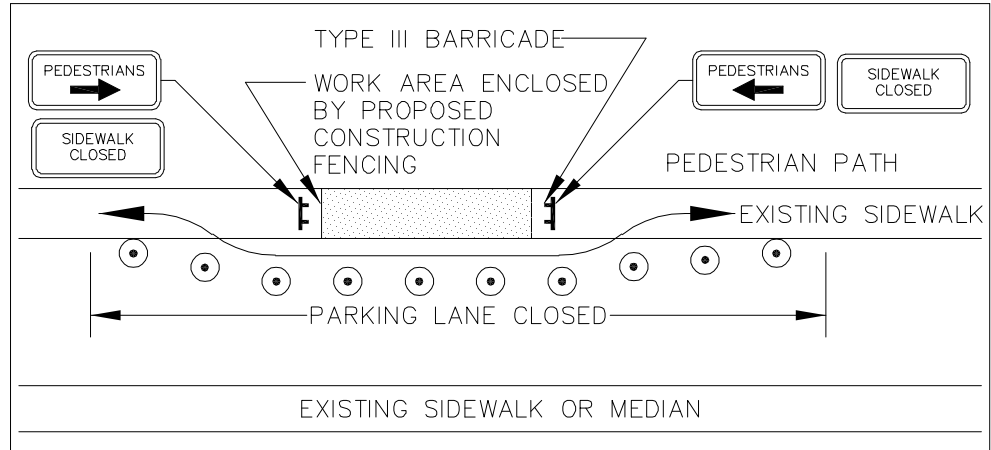
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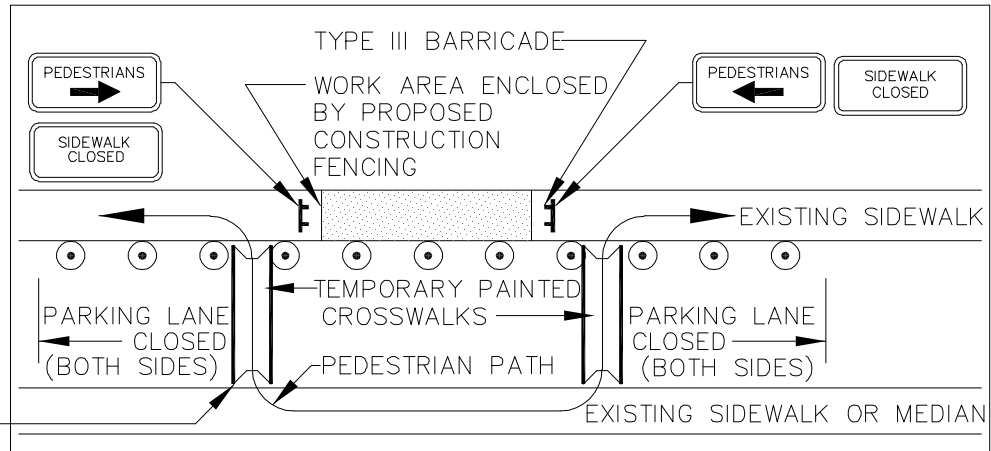
1570.7

TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING AND AS DIRECTED BY THE CITY.

TYPE I
N.T.S.



TYPE II
N.T.S.



TEMPORARY BITUMINOUS CONCRETE WHEEL CHAIR RAMP. WIDTH AND LENGTH PER ADA REQUIREMENTS BUT SHALL NOT INTRUDE INTO TRAVEL WAY

PEDESTRIAN BYPASS NOTES:

1. ADDITIONAL ADVANCE WARNING MAY BE REQUIRED BY THE CITY.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS DETAILED ELSEWHERE.
3. STREET LIGHTING SHALL BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. EXISTING WHEELCHAIR RAMPS SHALL BE CONSIDERED WHEN LOCATING TEMPORARY PAINTED CROSSWALKS.
5. DIRECTION OF PEDESTRIAN TRAVEL.
6. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.



PEDSTRIAN BYPASS DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

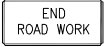












SCALE: N.T.S.

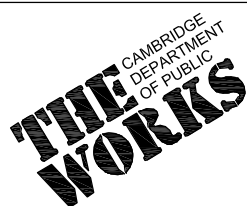
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CONSTRUCTION SIGN LEGEND

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW	BACK- GROUND	LEGEND	BORDER
G20-2	36"	24"		MUTCD STANDARD DETAIL			MUTCD STANDARD DETAIL		
W1-4L	30"	30"							
W1-4R	30"	30"							
W4-2L	48"	48"							
W4-2R	48"	48"							
W5-1	48"	48"							
W6-1	48"	48"							
W20-1	36"	36"							
W20-4	48"	48"							
W20-5L	48"	48"							
W20-5R	48"	48"							
W20-7b	36"	36"							
W20-8	36"	36"							



CONSTRUCTION SIGN LEGEND

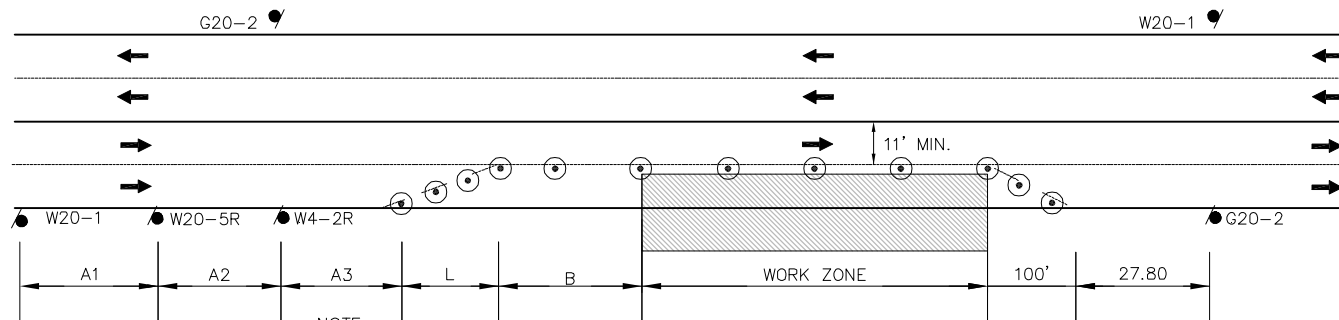
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1570.2



NOTE:
1. THIS DETAIL SHOWS A RIGHT LANE CLOSURE DETAIL. THIS DETAIL SHALL ALSO BE USED FOR LEFT LANE CLOSURES WITH THE SIGN PLACEMENT AND TYPE AS APPROPRIATE

SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (A1/A2/A3)	CHANNELIZING DEVICES			
		TRANSITION LENGTH (L)	BUFFER LENGTH (B)	DEVICE SPACING	MIN. #
25-40	500/500/500	320	160	20	30
45-55	500/1000/1000	680	360	40	30



TYPICAL ONE LANE CLOSURE

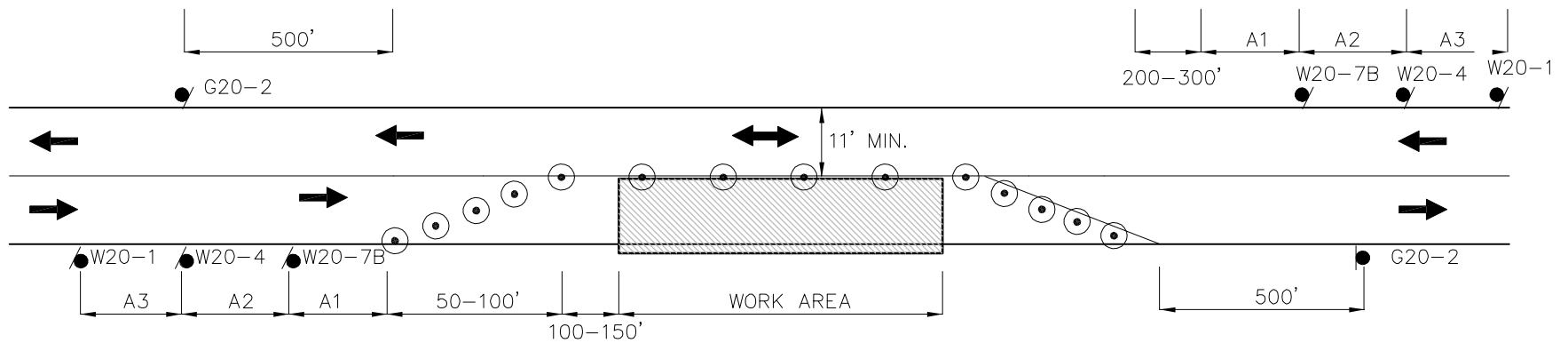
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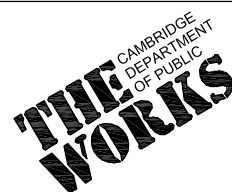
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1570.3



SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (A1/A2/A3)	CHANNELIZING DEVICES	
		DEVICE SPACING	MIN. #
25-40	500/500/500	20	20
45-55	500/1000/1000	40	20



TYPICAL TWO WAY ALTERNATING TRAFFIC

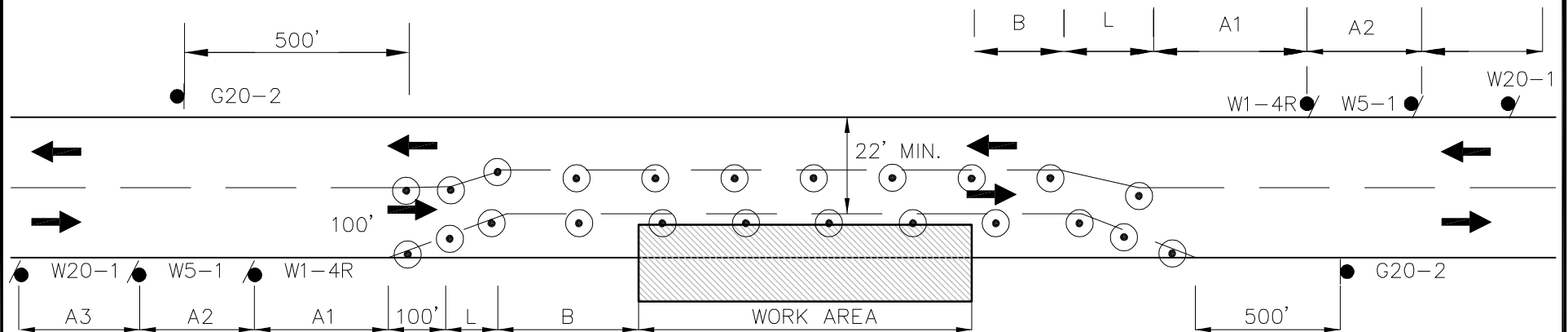
CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: N.T.S.

DATE
OF ISSUE: 02/05

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1570.6



NOTES:

1. THIS DETAIL SHOWS A RIGHT LANE CLOSURE DETAIL. THIS DETAIL CAN ALSO BE USED FOR LEFT LANE CLOSURES, WITH SIGN PLACEMENT AND TYPE AS APPROPRIATE.

SPEED LIMIT (MPH)	SPACING FOR ADVANCE WARNING SIGNS (A1/A2/A3)	CHANNELIZING DEVICES			
		TRANSITION LENGTH (L)	BUFFER LENGTH (B)	DEVICE SPACING	MIN. #
25-40	500/500/500	320	160	20	90
45-55	500/1000/1000	680	360	40	90



TYPICAL TWO-WAY STREET LANE SHIFT

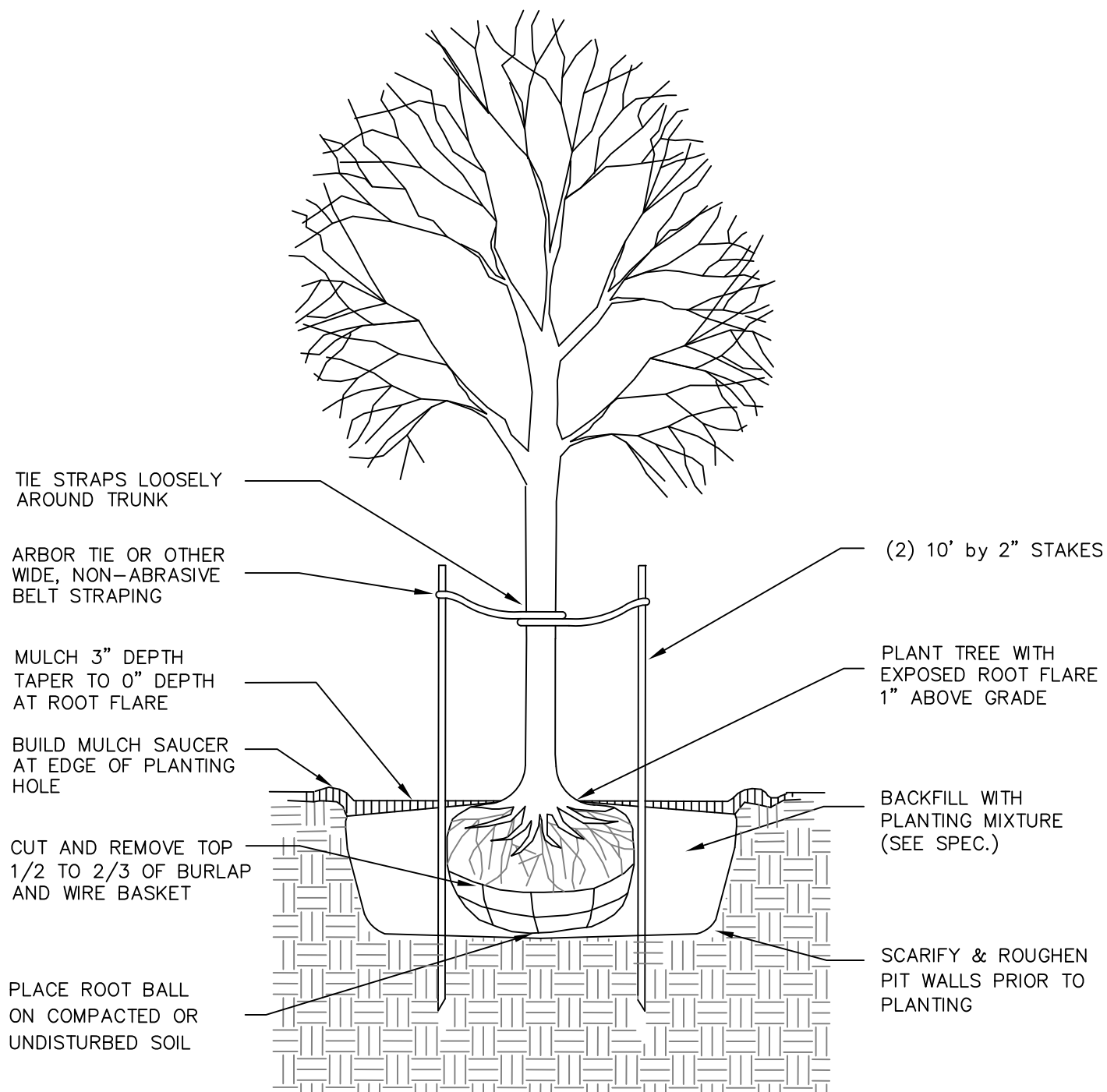
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TREE PLANTING DETAIL

CITY OF CAMBRIDGE STANDARD SPECIFICATIONS AND DETAILS

SCALE: NTS

DATE
OF ISSUE: 09/2013

SPEC. SECTION REF#: