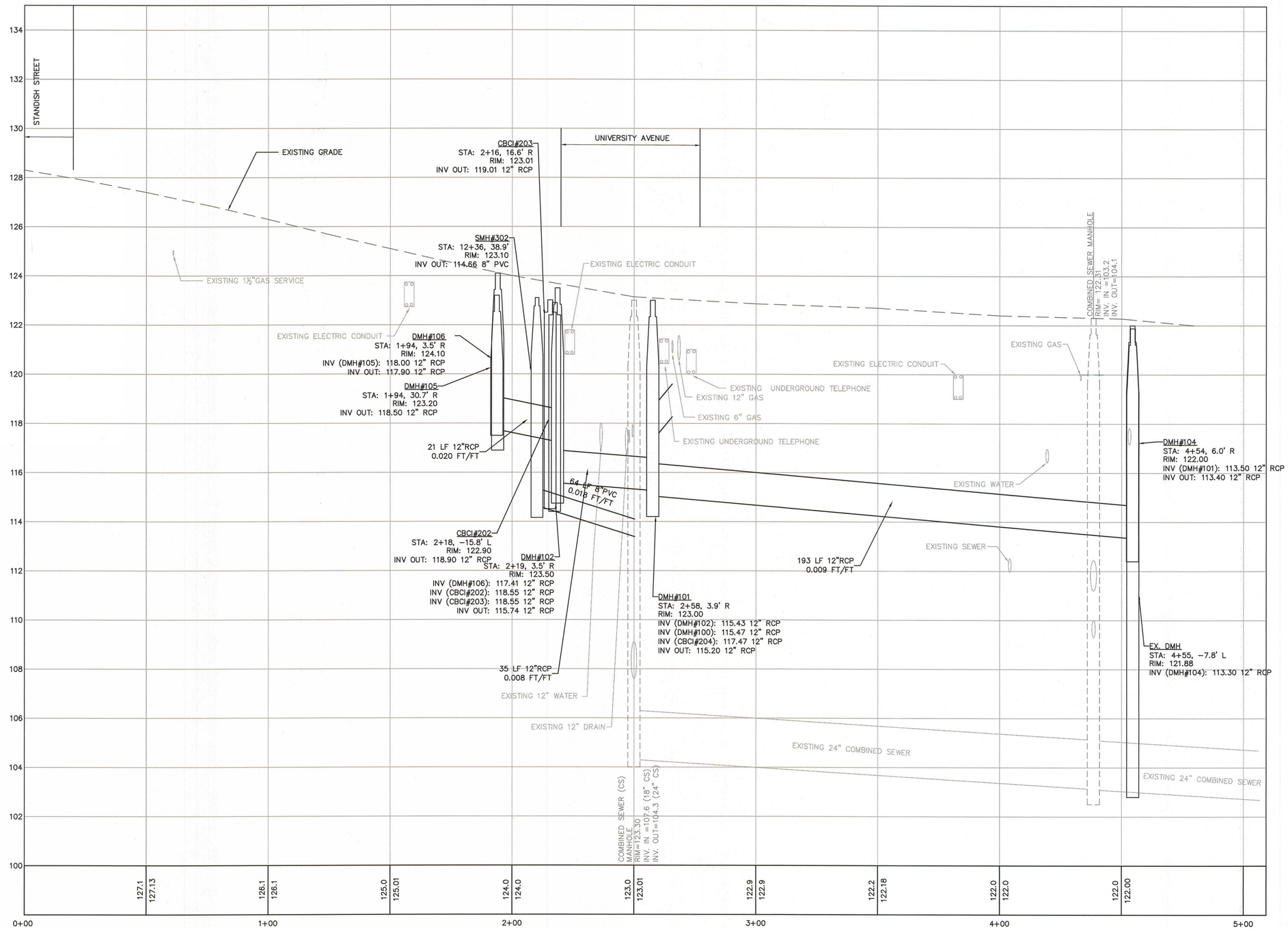

RIVERSIDE STREET PROFILE

GENERAL NOTES:

1. ASSUME ALL DRAIN PIPE IS 12" RCP UNLESS NOTED OTHERWISE.
2. CONTRACTOR SHALL USE CITY OF LOWELL STANDARD FRAMES AND COVERS FOR DRAIN MANHOLES AND CITY OF LOWELL STANDARD FRAMES AND GRATES FOR CATCH BASINS.
3. CONTRACTOR TO REMOVE THE FIVE (5) EXISTING CATCH BASINS LOCATED IN THE INTERSECTION AND CAP PIPE AT BOTH ENDS.
4. REFER TO SHEET 4 FOR PLAN OF RIVERSIDE STREET.

SCALE:
1"=20'
20 10 0 20 40
2 1 0 2 4
1" = 2'

COMMONWEALTH OF MASSACHUSETTS
WILLIAM R. MAHER
CIVIL
31069
REGISTERED PROFESSIONAL ENGINEER
3/26/2014

UNIVERSITY OF MASSACHUSETTS LOWELL
PROJECT NO. UML1203-DC1
UNIVERSITY AVENUE AT RIVERSIDE STREET
UTILITY INTERSECTION UPGRADE
LOWELL, MA

ALTERNATE NO. 1

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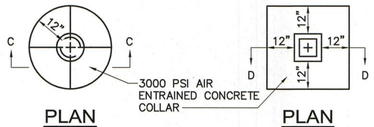
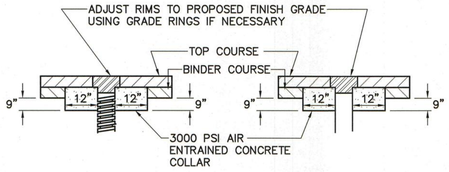
DRAFTED BY:	W. MAHER
CHECKED BY:	W. MAHER

REV.	COMMENTS	DATE
	REVISIONS	

RIVERSIDE STREET PLAN/ PROFILE

SHEET NO: 6

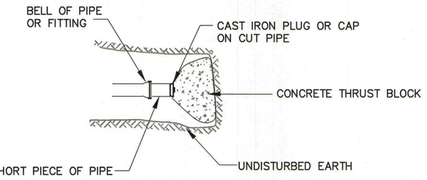




NOTE:
ALL GATE BOX RIMS TO BE RAISED TO FINISH GRADE AFTER BINDER COURSE OR LEVELING COURSE PVMT HAS BEEN PLACED.

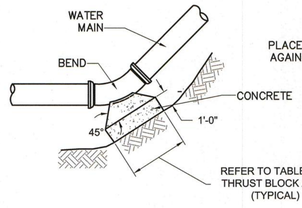
WATER GATE BOX DETAIL

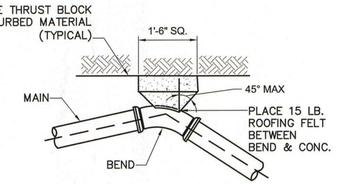
NOT TO SCALE

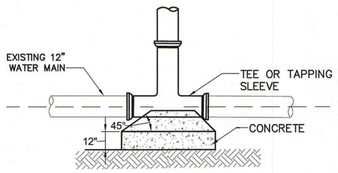


PLUG OR CAP DETAIL

NOT TO SCALE







NOTES:

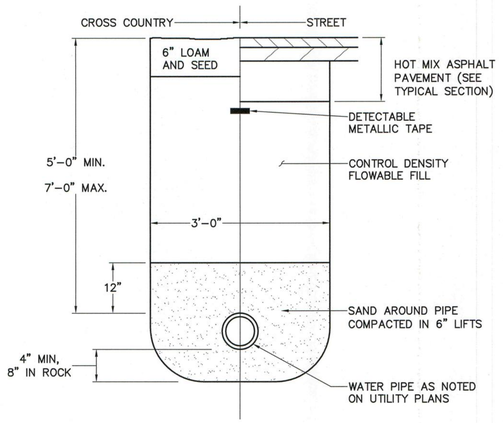
1. THRUST BLOCKS TO BE USED ON ALL PRESSURE PIPES AT HORIZONTAL AND VERTICAL BENDS GREATER OR EQUAL TO 45°, TEES AND DEAD ENDS.
2. FOR FITTINGS WITH LESS THAN 45° DEFLECTION USE BEARING AREAS FOR 45° BEND.
3. BEARING AREAS BASED ON HORIZONTAL PASSIVE SOIL PRESSURE OF 2000 PSF AND A MINIMUM INTERNAL WATER PRESSURE OF 175 PSIG. JOINTS SHALL NOT BE ENCASED IN CONCRETE, BEARING AREAS MAY BE DISREGARDED FOR TRENCHES IN ROCK WHERE THE TOP OF THE ROCK FACE IS AT OR ABOVE THE CROWN OF THE PIPE. HOWEVER, CONCRETE BACKING SHALL BE PLACED BETWEEN THE PIPE AND ROCK FACE.

TABLE OF BEARING AREAS IN SQUARE FEET AGAINST UNDISTURBED MATERIAL FOR FITTING. *

SIZE OF MAIN (INCHES)	90° BEND (S.F.)	45° BEND (S.F.)	DEAD END (S.F.)
≤ 8	6.0	3.0	4.0
10 & 12	12.0	7.0	9.0

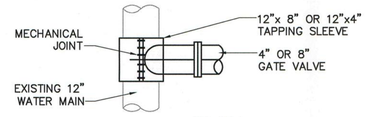
THRUST BLOCK DETAILS

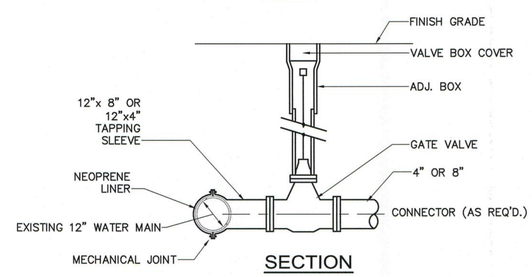
NOT TO SCALE



WATER MAIN TRENCH DETAIL

NOT TO SCALE





TAPPING SLEEVE, VALVE & BOX DETAIL

NOT TO SCALE

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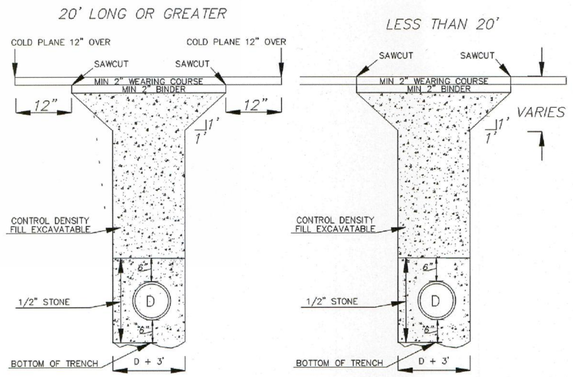
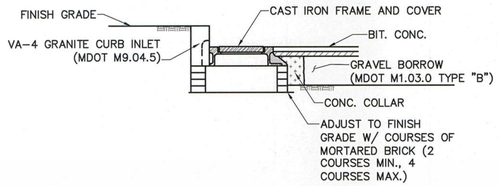
CONSTRUCTION DETAILS (WATER)

SHEET NO: 7



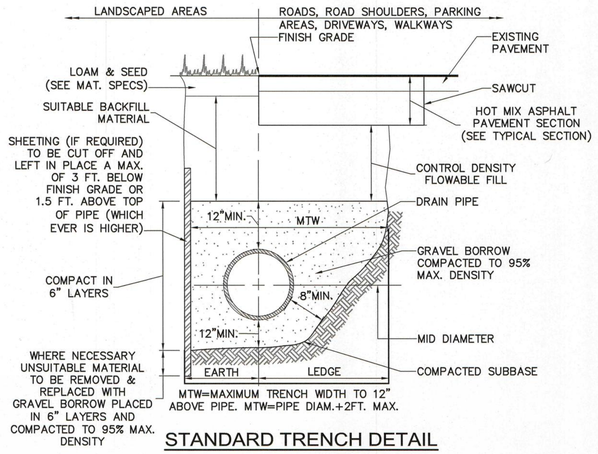
CITY OF LOWELL STANDARD TRENCH DETAIL FOR DRAIN PIPE

NOT TO SCALE



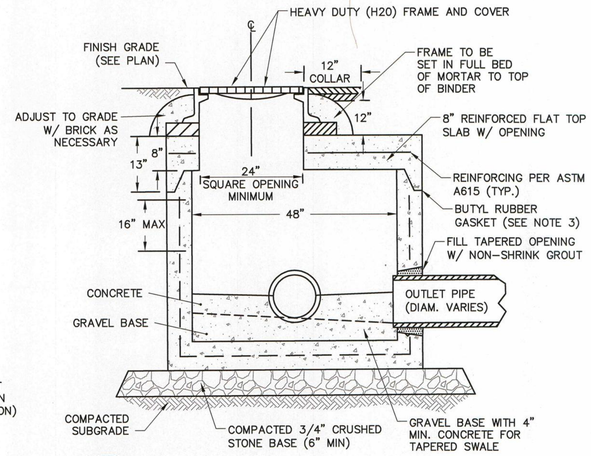
CATCH BASIN CURB DETAIL

NOT TO SCALE



STANDARD TRENCH DETAIL FOR DRAIN PIPE

NOT TO SCALE

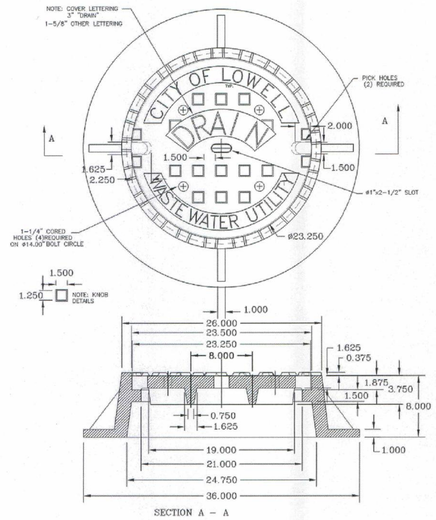


NOTES:

1. PRECAST REINFORCED CONCRETE SHALL BE CERTIFIED FOR H-20 LOADING.
2. PRECAST CONCRETE CONIC RISER SECTIONS MAY BE USED WHERE NECESSARY.
3. ALL CONNECTED JOINTS SHALL BE SEALED WITH PREFORMED BUTYL RUBBER AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS.
4. OUTSIDE FACE OF ALL STRUCTURE JOINTS SHALL BE FILLED WITH NON-SHRINK MORTAR.
5. "V" KNOCKOUTS SHALL BE PROVIDED FOR ALL PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE.
6. FRAME AND COVER SHALL BE SET IN FULL MORTAR BED AND ADJUSTED TO GRADE WITH REINFORCED CONCRETE RISER OR CLAY BRICK AND MORTAR (2 BRICK COURSE TYP., 5 BRICK COURSE MAX).
7. FRAME AND COVER MAY BE CENTERED ON STRUCTURE AS NECESSARY.

PRECAST DRAINAGE MANHOLE

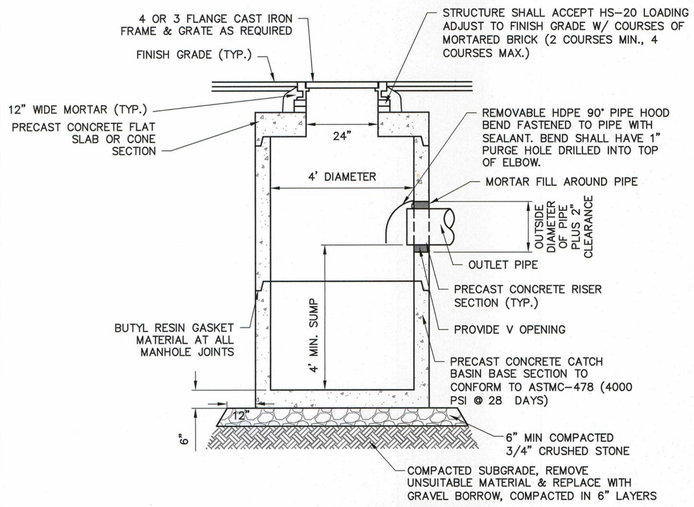
NOT TO SCALE



SECTION A – A

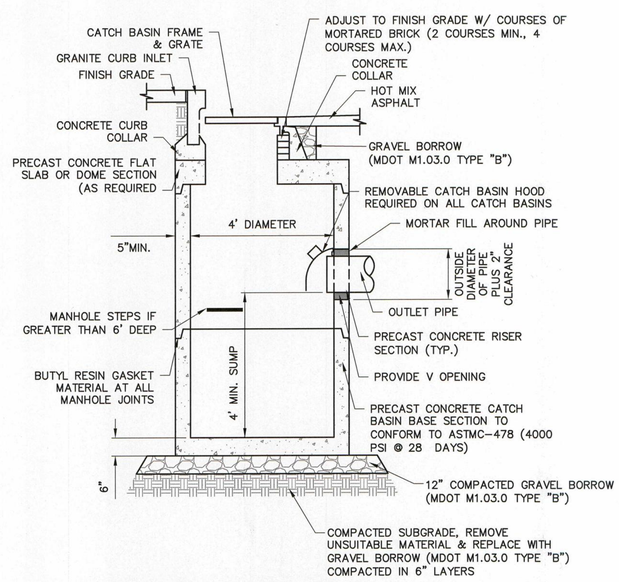
LOWELL STANDARD DRAIN MANHOLE RING AND COVER DETAIL

NOT TO SCALE



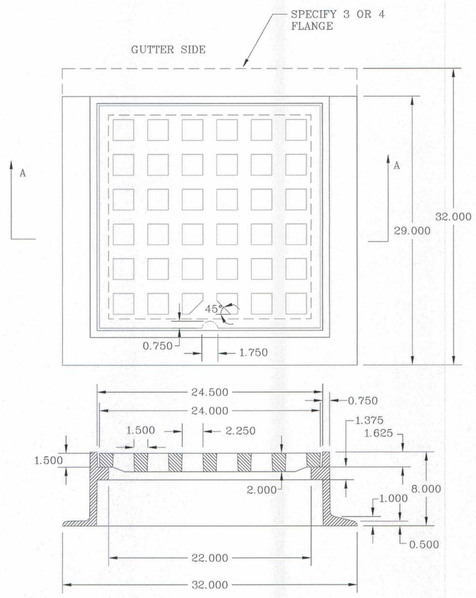
PRECAST CONCRETE CATCH BASIN WITH HOOD

NOT TO SCALE



PRECAST CONCRETE CATCH BASIN DETAIL (W/ GRANITE CURB INLET)

NOT TO SCALE



SECTION A – A

LOWELL CATCH BASIN FRAME & GRATE DETAIL

NOT TO SCALE

ALTERNATE NO. 1

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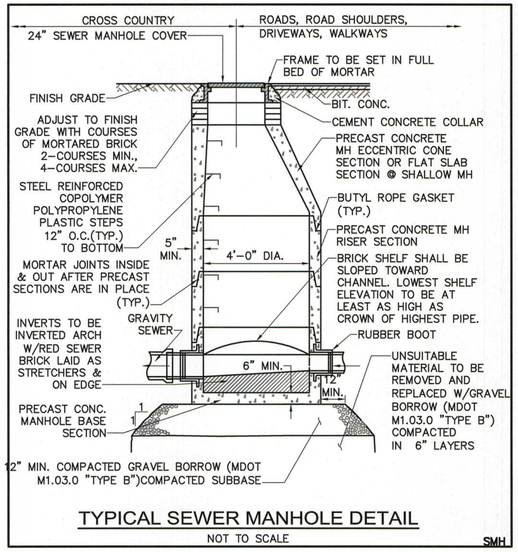
CONSTRUCTION DETAILS (DRAIN)

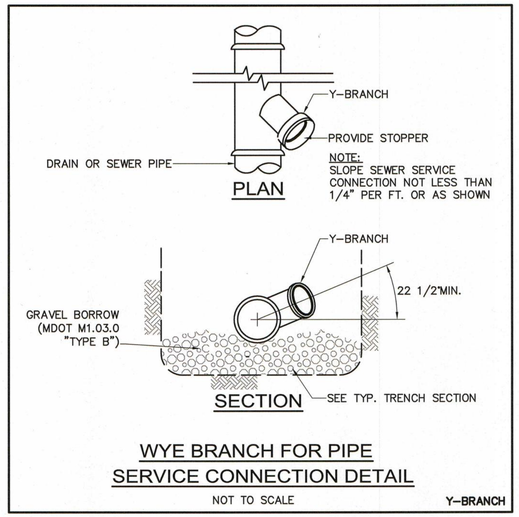
SHEET NO: 8



TYPICAL SEWER MANHOLE DETAIL

NOT TO SCALE

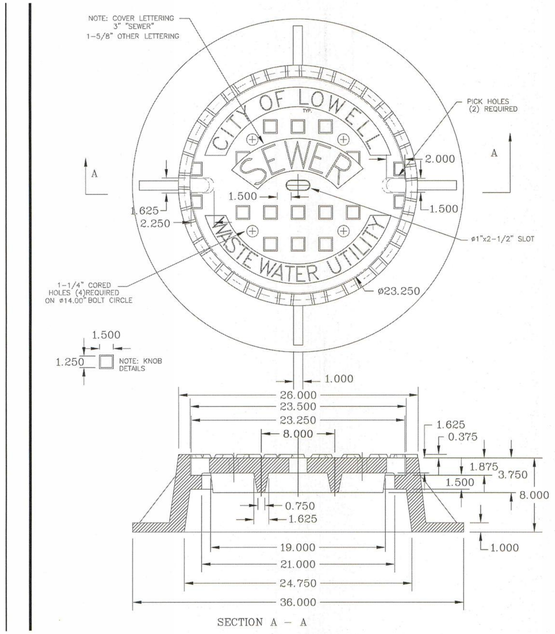
SMH



WYE BRANCH FOR PIPE SERVICE CONNECTION DETAIL

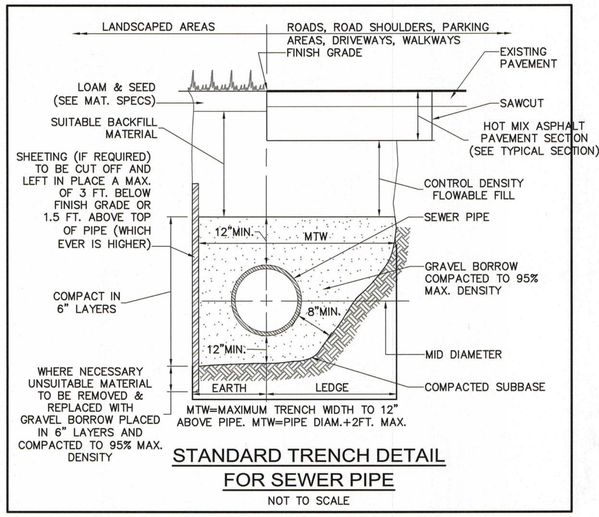
NOT TO SCALE

Y-BRANCH



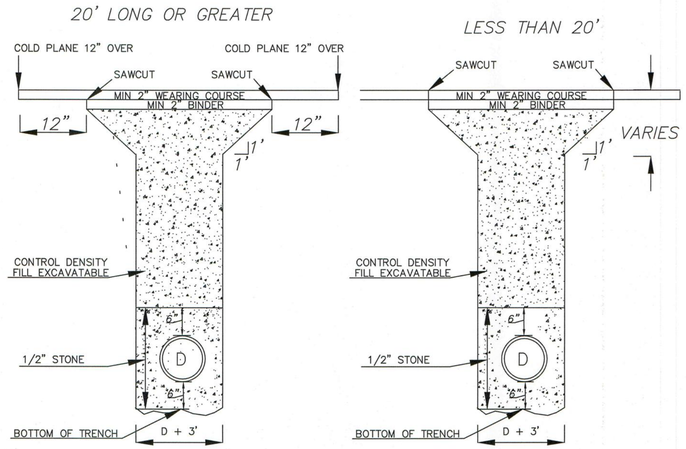
LOWELL STANDARD SEWER MANHOLE RING AND COVER DETAIL

NOT TO SCALE



STANDARD TRENCH DETAIL FOR SEWER PIPE

NOT TO SCALE



CITY OF LOWELL STANDARD TRENCH DETAIL FOR DRAIN PIPE

NOT TO SCALE

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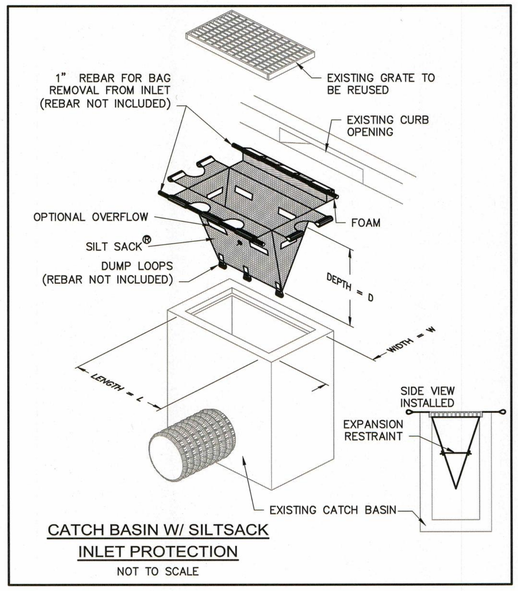
CONSTRUCTION DETAILS (SEWER)

SHEET NO: 9

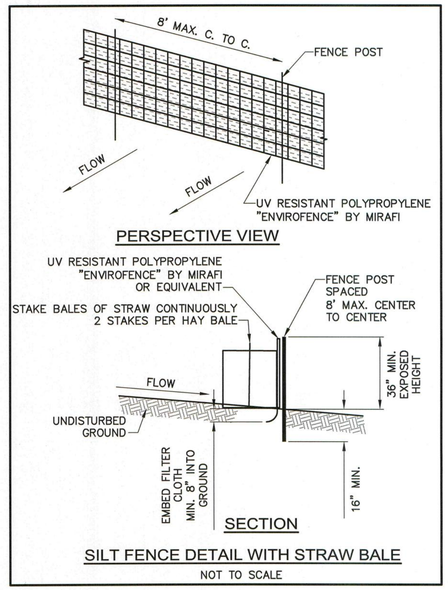
SEDIMENTATION AND EROSION CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH PUBLISHED EROSION CONTROL AND SEDIMENT GUIDELINES FOR MASSACHUSETTS (SEE REFERENCE BELOW, NOTE #6).
2. SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF AND DURING ALL PHASES OF CONSTRUCTION AND BE CONSTRUCTED PRIOR TO AND IMMEDIATELY AFTER ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL ON THE SITE.
3. PERIODIC INSPECTION AND MAINTENANCE OF ALL SEDIMENT CONTROL STRUCTURES SHALL BE PROVIDED TO INSURE THAT THE INTENDED PURPOSE IS ACCOMPLISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEDIMENT LEAVING THE LIMIT OF WORK. SEDIMENT CONTROL MEASURES SHALL BE IN WORKING CONDITION AT THE END OF EACH WORKING DAY.
4. ALL POINTS OF CONSTRUCTION INGRESS OR EGRESS WILL BE PROTECTED TO PREVENT TRACKING OF MUD ONTO PUBLIC WAYS.
5. ALL SEDIMENT WILL BE PREVENTED FROM ENTERING ANY STORM DRAINAGE SYSTEM (I.E. THROUGH THE USE OF HAY BALES, CATCH BASIN SEDIMENT TRAPS, GRAVEL, BOARDS OR OTHER APPLICABLE METHODS).
6. THE CONTRACTOR INSTALLING THE ABOVE SHALL OBTAIN AND FOLLOW THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" PREPARED BY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF RESOURCE PROTECTION, DATED MAY 1997, REPRINTED MAY 2003 (OR LATEST EDITION), AND THE 2008 NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES, OR LATEST EDITION.
7. ALL DRAINAGE SWALES AND GROUND SURFACES WITHIN THE LIMIT OF WORK SHALL BE PROTECTED.
8. AFTER ANY SIGNIFICANT RAINFALL, SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOR INTEGRITY. ANY DAMAGED DEVICES SHALL BE CORRECTED IMMEDIATELY.
9. ALL STOCK PILES SHALL BE PROTECTED AND LOCATED AWAY FROM EXISTING WATER BODIES & WITHIN THE LIMIT OF WORK.
10. ANY SEDIMENT TRACKED ONTO PAVED AREAS SHALL BE SWEPT AT THE END OF EACH WORKING DAY.
11. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF-SITE.
12. ALL TOPSOIL ENCOUNTERED WITHIN THE WORK AREA SHALL BE STRIPPED TO ITS FULL DEPTH AND STOCKPILED FOR REUSE. EXCESS TOPSOIL SHALL BECOME THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED AS DIRECTED BY THE OWNER. TOPSOIL PILES SHALL REMAIN SEGREGATED FROM EXCAVATED SUBSURFACE SOIL MATERIALS.
13. TEMPORARY DIVERSION DITCHES, PERMANENT DITCHES, CHANNELS, EMBANKMENTS AND ANY DENUDED SURFACE WHICH WILL BE EXPOSED FOR A PERIOD OF 14 CALENDAR DAYS OR MORE SHALL BE CONSIDERED CRITICAL VEGETATION AREAS. THESE AREAS SHALL BE MULCHED WITH STRAW. MULCH SHALL BE SPREAD UNIFORMLY IN A CONTINUOUS BLANKET OF SUFFICIENT THICKNESS TO COMPLETELY HIDE THE SOIL FROM VIEW.
14. AN EROSION CONTROL BARRIER SHALL BE INSTALLED ALONG THE EDGE OF PROPOSED DEVELOPMENT AS INDICATED IN THE PLAN PRIOR TO COMMENCEMENT OF DEMOLITION OR CONSTRUCTION OPERATIONS.
15. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL EROSION AND SEDIMENT CONTROLS AT THE COMPLETION OF SITE CONSTRUCTION.
16. MEANS OF EROSION AND SEDIMENT PROTECTION AS NOTED ON THE DRAWINGS INDICATE THE MINIMUM PROVISIONS NECESSARY. ADDITIONAL MEANS OF PROTECTION SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED FOR CONTINUED OR UNFORESEEN EROSION PROBLEMS, AT NO ADDITIONAL EXPENSE TO THE OWNER.
17. THE CONTRACTOR SHALL USE TEMPORARY SEEDING, MULCHING OR OTHER APPROVED STABILIZATION MEASURES TO PROTECT EXPOSED AREAS DURING PROLONGED CONSTRUCTION OR OTHER LAND DISTURBANCE. STOCKPILES THAT WILL BE EXPOSED FOR LONGER THAN 15 DAYS SHALL BE SEEDED WITH AN ANNUAL RYE.
18. ALL STOCKPILED MATERIALS SHALL BE LOCATED AT LEAST 100-FEET FROM THE WETLANDS. EXCESS EXCAVATED MATERIALS SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF WITHIN 20 DAYS AFTER EXCAVATION.



CATCH BASIN W/ SILTSACK INLET PROTECTION

NOT TO SCALE



PERSPECTIVE VIEW

SECTION

SILT FENCE DETAIL WITH STRAW BALE

NOT TO SCALE

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SEDIMENTATION AND EROSION CONTROL NOTES & DETAILS

10