

CONTRACT PLANS

for the

- GODFREY BROOK IMPROVEMENT PROJECT - CHURCH STREET CULVERT REPLACEMENT

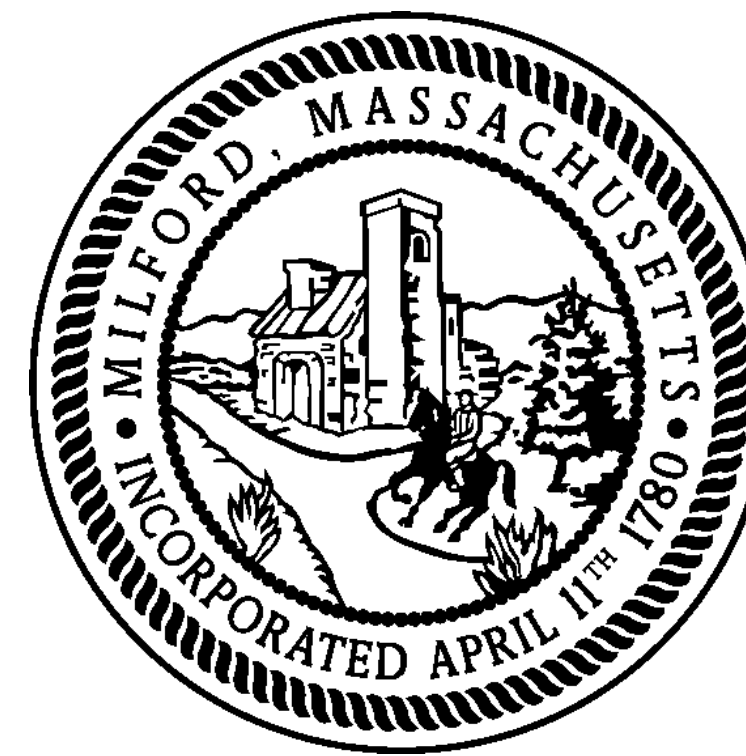
TOWN of MILFORD, MASSACHUSETTS

MILFORD HIGHWAY DEPARTMENT

and the

OFFICE of PLANNING and ENGINEERING

SCOTT J. CRISAFULLI
HIGHWAY SURVEYOR



MICHAEL SANTORA, P.E.
TOWN ENGINEER

December, 2011

Issued for Bidding, March 28, 2012

PROJECT FUNDING ASSISTANCE PROVIDED BY:

HAZARD MITIGATION GRANT PROGRAM (HMGP)

"A Federal, State, and Local Partnership through the Federal Emergency Management Agency (FEMA)"

HMGP GRANT NUMBER 1813-22

Commonwealth of Massachusetts
DEVAL L. PATRICK, GOVERNOR

Massachusetts Emergency Management Agency
KURT N. SCHWARTZ, DIRECTOR

Department of Conservation and Recreation
EDWARD M. LAMBERT, JR., COMMISSIONER

INDEX TO PLAN SHEETS

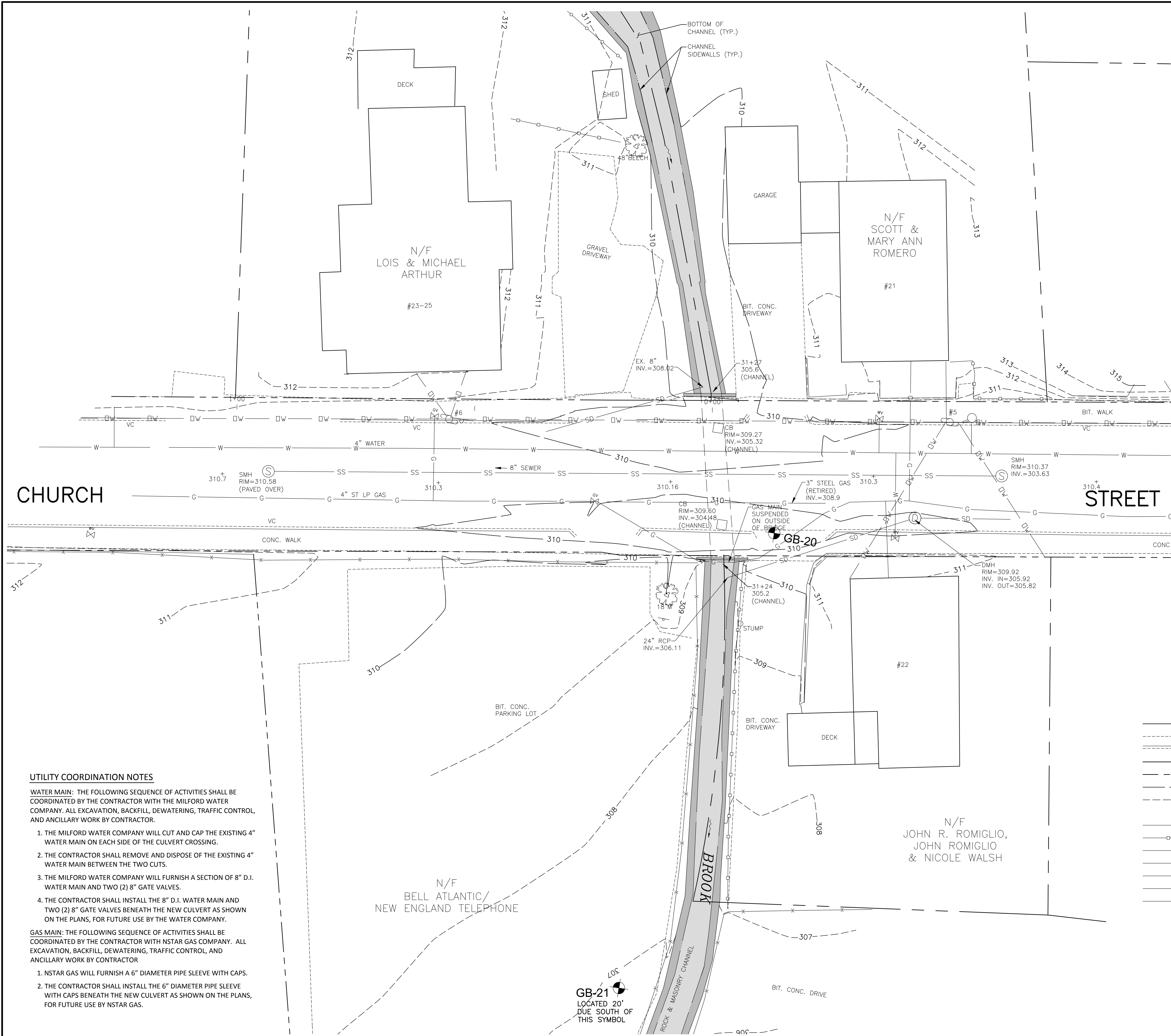
SHEET NUMBER	TITLE
	Cover Sheet
1. - - -	Existing Conditions Church Street
2. - - -	Proposed Conditions Church Street
3. - - -	Church Street Profile
4. - - -	Church Street Details
5. - - -	Godfrey Brook & Culvert Details
6. - - -	Culvert Details & Sections
7. - - -	Channel Details

ALL MATERIALS AND CONSTRUCTION METHODS AND DETAILS FOR THIS PROJECT SHALL CONFORM TO THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", MASSACHUSETTS HIGHWAY DEPARTMENT (MHD), AS AMENDED, REFERRED TO HEREIN AS THE "STANDARD SPECIFICATIONS".

PREPARED BY



GZA GeoEnvironmental, Inc.
Engineers and Scientists
ONE FINANCIAL PLAZA
1350 Main Street, Suite 1400
Springfield, MA 01103
413-726-2100



GENERAL NOTES

1. BASE SURVEY FOR THIS PROJECT WAS PROVIDED BY GUERRIERE AND HALNON, INC., MILFORD, MASSACHUSETTS. COMPLETE TOPOGRAPHICAL PLANS FROM THIS SURVEY WORK CAN BE OBTAINED FROM THE TOWN OF MILFORD.
2. THE ACCURACY AND COMPLETENESS OF UNDERGROUND AND OVERHEAD UTILITIES AS SHOWN ON THE PLANS ARE NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION, SIZE, TYPE, ETC. OF ALL UTILITIES THAT MAY BE AFFECTED BY THE WORK OF THIS PROJECT. ALL DRAIN AND SANITARY SEWER STRUCTURES OWNED BY THE TOWN OF MILFORD SHALL BE ADJUSTED TO NEW LINE AND GRADE BY THE CONTRACTOR, AS DIRECTED BY THE PLANS OR BY THE ENGINEER. ANY UTILITY POLES OR GUY POLES WITHIN AREAS AFFECTED BY THE WORK OF THIS PROJECT SHALL BE REMOVED AND RESET BY THE APPLICABLE UTILITY COMPANY. ALTERATIONS TO UTILITIES NOT OWNED BY THE TOWN OF MILFORD SHALL BE MADE BY THE APPLICABLE UTILITY OWNERS, AS COORDINATED BY THE CONTRACTOR, AS DESCRIBED IN "UTILITY COORDINATION NOTES".
3. ALL MATERIALS AND CONSTRUCTION METHODS AND DETAILS FOR THIS PROJECT SHALL CONFORM TO THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", MASSACHUSETTS HIGHWAY DEPARTMENT (MHD), AS AMENDED, REFERRED TO HEREIN AS THE "STANDARD SPECIFICATIONS".
4. THE CONTRACTOR MAY USE A CERTAIN PORTION OF THE VERIZON (BELL ATLANTIC) PROPERTY AT 9 WATER STREET AS A STAGING AREA. THE CONTRACTOR SHALL REMOVE A PORTION OF THE FENCE FOR ACCESS FROM CHURCH STREET. AT THE END OF THIS PROJECT, THE CONTRACTOR SHALL REPLACE THE FENCE, REMOVE AND DISPOSE OF ALL INTERIOR FENCING AND OTHER INTERIOR IMPROVEMENTS AND SHALL SWEEP THE AREA CLEAN OF DUST AND DEBRIS. ALL OTHER STAGING AREAS SHALL BE PROCURED BY THE CONTRACTOR. ANY DAMAGE TO PRIVATE PROPERTY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL PROPOSED CATCH BASIN AND DROP INLET FRAMES AND COVERS SHALL BE AS LEBARON FOUNDRY, INC. MODEL NO. LF-248-2, OR EQUIVALENT. ALL PROP. CATCH BASINS SHALL BE AS SHOWN IN MHD (SD) 201.4.0 EXCEPT THAT THE SUMP SHALL BE 4'-0" DEEP. ALL CATCH BASINS SHALL BE EQUIPPED WITH HOODS AS PER MHD (SD) 201.12.0.
6. ALL PROP. DRAINAGE AND SAN. SEWER STRUCTURES SHALL BE SUPPORTED WITH A 12" CRUSHED STONE (M2.01.1) FOUNDATION.
7. ALL REINFORCED CONCRETE PIPE USED ON THIS PROJECT SHALL BE CLASS IV, UNLESS OTHERWISE DESIGNATED ON THE PLANS.
8. ALL EXISTING DRAIN AND SAN. SEWER LINES TO BE REPLACED SHALL BE ABANDONED IN PLACE. IF THEY CONNECTING PIPES, INLETS, AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO NEW WORK TO THE SATISFACTION OF THE ENGINEER.
9. WHERE LINES OR STRUCTURES ARE ABANDONED IN PLACE, THE CONTRACTOR SHALL ENSURE THAT ALL OPENINGS IN THE PRECAST STRUCTURES.
10. CATCH BASIN, DROP INLET, AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE RECONSTRUCTION AREAS UNDER THIS CONTRACT.
11. ALL EXISTING PAVEMENT MARKINGS SHALL BE REPLACED IN KIND AFTER FINAL PAVING OF ROAD RECONSTRUCTION AREAS UNDER THIS CONTRACT.
12. ALL STRUCTURE STATIONS AND OFFSETS ARE TO THE CENTER POINT OF THE PROP. GRATE OR COVER.
13. ALL PROPOSED GRANITE CURBING SHALL BE MHD TYPE VB AND SHALL INCLUDE REMOVAL OF EXISTING GRANITE CURBING, WHERE APPLICABLE. REMOVE AND DISPOSE OF EXISTING GRANITE CURBING WITHIN THE LIMIT OF WORK.
14. NEW SIDEWALKS, WHEELCHAIR RAMPS, PRIVATE WALKS AND DRIVEWAYS SHALL BE CONSTRUCTED TO THE NEAREST SCORE LINE OR EXPANSION JOINT IN THE EXISTING ADJACENT SURFACES OR AS DIRECTED BY THE ENGINEER. PROP. CEMENT CONCRETE SIDEWALKS SHALL INCLUDE REMOVAL OF EXISTING SIDEWALK SURFACES.
15. ALL WHEELCHAIR RAMPS SHALL MEET THE LATEST REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND THE LATEST STANDARDS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT.
16. ALL DRIVEWAY REPAIRS SHALL BE "TYPICAL DRIVEWAYS" AS SHOWN IN THE DETAILS.
17. ALL PROPOSED RETAINING WALLS AND END WALLS SHALL BE CEMENTED FIELD STONE MASONRY (MHD SD 302.2.0) OR CEMENT CONCRETE MASONRY (MHD SD 302.1.0) OR AS OTHERWISE SHOWN ON THE PLANS. EXACT HEIGHTS OF THESE WALLS SHALL BE AS SHOWN ON THE CROSS SECTIONS OR DETAILS OR AS DIRECTED IN THE FIELD BY THE ENGINEER.
18. IN EXCAVATION AREAS, ALL TOPSOIL SHALL BE REMOVED TO A DEPTH OF 12" (MINIMUM) OR AS DIRECTED BY THE ENGINEER AND SHALL BE STOCKPILED FOR RESPREADING AFTER BACKFILLING IS COMPLETED.
19. MAILBOXES, FENCES, STREET SIGNS, ETC. THAT NEED TO BE REMOVED AND RESET OR RELOCATED SHALL BE DONE SO TO THE SATISFACTION OF THE ENGINEER. ALL ITEMS SHALL BE SET TO MHD STANDARDS.
20. CONTRACTOR SHALL COMPLY IN ALL RESPECTS WITH ALL ENVIRONMENTAL PERMITS ISSUED FOR THIS PROJECT.
21. SOME GODFREY BROOK FIELDSTONE WALLS HAVE BEEN REPLACED WITH CONCRETE WALLS.
22. IF ANY ARTIFACTS OR HUMAN REMAINS ARE FOUND DURING GROUND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL CEASE WORK AND IMMEDIATELY NOTIFY THE ENGINEER.
23. ALL DISTURBED AREAS NOT OTHERWISE SURFACED SHALL RECEIVE 6" LOAM AND SEED AND BE ESTABLISHED AS LAWNS.

LEGEND

---	EXISTING EDGE OF WATER
----	EXISTING EDGE OF PAVEMENT
VC	EXISTING CURB
---	EXISTING PROPERTY LINE
---	EXISTING STREET RIGHT OF WAY
---	EXISTING 10 FT. CONTOUR
---	EXISTING 1 FT. CONTOUR
+	EXISTING SPOT GRADE
---	EXISTING CHAIN LINK FENCE
---	EXISTING STOCKADE FENCE
SD	EXISTING STORM DRAIN LINE
SS	EXISTING SANITARY SEWER LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
OW	EXISTING OVERHEAD WIRES
□	EXISTING CATCH BASIN
○	EXISTING DRAIN MANHOLE
○	EXISTING SANITARY MANHOLE
○	EXISTING UTILITY POLE
○	EXISTING HYDRANT
○	EXISTING WATER VALVE
○	EXISTING GAS VALVE
○	EXISTING TREES


GB-20 BORING LOCATION

N

2	ISSUED FOR CONSTRUCTION	EDM	3/28/12
1	ISSUED FOR PERMITTING	EDM	1/19/12
NO.	ISSUE/DESCRIPTION	BY	DATE

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

EXISTING CONDITIONS CHURCH STREET CHURCH STREET CULVERT REPLACEMENT MILFORD, MASSACHUSETTS

PREPARED BY:  GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR: TOWN OF MILFORD
---	----------------------------------

PROJ MGR: TEJ	REVIEWED BY: RS	CHECKED BY: TEJ
DESIGNED BY: RS	DRAWN BY: EDM	SCALE: 1"=10'
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.

1

UTILITY COORDINATION NOTES

WATER MAIN: THE FOLLOWING SEQUENCE OF ACTIVITIES SHALL BE COORDINATED BY THE CONTRACTOR WITH THE MILFORD WATER COMPANY. ALL EXCAVATION, BACKFILL, DEWATERING, TRAFFIC CONTROL, AND ANCILLARY WORK BY CONTRACTOR.

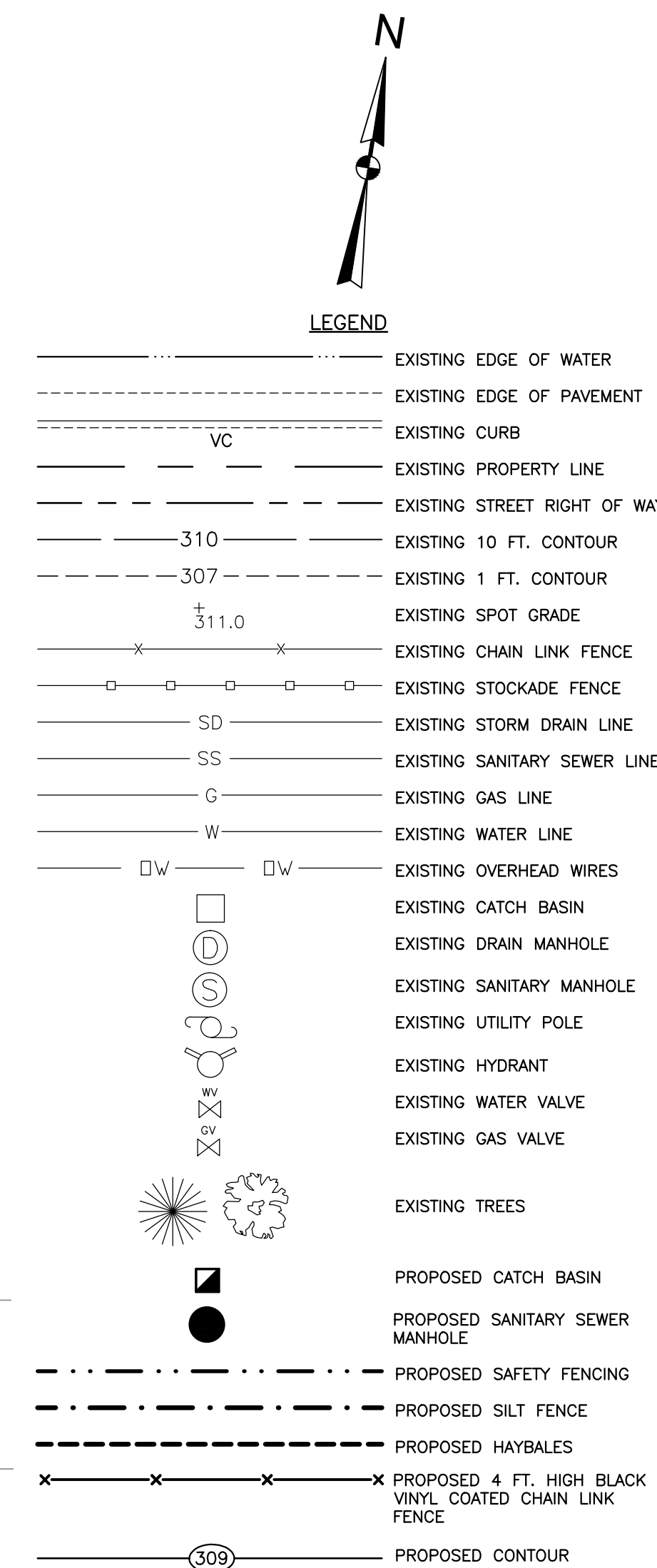
1. THE MILFORD WATER COMPANY WILL CUT AND CAP THE EXISTING 4" WATER MAIN ON EACH SIDE OF THE CULVERT CROSSING.
2. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EXISTING 4" WATER MAIN BETWEEN THE TWO CUTS.
3. THE MILFORD WATER COMPANY WILL FURNISH A SECTION OF 8" D.I. WATER MAIN AND TWO (2) 8" GATE VALVES.
4. THE CONTRACTOR SHALL INSTALL THE 8" D.I. WATER MAIN AND TWO (2) 8" GATE VALVES BENEATH THE NEW CULVERT AS SHOWN ON THE PLANS, FOR FUTURE USE BY THE WATER COMPANY.

GAS MAIN: THE FOLLOWING SEQUENCE OF ACTIVITIES SHALL BE COORDINATED BY THE CONTRACTOR WITH NSTAR GAS COMPANY. ALL EXCAVATION, BACKFILL, DEWATERING, TRAFFIC CONTROL, AND ANCILLARY WORK BY CONTRACTOR

1. NSTAR GAS WILL FURNISH A 6" DIAMETER PIPE SLEEVE WITH CAPS.
2. THE CONTRACTOR SHALL INSTALL THE 6" DIAMETER PIPE SLEEVE WITH CAPS BENEATH THE NEW CULVERT AS SHOWN ON THE PLANS, FOR FUTURE USE BY NSTAR GAS.

1. PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A TEMPORARY TRAFFIC CONTROL PLAN FOR APPROVAL BY THE ENGINEER IN WRITING.
2. ANY REQUIRED TEMPORARY CHANNELIZATION OF TRAFFIC SHALL BE ACCOMPLISHED THROUGH THE USE OF REFLECTORIZED PLASTIC DRUMS WITH STEADY BURN LIGHTS TYPE'3', EXCEPT THAT THE FIRST THREE DRUMS USED AT EACH END OF A STRING OF DRUMS SHALL HAVE ATTACHED FLASHER TYPE'2A'. DRUMS AND LIGHTS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 2009 EDITION (MUTCD) AND MASSDOT STANDARDS.
3. MAXIMUM SPACING OF DRUMS SHALL BE 20 FEET ON TAPER, 40 FEET ON TANGENT.
4. ALL SIGNS SHALL BE BLACK LEGEND ON A REFLECTIVE ORANGE BACKGROUND AND IN ACCORDANCE WITH THE MUTCD AND MASSDOT STANDARDS. ALL CONSTRUCTION SIGNS SHALL BE ATTACHED TO THEIR OWN INDEPENDENT SUPPORTS. SIGN SUPPORTS SHALL BE CRASHWORTHY.
5. ALL CONSTRUCTION TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE IMMEDIATELY REMOVED WHEN NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPLICABLE SHALL BE EITHER COVERED OR REMOVED.
6. THE CONTRACTOR SHALL MAINTAIN ACCESS AND EGRESS AT ALL TIMES TO ALL PROPERTIES ABUTTING THE WORK AREA.
7. DURING NON-WORKING HOURS, NO LATERAL DROP-OFF WILL BE PERMITTED WITHIN THE AREA OF EXCAVATION ADJACENT TO ANY TRAVELLED WAY.
8. IT IS ANTICIPATED THAT ONE, CONTINUOUS, SHORT-TERM STREET CLOSURE, WITH DETOUR (2 WEEKS OR LESS) MAY BE ALLOWABLE FOR CHURCH STREET. LOCAL TRAFFIC MAY BE ALLOWED TO DRIVE 2 WAYS ON CHURCH STREET. ANY PROPOSED DETOUR MUST BE REVIEWED IN DETAIL WITH THE ENGINEER AND WRITTEN APPROVAL OF THE DETOUR PLAN MUST BE OBTAINED PRIOR TO IMPLEMENTATION.


1. SEDIMENT BASINS AND TRAPS (IF NECESSARY), PERIMETER BERMS, SEDIMENT BARRIERS, CATCH BASIN PROTECTION AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPGRADIENT LAND DISTURBANCE TAKES PLACE.
2. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE PROJECT PLANS AND OTHERS AS MAY BE NECESSARY PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITIES. SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES, AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURES UNTIL THE AREAS DRAINING TO THEM ARE FULLY STABILIZED. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS THEY ARE REMOVED. CONDUCT INSPECTIONS AND REPORTING IN ACCORDANCE WITH ALL PERMITS.
3. THE CONTRACTOR SHALL IMPLEMENT MEASURES TO DIVERT THE RUN-ON OF STORMWATER FLOWS INTO THE SITE AT UPGRADIENT LOCATIONS, WHERE POSSIBLE, AND WITHOUT CAUSING OR CONTRIBUTING TO FLOODING OF NEIGHBORING PROPERTIES.
4. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT PRACTITION, THE CONTRACTOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES (BMPs) TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY FOR PERMIT COMPLIANCE.
5. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH APPLICABLE, PUBLISHED STANDARDS AND SPECIFICATIONS AND THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS", MA DEP, MAY 2003 (THE GUIDELINES).
6. ALL DISTURBED AREAS SHALL HAVE SOIL, SEED, MULCH, OR OTHER APPROVED STABILIZATION MEASURES APPLIED TO DISTURBED AREAS WITHIN SEVEN (7) CALENDAR DAYS AFTER ACTIVITIES ON THAT AREA HAVE CEASED. MAINTENANCE SHALL BE PROVIDED AS NECESSARY TO MAINTAIN SOIL, SEED, MULCH, OR OTHER APPROVED CONSTRUCTION AREAS MAY BE EXEMPTED, PROVIDED THAT PROPER CONTROLS ARE IN PLACE AND MAINTAINED.
7. STOCKPILES WHICH HAVE NOT BEEN USED FOR SEVEN (7) CALENDAR DAYS SHALL BE STABILIZED THROUGH COVERING, OR THE APPLICATION OF SOIL, SEED, AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES.
8. ALL CATCH BASINS OR OTHER DRAIN INLETS WHICH MAY RECEIVE STORMWATER FROM DISTURBED AREAS AS SHOWN ON THE PLANS AND ADDITIONALLY AS LOCATED IN THE FIELD SHALL BE PROVIDED WITH SILT SACKS OR EQUIVALENT INLET PROTECTION TO FILTER SEDIMENT-LADEN STORMWATER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT SCATTERING AND RISING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE APPROPRIATE CONTROLS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
10. ALL WASTE MATERIALS GENERATED AT THE SITE SHALL BE IMMEDIATELY REMOVED AND DISPOSED OF PROPERLY OR STORED IN A SECURELY COVERED CONTAINER IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS. CONTAINER SHALL BE EMPTIED ON A REGULAR BASIS AND AS NECESSARY. NO CONSTRUCTION WASTE OR DEBRIS SHALL BE BURIED ON-SITE.
11. PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES THE CONTRACTOR SHALL STABILIZE ALL CONTRIBUTORY AREAS USING PAVEMENT, SOIL, OR AN APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED MULCH.
12. THIS PROJECT MAY BE REGULATED UNDER THE U.S. EPA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MASSACHUSETTS GENERAL PERMIT FOR DEWATERING ACTIVITY DISCHARGE. OPERATORS OF SUCH CONSTRUCTION SITES MUST MEET THE REQUIREMENTS OF EPA'S DEWATERING GENERAL PERMIT (DGP). TO OBTAIN COVERAGE UNDER THE DGP, THE CONTRACTOR MUST PREPARE AND FILE A COMPLETE AND ACCURATE NOTICE OF INTENT (NOI) WITH EPA AND MASSACHUSETTS DEP. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE DGP, INCLUDING ALL MONITORING AND REPORTING REQUIREMENTS.
13. THE CONTRACTOR SHALL PREVENT SEDIMENTATION OF THE STREAM CHANNEL DOWNSTREAM OF THE WORK BY INSTALLING A SANDBAG DIKE OR OTHER APPROVED MEASURES IN THE CHANNEL DOWNSTREAM OF THE LIMIT OF WORK.



2	ISSUED FOR CONSTRUCTION	EDM	3/28/12
1	ISSUED FOR PERMITTING	EDM	1/19/12
NO.	ISSUE/DESCRIPTION	BY	DATE

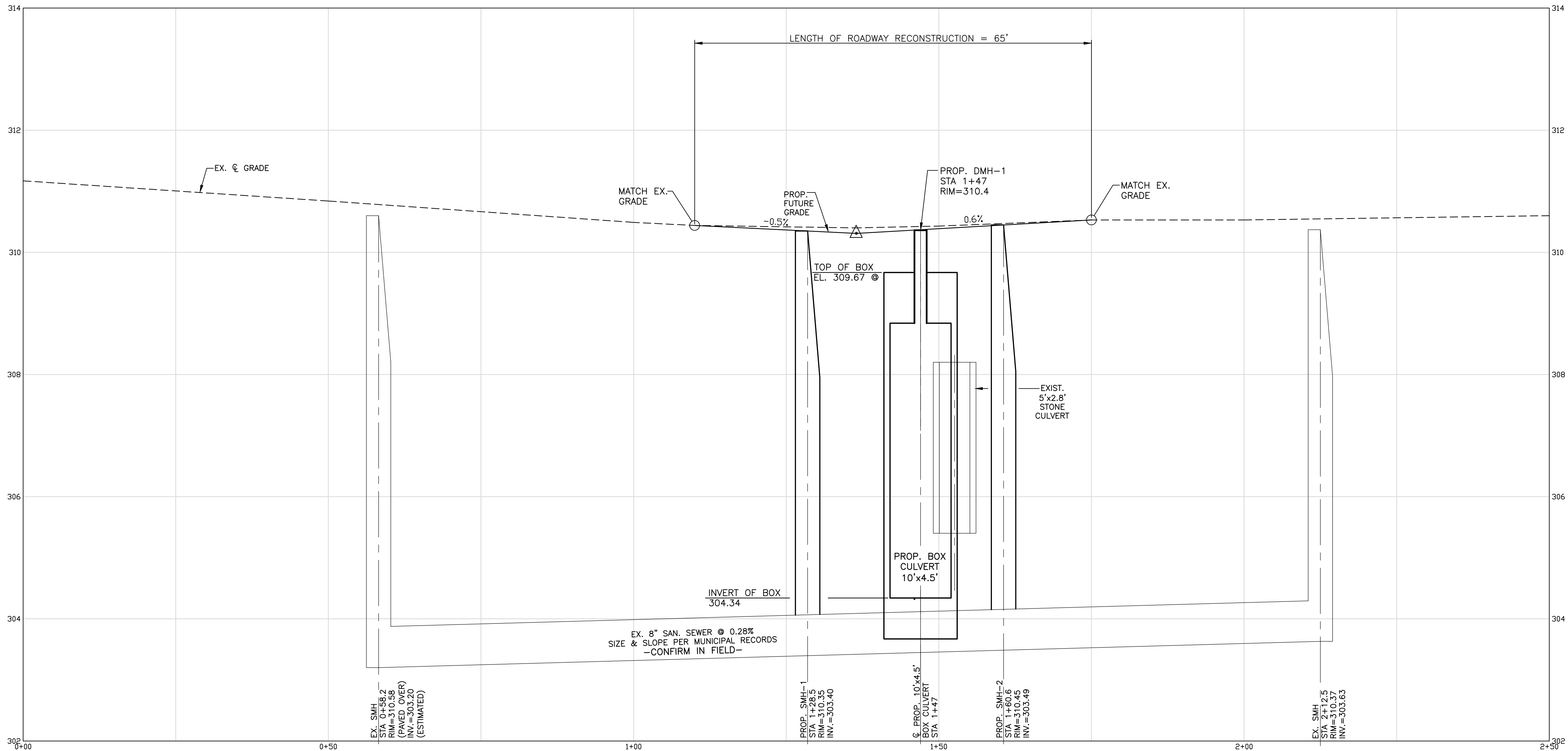
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOTECHNICAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, REPRODUCED, OR ALTERED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF GZA. FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA, ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

PROPOSED CONDITIONS
CHURCH STREET
CHURCH STREET
CULVERT REPLACEMENT
MILFORD, MASSACHUSETTS

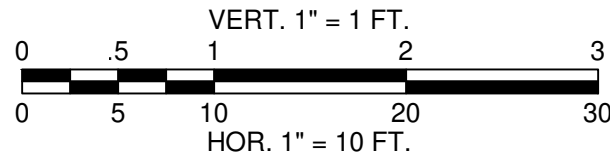
PREPARED BY:  GZA A GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	PREPARED FOR: TOWN OF MILFORD
--	----------------------------------

PROJ MGR:	TEJ	REVIEWED BY:	RS	CHECKED BY:	TEJ
DESIGNED BY:	RS	DRAWN BY:	EDM	SCALE:	1"=10'
DATE:	DECEMBER, 2011	PROJECT NO.	15.0166148.10	REVISION NO.	

2



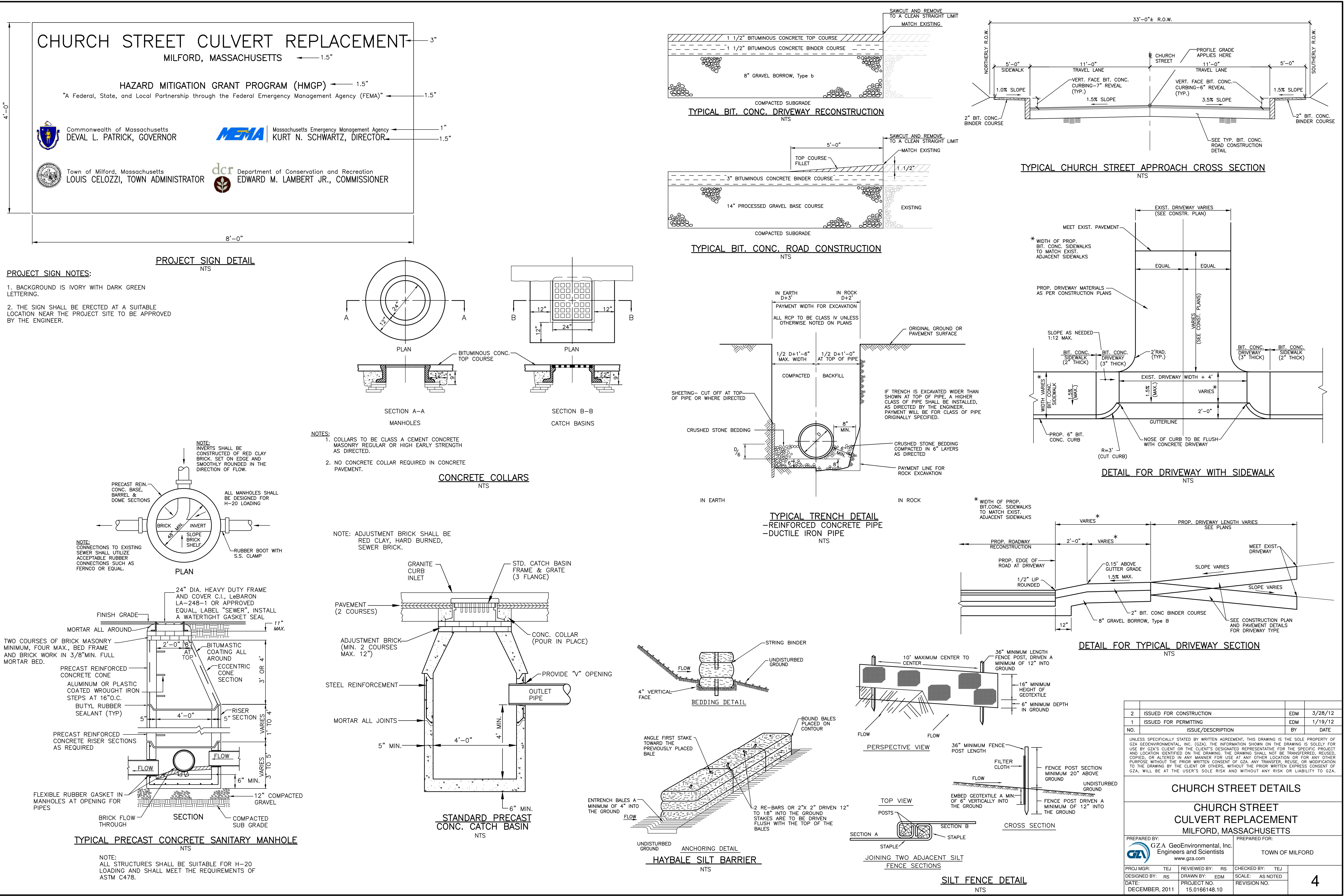
PROFILE-CHURCH STREET
VERT. 1"=1'
HOR. 1"=10'

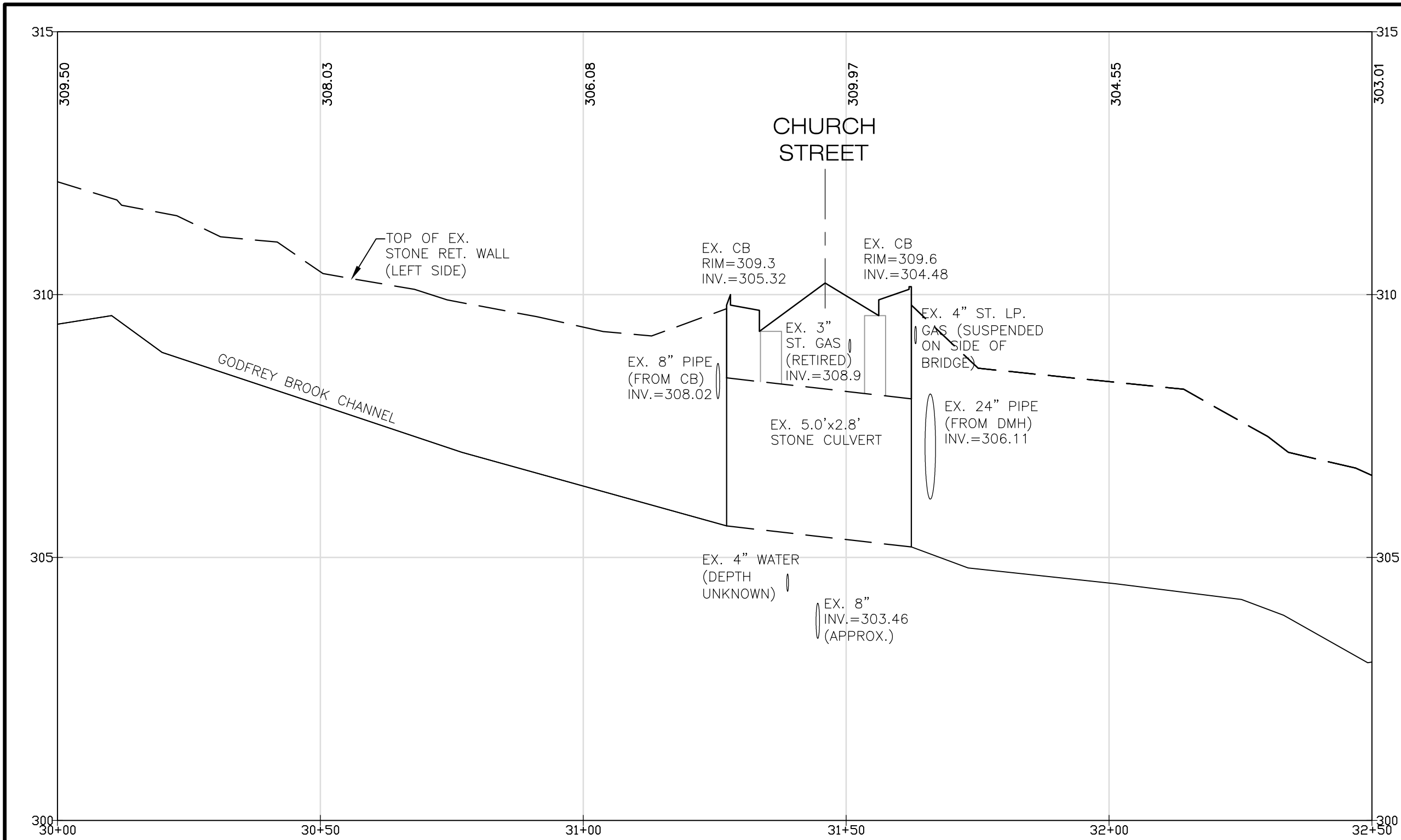


NOTES:

1. PROPOSED FUTURE GRADE BASED ON DRAFT TOWN OF MILFORD ROADWAY IMPROVEMENT PROJECT PLANS, BY GCG ASSOCIATES, INC., DECEMBER 10, 2011.
2. CONTRACTOR TO REVIEW PROFILE WITH THE ENGINEER IN THE FIELD PRIOR TO PAVING.
3. THE CONTRACTOR SHALL PAVE WITHIN THE LIMITS OF ROADWAY RECONSTRUCTION TO FORM A SMOOTH TRANSITION BETWEEN THE STRUCTURES AND EXISTING PAVEMENT.

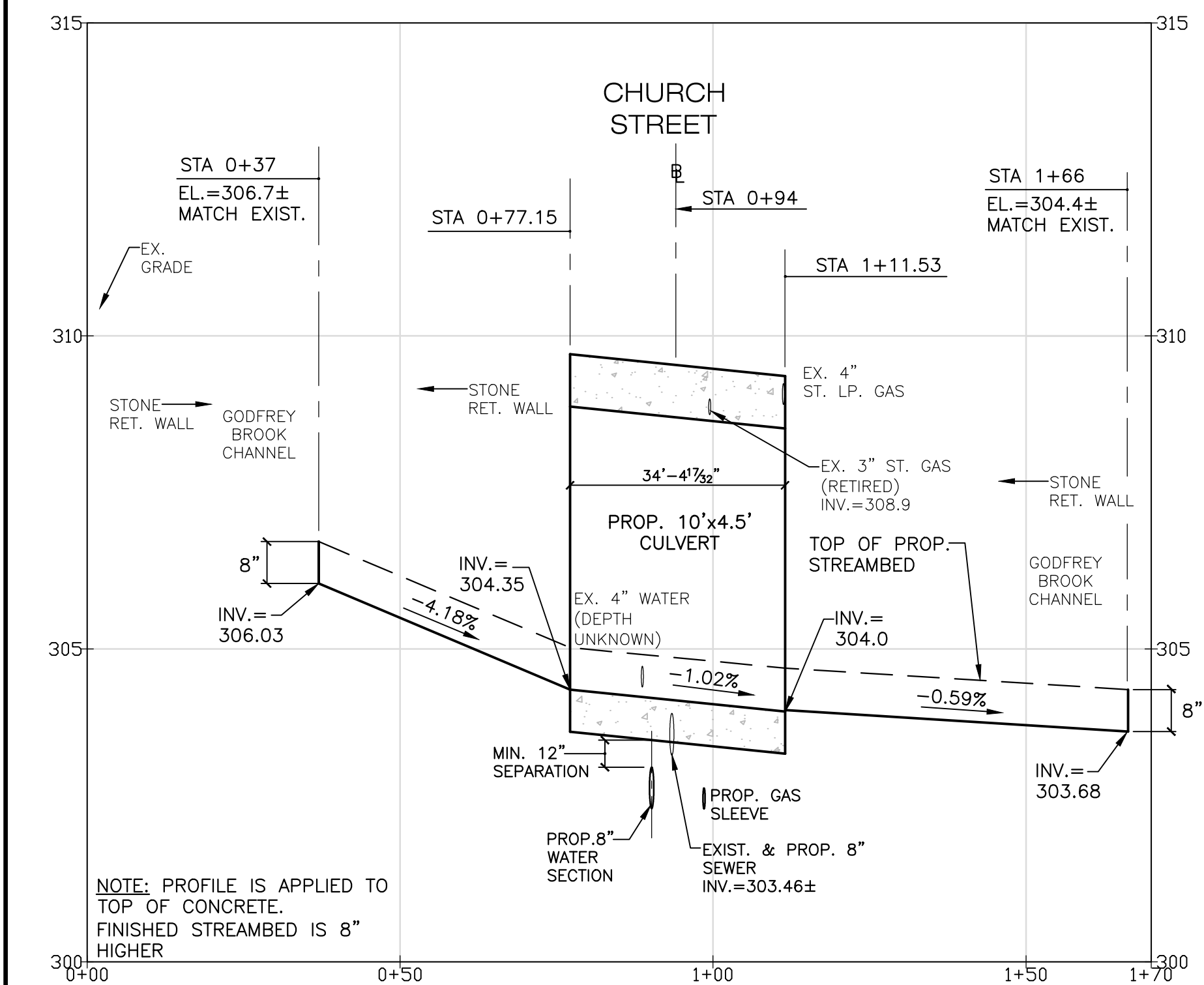
2	ISSUED FOR CONSTRUCTION			EDM	3/28/12
1	ISSUED FOR PERMITTING			EDM	1/19/12
NO.	ISSUE/DESCRIPTION			BY	DATE
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA (GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.					
CHURCH STREET PROFILE CHURCH STREET CULVERT REPLACEMENT MILFORD, MASSACHUSETTS					
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com			PREPARED FOR: TOWN OF MILFORD		
PROJ MGR: TEJ		REVIEWED BY: RS		CHECKED BY: TEJ	
DESIGNED BY: RS		DRAWN BY: EDM		SCALE: AS NOTED	
DATE: DECEMBER, 2011		PROJECT NO. 15.0166148.10		REVISION NO.	





PROFILE-GODFREY BROOK EXISTING CULVERT

VERT. 1"=2'
HOR. 1"=20'



PROFILE-RELOCATED GODFREY BROOK PROPOSED CULVERT

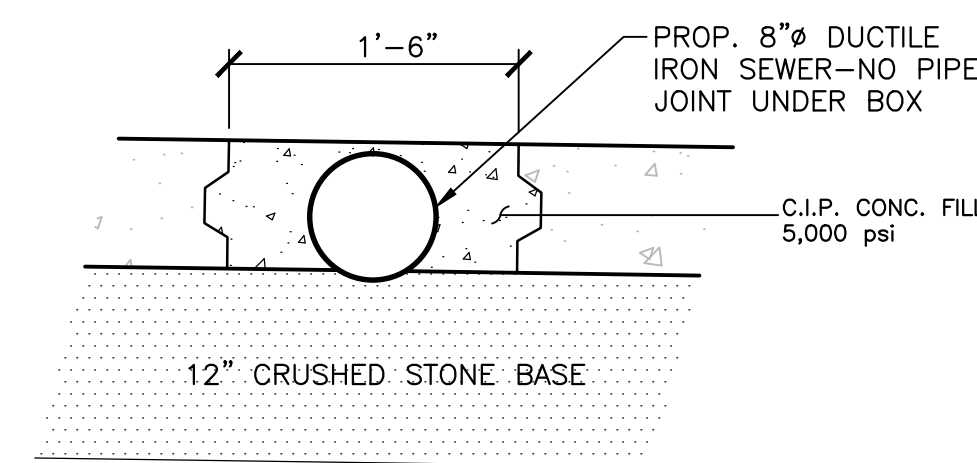
VERT. 1"=2'
HOR. 1"=20'

PRECAST DESIGN NOTES:

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT - ASTM A615, GRADE 60
WHEEL LOADING - AASHTO HS20-44 + IMPACT
COVER TO STEEL - 1.5 INCHES
EARTH COVER - 0'-0"
UNIT WEIGHT OF EARTH - 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT - 0.25 MIN., 0.5 MAX.
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318-83, AND LOAD FACTOR DESIGN (AASHTO)
LI-SHAPED CHANNEL: DESIGN FOR 2' LIVELOAD SURCHARGE

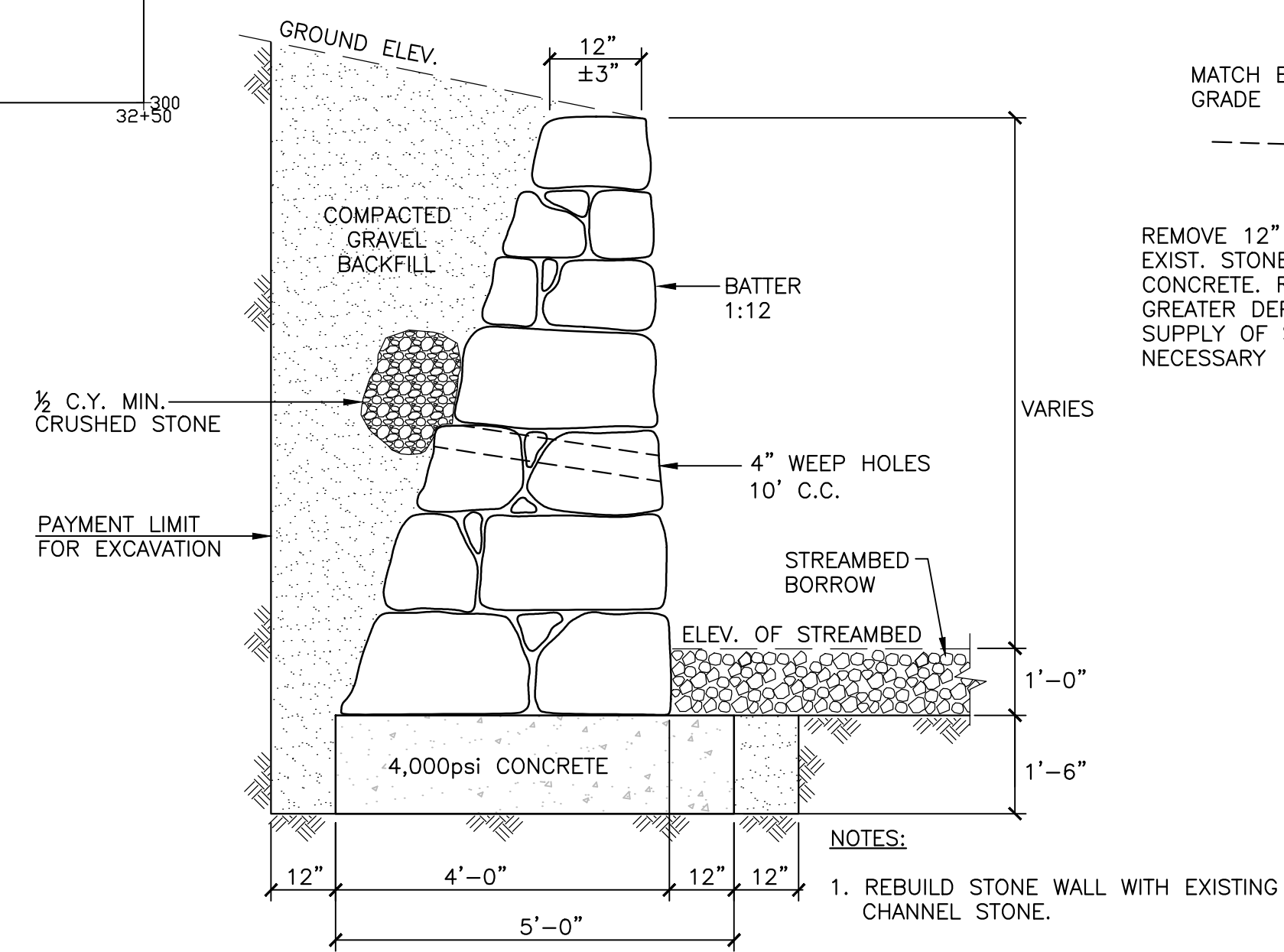
CAST-IN-PLACE CONCRETE NOTES

CONCRETE MINIMUM STRENGTH = 4,000 psi @ 28 DAYS
STEEL REINFORCEMENT - ASTM A615, GRADE 60, EPOXY COATED



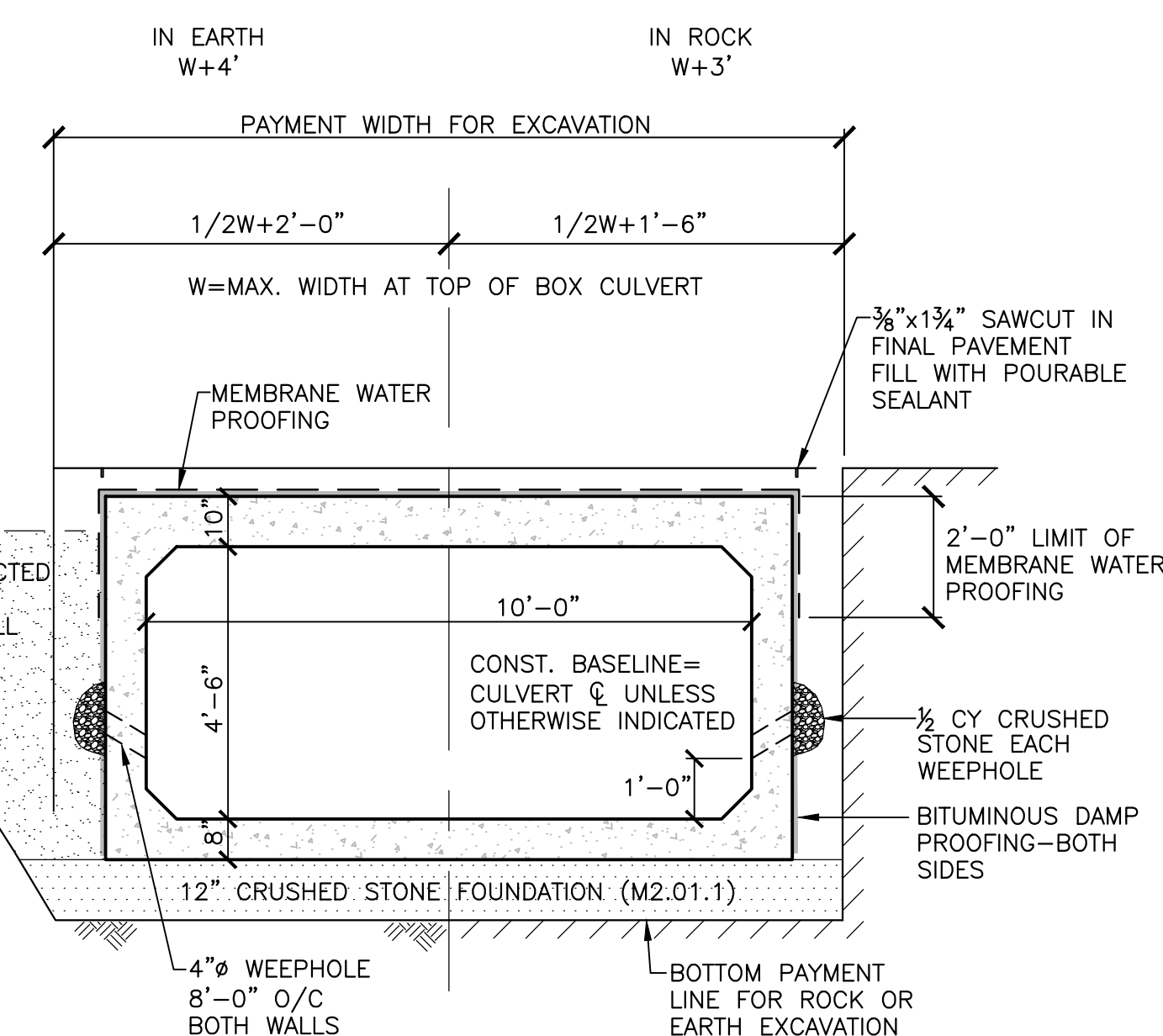
DETAIL AT SEWER

1"=1'



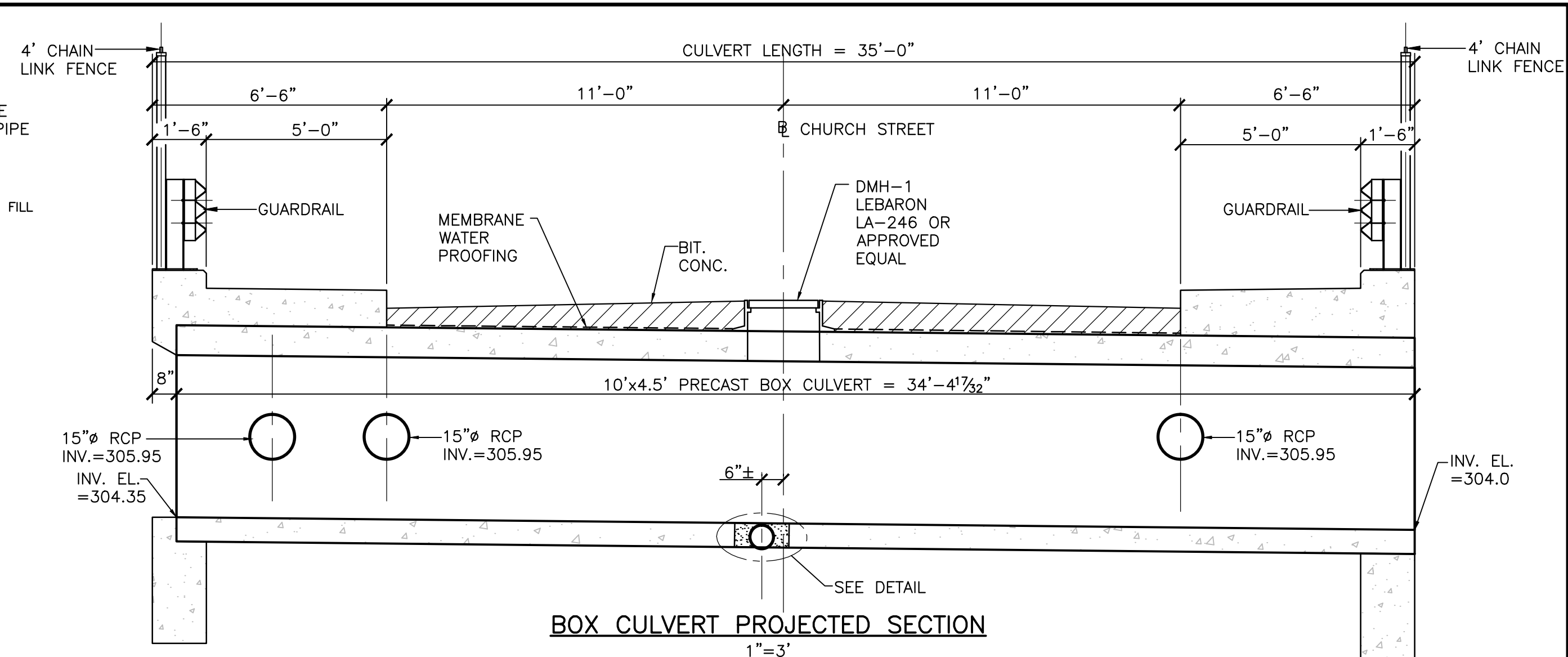
TYPICAL CEMENTED STONE MASONRY WALL

NTS



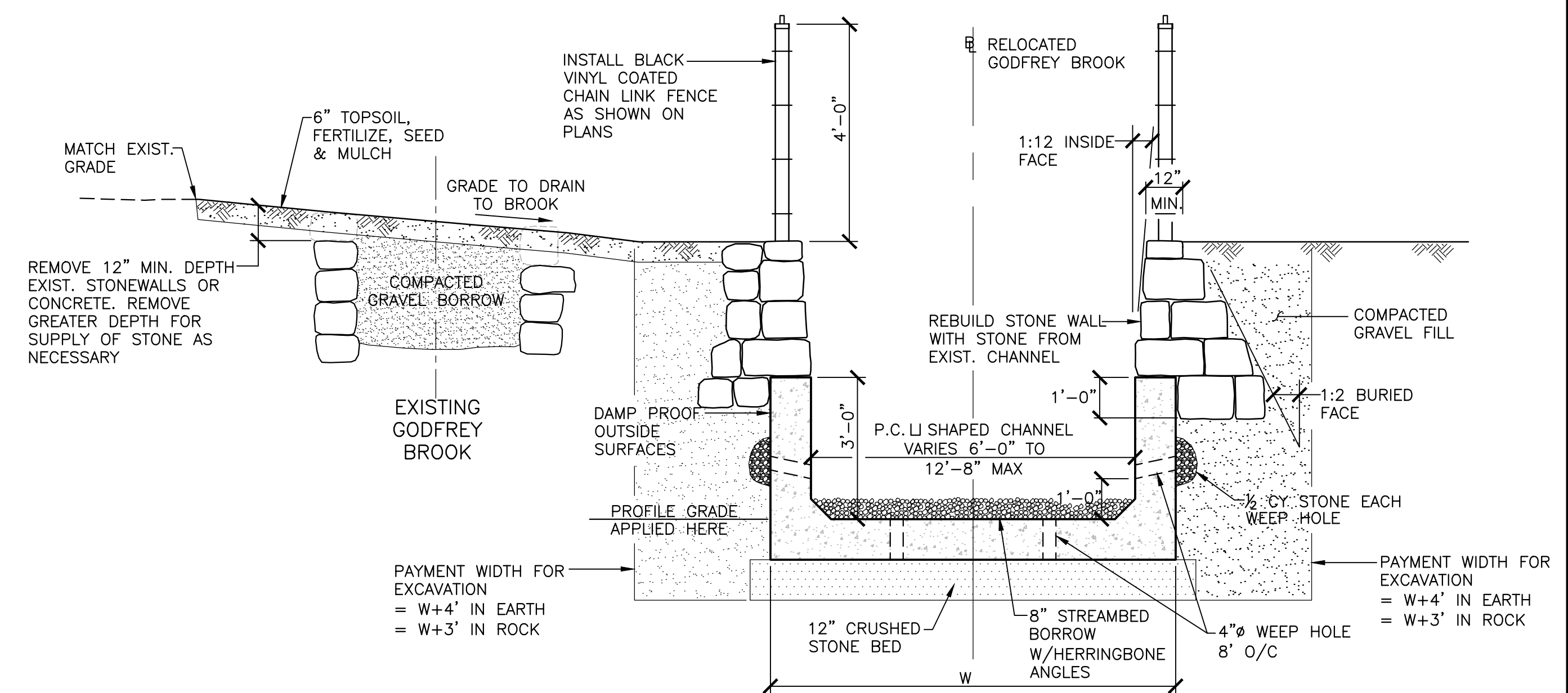
TYPICAL BOX CULVERT DETAIL

NTS



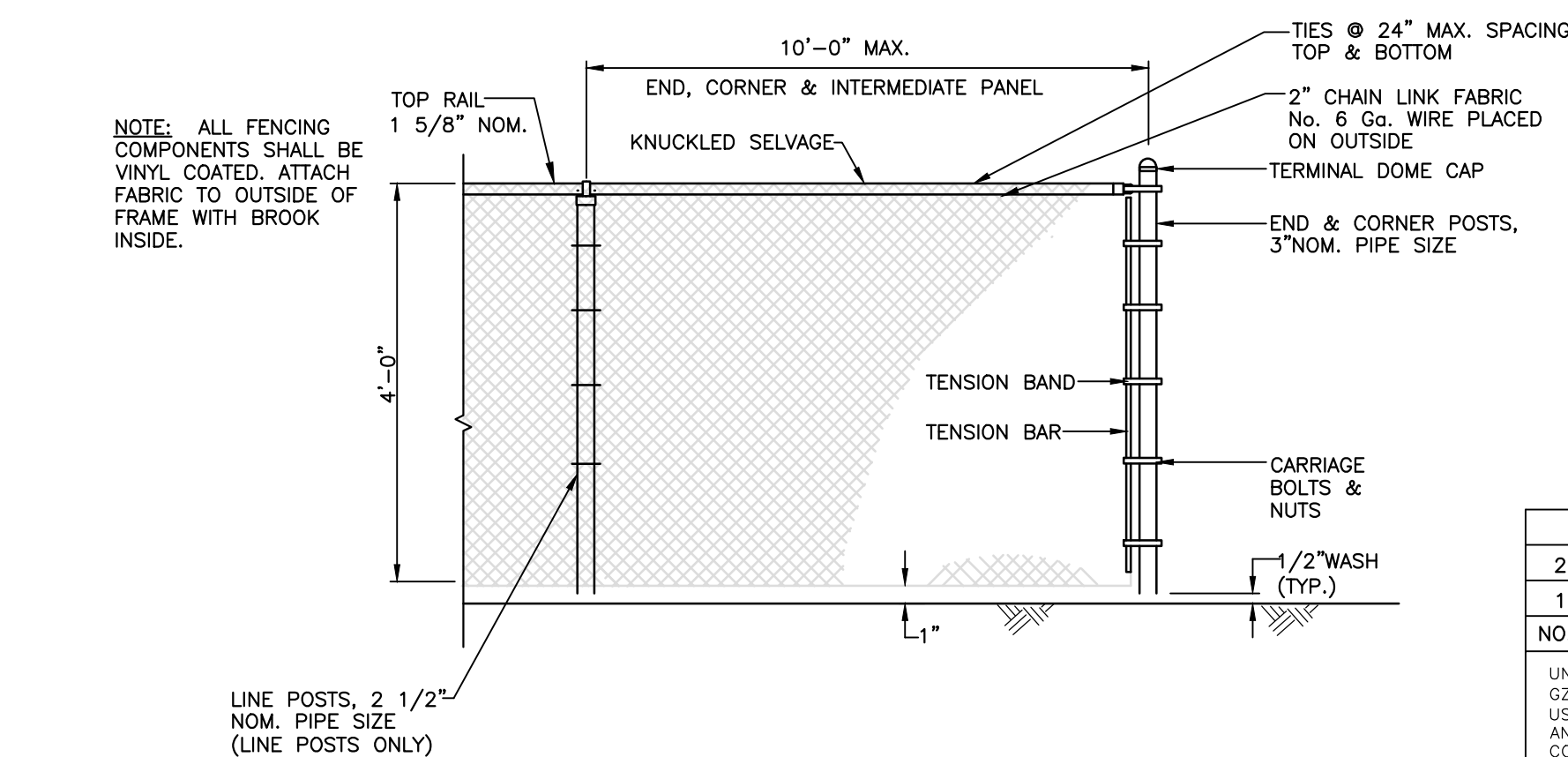
BOX CULVERT PROJECTED SECTION

1"=3'



TYPICAL SECTION AT PRECAST U-SHAPED CHANNEL

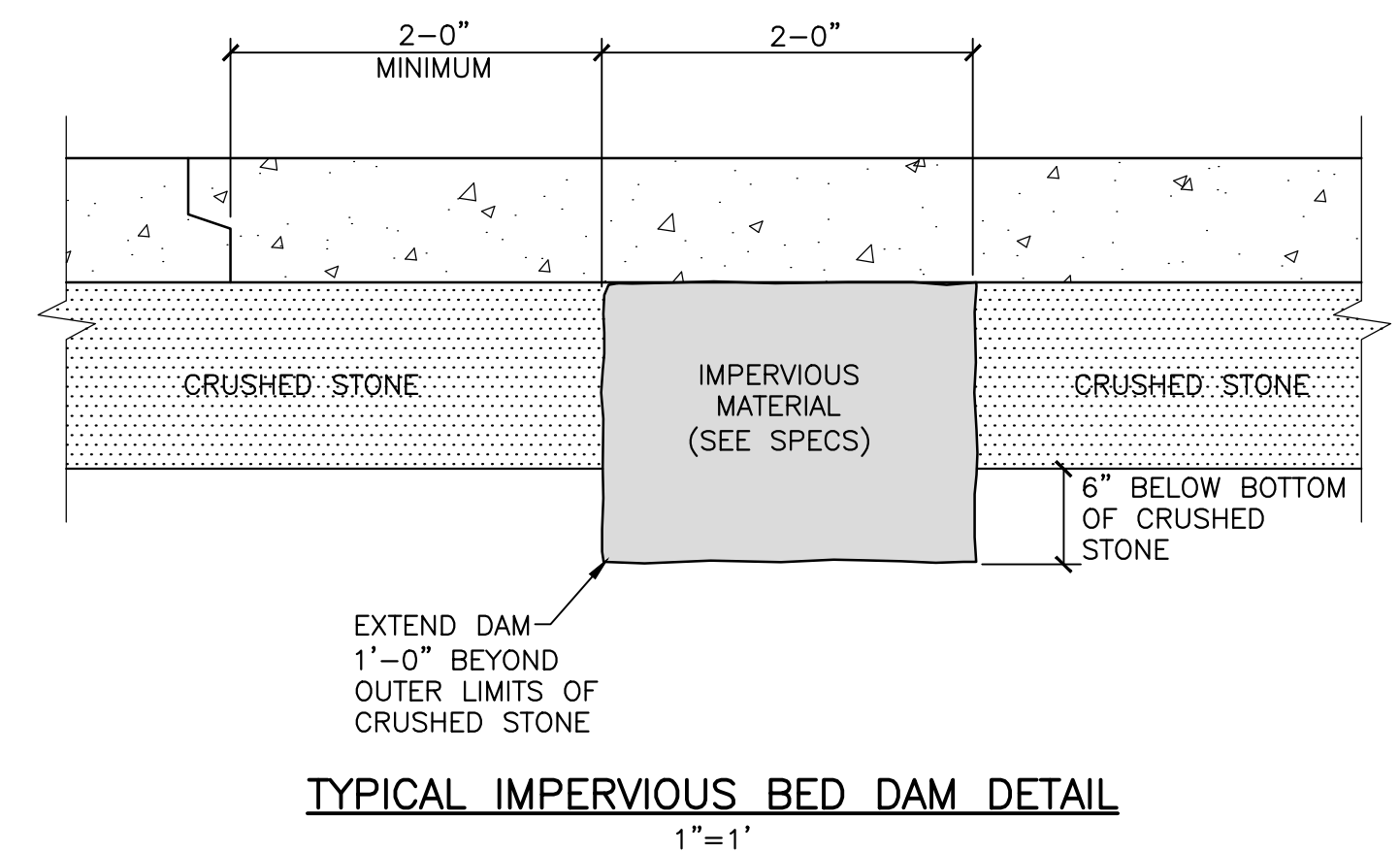
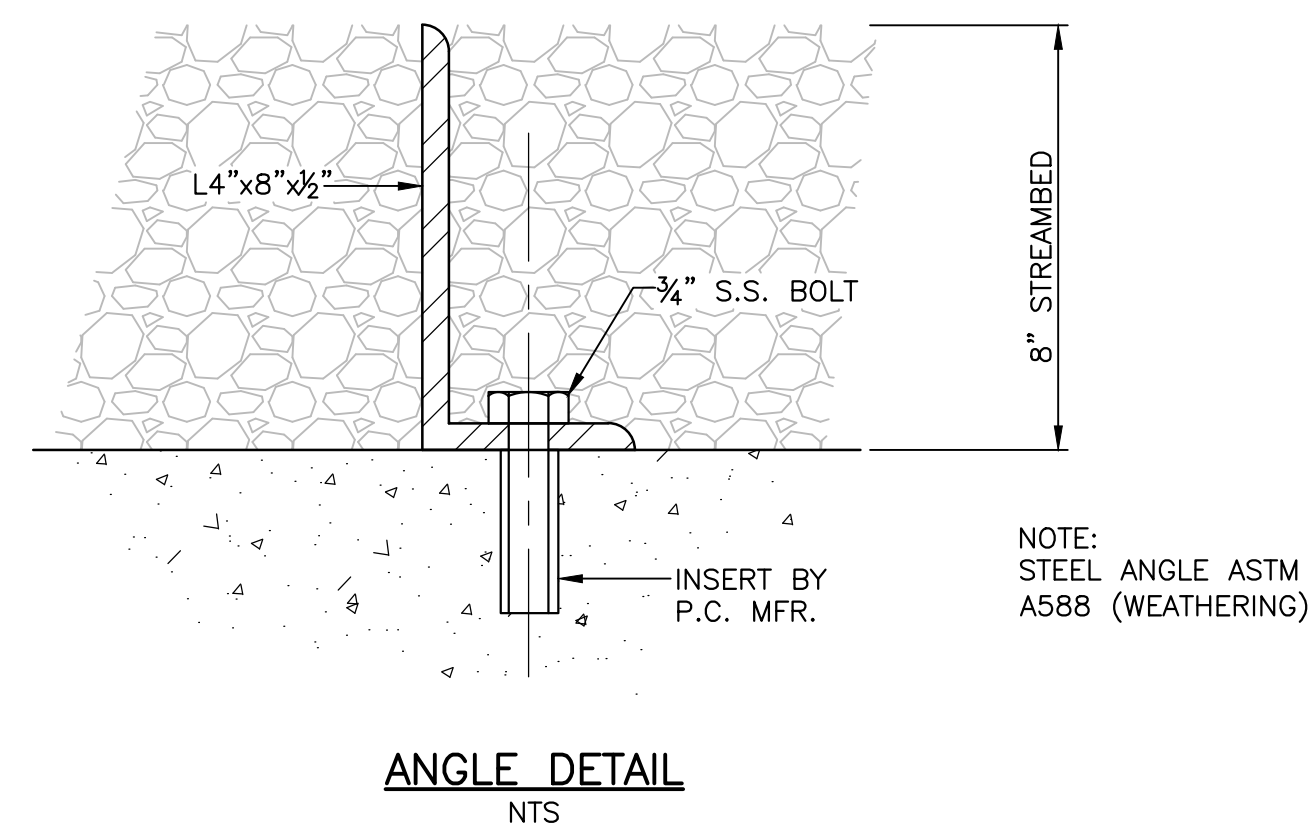
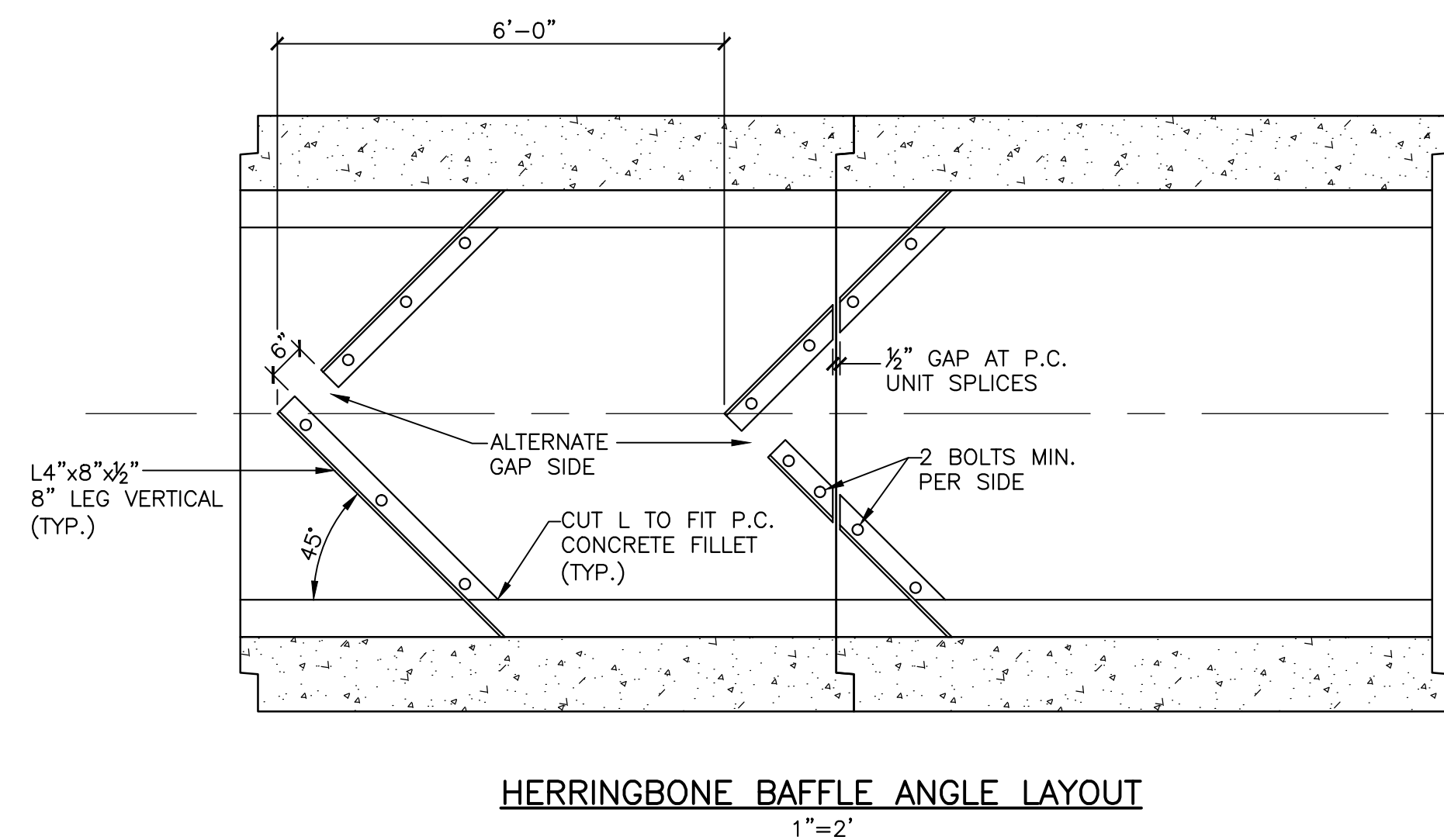
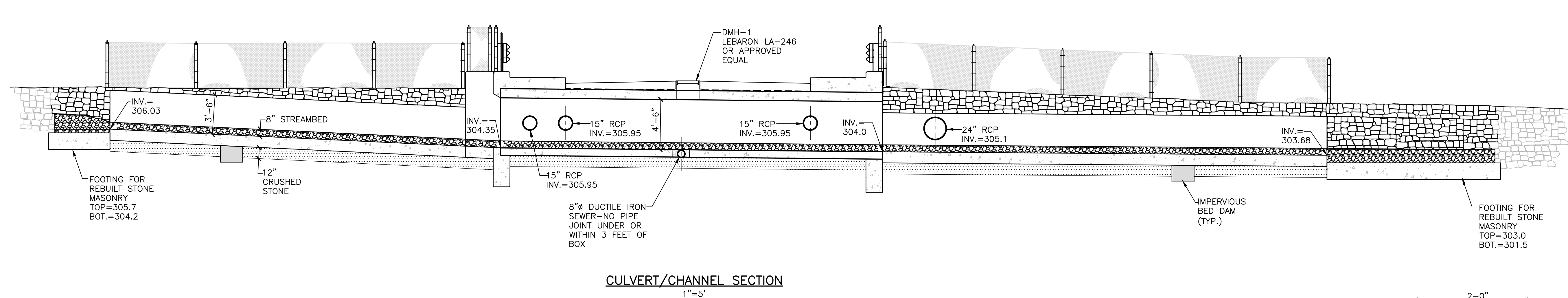
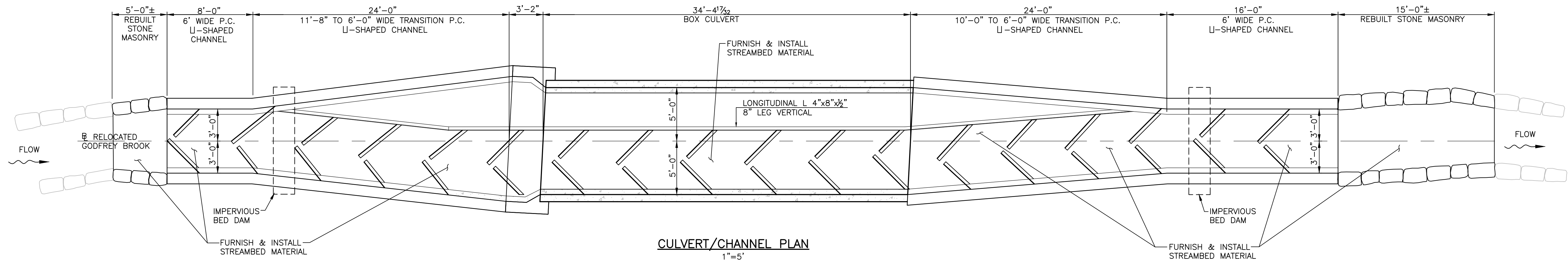
NTS



VINYL COATED CHAIN LINK FENCE

NTS

2	ISSUED FOR CONSTRUCTION	EDM	3/28/12
1	ISSUED FOR PERMITTING	EDM	1/19/12
NO.	ISSUE/DESCRIPTION	BY	DATE
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOTECHNICAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.			
GODFREY BROOK & CULVERT DETAILS			
CHURCH STREET			
CULVERT REPLACEMENT			
MILFORD, MASSACHUSETTS			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: TOWN OF MILFORD	
PROJ MGR: TEJ	DESIGNED BY: RS	REVIEWED BY: RS	CHECKED BY: TEJ
DATE: DECEMBER, 2011	DRAWN BY: EDM	PROJECT NO. 15.0166148.10	SCALE: AS NOTED
			REVISION NO.



2	ISSUED FOR CONSTRUCTION	EDM	3/28/12
1	ISSUED FOR PERMITTING	EDM	1/19/12
NO.	ISSUE/DESCRIPTION	BY	DATE
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOTECHNICAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.			
CHANNEL DETAILS			
CHURCH STREET CULVERT REPLACEMENT MILFORD, MASSACHUSETTS			
PREPARED BY:	GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: TOWN OF MILFORD
PROJ MGR: TEJ	DESIGNED BY: RS	REVIEWED BY: RS	CHECKED BY: TEJ
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	SCALE: AS NOTED	REVISION NO.