REQUEST FOR
QUALIFICATIONS /
PROPOSALS (RFQ / RFP)
FOR
ENGINEERING SERVICES

ADDENDUM #1

The Town is providing the following information in reference to the questions/comments received by design companies.

1. The submittals should include the Company's qualification materials (i.e., Firm Introduction, Project Team Resumes, & Relevant Experience).

2. The town will provide the MEMA/FEMA PDM Grant application to the company that is awarded the project. The grant award documents are attached (see Exhibit A).

3. The Secretary's Certificate on the ENF is attached. Some of the proposed cross sections with the proposed pre-cast concrete structure is also attached (see Exhibit B).

4. The hydraulic analysis will be provided to the company that is awarded the project. There is a hydraulic analysis that exists utilizing HEC-RAS. The RFQ/RFP scope of services includes the services for a Hydraulic analysis to be performed. Some of the design plans for the portions of Godfrey Brook that have already been constructed are attached (see Exhibit C).

Exhibit A

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF PUBLIC SAFETY AND SECURITY

MASSACHUSETTS EMERGENCY MANAGEMENT AGENCY
400 Worcester Road Framingham, MA 01702-5399
Tel: 508-820-2000 Fax: 508-820-2030
Website: www.mass.gov/mema

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Terrence M. Reidy
Acting Secretary

Samantha C. Phillips
Director

August 12, 2021

Richard A. Villani, Esq.,
Town Administrator
Town of Milford
52 Main Street
Milford, MA 01757

Re: Pre-Disaster Mitigation Competitive Grant Program
PDMC 19-04 Godfrey Brook Capacity Improvements

Dear Mr. Villani,

The Federal Emergency Management Agency (FEMA) has approved Pre-Disaster Mitigation funding for the Town of Milford **Godfrey Brook Capacity Improvements** project.

The Town of Milford has received a FEMA award of $733,425.00 and will be reimbursed up to 75% of approved, allowable, and eligible costs, up to the Federal Award, as stipulated by the grant agreement and 2 CFR Part 200. This is a reimbursable grant program and expenses must be incurred and paid, prior to being reimbursed. Please note that any project revisions, changes or deviations from the FEMA-approved grant application must be approved in writing by both MEMA and FEMA in order to be eligible for grant reimbursement.

Please Note: work cannot begin on this project until the contract is executed by all parties and a Notice to Proceed is issued.

In order to execute this agreement, the following forms relative to the attached grant agreement must be reviewed, completed and signed.

1) **Contractor Authorized Signatory Listing:** The Authorized Signatory must complete and sign the CASL according to instructions provided.
2) **Standard Contract Form and Commonwealth Terms and Conditions:** The Authorized Signatory identified on the CASL must complete, sign and hand date the form as the Contractor, on page 1 of the document.

3) **Record of Environmental Considerations:** The FEMA Record of Environmental Considerations (REC), which includes the approved Scope of Work, is included for review and reference.
4) **Budget Information:** The budget has been completed according to the approved budget included in your application, with the funds allocated through the appropriate fiscal years.
5) **Work Schedule:** The work schedule has been prepared to coincide with the contract start and end dates.
6) **Designation of Project Manager Form:** The Authorized Signatory must appoint a local Project Manager for this Agreement; please complete and sign the form provided.
7) **Federal Funding Accountability and Transparency Act (FFATA):** This form must be completed and **signed in blue ink.**
8) **MEMA Sub-recipient Pre-Award Risk Assessment Questionnaire:** This form must be completed and signed by either the Authorized Signatory or CFO.
9) **MEMA Terms and Conditions:** These are conditions set forth by MEMA. Please review and sign this document. These conditions/requirements must be satisfied to be eligible for reimbursement.
10) **FEMA Assurances and Certifications:** This form must be completed and signed on page 1 of the form. Please review the instructions provided with the form.
11) **2020 DHS Standard Terms and Conditions:** Please review this document; these conditions/requirements must be satisfied to be eligible for funding.
12) **FEMA Award Letter:** A copy of the FEMA Award Letter is enclosed for your reference.

Documents requiring signature must be returned as single-sided, hard copy forms with original signatures. Scanned and emailed documents are not acceptable for contracts.

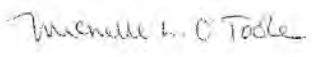
Please return this fully executed contract package within 30 days to:

Massachusetts Emergency Management Agency
Attn: Beth Dubrawski
Mitigation and Recovery Grants Support Coordinator
400 Worcester Road
Framingham, MA 01702

Once the Authorized Signatory has signed all required forms, MEMA will approve the contract and return an executed copy to you with a Notice to Proceed. Please carefully review all provisions of the attached grant agreement prior to execution.

Please do not hesitate to contact Beth Dubrawski at (508) 820-1425, or by email at beth.dubrawski@mass.gov, with any questions or concerns regarding these documents.

Sincerely,



Michelle O'Toole
Acting State Hazard Mitigation Officer

Enclosures
Cc: File

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF PUBLIC SAFETY AND SECURITY

MASSACHUSETTS EMERGENCY MANAGEMENT AGENCY
400 Worcester Road Framingham, MA 01702-5399
Tel: 508-820-2000 Fax: 508-820-2030
Website: www.mass.gov/mema

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Terrence M. Reidy
Acting Secretary

Samantha C. Phillips
Director

September 27, 2021

Richard A. Villani, Esq.,
Town Administrator
Town of Milford
52 Main Street
Milford, MA 01757

Re: Pre-Disaster Mitigation Competitive Grant Program
PDMC 19-04 Godfrey Brook Capacity Improvements

Dear Mr. Villani,

Thank you for returning the executed contract, PDMC1904MILFORD00000, for the project listed above. The performance period shall start on the latest date that this contract has been executed by an authorized signatory of the Contractor, or the Department; that date is September 21, 2021. All work must be completed by the contract end date of May 29, 2024, to be eligible for FEMA reimbursement. Enclosed is a copy of the contract for your files.

The Massachusetts Emergency Management Agency (MEMA) and Federal Emergency Management Agency (FEMA) are very interested in completing this project as expeditiously as possible. We look forward to working with you on this important mitigation initiative.

Please do not hesitate to contact Beth Dubrawski at (508) 820-1425 or by e-mail at beth.dubrawski@mass.gov with any questions or concerns regarding this mitigation grant agreement.

Sincerely,

Michelle L. O'Toole

Michelle O'Toole
Acting State Hazard Mitigation Officer

Enclosures

Exhibit B

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

Ian A. Bowles
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
http://www.mass.gov/envir

September 11, 2009

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Godfrey Brook System Renovation
PROJECT MUNICIPALITY	: Milford
PROJECT WATERSHED	: Charles River
EEA NUMBER	: 14465
PROJECT PROPONENT	: Town of Milford
DATE NOTICED IN MONITOR	: August 12, 2009

Pursuant to the Massachusetts Environmental Policy Act (M.G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** the preparation of an Environmental Impact Report (EIR).

As described in the Environmental Notification Form (ENF), the project involves the replacement of the deteriorating masonry channel walls and bottoms of Godfrey Brook, O'Brien Brook and Hospital Brook. Godfrey Brook is an intermittent stream that is a tributary to the Charles River. O'Brien and Hospital brooks are intermittent streams that are tributaries to Godfrey Brook. Except for the upper reaches of the watershed, the Godfrey Brook system is constructed of stone masonry channels that have exceeded their expected lifespan. Godfrey Brook and its tributaries are part of the Town of Milford's stormwater management system.

Jurisdiction

The project is undergoing MEPA review pursuant to Section 11.03(3)(b)(1)(f) of the MEPA regulations because the it requires a State agency action and will result in alteration of ½ or more acres of any other wetlands. The project will require a Section 401 Water Quality

Certificate (401 WQC) from the Massachusetts Department of Environmental Protection (MassDEP) and a Section 404 Permit from the U.S. Army Corps of Engineers (U.S. ACOE). The project will also require an Order of Conditions from the Milford Conservation Commission, and if appealed, a Superceding Order of Conditions from MassDEP.

The project will be undertaken by an agency of the Commonwealth. Therefore, MEPA jurisdiction for this project is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment as defined in the MEPA regulations.

Review of the ENF

Site Location

Godfrey, O'Brien and Hospital Brooks are intermittent in flow due to the dense residential development that has occurred in their vicinity over the last 75 years and the significant portions of the drainage areas that have been rendered impervious. All three brooks are located entirely within the Town of Milford, almost exclusively on privately-owned property. Except in their extreme upper reaches, where the brooks remain in somewhat of a natural state, the channels of Godfrey, O'Brien, and Hospital Brooks typically are lined with stone masonry walls constructed in the 1930s by the Works Projects Administration. At that time, the channels were configured to accommodate the then existing brook flows and were not designed to provide additional capacity for future development in the watershed.

The condition of the stone walls is highly variable, ranging from fair to extremely poor and failing. The walls were observed in many areas to be leaning or threatening to collapse. In at least one area, the walls were observed to have completely fallen into the brook. Some portions of the stone walls have been replaced with walls of mass concrete as emergency repairs where extreme failures have occurred due to heavy storms. Godfrey and O'Brien Brooks run through culverts under street crossings in many locations, or are bridged with simple slab spans and stone abutments. Residential and commercial development encroaches upon the channels, with buildings very near the channel walls in many locations. The majority of the channels have a stone masonry bottom in addition to the walls, over which a gravel and debris substrate has developed, providing minimal wildlife habitat value. The channels provide a travel corridor and intermittent water source function, with the substrate providing limited habitat for aquatic invertebrates. Parts of the channels have no natural substrate and provide little to no habitat function, while the upstream natural areas provide greater habitat function.

Alternatives Analysis

The ENF indicates that the Town considered a number of potential alternatives resulting in the selection of the Preferred Alternative. The ENF included a feasibility study that was prepared to evaluate alternatives for restoration of the stream channels. The alternatives included:

1. *Emergency Repair of Channels Upon Failure* – No major repair or reconstruction of the channels is conducted and the stone masonry walls are repaired piecemeal upon failure of wall segments, as has been done in the past;
2. *Underground Culvert* – Open stream channels are converted to underground culverts;

3. *Restore Natural Stream Channel* – The stone masonry walls are removed and the channel is restored to a more natural condition, with reconstructed natural banks; and
4. *Stabilize Existing Channel in Place* – The existing channel is reconstructed in place with more stable materials and modern practices.

After a comparison of alternatives, the Town of Milford chose Alternative #4 as the Preferred Alternative. This alternative entails stabilizing the existing channel in place and provides for the replacement or reconstruction of the brook channels in their existing locations by increasing stability and longevity of the structures.

The ENF concludes that the Preferred Alternative provides a structural solution that does not impair wildlife habitat functions within the brooks. A precast concrete channel section is proposed with a natural substrate stream bottom that provides for wildlife habitat values equivalent to or better than existing conditions. The design would ensure that the channels would have the structural integrity to withstand existing flows with a long design life. Conveyance capacity could be increased in areas where site conditions allow improvements to the cross-sectional area of the stream. The ENF indicates that this alternative may be implemented in segments, determined either by priority for repair or by working in one direction along the channel. Typical methods would be required to construct this alternative, diverting flows around the active work areas. Replacement of the existing channel with a structurally stable cross-section will benefit water quality by eliminating erosion and sedimentation associated with collapse of the channel walls. The system could be designed to incorporate characteristics that would provide habitat enhancement, such as a natural bottom substrate and permeability to allow for groundwater exchange.

Wetland Impacts

The Preferred Alternative will require an Order of Conditions from the Milford Conservation Commission and a 401 Water Quality Certification from MassDEP. MassDEP has indicated in its comments that the Wetlands Protection Act regulations at 310 CMR 10:54 (1) states that where stream banks are composed of concrete, asphalt, or other artificial material, said banks are only significant to flood control and storm damage prevention. Therefore, Alternative 3 should be the Preferred Alternative because this alternative is the only alternative in which the stone masonry walls would be removed and the channel restored to a more natural condition with reconstructed natural banks. However, MassDEP acknowledges that this may not be practicable in many of the stream locations due to the constraints of the watershed area and velocity erosion. MassDEP has indicated that the Proponent should examine the possibility of combining Alternatives 3 and 4. I advise the Town of Milford to consult with MassDEP regarding the final designs of the Preferred Alternative.

Floodplain

The project involves activities with the 100-year floodplain and floodway. I refer the proponent to the comment letter from the Department of Conservation and Recreation's (DCR) Flood Hazard Management Program (FHMP) for guidance on applicable federal, state and local regulations and other requirements pertaining to development within the 100-year floodplain. As

noted by FHMP, if the project involves any federal action, it must comply with the federal Executive Order 11988, Floodplain Management.

Conclusion

Based on the information in the ENF and after consultation with relevant public agencies, I find that no further MEPA review is required. The project may proceed to State permitting.

September 11, 2009
Date

Ian A. Bowles

Comments received:

08/25/09	Board of Underwater Archaeological Resources
08/25/09	Massachusetts Department of Environmental Protection – CERO
09/01/09	Charles River Watershed Association
09/02/09	Department of Conservation and Recreation's Flood Hazard Management Program

IAB/ACC/acc

Exhibit C

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

CHURCH STREET CULVERT

SCOTT J. CRISAFULLI
HIGHWAY SURVEYOR

MICHAEL SANTORA, P.E.
TOWN ENGINEER

December, 2011
Issued for Bidding, March 28, 2012

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".

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

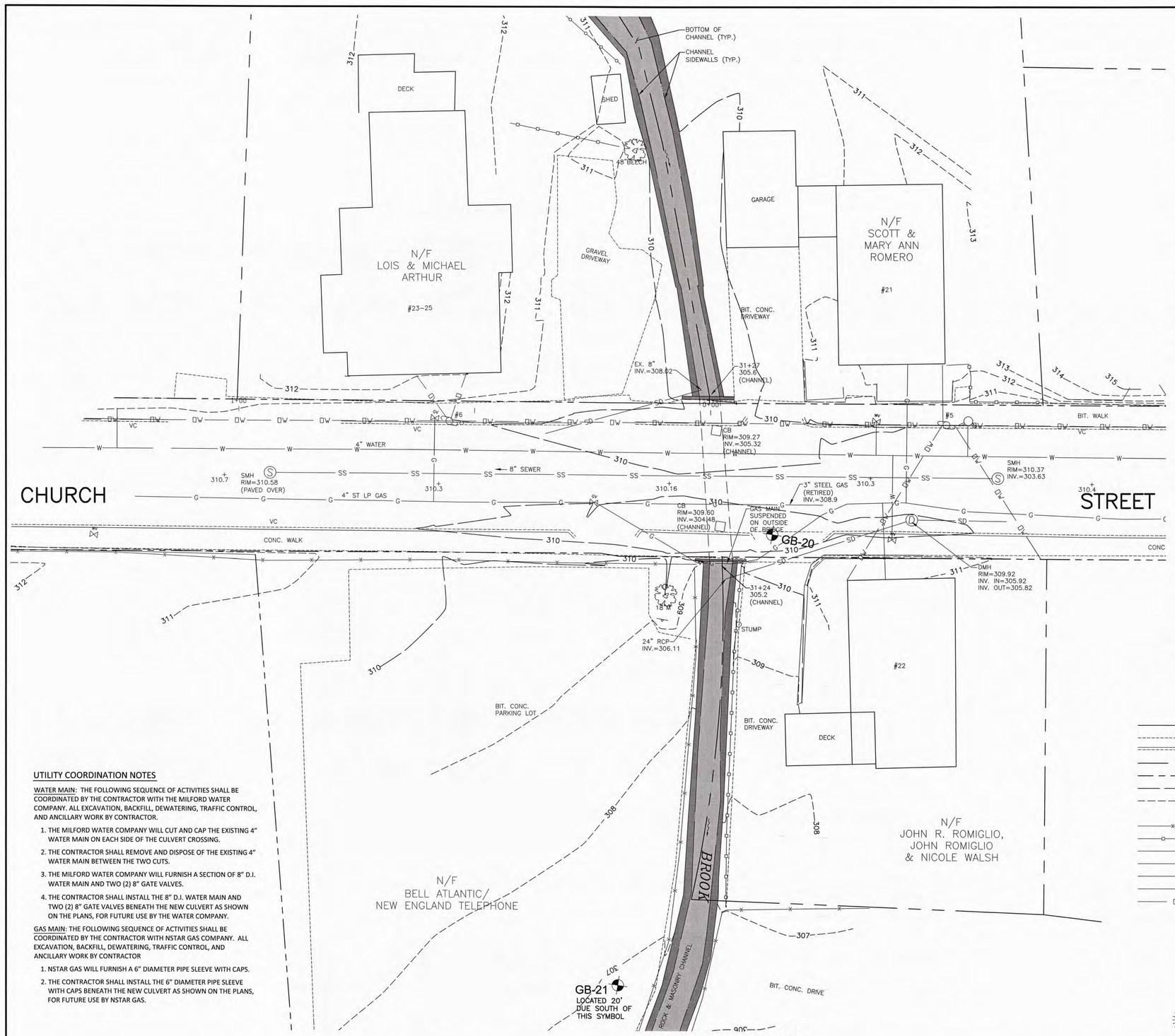
Department of Conservation and Recreation
EDWARD M. LAMBERT, JR., COMMISSIONER

INDEX TO PLAN SHEETS

☑ APPROVED

PREPARED BY

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



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.

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 CONFLICT WITH ANY PROP. WORK THEY SHALL BE REMOVED.

9. WHERE LINES OR STRUCTURES ARE ABANDONED IN PLACE, THE CONTRACTOR SHALL ENSURE THAT ALL CONNECTING PIPES, INLETS, AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO NEW WORK TO THE SATISFACTION OF THE ENGINEER.

10. CATCH BASIN, DROP INLET, AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE OPENINGS IN THE PRECAST STRUCTURES.

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 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
- EXISTING CURB (VC)
- EXISTING PROPERTY LINE
- EXISTING STREET RIGHT OF WAY
- EXISTING 10 FT. CONTOUR (310)
- EXISTING 1 FT. CONTOUR (307)
- EXISTING SPOT GRADE (+311.0)
- EXISTING CHAIN LINK FENCE
- EXISTING STOCKADE FENCE
- EXISTING STORM DRAIN LINE (SD)
- EXISTING SANITARY SEWER LINE (SS)
- EXISTING GAS LINE (G)
- EXISTING WATER LINE (W)
- EXISTING OVERHEAD WIRES (OW)
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE (D)
- EXISTING SANITARY MANHOLE (S)
- EXISTING UTILITY POLE
- EXISTING HYDRANT
- EXISTING WATER VALVE (W)
- EXISTING GAS VALVE (GV)
- EXISTING TREES
- GB-20 BORING LOCATION

N

0 5 10 20
1 inch = 10 feet

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

EXISTING CONDITIONS
CHURCH STREET
CULVERT REPLACEMENT
MILFORD, MASSACHUSETTS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF MILFORD

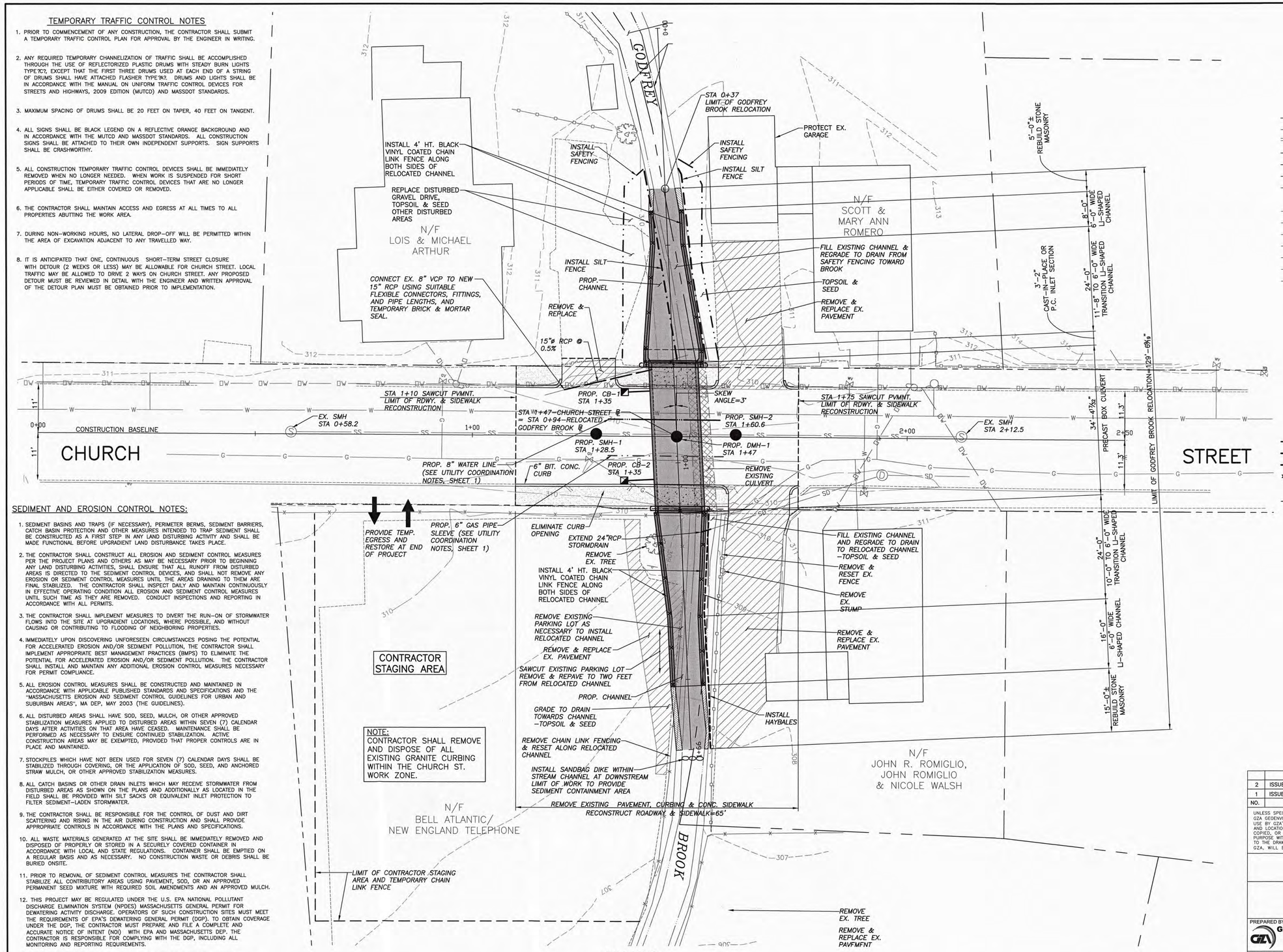
PROJ MGR: TEJ	REVIEWED BY: RS	CHECKED BY: TEJ	
DESIGNED BY: RS	DRAWN BY: EDM	SCALE: 1"=10'	1
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	

TEMPORARY TRAFFIC CONTROL NOTES

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"C"7, EXCEPT THAT THE FIRST THREE DRUMS USED AT EACH END OF A STRING OF DRUMS SHALL HAVE ATTACHED FLASHER TYPE"A". 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.

SEDIMENT AND EROSION CONTROL NOTES:

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 FINAL 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 POLLUTION, 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 SOD, 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 PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION. ACTIVE 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 SOD, 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 ONSITE.
11. PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES THE CONTRACTOR SHALL STABILIZE ALL CONTRIBUTORY AREAS USING PAVEMENT, SOD, 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 SEDIMENTAION 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.



SITE PLAN
1"=10'

LEGEND

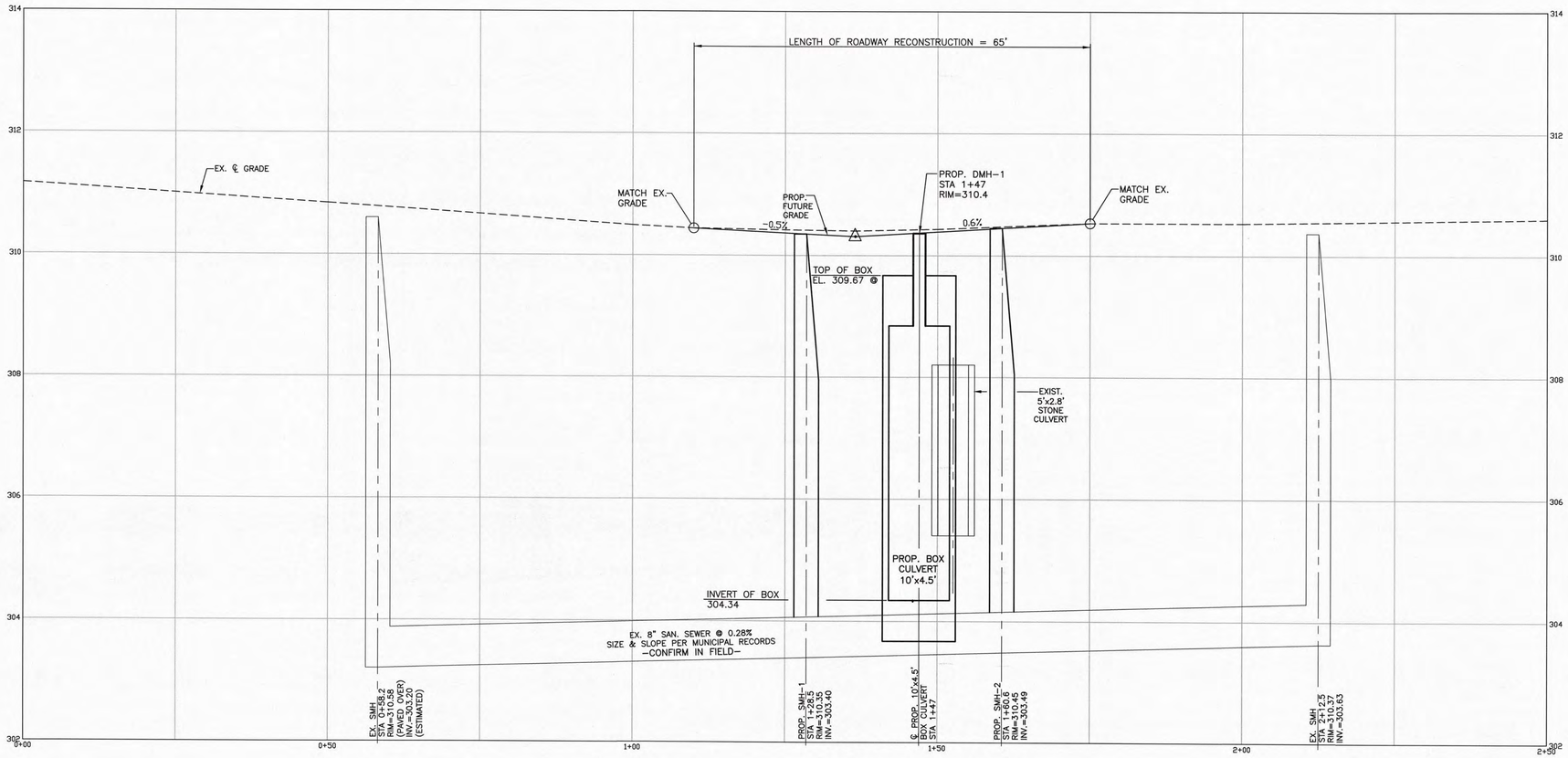
- EXISTING EDGE OF WATER
- EXISTING EDGE OF PAVEMENT
- EXISTING CURB
- EXISTING PROPERTY LINE
- EXISTING STREET RIGHT OF WAY
- EXISTING 10 FT. CONTOUR
- EXISTING 1 FT. CONTOUR
- EXISTING SPOT GRADE
- EXISTING CHAIN LINK FENCE
- EXISTING STOCKADE FENCE
- EXISTING STORM DRAIN LINE
- EXISTING SANITARY SEWER LINE
- EXISTING GAS LINE
- EXISTING WATER LINE
- 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
- PROPOSED CATCH BASIN
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SAFETY FENCING
- PROPOSED SILT FENCE
- PROPOSED HAYBALES
- PROPOSED 4 FT. HIGH BLACK VINYL COATED CHAIN LINK FENCE
- PROPOSED CONTOUR
- PROPOSED BITUMINOUS CONCRETE SIDEWALK
- PROPOSED CEMENT CONCRETE SIDEWALK

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

PROPOSED CONDITIONS
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'	2
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	



PROFILE-CHURCH STREET

VERT. 1"=1'
HOR. 1"=10'

VERT. 1" = 1 FT.
0 .5 1 2 3
0 5 10 20 30
HOR. 1" = 10 FT.

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.

NO.	ISSUE/DESCRIPTION	BY	DATE
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1	ISSUED FOR PERMITTING	EDM	1/19/12

CHURCH STREET
PROFILE
CHURCH STREET
CULVERT REPLACEMENT
MILFORD, MASSACHUSETTS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
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PROJ MGR: TEJ	REVIEWED BY: RS	CHECKED BY: TEJ	
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DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	

CHURCH STREET CULVERT REPLACEMENT

MILFORD, MASSACHUSETTS

HAZARD MITIGATION GRANT PROGRAM (HMGP)

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

Commonwealth of Massachusetts
DEVAL L. PATRICK, GOVERNOR

Massachusetts Emergency Management Agency
KURT N. SCHWARTZ, DIRECTOR

Town of Milford, Massachusetts
LOUIS CELOZZI, TOWN ADMINISTRATOR

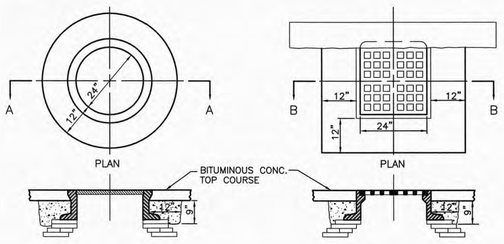
Department of Conservation and Recreation
EDWARD M. LAMBERT JR., COMMISSIONER

4'-0" x 8'-0"

PROJECT SIGN DETAIL
NTS

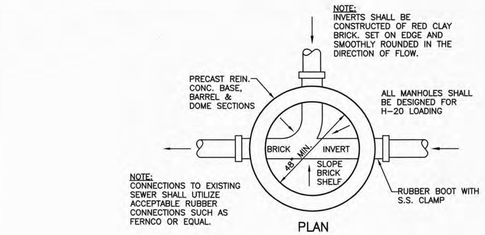
PROJECT SIGN NOTES:

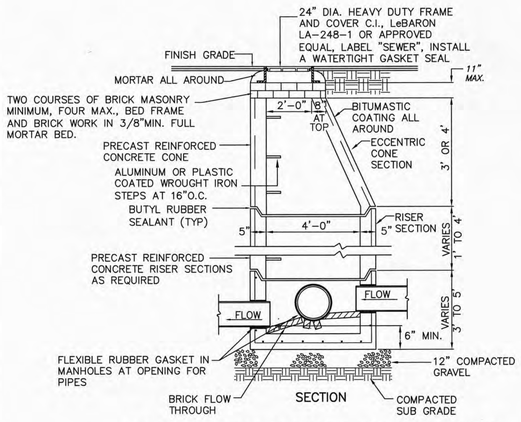
1. BACKGROUND IS IVORY WITH DARK GREEN LETTERING.
2. THE SIGN SHALL BE ERECTED AT A SUITABLE LOCATION NEAR THE PROJECT SITE TO BE APPROVED BY THE ENGINEER.



NOTES:
1. COLLARS TO BE CLASS A CEMENT CONCRETE MASONRY REGULAR OR HIGH EARLY STRENGTH AS DIRECTED.
2. NO CONCRETE COLLAR REQUIRED IN CONCRETE PAVEMENT.

CONCRETE COLLARS
NTS

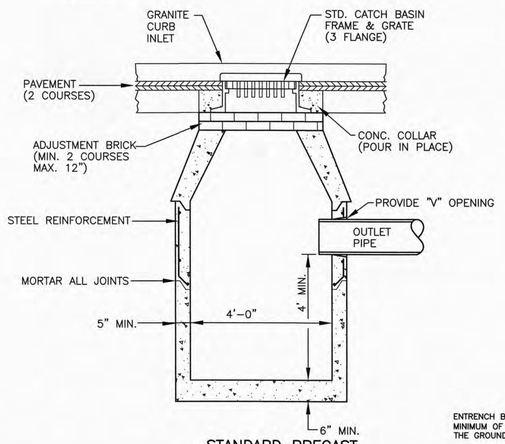




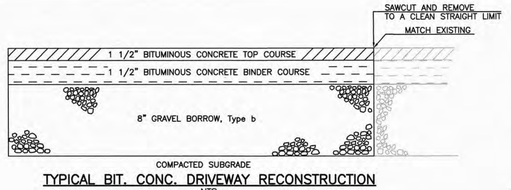
TYPICAL PRECAST CONCRETE SANITARY MANHOLE
NTS

NOTE:
ALL STRUCTURES SHALL BE SUITABLE FOR H-20 LOADING AND SHALL MEET THE REQUIREMENTS OF ASTM C478.

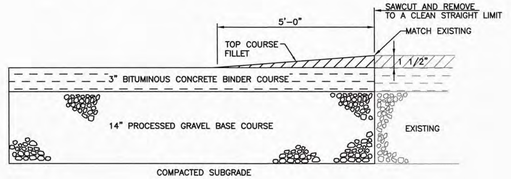
NOTE: ADJUSTMENT BRICK SHALL BE RED CLAY, HARD BURNED, SEWER BRICK.



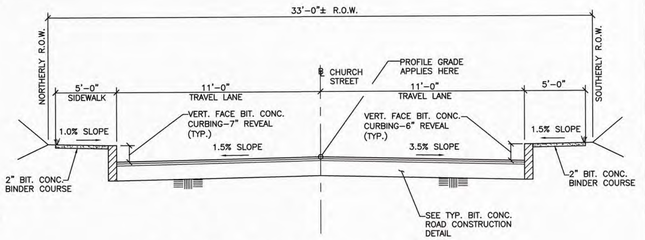
STANDARD PRECAST CONC. CATCH BASIN
NTS



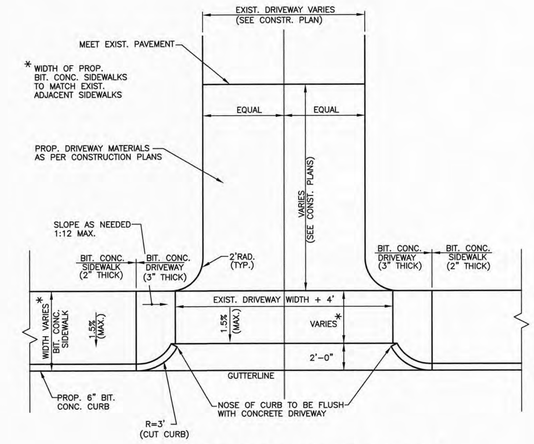
TYPICAL BIT. CONC. DRIVEWAY RECONSTRUCTION
NTS



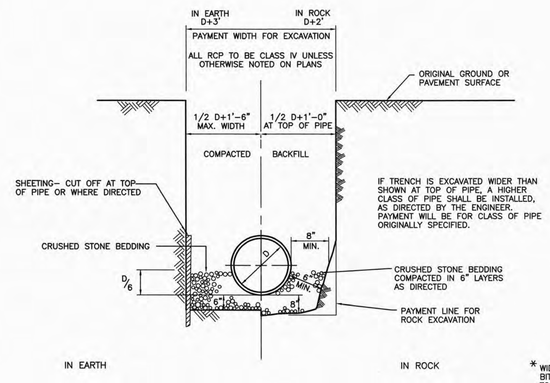
TYPICAL BIT. CONC. ROAD CONSTRUCTION
NTS



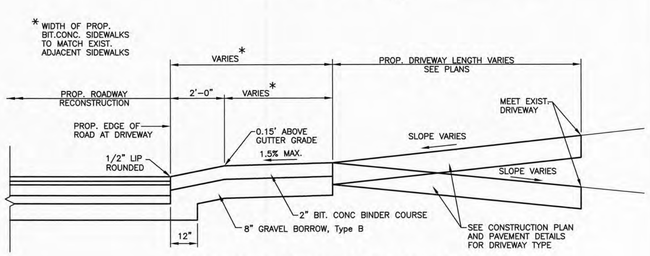
TYPICAL CHURCH STREET APPROACH CROSS SECTION
NTS



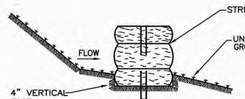
DETAIL FOR DRIVEWAY WITH SIDEWALK
NTS



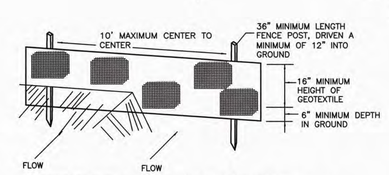
TYPICAL TRENCH DETAIL
-REINFORCED CONCRETE PIPE
-DUCTILE IRON PIPE
NTS



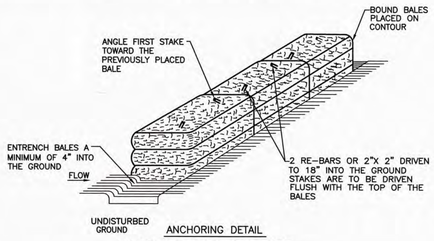
DETAIL FOR TYPICAL DRIVEWAY SECTION
NTS



BEDDING DETAIL

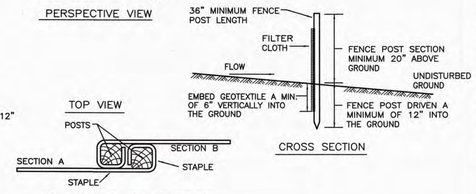


PERSPECTIVE VIEW



ANCHORING DETAIL

HAYBALE SILT BARRIER
NTS



CROSS SECTION

JOINING TWO ADJACENT SILT FENCE SECTIONS

SILT FENCE DETAIL
NTS

NO.	ISSUE/DESCRIPTION	BY	DATE
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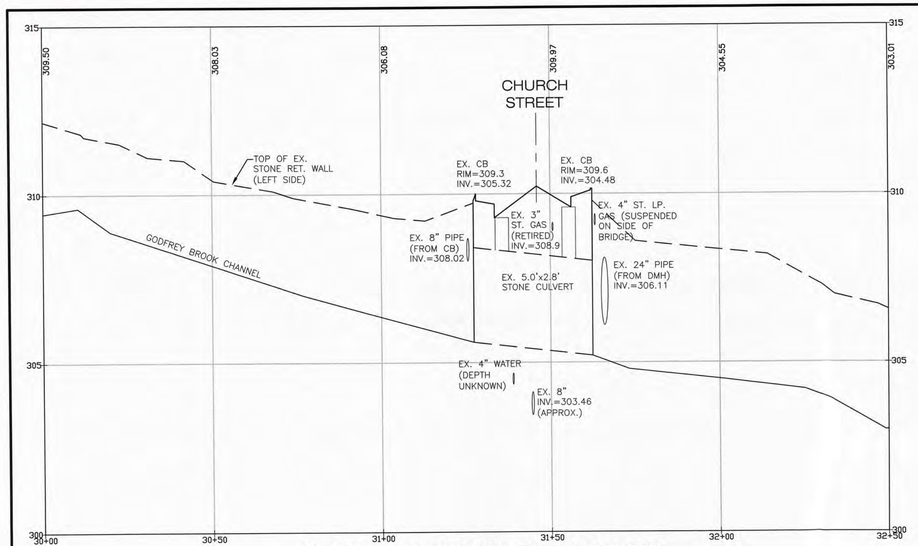
CHURCH STREET DETAILS

CHURCH STREET CULVERT REPLACEMENT
MILFORD, MASSACHUSETTS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

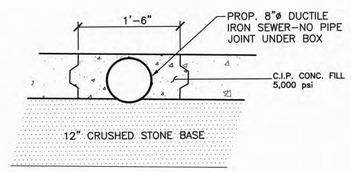
PREPARED FOR:
TOWN OF MILFORD

PROJ MGR: TEJ	REVIEWED BY: RS	CHECKED BY: TEJ	
DESIGNED BY: RS	DRAWN BY: EDM	SCALE: AS NOTED	4
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	



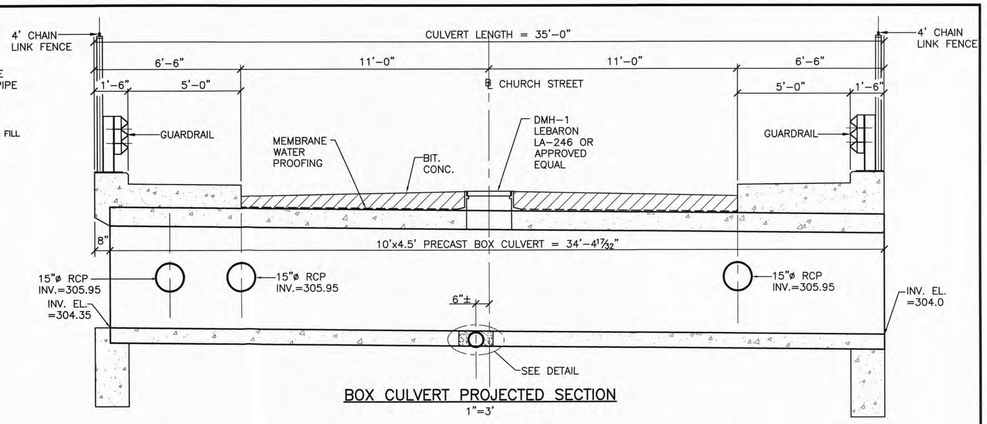
PROFILE–GODFREY BROOK EXISTING CULVERT

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



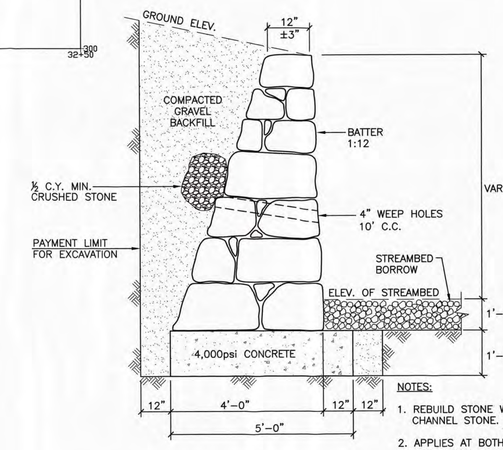
DETAIL AT SEWER

1"=1'



BOX CULVERT PROJECTED SECTION

1"=3'

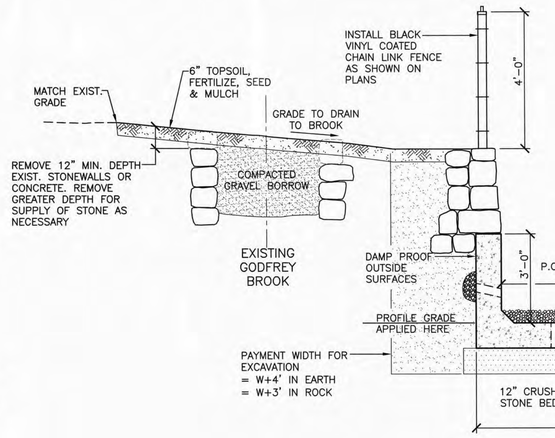


NOTES:

1. REBUILD STONE WALL WITH EXISTING CHANNEL STONE.
2. APPLIES AT BOTH ENDS OF CHANNEL RELOCATION.

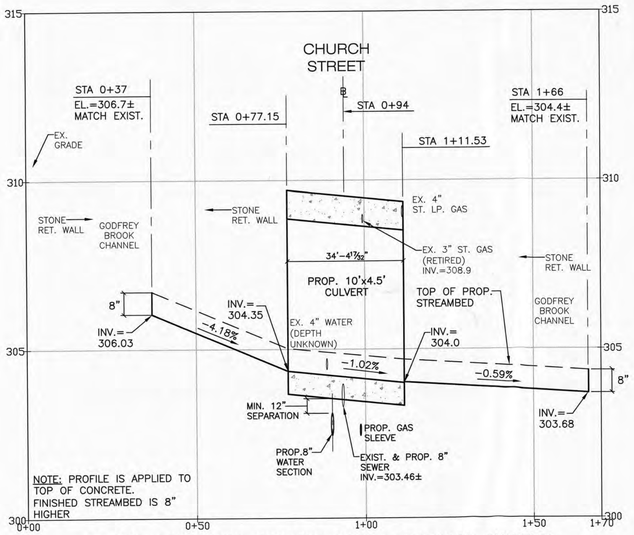
TYPICAL CEMENTED STONE MASONRY WALL

NTS



TYPICAL SECTION AT PRECAST LI–SHAPED CHANNEL

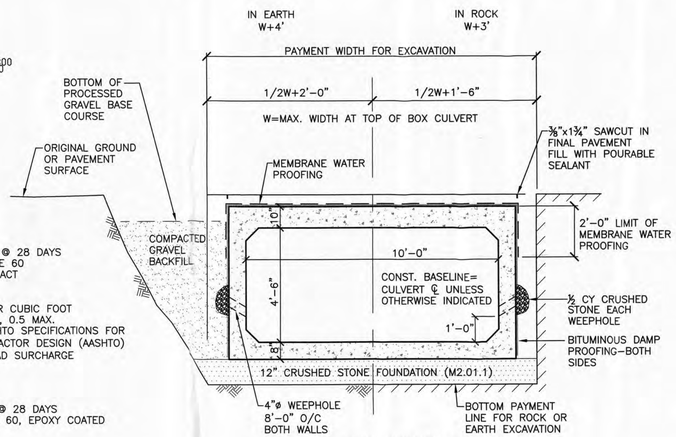
NTS



NOTE: PROFILE IS APPLIED TO TOP OF CONCRETE. FINISHED STREAMBED IS 8" HIGHER

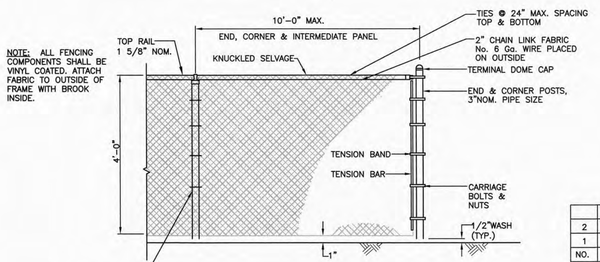
PROFILE–RELOCATED GODFREY BROOK PROPOSED CULVERT

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



TYPICAL BOX CULVERT DETAIL

NTS



NOTE: ALL FENCING COMPONENTS SHALL BE VINYL COATED. ATTACH FABRIC TO OUTSIDE OF FRAME WITH BROOK INSIDE.

VINYL COATED CHAIN LINK FENCE

NTS

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

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GODFREY BROOK & CULVERT DETAILS

CHURCH STREET CULVERT REPLACEMENT

MILFORD, MASSACHUSETTS

PREPARED BY:
GZA GeoEnvironmental, Inc.
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PREPARED FOR:
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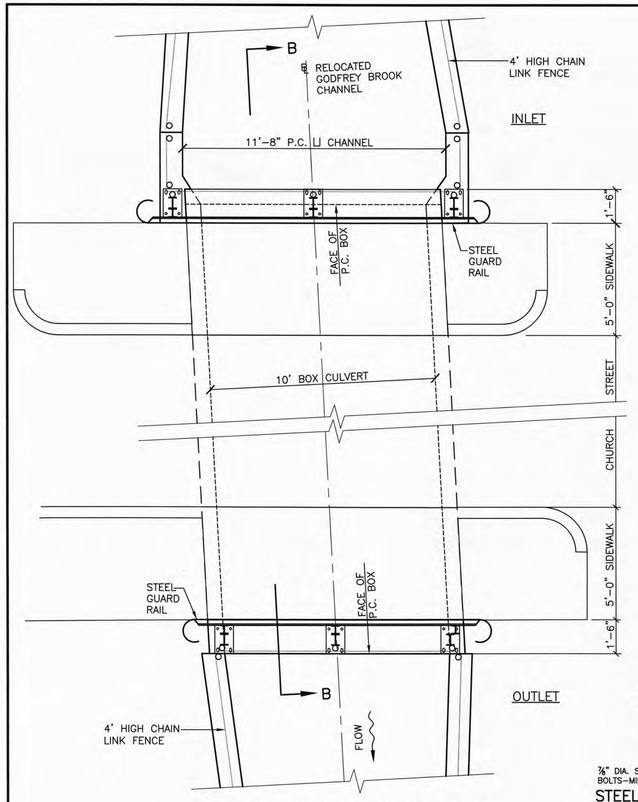
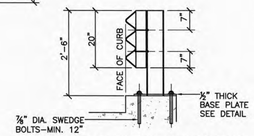
PROJ MGR: TEJ	REVIEWED BY: RS	CHECKED BY: TEJ	
DESIGNED BY: RS	DRAWN BY: EDM	SCALE: AS NOTED	5
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	



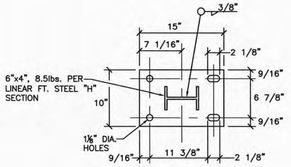
BOX CULVERT INLET/OUTLET PLAN
1"=3'

NOTES:

1. SWEDGE BOLTS, U-BOLTS, NUTS & WASHERS TO BE HOT-DIPPED GALVANIZED.
2. HOLES FOR SWEDGE BOLTS SHALL BE 10" DEEP. SWEDGE BOLTS TO BE SET IN EPOXY RESIN, AS APPROVED BY THE ENGINEER.
3. BASE PLATE IS TO BE SET ON 3/32" NEOPRENE.
4. THE BASE PLATE AMD CONSTRUCTION METHOD SHOWN ARE ALSO USED WHEN THERE ARE NO EXPANSION JOINTS IN THE CEMENT CONCRETE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FIELD MEASUREMENTS.

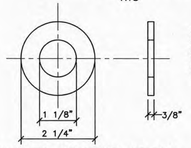


STEEL THRIE BEAM GUARDRAIL
NTS



BASE PLATE DETAIL
NTS

CHAIN LINK FENCE MOUNTED ON GUARDRAIL
NTS

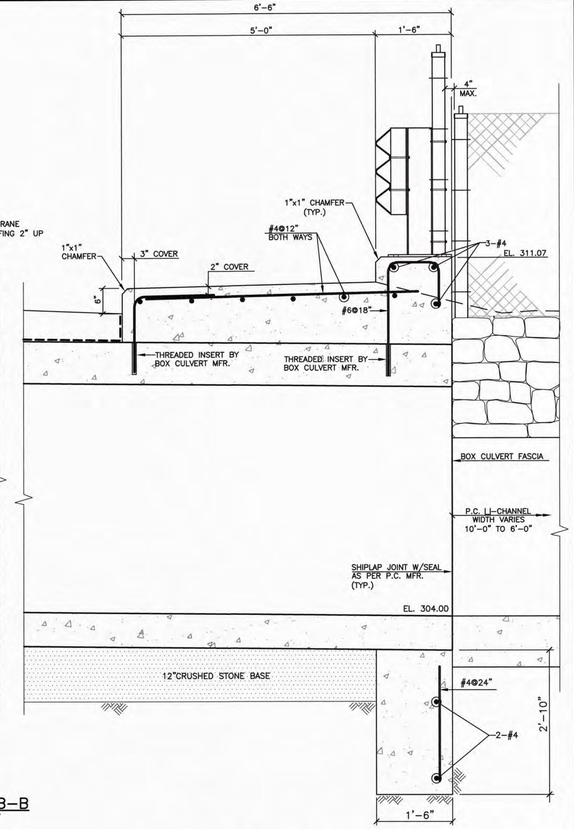


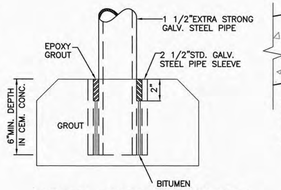
NOTES:
1. CHAIN LINK FENCE TO FOLLOW GRADE OF TOP OF WALL.
2. JOINTS SHALL BE WELDED AND GROUND SMOOTH.
3. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE STANDARD SPECIFICATIONS.

TYPICAL FENCE ANCHORAGE IN STONE MASONRY
NTS

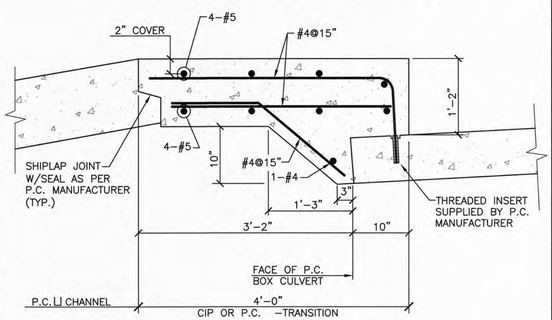
GALVANIZED WASHER DETAIL
NTS

SECTION B-B
¾"=1'-0"

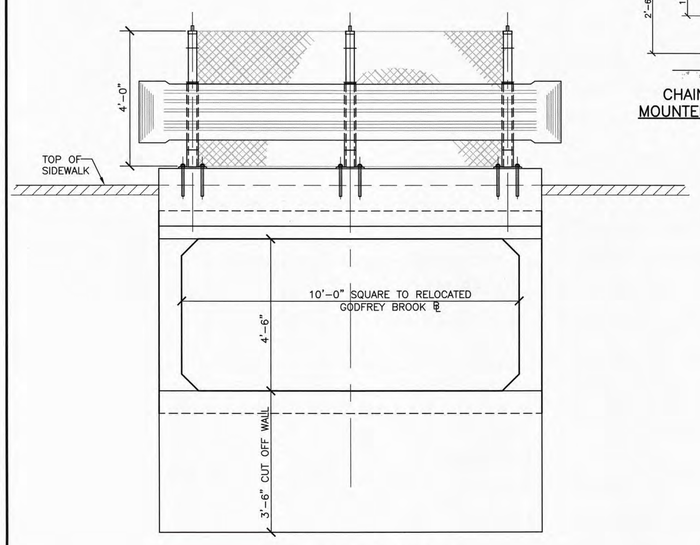




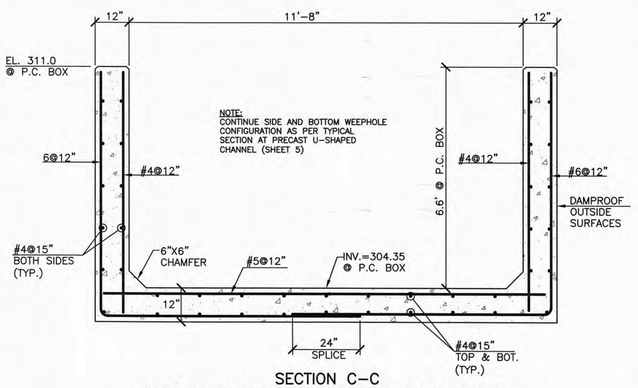
TYPICAL FENCE ANCHORAGE IN CONCRETE
NTS



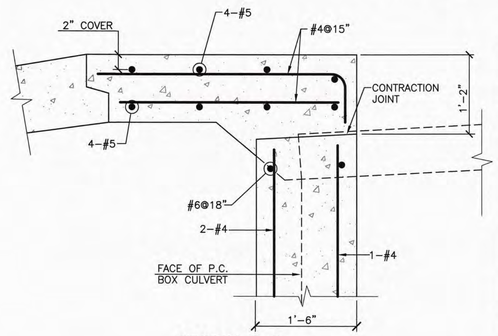
SECTION D-D
1"=1'



TYPICAL PORTAL VIEW
1"=2'



SECTION C-C
CAST-IN-PLACE OR PRECAST LI INLET SECTION
1"=2'



SECTION E-E
1"=1'

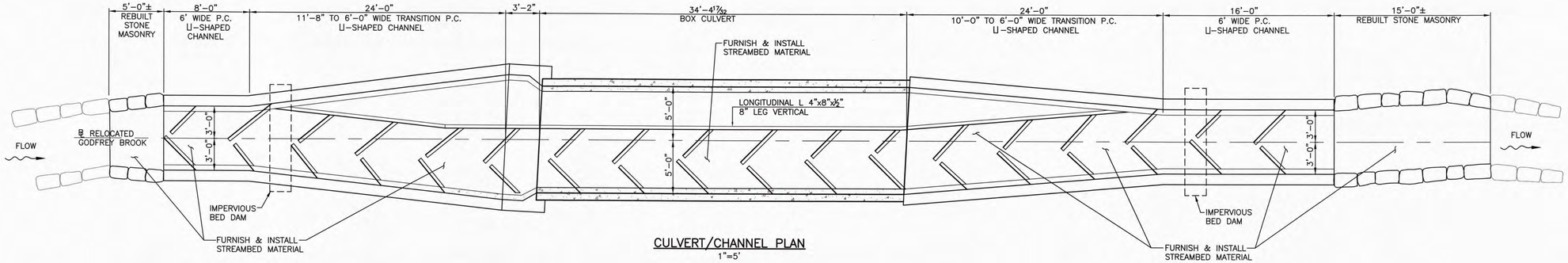
NO.	ISSUE/DESCRIPTION	BY	DATE
2	ISSUED FOR CONSTRUCTION	EDM	3/28/12
1	ISSUED FOR PERMITTING	EDM	1/19/12

CULVERT DETAILS & SECTIONS
CHURCH STREET CULVERT REPLACEMENT
MILFORD, MASSACHUSETTS

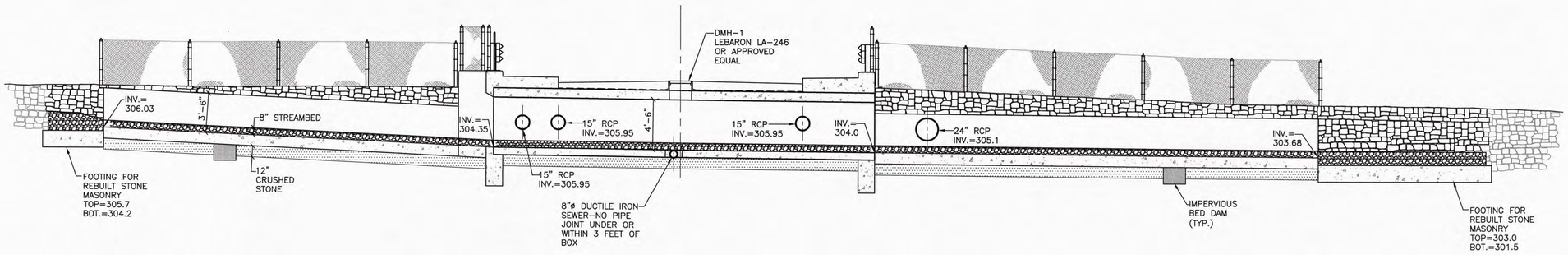
PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
TOWN OF MILFORD

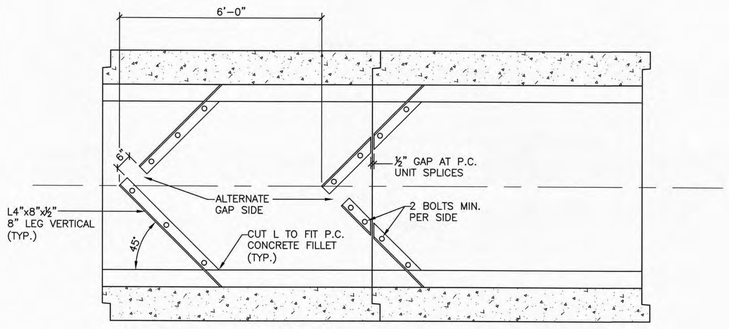
PROJ MGR: TEJ	REVIEWED BY: RS	CHECKED BY: TEJ	
DESIGNED BY: RS	DRAWN BY: EDM	SCALE: AS NOTED	6
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	



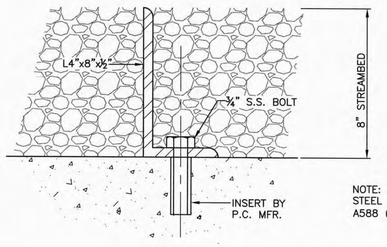
CULVERT/CHANNEL PLAN
1"=5'



CULVERT/CHANNEL SECTION
1"=5'

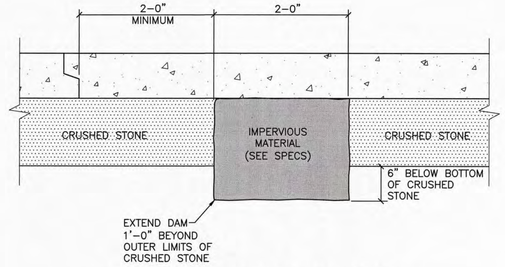


HERRINGBONE BAFFLE ANGLE LAYOUT
1"=2'



NOTE:
STEEL ANGLE ASTM A588 (WEATHERING)

ANGLE DETAIL
NTS



TYPICAL IMPERVIOUS BED DAM DETAIL
1"=1'

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

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	REVIEWED BY: RS	CHECKED BY: TEJ	
DESIGNED BY: RS	DRAWN BY: EDM	SCALE: AS NOTED	7
DATE: DECEMBER, 2011	PROJECT NO. 15.0166148.10	REVISION NO.	

CONTRACT PLANS

For The

GODFREY BROOK FLOOD MITIGATION PROJECT

Prepared For The

TOWN OF MILFORD, MASSACHUSETTS
OFFICE OF PLANNING AND ENGINEERING

RENO DE LUZIO
TOWN PLANNER

MICHAEL SANTORA, P.E.
TOWN ENGINEER

April, 1999

Issued for Bidding, August 12, 1999

Issued as Record Print, October 1, 2001
As-Built Information Provided By
John Rocchio Corp., Sept. 19, 2001

PROJECT FUNDING ASSISTANCE PROVIDED BY:

COMMONWEALTH OF MASSACHUSETTS

THE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
MASSACHUSETTS COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM

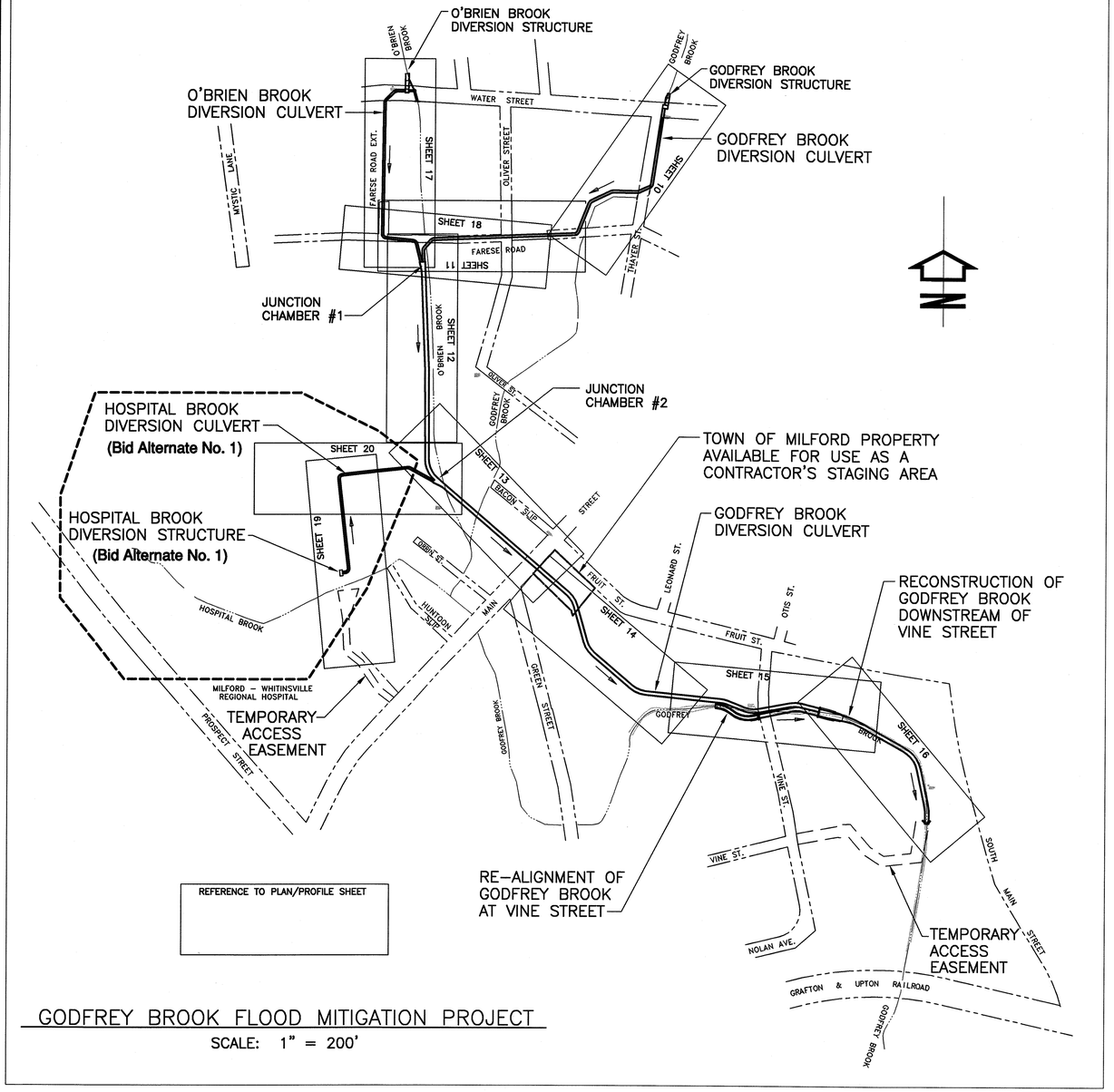
THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATERWAYS

PREPARED BY

BEC BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers — Environmental Scientists
296 North Main Street — East Longmeadow, MA 01028

INDEX TO PLAN SHEETS

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".



GODFREY BROOK FLOOD MITIGATION PROJECT

SCALE: 1" = 200'

ABBREVIATIONS

Aban.	Abandon
Approx.	Approximately
BB	Bituminous Berm
Bit. Conc.	Bituminous Concrete
℄	Baseline
Bldg.	Building
B.M.	Bench Mark
C.B.	Catch Basin
CEM.	Cement
C.I.	Curb Inlet
C.I.P.	Cast Iron pipe
℄	Center Line
Conc.	Concrete
Const.	Construct(ion)
Culv.	Culvert
Cu. Yds.	Cubic Yards
D.I.	Drop Inlet
D.I.P.	Ductile Iron Pipe
Dr.	Drive
Elev. (or EL.)	Elevation
Exc.	Excavation
Exist. (or Ex.)	Existing
GC	Granite Curb
Gar.	Garage
Gran.	Granite
Hyd.	Hydrant
Inv	Invert Elevation
LP	Low Point
Lt.	Left
M.H.	Manhole
M.H.D.	Mass. Highway Department
Min.	Minimum
Max.	Maximum
NTS	Not to Scale
O.C.	On Centers
P.C.	Point of Curvature
P.C.C.	Point of Compound Curvature
P.I.	Point of Intersection
℄ (or Prop. Line)	Property Line
P.R.C.	Point of Reverse Curvature
PVCP	Poly–Vinyl–Chloride Pipe
Proj.	Project
Prop.	Proposed
P.T.	Point of Tangency
R	Radius of Curvature
R&R	Remove and Reset or Rebuild
R&S	Remove and Stack
RCP	Reinforced Concrete Pipe
Rd.	Road
Rdwy.	Roadway
Rem.	Remove
Ret.	Retain
Ret. Wall	Retaining Wall
R.O.W.	Right–of–Way
R.R.	Railroad
Rt.	Right
R/W	Right–of–Way
San.	Sanitary
Sec.	Section
Sects.	Sections (End sections for pipes)
Sh.	Sheet
S.M.H.	Sewer Manhole
Sq. Yds.	Square Yards
St.	Street
Sta.	Station
Surf.	Surfacing or Surface
S.W.	Sidewalk
T, Tan.	Tangent
Temp.	Temporary
Typ.	Typical
Var.	Variable
V.C.	Vertical Curve
V.C.P.	Vitrified Clay Pipe
Vert.	Vertical
Wd.	Wood
X–Sect.	Cross Section

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.
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. PRIOR TO ANY OTHER WORK TAKING PLACE, THE CONTRACTOR SHALL ERECT SILT FENCE EROSION CONTROL BARRIER ALONG THE TEMPORARY EASEMENT LINES AT ALL UNPAVED OR UNSURFACED AREAS THROUGHOUT THE PROJECT AREA. EROSION CONTROL BARRIER INSTALLATION MAY BE PHASED BUT NO GROUND DISTURBANCE SHALL BE ALLOWED WITHOUT AN ADEQUATE EROSION CONTROL BARRIER IN PLACE.
5. THE CONTRACTOR MAY USE THE TOWN OF MILFORD PROPERTY AT THE CORNER OF MAIN ST. AND FRUIT ST. AS A STAGING AREA. AT THE END OF THIS PROJECT, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL PAVING, INTERIOR FENCING, AND OTHER INTERIOR IMPROVEMENTS AND SHALL GRADE THE SITE LEVEL, ADDING GRAVEL BORROW AS NECESSARY TO FILL ANY LOW AREAS. ALL OTHER STAGING AREAS SHALL BE PROCURED BY THE CONTRACTOR.
6. 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.
7. ALL PROP. DRAINAGE AND SAN. SEWER STRUCTURES SHALL BE SUPPORTED WITH A 12" CRUSHED STONE (M2.01.1) FOUNDATION.
8. ALL REINFORCED CONCRETE PIPE USED ON THIS PROJECT SHALL BE CLASS III, UNLESS OTHERWISE DESIGNATED ON THE PLANS.
9. ALL EXISTING DRAIN AND SAN. SEWER LINES TO BE REPLACED SHALL BE ABANDONED IN PLACE. IF THEY CONFLICT WITH ANY PROP. WORK THEY SHALL BE REMOVED.
10. WHERE LINES OR STRUCTURES ARE ABANDONED IN PLACE, THE CONTRACTOR SHALL ENSURE THAT ALL CONNECTING PIPES, INLETS, AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO NEW WORK TO THE SATISFACTION OF THE ENGINEER.
11. CATCH BASIN, DROP INLET, AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE OPENINGS IN THE PRECAST STRUCTURES.
12. ALL EXISTING PAVEMENT MARKINGS SHALL BE REPLACED IN KIND AFTER FINAL PAVING OF ROAD RECONSTRUCTION AREAS.
13. ALL STRUCTURE STATIONS AND OFFSETS ARE TO THE CENTER POINT OF THE PROP. GRATE OR COVER.
14. ALL PROPOSED GRANITE CURBING SHALL BE MHD TYPE VB AND SHALL INCLUDE REMOVAL OF EXISTING GRANITE CURBING, WHERE APPLICABLE. REMOVE AND RESET OF GRANITE CURBING SHALL BE LIMITED TO AREAS OUTSIDE OF THE PUBLIC RIGHT OF WAY.
15. 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.
16. ALL WHEELCHAIR RAMPS SHALL MEET THE LATEST REQUIREMENTS OF THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND THE LATEST STANDARDS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT.
17. ALL DRIVEWAY REPAIRS SHALL BE "TYPICAL DRIVEWAYS" AS SHOWN IN THE DETAILS.
18. ALL UNSURFACED AREAS WITHIN THE PERMANENT EASEMENT SHALL BE CLEARED AND GRUBBED. ALL OTHER TREES, SHRUBS, AND OTHER VEGETATION OUTSIDE OF THE PERMANENT EASEMENTS BUT WITHIN THE TEMPORARY EASEMENT LINES SHALL BE REMOVED AS THE CONTRACTOR REQUIRES TO COMPLETE THE WORK OF THIS PROJECT, WITH THE EXCEPTION OF TREES DESIGNATED ON THE PLANS AS TO REMAIN. GRUBBING WITHIN THE TEMPORARY EASEMENTS SHALL NOT BE REQUIRED BUT WILL BE ALLOWED, EXCEPT FOR WITHIN WETLAND AREAS, IF THE CONTRACTOR DESIRES IN ORDER TO FACILITATE THE WORK.
19. 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.
20. 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.
21. MAILBOXES, FENCES, STREET SIGNS, ETC. THAT NEED TO REMOVED AND RESET OR RELOCATED SHALL BE DONE SO TO THE SATISFACTION OF THE OWNER. ALL ITEMS SHALL BE SET TO MHD STANDARDS.
22. CONTRACTOR SHALL COMPLY IN ALL RESPECTS WITH ALL ENVIRONMENTAL PERMITS ISSUED FOR THIS PROJECT.

TRAFFIC MANAGEMENT NOTES

1. PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A TRAFFIC MANAGEMENT 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 "C", EXCEPT THAT THE FIRST THREE DRUMS USED AT EACH END OF A STRING OF DRUMS SHALL HAVE ATTACHED FLASHER TYPE "A".
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 MHD STANDARDS. ALL CONSTRUCTION SIGNS SHALL BE ATTACHED TO THEIR OWN INDEPENDENT SUPPORTS.
5. ALL CONSTRUCTION TRAFFIC CONTROL DEVICES SHALL BE IMMEDIATELY REMOVED WHEN NO LONGER NEEDED. ADVANCE WARNING SIGNS 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. AT THE END OF EACH WORKDAY, ALL ROADWAYS SHALL BE OPEN FOR TWO–WAY TRAFFIC BY FILLING EXCAVATIONS TO GRADE OR BY THE USE OF STEEL PLATES.
8. DURING NON–WORKING HOURS, NO LATERAL DROP–OFF WILL BE PERMITTED WITHIN THE AREA OF EXCAVATION ADJACENT TO ANY TRAVELLED WAY.
9. IT IS ANTICIPATED THAT SHORT–TERM DETOURS (3 DAYS OR LESS) MAY BE ALLOWABLE FOR PORTIONS OF WATER STREET, THAYER STREET, TAYLOR STREET, FARESE ROAD AND FARESE ROAD EXTENSION, AND VINE STREET. ALL PROPOSED DETOURS MUST BE REVIEWED IN DETAIL WITH THE ENGINEER AND WRITTEN APPROVAL OF THE DETOUR PLAN MUST BE OBTAINED PRIOR TO IMPLEMENTATION.
10. NO DETOUR OF MAIN STREET TRAFFIC WILL BE ALLOWED.

GENERAL CONSTRUCTION SEQUENCING

1. THE CONTRACTOR SHALL SUBMIT A WRITTEN PROJECT SEQUENCE AND SCHEDULE FOR APPROVAL BY THE ENGINEER IN WRITING PRIOR TO ANY CONSTRUCTION ACTIVITIES TAKING PLACE.
2. THE CONTRACTOR SHALL GENERALLY PROCEED IN A DOWNSTREAM TO UPSTREAM FASHION.
3. SEQUENCING FOR WORK IN THE VINE STREET AREA HAS BEEN DESCRIBED IN DETAIL FOR PERMITTING PURPOSES AND IS INCLUDED IN THE CONSTRUCTION PLANS.
4. UNDER NO CIRCUMSTANCES SHALL ANY DIVERSION STRUCTURE BE PLACED INTO OPERATION BEFORE ALL DOWNSTREAM WORK HAS BEEN ACCEPTED FOR USE.

LEGEND

EXISTING

- FIRE HYDRANT
- WATER GATE
- SEWER MANHOLE
- CATCH BASIN
- DRAIN MANHOLE
- PIPE OUTLET
- GAS GATE
- UTILITY POLE
- GUY WIRE
- 305.9 × SPOT GRADES
- B–3 296.1± APPROX. BORING LOCATION WITH APPROX. GROUND SURFACE ELEVATION
- SHRUB OR MISC. TREE
- HEDGE LINE
- TREE LINE
- WETLAND AREA
- APPROX. STREET LINES
- APPROX. PROPERTY LINES
- EDGE OF PAVEMENT
- PAVED WALKS
- CURB LINES
- EDGE OF DRIVES
- FENCE
- STONE WALL
- CONCRETE WALL
- OH — OH OVERHEAD WIRES
- G — 4" CIP — G GAS LINE
- S — 8" VCP — S SEWER LINE
- D — 12" RCP — D DRAIN LINE
- W — 6" CIP — W WATER LINE
- T — T TELEPHONE LINE
- BUILDING
- WETLAND BOUNDARY
- STREAMS
- 100' WETLAND BUFFER ZONE

PROPOSED

- SUPPLEMENTARY EROSION CONTROL BARRIER (F/7)
- REQUIRED PERMANENT EASEMENT
- REQUIRED TEMPORARY EASEMENT
- 12+00 — 13+00 CONSTRUCTION BASELINES
- DIVERSION CULVERTS
- CATCH BASIN (OR DROP INLET)
- MH#4 DRAINAGE MANHOLE
- SMH #2 SAN. SEWER MANHOLE
- DIRECTION OF FLOW
- CURB (OR BERM) – TYPE NOTED
- EDGE OF PAVING OR SIDEWALK
- 45 LF–42"RCP DRAIN PIPE (DOUBLE LINE 24" AND OVER)
- 22 LF– 8" PVCP SEWER MAIN
- SAN. SEWER
- + 300.0 SPOT GRADE
- (TOP) — (BOTTOM) SLOPE
- (A/8) = DETAIL "A" AS SHOWN ON SHEET NO. 8 (TYP.)

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

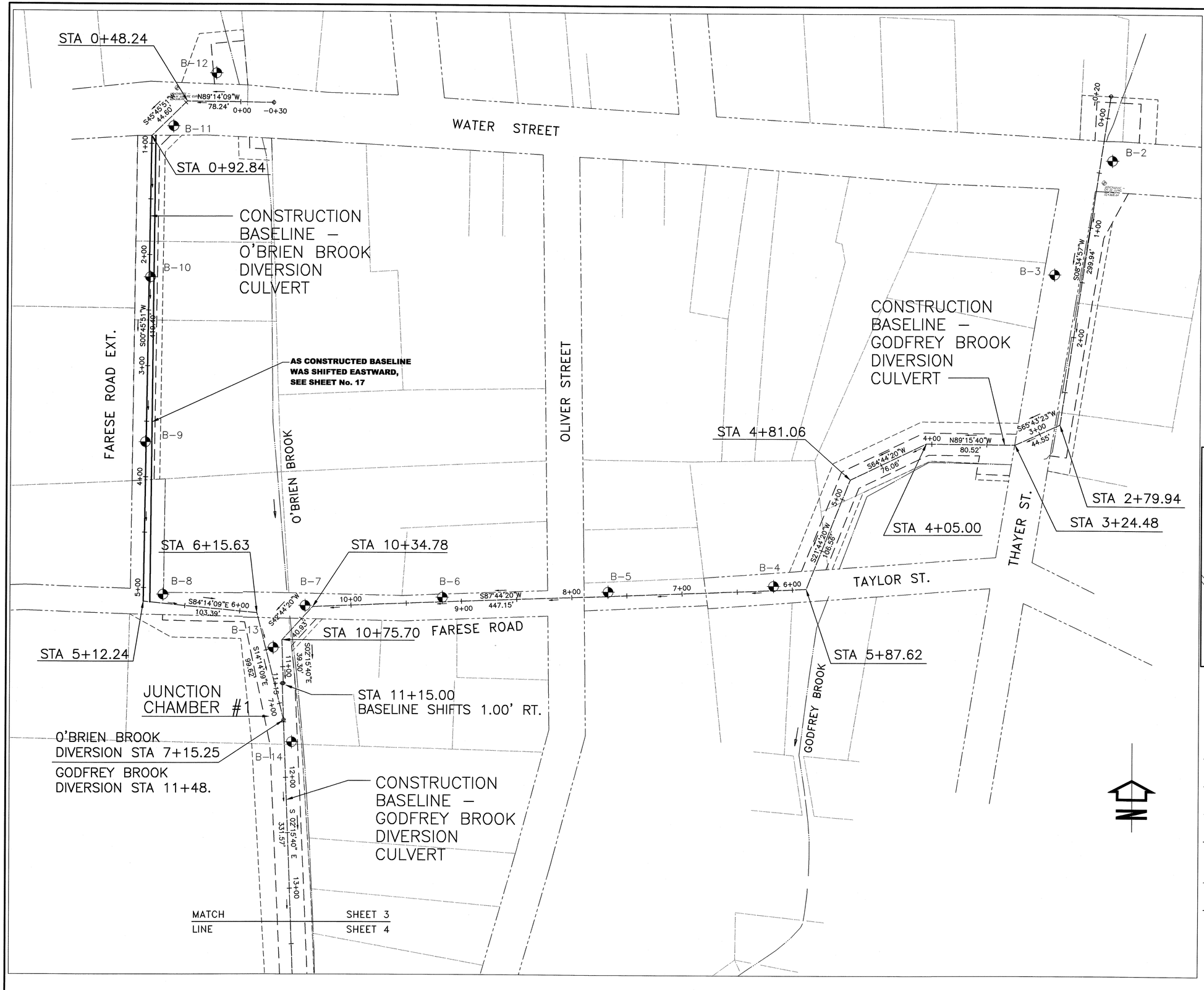
DRAWING NO. 2 OF 35 SHTS

PROJECT NO. 94–1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Index Plan

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



NOTE:
LOCAL COORDINATED CONTROL POINTS WILL BE PROVIDED TO THE CONTRACTOR.

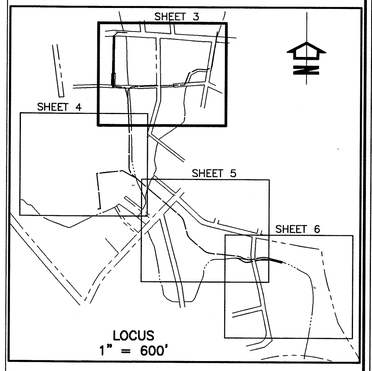
CONSTRUCTION BASELINE COORDINATE LISTINGS

GODFREY BROOK DIVERSION CULVERT:

STATION	COORDINATES
-0+20.00 (BEGIN)	N 414802.98 E 593331.85
11+15.00	N 414270.22 E 592584.68
BASELINE SHIFTS 1.00' RT. AT GODFREY BROOK STA 11+15.00	
11+15.00 1.00'R	N 414270.68 E 592583.68

O'BRIEN BROOK DIVERSION CULVERT:

STATION	COORDINATES
-0+30.00 (BEGIN)	N 414794.08 E 592573.40
7+15.25 (END)	N 414237.70 E 592584.99
INTERSECTION AT GODFREY BROOK STA 11+48.00	



COORDINATES SHOWN ARE MASSACHUSETTS COORDINATE SYSTEM GRID NORTH – MAINLAND ZONE

LEGEND

- EXISTING STREAM CHANNELS
- APPROXIMATE STREET LINES
- APPROXIMATE PROPERTY LINES
- CONSTRUCTION BASELINES, WITH FLOW DIRECTION
- REQ'D. TEMPORARY EASEMENTS
- REQ'D. PERMANENT EASEMENTS
- B-29 APPROXIMATE BORING LOCATION

BORING LOGS INCLUDED WITH SPECIFICATIONS

DRAWING NO. 3 OF 35 SHTS

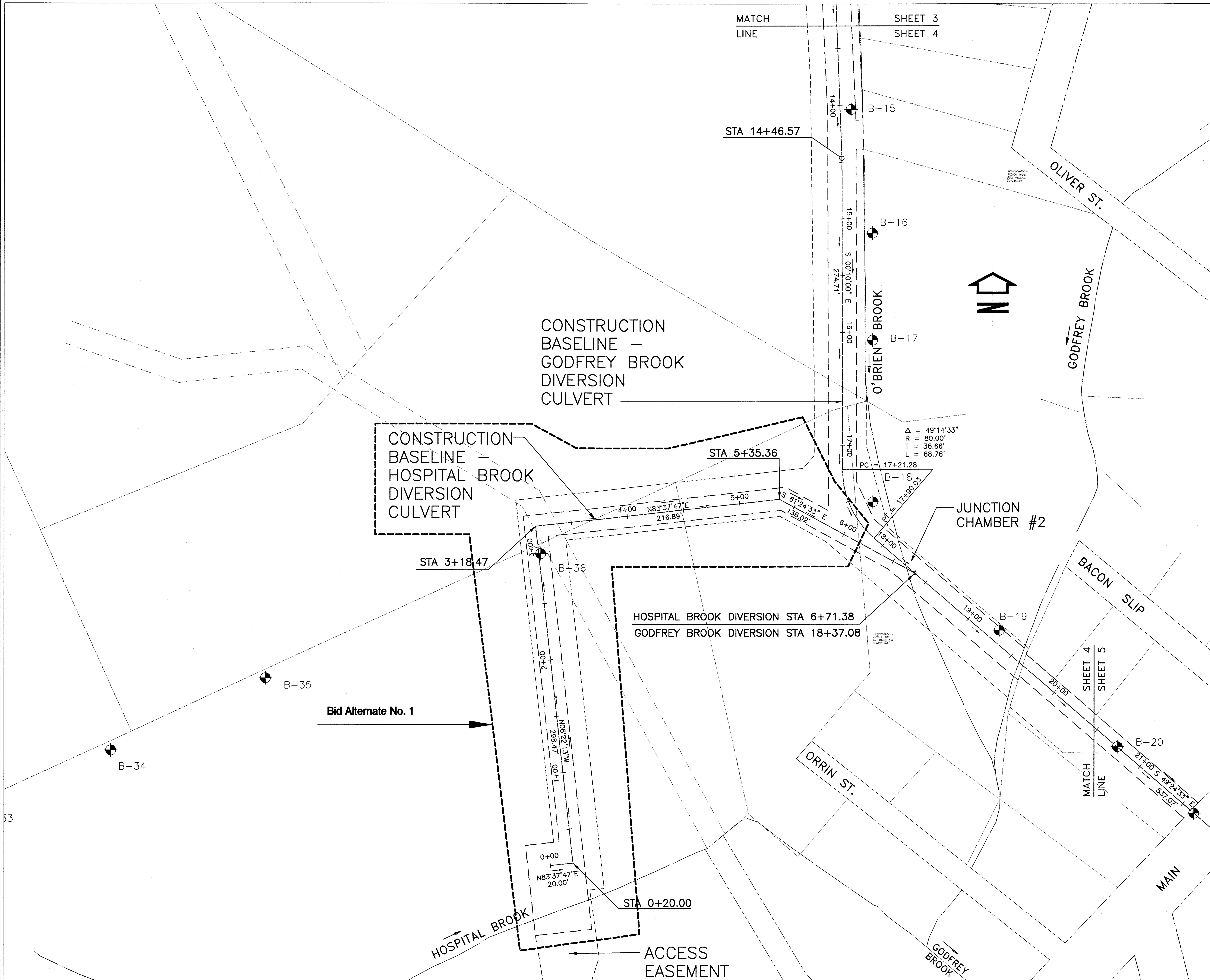
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors Engineers
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE 1" = 40'
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Layout Plan No. 1

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



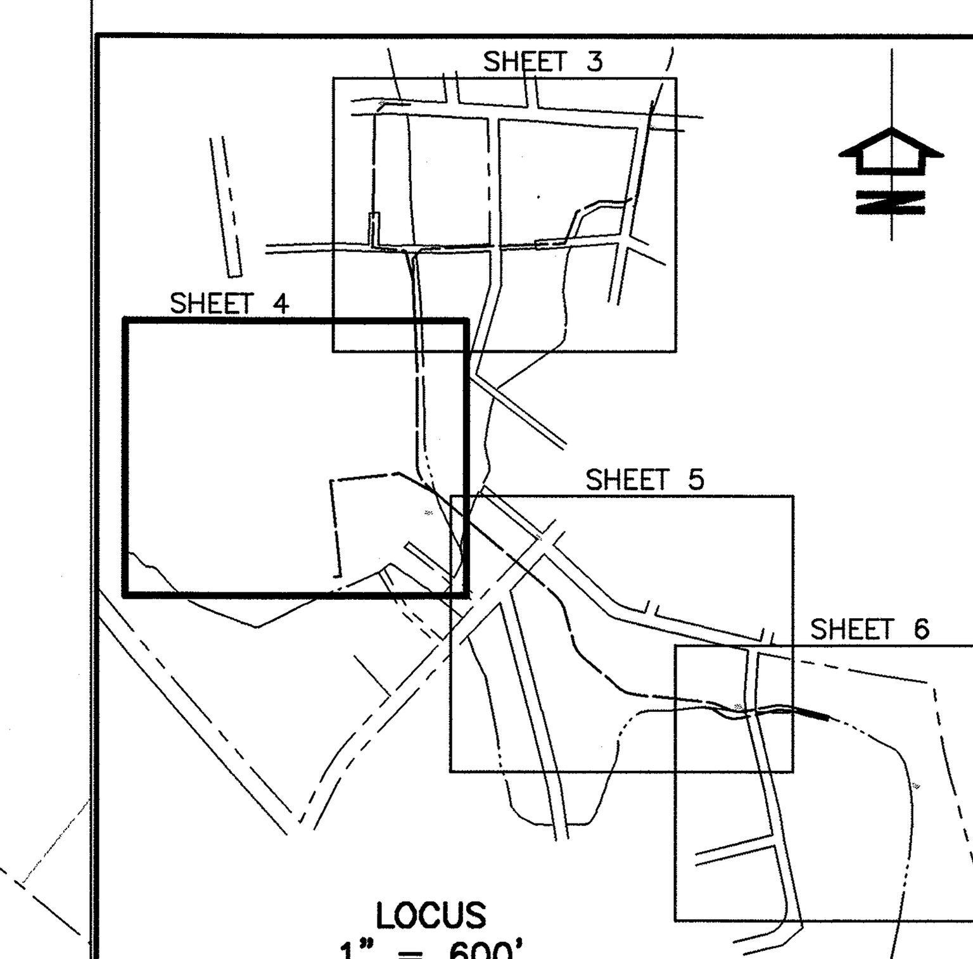
NOTE:
LOCAL COORDINATED CONTROL POINTS WILL BE PROVIDED TO THE CONTRACTOR.

CONSTRUCTION BASELINE COORDINATE LISTINGS

HOSPITAL BROOK DIVERSION CULVERT:

STATION	COORDINATES
0+00.00 (BEGIN)	N 413315.71 E 592339.50
6+71.38 (END)	N 413573.53 E 592661.24

INTERSECTION AT GODFREY BROOK STA 18+37.08



LOCUS
1" = 600'

COORDINATES SHOWN ARE MASSACHUSETTS COORDINATE SYSTEM GRID NORTH – MAINLAND ZONE

LEGEND

- EXISTING STREAM CHANNELS
- APPROXIMATE STREET LINES
- APPROXIMATE PROPERTY LINES
- CONSTRUCTION BASELINES, WITH FLOW DIRECTION
- REQ'D. TEMPORARY EASEMENTS
- REQ'D. PERMANENT EASEMENTS
- B-29 APPROXIMATE BORING LOCATION
  BORING LOGS INCLUDED WITH SPECIFICATIONS

DRAWING NO. 4 of 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE 1" = 40'
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Layout Plan No. 2

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

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BEC, Inc.

BACON SLIP

SHEET 4 / SHEET 5 MATCH LINE

B-20

21+00 S 49°24'33" E 53.07'

B-21

22+00

B-22

23+00

B-23

Δ = 33°41'46"
R = 80.00'
T = 24.23'
L = 47.05'

PC = 23+27.10

PT = 23+74.15

24+00 S 15°42'47" E 113.17'

PC = 24+87.32

PT = 25+34.63

25+00

B-24

26+00 S 49°35'41" E 154.01'

B-25

27+00

28+00 S 84°20'09" E 233.26'

29+00

30+00 57.17'

B-26

11+00 N 79°39'16" E 100.31'

32+00

B-27

S 75°56'25" E 57.43'

32+84.29

STREET

TOWN OF MILFORD PROPERTY—
CONTRACTOR'S STAGING AREA
See Note 5 on Sheet 2

MAIN

LEONARD ST.

FRUIT ST.

GREEN STREET

GODFREY BROOK

CONSTRUCTION BASELINE — GODFREY BROOK DIVERSION CULVERT

Δ = 33°52'54"
R = 80.00'
T = 24.37'
L = 47.31'

Δ = 34°44'28"
R = 80.00'
T = 25.03'
L = 48.51'

PC = 26+88.64

PT = 27+37.15

SHEET 5 / SHEET 6 MATCH LINE

Δ = 31°14'38"
R = 80.00'
T = 22.37'
L = 43.62'

PC = 30+48.85

PT = 30+92.48

PC = 29+70.41

PT = 29+91.68

Δ = 15°14'03"
R = 80.00'
T = 10.70'
L = 21.27'

PC = 31+78.78

PT = 32+26.86

Δ = 24°24'19"
R = 80.00'
T = 17.30'
L = 34.08'

VINE ST.

CONSTRUCTION BASELINE
RE-ALIGNMENT OF GODFREY BROOK AT VINE STREET
(SEE SHEET 6)

END CONST. BASELINE
FOR GODFREY BROOK
DIVERSION CULVERT
@ STA 32+84.29
BEGIN OPEN CHANNEL
RECONSTRUCTION DOWNSTREAM
OF VINE STREET, STA. 0+00.
BASELINE SHIFTS 0.50' RT.
AT THIS POINT

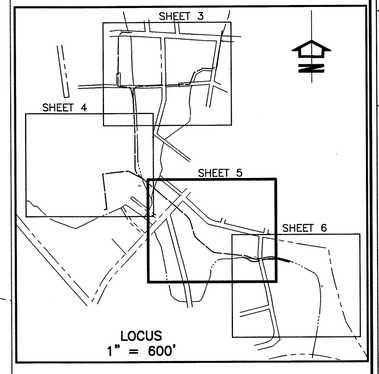
NOTE:
LOCAL COORDINATED CONTROL POINTS WILL BE PROVIDED TO THE CONTRACTOR.

CONSTRUCTION BASELINE COORDINATE LISTINGS

GODFREY BROOK
DIVERSION CULVERT:

STATION	COORDINATES
-0+20.00 (BEGIN)	N 414802.98 E 593331.85
32+84.29 (END)	N 412899.62 E 593812.61

BASELINE SHIFTS 0.50' RT.
AT GODFREY BROOK STA 32+84.29
= RECONSTRUCTION OF
GODFREY BROOK, STA 0+00.00



COORDINATES SHOWN ARE
MASSACHUSETTS COORDINATE SYSTEM
GRID NORTH — MAINLAND ZONE

LEGEND

- EXISTING STREAM CHANNELS
- APPROXIMATE STREET LINES
- APPROXIMATE PROPERTY LINES
- CONSTRUCTION BASELINES, WITH FLOW DIRECTION
- REQ'D. TEMPORARY EASEMENTS
- REQ'D. PERMANENT EASEMENTS
- B-29 APPROXIMATE BORING LOCATION

BORING LOGS INCLUDED WITH SPECIFICATIONS

DRAWING NO. 5 OF 35 SHTS

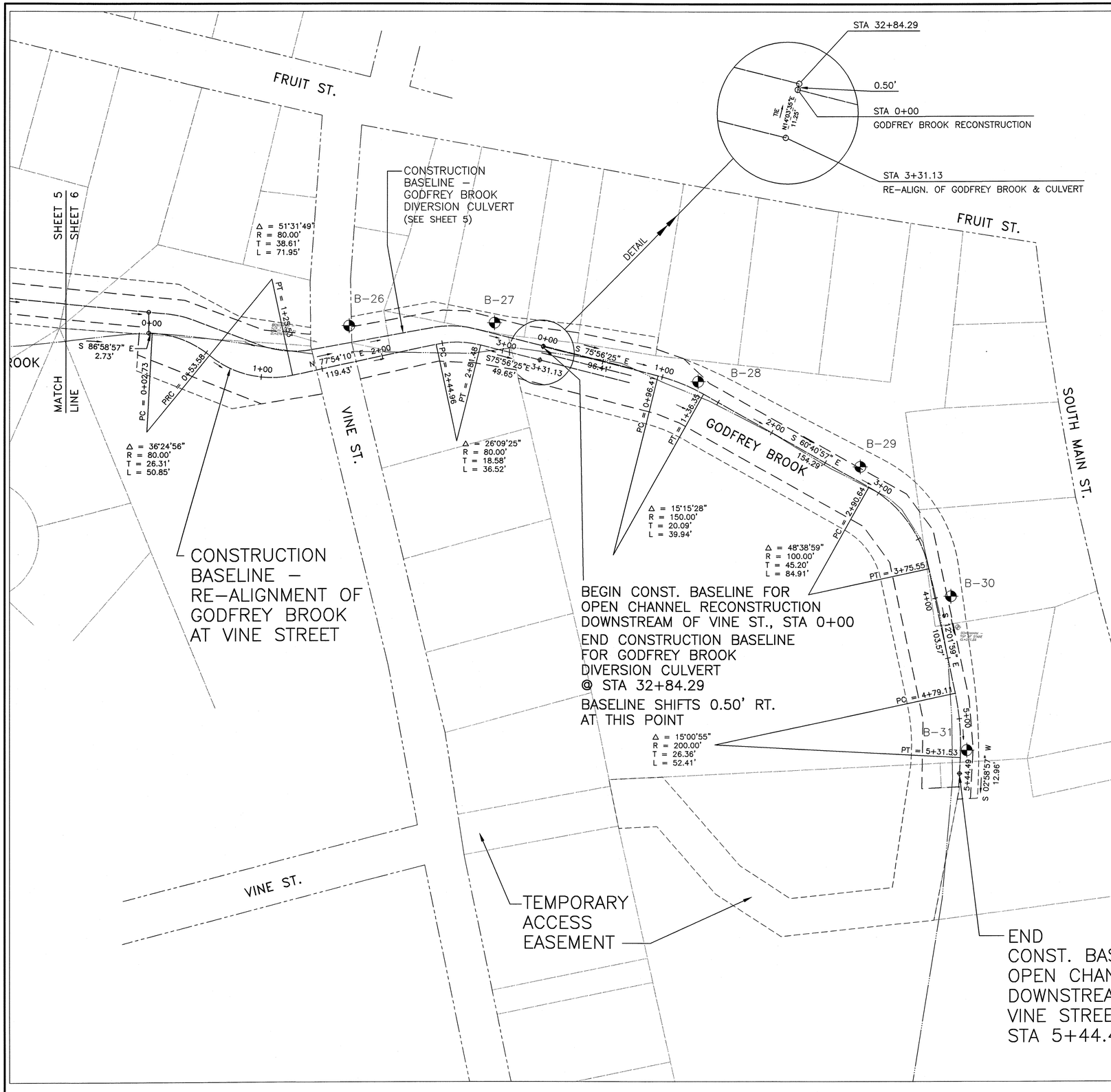
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215 | SCALE 1" = 40' | DATE APRIL 1999 | DRAWN BY EDM | CHECKED BY TEJ

SHEET TITLE: Layout Plan No. 3

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



NOTE:
LOCAL COORDINATED CONTROL POINTS WILL BE PROVIDED TO THE CONTRACTOR.

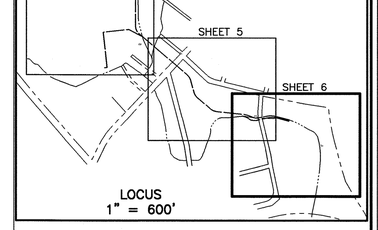
CONSTRUCTION BASELINE COORDINATE LISTINGS

RE–ALIGNMENT OF GODFREY BROOK AT VINE STREET:

STATION	COORDINATES
0+00.00 (BEGIN)	N 412910.55 E 523491.71
3+31.13 (END)	N 412888.22 E 593809.76

RECONSTRUCTION OF GODFREY BROOK DOWNSTREAM OF VINE STREET:

STATION	COORDINATES
0+00.00 (BEGIN)	N 412899.13 E 593812.49
5+44.49 (END)	N 412552.75 E 594151.42



COORDINATES SHOWN ARE MASSACHUSETTS COORDINATE SYSTEM GRID NORTH – MAINLAND ZONE

LEGEND

- EXISTING STREAM CHANNELS
- APPROXIMATE STREET LINES
- APPROXIMATE PROPERTY LINES
- CONSTRUCTION BASELINES, WITH FLOW DIRECTION
- REQ'D. TEMPORARY EASEMENTS
- REQ'D. PERMANENT EASEMENTS
- B-29 APPROXIMATE BORING LOCATION

BORING LOGS INCLUDED WITH SPECIFICATIONS

DRAWING NO. 6 OF 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
286 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE 1" = 40'
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Layout Plan No. 4

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
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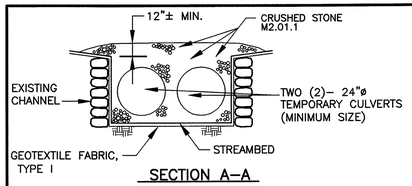
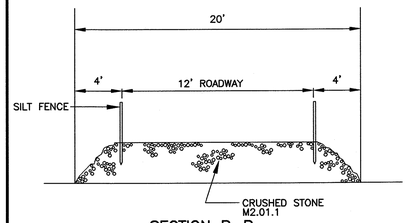
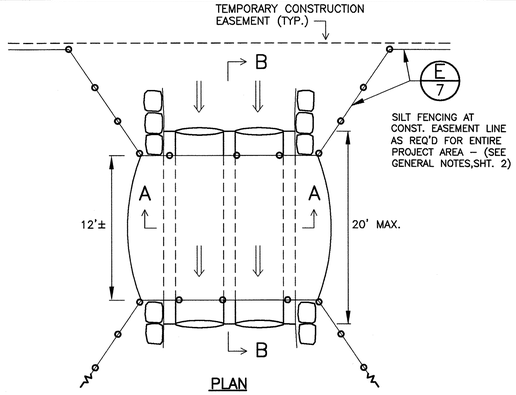
1	8/12/99	ISSUED FOR BIDDING	TEJ



SECTION A–A



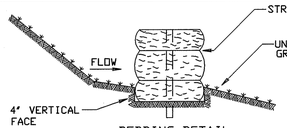
SECTION B–B



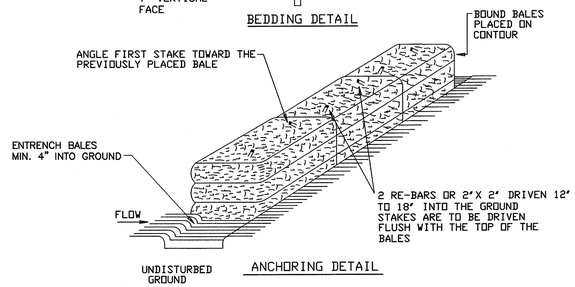
PLAN

A/7 TEMPORARY BROOK CROSSING TYPICAL DETAIL – APPLIES TO CROSSINGS OF HOSPITAL, O'BRIEN, & GODFREY BROOKS

NTS



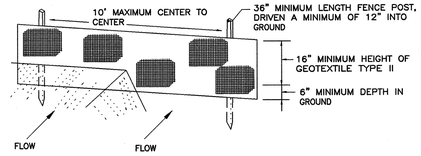
BEDDING DETAIL



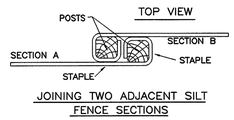
ANCHORING DETAIL

B/7 HAYBALE SILT BARRIER

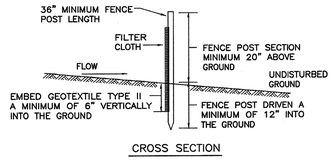
NTS



PERSPECTIVE VIEW



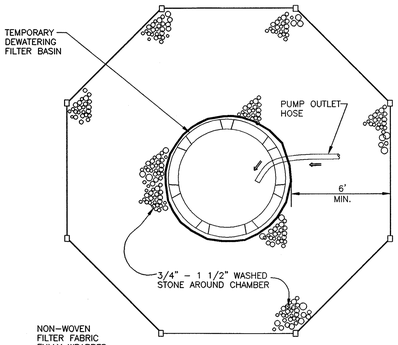
JOINING TWO ADJACENT SILT FENCE SECTIONS



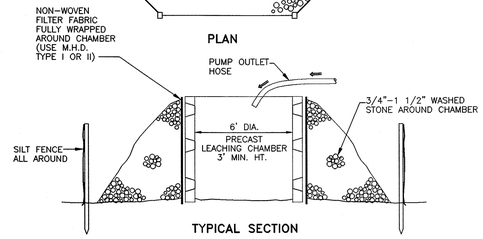
CROSS SECTION

E/7 SILT FENCE DETAIL

NTS



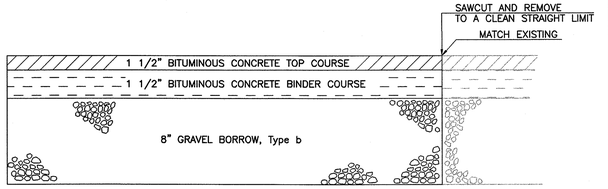
PLAN



TYPICAL SECTION

C/7 TEMPORARY DEWATERING FILTER BASIN

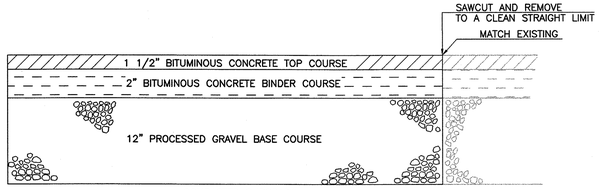
NTS



COMPACTED SUBGRADE

J/7 TYPICAL BIT. CONC. DRIVEWAY RECONSTRUCTION

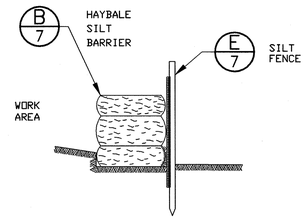
NTS



COMPACTED SUBGRADE

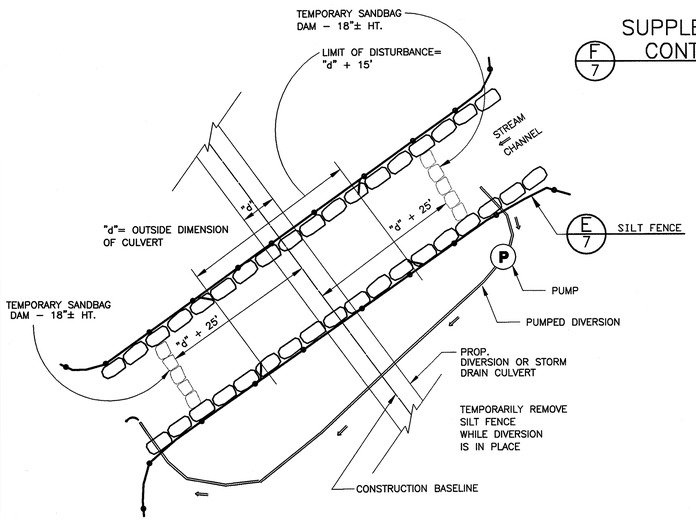
K/7 TYPICAL BIT. CONC. ROAD RECONSTRUCTION

NTS



F/7 SUPPLEMENTARY EROSION CONTROL BARRIER

NTS

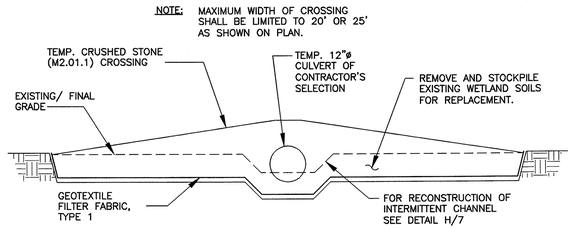


D/7 DIVERSION CULVERT CROSSINGS UNDER EXISTING STREAM CHANNELS TYPICAL DETAIL

NTS

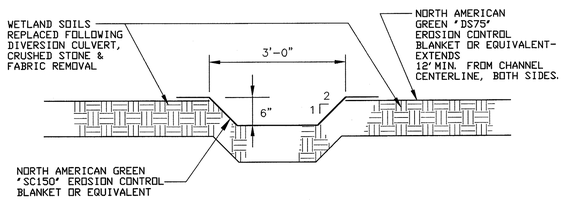
NOTES FOR TEMPORARY DIVERSIONS:

1. EROSION CONTROL BARRIERS SHALL BE IN PLACE PRIOR TO ANY OTHER WORK TAKING PLACE.
2. HAVE PUMP IN PLACE PRIOR TO PLACING TEMPORARY SANDBAG DAMS.
3. PUMPS SHALL BE CAPABLE OF DISCHARGING 1,500 GPM (3.3±CFS) UNDER THE INSTALLED CONDITIONS. PRIOR TO INSTALLING THE DIVERSION, A STANDBY PUMP OF EQUAL OR GREATER CAPACITY SHALL BE ON SITE FOR SUBSTITUTION IN CASE OF MALFUNCTION OR FOR DUPLEX USE IN CASE OF HIGH FLOWS IN THE STREAM CHANNEL.
4. ONCE STARTED, THE PUMPED DIVERSION SHALL REMAIN IN PLACE UNTIL THE WORK IS COMPLETE. PUMPS SHALL BE ATTENDED 24–HOURS PER DAY DURING THE PERIOD OF PUMPED DIVERSION.
5. ACTUAL DISTURBANCE TO THE STREAM CHANNEL SHALL BE LIMITED TO FIFTEEN FEET (15') GREATER THAN THE OUTSIDE DIMENSION OF THE CULVERT BEING INSTALLED.
6. FOLLOWING INSTALLATION OF THE CULVERT AND PROPER BACKFILL, THE CHANNEL WALLS AND FLOOR SHALL BE RECONSTRUCTED IN KIND TO THE SATISFACTION OF THE ENGINEER.
7. PRIOR TO REMOVING THE DIVERSION, THE STREAM CHANNEL IN THE WORK AREA SHALL BE THOROUGHLY CLEANED, WITH ALL DEBRIS AND EXTRANEOUS MATERIAL REMOVED.
8. REMOVE ALL TEMPORARY SANDBAGGING AT THE COMPLETION OF THE PUMPED DIVERSION.



G/7 TEMPORARY CROSSING OF INTERMITTENT CHANNEL/ WETLAND AREA

NTS



H/7 RECONSTRUCTION OF DISTURBED INTERMITTENT CHANNELS

NTS

APPROX. LIMITS OF ROAD RECONSTRUCTION

NOTE: CONTRACTOR SHALL RECORD EXIST. ELEVATIONS AT EACH STATION AND OFFSET LISTED BELOW FOR REFERENCE AND RE–ESTABLISHMENT DURING ROAD RECONSTRUCTION. POINTS REPRESENT FINISHED EDGE OF PAVING.

TAYLOR ST. GODFREY BROOK DIVERSION BASELINE		FARESE ROAD		FARESE RD. EXT. O'BRIEN BROOK DIVERSION BASELINE	
5+66.8	14.3' Lt	8+17.0	14.3' Rt	0+86.0	5.5' Lt
5+85.8	14.9' Lt	8+17.6	8.8' Lt	0+93.1	9.0' Rt
6+00.0	5.6' Lt	8+18.0	10.2' Rt	1+37.1	5.9' Rt
6+05.1	14.4' Rt	8+21.7	7.3' Rt	1+43.9	8.8' Lt
6+13.0	15.3' Rt	8+22.1	7.6' Lt	1+44.6	9.2' Lt
6+19.4	15.0' Rt	8+25.0	6.4' Rt	1+71.4	3.8' Rt
6+25.0	6.4' Lt	8+50.0	8.0' Lt	2+50.5	3.9' Rt
6+50.0	7.1' Lt	8+50.0	4.6' Rt	3+36.4	2.3' Rt
6+51.7	13.9' Rt	8+75.0	7.2' Lt	3+91.8	2.9' Rt
6+60.3	7.4' Lt	8+75.0	4.2' Rt	4+44.8	4.4' Rt
6+64.2	9.5' Lt	9+00.0	6.4' Lt	4+80.5	2.5' Rt
6+65.7	10.7' Lt	9+00.0	4.3' Rt	4+86.1	6.2' Rt
6+75.0	10.2' Rt	9+25.0	7.1' Lt	4+87.6	9.6' Rt
6+81.9	10.2' Rt	9+25.0	3.9' Rt	4+94.9	10.0' Lt
6+82.7	13.0' Rt	9+35.4	7.7' Lt	5+06.8	9.5' Rt
6+83.0	10.5' Lt	9+46.5	9.3' Lt	5+25.4	11.0' Lt
6+84.2	8.3' Lt	9+50.0	12.2' Lt	5+27.7	5.6' Lt
6+86.6	7.8' Lt	9+50.0	5.0' Rt		
7+00.0	7.5' Lt	9+75.0	6.2' Rt		
7+11.3	12.7' Rt	9+92.8	12.5' Lt	–0+27.7	454.8' Lt
7+14.4	9.0' Rt	9+95.2	8.2' Lt	5+06.4	108.4' Lt
7+25.0	7.2' Lt	10+00.0	10.0' Rt	5+44.0	10.0' Lt
7+25.0	8.8' Rt	10+25.0	11.9' Rt	5+83.3	4.5' Lt
7+50.0	7.3' Lt	10+28.1	8.5' Lt	6+03.1	15.3' Lt
7+50.0	8.7' Rt	10+44.0	10.0' Rt		
7+89.2	8.4' Rt	10+51.5	6.2' Rt		
7+89.3	7.6' Lt	10+51.8	9.1' Rt		
		10+67.2	10.9' Lt		

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

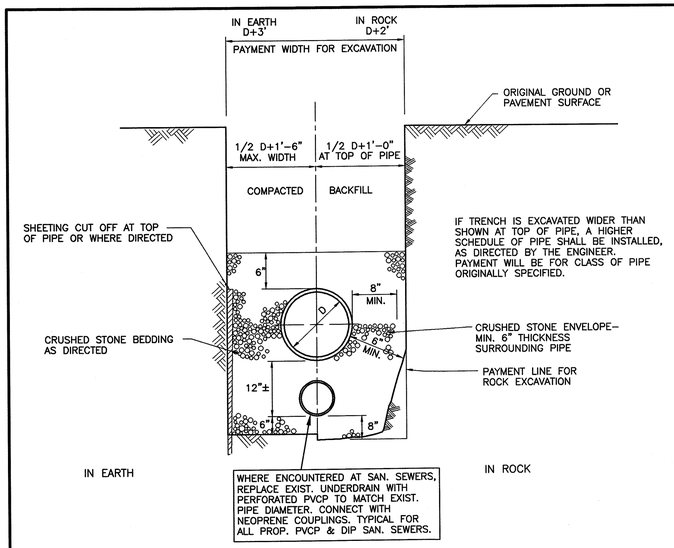
DRAWING NO. 7 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY SMR
CHECKED BY TEJ

SHEET TITLE: Construction Details No. 1

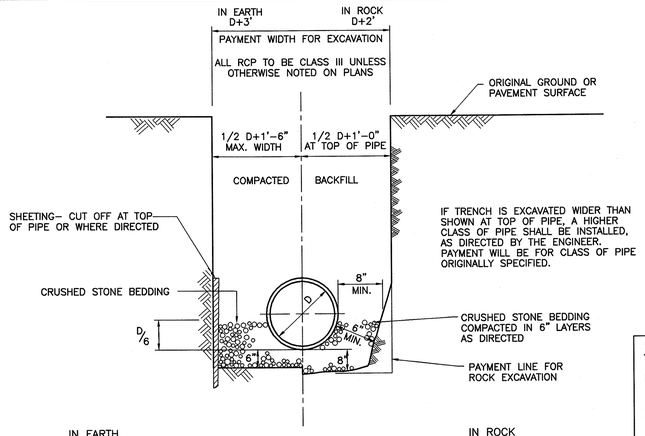
PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



A/8 TYPICAL TRENCH DETAIL– PVC PIPE

NTS



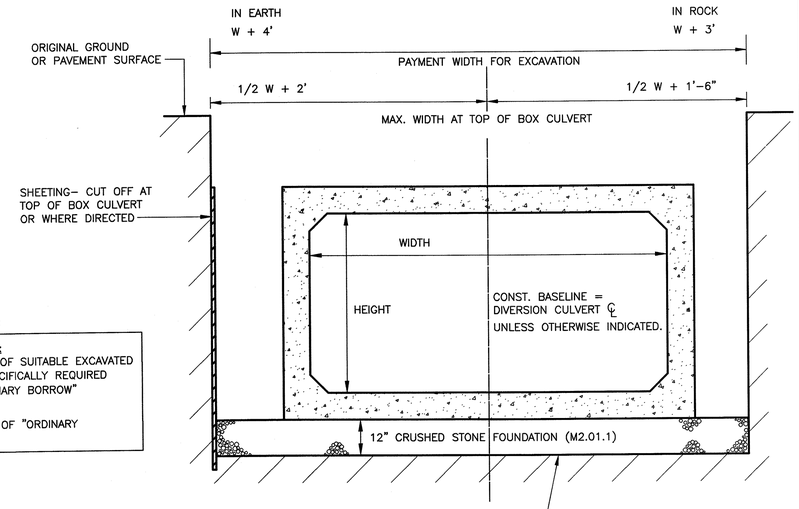
B/8 TYPICAL TRENCH DETAIL
–REINFORCED CONCRETE PIPE
–DUCTILE IRON PIPE

NTS

BACKFILL TO SUBGRADE:

OUTSIDE OF PAVED AREAS:
BACKFILL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL OR, WHERE SPECIFICALLY REQUIRED BY THE ENGINEER, "ORDINARY BORROW"

WITHIN PAVED AREAS:
BACKFILL SHALL CONSIST OF "ORDINARY BORROW"



C/8 TYPICAL TRENCH DETAIL
PRECAST BOX CULVERT

NTS

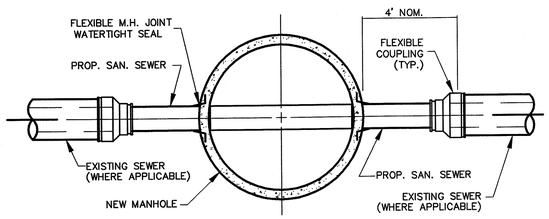
PRECAST BOX CULVERT DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

WEEP HOLES IN BOX CULVERT SECTIONS– EACH PRECAST SECTION SHALL CONTAIN A MINIMUM OF TWO (2) 4"ø WEEP HOLES.



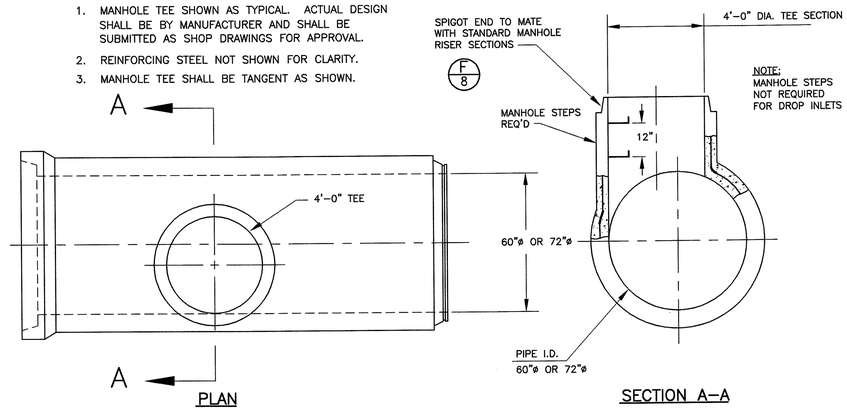
ALL SAN. SEWER MANHOLES SHALL HAVE FLEXIBLE WATERTIGHT SEALS AT ALL PIPE ENTRANCES

D/8 CONNECTION OF SANITARY SEWERS TO NEW MANHOLES

NTS

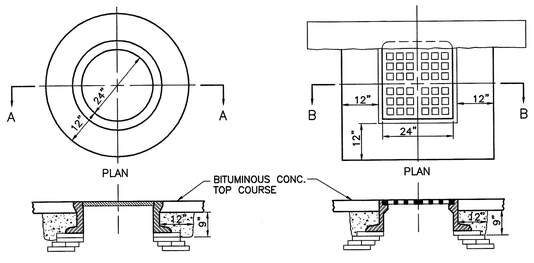
NOTES:

1. MANHOLE TEE SHOWN AS TYPICAL. ACTUAL DESIGN SHALL BE BY MANUFACTURER AND SHALL BE SUBMITTED AS SHOP DRAWINGS FOR APPROVAL.
2. REINFORCING STEEL NOT SHOWN FOR CLARITY.
3. MANHOLE TEE SHALL BE TANGENT AS SHOWN.



E/8 MANUFACTURED ECCENTRIC MANHOLE TEE

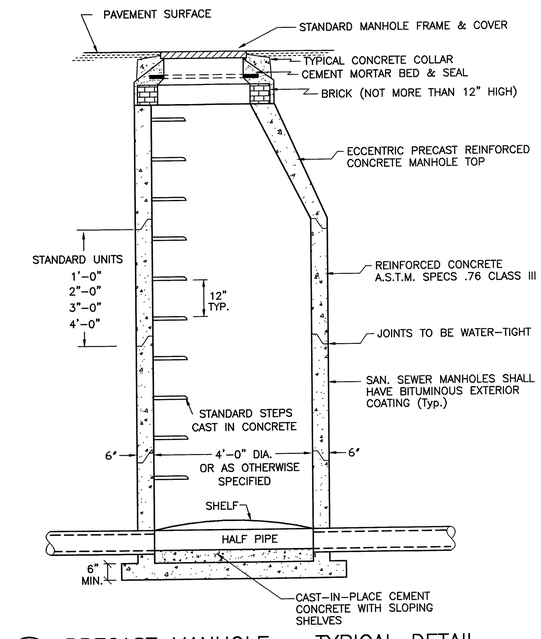
NTS



NOTES:
1. COLLARS TO BE CLASS A CEMENT CONCRETE MASONRY REGULAR OR HIGH EARLY STRENGTH AS DIRECTED.
2. NO CONCRETE COLLAR REQUIRED IN CONCRETE PAVEMENT.

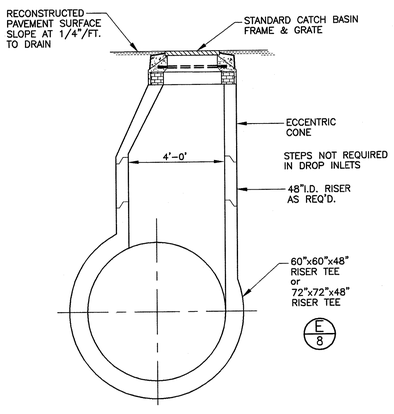
G/8 CONCRETE COLLARS

NTS



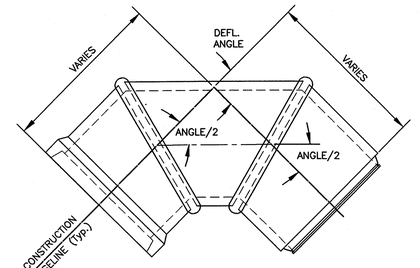
F/8 PRECAST MANHOLE – TYPICAL DETAIL

NTS

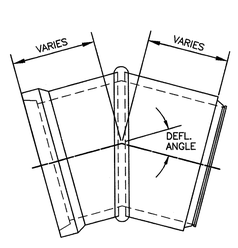


H/8 DROP INLET

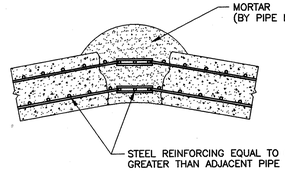
NTS



SHOP–FABRICATED
THREE PIECE ELBOW – 45° TO 90°
TOTAL DEFLECTION



SHOP–FABRICATED
TWO PIECE ELBOW – 0° TO 45°
TOTAL DEFLECTION



NOTES:
1. ELBOW SHOWN AS TYPICAL. ACTUAL DESIGN SHALL BE BY MANUFACTURER AND SHALL BE SUBMITTED AS SHOP DRAWINGS FOR APPROVAL.
2. GENERAL SPECIFICATION: A.S.T.M. C 361.
3. STEEL AREA IN ELBOW CONNECTION SHALL EXCEED THAT REQUIRED IN ADJACENT PIPE BARREL.

J/8 TWO AND THREE PIECE ELBOW
60"ø & 72"ø REINFORCED CONCRETE PIPE

NTS

DRAWING NO. 8 OF 35 SHTS

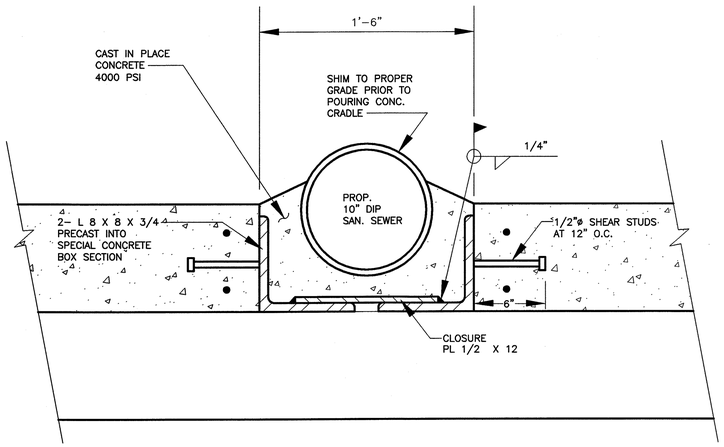
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY SMR
CHECKED BY TEJ

SHEET TITLE: Construction Details No. 2

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



SECTION B–B
NTS

LAYOUT INFORMATION:

PIPE END #1 GODFREY BROOK BASELINE

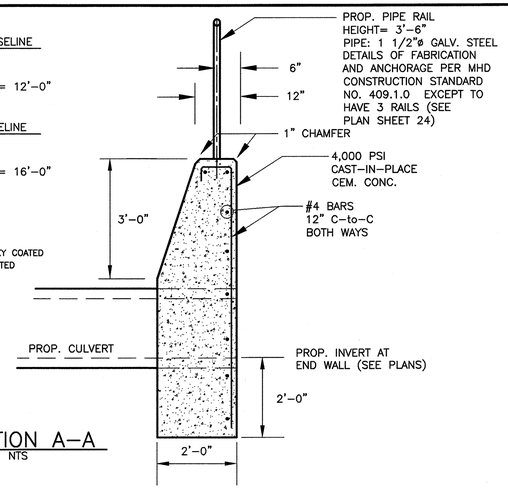
STA. 3+28.4, 11.2' LT
STA. 3+30.2, 23.1' LT
TOTAL LENGTH OF FRONT FACE= 12'-0"
TOP OF WALL ELEV.= 302.50

PIPE END #2 O'BRIEN BROOK BASELINE

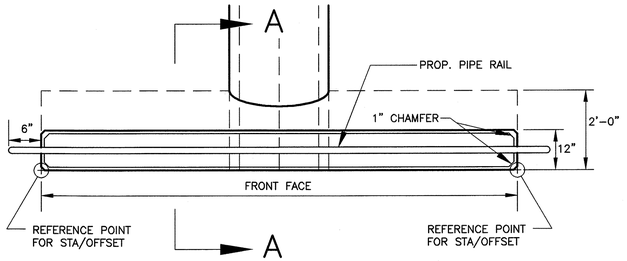
STA. -0+11.3, 32.2' LT
STA. -0+27.2, 32.8' LT
TOTAL LENGTH OF FRONT FACE= 16'-0"
TOP OF WALL ELEV.= 307.80

CONCRETE NOTES:

1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.- ASTM A-61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS

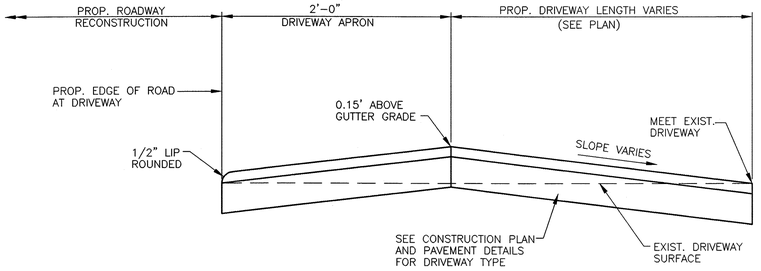


SECTION A–A
NTS

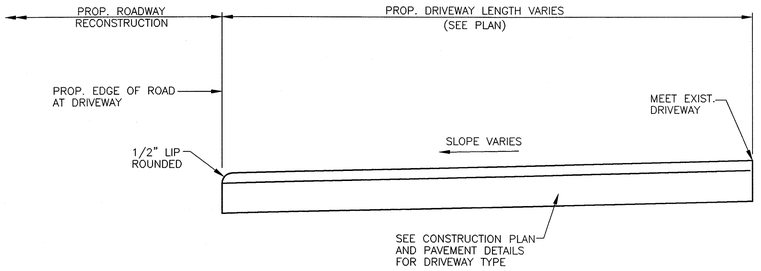


PLAN
NTS

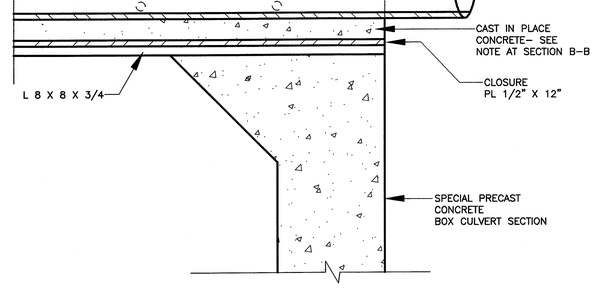
B 9 CEM. CONC. MASONRY PIPE ENDS



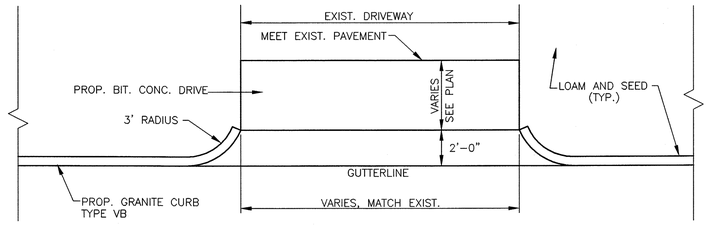
E 9 SECTION FOR DRIVEWAY WITHOUT SIDEWALK (EXIST. DRIVEWAY SLOPING AWAY FROM ROAD)
NTS



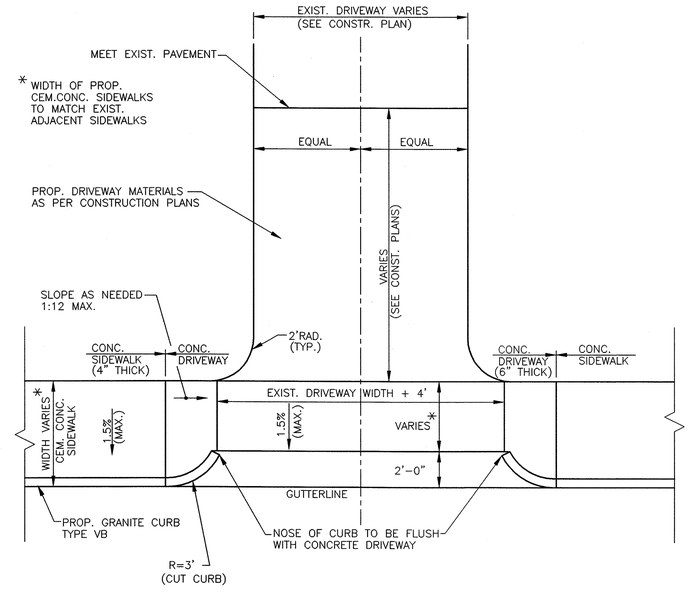
F 9 SECTION FOR DRIVEWAY WITHOUT SIDEWALK (EXIST. DRIVEWAY SLOPING TOWARD ROAD)
NTS



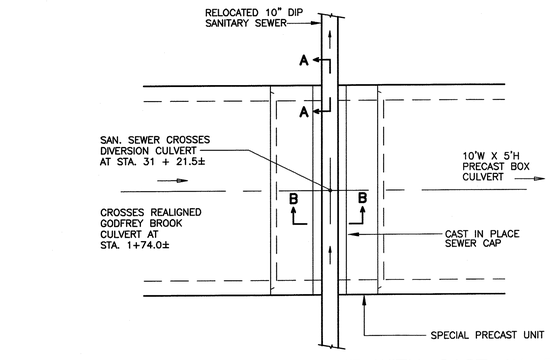
SECTION A–A
NTS



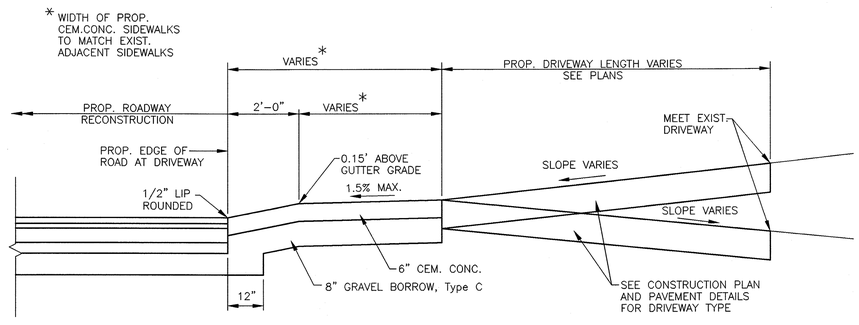
C 9 DETAIL FOR DRIVEWAY WITHOUT SIDEWALK
NTS



G 9 DETAIL FOR DRIVEWAY WITH SIDEWALK
NTS



A 9 SPECIAL PRECAST BOX UNIT WITH CAST-IN-PLACE TOP
NTS



D 9 DETAIL FOR TYPICAL DRIVEWAY SECTION
NTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Engineers Surveyors
296 North Main Street East Longmeadow, MA 01028

DRAWING NO. 9 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY SMR
CHECKED BY TEJ

SHEET TITLE: Construction Details No. 3

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

NOTE: CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE CRITICAL CLEARANCES AND POTENTIAL CONFLICTS AT THESE PIPELINE CROSSINGS. CONSULT THE DESIGN ENGINEER IF ANY CHANGES IN ALIGNMENT OR GRADE ARE FOUND NECESSARY WHILE CONSTRUCTING.

WATER STREET

100 FT. WETLAND BUFFER ZONE

PROP. MH#3 0+53.7, 31.0'Lt **EX. INV.=300.31** **18"OUT=300.18**

PROP. ROAD RECONSTRUCTION

PROP. BIT. CONC. DRIVEWAY REPAIR

PROP. MH#1 0+27.8 32.7'Lt **INV.=298.17**

PROP. LOW-FLOW BYPASS CULVERT

PROP. BIT. CONC. DRIVEWAY REPAIR

R & R FENCE

WETLAND AREA - A SEE SHT. 21

35 LF-18" DIP

PROP. GODFREY BROOK DIVERSION STRUCTURE SEE SHEET 25 & 25-A

R & R FENCE

PROP. BIT. CONC. DRIVEWAY REPAIR

PROP. CEM. CONC. SIDEWALK

PROP. GC

PROP. MH#4 0+38.6, 28.9'Rt **EX. INV.=299.86** **15"OUT=299.75**

148 LF-15" RCP

REPLACE 38 LF EXISTING 8" VCP SEWER WITH 8"DIP- SEE SHEET 32

WETLAND AREA - B 250± LF STONE-LINED INTERMITTENT STREAM CHANNEL TO BE REPLACED BY 305± LF - 42"ø RCP.

PROP. GC

PROP.CEM.CONC. SIDEWALK

PROP. BIT. CONC. DRIVEWAY REPAIR

20 LF-18" RCP

PROP. MH#2 1+18.3, 9.5'Lt **INV.=297.67**

3 LF- 12"PVCP

PROP. MH#5

90LF 18"DIP

5 LF-18"DIP

23 LF-42"RCP

R&R SIGN

PROP. CEM. CONC. SIDEWALK

ABAN.

PROP.GC

PROP. BC

REM. DRIVEWAY CULVERT & RAILS

PROP. BIT. CONC. DRIVEWAY REPAIR

R & R FENCE

REMOVE TREE

REM. TREE

REM. DRIVEWAY CULVERT & RAILS

PROP. ROAD RECONSTRUCTION

174 LF-42"RCP

PROP. DI #1 1+57.0 9.0'Lt **INV.=296.10**

PROP. BIT. CONC. DRIVEWAY REPAIR

PROP. MH#6 2+89.7 15.2'Lt **INV.=296.45**

R & R FENCE

RETAIN TREE

REM. EXIST. CHANNEL MASONRY AND CONC. DECK

45 LF-42"RCP

R & R FENCE

PROP. GC

PROP. CEM. CONC. MASONRY END #1 WITH PIPE HANDRAIL (B/9)

THAYER STREET

PROP. DI #2 **INV.=285.64**

PROP. CEM. CONC. SIDEWALK

GODFREY BROOK DIVERSION CULVERT CONSTRUCTION BASELINE (TYP.)

PROP. 72"ø DIVERSION CULVERT (GODFREY BROOK)

REM. TREE

R & R FENCE

R & R SHRUBS

TAYLOR STREET

3' H. JUNIPERS- 10 PLANTS

Existing 5'W X 3'H Stone Lined Channel

Gravel Drive

6+00

5+00

4+00

3+00

2+00

1+00

0+00

0+80

0+20

STA. 4+50.0 10 LF- 12" PVCP TO CONNECT EXIST. 12" VCP REVIEW WITH ENGINEER PRIOR TO CONNECTING

REQUIRED PERMANENT EASEMENT (TYP.)

REQUIRED TEMPORARY EASEMENT (TYP.)

CONTINUED ON SHEET 11

GENERAL PLAN
1" = 20'

PIPE HANDRAIL

TOP OF HEADWALL = ELEV. 306.00

WATER STREET

PROP. 6' I.D. MH #5 STA 1+20.0, 0.0' Lt
INV. 42" = ~~297.60~~ 297.56
INV. 18" = ~~297.70~~ 297.68

#37 - #39 THAYER STREET

Sill Elev. = 304.8±

#29 THAYER STREET

Sill Elev. = 305.3±

1 1/2" PIPE RAIL

PROP. CEM. CONC. MASONRY END #1 TOP OF WALL ELEV.= 302.5 (B/9)

THAYER STREET

10'Wx4'H PRECAST BOX CULVERT

STA. -0+09.4± MATCH EX. INV. ~~300.73~~ 300.67

INV. = ~~299.00~~ 298.94

EXIST. TEL.

EXIST. 6"GAS

TOP OF EASTERLY SIDE OF CHANNEL

REM. Existing Driveway Culvert

APPROX. FINISH GRADE

REM. Existing Driveway Culvert

EXISTING GRADE @ CONSTRUCTION BASELINE

EXIST. 3"GAS (72"ø ℄)

EXIST. 3"GAS (42"ø ℄)

EXIST. 18"RCP DRAIN

18"RCP FROM MH #3

INV. 42"RCP ~~297.84~~ 297.83

INV. = ~~297.54~~ 297.53

EXIST. 12" CIP WATER

PROP. 42"ø RCP CULVERT

REM. EXIST. DRIVEWAY CULVERTS & CHANNEL MASONRY WHERE 42"ø RCP CULVERT IS INSTALLED

0.82%

GODFREY BROOK CHANNEL

EXIST. 6" CIP WATER (72"ø ℄)

EXIST. 6" CIP WATER (42"ø ℄)

INV.= ~~295.80~~ 295.84

EXISTING 12"VCP SEWER IN THAYER STREET

EXIST. 12" VCP SEWER (72"ø ℄)

EXIST. 12" VCP SEWER (42"ø ℄)

ANTICIPATED RELOCATION OF WATER MAIN

GODFREY BROOK CHANNEL

18" DIP LOW-FLOW BYPASS CULVERT STA. -0+2.6 INV.= ~~299.50~~ 299.56

15" RCP FROM MH# 4

EXIST. 8"VCP SEWER

REPLACE 38 LF EXISTING 8"VCP SEWER WITH 8" DIP

ANTICIPATED RELOCATION OF WATER MAIN

12" PVCP FROM DI #1 INV.= ~~292.4~~ 294.48 1+57.0

PROP. PRECAST GODFREY BROOK DIVERSION STRUCTURE SEE SHEET 25 & 25-A

GODFREY BROOK DIVERSION STA. 0+94.50 INV.= ~~288.61~~ 288.61

PROP. 72"ø RCP DIVERSION CULVERT (GODFREY BROOK)

PROP. 72"X72"X48" RISER TEE (E/8)

DI #2 STA. 2+90.00, 2.0' Lt

GODFREY BROOK DIVERSION STA. 2+90.00 INV.= ~~285.63~~ 285.60

INV.= ~~289.0~~ 288.91

12" PVCP FROM EXIST. 12" VCP 4+50.0 72"x72"x12" TEE

PROP. 72"ø RCP DIVERSION CULVERT (GODFREY BROOK)

GODFREY BROOK DIVERSION STA. 5+50.00 INV.= ~~284.20~~ 284.25

1.54%

0.55%

285.64

300

290

0+00 1+00 2+00 3+00 4+00 5+00

STA -0+20 TO 5+50
VERT. 1"=2'
HOR. 1"=20'

GENERAL NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WALLS, RAILINGS, CONC. DECKS ASSOCIATED WITH THE EXISTING GODFREY BROOK CHANNEL BEING REPLACED BY NEW WORK.
2. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO #12 WATER ST, #37-#39 THAYER ST, AND #29 THAYER ST. AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
3. SEE SHEETS 32-34 FOR UTILITY PROFILES.

NO.	DATE	REVISION	BY
3	10/1/01	ISSUED AS RECORD PRINT	EDM
2	11/13/00	GODFREY BROOK DIVERSION STRUCTURE; MISC. EDITS	TEJ
1	8/12/99	ISSUED FOR BIDDING	TEJ

SHEET TITLE: Plan / Profile Sta. -0+20 to 5+50 Godfrey Brook Diversion Culvert

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

DRAWING NO. 10 OF 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

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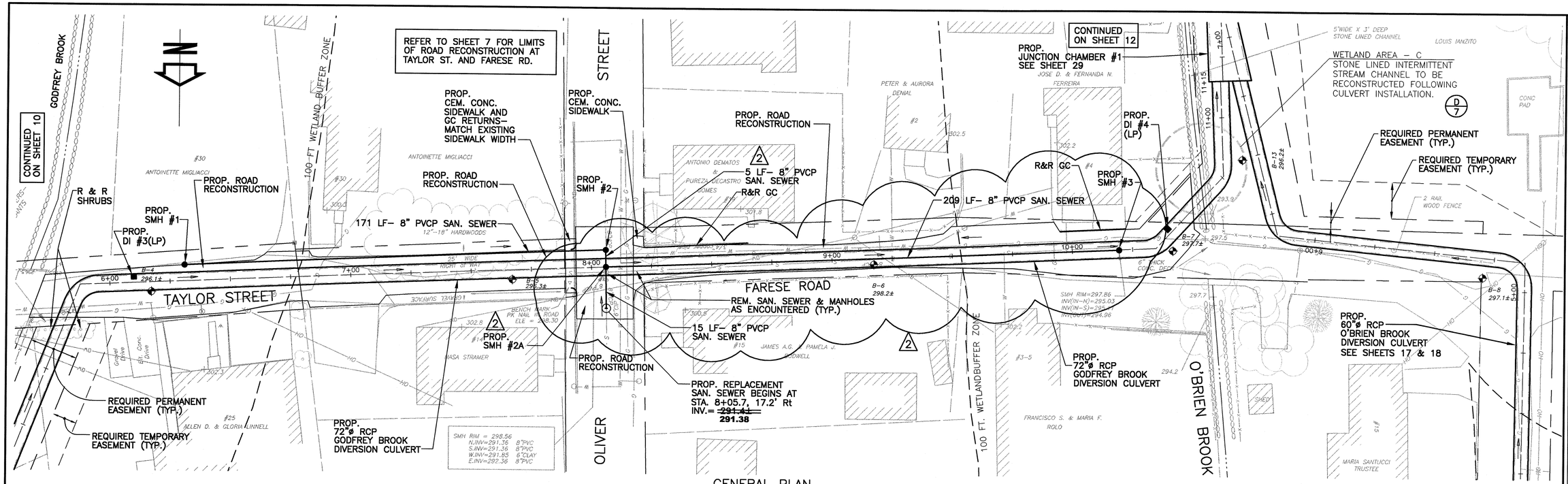
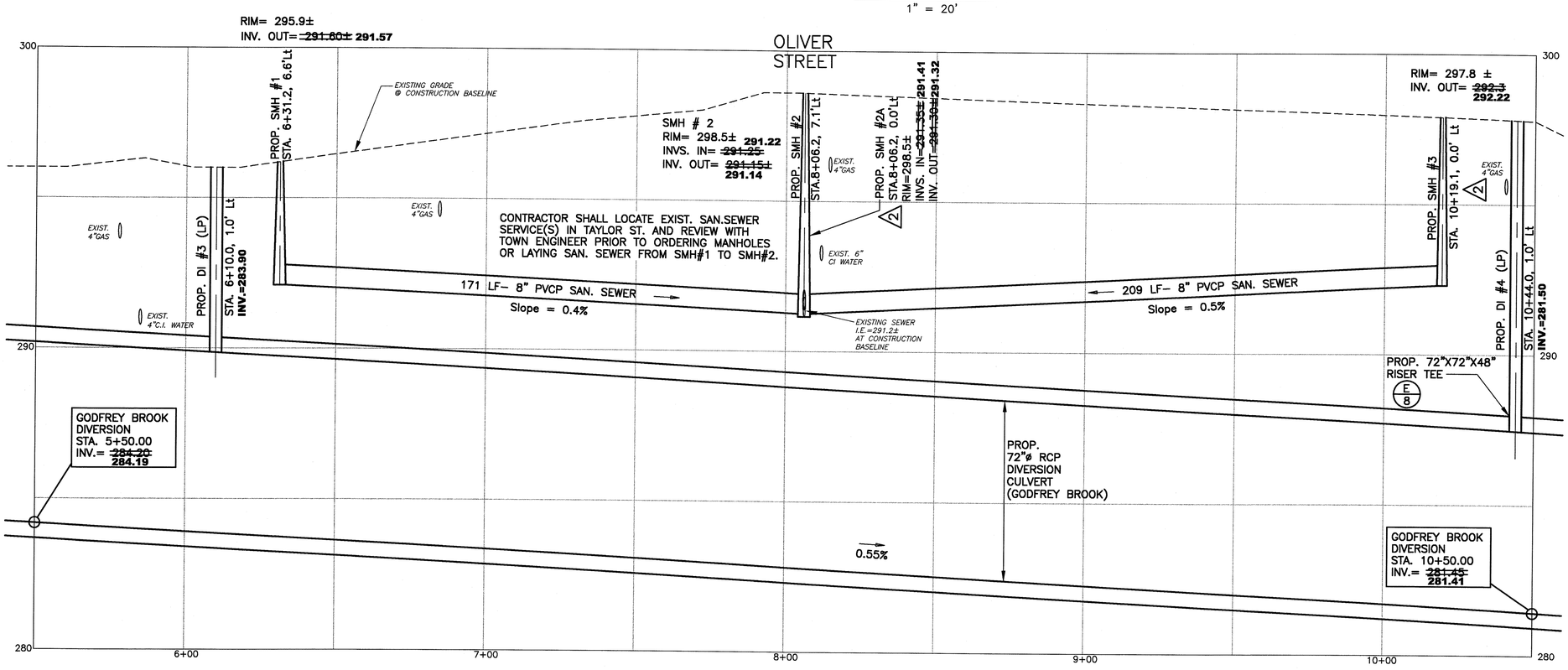
BEC, Inc.



GENERAL PLAN
1" = 20'



STA 5+50 TO 10+50
VERT. 1"=2'
HOR. 1"=20'

GENERAL NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WALLS, RAILINGS, CONC. DECKS ASSOCIATED WITH THE EXISTING GODFREY BROOK CHANNEL BEING REPLACED BY NEW WORK.
2. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO ALL RESIDENCES ALONG TAYLOR ST., FARESE ROAD, AND FARESE RD. EXT. AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
3. SEE SHEETS 32–34 FOR UTILITY PROFILES.

DRAWING NO. 11 OF 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE
Plan / Profile
Sta. 5+50 to 10+50
Godfrey Brook Diversion Culvert

PROJECT
Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
3	10/1/01	ISSUED AS RECORD PRINT	EDM
2	10/16/00	SEWER LOCATION IN FARESE ROAD	TEJ
1	8/12/99	ISSUED FOR BIDDING	TEJ

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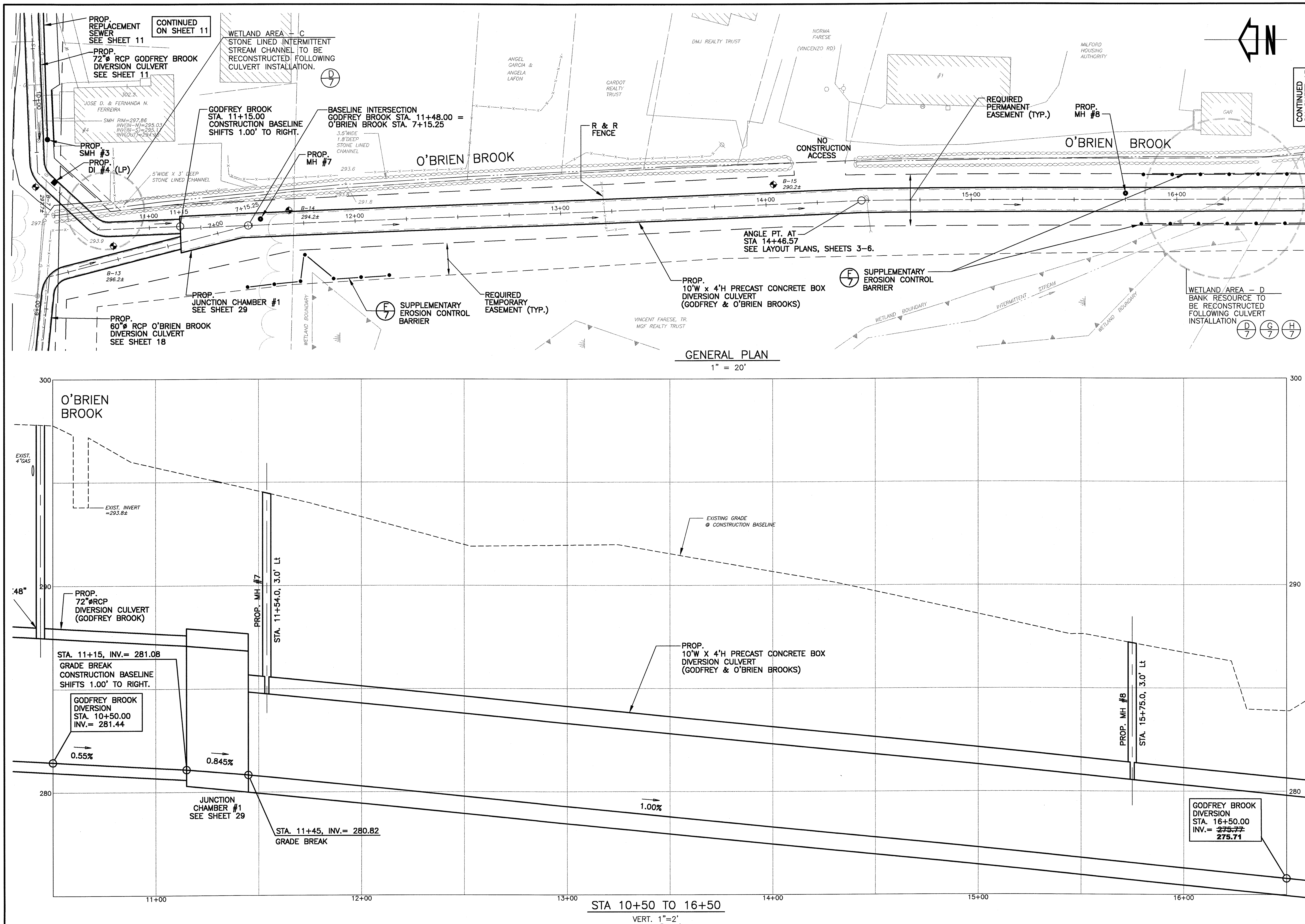
BEC, Inc.


PROP. REPLACEMENT SEWER SEE SHEET 11
CONTINUED ON SHEET 11
WETLAND AREA – C STONE LINED INTERMITTENT STREAM CHANNEL TO BE RECONSTRUCTED FOLLOWING CULVERT INSTALLATION.
PROP. 72"ø RCP GODFREY BROOK DIVERSION CULVERT SEE SHEET 11
GODFREY BROOK STA. 11+15.00 CONSTRUCTION BASELINE SHIFTS 1.00' TO RIGHT.
BASELINE INTERSECTION GODFREY BROOK STA. 11+48.00 = O'BRIEN BROOK STA. 7+15.25
R & R FENCE
NO CONSTRUCTION ACCESS
REQUIRED PERMANENT EASEMENT (TYP.)
PROP. MH #8
CONTINUED ON SHEET 13
O'BRIEN BROOK
PROP. SMH #3
PROP. DI #4 (LP)
PROP. MH #7
ANGLE PT. AT STA 14+46.57 SEE LAYOUT PLANS, SHEETS 3–6.
PROP. JUNCTION CHAMBER #1 SEE SHEET 29
PROP. 60"ø RCP O'BRIEN BROOK DIVERSION CULVERT SEE SHEET 18
SUPPLEMENTARY EROSION CONTROL BARRIER
REQUIRED TEMPORARY EASEMENT (TYP.)
PROP. 10'W x 4'H PRECAST CONCRETE BOX DIVERSION CULVERT (GODFREY & O'BRIEN BROOKS)
WETLAND AREA – D BANK RESOURCE TO BE RECONSTRUCTED FOLLOWING CULVERT INSTALLATION
GENERAL PLAN
1" = 20'
O'BRIEN BROOK
EXIST. INVERT =293.8±
EXISTING GRADE @ CONSTRUCTION BASELINE
PROP. 72"øRCP DIVERSION CULVERT (GODFREY BROOK)
STA. 11+15, INV.= 281.08 GRADE BREAK CONSTRUCTION BASELINE SHIFTS 1.00' TO RIGHT.
GODFREY BROOK DIVERSION STA. 10+50.00 INV.= 281.44
PROP. MH #7 STA. 11+54.0, 3.0' Lt
PROP. MH #8 STA. 15+75.0, 3.0' Lt
0.55%
0.845%
1.00%
JUNCTION CHAMBER #1 SEE SHEET 29
STA. 11+45, INV.= 280.82 GRADE BREAK
GODFREY BROOK DIVERSION STA. 16+50.00 INV.= 275.77 275.71
STA 10+50 TO 16+50
VERT. 1"=2'
HOR. 1"=20'

12 of 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: **Plan / Profile Sta. 10+50 to 16+50 Godfrey Brook Diversion Culvert**

PROJECT: **Godfrey Brook Flood Mitigation Project Milford, Massachusetts**

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

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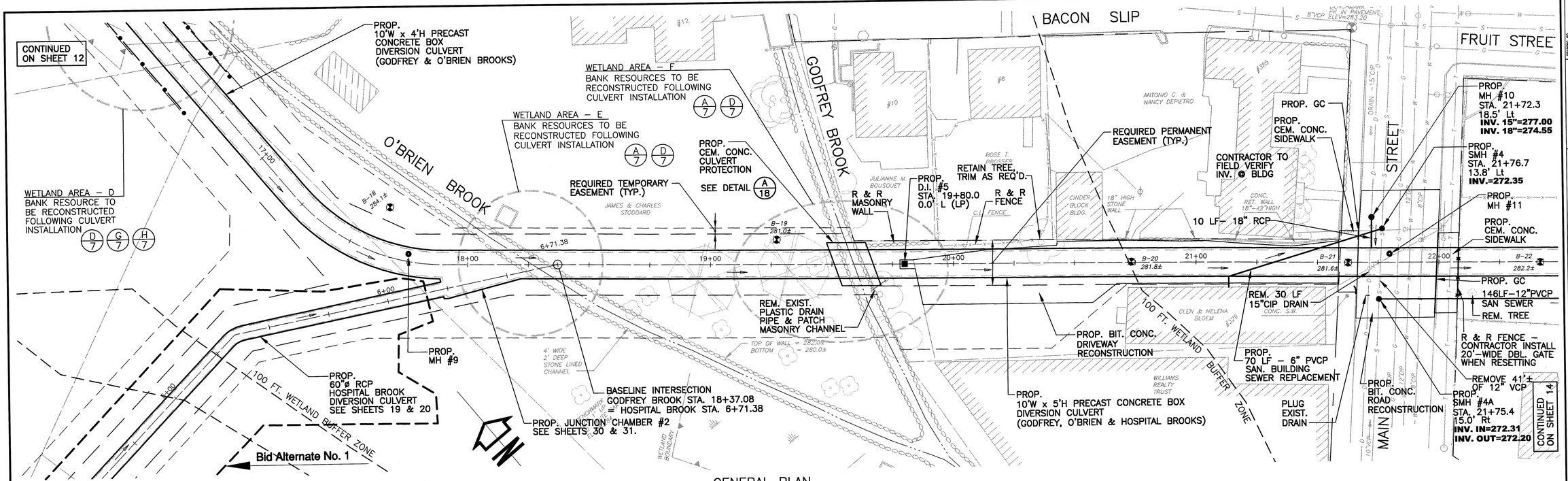
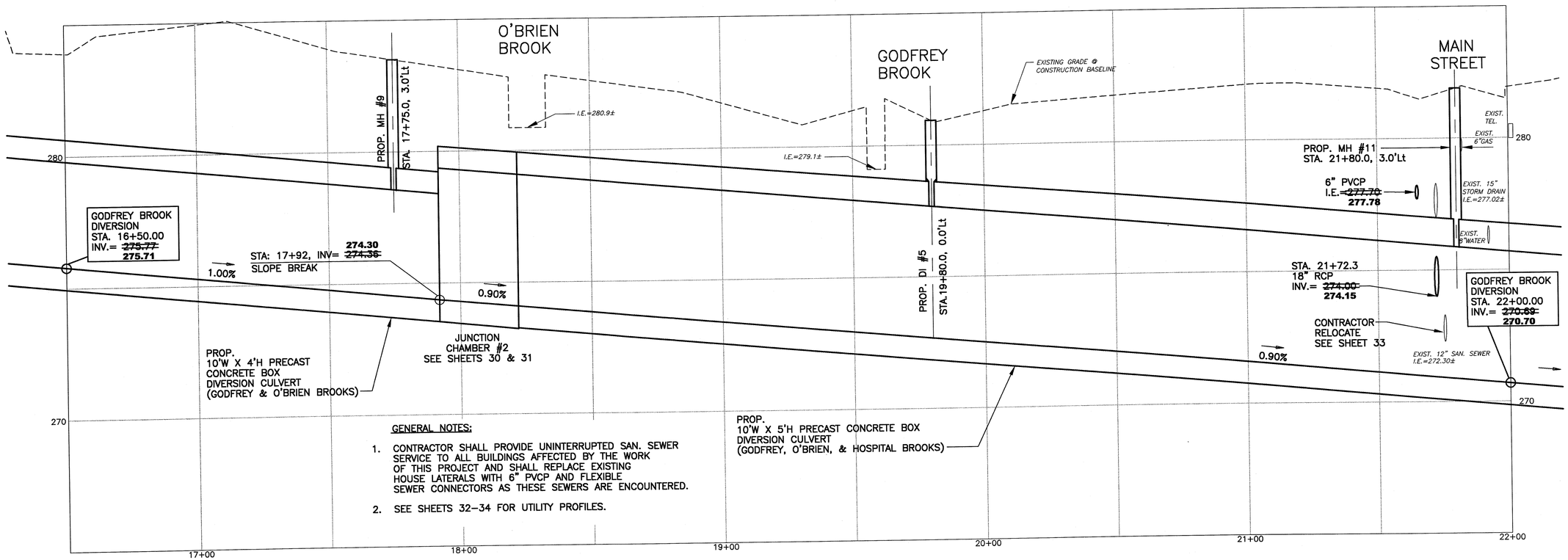


GENERAL PLAN
1" = 20'



GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO ALL BUILDINGS AFFECTED BY THE WORK OF THIS PROJECT AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
2. SEE SHEETS 32–34 FOR UTILITY PROFILES.

STA 16+50 TO 22+00
VERT. 1"=2'
HOR. 1"=20'

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

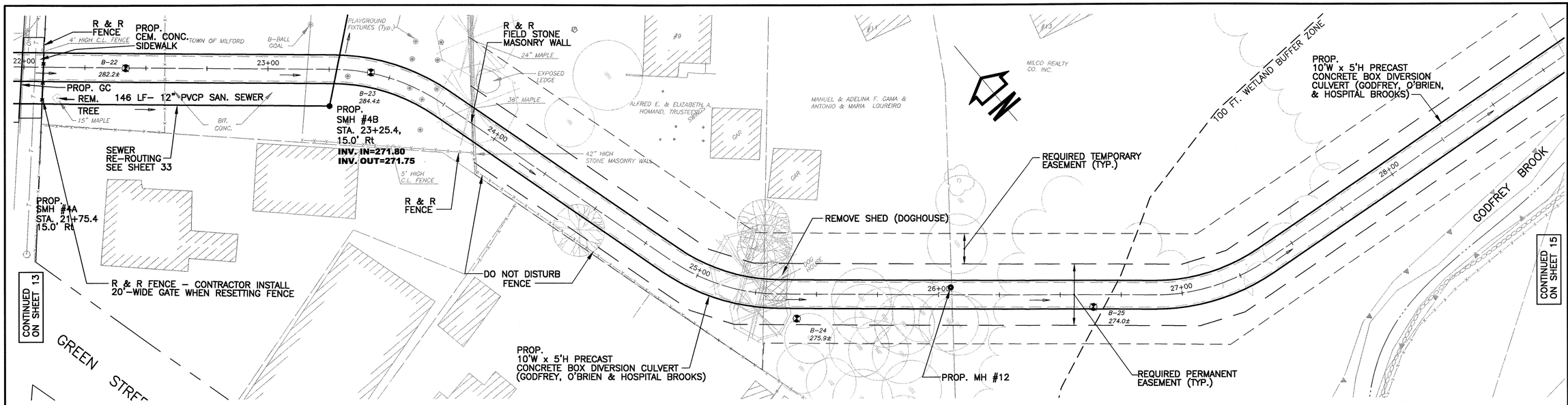
DRAWING NO. 13 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

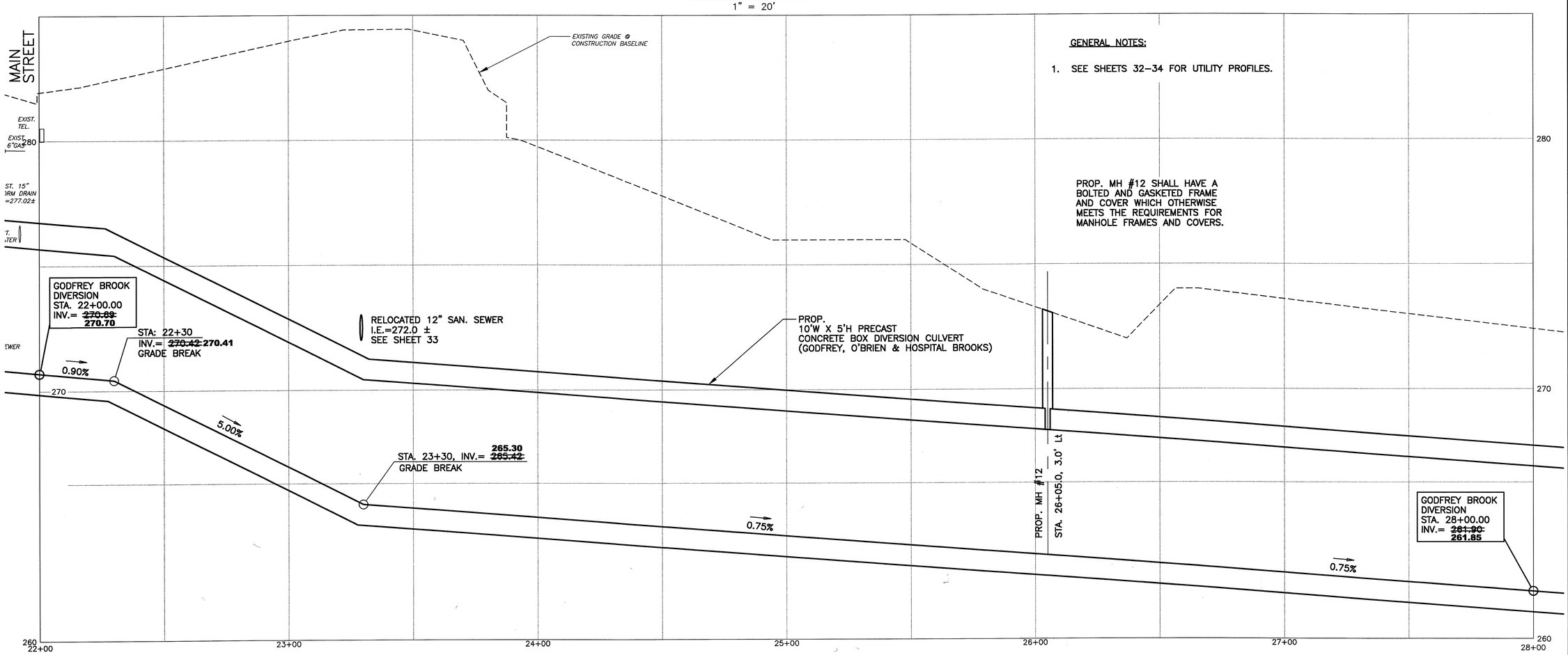
SHEET TITLE: Plan / Profile Sta. 16+50 to 22+00 Godfrey Brook Diversion Culvert

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



GENERAL PLAN
1" = 20'



STA 22+00 TO 28+00
VERT. 1"=2'
HOR. 1"=20'

GENERAL NOTES:

1. SEE SHEETS 32-34 FOR UTILITY PROFILES.

DRAWING NO. 14 OF 35 SHTS

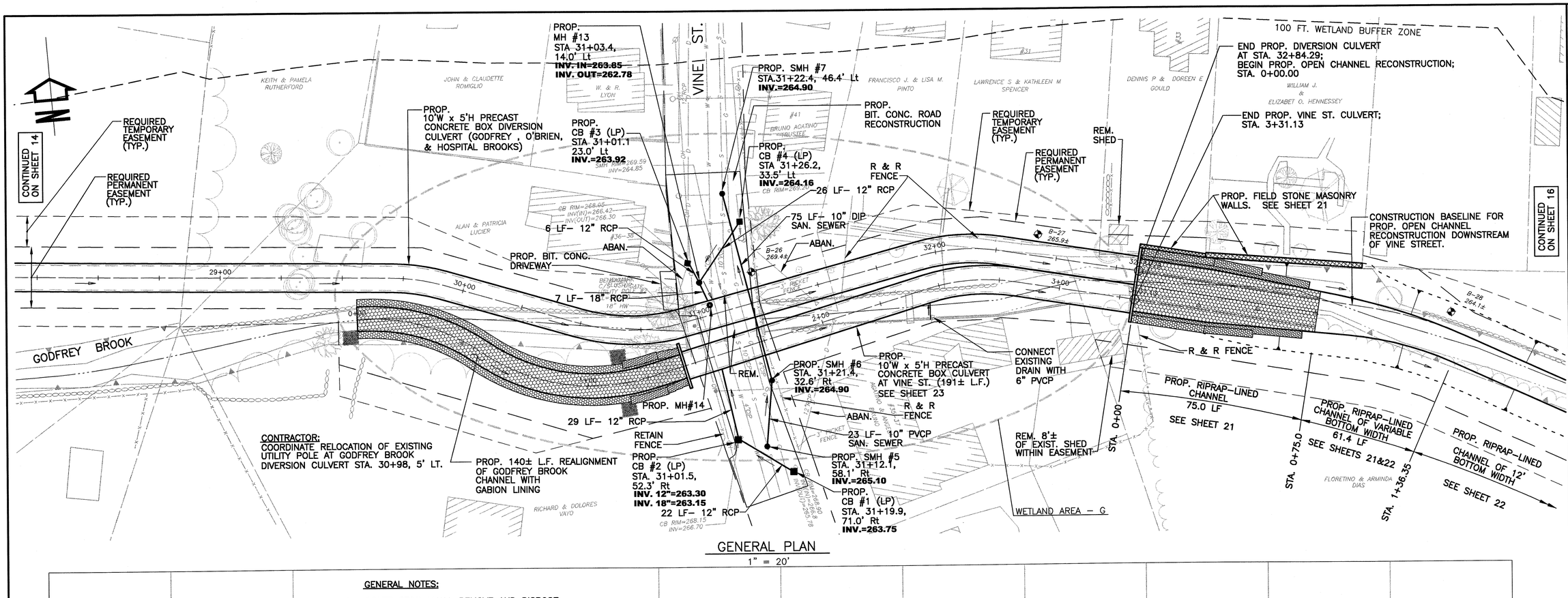
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE
Plan / Profile
Sta. 22+00 to 28+00
Godfrey Brook Diversion Culvert

PROJECT
Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

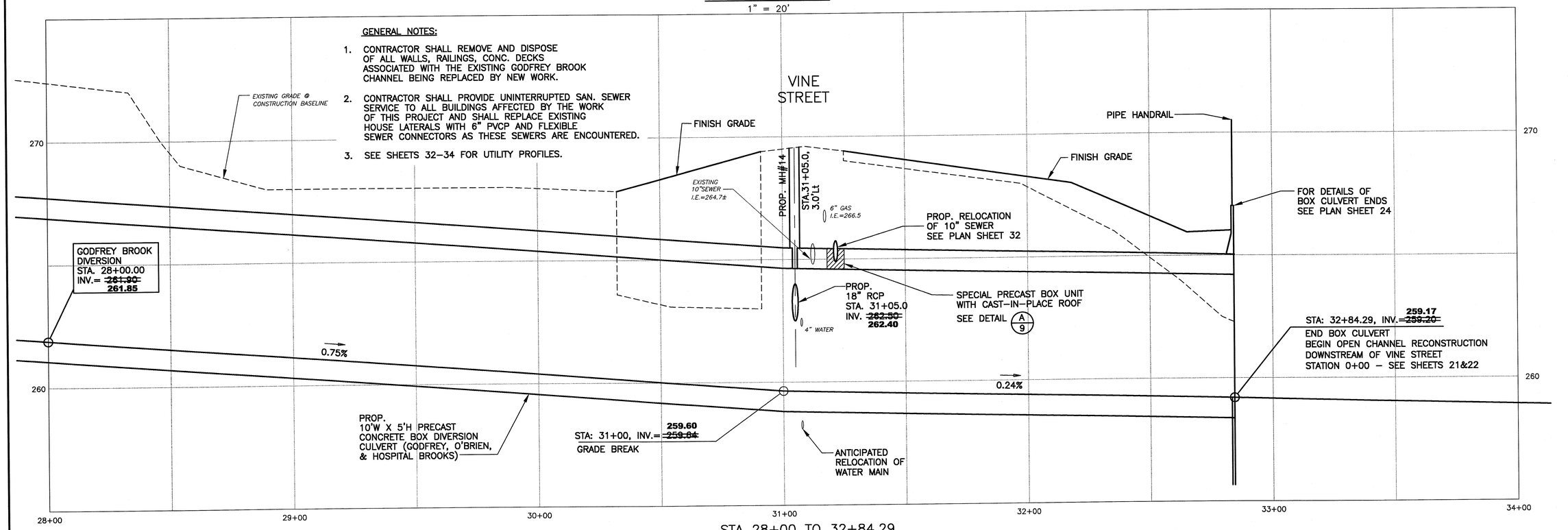


GENERAL PLAN

1" = 20'

GENERAL NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WALLS, RAILINGS, CONC. DECKS ASSOCIATED WITH THE EXISTING GODFREY BROOK CHANNEL BEING REPLACED BY NEW WORK.
2. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO ALL BUILDINGS AFFECTED BY THE WORK OF THIS PROJECT AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
3. SEE SHEETS 32–34 FOR UTILITY PROFILES.



STA 28+00 TO 32+84.29

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

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
East Longmeadow, MA 01028
296 North Main Street

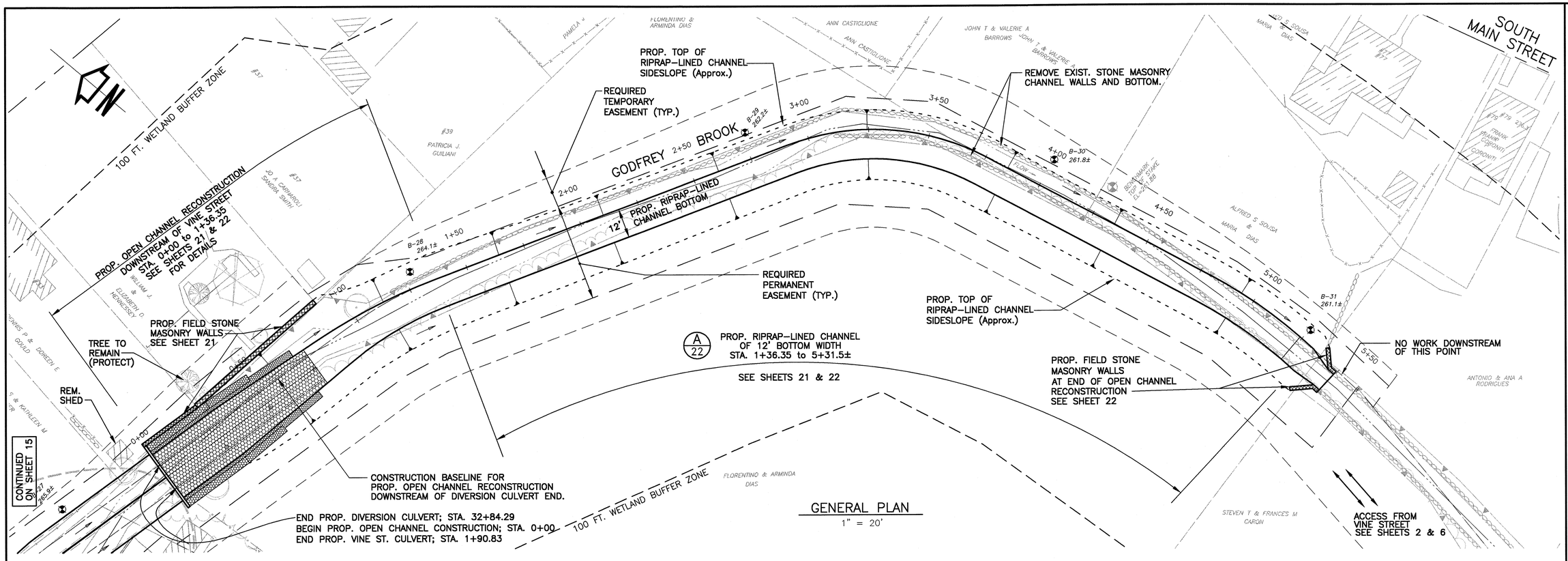
DRAWING NO. 15 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Plan / Profile Sta. 28+00 to 32+84.29 Godfrey Brook Diversion Culvert

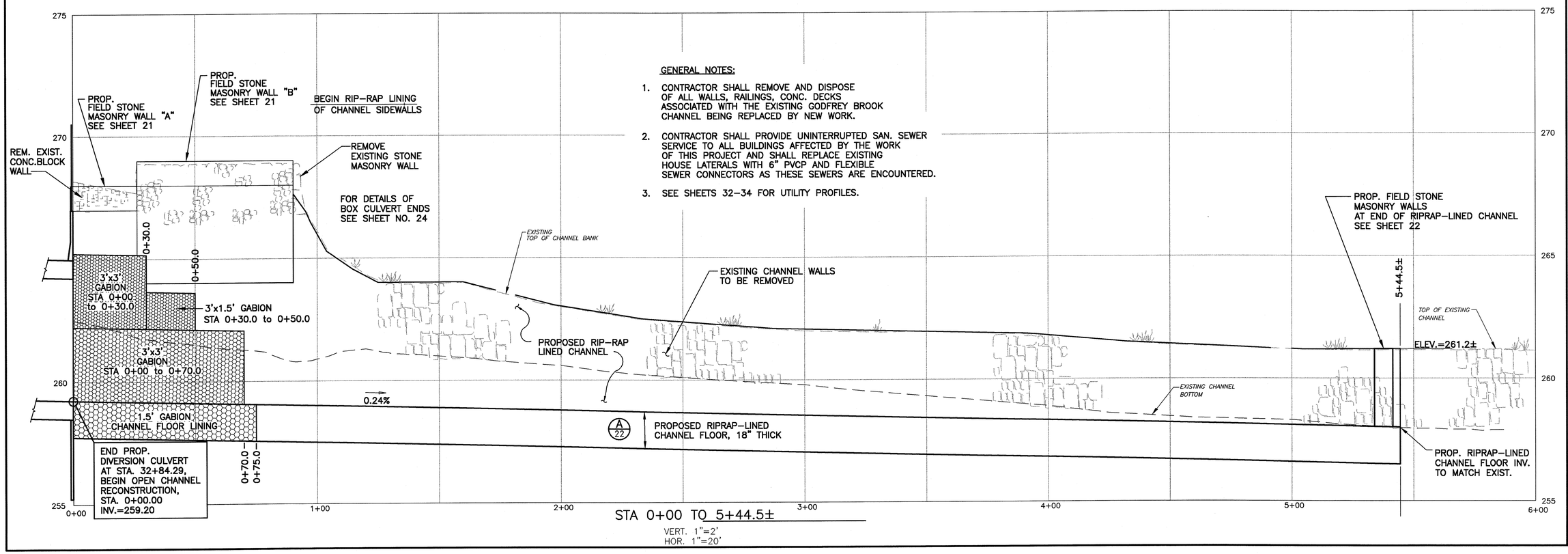
PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



GENERAL PLAN

1" = 20'



STA 0+00 TO 5+44.5±

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

GENERAL NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WALLS, RAILINGS, CONC. DECKS ASSOCIATED WITH THE EXISTING GODFREY BROOK CHANNEL BEING REPLACED BY NEW WORK.
2. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO ALL BUILDINGS AFFECTED BY THE WORK OF THIS PROJECT AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
3. SEE SHEETS 32–34 FOR UTILITY PROFILES.

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

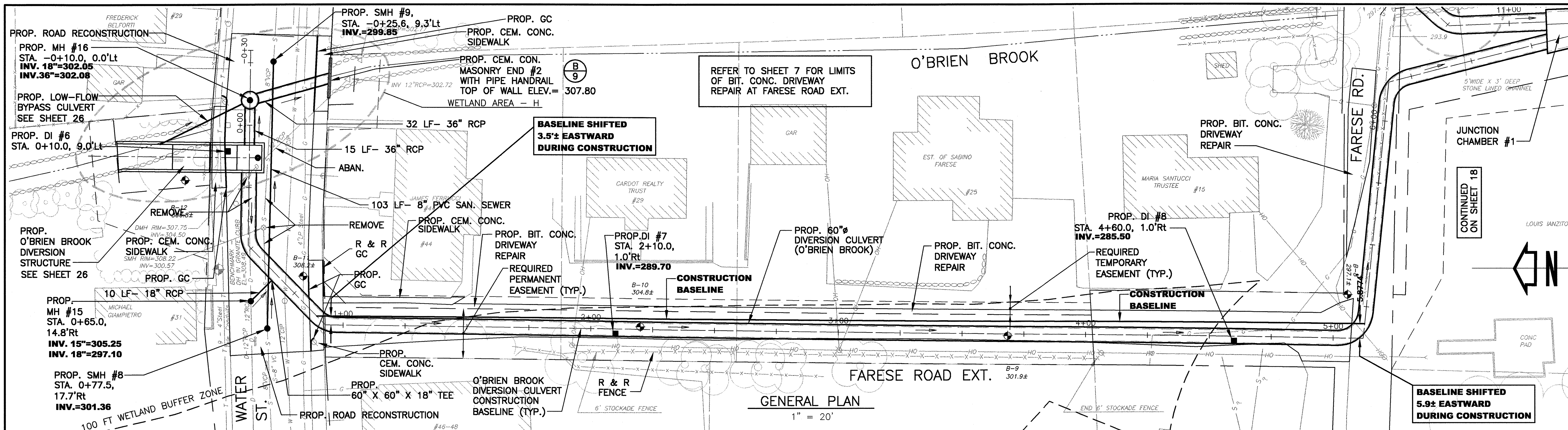
DRAWING NO. 16 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Plan / Profile of Sta. 0+00 to 5+44.5± Open Channel Reconstruction Downstream of Vine Street

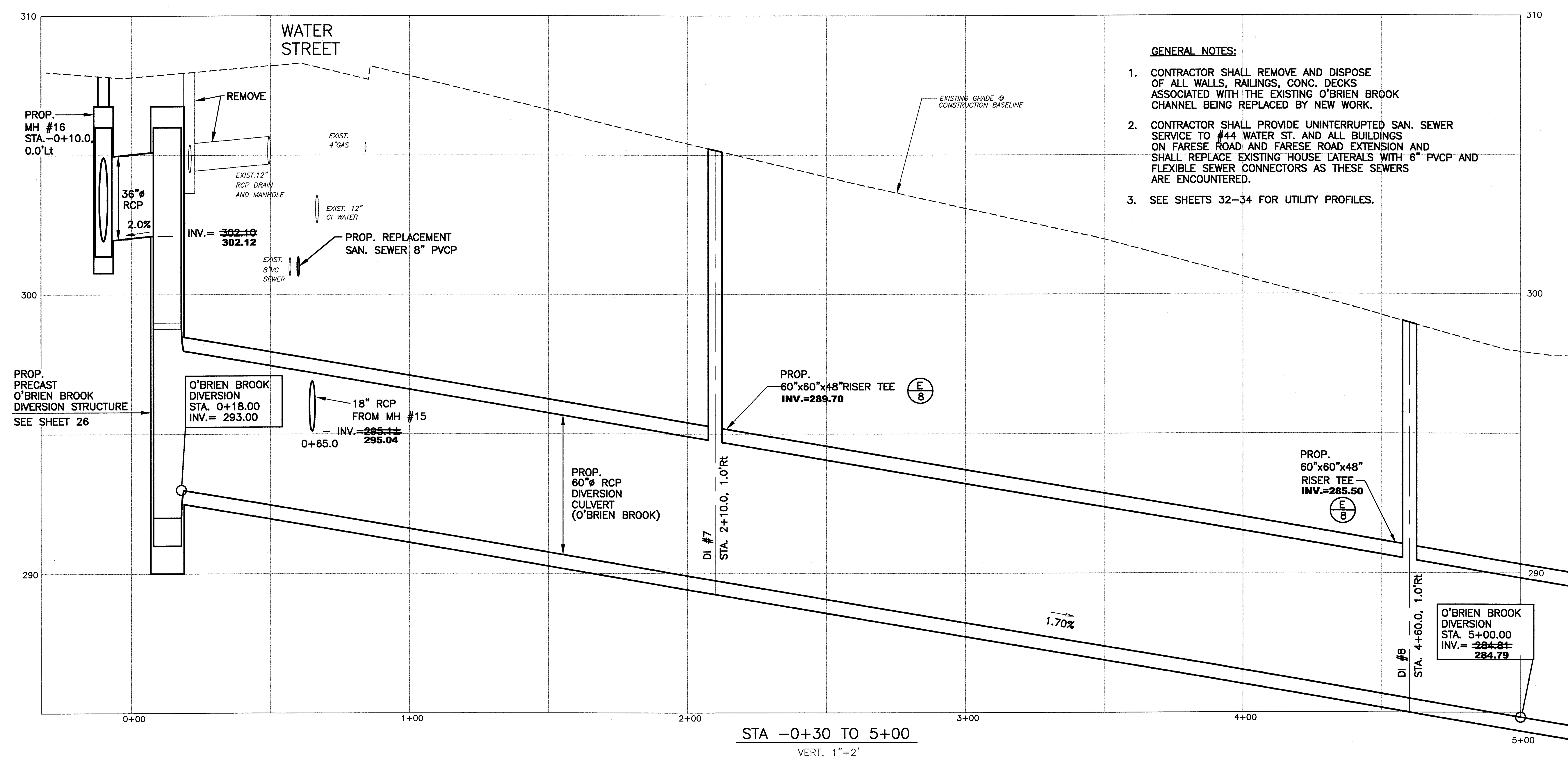
PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



PROP. ROAD RECONSTRUCTION
PROP. MH #16
STA. -0+10.0, 0.0'Lt
INV. 18"=302.05
INV.36"=302.08
PROP. LOW-FLOW BYPASS CULVERT SEE SHEET 26
PROP. DI #6
STA. 0+10.0, 9.0'Lt
PROP. SMH #9,
STA. -0+25.6, 9.3'Lt
INV.=299.85
PROP. GC
PROP. CEM. CONC. SIDEWALK
PROP. CEM. CON. MASONRY END #2 WITH PIPE HANDRAIL TOP OF WALL ELEV.= 307.80
WETLAND AREA – H
32 LF– 36" RCP
15 LF– 36" RCP
ABAN.
103 LF– 8" PVC SAN. SEWER
BASELINE SHIFTED 3.5'± EASTWARD DURING CONSTRUCTION
REFER TO SHEET 7 FOR LIMITS OF BIT. CONC. DRIVEWAY REPAIR AT FARESE ROAD EXT.
O'BRIEN BROOK
REMOVE
PROP. O'BRIEN BROOK DIVERSION STRUCTURE SEE SHEET 26
PROP. CEM. CONC. SIDEWALK
PROP. GC
10 LF– 18" RCP
PROP. MH #15
STA. 0+65.0, 14.8'Rt
INV. 15"=305.25
INV. 18"=297.10
PROP. SMH #8
STA. 0+77.5, 17.7'Rt
INV.=301.36
100 FT WETLAND BUFFER ZONE
WATER ST.
PROP. CEM. CONC. SIDEWALK
R & R GC
PROP. GC
PROP. BIT. CONC. DRIVEWAY REPAIR
REQUIRED PERMANENT EASEMENT (TYP.)
PROP.DI #7
STA. 2+10.0, 1.0'Rt
INV.=289.70
CONSTRUCTION BASELINE
PROP. 60"ø DIVERSION CULVERT (O'BRIEN BROOK)
PROP. BIT. CONC. DRIVEWAY REPAIR
PROP. DI #8
STA. 4+60.0, 1.0'Rt
INV.=285.50
REQUIRED TEMPORARY EASEMENT (TYP.)
PROP. BIT. CONC. DRIVEWAY REPAIR
FARESE RD.
JUNCTION CHAMBER #1
CONTINUED ON SHEET 18
N
PROP. CEM. CONC. SIDEWALK
PROP. 60" X 60" X 18" TEE
PROP. ROAD RECONSTRUCTION
O'BRIEN BROOK DIVERSION CULVERT CONSTRUCTION BASELINE (TYP.)
R & R FENCE
FARESE ROAD EXT.
BASELINE SHIFTED 5.9± EASTWARD DURING CONSTRUCTION

GENERAL PLAN
1" = 20'



WATER STREET
PROP. MH #16 STA.-0+10.0, 0.0'Lt
REMOVE
36"ø RCP
2.0%
INV.= 302.10 302.12
PROP. REPLACEMENT SAN. SEWER 8" PVCP
EXISTING GRADE @ CONSTRUCTION BASELINE
PROP. PRECAST O'BRIEN BROOK DIVERSION STRUCTURE SEE SHEET 26
O'BRIEN BROOK DIVERSION STA. 0+18.00 INV.= 293.00
18" RCP FROM MH #15
INV.=295.1± 295.04
0+65.0
PROP. 60"ø RCP DIVERSION CULVERT (O'BRIEN BROOK)
DI #7 STA. 2+10.0, 1.0'Rt
PROP. 60"x60"x48"RISER TEE INV.=289.70
PROP. 60"x60"x48" RISER TEE INV.=285.50
1.70%
DI #8 STA. 4+60.0, 1.0'Rt
O'BRIEN BROOK DIVERSION STA. 5+00.00 INV.= 284.81 284.79
310
300
290
0+00
1+00
2+00
3+00
4+00
5+00

GENERAL NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WALLS, RAILINGS, CONC. DECKS ASSOCIATED WITH THE EXISTING O'BRIEN BROOK CHANNEL BEING REPLACED BY NEW WORK.
2. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO #44 WATER ST. AND ALL BUILDINGS ON FARESE ROAD AND FARESE ROAD EXTENSION AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
3. SEE SHEETS 32–34 FOR UTILITY PROFILES.

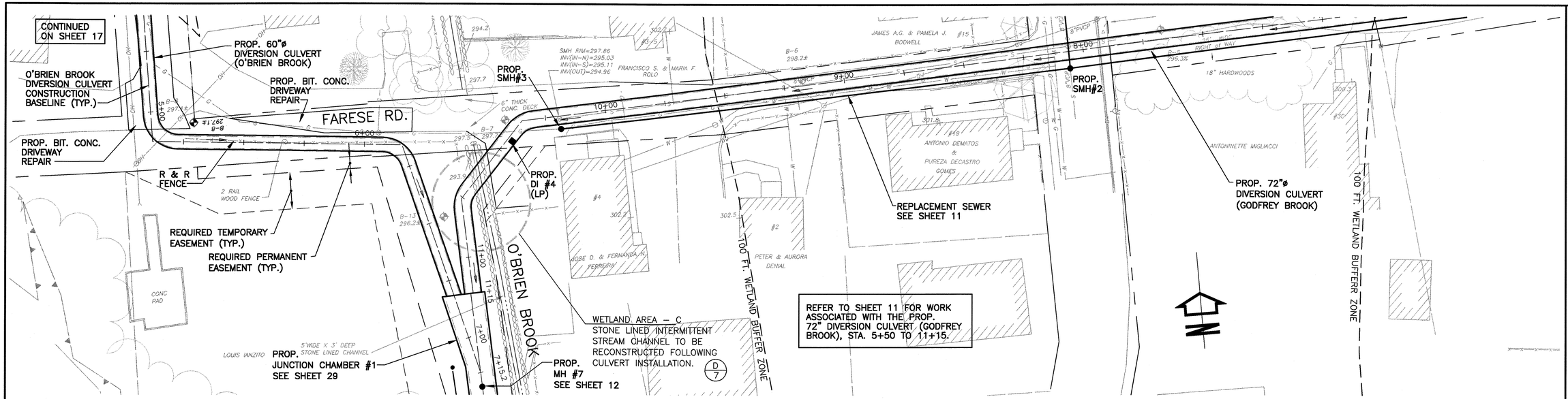
STA –0+30 TO 5+00
VERT. 1"=2'
HOR. 1"=20'

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

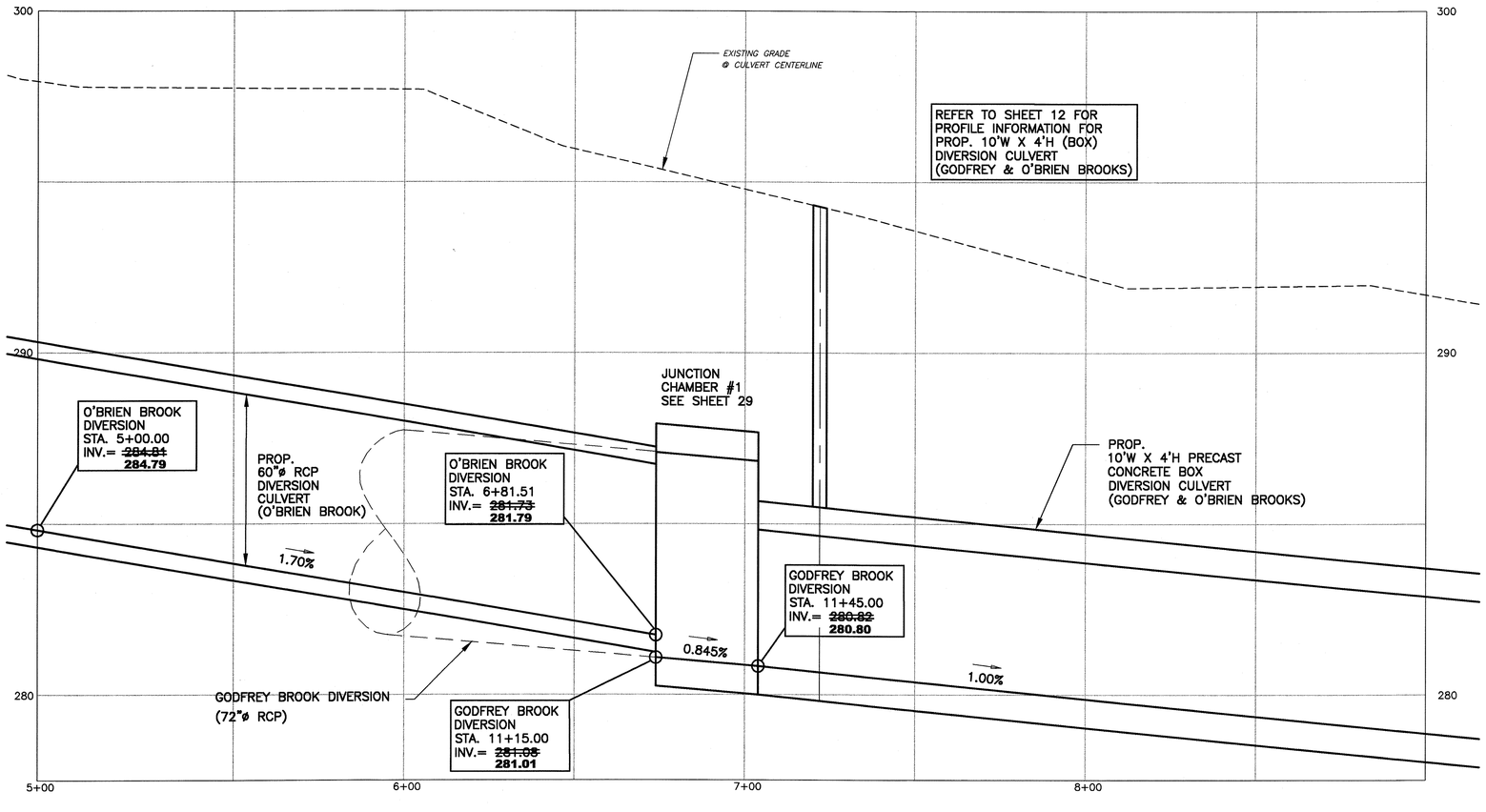
Plan / Profile
Sta. -0+30 to 5+00
O'Brien Brook Diversion Culvert
Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

PROJECT NO. 94-1215 · SCALE AS NOTED · DATE APRIL 1999 · DRAWN BY EDM · CHECKED BY TEJ

NO.	DATE	REVISION	BY	
2	10/1/01	ISSUED AS RECORD PRINT	EDM	TEJ
1	8/12/99	ISSUED FOR BIDDING		



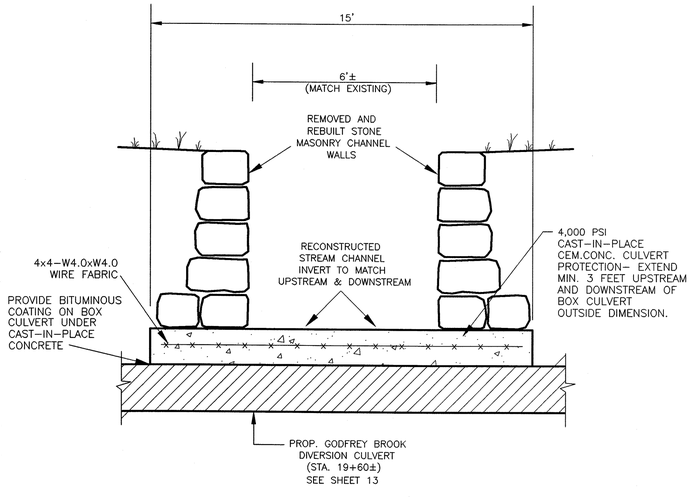
GENERAL PLAN
1" = 20'



STA 5+00 TO 6+81.51
VERT. 1"=2'
HOR. 1"=20'

GENERAL NOTES:

1. CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL WALLS, RAILINGS, CONC. DECKS ASSOCIATED WITH THE EXISTING GODFREY BROOK CHANNEL BEING REPLACED BY NEW WORK.
2. CONTRACTOR SHALL PROVIDE UNINTERRUPTED SAN. SEWER SERVICE TO ALL BUILDINGS AFFECTED BY THE WORK OF THIS PROJECT AND SHALL REPLACE EXISTING HOUSE LATERALS WITH 6" PVCP AND FLEXIBLE SEWER CONNECTORS AS THESE SEWERS ARE ENCOUNTERED.
3. SEE SHEETS 32–34 FOR UTILITY PROFILES.



A/18 CEM. CONC. CULVERT PROTECTION
NTS

DRAWING NO. 18 OF 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Plan / Profile Sta. 5+00 to 6+81.51 O'Brien Brook Diversion Culvert

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

AutoCAD File: P:\AUTOCAD\ACADWIN\94121S\RECORD DRAWINGS\Sheet 16 17 18 22 34.dwg Plotted at: Tue Oct 02 08:33:59 2001
BEC, Inc.

EXISTING DETENTION BASIN OUTLET STRUCTURE TO BE MODIFIED SEE SHEETS 27 & 28

PROP. HOSPITAL BROOK DIVERSION STRUCTURE– SEE SHEETS 27 & 28

EXISTING STONE MASONRY WALL

EXISTING DETENTION BASIN

100' WETLAND BUFFER ZONE

EXISTING RIP RAP EMERGENCY SPILLWAY AT ELEV. 291.4±

PROP. 60"ø DIVERSION CULVERT (HOSPITAL BROOK)

REPLACE DISTURBED AREAS IN KIND

PROP. MH #17 **INV.=275.97**

B-36 291.1±

INV 30"RCP=284.34

INV 48"RCP=284.86

ACCESS EASEMENT– SEE SHEETS 2 & 4

EXISTING CONCRETE HEAD WALL WITH TRASH RACK

48"RCP

30"RCP

EX. DMH RIM=288.97 INV=281.72

60"x38"RCP (elip)

HOSPITAL BROOK

5' WIDE 1' DEEP CHANNEL

MILFORD – WHITINGSVILLE HOSPITAL

R & R FENCE

20' REQUIRED PERMANENT EASEMENT (TYP.)

40' REQUIRED TEMPORARY EASEMENT (TYP.)

LIMIT OF DISTURBANCE (TYP.)

HOSPITAL BROOK DIVERSION CULVERT CONSTRUCTION BASELINE (TYP.)

EXISTING 20' SEWER EASEMENT

SUPPLEMENTARY EROSION CONTROL BARRIER

F/7

EX. SMH RIM=291.44 INV=283.39

WETLAND BOUNDARY

REPLACE 20 LF EXIST. 8" VCP SEWER WITH 8" PVCP MAINTAIN CONTINUOUS SERVICE

WETLAND AREA – I AREA OF TEMPORARY IMPACT TO BORDERING VEGETATIVE WETLAND (750± S.F.)

D/7 G/7 H/7

CONTINUED ON SHEET 20

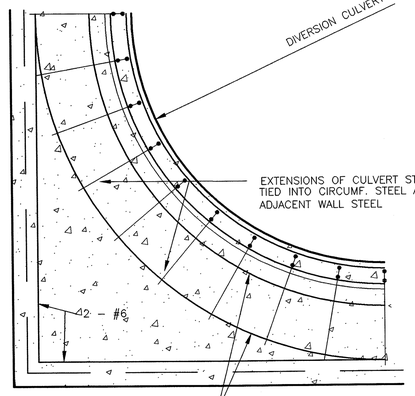
0+00 1+00 2+00 3+00 4+00

5' 15'

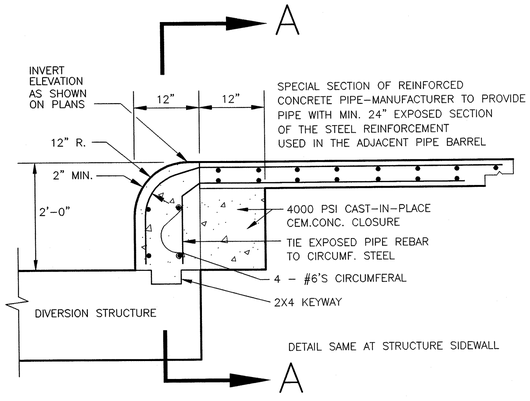
N

GENERAL PLAN
1" = 20'

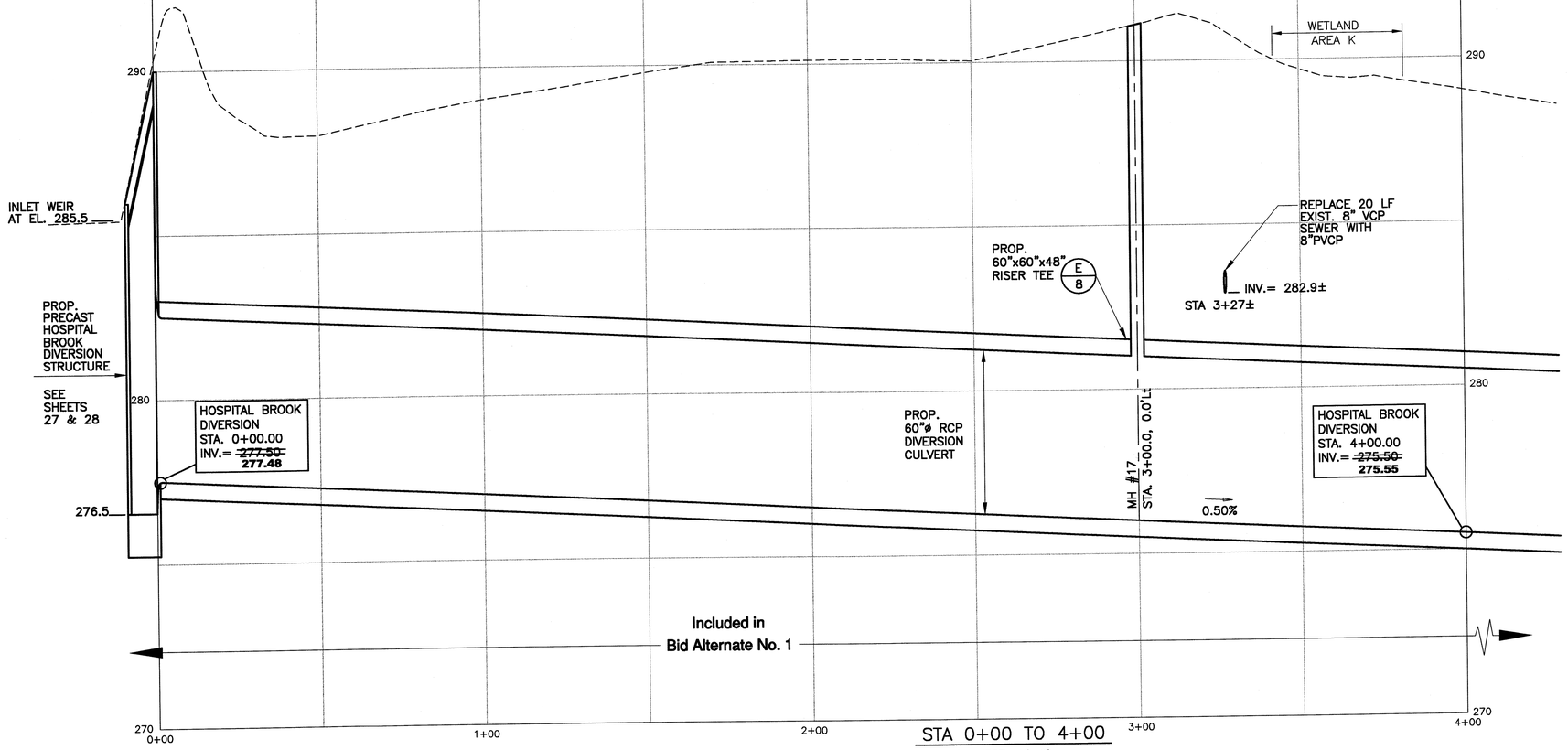
This Work is under Bid Alternate No. 1



PARTIAL SECTION A–A
NTS



A/19 TYPICAL DETAIL OF DIVERSION CULVERT CONNECTION AT DIVERSION STRUCTURES
NTS



STA 0+00 TO 4+00
VERT. 1"=2'
HOR. 1"=20'

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
236 North Main Street East Longmeadow, MA 01028

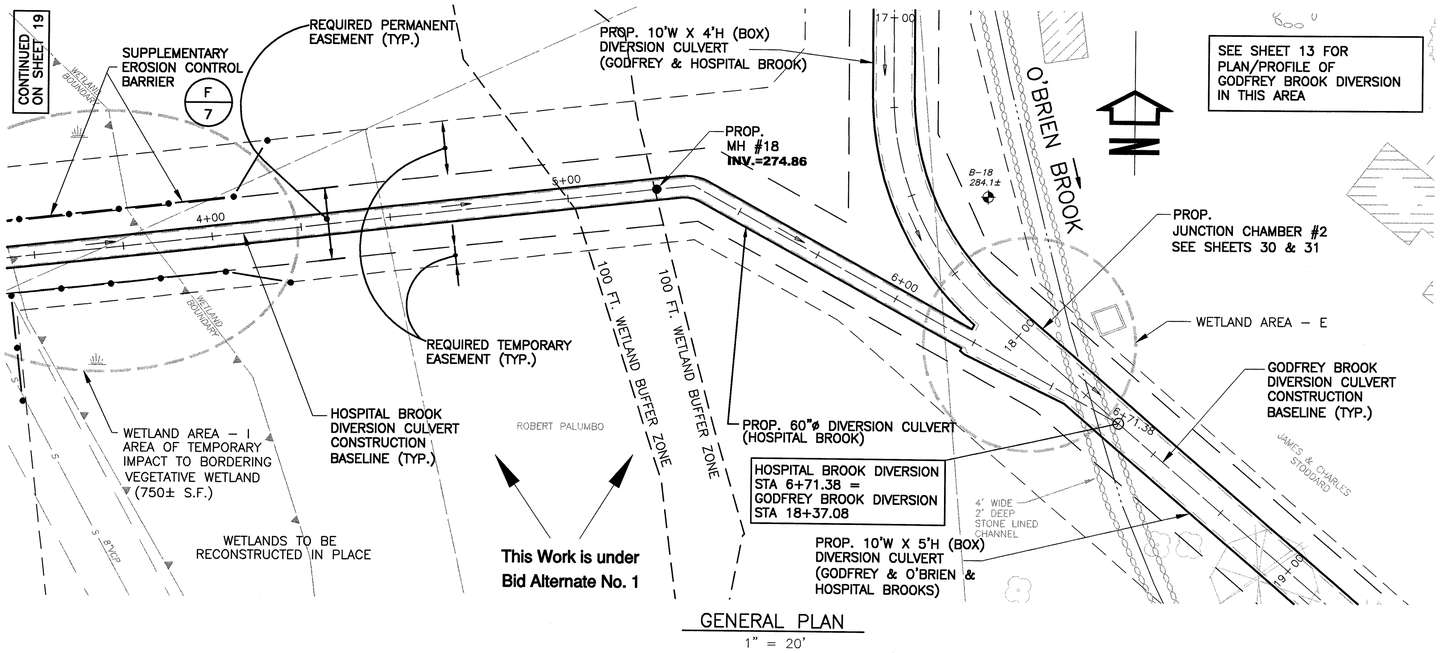
DRAWING NO. 19 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

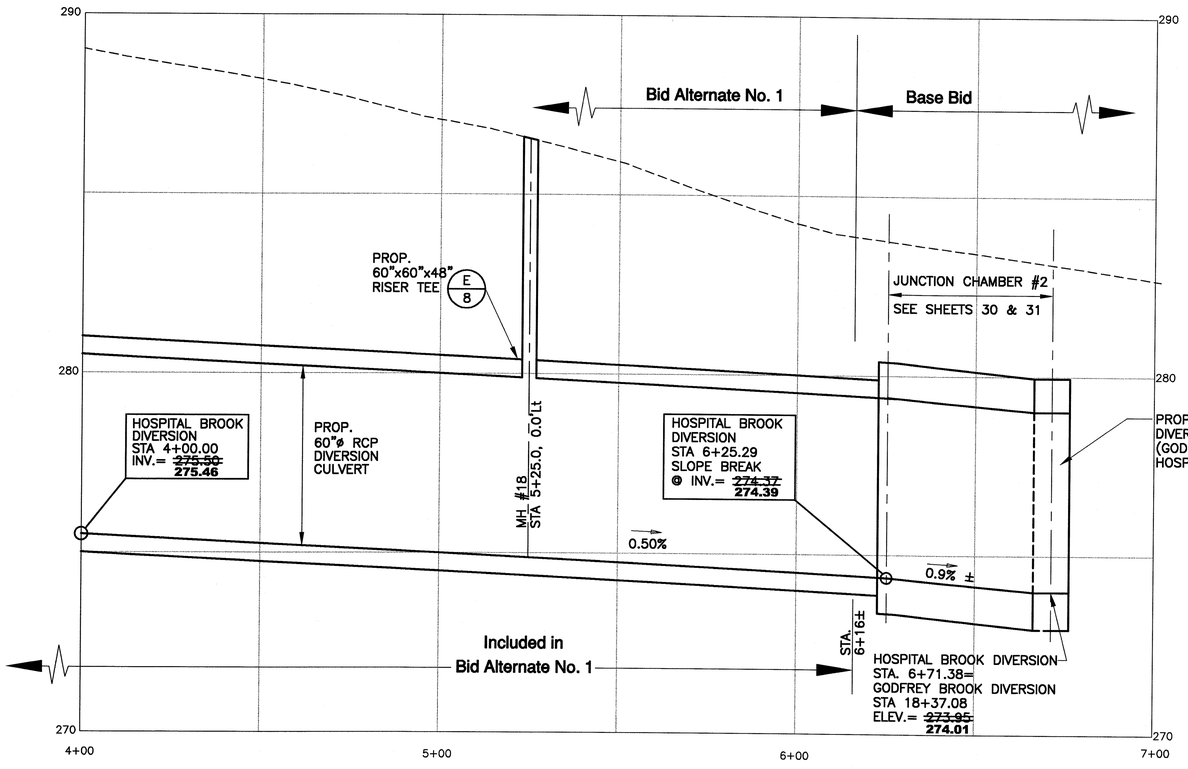
SHEET TITLE: Plan / Profile Sta. 0+00 to 4+00 Hospital Brook Diversion Culvert

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



GENERAL PLAN
1" = 20'



STA 4+00 TO 6+71.38
VERT. 1"=2'
HOR. 1"=20'

A/20 STRUCTURE SCHEDULE

NOTE: ALL CATCH BASINS SHALL HAVE 4" SUMPS AND HOODS AS PER MHD (SD) 201.12.0.
CONTRACTOR VERIFY ALL RIM & INVERT ELEVATIONS.

	PLAN/PROFILE SHEET NO.	STRUCTURE TYPE NO.	REFERENCE BASELINE	STATION	OFFSET Lt/Rt	APPROX. RIM ELEV.	INVERTS
	15	CB 1	GODFREY	31+19.9	71.0 ' Rt	268.9	~~263.80~~ 263.75
	15	CB 2	GODFREY	31+01.5	52.3 ' Rt	268.1	12" IN = ~~263.40~~ 263.30 18" OUT = ~~263.10~~ 263.15
	15	CB 3	GODFREY	31+01.1	23.0 ' Lt	268.9	~~263.80~~ 263.92
	15	CB 4	GODFREY	31+26.2	33.5 ' Lt	269.2	~~264.20~~ 264.16
	10	DI 1	GODFREY	1+57.0	9.0 ' Lt	301.0	~~298.00~~ 296.10
	10	DI 2	GODFREY	2+90.0	1.0 ' Lt	300.8	ON 72" RISER TEE, INV. = ~~285.63~~ 285.64
	11	DI 3	GODFREY	6+10.0	1.0 ' Lt	295.8	ON 72" RISER TEE, INV. = ~~283.87~~ 283.90
	11	DI 4	GODFREY	10+44.0	1.0 ' Lt	297.3	ON 72" RISER TEE, INV. = ~~281.48~~ 281.50
	13	DI 5	GODFREY	19+80.0	0.0 ' Lt	280.8	ON 10 x 5 BOX CULVERT
	17	DI 6	O'BRIEN	0+10.0	9.0 ' Rt	306.6	ON O'BRIEN BROOK DIVERSION STRUCTURE
	17	DI 7	O'BRIEN	2+10.0	1.0 ' Rt	305.2	ON 60" RISER TEE, INV. = ~~293.74~~ 289.70
	17	DI 8	O'BRIEN	4+60.0	1.0 ' Rt	299.0	ON 60" RISER TEE, INV. = ~~285.48~~ 285.50
	10	PIPE END 1	GODFREY	3+28.4	11.2 ' Lt	TOP OF WALL = 307.80	
	10	PIPE END 1	GODFREY	3+30.2	23.1 ' Lt		
	17	PIPE END 2	O'BRIEN	-0+11.3	32.2 ' Lt	TOP OF WALL = 302.50	
	17	PIPE END 2	O'BRIEN	-0+27.2	32.8 ' Lt		
	10	MH 1	GODFREY	0+27.8	32.7 ' Lt	305.5	18" = ~~298.25~~ 298.17
	10	MH 2	GODFREY	1+18.3	9.5 ' Lt	305.0	18" = ~~297.80~~ 297.87
	10	MH 3	GODFREY	0+53.7	31.0 ' Lt	305.1	18" EXIST. = ~~300.2~~ 300.31 18" OUT = ~~300.15~~ 300.18
	10	MH 4	GODFREY	0+38.6	28.9 ' Rt	305.1	12" EXIST. = ~~299.30~~ 299.86 15" OUT = ~~299.70~~ 299.75
	10	MH 5	GODFREY	1+20.0	0.0 ' Lt	305.0	18" IN = ~~297.70~~ 297.68 42" = ~~297.00~~ 297.56
	10	MH 6	GODFREY	2+89.7	15.2 ' Lt	301.8	~~296.50~~ 296.45
	10	MH 6	GODFREY	2+89.7	15.2 ' Lt	301.8	~~296.50~~ 296.45
	12	MH 7	GODFREY	11+54.0	3.0 ' Lt	290.5	ON 10 x 4 BOX CULVERT
	12	MH 8	GODFREY	15+75.0	3.0 ' Lt	287.2	ON 10 x 4 BOX CULVERT
	13	MH 9	GODFREY	17+75.0	3.0 ' Lt	283.5	ON 10 x 4 BOX CULVERT
	13	MH 10	GODFREY	21+72.3	18.5 ' Lt	281.9	15" IN = ~~277.10~~ 277.00 18" OUT = ~~274.50~~ 274.55
	13	MH 11	GODFREY	21+80.0	3.0 ' Lt	281.9	ON 10 x 5 BOX CULVERT
	14	MH 12	GODFREY	26+05.0	3.0 ' Lt	273.0	ON 10 x 5 BOX CULVERT
	15	MH 13	GODFREY	31+03.4	14.0 ' Lt	269.3	INVS. IN = ~~263.80~~ 263.85 18" OUT = ~~262.70~~ 262.78
	15	MH 14	GODFREY	31+05.0	3.0 ' Lt	269.4	ON 10 x 5 BOX CULVERT
	17	MH 15	O'BRIEN	0+65.0	14.8 ' Rt	308.5	12" IN = ~~305.30~~ 305.25 18" OUT = ~~297.00~~ 297.10
	17	MH 16	O'BRIEN	0+10.0	0.0 ' Lt	307.0	18" IN = ~~302.00~~ 302.02 36" OUT = ~~302.00~~ 302.08
*	19	MH 17	HOSPITAL	3+00.0	0.0 ' Lt	291.1	ON 60" RISER TEE, INV. = ~~278.00~~ 295.97
*	20	MH 18	HOSPITAL	5+25.0	0.0 ' Lt	286.5	ON 60" RISER TEE, INV. = ~~274.88~~ 274.86
	11	SMH 1	GODFREY	6+31.2	6.6 ' Lt	295.9	~~292.30~~ 291.57
	11	SMH 2	GODFREY	8+06.2	7.1 ' Lt	298.5	IN (3) = ~~291.28~~ 291.22 OUT = ~~291.19~~ 291.14
	11	SMH 3	GODFREY	10+19.1	5.4 ' Lt	297.8	~~292.30~~ 292.22
	13	SMH 4	GODFREY	21+76.7	13.8 ' Lt	282.4	~~272.30~~ 272.35
	15	SMH 5	GODFREY	31+12.1	58.1 ' Rt	268.8	~~265.00~~ 265.10
	15	SMH 6	GODFREY	31+21.4	32.6 ' Rt	269.0	~~264.35~~ 264.90
	15	SMH 7	GODFREY	31+22.4	46.4 ' Lt	269.4	~~264.80~~ 264.90
	17	SMH 8	O'BRIEN	0+77.5	17.7 ' Rt	309.0	~~301.30~~ 301.36
	17	SMH 9	O'BRIEN	-0+25.6	9.3 ' Lt	306.9	~~299.90~~ 299.85
	13	SMH 4A	GODFREY	21+75.4	15.0 ' Rt	282.0	IN = ~~272.34~~ 272.31 OUT = ~~272.24~~ 272.20
	14	SMH 4B	GODFREY	23+25.4	15.0 ' Rt	284.5	IN = ~~271.80~~ 271.80 OUT = ~~271.70~~ 271.75
	14	SMH 4C	GODFREY	23+36.0	93.0 ' Lt	282.5	12" IN = ~~271.44~~ 271.40 15" IN/OUT = ~~271.34~~ 271.32

* = UNDER BID ALTERNATE No.1

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
236 North Main Street East Longmeadow, MA 01028

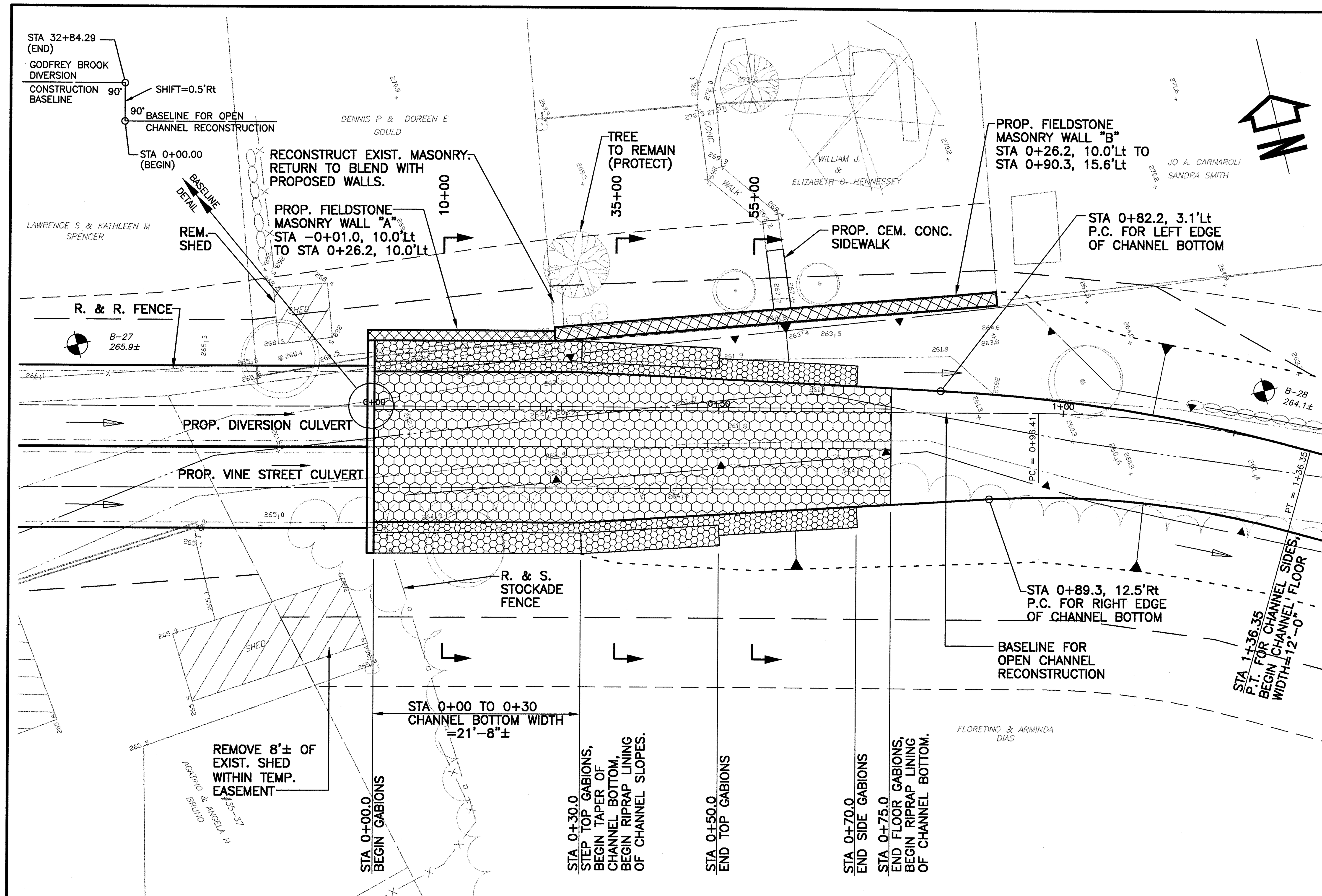
DRAWING NO. 20 of 35 SHTS

PROJECT NO. 94-1215 | SCALE AS NOTED | DATE APRIL 1999 | DRAWN BY EDM | CHECKED BY TEJ

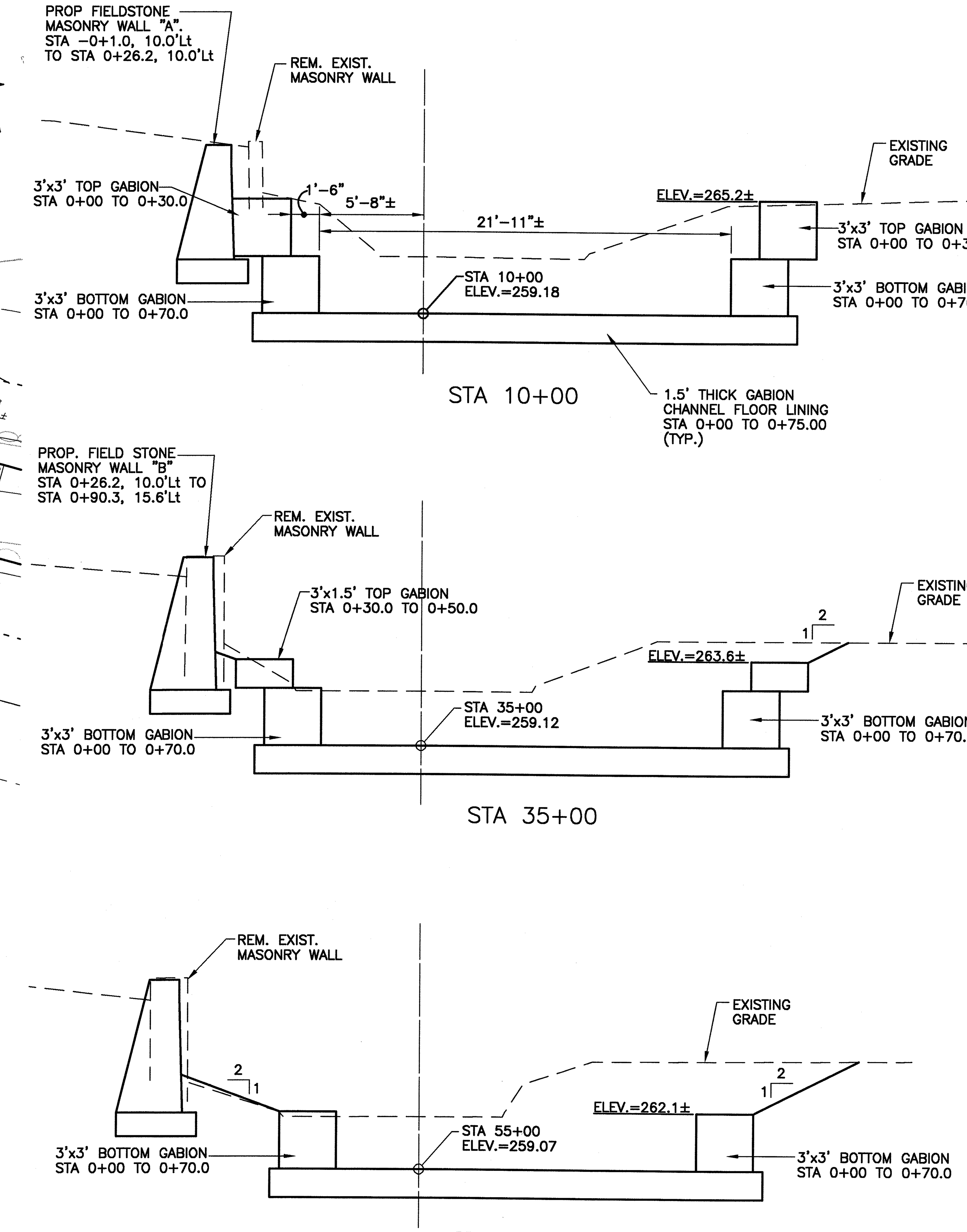
SHEET TITLE: Plan / Profile Sta. 4+00 to 6+71.38 Hospital Brook Diversion Culvert

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

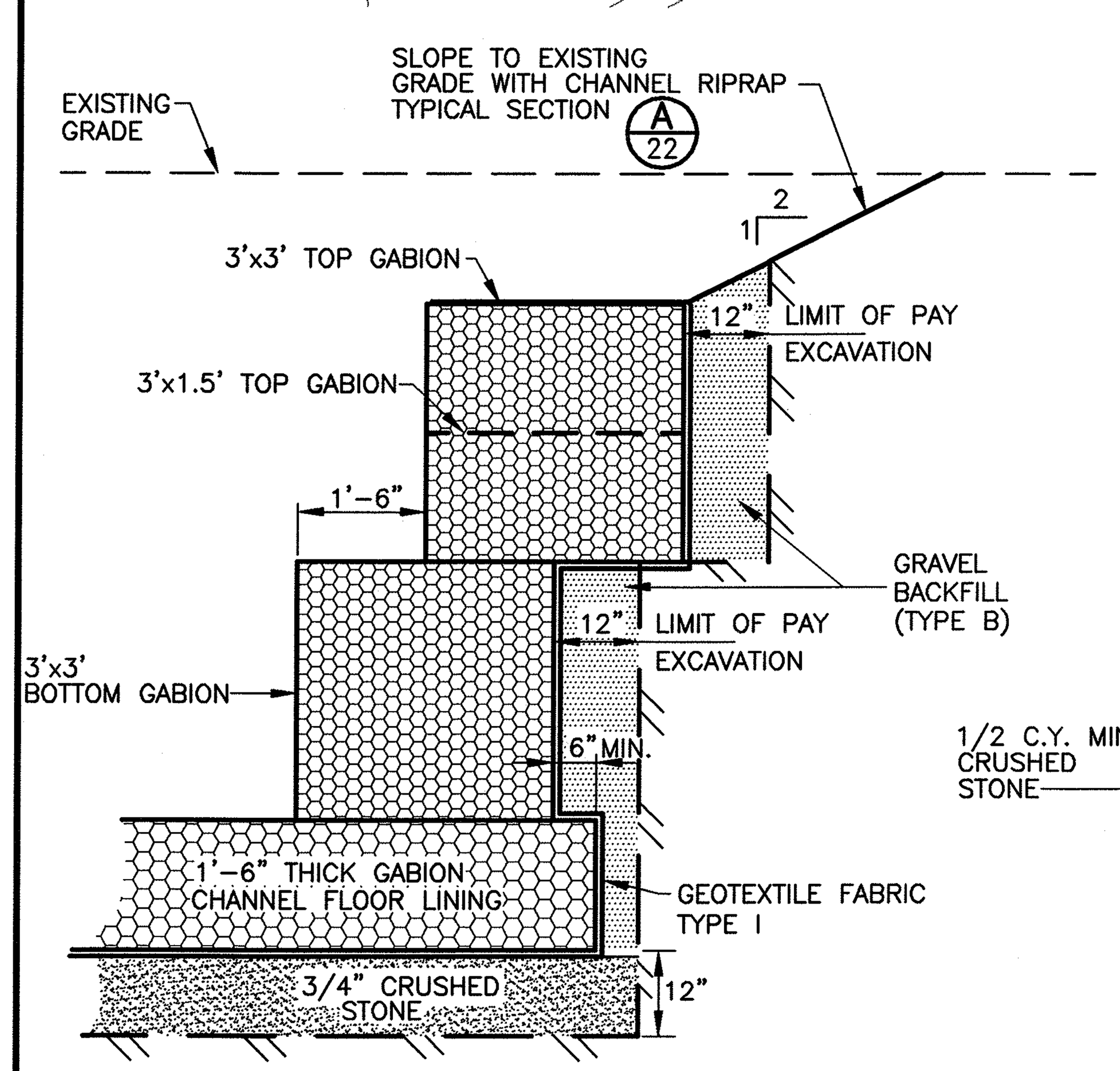
NO.	DATE	REVISION	BY
3	10/1/01	ISSUED AS RECORD PRINT	EDM
2	11/13/00	GODFREY BROOK DIVERSION STRUCTURE; MISC. EDITS	TEJ
1	6/12/99	ISSUED FOR BIDDING	TEJ



PROPOSED LAYOUT OF GABIONS
OPEN CHANNEL BASELINE STA 0+00 TO 0+75
1"=10'



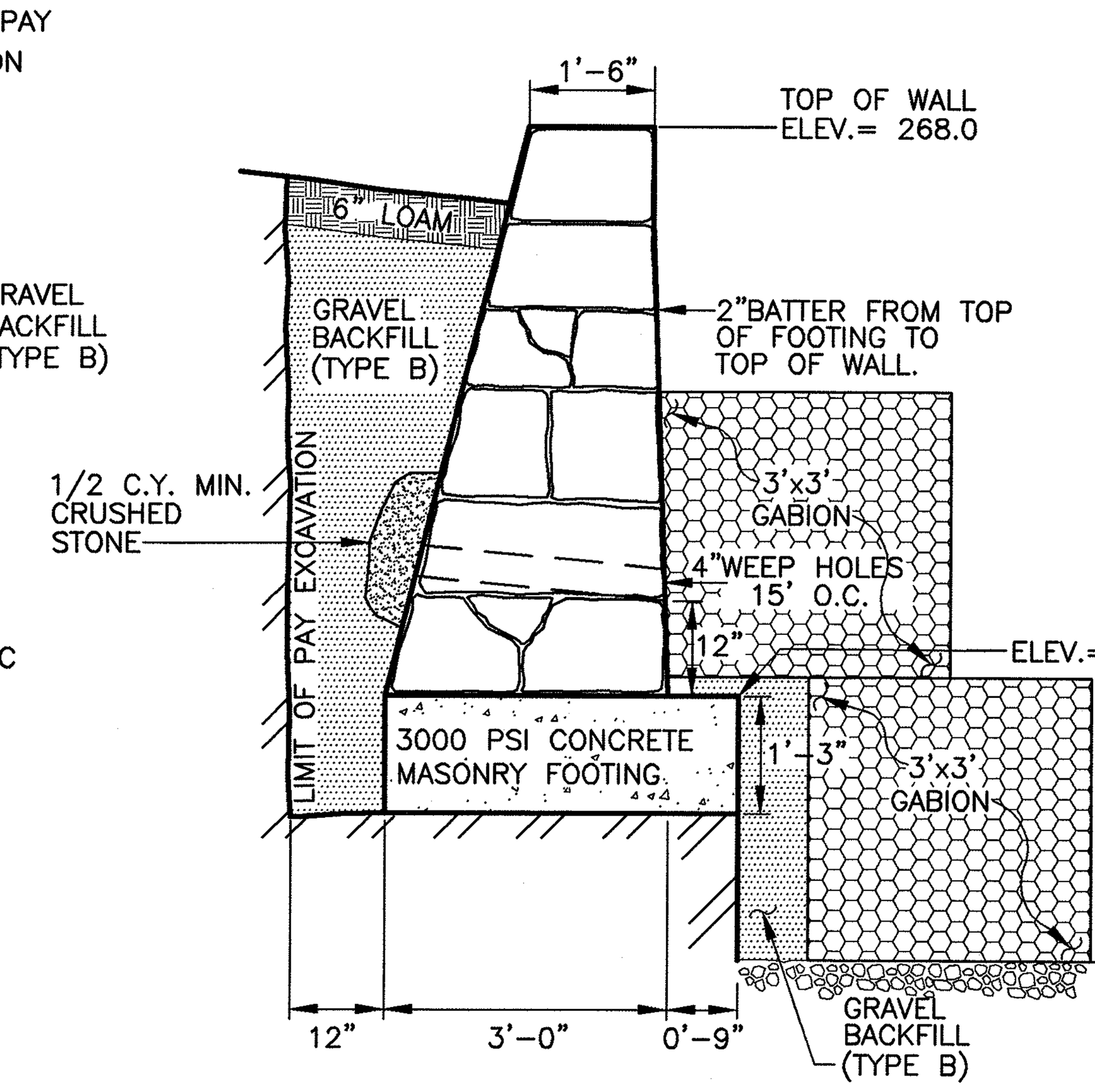
CROSS SECTIONS OF PROPOSED GABION CONSTRUCTION
NTS



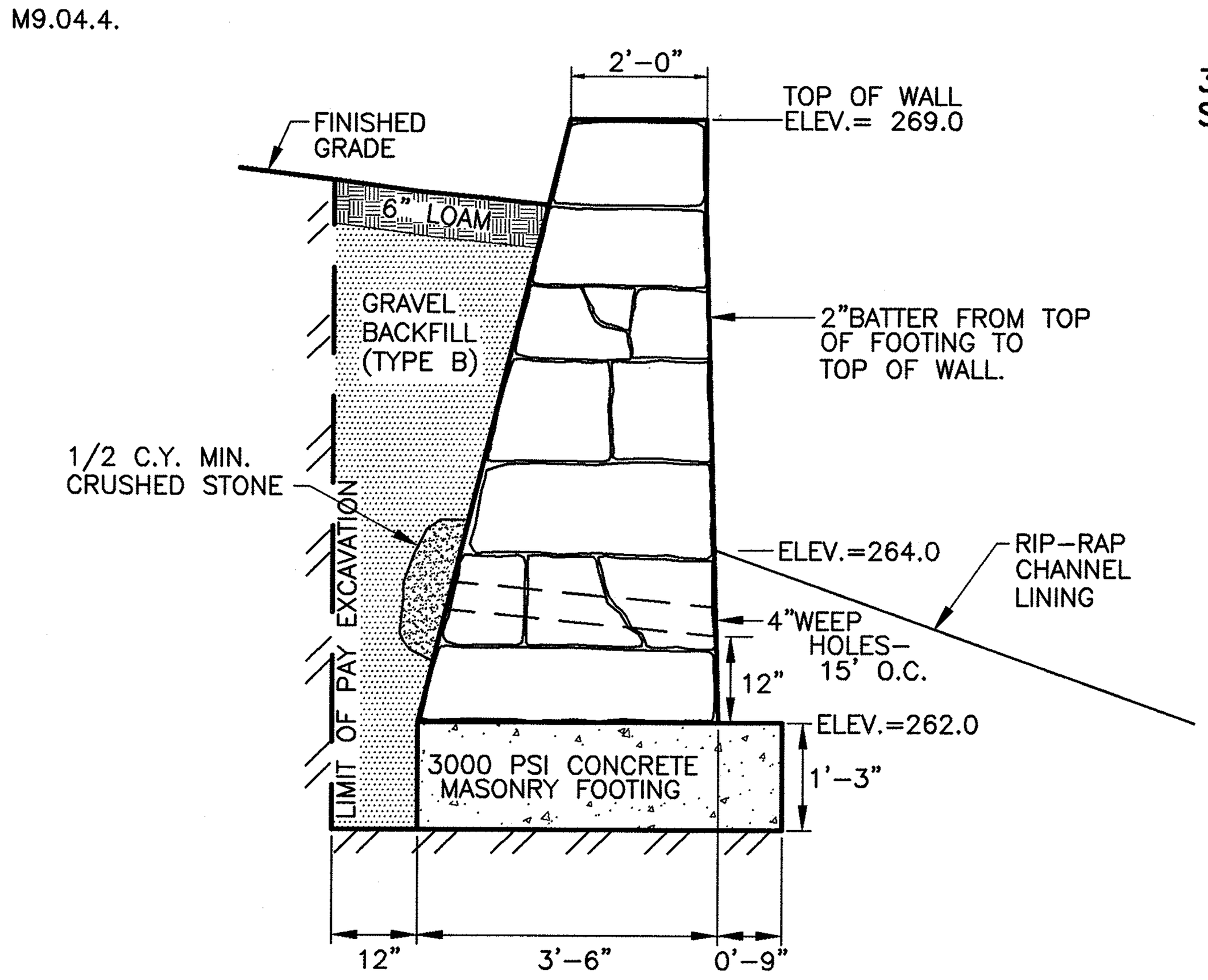
A/21 TYPICAL GABION INSTALLATION
NTS

NOTES:

1. COPING TO BE NATIVE MILFORD GRANITE WITH THERMAL FINISH FOR ENTIRE LENGTH OF WALL.
2. FIELDSTONE MASONRY TO BE COMPOSED OF NATIVE MILFORD GRANITE OTHERWISE MEETING THE REQUIREMENTS OF M9.04.4.



FIELD STONE MASONRY WALL "A"
OPEN-CHANNEL BASELINE STA −0+01.0 TO 0+26.2, 10.0'Lt
NTS



FIELD STONE MASONRY WALL "B"
OPEN-CHANNEL BASELINE STA 0+26.2, 10.0'Lt TO 0+90.3, 15.6'Lt
NTS

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

SHEET TITLE: Plan & Details - Sta. 0+00 to 1+36.35
Open Channel Reconstruction
Downstream of Vine Street

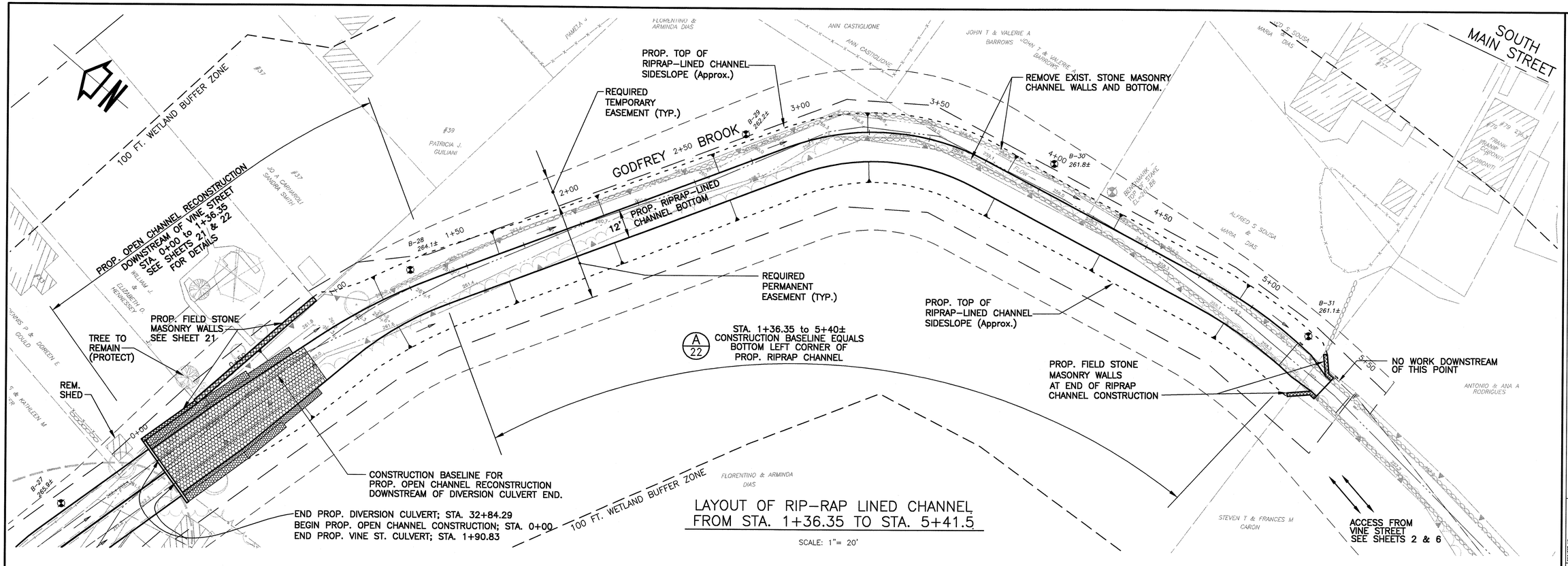
PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY SMR
CHECKED BY TEJ

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

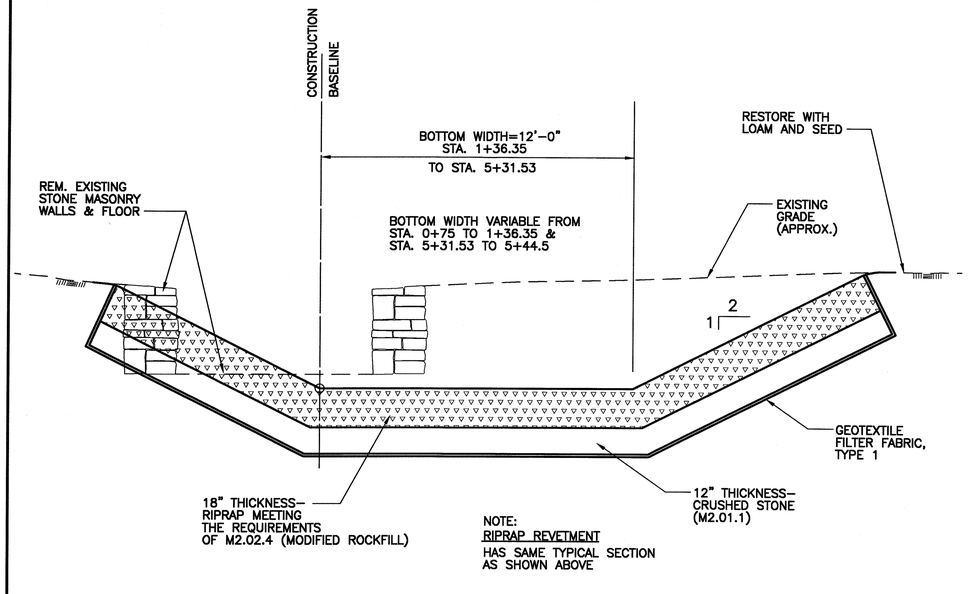
DRAWING NO. 21 OF 35 SHTS

AutoCAD File: P:\AUTOCAD\ACADWIN\941215\RECORD DRAWINGS\Sheet 21.dwg Plotted at: Tue Oct 02 09:19:53 2001
BEC, Inc.



LAYOUT OF RIP–RAP LINED CHANNEL FROM STA. 1+36.35 TO STA. 5+41.5

SCALE: 1"= 20'

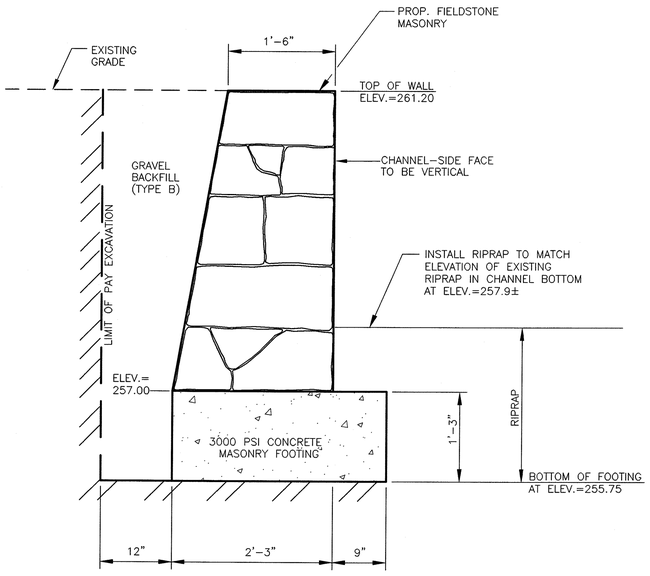


A 22 PROPOSED RIPRAP CHANNEL CONSTRUCTION
TYPICAL SECTION

NTS

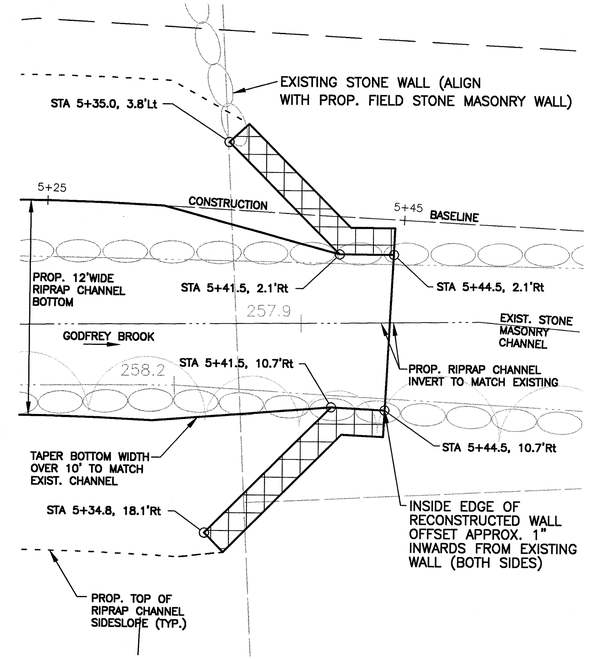
NOTES:

1. FIELDSTONE MASONRY TO BE COMPOSED OF NATIVE MILFORD GRANITE OTHERWISE MEETING THE REQUIREMENTS OF M9.04.4.



PROPOSED FIELD STONE WALLS AT END OF RIPRAP CHANNEL
TYPICAL SECTION

NTS



PROPOSED FIELD STONE WALLS AT END OF RIPRAP CHANNEL
DETAIL PLAN

1"=4'

DRAWING NO. 22 OF 35 SHTS

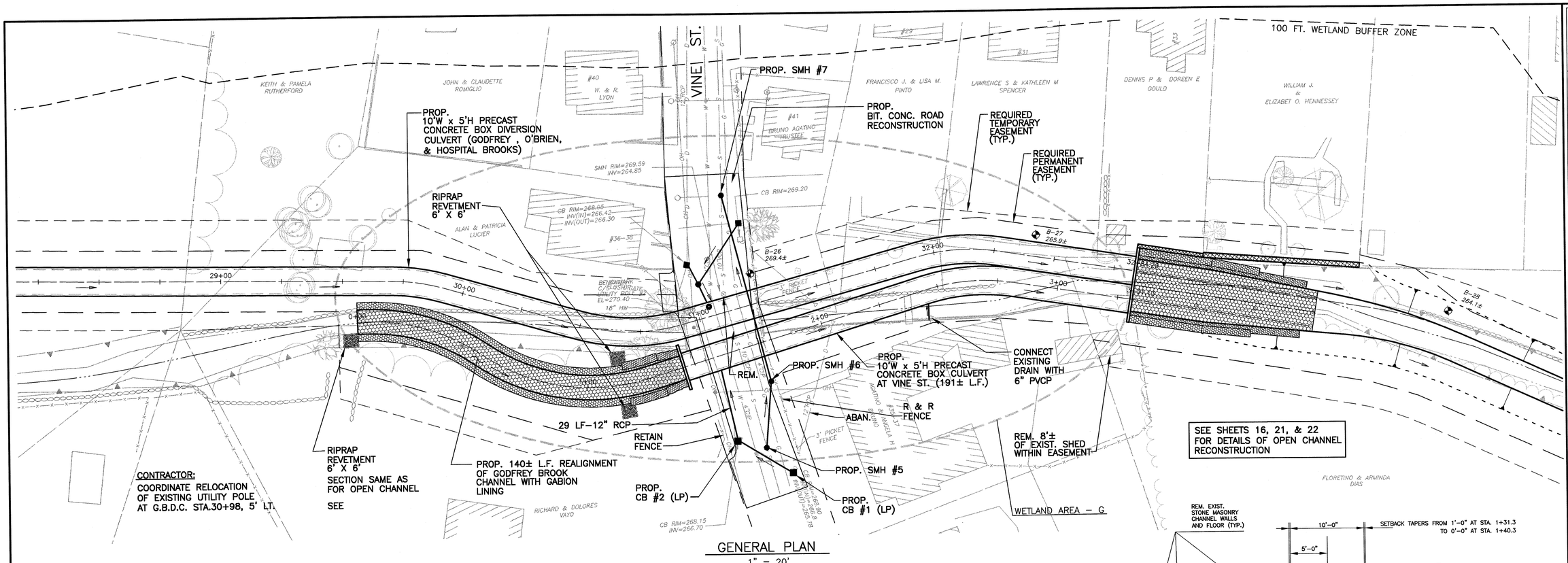
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors Engineers
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

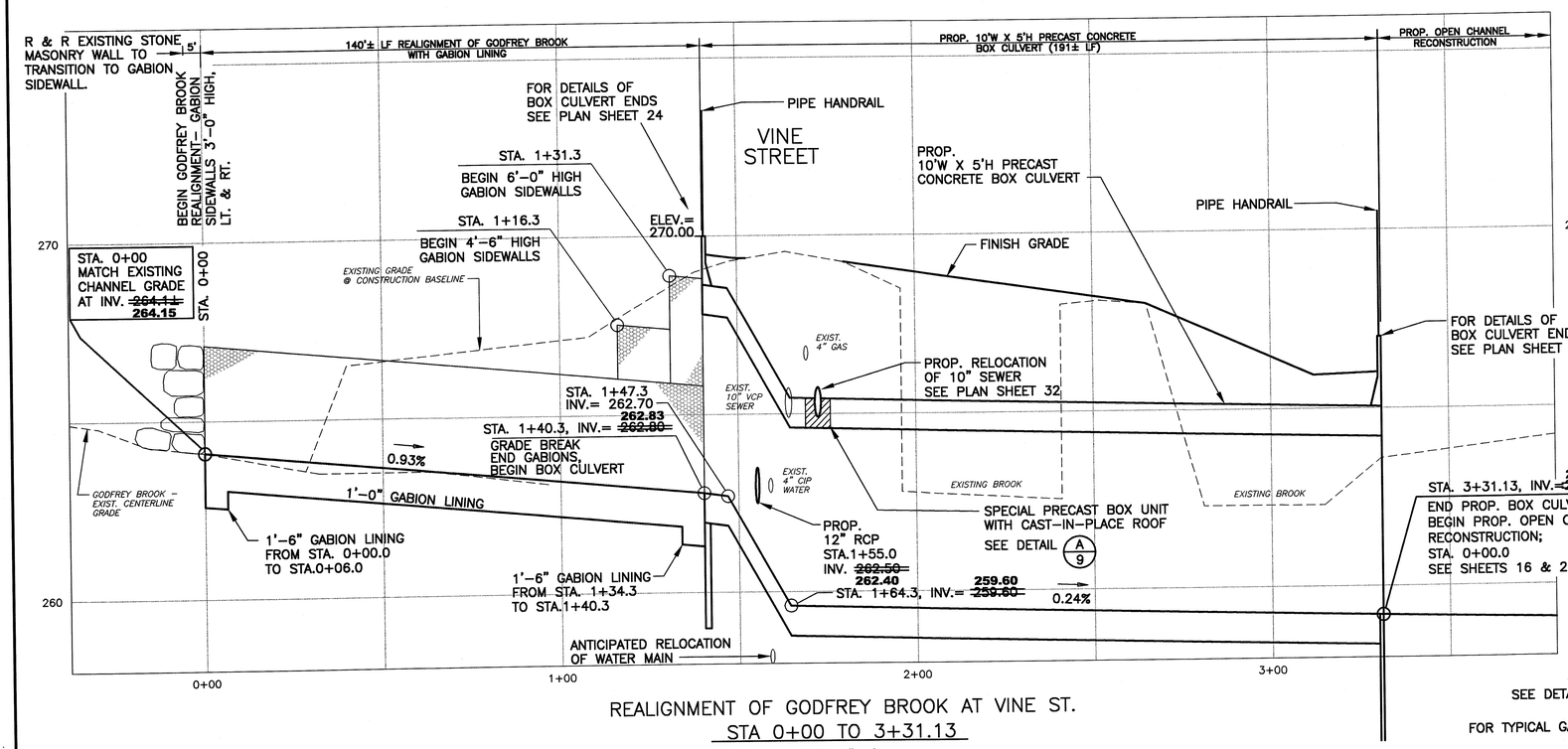
SHEET TITLE: Plan & Details - Sta. 1+36.35 to 5+44.5± Open Channel Reconstruction Downstream of Vine Street

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

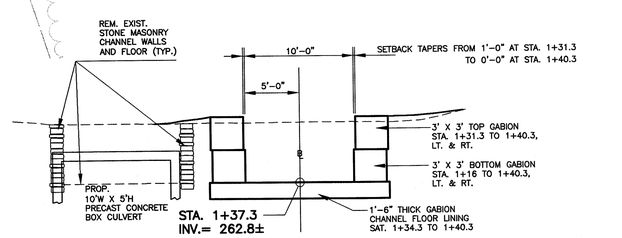


GENERAL PLAN
1" = 20'



REALIGNMENT OF GODFREY BROOK AT VINE ST.
STA 0+00 TO 3+31.13
VERT. 1"=2'
HOR. 1"=20'

SEE DETAIL A/8
FOR TYPICAL GABION INSTALLATION



CROSS SECTIONS OF CHANNEL WITH GABION LINING
NTS

DRAWING NO. 23 OF 35 SHTS

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE
Plan / Profile
Sta. 0+00 to 3+31.13
ReAlignment of Godfrey Brook at Vine St.

PROJECT
Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

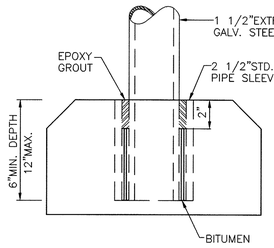
PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

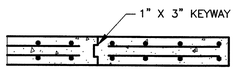
CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

NO WEEP HOLES IN CULVERT SECTIONS OR DIVERSION STRUCTURES

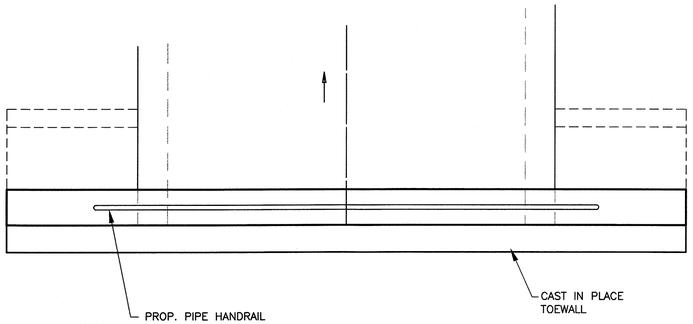


NOTES:
1. GALV. STEEL PIPE FENCE & HAND RAIL TO FOLLOW GRADE OF COPING OR STRUCTURE.
2. JOINTS SHALL BE WELDED AND GROUND SMOOTH.
3. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE STANDARD SPECIFICATIONS.

A/24 TYP. HANDRAIL ANCHORAGE
NTS

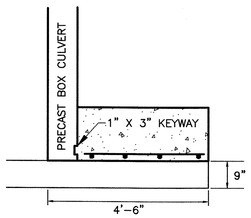


SECTION E–E
1/2" = 1'

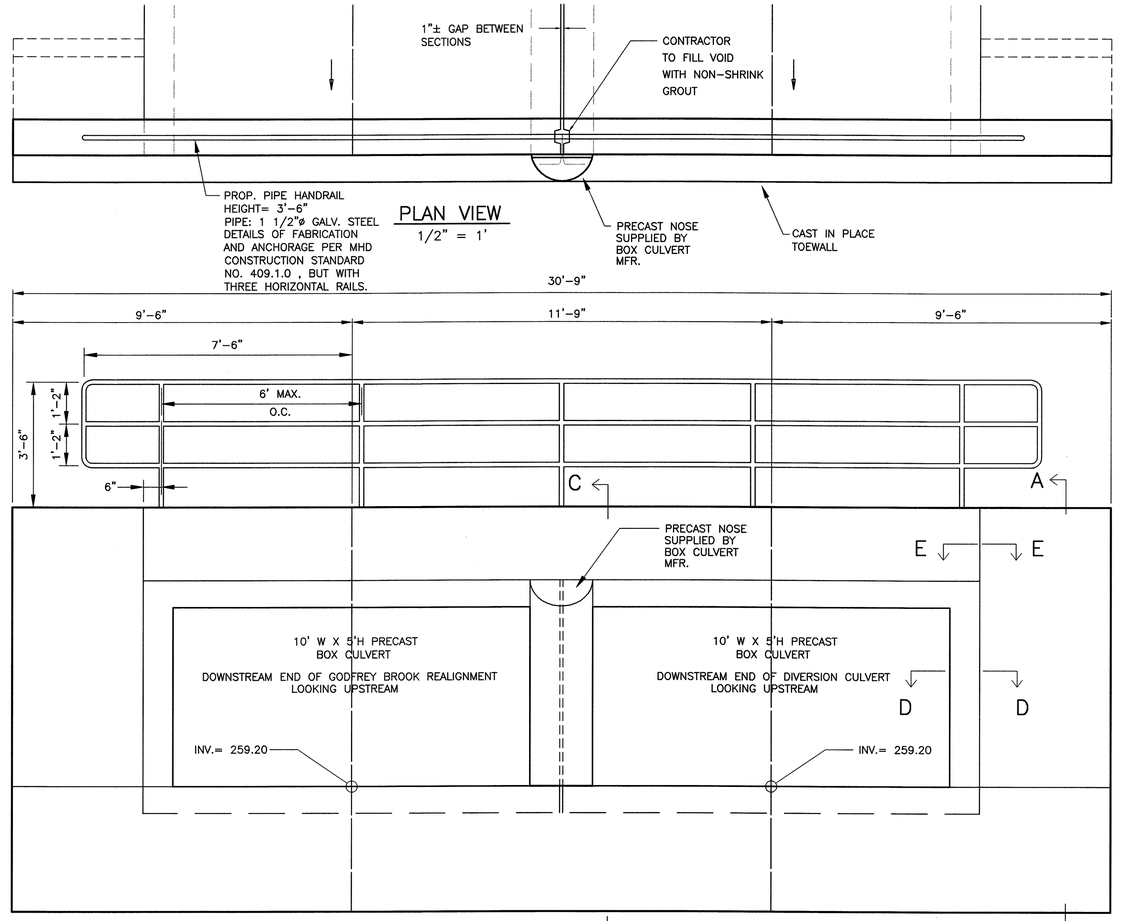


A/24

PLAN VIEW
1/2" = 1'

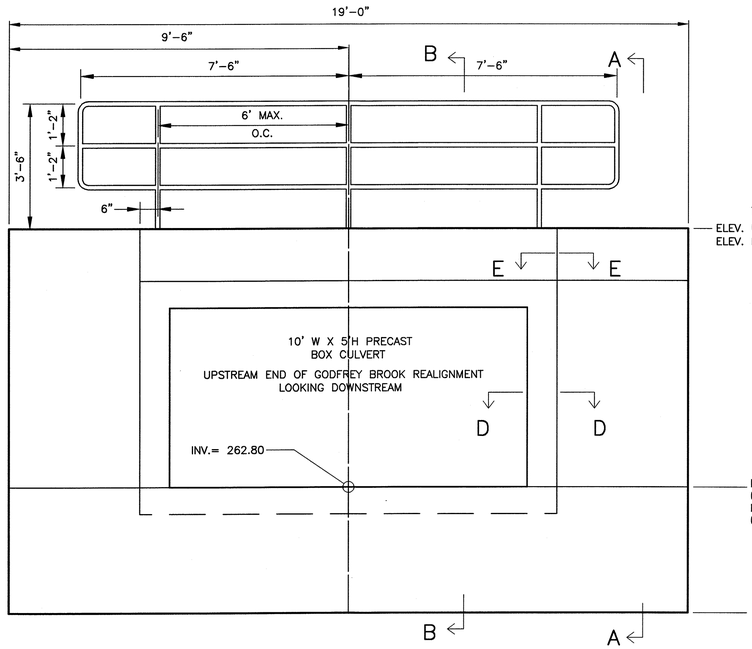


SECTION D–D
1/2" = 1'

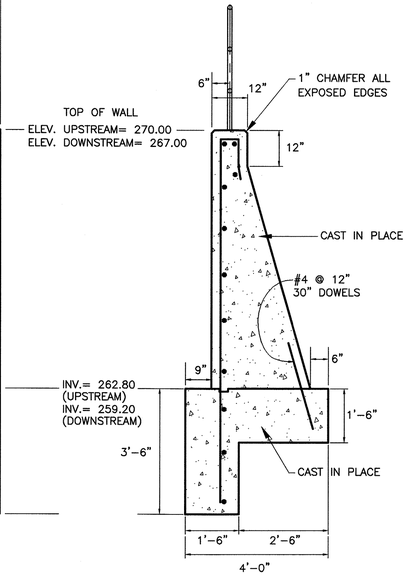


PLAN VIEW
1/2" = 1'

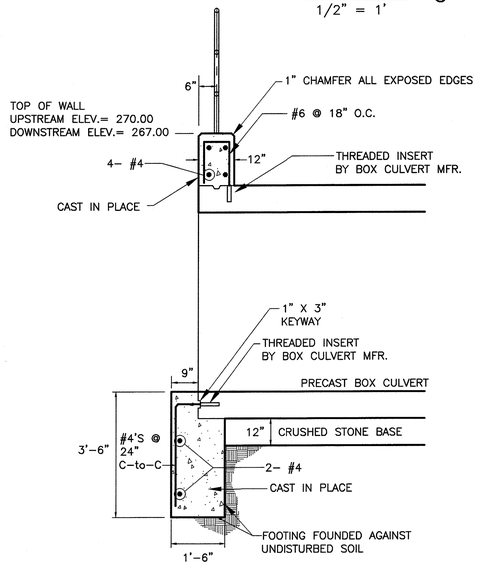
CAST–IN–PLACE CONCRETE NOTES:
1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.– ASTM A–61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS



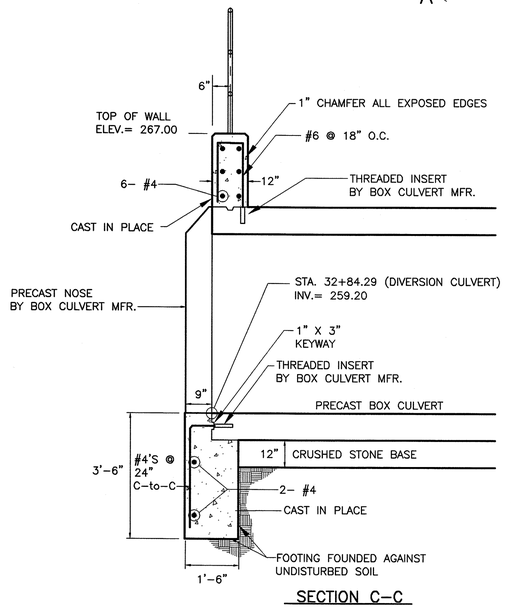
ELEVATION
1/2" = 1'



SECTION A–A
1/2" = 1'



SECTION B–B
1/2" = 1'



SECTION C–C
1/2" = 1'

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Engineers Surveyors
286 North Main Street East Longmeadow, MA 01028

DRAWING NO. 24 OF 35 SHTS

PROJECT NO. 94–1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Box Culvert Ends Details and Sections

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

2

REFER TO THE NEW PLAN SHEET NO. 25-A
FOR
PLAN, PROFILE, AND DETAILS OF THE
GODFREY BROOK DIVERSION STRUCTURE

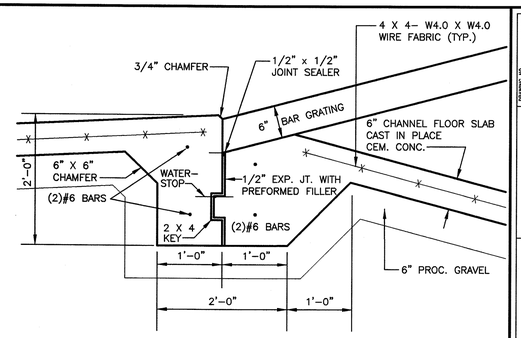
PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.



B/25 SLAB JOINT DETAIL
N.T.S.

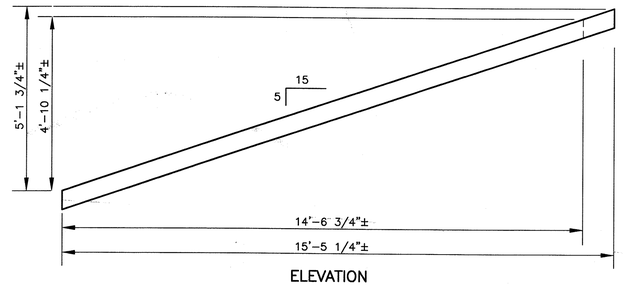
SIDEWALL LAYOUT INFORMATION:

LEFT SIDEWALL:	BOTTOM OF FOOTING:	
STA. –0+11.5 TO 0+04.60	ELEV. 297.00	2 (CONSISTENT WITH APPROVED SHOP DRAWINGS)
STA. 0+02.6 TO 0+19.1±	ELEV. 296.00	

RIGHT SIDEWALL:	BOTTOM OF FOOTING:	
STA. –0+11.5 TO 0+04.60	ELEV. 297.00	2 (CONSISTENT WITH APPROVED SHOP DRAWINGS)
STA. 0+02.6 TO 0+20.1±	ELEV. 296.00	

BAR GRATING NOTES:

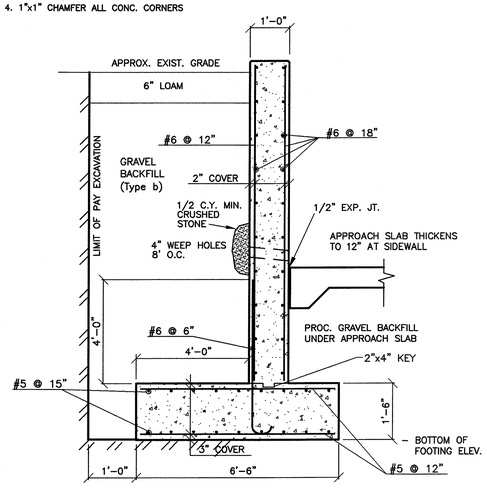
1. ALL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO–M183.
2. BAR GRATING PANELS SHALL BE FABRICATED IN FULL LENGTH PANELS. MINIMUM PANEL WIDTH = 3'–0".
3. BAR GRATING PANELS SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION AND TEST FITTING. GALVANIZING SHALL MEET THE REQUIREMENTS OF AASHTO–M11 "ZINC (HOT–GALVANIZED) COATINGS ON PRODUCTS FABRICATED FROM ROLLED, PRESSED, AND FORGED STEEL SHAPES, PLATES, BARS, AND STRIP."



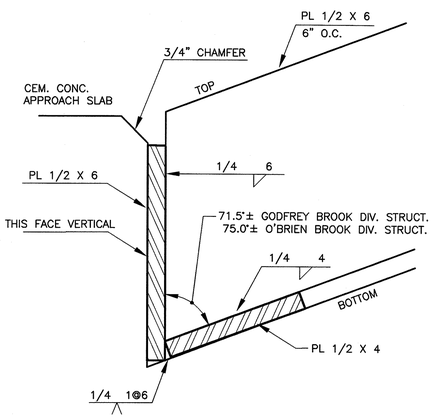
ELEVATION

CAST–IN–PLACE CONCRETE NOTES:

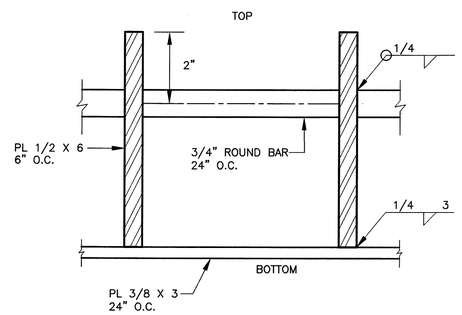
1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.– ASTM A–61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS



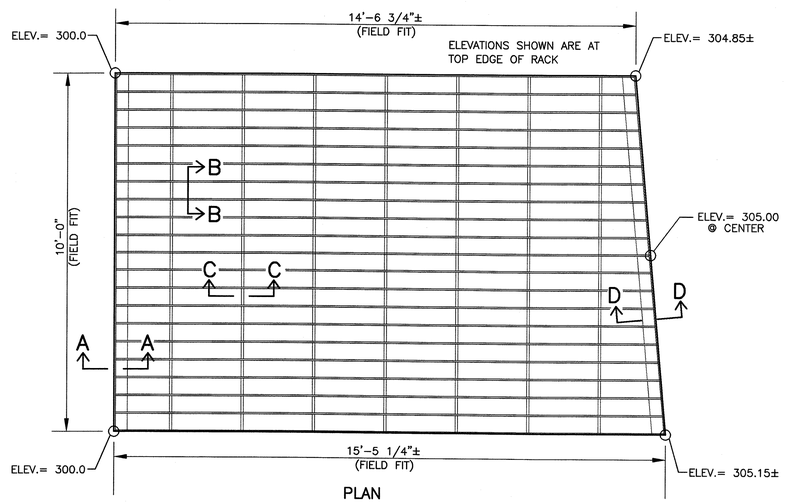
A/25 CHANNEL SIDEWALL TYPICAL SECTION
N.T.S.



BAR GRATING NO. 1 & 2 – SECTION A–A
1"=2"



BAR GRATING NO. 1 & 2 – SECTION B–B
1"=2"



PLAN

BAR GRATING NO. 1
GODFREY BROOK DIVERSION STRUCTURE
1/2"= 1'

SEE SHEET 26 FOR C–C & D–D

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
286 North Main Street East Longmeadow, MA 01028

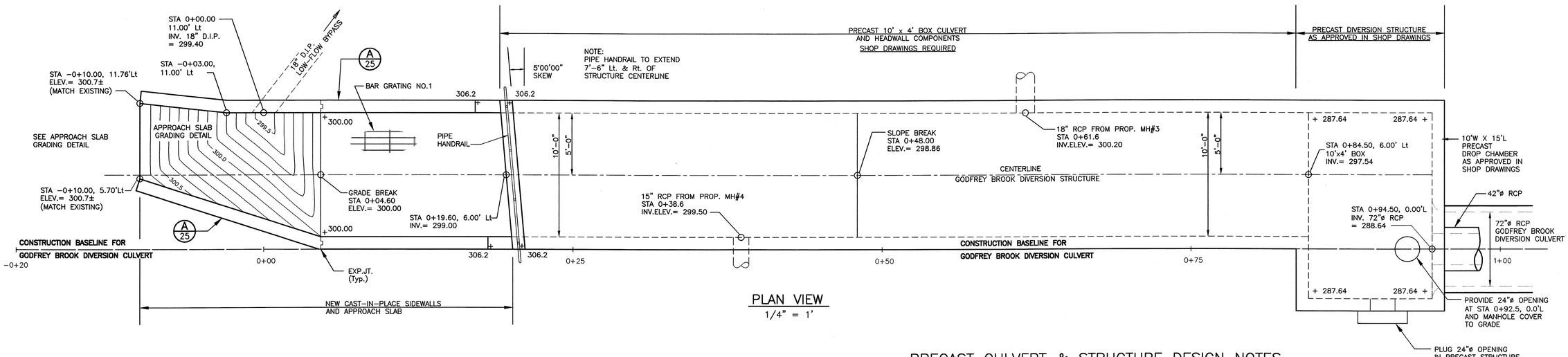
DRAWING NO. 25 of 35 SHTS

PROJECT NO. 94–1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Godfrey Brook Diversion Structure

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
3	10/1/01	ISSUED AS RECORD PRINT	EDM
2	11/13/00	GODFREY BROOK DIVERSION STRUCTURE; MISC. EDITS	TEJ
1	8/12/99	ISSUED FOR BIDDING	TEJ



PLAN VIEW
1/4" = 1'

PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25−40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'−0" MINIMUM, 13'−6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'−0" LIVE LOAD SURCHARGE APPLIED TO 13'−6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS
FOR HIGHWAY BRIDGES, ACI 318−83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.

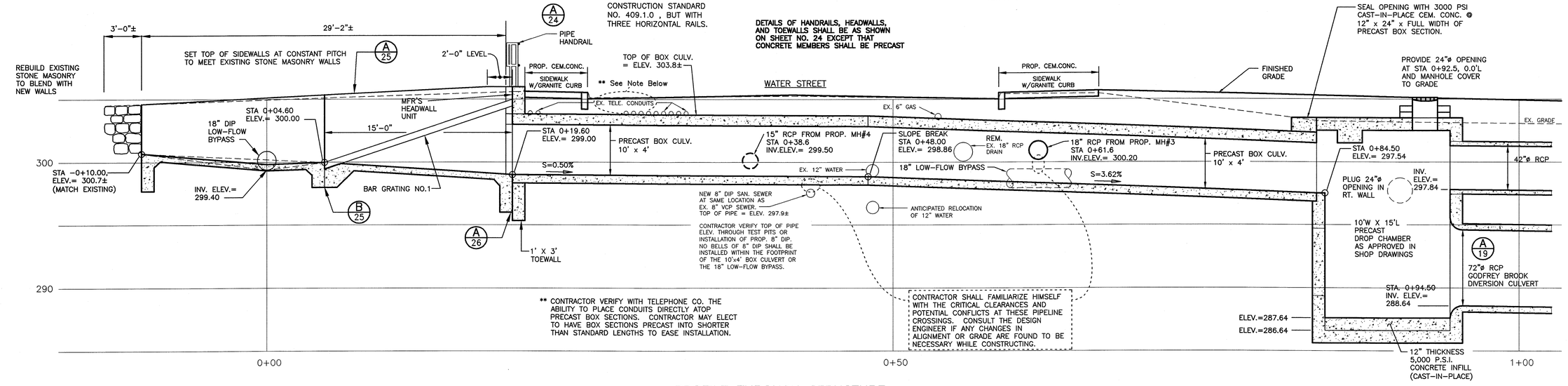
CAST−IN−PLACE CONCRETE NOTES:

1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.– ASTM A−61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS

SIDEWALL LAYOUT INFORMATION:

LEFT SIDEWALL:	BOTTOM OF FOOTING:
STA. −0+11.5 TO 0+04.60	ELEV. 297.00
STA. 0+02.6 TO 0+19.1±	ELEV. 296.00

RIGHT SIDEWALL:	BOTTOM OF FOOTING:
STA. −0+11.5 TO 0+04.60	ELEV. 297.00
STA. 0+02.6 TO 0+20.1±	ELEV. 296.00



PROFILE THROUGH STRUCTURE
1/4" = 1'
FOLLOWS STRUCTURE ℄ TO PRECAST DROP CHAMBER THEN ℄ OF 72" DIVERSION CULVERT

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors Engineers
296 North Main Street East Longmeadow, MA 01028

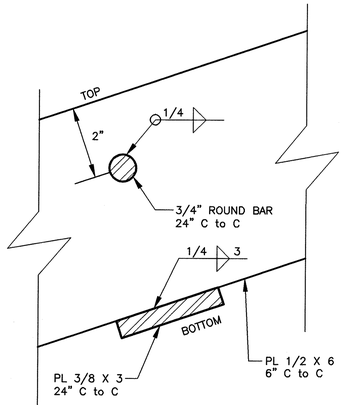
DRAWING NO. 25-A OF 35 SHTS

PROJECT NO. 94−1215
SCALE AS NOTED
DATE NOV. 2000
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Godfrey Brook Diversion Structure

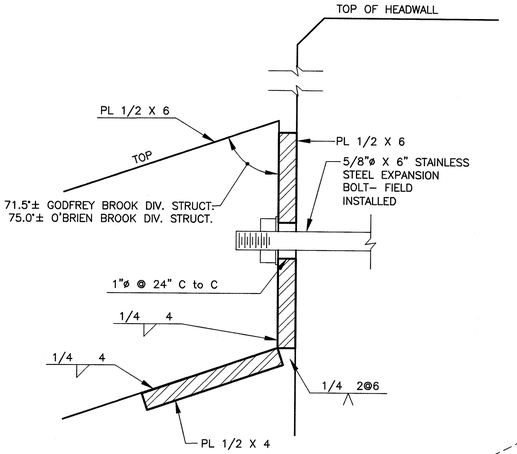
PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	11/13/00	DRAWING ISSUED	TEJ



BAR GRATING NO. 1 & 2 – SECTION C–C

1"=2"



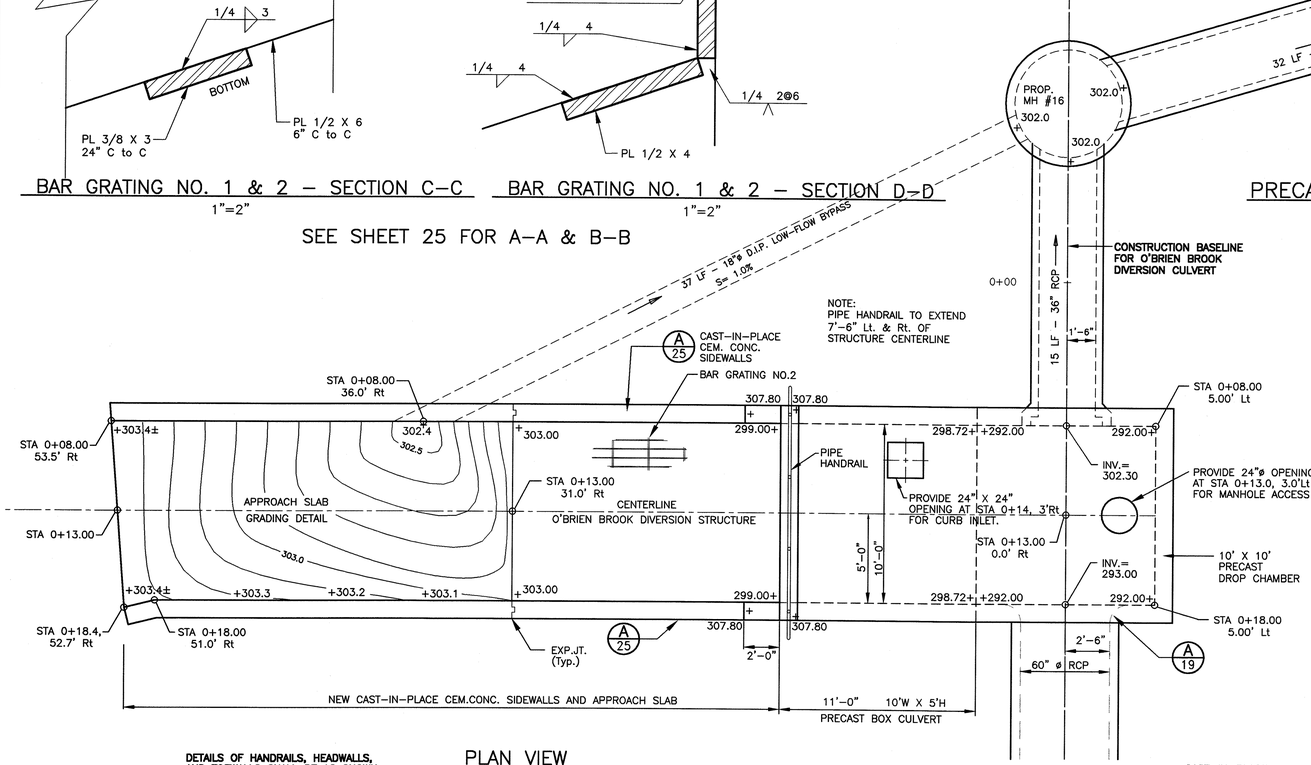
BAR GRATING NO. 1 & 2 – SECTION D–D

1"=2"

SEE SHEET 25 FOR A–A & B–B

LEFT SIDEWALL:	BOTTOM OF FOOTING:
STA. 0+08.0, 55.0'Rt TO 31.0'Rt	ELEV. 300.50
STA. 0+08.0, 33.0'Rt TO 21.0'Rt	ELEV. 296.50

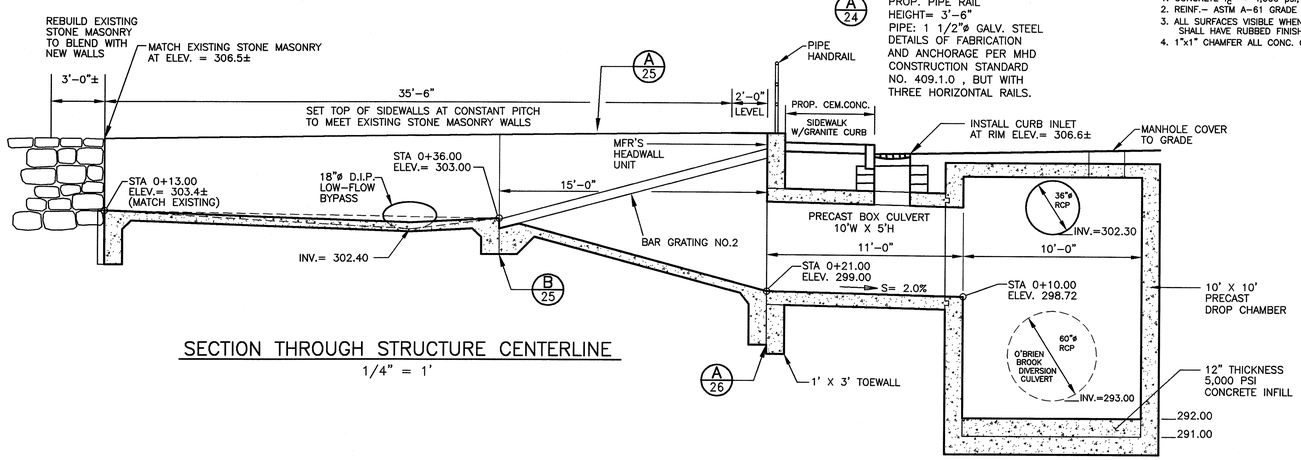
RIGHT SIDEWALL:	BOTTOM OF FOOTING:
STA. 0+18.4, 54.2'Rt TO STA. 0+18.0, 31.0'Rt	ELEV. 300.50
STA. 0+18.0, 33.0'Rt TO 21.0'Rt	ELEV. 296.50



PLAN VIEW

1/4" = 1'

DETAILS OF HANDRAILS, HEADWALLS, AND TOEWALLS SHALL BE AS SHOWN ON SHEET NO. 24 EXCEPT THAT CONCRETE MEMBERS SHALL BE PRECAST

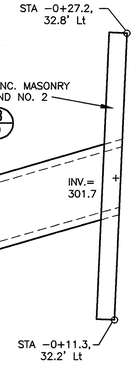


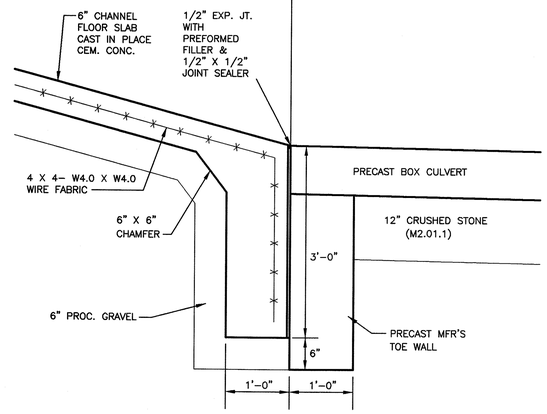
SECTION THROUGH STRUCTURE CENTERLINE

1/4" = 1'

CAST–IN–PLACE CONCRETE NOTES:

1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.– ASTM A–61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS





A/26 SLAB JOINT DETAIL

N.T.S.

PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

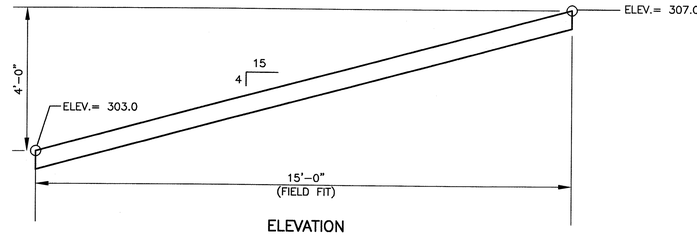
LOAD FACTORS: DEAD LOAD 1.5 LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4 EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS: SHEAR 0.85 MOMENT 0.90

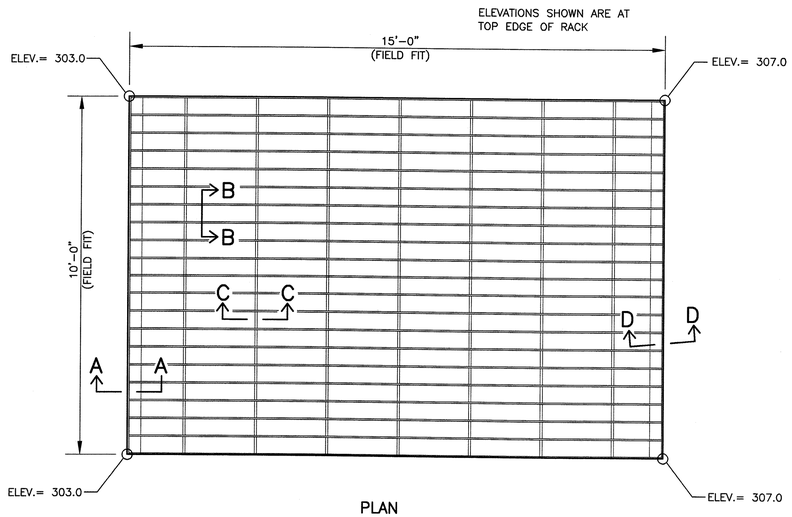
WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.

BAR GRATING NOTES:

1. ALL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO–M183.
2. BAR GRATING PANELS SHALL BE FABRICATED IN FULL LENGTH PANELS. MINIMUM PANEL WIDTH = 3'–0".
3. BAR GRATING PANELS SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION AND TEST FITTING. GALVANIZING SHALL MEET THE REQUIREMENTS OF AASHTO–M111 "ZINC (HOT–GALVANIZED) COATINGS ON PRODUCTS FABRICATED FROM ROLLED, PRESSED, AND FORGED STEEL SHAPES, PLATES, BARS, AND STRIP."



ELEVATION



PLAN

BAR GRATING NO. 2
O'BRIEN BROOK DIVERSION STRUCTURE

1/2"= 1'

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors Engineers
East Longmeadow, MA 01028
296 North Main Street

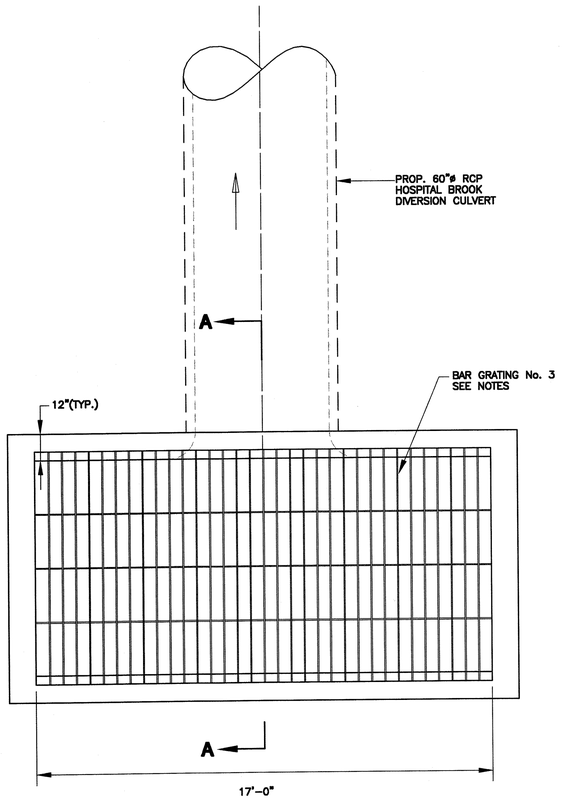
DRAWING NO. 26 OF 35 SHTS

PROJECT NO. 94–1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

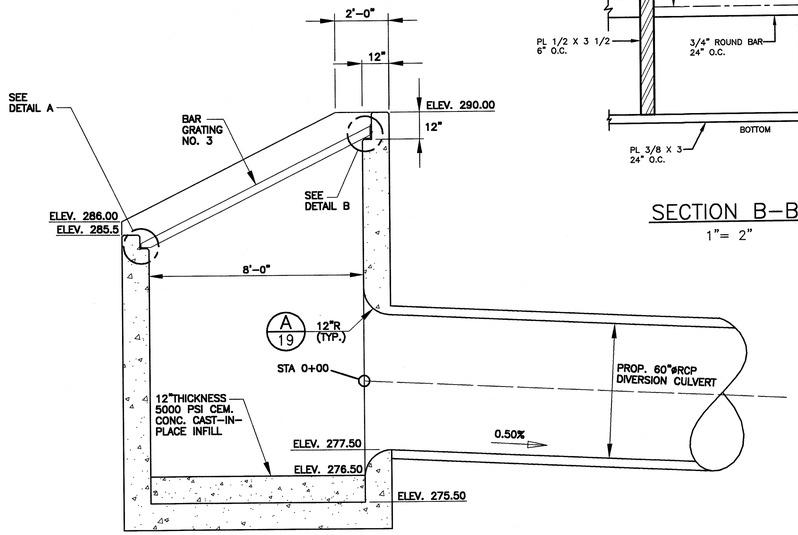
SHEET TITLE: O'Brien Brook Diversion Structure

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



PLAN VIEW
3/8" =1'-0"



SECTION A–A
3/8" =1'-0"

SECTION B–B
1"= 2"

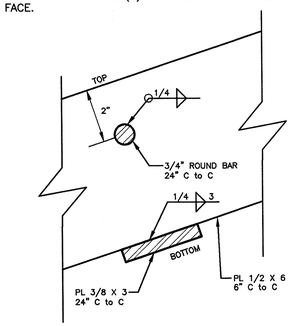
PRECAST STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

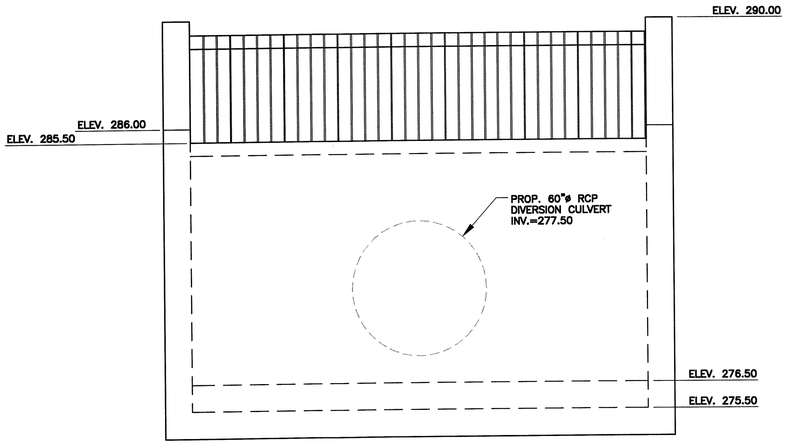
WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.



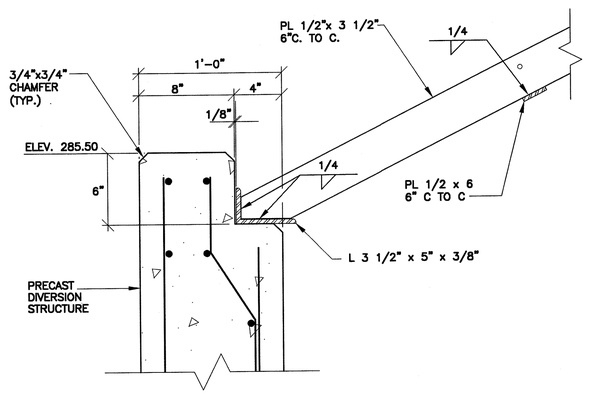
SECTION C–C
1"= 2"

BAR GRATING NOTES:

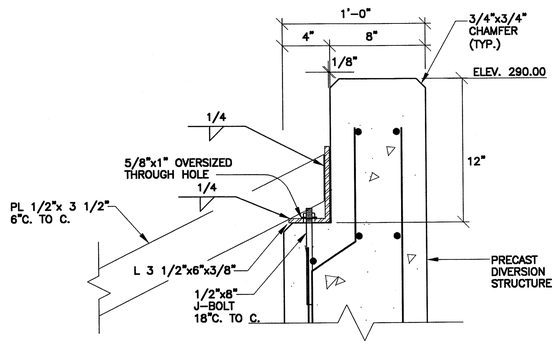
1. ALL STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO–M183.
2. BAR GRATING PANELS SHALL BE FABRICATED IN FULL LENGTH PANELS. MINIMUM PANEL WIDTH = 3'–0".
3. BAR GRATING PANELS SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION AND TEST FITTING. GALVANIZING SHALL MEET THE REQUIREMENTS OF AASHTO–M11 "ZINC (HOT–GALVANIZED) COATINGS ON PRODUCTS FABRICATED FROM ROLLED, PRESSED, AND FORGED STEEL SHAPES, PLATES, BARS, AND STRIP."



FRONT
ELEVATION
3/8" =1'-0"



BAR GRATING NO. 3
DETAIL A
3/8" =1'-0"



BAR GRATING NO. 3
DETAIL B
3/8" =1'-0"

Entire Sheet to be Included Under Bid Alternative No. 1

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Engineers Scientists Surveyors
296 North Main Street East Longmeadow, MA 01028

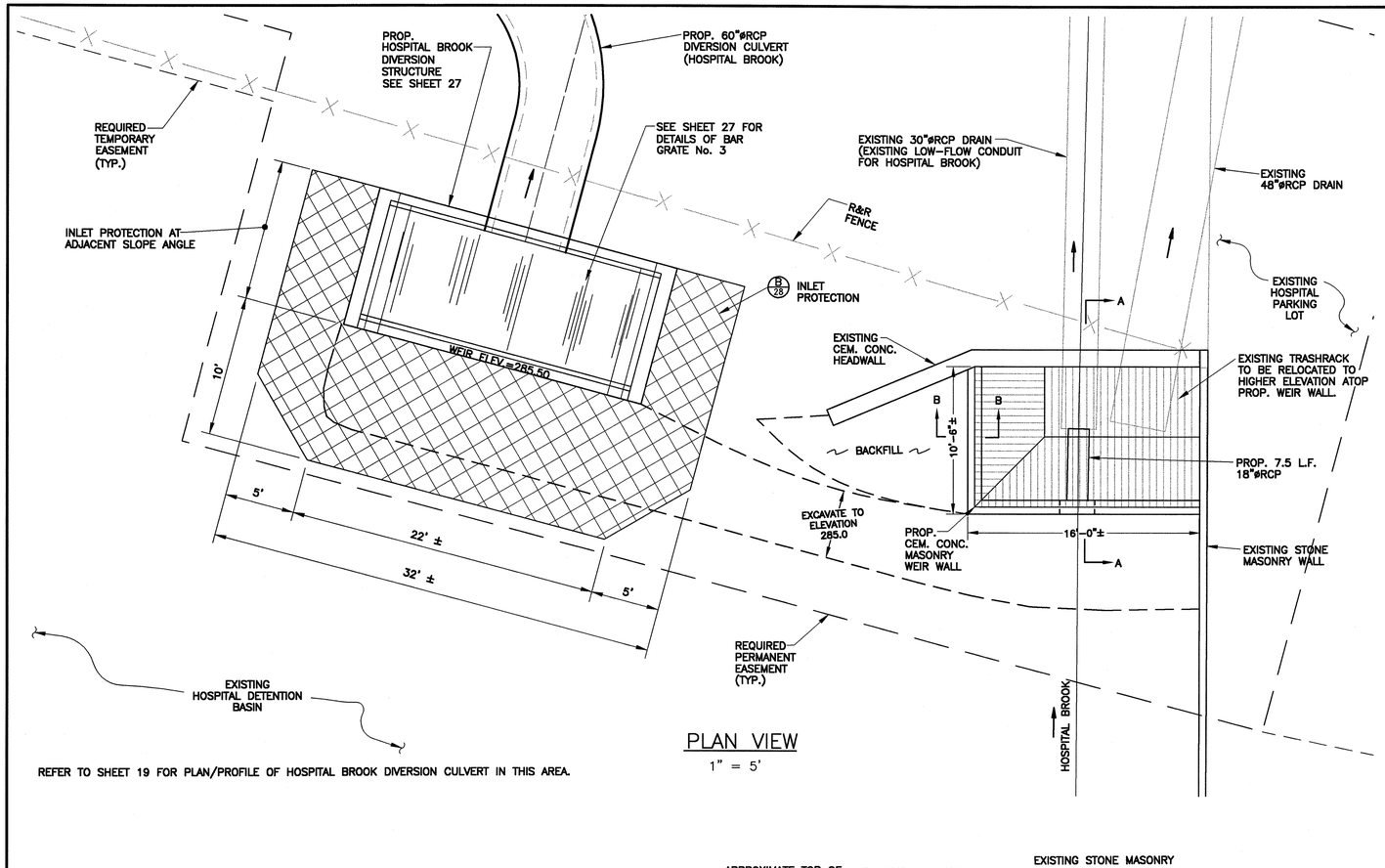
PROJECT NO. 94-1215 | SCALE AS NOTED | DATE APRIL 1999 | DRAWN BY EDM | CHECKED BY TEJ

SHEET TITLE: Hospital Brook Diversion Structure

PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

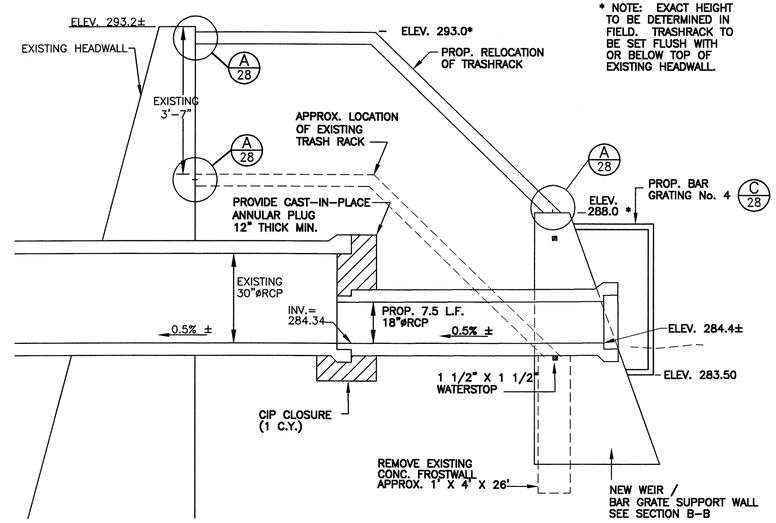
NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

DRAWING NO. 27 OF 35 SHTS



PLAN VIEW
1" = 5'

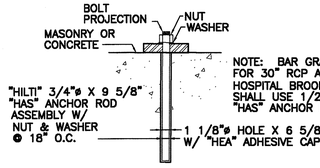
REFER TO SHEET 19 FOR PLAN/PROFILE OF HOSPITAL BROOK DIVERSION CULVERT IN THIS AREA.



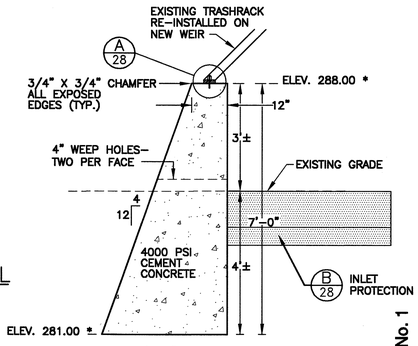
SECTION A-A
1/2"= 1'

CONCRETE NOTES:

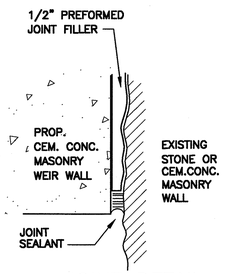
1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.- ASTM A-61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS



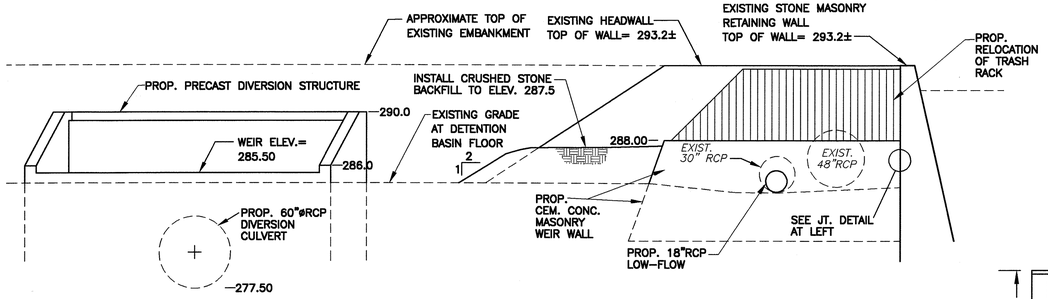
A/28 TYPICAL BAR GRATE FASTENER DETAIL
1/4"= 1'



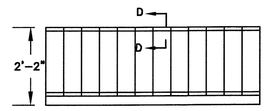
SECTION B-B
1/2"= 1'



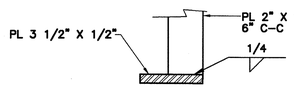
JOINT DETAIL
PROP. MASONRY WEIR WALL AGAINST EXIST. MASONRY



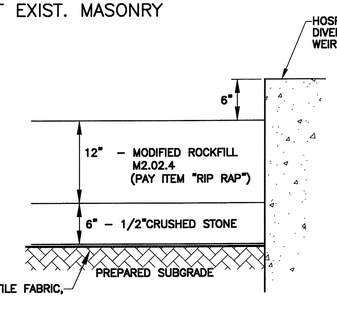
ELEVATION
1" = 5'

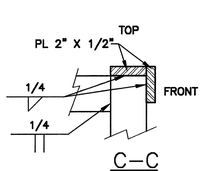


PLAN
1/2"= 1'

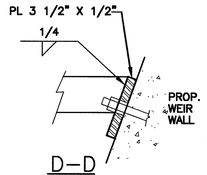


G-G
1/4"= 1"

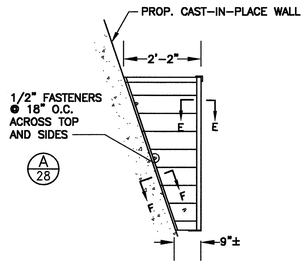




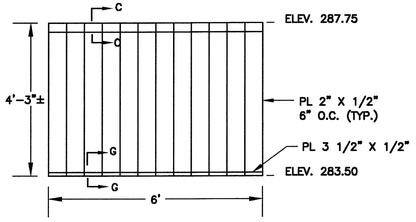
C-C
1/4"= 1"



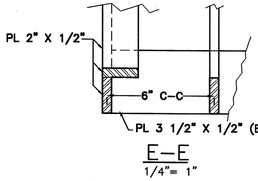
D-D
1/4"= 1"



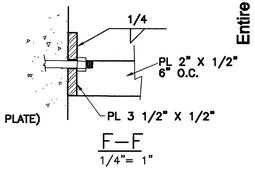
SIDE ELEV
1/2"= 1'



FRONT ELEV
1/2"= 1'



E-E
1/4"= 1"



F-F
1/4"= 1"

B/28 INLET PROTECTION - TYPICAL SECTION
NTS

C/28 BAR GRATING No. 4
NTS

Entire Sheet to be Included Under Bid Alternative No. 1

BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors Engineers
East Longmeadow, MA 01028
296 North Main Street

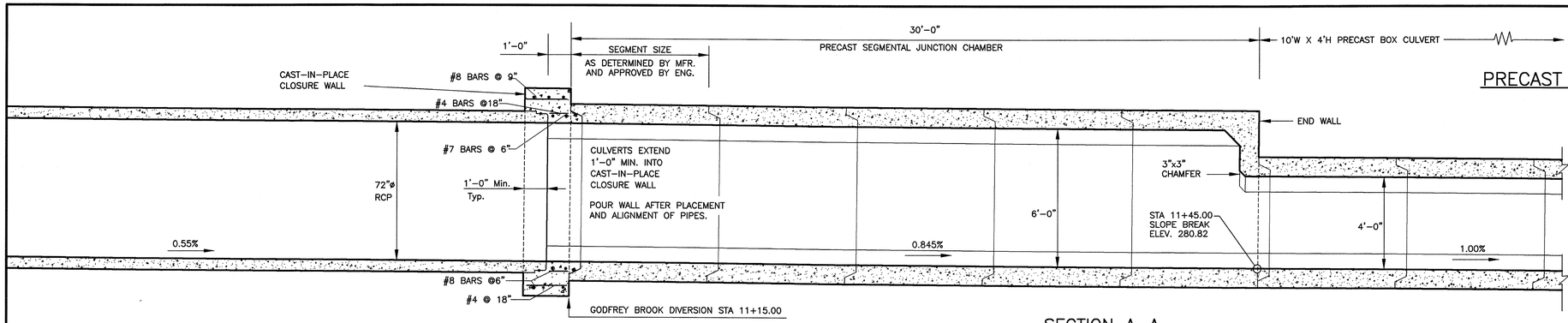
DRAWING NO. 28 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY SMR
CHECKED BY TEJ
HOSPITAL

SHEET TITLE: Hospital Brook Diversion and Modifications to Existing Structures

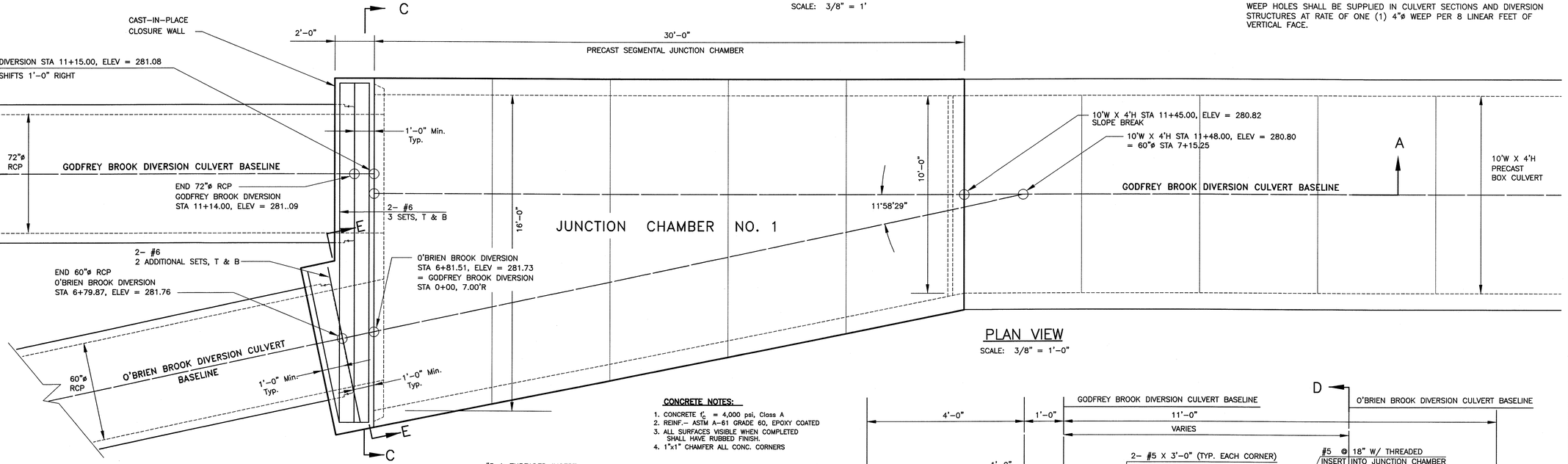
PROJECT: Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



SECTION A–A

SCALE: 3/8" = 1'

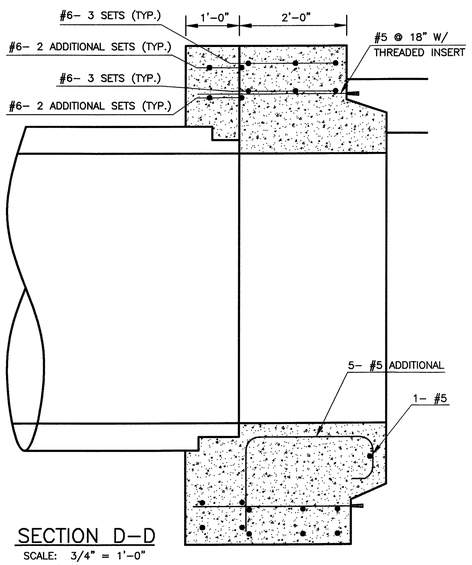


PLAN VIEW

SCALE: 3/8" = 1'–0"

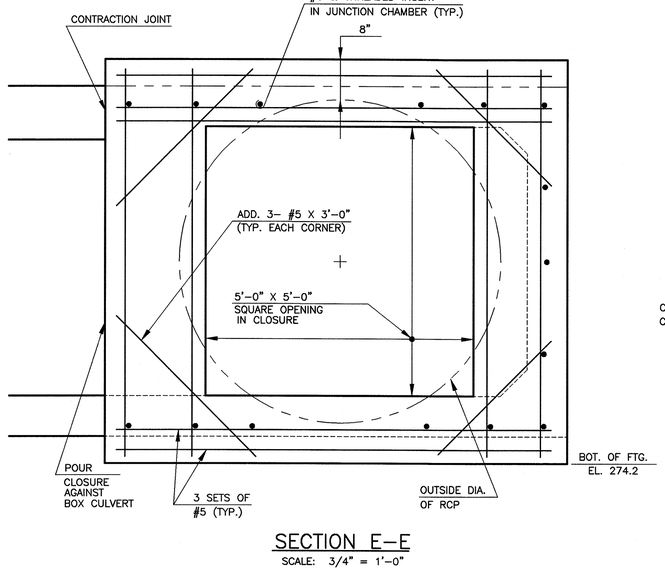
CONCRETE NOTES:

1. CONCRETE f'_c = 4,000 psi, Class A
2. REINF.– ASTM A–61 GRADE 60, EPOXY COATED
3. ALL SURFACES VISIBLE WHEN COMPLETED SHALL HAVE RUBBED FINISH.
4. 1"x1" CHAMFER ALL CONC. CORNERS



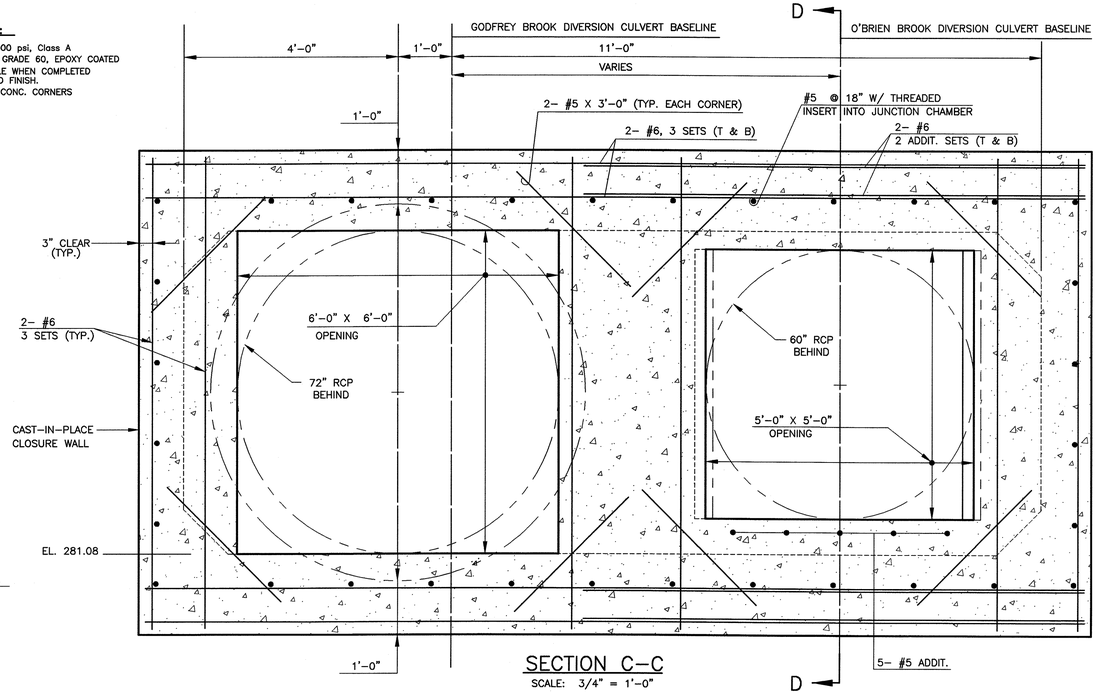
SECTION D–D

SCALE: 3/4" = 1'–0"



SECTION E–E

SCALE: 3/4" = 1'–0"



SECTION C–C

SCALE: 3/4" = 1'–0"

PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.

DRAWING NO. 29 OF 35 SHTS

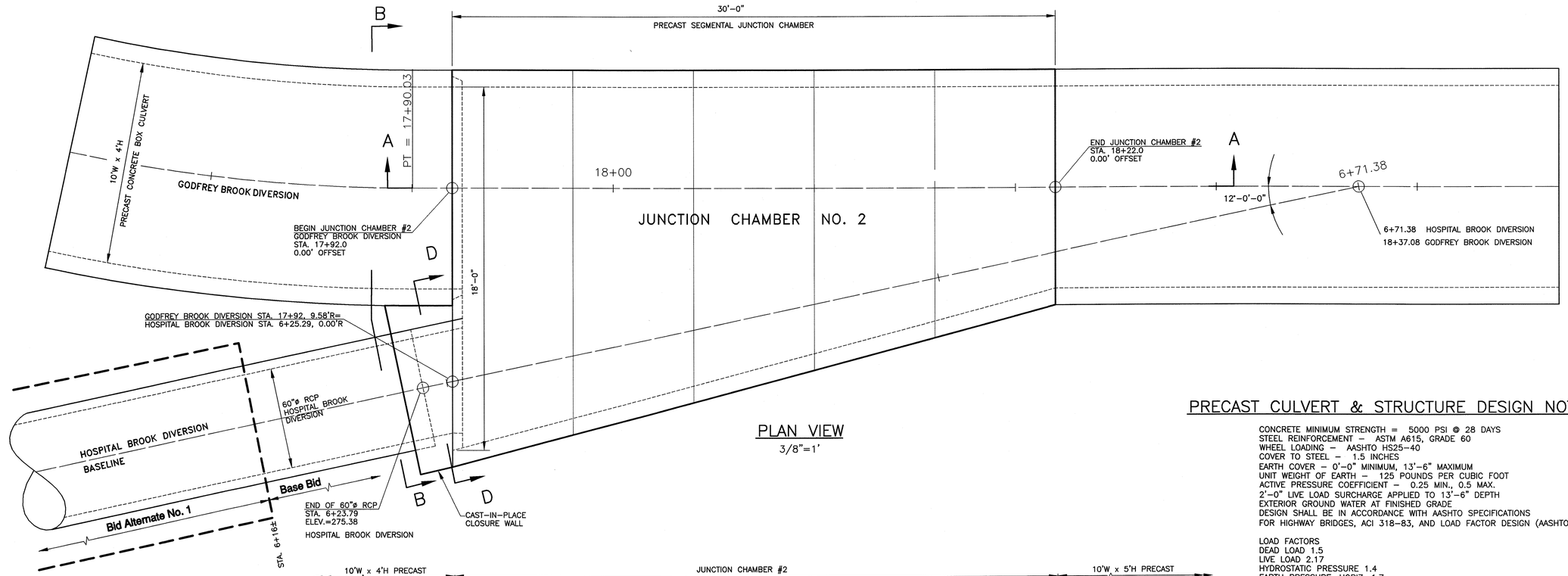
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94–1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Junction Chamber No. 1 Plan and Sections

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

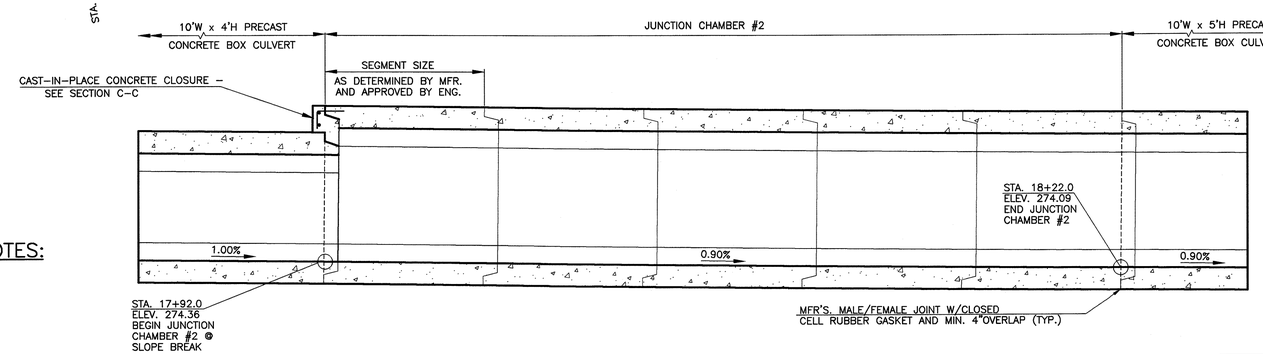


PLAN VIEW
3/8"=1'

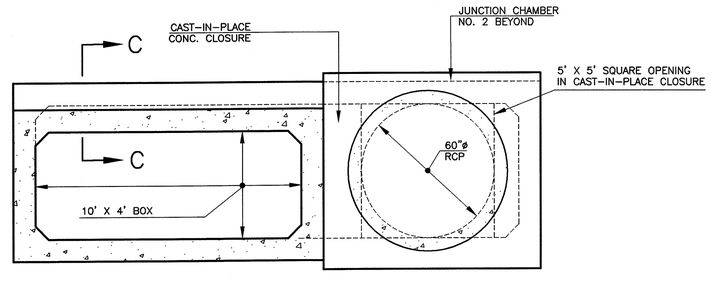
NOTE: IF BID ALTERNATE No.1 IS NOT SELECTED, BASE BID SHALL INCLUDE 8' X 8' X 1.5' CAST-IN-PLACE TEMPORARY PLUG (3000 psi CEM. CONC.) AT HOSPITAL BROOK DIVERSION, STA. 6+16±.

CAST-N-PLACE CONC. NOTES:

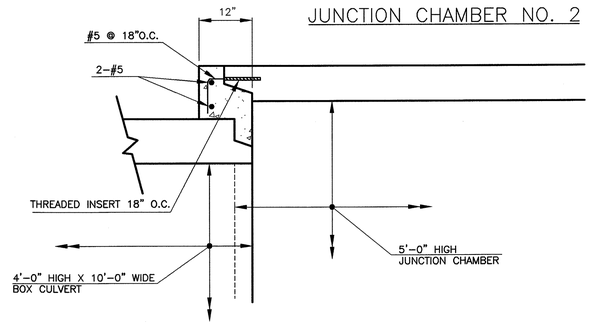
1. Fc' = 4,000 psi - CLASS A CONC.
2. REINF. - ASTM A-615 GRADE 60.
3. REINF. - 2" COVER MIN.
4. REINF. - MIN. SPLICE= 18"
5. 1" X 1" CHAMFER ALL CORNERS.



SECTION A-A
3/8"=1'



SECTION B-B
3/8"=1'



SECTION C-C
3/4"=1'

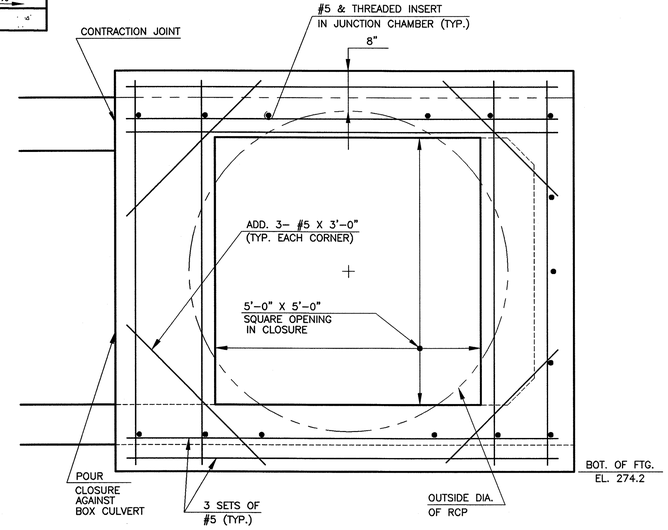
PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT - ASTM A615, GRADE 60
WHEEL LOADING - AASHTO HS25-40
COVER TO STEEL - 1.5 INCHES
EARTH COVER - 0'-0" MINIMUM, 13'-6" MAXIMUM
UNIT WEIGHT OF EARTH - 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT - 0.25 MIN., 0.5 MAX.
2'-0" LIVE LOAD SURCHARGE APPLIED TO 13'-6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS
FOR HIGHWAY BRIDGES, ACI 318-83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.



SECTION D-D
3/4"=1'

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Engineers
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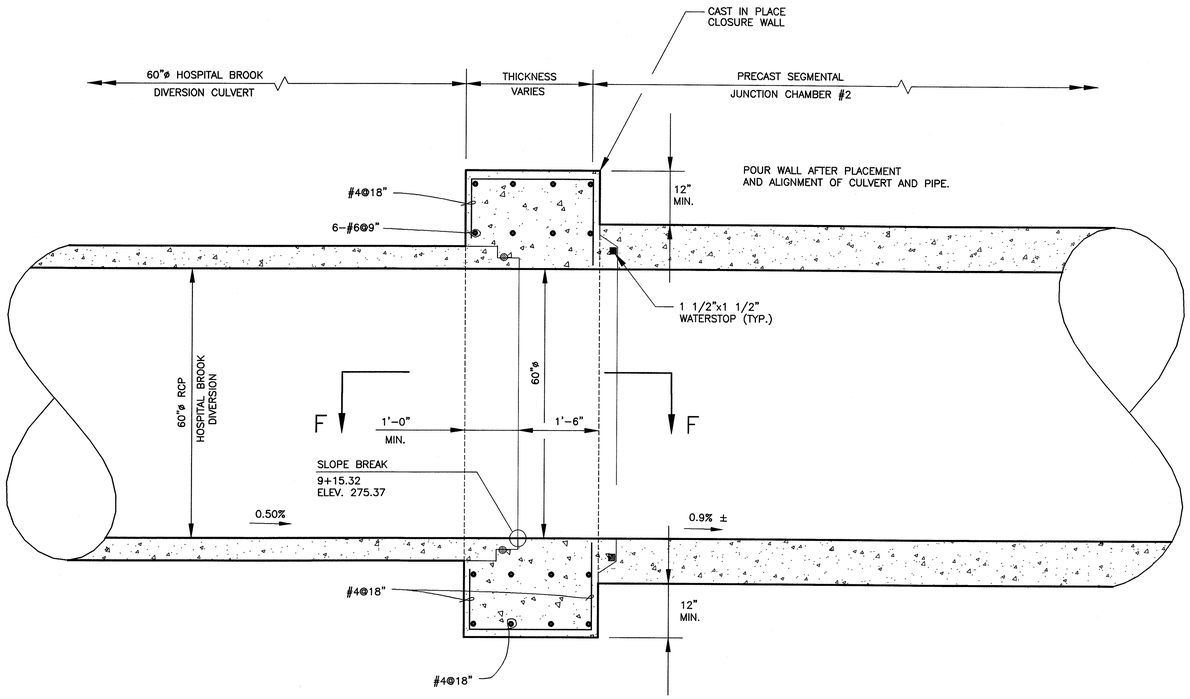
DRAWING NO. 30 OF 35 SHTS

PROJECT NO. 1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Junction Chamber No. 2 Plan and Sections

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	9/12/99	ISSUED FOR BIDDING	TEJ



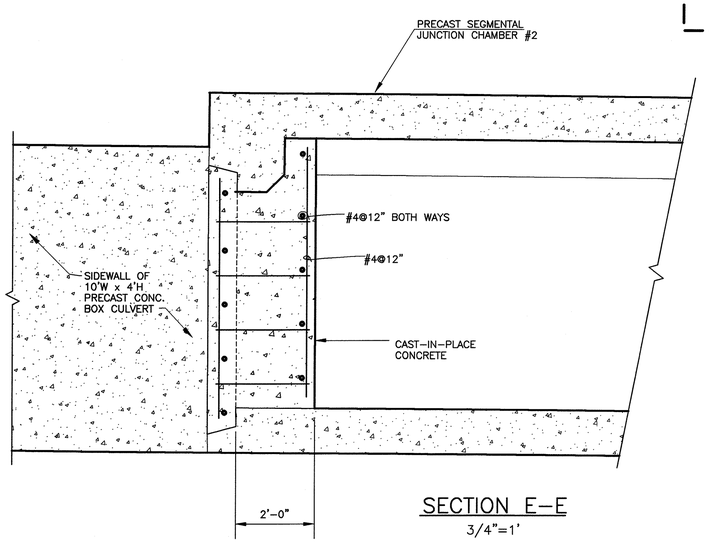
SECTION B–B

3/4"=1'

CAST–N–PLACE CONC. NOTES:

1. Fc' = 4,000 psi – CLASS A CONC.
2. REINF. – ASTM A–615 GRADE 60.
3. REINF. – 2" COVER MIN.
4. REINF. – MIN. SPLICE= 18"
5. 1" X 1" CHAMFER ALL CORNERS.

NOTE: IF BID ALTERNATE No.1 IS NOT SELECTED, BASE BID SHALL INCLUDE 8' X 8' X 1.5' CAST–IN–PLACE TEMPORARY PLUG (3000 psi CEM. CONC.) AT HOSPITAL BROOK DIVERSION, STA. 6+16±.



SECTION E–E

3/4"=1'

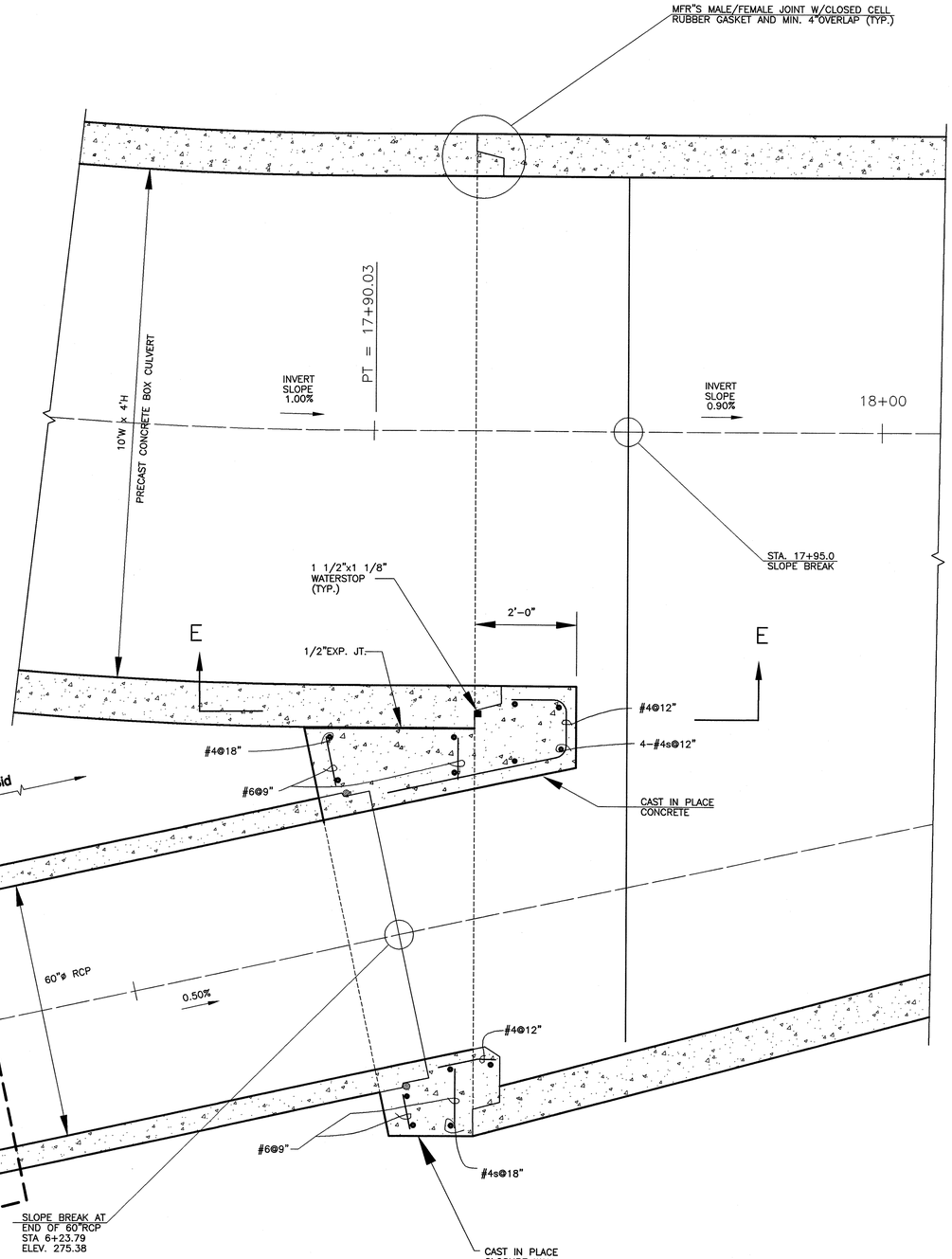
PRECAST CULVERT & STRUCTURE DESIGN NOTES

CONCRETE MINIMUM STRENGTH = 5000 PSI @ 28 DAYS
STEEL REINFORCEMENT – ASTM A615, GRADE 60
WHEEL LOADING – AASHTO HS25–40
COVER TO STEEL – 1.5 INCHES
EARTH COVER – 0'–0" MINIMUM, 13'–6" MAXIMUM
UNIT WEIGHT OF EARTH – 125 POUNDS PER CUBIC FOOT
ACTIVE PRESSURE COEFFICIENT – 0.25 MIN., 0.5 MAX.
2'–0" LIVE LOAD SURCHARGE APPLIED TO 13'–6" DEPTH
EXTERIOR GROUND WATER AT FINISHED GRADE
DESIGN SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS FOR HIGHWAY BRIDGES, ACI 318–83, AND LOAD FACTOR DESIGN (AASHTO)

LOAD FACTORS
DEAD LOAD 1.5
LIVE LOAD 2.17
HYDROSTATIC PRESSURE 1.4
EARTH PRESSURE, HORIZ. 1.7

CAPACITY REDUCTION FACTORS
SHEAR 0.85
MOMENT 0.90

WEEP HOLES SHALL BE SUPPLIED IN CULVERT SECTIONS AND DIVERSION STRUCTURES AT RATE OF ONE (1) 4"ø WEEP PER 8 LINEAR FEET OF VERTICAL FACE.



SECTION F–F

3/4"=1'

DRAWING NO. 31 OF 35 SHTS

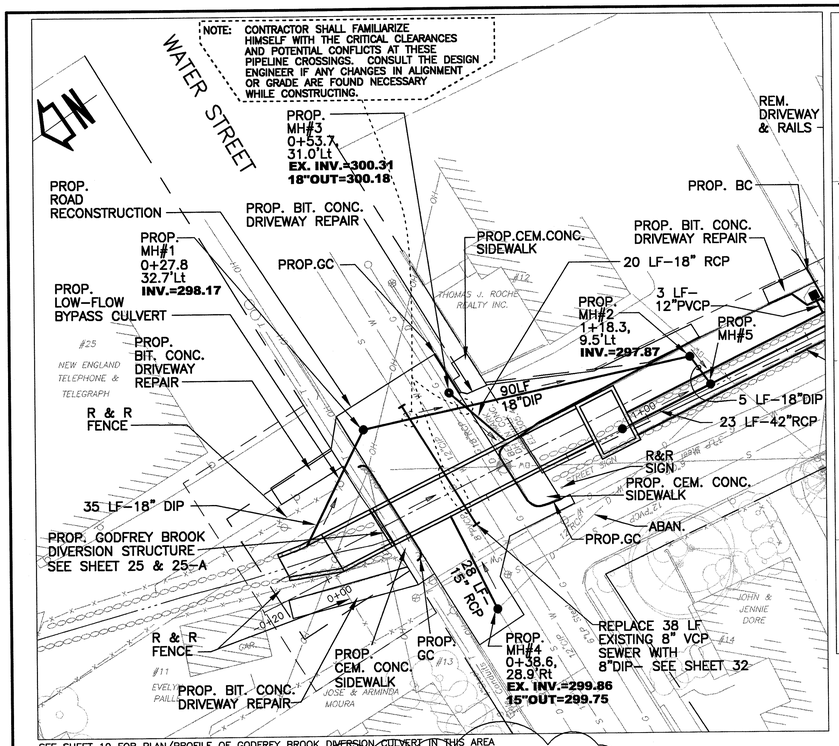
BAYSTATE ENVIRONMENTAL CONSULTANTS INC.
Scientists Surveyors
Engineers
296 North Main Street East Longmeadow, MA 01028

PROJECT NO. 94–1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

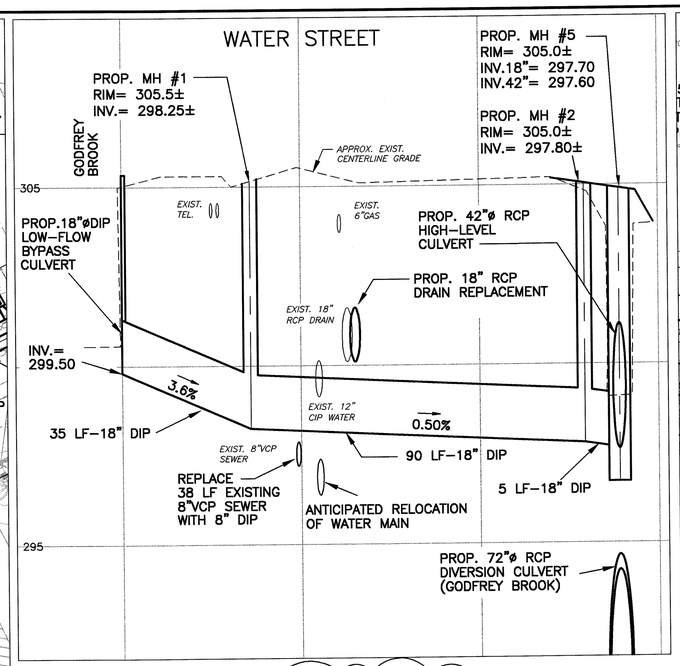
SHEET TITLE: Junction Chamber No. 2 Sections

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

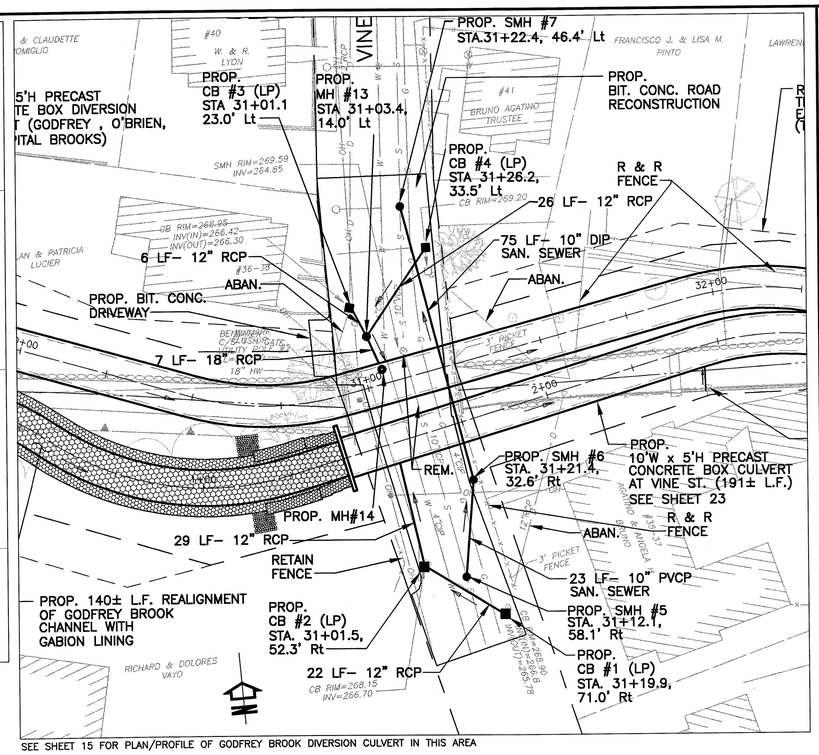
NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ



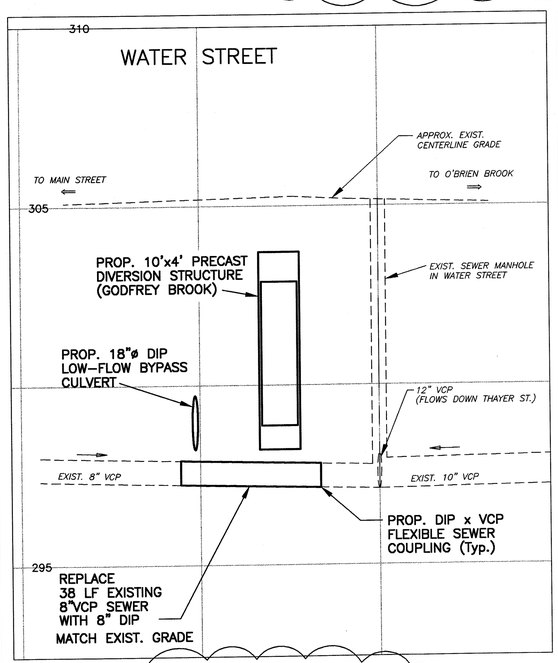
2 PARTIAL PLAN OF WATER ST./THAYER ST. AREA
1" = 20'



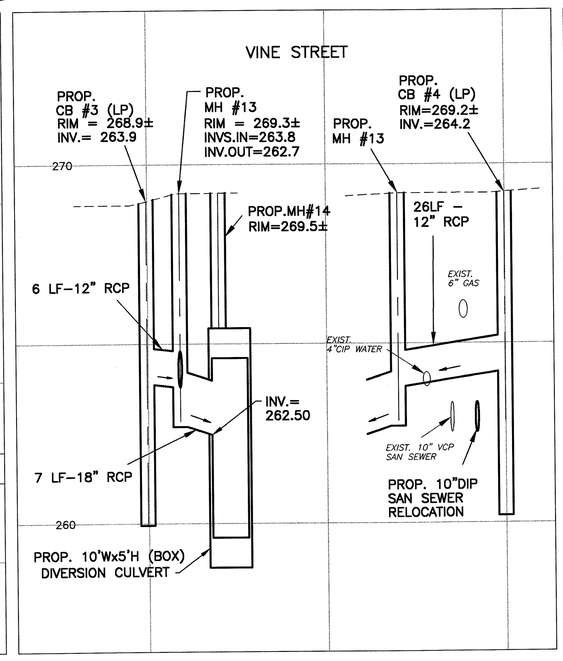
2 — DRAIN PROFILE — GODFREY BROOK LOW-FLOW BYPASS PROP. MH#1 TO MH#2 TO MH#5
VERT. 1"=2'
HOR. 1"=20'



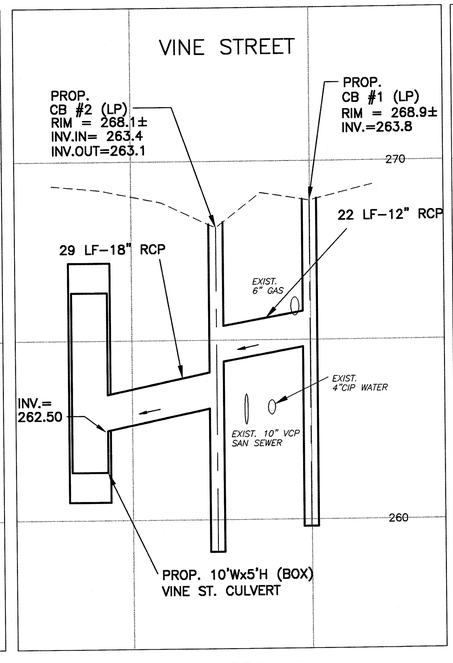
PARTIAL PLAN OF VINE STREET AREA
1" = 20'



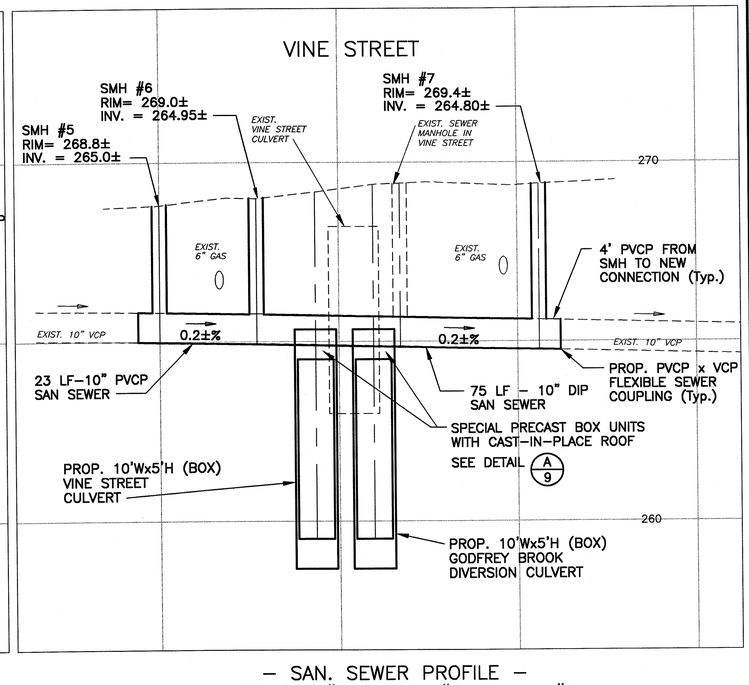
2 — SAN. SEWER PROFILE — REPLACEMENT SEWER AT GODFREY BROOK DIVERSION AREA
VERT. 1"=2'
HOR. 1"=20'



— DRAIN PROFILE —
PROP. CB#4 TO MH#13 &
PROP. CB#3 TO MH#13 TO DIV. CULVERT
VERT. 1"=2'
HOR. 1"=20'



— DRAIN PROFILE —
PROP. CB#1 TO CB#2 TO VINE ST. CULVERT
VERT. 1"=2'
HOR. 1"=20'



— SAN. SEWER PROFILE —
PROP. SMH#5 TO SMH#6 TO SMH#7
VERT. 1"=2'
HOR. 1"=20'

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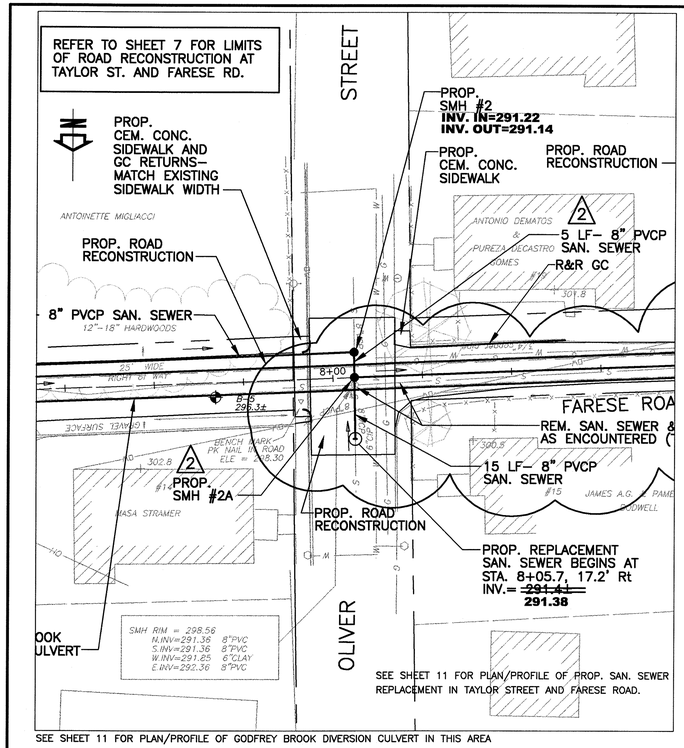
DRAWING NO. 32 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Utility Profiles No. 1 Proposed Drains and Sanitary Sewers

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

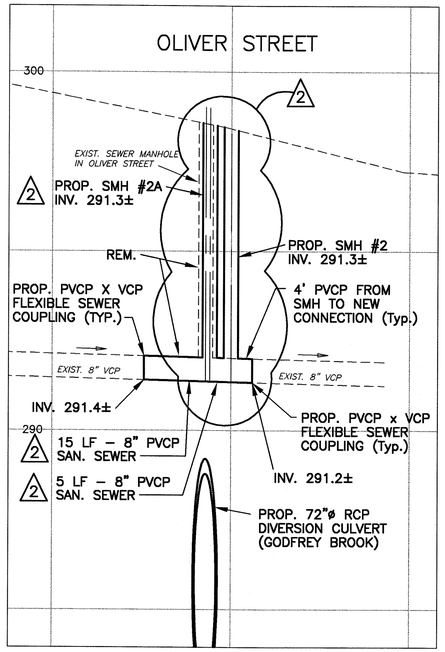
NO.	DATE	REVISION	BY
3	10/1/01	ISSUED AS RECORD PRINT	EDM
2	11/13/00	GODFREY BROOK DIVERSION STRUCTURE; MISC. EDITS	TEJ
1	8/12/99	ISSUED FOR BIDDING	TEJ



SEE SHEET 11 FOR PLAN/PROFILE OF GODFREY BROOK DIVERSION CULVERT IN THIS AREA

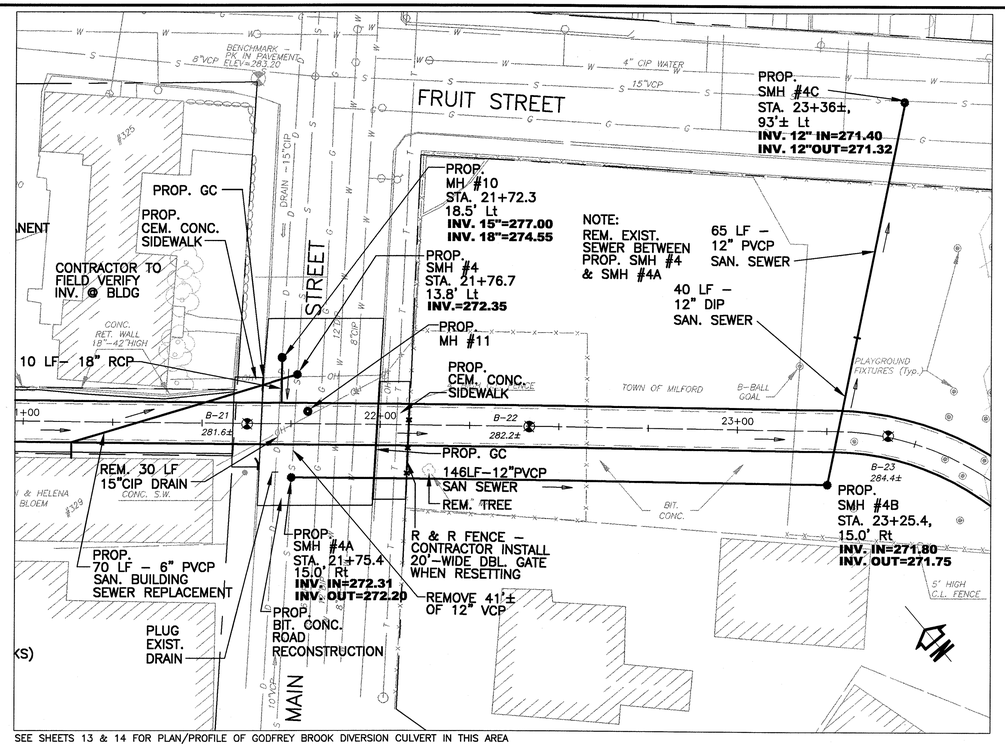
PARTIAL PLAN OF OLIVER STREET AREA

1" = 20'



– DRAIN PROFILE – PROP. SAN. SEWER REPLACEMENT AND SMH #2 IN OLIVER STREET

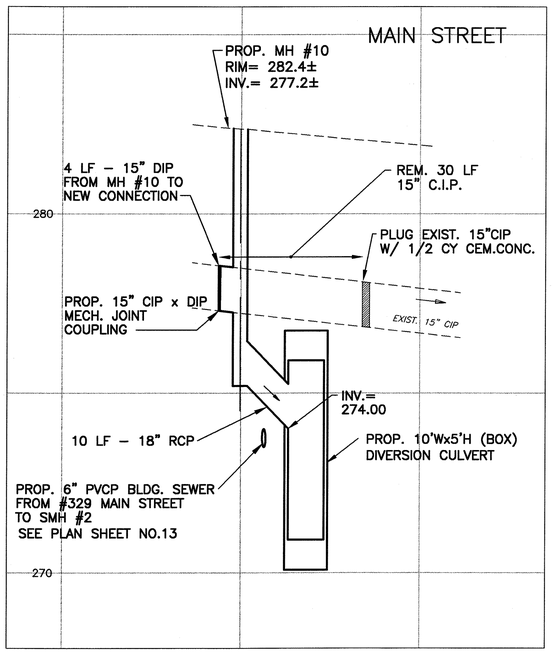
VERT. 1"=2'
HOR. 1"=20'



SEE SHEETS 13 & 14 FOR PLAN/PROFILE OF GODFREY BROOK DIVERSION CULVERT IN THIS AREA

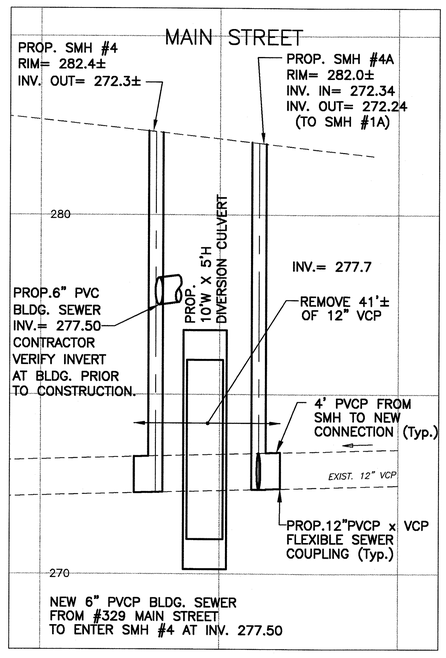
PARTIAL PLAN OF MAIN STREET AREA

1" = 20'



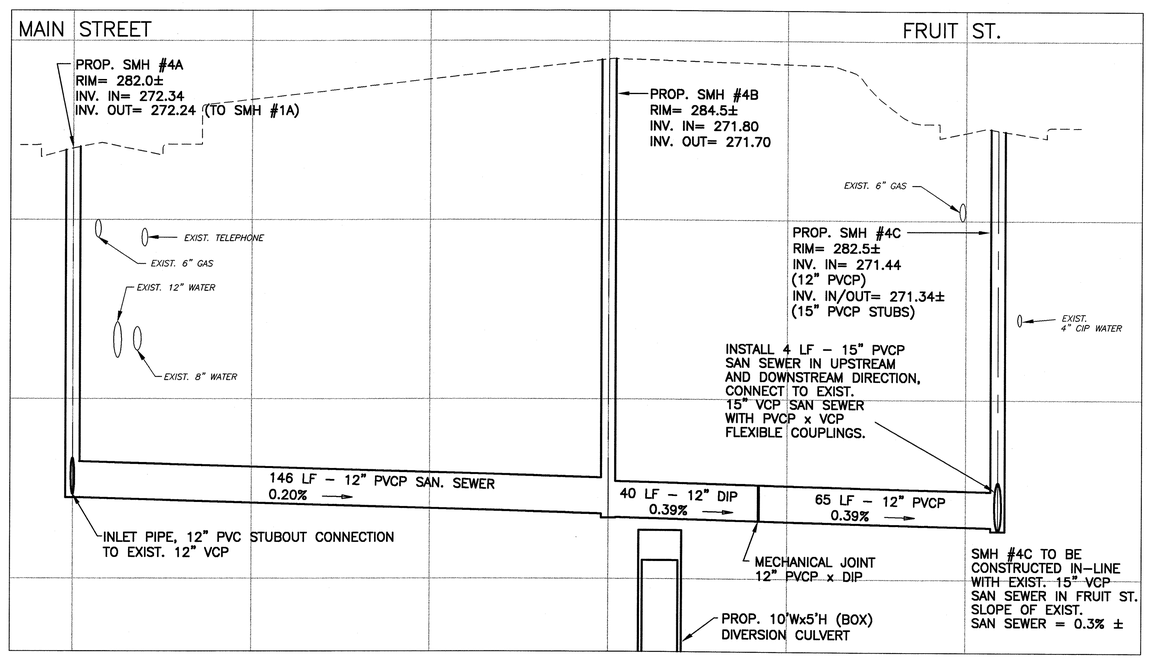
– DRAIN PROFILE – PROP. MH #10 TO DIVERSION CULVERT

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



– SAN. SEWER PROFILE – PROP. SMH #4 AND SMH #4A

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



– SAN. SEWER PROFILE – PROP. SMH #4A TO SMH #4B TO SMH #4C

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

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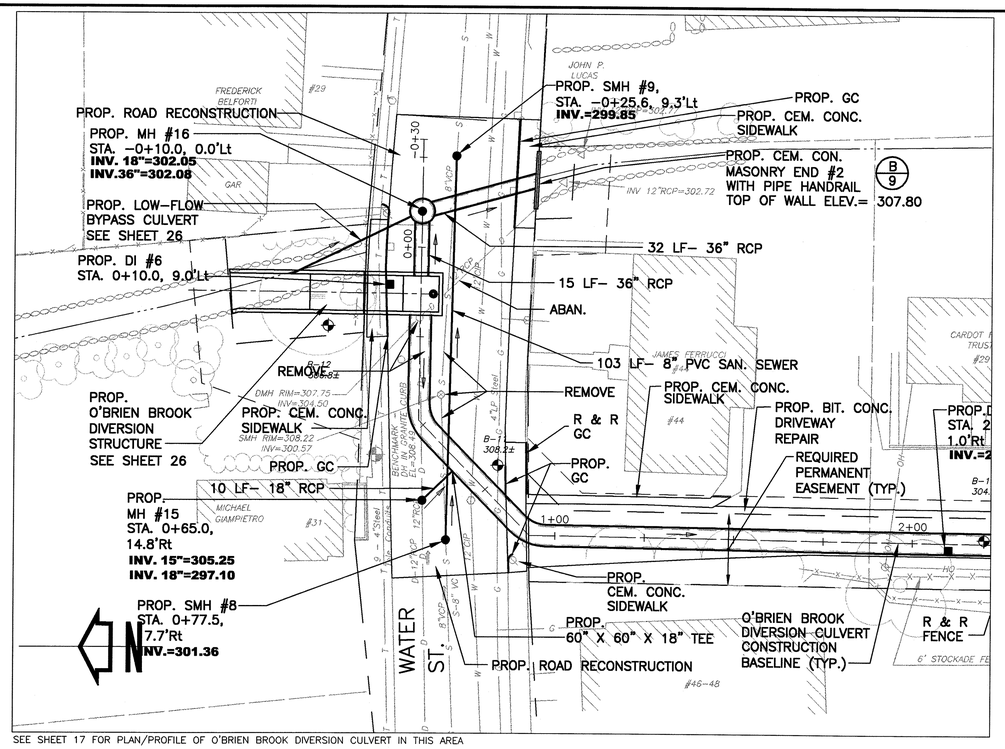
DRAWING NO. 33 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

DIRECT TITLE: Utility Profiles No. 2 Proposed Drains and Sanitary Sewers

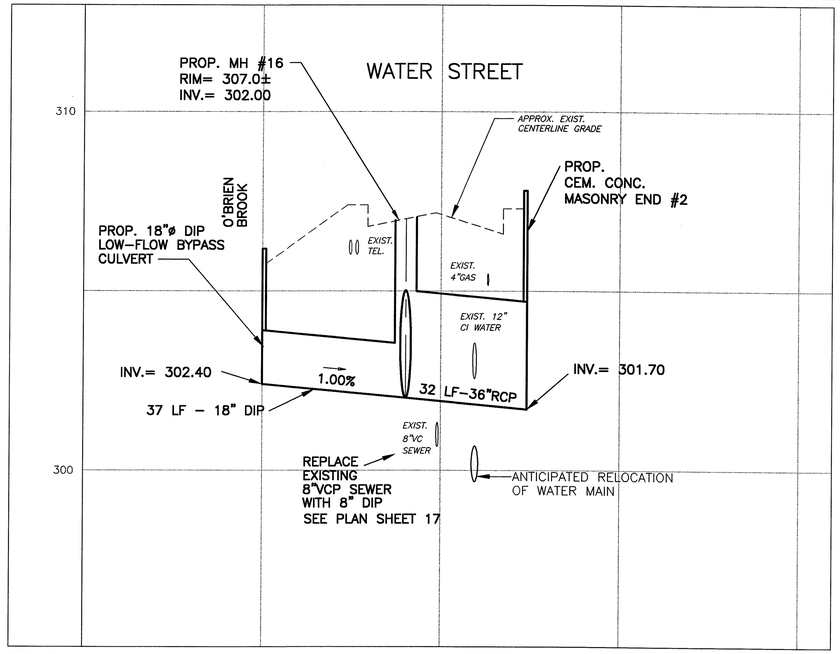
PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
3	10/1/01	ISSUED AS RECORD PRINT	EDM
2	10/16/00	SEWER LOCATION IN FARESE ROAD	TEJ
1	8/12/99	ISSUED FOR BIDDING	TEJ

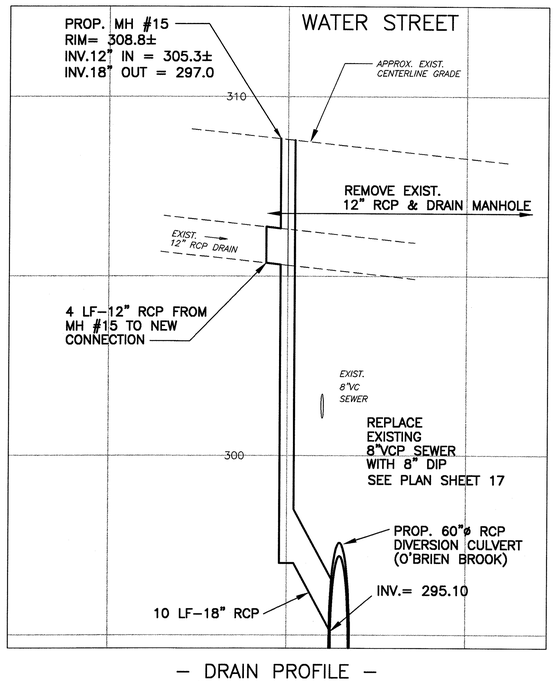


SEE SHEET 17 FOR PLAN/PROFILE OF O'BRIEN BROOK DIVERSION CULVERT IN THIS AREA

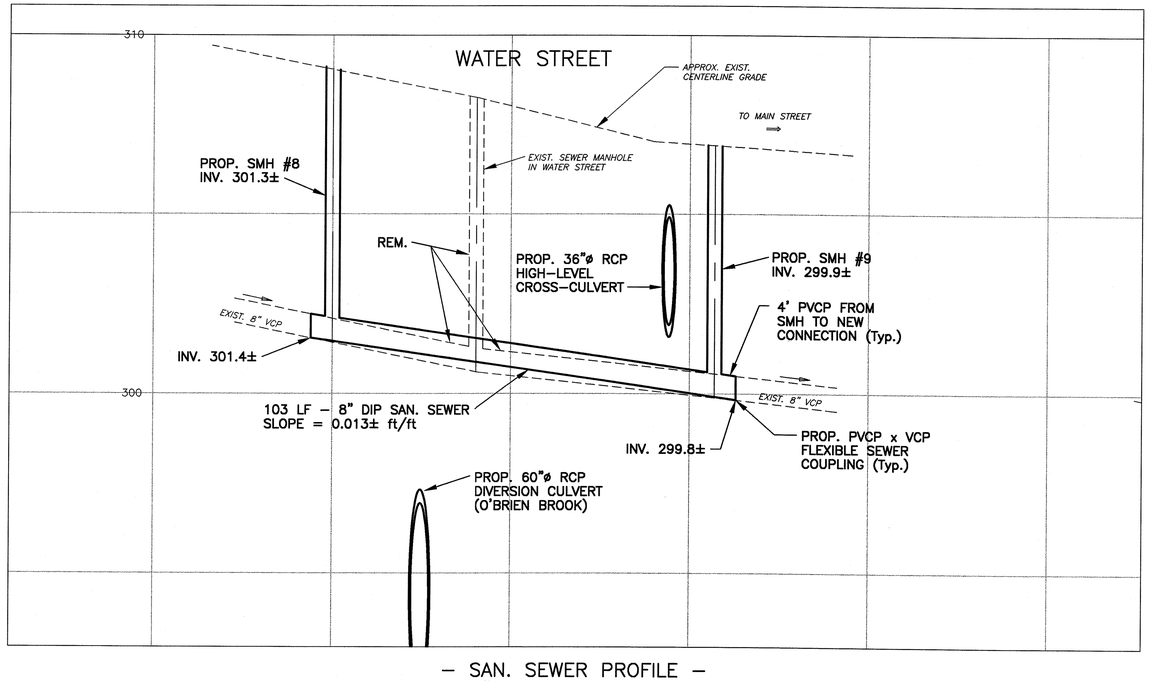
PARTIAL PLAN OF
O'BRIEN BROOK DIVERSION AREA
1" = 20'



– DRAIN PROFILE –
PROP. OBRIEN BROOK LOW-FLOW BYPASS
CULVERT, MH #16, & FIELDSTONE MASONRY END
VERT. 1"=2'
HOR. 1"=20'



– DRAIN PROFILE –
PROP. MH #15 TO DIVERSION CULVERT
VERT. 1"=2'
HOR. 1"=20'



– SAN. SEWER PROFILE –
PROP. SMH #8 TO SMH #9, WATER STREET
VERT. 1"=2'
HOR. 1"=20'

DRAWING NO. 34 OF 35 SHTS

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Scientists Surveyors
Engineers East Longmeadow, MA 01028
296 North Main Street

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE
Utility Profiles No. 3
Proposed Drains and Sanitary Sewers

PROJECT
Godfrey Brook Flood Mitigation Project
Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ

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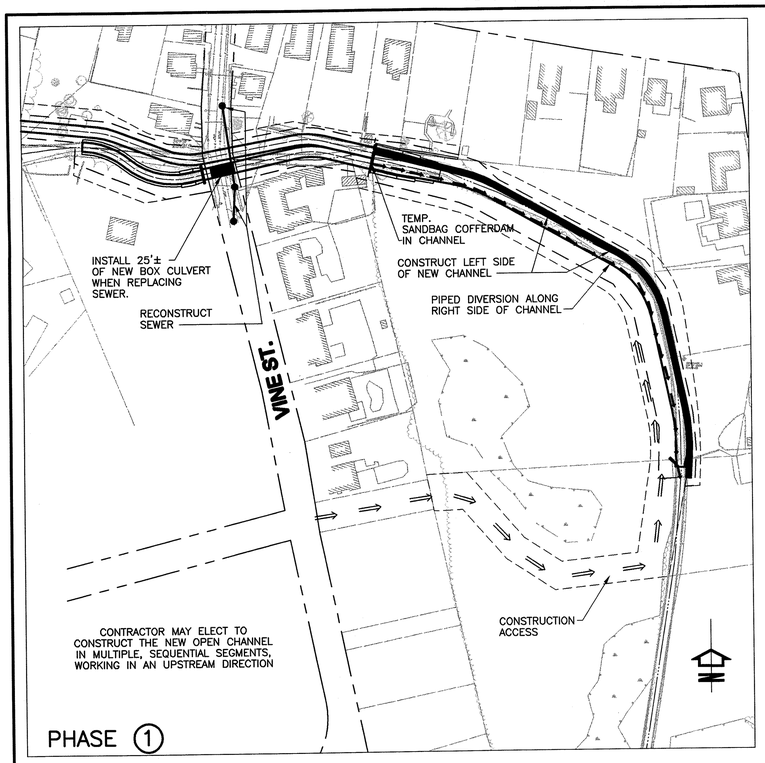
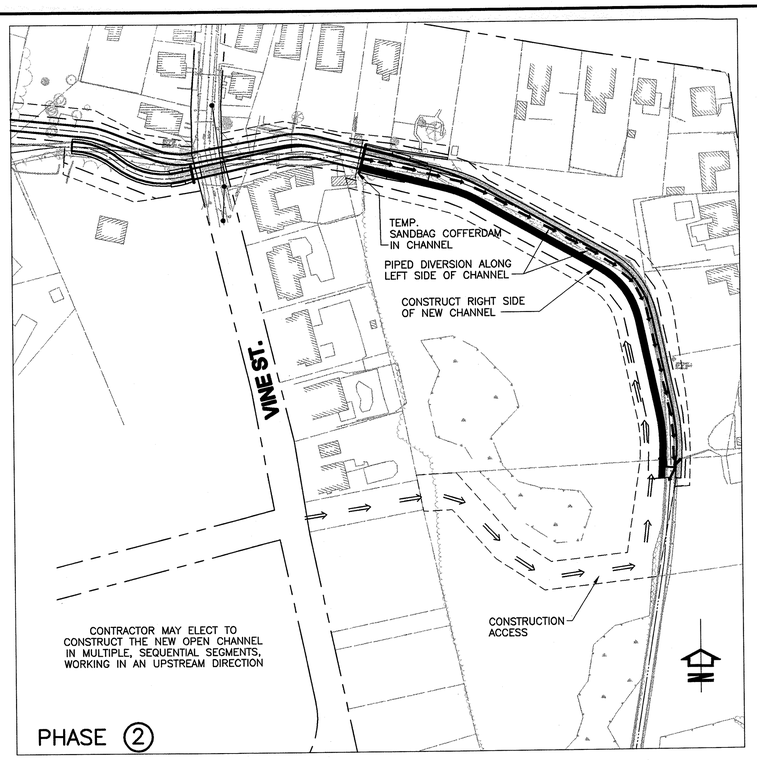
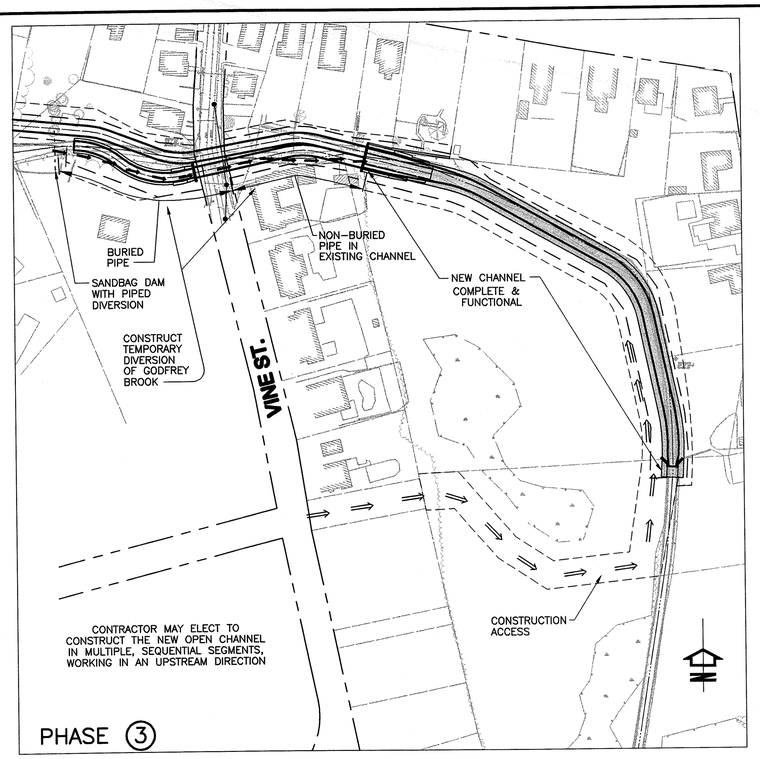
BEC, Inc.







CONSTRUCTION IN CURRENT PHASE

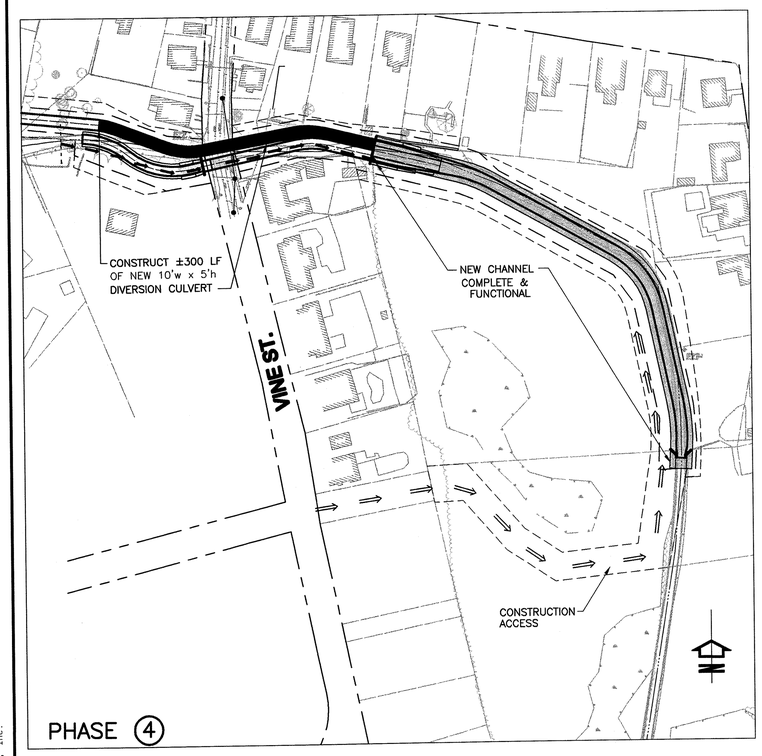
CONSTRUCTED IN PREVIOUS PHASES

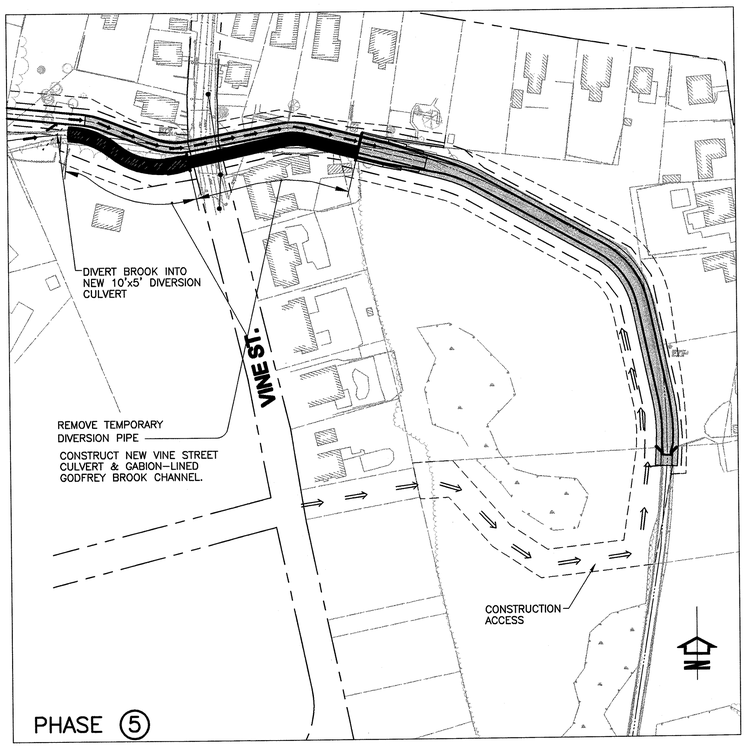
REFER TO SHEET NO.2 FOR GENERAL SEQUENCING NOTES

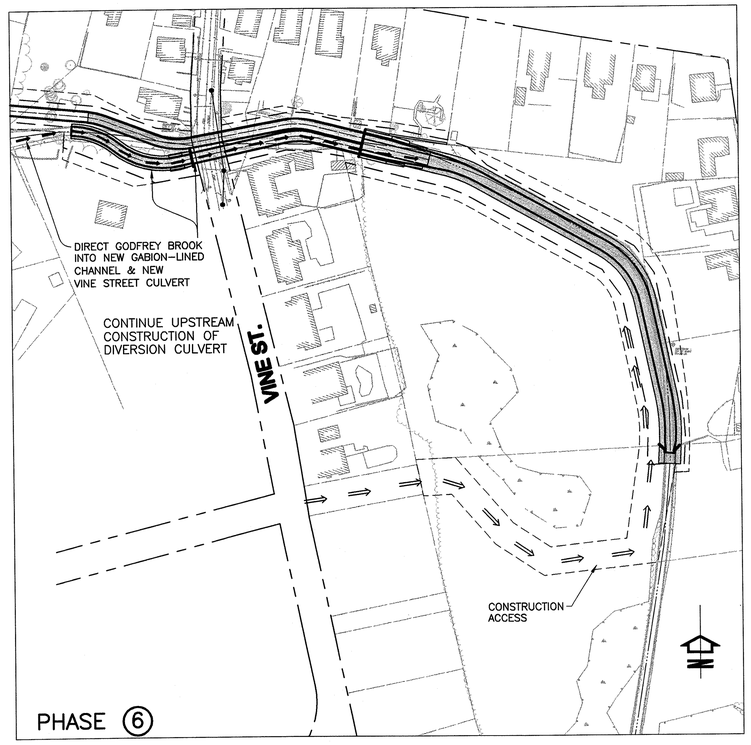
GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.







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Engineers Scientists Surveyors
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DRAWING NO. 35 OF 35 SHTS

PROJECT NO. 94-1215
SCALE AS NOTED
DATE APRIL 1999
DRAWN BY EDM
CHECKED BY TEJ

SHEET TITLE: Construction Sequencing Plan Vine Street Area

PROJECT: Godfrey Brook Flood Mitigation Project Milford, Massachusetts

NO.	DATE	REVISION	BY
2	10/1/01	ISSUED AS RECORD PRINT	EDM
1	8/12/99	ISSUED FOR BIDDING	TEJ