

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	1	82
PROJECT FILE NO.		616375	

TITLE SHEET & INDEX

PLAN AND PROFILE OF
PLEASANT STREET (BRIDGE NO. L-08-053)
UNION STREET (BRIDGE NO. L-08-060) AND
LANCASTER STREET (WALL RECONSTRUCTION)

IN THE CITY OF

LEOMINSTER
WORCESTER COUNTY

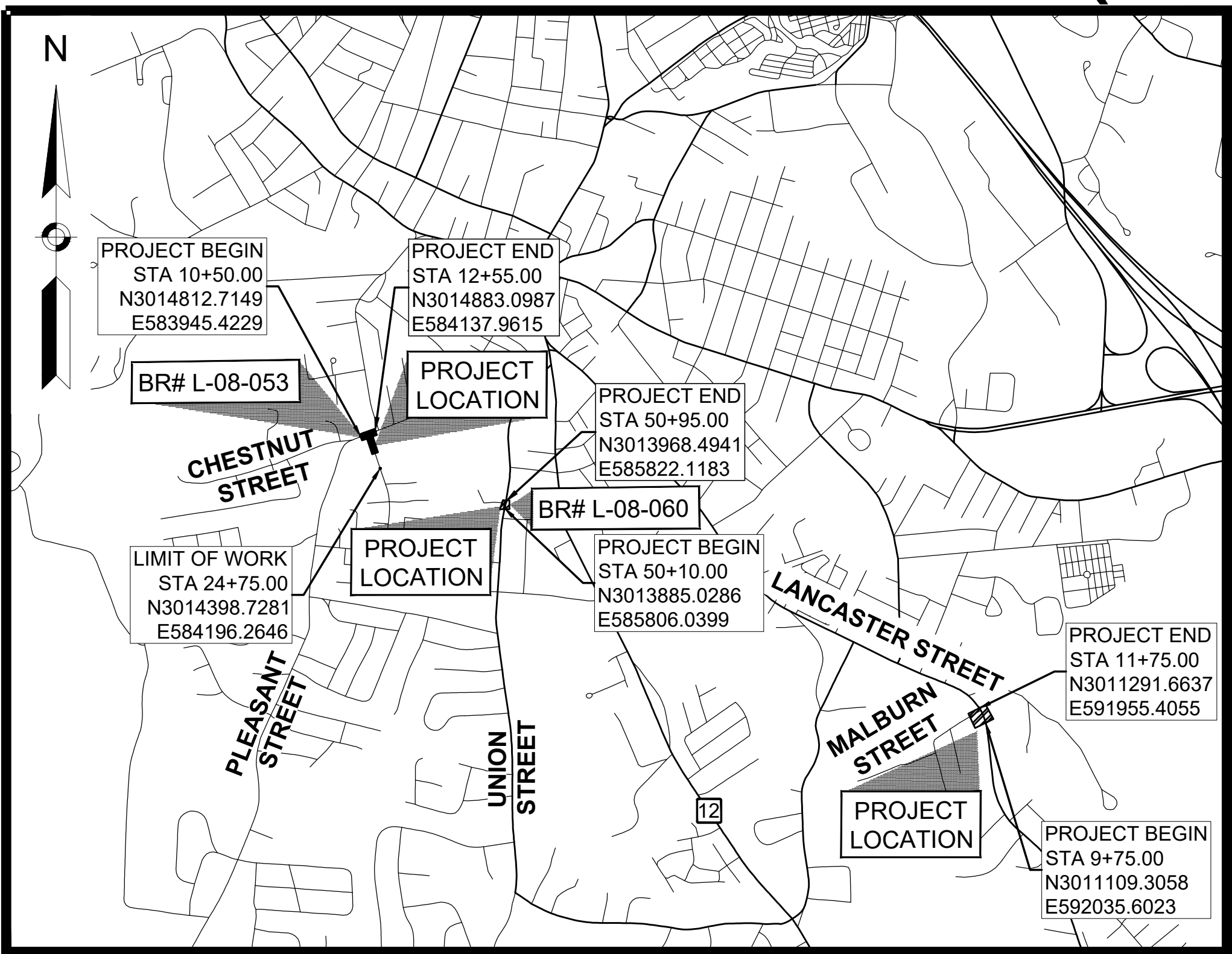
FEDERAL AID PROJECT NO.

EMR/STP/PRC-EMRS(123)X

THESE PLANS ARE SUPPLEMENTED BY THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS, AS IDENTIFIED IN THE CONTRACT SPECIAL PROVISIONS: THE MASSDOT CONSTRUCTION STANDARD DETAILS, THE MASSDOT STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE MASSDOT STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, THE MASSDOT OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, THE MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, AND THE ANSI AMERICAN STANDARD FOR NURSERY STOCK.

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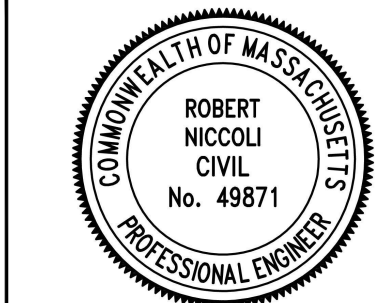
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LENGTH OF PROJECT ALONG PLEASANT STREET = 205.00 FEET = 0.039 MILES
LENGTH OF PROJECT ALONG COLBURN STREET = 267.00 FEET = 0.051 MILES
LENGTH OF PROJECT ALONG LANCASTER STREET = 190.00 FEET = 0.036 MILES
LENGTH OF PROJECT ALONG UNION STREET = 85.00 FEET = 0.016 MILES

DESIGN DESIGNATION (PLEASANT STREET)

DESIGN SPEED	25 MPH
ADT (2025)	6,022
K	8.7%
D	51.1% WB
T (PEAK HOUR)	3.6%
T (AVERAGE DAY)	5.2%
DHV	590 VPH
DDHV	301 VPH
FUNCTIONAL CLASSIFICATION	MAJOR COLLECTOR



Robert Niccoli
Digitally signed by Robert Niccoli
Date: 2025.08.26 21:51:54 -0400



APPROVED

John Moran
Digitally signed by John Moran
Date: 2025.08.26 21:51:54 -0400

CHIEF ENGINEER

DATE

08/26/2026



282 Merrimack St
2nd Floor
Lawrence, MA 01843
978-794-1792

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10th Floor
Worcester, MA 01608
508-868-5104

2 Monument Square
Suite 301
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www.tecinc.com

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN
		CATCH BASIN CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		LIGHT POLE
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WATER GATE
		PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		GUARD RAIL - DOUBLE FACE - STEEL POSTS
		GUARD RAIL - DOUBLE FACE - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		SEDIMENT BARRIER
		COIR LOG SEDIMENT BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
		RAILROAD SIGNAL
		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

ABBREVIATIONS

GENERAL	
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CPP	CORRUGATED PLASTIC PIPE
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER

ABBREVIATIONS (cont.)

GENERAL	
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LOG	LIMIT OF GRADING
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
M&O	MILL & OVERLAY
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROPOSED	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION

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LEGEND & ABBREVIATIONS

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE
		CROSSWALK
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE (10' LINE W/ 30' GAP)
		BROKEN YELLOW LINE (10' LINE W/ 30' GAP)
		DOTTED WHITE LINE (3' LINE W/ 9' GAP)
		DOTTED YELLOW LINE (3' LINE W/ 9' GAP)
		DOTTED WHITE LINE EXTENSION (2' LINE W/ 6' GAP)
		DOTTED YELLOW LINE EXTENSION (2' LINE W/ 6' GAP)
		DOUBLE WHITE LINE
		DOUBLE YELLOW LINE

ABBREVIATIONS (cont.)

GENERAL	
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

CONSTRUCTION NOTES:

1. **PLEASANT STREET:** THE EXISTING CONDITIONS SHOWN ON THESE PLANS CONSIST OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY CHAPPELL ENGINEERING ASSOCIATES, LLC FROM SEPTEMBER 27 TO OCTOBER 9 OF 2024 FIELD BOOK 41342.
- UNION & LANCASTER: THE EXISTING CONDITIONS INFORMATION COMPILED FROM SURVEY BY GCG ASSOCIATES, PERFORMED FROM NOVEMBER 2, 2024 THROUGH DECEMBER 11, 2024.
- HORIZONTAL DATUM = NAD83 (MASSACHUSETTS STATE PLANE COORDINATES)
VERTICAL DATUM = NAVD88
2. ALL EXISTING STATE, COUNTY, AND CITY LOCATION LINES HAVE BEEN ESTABLISHED FROM AN ACTUAL ON-THE-GROUND SURVEY. ABUTTING PROPERTY LINES HAVE BEEN COMPLIED FROM RECORD INFORMATION.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL CONTACT DIGSAFE (1-888-DIGSAFE) A MINIMUM OF 72 HOURS PRIOR TO ANY CONSTRUCTION TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
5. ALL PRIVATELY OWNED UTILITY STRUCTURES (GAS GATES, ELECTRIC /TELEPHONE MANHOLES, ETC.) SHALL BE ADJUSTED TO FINISHED GRADE BY THE PRIVATE UTILITY COMPANY, UNLESS DIRECTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES FOR THE ALTERATION AND ADJUSTMENT, AS NECESSARY.
6. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
7. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R), AS APPROVED BY THE ENGINEER.
8. THE TERM "MEET EXIST" MEANS TO MEET BOTH THE EXISTING ALIGNMENT AND ELEVATION.
9. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 4'-0" (EXCLUDING THE WIDTH OF CURB) SHALL BE MAINTAINED PAST ALL VERTICAL OBSTRUCTIONS (UTILITY POLES, LIGHT POLES, SIGNS, MAILBOXES, ETC.)
10. ALL EXISTING GRANITE CURB THAT MEETS SPECIFICATIONS SHALL BE RE-USED WITHIN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN THAT PROPOSED.
11. DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED PEDESTRIAN CURB RAMPS AND SHALL BE INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARDS.
12. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE, OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET IS WITHIN THE PROPOSED OR EXISTING (IF RECIPROCAL OR WITHIN PROJECT LIMITS) ACCESSIBLE SURFACE, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OR THE STRUCTURE COVER SHALL BE FLUSH WITH THE CURB RAMP SURFACE.
13. THE CONTRACTOR SHALL MAINTAIN ACCESS TO PRIVATE DRIVEWAYS DURING CONSTRUCTION.
14. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS. ALL SIGNS THAT ARE TO BE REMOVED AND RESET SHALL BE RESET WITH A NEW P5 POST.
15. ALL PROPOSED PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL BE THERMOPLASTIC MATERIALS.
16. THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF THE CURB OR SIDEWALK SHALL BE 7 FEET.
17. ALL PROPOSED CATCH BASINS SHALL HAVE CURB INLETS UNLESS OTHERWISE NOTED.
18. ALL PROPOSED SIDEWALKS MUST BE ADA-COMPLIANT (WITH ADAAG, PROWAG, AND 521 CMR).
19. THE CONTRACTOR SHALL MINIMIZE CLEARING AS MUCH AS POSSIBLE FOR ACCESS TO PERFORM SEDIMENT REMOVAL. CONTRACTOR SHALL LIMIT SIZE OF EQUIPMENT TO BE AS MINIMALLY INVASIVE TO THE EXISTING WETLAND AREAS WHILE STILL BEING ABLE TO PERFORM THE WORK. INDIVIDUAL TREE REMOVAL SHALL BE COORDINATED WITH MASSDOT AND THE GEOMORPHOLOGIST.
20. PRIVATE ITEMS TO BE REMOVED AND STACKED SHALL BE STACKED ON THE OWNER'S PROPERTY.
21. EXISTING RIP RAP MAY BE REUSED IF IT MEETS THE REQUIRED SPECIFICATIONS.
22. CONTRACTOR SHALL NOT STORE EQUIPMENT OR STOCKPILE MATERIALS WITHIN 50 FEET OF A FLAGGED WETLAND OR RESOURCE AREA.

TEMPORARY TRAFFIC CONTROL NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
2. ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN THE "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
6. THE CONTRACTOR SHALL MAINTAIN SAFE AND REASONABLE ACCESS TO AND FROM ABUTTING PROPERTIES AT ALL TIMES. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE TEMPORARY CLOSURE OF ACCESS TO THE ABUTTER'S PROPERTY, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
7. THE FIRST TEN PLASTIC DRUMS OF A MERGING TAPER SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS.
8. THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
9. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
11. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
12. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
13. TEMPORARY FACILITIES, INCLUDING BUT NOT LIMITED TO, TEMPORARY PEDESTRIAN PASSAGEWAYS AROUND A CONSTRUCTION SITE, SHALL COMPLY WITH 521 CMR WHICH STATES, "NO ALTERATION SHALL BE UNDERTAKEN WHICH DECREASES OR HAS THE EFFECT OF DECREASING ACCESSIBILITY OR USABILITY OF A FACILITY BELOW THE REQUIREMENTS FOR NEW CONSTRUCTION."
14. NO WORK THAT IMPACTS THE TRAVELED WAY SHALL BE PERMITTED DURING PEAK HOUR TRAFFIC (7-9AM , 4-6PM).

TTC CONSTRUCTION STANDARD DETAILS

DRAWING NUMBER	TITLE	VERSION
850.1.1	TEMPORARY CURB RAMP (1 OF 2)	JAN 2025
850.1.2	TEMPORARY CURB RAMP (2 OF 2)	JAN 2025
851.1.1	CONES & DRUMS	JAN 2025
851.2.1	TYPE III BARRICADE	JAN 2025
851.2.2	TYPE III BARRICADE WITH SIGN	JAN 2025
851.3.1	PEDESTRIAN CHANNELIZING DEVICE	JAN 2025
852.4.4	ALTERNATING ONE-WAY (TRAFFIC OFFICER)	JAN 2025
852.5.2	TWO LANE ROAD HALF OF ROAD CLOSURE WITH DROP OFF PROTECTION	JAN 2025
852.5.3	TWO LANE ROAD SHOULDER CLOSURE	JAN 2025
852.5.4	TWO LANE ROAD HALF ROAD CLOSURE	JAN 2025
852.10.2	INTERSECTION QUADRANT CLOSURE	JAN 2025

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS		
	A	B	C
URBAN (30MPH OR LESS)	100 FEET	100 FEET	100 FEET
URBAN (35MPH OR GREATER)	350 FEET	350 FEET	350 FEET
RURAL	500 FEET	500 FEET	500 FEET
EXPRESSWAY/FREEWAY	1,000 FEET	1,500 FEET	2,640 FEET

SIGN SPACING NOTES:

1. ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.
2. THE "A" DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE "B" DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE "C" DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS.
3. MA-R2-10a SIGNS SHALL BE PLACED HALFWAY BETWEEN THE SECOND AND THIRD SIGNS NOTED ABOVE.
4. SIGN SPACING MAY NEED TO BE INCREASED IF ADDITIONAL SIGNS ARE REQUIRED PER THE DETAIL / TYPICAL SETUP FIGURES.

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN. 100 FT MAX.
DOWNSTREAM TAPER	50 FT MIN. 100 FT MAX. PER LANE

FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	L= $\frac{WS^2}{60}$
45 MPH OR MORE	L= WS

WHERE: L = TAPER LENGTH IN FEET

W = WIDTH OF OFFSET IN FEET

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

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	3	82
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CONSTRUCTION NOTES
SHEET 1 OF 2

STRUCTURAL DESIGN:

1. IN ACCORDANCE WITH THE 2024 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 10TH EDITION FOR HL-93 LOADING.
2. NO PLANS WERE AVAILABLE FOR THE UNION STREET BRIDGE. EXISTING LOAD CAPACITY HAS NOT BEEN ANALYZED OR UPGRADED AS PART OF THIS PROJECT.

BENCHMARKS:

PLEASANT STREET:	LANCASTER STREET:	UNION STREET:	UNION STREET:
1 N: 3014819.489' E: 584026.060' EL: 421.146' MAGNAIL	3654 N: 3010939.529' E: 592089.332' EL: 303.969'	102 N: 3013882.488' E: 585684.868' EL: 394.874' MSTN 102	152 N: 3013928.691' E: 585951.322' EL: 396.768' MSTN 152
2 N: 30147588.323' E: 584098.619' EL: 416.921' MAGNAIL	3655 N: 3011285.786' E: 591931.262' EL: 312.375' SPIKE IN UPL 74/71 EL: 310.92'	103 N: 3013916.534' E: 585735.746' EL: 396.778' MSTN 103	153 N: 3013939.875' E: 585849.857' EL: 402.906' MSTN 153
3 N: 30147799.216' E: 584143.471' EL: 413.386' MAGNAIL	SPIKE IN UPL 75/72 EL: 312.09'	104 N: 3013929.209' E: 585769.949' EL: 391.827' MDHL 104	3656 N: 3013748.860' E: 585755.422' EL: 411.708'
3645 N: 584122.873' EL: 420.006' MAGNAIL - MASSDOT		151 N: 3013908.683' E: 585845.361' EL: 401.780' MSTN 151	
NAIL IN UP 5-50 EL: 422.20'			
NAIL IN UP-1 EL: 390.118'			

DATE:

TO BE CENTERED ON THE OUTSIDE FACE OF EACH HEADWALL (PLEASANT STREET). A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE HEADWALLS ARE CONSTRUCTED. BOTH HEADWALL SHALL FEATURE THE SAME DATE.

SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZED PRINTS. DIVIDE SCALES BY 2 FOR HALF-SIZE PRINTS (A3).

FOUNDATIONS:

FOUNDATION MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATION OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

CONCRETE:

UNLESS OTHERWISE SPECIFIED, ALL CONCRETE SHALL BE 5000 HP CONCRETE.

ALL CIP AND PRECAST CONCRETE POURS SHOWN ON THESE CONSTRUCTION DRAWINGS WHERE ALL VOLUMETRIC DIMENSIONS ARE 4 FEET OR GREATER SHALL BE CONSIDERED TO BE MASS CONCRETE AND SHALL REQUIRE A HEAT OF HYDRATION ANALYSIS AND THERMAL CONTROL PLAN, AS SPECIFIED IN THE MASSDOT STANDARD SPECIFICATIONS.

REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 31 GRADE 60. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MODIFICATION CONDITION:	#4 BARS	#5 BARS	#6 BARS
1. NONE	16"	17"	21"
2. 12" OF CONCRETE BELOW BAR	18"	22"	27"
3. EPOXY COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	21"	26"	31"
4. COATED BARS, ALL OTHER CASES	17"	21"	25"
5. CONDITION 2. AND 3.	23"	29"	35"
6. CONDITION 2. AND 4.	21"	27"	32"

ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

ADDITIONAL INFORMATION:

1. FOR PLEASANT STREET CULVERT, SEE REVISED GEOTECHNICAL REPORT PREPARED BY GTR. INC., DATED 2/6/2026.
2. FOR PLEASANT STREET CULVERT, SEE REVISED HYDRAULIC REPORT PREPARED BY MASSDOT, DATED 2/6/2026.
3. FOR UNION STREET CULVERT, SEE GEOTECHNICAL REPORT PREPARED BY GTR. INC., DATED 9/4/2025.
4. FOR UNION STREET CULVERT, SEE HYDRAULIC STUDY REPORT PREPARED BY MASSDOT, DATED 7/11/2025.
5. FOR UNION STREET CULVERT, SEE TEMPORARY WATER CONTROL MEASURES MEMORANDUM PREPARED BY MASSDOT, DATED 9/19/2025.

PLEASANT STREET

SEISMIC DESIGN CRITERIA	
DESIGN RETURN PERIOD:	1000
DESIGN SPECTRA	
As	0.104
SDs	0.237
SD1	0.096
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

HYDRAULIC DESIGN FLOOD (HDF) DATA	
DRAINAGE AREA (SQ. MILES)	0.53
HDF DISCHARGE (C.F.S.)	151
HDF FREQUENCY (YEARS)	25
HDF VELOCITY (F.P.S.)	13.33
HDF ELEVATION (FEET, NAVD, UPSTREAM)	415.67
BASE (100-YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	215
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	417.47
SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	50
SDF ELEVATION (FEET, NAVD, HEADWATER)	416.00
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	4.20
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	100
SCF ELEVATION (FEET, NAVD, HEADWATER)	416.00
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	4.49
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	UNKNOWN
FREQUENCY (IF KNOWN, YEARS)	UNKNOWN
MAXIMUM ELEVATION (FEET, NAVD)	UNKNOWN
DATE (MM/YYYY)	09/2023
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	YES

TEMPORARY WATER CONTROL DESIGN DATA *	
DESIGN FLOOD DISCHARGE (C.F.S.)	59
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	1.43
DESIGN FLOOD ELEVATION (FEET, NAVD)	416.10

NOTE:

* VALUES SHOWN ARE FOR THE UPSTREAM SIDE OF CROSSING AT PLEASANT STREET.

TEMPORARY WATER CONTROL DESIGN DATA **	
DESIGN FLOOD DISCHARGE (C.F.S.)	59
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	5.16
DESIGN FLOOD ELEVATION (FEET, NAVD)	411.88

NOTE:

** VALUES SHOWN ARE FOR THE DOWNSTREAM SIDE OF CROSSING AT PLEASANT STREET.

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	4	82
PROJECT FILE NO.		616375	

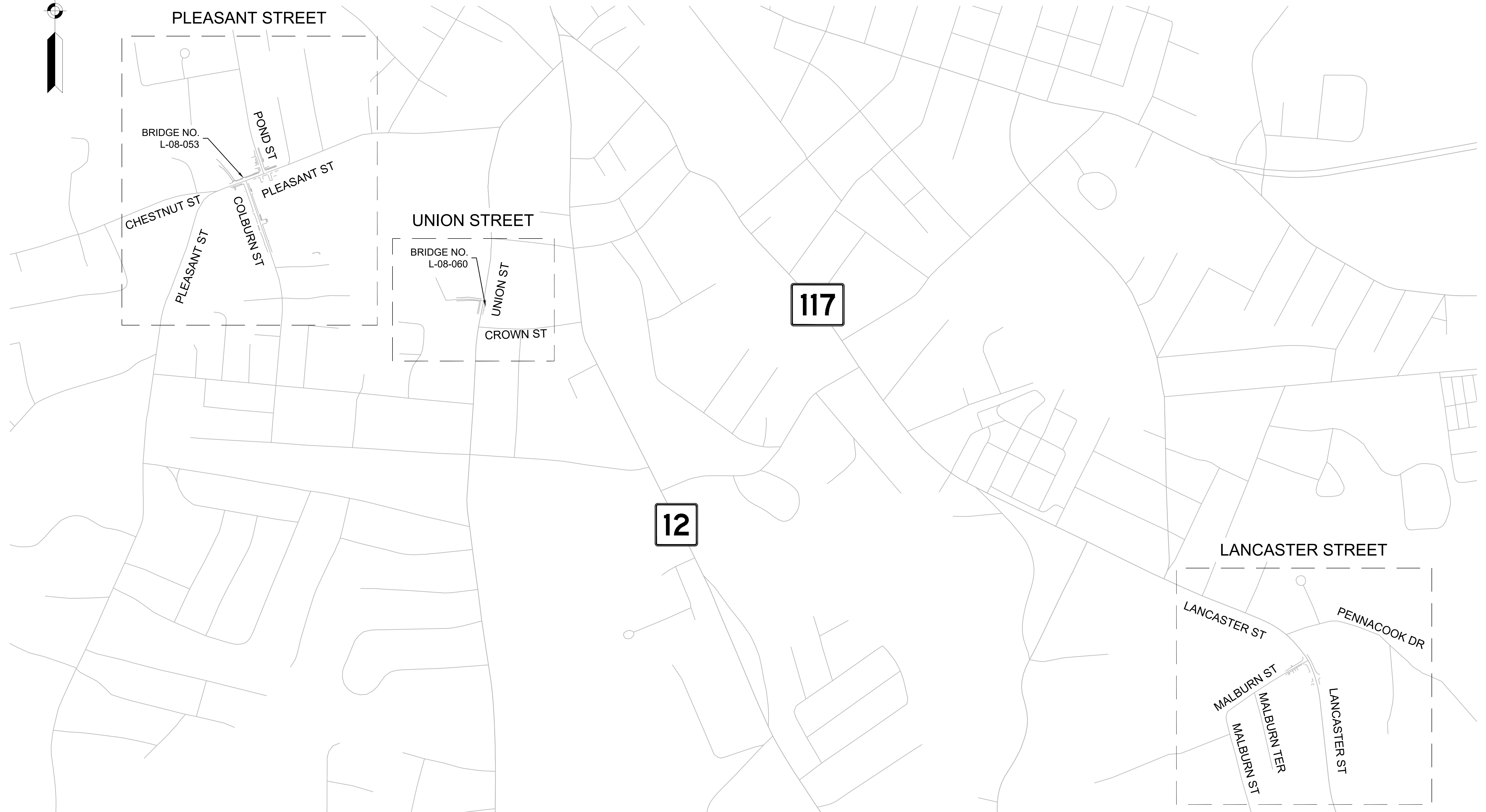
CONSTRUCTION NOTES
SHEET 2 OF 2

UNION STREET

SEISMIC DESIGN CRITERIA	
DESIGN RETURN PERIOD:	1000
DESIGN SPECTRA	
As	0.104
SDs	0.237
SD1	0.096
SITE CLASS	D
SEISMIC DESIGN CATEGORY (SDC)	A

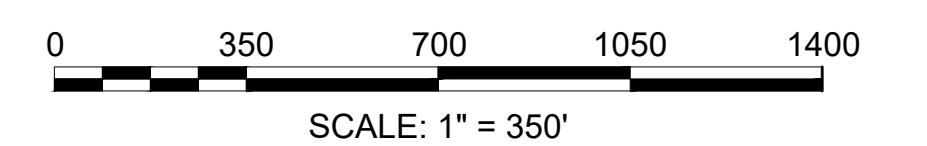
HYDRAULIC DESIGN FLOOD (HDF) DATA	
DRAINAGE AREA (SQ. MILES)	1.17
HDF DISCHARGE (C.F.S.)	470
HDF FREQUENCY (YEARS)	25
HDF VELOCITY (F.P.S.)	12.49
HDF ELEVATION (FEET, NAVD, UPSTREAM)	397.11
BASE (100-YEAR) FLOOD DATA	
BASE FLOOD DISCHARGE (C.F.S.)	693
BASE FLOOD ELEVATION (FEET, NAVD, UPSTREAM)	398.85
SCOUR DESIGN FLOOD (SDF) EVENT DATA	
SDF EVENT FREQUENCY (YEARS)	50
SDF ELEVATION (FEET, NAVD, HEADWATER)	397.81
SDF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	9.32
SDF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
SCOUR CHECK FLOOD (SCF) EVENT DATA	
SCF EVENT FREQUENCY (YEARS)	100
SCF ELEVATION (FEET, NAVD, HEADWATER)	398.85
SCF TOTAL SCOUR DEPTH AT ABUTMENT (FEET)	10.07
SCF TOTAL SCOUR DEPTH AT PIER (FEET)	N/A
FLOOD OF RECORD	
DISCHARGE (C.F.S.)	UNKNOWN
FREQUENCY (IF KNOWN, YEARS)	UNKNOWN
MAXIMUM ELEVATION (FEET, NAVD)	UNKNOWN
DATE (MM/YYYY)	09/2023
HISTORY OF ICE FLOES	N/A
EVIDENCE OF SCOUR AND EROSION	YES

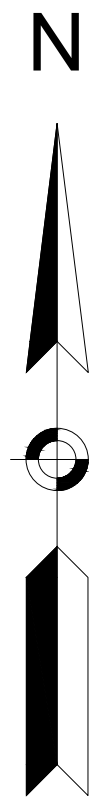
TEMPORARY WATER CONTROL DESIGN DATA	
DESIGN FLOOD DISCHARGE (C.F.S.)	172
DESIGN FLOOD FREQUENCY (YEARS)	2
DESIGN FLOOD VELOCITY (F.P.S.)	11.5
DESIGN FLOOD ELEVATION (FEET, NAVD)	395.33



NOTES

1. SEE SHEET 7 FOR DETAILED KEY PLAN FOR LOCATION 1.

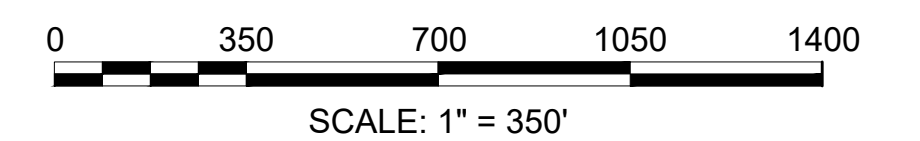
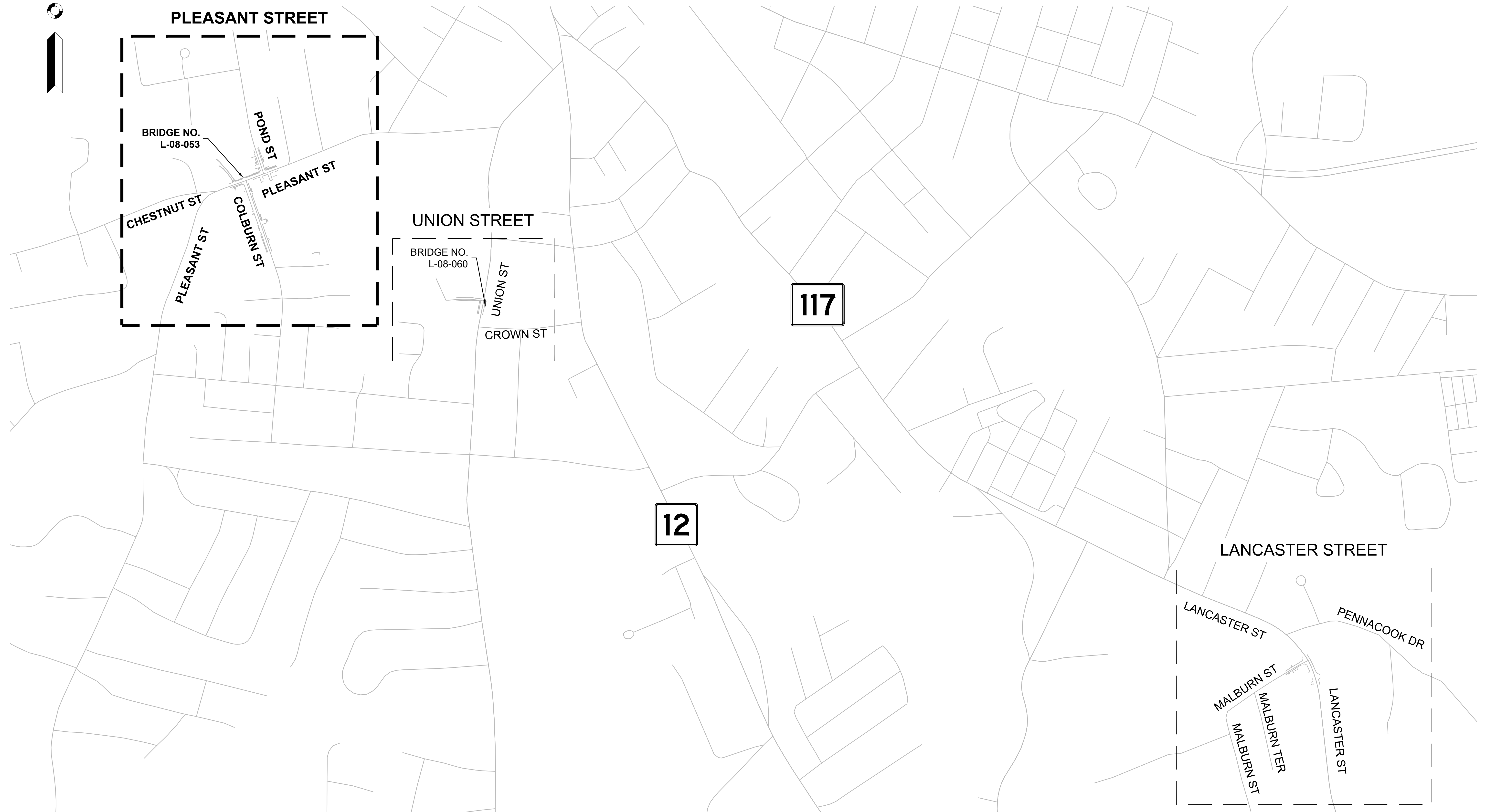


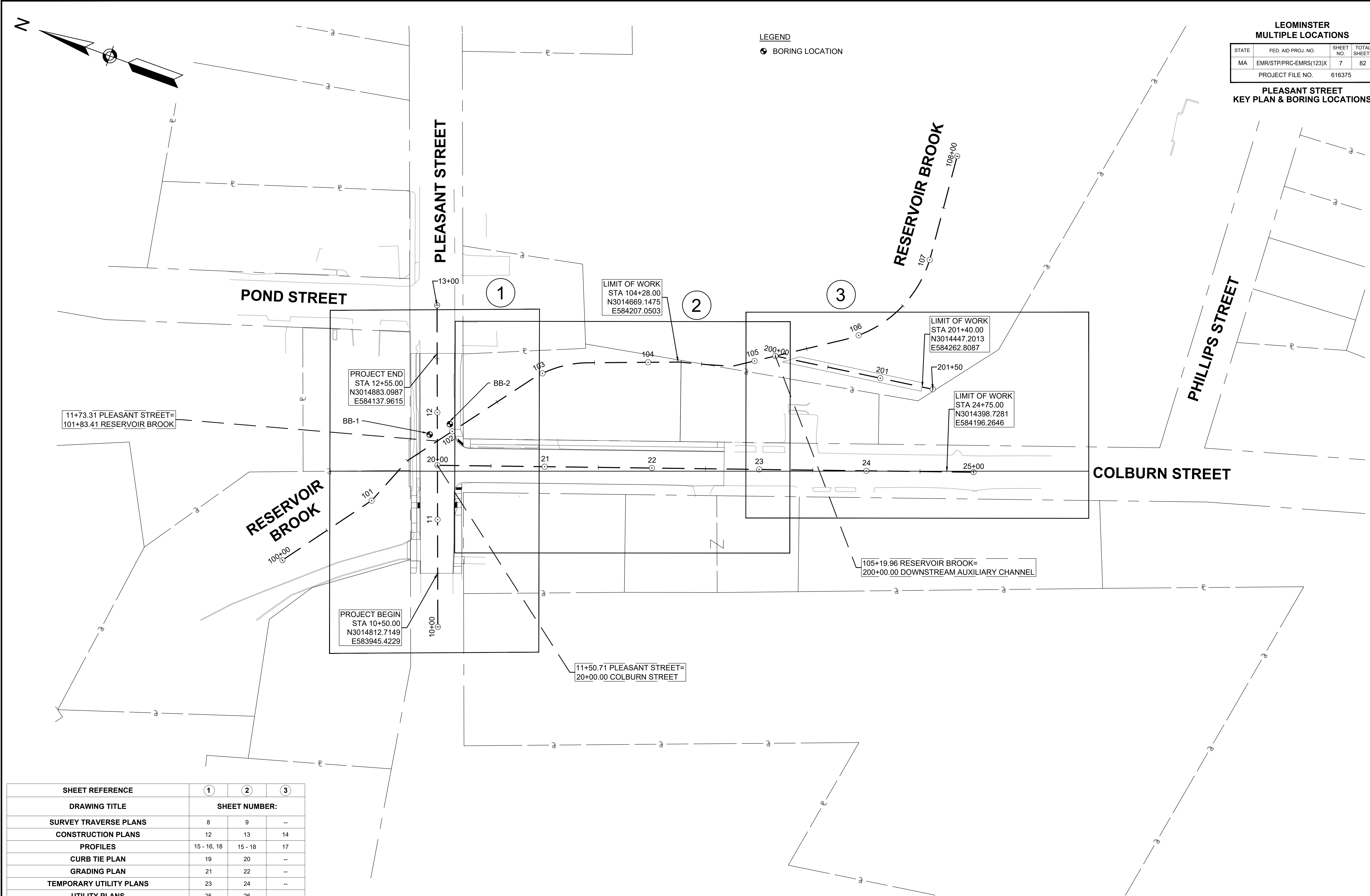


LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	6	82
PROJECT FILE NO.		616375	

PLEASANT STREET
GENERAL KEY PLAN



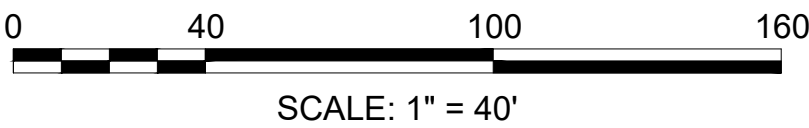


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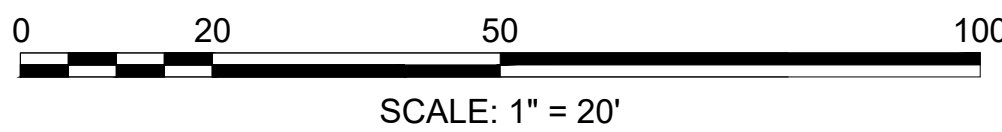
● BORING LOCATION

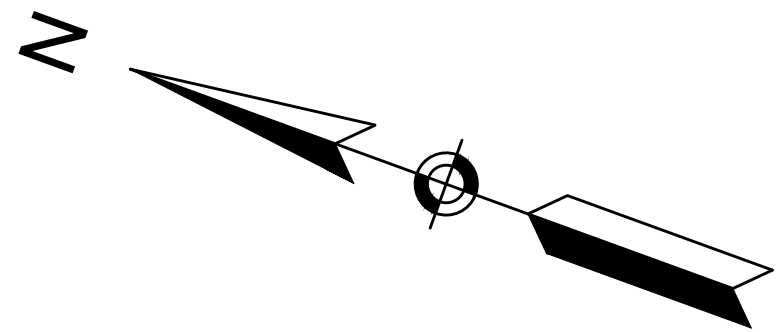
LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	7	82
PROJECT FILE NO.		616375	
PLEASANT STREET KEY PLAN & BORING LOCATIONS			

SHEET REFERENCE	①	②	③
DRAWING TITLE	SHEET NUMBER:		
SURVEY TRAVERSE PLANS	8	9	--
CONSTRUCTION PLANS	12	13	14
PROFILES	15 - 16, 18	15 - 18	17
CURB TIE PLAN	19	20	--
GRADING PLAN	21	22	--
TEMPORARY UTILITY PLANS	23	24	--
UTILITY PLANS	25	26	--
TRAFFIC SIGN & PAVEMENT MARKING PLANS	27	28	--
LANDSCAPE PLANS	33	34	35
EROSION & SEDIMENT CONTROL PLANS	36	37	38



616375_HD7_SURVEY TRAVERSE PLANS_PLEASANT.DWG Plotted on 20-Aug-2026 8:07 AM





LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	9	82
PROJECT FILE NO.		616375	

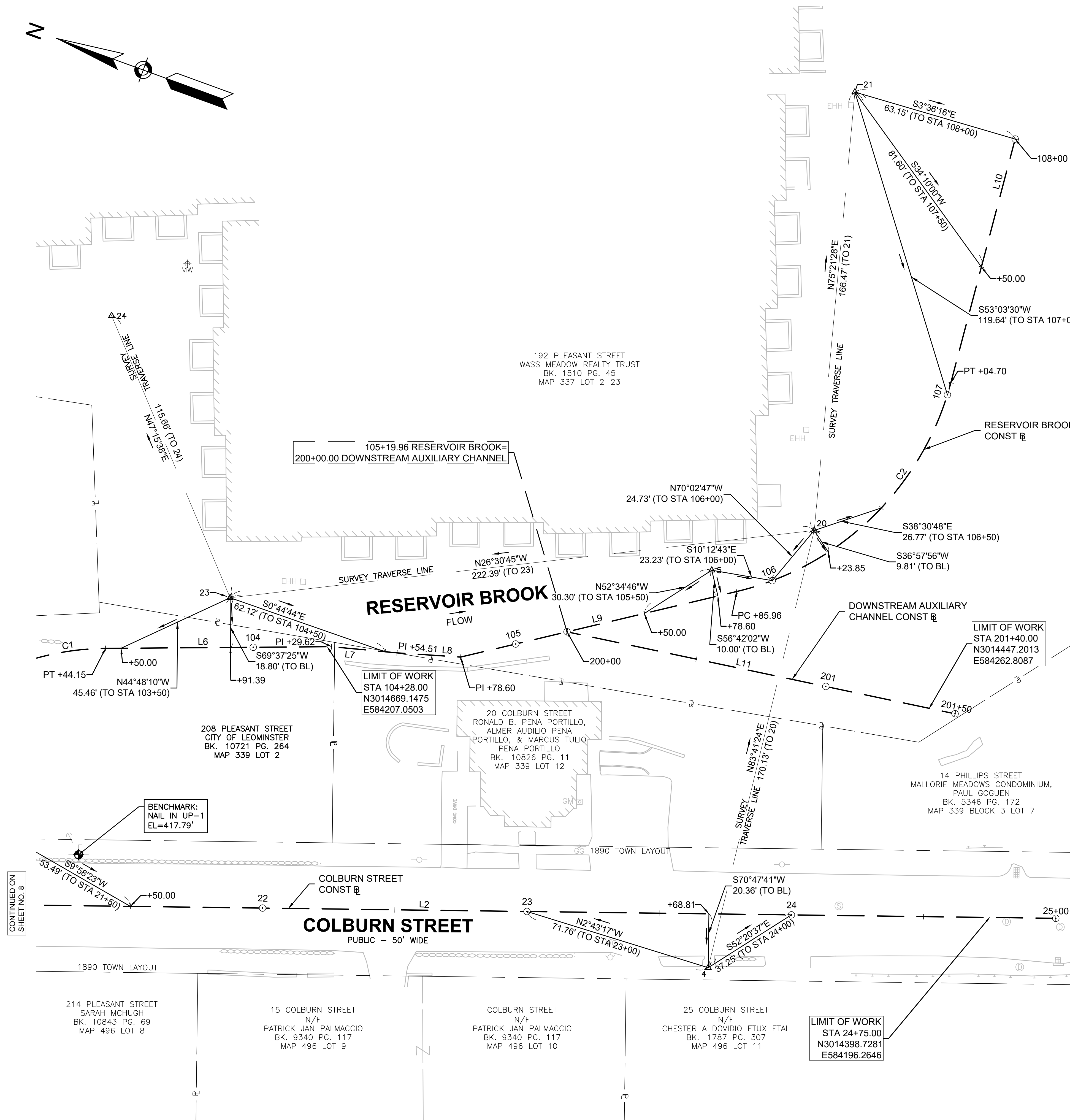
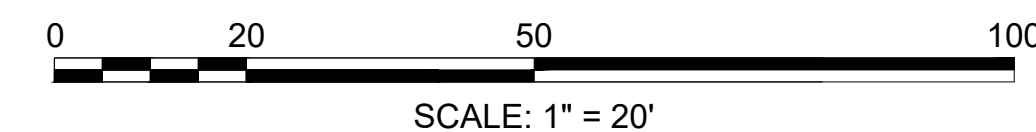
PLEASANT STREET
SURVEY TRAVERSE PLANS
SHEET 2 OF 2

Point Table				
Point #	Northing	Easting	Elevation	Raw Description
4	3014492.3093	584142.1049	408.750	MTRV MAGNAIL
5	3014542.3085	584283.8333	401.734	MTRV SPIKE (WIPE OUT)
20	3014511.0074	584311.2005	401.209	MTRV SPIKE
21	3014553.0886	584472.2661	402.342	MTRV SPIKE
23	3014710.0090	584211.9282	407.436	MTRV SPIKE
24	3014788.5025	584296.8730	406.749	MTRV SPIKE

COLBURN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L2	20+00.00	3014847.2926	584040.0119		S19°12'19"E 500.00'	25+00.00	3014375.1194	584204.4884

RESERVOIR BROOK CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	102+86.96	3014792.9461	584144.0904	R = 100.00' Δ = 32°46'12" L = 57.19' T = 29.40'		103+44.15	3014747.7476	584177.8559
L6	103+44.15	3014747.7476	584177.8559		S20°22'35"E 85.47'	104+29.62	3014667.6248	584207.6159
L7	104+29.62	3014667.6248	584207.6159		S14°32'59"E 24.88'	104+54.51	3014643.5398	584213.8670
L8	104+54.51	3014643.5398	584213.8670		S16°08'54"E 24.09'	104+78.60	3014620.4017	584220.5666
L9	104+78.60	3014620.4017	584220.5666		S33°17'58"E 107.36'	105+85.96	3014530.6680	584279.5092

DOWNSTREAM AUXILIARY CHANNEL CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	200+00.00	3014585.8317	584243.2743		S8°01'15"E 150.00'	201+50.00	3014437.2977	584264.2042



CONTINUED ON
SHEET NO. 8

BORING 1 (BB-1)



GEOSCIENCES TESTING AND RESEARCH, INC.
55 Middlesex Street, Suite 225, North Chelmsford, MA.
Phone: (978) 251-9395 www.gtrinc.net

Project Name: Pleasant Street		Boring No. BB-1	
Location: Leominster, MA		Page: 1 of 2	
		GTR Job #: 24.379	
		GTR Rep: P. Dion	
		Reviewer: C. George	
Drilling Co. Carr-Dee Corp.			
Driller: Joe Desimone	Helper(s): Sean	Equipment	Casing
Start Date: 2/5/2025	End Date: 2/7/2025	Type	HW SS NX
Ground Surface Elev (ft): ~420 ft	Size I.D. 4.00"	1.375"	2.16"
Boring Location: N3014862.8447, E584065.7377	Hammer Wt. 300 lb	140 lb	-
Note: Diedrich D-50 truck rig; auto hammer	Hammer Fall 30"	30"	-

Depth	Casing BPF	Sample Data					Stratum	Additional Data	Notes
		No.	Pen/ Recovery	Depth (ft.)	Blows per 6in	Field Test			
0							RECLAIMED GRANULAR FILL		1,2,3
5		S-1	24/12	5-7	6-5	Loose, brown/black, RECLAIMED FILL, some f-m Sand, trace Silt; dry			
10		S-2	24/13	10-12	12-16	Dense, brown, GRAVEL and f-c Sand, trace Silt, wet			
15		S-3	1/0	15-15.1	50/1"	Very dense, gray, f-m SAND, little Gravel, little Silt			
20		S-5	24/14	20-22	44-30	Very dense, gray, f-m SAND, little Silt, trace Gravel			
25		S-6	24/17	25-27	12-8	Medium dense, gray, f- SAND, some Silt, trace Gravel			

NOTES:	
1. 6" of Asphalt.	
2. Vacuum Excavated to 5' below grade. Material consisted of COBBLES, some Reclaimed Fill, little f-m SAND, trace Silt	
3. Reclaimed Granular Fill consisted primarily of varying sized Concrete, Brick, and Asphalt.	
4. Switched from hollow stem augers to HW casing after sampling from 10'-12'.	
5. Increased drilling resistance starting at approximately 16'.	
Order of Sample Description (Modified Burmister)	
1. Moisture Content: Dry, Moist, Wet	2. Soil Relative Density or Consistency
3. Color	4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size	"some" - 20% to 35% minor grain size
"little" - 10% to 20% minor grain size	"trace" - < 10% of minor grain size



GEOSCIENCES TESTING AND RESEARCH, INC.
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Phone: (978) 251-9395 www.gtrinc.net

Project Name: Pleasant Street		Boring No. BB-1								
Location: Leominster, MA		Page: 2 of 2								
		GTR Job #: 24.379								
		GTR Rep: P. Dion								
		Reviewer: C. George								
Drilling Co. Carr-Dee Corp.										
Driller: Joe Desimone	Helper(s): Sean	Equipment	Casing	Sampler	Core	Groundwater	Depth (ft)			
Start Date: 2/5/2025	End Date: 2/7/2025	Type	HW	SS	NX	Date	Time	Water	Casing	Hole
Ground Surface Elev (ft): ~420 ft	Size I.D. 4.00"	1.375"	2.16"	2.5	2.26	12	20	22		
Boring Location: N3014862.8447, E584065.7377	Hammer Wt. 300 lb	140 lb	30"	30"	30"	30"	30"	30"	30"	30"
Note: Diedrich D-50 truck rig; auto hammer	Hammer Fall 30"	30"	30"	30"	30"	30"	30"	30"	30"	30"

Depth	Casing BPF	Sample Data					Stratum	Additional Data	Notes
		No.	Pen/ Recovery	Depth (ft.)	Blows per 6in	Field Test			
30		S-7	24/20	30-32	12-23	Dense, gray, f- SAND, trace Gravel			
35		S-8	24/16	35-37	29-18	Dense, gray, f- SAND, little Silt, trace Gravel			
40		S-9	24/11	40-42	57-87	Very dense, brown, f- SAND, some Gravel, little Clayey Silt			
45						Bottom of boring at 42 ft below ground surface with no refusal encountered			
50									
55									

NOTES:	
5. Increase in casing/rollerbit resistance at 34'.	
Order of Sample Description (Modified Burmister)	
1. Moisture Content: Dry, Moist, Wet	2. Soil Relative Density or Consistency
3. Color	4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size	"some" - 20% to 35% minor grain size
"little" - 10% to 20% minor grain size	"trace" - < 10% of minor grain size

BORING 2 (BB-2)



GEOSCIENCES TESTING AND RESEARCH, INC.
55 Middlesex Street, Suite 225, North Chelmsford, MA.
Phone: (978) 251-9395 www.gtrinc.net

Project Name: Pleasant Street		Boring No. BB-2							
Location: Leominster, MA		Page: 1 of 2							
		GTR Job #: 24.379							
		GTR Rep: P. Dion							
		Reviewer: C. George							
Drilling Co. Carr-Dee Corp.									
Driller: Joe Desimone	Helper(s): Sean	Equipment	Casing	Sampler	Core	Groundwater	Depth (ft)		
Start Date: 2/7/2025	End Date: 2/10/2025	Type	HW	SS	NX	Time	Water	Casing	Notes
Ground Surface Elev (ft): ~420 ft	Size I.D. 4.00"	4.00"	1.375"	2.16"	2.7	27	2.7	2.7	12
Boring Location: N3014848.7930, E584078.9537	Hammer Wt. 300 lb	140"	-	-	2/11	11:36	9	35	42
Note: Diedrich D-50 truck rig; auto hammer	Hammer Fall 30"	30"	30"	10"	-	-	-	-	-

Depth	Casing BPF	Sample Data					Stratum	Additional Data	Notes
		No.	Pen/ Recovery	Depth (ft.)	Blows per 6in	Field Test			
0							RECLAIMED GRANULAR FILL		1,2,3
5		S-1	24/6	5-7	11-10	Medium dense, brown/black, f-c SAND and Reclaimed Fill, trace Silt, dry			
10		S-2	24/7	10-12	3-3	Medium dense, gray, GRAVEL and f-c Sand, trace Silt, wet			
15		S-3	24/15	15-17	16-18	Dense, brown, f-m SAND, little Gravel, trace Silt			
20		S-4	24/17	20-22	31-44	Very dense, brown, f-m SAND, little Gravel, little Silt			
25		S-5	24/5	25-27	45-32	Very dense, gray, f-c SAND, little Gravel, trace Silt			

NOTES:	
1. 6" of Asphalt.	
2. Vacuum Excavated to 5' below grade. Material consisted of COBBLES, little Reclaimed Fill, little f-m Sand, trace Silt	
3. Reclaimed Granular Fill consisted primarily of varying sized Concrete, Brick, and Asphalt.	
4. Switched from hollow stem augers to HW casing after sampling from 10'-12'.	
5. Increased drill resistance starting at approximately 15'.	
Order of Sample Description (Modified Burmister)	
1. Moisture Content: Dry, Moist, Wet	2. Soil Relative Density or Consistency
3. Color	4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size	"some" - 20% to 35% minor grain size
"little" - 10% to 20% minor grain size	"trace" - < 10% of minor grain size



GEOSCIENCES TESTING AND RESEARCH, INC.
55 Middlesex Street, Suite 225, North Chelmsford, MA.
Phone: (978) 251-9395 www.gtrinc.net

Project Name: Pleasant Street		Boring No. BB-2	
Location: Leominster, MA		Page: 2 of 2	
		GTR Job #: 24.379	
		GTR Rep: P. Dion	
		Reviewer: C. George	
Drilling Co. Carr-Dee Corp.			
Driller: Joe Desimone	Helper(s): Sean	Equipment	Casing
Start Date: 2/7/2025	End Date: 2/10/2025	Type	HW SS NX
Ground Surface Elev (ft): ~420 ft	Size I.D. 4.00"	1.375"	2.16"
Boring Location: N3014848.7930, E584078.9537	Hammer Wt. 300 lb	140 lb	2.7
Note: Diedrich D-50 truck rig; auto hammer	Hammer Fall 30"	30"	2.7

Depth	Casing BPF	Sample Data					Stratum	Additional Data	Notes
		No.	Pen/ Recovery	Depth (ft.)	Blows per 6in	Field Test			
30		S-6	24/14	30-32	18-21	Dense, brown, f-m SAND, trace Silt, trace Gravel			
35		S-7	24/21	35-37	25-33	Very dense, gray, f-m SAND, some Clayey Silt, trace Gravel			
40		S-8	24/16	40-42	17-24	Very dense, brown, f- SAND, little Clayey Silt			
45						Bottom of boring at 42 ft below ground surface with no refusal encountered			
50									
55									

NOTES:	
5. Increase in casing/rollerbit resistance at 34'.	
Order of Sample Description (Modified Burmister)	
1. Moisture Content: Dry, Moist, Wet	2. Soil Relative Density or Consistency
3. Color	4. Major Component: Should be capitalized
5. Minor Component: "and" - 35% to 50% minor grain size	"some" - 20% to 35% minor grain size
"little" - 10% to 20% minor grain size	"trace" - < 10% of minor grain size

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	10	82
PROJECT FILE NO.		616375	

PLEASANT STREET
BORING LOGS

BORING NOTES:

- LOCATION OF BORINGS SHOWN ON THE PLANS THUS: ●
- BORINGS ARE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
- WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
- FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
- BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
- ALL BORINGS WERE MADE IN FEBRUARY 2025.
- ALL BORINGS WERE PERFORMED BY CARR-DEE CORP OF 37 LINDEN STREET, MEDFORD, MA 01255 AND OBSERVED BY GEOSIENCES TESTING AND RESEARCH, INC., 55 MIDDLESEX STREET, SUITE 225, NORTH CHELMSFORD, MA, 01863.
- THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

EXIST. GROUND
EL. = 420.00

OBS. GROUNDWATER
(2/7/2025)
EL. = 411.00

EL. = 410.00

PROP. UPSTREAM B.O.F.
EL. = 405.50

EL. = 400.00

EXIST. GROUND
EL. = 420.00

OBS. GROUNDWATER
(2/11/2025)
EL. = 411.00

EL. = 410.00

PROP. DOWNSTREAM B.O.F.
EL. = 402.90
EL. = 400.00

EL. = 390.00

EL. = 380.00

EL. = 370.00

ELEVATION (FT)

ELEVATION (FT)

LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	11	82
PROJECT FILE NO.		616375	

PLEASANT STREET
TYPICAL SECTIONS & PAVEMENT NOTES

PAVEMENT NOTES

PROPOSED HMA MILL & OVERLAY

SURFACE: 1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
1¾" PAVEMENT FINE MILLING

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
2¼" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) OVER

BASE: 3½" SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) OVER

SUBBASE: 12" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE SIDEWALKS / PEDESTRIAN CURB RAMPS

SURFACE: 4" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, ¾", 610)

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE SIDEWALKS AT DRIVEWAYS

SURFACE: 6" CEMENT CONCRETE (AIR ENTRAINED, 4000 PSI, ¾", 610)

BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA WALKWAYS

SURFACE: 1¾" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER

BASE: 8" SUITABLE EXISTING GRAVEL;
ADD GRAVEL BORROW, TYPE b AS REQUIRED.

PROPOSED PERMANENT PAVEMENT TRENCH PATCH (PAID FOR UNDER ITEM 451.)

SURFACE: 1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
2¼" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) OVER
VARIABLE DEPTH SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)
(COMPACTED IN 2¼" (MIN) TO 3½" (MAX) LIFTS
TO MATCH EXIST PAVEMENT THICKNESS) OVER

BASE: 12" GRAVEL BORROW, TYPE b OVER

SUBBASE: EXISTING MATERIAL SUITABLE FOR RE-USE SUPPLEMENTED WITH GRAVEL
BORROW AS NECESSARY TO MATCH GRADE (SEE VARIOUS TRENCH DETAILS)

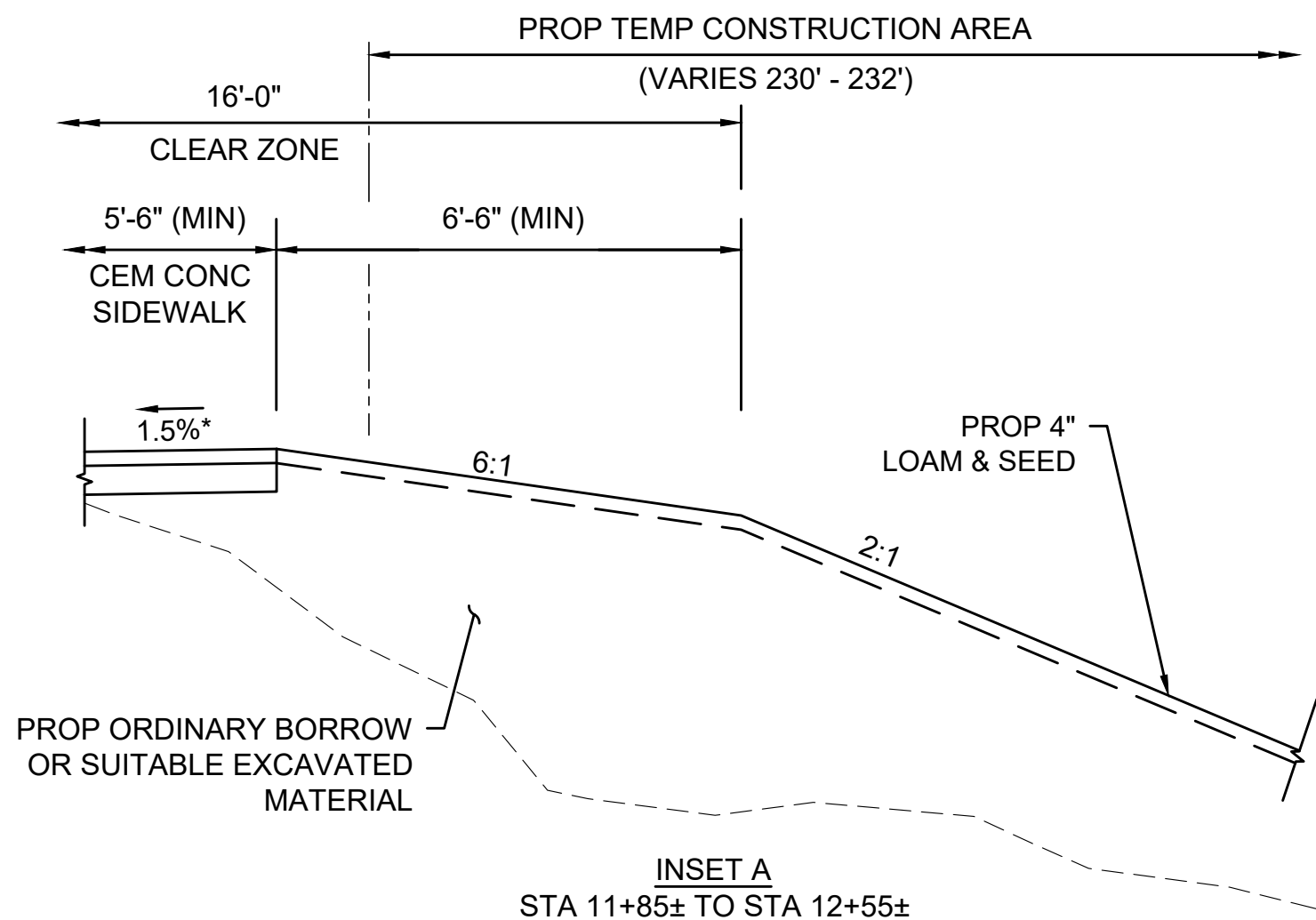
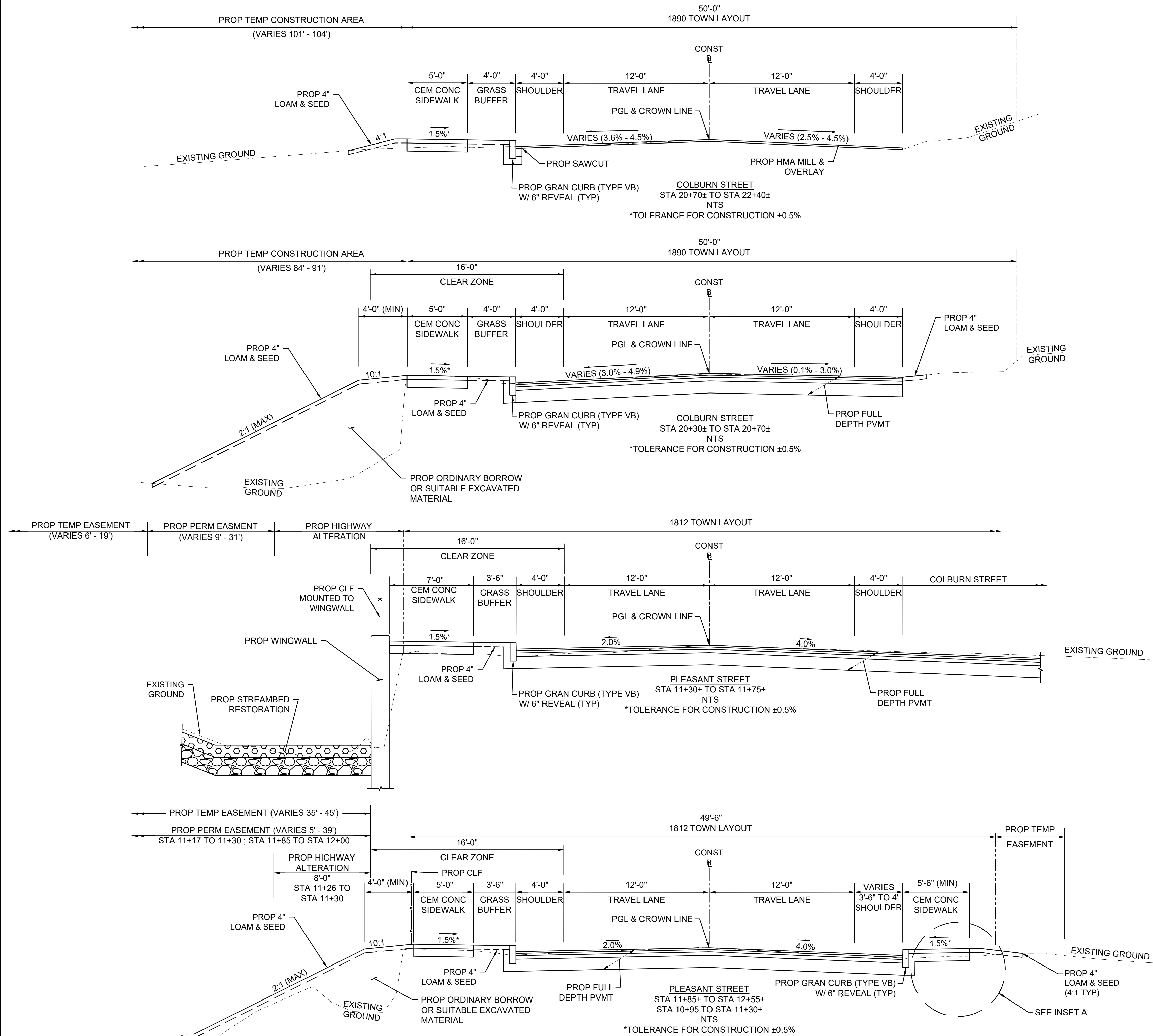
PROPOSED TEMPORARY PAVEMENT TRENCH PATCH (PAID FOR UNDER ITEM 472.)

SURFACE: 2½" HMA FOR TEMPORARY ASPHALT PATCHING

BASE: EXISTING MATERIAL SUITABLE FOR RE-USE (SEE VARIOUS TRENCH DETAILS)

GENERAL PAVEMENT NOTE:

- ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED BETWEEN ALL ASPHALT SURFACES AND SAWCUT JOINTS BEFORE PAVING. HMA JOINT ADHESIVE SHALL BE APPLIED TO ALL COLD JOINTS (LONGITUDINAL AND TRANSVERSE) BEFORE PAVING SURFACE COURSE. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT A RATE CONSISTENT WITH STANDARD SPECIFICATION 450.43.G.2. ALL SURFACES SHALL BE CLEAN OF ALL ORGANICS, DEBRIS, AND SAND PRIOR TO PAVING.
- ROUNDING OF SLOPES PER CONSTRUCTION STANDARD DETAIL 150.0.1 SHALL BE APPLIED CONSISTENTLY AT ALL SLOPE TRANSITIONS THROUGHOUT THE PROJECT.



HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 25

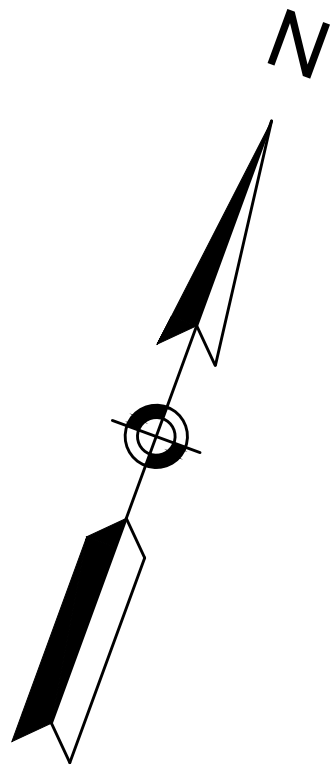
DRAINAGE DETAILS

SEE SHEET 25

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	12	82
PROJECT FILE NO.		616375	

PLEASANT STREET
CONSTRUCTION PLANS
SHEET 1 OF 3

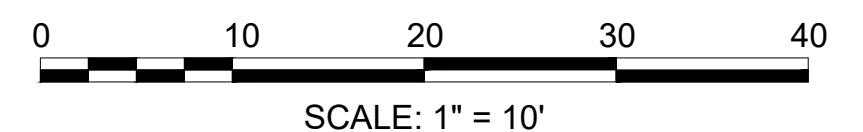


PLEASANT STREET
PUBLIC - 49.5' WIDE

LEGEND

- # = PEDESTRIAN CURB RAMP NUMBER
= DRIVEWAY NUMBER

FOR CONSTRUCTION PROFILES: SEE SHEETS NO. 15 - 17



HIGHWAY GUARD DETAILS

TRAFFIC SIGNAL CONDUIT

WATER SUPPLY ALTERATIONS

DRAINAGE DETAILS

NONE

NONE

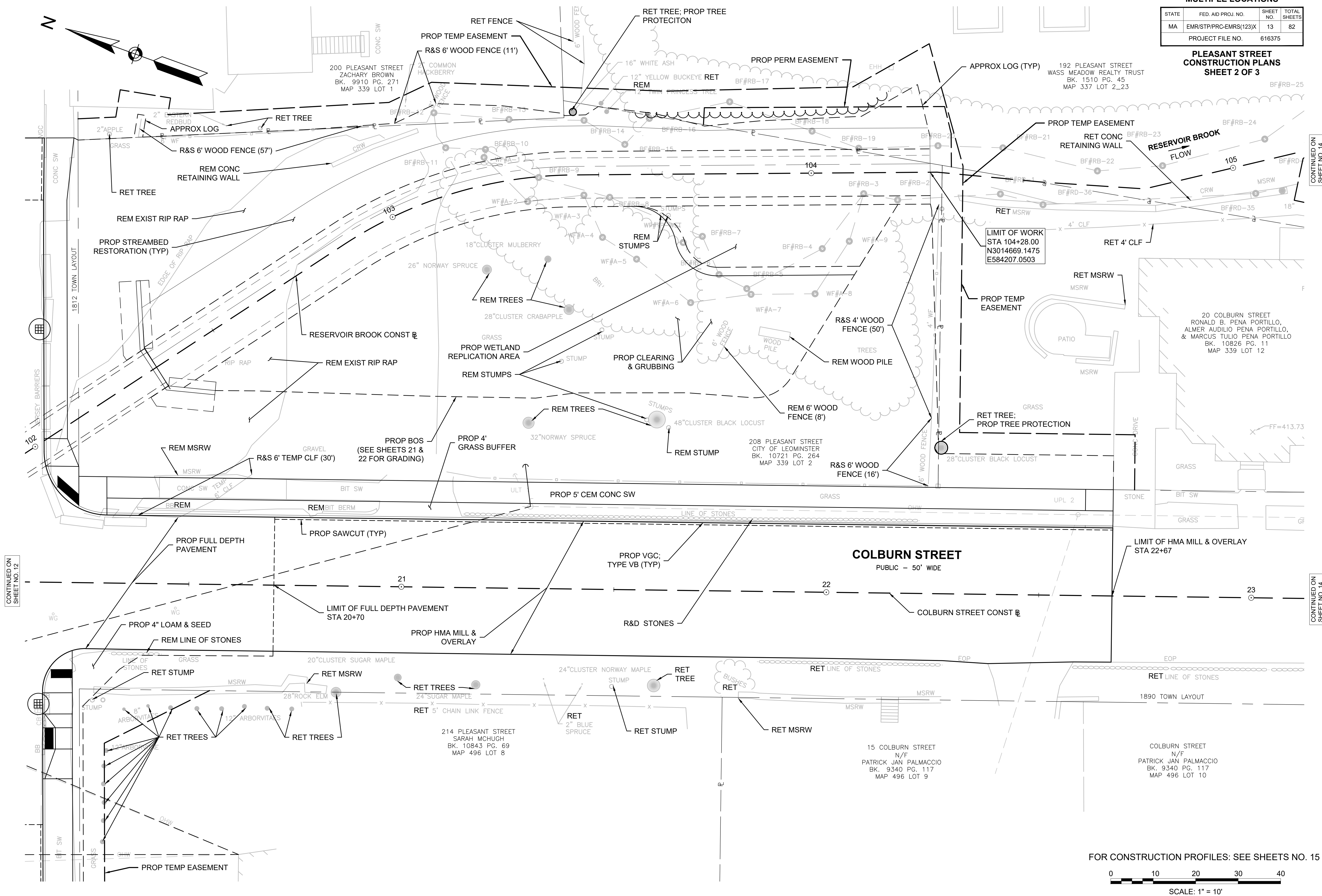
SEE SHEET 26

SEE SHEET 26

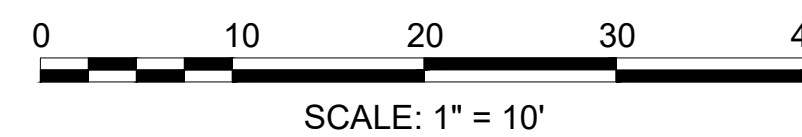
LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	13	82
PROJECT FILE NO.		616375	

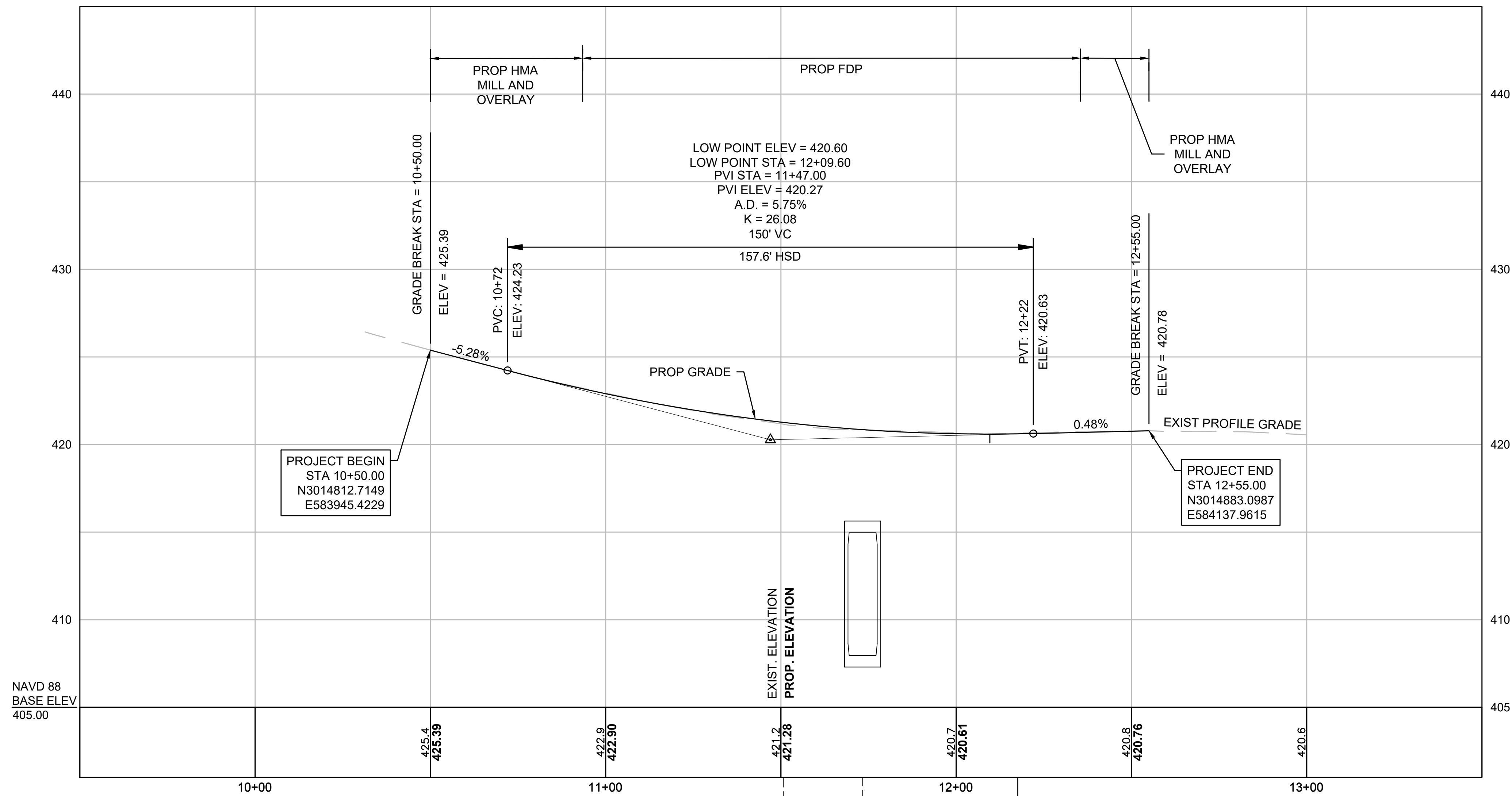
PLEASANT STREET
CONSTRUCTION PLANS
SHEET 2 OF 3



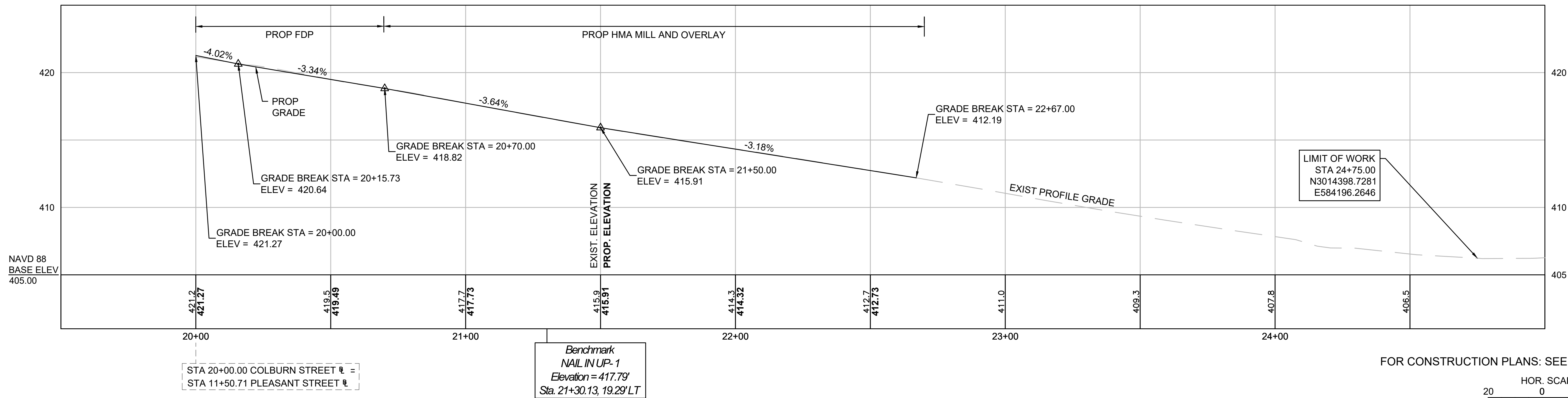
FOR CONSTRUCTION PROFILES: SEE SHEETS NO. 15 - 17



PLEASANT STREET



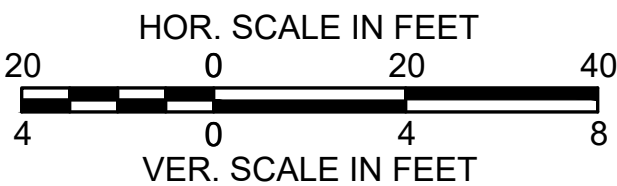
COLBURN STREET



LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	15	82
PROJECT FILE NO.		616375	

PLEASANT STREET
PROFILES
SHEET 1 OF 3

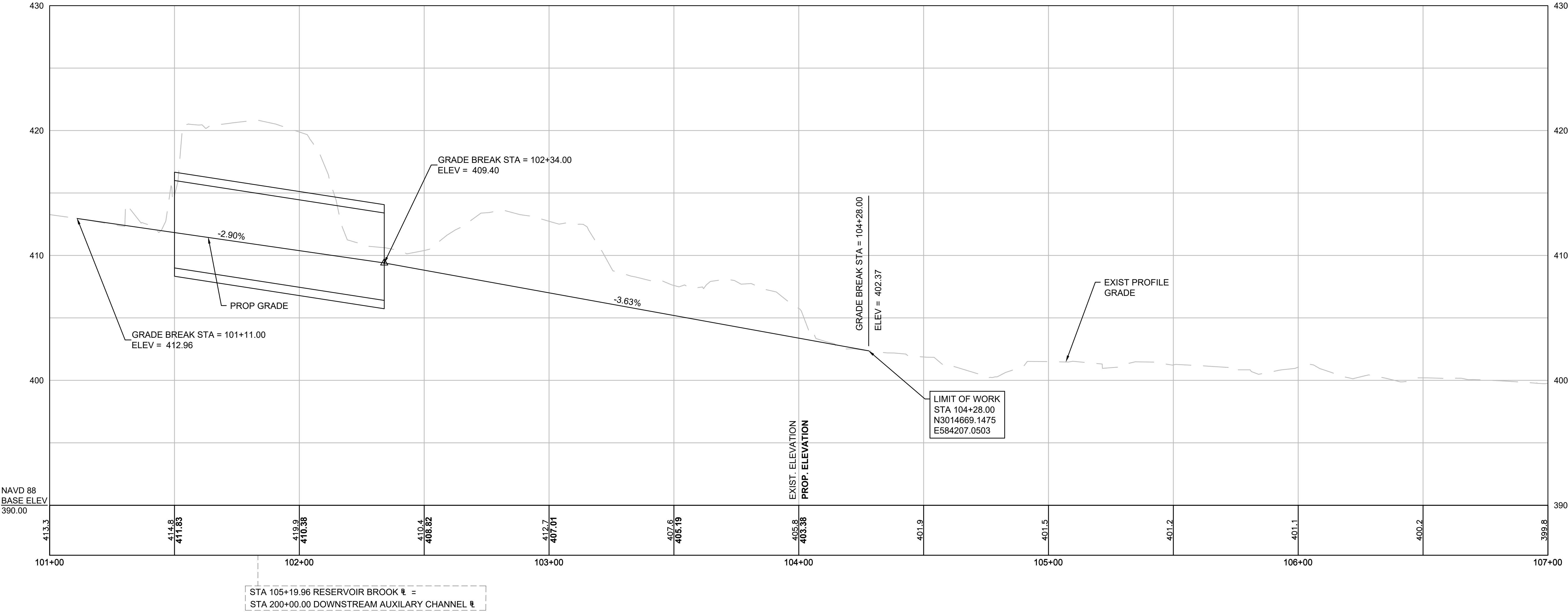
FOR CONSTRUCTION PLANS: SEE SHEETS NO. 12 - 13



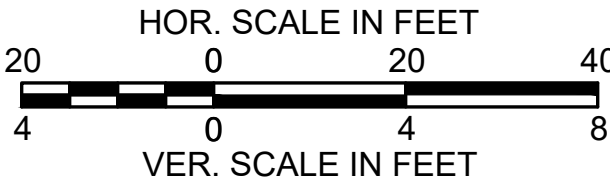
LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	16	82
PROJECT FILE NO.		616375	

PLEASANT STREET
PROFILES
SHEET 2 OF 3

RESERVOIR BROOK



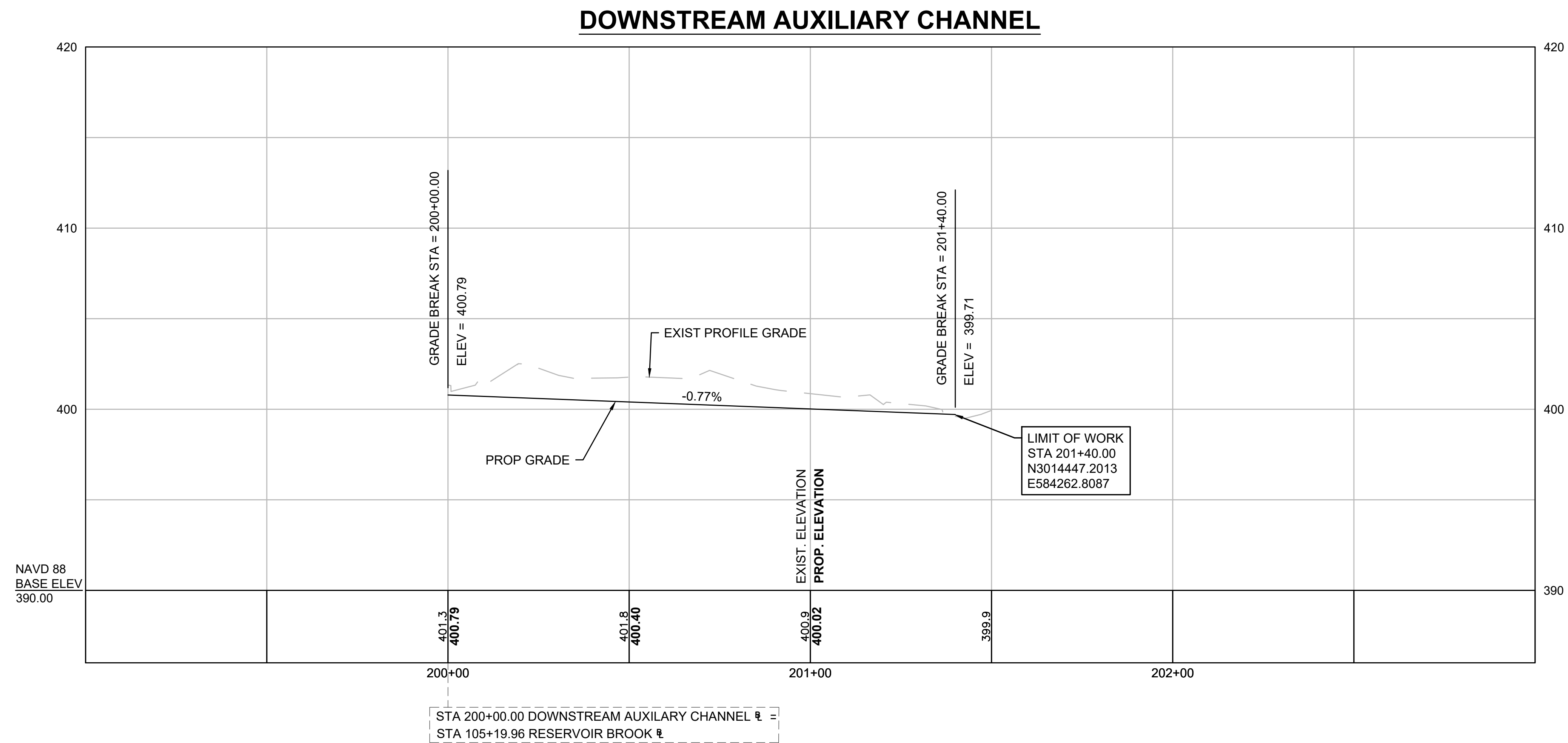
FOR CONSTRUCTION PLANS: SEE SHEETS NO. 12 - 13



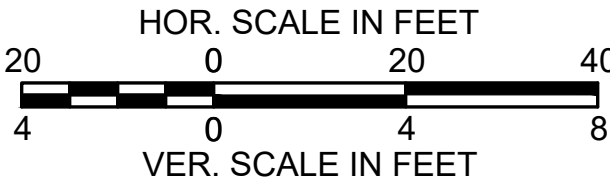
LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	17	82
PROJECT FILE NO.		616375	

PLEASANT STREET
PROFILES
SHEET 3 OF 3



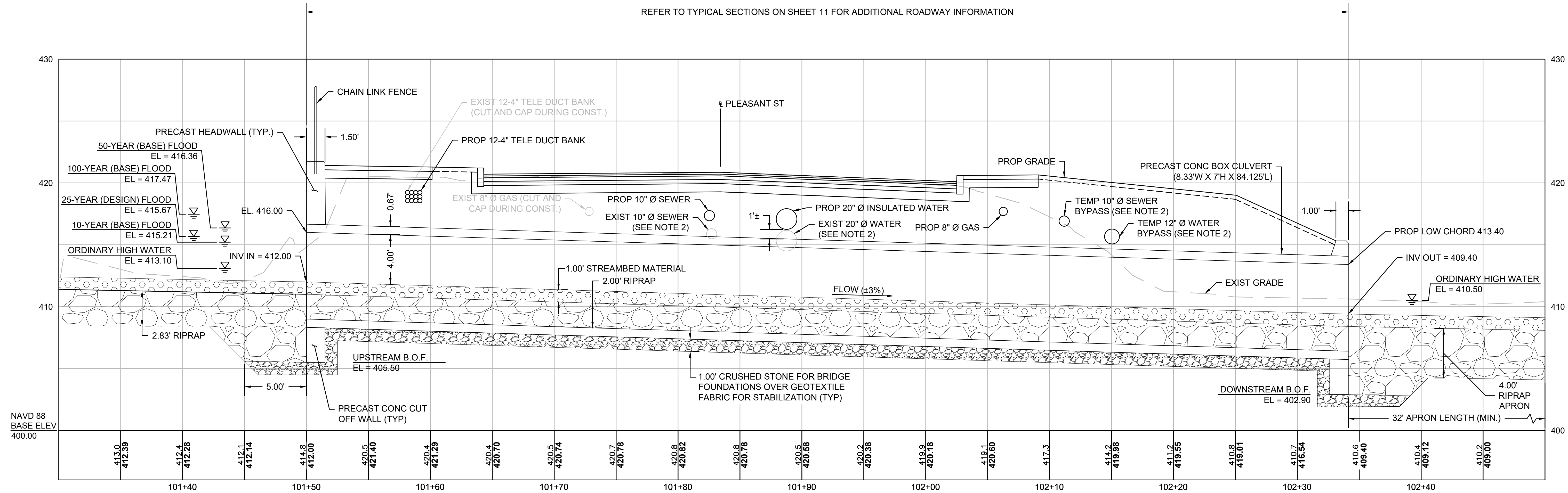
FOR CONSTRUCTION PLANS: SEE SHEETS NO. 14



LEOMINSTER
MULTIPLE LOCATIONS

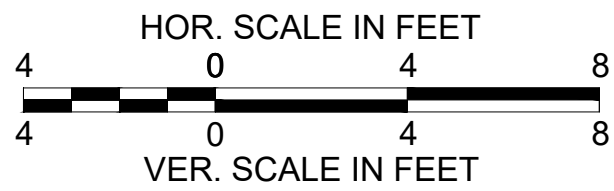
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	18	82
PROJECT FILE NO.		616375	

PLEASANT STREET
CULVERT PROFILE



NOTES:

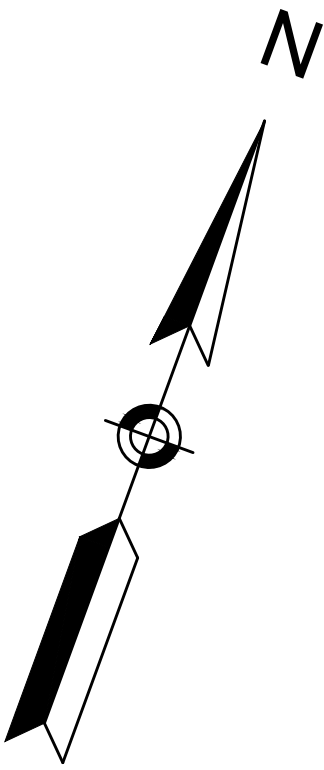
- THIS PROFILE IS TAKEN ALONG THE RESERVOIR BROOK BASELINE. SEE SHEETS 45 - 48 FOR CULVERT DETAILS.
- EXISTING WATER AND SEWER LINES SHALL REMAIN IN THEIR CURRENT POSITION UNTIL THE DOWNSTREAM PORTION OF THE PROPOSED CULVERT CAN BE INSTALLED TO SUPPORT THE TEMPORARY BYPASSES. ONLY ONCE THE TEMPORARY BYPASSES ARE IN PLACE AND ACTIVE MAY THE CONTRACTOR REMOVE THE EXISTING WATER AND SEWER LINES. THE CONTRACTOR'S CULVERT DESIGN AND ERECTION PROCEDURE SHALL CONSIDER THE INSTALLATION OF THE TEMPORARY BYPASS PIPES WHEN SIZING CULVERT UNITS.
- REFER TO TYPICAL SECTIONS ON SHEET 11 FOR ADDITIONAL ROADWAY INFORMATION.



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	19	82
PROJECT FILE NO.		616375	

PLEASANT STREET
CURB TIE PLANS
SHEET 1 OF 2



225 PLEASANT STREET
LENNY VALAREZO
BK. 8747 PG. 53
MAP 342 LOT 13

219 PLEASANT STREET
GRANT R & ALANA M GARCIA
BK. 1779 PG. 215
MAP 342 LOT 12

189 POND STREET
RENATO A PACHECO
BK. 6472 PG. 342
MAP 342 LOT 6_B

200 PLEASANT STREET
ZACHARY BROWN
BK. 9910 PG. 271
MAP 339 LOT 1

208 PLEASANT STREET
CITY OF LEOMINSTER
BK. 10721 PG. 264
MAP 339 LOT 2

214 PLEASANT STREET
SARAH MCHUGH
BK. 10843 PG. 69
MAP 496 LOT 8

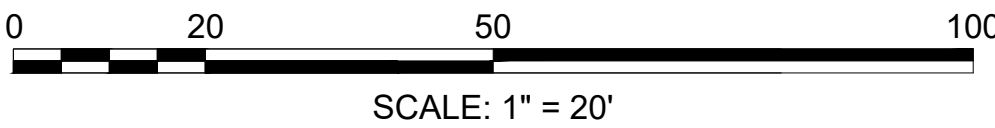
PLEASANT STREET
PUBLIC - 49.5' WIDE

COLBURN STREET
PUBLIC - 50' WIDE

POND STREET
PUBLIC - 49.5' WIDE

CURVE TABLE				
CURVE #	DELTA	RADIUS	LENGTH	TANGENT
C1	90° 52' 30"	10.00'	15.86'	10.15'
C2	89° 07' 30"	15.00'	23.33'	14.77'

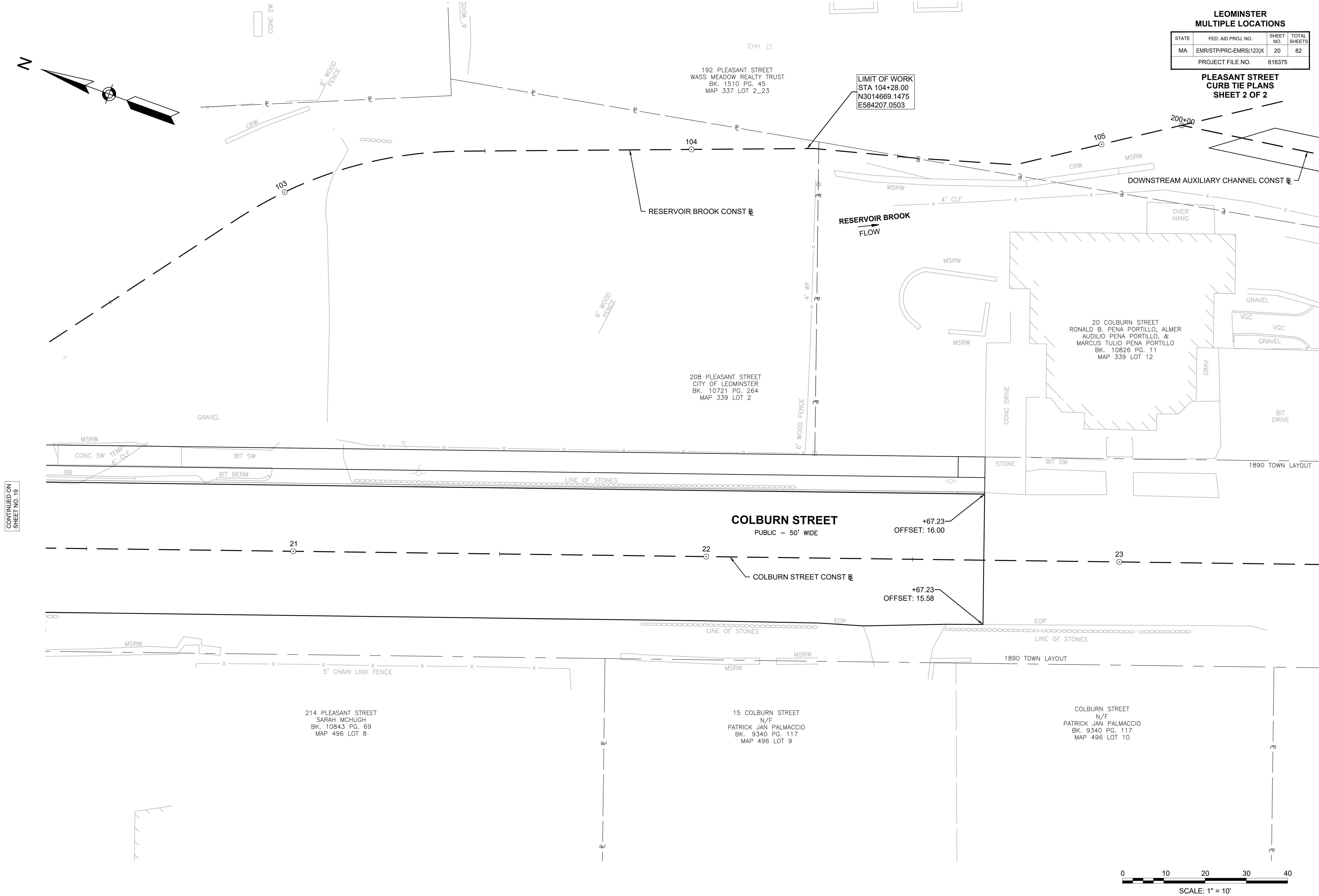
CONTINUED ON
SHEET NO. 20



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	20	82
PROJECT FILE NO.		616375	

PLEASANT STREET
CURB TIE PLANS
SHEET 2 OF 2

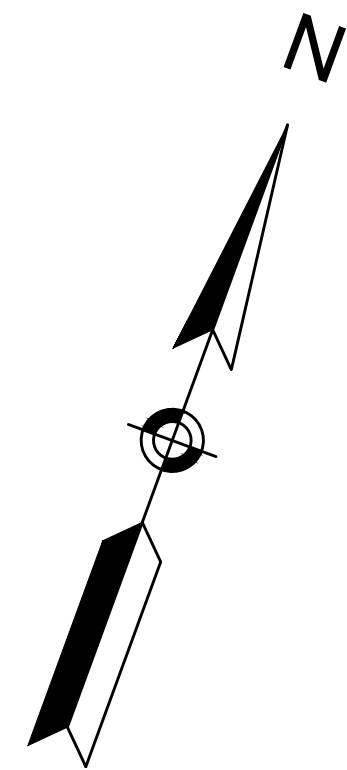


CONTINUED ON
SHEET NO. 19

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	21	82
PROJECT FILE NO.		616375	

PLEASANT STREET
GRADING PLANS
SHEET 1 OF 2



225 PLEASANT STREET
LENNY VALAREZO
BK. 8747 PG. 53
MAP 342 LOT 13

1812 TOWN LAYOUT

PROJECT BEGIN
STA 10+50.00
N3014812.7149
E583945.4229

PLEASANT STREET
PUBLIC - 49.5' WIDE

1812 TOWN LAYOUT

214 PLEASANT STREET
SARAH MCHUGH
BK. 10843 PG. 69
MAP 496 LOT 8

219 PLEASANT STREET
GRANT R & ALANA M. GARCIA
BK. 1779 PG. 215
MAP 342 LOT 12

RESERVOIR BROOK
CONST

RESERVOIR
BROOK
FLOW

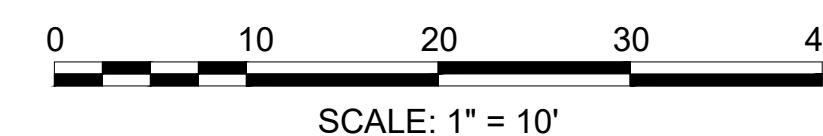
189 POND STREET
RENATO A. PACHECO
BK. 6472 PG. 342
MAP 342 LOT 6_B

1896 TOWN LAYOUT
POND STREET
PUBLIC - 49.5' WIDE

200 PLEASANT STREET
ZACHARY BROWN
BK. 9910 PG. 271
MAP 339 LOT 1

NOTES

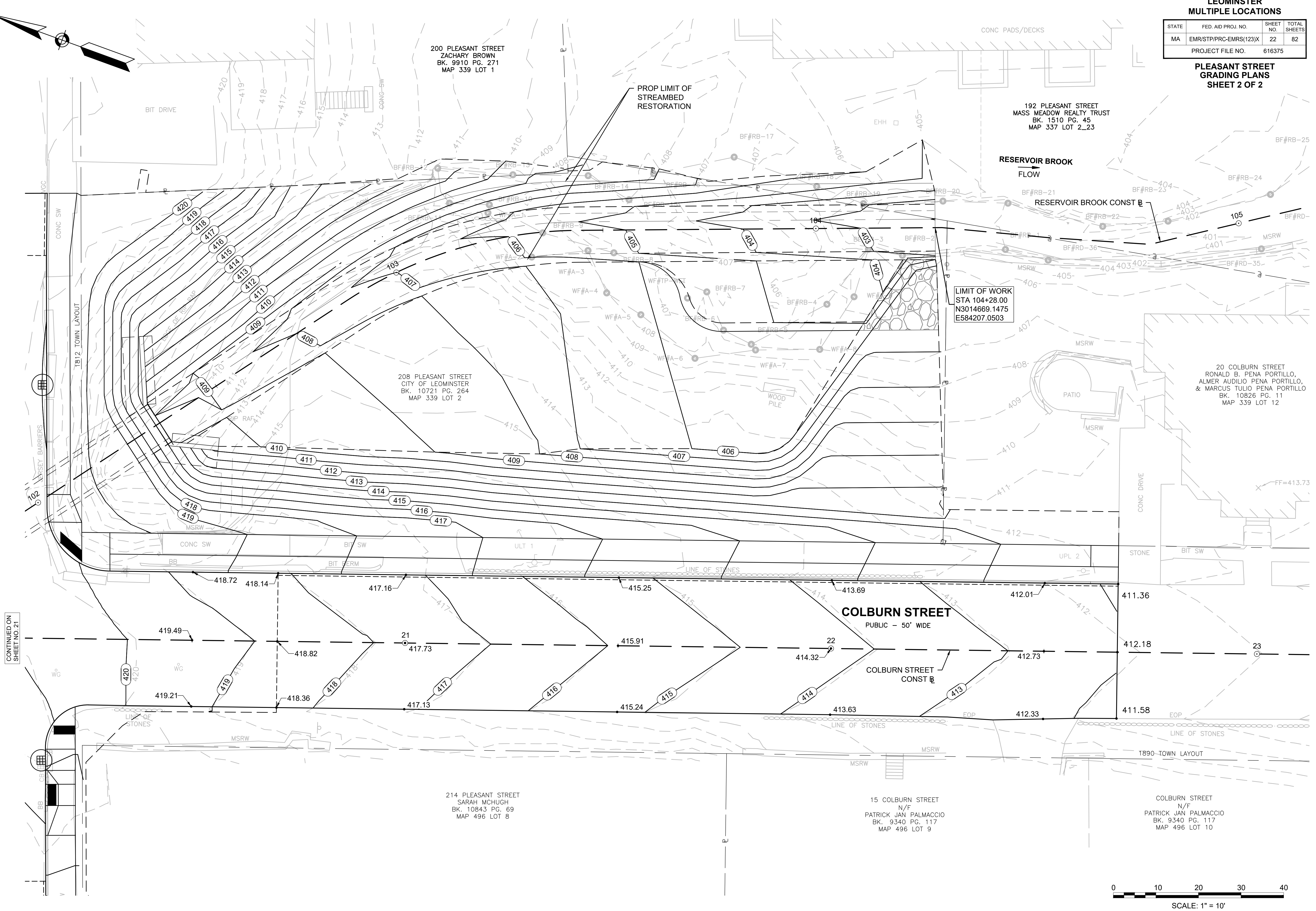
- SOIL MANAGEMENT, STOCKPILING, AND DISPOSAL SHALL BE PROPOSED AND CONDUCTED IN ACCORDANCE WITH ITEM 102.33 TO PREVENT THE INTRODUCTION AND SPREAD OF NEW AND EXISTING INVASIVE SPECIES. THIS INCLUDES BUT IS NOT LIMITED TO THE SEPARATION OF INFESTED SOILS FROM GENERAL STOCKPILE LOCATIONS.
- EQUIPMENT SHALL BE CLEANED AND INSPECTED IN ACCORDANCE WITH ITEM 102.33.



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	22	82
PROJECT FILE NO.		616375	

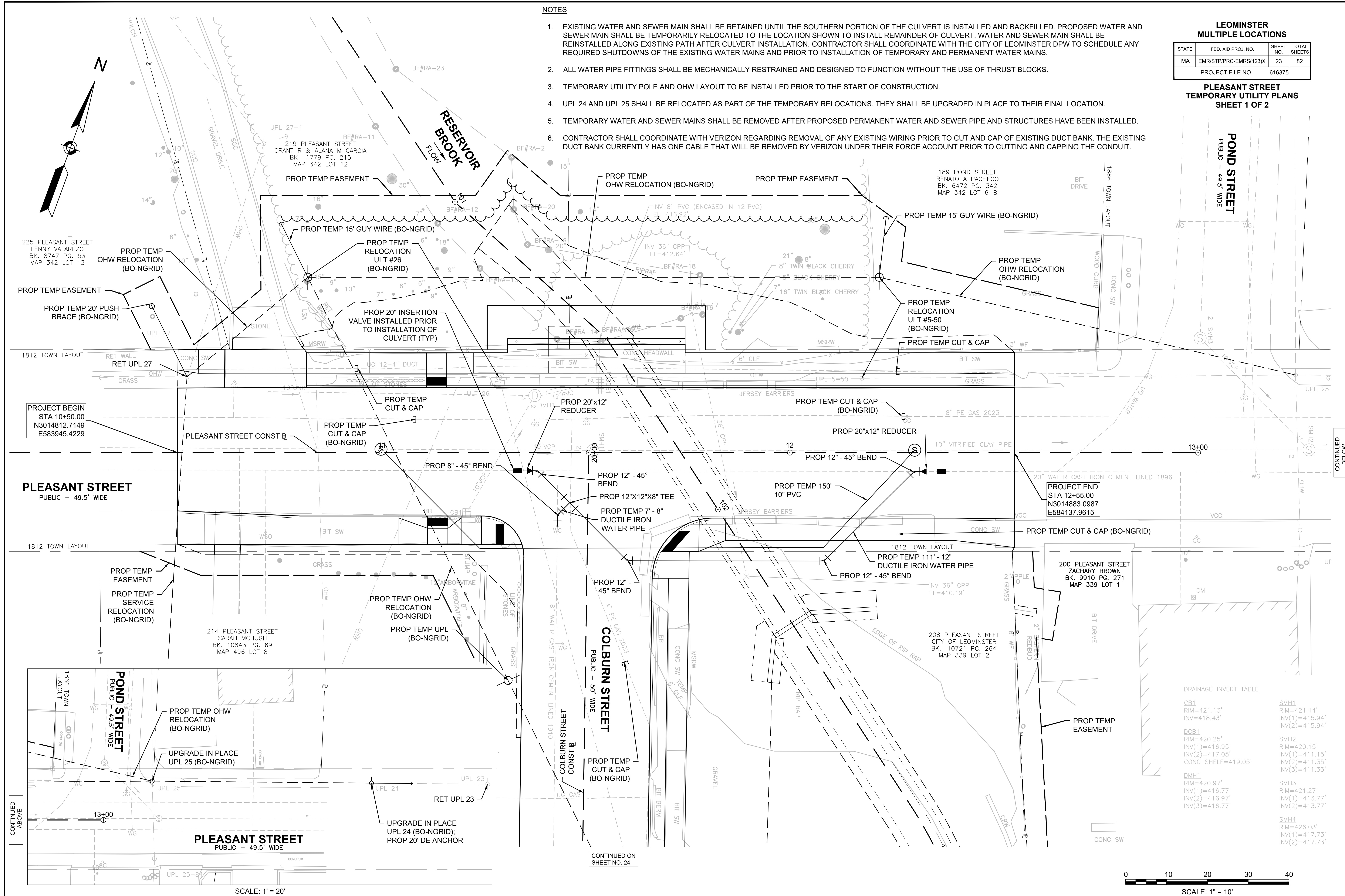
PLEASANT STREET
GRADING PLANS
SHEET 2 OF 2

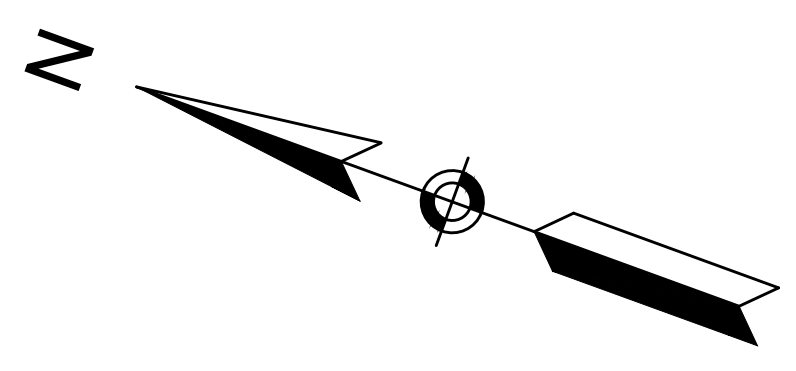


**LEOMINSTER
MULTIPLE LOCATIONS**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	23	82
PROJECT FILE NO.		616375	

PLEASANT STREET
TEMPORARY UTILITY PLANS
SHEET 1 OF 2

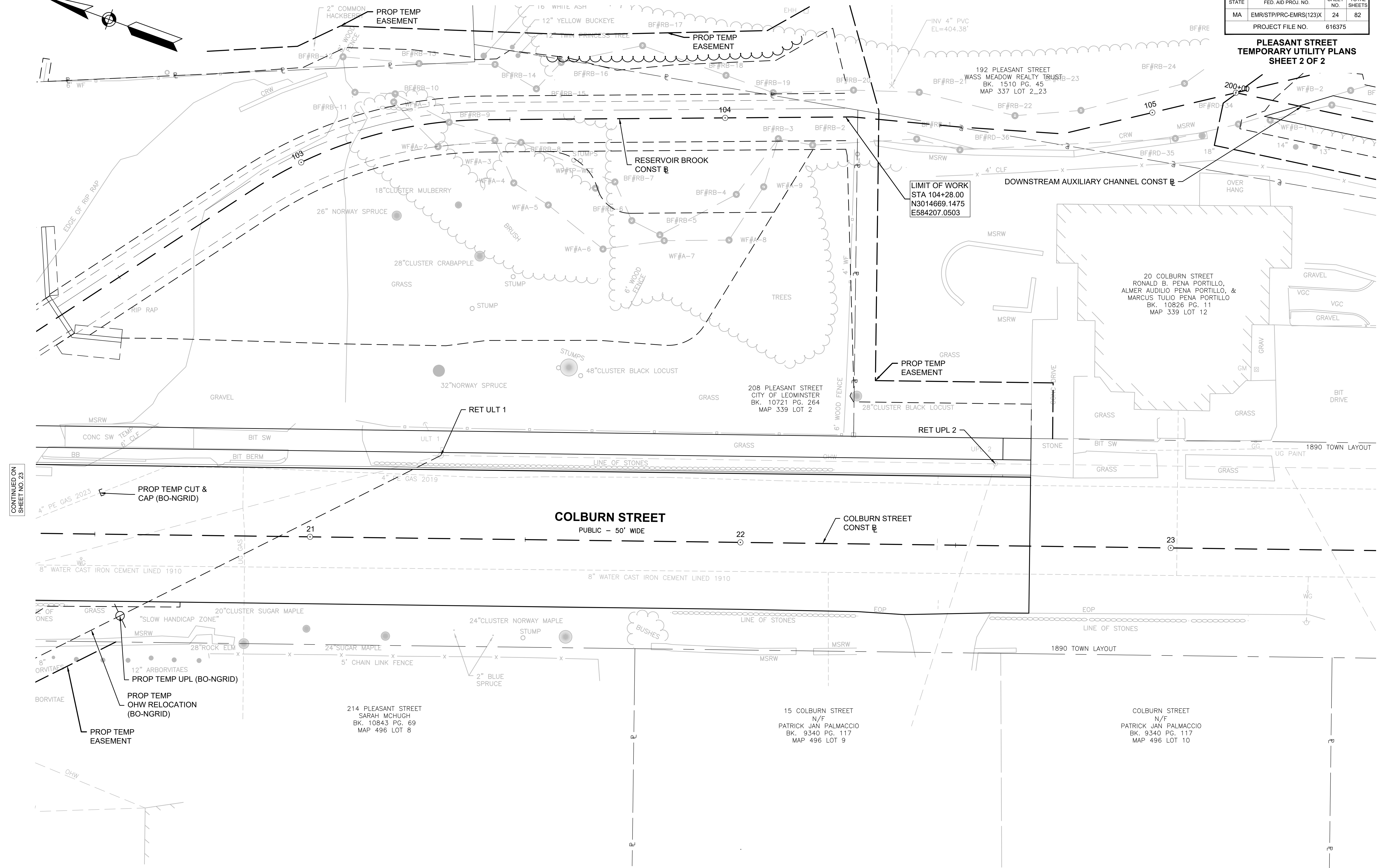




LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	24	82
PROJECT FILE NO.		616375	

PLEASANT STREET
TEMPORARY UTILITY PLANS
SHEET 2 OF 2



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	25	82
PROJECT FILE NO.		616375	

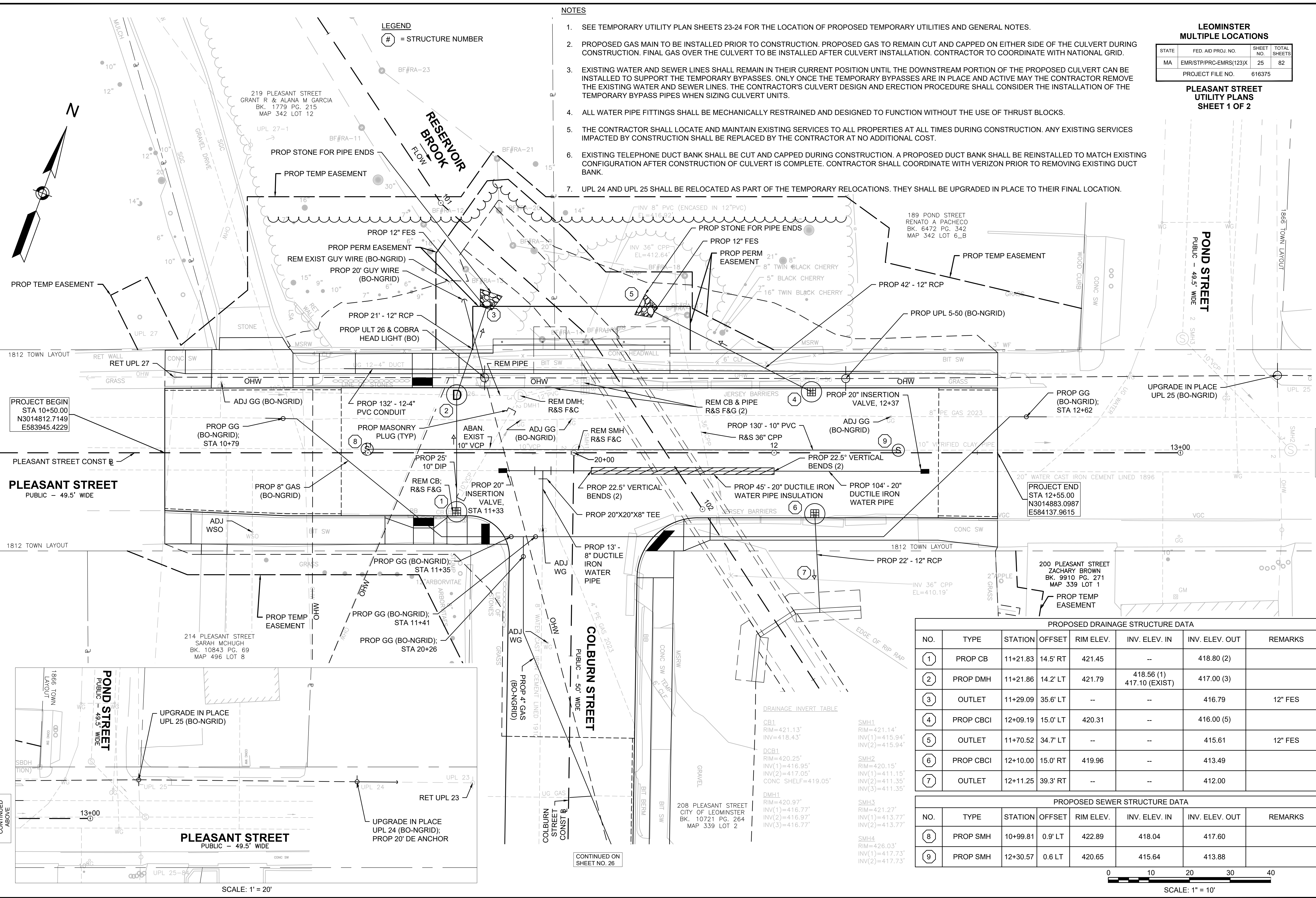
PLEASANT STREET
UTILITY PLANS
SHEET 1 OF 2

NOTES

- SEE TEMPORARY UTILITY PLAN SHEETS 23-24 FOR THE LOCATION OF PROPOSED TEMPORARY UTILITIES AND GENERAL NOTES.
- PROPOSED GAS MAIN TO BE INSTALLED PRIOR TO CONSTRUCTION. PROPOSED GAS TO REMAIN CUT AND CAPPED ON EITHER SIDE OF THE CULVERT DURING CONSTRUCTION. FINAL GAS OVER THE CULVERT TO BE INSTALLED AFTER CULVERT INSTALLATION. CONTRACTOR TO COORDINATE WITH NATIONAL GRID.
- EXISTING WATER AND SEWER LINES SHALL REMAIN IN THEIR CURRENT POSITION UNTIL THE DOWNSTREAM PORTION OF THE PROPOSED CULVERT CAN BE INSTALLED TO SUPPORT THE TEMPORARY BYPASSES. ONLY ONCE THE TEMPORARY BYPASSES ARE IN PLACE AND ACTIVE MAY THE CONTRACTOR REMOVE THE EXISTING WATER AND SEWER LINES. THE CONTRACTOR'S CULVERT DESIGN AND ERECTION PROCEDURE SHALL CONSIDER THE INSTALLATION OF THE TEMPORARY BYPASS PIPES WHEN SIZING CULVERT UNITS.
- ALL WATER PIPE FITTINGS SHALL BE MECHANICALLY RESTRAINED AND DESIGNED TO FUNCTION WITHOUT THE USE OF THRUST BLOCKS.
- THE CONTRACTOR SHALL LOCATE AND MAINTAIN EXISTING SERVICES TO ALL PROPERTIES AT ALL TIMES DURING CONSTRUCTION. ANY EXISTING SERVICES IMPACTED BY CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- EXISTING TELEPHONE DUCT BANK SHALL BE CUT AND CAPPED DURING CONSTRUCTION. A PROPOSED DUCT BANK SHALL BE REINSTALLED TO MATCH EXISTING CONFIGURATION AFTER CONSTRUCTION OF CULVERT IS COMPLETE. CONTRACTOR SHALL COORDINATE WITH VERIZON PRIOR TO REMOVING EXISTING DUCT BANK.
- UPL 24 AND UPL 25 SHALL BE RELOCATED AS PART OF THE TEMPORARY RELOCATIONS. THEY SHALL BE UPGRADED IN PLACE TO THEIR FINAL LOCATION.

LEGEND

⊖ = STRUCTURE NUMBER



PROJECT BEGIN
STA 10+50.00
N3014812.7149
E583945.4229

PROJECT END
STA 12+55.00
N3014883.0987
E584137.9615

PROPOSED DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
①	PROP CB	11+21.83	14.5' RT	421.45	--	418.80 (2)	
②	PROP DMH	11+21.86	14.2' LT	421.79	418.56 (1) 417.10 (EXIST)	417.00 (3)	
③	OUTLET	11+29.09	35.6' LT	--	--	416.79	12" FES
④	PROP CBCI	12+09.19	15.0' LT	420.31	--	416.00 (5)	
⑤	OUTLET	11+70.52	34.7' LT	--	--	415.61	12" FES
⑥	PROP CBCI	12+10.00	15.0' RT	419.96	--	413.49	
⑦	OUTLET	12+11.25	39.3' RT	--	--	412.00	

PROPOSED SEWER STRUCTURE DATA

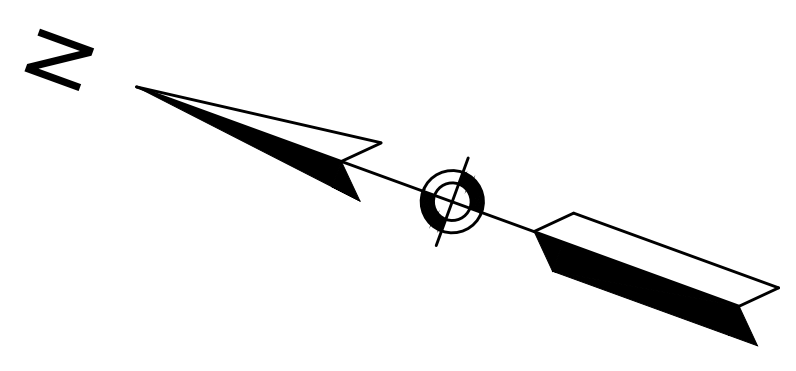
NO.	TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
⑧	PROP SMH	10+99.81	0.9' LT	422.89	418.04	417.60	
⑨	PROP SMH	12+30.57	0.6' LT	420.65	415.64	413.88	

DRAINAGE INVERT TABLE

CB1 RIM=421.13' INV=418.43'	SMH1 RIM=421.14' INV(1)=415.94' INV(2)=415.94'
DCB1 RIM=420.25' INV(1)=416.95' INV(2)=417.05' CONC SHELVE=419.05'	SMH2 RIM=420.15' INV(1)=411.15' INV(2)=411.35' INV(3)=411.35'
DMH1 RIM=420.97' INV(1)=416.77' INV(2)=416.97' INV(3)=416.77'	SMH3 RIM=421.27' INV(1)=413.77' INV(2)=413.77'
	SMH4 RIM=426.03' INV(1)=417.73' INV(2)=417.73'

SCALE: 1" = 20'

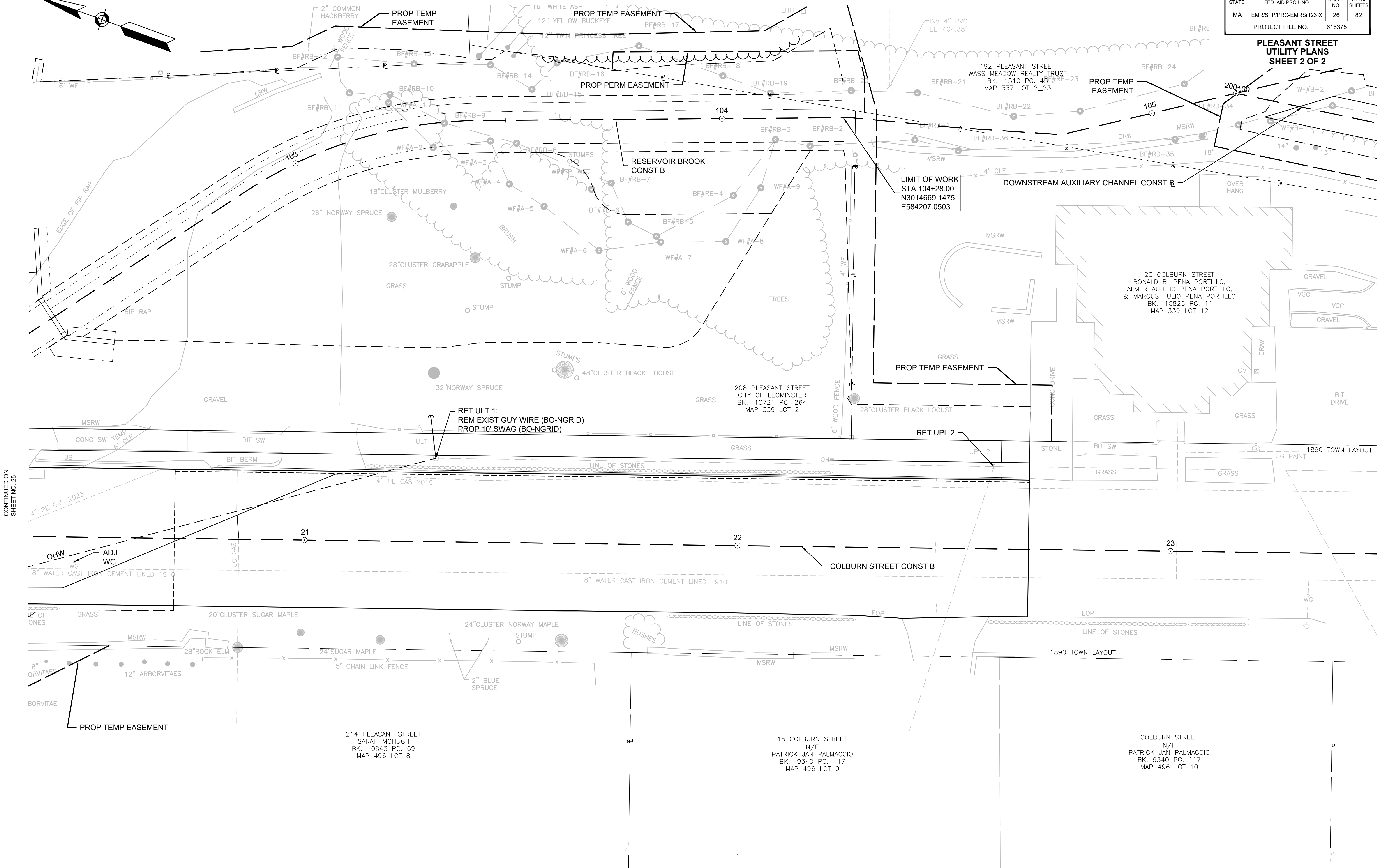
SCALE: 1" = 10'



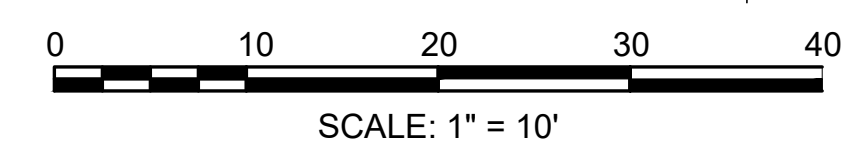
LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	26	82
PROJECT FILE NO.		616375	

PLEASANT STREET
UTILITY PLANS
SHEET 2 OF 2



CONTINUED ON
SHEET NO. 25

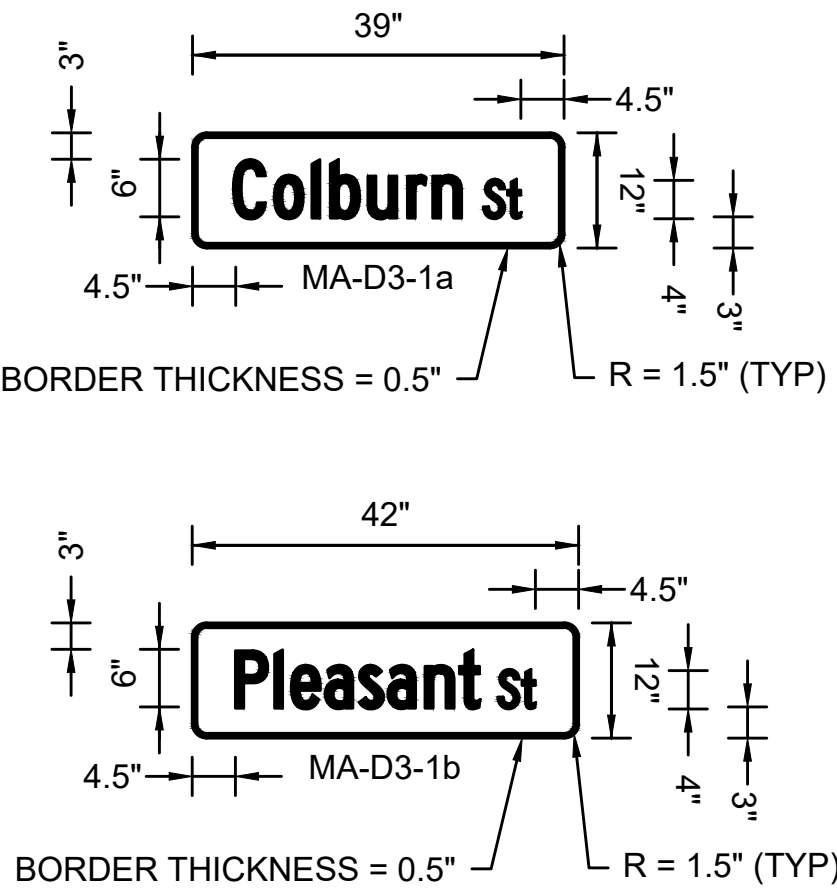


STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	28	82
PROJECT FILE NO.		616375	

**PLEASANT STREET
TRAFFIC SIGN & PAVEMENT MARKING PLANS
SHEET 2 OF 2**



TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF P5 POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
R1-1	30	30		SEE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	RED	WHITE	WHITE	1	6.25	6.25
W11-2	30	30					4	FLUORESCENT YELLOW / GREEN	BLACK	BLACK	3	6.25	25.00
W16-7pL	24	12					2	FLUORESCENT YELLOW / GREEN	BLACK	BLACK	0 MOUNT W/ W11-2	2.00	4.00
W16-7pR	24	12					2	FLUORESCENT YELLOW / GREEN	BLACK	BLACK	0 MOUNT W/ W11-2	2.00	4.00
W16-9P	24	12					1	FLUORESCENT YELLOW / GREEN	BLACK	BLACK	0 MOUNT W/ W11-2	2.00	2.00
MA-D3-1a	39	12	SEE RIGHT	6C / 4D	3 3	N/A	2	BLUE	WHITE	WHITE	0 MOUNT W/ R1-1	3.25	6.50
MA-D3-1b	42	12	SEE RIGHT	6C / 4D	3 3	N/A	2	BLUE	WHITE	WHITE	0 MOUNT W/ R1-1	3.50	7.00



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	30	82
PROJECT FILE NO.		616375	

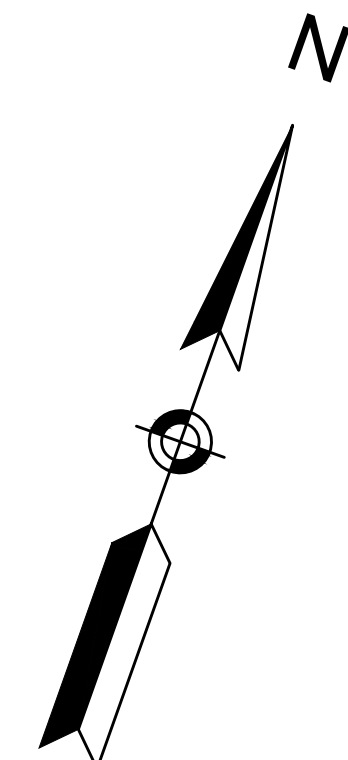
Site plan map showing the intersection of Pleasant Street and S Cotton Street. The map includes the following features:

- Streets:** Pleasant Street, S Cotton Street, Pond Street, Biscuit Hill Drive, Chestnut Street, Colburn Street, Manchester Street, Union Street, Franklin Street, Bennett Place.
- Zoning Designations:** MA-R2-10a, MA-R2-10e, W20-1, MA-R2-10b.
- Scale:** 100' (TYP) scale bar.
- North Arrow:** Indicated in the top left corner.
- Road Sign:** Route 12 sign shown on the right side of the map.
- Shaded Area:** A rectangular area shaded with diagonal lines, located at the intersection of Pleasant Street and S Cotton Street, indicating the proposed development site.
- Other Labels:** "A+B+C = 300' (TYP)" is labeled near the shaded area.

NOTES:

- [illegible]

NOTE:
PEDESTRIANS SHALL NOT BE DETOURED AS PART OF THE TEMPORARY PLEASANT STREET / COLBURN STREET CLOSURE. THE CONTRACTOR SHALL INSTALL R9-9 (SIDEWALK CLOSED) SIGNS ALONG EACH SIDEWALK AT THE CLOSURE POINT / CONSTRUCTION FENCING / BARRIER ALONG PLEASANT STREET IF STAGING ALLOWS. THIS SIGN IS NOT REQUIRED ALONG COLBURN STREET AS SIDEWALK IS NOT CONTINUOUS PAST FIRST RESIDENTIAL DRIVEWAY.



225 PLEASANT STREET
N/F
LENNY VALAREZO
BK. 8747 PG. 53
MAP 342 LOT 13

189 POND STREET
N/F
RENATO A PACHECO
BK. 6472 PG. 342
MAP 342 LOT 6_B

LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	31	82
PROJECT FILE NO.		616375	

PLEASANT STREET
TEMPORARY TRAFFIC CONTROL PLANS
SHEET 2 OF 3

PROP TEMP
CONC BARRIER (TYP)

PROP TYPE III BARRICADES (TYP)

R11-2 ON TYPE III BARRICADE
**ROAD
CLOSED**

WORK ZONE

PROP REFLECTORIZED DRUMS (TYP)

PLEASANT STREET

R11-2 ON TYPE III BARRICADE
**ROAD
CLOSED**

214 PLEASANT STREET
N/F
SARAH MCHUGH
BK. 10843 PG. 69
MAP 496 LOT 8

208 PLEASANT STREET
N/F
CITY OF LEOMINSTER
BK. 10721 PG. 264
MAP 339 LOT 2

200 PLEASANT STREET
N/F
ZACHARY BROWN
BK. 9910 PG. 271
MAP 339 LOT 1

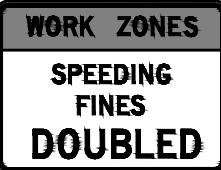
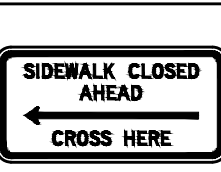
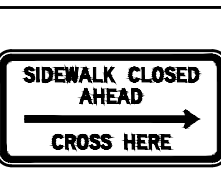
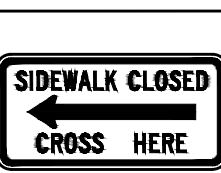
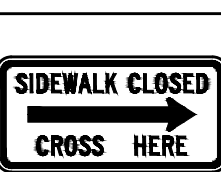
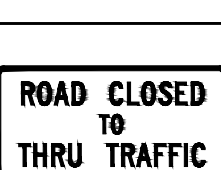
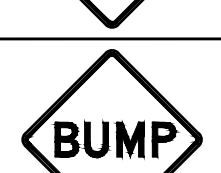
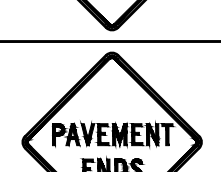
15 COLBURN STREET
N/F
PATRICK JAN PALMACCIO
BK. 9340 PG. 117
MAP 496 LOT 9

COLBURN STREET

PROP TEMPORARY FENCE (TYP)

R11-2 ON TYPE III BARRICADE
**ROAD
CLOSED**

PLEASANT STREET / COLBURN STREET CLOSURE
SCALE: 1" = 20'

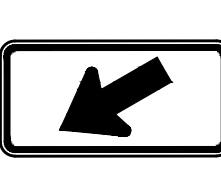
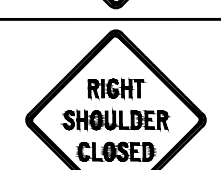
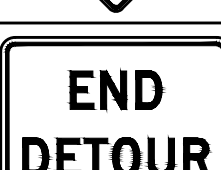
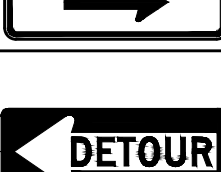
TEMPORARY TRAFFIC CONTROL SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR	BACK-GROUND	LEGEND	BORDER			
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			FLUORESCENT ORANGE WHITE	BLACK	BLACK	5	12.00	60.00
MA-R2-10e	36	48					FLUORESCENT ORANGE WHITE	BLACK	BLACK	4	12.00	48.00
MA-W20-7b	36	36					FLUORESCENT ORANGE	BLACK	BLACK	4	9.00	36.00
R9-9	24	12		SEE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			WHITE	BLACK	BLACK	4	2.00	8.00
R9-11L	24	18					WHITE	BLACK	BLACK	1	3.00	3.00
R9-11R	24	18					WHITE	BLACK	BLACK	1	3.00	3.00
R9-11aL	24	12					WHITE	BLACK	BLACK	1	2.00	2.00
R9-11aR	24	12					WHITE	BLACK	BLACK	1	2.00	2.00
R11-2	48	30					WHITE	BLACK	BLACK	4	10.00	40.00
R11-3a (1500')	60	30					WHITE	BLACK	BLACK	1	12.50	12.50
R11-4	60	30					WHITE	BLACK	BLACK	1	12.50	12.50
W1-4L	36	36					FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W1-4R	36	36					FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W5-1	36	36					FLUORESCENT ORANGE	BLACK	BLACK	2	9.00	18.00
W8-1	36	36					FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W8-3	36	36					FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W8-15	36	36					FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W11-2	30	30					FLUORESCENT YELLOW/GREEN	BLACK	BLACK	4	6.25	25.00
W13-1p	24	24					FLUORESCENT ORANGE	BLACK	BLACK	2	4.00	8.00

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	32	82

PROJECT FILE NO. 616375

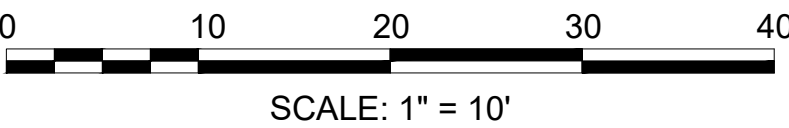
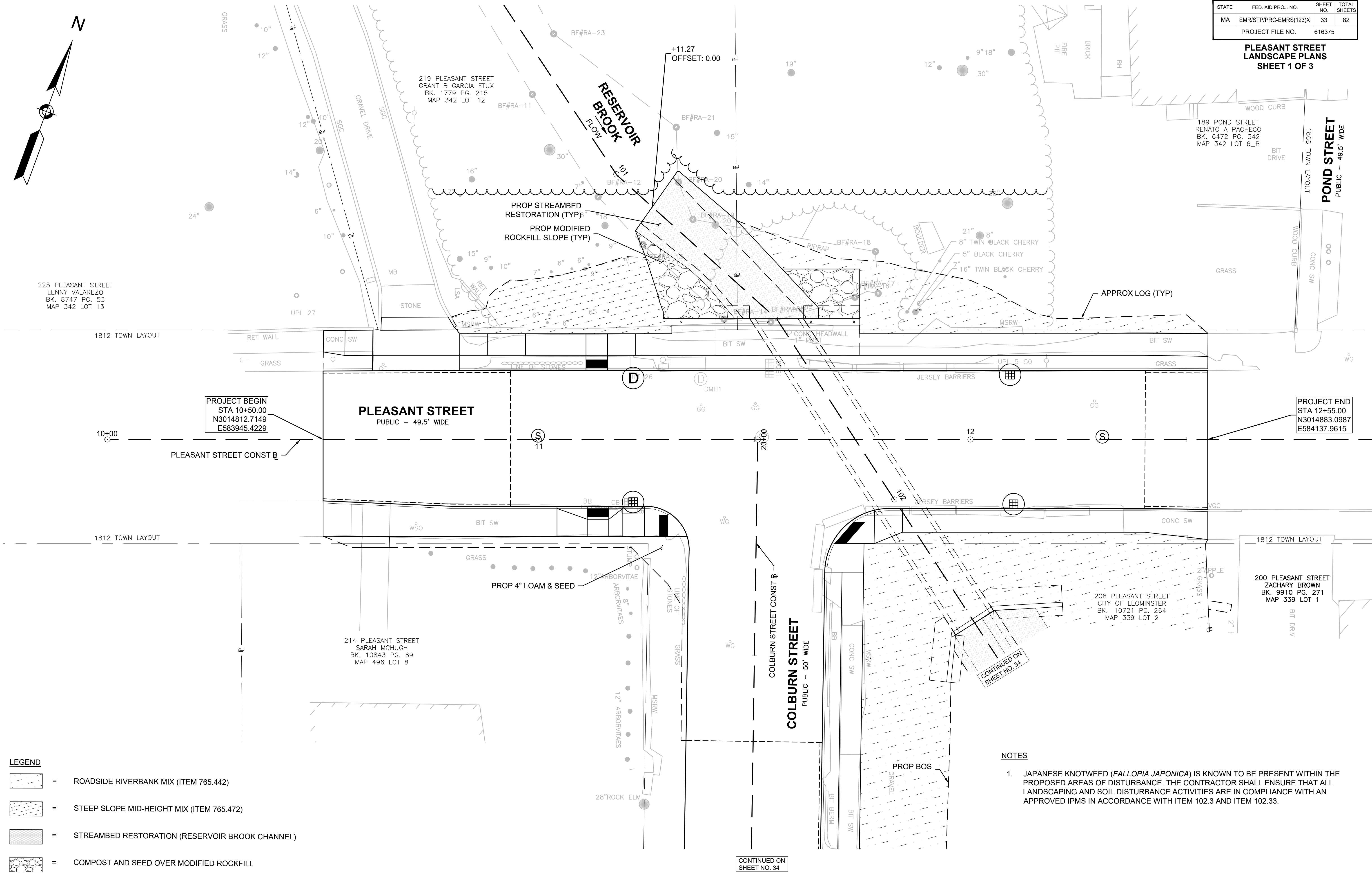
PLEASANT STREET
TEMPORARY TRAFFIC CONTROL PLANS
SHEET 3 OF 3

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR	BACK-GROUND	LEGEND	BORDER			
W16-7pL	24	12		SEE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			FLUORESCENT YELLOW/GREEN	BLACK	BLACK	4	2.00	8.00
W16-8P	22	14					FLUORESCENT ORANGE	BLACK	BLACK	16	2.14	34.22
W16-9P	24	12					FLUORESCENT YELLOW / GREEN	BLACK	BLACK	1	2.00	2.00
W20-1	36	36					FLUORESCENT ORANGE	BLACK	BLACK	5	9.00	45.00
W20-2	36	36					FLUORESCENT ORANGE	BLACK	BLACK	5	9.00	45.00
W20-4	36	36					FLUORESCENT ORANGE	BLACK	BLACK	3	9.00	27.00
W21-5a	36	36					FLUORESCENT ORANGE	BLACK	BLACK	1	9.00	9.00
M4-8a	24	18					FLUORESCENT ORANGE	BLACK	BLACK	2	3.00	6.00
M4-9L	30	24					FLUORESCENT ORANGE	BLACK	BLACK	4	5.00	20.00
M4-9R	30	24					FLUORESCENT ORANGE	BLACK	BLACK	4	5.00	20.00
M4-9V	30	24					FLUORESCENT ORANGE	BLACK	BLACK	2	5.00	10.00
M4-9aL	30	24					FLUORESCENT ORANGE	BLACK	BLACK	2	5.00	10.00
M4-9aR	30	24					FLUORESCENT ORANGE	BLACK	BLACK	2	5.00	10.00
M4-9bL	30	24					FLUORESCENT ORANGE	BLACK	BLACK	2	5.00	10.00
M4-9bR	30	24					FLUORESCENT ORANGE	BLACK	BLACK	2	5.00	10.00
M4-10L	48	18					FLUORESCENT ORANGE	BLACK	BLACK	1	6.00	6.00

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	33	82
PROJECT FILE NO.		616375	

PLEASANT STREET
LANDSCAPE PLANS
SHEET 1 OF 3



616375_HD19_LANDSCAPE PLANS_PLEASANT.DWG Plotted on 20-Aug-2026 8:17 AM

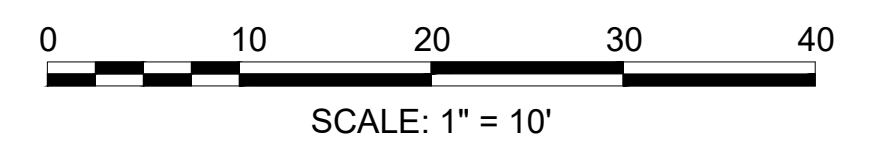


[illegible]CONTINUED ON
SHEET NO. 34

LIMIT OF WORK
STA 24+75.00
N3014398.7281
E584196.2646



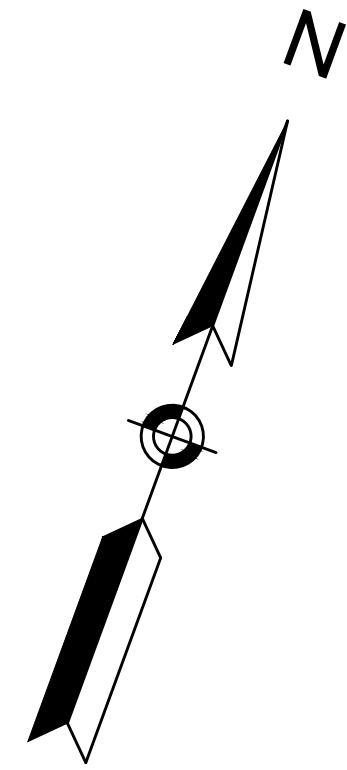
WETLAND SEED SEASONALLY FLOODED MIX (ITEM 765.554)



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	36	82
PROJECT FILE NO.		616375	

PLEASANT STREET
EROSION & SEDIMENT CONTROL PLANS
SHEET 1 OF 3



225 PLEASANT STREET
LENNY VALAREZO
BK. 8747 PG. 53
MAP 342 LOT 13

219 PLEASANT STREET
GRANT R & ALANA M GARCIA
BK. 1779 PG. 215
MAP 342 LOT 12

189 POND STREET
RENATO A PACHECO
BK. 6472 PG. 342
MAP 342 LOT 6_8

200 PLEASANT STREET
ZACHARY BROWN
BK. 9910 PG. 271
MAP 339 LOT 1

214 PLEASANT STREET
SARAH MCHUGH
BK. 10843 PG. 69
MAP 496 LOT 8

PROJECT BEGIN
STA 10+50.00
N3014812.7149
E583945.4229

PROJECT END
STA 12+55.00
N3014883.0987
E584137.9615

LEGEND

= JUTE MESH

= STREAMBED RESTORATION

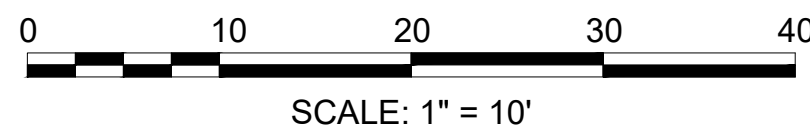
= MODIFIED ROCKFILL

= SEDIMENT CONTROL BARRIER

- NOTES
1.

SEE CONTROL OF WATER PLANS ON SHEET 49. CONTROL OF WATER SHALL BE INSTALLED PER ITEM 991.1.
2.

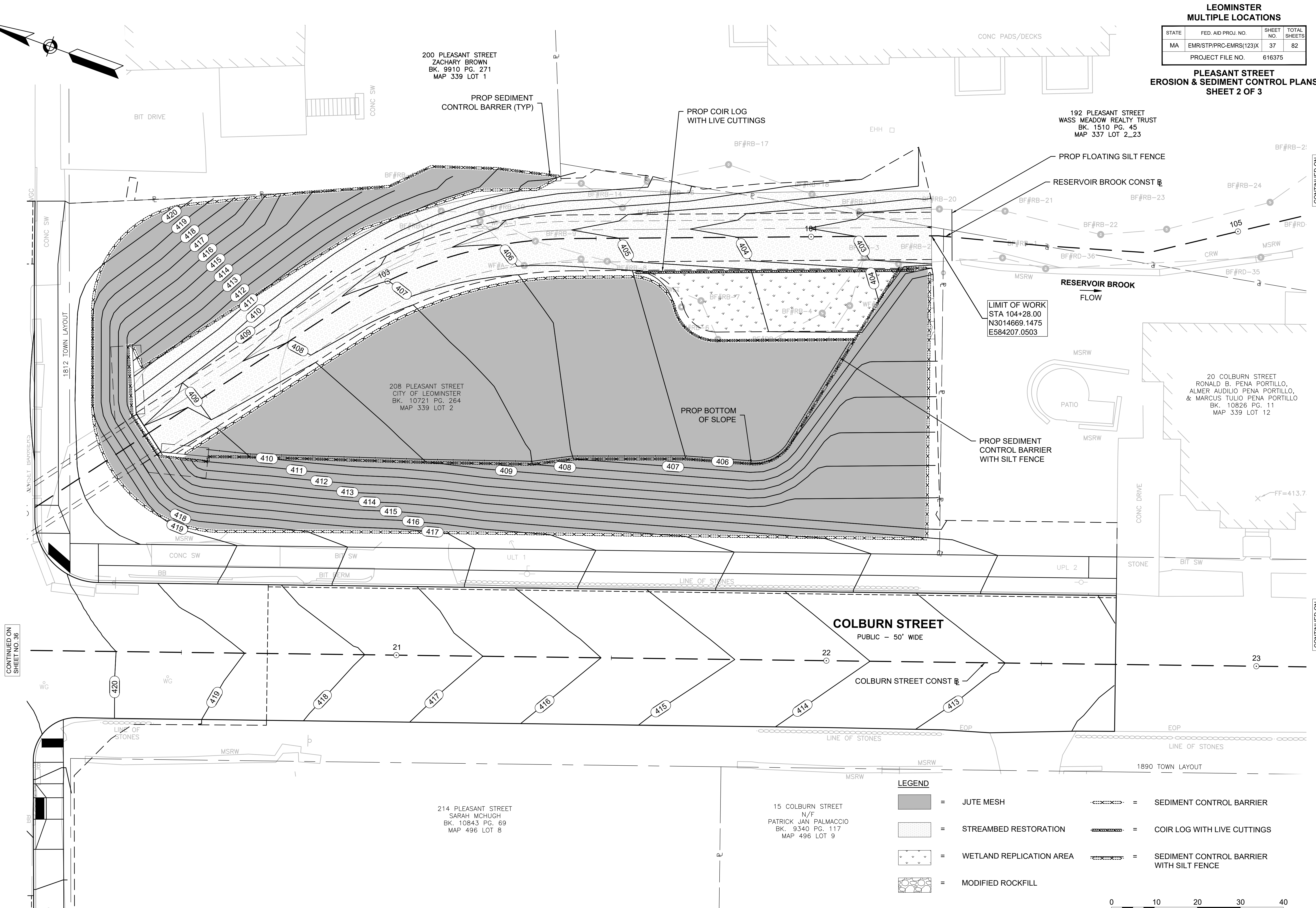
FLOATING SILT FENCE SHALL BE INSTALLED PER ITEM 697.2.



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	37	82
PROJECT FILE NO.		616375	

PLEASANT STREET
EROSION & SEDIMENT CONTROL PLANS
SHEET 2 OF 3



LEGEND

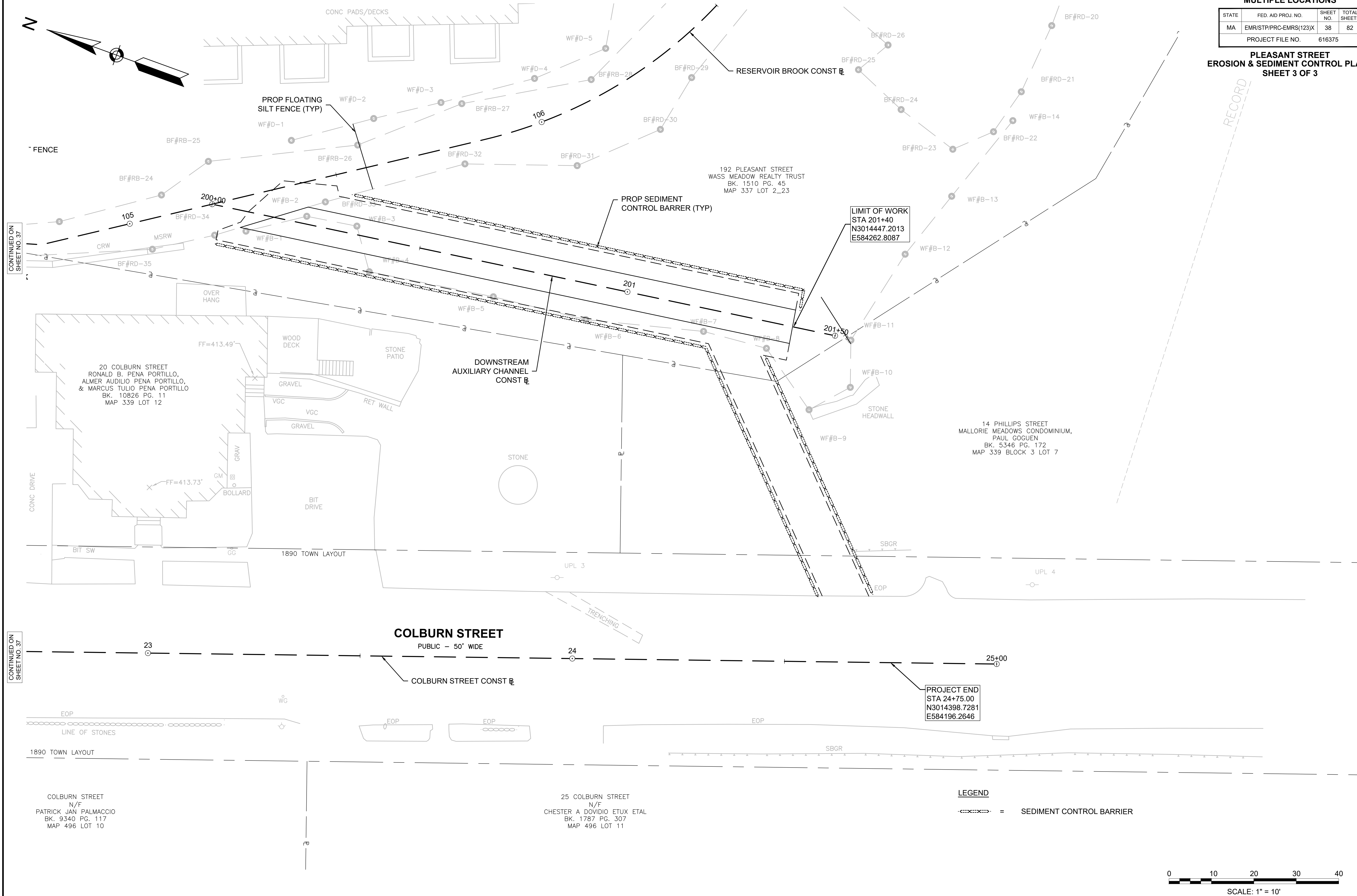
[Symbol]	JUTE MESH	[Symbol]	SEDIMENT CONTROL BARRIER
[Symbol]	STREAMBED RESTORATION	[Symbol]	COIR LOG WITH LIVE CUTTINGS
[Symbol]	WETLAND REPLICATION AREA	[Symbol]	SEDIMENT CONTROL BARRIER WITH SILT FENCE
[Symbol]	MODIFIED ROCKFILL		

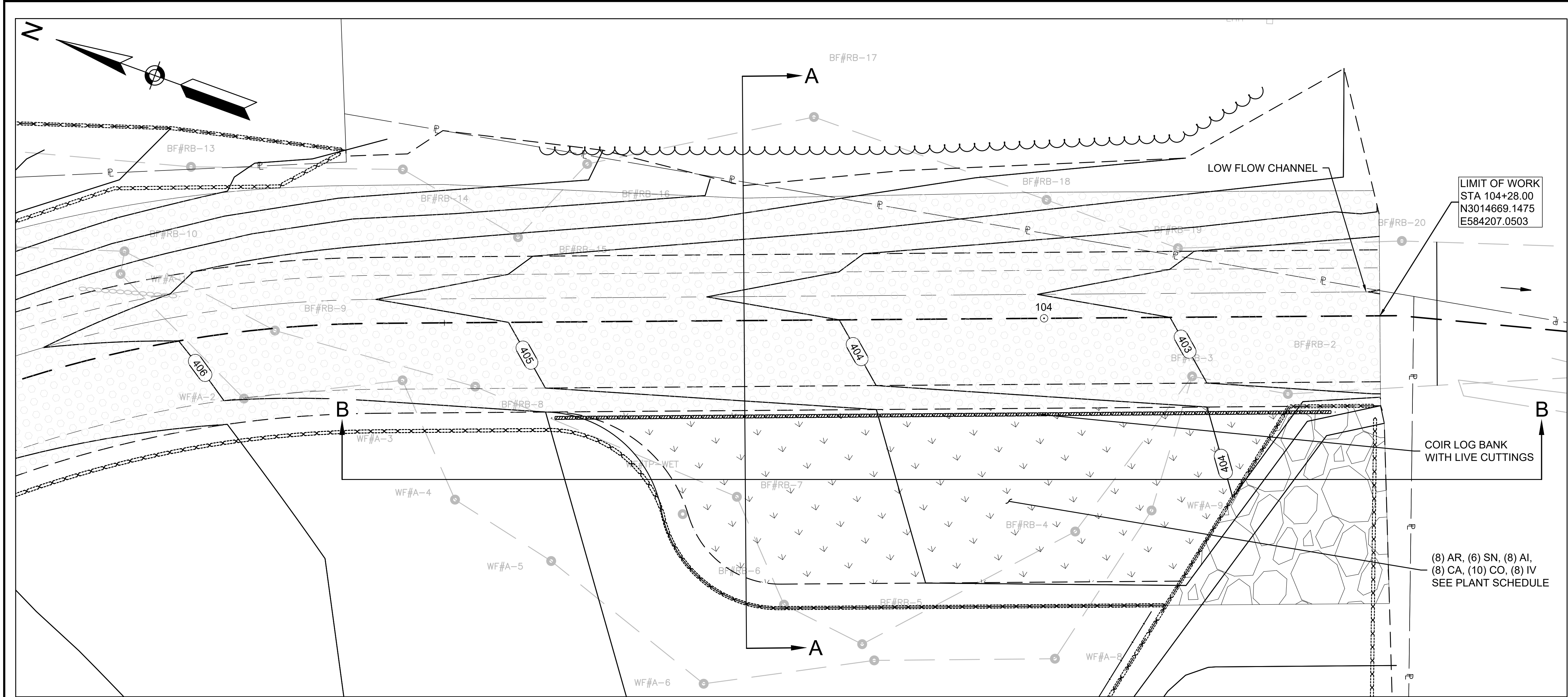
0 10 20 30 40
SCALE: 1" = 10'

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	38	82
PROJECT FILE NO.		616375	

PLEASANT STREET
EROSION & SEDIMENT CONTROL PLANS
SHEET 3 OF 3

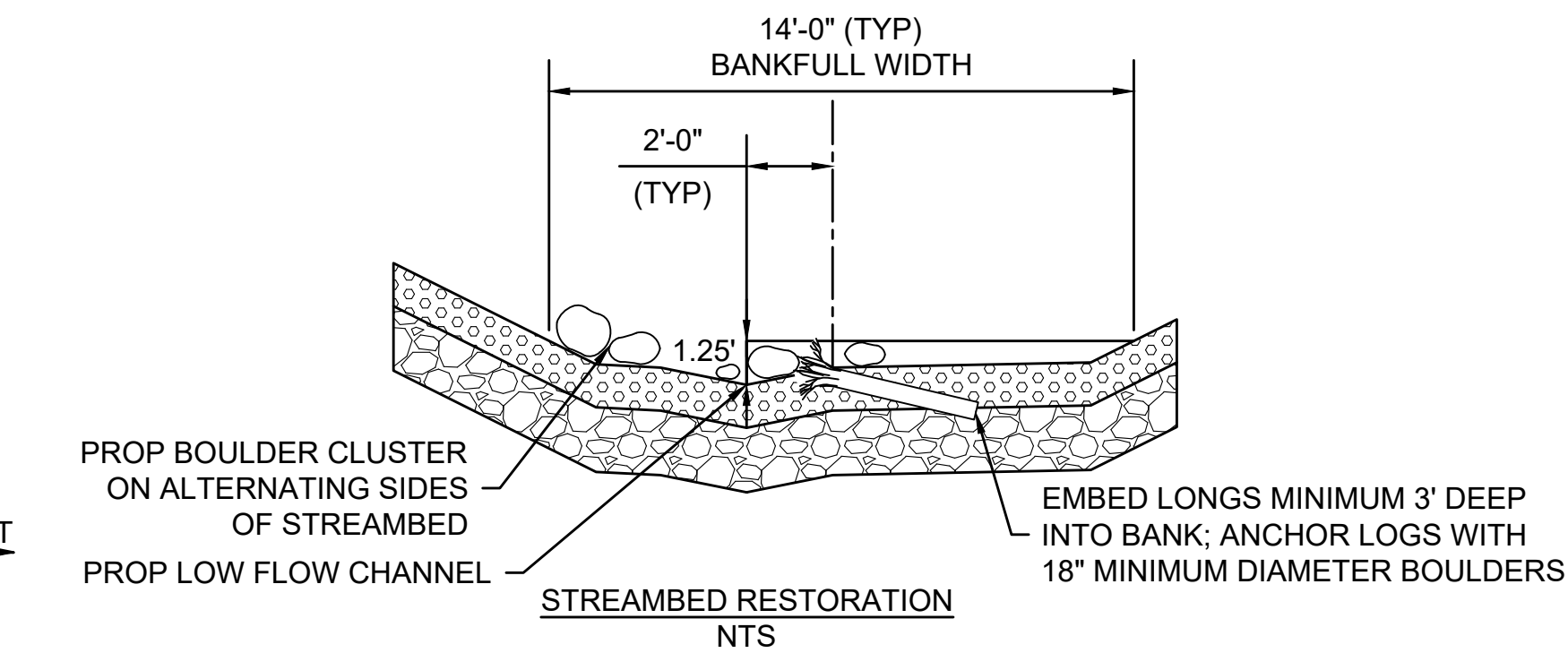




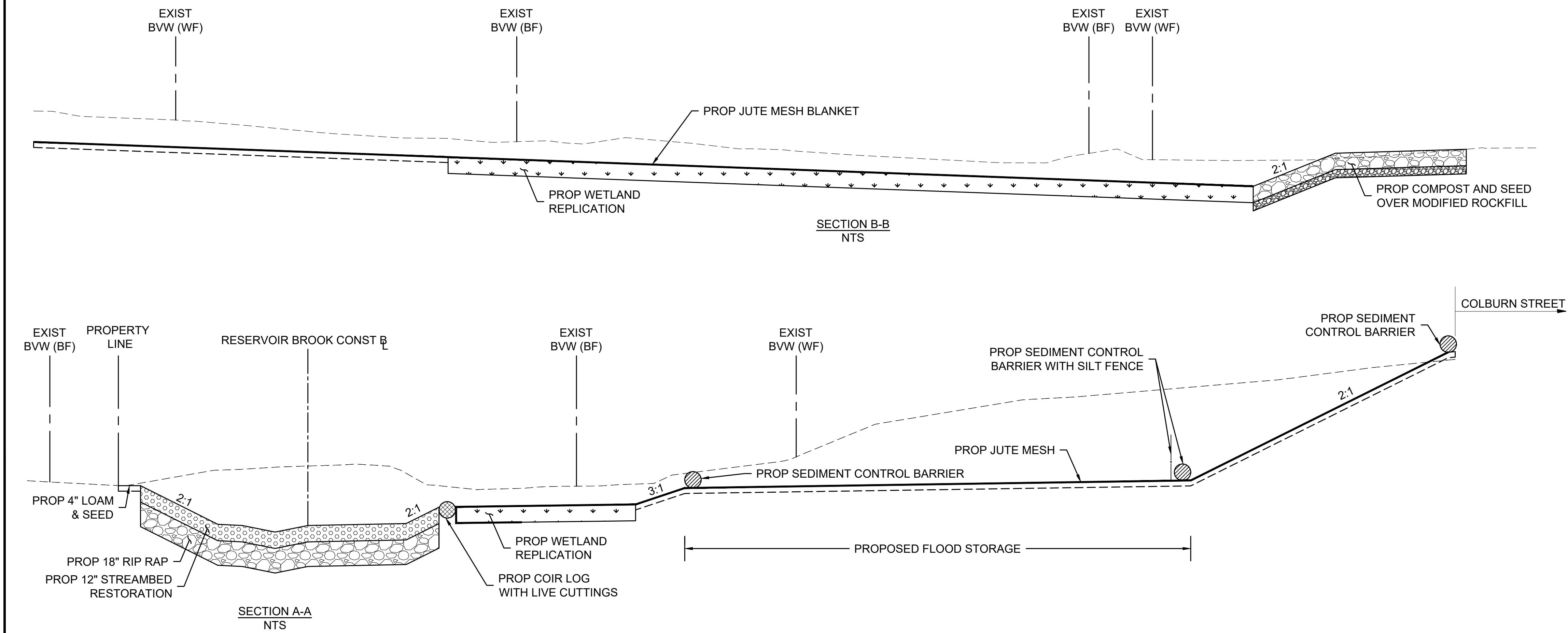
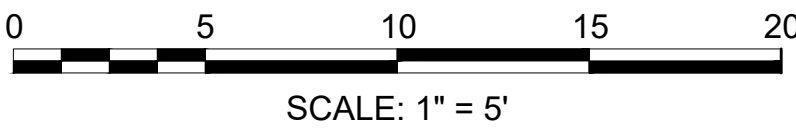
LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	39	82
PROJECT FILE NO.		616375	

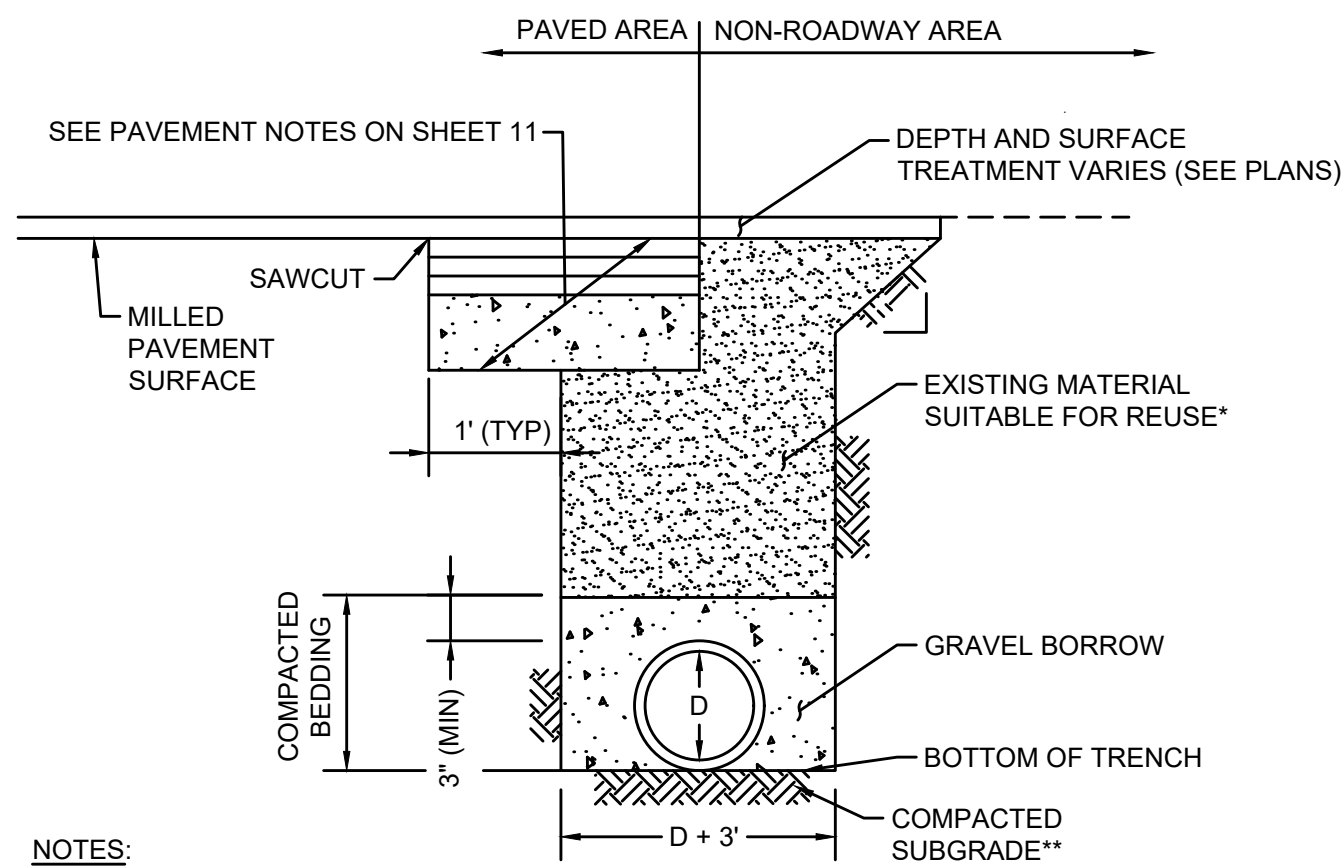
PLEASANT STREET WETLAND REPLICATION & PLANTING PLAN			
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- NOTES:
- WETLAND PLANTS ARE TO BE LAID OUT BY THE WETLAND SPECIALIST.
 - LIVE CUTTING WILLOW STAKES WILL BE PLACED IN THE COIR LOG BANK AT 3-5 FOOT SPACING ACROSS THE REPLICATION AREA BANK.
 - WETLAND REPLICATION AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 755.35 OF THE SPECIAL PROVISIONS. EXCAVATE EXISTING SOIL TO TARGET ELEVATIONS. IF EXISTING SUBSOIL IS DETERMINED TO BE UNSUITABLE FOR PLANTING, EXCAVATE TO DEPTH NECESSARY FOR PLANTING AND BACKFILL WITH APPROPRIATE MANUFACTURED SOIL. BACKFILL SHALL BE INSTALLED AS PER MASSDOT STANDARD SPECIFICATIONS.
 - SET LOW FLOW CHANNEL WIDTH TO APPROXIMATELY $\frac{1}{3}$ THE BANKFULL WIDTH.
 - ALIGNMENT OF THE LOW FLOW CHANNEL TO BE CONFIRMED IN THE FIELD DURING CONSTRUCTION BY THE GEOMORPHOLOGIST.
 - PROPOSED CHANNEL TO BE CONSTRUCTED USING NATIVE CHANNEL BED MATERIAL IN ACCORDANCE WITH THE STREAMBED RESTORATION SPECIFICATION AND IN COORDINATION WITH THE GEOMORPHOLOGIST. MAINTAIN ROUGH AND IRREGULAR CROSS SECTION.
 - CHANNEL BED SHOULD BE ROUGH AND "MESSY". WOOD TO BE EMBEDDED IN SEDIMENT PER GEOMORPHOLOGIST'S DIRECTION IN FIELD TO CREATE HABITAT FEATURES. PLACE NATIVE BOULDERS IN CHANNEL.
 - ADD A 6" MINIMUM LAYER OF RIVER GRAVEL ACROSS CHANNEL BOTTOM IF MUCK SOILS ARE UNCOVERED WITHIN THE EXCAVATED CHANNEL. RIVER GRAVEL TO BE INCIDENTAL TO ITEM 983.521.
 - JAPANESE KNOTWEED (*FALLOPIA JAPONICA*) IS KNOWN TO BE PRESENT WITHIN THE PROPOSED AREAS OF DISTURBANCE. THE CONTRACTOR SHALL ENSURE THAT ALL LANDSCAPING AND SOIL DISTURBANCE ACTIVITIES ARE IN COMPLIANCE WITH AN APPROVED IPMS IN ACCORDANCE WITH ITEM 102.3 AND ITEM 102.33.
 - CONTRACTOR SHALL ANTICIPATE INVASIVE SPECIES MONITORING AND MANAGEMENT UNDER AN APPROVED IPMS IN ACCORDANCE WITH ITEM 102.3, AND ITEM 102.33 WILL EXTEND THROUGH THE DURATION OF THE MONITORING PROVISIONS OF ITEM 755.35, ITEM 755.45, AND ITEM 755.76.
 - CONTRACTOR SHALL USE TIMBER MATTING IN ACCORDANCE WITH ITEM 767.91 FOR WORK WITHIN THE WETLAND AREAS.



Plant Schedule				
Symbol	Quantity	Botanical Name	Common Name	Size
Trees				
AR	8	ACER RUBRUM	RED MAPLE	3'-4' HT
SN	6	SALIX NIGRA	BLACK WILLOW	3'-4' HT
Shrubs				
AI	8	ALNUS INCANA	SPECKLED ALDER	2'-3' HT
CA	8	CORNUS AMOMUM	SILKY DOGWOOD	2'-3' HT
CO	10	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	18"-24" HT
IV	8	ILEX VERTICILLATA	COMMON WINTERBERRY	18"-24" HT



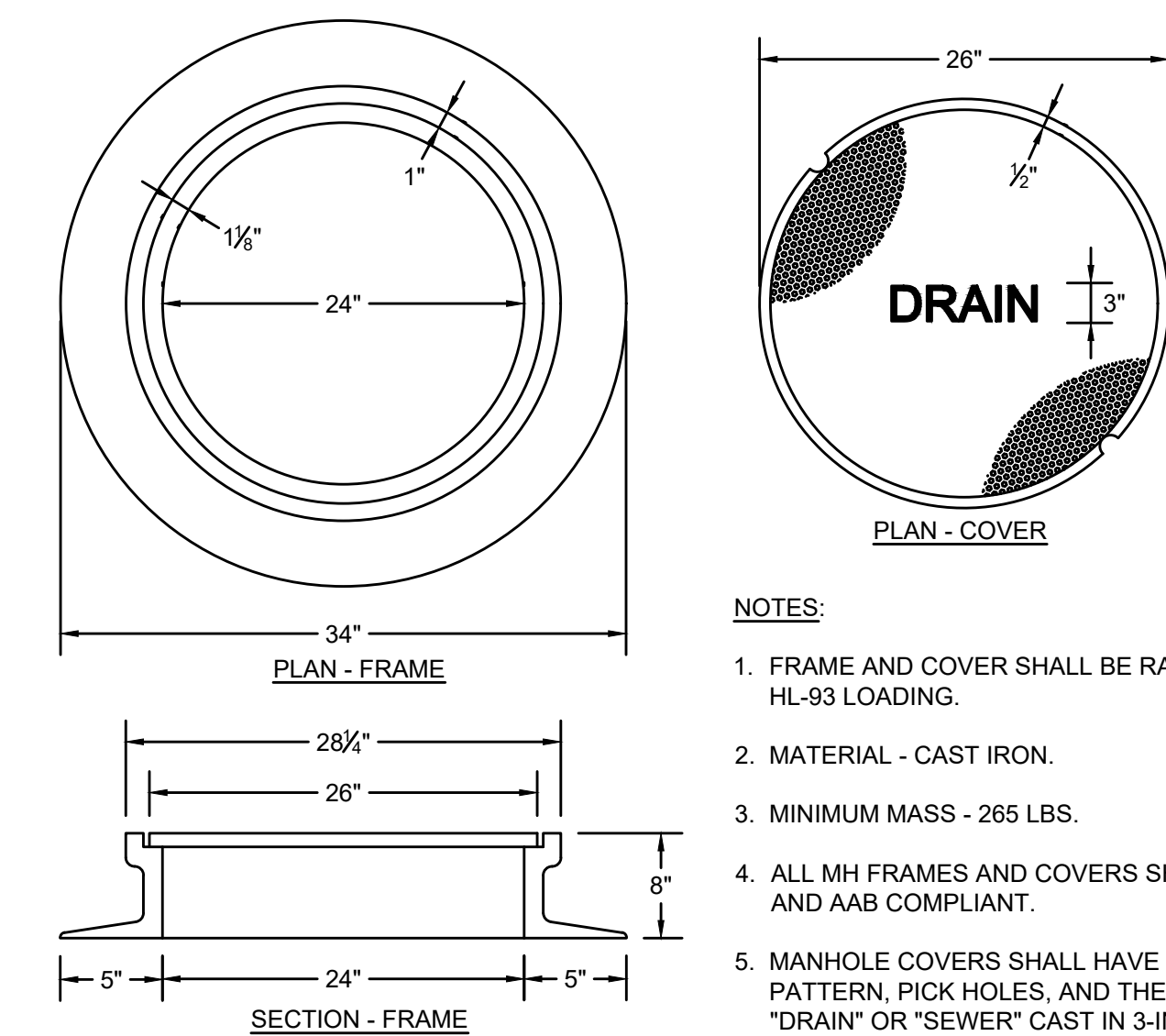


NOTES:

* EXISTING MATERIAL OBTAINED FROM EXCAVATION THAT IS DETERMINED TO BE SUITABLE, AND APPROVED BY THE ENGINEER SHALL BE USED. BACKFILL SHALL BE PLACED IN LAYERS NO MORE THAN 6" IN DEPTH AND THOROUGHLY COMPACTED. BACKFILLING TO A POINT 2' OVER THE PIPE SHALL CONTAIN NO STONES LARGER THAN 3".

**SOFT OR UNSUITABLE MATERIAL EXISTING BELOW THE REQUIRED BEDDING GRADE SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SAND, GRAVEL, CRUSHED STONE OR OTHER SUITABLE MATERIAL AND THOROUGHLY COMPACTED.

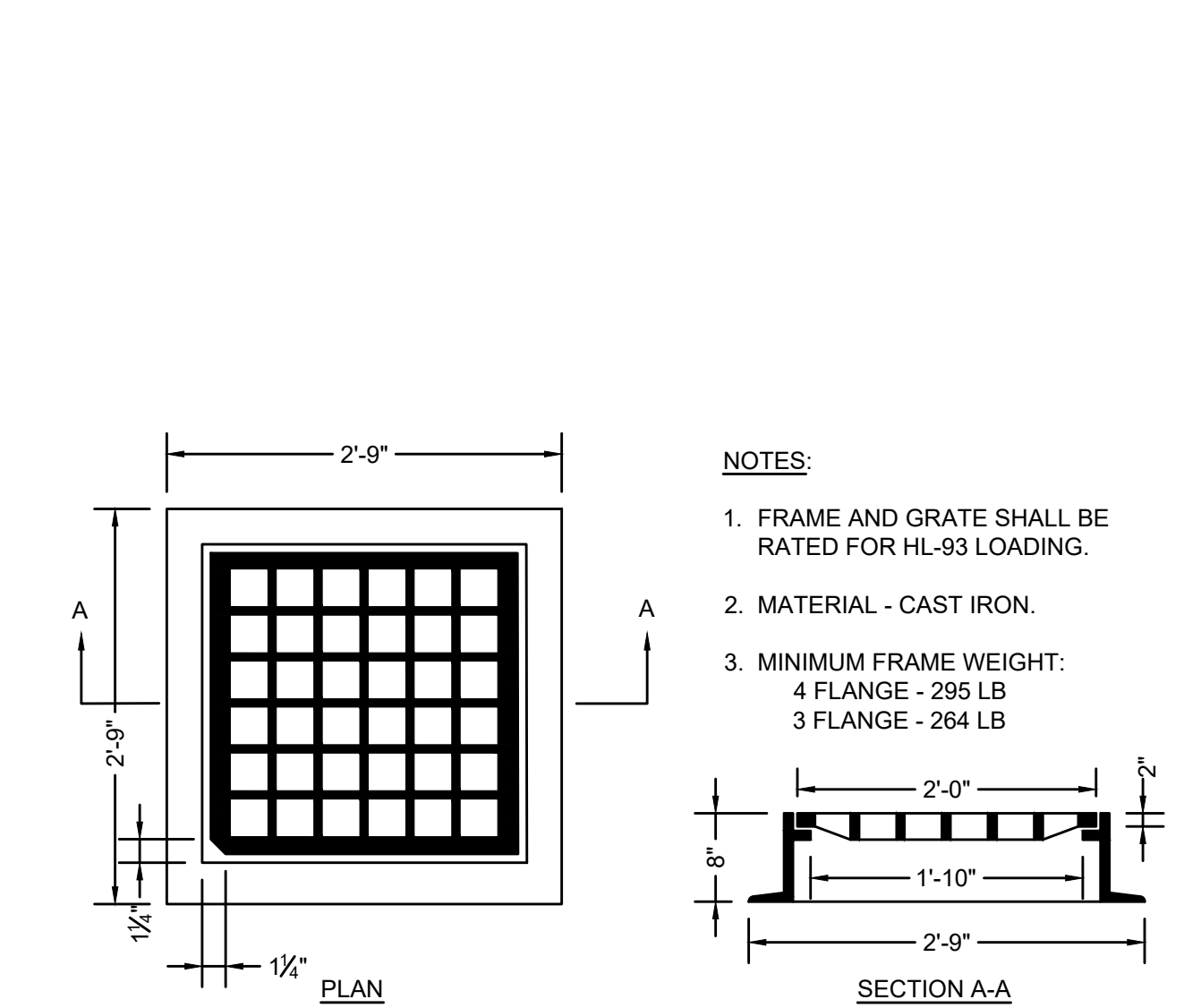
DRAINAGE TRENCH
N.T.S.



NOTES:

1. FRAME AND COVER SHALL BE RATED FOR HL-93 LOADING.
2. MATERIAL - CAST IRON.
3. MINIMUM MASS - 265 LBS.
4. ALL MH FRAMES AND COVERS SHALL BE ADA AND AAB COMPLIANT.
5. MANHOLE COVERS SHALL HAVE A DIAMOND PATTERN, PICK HOLES, AND THE WORD "DRAIN" OR "SEWER" CAST IN 3-INCH LETTERS.

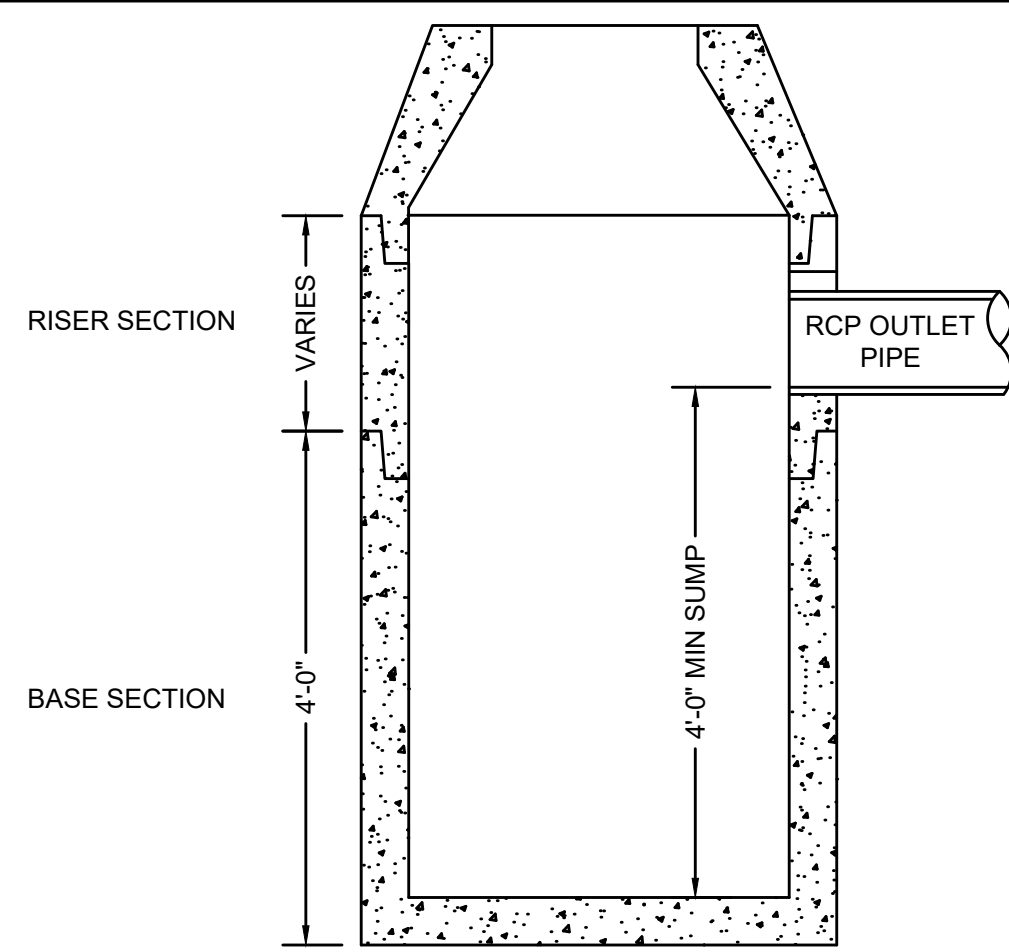
MANHOLE FRAME & COVER (MUNICIPAL STANDARD)
N.T.S.



NOTES:

1. FRAME AND GRATE SHALL BE RATED FOR HL-93 LOADING.
2. MATERIAL - CAST IRON.
3. MINIMUM FRAME WEIGHT:
4 FLANGE - 295 LB
3 FLANGE - 264 LB

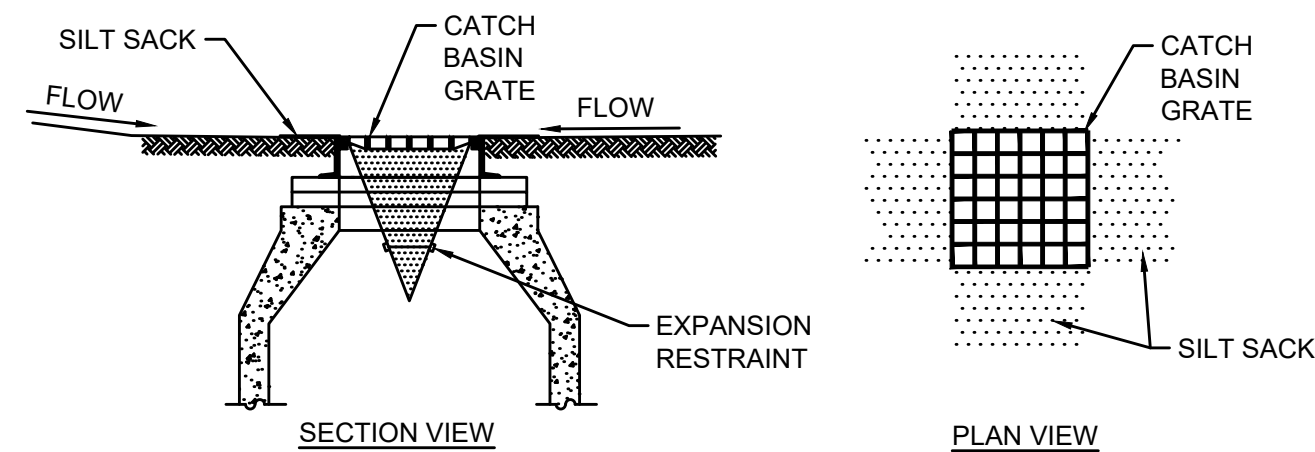
CATCH BASIN FRAME & GRATE (MUNICIPAL STANDARD)
N.T.S.



NOTE:

ALL CATCH BASINS SHALL CONFORM TO MASSDOT CONSTRUCTION STANDARD E 201.4.0 EXCEPT FOR 4' SUMP DEPTH AS SHOWN

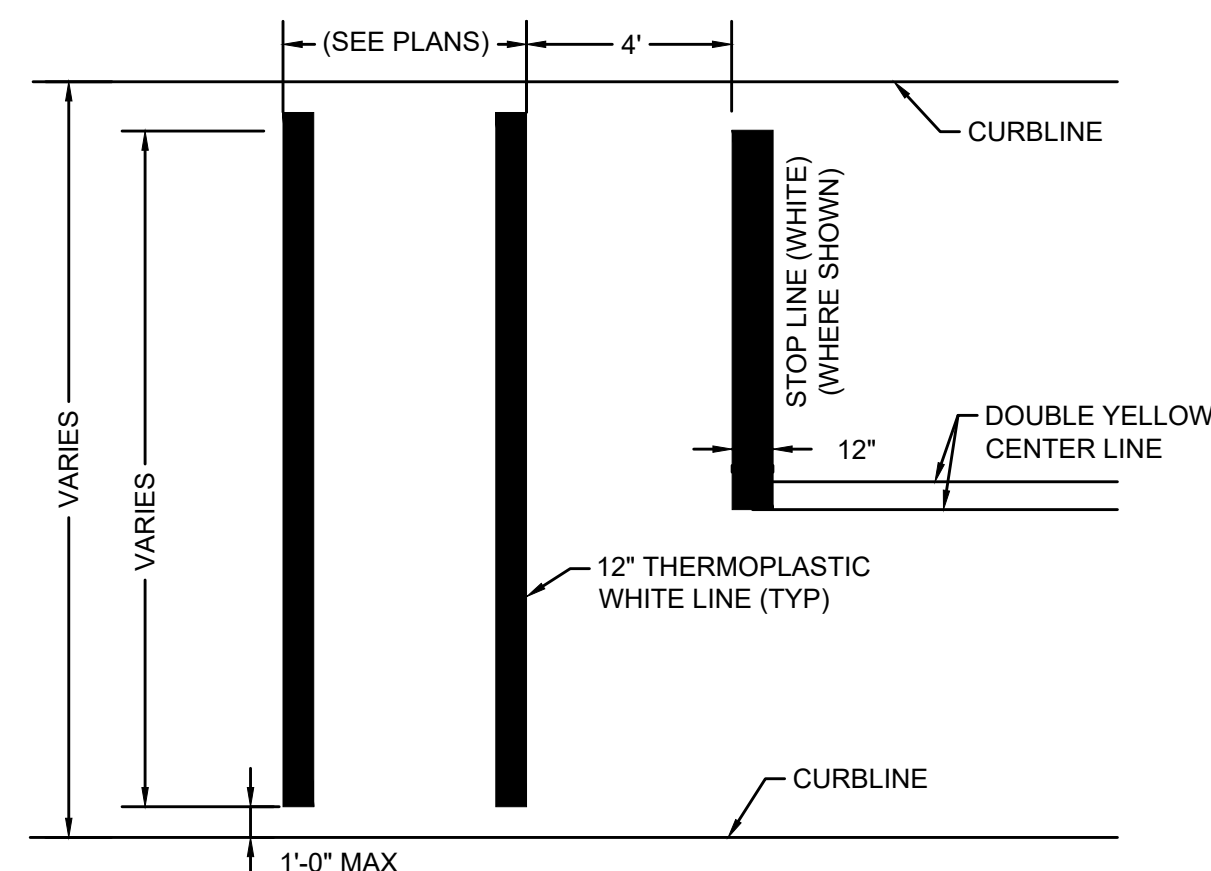
DEEP SUMP CATCH BASIN
N.T.S.



NOTES:

1. INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

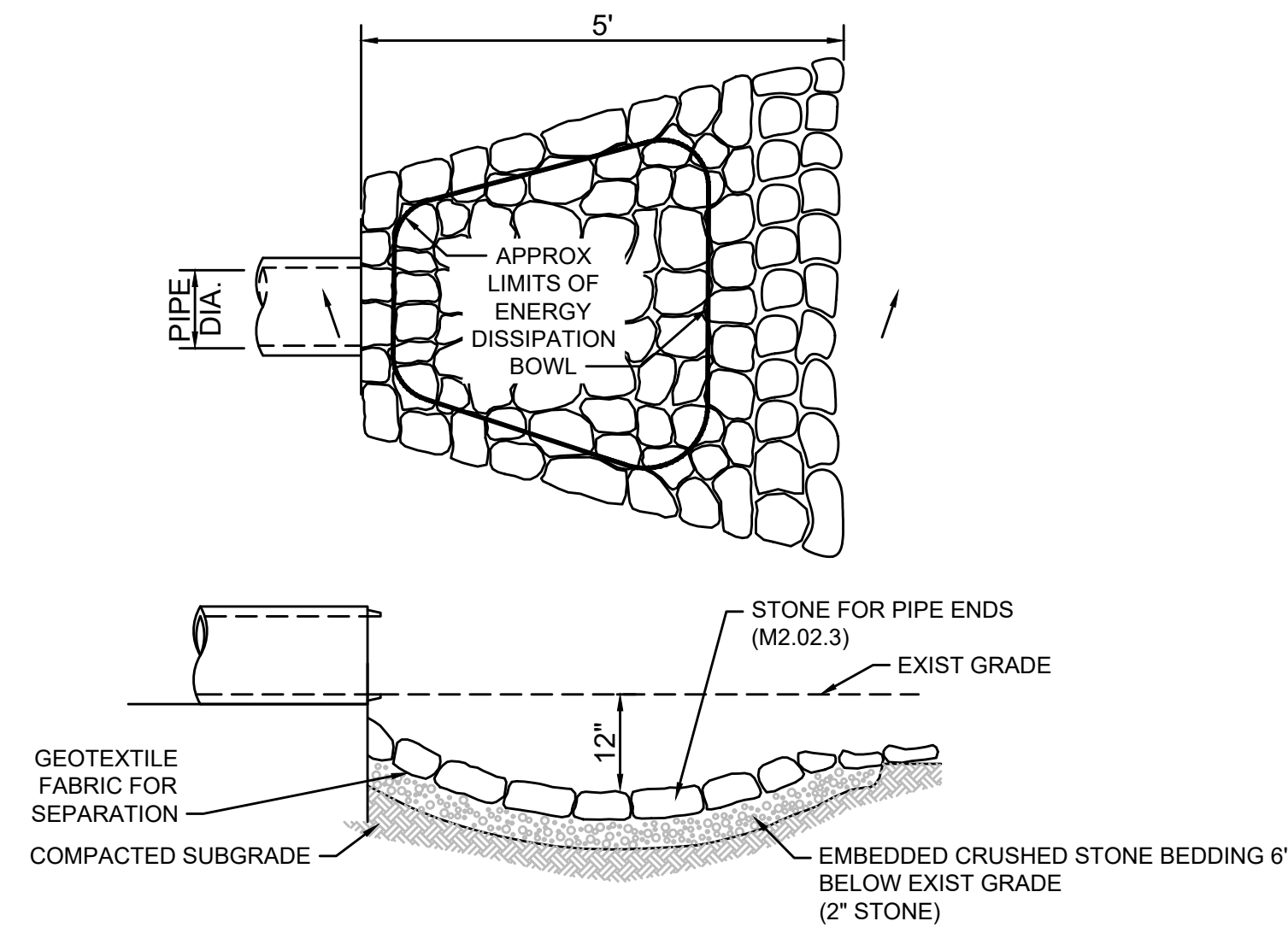
INLET PROTECTION SILT SACK IN CATCH BASIN
N.T.S.



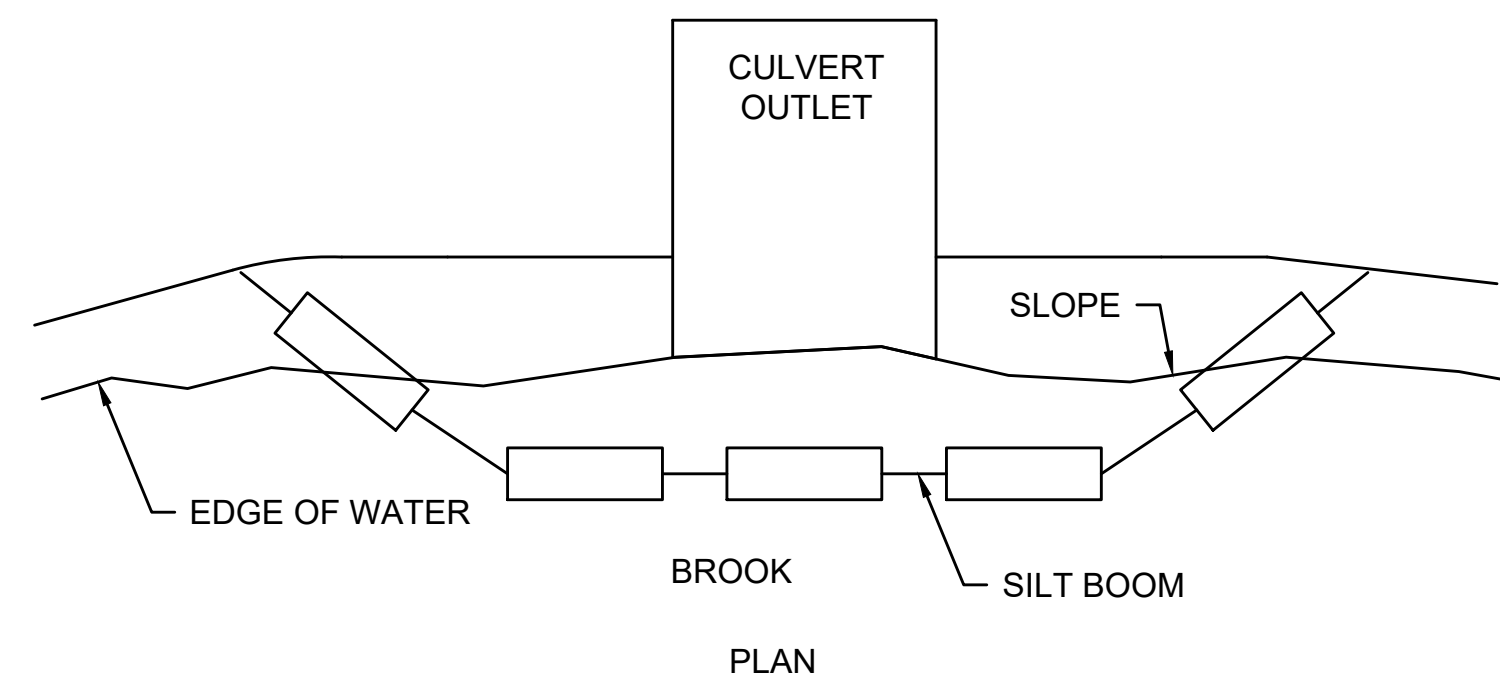
NOTES:

1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.

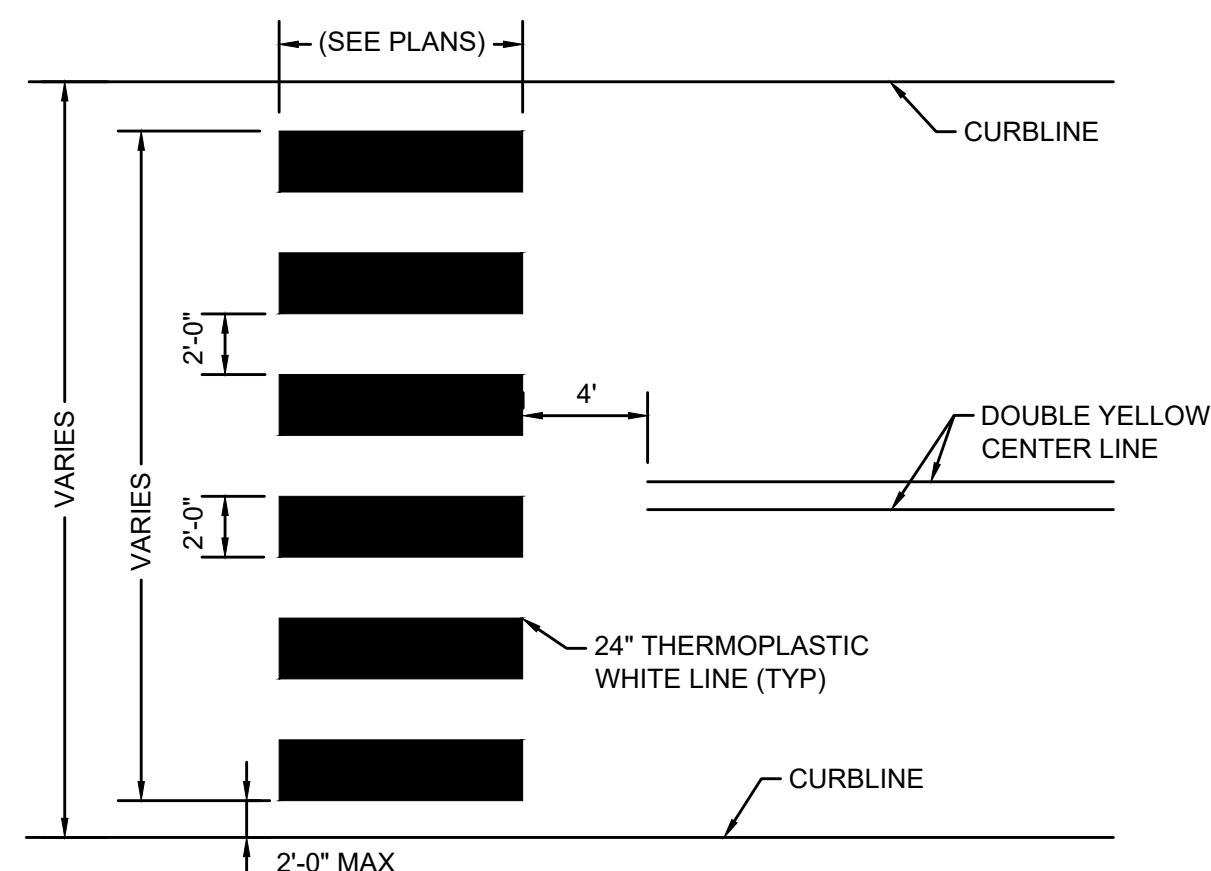
CROSSWALK PAVEMENT MARKING
N.T.S.



STONE FOR PIPE ENDS
N.T.S.



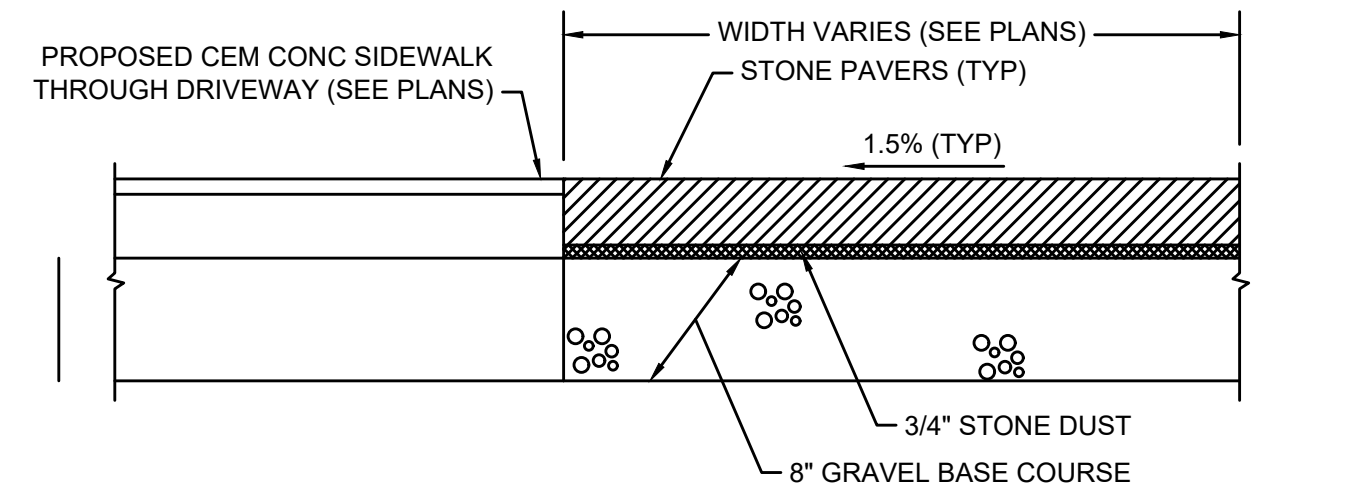
FLOATING SILT FENCE
N.T.S.



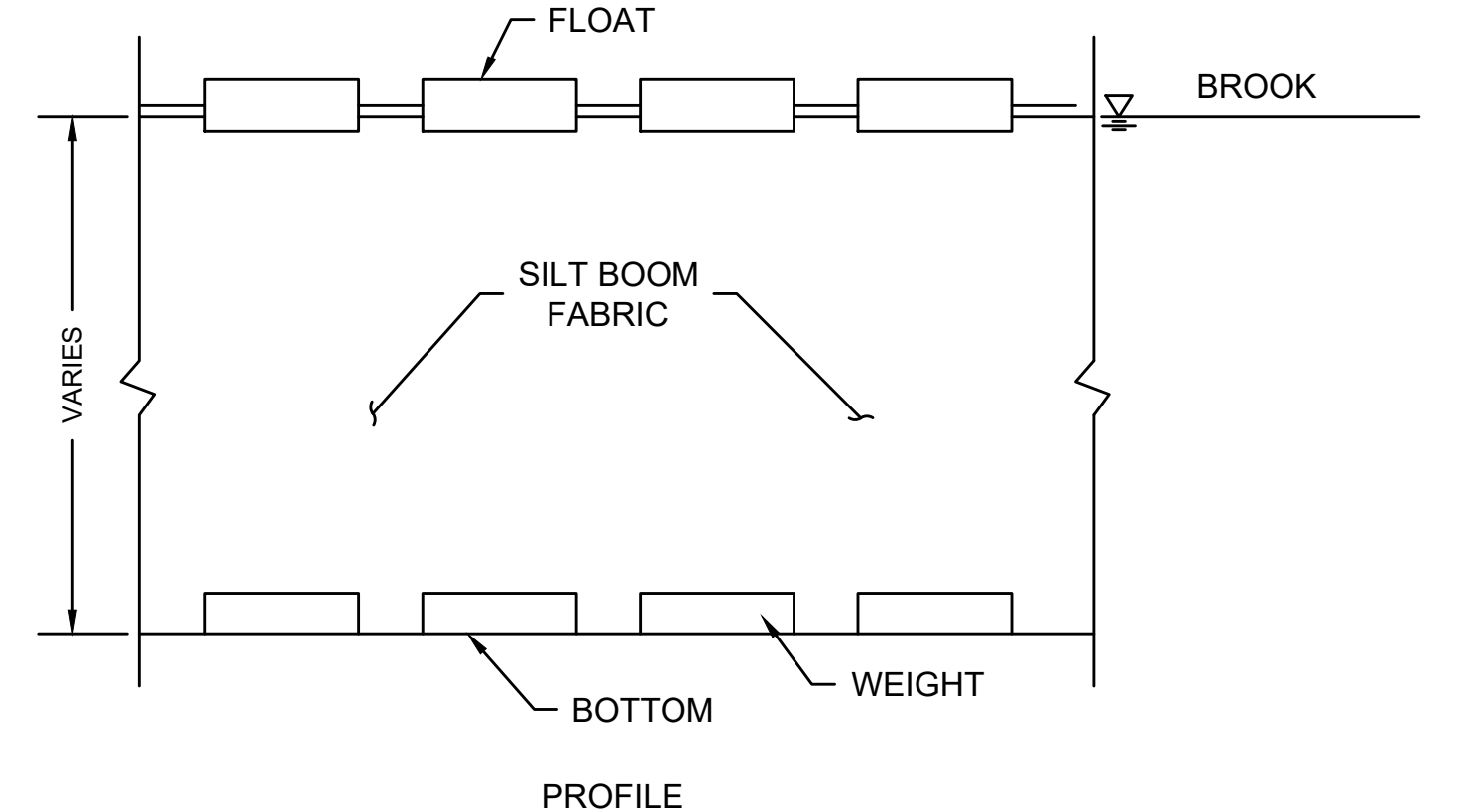
NOTES:

1. ALL 12" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED. ALL 24" LINES SHALL BE A COMBINATION OF TWO-12" LINES.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.
3. CROSSWALK BARS SHALL BE PLACED OUTSIDE THE VEHICULAR WHEEL PATH WHEREVER POSSIBLE.

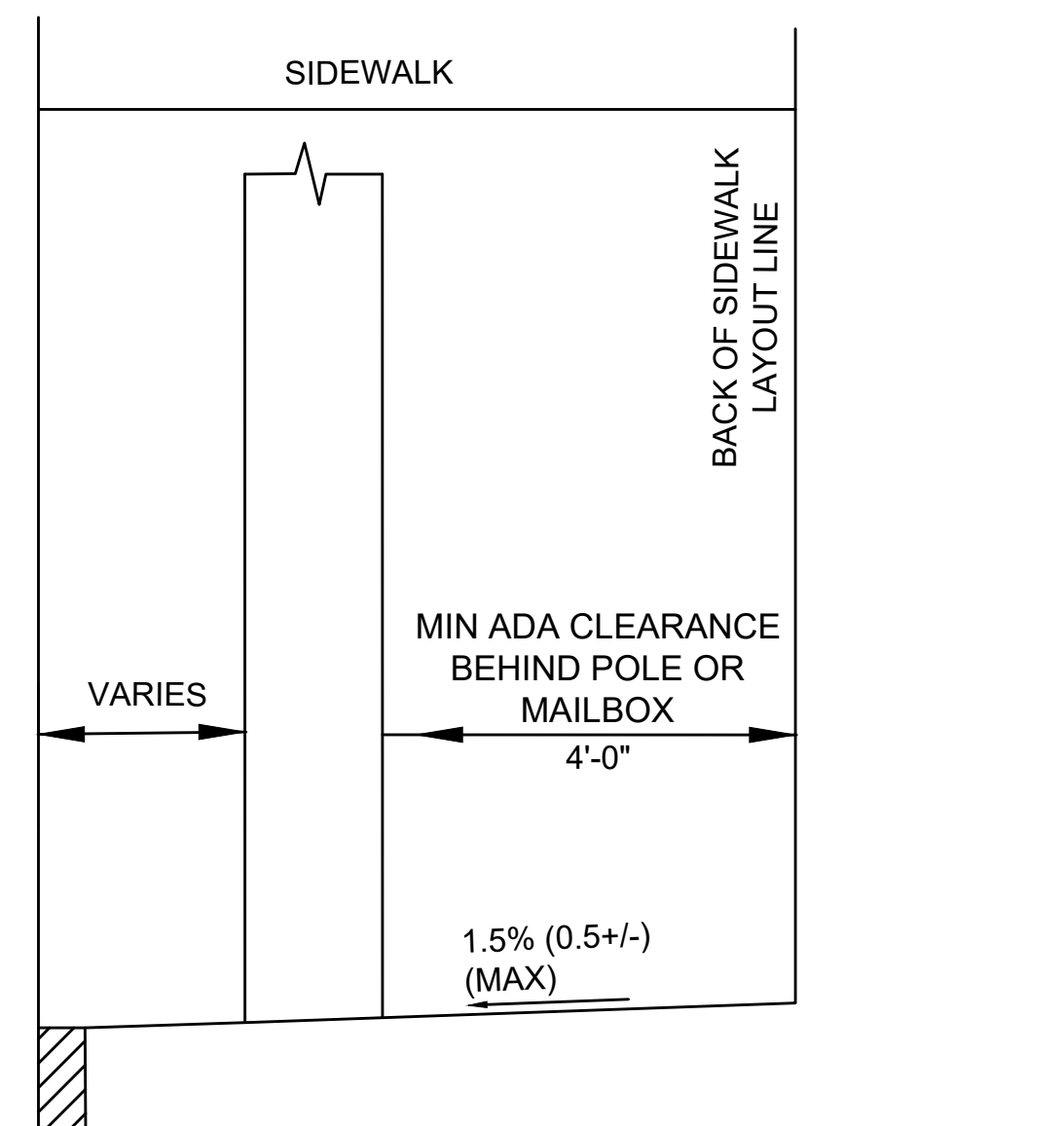
CROSSWALK PAVEMENT MARKING (MIDBLOCK)
N.T.S.



STONE PAVERS REMOVED AND RESET
N.T.S.

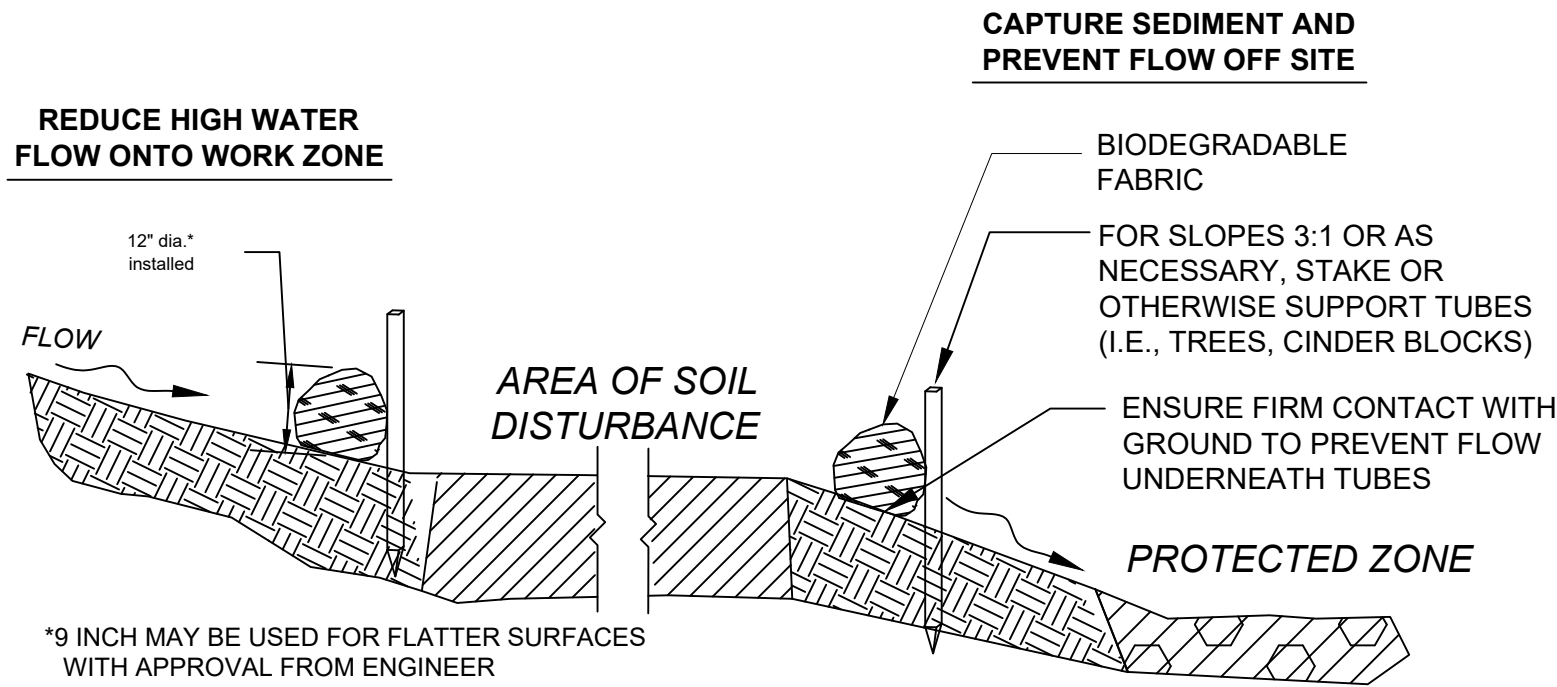


FLOATING SILT FENCE
N.T.S.



MIN CLEARANCE BEHIND VERTICAL STRUCTURE
N.T.S.

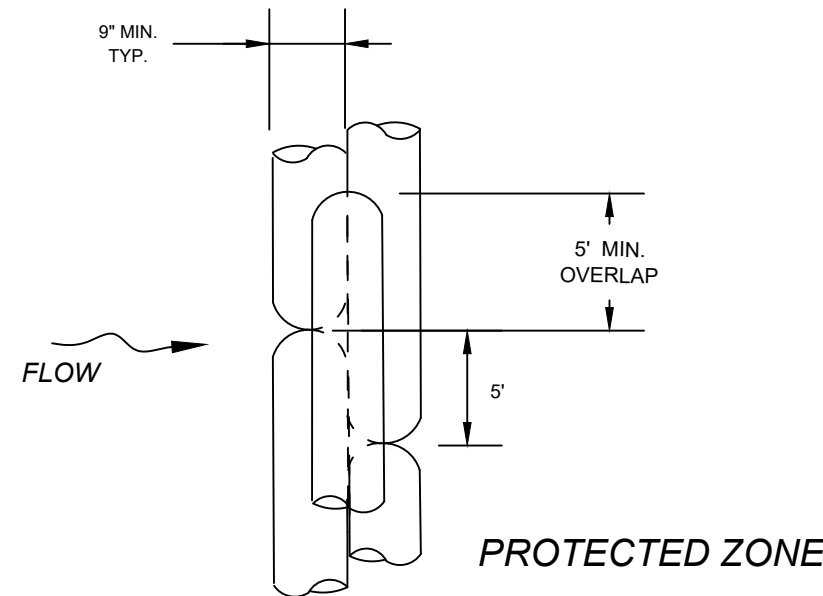
LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	40	82
PROJECT FILE NO.		616375	
PLEASANT STREET CONSTRUCTION DETAILS SHEET 1 OF 3			



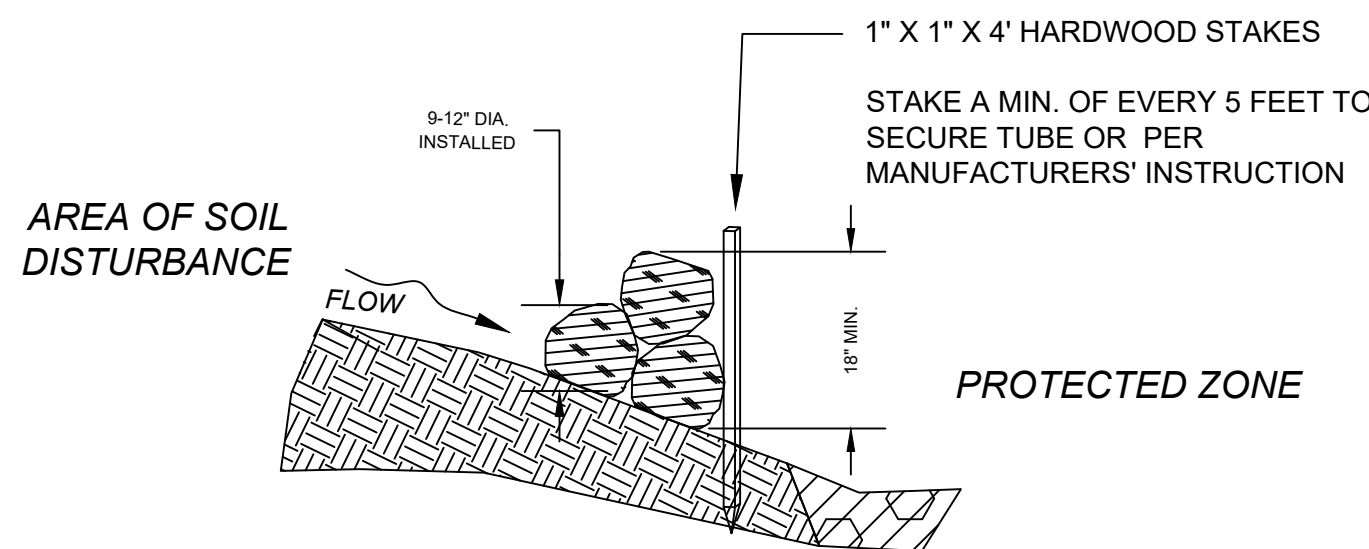
SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBES

N.T.S.



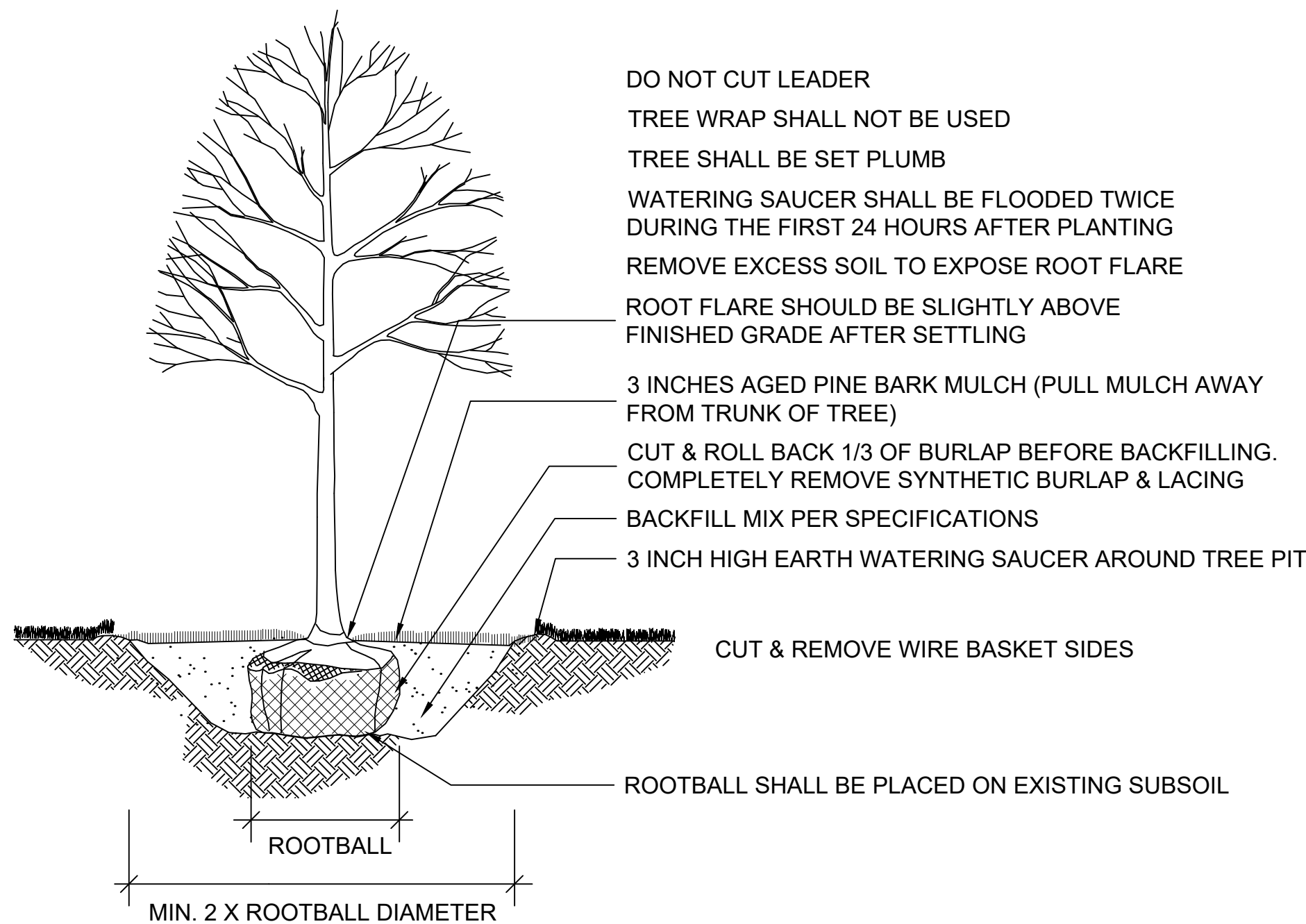
PLAN VIEW



SECTION

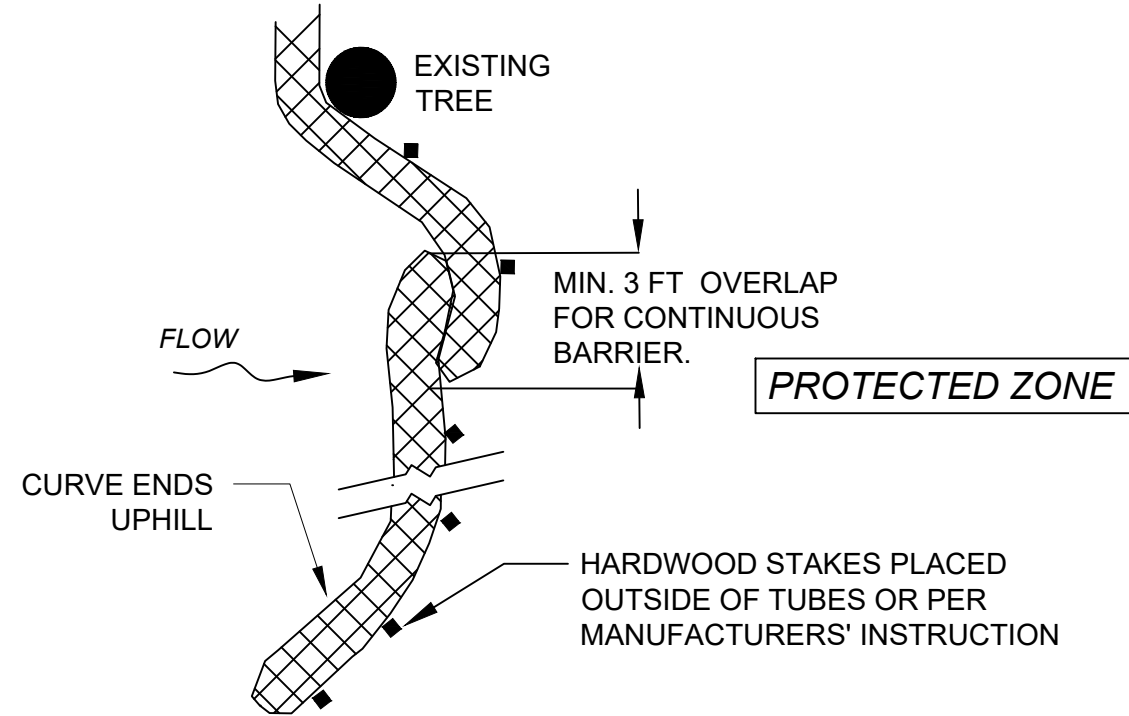
COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)

N.T.S.



DECIDUOUS TREE PLANTING

NOT TO SCALE



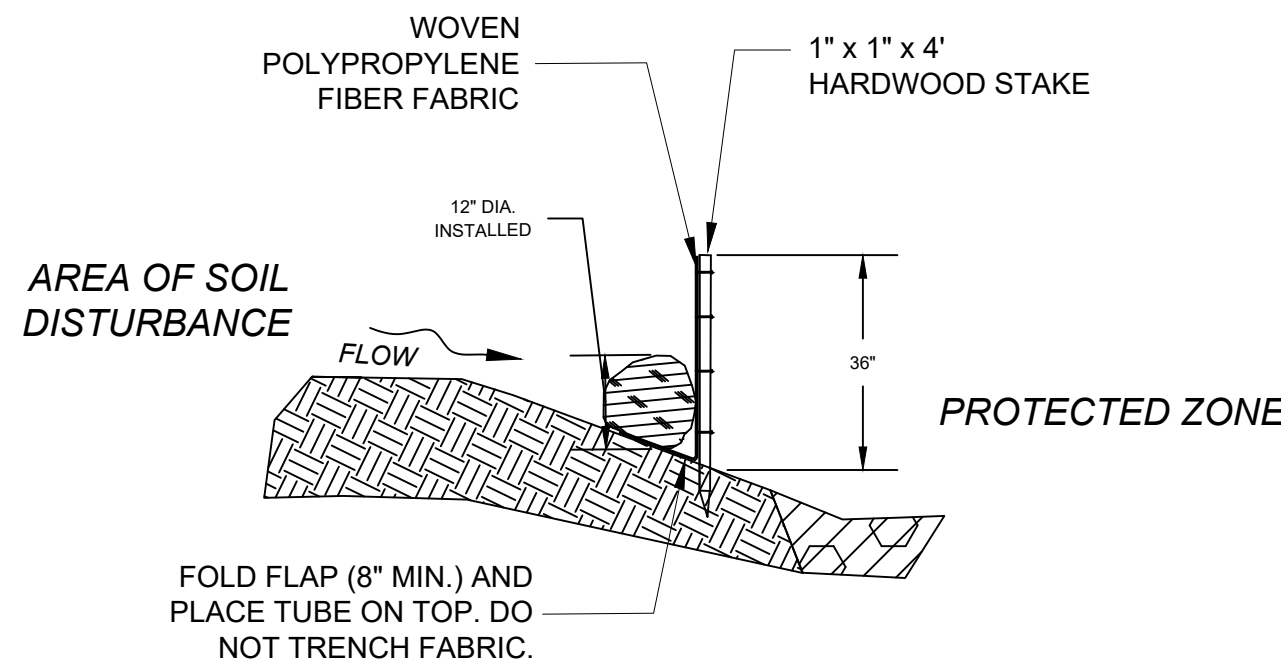
PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW

COMPOST FILTER TUBE

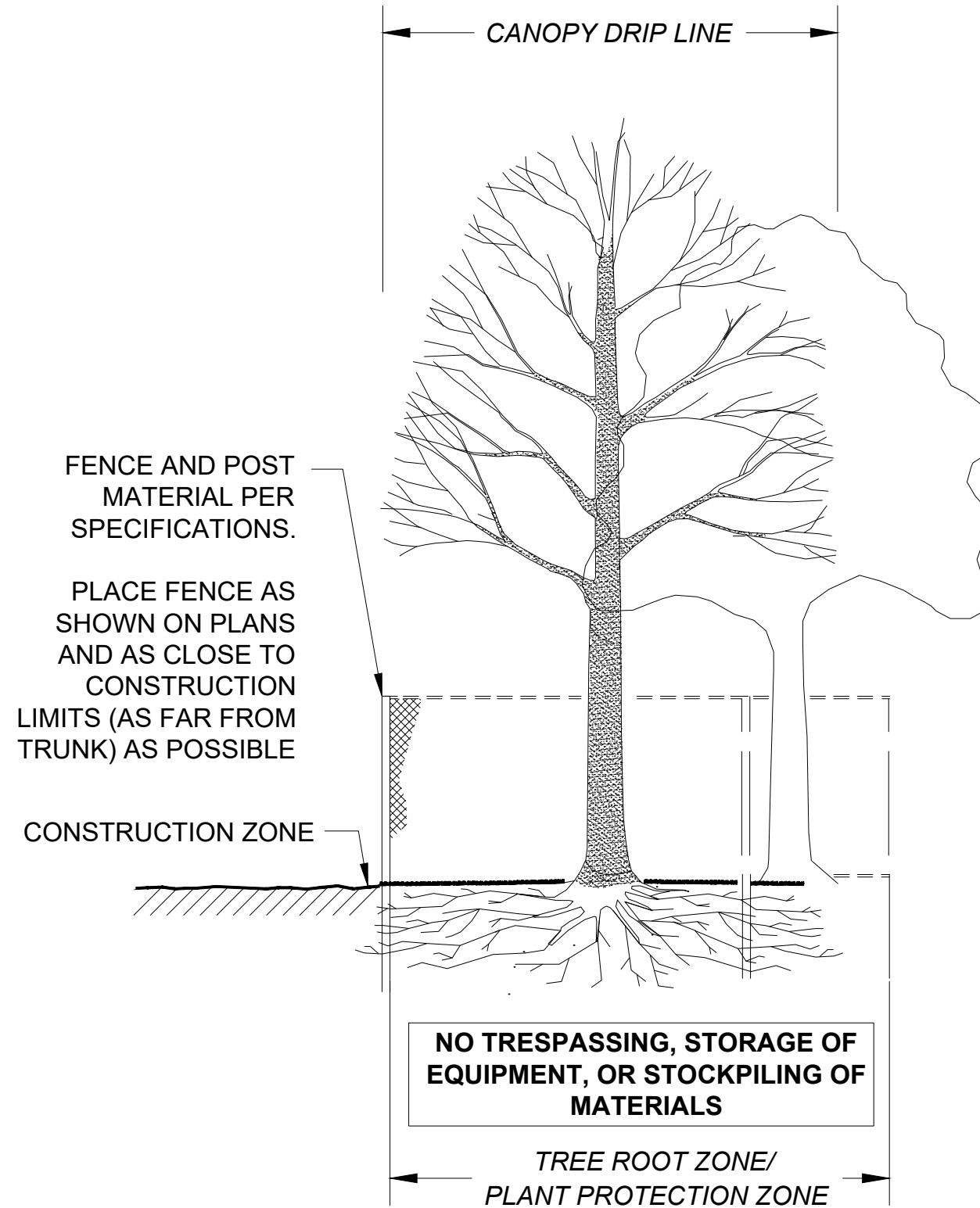
N.T.S.



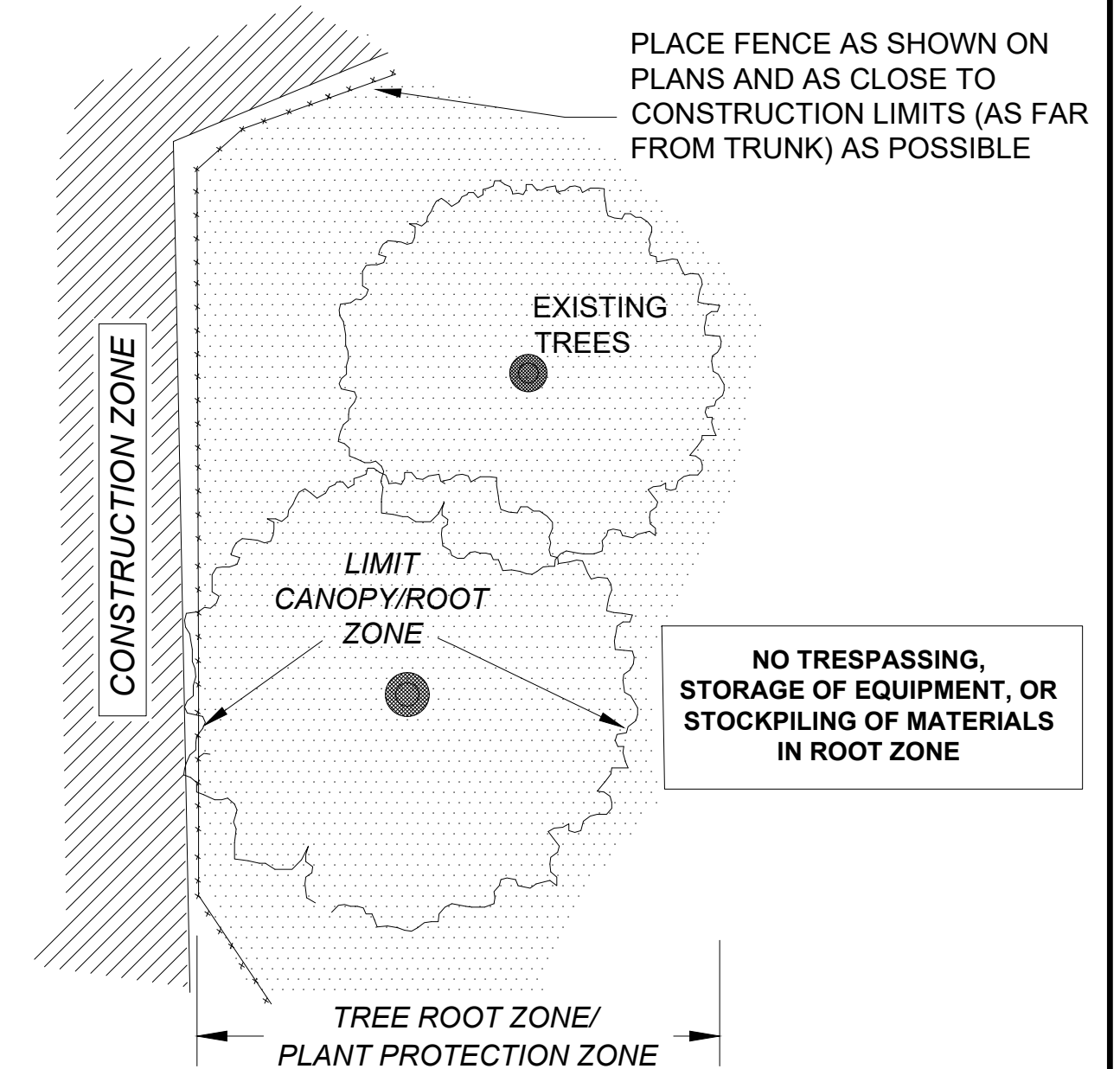
SECTION

COMPOST FILTER TUBE & SILT FENCE

N.T.S.



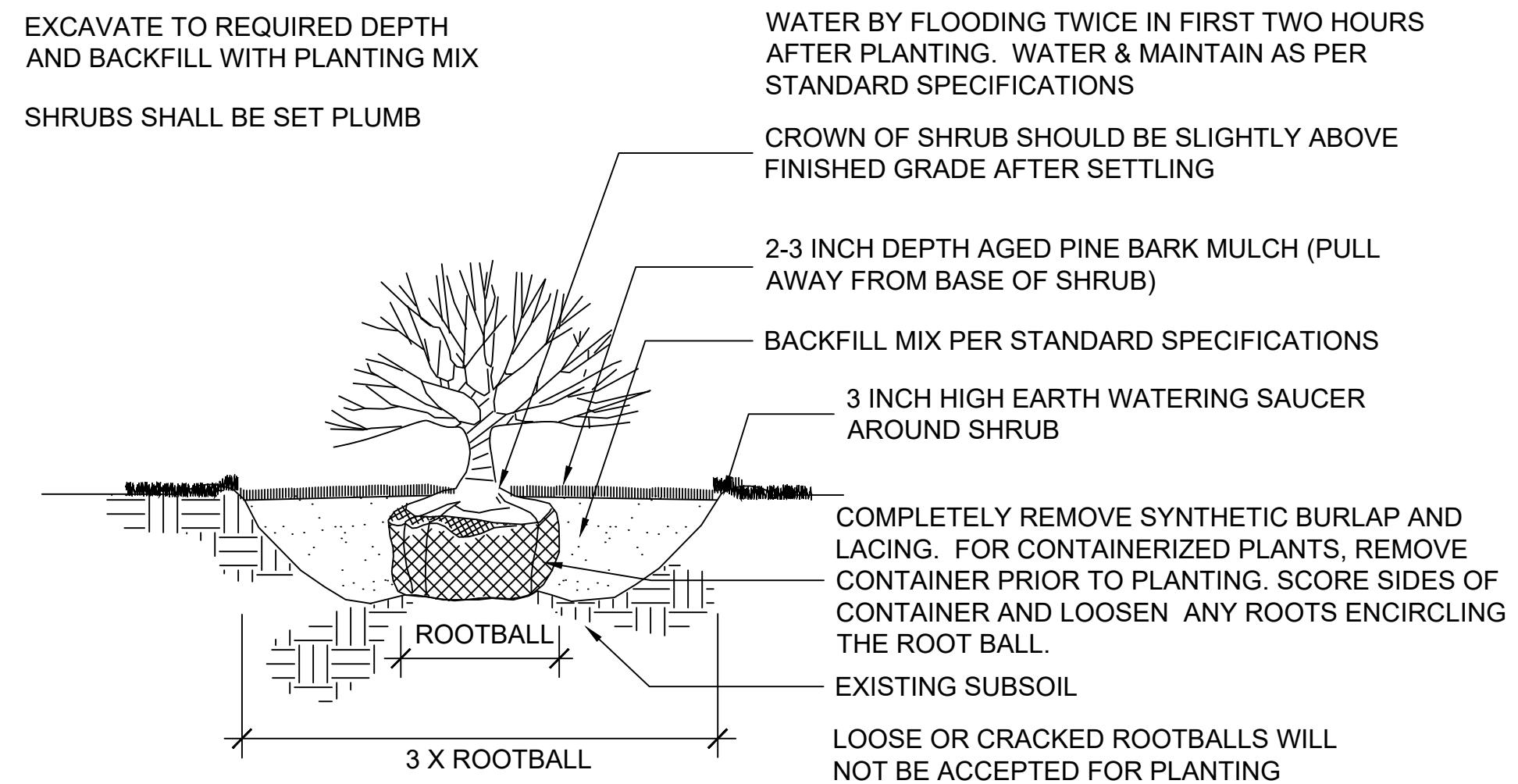
SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION - ROOT ZONE

N.T.S.



SHRUB PLANTING

NOT TO SCALE

**LEOMINSTER
MULTIPLE LOCATIONS**

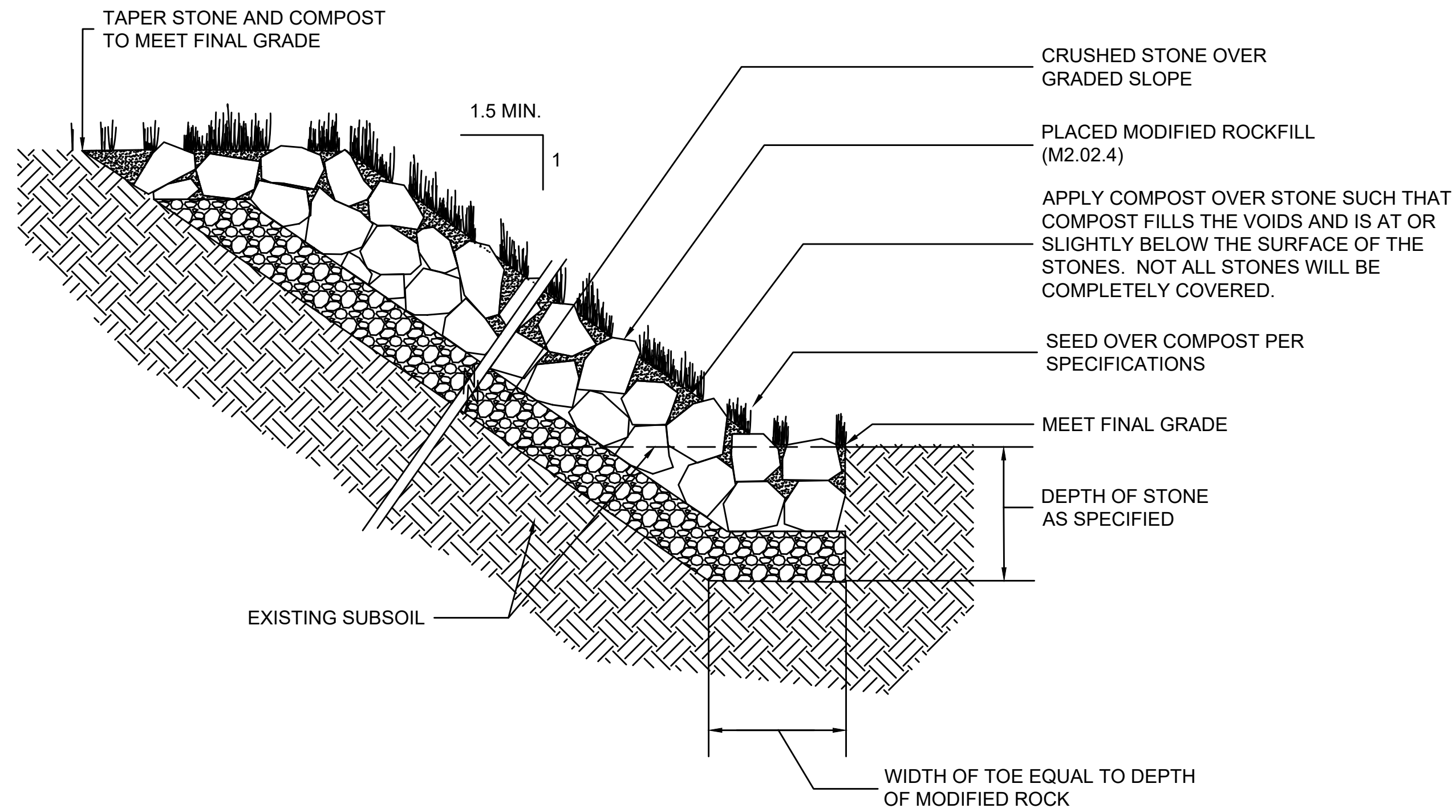
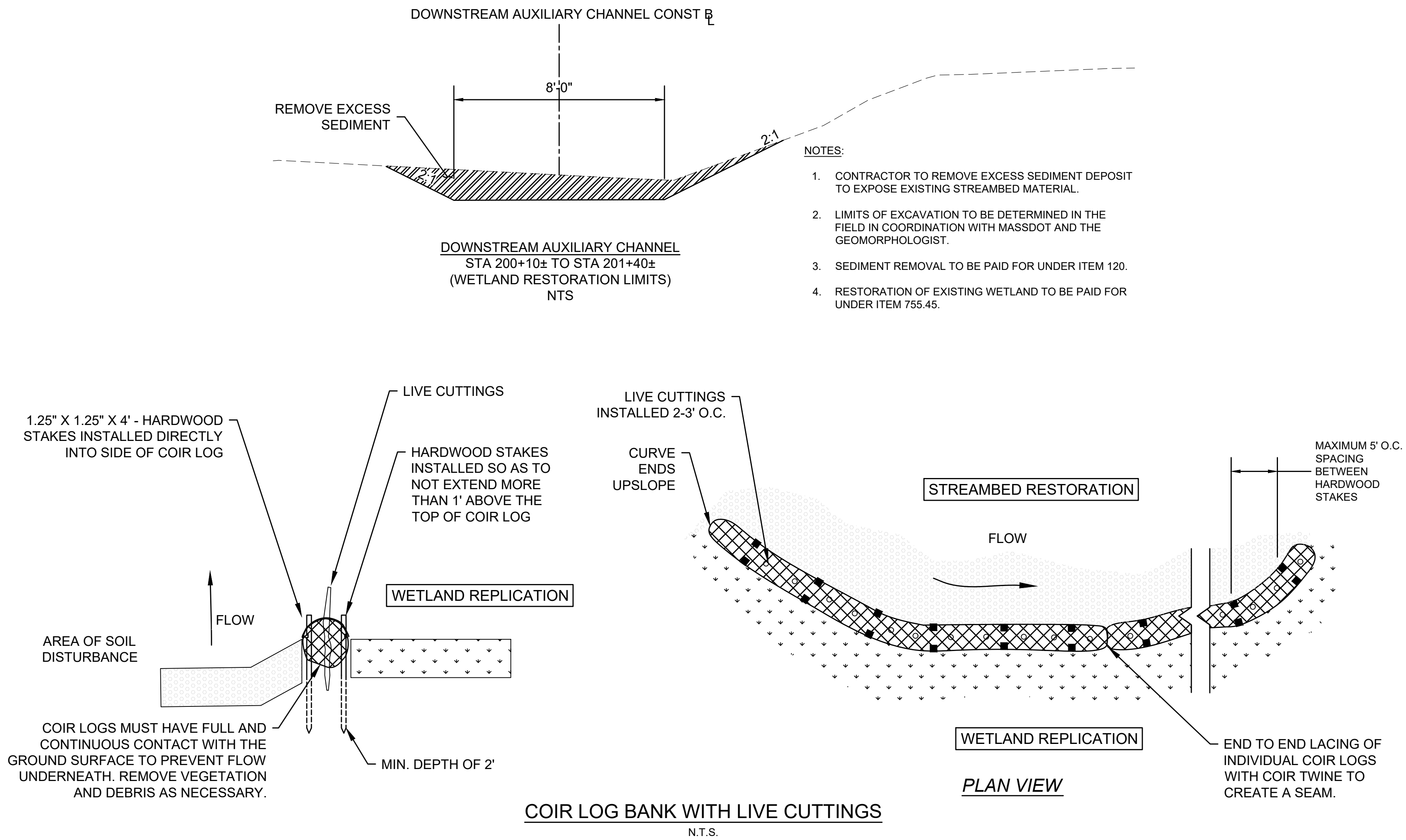
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	41	82
PROJECT FILE NO.		616375	

**PLEASANT STREET
CONSTRUCTION DETAILS
SHEET 2 OF 3**

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	42	82
PROJECT FILE NO.		616375	

PLEASANT STREET
CONSTRUCTION DETAILS
SHEET 3 OF 3



COMPOST AND SEED OVER MODIFIED ROCKFILL

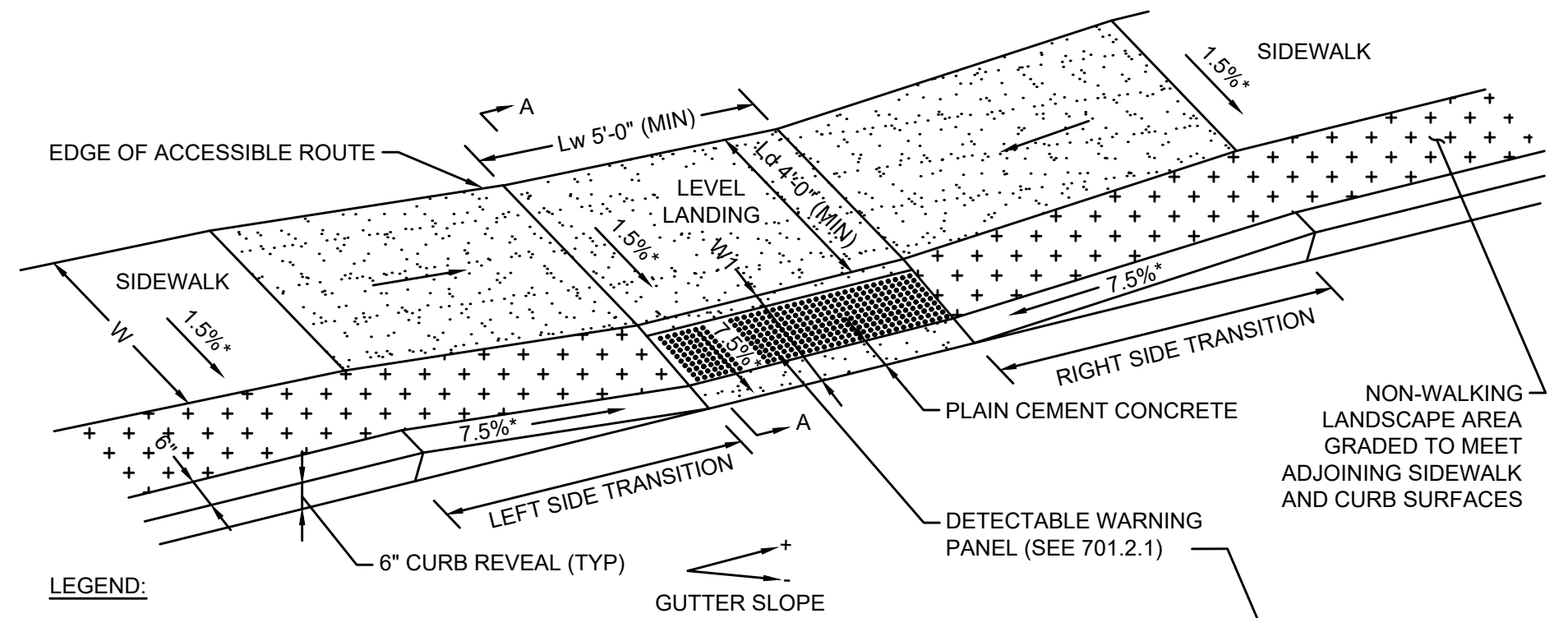
NOT TO SCALE

20160320_MassDOT

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	43	82
PROJECT FILE NO.		616375	

PLEASANT STREET
PEDESTRIAN CURB RAMP & DRIVEWAY DETAILS



LEGEND:

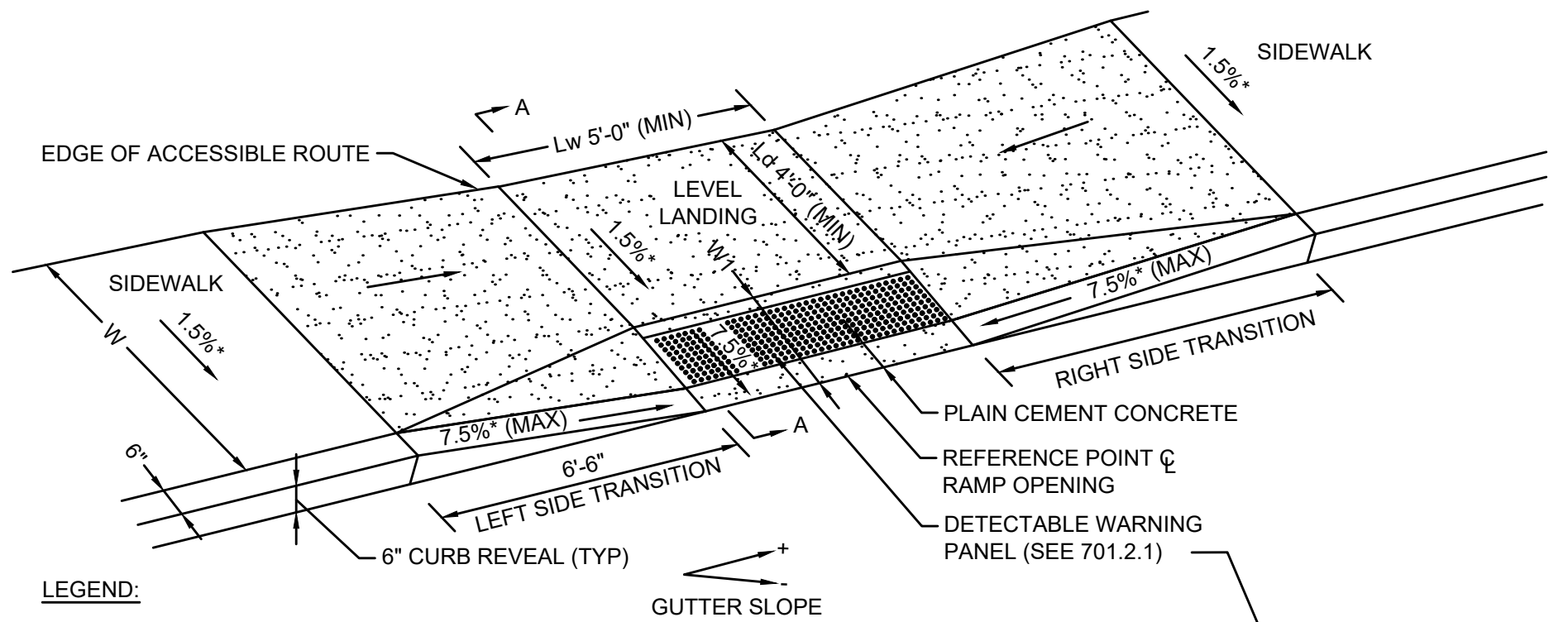
W = SIDEWALK WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED FROM LEFT TO RIGHT WHEN FACING RAMP OPENING

PEDESTRIAN CURB RAMP TYPE A

N.T.S.



LEGEND:

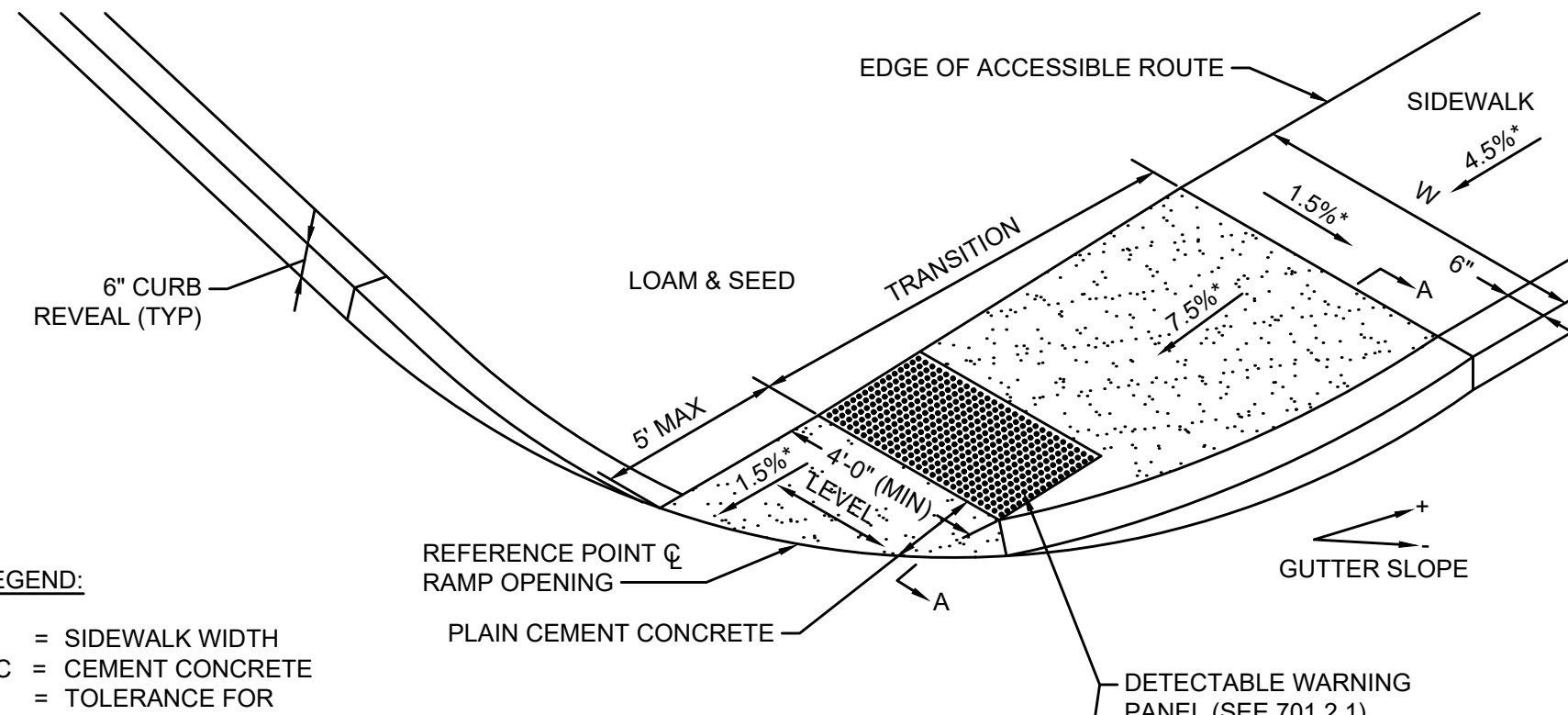
W = SIDEWALK WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED FROM RIGHT TO LEFT WHEN FACING THE RAMP OPENING.

PEDESTRIAN CURB RAMP TYPE B

N.T.S.



LEGEND:

W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W-6"
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED FROM LEFT TO RIGHT PARALLEL TO RAMP
4. SEE 701.2.5 FOR ALL OTHER DETAILS

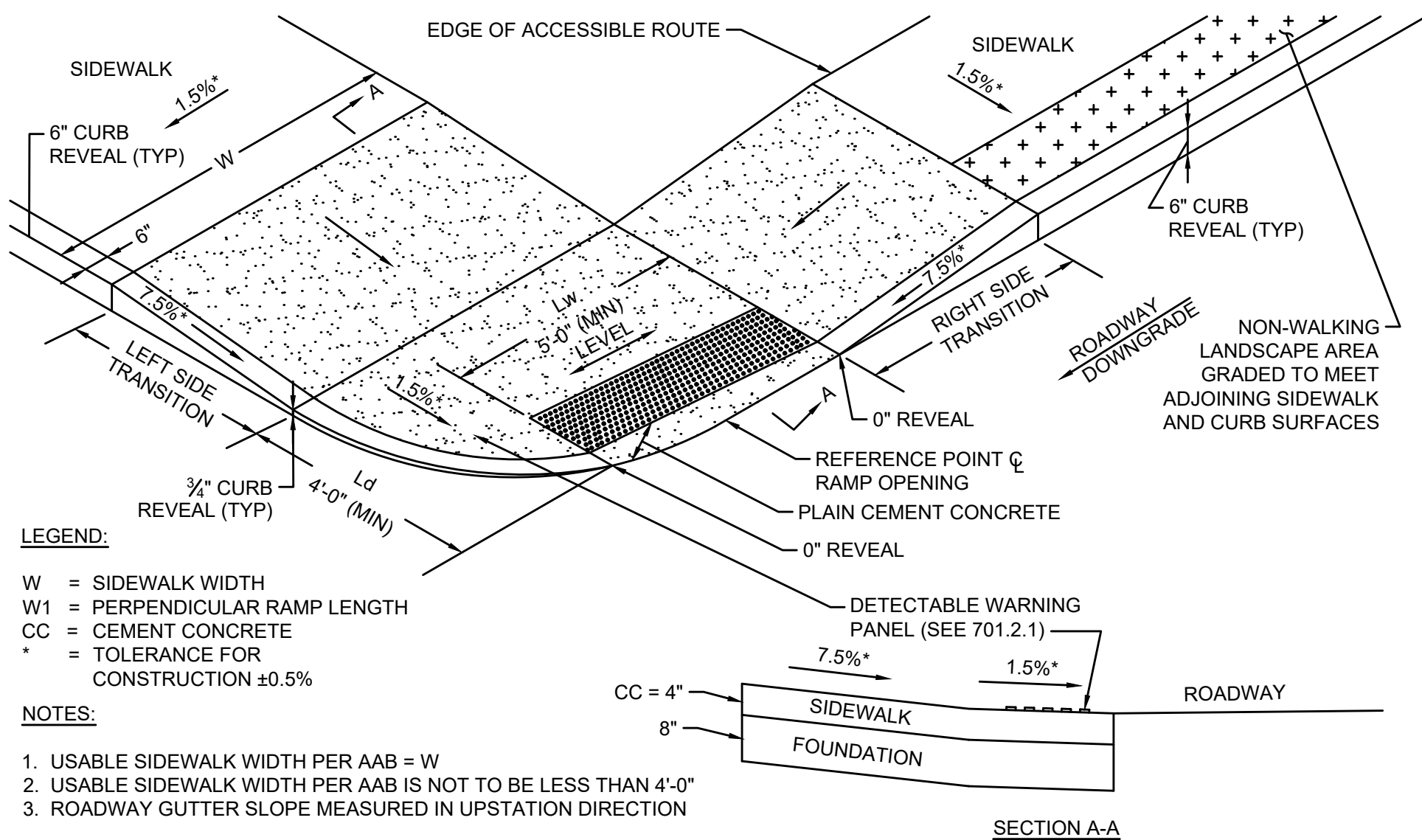
PEDESTRIAN CURB RAMP TYPE C

N.T.S.

CURB RAMP DATA													
RAMP #	BASELINE REFERENCE	STATION	OFFSET	LEVEL LANDING		RAMP (W1)	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION			RIGHT SIDE TRANSITION		
				WIDTH (Lw)	DEPTH (Ld)			TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
	PLEASANT STREET	11+13.4	16.0 LT	5'-0"	5'-0"	3'-6"	+3.8%	14'-0"	6"	5'-0"	6'-6"	6"	5'-0"

CURB RAMP DATA													
RAMP #	BASELINE REFERENCE	STATION	OFFSET	LEVEL LANDING		RAMP (W1)	ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION			RIGHT SIDE TRANSITION		
				WIDTH (Lw)	DEPTH (Ld)			TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
2	PLEASANT STREET	11+13.7	15.5 RT	5'-0"	4'-0"	3'-0"	-3.8%	3'-3"	3"	7'-0"	7'-0"	6"	7'-0"

CURB RAMP DATA								
RAMP #	BASELINE REFERENCE	STATION	OFFSET	ROADWAY GUTTER SLOPE	TRANSITION			
					TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	
3	COLBURN STREET	20+19.7	17.7 RT	+3.3%	5'-6"	3"	7'-0"	



LEGEND:

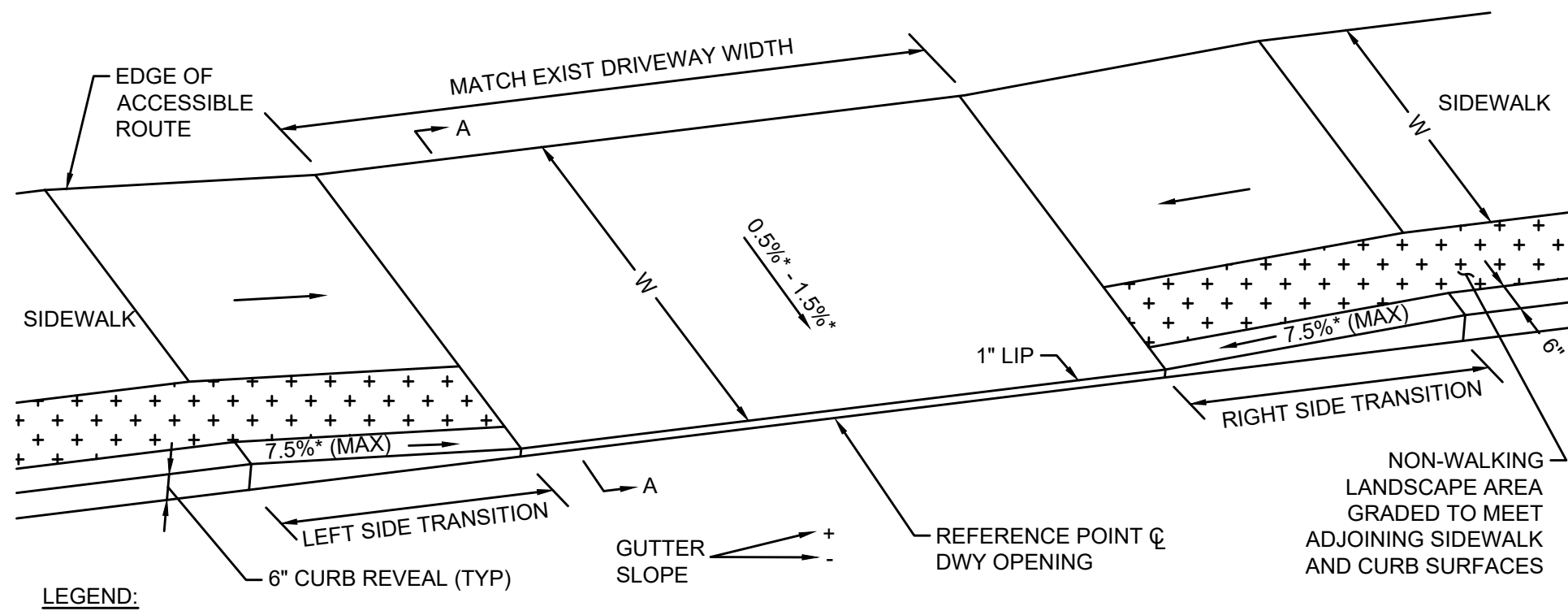
W = SIDEWALK WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED IN UPSTATION DIRECTION

PEDESTRIAN CURB RAMP TYPE D

N.T.S.



LEGEND:

W = SIDEWALK WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:

1. USABLE SIDEWALK WIDTH PER AAB = W-6"
2. USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'-0"
3. ROADWAY GUTTER SLOPE MEASURED FROM LEFT TO RIGHT WHEN FACING DWY OPENING

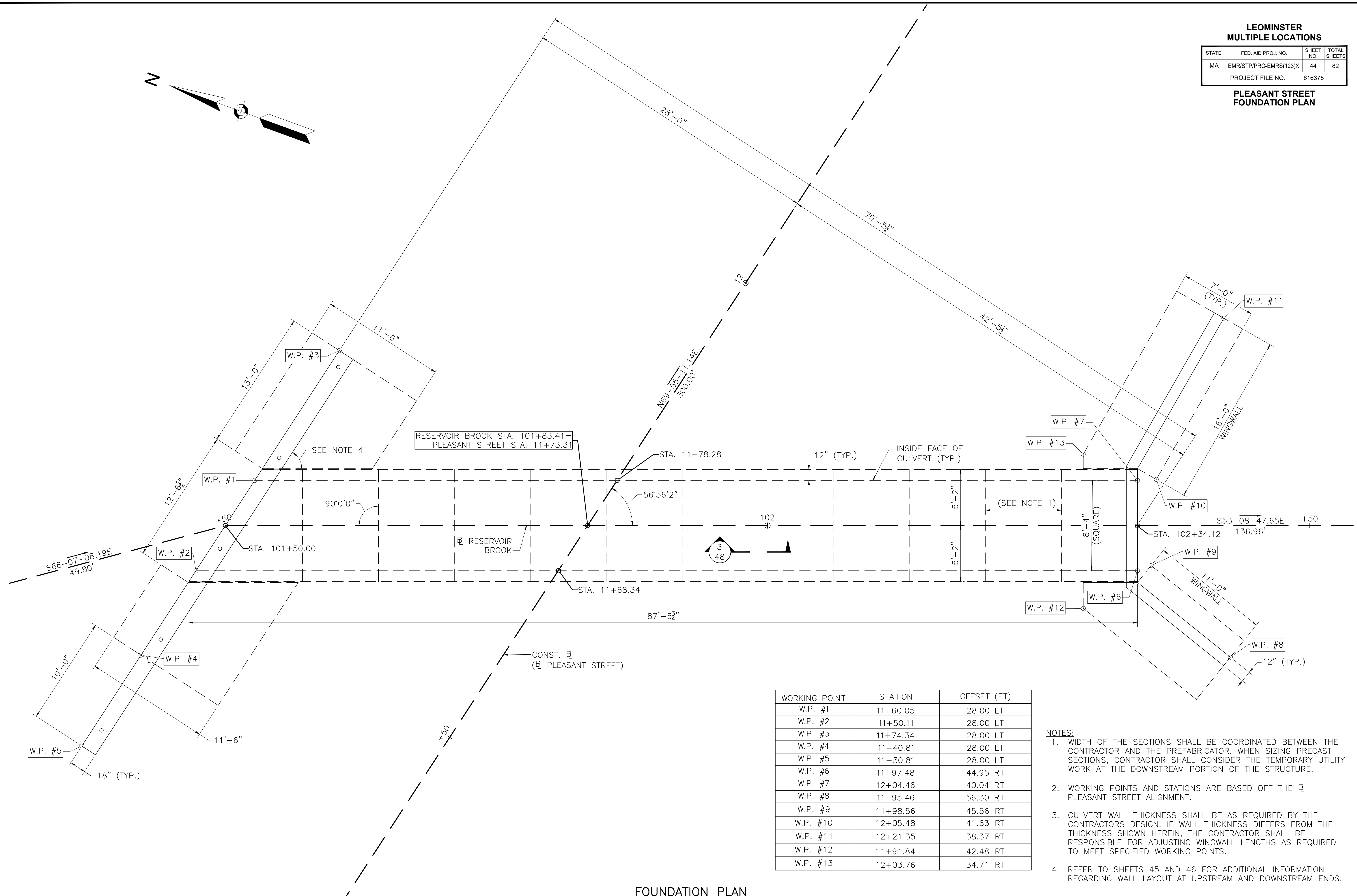
SIDEWALK THROUGH DRIVEWAY TYPE A

N.T.S.

CURB RAMP DATA												
RAMP #	BASELINE REFERENCE	STATION	OFFSET	LEVEL LANDING		ROADWAY GUTTER SLOPE	LEFT SIDE TRANSITION			RIGHT SIDE TRANSITION		
				WIDTH (Lw)	DEPTH (Ld)		TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH	TRANSITION LENGTH	CURB REVEAL	SIDEWALK WIDTH
4	COLBURN STREET	20+20.8	19.6 LT	7'-0"	7'-0"	LT: +1.2% RT: -3.8%	7'-0"	6"	5'-6"	6'-6"	6"	5'-0"

DRIVEWAY DATA													
DWY #	BASELINE REFERENCE	STATION	OFFSET	DRIVEWAY SURFACE	DWY WIDTH @ GUTTER (Wg)	ROADWAY GUTTER SLOPE	WIDTH OF ACCESSIBLE ROUTE (Wa)	LEFT SIDE TRANSITION			RIGHT SIDE TRANSITION		
								LENGTH	CURB REVEAL	SW WIDTH (Ws)	LENGTH	CURB REVEAL	SW WIDTH (Ws)
1	PLEASANT STREET	10+71.5	16.0' LT	CEM CONC	20'-1"	-4.7%	9'-4"	7'-8"	6"	5'-0"	6'-6"	6"	5'-0"

PLEASANT STREET FOUNDATION PLAN



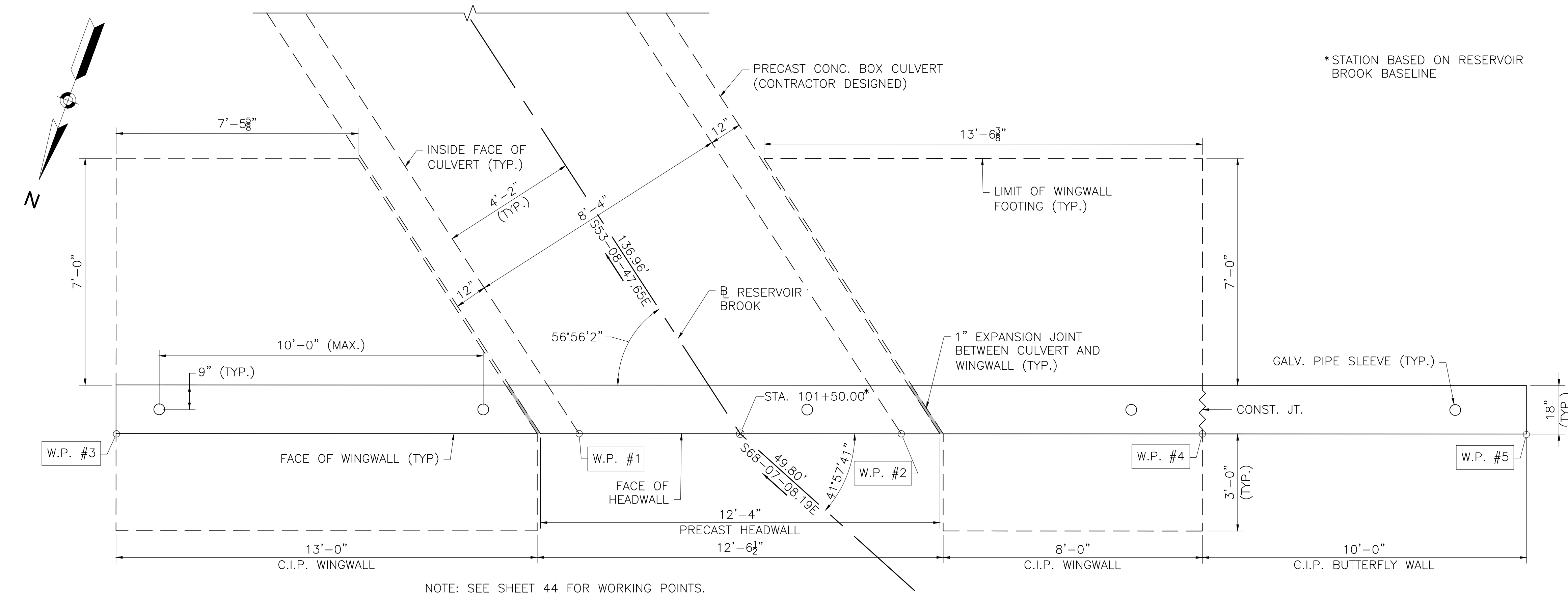
FOUNDATION PLAN

SCALE: 1" = 4'

- NOTES:**
1. WIDTH OF THE SECTIONS SHALL BE COORDINATED BETWEEN THE CONTRACTOR AND THE PREFABRICATOR. WHEN SIZING PRECAST SECTIONS, CONTRACTOR SHALL CONSIDER THE TEMPORARY UTILITY WORK AT THE DOWNSTREAM PORTION OF THE STRUCTURE.
 2. WORKING POINTS AND STATIONS ARE BASED OFF THE B PLEASANT STREET ALIGNMENT.
 3. CULVERT WALL THICKNESS SHALL BE AS REQUIRED BY THE CONTRACTORS DESIGN. IF WALL THICKNESS DIFFERS FROM THE THICKNESS SHOWN HEREIN, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING WINGWALL LENGTHS AS REQUIRED TO MEET SPECIFIED WORKING POINTS.
 4. REFER TO SHEETS 45 AND 46 FOR ADDITIONAL INFORMATION REGARDING WALL LAYOUT AT UPSTREAM AND DOWNSTREAM ENDS.

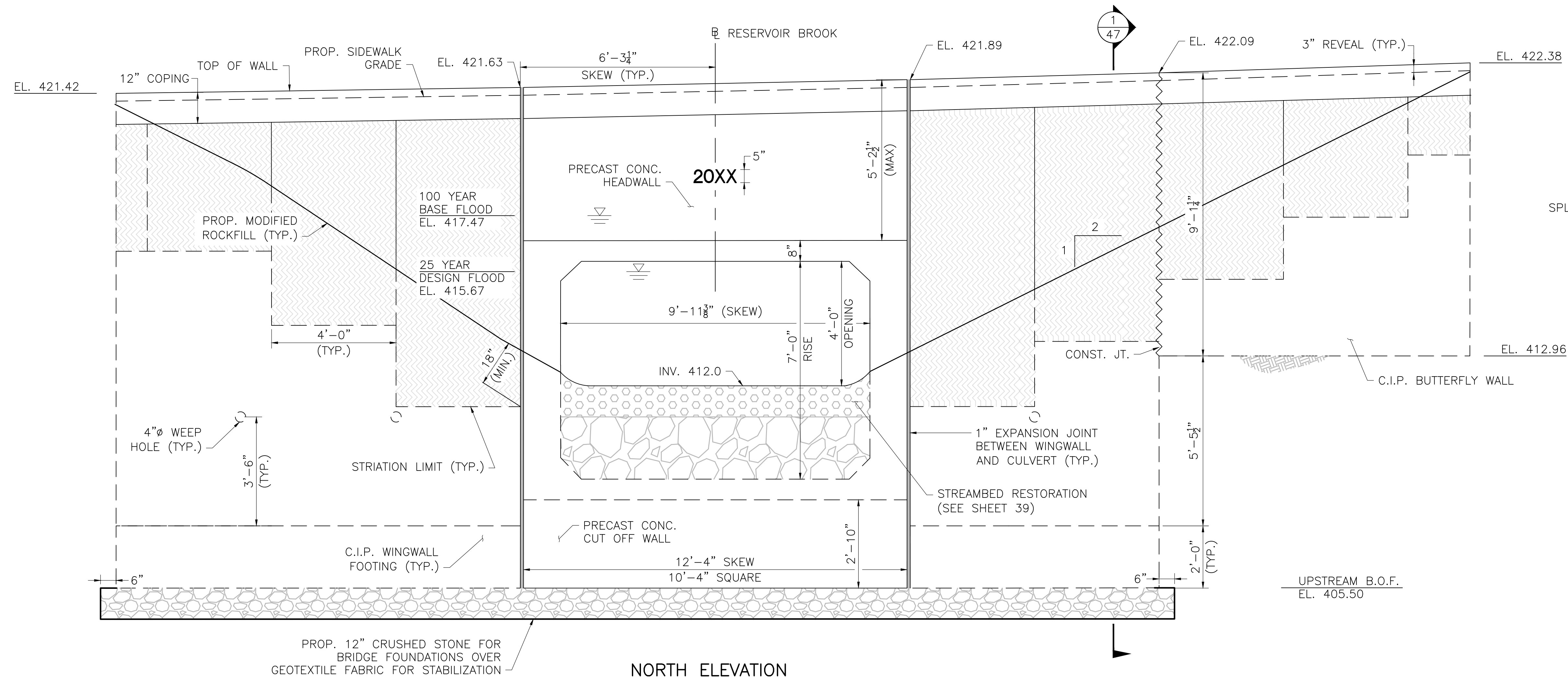
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	45	82
PROJECT FILE NO.		616375	

CULVERT DETAILS
SHEET 1 OF 4



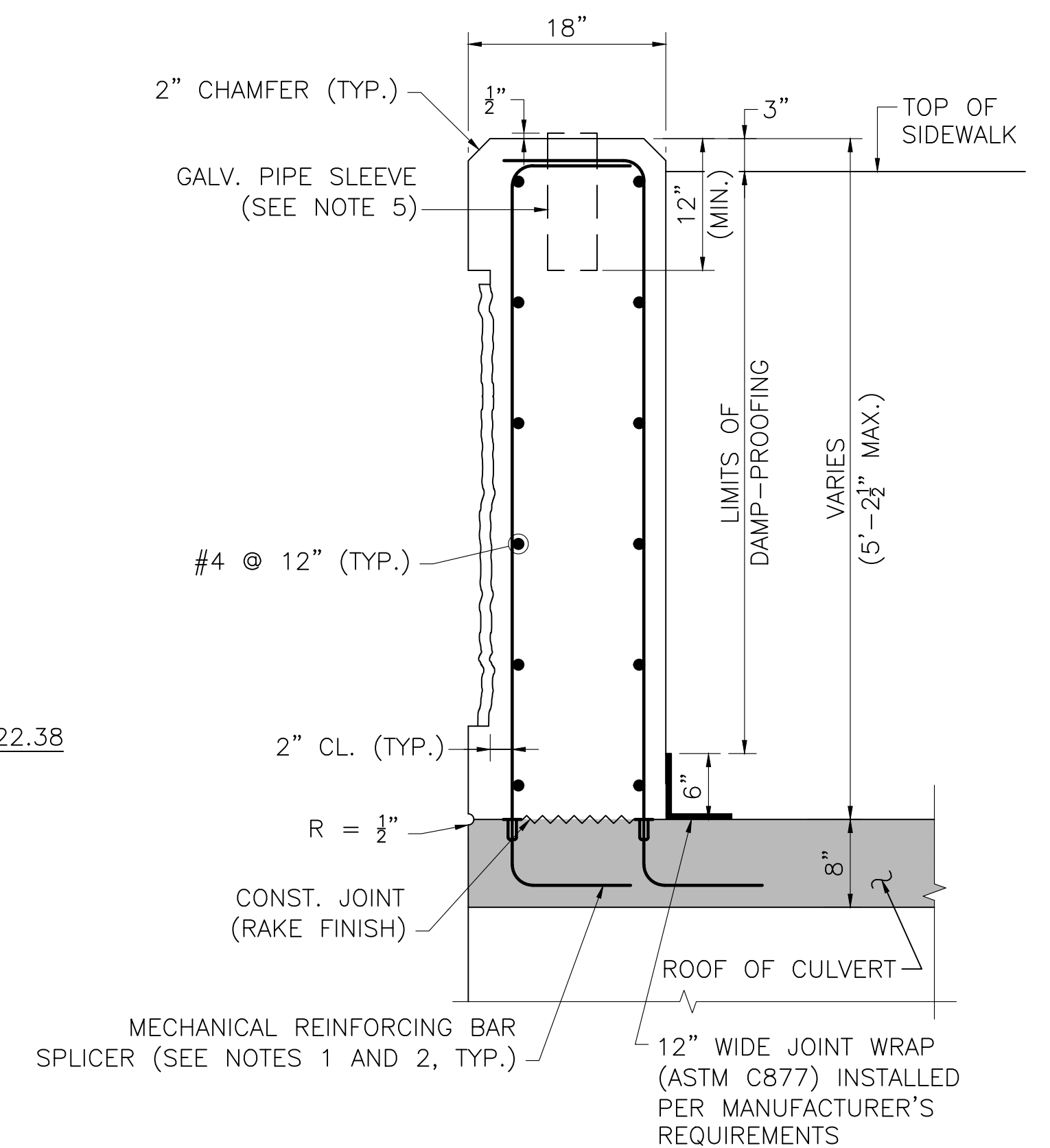
NORTH PLAN

SCALE: $\frac{1}{2}" = 1'-0"$



NORTH ELEVATION

SCALE: $\frac{1}{2}" = 1'-0"$

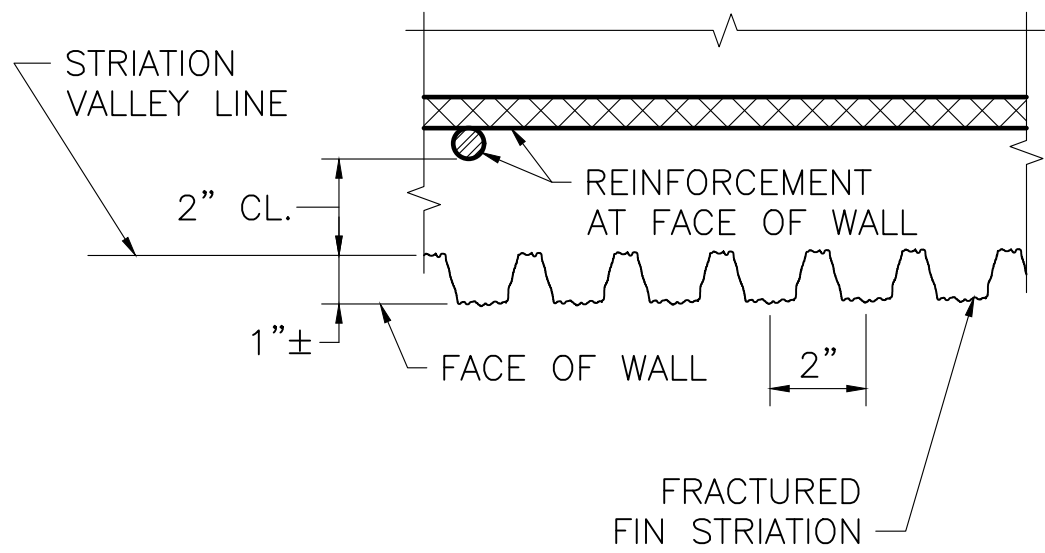


NOTES:

1. THIS DETAIL IS CONCEPTUAL ONLY. THE CONTRACTOR'S DESIGN PACKAGE SHALL INCLUDE ALL RELEVANT HEADWALL DETAILS AND CALCULATIONS, INCLUDING ANCHORAGE TO THE CULVERT. THE HEADWALL SHALL BE DESIGN FOR ALL APPLICABLE LOADS TO WHICH IT WILL BE EXPOSED.
2. THE CONTRACTOR MAY SUBSTITUTE EXTENDED HOOPS FOR THE MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS AS SHOWN.
3. CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.
4. REFER TO DETAIL AT TOP OF U-WINGWALL AND HEADWALL ON SHEET 47 FOR ADDITIONAL INFORMATION.
5. GALVANIZED STEEL PIPE SLEEVE SHALL BE INSTALLED PRIOR TO CASTING AND SHALL BE SECURELY FASTENED TO PREVENT MOVEMENT DURING CONCRETE PLACEMENT. NO FIELD DRILLING, CORING, OR CUTTING OF CONCRETE WILL BE ALLOWED FOR INSTALLATION OF THIS ITEM.

CONCEPTUAL NORTH HEADWALL DETAIL

SCALE: 1" = 1'-0"

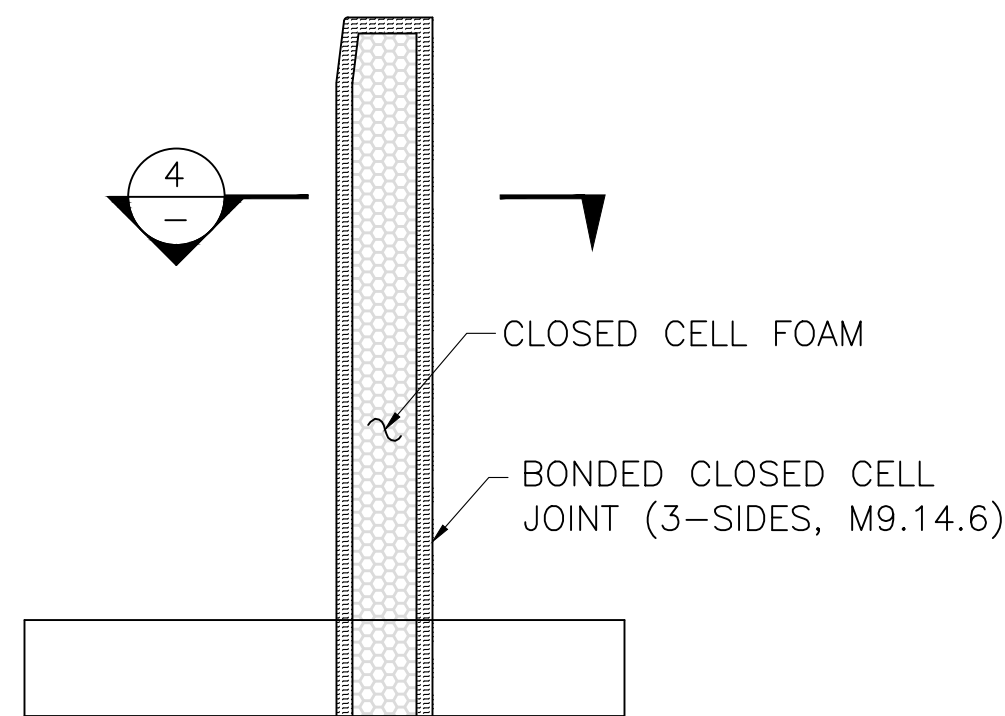


NOTES:

1. THE CONTRACTOR SHALL MAKE SURE THAT THE STRIATION FINS ARE PLUMB AND LINED UP VERTICALLY FROM PANEL TO PANEL FOR THE FULL HEIGHT OF THE WALL.
2. THE HORIZONTAL JOINT MAY BE OMITTED IF THE CONTRACTOR CAN DEMONSTRATE THAT THE FORM LINER PANELS CAN BE INSTALLED END TO END WITHOUT CREATING A VISIBLE SEAM IN THE FINAL CAST CONCRETE.

TYPICAL STRIATION DETAIL

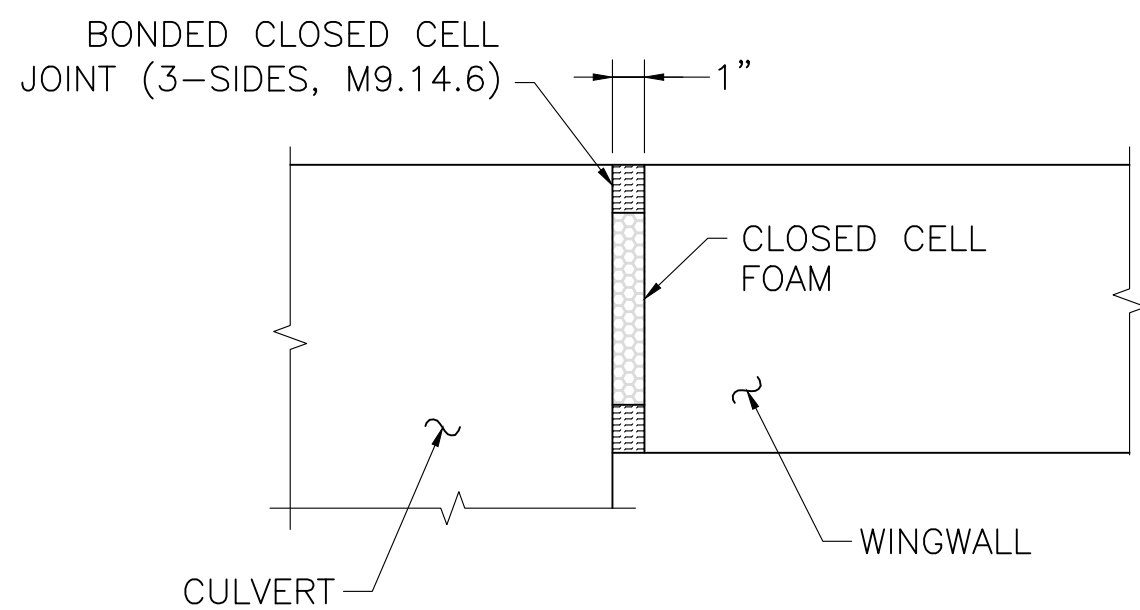
SCALE: 3" = 1'-0"



NOTE:
EXPANSION JOINT MATERIAL SHALL BE PLACED WHERE PRECAST AND C.I.P. ELEMENTS ABUT EACH OTHER.

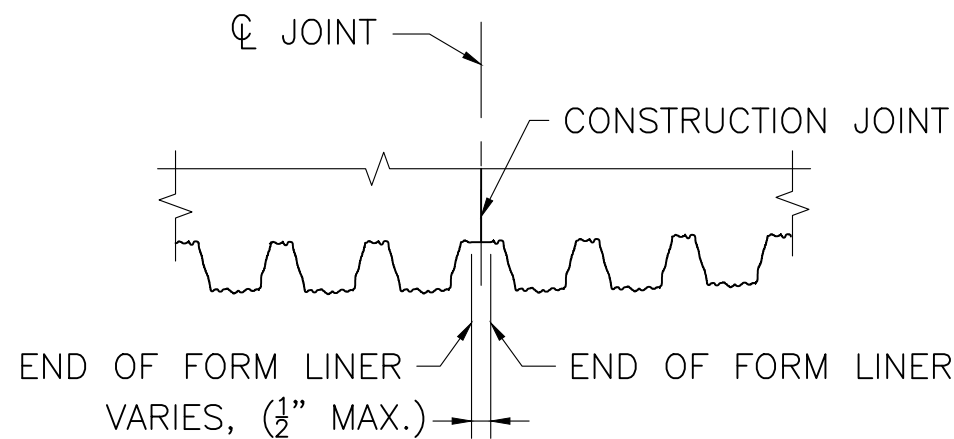
EXPANSION JOINT BETWEEN WINGWALL AND CULVERT

SCALE: $\frac{1}{2}$ " = 1'-0"



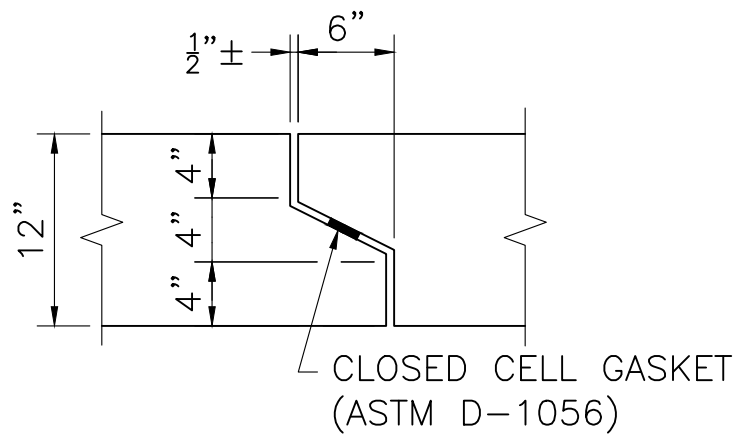
SECTION

SCALE: 1" = 1'-0"



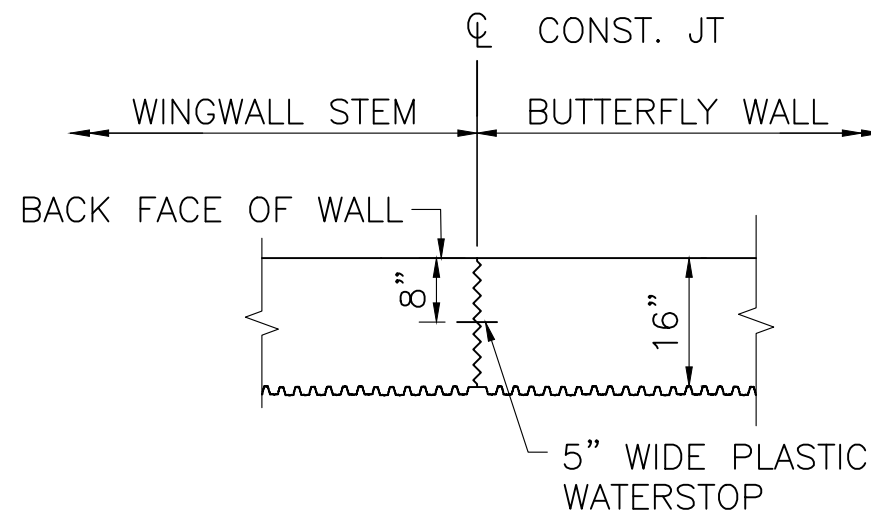
CONSTRUCTION JOINT

SCALE: 3" = 1'-0"



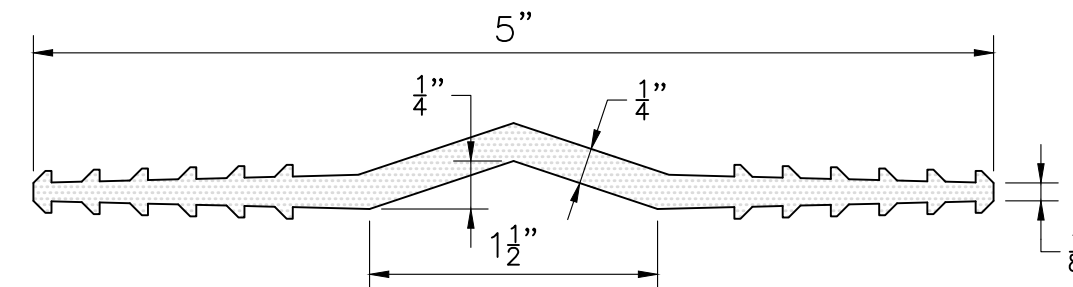
JOINT DETAIL

SCALE: 1" = 1'-0"



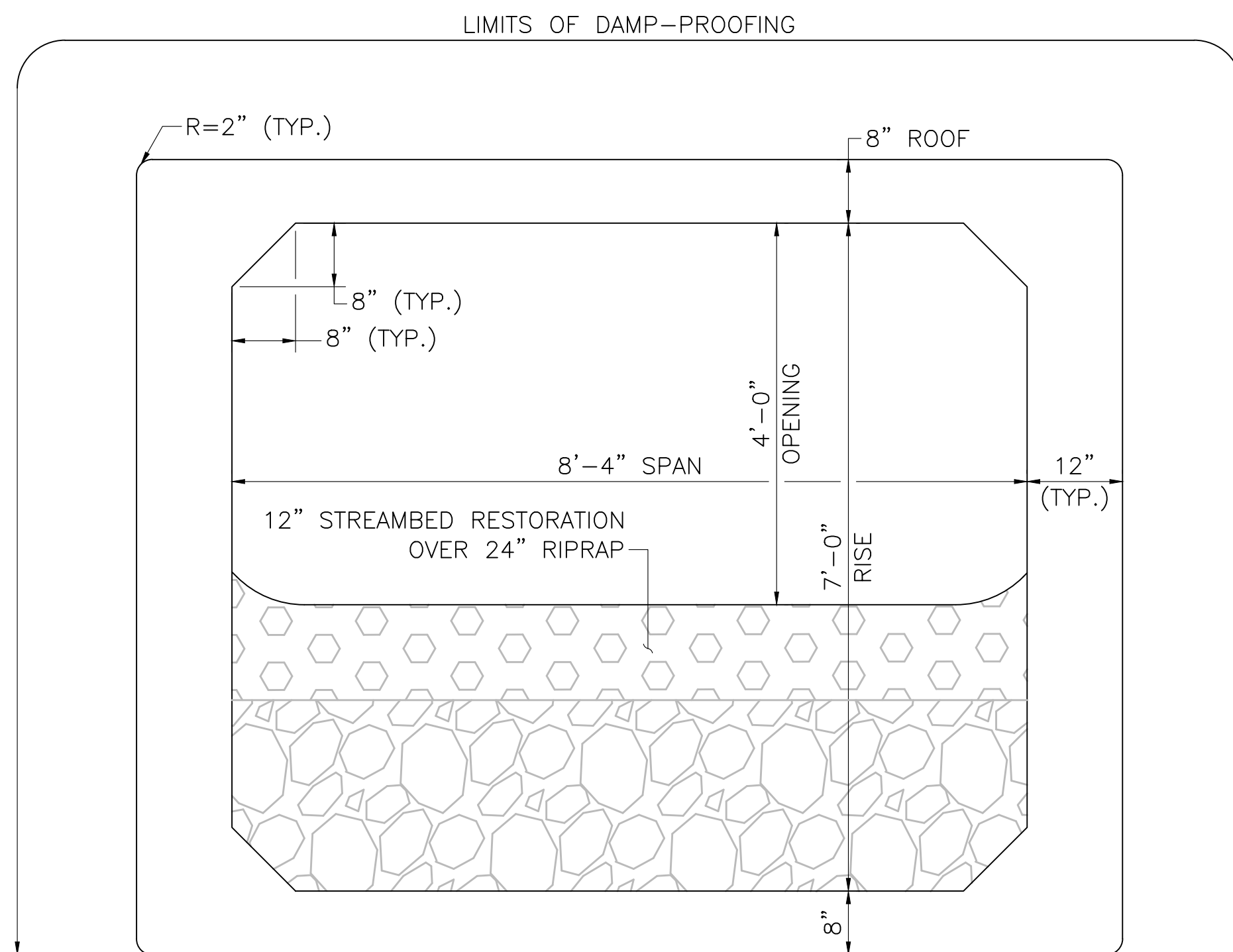
CONSTRUCTION JOINT DETAIL AT BUTTERFLY WALL

SCALE: $\frac{1}{2}$ " = 1'-0"



5" WATERSTOP

FULL SIZE



TYPICAL CULVERT SECTION

SCALE: $\frac{3}{4}$ " = 1'-0"

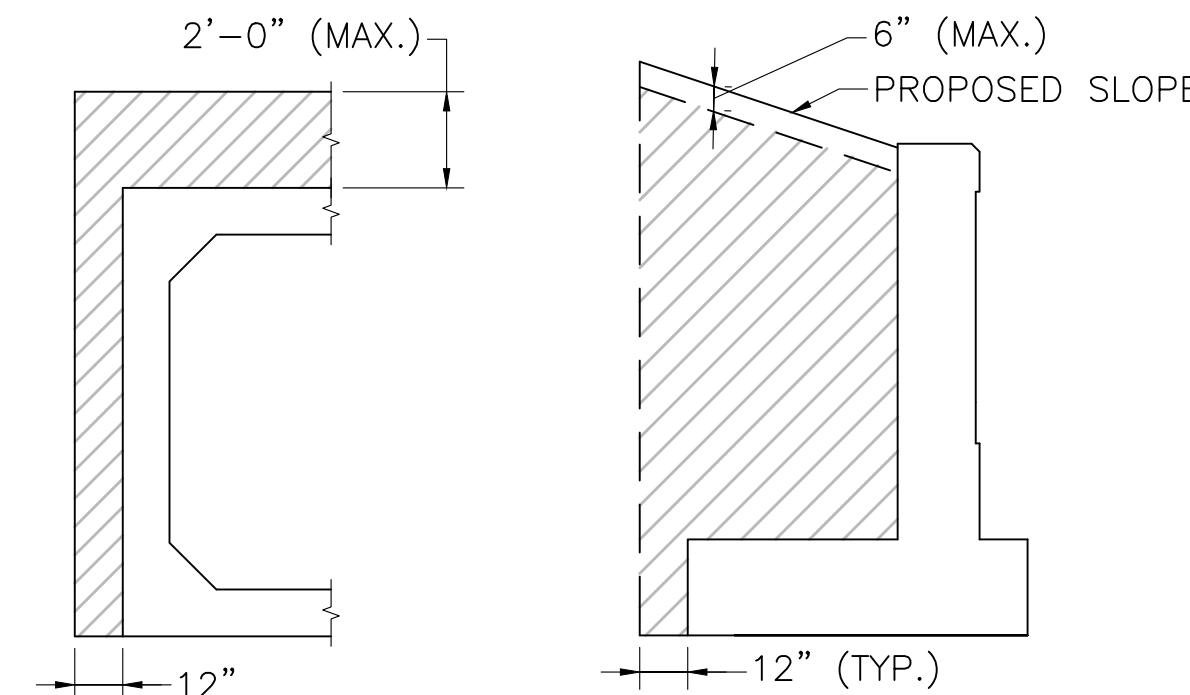
PRECAST CULVERT NOTES

1. CONTRACTOR SHALL SUBMIT PRECAST CONCRETE 4-SIDED BOX CULVERT DESIGN CALCULATIONS ALONG WITH SHOP DRAWINGS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS FOR APPROVAL PRIOR TO FABRICATION. PRESCRIBED HYDRAULIC OPENING (4' X 8'-4") SHALL BE MAINTAINED.
2. ALL CULVERT CONCRETE SHALL BE 5000 PSI HP CEMENT CONCRETE.
3. THE CONTRACTOR SHALL APPROVE ALL ELEVATIONS AND DIMENSIONS OF THE SHOP DRAWINGS PRIOR TO FABRICATION. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
4. REINFORCEMENT SHALL BE PLACED WITH A MINIMUM OF $1\frac{1}{2}$ " COVER.
5. ALL CULVERT, HEADWALL, AND CUT-OFF WALL REINFORCEMENT SHOWN IS CONCEPTUAL FOR BIDDING PURPOSES.
6. DESIGN SHALL BE IN ACCORADANCE WITH THE 2024 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONIS FOR HL-93 LOADING.
7. A FACTORED BEARING RESISTANCE OF 7.93 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION SHALL BE USED IN THE DESIGN OF THE CULVERT FOOTINGS (FOR FOOTINGS THAT ARE OVER-EXCAVATED AND PLACED ON CRUSHED STONE, AS SPECIFIED IN THE GEOTECHNICAL REPORT). FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.45. A MAX ALLOWABLE NET BEARING PRESSURE OF 3.50 KSF SHALL BE USED FOR THE SERVICE LIMIT STATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUBGRADE PREPARATION SUCH THAT THE DESIGN BEARING RESISTANCE SHALL BE ACHIEVED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF THIS BEARING RESISTANCE CANNOT BE MET.

LEOMINSTER MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	48	82
PROJECT FILE NO.		616375	

CULVERT DETAILS SHEET 4 OF 4



PRECAST CONCRETE BOX CULVERT

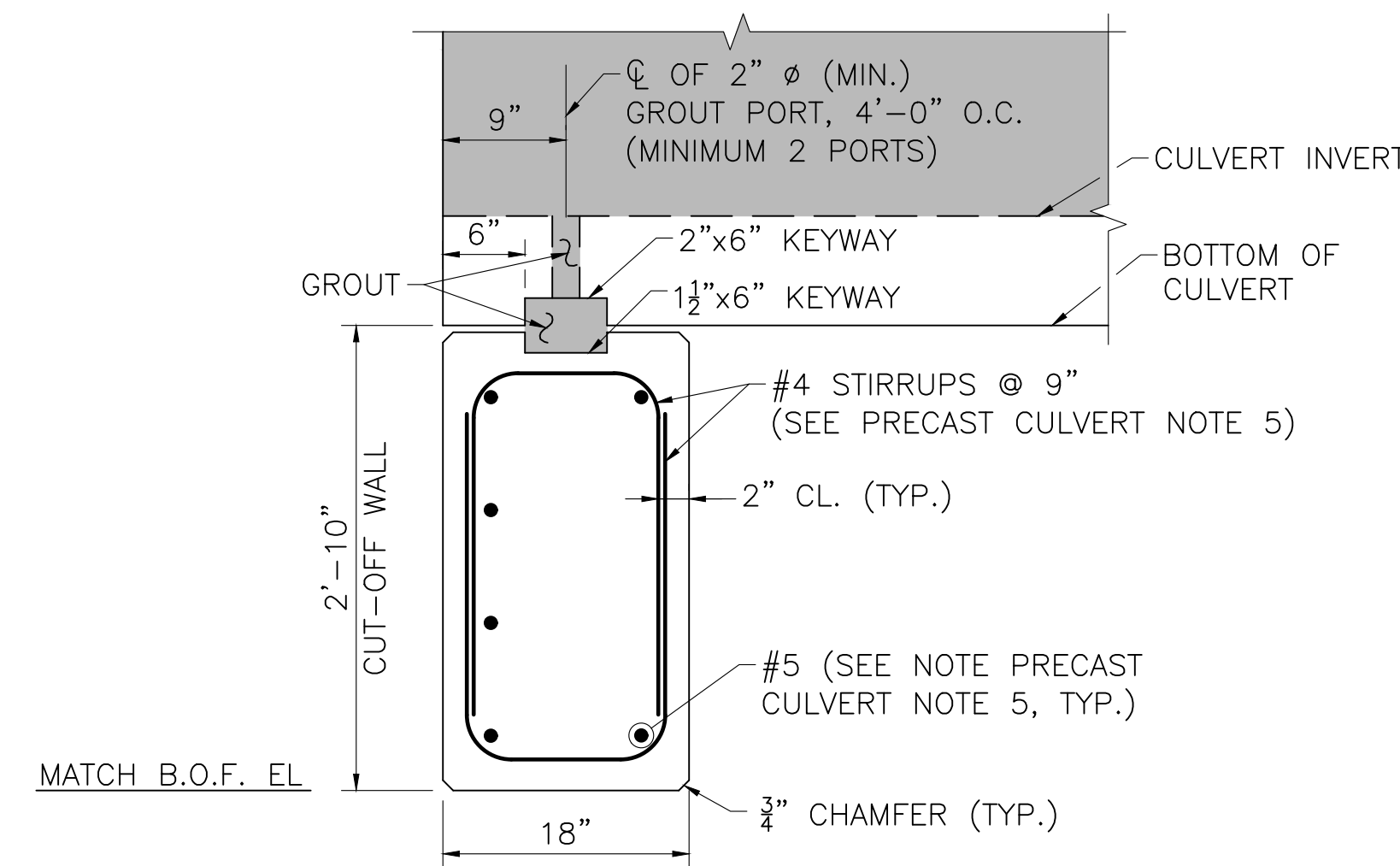
WINGWALL

NOTES:

1. HATCHED AREAS INDICATE THE LIMIT OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
2. THE BACKFILL PLACED AROUND THE STRUCTURE SHALL BE DEPOSITED ON BOTH SIDES TO APPROXIMATELY THE SAME ELEVATION AT THE SAME TIME.

LIMIT OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

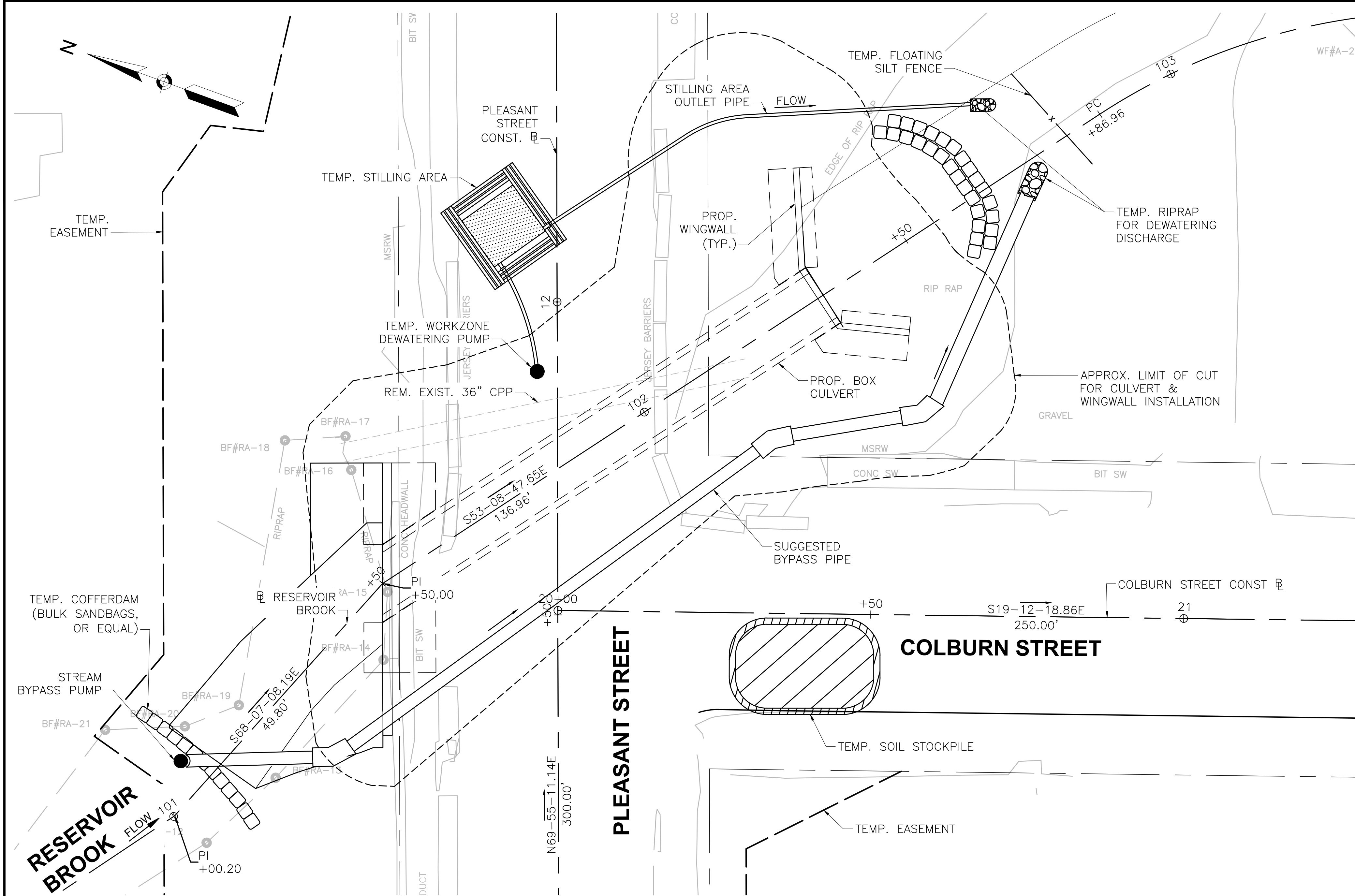
NOT TO SCALE



NOTE:
REINFORCEMENT SHOWN IS PRELIMINARY.
CONTRACTOR TO DETERMINE FINAL REINFORCEMENT.

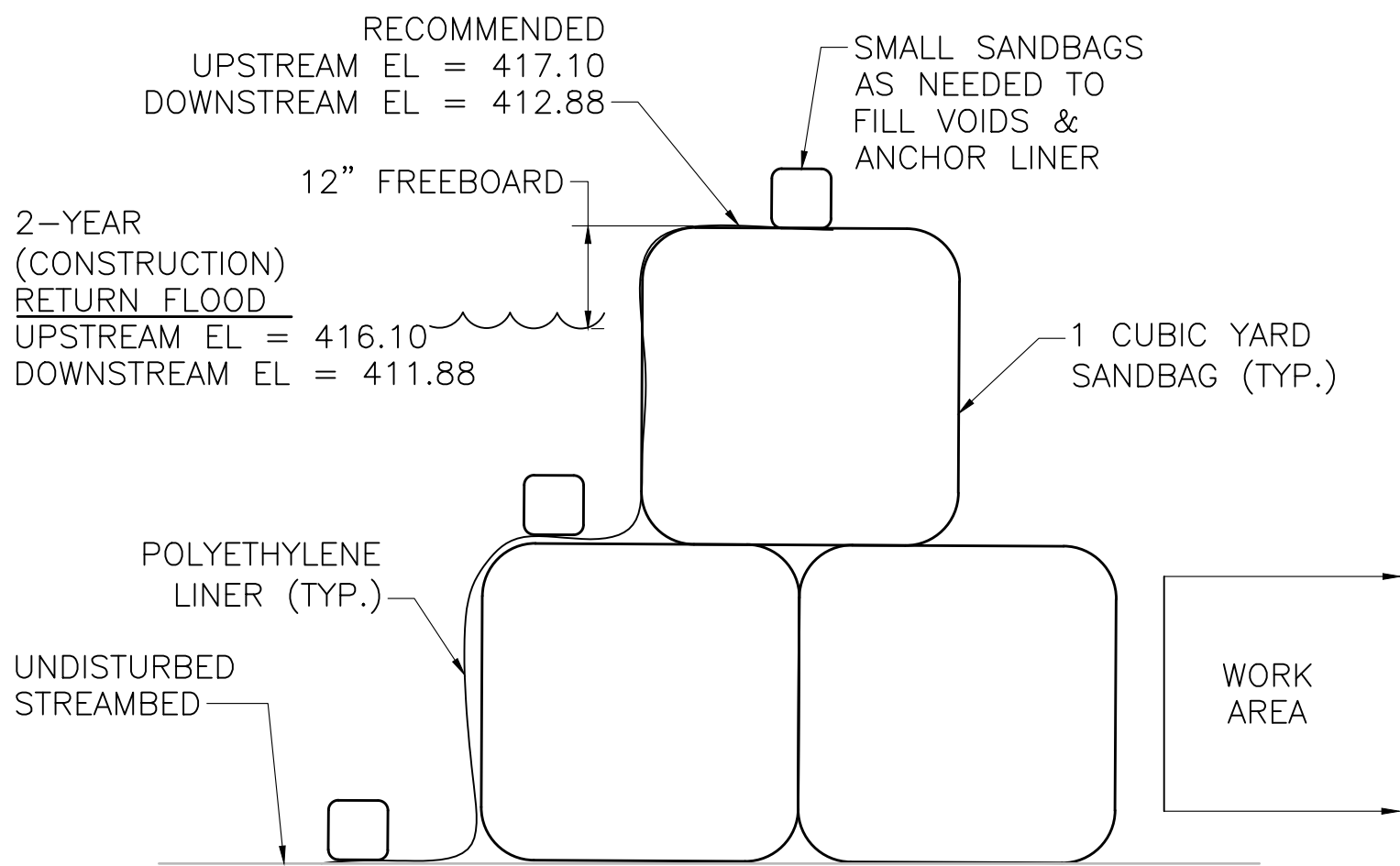
CUT-OFF WALL CONNECTION DETAIL

SCALE: $\frac{3}{4}$ " = 1'-0"



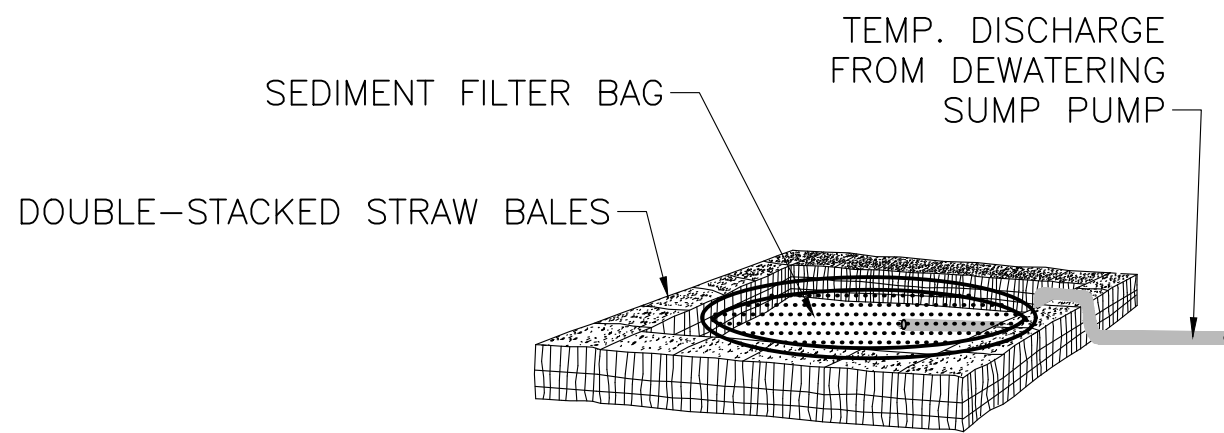
CONCEPTUAL CONTROL OF WATER PLAN FOR CULVERT CONSTRUCTION

SCALE: 1" = 10'



SANDBAG COFFERDAM

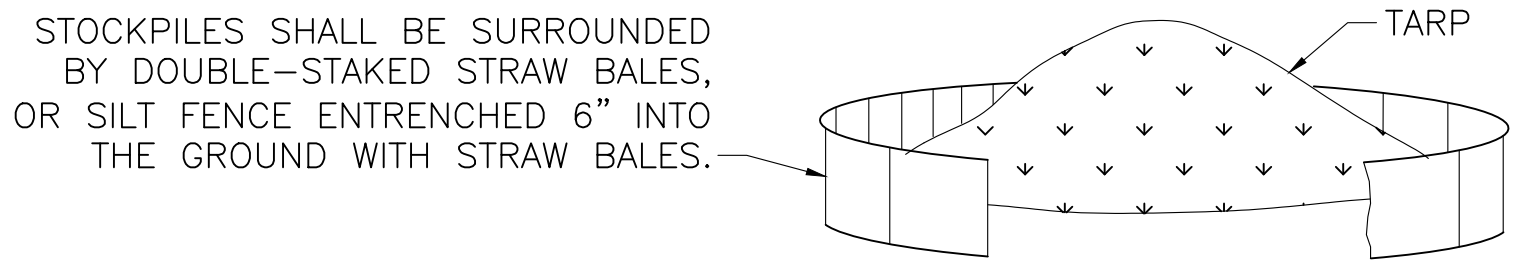
NOT TO SCALE



TEMP. STILLING NOTE:
DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR APPROVED EQUAL. SYSTEM SHOWN IS CONCEPTUAL. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL.

TEMPORARY STILLING AREA

NOT TO SCALE



NOTE:
IF STOCKPILE IS PLACED ON PAVEMENT, THEN IT SHALL BE SURROUNDED BY COMPOST FILTER TUBES.

TEMPORARY SOIL STOCKPILE

NOT TO SCALE

LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	49	82
PROJECT FILE NO.		616375	

PLEASANT STREET
CONTROL OF WATER PLAN

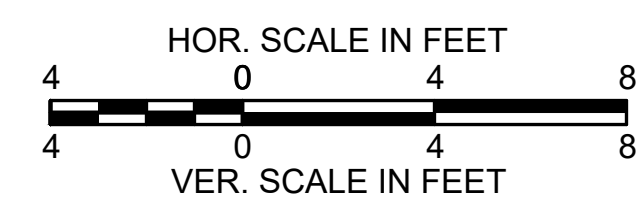
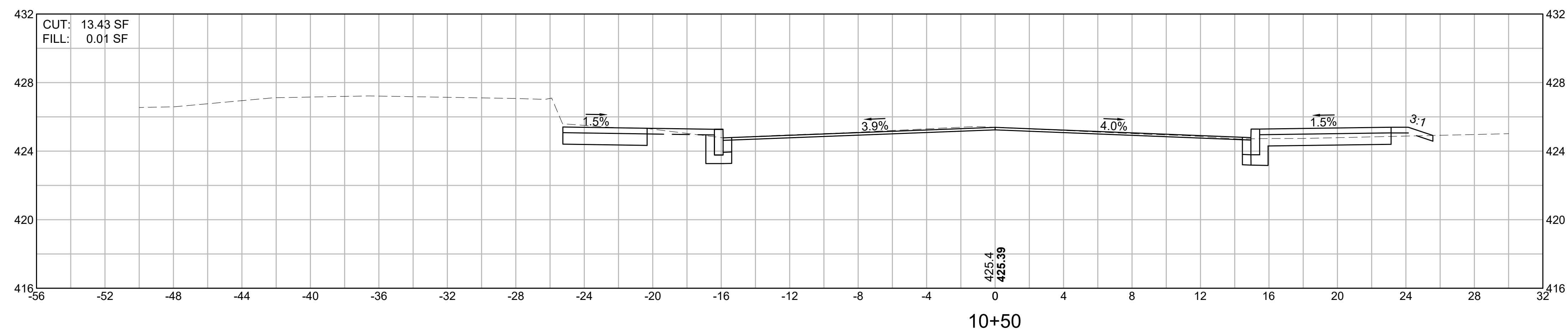
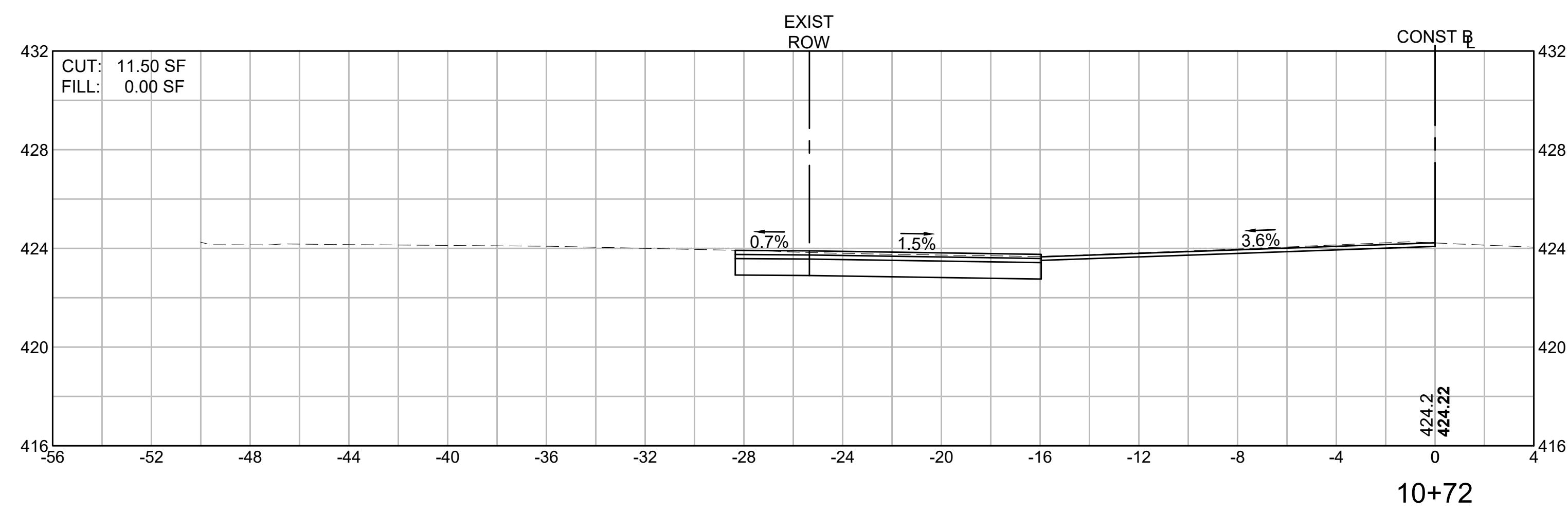
CONTROL OF WATER NOTES:

1. THE CONTROL OF WATER (C.O.W.) SYSTEM SHOWN IN THESE PLANS IS AN ALTERNATIVE FOR THE CULVERT CONSTRUCTION ONLY. THE CONTRACTOR SHALL DETERMINE THE MOST APPROPRIATE METHODS FOR CONTROLLING WATER AND FOR THE STREAM RELOCATION WORK DOWNSTREAM OF THE CULVERT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL NECESSARY C.O.W. SYSTEMS AND SHALL SUBMIT A C.O.W. PLAN TO THE ENGINEER FOR APPROVAL.
2. ALL DEWATERING SHALL BE DIVERTED TO A TEMPORARY STILLING BASIN PRIOR TO BEING PUMPED BACK INTO THE BROOK. NO CONTAMINATED WATER IS PERMITTED TO ENTER THE BROOK.
3. C.O.W. SYSTEM SHALL BE DESIGNED TO WITHSTAND A 2-YEAR FLOOD ELEVATION. THE TOP ELEVATION OF THE TEMPORARY WATER CONTROL MEASURE SHALL BE THE 2-YEAR FLOOD ELEVATION +1 FOOT OF FREEBOARD.
4. C.O.W. SYSTEM SHALL BE INSPECTED DAILY FOR WATER LEAKS OR EROSION AND REPAIR PROCEDURES SHALL BE IMPLEMENTED ACCORDINGLY.
5. PLEASANT STREET SHALL BE CLOSED TO VEHICULAR AND PEDESTRIAN TRAFFIC AT THE BRIDGE CROSSING PRIOR TO BEGINNING EXCAVATION. DETOUR SIGNAGE WILL BE INSTALLED IN ACCORDANCE WITH THE MUTCD AND THE TEMPORARY TRAFFIC CONTROL PLANS INCLUDED IN THESE CONSTRUCTION DRAWINGS.
6. TEMPORARY AND PERMANENT UTILITIES NOT SHOWN FOR CLARITY. REFER TO UTILITY PLANS ON SHEETS 23-26 FOR ADDITIONAL INFORMATION REGARDING TEMPORARY AND PERMANENT UTILITY WORK.

SUGGESTED SEQUENCE OF CONSTRUCTION:

1. CLOSE THE ROADWAY TO VEHICULAR AND PEDESTRIAN TRAFFIC AT THE BRIDGE CROSSING. COORDINATE TEMPORARY UTILITY WORK (GAS AND OHW) WITH RESPECTIVE OWNERS PRIOR TO BREAKING EARTH.
2. INSTALL EROSION CONTROLS: TEMPORARY EROSION CONTROL AROUND PROJECT LIMITS TO PROTECT RESERVOIR BROOK FROM WORK ZONE SEDIMENT; FLOATING SILT FENCE IN THE RESERVOIR BROOK DOWNSTREAM OF THE PROJECT LIMITS TO TRAP ANY FLOATING DEBRIS/SILT THAT MAY ENTER THE BROOK.
3. INSTALL C.O.W. COFFERDAMS, BYPASS PIPE, DEWATERING PUMPS, AND TEMPORARY STILLING BASIN.
4. PLACE TEMPORARY RIPRAP AT OUTLET FOR BYPASS DISCHARGE.
5. DEWATER THE WORK AREA PRIOR TO (AND THROUGHOUT) EXCAVATION TO FACILITATE INSTALLING THE CULVERT AND WINGWALLS IN THE DRY CONDITION. ALL DEWATERING FLOW SHALL PASS THROUGH THE STILLING BASIN TO REMOVE SEDIMENT PRIOR TO DEPOSITING BACK INTO THE STREAM.
6. INSTALL THE DOWNSTREAM CULVERT SECTIONS FIRST TO FACILITATE TEMPORARY UTILITY RELOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR TIMING THE WORK SUCH THAT THE INSTALLATION OF NECESSARY PRECAST CULVERT SECTIONS IS COMPLETE PRIOR TO TEMPORARY UTILITY RELOCATIONS (WATER AND SEWER).
7. INSTALL THE REMAINING PRECAST BOX CULVERT SECTIONS AND WINGWALLS (EXCEPT BUTTERFLY WALL ON NORTH SIDE). RESTORE THE STREAMBED IN ACCORDANCE WITH THESE PLANS.
8. MAKE FINAL UTILITY CONNECTIONS AND REMOVE TEMPORARY BYPASS PIPING. BACKFILL THE CULVERT AND WINGWALLS THAT HAVE BEEN INSTALLED.
9. REDIRECT STREAM FLOW THROUGH THE CULVERT.
10. CONSTRUCT THE BUTTERFLY WALL. NOTE THAT THE STREAMFLOW SHALL BE FULLY RESTORED PRIOR TO CONSTRUCTION OF THE BUTTERFLY WALL DUE TO THE BYPASS PIPE ALIGNMENT BENEATH THE WALL.
11. INSTALL MODIFIED ROCKFILL EMBANKMENT AND LOAM AND SEED WITH EROSION CONTROL BLANKET IN FRONT OF THE WINGWALLS.

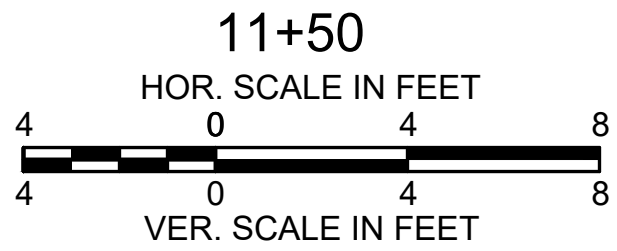
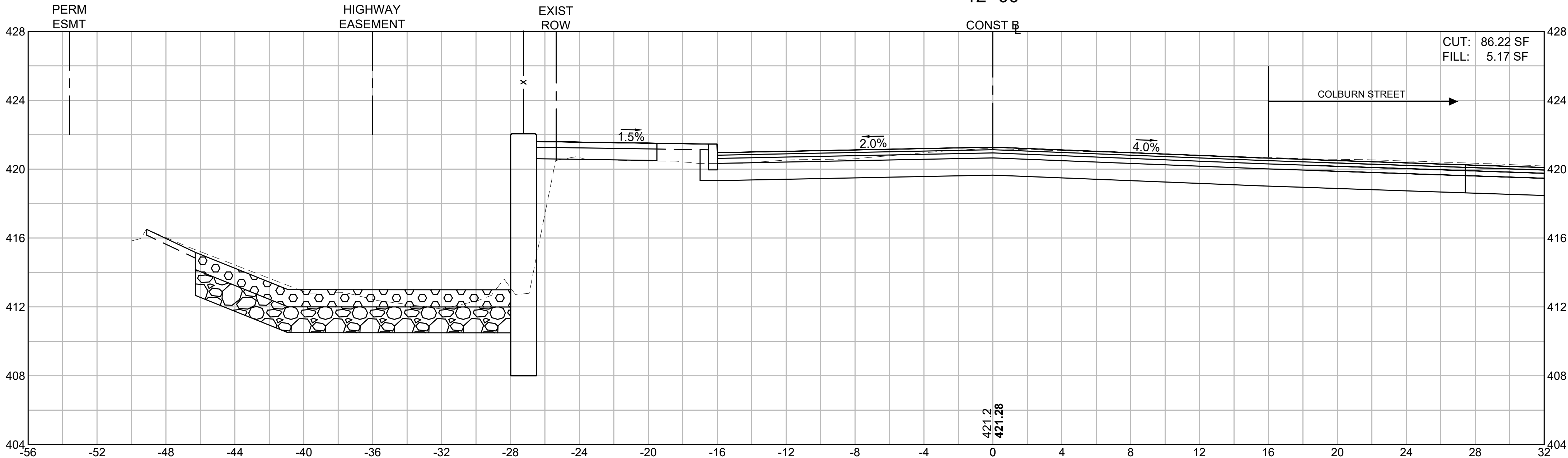
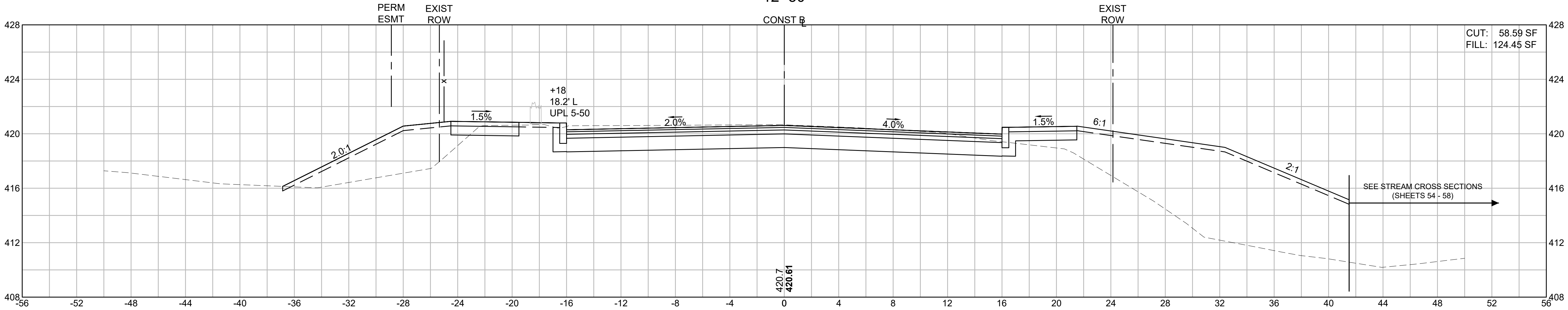
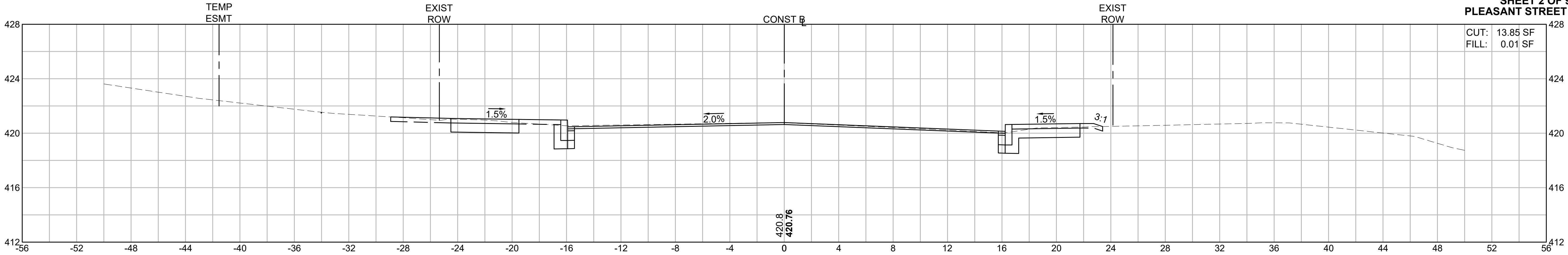
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	50	82
PROJECT FILE NO.		616375	



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	51	82
PROJECT FILE NO.		616375	

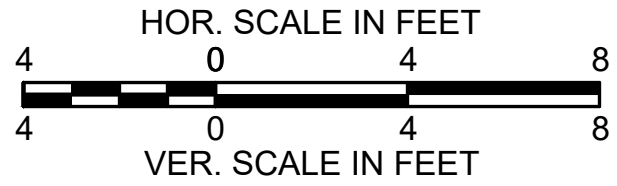
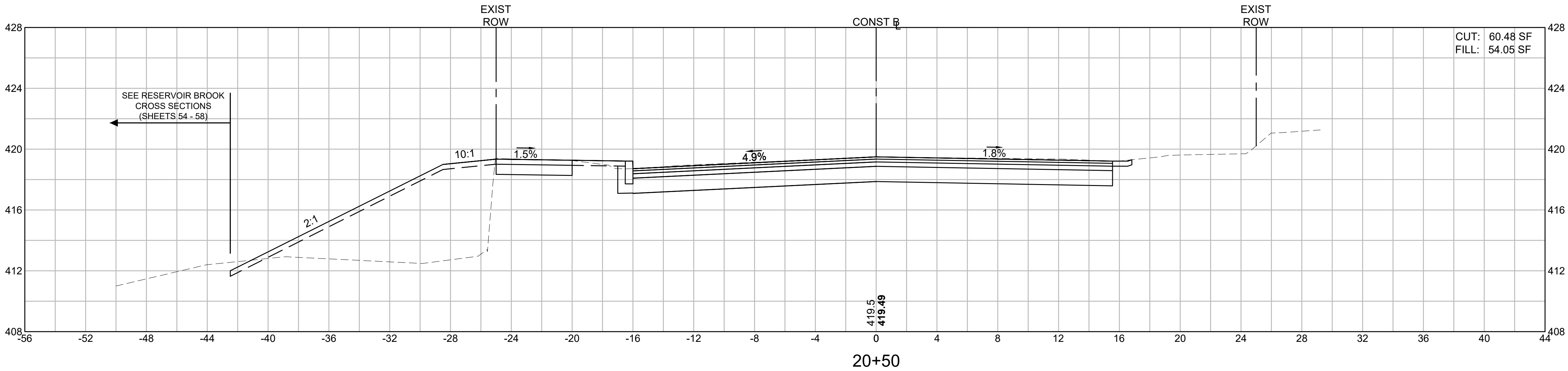
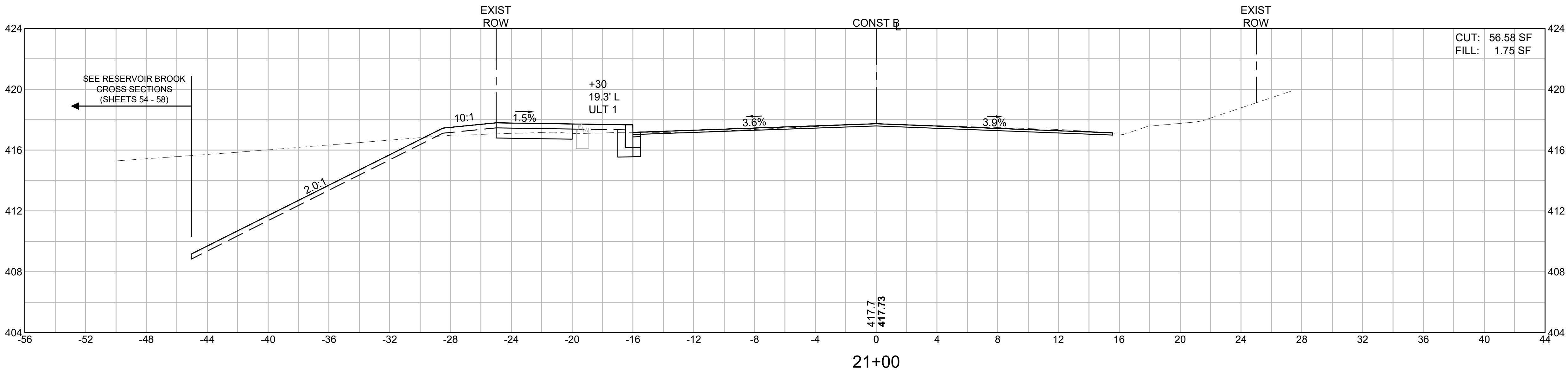
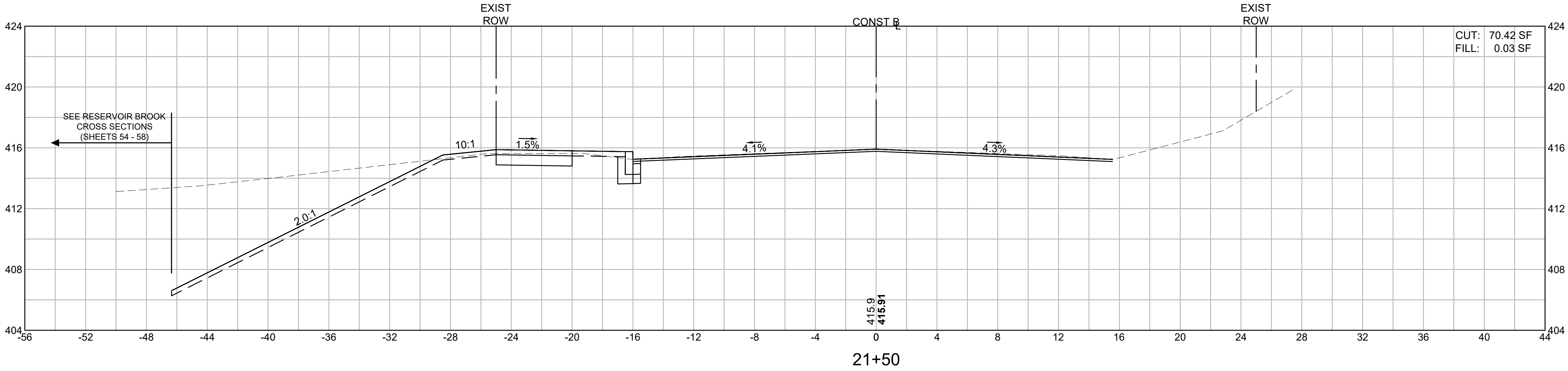
CROSS SECTIONS
SHEET 2 OF 9
PLEASANT STREET - 2 OF 2



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	52	82
PROJECT FILE NO.		616375	

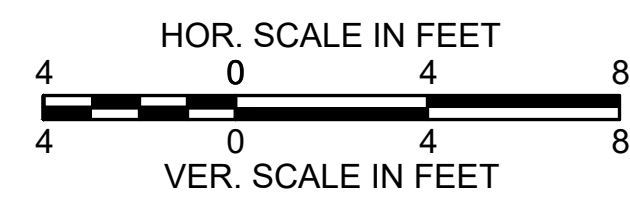
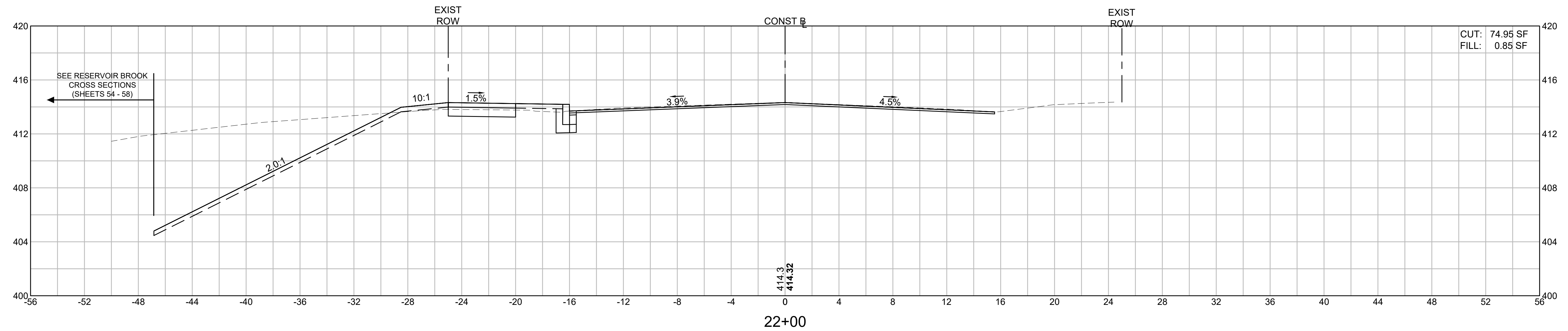
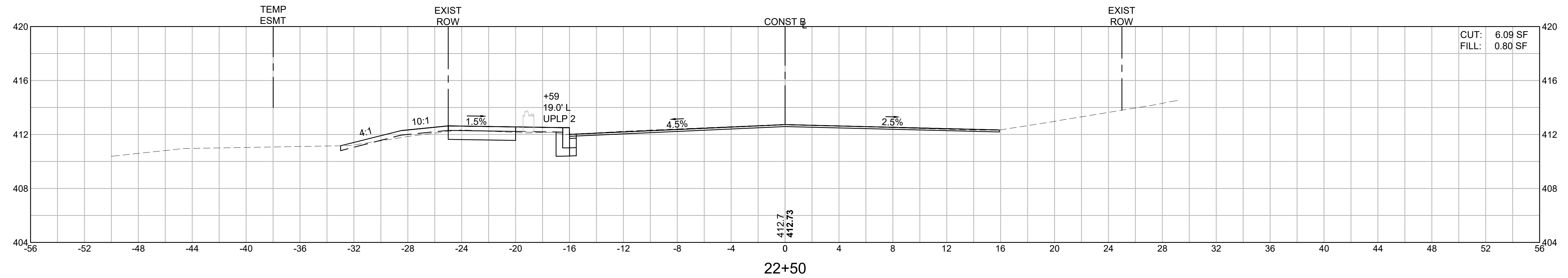
CROSS SECTIONS
SHEET 3 OF 9
COLBURN STREET - 1 OF 2



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	53	82
PROJECT FILE NO.		616375	

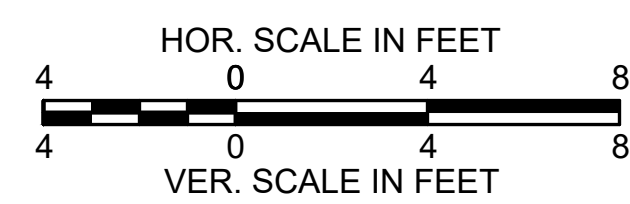
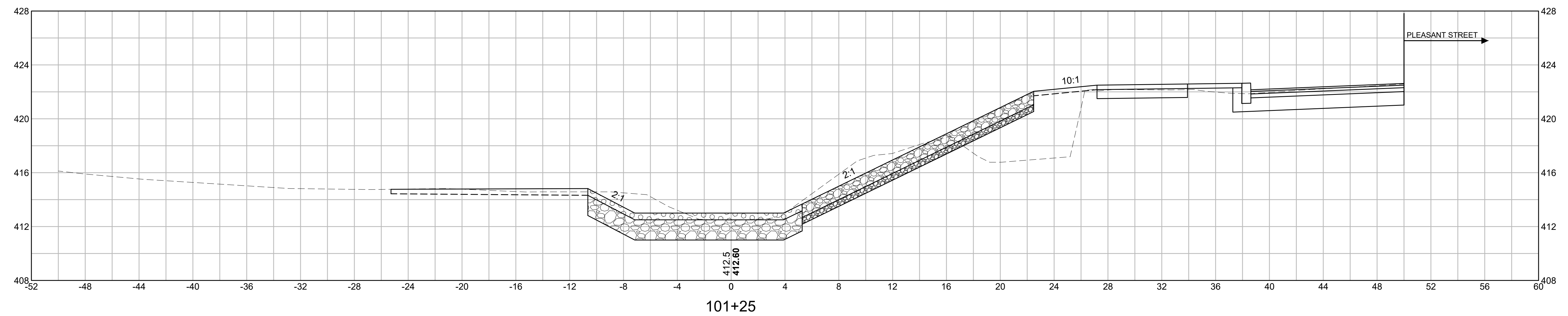
CROSS SECTIONS
SHEET 4 OF 9
COLBURN STREET - 2 OF 2



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	54	82
PROJECT FILE NO.		616375	

CROSS SECTIONS
SHEET 5 OF 9
RESERVOIR BROOK - 1 OF 5



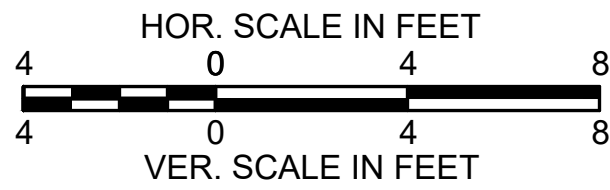
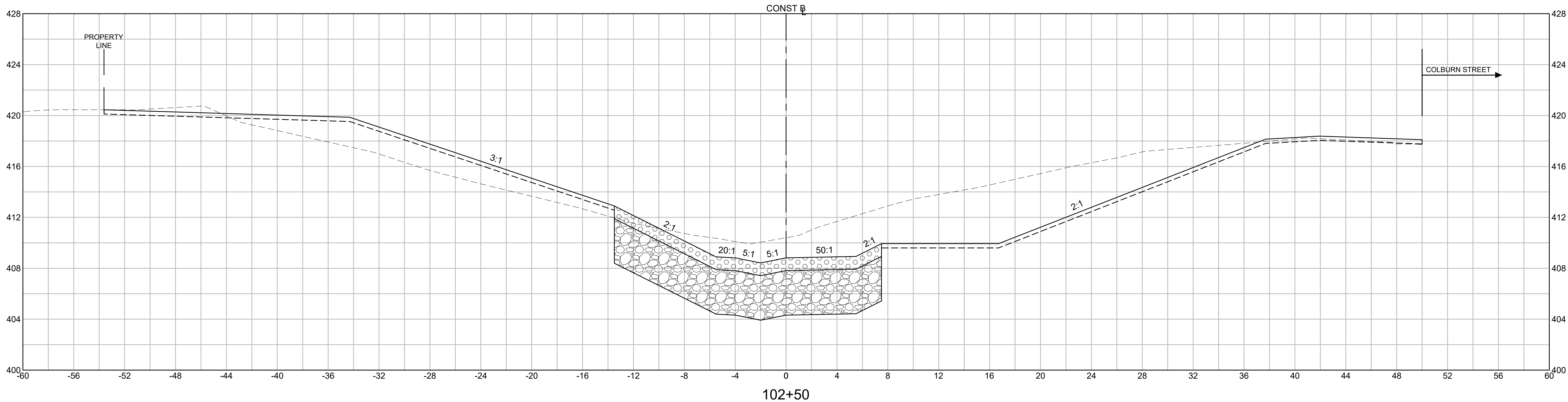
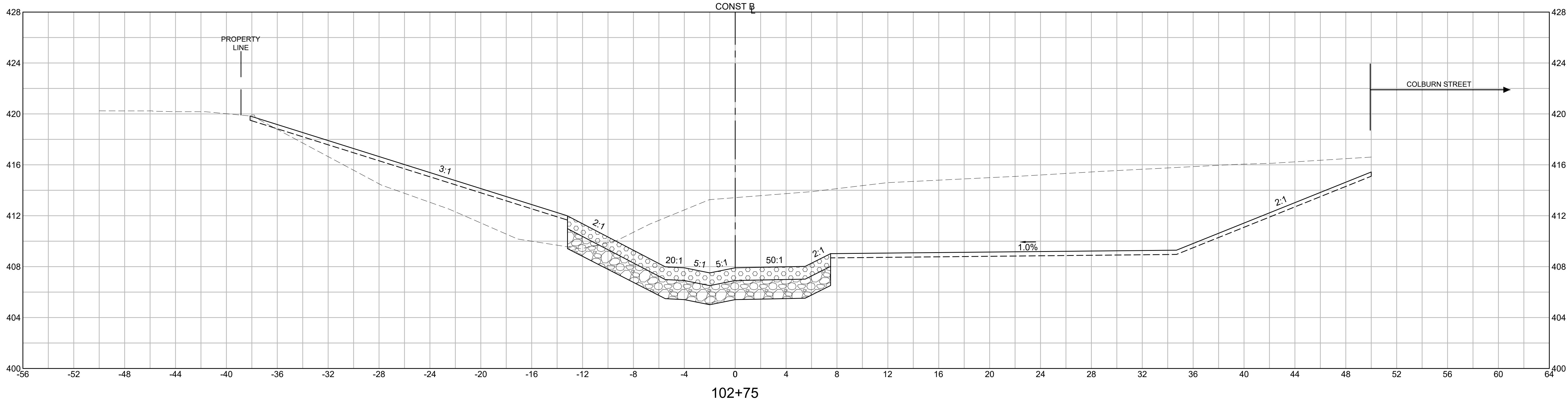
LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	55	82
PROJECT FILE NO.		616375	

CROSS SECTIONS

SHEET 6 OF 9

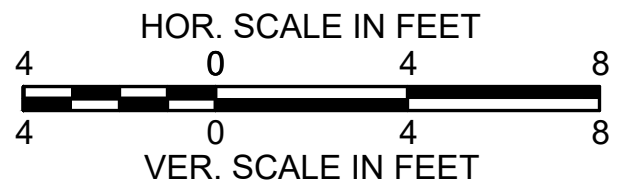
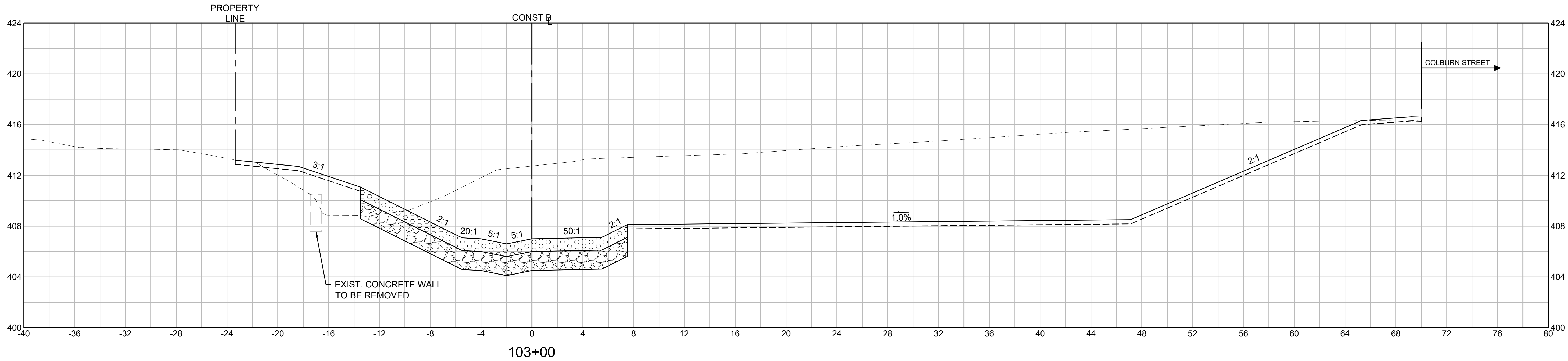
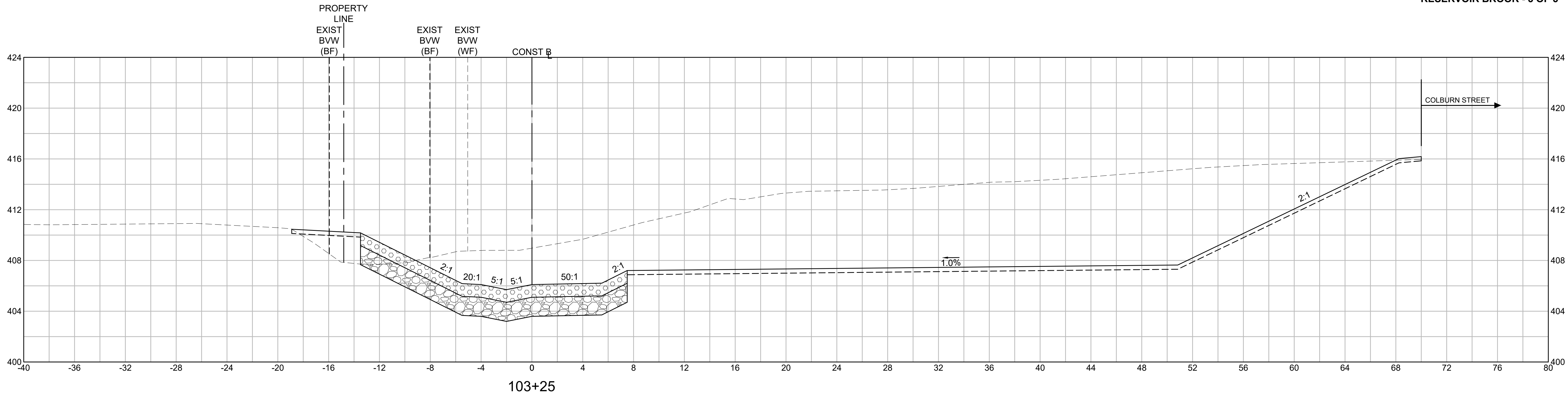
RESERVOIR BROOK - 2 OF 5



LEOMINSTER
MULTIPLE LOCATIONS

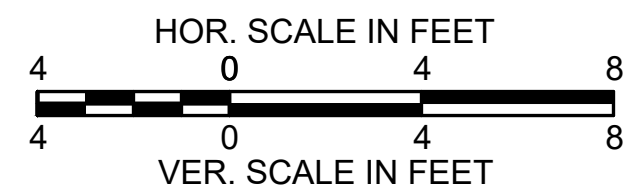
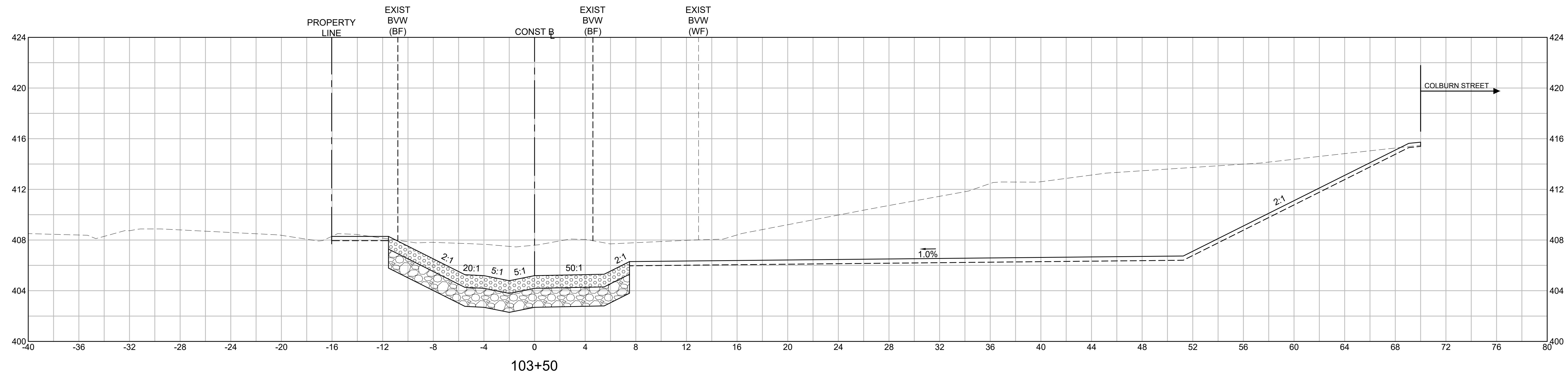
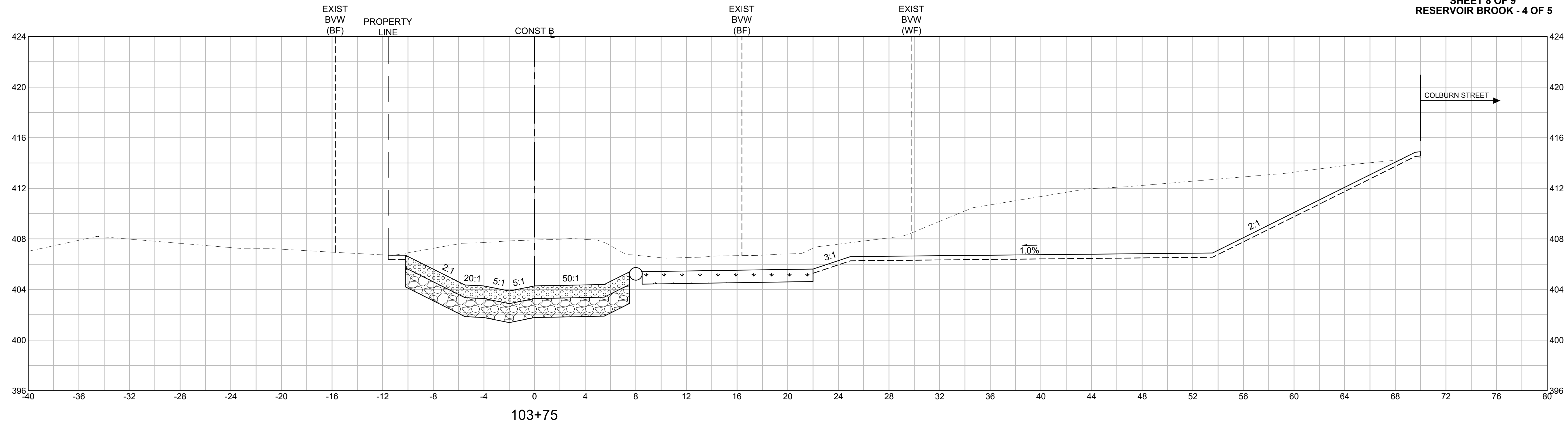
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	56	82
PROJECT FILE NO.		616375	

CROSS SECTIONS
SHEET 7 OF 9
RESERVOIR BROOK - 3 OF 5



LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	57	82
PROJECT FILE NO.		616375	

CROSS SECTIONS
SHEET 8 OF 9
RESERVOIR BROOK - 4 OF 5



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	58	82
PROJECT FILE NO.		616375	

104+25

EXIST BVW (BF)

PROPERTY LINE

CONST B

EXIST BVW (BF)

SEE GRADING PLANS

COLBURN STREET

2:1

20:1

5:1

5:1

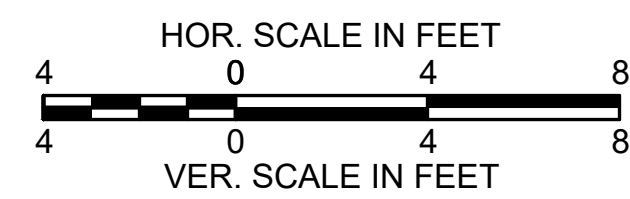
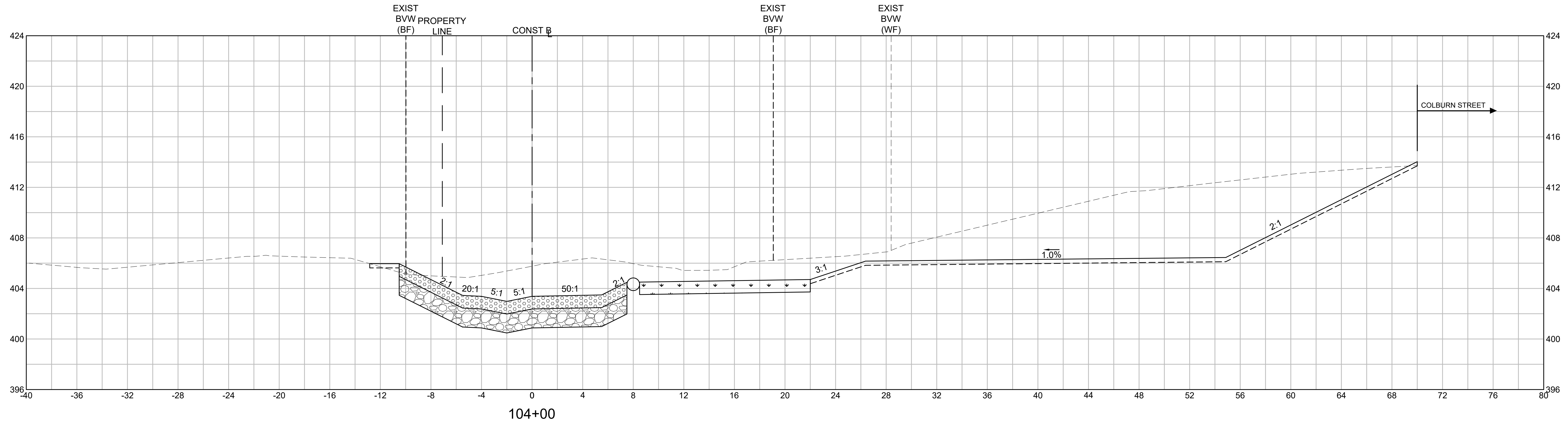
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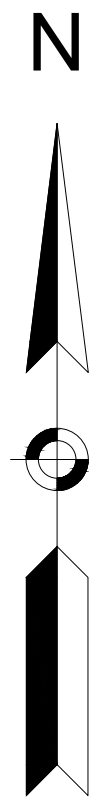
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18" 1/2" STONE

4' DEPTH

5' WIDTH

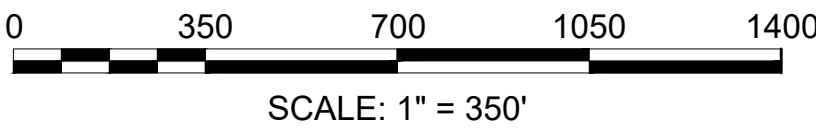
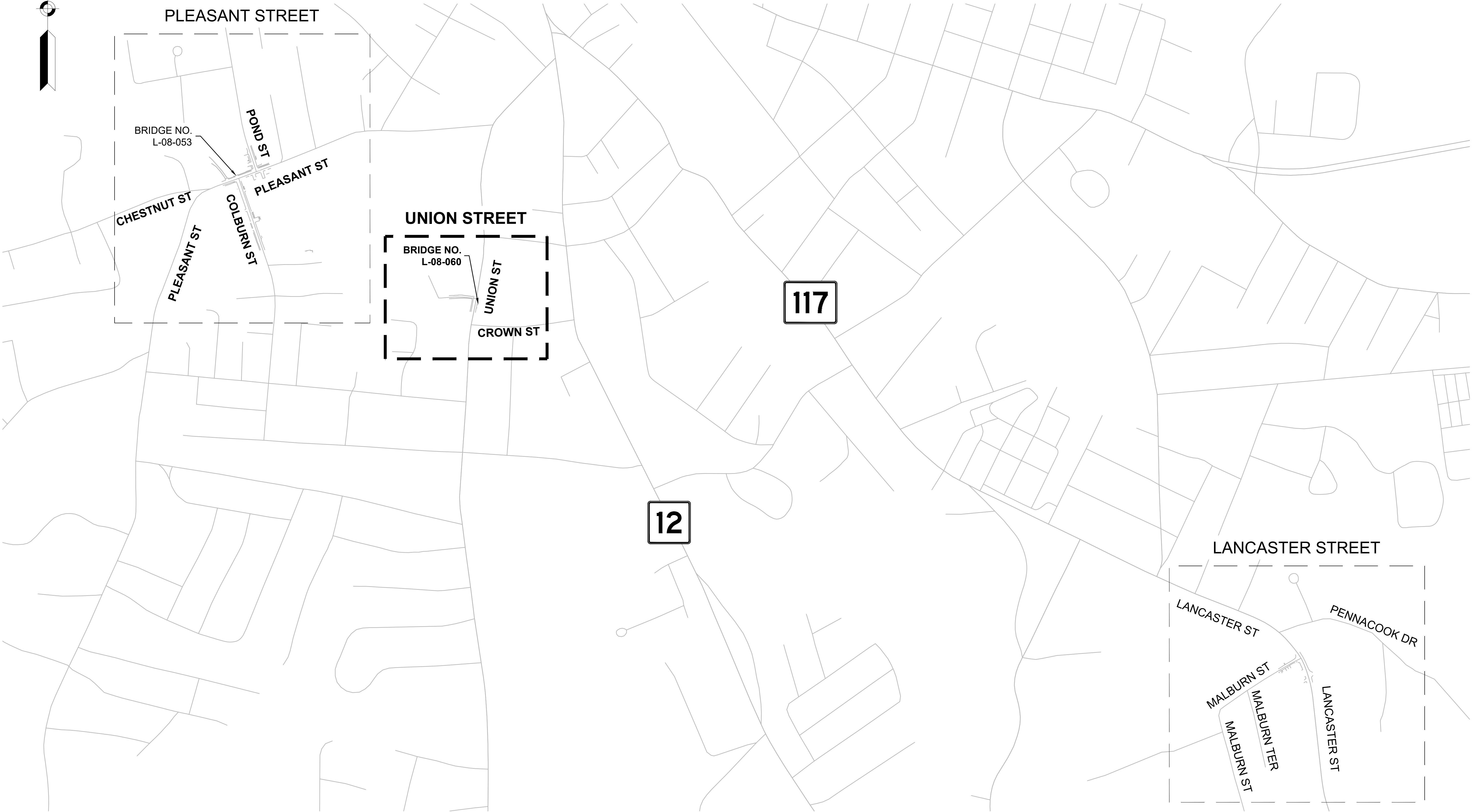


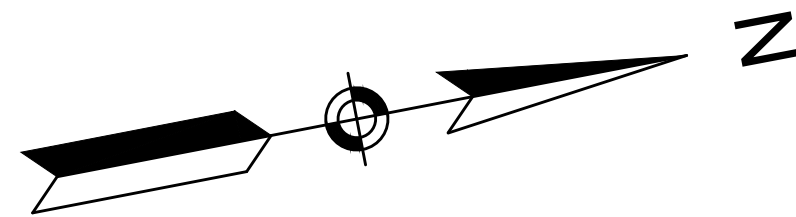


LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	59	82
PROJECT FILE NO.		616375	

UNION STREET
GENERAL KEY PLAN

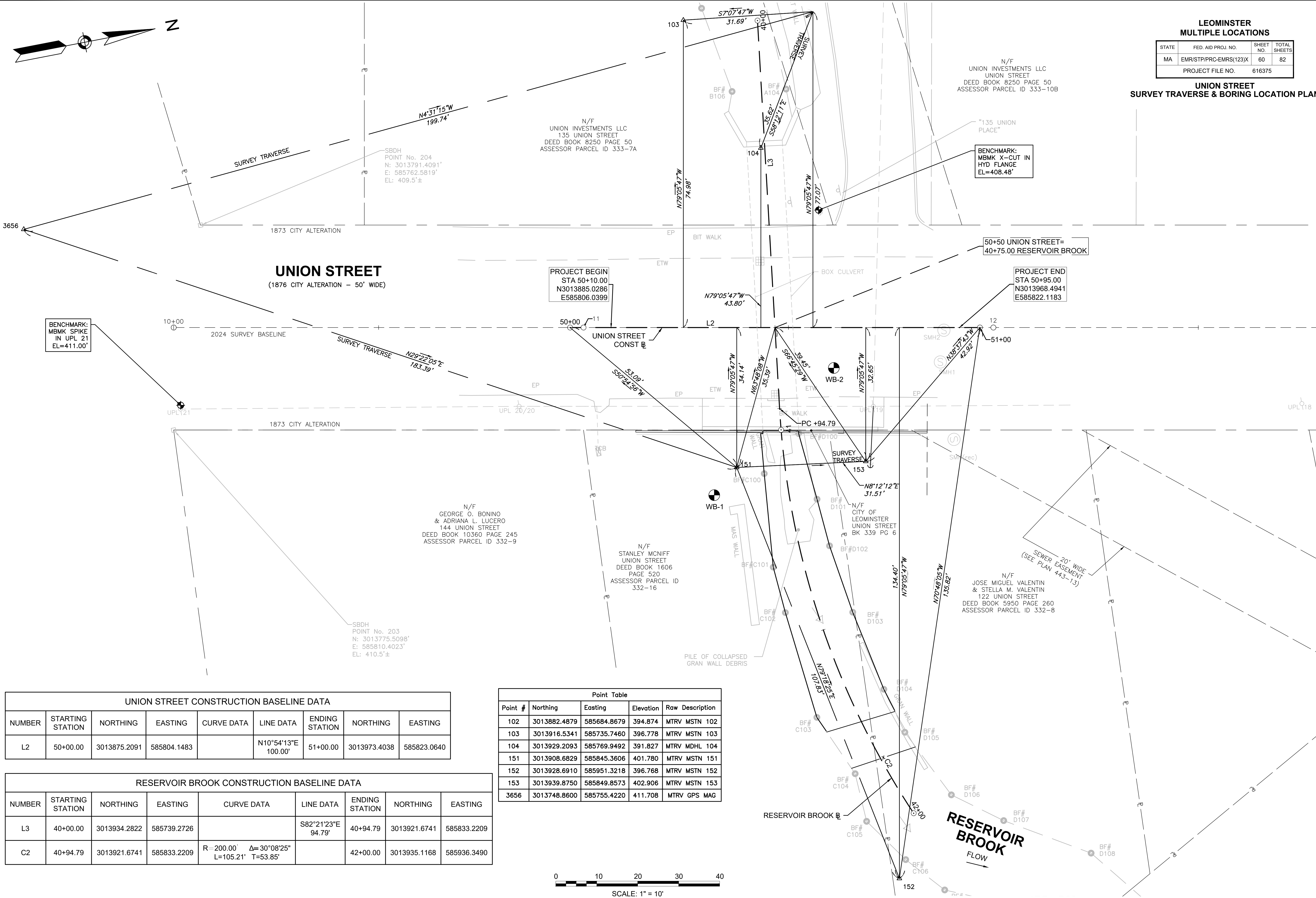




LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	60	82
PROJECT FILE NO.		616375	

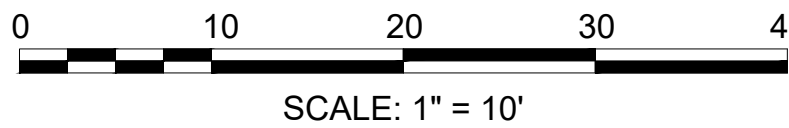
UNION STREET
SURVEY TRAVERSE & BORING LOCATION PLAN



UNION STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L2	50+00.00	3013875.2091	585804.1483		N10°54'13"E 100.00'	51+00.00	3013973.4038	585823.0640

RESERVOIR BROOK CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L3	40+00.00	3013934.2822	585739.2726		S82°21'23"E 94.79'	40+94.79	3013921.6741	585833.2209
C2	40+94.79	3013921.6741	585833.2209	R=200.00' Δ=30°08'25" L=105.21' T=53.85'		42+00.00	3013935.1168	585936.3490

Point Table				
Point #	Northing	Easting	Elevation	Raw Description
102	3013882.4879	585684.8679	394.874	MTRV MSTN 102
103	3013916.5341	585735.7460	396.778	MTRV MSTN 103
104	3013929.2093	585769.9492	391.827	MTRV MDHL 104
151	3013908.6829	585845.3606	401.780	MTRV MSTN 151
152	3013928.6910	585951.3218	396.768	MTRV MSTN 152
153	3013939.8750	585849.8573	402.906	MTRV MSTN 153
3656	3013748.8600	585755.4220	411.708	MTRV GPS MAG



GEOSCIENCES TESTING AND RESEARCH, INC

55 Middlesex Street, Suite 225, North Chelmsford, MA.
Phone: (978) 251-9395 www.gtrinc.net

Project Name: Union Street
Location: Leominster, MA

Boring No.	WB-2
Page:	1 of 2
GTR Job #:	24.379
GTR Rep:	P. Dion
Reviewer:	C. George

Carr-Dee Corp.									
Drilling Co.		Helper(s)		Equipment	Casing	Sampler	Core	Groundwater	Depth (ft)
Driller:	Joe Desimone	Sean							
Start Date:	2/4/2025	End Date:		2/4/2025	Type	HW	SS	N/A	
					Size I.D.	4.00"	1.375"	2.16"	
Ground Surface Elev (ft):	~ 406 ft								
								Date	Time
								12	1:44
								Water	Casing
								29	36
Boring Location:	N3013937.0086, ES58526.4643			Hammer w/	300 lb	140 lb	-		
Note:	N3013937.0086, ES58526.4643			Hammer Fall	30'	30'	-		

[illegible]

NOTES:

1. 6" of Asphalt.
2. Vacuum excavated to 6' below grade. Material consisted of f-m SAND, little f-c Gravel, little Cobbles, trace Silt
3. Bottom 2" of sample composed of Black Organic SILT, trace Roots.
4. Drilled through boulder from 21.5'-23'.

Order of Sample Description (Modified Burmister)	PENETRATION RESISTANCE (N/GIUGE)	
1. Moisture Content: Dry, Moist, Wet	Cohesiveless Soils (Sands)	Cohesive Soils (Clays)
2. Relative Density or Consistency	Relative Density / Blow per foot	Consistency / Blow per foot
3. Color	Very Loose < 0.4	Very Soft < Below 2
4. Major Component: Should be capitalized	Loose 0.4 - 1.0	Soft 2 - 4
5. Minor Component: "and" or "some"	Medium Dense 1.0 - 30	Medium Stiff 4 - 15
	Dense 30 - 50	Stiff 15 - 30
	Very Dense > 50	Very Stiff > 30
		Hard > 80
		Stiff 8 - 15
		Very Stiff 15 - 30
		Hard 30 - 50
		Very Hard 50 - 80
		Extremely Hard 80 - 100

GEOSCIENCES TESTING AND RESEARCH, INC.

55 Middlesex Street, Suite 225, North Chelmsford, MA
Phone: (978) 251-9395 www.gtrinc.net

Boring No.	WB-1
Page:	1 of 2
GTR Job #:	24.379
GTR Rep:	P. Dion
Reviewer:	C. George

Project Name: Union Street
Location: Leominster, MA

Drilling Co.										Carr-Dee Corp.															
Driller:		Joe Desimone		Hole(s) ID:		Frank		Equipment		Casing		Sampler		Core		Groundwater		Depth (ft)							
Start Date:		2/3/2025		End Date:		2/5/2025		Type		HW		SS		NX		Date		Time		Water		Casing		Hole	
Ground Surface Elev (ft):				~ 403ft				Size I.D.		4.00"		1.375"		2.16"		2/3		2:44		14		15		17	
Boring Location:		N3013900.816E, 45848551.3929						Hammer Fall		300 lb		140 lb				2/5		2:32		11		30		36	
Note:		M301356.561E, 45848551.3929						Hammer Fall		300 lb		30"		30"											

Depth	Casing BPF	Sample Data					Stratum	Additional Data	Notes
		No.	Pen/ Recovery	Depth (ft.)	Blows per in	Field Test	Description and Classification		
0		S-1	24/36	0-2	3-3		Loose, brown, URBAN FILL, little F-m Sand, trace Silt, dry	URBAN FILL	1.2
		S-2	24/4	2-4	5-2		Loose, black, F-m SAND, little Urban Fill, little Silt, dry		
		S-3	24/12	4-6	1-2		Very loose, black, URBAN FILL, little F- Sand, trace Silt, dry		
		S-4	24/6	6-8	3-2		Loose, black, URBAN Fill, some F- Sand, trace Silt, dry		
		S-5	24/1	8-10	1-1		Very loose, black, F- SAND and Urban Fill, trace Silt, dry		
10								-----12.5'	3
		S-6	24/12	15-17	3-3		Loose, brown, f-m SAND, trace Silt, wet	SAND	
					5-7				
20		S-7	24/15	20-22	15-13		Medium dense, brown, f-m SAND, some Silt		
					15-22			-----23.5'	
25		S-8	24/17	25-27	23-23		Dense, brown, f-m SAND, some Gravel, little Clayey Silt	GLACIAL TILL	
					18-16				

NOTES:

1. Mudline is 16 feet from road grade.
2. Urban fill primarily consisted of Ash, Cinders, and Rubber, with minor amounts of Roots, Plaster, and Brick.
3. Switched from hollow stem augers to HW casing after sampling 15'-17'.

Order of Sample Description (Modified Burmister)	PENETRATION RESISTANCE (N) GUIDE	
1. Moisture Content: Dry, Moist, Wet	Cohesiveless Soils [Sands]	Cohesive Soils [Clays]
2. Soil Reactivity or Consistency	Relative Density / Blows per foot	Consistency / Blows per foot
3. Color	Very Loose >= 0 - 4	Very Soft >= Below 2
4. Major Component: Should be capitalized	Loose >= 4 - 10	Soft >= 2 - 4
5. Minor Component: "and" or "some"	Medium Dense >= 10 - 30	Medium Stiff >= 4 - 15
6. Minor Component: "some" - 20% to 35% minor grain size	Dense >= 30 - 50	Stiff >= 8 - 15
7. Minor Component: "little" - 10% to 20% minor grain size	Very Dense >= Over 50	Very stiff >= 15 - 30
8. Minor Component: "trace" - 1% to 10% minor grain size	Hard >= Over 10	Over 30

GEOSCIENCES TESTING AND RESEARCH, INC.

55 Middlesex Street, Suite 225, North Chelmsford, MA
Phone: (978) 251-9395 www.gtrinc.net

Boring No.	WB-1
Page:	2 of 2
GTR Job #:	24.379
GTR Rep:	P. Dion
Reviewer:	C. George

Project Name: Union Street
Location: Leominster, MA

Carr-Dee Corp.											
Drilling Co:	Joe Desimone	Helper(s):	Frank	Equipment	Casing	Sampler	Core	Groundwater		Depth (ft)	
Start Date:	7/3/2025	End Date:	2/5/2025	Type	HW	SS	NX	Date	Time	Water	Casing
Ground Surface Elev (ft):	~ 403 ft			Size I.D.	4.00"	1.375"	2.16"	2/3	2:44	14	15
Boring Location:	M3013000.0161, ES58551.3929			Hammer/Hit	300'	140 lb		2/5	2:42	11	30
Notes:	M3013000.0161, ES58551.3929			Hammer Fall	300'						

[illegible]

NOTES:

4. The disintegrated bedrock was completely decomposed into a strong soil matrix with small rock fragments still intact; the soil component of the disintegrated bedrock consists of fine sand, silt, and clay.

Order of Sample Description (Modified Burnister)		PENETRATION RESISTANCE (N) GUIDE	
1. Moisture Content: Dry, Moist, Wet		Cohesiveness Sols (Sands)	Cohesive Sols (Clays)
2. Soil Relative Density or Consistency		Relative Density / Blows per Foot	Consistency / Blows per Foot
3. Color		Very Loose < 4	Very Soft < 2
4. Major Component: Should be capitalized		Loose < 10	Soft < 4
5. Minor Component: "and" or "some" 35% to 40% minor grain size		Medium Dense > 10 - 30	Medium Stiff > 4 - 8
		Dense > 30 - 50	Stiff > 8 - 15
		Very Dense > Over 50	Very Stiff > 15 - 30
			Hard > Over 30
			Very Hard > 50

LEOMINSTER

MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	61	82
PROJECT FILE NO.		616375	

UNION STREET BORING LOGS

1. LOCATION OF BORINGS SHOWN ON THE PLANS THUS:

2. BORINGS ARE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. ALL BORINGS WERE MADE IN FEBRUARY 2025.
7. ALL BORINGS WERE PERFORMED BY CARR-DEE CORP. AND OBSERVED BY GEOSIENCES TESTING AND RESEARCH, INC., 55 MIDDLESEX STREET, SUITE 225, NORTH CHELMSFORD, MA, 01863.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

GEOSCIENCES TESTING AND RESEARCH, INC.

55 Middlesex Street, Suite 225, North Chelmsford, MA.
Phone: (978) 251-9395 www.gtrinc.net

Project Name: Union Street
Location: Leominster, MA

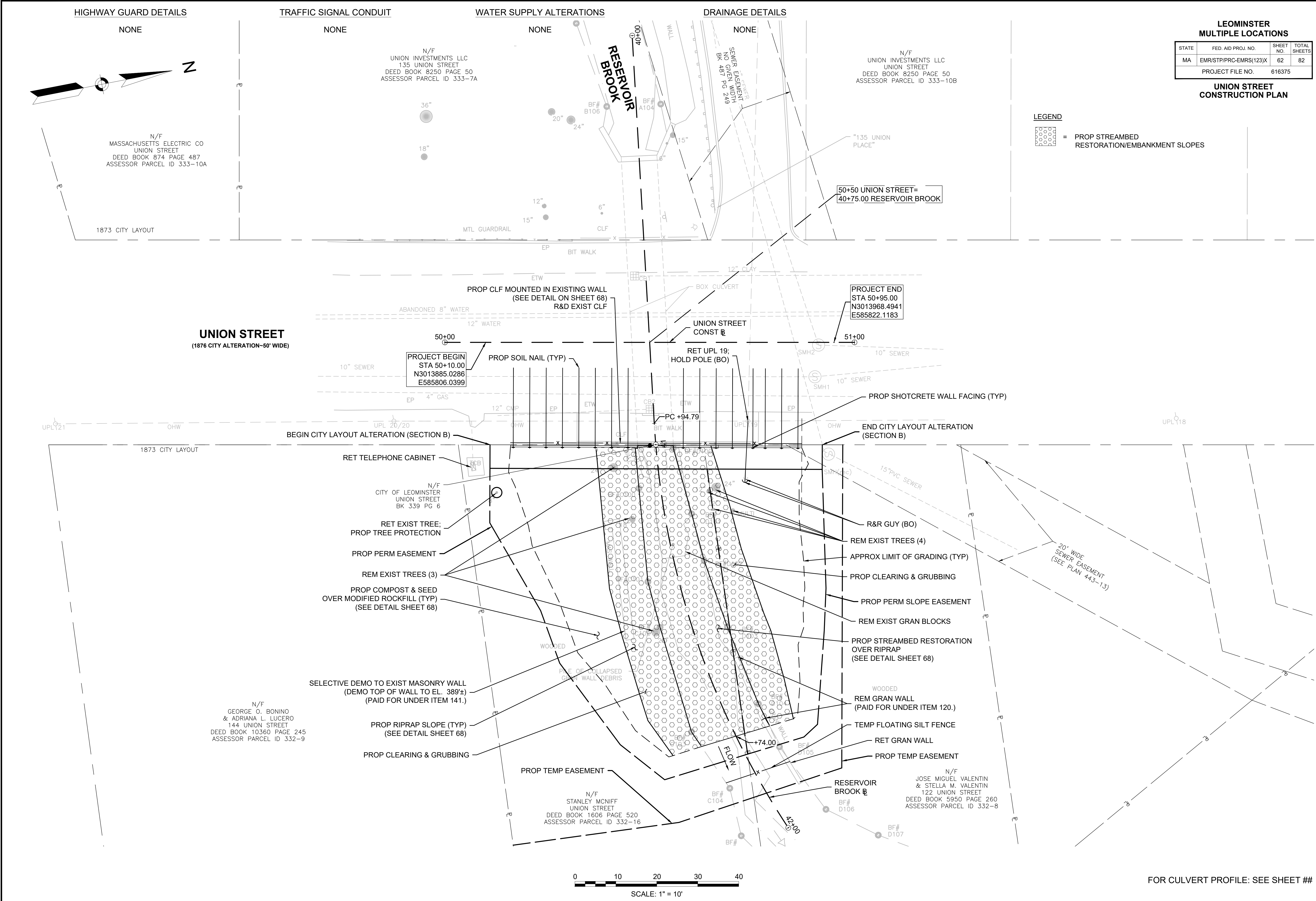
Boring No.	WB-2
Page:	2 of 2
GTR Job #:	24.379
GTR Rep:	P. Dion
Reviewer:	C. George

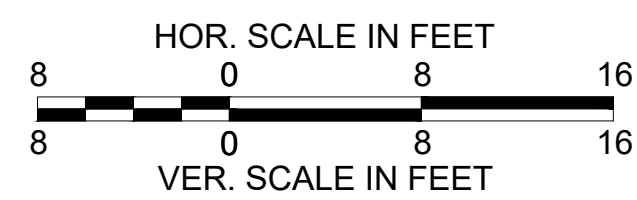
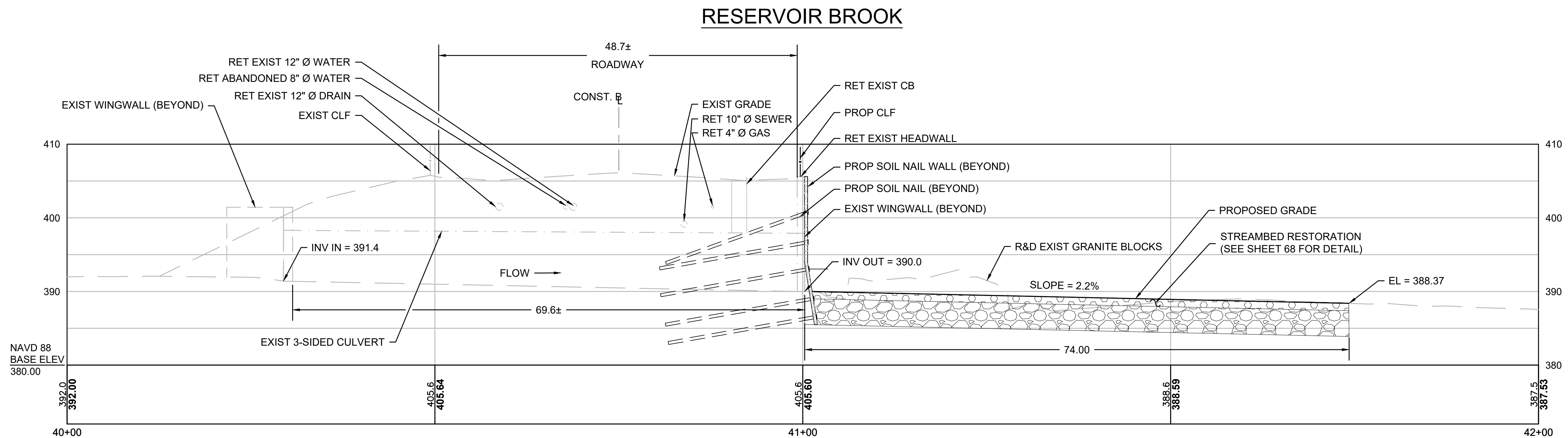
Carr-Dee Corp.											
Drilling Co:	Joe Desimone	Helper(s):	Sean	Equipment	Casing	Sampler	Core	Groundwater		Depth (ft)	
Driller:				Type	HW	SS	NX	Date	Time	Water	Casing
Start Date:	2/4/2025	End Date:	2/4/2025	Size I.D.	4.00"	1.375"	2.16"	2/4	1:44	12	29
Ground Surface Elev (ft):	~ +406 ft										
Boring Location:	N3013937.0086, E585826.4643			Hammer wt.	300 lb	140 lb					
Note:	Mobile B-56 ATV rig; auto hammer			Hammer Fall	30"	30"					

[illegible]

NOTES:

Order of Sample Description (Modified Burmister)	PENETRATION RESISTANCE (N) GUIDE	
1. Moisture Content: Dry, Moist, Wet	Cohesionless Soils (Sands)	Cohesive Soils (Clays)
2. Soil Relative Density or Consistency	Relative Density / Blow per Foot	Consistency / Blow per Foot
3. Color	Very loose < 4	Very soft < 4
4. Major Component: Should be capitalized	Dense >> 4-10	Soft >> 7-4
5. Minor Component: "and"	Medium dense >> 10-30	Medium stiff >> 10-30
6. % to 20% to minor grain size	Dense >> 30-50	Stiff >> 8-15
7. "little" - 20% to 35% minor grain size	Very dense >> Over 50	Very stiff >> 15-30
8. "trace" - 10% to 20% minor grain size		Hard >> Over 30
9. < 10% of minor grain size		

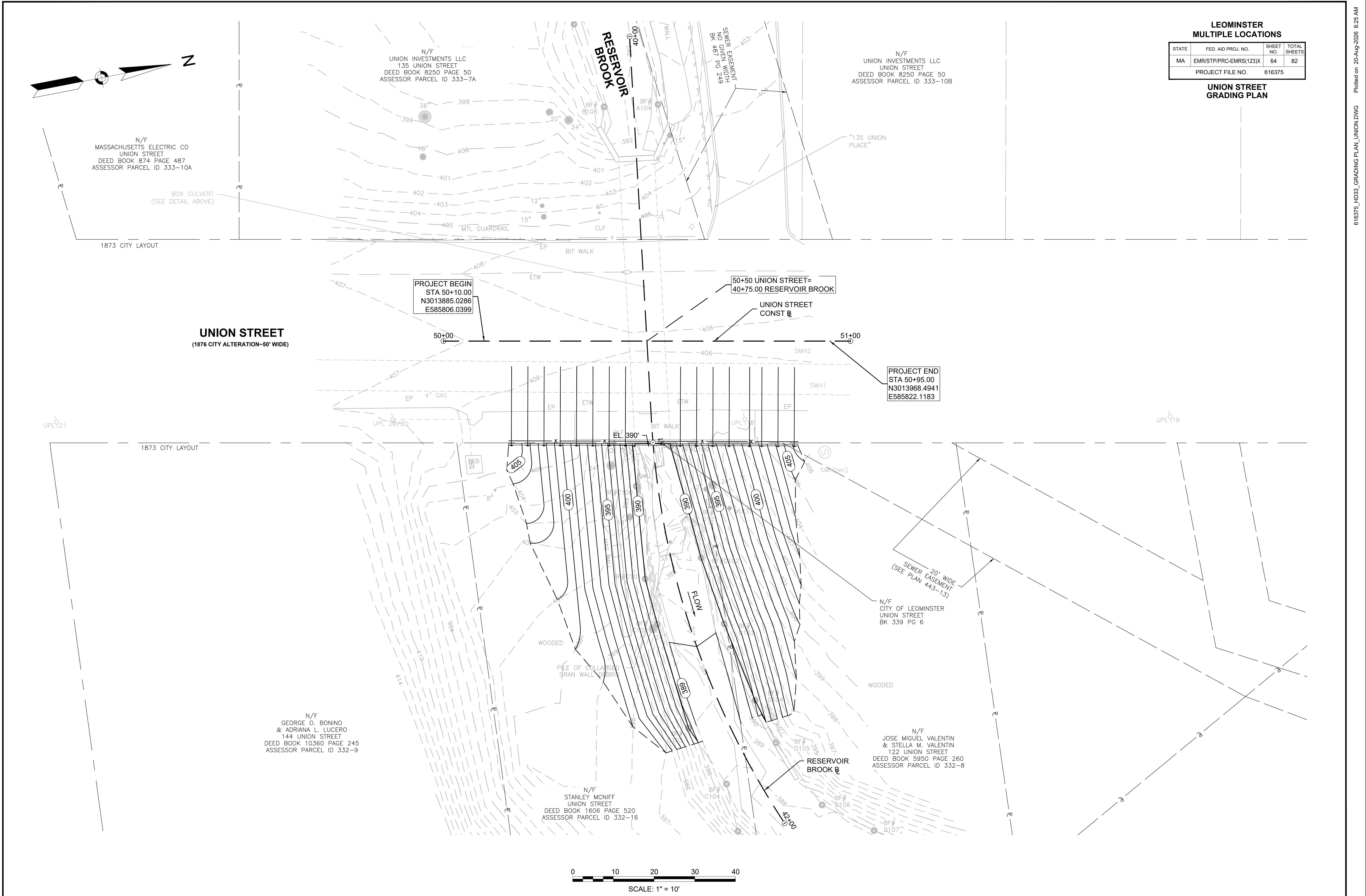




LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	64	82
PROJECT FILE NO.		616375	

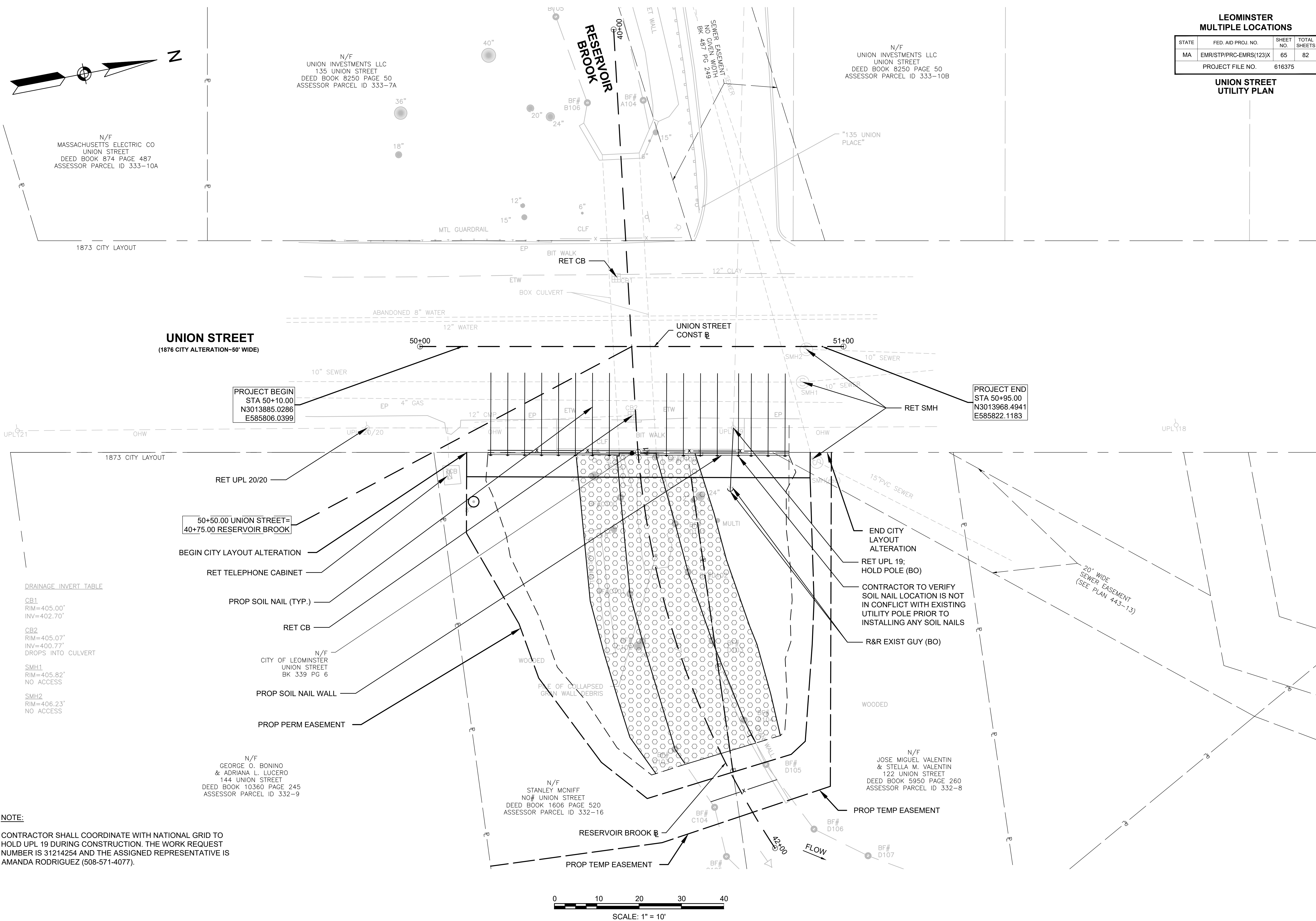
UNION STREET
GRADING PLAN



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	65	82
PROJECT FILE NO.		616375	

UNION STREET
UTILITY PLAN

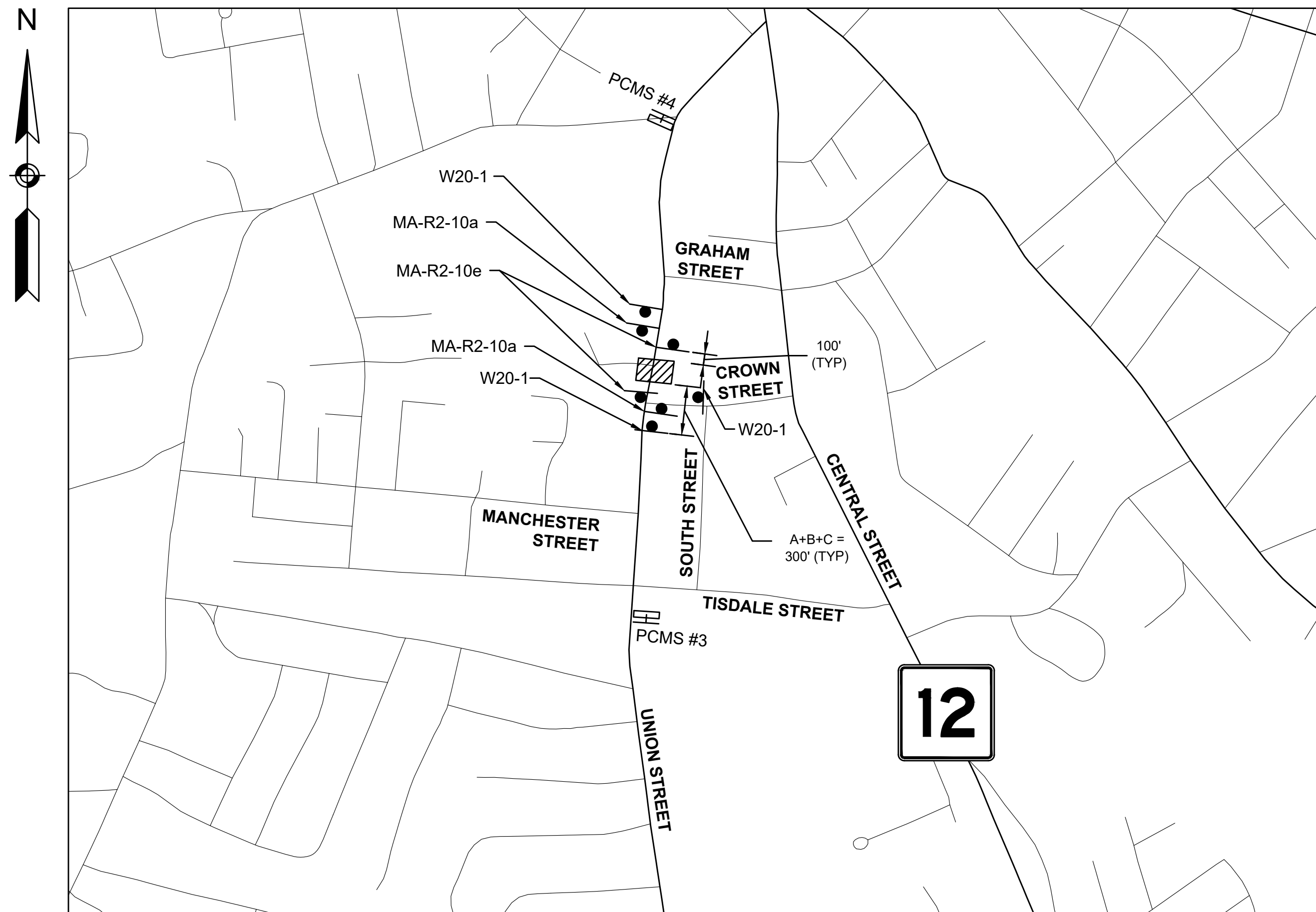


TEMPORARY TRAFFIC CONTROL LEGEND

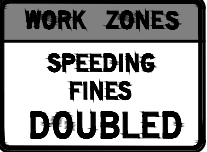
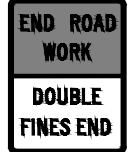
 WORK ZONE

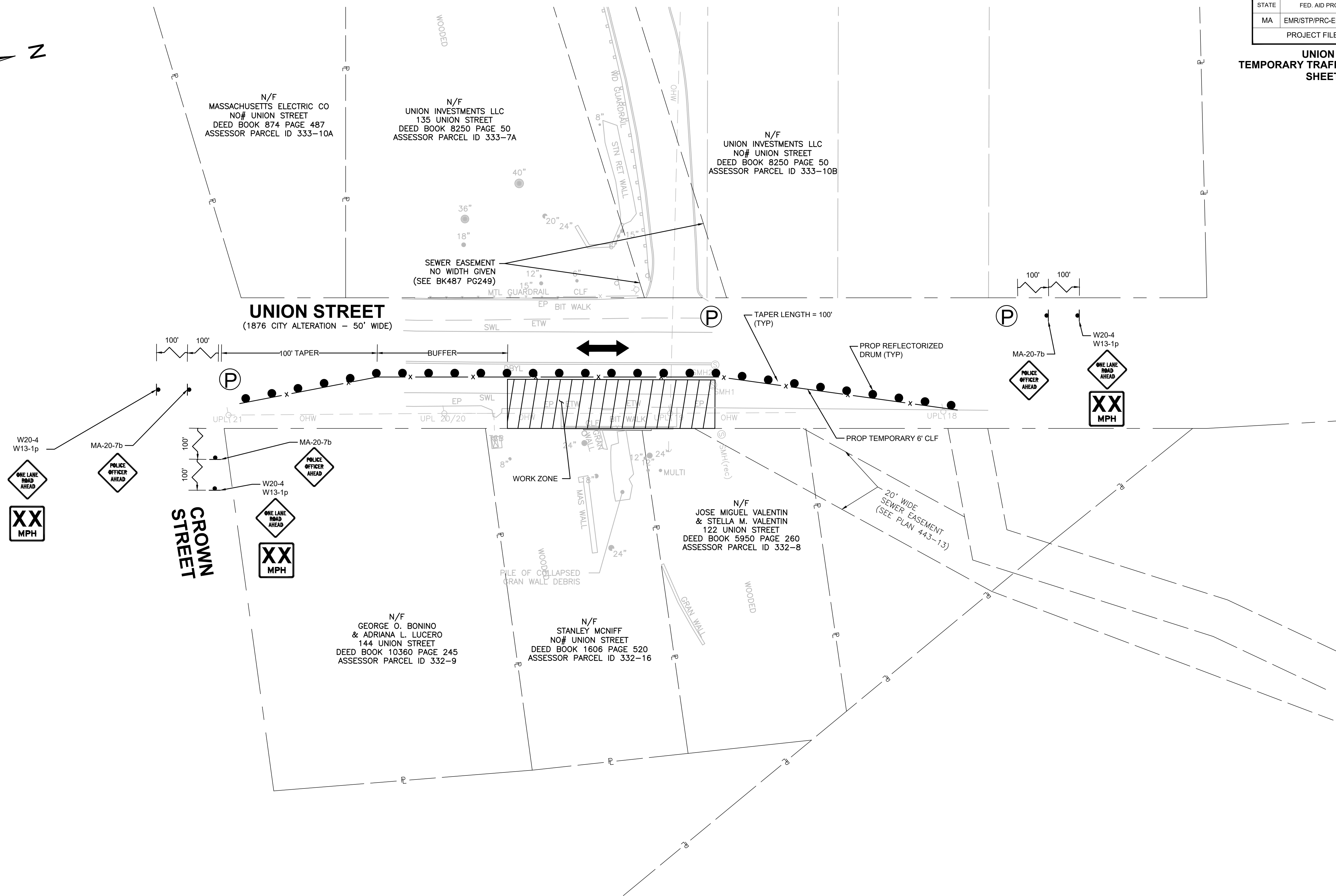
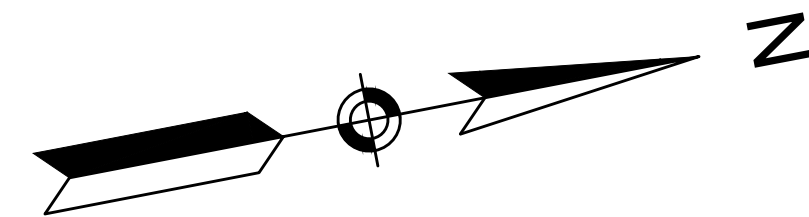
 SIGN

 PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)



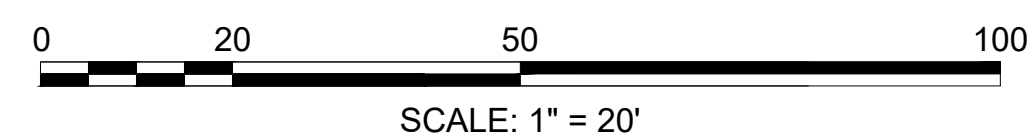
- ADVANCE SIGN SCHEMATIC
N.T.S.
- NOTES:
- SEE TTCP NOTES ON SHEET 3.
 - THE "A" DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE "B" DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE "C" DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS.
 - ON SIDE STREETS, W20-1 SIGNS SHALL BE LOCATED 100' FROM THE LIMIT OF WORK.
 - REFER TO SUGGESTED WORK ZONE WARNING SIGN SPACING TABLE AND NOTES FOR ADDITIONAL DETAILS.

IDENTIFICATION NUMBER	SIZE OF SIGN (in)		TEXT DIMENSIONS (in)				COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR	BACK-GROUND	LEGEND	BORDER			
MA-R2-10a	60	48		MASSDOT STANDARD SIGN			FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	2	20.00	40.00
MA-R2-10e	36	48					FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	2	12.00	24.00
MA-W20-7b	36	36					FL. ORANGE	BLACK	BLACK	3	9.00	27.00
W5-1	36	36		SEE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			FL. ORANGE	BLACK	BLACK	2	9.00	18.00
W13-1p	36	36					FL. ORANGE	BLACK	BLACK	4	9.00	36.00
W20-1	36	36					FL. ORANGE	BLACK	BLACK	1	9.00	9.00
	48	48					FL. ORANGE	BLACK	BLACK	2	16.00	32.00
W20-4	36	36					FL. ORANGE	BLACK	BLACK	2	9.00	18.00
W21-5a	36	36					FL. ORANGE	BLACK	BLACK	2	9.00	18.00

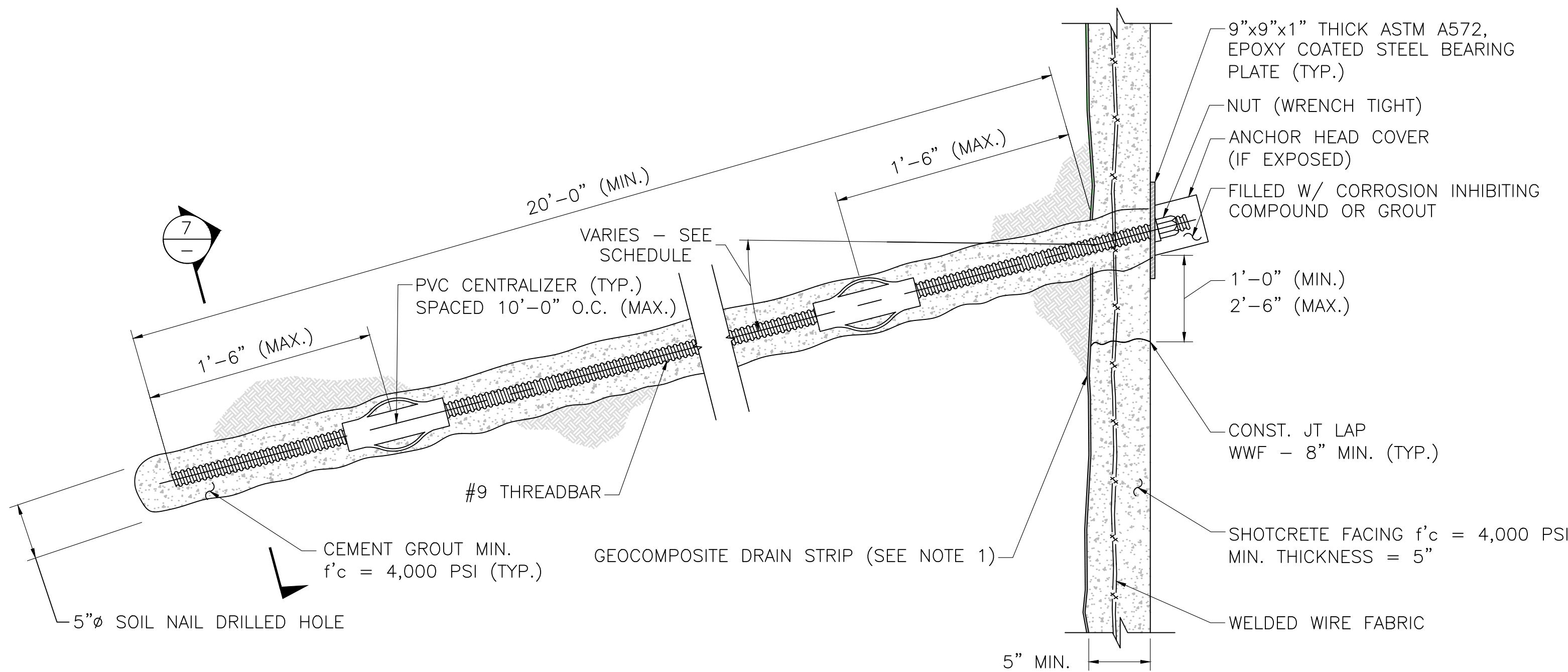


UNION STREET TYPICAL DAILY LANE CLOSURE

NOTE:
TWO LANES OF TRAFFIC (ONE IN EACH DIRECTION)
SHALL BE MAINTAINED AFTER NORMAL WORK HOURS.



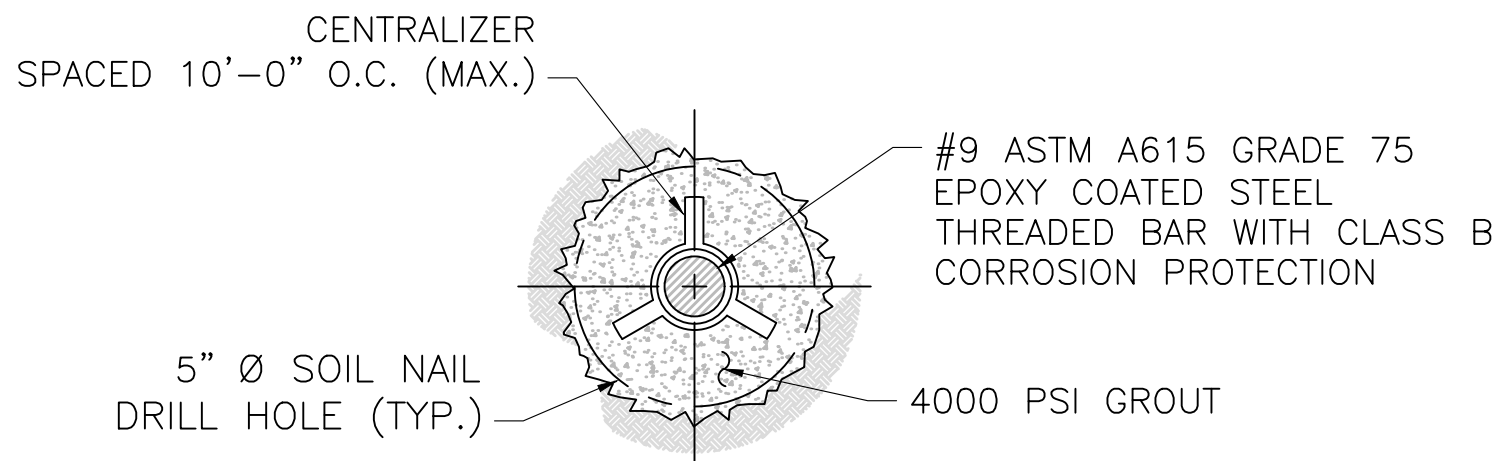
- TEMPORARY TRAFFIC CONTROL LEGEND
- WORK ZONE
 - SIGN
 - REFLECTORIZED DRUM OR 36" CONE
 - DIRECTION OF TRAVEL
 - POLICE DETAIL



TYPICAL SOIL NAIL DETAIL

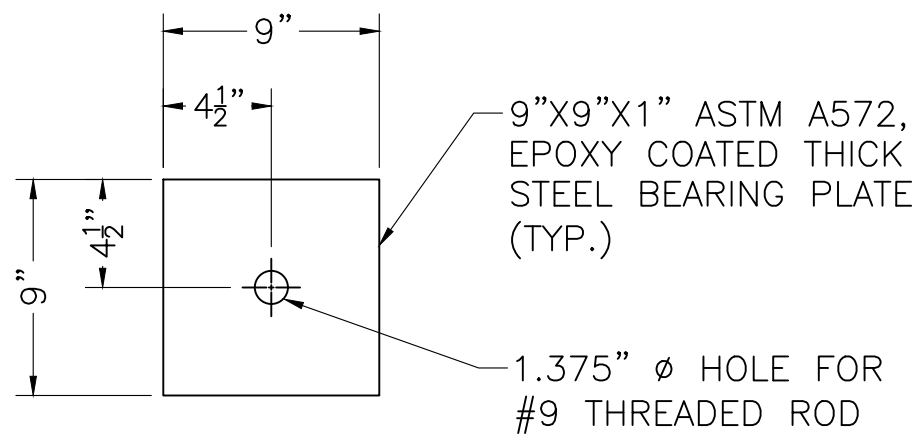
NOT TO SCALE

SOIL NAIL SCHEDULE					
SOIL NAIL NUMBERS	TOTAL NAIL LENGTH (FT)	SOIL NAIL ANGLE (DEG.)	BAR SIZE (GRADE 75)	GROUT STRENGTH (PSI)	HOLE DIAMETER (IN)
FIRST NAIL IN EACH COLUMN	20	20	#9	4000	5
ALL SUBSEQUENT NAILS	20	10	#9	4000	5



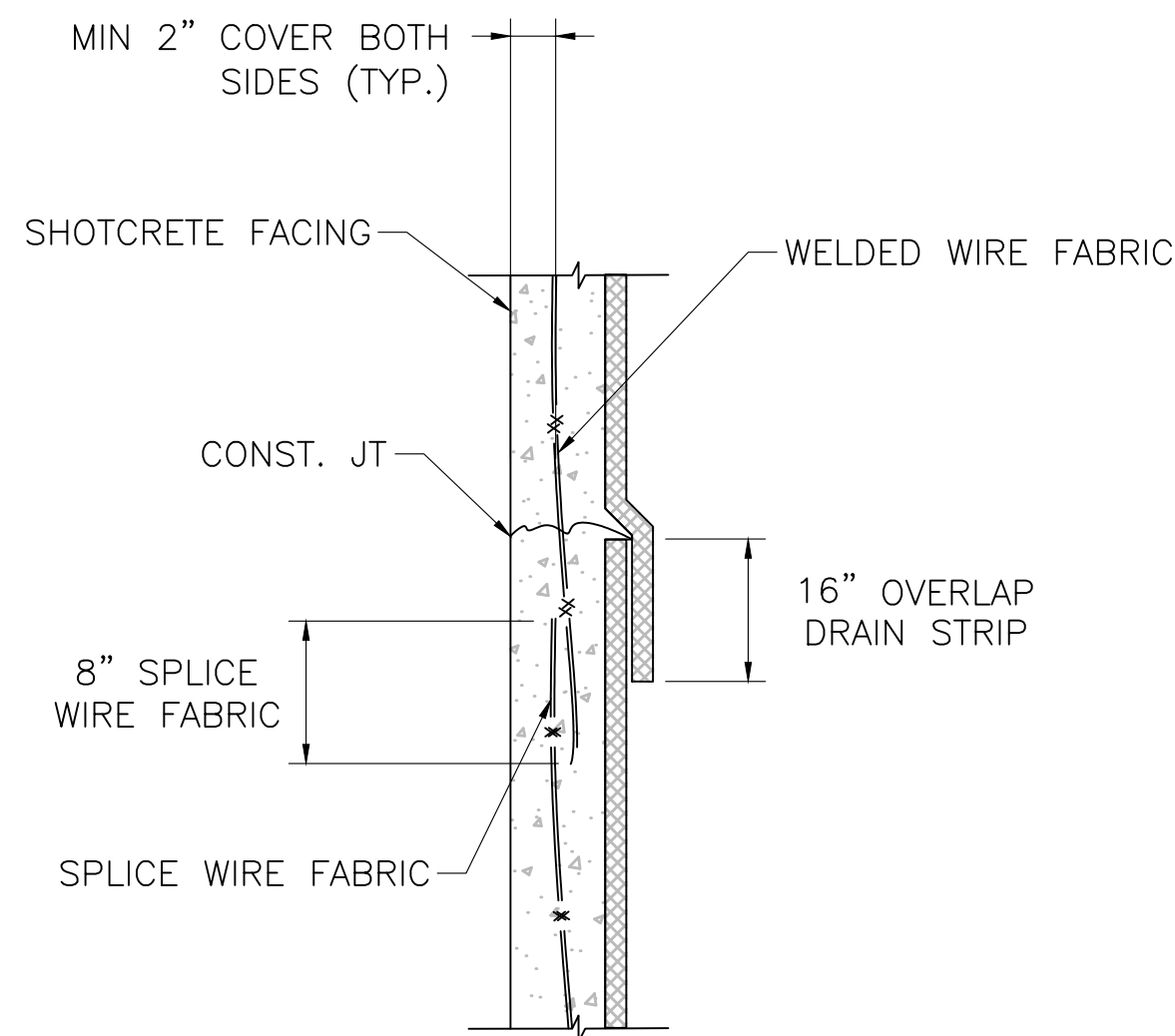
SECTION

NOT TO SCALE



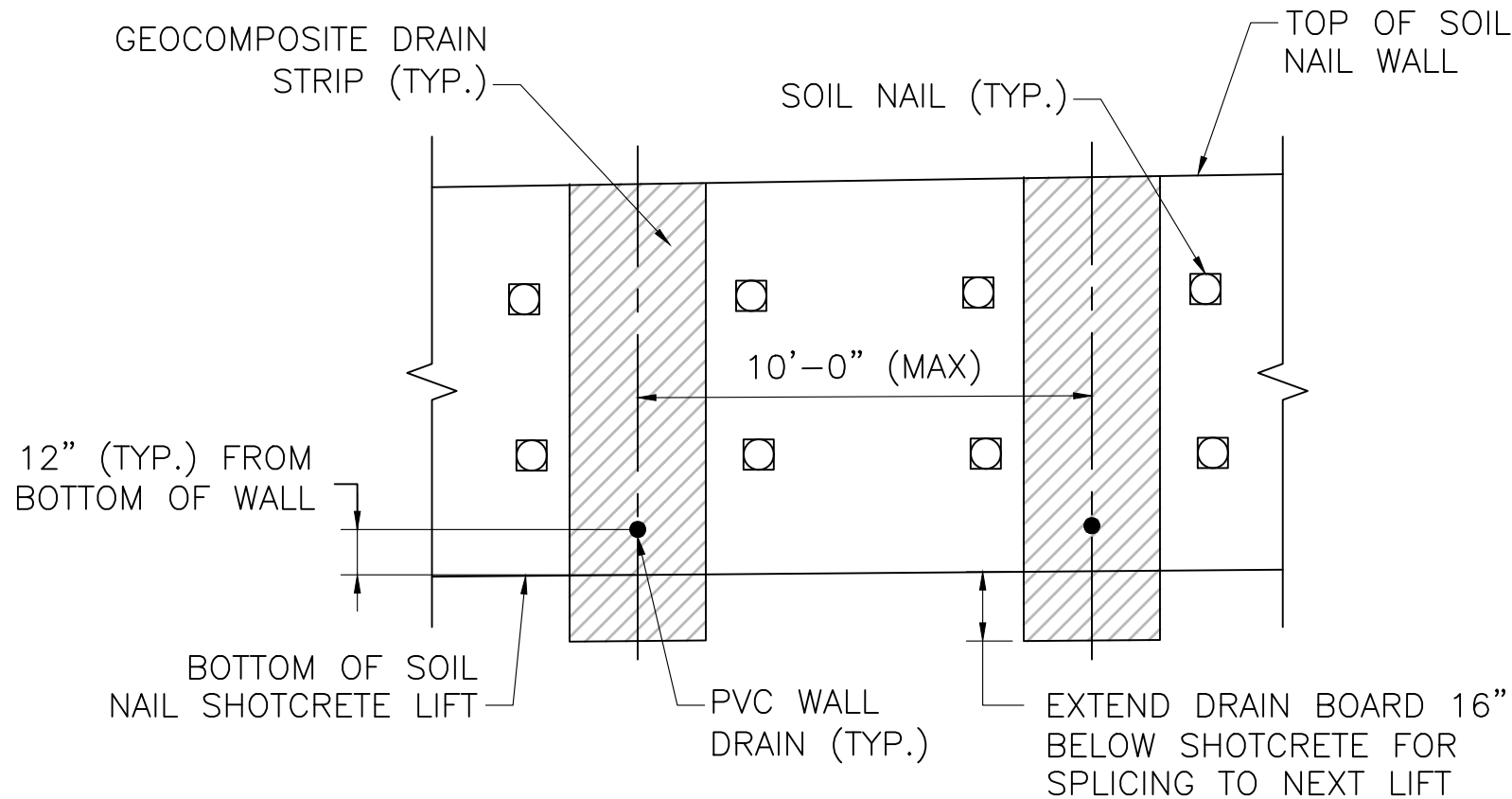
BEARING PLATE DETAIL

NOT TO SCALE



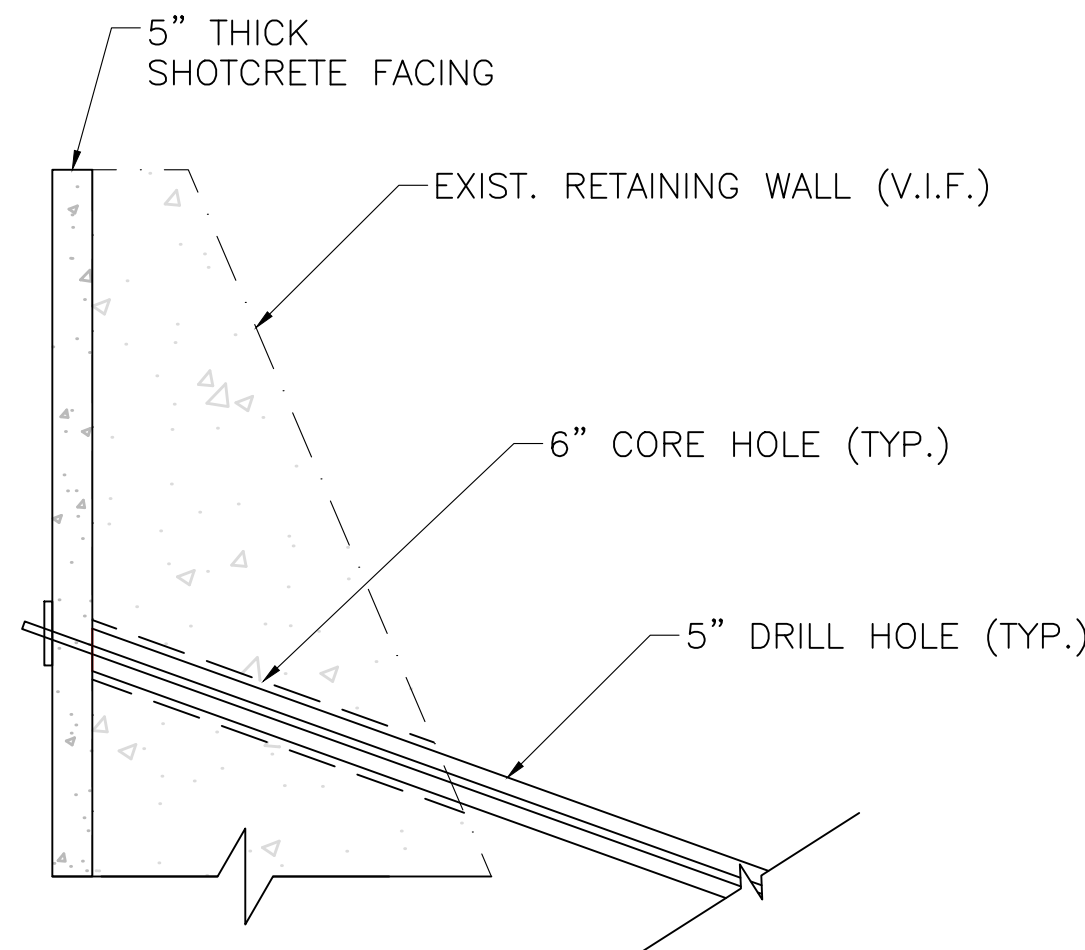
TYPICAL SOIL NAIL DRAINAGE DETAILS

NOT TO SCALE



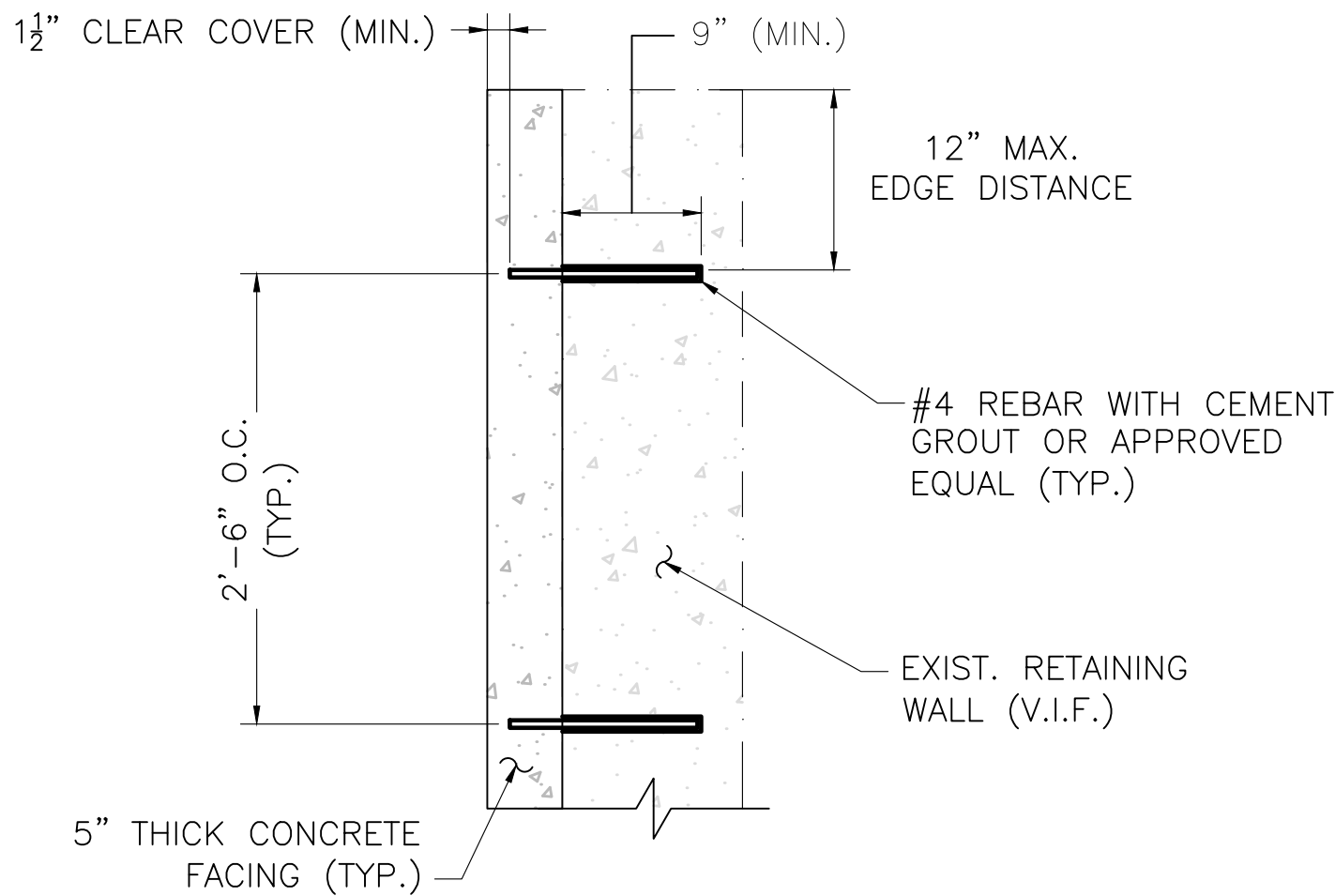
DRAINAGE AND SPLICING NOTES:

- ONE 12 INCH WIDE GEOCOMPOSITE DRAIN STRIP C-188 OR APPROVED EQUAL SHALL BE PLACED CENTERED VERTICALLY BETWEEN EVERY OTHER BAY BETWEEN SOIL NAILS FOR DRAINAGE BEHIND SHOTCRETE.
- GEOCOMPOSITE DRAIN STRIP SHALL HAVE A MINIMUM OF 16 INCH OVERLAP AT SPLICE LOCATIONS.
- WELDED WIRE FABRIC SHALL BE 1 LAYER OF 4"x4" - W4.0X4.0 EPOXY COATED FABRIC AND SHALL HAVE A MINIMUM OF 8 INCH OVERLAP AT SPLICE LOCATIONS.
- WALL DRAIN SHALL BE 4" PVC AND SHALL BE LOCATED 1 FOOT UP FROM THE BOTTOM OF SHOTCRETE WALL OF LOWEST LIFT AND INSTALLED AT EACH GEOCOMPOSITE DRAIN STRIP LOCATION ALONG WALL.



CORE HOLE DETAIL

NOT TO SCALE

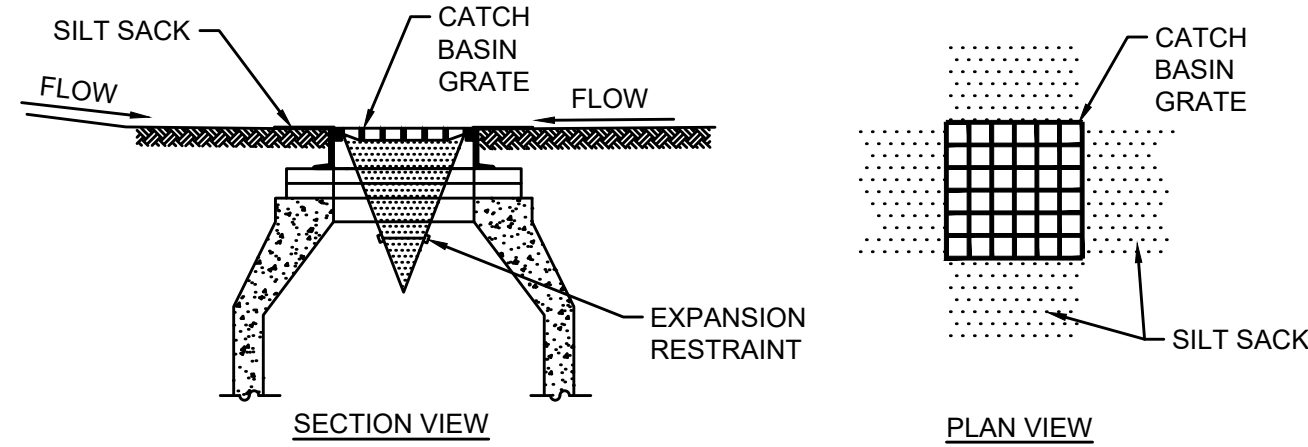


REBAR STUD DETAIL

NOT TO SCALE

LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	71	82
PROJECT FILE NO.		616375	

UNION STREET
CONSTRUCTION DETAILS

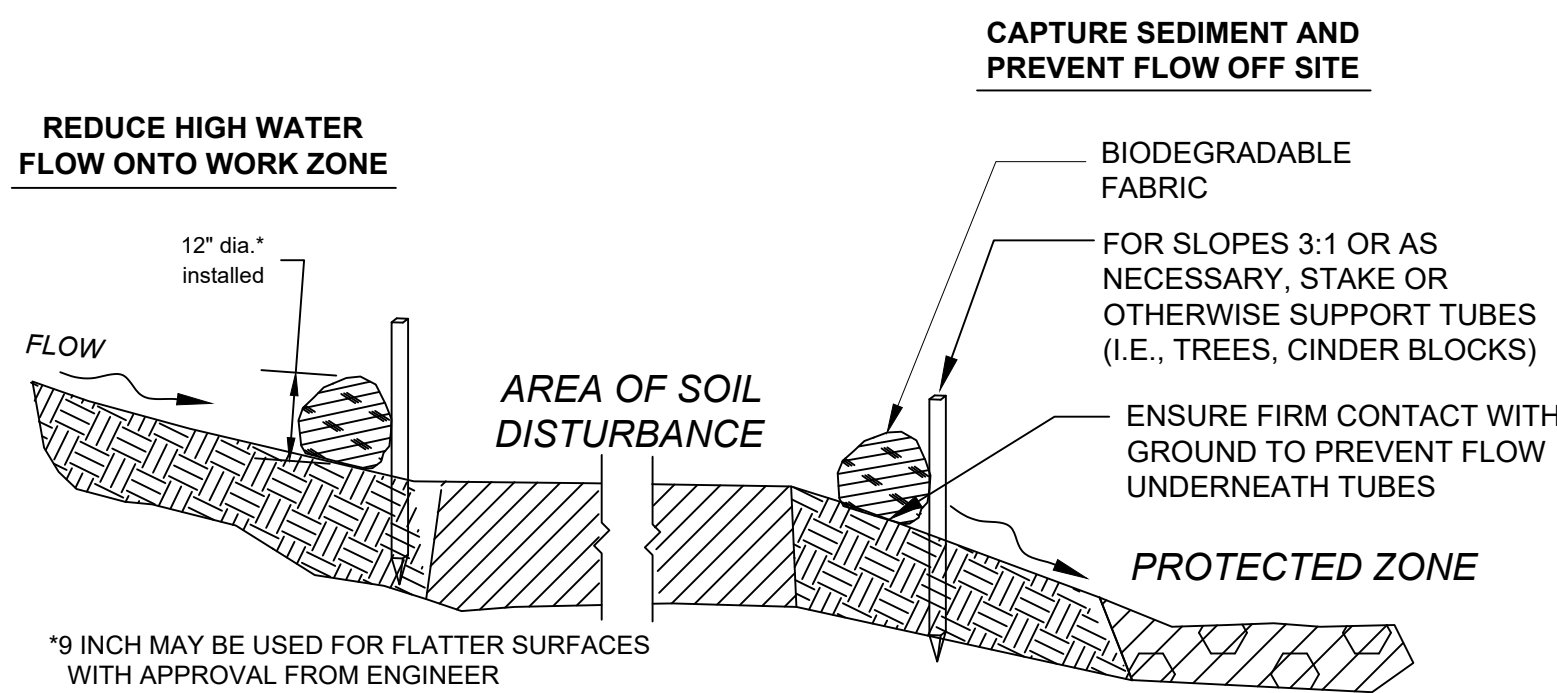


NOTES:

1. INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

INLET PROTECTION SILT SACK IN CATCH BASIN

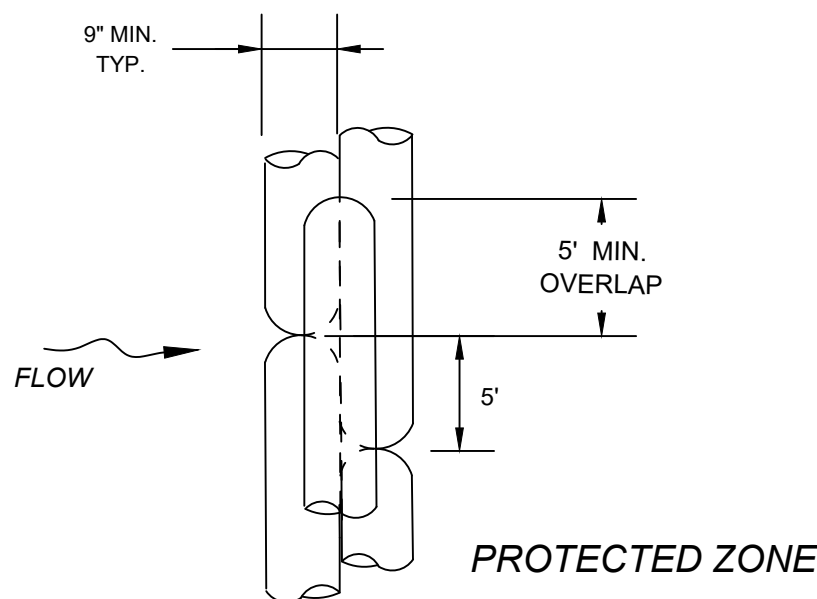
N.T.S.



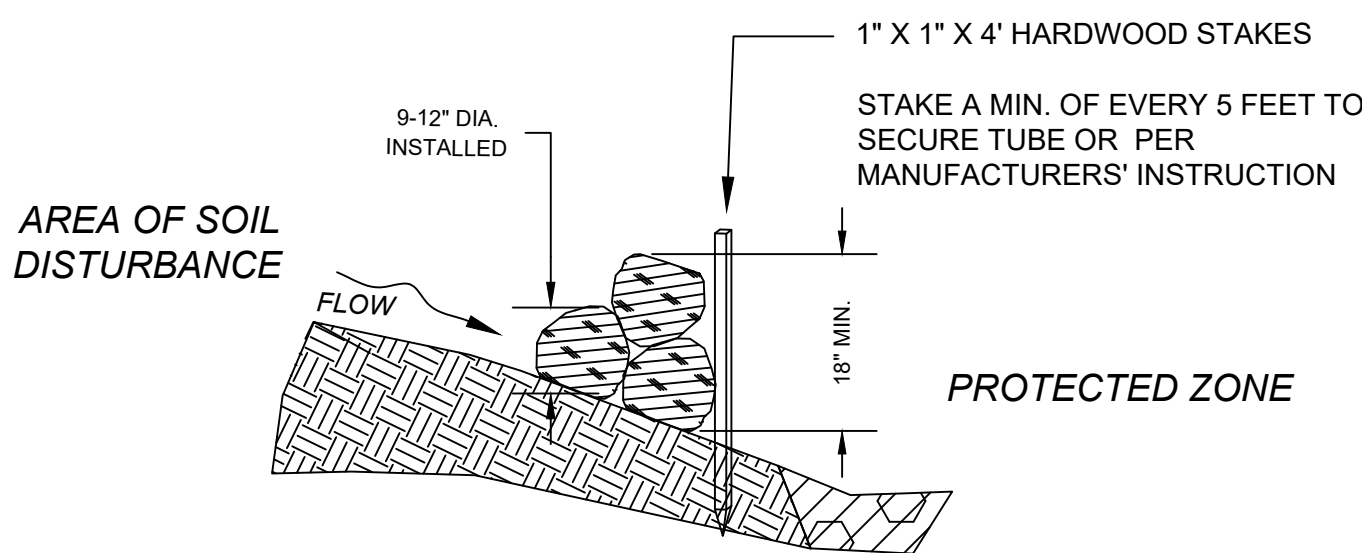
SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBES

N.T.S.



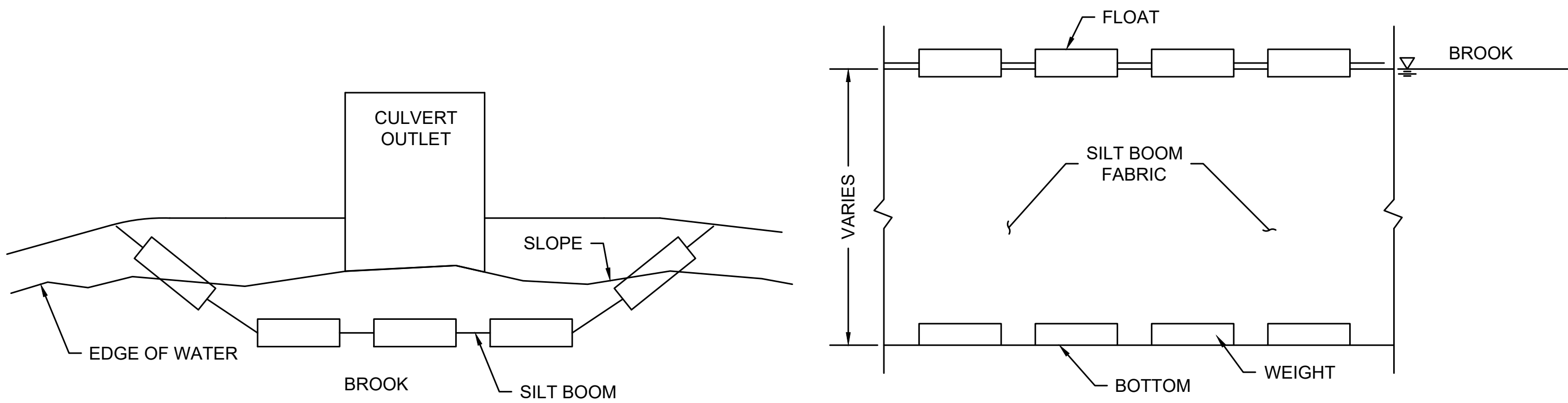
PLAN VIEW



SECTION

COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)

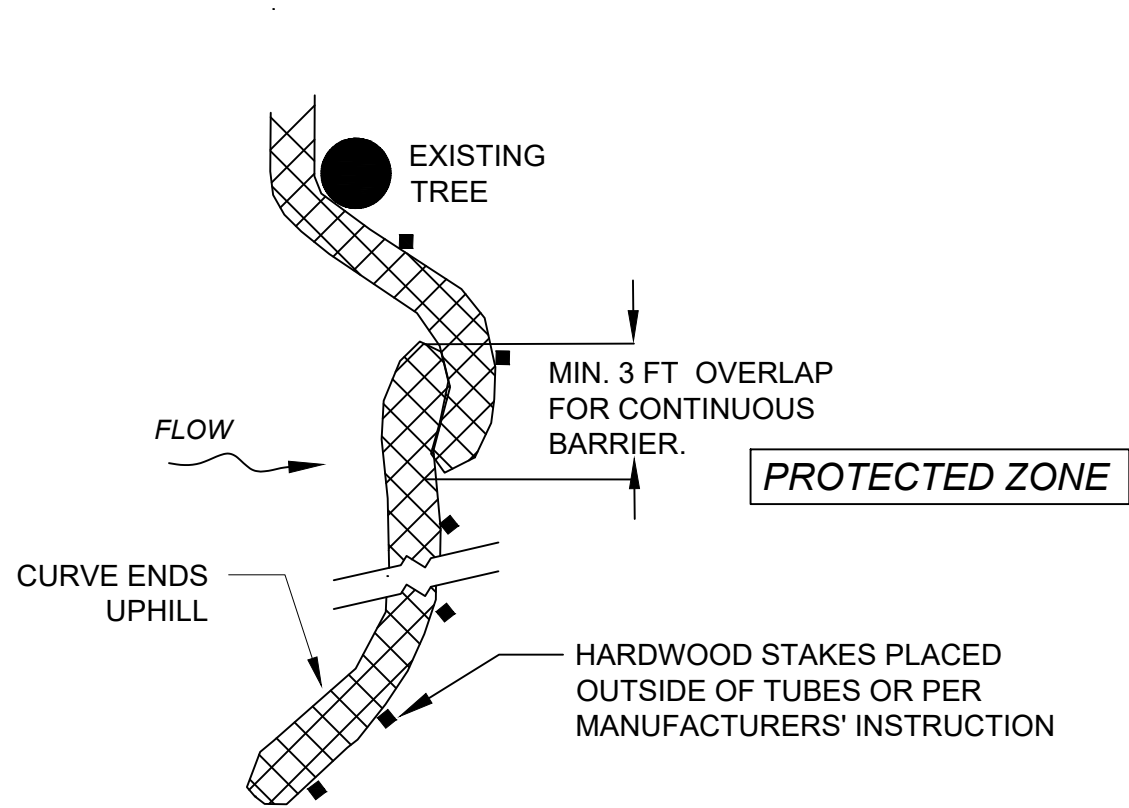
N.T.S.



PLAN

FLOATING SILT FENCE

N.T.S.



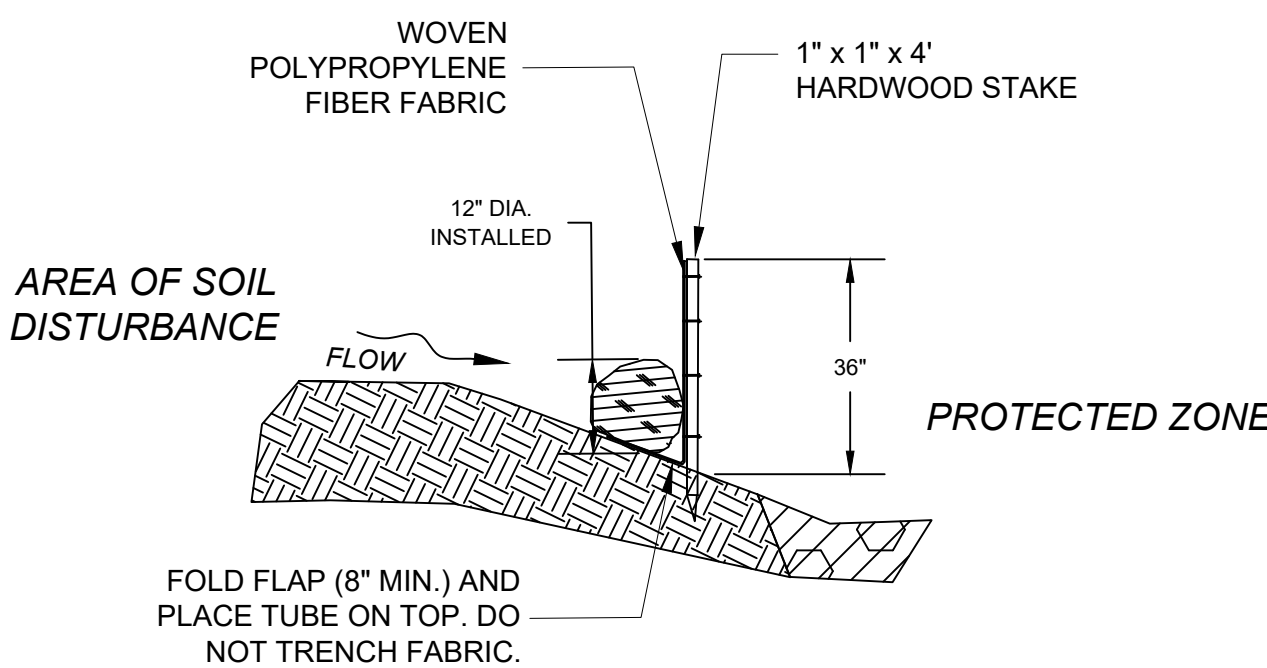
PLACE TUBE AS CLOSE TO LIMIT OF SOIL DISTURBANCE AS POSSIBLE, ALONG CONTOURS, AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLAN VIEW

COMPOST FILTER TUBE

N.T.S.

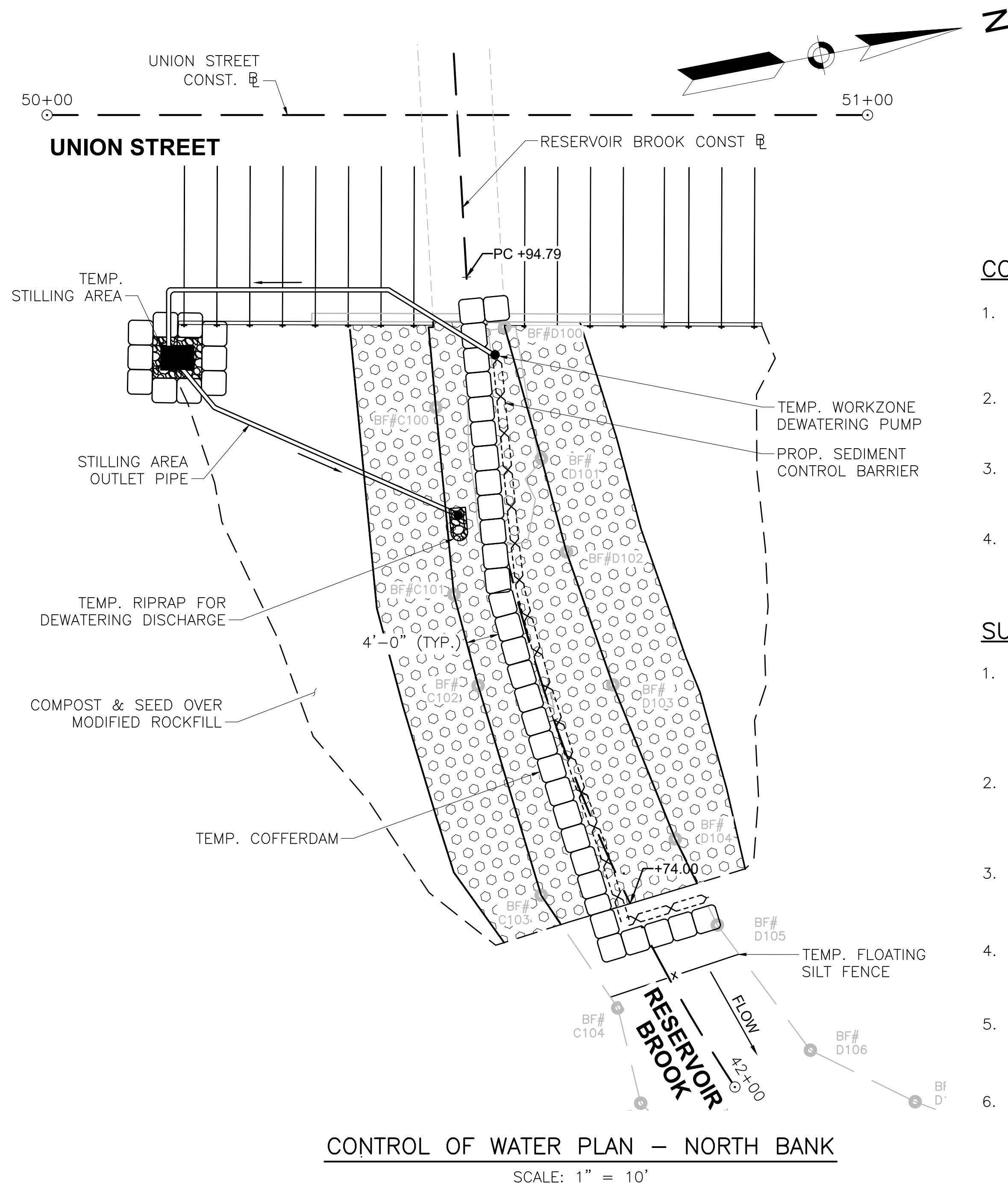
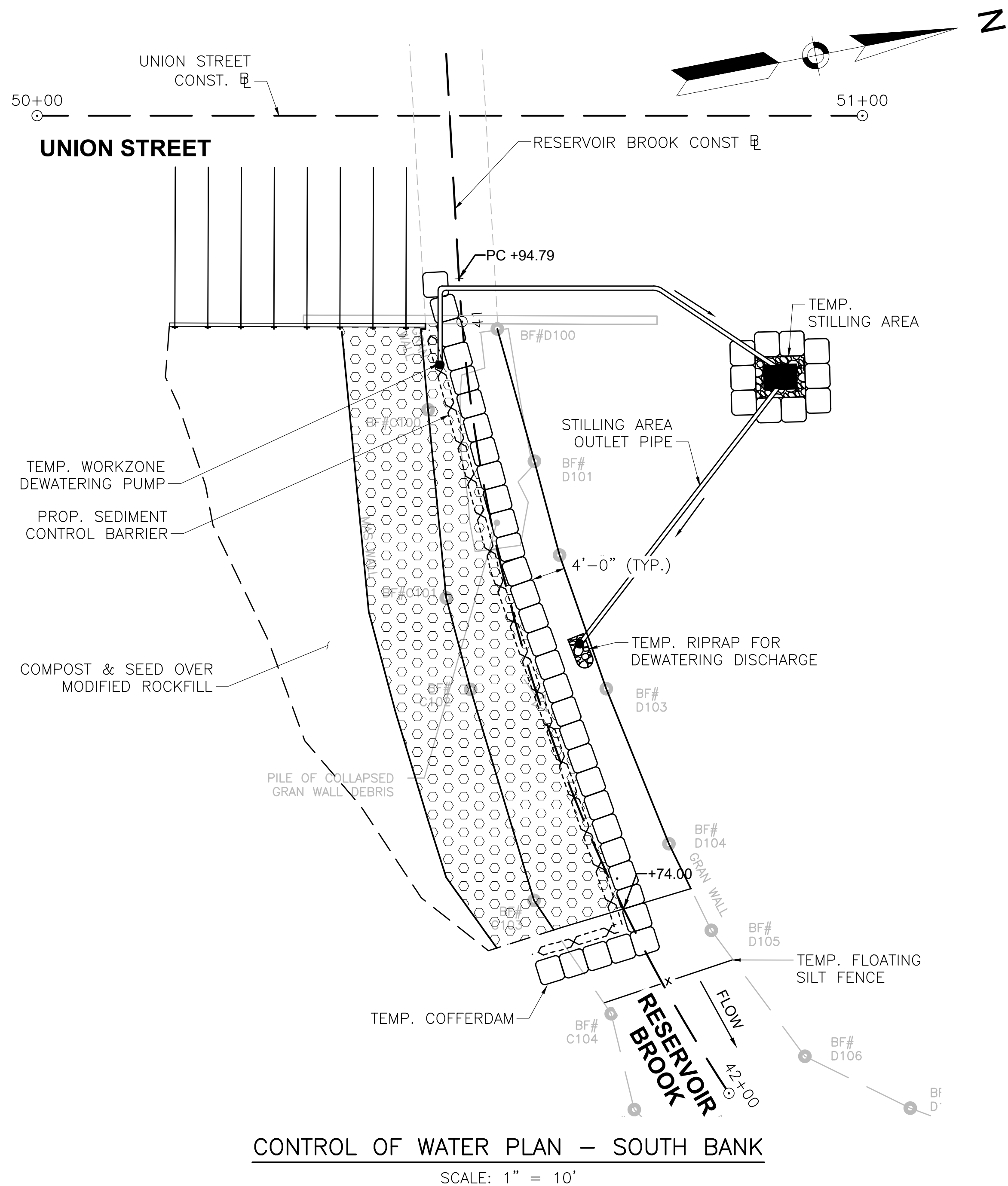


SECTION

COMPOST FILTER TUBE & SILT FENCE

N.T.S.

LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	72	82
PROJECT FILE NO.		616375	
UNION STREET CONTROL OF WATER PLAN			



CONTROL OF WATER NOTES:

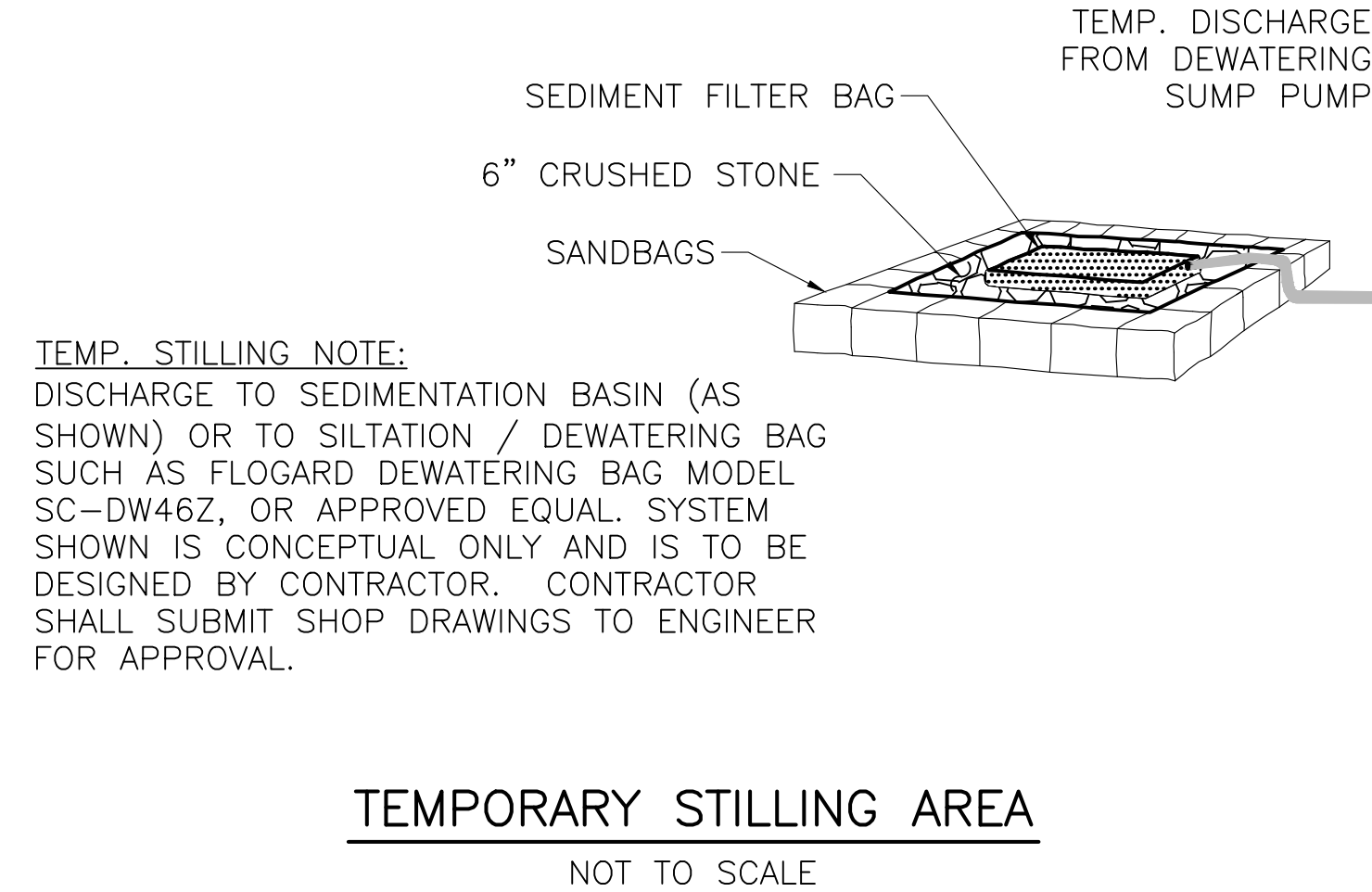
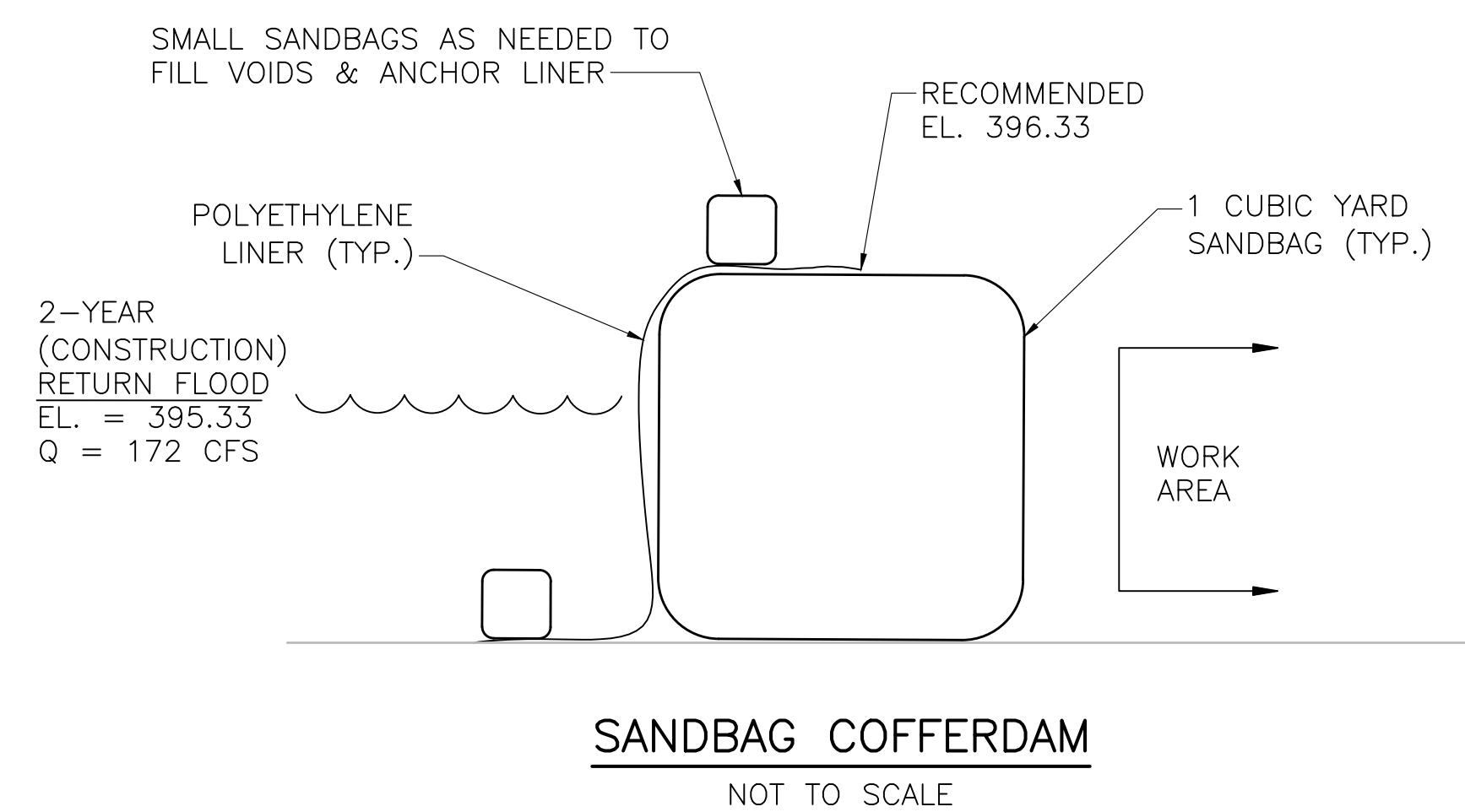
1. THE CONTROL OF WATER (C.O.W.) SYSTEM SHOWN IN THESE PLANS IS CONCEPTUAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF THE C.O.W. SYSTEM AND SHALL SUBMIT A C.O.W. PLAN TO THE ENGINEER FOR APPROVAL.
2. ALL DEWATERING SHALL BE DIVERTED TO A TEMPORARY STILLING BASIN PRIOR TO BEING PUMPED BACK INTO THE BROOK. NO CONTAMINATED WATER IS PERMITTED TO ENTER THE BROOK.
3. C.O.W. SYSTEM SHALL BE DESIGNED USING A 2-YEAR (CONSTRUCTION) RETURN FREQUENCY FLOOD EVENT OF 172 CFS. PROVIDED SYSTEM SHALL EXTEND 12" (MIN.) ABOVE STORM ELEVATION OF 395.33 (NAVD).
4. C.O.W. SYSTEM SHALL BE INSPECTED DAILY FOR WATER LEAKS OR EROSION AND REPAIR PROCEDURES SHALL BE IMPLEMENTED ACCORDINGLY.

SUGGESTED SEQUENCE OF CONSTRUCTION:

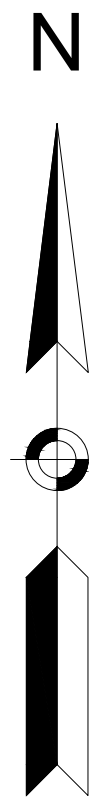
1. INSTALL EROSION CONTROLS: EROSION CONTROL MEASURES SHALL BE INSTALLED AT THE DOWNSTREAM LIMITS OF EXCAVATION PRIOR TO EXCAVATION ACTIVITIES TO PROTECT RESERVOIR BROOK FROM SEDIMENT; FLOATING SILT FENCE DOWNSTREAM OF THE PROJECT LIMITS TO TRAP ANY FLOATING DEBRIS/SILT THAT MAY ENTER THE STREAM.
2. FOR THE CONSTRUCTION OF THE SOIL NAIL WALL AND SLOPE ALONG THE SOUTH BANK, INSTALL C.O.W. SYSTEM TO SHIFT THE STREAM TO THE NORTH. C.O.W. SYSTEM SHALL CONSIST OF A SANDBAG COFFERDAM OR APPROVED EQUIVALENT.
3. DEWATER THE WORK AREA TO INSTALL THE SOIL NAILS AND EMBANKMENT SLOPES. REFER TO THE "SUGGESTED INSTALLATION PROCEDURE FOR NAILS WITHIN LIMITS OF EXISTING WALL" ON SHEET 69.
4. FOR THE CONSTRUCTION OF THE SOIL NAIL WALL AND SLOPE ALONG THE NORTH BANK, SHIFT CONTROL OF WATER SYSTEM TO MOVE THE RESERVOIR BROOK FLOW TO THE SOUTH.
5. DEWATER THE WORK AREA TO INSTALL THE SOIL NAILS AND EMBANKMENT SLOPES. REFER TO THE "SUGGESTED INSTALLATION PROCEDURE FOR NAILS WITHIN LIMITS OF EXISTING WALL" ON SHEET 69.
6. REMOVE SANDBAG COFFERDAM AND RESTORE NORMAL BROOK FLOW AFTER PROPOSED WORK HAS BEEN COMPLETED.

LEGEND

= PROP STREAMBED RESTORATION/EMBANKMENT SLOPES



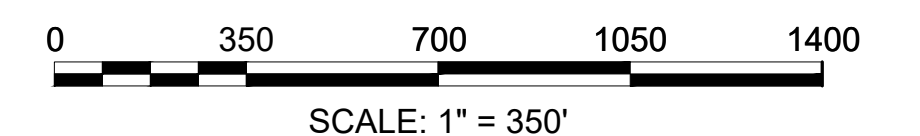
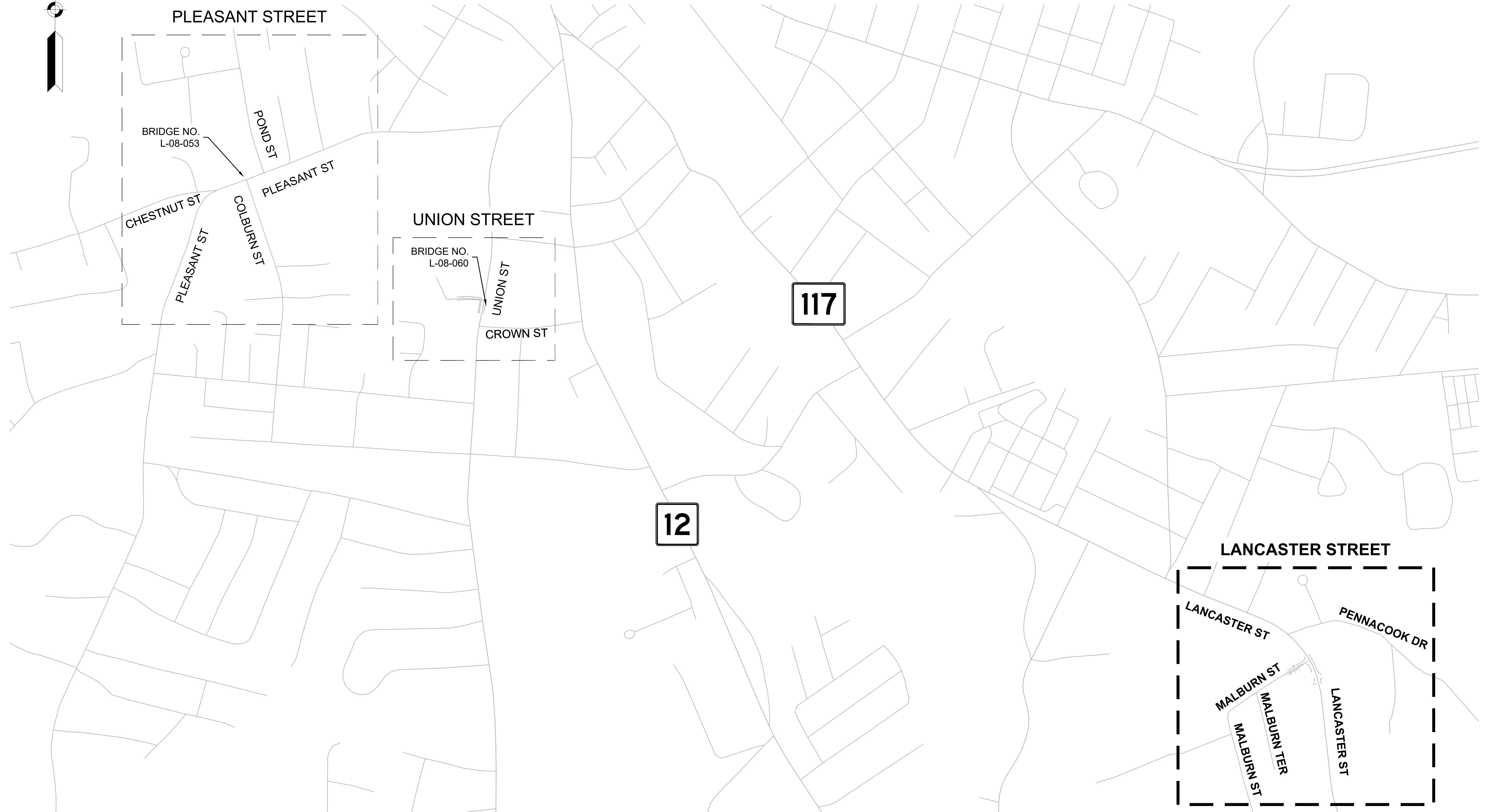
TEMP. STILLING NOTE:
DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION / DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW46Z, OR APPROVED EQUAL. SYSTEM SHOWN IS CONCEPTUAL ONLY AND IS TO BE DESIGNED BY CONTRACTOR. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO ENGINEER FOR APPROVAL.

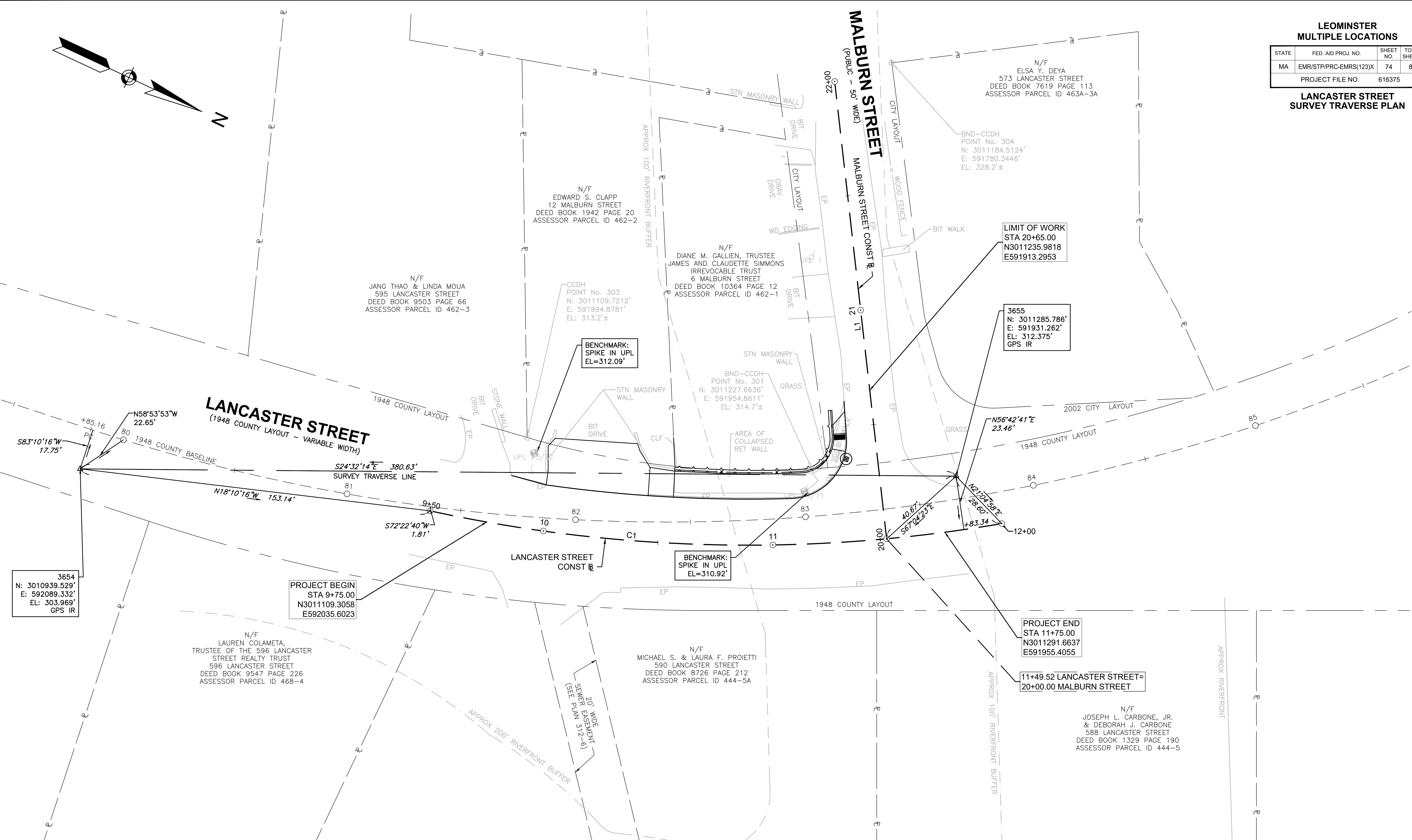


LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	73	82
PROJECT FILE NO.		616375	

LANCASTER STREET
GENERAL KEY PLAN

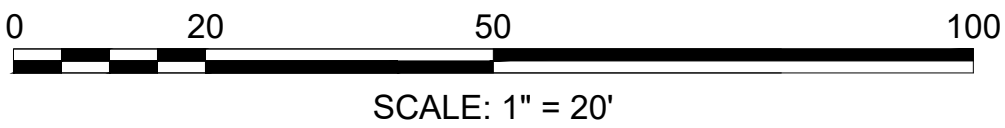




LANCASTER STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	9+50.00	3011085.0340	592041.5740	R = 650.00' Δ= 22°02'13" L=250.00' T=126.56'		12+00.00	3011312.4733	591941.5506

MALBURN STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	20+00.00	3011269.9421	591968.7208		S58°30'12"W 200.00'	22+00.00	3011165.4524	591798.1866

Point Table				
Point #	Northing	Eastng	Elevation	Raw Description
3654	3010939.5290	592089.3320	303.969	MTRV GPS IR
3655	3011285.7860	591931.2620	312.375	MTRV GPS IR



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	74	82
PROJECT FILE NO.		616375	

LANCASTER STREET
SURVEY TRAVERSE PLAN

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 77

LEOMINSTER
MULTIPLE LOCATIONS

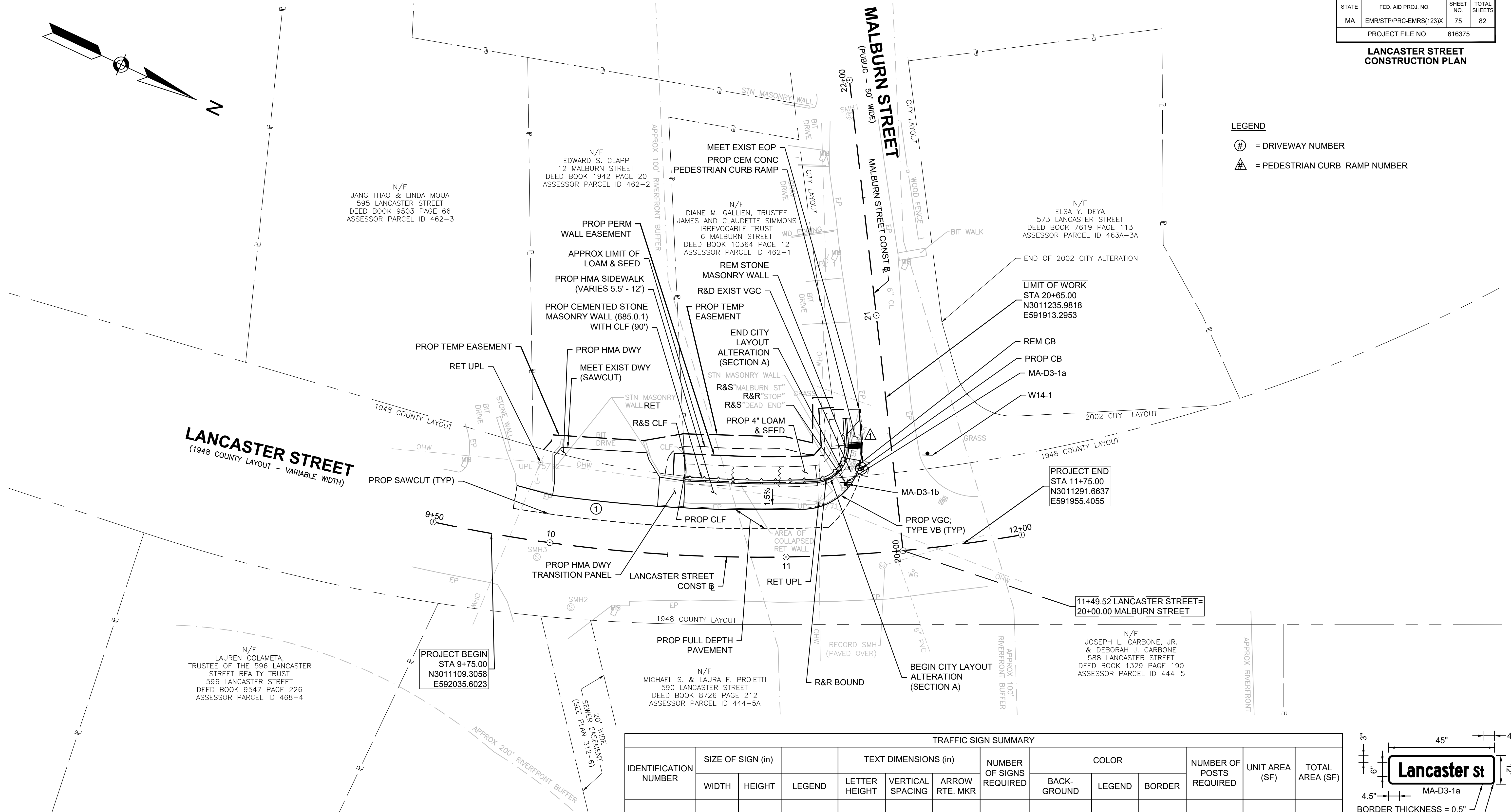
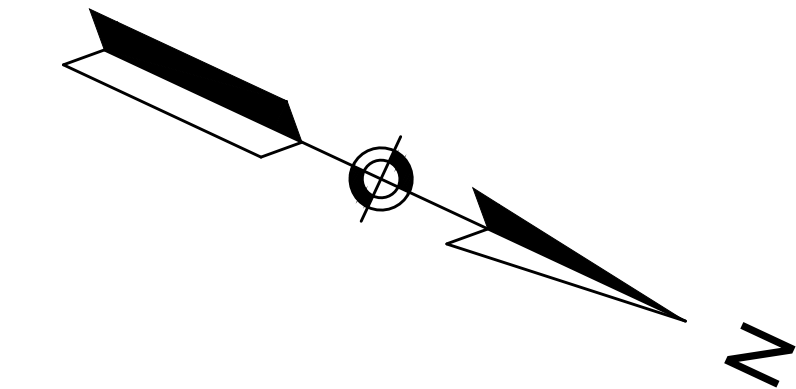
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	75	82
PROJECT FILE NO.		616375	

LANCASTER STREET
CONSTRUCTION PLAN

LEGEND

⊕ = DRIVEWAY NUMBER

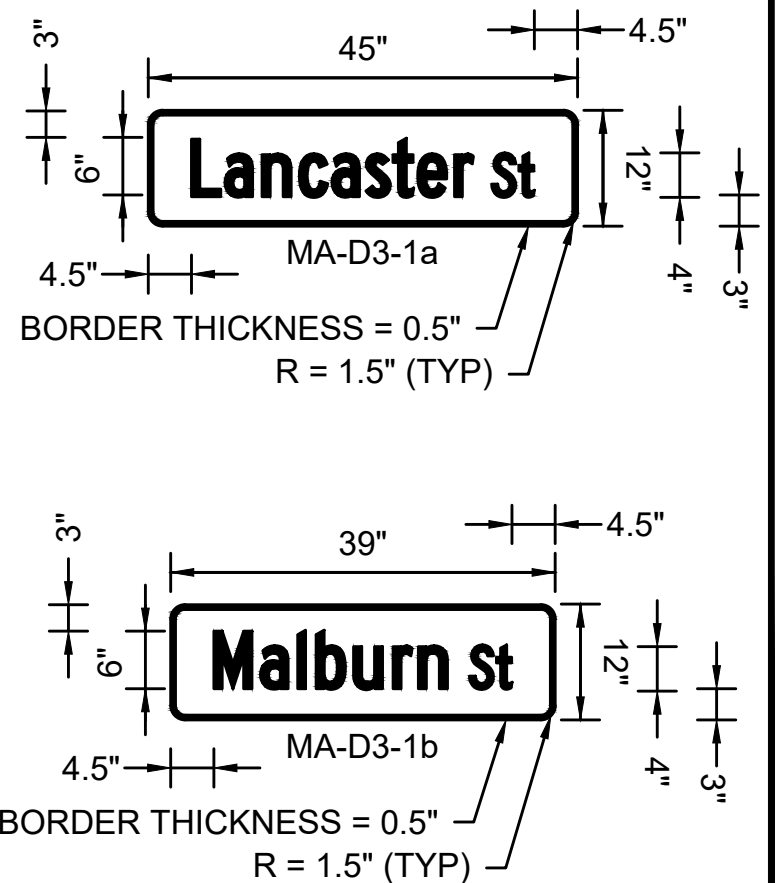
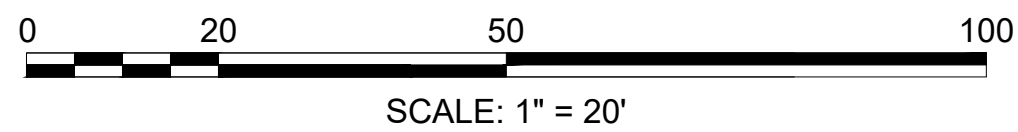
⚠ = PEDESTRIAN CURB RAMP NUMBER



NOTE:

EXISTING SHOULDER LINE SHALL BE REPLACED WITH 6" WHITE THERMOPLASTIC PAVEMENT MARKINGS. EXISTING STOP LINE ON MALBURN STREET SHALL BE REPLACED WITH 12" WHITE THERMOPLASTIC PAVEMENT MARKINGS.

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			NUMBER OF POSTS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK- GROUND	LEGEND	BORDER			
MA-D3-1a	45	12	SEE RIGHT	6C / 4D	3 3	N/A	1	BLUE	WHITE	WHITE	1	3.75	3.75
MA-D3-1b	39	12	SEE RIGHT	6C / 4D	3 3	N/A	1	BLUE	WHITE	WHITE	1	3.25	3.25
W14-1	30	30		SEE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS FOR TEXT AND LEGEND DIMENSIONS			1	YELLOW	BLACK	BLACK	1	6.25	6.25

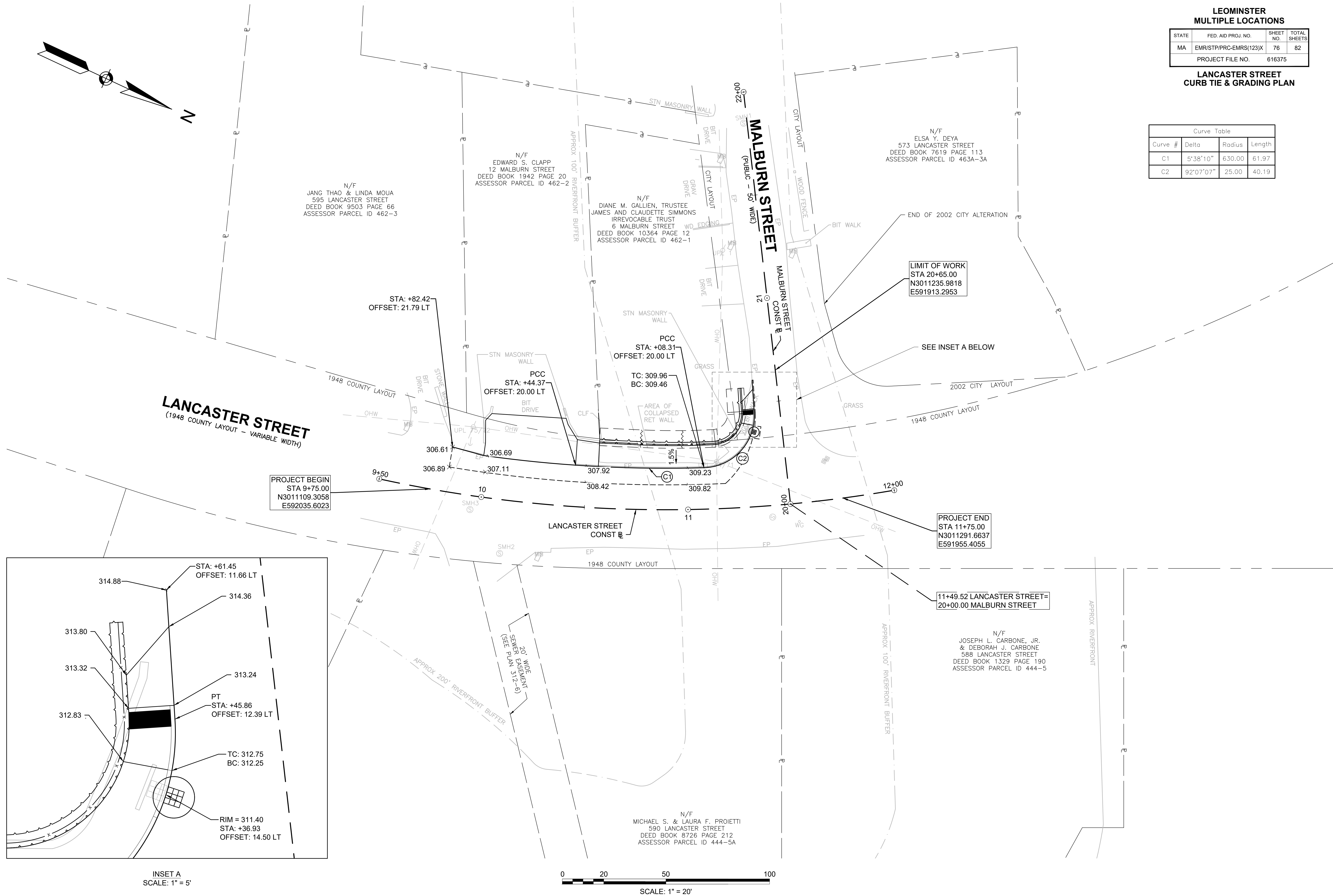


LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	76	82
PROJECT FILE NO.		616375	

LANCASTER STREET
CURB TIE & GRADING PLAN

Curve Table			
Curve #	Delta	Radius	Length
C1	5°38'10"	630.00	61.97
C2	92°07'07"	25.00	40.19



LEOMINSTER
MULTIPLE LOCATIONS

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	77	82
PROJECT FILE NO.		616375	

LANCASTER STREET
UTILITY PLAN

LEGEND

= STRUCTURE NUMBER

PROPOSED DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	OFFSET	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT
1	PROP CB	20+36.4	13.1' RT	311.40'	-	308.23'

DRAINAGE INVERT TABLE

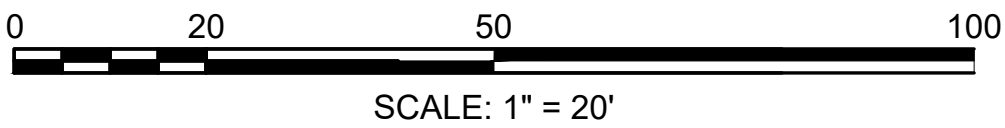
CB1
RIM=311.00'
INV(a)=305.90'
INV(b)=307.75'

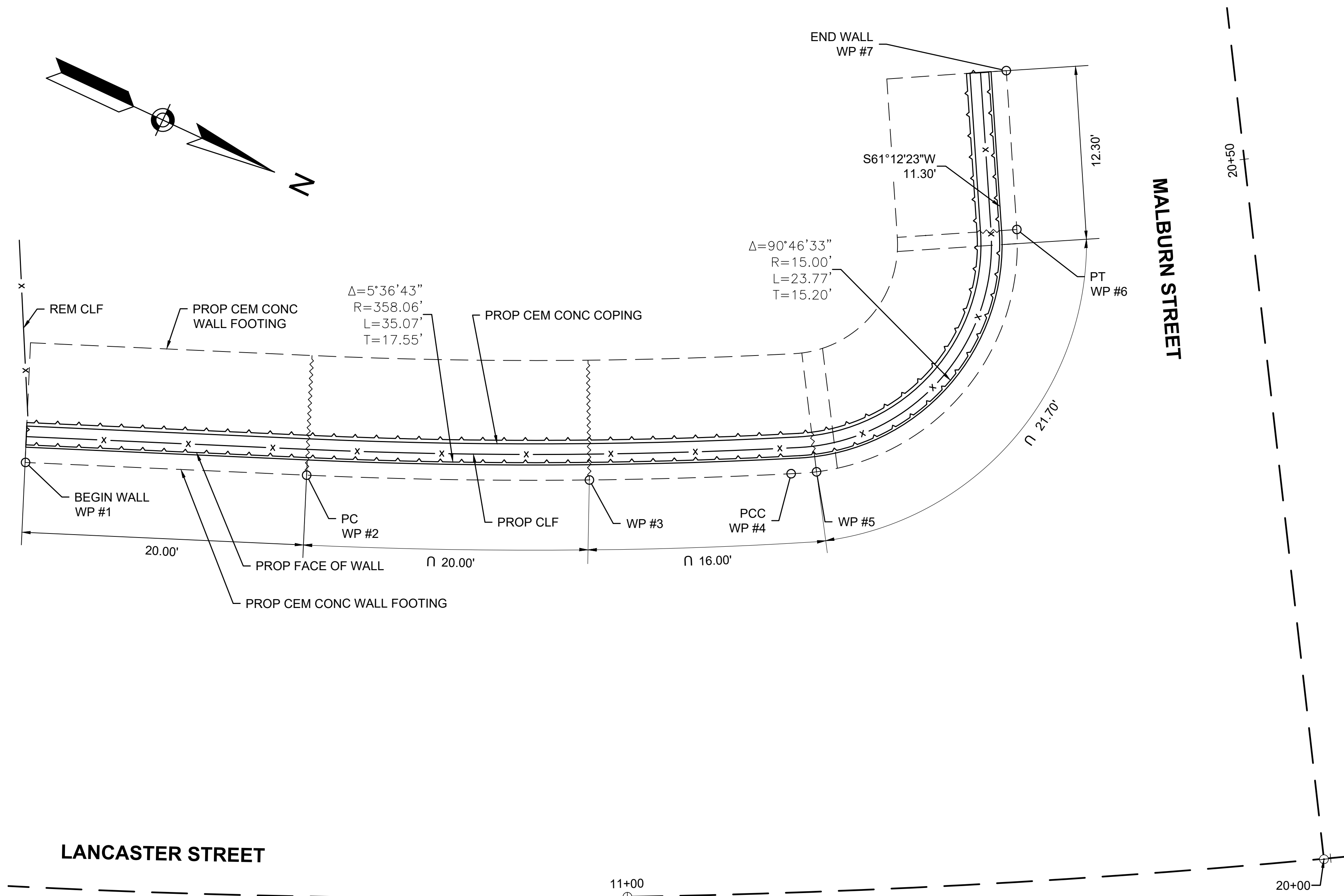
CB2
RIM=311.41'
INV=308.31'

SMH1
RIM=324.56'
INV=312.96'

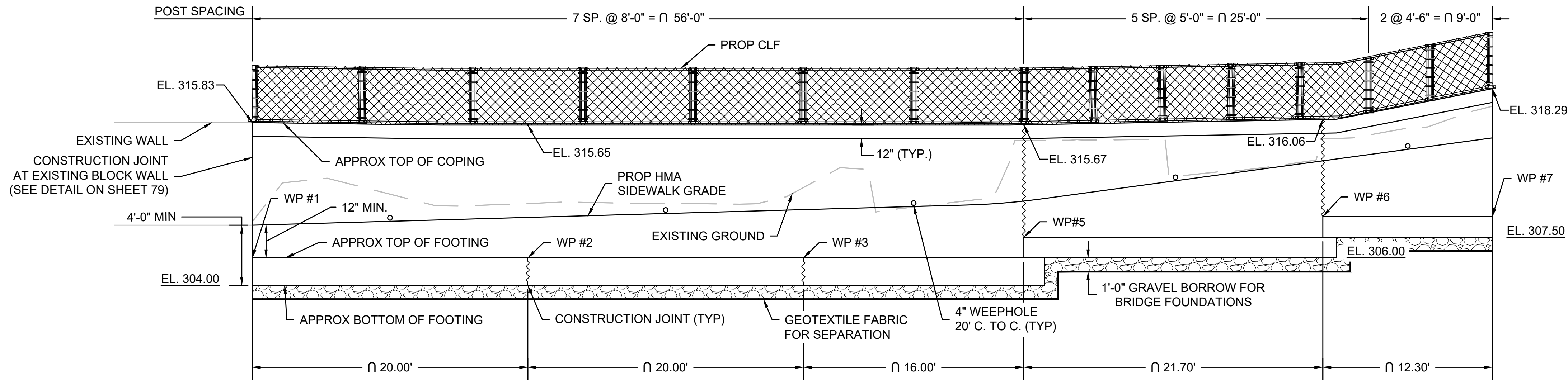
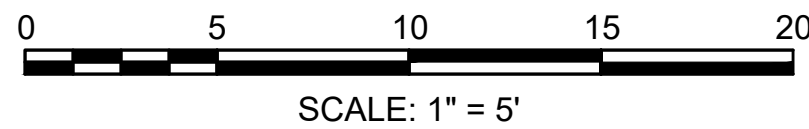
SMH2
RIM=303.83'
INV=296.08'

SMH3
RIM=307.78'
INV=295.28'

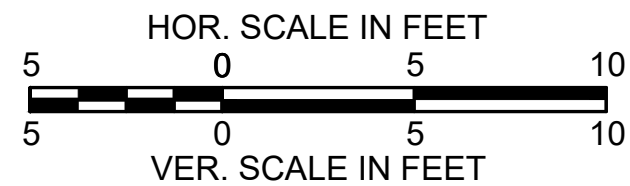




LANCASTER STREET CEMENTED STONE MASONRY WALL LAYOUT PLAN



LANCASTER STREET CEMENTED STONE MASONRY WALL

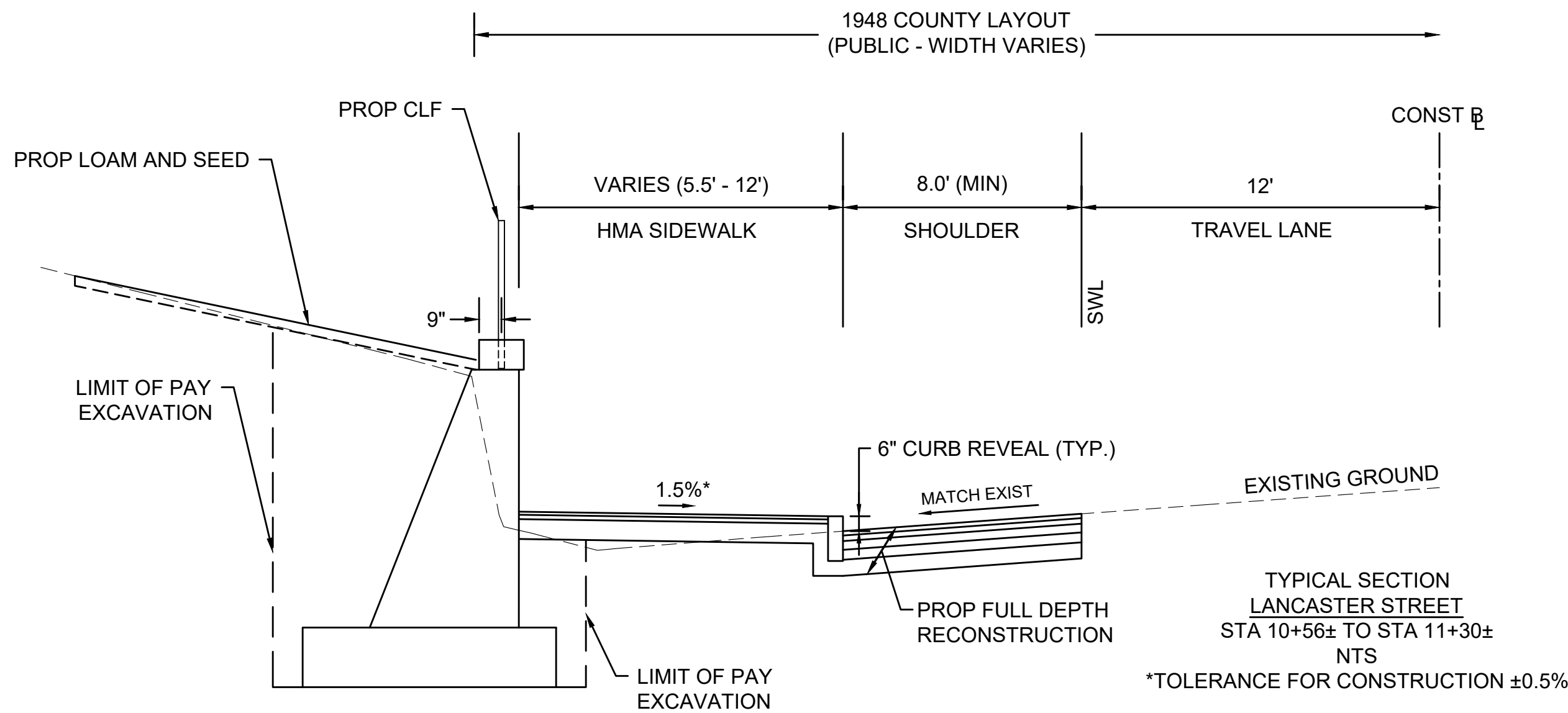


NOTES:

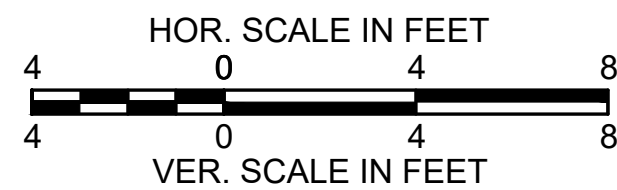
1. THE RETAINING WALL SHALL BE A CEMENTED STONE MASONRY WALL IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARD DRAWING 685.0.1.
2. UNSUITABLE MATERIAL EXISTING BELOW THE REQUIRED SUBGRADE SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AND REPLACED WITH SAND, GRAVEL, CRUSHED STONE, OR OTHER SUITABLE MATERIAL AND THOROUGHLY COMPACTED.
3. DIMENSIONS TAKEN ALONG TOE OF FOOTING.

WORKING POINT	DESCRIPTION	LANCASTER STREET STATION	MALBURN STREET STATION	OFFSET FROM BASELINE	NORTHING	EASTING
WP #1	BEGIN WALL	10+55.68		30.09' LT	3011174.4928	591982.1547
WP #2	PC/ CONST. JT	10+76.52		29.90' LT	3011192.8652	591974.5797
WP #3	CONST. JT	10+97.68		29.62' LT	3011211.3157	591966.3584
WP #4	PCC	11+12.69		29.71' LT	3011224.1059	591959.9059
WP #5	CONST. JT.	11+14.59		29.78' LT	3011225.6813	591959.0225
WP #6	PT/CONST. JT.		20+46.87	16.60' LT	3011231.2984	591937.4275
WP #7	END WALL		20+58.16	16.07' LT	3011225.8557	591927.5245

WALL DATA TABLE



LANCASTER STREET CEMENTED STONE MASONRY WALL TYPICAL SECTION



NOTE:

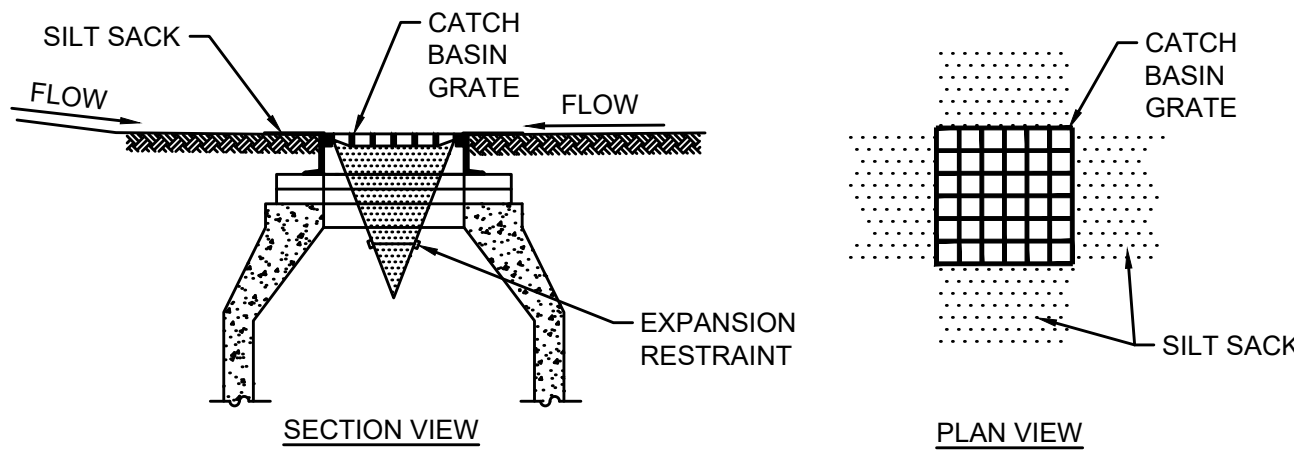
1. DEPTH OF COPING SHALL BE UNIFORM AND THE TOP OF THE MASONRY WALL SHALL VARY. SEE DETAIL ON SHEET 79.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	79	82
PROJECT FILE NO.		616375	

LEOMINSTER
MULTIPLE LOCATIONS

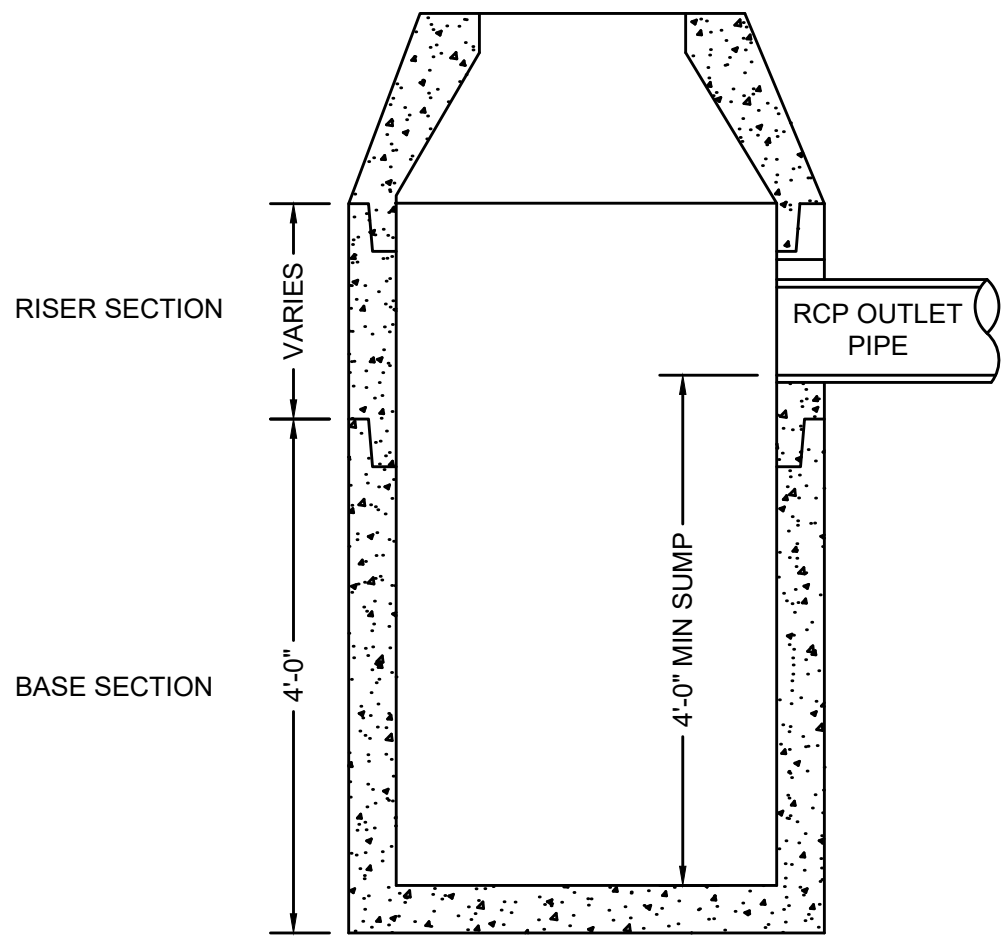
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	80	82
PROJECT FILE NO.		616375	

LANCASTER STREET
CONSTRUCTION DETAILS



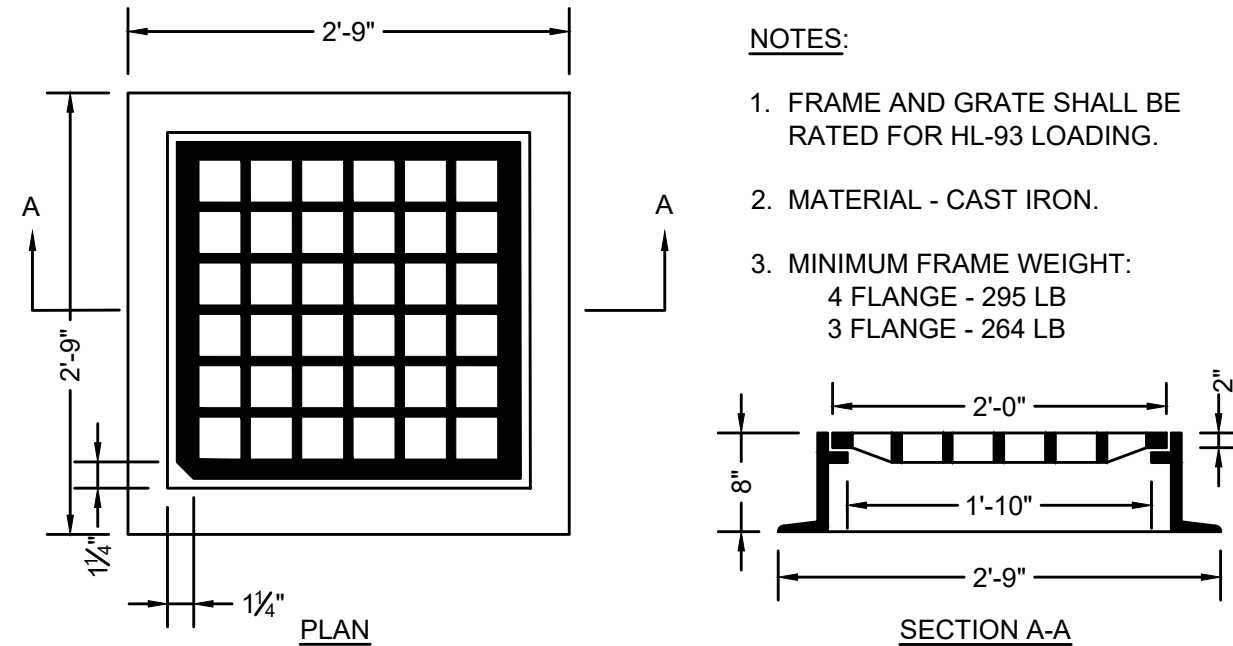
- NOTES:
- INSTALL SILT SACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
 - GRATE TO BE PLACED OVER SILT SACK.
 - SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

INLET PROTECTION SILT SACK IN CATCH BASIN
N.T.S.

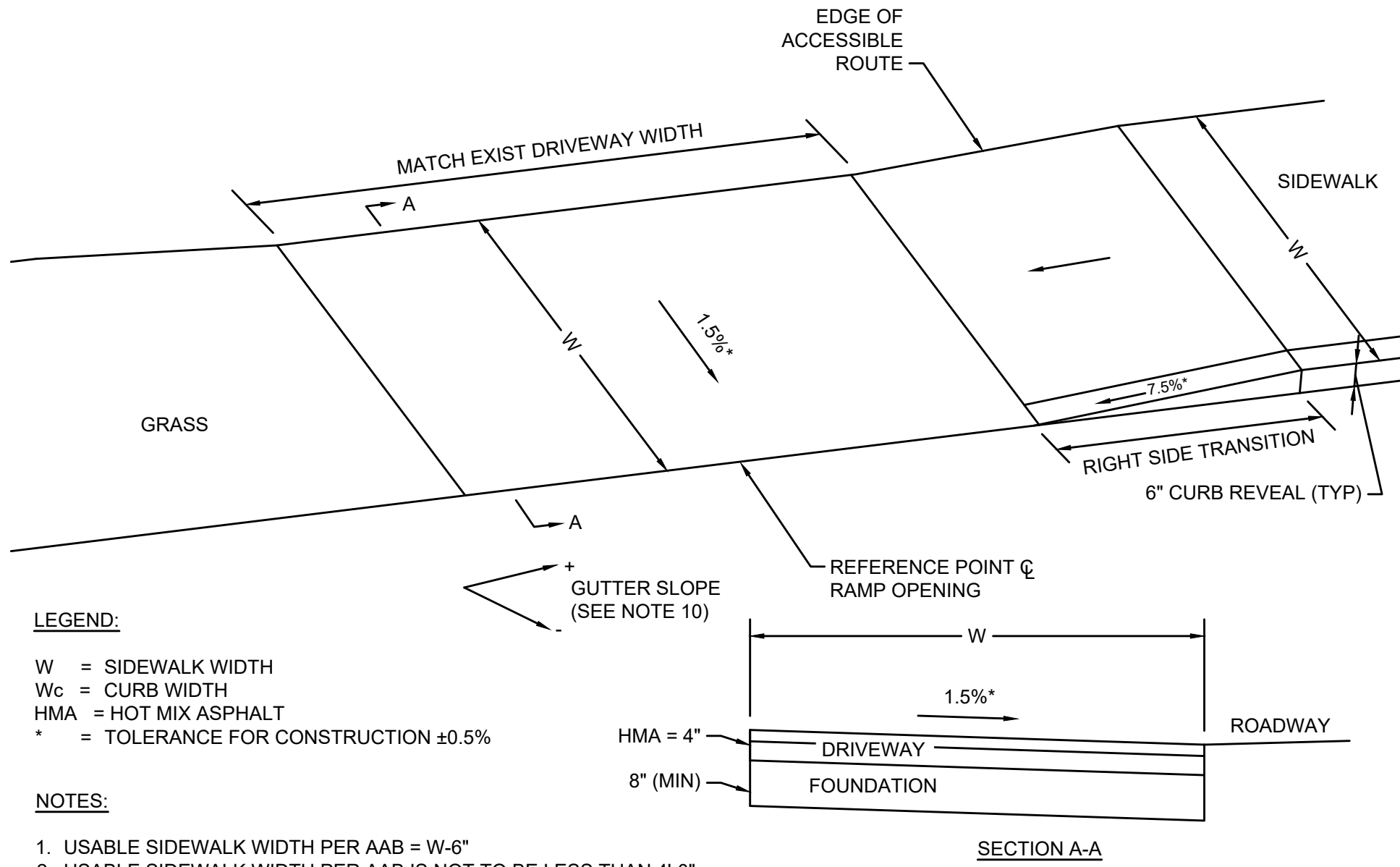


NOTE:
ALL CATCH BASINS SHALL CONFORM TO MASSDOT CONSTRUCTION STANDARD E 201.4.0 EXCEPT FOR 4' SUMP DEPTH AS SHOWN

DEEP SUMP CATCH BASIN
N.T.S.



CATCH BASIN FRAME & GRATE (MUNICIPAL STANDARD)
N.T.S.



SIDEWALK THROUGH DRIVEWAY TYPE A
N.T.S.

DRIVEWAY DATA							RIGHT SIDE TRANSITION		
DWY #	BASELINE REFERENCE	STATION	OFFSET	DRIVEWAY SURFACE	DWY WIDTH @ GUTTER (Wg)	ROADWAY GUTTER SLOPE	LENGTH	CURB REVEAL	SW WIDTH (Ws)
1	LANCASTER STREET	10+21.39	20.0' LT	HMA	44'-6"	2.5%	11'-0"	6"	6'-0"

PAVEMENT NOTES:

PROPOSED FULL DEPTH PAVEMENT (LANCASTER STREET)
SURFACE: 1¾" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
2¼" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) OVER

BASE: 3½" SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUBBASE OVER
8" GRAVEL BORROW, TYPE b

PROPOSED HMA SIDEWALK (LANCASTER STREET)
SURFACE: 1¼" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5) OVER
1¼" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER

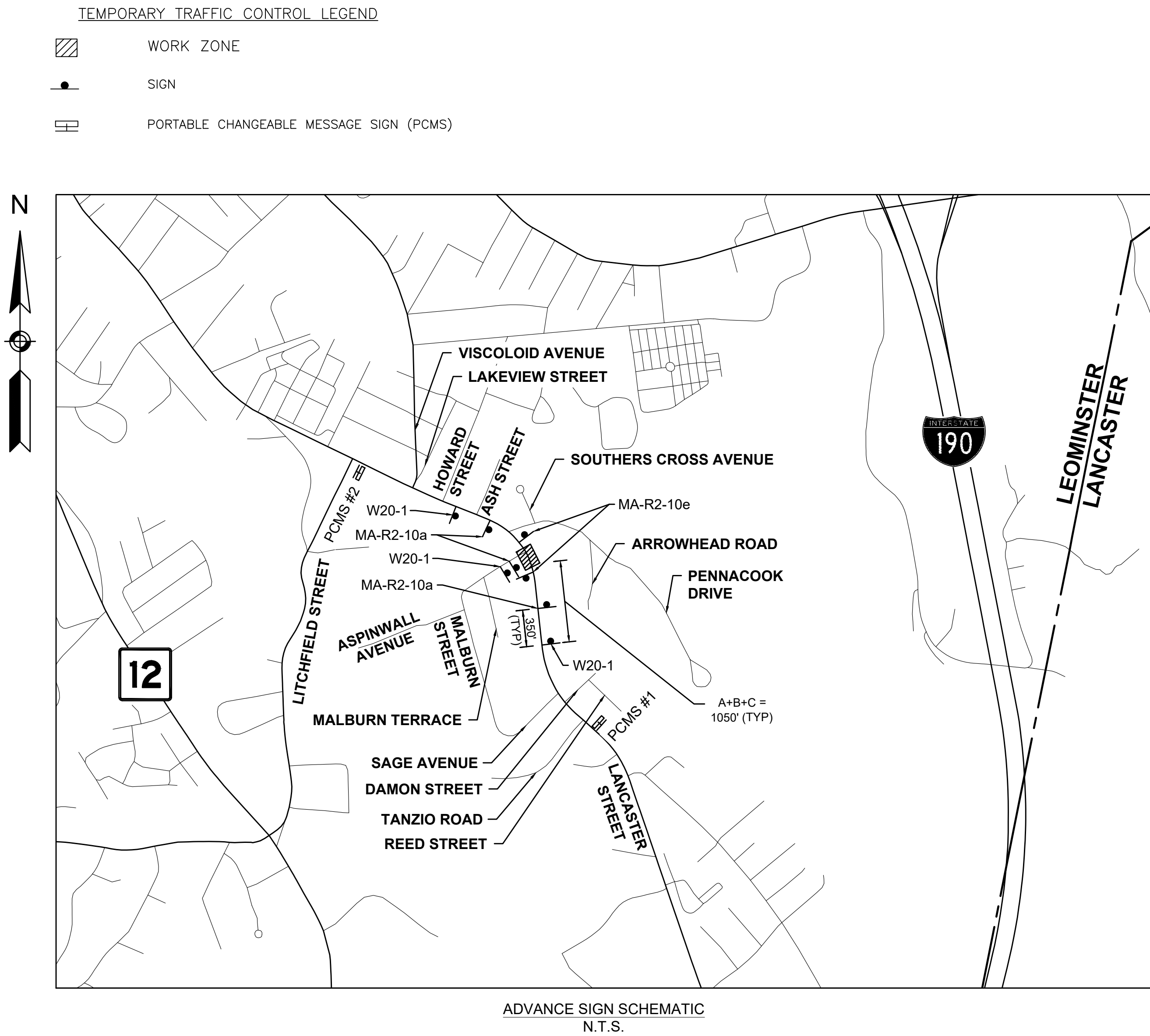
BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA DRIVEWAY (RESIDENTIAL)
SURFACE: 1½" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER
2½" SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) OVER

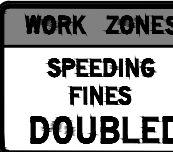
BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE CURB RAMPS
SURFACE: 4" CEMENT CONCRETE (4000 PSI, ¾", 610) OVER

BASE: 8" GRAVEL BORROW, TYPE b

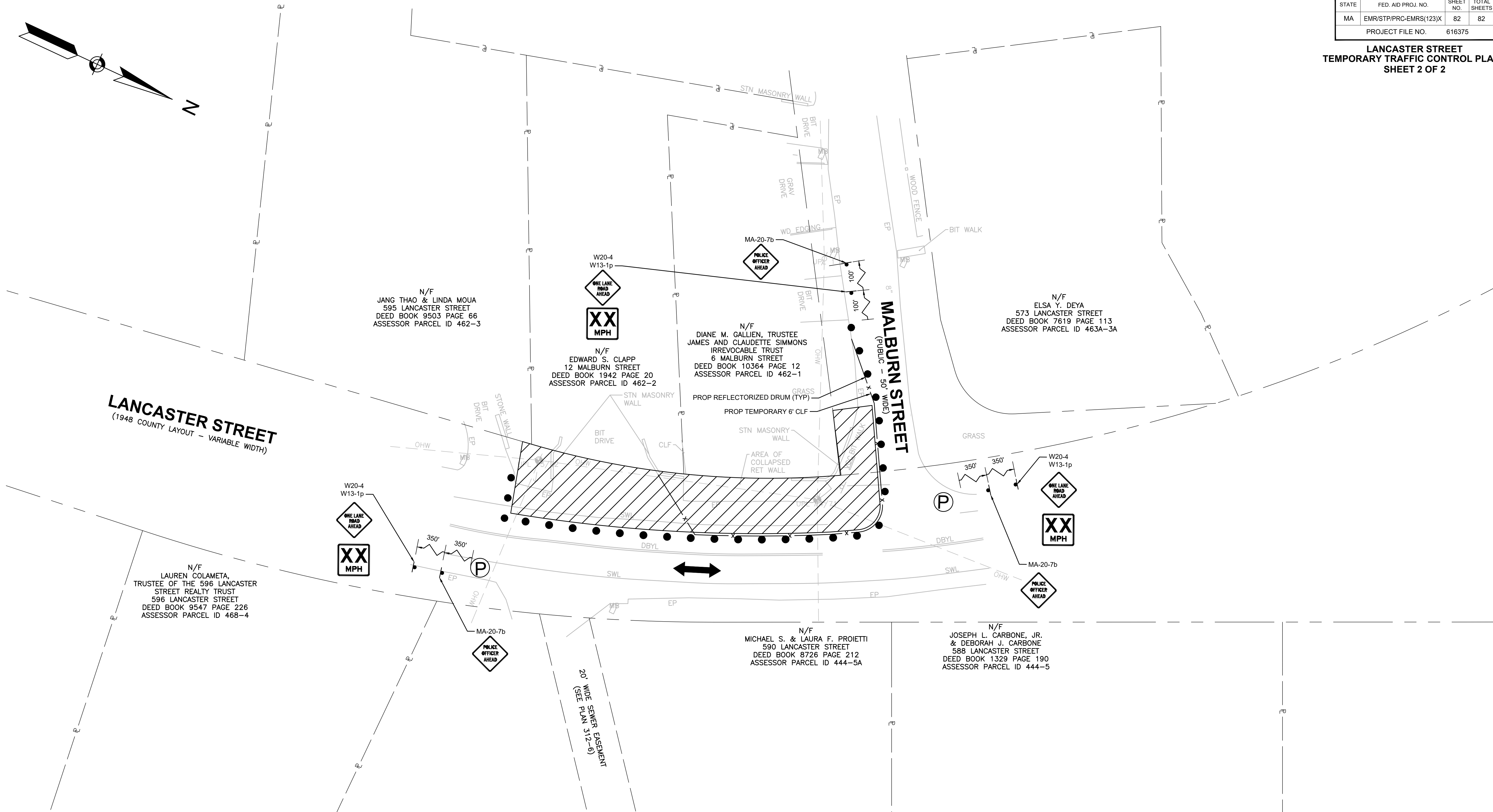
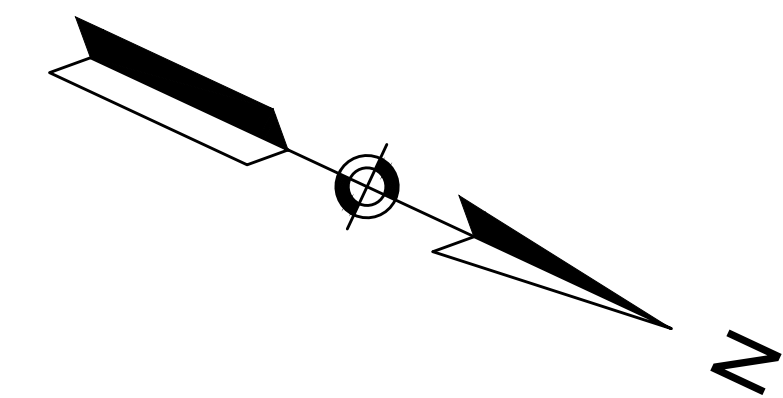
ADVANCE SIGN SCHEMATIC
N.T.S.

- NOTES:
- SEE TTCP NOTES ON SHEET 3.
 - THE "A" DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE "B" DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE "C" DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS.
 - ON SIDE STREETS, W20-1 SIGNS SHALL BE LOCATED 100' FROM THE LIMIT OF WORK.
 - REFER TO SUGGESTED WORK ZONE WARNING SIGN SPACING TABLE AND NOTES FOR ADDITIONAL DETAILS.

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY												
IDENTIFICATION NUMBER	SIZE OF SIGN (in)			TEXT DIMENSIONS (in)			COLOR			NUMBER OF SIGNS REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT	LEGEND	LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR	BACK- GROUND	LEGEND	BORDER			
MA-R2-10a	60	48		MASSDOT STANDARD SIGN			FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	3	20.00	60.00
MA-R2-10e	36	48					FL. ORANGE WHITE	BLACK BLACK	BLACK BLACK	2	12.00	24.00
MA-W20-7b	36	36					FL. ORANGE	BLACK	BLACK	3	9.00	27.00
W5-1	36	36		SEE 2023 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS			FL. ORANGE	BLACK	BLACK	2	9.00	18.00
W13-1p	36	36					FL. ORANGE	BLACK	BLACK	3	9.00	27.00
W20-1	36	36					FL. ORANGE	BLACK	BLACK	1	9.00	9.00
	48	48					FL. ORANGE	BLACK	BLACK	2	16.00	32.00
W20-4	36	36					FL. ORANGE	BLACK	BLACK	3	9.00	27.00
W21-5a	36	36					FL. ORANGE	BLACK	BLACK	2	9.00	18.00

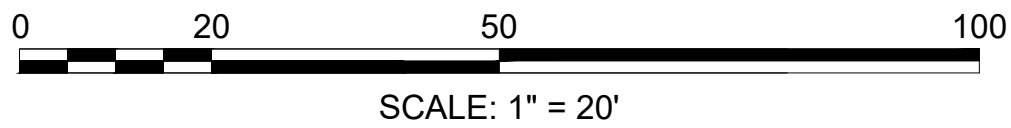
LEOMINSTER MULTIPLE LOCATIONS			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	EMR/STP/PRC-EMRS(123)X	82	82
PROJECT FILE NO.		616375	

LANCASTER STREET
TEMPORARY TRAFFIC CONTROL PLANS
SHEET 2 OF 2



LANCASTER STREET TYPICAL DAILY LANE CLOSURE

NOTE:
TWO LANES OF TRAFFIC (ONE IN EACH DIRECTION)
SHALL BE MAINTAINED AFTER NORMAL WORK HOURS.



TEMPORARY TRAFFIC CONTROL LEGEND

- WORK ZONE
- SIGN
- REFLECTORIZED DRUM OR 36" CONE
- DIRECTION OF TRAVEL
- POLICE DETAIL