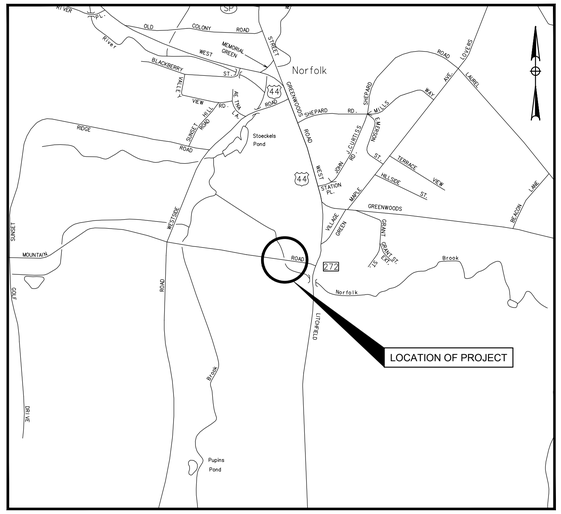


PROJECT LOCATION PLAN
NOT TO SCALE

TOWN OF NORFOLK

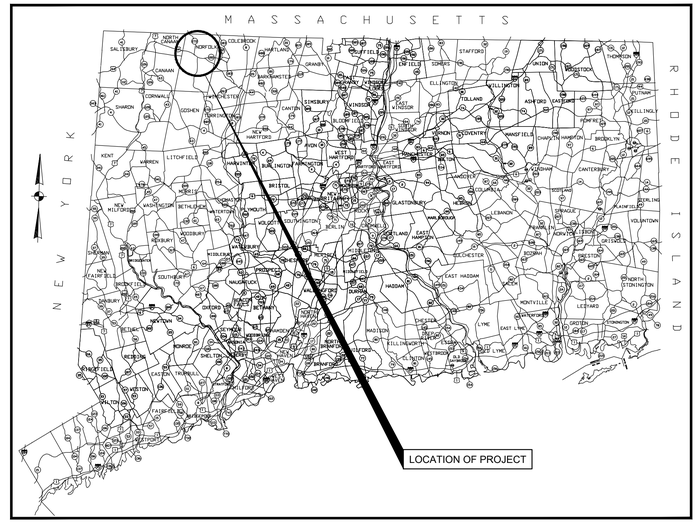
PLAN FOR THE REPLACEMENT OF MOUNTAIN ROAD BRIDGE OVER NORFOLK BROOK (BRIDGE NO. 097-004)

FROM STATION 1+50 TO STATION 3+50
LENGTH = 200'
SCALES: AS NOTED
TO BE MAINTAINED BY THE TOWN OF NORFOLK

FIRST SELECTMAN

Matthew T. Riiska

February 4, 2020



PROJECT VICINITY MAP
NOT TO SCALE

DESIGN DATA
FUNCTIONAL CLASSIFICATION: RURAL LOCAL ROAD
DESIGN SPEED: 25 mph
ADT (EST.): 100

CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817 (2016), SUPPLEMENTAL SPECIFICATIONS DATED JULY 2019 GOVERN.

LIST OF DRAWINGS

SHEET NO.	TITLE	DRAWING	SHEET NO.	STANDARD DRAWINGS	FHWA APPROVAL DATE
1	TITLE SHEET	TITLE	HW-822_01	TEMPORARY PRECAST CONCRETE BARRIER CURB	7-24-13
2	GENERAL NOTES AND TYPICAL SECTION	GEN-01	TR-1210_08	PAVEMENT MARKINGS ON NON FREEWAYS	8-21-18
3	ROADWAY PLAN & PROFILE	PLA-01	TR-1220_01	SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS	8-21-18
4 - 7	CROSS SECTIONS	XSC-01 - XSC-07	TR-1220_02	CONSTRUCTION SIGN SUPPORTS AND CHANNELIZING DEVICES	8-21-18
8	CULVERT GENERAL PLAN	STR-01			
9	CULVERT ELEVATION AND SECTIONS	STR-02			
10	BORING LOGS	STR-03			
11	LAYOUT & FOUNDATION PLAN	STR-04			
12 - 13	CULVERT MISCELLANEOUS DETAILS	STR-05 - STR-06			
14	WATER HANDLING PLAN	WTH-01			
15	MISCELLANEOUS DETAILS	MDS-01			
16 - 19	STEEL-BACKED TIMBER GUIDERAIL DETAILS	GRD-01 - GRD-04			
20	SEDIMENT & EROSION CONTROL NOTES	SED-01			
21	SEDIMENT & EROSION CONTROL DETAILS	SED-02			
22	DETOUR PLAN	DET-01			

LIST OF DRAWING REVISIONS

SHEET NO.	DESCRIPTION	DATE	BY

TITLE
1

CARDINAL
ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

GENERAL NOTES

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 817, WITH LATEST REVISIONS UNLESS OTHERWISE SPECIFIED IN THE TECHNICAL SPECIFICATIONS.

2. EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 817, WITH LATEST REVISIONS, 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, DEP BULLETIN 34, UNLESS OTHERWISE SPECIFIED IN THE TECHNICAL SPECIFICATIONS.

3. ALL DIMENSIONS ARE FEET UNLESS OTHERWISE NOTED.

4. THE CONTRACTOR SHALL WALK THE PROJECT PRIOR TO CONSTRUCTION WITH A REPRESENTATIVE FROM THE TOWN AND THE ENGINEER. TREES TO BE REMOVED SHALL BE MARKED IN THE FIELD. EXTREME CARE SHALL BE EXERCISED TO PROTECT ALL TREES NOT DESIGNATED FOR REMOVAL. NO TREES SHALL BE REMOVED UNTIL AUTHORIZATION IS GIVEN BY THE TOWN. COST IS INCLUDED IN THE ITEM "CLEARING AND GRUBBING".

5. ANY PHYSICAL FEATURES DISTURBED BY THE CONTRACTOR SHALL BE REPLACED OR RECONSTRUCTED AS DIRECTED BY THE ENGINEER TO A CONDITION EQUAL TO OR BETTER THAN PRIOR TO CONSTRUCTION AT THE CONTRACTORS EXPENSE.

6. ALL DIMENSIONS AND ELEVATIONS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF MANUFACTURING AND CONSTRUCTION, AND NECESSARY ADJUSTMENTS MADE AS ORDERED BY THE ENGINEER.

7. WORKING HOURS SHALL BE LIMITED TO THE HOURS BETWEEN 7:30 A.M. AND 4:00 P.M., MONDAY THRU FRIDAY. NO WORK WILL BE PERFORMED ON WEEKENDS, HOLIDAYS, OR SPECIAL DAYS AS DIRECTED BY THE ENGINEER. THE ONLY EXCEPTIONS TO THESE LIMITATIONS WILL BE AS DIRECTED BY THE ENGINEER TO CORRECT OR HANDLE EMERGENCY CONDITIONS, OR IF APPROVED BY THE ENGINEER IN WRITING.

8. THE CONTRACTOR SHALL SUBMIT A DETAILED SCHEDULE FOR APPROVAL PRIOR TO COMMENCING CONSTRUCTION.

9. THE CONTRACTOR SHALL PROVIDE ACCESS TO ALL PROPERTIES AT ALL TIMES DURING CONSTRUCTION. COORDINATE ACCESS WITH PAVING OPERATIONS SO THAT JOINTS ARE MINIMIZED (SEE MAINTENANCE AND PROTECTION OF TRAFFIC SPECIFICATIONS). NO TRANSVERSE JOINTS SHALL BE ALLOWED DURING THE PAVING OF THE WEARING COURSE.

10. ALL DISTURBED AREAS THAT WILL NOT BE PAVED SHALL RECEIVE 4" OF TOPSOIL AND TURF ESTABLISHMENT.

11. FOR LAYOUT PURPOSES, PIPE LENGTHS INDICATED ON THE PLANS ARE FROM CENTER OF CATCH BASIN/MANHOLE TO CENTER OF CATCH BASIN/MANHOLE OR FACE OF ENDWALL AND THE LENGTH OF THE FLARED END SECTION IS INCLUDED IN PIPE LENGTH. PAYMENT SHALL BE THE ACTUAL LENGTH INSTALLED MEASURED FROM THE INSIDE FACE OF THE STRUCTURE TO THE INSIDE FACE OF A STRUCTURE OR THE FACE OF AN ENDWALL AND SHALL NOT INCLUDE THE LENGTH OF THE CULVERT END. CULVERT ENDS ARE PAID SEPARATELY.

12. RCP SHALL BE CLASS IV UNLESS NOTED OTHERWISE.

13. ALL SWALES AND DITCHES WILL HAVE TEMPORARY "U" SHAPED STONE DIKES PLACED PERPENDICULAR TO FLOW AT 30' SPACING DURING CONSTRUCTION TO PREVENT EROSION .

14. ALL REQUIRED UTILITY RELOCATIONS SHALL BE PERFORMED BY THE RESPECTIVE UTILITY COMPANY UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL CONTACT THE UTILITY COMPANIES PRIOR TO ANY WORK AND COORDINATE HIS WORK WITH THE UTILITY COMPANY WORK. THE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY COMPANY FOR THE UTILITY COMPANY TO HOLD ANY POLES THAT NEED TO BE SUPPORTED DURING THE CONTRACTOR'S TRENCHING OPERATIONS. THE COST TO COORDINATE THIS WORK WITH THE UTILITY COMPANIES SHALL BE INCIDENTAL TO THE PROJECT UNLESS A SPECIFIC PAY ITEM IS INCLUDED.

15. IF THE CONTRACTOR WILL BE REQUIRED TO WORK IN PROXIMITY OF AND BENEATH OVERHEAD POWER LINES AS WELL AS TELEPHONE, CABLE TV AND TELECOMMUNICATION LINES. THE OVERHEAD LINES ARE NOT ANTICIPATED TO BE DE-ENERGIZED DURING THE PROSECUTION OF THIS WORK. THE CONTRACTOR SHALL SPECIFICALLY COMPLY WITH THE REQUIREMENTS DETAILED IN OSHA REGULATIONS (STANDARDS 29 CFR) CRANES AND DERRICKS - 1926.550 AS WELL AS OTHER APPLICABLE OSHA STANDARDS. THE CONTRACTOR SHALL MAINTAIN A SAFE DISTANCE FROM ALL UTILITY POLES DURING CONSTRUCTION ACTIVITIES.

16. THE INFORMATION SHOWN ON THESE PLANS IS BASED ON LIMITED INVESTIGATIONS AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OF WORK REQUIRED. LOCATIONS OF EXISTING UTILITIES AND UNDERGROUND STRUCTURES HAVE BEEN COMPILED FROM THE BEST AVAILABLE INFORMATION. THIS INFORMATION WAS COMPILED UTILIZING UTILITY COMPANY & TOWN RECORD MAPS AND FIELD SURVEY AND THEREFORE, IS CONSIDERED TO BE APPROXIMATE. ALL UTILITIES AND UNDERGROUND STRUCTURES MAY NOT BE SHOWN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE ACTUAL LOCATION OF ALL UTILITIES AND TO NOTIFY UTILITY COMPANIES OF NECESSARY RELOCATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH THAT OF THE UTILITY COMPANIES. UTILITY LINES DAMAGED BY THE CONTRACTOR SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER AND THE UTILITY COMPANY AND THE COST OF REPAIR WORK SHALL BE BORNE BY THE CONTRACTOR. THE CONTRACTOR SHALL CONTACT CALL BEFORE-U-DIG AT 1-800-922-4455 FOR MARKING OF EXISTING UTILITIES AT LEAST FORTY-EIGHT (48) HOURS IN ADVANCE OF EXCAVATION (MONDAY THROUGH FRIDAY, EXCLUDING HOLIDAYS).

17. CONTRACTOR TO SUPPLY UTILITY COMPANIES WITH SUFFICIENT VERTICAL AND HORIZONTAL STAKEOUT OF PROPOSED STORM DRAINAGE, PROPOSED ROADWAY, AND OTHER PROPOSED IMPROVEMENTS TO PERFORM UTILITY RELOCATIONS. THE COST OF THIS WORK SHALL BE INCLUDED IN THE ITEM "CONSTRUCTION STAKING."

18. ANTICIPATED UTILITY POLE RELOCATIONS, IF ANY, ARE SHOWN ON THE PLANS. ADDITIONAL POLE RELOCATIONS MAY BE REQUIRED. CONTRACTOR TO PROVIDE STAKEOUT OF PROPOSED IMPROVEMENTS PRIOR TO COMMENCEMENT OF WORK TO DETERMINE IF ADDITIONAL POLE RELOCATIONS ARE REQUIRED. POLE RELOCATIONS MAY NOT BE COMPLETED PRIOR TO THE INSTALLATION OF STORM DRAINAGE AND ROADWAY IMPROVEMENTS. THE COST OF THIS WORK SHALL BE INCIDENTAL TO THE PROJECT.

19. EXISTING PAVEMENT SHALL BE REMOVED IN FILL AREAS PRIOR TO PLACING FILL. EXISTING PAVEMENT OUTSIDE OF THE CUT AND FILL LIMITS THAT WILL NOT BE USED IN THE PROPOSED CONDITIONS SHALL BE REMOVED. PAYMENT SHALL BE MADE UNDER THE ITEM "EARTH EXCAVATION."

20. ALL EXISTING DRAINAGE PIPES AND CULVERTS WITHIN THE PROJECT SLOPE LIMITS THAT ARE DESIGNATED TO BE REMOVED SHALL BE REMOVED AND BACKFILLED AS SPECIFIED IN SECTION 2.05 "TRENCH EXCAVATION" UNLESS OTHERWISE SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER. COORDINATE THIS WORK WITH THE RECONNECTION OF ANY EXISTING FOUNDATION AND OTHER DRAINS TO THE PROPOSED DRAINAGE SYSTEM.

21. THE CONTRACTOR SHALL MAINTAIN ALL ROAD NAME SIGNS AS INDICATED ON THE PLANS AND SHALL MAINTAIN ALL TRAFFIC CONTROL SIGNS AS NEEDED DURING CONSTRUCTION AND AS DIRECTED BY THE ENGINEER. COST IS INCLUDED IN THE ITEM "MAINTENANCE AND PROTECTION OF TRAFFIC".

22. PLANIMETRIC AND TOPOGRAPHIC FEATURES ARE BASED ON FIELD SURVEY PERFORMED BY CARDINAL ENGINEERING ASSOCIATES, IN FEBRUARY 2019. SURVEY BASELINE CONFORMS TO CLASS A-2 HORIZONTAL ACCURACY. STREETLINE AND PROPERTY LINE INFORMATION (IF SHOWN) ARE APPROXIMATE AND BASED ON LIMITED FIELD SURVEY. ALL ELEVATIONS ARE BASED ON ASSUMED DATUM. HORIZONTAL COORDINATES ARE ASSUMED. VERTICAL ACCURACY IS CLASS T-2.

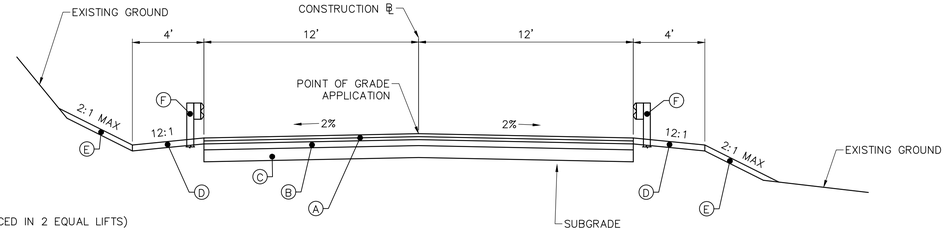
23. ALL TOP OF FRAME ELEVATIONS REFLECT THE ELEVATION WITH THE STANDARD DEPRESSION AS SHOWN ON "DETAILS OF DEPRESSED GUTTER STRIP" (SEE MISC DETAILS).

24. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE UTILITY COMPANIES TO RESET ALL UTILITY BOXES TO FINISHED GRADE. THERE WILL BE NO SEPARATE PAYMENT TO COORDINATE THIS WORK OR CLAIM FOR TIME EXTENSION.

25. THE CONTRACTOR SHALL RESET ALL WATER AND GAS CURB STOPS BOXES AND WATER AND GAS GATE VALVE BOXES TO FINISHED GRADE. THERE SHALL BE NO SEPARATE MEASUREMENT OR PAYMENT FOR THIS WORK AS IT IS INCIDENTAL TO CONSTRUCTION.

26. STREAMBED MATERIAL EXCAVATED FOR THE CONSTRUCTION OF THE BRIDGE AND PLACEMENT OF RIPRAP SHALL BE STOCKPILED AND PLACED IN THE LOW FLOW PORTION OF THE RIVER BED AS SHOWN ON THE DETAILS. THE MATERIAL SHALL BE PLACED IN A MANNER REPLICATING THE EXISTING RIVER CROSS SECTION. THIS WORK SHALL BE INCLUDED IN THE ITEMS "CHANNEL EXCAVATION - EARTH", "STRUCTURE EXCAVATION - EARTH (EXCLUDING COFFERDAM AND DEWATERING)" AND "STRUCTURE EXCAVATION - ROCK (EXCLUDING COFFERDAM AND DEWATERING)." SUPPLEMENTAL STREAMBED MATERIAL SHALL BE PROVIDED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER IF SUFFICIENT EXCAVATED STREAMBED MATERIAL IS NOT AVAILABLE. THIS MATERIAL SHALL BE ROUNDED STONE RIPRAP (SEE SPECIFICATIONS).

27. ALL UNCONFINED INSTREAM WORK SHALL BE PERFORMED BETWEEN JUNE 1 AND SEPTEMBER 30.



LEGEND

- (A) 4" – HMA S0.5 TRAFFIC LEVEL 2 (PLACED IN 2 EQUAL LIFTS)
- (B) 4" – PROCESSED AGGREGATE BASE
- (C) 8" – SUBBASE ON EARTH, 18" ON ROCK
- (D) 4" – PROCESSED AGGREGATE
- (E) 4" – TOPSOIL AND TURF ESTABLISHMENT
- (F) METAL BEAM RAIL

NOTES:

1. SEE CROSS SECTIONS AND PLANS FOR ADDITIONAL INFORMATION.

MOUNTAIN ROAD TYPICAL SECTION

NOT TO SCALE

LIST OF ABBREVIATIONS

AGGR	AGGREGATE
AH	AHEAD
A	ALGEBRAIC DIFFERENCE IN GRADES
APPROX	APPROXIMATE
ASPH	ASPHALT
BK	BACK
℄	BASELINE
BM	BENCHMARK
BIT	BITUMINOUS
BCLC	BITUMINOUS CONCRETE LIP CURBING
CGR	CABLE GUIDERAIL
CI / CIP	CAST IRON PIPE
CB	CATCH BASIN
℄	CENTERLINE
CC	CONCRETE CURBING
CL	CLASS
CONC	CONCRETE
CP	CONTROL POINT
COR	CORNER
CMP	CORRUGATED METAL PIPE
CPFE	CORRUGATED POLYETHYLENE FLARED END
CPP	CORRUGATED POLYETHYLENE PIPE
CY	CUBIC YARD
DIA	DIAMETER
DBL	DOUBLE
DRIVE	DRIVEWAY
DI / DIP	DUCTILE IRON PIPE
EA	EACH
EP	EDGE OF PAVEMENT
EL / ELEV	ELEVATION
EX / EXIST	EXISTING
FG	FINISHED GRADE
FP	FLAGPOLE
FE	FLARED END
FL	FLOW LINE
FT	FOOT
FND	FOUND
FOUND	FOUNDATION
G	GAS
GV	GAS VALVE
GSC / GC	GRANITE STONE CURBING
HP	HIGH POINT
HORIZ	HORIZONTAL
HRS	HOURS
HYD	HYDRANT
INV	INVERT
IE	INVERT ELEVATION
IP	IRON PIN
LT	LEFT
L	LENGTH
LVC	LENGTH OF VERTICAL CURVE
LTP	LIGHT POLE
LF	LINEAR FEET
LP	LOW POINT
LS	LUMP SUM
MB	MAILBOX
MH	MANHOLE
MAX	MAXIMUM
MBR	METAL BEAM RAIL
MCE	METAL CULVERT END
MIN	MINIMUM
MON	MONUMENT
NTS	NOT TO SCALE
NOM	NOMINAL
NO	NUMBER
PERF	PERFORATED
POB	POINT OF BEGINNING
PCC	POINT OF COMPOUND CURVATURE
PC	POINT OF CURVATURE
POE	POINT OF ENDING
PGA	POINT OF GRADE APPLICATION
PI	POINT OF INTERSECTION
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVCC	POINT OF VERTICAL COMPOUND CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVRC	POINT OF VERTICAL REVERSE CURVE
PVT	POINT OF VERTICAL TANGENCY
POC	POINT ON CURVATURE
POT	POINT ON TANGENT
PVC	POLYVINYL CHLORIDE PIPE
℄	PROPERTY LINE
R	RADIUS
RR	RAILROAD
K	RATE OF VERTICAL CURVATURE
REINF	REINFORCED
RCCE	REINFORCED CONCRETE CULVERT END
RCP	REINFORCED CONCRETE PIPE
REQD	REQUIRED
RT	RIGHT
ROW	RIGHT OF WAY
RSC	RIGID STEEL CONDUIT
RD	ROAD
SAN	SANITARY
SS	SANITARY SEWER
SED	SEDIMENTATION
SCB	SEDIMENT CONTROL BALES
SCS	SEDIMENT CONTROL SYSTEM
SHLD	SHOULDER
SF	SQUARE FOOT
SY	SQUARE YARD
STD	STANDARD
STA	STATION
SSD	STOPPING SIGHT DISTANCE
ST	STREET
℄	STREET LINE
TBD	TO BE DETERMINED
TF	TOP OF FRAME
TYP	TYPICAL
UD	UNDERDRAIN
VERT	VERTICAL
VC	VERTICAL CURVE
VF	VERTICAL FEET
VCP	VITRIFIED CLAY PIPE
W	WATER
WV	WATER VALVE

STANDARD CONVENTIONS

EXISTING		PROPOSED
	APPROXIMATE LIMIT OF CUT SLOPE	C
	APPROXIMATE LIMIT OF FILL SLOPE	F
	APPROXIMATE PROPERTY LINE	
	APPROXIMATE STREET LINE	
	BASELINE STATION	0+00
Bit	BITUMINOUS CONCRETE DRIVEWAY	
	BORING NUMBER B10 (SEE BORING LOG SHEET)	B10
	CATCH BASIN	
	CONTROL POINT	
Conc	CONCRETE DRIVEWAY/ CONCRETE DRIVEWAY RAMP	
	CULVERT END	
	DRAINAGE DITCH	
Size & Type	DRAINAGE PIPE	SIZE & TYPE
	EASEMENT LINE (PERMANENT)	
	EASEMENT LINE (TEMPORARY)	
E	ELECTRIC LINE (OVERHEAD OR UNDERGROUND)	
G	GAS LINE	
	GAS TEST PIT	TP G1
GV WV	GAS VALVE or WATER VALVE	
HV	HIGH VOLTAGE OVERHEAD LINE	
Number or Name	HOUSE/ STRUCTURE	
	HYDRANT	
	INLAND WETLAND LIMITS	
	MAILBOX	
D	MANHOLE (STORM)	
S	MANHOLE (SANITARY)	
	MILLING AND OVERLAY	
Mon	MONUMENT	MON
	NORTH ARROW	
	RIPRAP APRON	
SC	SANITARY SERVICE CONNECTION	
Size & Type	SANITARY SEWER	SIZE & TYPE
	SEDIMENTATION CONTROL SYSTEM	
	SIGN	
x 33.2	SPOT ELEVATION	x 33.2
	STONE WALL	
T	TELEPHONE LINE (OVERHEAD OR UNDERGROUND)	
	TEST HOLE NUMBER 5 (SEE CONTRACT DOCUMENTS)	TH-5
	TREE	
	TREE LINE	
Size & Type	UNDERDRAIN	SIZE & TYPE
	"U" SHAPED STONE DIKE	
Number & Owner	UTILITY POLE	
	WATER COURSE	
W	WATER LINE	W
	WATER TEST PIT	TP W1

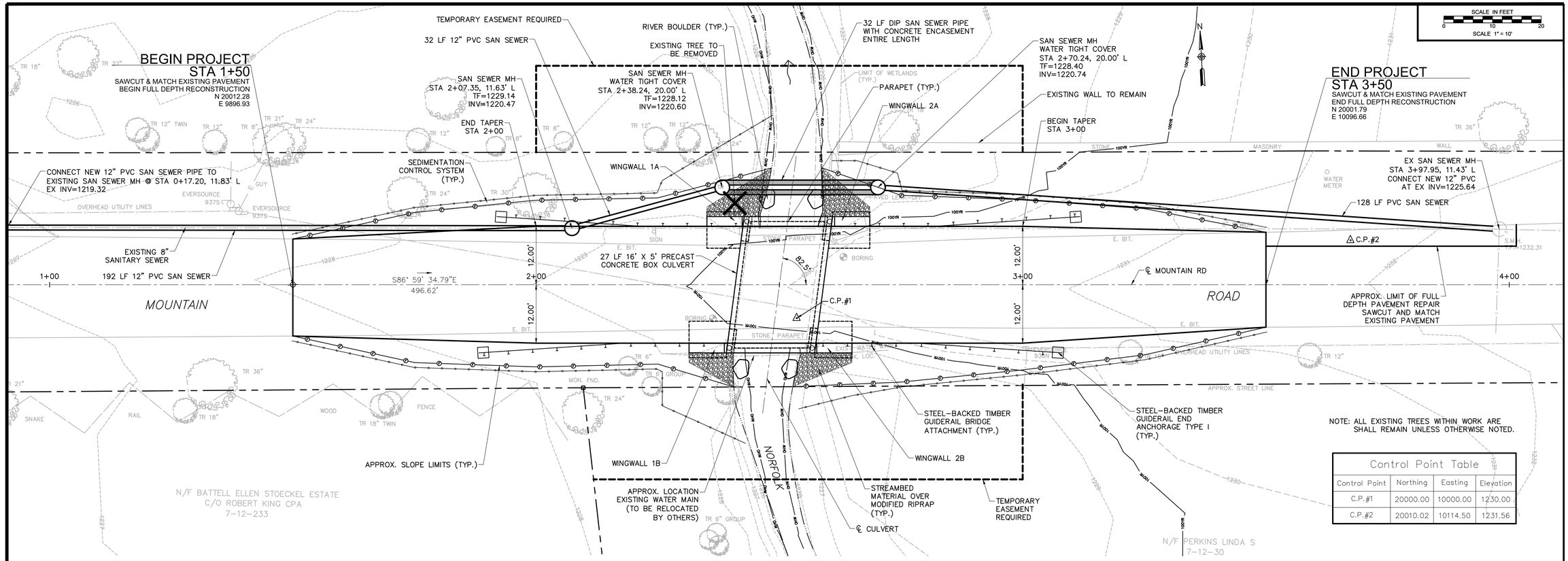
NO.	DATE	BY	REVISION

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street I Meriden, CT 06451 I 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
GENERAL NOTES & TYPICAL SECTION

GEN-01



Control Point Table			
Control Point	Northing	Easting	Elevation
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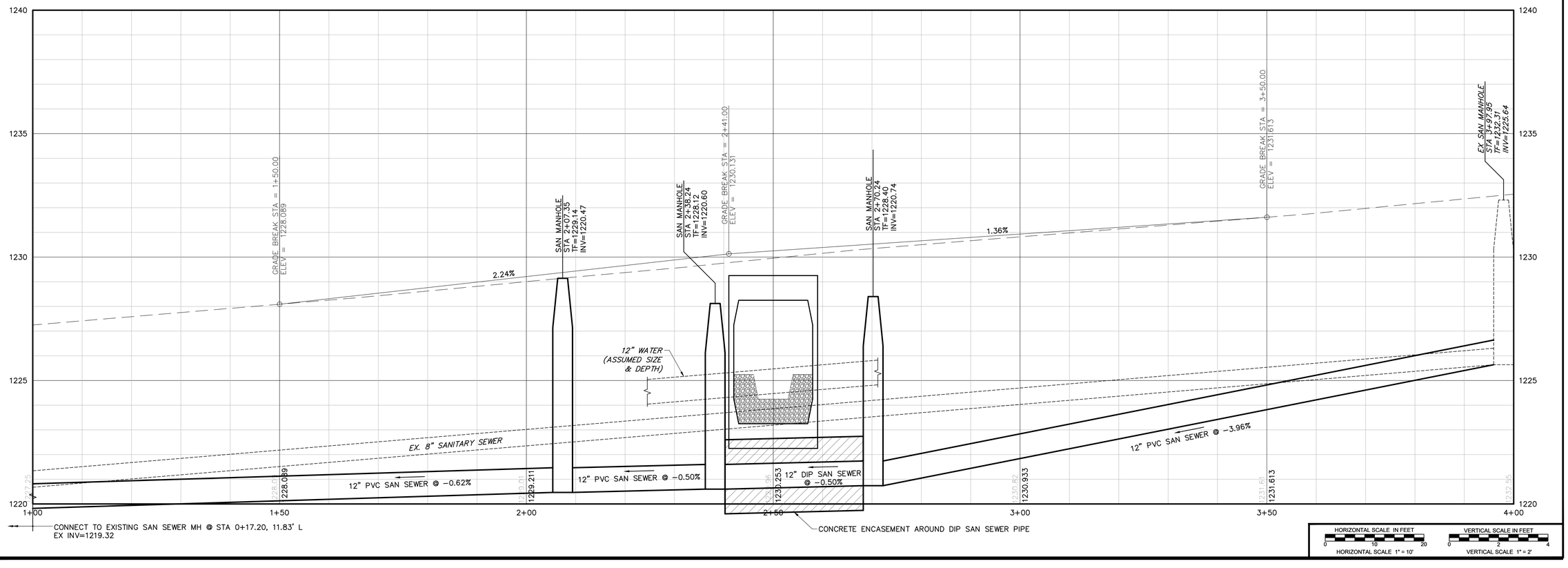
C.P.#2	20010.02	10114.50	1231.56



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APPROVED BY: JAC

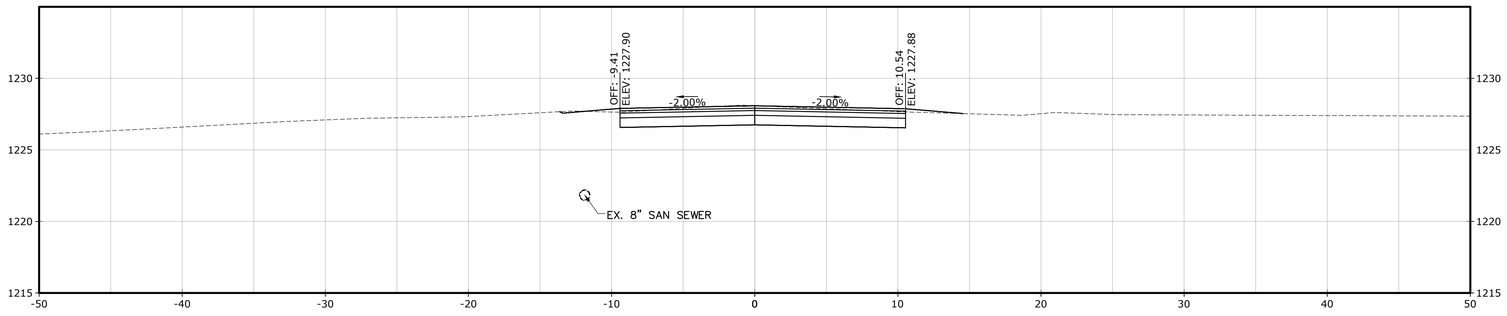
CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
ROADWAY PLAN & PROFILE

PLA-01

3

SCALE IN FEET
0 5 10
SCALE 1" = 5'



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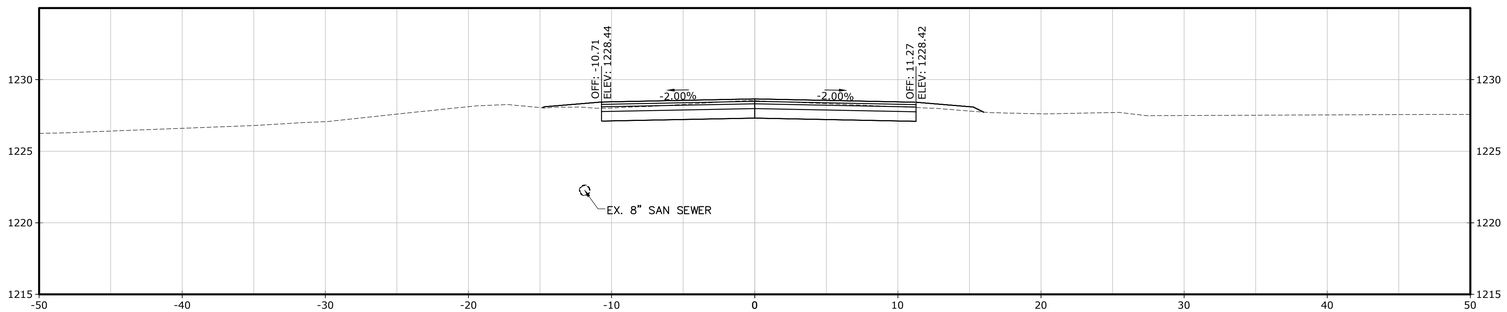

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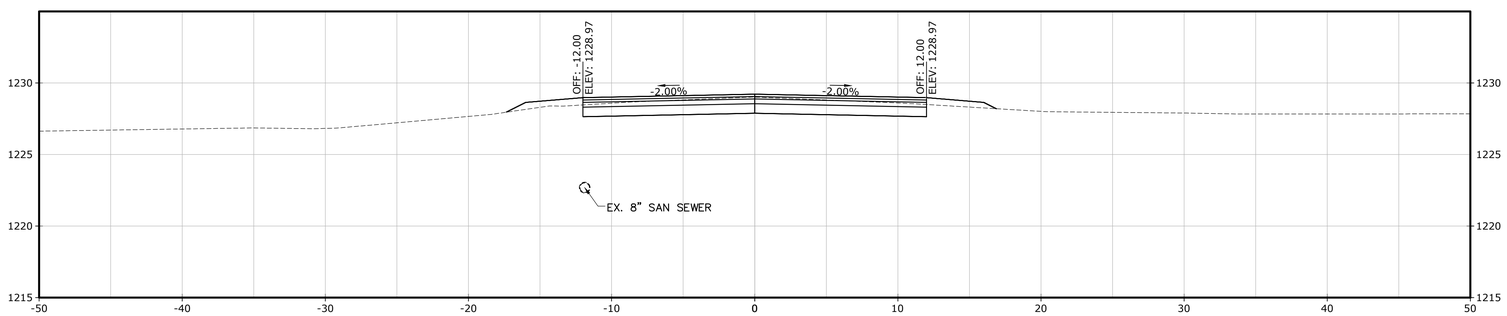


2+00.00

NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

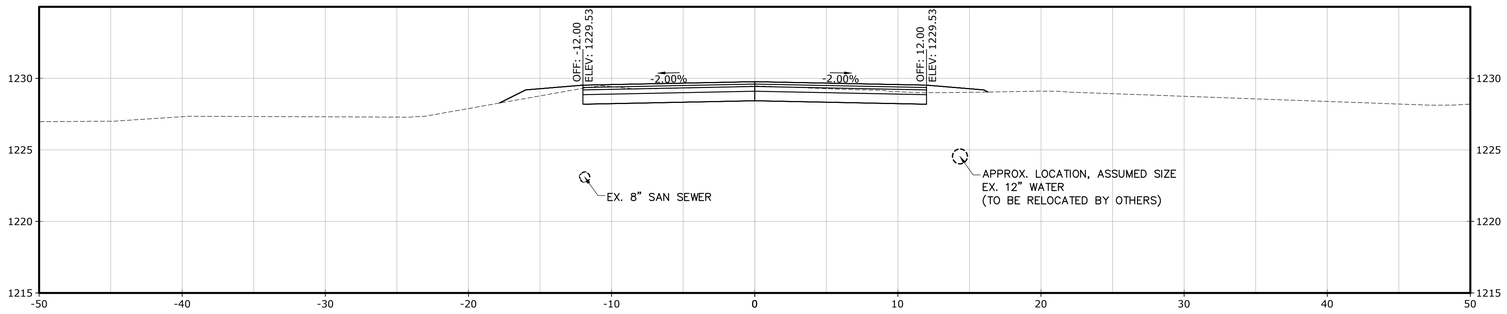
CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
CROSS SECTIONS

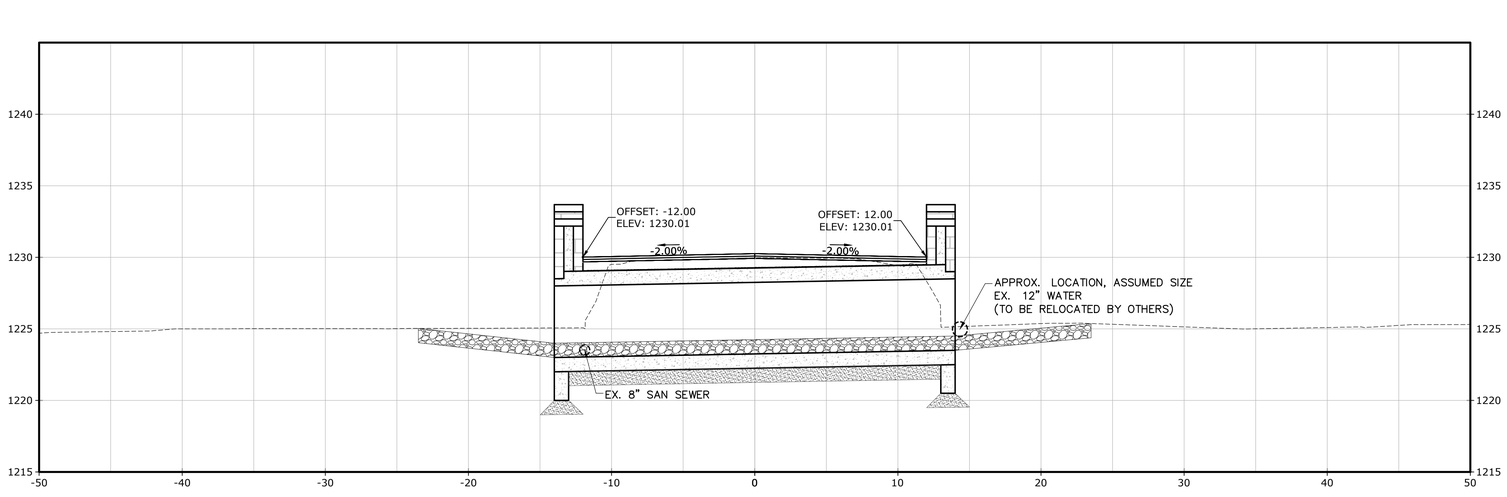
XSC-01

4

SCALE IN FEET
0 5 10
SCALE 1" = 5'



2+25.00



2+50.00

NO.	REVISION	DATE	BY

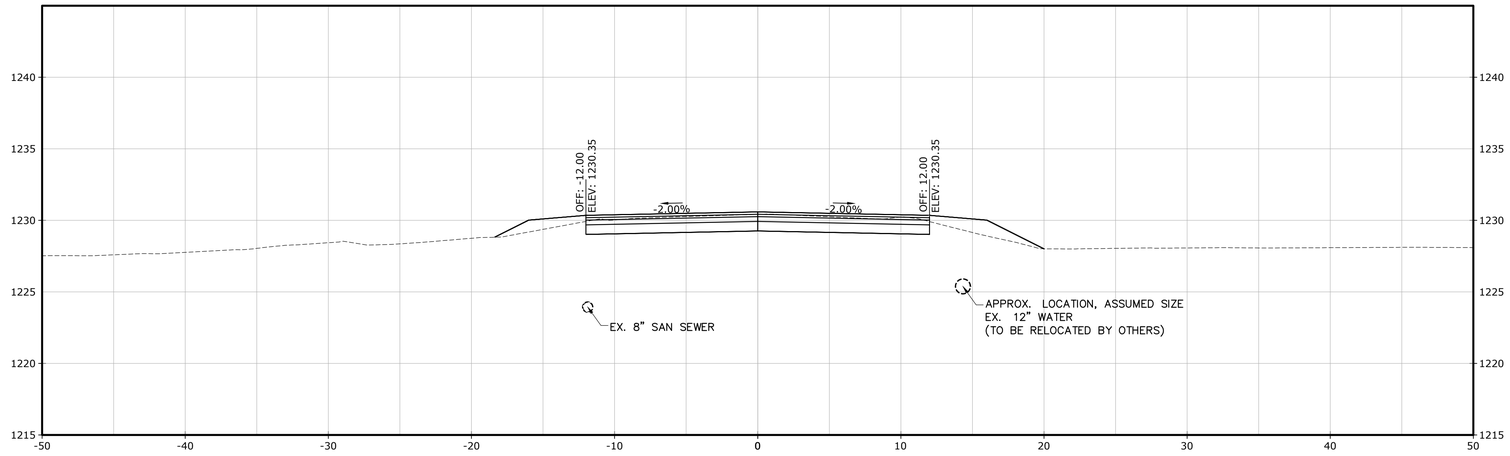
DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

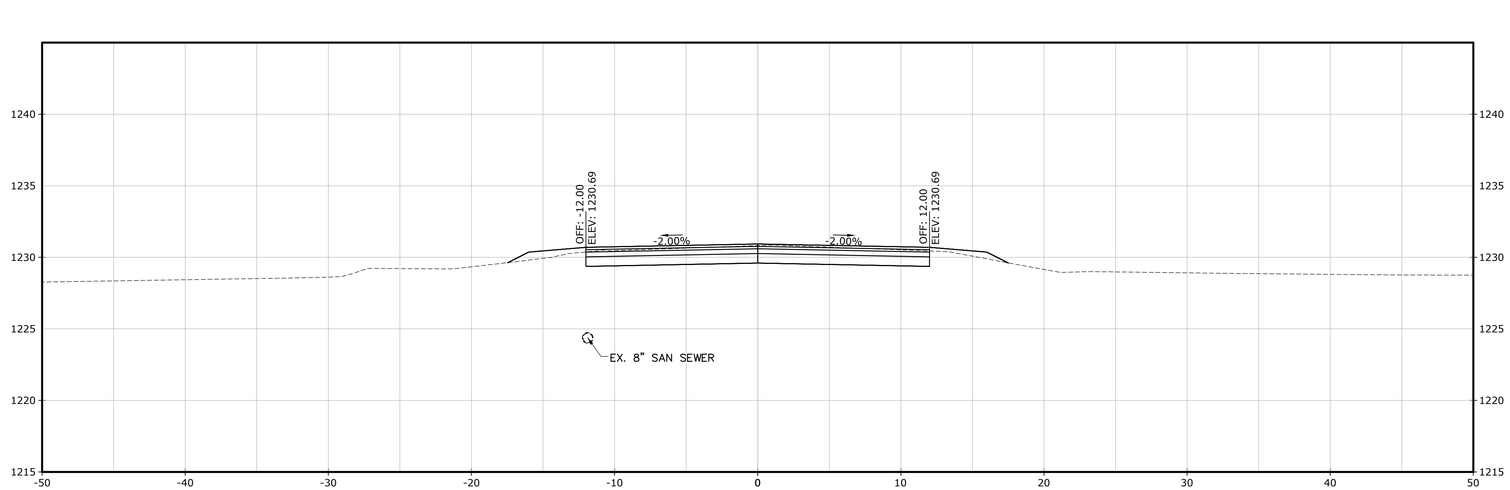
REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT

XSC-02

SCALE IN FEET
0 5 10
SCALE 1" = 5'



2+75.00



3+00.00

NO.	REVISION	DATE	BY

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SCALE: AS NOTED
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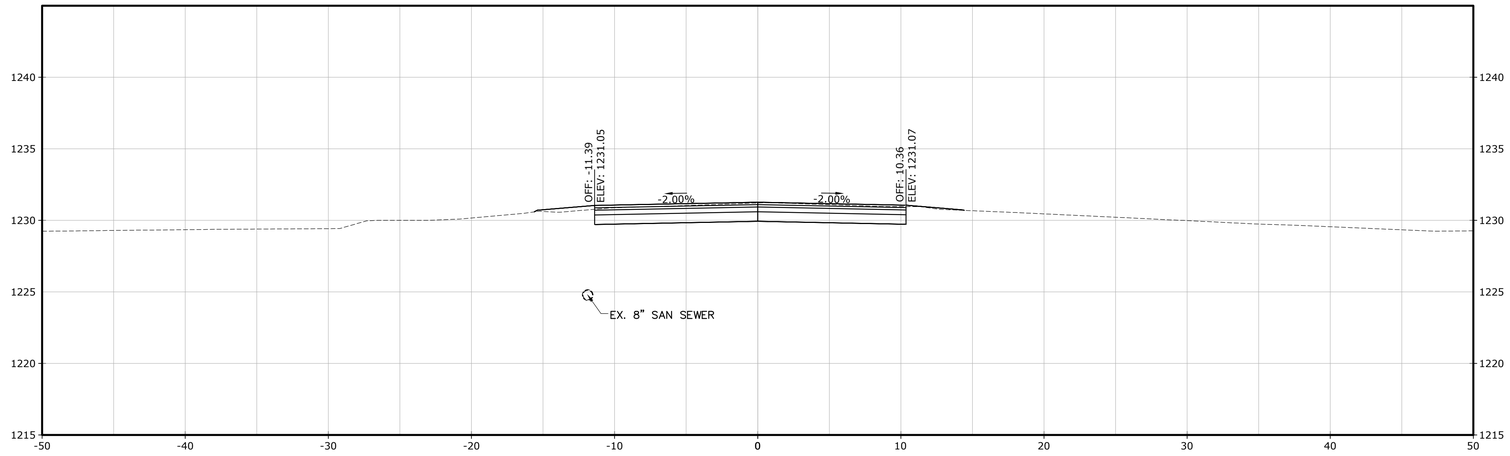
CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

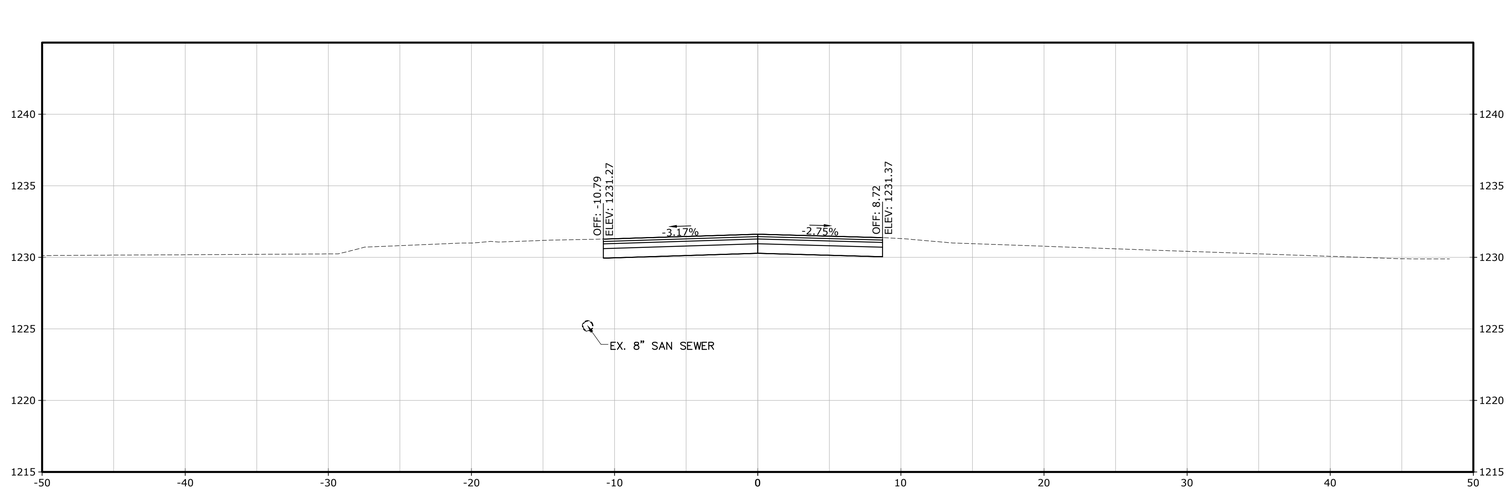
REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT

XSC-03

SCALE IN FEET
0 5 10
SCALE 1" = 5'



3+25.00



3+50.00

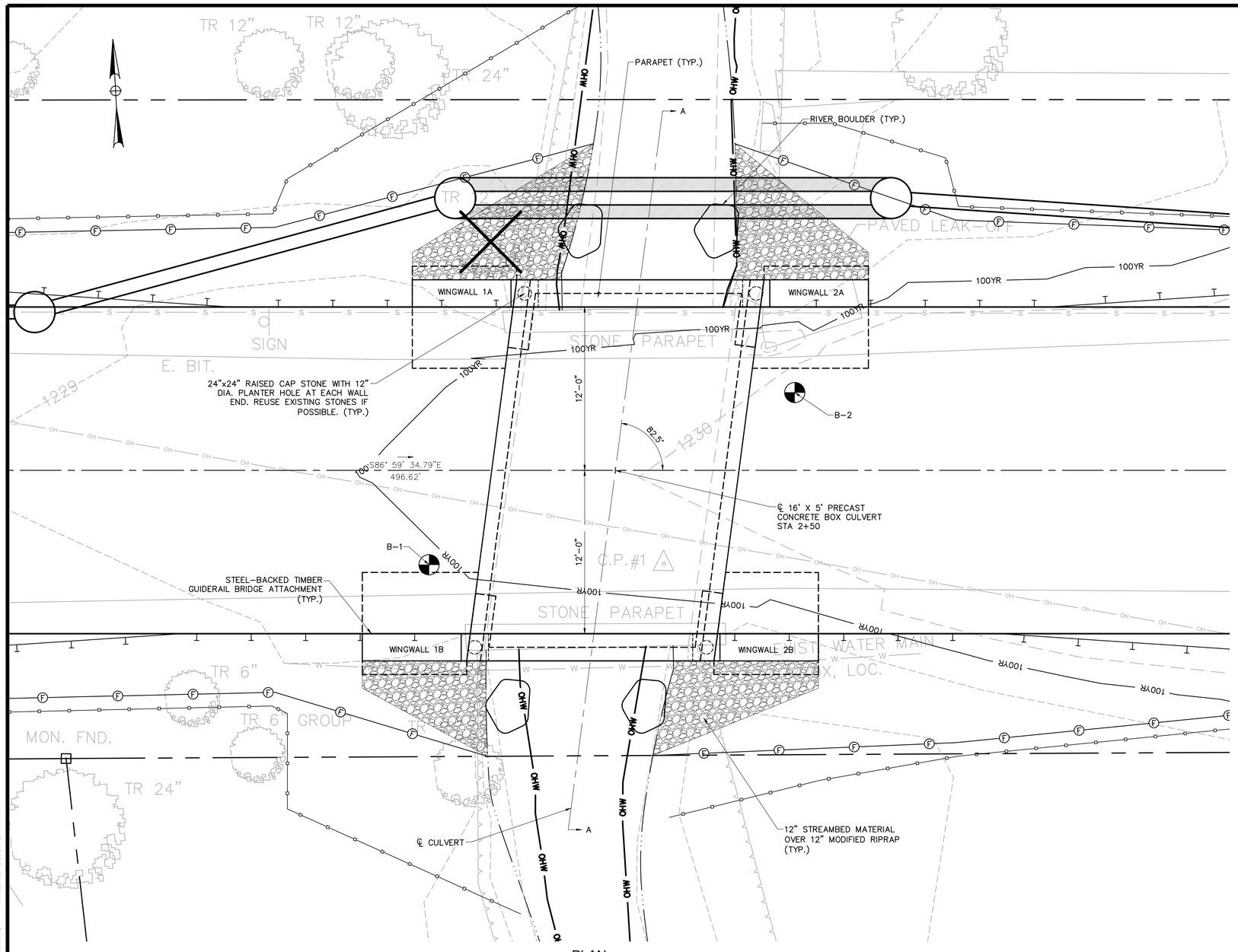
NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT

XSC-04



PLAN

SCALE: ¼"=1'-0'

GENERAL NOTES:

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817 (2016), SUPPLEMENTAL SPECIFICATIONS DATED JULY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS EIGHTH EDITION, INCLUDING 2018 INTERIM REVISIONS AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL (2003 EDITION), UP TO AND INCLUDING 2011 REVISIONS.

ALLOWABLE DESIGN STRESSES:
PCC03340 CONCRETE: BASED ON f'c = 3,300 PSI
PCC04460 CONCRETE: BASED ON f'c = 4,400 PSI
PCC04462 CONCRETE: BASED ON f'c = 4,400 PSI
REINFORCEMENT (ASTM A615 GRADE 60): FY = 60 KSI

LIVE LOAD: AASHTO HL-93 DESIGN VEHICLE

FUTURE PAVING ALLOWANCE: NONE

PARAPET CONCRETE: PCC04462 CONCRETE SHALL BE USED FOR CAST IN PLACE PARAPET & WING WALLS.

JOINT SEAL: SEE SPECIAL PROVISIONS.

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLER SHALL BE INCLUDED IN THE COST OF THE ITEM "PRECAST SUBSTRUCTURE ELEMENTS."

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1" UNLESS DIMENSIONED OTHERWISE.

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE TWO INCHES OF COVER UNLESS DIMENSIONED OTHERWISE.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

REINFORCING BARS: ALL REINFORCEMENT SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. THESE BARS SHALL BE INCLUDED IN THE PAY ITEM FOR "DEFORMED STEEL BARS – GALVANIZED".

DIMENSIONS: WHEN DECIMAL DIMENSIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZEROS.

EXISTING DIMENSIONS: DIMENSIONS AND LOCATIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

CONSTRUCTION JOINTS: CONSTRUCTION JOINTS, OTHER THAN THOSE SHOWN ON THE PLANS WILL NOT BE PERMITTED WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

PRECAST CONCRETE: ALL CONCRETE COMPONENTS, EXCLUDING BOX CULVERT AND CUTOFF & RETURN WALLS, HAVE BEEN DESIGNED AS CAST-IN-PLACE REINFORCED CONCRETE STRUCTURES. PRECAST CONCRETE WILL BE PERMITTED FOR THE WINGWALL STEMS, WINGWALL FOOTINGS AND PARAPET ONLY. IF THE CONTRACTOR ELECTS TO INSTALL ANY PRECAST CONCRETE COMPONENTS, THE DESIGN AND DETAILS OF EACH COMPONENT AND ASSOCIATED CONNECTION DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH ANY DESIGN OTHER THAN CAST-IN-PLACE CONSTRUCTION FOR ALL CONCRETE COMPONENTS.

PRECAST CONCRETE BOX CULVERT: SEE SPECIAL PROVISIONS

PRECAST SUBSTRUCTURE ELEMENTS: SEE SPECIAL PROVISIONS

100 YEAR FEMA DISCHARGE PROPOSED VS NATURAL

RIVER STATION	NATURAL		PROPOSED		PROPOSED VS NATURAL	
	CWSEL (FT)	VELOCITY (FT/S)	CWSEL (FT)	VELOCITY (FT/S)	CWSEL (FT)	VELOCITY (FT/S)
1650	1228.55	7.13	1228.05	4.84	−0.50	−2.29
1620	1228.20	8.13	1227.79	5.58	−0.41	−2.55
1595	1227.48	9.23	1226.98	6.28	−0.50	−2.95
1570	1226.94	9.64	1227.09	4.12	0.15	−5.52
1565	1227.88	4.55	1227.17	2.98	−0.71	−1.57
1550	–	–	MOUNTAIN ROAD – PROPOSED CULVERT		–	–
1530	1227.83	4.39	1227.12	3.06	−0.71	−1.33
1520	1227.30	7.01	1226.60	5.80	−0.70	−1.21
1495	1226.78	8.17	1226.21	6.06	−0.57	−2.11
1470	1226.27	8.90	1226.15	4.74	−0.12	−4.16

HYDRAULIC DATA

DRAINAGE AREA	1.32 SQ. MILES
DESIGN FREQUENCY	100 YEARS
DESIGN DISCHARGE	200 C.F.S.
*AVERAGE DAILY FLOW ELEVATION	1225.60
UPSTREAM DESIGN WATER SURFACE ELEVATION	1228.10
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	1228.00
MAXIMUM SCOUR ELEVATION	NA
FREQUENCY	NA
DISCHARGE	NA
WORST CASE SCOUR SUB-STRUCTURE UNIT	NA

*OBSERVED FEB./2019

NO.	REVISION	DATE	BY

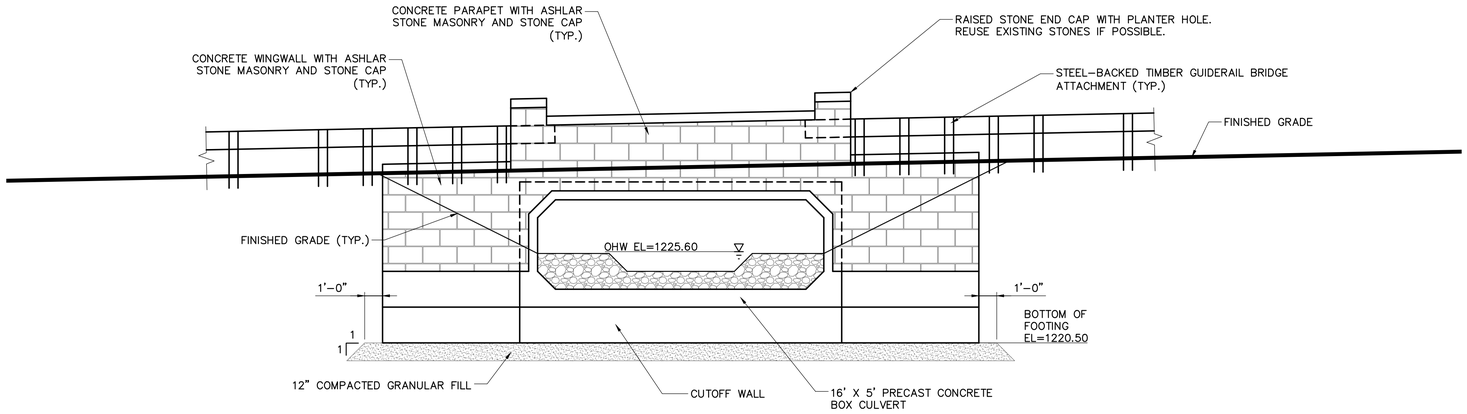
DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
CULVERT GENERAL PLAN

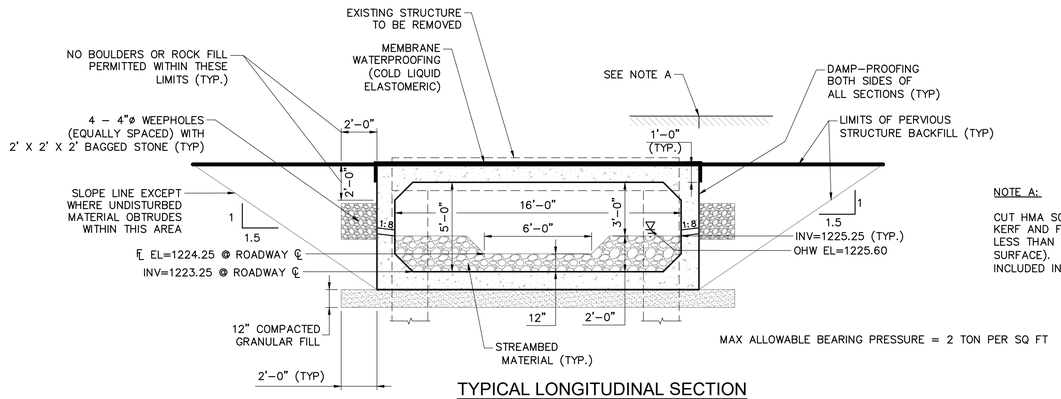
STR-01

8



PROPOSED SOUTH ELEVATION
(NORTH ELEVATION SIMILAR)

SCALE: 1/4"=1'-0"



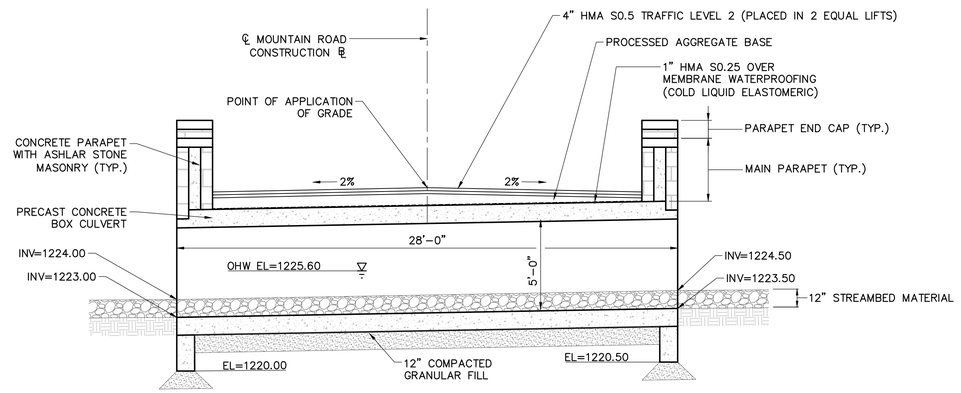
NOTE A:

CUT HMA S0.5 SURFACE COURSE WITH A ⅜" X 2" DEEP KERF AND FILL WITH A POURABLE SEALANT WHEN COVER IS LESS THAN 2'-0" (FROM TOP OF BOX TO WEARING SURFACE). COST OF CUTTING AND SEALING TO BE INCLUDED IN THE CONTRACT UNIT PRICE FOR "HMA S0.5".

MAX ALLOWABLE BEARING PRESSURE = 2 TON PER SQ FT

TYPICAL LONGITUDINAL SECTION

SCALE: ¼"=1'-0"



SECTION A-A

SCALE: 1/4"=1'-0"

NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
CULVERT ELEVATION AND SECTIONS

STR-02

Jaime Lloret	TEST BORING REPORT	SHEET 1 OF 1
DRILLER	ASSOCIATED BORINGS CO., INC.	
INSPECTOR	119 MARGARET CIRCLE, NAUGATUCK, CT 06770	CME-45B
	Tel (203) 729-5435 Fax (203) 729-5116	DRILLING EQUIPMENT
	PROJECT NAME: Mountain Road Culvert	Cardinal Engineering Assoc., Inc
SOILS ENGINEER	PROJECT NUMBER:	CLIENT
Surface Elevation:	LOCATION: Norfolk, Connecticut	
Date Started: 7/16/2019	Auger / Casing / Sampler / Core Bar	Hole No. **B-1**
Date Finished: 7/16/2019	Type: HSA / SS	Line & Station
Groundwater Observations	Size I. D.: 2 1/4 in / 2 in	Offset
AT 5 ' AFTER 0 HRS	Hammer: 140 lb Bit	N Coordinate
AT ' AFTER HRS	Fall: 30 in	E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. INCH	REC. INCH	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0 - 6	6 - 12	12-18	18-24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
											3"	Bituminous Concrete
												Br. C-F Sand and C-F Gravel, Cobbles (Fill)
5		5.0 - 7.0	1	24	9	D	5	13	17	25		
10		10.0 - 12.0	2	24	10	D	8	16	12	10	13	
												Br. Silt, Tr. F. Sand
15		15.0 - 17.0	3	24	14	D	3	4	3	4		
20		20.0 - 22.0	4	24	5	D	6	8	10	12		
		23.0 - 25.0	5	24	6	D	14	11	11	11	25	
25												End of Boring - 25.0
30												
35												
40												

From Ground Surface to Feet Used Inch Casing Then Inch Casing For Feet

Footage in Earth 25.0 Footage in Rock 0.0 No. of Samples 5 Hole No. B-1

SAMPLE TYPE CODING: D = DRIVEN C = CORE A = AUGER UP = UNDISTURBED PISTON

PROPORTIONS USED: TRACE = 1-10% LITTLE = 10-20% SOME = 20-35% AND = 35-50%

B-1

Jaime Lloret	TEST BORING REPORT	SHEET 1 OF 1
DRILLER	ASSOCIATED BORINGS CO., INC.	
INSPECTOR	119 MARGARET CIRCLE, NAUGATUCK, CT 06770	CME-45B
	Tel (203) 729-5435 Fax (203) 729-5116	DRILLING EQUIPMENT
	PROJECT NAME: Mountain Road Culvert	Cardinal Engineering Assoc., Inc
SOILS ENGINEER	PROJECT NUMBER:	CLIENT
Surface Elevation:	LOCATION: Norfolk, Connecticut	
Date Started: 7/16/2019	Auger / Casing / Sampler / Core Bar	Hole No. **B-2**
Date Finished: 7/16/2019	Type: HSA / SS	Line & Station
Groundwater Observations	Size I. D.: 2 1/4 in / 2 in	Offset
AT 5 ' AFTER 0 HRS	Hammer: 140 lb Bit	N Coordinate
AT ' AFTER HRS	Fall: 30 in	E. Coordinate

DEPTH	Casing blows per foot	SAMPLE DEPTH IN FEET FROM - TO	NO.	PEN. INCH	REC. INCH	TYPE	BLOWS PER 6 INCHES ON SAMPLER 0 - 6	6 - 12	12-18	18-24	STRATA CHANGE: DEPTH, ELEV.	FIELD IDENTIFICATION OF SOIL, REMARKS (INCL. COLOR, LOSS OF WASH WATER, ETC.)
											3"	Bituminous Concrete
												Br. C-F Sand and C-F Gravel, Cobbles (Fill)
5		5.0 - 7.0	1	24	5	D	18	27	15	15		
10		10.0 - 12.0	2	24	3	D	3	1	1	1	10	
											13	Br. M-F Sand
												Br. Silt, Tr. F. Sand
15		15.0 - 17.0	3	24	16	D	4	5	5	4		
20		20.0 - 22.0	4	24	5	D	4	7	7	7		
		23.0 - 25.0	5	24	7	D	8	8	6	6	25	
25												End of Boring - 25.0
30												
35												
40												

From Ground Surface to Feet Used Inch Casing Then Inch Casing For Feet

Footage in Earth 25.0 Footage in Rock 0.0 No. of Samples 5 Hole No. B-2

SAMPLE TYPE CODING: D = DRIVEN C = CORE A = AUGER UP = UNDISTURBED PISTON

PROPORTIONS USED: TRACE = 1-10% LITTLE = 10-20% SOME = 20-35% AND = 35-50%

B-2

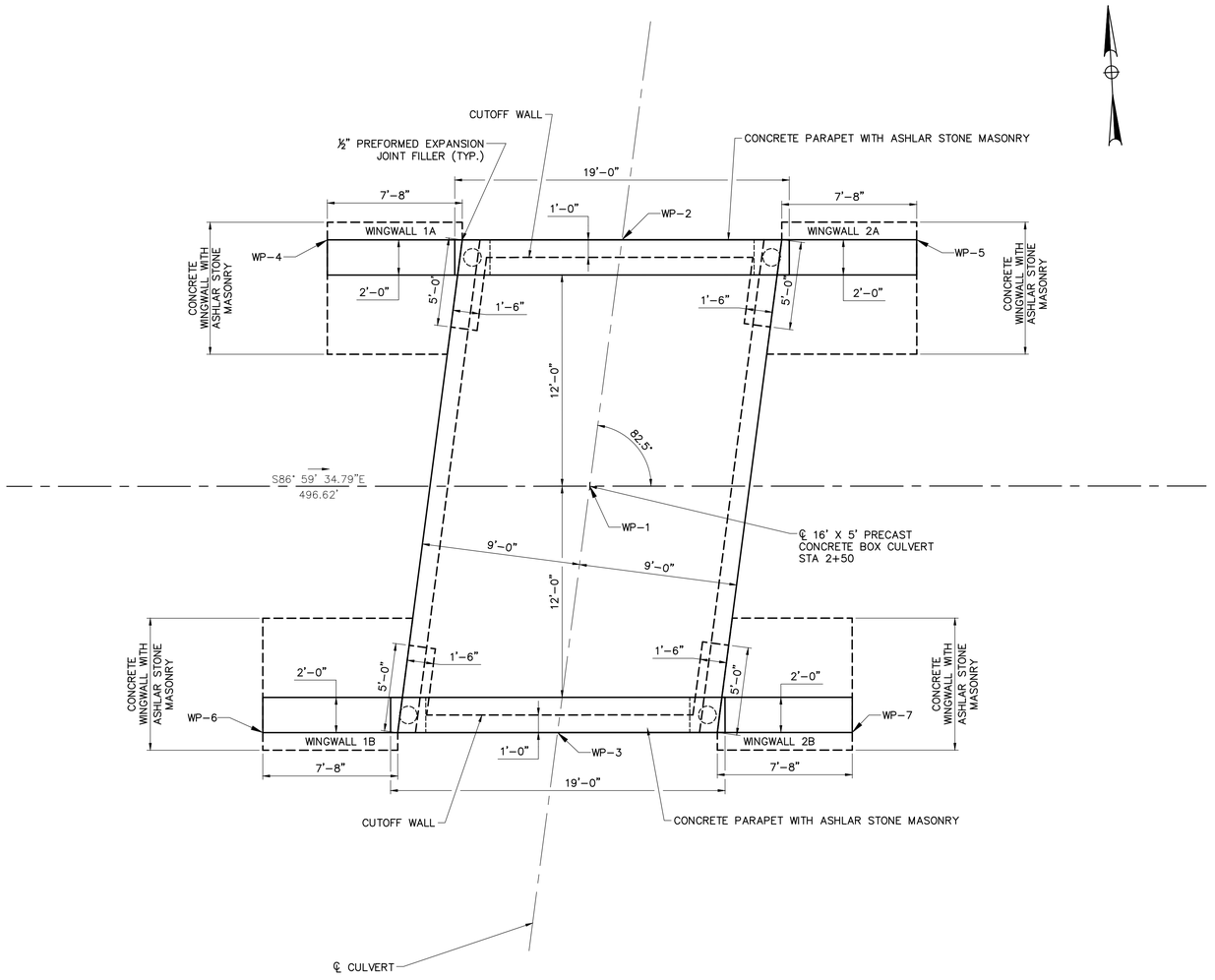
NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
BORING LOGS

STR-03



LAYOUT & FOUNDATION PLAN

SCALE: ¼"=1'-0'

WORKING POINTS					
WORKING POINT	DESCRIPTION	NORTING	EASTING	STATION	OFFSET
WP-1	CL CULVERT AT CL ROAD	20007.04	9996.79	2+50.00	0.00
WP-2	CL CULVERT AT NORTH END	20020.92	9999.36	2+51.84	14.00 L
WP-3	CL CULVERT AT SOUTH END	19993.15	9994.23	2+48.16	14.00 R
WP-4	OUTSIDE CORNER WW-1A	20021.80	9982.64	2+35.09	14.00 L
WP-5	OUTSIDE CORNER WW-2A	20020.04	10016.08	2+68.58	14.00 L
WP-6	OUTSIDE CORNER WW-1B	19994.03	9977.50	2+31.42	14.00 R
WP-7	OUTSIDE CORNER WW-2B	19992.27	10010.95	2+64.91	14.00 R

PRECAST CONCRETE NOTES:

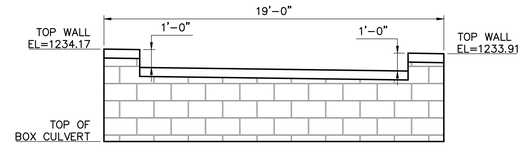
1. THE CONTRACTOR SHALL DESIGN, MANUFACTURE AND CONSTRUCT PRECAST CONCRETE BOX CULVERT AND WINGWALLS IN ACCORDANCE WITH THE SPECIAL PROVISIONS FOR "PRECAST CONCRETE BOX CULVERT" AND "PRECAST SUBSTRUCTURE ELEMENTS" AND THE INSIDE DIMENSIONS, LENGTH AND DETAILS SHOWN ON THESE PLANS.
2. ALL INSERTS OR HOLES CAST INTO THE CULVERT SECTIONS FOR THE SOLE PURPOSE OF HANDLING AND SETTING THE UNITS SHALL BE GROUTED OVER TO A SMOOTH FINISH UPON COMPLETION OF THE WORK.
3. NON-SHRINK GROUT SHALL BE USED TO GROUT REINFORCEMENT.
4. THE COST OF FURNISHING AND INSTALLING INSERTS SHALL BE INCLUDED IN THE ITEMS "16' x 5' PRECAST CONCRETE BOX CULVERT" AND SHALL BE ONE OF THE FOLLOWING:

STAR EXPANSION INDUSTRIES CORP.	TYP P-35-T
RICHMOND SCREW ANCHOR CO.	TYP LF
DAYTON SUPERIOR CORP.	TYP F-57

5. ALL INSERTS SHALL HAVE A CORROSIVE RESISTANT COATING.
6. THREADED INSERTS SHALL BE APPROVED BY THE ENGINEER, AND SHALL HAVE A MINIMUM STRENGTH EQUAL TO 150 PERCENT OF THE YIELD STRENGTH OF THE REINFORCING BAR.
7. THE #6 BARS WITH THREADED END SHALL BE COMPATIBLE WITH THE THREADED INSERTS. THREADS SHALL BE LONG ENOUGH TO FULLY ENGAGE THE INSERTS. THE THREADED BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
8. ALL REINFORCEMENT TO HAVE 2" COVER UNLESS SPECIFIED OTHERWISE
9. ALL DIMENSIONS SHOWN FOR PRECAST ELEMENTS, INCLUDING BOX CULVERT AND WINGWALL STEMS ARE BASED ON ASSUMPTIONS. THESE DIMENSIONS SHALL BE ADJUSTED AS REQUIRED BASED ON THE CONTRACTORS FINAL DESIGN OF THESE ELEMENTS AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
10. IT IS ASSUMED ANY PRECAST ELEMENT DETAILS NOT SHOWN ON THESE DRAWINGS WILL BE PROVIDED BY THE CONTRACTOR UPON COMPLETION OF THE FINAL DESIGN AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

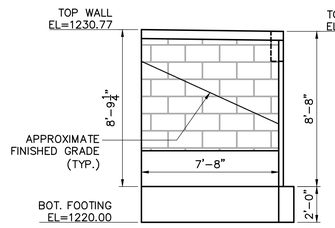
NOTES:

1. MAXIMUM ALLOWABLE BEARING PRESSURE = 2 TONS PER SQ. FT.
2. PRECAST WINGWALL STEMS, WINGWALL FOOTINGS AND CUTOFF/RETURN WALLS SHALL BE PAID FOR UNDER THE ITEM "PRECAST SUBSTRUCTURE ELEMENTS".



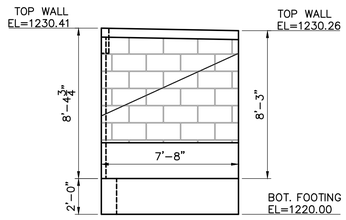
NORTH PARAPET ELEVATION

SCALE: ¼"=1'-0'



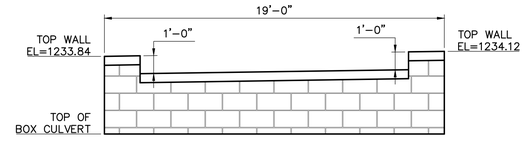
WINGWALL 2A ELEVATION

SCALE: ¼"=1'-0'



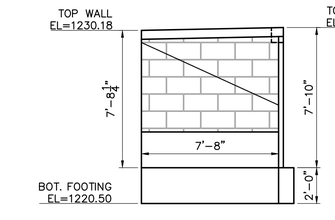
WINGWALL 1A ELEVATION

SCALE: ¼"=1'-0'



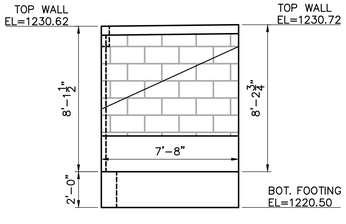
SOUTH PARAPET ELEVATION

SCALE: ¼"=1'-0'



WINGWALL 1B ELEVATION

SCALE: ¼"=1'-0'



WINGWALL 2B ELEVATION

SCALE: ¼"=1'-0'

NO.	REVISION	DATE	BY

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SCALE: AS NOTED
DESIGNED BY:
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APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
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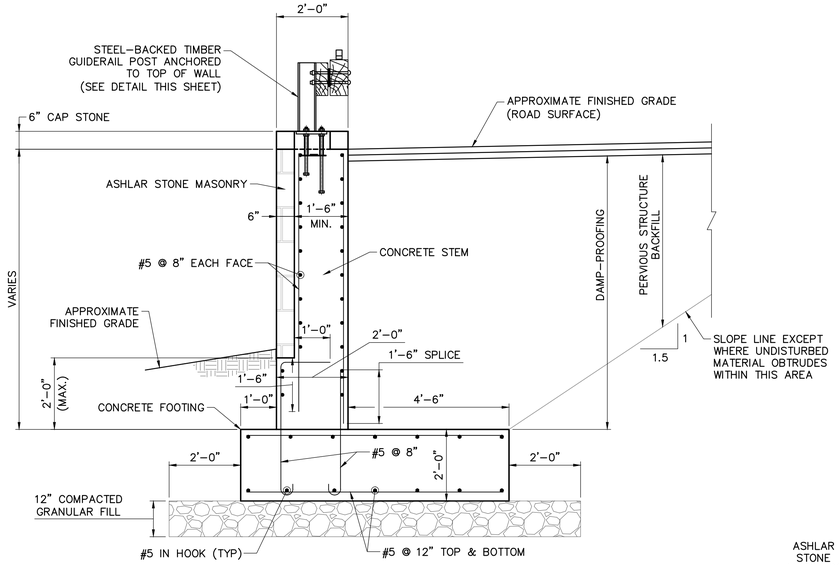
REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
LAYOUT & FOUNDATION PLAN

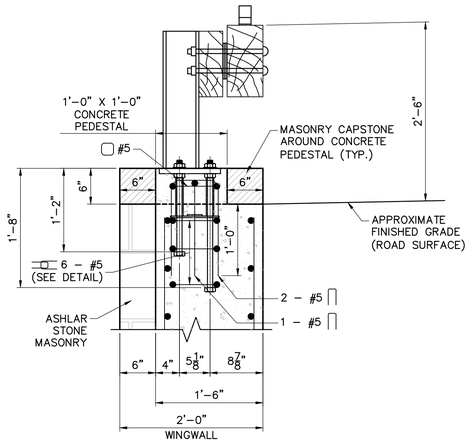
STR-04

11



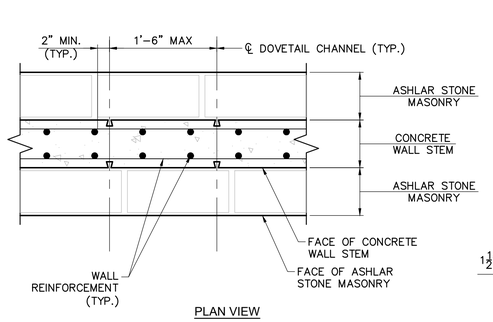
TYPICAL WINGWALL SECTION

SCALE: ½"=1'-0"



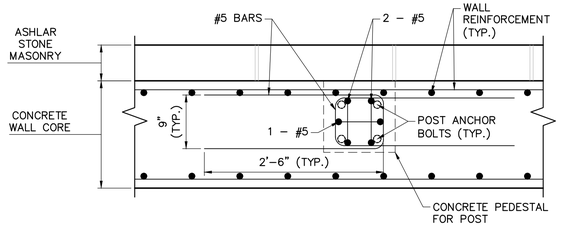
STEEL-BACKED TIMBER GUIDERAIL WALL POST ANCHOR DETAIL

SCALE: 1"=1'-0"



ASHLAR STONE MASONRY DETAILS

SCALE: 1"=1'-0"



STEEL-BACKED TIMBER GUIDERAIL WALL POST ANCHOR REINFORCEMENT PLAN

SCALE: 1"=1'-0"

ASHLAR STONE MASONRY NOTES:

ASHLAR STONE MASONRY SHALL BE INSTALLED ON ALL EXPOSED VERTICAL FACES OF PARAPETS AND WINGWALLS UNLESS OTHERWISE NOTED.

ASHLAR STONE MASONRY SHALL BE CONSTRUCTED UTILIZING EXISTING STONE MASONRY FROM DEMOLISHED SUBSTRUCTURE ELEMENTS. CUT STONES TO SIZE AS REQUIRED.

FURNISH ADDITIONAL STONES OF SIMILAR MATERIAL, SIZE AND APPEARANCE IF ADDITIONAL STONES ARE REQUIRED. COST OF ADDITIONAL STONES SHALL BE INCLUDED UNDER THE ITEM "ASHLAR STONE MASONRY".

STONE MASONRY ANCHORS:

CORRUGATED METAL ANCHORS SHALL COMPLY WITH THE FOLLOWING:

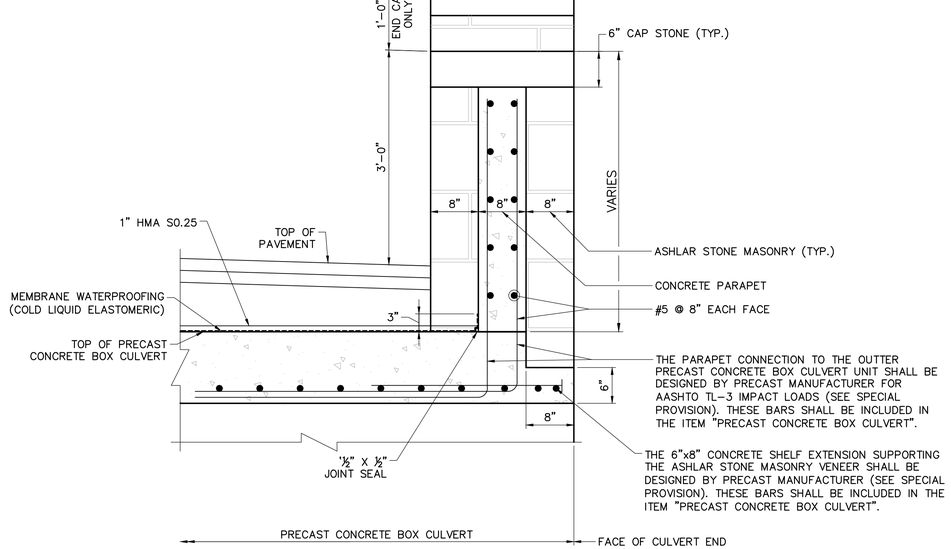
1. STAINLESS-STEEL SHEET: ASTM A 666, TYPE 304.
2. NOT LESS THAN 0.030-INCH- THICK BY 7/8-INCH- WIDE SHEET WITH CORRUGATIONS HAVING A WAVELENGTH OF 0.3 TO 0.5 INCH AND AN AMPLITUDE OF 0.06 TO 0.10 INCH.

ANCHOR STONE TO CONCRETE WITH CORRUGATED-METAL VENEER ANCHORS IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:

1. EMBED DOVETAIL END IN CONCRETE DOVETAIL SLOT, AND EMBED VENEER ANCHORS IN MORTAR JOINTS TO WITHIN 1 INCH OF FACE.
2. SPACE VENEER ANCHORS NOT MORE THAN 18 INCHES ON-CENTER VERTICALLY AND HORIZONTALLY, WITH NOT LESS THAN 1 VENEER ANCHOR PER 2.67 SQ. FT. OF WALL AREA. INSTALL ADDITIONAL VENEER ANCHORS WITHIN 12 INCHES OF PERIMETER AT INTERVALS NOT EXCEEDING 12 INCHES.

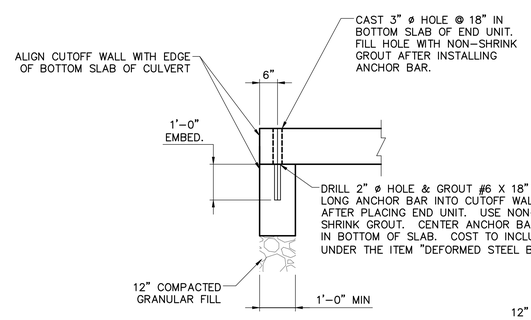
COST OF INSTALLING ASHLAR STONE MASONRY, INCLUDING CUTTING EXISTING STONES TO FIT, FURNISHING ADDITIONAL STONES, AND FURNISHING AND INSTALLING MORTAR BACKING, TO BE PAID FOR UNDER THE ITEM "ASHLAR STONE MASONRY". SEE SPECIAL PROVISIONS.

COST OF FURNISHING AND INSTALLING STONE MASONRY ANCHORS SHALL BE PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS - GALVANIZED".



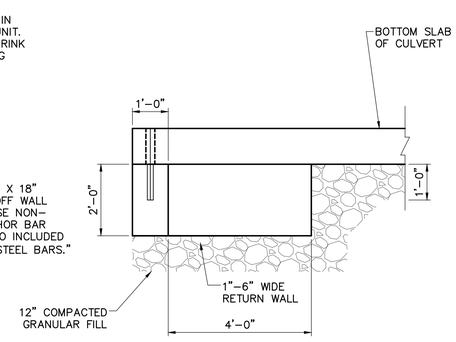
TYPICAL PARAPET SECTION

SCALE: 1"=1'-0"



SECTION THROUGH PRECAST CUTOFF WALL (RETURN WALL SIMILAR)

SCALE: ½"=1'-0"



PRECAST RETURN WALL ELEVATION (CUTOFF WALL SIMILAR)

SCALE: ½"=1'-0"

NO.	REVISION	DATE	BY

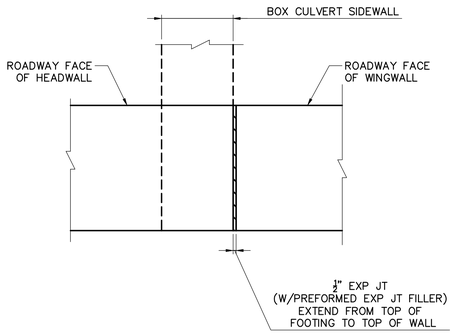
DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
CULVERT MISCELLANEOUS DETAILS

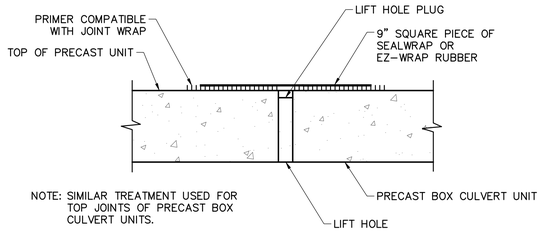
STR-05

12

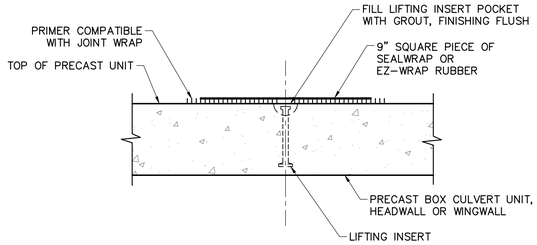


TYPICAL EXPANSION JOINT AT WINGWALL INTERFACE

SCALE: 1"=1'-0"



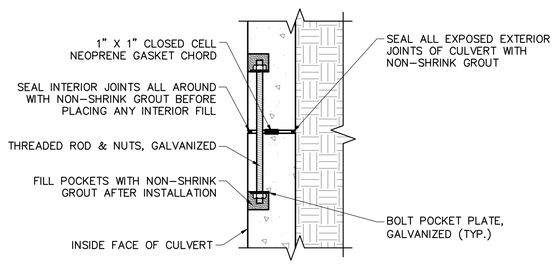
LIFTING HOLES



LIFTING INSERTS

TYPICAL LIFT POINT SEALING DETAIL

SCALE: 1"=1'-0"



TYPICAL BOX JOINT SEALING DETAIL

SCALE: 1"=1'-0"

NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
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CHECKED BY:
APPROVED BY: JAC

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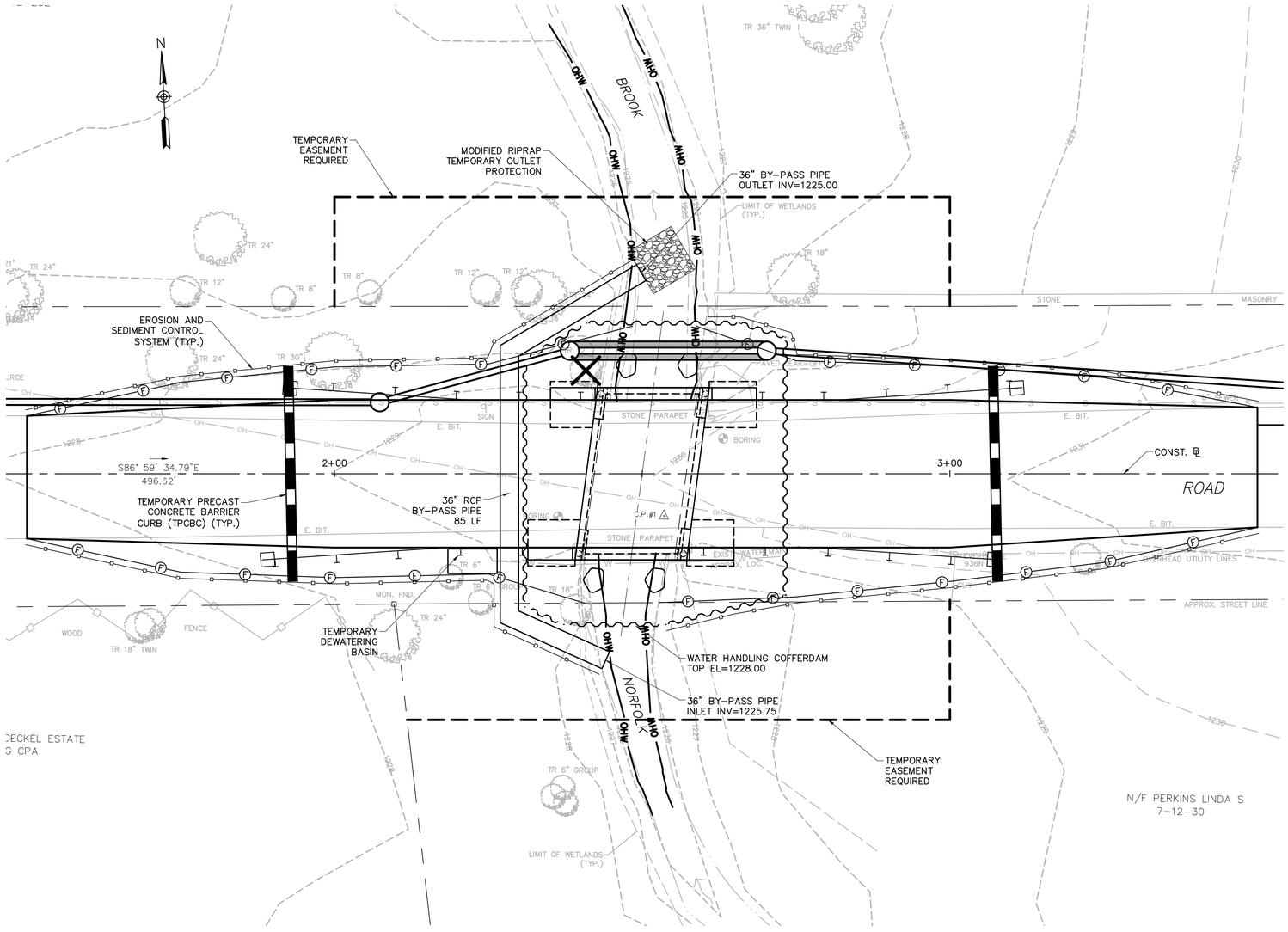
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
CULVERT MISCELLANEOUS DETAILS

STR-06



PLAN
SCALE: 1"=10'

LEGEND

TEMPORARY PRECAST CONCRETE BARRIER CURB (TPCBC)

TEMPORARY COFFERDAM

PROPOSED CONSTRUCTION SEQUENCE NOTES

1. INSTALL EROSION & SEDIMENT CONTROL SYSTEM.
2. INSTALL 36" BY-PASS PIPE.
3. CONSTRUCT COFFERDAMS UPSTREAM AND DOWNSTREAM AND DIVERT FLOW TO BY-PASS PIPE.
4. CONSTRUCT SANITARY SEWER.
5. REMOVE THE EXISTING STRUCTURE.
6. INSTALL PRECAST WINGWALL FOOTINGS, RETURN WALLS AND CUTOFF WALLS.
7. INSTALL PRECAST CONCRETE BOX CULVERT.
8. INSTALL PRECAST WINGWALLS.
9. BACKFILL BOX CULVERT AND WINGWALLS, GRADE CHANNEL, REMOVE BY-PASS PIPE, COFFERDAMS AND DIRECT FLOW INTO NEW CULVERT.
10. INSTALL TEMPORARY PAVEMENT, PLACE BARRICADES, SAND BARREL ARRAY AND TRAFFIC DRUMS AS NECESSARY TO PROTECT THE REMAINING WORK AREAS ON THE BRIDGE AND REDIRECT TRAFFIC.
11. OPEN ROADWAY, CONSTRUCT REMAINING BRIDGE ELEMENTS (ALTERNATING ONE-WAY TRAFFIC IF REQUIRED).
12. CONSTRUCT THE REMAINING ROADWAY AND CULVERT IMPROVEMENTS UTILIZING ALTERNATING ONE-WAY TRAFFIC AS REQUIRED.

TEMPORARY HYDRAULIC DATA

AVERAGE DAILY FLOW	3 CFS
AVERAGE SPRING FLOW	5 CFS
2-YEAR FREQUENCY DISCHARGE	10 CFS
TEMPORARY DESIGN DISCHARGE	10 CFS
TEMPORARY DESIGN FREQUENCY	2 YEAR
TEMPORARY WATER SURFACE ELEVATION UPSTREAM	1227.00
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM	1226.20

CONSTRUCTION SEQUENCE GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.
2. SEQUENCE OF CONSTRUCTION NOTES SHALL BE USED IN CONJUNCTION WITH THE HIGHWAY CONSTRUCTION, MAINTENANCE AND PROTECTION OF TRAFFIC PLANS.
3. THE SUGGESTED STEPS ILLUSTRATE A SEQUENCE OF CONSTRUCTION THAT CONFORMS TO STAGING REQUIREMENTS. THE SEQUENCE MAY BE ALTERED, SUBJECT TO THE APPROVAL OF THE ENGINEER SO LONG AS THE OPERATION OF VEHICULAR TRAFFIC IS MAINTAINED.
4. NEITHER THE WORK NOR STEPS LISTED IN THE CONSTRUCTION SEQUENCE ARE INTENDED TO COVER ALL DETAILS OF THE WORK. THE CONTRACTOR SHALL PREPARE A DETAILED CONSTRUCTION SEQUENCE AND SCHEDULE FOR REVIEW AND APPROVAL BY THE ENGINEER.
5. THE TEMPORARY COFFERDAM SHALL CONSIST OF SHEETS OR ANY OTHER APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND EXCAVATION AND SHALL CONFORM TO PERMITS.
6. THE CONTRACTOR IS HEREIN NOTIFIED THAT THE OVERHEAD ELECTRICAL FACILITIES WILL REMAIN LIVE THROUGHOUT THE DURATION OF CONSTRUCTION.

NO.	REVISION	DATE	BY

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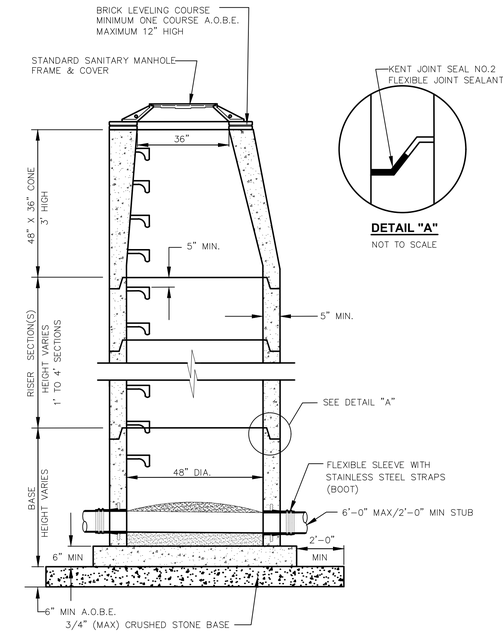
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
WATER HANDLING PLAN

WTH-01

14

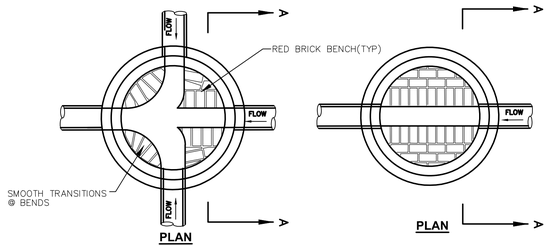


DETAIL "A"
NOT TO SCALE

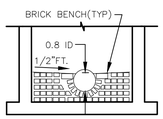
GENERAL MANHOLE NOTES:

1. MANHOLE TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
2. TOP STEP TO BE 18" MAX. BELOW TOP OF FRAME.
3. MANHOLE STEPS TO BE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC MODEL#PS2-PF-SL OR CAST ALUMINUM ALLOY 6061 WITH DROP FRONT DESIGN.
4. INSERT RUBBER PLUG INTO LIFTING HOLES FROM OUTSIDE & FILL WITH NON-SHRINK MORTAR INSIDE & OUTSIDE.
5. BRICK RISER COLLAR TO BE PARGED & RECEIVE TWO COATS BITUMINOUS WATERPROOFING MATERIAL.
6. MANHOLE JOINTS SHALL RECEIVE NON-SHRINK GROUT INTERIOR.
7. MANHOLE STEPS SHALL BE 12" ON CENTER.
8. OUTSIDE OF MANHOLE SHALL RECEIVE TWO COATS BITUMINOUS WATERPROOFING MATERIAL.
9. INVERT SHALL CONSIST OF RED BRICK.
10. CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C-90.
11. THE HORIZONTAL EXCAVATION PAYMENT LIMIT FOR MANHOLE STRUCTURES SHALL BE 2'-0" OUTSIDE THE NEAT LINES OF THE MANHOLE BASE. THE VERTICAL EXCAVATION PAYMENT LIMIT SHALL BE TO THE BOTTOM OF THE BASE THICKNESS DETAILED.

TYPICAL SANITARY MANHOLE
NOT TO SCALE



PLAN **PLAN**

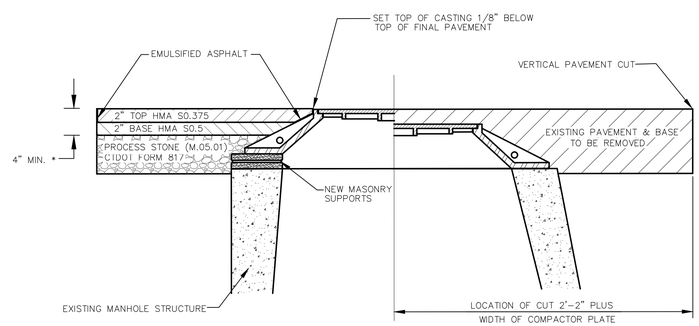


SECTION A-A

NOTES:

1. INVERTS TO CONSIST OF RED CLAY BRICK ONLY, UNLESS OTHERWISE ORDERED BY THE ENGINEER.
2. MASONRY TO BE UNIFORM, WITH MAXIMUM SPACING OF 3/8".
3. INVERTS SHALL CLOSELY MATCH THE PIPE DIAMETER.
4. INVERTS SHALL NOT BE PREFABRICATED ABOVE GRADE.

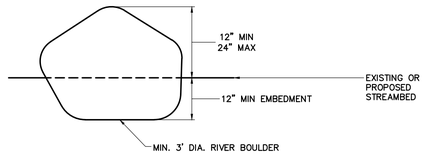
TYPICAL BRICK INVERT
NOT TO SCALE



PROPOSED **EXISTING**

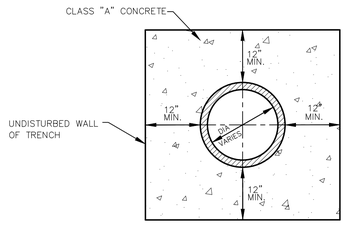
* MATCH THICKER PAVEMENT, IF PRESENT

TYPICAL SANITARY MANHOLE RAISING TO GRADE
NOT TO SCALE

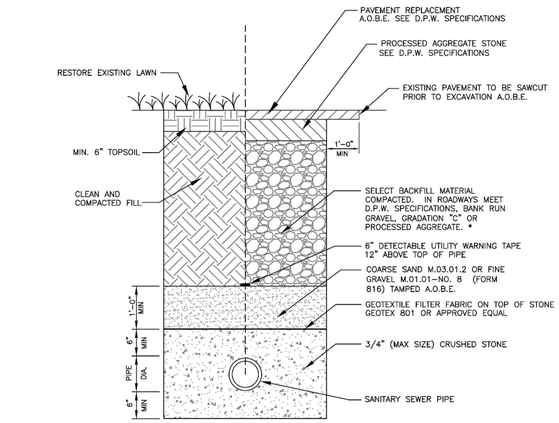


NOTE: CONTRACTOR TO CONTACT ENGINEER AND DEEP 1 WEEK PRIOR TO INSTALLATION OF RIVER BOULDERS SO DEEP FISHERIES STAFF CAN BE ON-SITE TO DIRECT PLACEMENT OF RIVER BOULDERS.

TYPICAL RIVER BOULDER PLACEMENT
NOT TO SCALE



CONCRETE ENCASEMENT
NOT TO SCALE



* - IN ALL OTHER AREAS, SUITABLE EXISTING MATERIAL MAY BE USED IF APPROVED BY THE ENGINEER.

TYPICAL SANITARY SEWER TRENCH CROSS-SECTION
NOT TO SCALE

NOTES:

1) THIS DETAIL IS TO BE USED WHERE "SAWCUT & MATCH EXISTING PAVEMENT" IS CALLED FOR ON THE PLANS.

2) OVERLAP BOTH BITUMINOUS CONCRETE COURSES OVER EXISTING SUBBASE.

3) MINIMUM THICKNESS TO BE SAME AS PROPOSED BITUMINOUS OR MATCH THICKNESS OF EXISTING PAVEMENT, WHICHEVER IS GREATER.

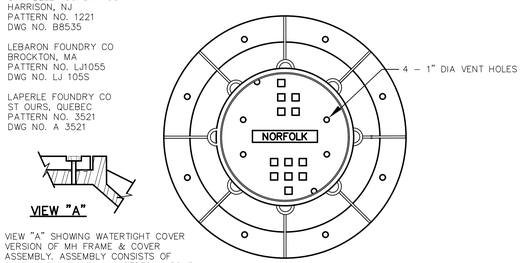
4) PAVEMENT MATCH TREATMENT WILL BE INCIDENTAL TO THE WORK.

PAVEMENT TRANSITION DETAIL
SCALE: ½" = 1'-0"

NOTES:
CAMPBELL FOUNDRY CO
HARRISON, NJ
PATTERN NO. 1221
DWG NO. B8535

LEBARON FOUNDRY CO
BROCKTON, MA
PATTERN NO. LJ1055
DWG NO. LJ 1055

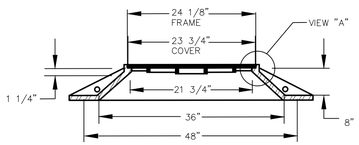
LAPERLE FOUNDRY CO
ST OURS, QUEBEC
PATTERN NO. 3521
DWG NO. A 3521



PLAN

VIEW "A"

VIEW "A" SHOWING WATERTIGHT COVER VERSION OF MH FRAME & COVER ASSEMBLY. ASSEMBLY CONSISTS OF 3 STAINLESS BOLTS & INSERTS, 1 SOLID COVER (NO VENT HOLES) & 1 SQUARE NEOPRENE GASKET.

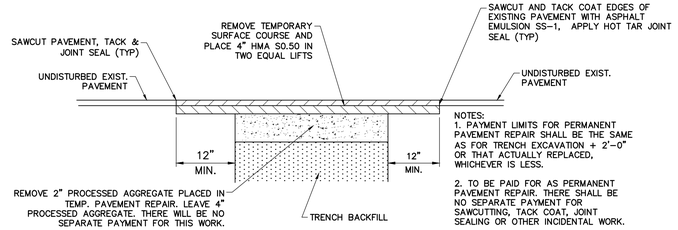


FRAME

NOTES:
1. MATERIAL CONSISTS OF GRAY CAST IRON CONFORMING TO ASTM SPEC A48-76 CLASS 30B.

2. PRIVATE MANHOLE FRAMES AND COVERS SHALL BE STANDARD MDC STYLE PATTERN NO. 1221-5012.

TYPICAL SANITARY MANHOLE FRAME AND COVER
NOT TO SCALE



NOTES:
1. PAYMENT LIMITS FOR PERMANENT PAVEMENT REPAIR SHALL BE THE SAME AS FOR TRENCH EXCAVATION + 2'-0" OR THAT ACTUALLY REPLACED, WHICHEVER IS LESS.

2. TO BE PAID FOR AS PERMANENT PAVEMENT REPAIR. THERE SHALL BE NO SEPARATE PAYMENT FOR SAWCUTTING, TACK COAT, JOINT SEALING OR OTHER INCIDENTAL WORK.

PERMANENT PAVEMENT REPAIR
NOT TO SCALE

NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
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CARDINAL ENGINEERING ASSOCIATES
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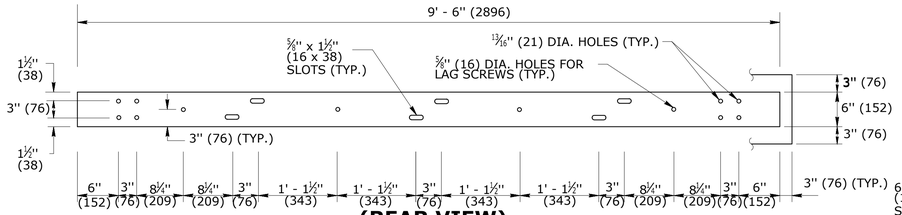
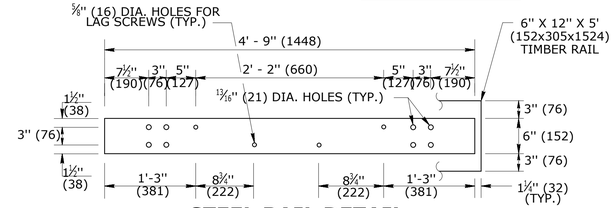
REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
MISCELLANEOUS DETAILS

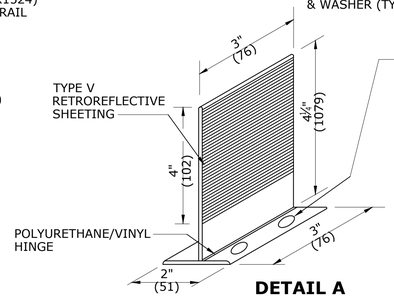
MDS-01



(REAR VIEW)
STANDARD STEEL RAIL DETAIL
6" x 3/8" x 9'-6"
(152x9x2896)



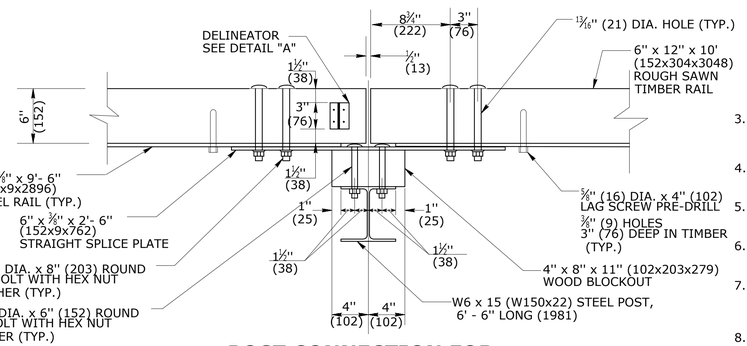
STEEL RAIL DETAIL
6" x 3/8" x 4'-9"
(152 x 9 x 1448)
FOR CURVES WITH R < 70' (21.3m)



1/4" x 1/2" (6x12) SLOT USE (4) 1" (25) LONG

1/2" (12) DIA. WOOD SCREWS FOR ATTACHING DELINEATOR. SCREW SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE W/ ASTM A-153.

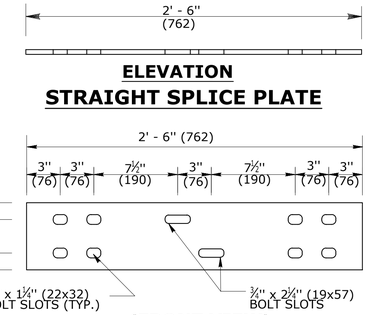
DETAIL A
DELINEATOR



POST CONNECTION FOR STRAIGHT SECTIONS

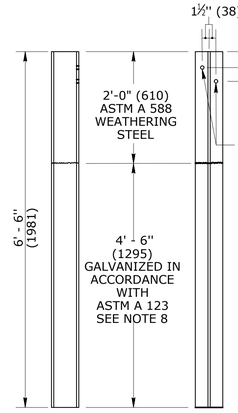
GENERAL NOTES

1. MATERIALS AND CONSTRUCTION OF THE STEEL-BACKED TIMBER GUIDERAIL SHALL CONFORM TO TECHNICAL SPECIFICATIONS PROVIDED WITH THE PROJECT.
2. DELINEATORS SHALL BE PLASTIC INVERTED T-SECTIONS IN ACCORDANCE WITH DETAIL "A". REFLECTORS SHALL BE SPACED IN ACCORDANCE WITH TABLE 1 , AND POSITIONED PERPENDICULAR TO THE ADJACENT EDGE OF LANE. DO NOT ATTACH REFLECTORS ON FLARE OR TERMINAL SECTIONS. REFLECTIVE SHEETING SHALL BE SILVER-WHITE ON ALL RAIL SECTIONS ADJACENT TO THE RIGHT SHOULDER, AND YELLOW ON RAIL SECTIONS ADJACENT TO THE SHOULDER OF TRAVEL LANES. DELINEATORS SHALL BE INCLUDED IN THE COST FOR "STEEL-BACKED TIMBER GUIDERAIL."
3. TWO ADDITIONAL 5/8" (16) DIA. X 4"(102) LONG LAG SCREWS AND WASHERS SHALL BE INSTALLED AT ALL MID-SPAN POINTS FOR STANDARD SYSTEMS.
4. ALL CONNECTION HARDWARE SHALL BE SUFFICIENTLY TIGHTENED TO ACCOMMODATE FOR SHRINKAGE OF THE WOOD ELEMENTS.
5. WHEN FURNISHING THE SHOP BENT SPLICE PLATES, USE THE MINIMUM BEND ANGLE AS SHOWN IN TABLE 2.
6. FOR RAILING SET ON A CURVE WITH RADII < 70' (21.3m) SPACE POSTS AT 5' (1524).
7. GUIDERAIL HEIGHT MAY VARY UP TO 2" (51) PLUS OR MINUS THE HEIGHT SHOWN IN THE DETAILS TO ACHIEVE A SMOOTH AND CONTINUOUS GUIDERAIL PROFILE.
8. 7'-6" (2286) LONG POSTS SHALL BE USED IN LOCATIONS WHERE SHOWN ON THE PLANS. POSTS SHALL BE SPACED AT 3'-4" AND 9'-6" MODIFIED STEEL RAIL SHALL BE USED. GALVANIZED COATING LIMITS SHALL BE INCREASED BY 1' (305). PAYMENT FOR EXTRA LONG POSTS WITH REDUCED SPACING SHALL BE INCLUDED WITH THE ITEM FOR STEEL-BACKED TIMBER GUIDERAIL WITH 7.5' POSTS.

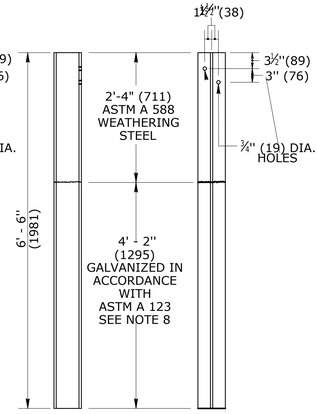


ELEVATION
STRAIGHT SPLICE PLATE

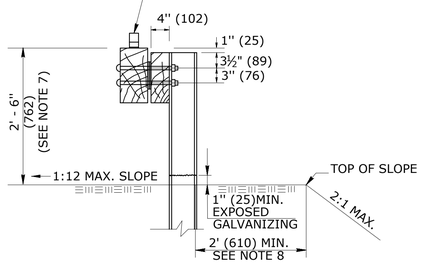
(FRONT VIEW)
STEEL SPLICE PLATE DETAIL
6" x 3/8" x 2'- 6"
(152x9x762)



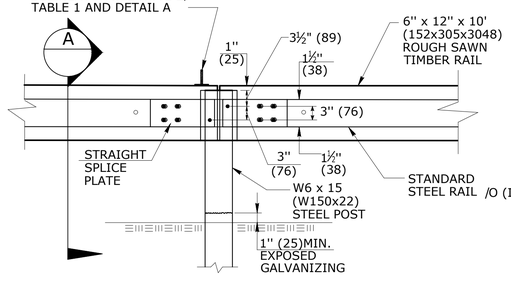
SIDE VIEW FRONT VIEW
POST DETAIL
W6 X 15
(W150x22)
WITH CURBING



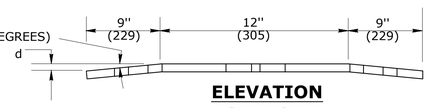
SIDE VIEW FRONT VIEW
POST DETAIL
W6 X 15
(W150x22)
NO CURBING



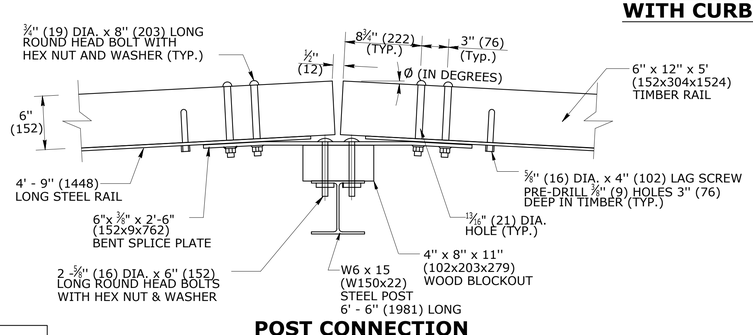
SECTION
(NO CURB)



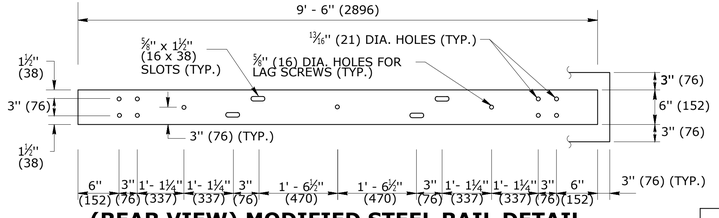
REAR VIEW ELEVATION
POST CONNECTION



ELEVATION
BENT SPLICE PLATE



POST CONNECTION
FOR CURVES WITH R < 70' (21.3m)



(REAR VIEW) MODIFIED STEEL RAIL DETAIL
6" x 3/8" x 9'-6" (152x9x2896)
(FOR 3'-4" POST SPACING)

TABLE 1

DELINEATOR SPACING	
CURVE RADIUS	SPACE
< 300' (91.4m)	20' (6.10m)
≥ 300' (91.4m)	50' (15.2m)

TABLE 2

Radius R (ft.)(m)	Ø (Degrees)	d (in.)(mm)
35 (10.7)Min.	4.10	5/8(16)
40 (12.2)	3.58	9/16(14)
45 (13.7)	3.18	1/2(13)
50 (15.2)	2.86	7/16(11)
55 (16.8)	2.60	7/16(11)
60 (18.3)	2.40	3/8(9)
65 (19.8)	2.20	3/8(9)
70 (21.3)	2.05	5/16(8)
Over 70 (21.3)	Flat	0

ALL METRIC DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

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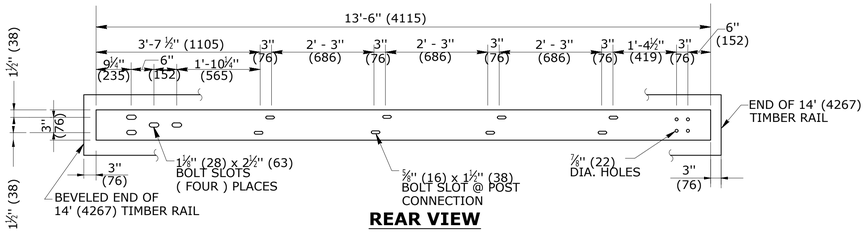
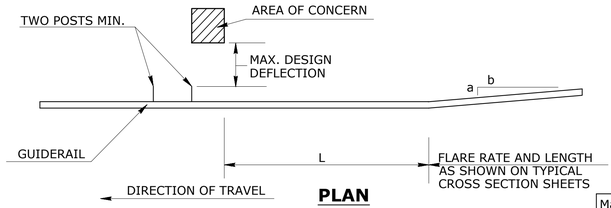
REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
STEEL-BACKED TIMBER GUIDERAIL DETAILS

GRD-01



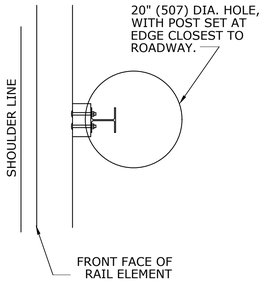
REAR VIEW

STEEL TRANSITION RAIL
6" x 3/8" x 13'-6" (152x9x4115)
FOR LEADING END ATTACHMENT

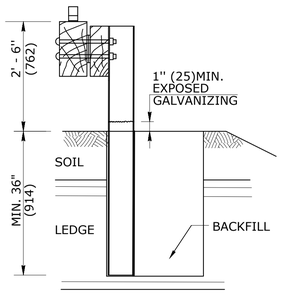


PLAN

APPROACH TO FIXED OBJECTS
SYSTEM 2 AND 3

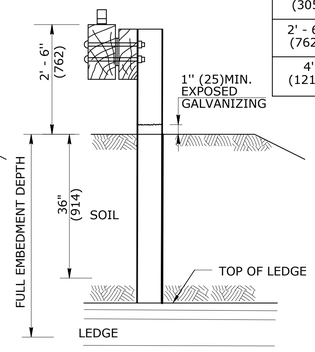


PLAN



CASE 1

(CURBLESS SECTION SHOWN)



CASE 2

(CURBLESS SECTION SHOWN)

DRILLING HOLE FOR GUIDERAIL POST

(SEE GENERAL NOTES 2-3)

CASE 1:IF LEDGE IS LOCATED WITHIN 36" (914) OF THE FINISHED GRADE AT THE POST LOCATIONA 20" (507) DIAMETER HOLE SHALL BE DRILLED IN THE LEDGE TO THE MINIMUM EMBEDMENT DEPTH OF 36" (914) AND THE POST SHALL BE CUT AND DRIVEN TO ACHIEVE THIS DEPTH.

CASE 2:IF LEDGE IS LOCATED AT A DEPTH GREATER THAN 36" (914) BUT LESS THAN THE FULL EMBEDMENT DEPTH THE POST SHALL BE CUT AND DRIVEN TO ACHIEVE EMBEDMENT TO THE DEPTH OF THE TOP OF LEDGE.

GENERAL NOTES:

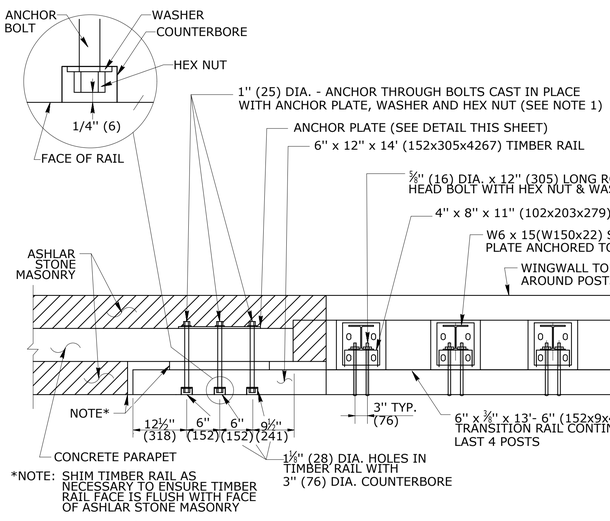
1.THIS DRAWING SHOWS LEADING END ATTACHMENT TO PROPOSED BARRIER/PARAPET. AT EXISTING PARAPETS ATTACH GUIDERAIL USING D.O.T. APPROVED CHEMICAL ANCHORS.

2.PRIOR TO GUIDERAIL POST INSTALLATION THE CONTRACTOR SHALL INVESTIGATE POST LOCATIONS FOR THE PRESENCE AND DEPTH OF LEDGE.

3. 20" (507) DIA. EXCAVATED HOLE SHALL BE BACKFILLED WITH SUITABLE MATERIAL, OR GRANULAR FILL COMPACTED IN 6" (150) LIFTS BEFORE DRIVING POST OR POSTS MAY BE SET IN EXCAVATED HOLE AND BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM).

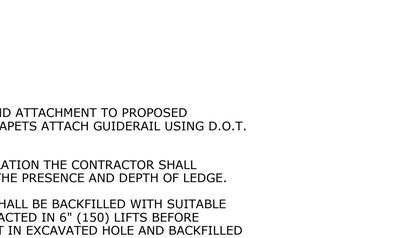
Maximum Design Deflection (ft) (mm)	Area Of Concern Plus 2 Posts (see sketch)	SYSTEM 3	SYSTEM 2	Standard System	L
		W6x15 (W150x22) Posts Spaced at 2'- 6" (762)	W6x15 (W150x22) Posts Spaced at 5' (1524)	W6x15 (W150x22) Posts Spaced at 10' (3048)	Min. Length Needed
1' (305)	System 3	10' (3048)	10' (3048)	50' (16.40m)	70' (21.34m)
2' - 6" (762)	System 2	–	10' (3048)	60' (19.68m)	70' (21.34m)
4' (1219)	Standard System	–	–	70' (21.34m)	70' (21.34m)

STEEL-BACKED TIMBER GUIDERAIL
DESIGN DEFLECTION CHART

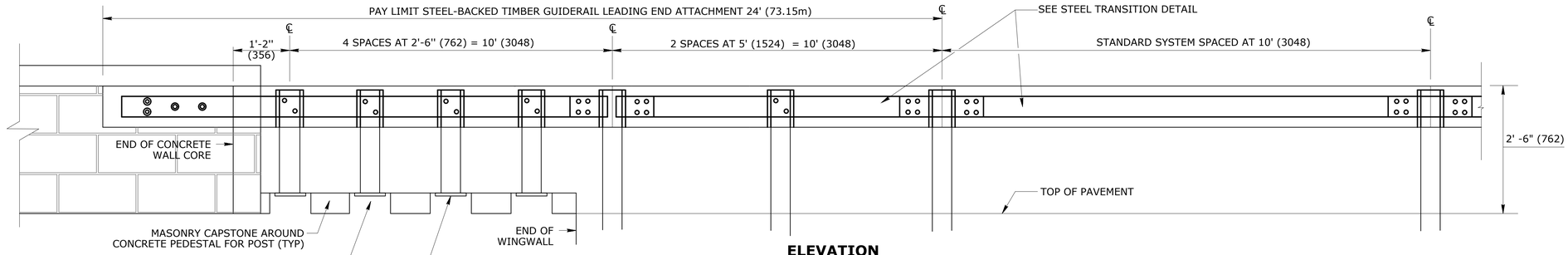


*NOTE: SHIM TIMBER RAIL AS NECESSARY TO ENSURE TIMBER RAIL FACE IS FLUSH WITH FACE OF ASHLAR STONE MASONRY

PLAN



ANCHORAGE PLATE DETAIL



ELEVATION

ATTACHMENT AT LEADING END (VERTICAL SHAPE BARRIER SHOWN)
(FRONT VIEW)

(SEE GENERAL NOTES 1)

ALL METRIC DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

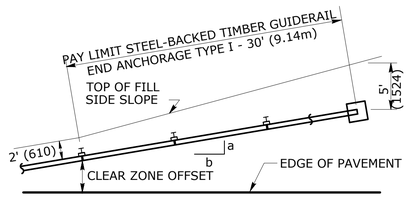
NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

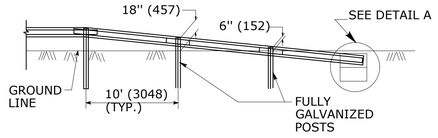
CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
STEEL-BACKED TIMBER GUIDERAIL DETAILS

GRD-02



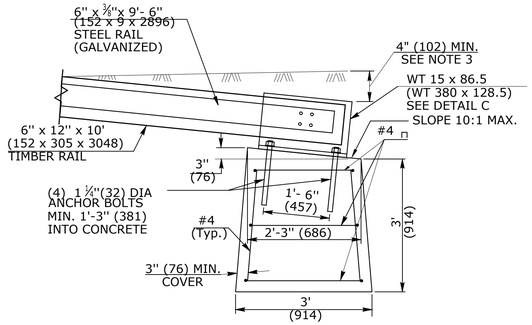
PLAN



ELEVATION

STEEL-BACKED TIMBER GUIDERAIL END ANCHORAGE TYPE I (BURIED ANCHOR)

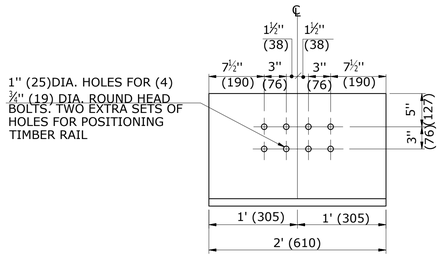
NOTE: SEE PLAN SHEETS FOR FLARE RATE a:b.



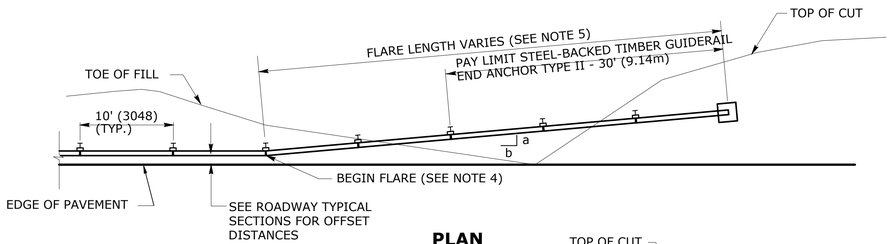
ELEVATION
DETAIL A

GENERAL NOTES:

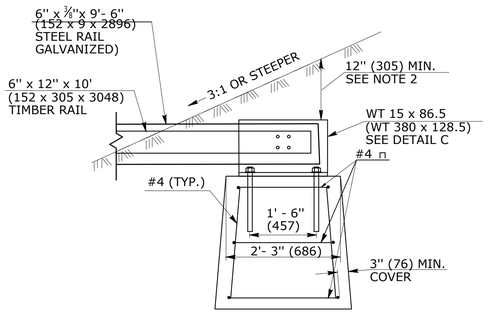
1. MATERIALS AND CONSTRUCTION OF THE STEEL-BACKED TIMBER GUIDERAIL END ANCHORS SHALL CONFORM TO THE TECHNICAL SPECIFICATIONS PROVIDED WITH THE PROJECT. ALL HARDWARE IN CONTACT WITH THE GROUND SHALL BE GALVANIZED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION.
2. FOR THE END ANCHOR TYPE II, EXTEND THE FLARE INTO THE CUT SLOPE UNTIL A MINIMUM 12" (305) OF COVER IS OBTAINED OVER THE GUIDERAIL ELEMENT.
3. FOR THE END ANCHOR TYPE I, EXTEND THE FLARE OUTSIDE THE CLEAR ZONE AND BURY THE GUIDERAIL ANCHOR AND ELEMENT TO OBTAIN A MINIMUM COVER OF 4" (102). SEE DETAIL A.
4. BEGIN THE FLARE AT THE NEAREST POST TO A TRANSITION POINT BETWEEN FILL AND CUT AS DIRECTED BY THE ENGINEER.
5. THE GUIDERAIL FLARE SHOWN ON THE PLAN SHEETS IS THE MINIMUM LENGTH AND RATE REQUIRED AS DIRECTED BY THE ENGINEER. FLARE THE GUIDERAIL SO THAT THE TERMINAL SECTION IS OUTSIDE THE CLEAR ZONE.



ELEVATION
DETAIL C
WT 15 x 86.5 (GALVANIZED)
(WT 380 X 128.5)



PLAN

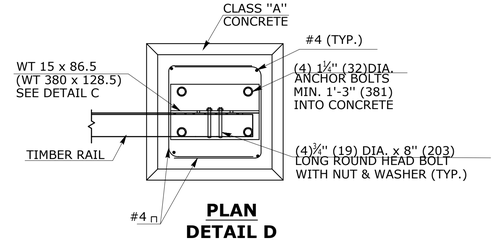


ELEVATION
DETAIL B

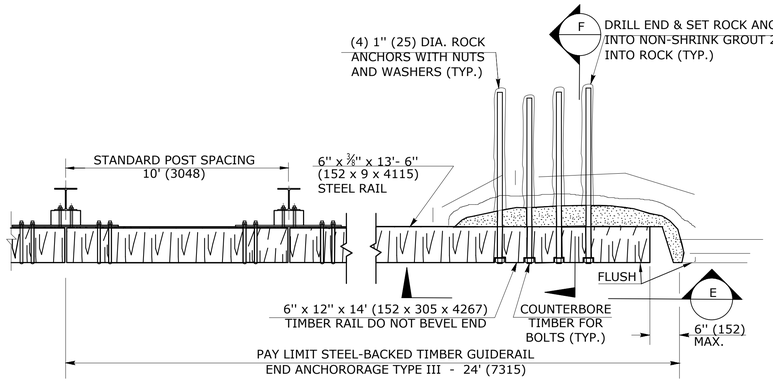
ELEVATION

STEEL-BACKED TIMBER GUIDERAIL END ANCHORAGE TYPE II (EARTH CUT SLOPE ANCHOR)

NOTE: SEE PLAN SHEETS FOR FLARE RATE a:b.

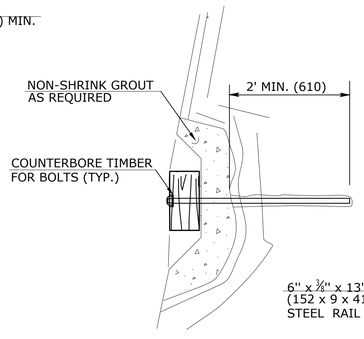


PLAN
DETAIL D

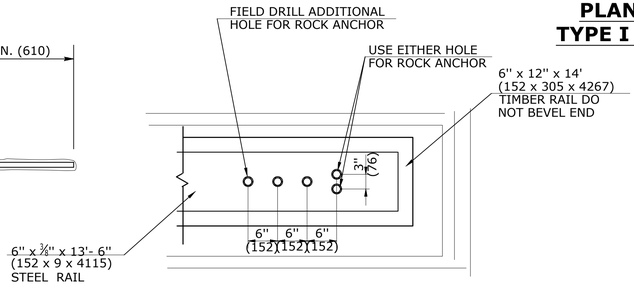


PLAN

STEEL-BACKED TIMBER GUIDERAIL END ANCHORAGE TYPE III (ROCK CUT ANCHOR)



SECTION F



SECTION E

PLAN VIEW FOR TYPE I & II ANCHOR

ALL METRIC DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.

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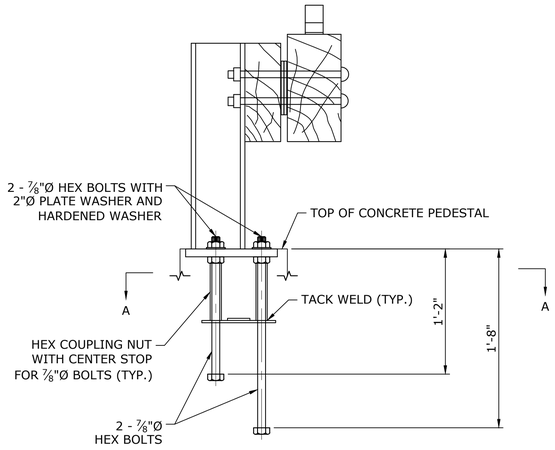
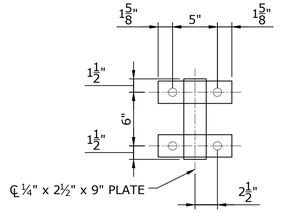
REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
STEEL-BACKED TIMBER GUIDERAIL DETAILS

GRD-03

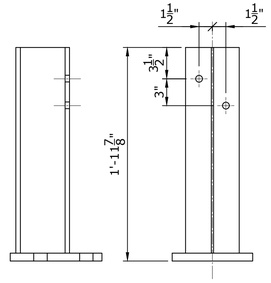


ELEVATION

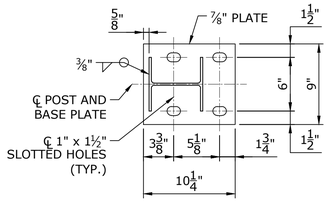


SECTION A-A

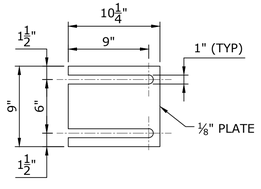
WALL POST ANCHOR ASSEMBLY



WALL POST ASSEMBLY



WALL POST BASE PLATE DETAIL



WALL POST BASE SHIM DETAIL

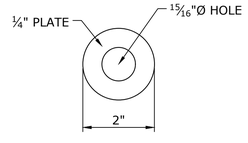


PLATE WASHER

NO.	REVISION	DATE	BY

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SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
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APPROVED BY: JAC

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3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
STEEL-BACKED TIMBER GUIDERAIL DETAILS

GRD-04

RESPONSIBILITY AND AUTHORITY

THE CITY/TOWN, OR ITS AUTHORIZED REPRESENTATIVE, HAS THE RESPONSIBILITY AND AUTHORITY FOR THE IMPLEMENTATION, OPERATION, MONITORING, AND MAINTENANCE OF THE SEDIMENT AND EROSION CONTROL MEASURES.

GENERAL

1. EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY/TOWN STANDARDS, THE CONNECTICUT DOT SPECIFICATIONS FOR ROADS , BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 817 (2016), 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL, DEP BULLETIN 34, AND THE PROJECT SPECIFICATIONS.

2. THESE GUIDELINES SHALL APPLY TO ALL WORK CONSISTING OF ANY AND ALL TEMPORARY AND/OR PERMANENT MEASURES TO CONTROL WATER POLLUTION AND SOIL EROSION, AS MAY BE REQUIRED, DURING THE CONSTRUCTION OF THE PROJECT.

3. IN GENERAL, ALL CONSTRUCTION ACTIVITIES SHALL PROCEED IN SUCH A MANNER SO AS NOT TO POLLUTE ANY WETLANDS, WATERCOURSE, WATERBODY, AND CONDUIT CARRYING WATER, ETC. THE CONTRACTOR SHALL LIMIT, INSOFAR AS POSSIBLE, THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION METHODS AND IMMEDIATELY PROVIDE PERMANENT AND TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT WETLANDS, WATERCOURSES, AND WATERBODIES, AND TO PREVENT, INSOFAR AS POSSIBLE, EROSION ON THE SITE.

4. ALL EROSION CONTROL MATTING SHALL BE AS SPECIFIED ON THE PLANS OR AN APPROVED EQUAL. ALL EROSION CONTROL MATTING SHALL BE LISTED ON THE QUALIFIED PRODUCT LIST FOR CONNECTICUT DEPARTMENT OF TRANSPORTATION PROJECTS (REPORT NUMBER 211-12-04-4), DATED APRIL 2004 OR LATEST REVISION. THIS REPORT IS POSTED ON THE CONNECTICUT DEPARTMENT OF TRANSPORTATION WEB SITE. INSTALLATION SHALL CONFORM TO CONN DOT FORM 814A, SECTION 7.55, GEOTEXTILE

5. THE EROSION CONTROL PLAN PROPOSES EROSION CONTROL MEASURES TO HELP CONTROL ACCELERATED EROSION AND SEDIMENTATION AND THE DANGER FROM STORM WATER RUNOFF AT THE SITE. THE RUNOFF SHALL BE CONTROLLED BY THE INTERCEPTION, DIVERSION AND SAFE DISPOSAL OF PRECIPITATION. RUNOFF SHALL ALSO BE CONTROLLED BY STAGING CONSTRUCTION ACTIVITY AND PRESERVING NATURAL VEGETATION WHENEVER POSSIBLE.

6. EXISTING VEGETATION SHALL BE PROTECTED AND ONLY THAT CLEARING AND GRUBBING ABSOLUTELY NECESSARY FOR THE PROPOSED CONSTRUCTION SHALL BE PERFORMED. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND CONTOUR UNLESS OTHERWISE INDICATED ON THE PLANS. THE CONTRACTOR SHALL TAKE SPECIAL CARE WITH HIS CONSTRUCTION METHODS AND SHALL COMPLY WITH THE FOLLOWING GUIDELINES:

ALL AREAS SHALL BE PROTECTED FROM SEDIMENTATION DURING AND AFTER CONSTRUCTION, PARTICULARLY THE STORAGE OF EXCAVATED OR STOCKPILED MATERIAL. THE CONTRACTOR SHALL CAREFULLY STRIP ALL TOPSOIL, LOAM OR ORGANIC MATTER PRIOR TO TRENCHING OTHER OPERATIONS AND SHALL STORE THEM SEPARATELY FROM ALL OTHER MATERIALS DURING EXCAVATION. EACH STOCKPILE MUST BE ADEQUATELY RINGED WITH SEDIMENT CONTROL MATERIAL (I.E. HAY BALES AND/OR GEOTEXTILE FENCE)

THE EXISTING NATURAL DRAINAGE PATTERNS AND VEGETATIVE COVER SHALL BE PRESERVED TO THE MAXIMUM POSSIBLE EXTENT.

CONSTRUCTION EQUIPMENT SHALL BE A TYPE THAT DOES NOT DAMAGE ADJACENT AREAS AND MINIMIZES THE NEED FOR AND SIZE OF ACCESS ROADWAYS.

CONSTRUCTION SHALL BE PERFORMED IN SUCH A MANNER SO AS TO KEEP LAND GRADING AND DISTURBANCES TO A MINIMUM.

WATERCOURSE ELEVATIONS WITHIN THE CONSTRUCTION SITE SHALL BE RESTORED. CHANNELS SHALL BE CLEANED AND CLEARED OF SEDIMENT AND DEBRIS.

EXCESS EXCAVATED MATERIAL AND OTHER DEBRIS SHALL NOT BE STORED OR DISPOSED OF WITHIN THE ADJACENT WATERCOURSES OR WETLAND AREAS.

ANY CONSTRUCTION ROADS BUILT DURING CONSTRUCTION SHALL BE REMOVED AND ALL GRADE ELEVATIONS SHALL BE RESTORED TO ORIGINAL CONDITION.

DEBRIS AND OTHER WASTE RESULTING FROM EQUIPMENT MAINTENANCE AND CONSTRUCTION SHALL NOT BE DISCARDED ON SITE.

LAND GRADING

GENERAL:

THE RESHAPING OF THE GROUND SURFACE BY EXCAVATION AND FILLING OR A COMBINATION OF BOTH, TO OBTAIN PLANNED GRADES, SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

A. THE CUT FACE OF EARTH EXCAVATION SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).

B. THE PERMANENT EXPOSED FACES OF FILLS SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).

C. THE CUT FACE OF ROCK EXCAVATION SHALL NOT BE STEEPER THAN ONE HORIZONTAL TO FOUR VERTICAL (1:4).

D. PROVISION SHOULD BE MADE TO CONDUCT SURFACE WATER SAFELY TO STORM DRAINS TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FILL SLOPES.

E. EXCAVATIONS SHOULD NOT BE MADE SO CLOSE TO PROPERTY LINES AS TO ENDANGER ADJOINING PROPERTY WITHOUT PROTECTING SUCH PROPERTY FROM EROSION, SLIDING, SETTLING, OR CRACKING.

F. NO FILL SHOULD BE PLACED WHERE IT WILL SLIDE OR WASH UPON THE PREMISES OF ANOTHER OWNER OR UPON ADJACENT WETLANDS, WATERCOURSES, OR WATERBODIES.

G. PRIOR TO ANY REGRADING, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT THE ENTRANCE TO THE WORK AREA IN ORDER TO REDUCE MUD AND OTHER SEDIMENTS FROM LEAVING THE SITE.

TOPSOILING

GENERAL:

1. TOPSOIL SHALL BE SPREAD OVER ALL EXPOSED AREAS IN ORDER TO PROVIDE A SOIL MEDIUM HAVING FAVORABLE CHARACTERISTICS FOR THE ESTABLISHMENT. GROWTH, AND MAINTENANCE OF VEGETATION.

2. UPON ATTAINING FINAL SUBGRADES, SCARIFY SURFACE TO PROVIDE A GOOD BOND WITH TOPSOIL.

3. REMOVE ALL LARGE STONES, TREE LIMBS, ROOTS AND CONSTRUCTION DEBRIS.

4. APPLY LIME ACCORDING TO SOIL TEST OR AT THE RATE OF 2 TON PER ACRE.

MATERIAL:

1. TOPSOIL SHOULD HAVE PHYSICAL, CHEMICAL, AND BIOLOGICAL CHARACTERISTICS FAVORABLE TO THE GROWTH OF PLANTS.

2. TOPSOIL SHOULD HAVE A SANDY OR LOAMY TEXTURE.

3. TOPSOIL SHOULD BE RELATIVELY FREE OF SUBSOIL MATERIAL AND MUST BE FREE OF STONES (OVER 1" IN DIAMETER), LUMPS OF SOIL, ROOTS, TREE LIMBS, TRASH, OR CONSTRUCTION DEBRIS. IT SHOULD BE FREE OF ROOTS OR RHIZOMES SUCH AS THISTLE, NUTGRASS, AND QUACKGRASS.

4. AN ORGANIC MATTER CONTENT OF SIX PERCENT (6%) IS REQUIRED. AVOID LIGHT COLORED SUBSOIL MATERIAL.

5. SOLUBLE SALT CONTENT OF OVER 500 PARTS PER MILLION (PPM) IS LESS SUITABLE. AVOID TIDAL MARSH SOILS BECAUSE OF HIGH SALT CONTENT AND SULFUR ACIDITY.

6. THE pH SHOULD BE MORE THAN 6.0. IF LESS, ADD LIME TO INCREASE pH TO AN ACCEPTABLE LEVEL.

APPLICATION:

1. AVOID SPREADING WHEN TOPSOIL IS WET OR FROZEN.

2. SPREAD TOPSOIL UNIFORMLY TO A DEPTH OF AT LEAST FOUR INCHES, OR TO THE DEPTH SHOWN ON THE PLANS.

TEMPORARY VEGETATIVE COVER

GENERAL:

1. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED ON ALL UNPROTECTED AREAS THAT PRODUCE SEDIMENT, AREAS WHERE FINAL GRADING HAS BEEN COMPLETED, AND AREAS WHERE THE ESTIMATED PERIOD OF BARE SOIL EXPOSURE IS LESS THAN 12 MONTHS. TEMPORARY VEGETATIVE COVER SHALL BE APPLIED IF AREAS WILL NOT BE PERMANENTLY SEEDED BY OCTOBER 15.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.

2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.

3. APPLY LIME ACCORDING TO SOIL TEST OR AT A RATE OF 1 TON OF GROUND DOLOMITIC LIMESTONE PER ACRE.

4. APPLY FERTILIZER ACCORDING TO SOIL TEST OR AT THE RATE OF 330 LB OF 10-10-10 PER ACRE (7.5 LB PER 1000 SF) AND SECOND APPLICATION OF 240 LB OF 10-10-10- (5.5 LB PER 100O SF) WHEN GRASS IS 4" TO 6" HIGH. APPLY ONLY WHEN GRASS IS DRY.

5. UNLESS HYDROSEEDED, WORK IN LIME AND FERTILIZER TO A DEPTH OF 4" USING A DISK OR ANY SUITABLE EQUIPMENT.

6. TILLAGE SHOULD ACHIEVE A REASONABLY UNIFORM LOOSE SEEDBED. WORK ON CONTOUR IF SITE IS SLOPING.

ESTABLISHMENT:

1. SELECT APPROPRIATE SPECIES FOR THE SITUATION. NOTE RATES AND SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).

2. APPLY SEED UNIFORMLY ACCORDING TO THE RATE INDICATED BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.

3. UNLESS HYDROSEEDED, COVER RYEGRASS SEEDS WITH NOT MORE THAN 2" OF SOIL USING SUITABLE EQUIPMENT.

4. MULCH IMMEDIATELY AFTER SEEDING IF REQUIRED. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW.) APPLY STRAW OR HAY MULCH AND ANCHOR TO SLOPES GREATER THAN 3% OR WHERE CONCENTRATED FLOW WILL OCCUR.

PERMANENT VEGETATIVE COVER

GENERAL:

1. PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED AS VARIOUS SECTIONS OF THE PROJECT ARE COMPLETED IN ORDER TO STABILIZE THE SOIL, REDUCE DOWNSTREAM DAMAGE FROM SEDIMENT AND RUNOFF, AND TO ENHANCE THE AESTHETIC NATURE OF THE SITE. IT WILL BE APPLIED TO ALL CONSTRUCTION AREAS SUBJECT TO EROSION WHERE FINAL GRADING HAS BEEN COMPLETED AND A PERMANENT COVER IS NEEDED.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.

2. REMOVE LOOSE ROCK, STONE. AND CONSTRUCTION DEBRIS FROM AREA.

3. PERFORM ALL PLANTING OPERATIONS PARALLEL TO THE CONTOURS OF THE SLOPE.

4. APPLY TOPSOIL AS INDICATED ELSEWHERE HEREIN.

5. APPLY FERTILIZER ACCORDING TO SOIL TEST OR SPREAD SEEDING: WORK DEEPLY IN SOIL, BEFORE SEEDING, 330 LB OF 10-10-10 FERTILIZER PER ACRE (7.5 LB PER 1000 SF); THEN SIX (6) TO EIGHT (8) WEEKS LATER, APPLY ON THE SURFACE AN ADDITIONAL 30 LB OF 10-10-10 FERTILIZER PER ACRE. AFTER SEPTEMBER 1, TEMPORARY VEGETATIVE COVER SHALL BE APPLIED, FALL SEEDING: WORK DEEPLY IN SOIL, BEFORE SEEDING. 240 LB OF 10-10-10 FERTILIZER PER ACRE (5.5 LB PER 1000 SF)

VEGETATIVE COVER SELECTION &; MULCHING

TEMPORARY VEGETATIVE COVER:

PERENNIAL RYEGRASS 3 LB/1000 SF
(IOLUIUM PERENNE)

PERMANENT VEGETATIVE COVER:

CREEPING RED FESCUE 2 LB/1000 SF
(FESTUCA RUBRA)

REDTOP 1 LB/1000 SF
(AGROSTIS ALBA)

TALL FESCUE 2 LB/1000 SF
(FESTUCA ARUNDINACEA)

TEMPORARY MULCHING:

STRAY OR HAY 60-90 LB/1000 SF
(TEMPORARY VEGETATIVE AREAS)

WOOD FIBER IN HYDROMULCH SLURRY 25-50 LB/1000 SF

ESTABLISHMENT:

1. SMOOTH AND FIRM SEEDBED WITH CULTIPACKER OR OTHER SIMILAR EQUIPMENT PRIOR TO SEEDING (EXCEPT WHEN HYDROSEEDING).

2. SELECT ADAPTED SEED MIXTURE FOR THE SPECIFIC SITUATION. NOTE RATES AND THE SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPEC).

3. APPLY SEED UNIFORMLY ACCORDING TO RATE INDICATED, BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.

4. COVER GRASS AND LEGUME SEED WITH NOT MORE THAN 1/4" OF SOIL WITH SUITABLE EQUIPMENT (EXCEPT WHEN HYDROSEEDING).

5. MULCH IMMEDIATELY AFTER SEEDING, IF REQUIRED, ACCORDING TO TEMPORARY MULCHING SPECIFICATIONS. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION).

6. USE PROPER INOCULANT ON ALL LEGUME SEEDINGS. USE FOUR (4) TIMES NORMAL RATES WHEN HYDROSEEDING.

7. USE SOD WHERE THERE IS A HEAVY CONCENTRATION OF WATER AND IN CRITICAL AREAS WHERE IT IS IMPORTANT TO GET A QUICK VEGETATIVE COVER TO PREVENT EROSION.

TEMPORARY EROSION / SEDIMENTATION CONTROL DEVICES

THE FOLLOWING EROSION/SEDIMENTATION CONTROL DEVICES ARE PLANNED FOR THE SITE DURING THE CONSTRUCTION PERIOD. THESE DEVICES SHALL BE INSTALLED AS INDICATED ON THE PLANS OR AS DESCRIBED HEREWITHIN.

1. SYNTHETIC FILTER BARRIERS AND HAY BALES WILL BE INSTALLED DOWNGRADIENT OF DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE SITE IS REVEGETATED. INSTALLATION DETAILS ARE PROVIDED IN THE PLAN SET ON THE EROSION CONTROL DETAIL SHEETS.

2. STRAW OR HAY MULCH IS INTENDED TO PROVIDE COVER FOR DENUDED OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED ON SLOPES OF LESS THAN 3 PERCENT SHALL BE ANCHORED BY APPLYING WATER; MULCH PLACED IN AREAS OF CONCENTRATED FLOW OR ON SLOPES STEEPER THAN 3 PERCENT SHALL BE COVERED WITH FABRIC NETTING OR EQUAL AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SLOPES STEEPER THAN 4:1 AND WHERE SHOWN ON THE PLANS, WHICH ARE TO BE REVEGETATED, SHALL RECEIVE CURLEX BLANKETS BY AMERICAN EXCELSIOR.

3. CONSTRUCTION ENTRANCES WILL BE INSTALLED AT ALL ACCESS POINTS OF THE SITE TO PREVENT THE TRACKING OF SOIL ONTO CITY STREETS AND STATE ROADS.

4. IF REQUIRED TEMPORARY SEDIMENTATION BASINS AND OR SEDIMENT TRAPS SHALL BE CONSTRUCTED IN THE LOCATIONS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN OR AT LOCATIONS SPECIFIED BY THE ENGINEER DURING CONSTRUCTION TO ALLOW SETTLEMENT OF FINE GRAIN PARTICLES FROM DEWATERING OPERATIONS AND SURFACE RUNOFF. THE REQUIRED VOLUME OF STORAGE IS 134 CUBIC YARDS FOR EVERY ACRE OF DISTURBED SITE ENTERING THE BASIN. A SEDIMENTATION BASIN WILL BE REQUIRED WHEN TWO ACRES ARE DISTURBED THAT DISCHARGE TO ANY POINT.

5. TEMPORARY STORAGE AND STOCKPILE AREAS SHALL BE SURROUNDED BY A SYNTHETIC FILTER BARRIER. TEMPORARY DRAINAGE SWALES SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS OR AS NECESSARY TO DIVERT RUNOFF INTO THE SEDIMENTATION BASINS.

6. SEDIMENT TRAPS WILL BE INSTALLED AROUND ALL CATCH BASINS. THE SEDIMENT TRAPS SHALL BE LEFT IN PLACE UNTIL THE TRIBUTARY AREA IS PAVED OR REVEGETATED.

7. WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED OR HAVE TEMPORARILY BEEN SUSPENDED FOR MORE THAN SEVEN DAYS ,OR WHEN FINAL GRADES ARE REACHED IN ANY PORTION OF THE SITE, STABILIZATION PRACTICES SHALL BE IMPLEMENTED WITHIN THREE DAYS. AREAS THAT WILL REMAIN DISTURBED BUT INACTIVE FOR AT LEAST THIRTY DAYS SHALL RECEIVE TEMPORARY SEEDING IN ACCORDANCE WITH THE GUIDELINES. AREAS THAT WILL REMAIN DISTURBED BEYOND THE PLANTING SEASON, SHALL RECEIVE LONG-TERM, NON-VEGETATIVE STABILIZATION SUFFICIENT TO PROTECT THE SITE THROUGH THE WINTER. IN ALL CASES, STABILIZATION MEASURES SHALL BE BE IMPLEMENTED AS SOON AS POSSIBLE IN ACCORDANCE WITH THE GUIDELINES.

8. IF WORK IS CONDUCTED BETWEEN SEPTEMBER 15TH AND APRIL 15TH OF ANY CALENDAR YEAR, ALL DENUDED AREAS WILL BE COVERED WITH HAY MULCH, APPLIED AT TWICE THE NORMAL APPLICATION RATE AND ANCHORED WITH FABRIC NETTING. THE PERIOD BETWEEN FINAL GRADING AND MULCHING SHALL BE REDUCED TO A 15 DAY MAXIMUM.

9. ALL STREETS SHALL BE SWEPT OR WASHED TO CONTROL MUD AND DUST AS NECESSARY AS DETERMINED BY THE TOWN AND/OR THE ENGINEER.

10. DURING GRUBBING OPERATIONS, CHECK DAMS WILL BE INSTALLED AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS.

11. EFFLUENT FROM DEWATERED WORK AREAS SHALL NOT BE DISCHARGED DIRECTLY TO THE WATERCOURSE BUT BE PROCESSED THROUGH TREATMENT STRUCTURES. SUCH STRUCTURES ARE NOT TO BE LOCATED WITHIN THE WATERCOURSE CHANNEL OR ADJACENT WETLANDS.

PERMANENT EROSION CONTROL MEASURES:

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES HAVE BEEN DESIGNED AS PART OF THE EROSION/SEDIMENTATION CONTROL PLAN:

1. ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIP RAP, ETC.) WILL BE LOAMED, LIMED, FERTILIZED, MULCHED AND SEEDED. FABRIC NETTING ANCHORED WITH STAPLES SHALL BE PLACED OVER THE MULCH IN AREAS WHERE THE FINISH GRADE SLOPE IS GREATER THAN 3 PERCENT. ALL AREAS SHALL RECEIVE PROTECTION WITHIN 30 DAYS. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

2. CATCH BASINS WILL BE PROVIDED WITH SEDIMENT SUMPS.

GENERAL PHASING OF EROSION AND SEDIMENTATION CONTROL MEASURES:

THE CONSTRUCTION OF THE TEMPORARY SEDIMENTATION BASINS ,IF REQUIRED MUST BE COMPLETED BEFORE OTHER WORK BEGINS AT THE SITE. EXTREME CAUTION MUST BE TAKEN TO LIMIT THE EXTENT OF DISTURBED AREAS. WORK SHALL BE CONDUCTED IN THE FOLLOWING ORDER (FOR ADDITIONAL INFORMATION SEE SEQUENCE OF CONSTRUCTION):

A. INSTALL CRUSHED STONE CONSTRUCTION ENTRANCES.

B. AND STORAGE AREAS AND IN OTHER AREAS AS INDICATED ON THE PLANS OR DIRECTED BY THE ENGINEER. INSTALL HAY BALE SEDIMENT TRAPS AT ALL EXISTING CATCH BASINS AND DRAINS.

C. CONSTRUCT TEMPORARY SEDIMENTATION BASINS AND, IF REQUIRED, TEMPORARY SWALES TO DIRECT RUNOFF TO BASINS. INSTALL CHECK DAMS IN SWALES AND OTHER AREAS OF CONCENTRATED FLOW.

D. DISPOSE OF ANY UNUSABLE FILL MATERIAL OFF SITE. DISPOSAL OF MATERIALS SHALL BE CONDUCTED IN A MANNER CONSISTENT WITH THIS PLAN WHICH WILL AVOID EROSION AND SEDIMENTATION OFF SITE. PLACE FILL MATERIAL WHICH IS SUITABLE FOR REUSE WITHIN DESIGNATED STOCKPILE AREAS.

E. DURING GRUBBING OPERATIONS, INSTALL CHECK DAMS AT ANY EVIDENT CONCENTRATED FLOW DISCHARGE POINTS.

F. INSTALL PROPOSED STORM SEWER SYSTEM AND CATCH BASINS. PROTECT CATCH BASINS FROM SILTATION WITH APPROPRIATE CONTROLS AS SHOWN ON THE DETAIL SHEETS.

G. STABILIZE DISTURBED AREAS WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS.

H. RECONSTRUCT ROADWAYS.

I. RESTORE DISTURBED AREAS, COMPLETE SEEDING AND LANDSCAPING AND REMOVE EROSION CONTROL DEVICES.

ADDITIONAL REQUIREMENTS

IN ADDITION TO THE MEASURES LISTED ABOVE, THE FOLLOWING WORK WILL BE PERFORMED AS REQUIRED:

1. REMOVE ACCUMULATED SEDIMENT AHEAD OF ANY SILT BARRIERS (AS NECESSARY) AND DISPOSE OFF SITE.

2. DUST AND WIND EROSION SHALL BE CONTROLLED THROUGHOUT THE LIFE OF THE CONTRACT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO, SPRINKLING OF WATER ON EXPOSED SOILS AND HAUL ROADS.

3. IF EXCAVATION IS INTERRUPTED BY HEAVY RAINS, ADDITIONAL MULCHING OR GRAVEL WORK MATS MAY BE REQUIRED ON AREAS OF EXPOSED SOILS. SOILS WHICH HAVE BECOME UNSUITABLE FOR USE DUE TO EXPOSURE TO HEAVY RAINS SHALL BE REMOVED FROM THE WORK AREA AND DRIED OR DISPOSED OF OFF SITE IN A MANNER CONSISTENT WITH THIS PLAN.

4. CLEAN OUT ALL CULVERTS, CATCH BASINS AND STORM SEWERS IN STREETS ADJACENT TO THE PROJECT AREA AFTER COMPLETION OF THE PROJECT.

5. CONSTRUCTION EQUIPMENT IS NOT TO ENTER ANY WATERCOURSE OR WETLAND.

6. EQUIPMENT IS NOT TO BE WASHED IN OR NEAR WETLANDS OR WATERCOURSES.

7. EQUIPMENT MAINTENANCE SHALL NOT BE CARRIED OUT WITHIN THE PROJECT SITE UNLESS APPROVED IN WRITING BY THE ENGINEER.

8. TRASH RECEPTACLES SHALL BE REQUIRED ON THE JOB SITE.

9. DUMPING OF OIL, CHEMICALS OR OTHER DELETERIOUS MATERIALS ON THE GROUND IS FORBIDDEN. THE CONTRACTOR SHALL PROVIDE A MEANS OF CATCHING, RETAINING AND PROPERLY DISPOSING OF DRAINED OIL, REMOVED OIL FILTERS OR OTHER DELETERIOUS MATERIAL. ALL SPILLS OF SUCH MATERIAL SHALL BE REPORTED IMMEDIATELY BY THE CONTRACTOR TO DEP. THE CONTRACTOR SHALL STORE OIL ABSORBENT MATERIALS ON SITE FOR THE CLEANUP OF SPILLS.

SEDIMENTATION AND EROSION CONTROL MAINTENANCE PROCEDURES DURING CONSTRUCTION:

ALL SEDIMENTATION AND EROSION CONTROL DEVICES SHALL BE INSPECTED DURING CONSTRUCTION BY THE CONTRACTOR ON A DAILY BASIS AND FOLLOWING ALL STORMS. THE CONTRACTOR SHALL MAINTAIN AND MAKE REPAIRS AND REMOVE SEDIMENT AS REQUIRED. THIS WORK SHALL BE PERFORMED WITHIN 24 HOURS FOLLOWING ALL STORM EVENTS. THERE SHALL BE NO SEPARATE PAYMENT FOR THIS WORK.

THE CONTRACTOR SHALL CLEAN SEDIMENT AND DEBRIS FROM ALL DRAINAGE STRUCTURES AND PIPES AT THE COMPLETION OF CONSTRUCTION AND AS REQUIRED TO KEEP THE SYSTEM FUNCTIONING PROPERLY DURING CONSTRUCTION.

FOLLOWING COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL REPAIR ALL ERODED AREAS AND ENSURE A GOOD STAND OF TURF IS ESTABLISHED THROUGHOUT. THE CONTRACTOR SHALL REPAIR ALL ERODED OR DISPLACED RIPRAP AND CLEAN SEDIMENT COVERED STONES.

SILT FENCES SHALL BE INSPECTED, REPAIRED AND CLEANED AS REQUIRED AND AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCES AS THEY BECOME SATURATED WITH MUD TO INSURE THAT THEY WORK AS PLANNED DURING THE CONSTRUCTION.

POST CONSTRUCTION:

1. THE MAINTENANCE SCHEDULE FOR THE CATCH BASIN SEDIMENT SUMPS IS AS FOLLOWS: THESE DEVICES SHALL BE INSPECTED IN APRIL OF EACH YEAR AT A MINIMUM. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE CATCH BASINS WHEN THE DEPTH OF THE SEDIMENT IS WITHIN ONE FOOT OF THE OUTLET PIPE INVERT. THE SEDIMENT WILL BE REMOVED FROM THE SITE BY THE TOWN OR THE CATCH BASIN CLEANING CONTRACTOR AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

2. STREETS ARE TO BE CLEANED WITH STREET SWEEPERS ANNUALLY AT A MINIMUM.

3. THE SITE SHALL BE INSPECTED EVERY 6 MONTHS AND AFTER MAJOR STORMS FOR EVIDENCE OF EROSION ALL ERODED SURFACES ARE TO BE REPAIRED AND PERMANENTLY STABILIZED.

INSPECTION:

QUALIFIED PERSONNEL (PROVIDED BY THE CONTRACTOR) SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION ACTIVITY THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.1 INCHES OR GREATER. WHERE SITES HAVE BEEN TEMPORARILY OR FINALLY STABILIZED, SUCH INSPECTION SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH FOR 3 MONTHS. FULL TIME CONSTRUCTION INSPECTION WILL BE PROVIDED BY THE ENGINEER.

1. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ASSESSABLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF SITE SEDIMENT TRACKING.

2. BASED ON THE RESULTS OF THE INSPECTION, THE DESCRIPTION OF POTENTIAL SOURCES AND POLLUTION PREVENTION MEASURES IDENTIFIED IN THE PLAN SHALL BE REVISED AS APPROPRIATE AS SOON AS PRACTICABLE AFTER SUCH INSPECTION. SUCH MODIFICATIONS SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE SITE WITHIN 24 HOURS AND IMPLEMENTATION OF ANY CHANGES TO THE PLAN WITHIN 3 CALENDAR DAYS FOLLOWING THE INSPECTION. THE PLAN SHALL BE REVISED AND THE SITE CONTROLS UPDATED IN ACCORDANCE WITH SOUND ENGINEERING PRACTICES AND GUIDELINES. A REPORT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORM WATER POLLUTION CONTROL PLAN AND ACTIONS TAKEN SHALL BE MADE AND RETAINED AS PART OF THE PLAN FOR AT LEAST 3 YEARS AFTER THE DATE OF INSPECTION. THE REPORT SHALL BE SIGNED BY THE PERMITTED OR HIS AUTHORIZED REPRESENTATIVE.

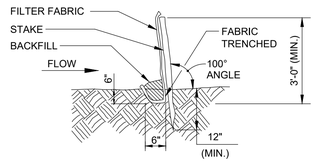
NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
SEDIMENT & EROSION CONTROL NOTES

SED-01



SILT FENCE INSTALLATION

A) MINIMUM LENGTH OF SILT FENCE IS 15 L.F.

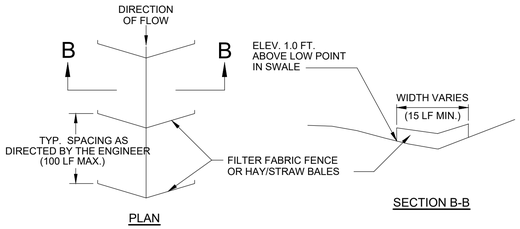
B) MAXIMUM POST SPACING IS 10 L.F.

C) JOINTS ONLY AT SUPPORT POST WITH MINIMUM 6" OVERLAP, SECURELY SEALED.

D) SEDIMENTATION DEPOSITS SHALL BE REMOVED WHEN THEY REACH 1/2 THE HEIGHT OF THE SILT FENCE.

E) SILT FENCE SHALL NOT BE USED IN A WATER COURSE.

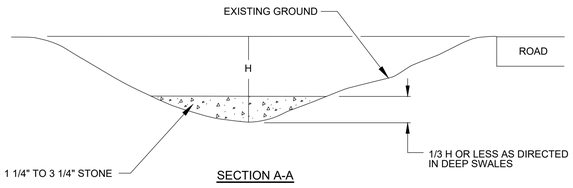
F) UPON ESTABLISHMENT OF GROUND COVER ON DISTURBED AREAS, AND WHEN DIRECTED BY THE ENGINEER, FENCE WILL BE REMOVED AND ANY SEDIMENTATION WILL BE THINLY SPREAD UPON EXISTING GROUND COVER.



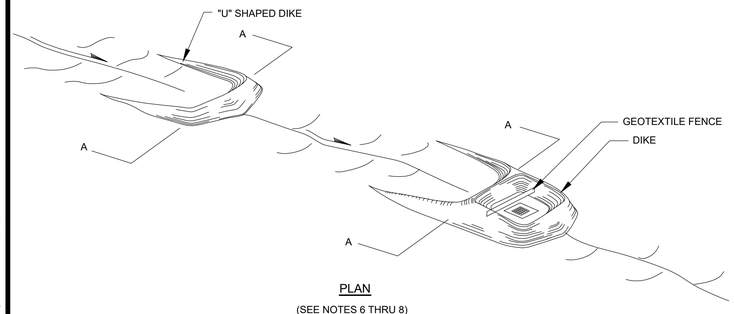
PLAN

SECTION B-B

CHECK DAM
FILTER FABRIC OR HAY/STRAW BALES



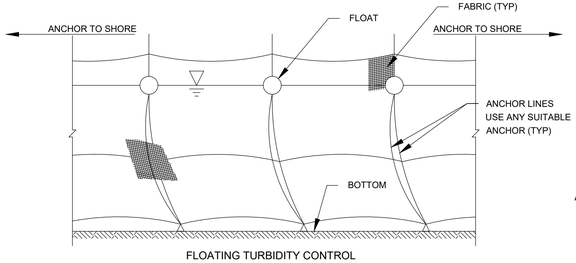
SECTION A-A



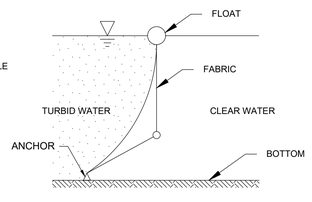
PLAN

(SEE NOTES 6 THRU 8)

"U" SHAPED STONE DIKE



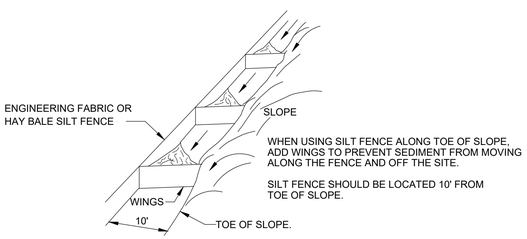
FLOATING TURBIDITY CONTROL



FLOATING SECTION

TURBIDITY CONTROL CURTAIN

NOT TO SCALE

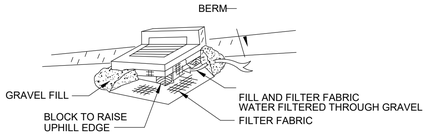


WHEN USING SILT FENCE ALONG TOE OF SLOPE, ADD WINGS TO PREVENT SEDIMENT FROM MOVING ALONG THE FENCE AND OFF THE SITE.

SILT FENCE SHOULD BE LOCATED 10' FROM TOE OF SLOPE.

SEDIMENTATION CONTROL SYSTEM
TOE OF SLOPE

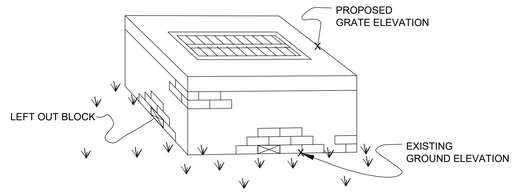
(WHERE DIRECTED BY ENGINEER)



WHERE DIRECTED BY ENGINEER, CONTRACTOR SHALL CONSTRUCT A STONE DIKE IN LIEU OF THE FILTER FABRIC CHECK DAM.

SEDIMENTATION CONTROL SYSTEM
FOR CATCH BASINS

NOTE: RAISE AND PROTECT CATCH BASIN TOPS WITH CRUSHED STONE AS SOON AS POSSIBLE TO PERMIT DRAINAGE TO ENTER STORM SYSTEMS, WHEN ROADWAY IS BROUGHT UP TO SUBBASE BEFORE PAVING.



SHORT TERM ALTERNATE

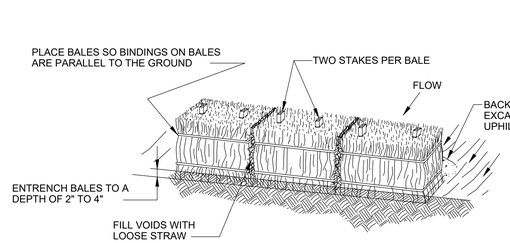
(SEE NOTES 2 THRU 5)

NOTES:

1. ALL DIMENSIONS ARE IN INCHES (") EXCEPT AS NOTED.
2. CONSTRUCT CATCH BASINS LEAVING ONE (1) BLOCK OUT PER SIDE AT EXISTING GROUND ELEVATION TO ALLOW WATER TO ENTER.
3. IF GROUND WITHIN A CATCH BASIN'S WATERSHED BECOMES DISTURBED AND THE CATCH BASIN WILL NOT BE BACKFILLED TO TOP OF GRATE ELEVATION FOR AT LEAST EIGHT (8) HOURS, INSTALL SEDIMENTATION CONTROL SYSTEM FOR CATCH BASIN.
4. INSTALL LEFT OUT BLOCKS NOT SOONER THAN TWO (2) HOURS PRIOR TO BACKFILLING AROUND CATCH BASIN.
5. IMMEDIATELY AFTER PLACING FILL, INSTALL SEDIMENTATION CONTROL SYSTEMS.
6. THE ENDS OF THE DIKE SHALL BE THE SAME ELEVATION AS THE SPILLWAY OR GREATER.
7. MAXIMUM HEIGHT OF DIKE SHOULD NOT EXCEED 1/3 HEIGHT OF THE CHANNEL.
8. STONE DIKES SHALL BE PLACED AT 50' INTERVALS IN ALL TEMPORARY DITCHES AND CHANNELS.

NOTE:

SEE PLANS AND SPECIAL PROVISIONS FOR LOCATION OF AND ADDITIONAL INFORMATION REGARDING TURBIDITY CONTROL CURTAIN.



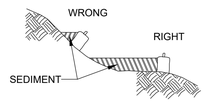
INSTALLATION

A) IDEALLY, BALES SHOULD BE ENTRENCHED 2 TO 4 INCHES AND TIGHTLY BUTTED TOGETHER. BALES CAN BE SUCCESSFULLY PLACED WITHOUT A TRENCH IF GOOD GROUND CONTACT IS MADE. REMOVE HEAVY BRUSH AND FILL IN ALL VOIDS WITH LOOSE STRAW.

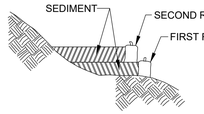
B) BALES SHALL BE ONLY USED AS A TEMPORARY BARRIER AND FOR NO LONGER THAN 60 DAYS. THEY SHALL NOT BE USED ON A JOB ADJACENT TO A RESIDENTIAL NEIGHBORHOOD, RESIDENCES OR ADJACENT TO OR IN A WATERCOURSE.

C) WHEN SEDIMENTATION DEPOSITS REACH WITHIN 3" OF THE TOP OF THE BALES, REMOVE SEDIMENTATION OR ADD ADDITIONAL BALES ON SEDIMENTATION DIRECTLY BEHIND THE FIRST ROW OF BALES AS DIRECTED BY THE ENGINEER.

D) UPON ESTABLISHMENT OF GROUND COVER ON DISTURBED AREAS AND WHEN DIRECTED BY THE THE ENGINEER, HAY BALES WILL BE REMOVED AND USED AS MULCH. ANY SEDIMENTATION WILL BE THINLY SPREAD UPON ESTABLISHED GROUND COVER.



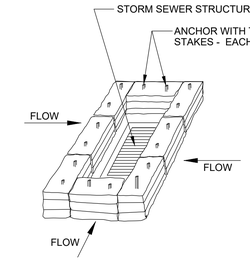
BALE PLACEMENT



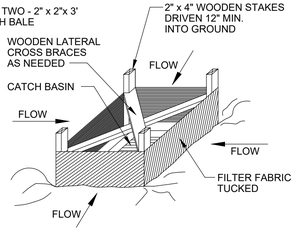
PREFERRED PLACEMENT

BALES PLACED AWAY FROM TOE OF SLOPE HAVE A LARGER CONFINEMENT AREA. ADDITIONAL BALES SHOULD BE ADDED BEHIND ORIGINAL BALES BEFORE SEDIMENT TOPS THE FIRST BALE.

DIKES HAY/STRAW BALES

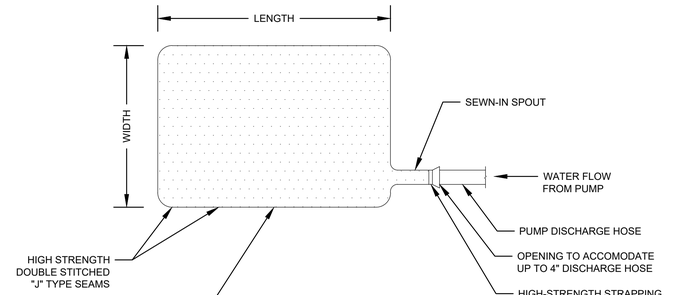


HAY BALE INSTALLATION AT CATCH BASIN

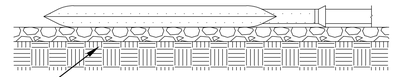


SILT FENCE INSTALLATION AT CATCH BASIN

CATCH BASIN IN A DEPRESSION

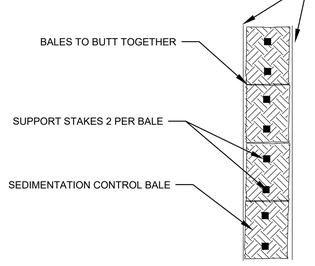


PLAN VIEW

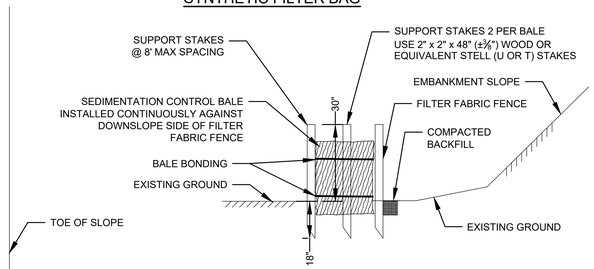


SIDE VIEW

SYNTHETIC FILTER BAG



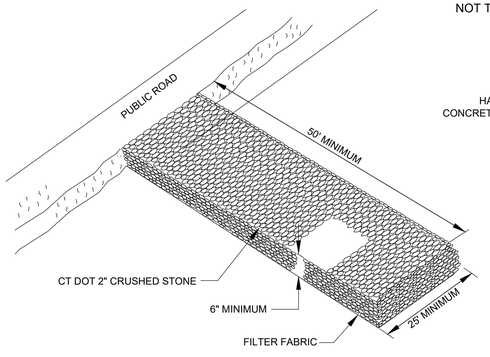
PLAN



SECTION

SEDIMENTATION CONTROL SYSTEM DOUBLE SILT FENCE WITH HAYBALES

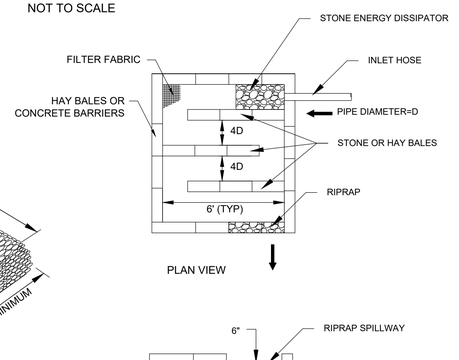
NOT TO SCALE



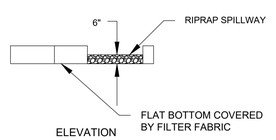
NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED,WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
2. ANTI-TRACKING PADS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.

ANTI-TRACKING PAD



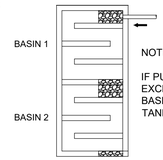
PLAN VIEW



ELEVATION

DEWATERING BASIN

NOT TO SCALE



NOTE:

IF PUMPING CAPACITY EXCEEDS BASIN CAPACITY, BASINS MAY BE USED IN TANDEM OR IN TIERS

NOTES:

1. VOLUME OF BASIN IS EQUAL TO THE MAXIMUM VOLUME OF WATER CAPABLE OF BEING PUMPED OVER ONE HOUR. THIS VOLUME CAN BE DETERMINED BY THE CONTRACTOR USING THE PUMP MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR TO SHOW APPROXIMATE LOCATION AND SIZE OF HIS PROPOSED DEWATERING BASIN(S) ON HIS EROSION AND SEDIMENTATION CONTROL PLANS. SEE SECTION 1.10, ENVIRONMENTAL COMPLIANCE.
3. DEWATERING BASIN(S) NOT TO BE LOCATED IN ANY WETLAND AREA.
4. THERE WILL BE NO SEPARATE PAYMENT FOR THE DEWATERING BASINS, BUT IT WILL BE INCLUDED IN THE COST OF THE RESPECTIVE ITEMS "COFFERDAM AND DEWATERING" AND SEDIMENT AND EROSION CONTROL.

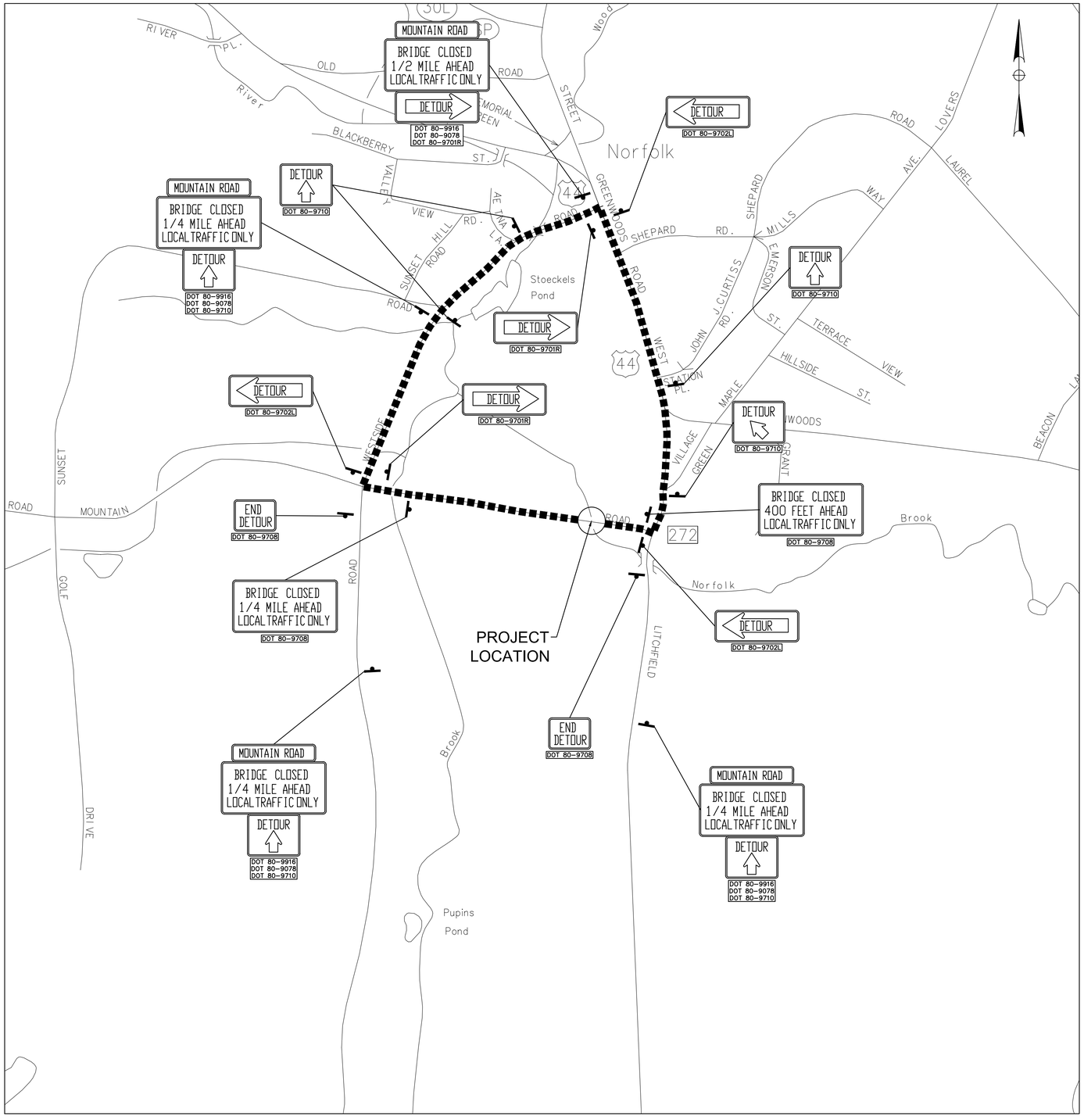
NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
SEDIMENT & EROSION CONTROL DETAILS

SED-02

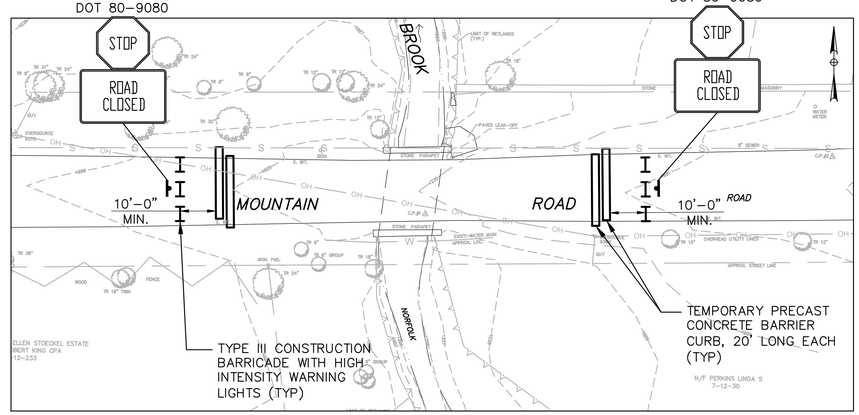


TRAFFIC DETOUR PLAN

SCALE: 1' = 400'

0 400' 800'

DOT 31-0552
DOT 80-9080



DOT 31-0552
DOT 80-9080

CONSTRUCTION AREA PLAN

SCALE: 1' = 20'

0 20' 40'

GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION. ADJUST ALL SIGN LOCATIONS IN THE FIELD AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL REMOVE OR COVER EXISTING SIGNS WHICH ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN, AS DIRECTED BY THE ENGINEER.
3. UPON COMPLETION OF THE PROJECT, ALL EXISTING SIGNS AND PAVEMENT MARKINGS WHICH ARE REMOVED IN ADVANCE OF STAGE CONSTRUCTION SHALL BE RE-ESTABLISHED AS DIRECTED BY THE ENGINEER.
4. TEMPORARY SIGNS AND OTHER TEMPORARY TRAFFIC PROTECTIVE DEVICES SHALL REMAIN IN PLACE AS SHOWN THROUGHOUT THE FULL DURATION OF EACH STAGE OF CONSTRUCTION. TRAFFICMEN SHALL BE REQUIRED WHEN DEVICES SHOWN ARE INSTALLED, RELOCATED, OR REMOVED.
5. ALL SIGNS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION, LATEST REVISION.
6. TEMPORARY PRECAST CONCRETE BARRIER CURB SHALL BE IN PLACE WHENEVER WORK HAS BEGUN AND THE CONTRACTOR IS NOT ACTIVELY WORKING AT THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY OF THE WORK SITE. SEE SPECIFICATIONS.

LEGEND

DETOUR ROUTE

CONSTRUCTION SIGN

NO.	REVISION	DATE	BY

DATE: February 2020
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY: JAC

CARDINAL ENGINEERING ASSOCIATES
3 Colony Street | Meriden, CT 06451 | 203-238-1969

REPLACEMENT OF MOUNTAIN ROAD BRIDGE NO. 097-004
OVER NORFOLK BROOK
NORFOLK, CONNECTICUT
DETOUR PLAN

DET-01

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