MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	1	227
PROJECT FILE NO.	605189		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

BRUCE FREEMAN RAIL TRAIL PHASE 2C

(BRIDGE NOS. C-19-015, C-19-038 & C-19-036)

IN THE TOWN OF

CONCORD

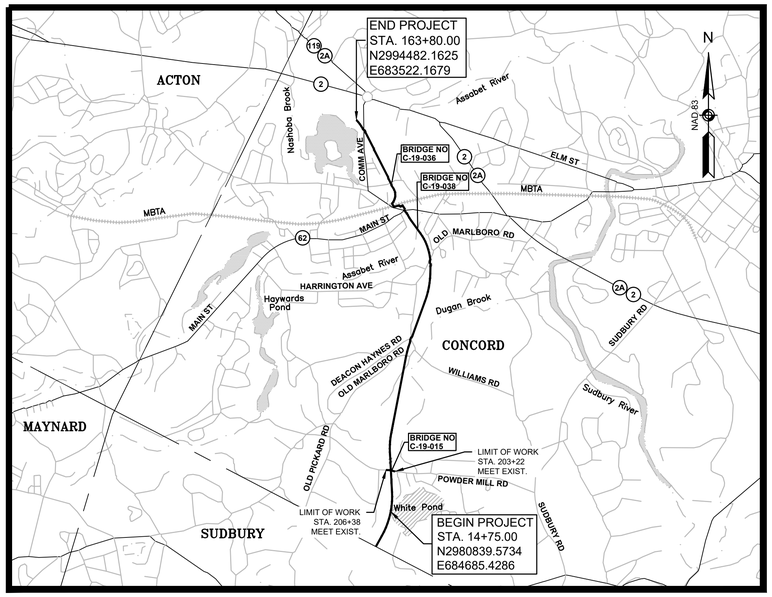
MIDDLESEX COUNTY

CM-002S(910)X

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2014 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, LRFD BRIDGE MANUAL - 2013 EDITION, THE GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES - 2012 EDITION AND THE CURRENT GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
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174-227	CROSS SECTIONS



0 2500 5000 7500 10000

SCALE: 1" = 2500'

LENGTH OF PROJECT
BFRT 2C = 14,905 FEET = 2.823 MILES
POWDER MILL ROAD = 316 FEET = 0.059 MILE
MAIN STREET = 398 FEET = 0.075 MILE

TRAIL DESIGN DESIGNATION

DESIGN SPEED	18 MPH
MINIMUM HORIZONTAL CURVE RADIUS	60'
MINIMUM LENGTH OF CREST VERTICAL CURVE	100'
MAXIMUM GRADE FOR LEVEL TERRAIN	4.5%* (7.5%* AT ADA/AAB ACCESSIBLE RAMPS)

* = TOLERANCE FOR CONSTRUCTION ±0.5%

GPI Greenman-Pedersen, Inc.
Engineers, Architects, Planners, Construction Engineers & Inspectors
181 Ballardvale Street, Suite 202, Wilmington, MA 01887
Tel: (978) 570-2999 Fax: (978) 658-3044
http://www.gpinet.com

DATE	DESCRIPTION	REV #

MassDOT Massachusetts Department of Transportation Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER _____ DATE _____

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR _____ DATE _____

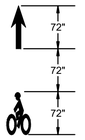
APPROVED

HIGHWAY ADMINISTRATOR _____ DATE _____

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GENERAL SYMBOLS

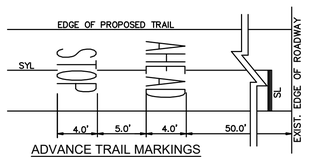
EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER ON BRIDGE OR JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
FES	FES	FLARED END STRUCTURE
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
Ⓒ	Ⓒ	CABLE MANHOLE
Ⓓ	Ⓓ	DRAINAGE MANHOLE
Ⓔ	Ⓔ	ELECTRIC MANHOLE
Ⓖ	Ⓖ	GAS MANHOLE
Ⓜ	Ⓜ	MISC MANHOLE
Ⓢ	Ⓢ	SEWER MANHOLE
Ⓣ	Ⓣ	TELEPHONE MANHOLE
Ⓦ	Ⓦ	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCE STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
		COMPOST FILTER TUBES
		TREE LINE OR LIMIT OF CLEARING AND GRUBBING
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		DRAINAGE SWALE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT



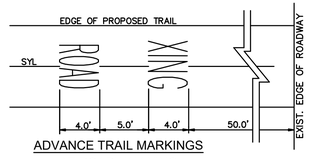
BIKE LANE MARKING DETAIL
NOT TO SCALE

PAVEMENT MARKINGS SYMBOLS

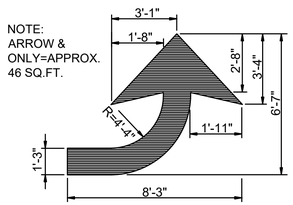
EXISTING	PROPOSED	DESCRIPTION (ALL THERMOPLASTIC)
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE
	CW	CROSSWALK
	SWL(T)	SOLID WHITE LINE (THERMOPLASTIC)
	SYL(T)	SOLID YELLOW LINE
	BWL(T)	BROKEN WHITE LINE
	BYL(T)	BROKEN YELLOW LINE
	DWL(T)	DOTTED WHITE LINE
	DYL(T)	DOTTED YELLOW LINE
	DWLEx(T)	DOTTED WHITE LINE EXTENSION
	DYLEx(T)	DOTTED YELLOW LINE EXTENSION
	DBWL(T)	DOUBLE WHITE LINE
	DBYL(T)	DOUBLE YELLOW LINE

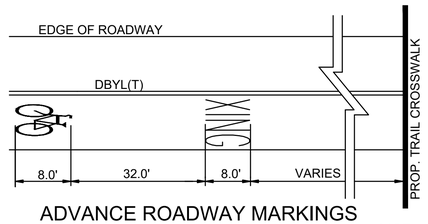


ADVANCE TRAIL MARKINGS
AT ROADWAY XING
NOT TO SCALE

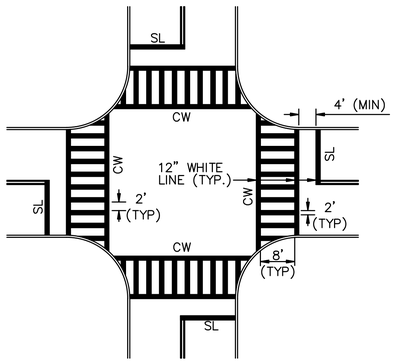


ADVANCE TRAIL MARKINGS
AT ROADWAY XING
NOT TO SCALE

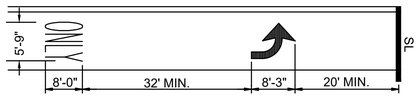




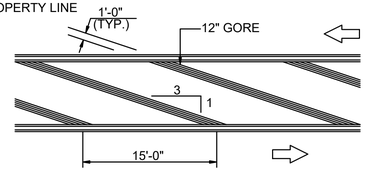
ADVANCE ROADWAY MARKINGS
AT TRAIL XING
NOT TO SCALE



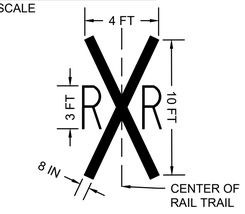
TYPICAL CROSSWALK MARKINGS
NOT TO SCALE



ARROW & ONLY DETAIL
NOT TO SCALE



GORE AREA DETAIL
NOT TO SCALE



RAILROAD CROSSING
PAVEMENT MARKING
NOT TO SCALE

GENERAL NOTES

1. TOPOGRAPHICAL INFORMATION WAS PROVIDED BY GREEN INTERNATIONAL AFFILIATES, INC, MEDFORD, MASSACHUSETTS DURING MAY 2007, CHAPPELL ENGINEERING ASSOCIATES, LLC DURING MAY 2009, AND SUPPLEMENTED BY GREENMAN-PEDERSEN, INC DURING AUGUST 2013. VERTICAL DATUM IS BASED ON NAVD1988. HORIZONTAL DATUM IS BASED ON NAD1983.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE EXACTLY AND TO PRESERVE ANY AND ALL UNDERGROUND UTILITIES. CALL "DIG-SAFE" 1-888-DIGSAFE (344-7233) AT LEAST 72 HOURS BEFORE COMMENCING CONSTRUCTION.
3. WHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
4. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
5. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
6. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS, OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE & RESET" (R&R).
7. ALL EXISTING STATE, COUNTY, CITY AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
8. ALL JOINTS BETWEEN NEW SURFACE PAVEMENT AND EXISTING SURFACE PAVEMENT TO REMAIN SHALL BE COATED WITH A HOT MIX ASPHALT JOINT SEALANT MEETING SPECIAL PROVISION ITEM 453.
9. ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE COMPOST TOPSOIL PLACED AND SEEDED. THE COPMPOST TOPSOIL SHALL HAVE A MINIMUM DEPTH OF 4 INCHES AND SHALL BE PLACED FLUSH WITH THE TOP OF THE ADJACENT CURB, EDGING, BERM OR PAVEMENT SURFACE.
10. THE LIMIT OF WORK AREA SHALL BE THE RIGHT OF WAY UNLESS SHOWN OTHERWISE.
11. PRIOR TO THE START OF ANY NEW UTILITY WORK, ALL ELEVATIONS OF EXISTING UTILITIES IN THOSE AREAS ARE TO BE VERIFIED. THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY SHOULD ANY DISCREPANCIES OCCUR.
12. ALL CASTINGS SHALL BE SET FLUSH WITH FINISHED GRADE.
13. ALL PUBLICLY OWNED GATE BOXES, SERVICE BOXES, MANHOLE FRAMES AND COVERS SHALL BE ADJUSTED TO GRADE BY THE CONTRACTOR.
14. ALL NEW SIDEWALKS AND DRIVEWAY GRADES SHALL MATCH EXISTING GRADES AT BACK OF SIDEWALK LINE UNLESS SHOWN OTHERWISE ON THE PLANS AND CROSS-SECTIONS.
15. THE CONTRACTOR SHALL TAKE EVERY PRECAUTION TO PROTECT ALL EXISTING TREES AND ROOTS THAT ARE NOT DESIGNATED FOR REMOVAL.
16. CONTRACTOR TO CONTACT ENGINEER PRIOR TO INSTALLATION OF BOUNDS FOR FINAL LOCATIONS.
17. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5 FEET SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5 FEET WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
18. CONTRACTOR SHALL REMOVE EXISTING ORGANIC MATERIAL THAT IS UNSUITABLE FOR REUSE AND DISPOSE OF OUTSIDE OF THE PROJECT LIMITS. IT IS ASSUMED THAT ALL OTHER EXCAVATED SUITABLE MATERIAL WILL REMAIN WITHIN THE PROJECT LIMITS. SEE SPECIAL PROVISIONS FOR DETAILS.
19. THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY'S RAILROAD OPERATIONS DIRECTORATE "GUIDELINES AND PROCEDURES FOR CONSTRUCTION ON MBTA RAILROAD PROPERTY". SUCH COMPLIANCE SHALL INCLUDE BUT NOT BE LIMITED TO ISSUANCE OF RAILROAD PROTECTIVE INSURANCE, SAFETY TRAINING AND RECEIPT/CONFORMANCE WITH STIPULATION IN PERMITS/LICENSE AGREEMENTS FOR ANY WORK PROPOSED ON MBTA PROPERTY.

GENERAL ABBREVIATIONS

AADT	ANNUAL AVERAGE DAILY TRAFFIC	EXC	EXCAVATION	PVC	POINT OF VERTICAL CURVATURE
ABAN	ABANDON	F&C	FRAME AND COVER	PVI	POINT OF VERTICAL INTERSECTION
ADJ	ADJUST	F&G	FRAME AND GRATE	PVT	POINT OF VERTICAL TANGENCY
APPROX.	APPROXIMATE	FDN.	FOUNDATION	PVMT	PAVEMENT
A.C.	ASPHALT CONCRETE	FLDSTN	FIELDSTONE	PWW	PAVED WATER WAY
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE	GAR	GARAGE	R	RADIUS OF CURVATURE
BIT.	BITUMINOUS	GD	GROUND	R&D	REMOVE AND DISPOSE
BC	BOTTOM OF CURB	GG	GAS GATE	RCP	REINFORCED CONCRETE PIPE
BD.	BOUND	GI	GUTTER INLET	RD	ROAD
BL	BASELINE	GIP	GALVANIZED IRON PIPE	RDWY	ROADWAY
BLDG	BUILDING	GRAN	GRANITE	REM	REMOVE
BM	BENCHMARK	GRAV	GRAVEL	RET	RETAIN
BO	BY OTHERS	GRD	GUARD	RET WALL	RETAINING WALL
BOS	BOTTOM OF SLOPE	HDW	HEADWALL	ROW	RIGHT OF WAY
BR.	BRIDGE	HMA	HOT MIX ASPHALT	RR	RAILROAD
CB	CATCH BASIN	HOR	HORIZONTAL	R&R	REMOVE AND RESET
CBCI	CATCH BASIN WITH CURB INLET	HYD	HYDRANT	R&S	REMOVE AND STACK
CC	CEMENT CONCRETE	INV	INVERT	RT	RIGHT
CCM	CEMENT CONCRETE MASONRY	JCT	JUNCTION	SB	STONE BOUND
CEM	CEMENT	L	LENGTH OF CURVE	SHLD	SHOULDER
CI	CURB INLET	LB	LEACH BASIN	SMH	SEWER MANHOLE
CIP	CAST IRON PIPE	LP	LIGHT POLE	ST	STREET
CLF	CHAIN LINK FENCE	LT	LEFT	STA	STATION
CL	CENTERLINE	MAX	MAXIMUM	SSD	STOPPING SIGHT DISTANCE
CMP	CORRUGATED METAL PIPE	MB	MAILBOX	SHLO	STATE HIGHWAY LAYOUT LINE
CTR	CENTER	MH	MANHOLE	SW	SIDEWALK
CO.	COUNTY	MHB	MASSACHUSETTS HIGHWAY BOUND	T	TANGENT DISTANCE OF CURVE/TRUCK %
CONC	CONCRETE	MIN	MINIMUM	TAN	TANGENT
CONT	CONTINUOUS	NIC	NOT IN CONTRACT	TEMP	TEMPORARY
CONST	CONSTRUCTION	NO.	NUMBER	TC	TOP OF CURB
CR GR	CROWN GRADE	PC	POINT OF CURVATURE	TOS	TOP OF SLOPE
CSP	CORRUGATED STEEL PIPE	PCC	POINT OF COMPOUND CURVATURE	TYP	TYPICAL
DHV	DESIGN HOURLY VOLUME	P.G.L.	PROFILE GRADE LINE	UP	UTILITY POLE
DI	DROP INLET	PI	POINT OF INTERSECTION	VAR	VARIES
DIA	DIAMETER	POC	POINT ON CURVE	VERT	VERTICAL
DIP	DUCTILE IRON PIPE	POT	POINT ON TANGENT	VC	VERTICAL CURVE
DW	STEADY DON'T WALK - PORTLAND ORANGE	PRC	POINT OF REVERSE CURVATURE	WCR	WHEEL CHAIR RAMP
DWY	DRIVEWAY	PROJ	PROJECT	WG	WATER GATE
ELEV (or EL.)	ELEVATION	PROP	PROPOSED	WIP	WROUGHT IRON PIPE
EOP	EDGE OF PAVEMENT	PSB	PLANTABLE SOIL BORROW	WM	WATER METER/WATER MAIN
EXIST (or EX)	EXISTING	PT	POINT OF TANGENCY	X-SECT	CROSS SECTION

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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MA	CM-002S(910)X	2	227
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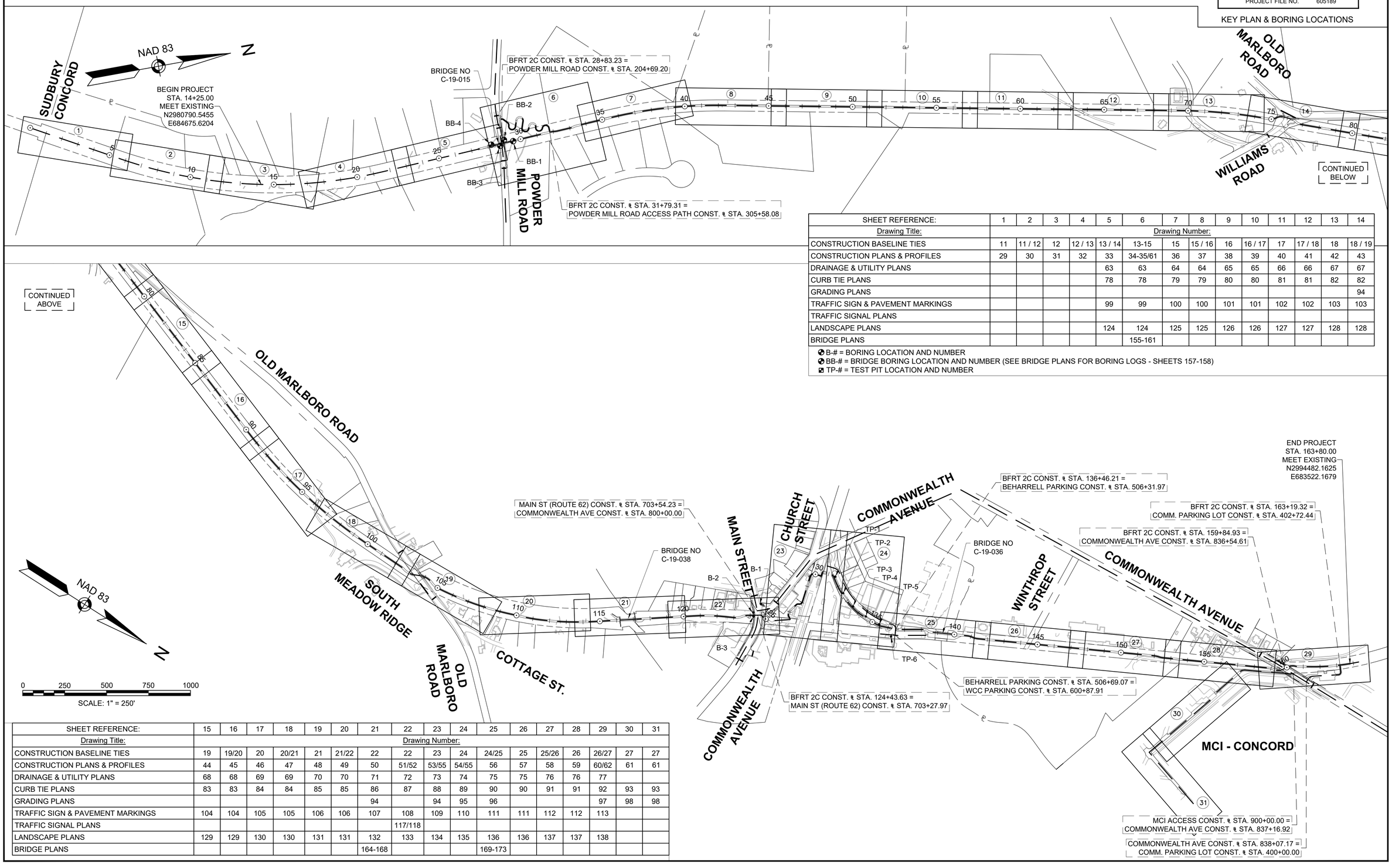
LEGEND & ABBREVIATIONS

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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	3	227
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KEY PLAN & BORING LOCATIONS



SHEET REFERENCE:	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Drawing Title:	Drawing Number:													
CONSTRUCTION BASELINE TIES	11	11 / 12	12	12 / 13	13 / 14	13-15	15	15 / 16	16	16 / 17	17	17 / 18	18	18 / 19
CONSTRUCTION PLANS & PROFILES	29	30	31	32	33	34-35/61	36	37	38	39	40	41	42	43
DRAINAGE & UTILITY PLANS					63	63	64	64	65	65	66	66	67	67
CURB TIE PLANS					78	78	79	79	80	80	81	81	82	82
GRADING PLANS														94
TRAFFIC SIGN & PAVEMENT MARKINGS					99	99	100	100	101	101	102	102	103	103
TRAFFIC SIGNAL PLANS														
LANDSCAPE PLANS					124	124	125	125	126	126	127	127	128	128
BRIDGE PLANS						155-161								

- B-# = BORING LOCATION AND NUMBER
- BB-# = BRIDGE BORING LOCATION AND NUMBER (SEE BRIDGE PLANS FOR BORING LOGS - SHEETS 157-158)
- TP-# = TEST PIT LOCATION AND NUMBER

SHEET REFERENCE:	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Drawing Title:	Drawing Number:																
CONSTRUCTION BASELINE TIES	19	19/20	20	20/21	21	21/22	22	22	23	24	24/25	25	25/26	26	26/27	27	27
CONSTRUCTION PLANS & PROFILES	44	45	46	47	48	49	50	51/52	53/55	54/55	56	57	58	59	60/62	61	61
DRAINAGE & UTILITY PLANS	68	68	69	69	70	70	71	72	73	74	75	75	76	76	77		
CURB TIE PLANS	83	83	84	84	85	85	86	87	88	89	90	90	91	91	92	93	93
GRADING PLANS							94		94	95	96				97	98	98
TRAFFIC SIGN & PAVEMENT MARKINGS	104	104	105	105	106	106	107	108	109	110	111	111	112	112	113		
TRAFFIC SIGNAL PLANS								117/118									
LANDSCAPE PLANS	129	129	130	130	131	131	132	133	134	135	136	136	137	137	138		
BRIDGE PLANS							164-168				169-173						

605189_HDI(KEY).DWG Plotted on 17-Aug-2016 10:55 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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MA	CM-002S(910)X	4	227
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BORING LOGS

605189_HD(KEY).DWG Plotted on 21-Sep-2016 11:36 AM

TEST PIT LOG

Nobis — Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #1
SHEET 1 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±129
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	8:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015

Depth Below Grade (ft)	Strata Change & Water Level	Subsurface Description	Excavation Effort	Boulder Qty/Class	USDA Soil Classification
1	TOPSOIL	G-1: Black, fine SAND, little Silt, several roots, moist (TOPSOIL).	E	-	Sandy Loam
2	SUBSOIL 2.3'	G-2: Brown, fine to coarse SAND, little fine to coarse Gravel, little Silt, few roots, moist (SUBSOIL).	E	-	Gravelly, Loamy Sand
3	SAND 3.5'	G-3: Tan, fine to coarse SAND, little fine to coarse Gravel, trace Silt, few cobbles, moist.	E / M	2A	Cobbly, Gravelly, Sand
4 5 6		G-4: Gray/tan, fine to coarse SAND, some fine to coarse Gravel, trace Silt, few cobbles, moist. [Laboratory Analysis Performed. Particle Size Analysis: Sand = 57%, Gravel = 35.0%, Silt = 8%]	E / M	3A	
7 8 9 10 11 12 13 14 15		Test pit terminated at approximately 6 feet below ground surface.			

Notes: 1.) No groundwater was encountered
2.) No evidence of redoxymorphic features was observed
3.) Excavation backfilled with native soils and compacted with excavator bucket.

WATER SYMBOLS
▼ Groundwater
▽ Estimated Seasonal High Groundwater

6.5' × 3.5' — N

BOULDER	CLASS
12" - 24"	A
24" - 36"	B
>36"	C

PROPORTIONS USED	
0-10%	Trace
10-20%	Little
20-35%	Some
35-50%	And

EXCAVATION EFFORT
E = Easy
M = Moderate
D = Difficult

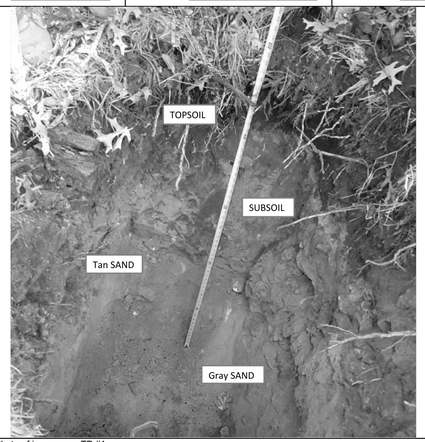
TEST PIT LOG

Nobis — Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #1
SHEET 2 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±129
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	8:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015



Notes: 4.) Photo of in-progress TP #1.

6.5' × 3.5' — N

TEST PIT LOG

Nobis — Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #2
SHEET 1 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±129
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	12:30pm
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015

Depth Below Grade (ft)	Strata Change & Water Level	Subsurface Description	Excavation Effort	Boulder Qty/Class	USDA Soil Classification
1	TOPSOIL 1.5'	G-1: Black, fine SAND, some Silt, little fine to coarse Gravel, several roots, moist (TOPSOIL mixed with ballast).	E	-	Gravelly, Loamy Sand
2	SAND 2.5'	G-2: Brown/tan, fine to medium SAND, little Silt, little fine to coarse Gravel, moist.	E / M	1A	
3	SILTY SAND 3.5'	G-3: Dark brown, fine to medium SAND, some Silt, very few plant fibers, moist. [Laboratory Analysis Performed. Particle Size Analysis: Sand = 76%, Silt = 24%, Gravel = 0%]	E	-	Loamy Sand
4 5	SAND 4.5'	G-4: Brown, fine to medium SAND, trace Silt, trace fine Gravel, moist.			Sand
6 7		G-5: Gray/brown, fine to medium SAND, trace fine Gravel, trace Silt, moist.		1A	
8 9 10 11 12 13 14 15		Test pit terminated at approximately 7 feet below ground surface.			

Notes: 1.) No groundwater was encountered
2.) No evidence of redoxymorphic features was observed
3.) Excavation backfilled with native soils and compacted with excavator bucket.

WATER SYMBOLS
▼ Groundwater
▽ Estimated Seasonal High Groundwater

9' × 3.5' — N

BOULDER	CLASS
12" - 24"	A
24" - 36"	B
>36"	C

PROPORTIONS USED	
0-10%	Trace
10-20%	Little
20-35%	Some
35-50%	And

EXCAVATION EFFORT
E = Easy
M = Moderate
D = Difficult

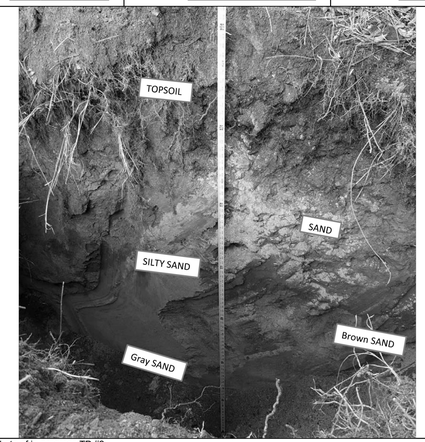
TEST PIT LOG

Nobis — Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #2
SHEET 2 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±129
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	12:30pm
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015



Notes: 4.) Photo of in-progress TP #2.

9' × 3.5' — N

TEST PIT LOG

Nobis Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #3
SHEET 1 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

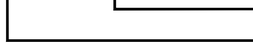
Engineer	Jason Keohane	Make	CAT	Ground El.	±128
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	10:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015

Depth Below Grade (ft)	Strata Change & Water Level	Subsurface Description	Excavation Effort	Boulder Qty/Class	USDA Soil Classification
1	TOPSOIL 1.5'	G-1: Black, fine SAND and coarse GRAVEL, trace silt, moist (TOPSOIL mixed with ballast).	E	-	Very Gravelly, Sand
2	FILL 3.4'	G-2: Brown, fine to coarse SAND, little fine to coarse Gravel, trace Silt, few cobbles, moist.	E / M	2A	Cobbly, Gravelly, Sand
3	SILTY SAND 4.0'	G-3: Brown, fine to medium SAND, some fine Gravel, some Silt, moist.	E	-	Loamy sand
4	SILTY SAND 4.5'	G-4: Black, fine to medium SAND, some Silt, trace fine to medium Gravel, moist.			
5	SAND	G-5: Light brown, fine to coarse SAND, trace fine to coarse Gravel, trace Silt, very few cobbles, moist.			Sand
6					
7		Test pit terminated at approximately 6.5 feet below ground surface.			
8					
9					
10					
11					
12					
13					
14					
15					

[Laboratory Analysis Performed. Particle Size Analysis: Sand = 52.5%, Silt = 23%, Gravel = 24.5%]

Notes: 1.) No groundwater was encountered
2.) No evidence of redoxymorphic features was observed
3.) Excavation backfilled with native soils and compacted with excavator bucket.

WATER SYMBOLS
Groundwater
Estimated Seasonal High Groundwater



BOULDER	CLASS
12" - 24"	A
24" - 36"	B
>36"	C

PROPORTIONS USED	
0-10%	Trace
10-20%	Little
20-35%	Some
35-50%	And

EXCAVATION EFFORT
E = Easy
M = Moderate
D = Difficult

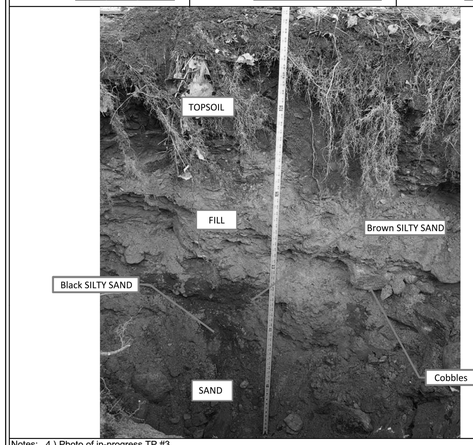
TEST PIT LOG

Nobis Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #3
SHEET 2 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±128
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	10:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015



Notes: 4.) Photo of in-progress TP #3.

TEST PIT LOG

Nobis Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

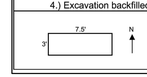
TEST PIT NO. TP #4
SHEET 1 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±128
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	11:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015

Depth Below Grade (ft)	Strata Change & Water Level	Subsurface Description	Excavation Effort	Boulder Qty/Class	USDA Soil Characteristics
1	TOPSOIL	G-1: Black, fine to coarse SAND, some Silt, little fine to coarse Gravel, several roots, moist (TOPSOIL mixed with ballast).	E	-	Gravelly, Sandy Loam
2	FILL	G-2: Brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt, several cobbles, moist (FILL).	E / M	1A	Cobbly, Very Gravelly, Sand
3					
4					
5	SILTY SAND 6.3'	G-3: Dark brown, fine SAND, some Silt, trace fine Gravel, several roots, moist. [Laboratory Analysis Performed. Particle Size Analysis: Sand = 68.1%, Silt = 28%, Gravel = 3.9%]	E	-	Loamy Sand
6		G-4: Tan, fine to medium SAND, little Silt, trace fine Gravel, several roots, moist.			
7	SAND	G-5: Light brown, fine to medium SAND, trace fine to coarse Gravel, trace Silt, moist.			Sand
8		Test pit terminated at approximately 7 feet below ground surface.			
9					
10					
11					
12					
13					
14					
15					

Notes: 1.) Sample G-3 is likely buried topsoil
2.) No groundwater was encountered
3.) No evidence of redoxymorphic features was observed
4.) Excavation backfilled with native soils and compacted with excavator bucket.

WATER SYMBOLS
Groundwater
Estimated Seasonal High Groundwater



BOULDER	CLASS
12" - 24"	A
24" - 36"	B
>36"	C

PROPORTIONS USED	
0-10%	Trace
10-20%	Little
20-35%	Some
35-50%	And

EXCAVATION EFFORT
E = Easy
M = Moderate
D = Difficult

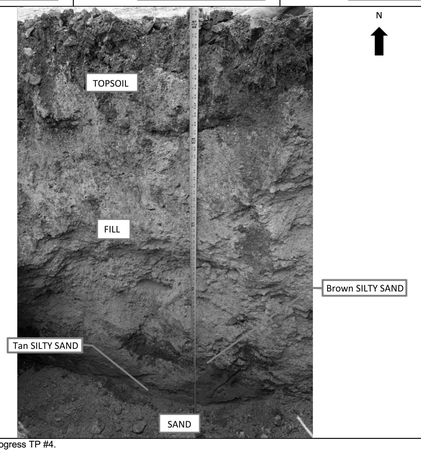
TEST PIT LOG

Nobis Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #4
SHEET 2 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±128
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	11:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015



Notes: 5.) Photo of in-progress TP #4.

TEST PIT LOG

Nobis Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #5
SHEET 1 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±127
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	10:30am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015

Depth Below Grade (ft)	Strata Change & Water Level	Subsurface Description	Excavation Effort	Boulder Qty/Class	USDA Soil Characteristics
1	TOPSOIL	G-1: Black, fine to coarse SAND, some Silt, little fine to coarse Gravel, several roots, moist (TOPSOIL mixed with Ballast).	E	-	Gravelly, Sandy Loam
2	FILL 3.5'	G-2: Brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt, several cobbles, moist (FILL).	E / M	3A	Cobbly, Very Gravelly, Sand
3					
4	SILTY SAND 4.5'	G-3: Dark brown, fine SAND, some Silt, trace fine Gravel, several roots, moist.	E	-	Loamy Sand
5		G-4: Tan, fine to medium SAND, little Silt, trace fine Gravel, several roots, moist.			
6	SAND	G-5: Gray, fine to medium SAND, trace fine to coarse Gravel, moist. [Laboratory Analysis Performed. Particle Size Analysis: Sand = 96.3%, Gravel = 3.7%, Silt = 0%]	E / M	2A	Sand
7		Test pit terminated at approximately 6.5 feet below ground surface.			
8					
9					
10					
11					
12					
13					
14					
15					

Notes: 1.) Sample G-3 is likely buried topsoil
2.) No groundwater was encountered
3.) No evidence of redoxymorphic features was observed
4.) Excavation backfilled with native soils and compacted with excavator bucket.

WATER SYMBOLS
Groundwater
Estimated Seasonal High Groundwater

BOULDER	CLASS
12" - 24"	A
24" - 36"	B
>36"	C

PROPORTIONS USED	
0-10%	Trace
10-20%	Little
20-35%	Some
35-50%	And

EXCAVATION EFFORT
E = Easy
M = Moderate
D = Difficult

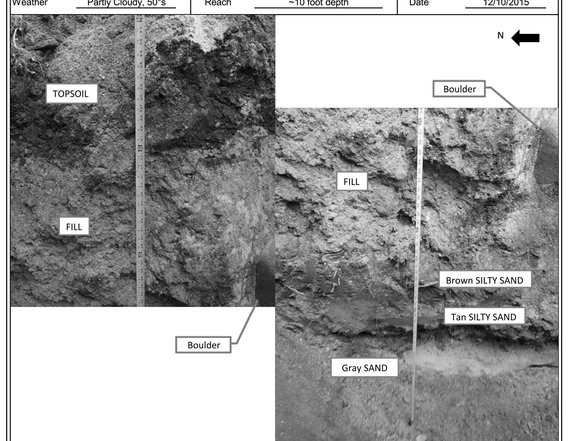
TEST PIT LOG

Nobis Engineering a Sustainable Future

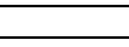
PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #5
SHEET 2 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±127
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	10:30am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015



Notes: 5.) Photo of in-progress TP #5.



TEST PIT LOG

Nobis Engineering a Sustainable Future

PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #6
SHEET 1 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

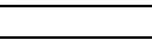
Engineer	Jason Keohane	Make	CAT	Ground El.	±128
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	9:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015

Depth Below Grade (ft)	Strata Change & Water Level	Subsurface Description	Excavation Effort	Boulder Qty/Class	USDA Soil Characteristics
1	TOPSOIL 1.5'	G-1: Black, fine SAND, little Silt, trace fine to coarse Gravel, several roots, moist (TOPSOIL).	E		Loamy Sand
2	FILL 3.2'	Black, fine SAND, some Silt, little fine to coarse Gravel, few slag pieces, few concrete pieces, moist (FILL).	M		Gravelly, Sandy Loam
3		G-2: Light brown, fine to coarse SAND, trace fine Gravel, trace Silt, moist (FILL).			Gravelly, Sand
4	SILTY SAND 4.5'	Dark brown, fine SAND, some silt, several roots, moist.	E		Sandy Loam
5		Orange/brown, fine SAND, some silt, trace fine Gravel, several roots, moist.			
6	SAND	G-3: Light brown, fine to coarse SAND, some fine to coarse Gravel, trace Silt, very few plant fibers, moist. [Laboratory Analysis Performed. Particle Size Analysis: Sand = 69.7%, Gravel = 22.3%, Silt = 8%]			Gravelly, Sand
7		Test pit terminated at approximately 6 feet below ground surface.			
8					
9					
10					
11					
12					
13					
14					
15					

Tan, fine to coarse SAND, little Silt, little fine to coarse Gravel, moist (FILL).

Notes: 1.) Buried concrete structure encountered at 2.7 feet depth at staked location. The test pit was moved ~5 feet north and continued.
2.) The dark brown material (part of the silty sand strata) is likely buried topsoil
3.) No groundwater was encountered
4.) No evidence of redoxymorphic features was observed
5.) Excavation backfilled with native soils and compacted with excavator bucket.

WATER SYMBOLS
Groundwater
Estimated Seasonal High Groundwater



BOULDER	CLASS
12" - 24"	A
24" - 36"	B
>36"	C

PROPORTIONS USED	
0-10%	Trace
10-20%	Little
20-35%	Some
35-50%	And

EXCAVATION EFFORT
E = Easy
M = Moderate
D = Difficult

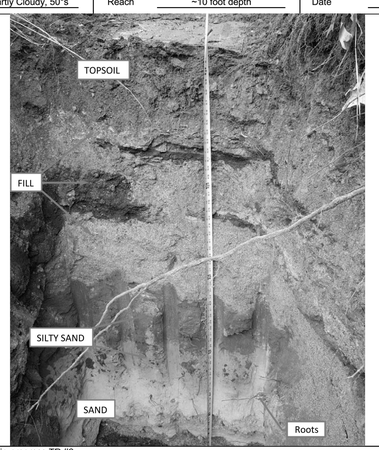
TEST PIT LOG

Nobis Engineering a Sustainable Future

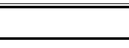
PROJECT
Bruce Freeman Rail Trail - Phase 2C
West Concord, Massachusetts

TEST PIT NO. TP #6
SHEET 2 of 2
FILE NO. 85430.03
CHKD BY Brien Waterman

Engineer	Jason Keohane	Make	CAT	Ground El.	±128
Contractor	Town of Concord	Model	420F IT	Datum	NAVD88
Operator	Andy Giles	Capacity	~1/4 cubic yard	Time Start	9:00am
Weather	Partly Cloudy, 50°s	Reach	~10 foot depth	Date	12/10/2015



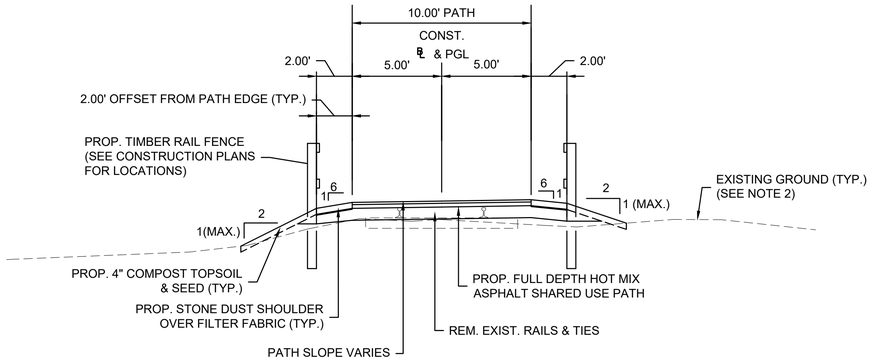
Notes: 6.) Photo of in-progress TP #6.



605189_HDI(KEY).DWG Plotted on 21-Sep-2016 11:36 AM

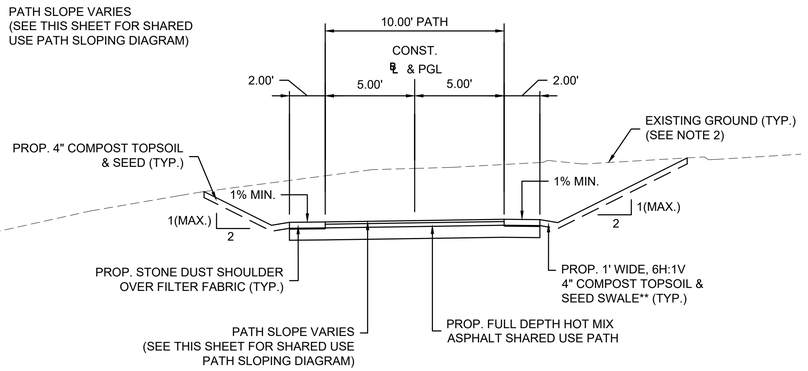
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	6	227
PROJECT FILE NO.	605189		

TYPICAL SECTIONS



* ± 0.5% CONSTRUCTION TOLERANCE
(SEE DIAGRAM BELOW FOR SLOPE OF PATH)

FILL SECTION



CUT SECTION

* ± 0.5% CONSTRUCTION TOLERANCE
(SEE DIAGRAM BELOW FOR SLOPE OF PATH)

**SWALES LONGER THAN 500' SHALL UTILIZE A 3' WIDTH OF MATTING FOR EROSION CONTROL FOR ENTIRE LENGTH (ITEM 767.9)
(STA. 27+40-30+00 RT, 24+25-31+84 LT, 62+50-67+90 LT, 95+95-102+50 LT, 96+03-101+77 RT, 144+74-150+74 LT, 149+99-156+49 RT)

TYPICAL SECTION - 10' WIDE PATH

SCALE 1" = 4'
STA. 27+40± - STA. 28+54±
STA. 29+23± - STA. 75+79±
STA. 76+22± - STA. 103+31±
STA. 103+69± - STA. 116+13±
STA. 117+66± - STA. 124+27±
STA. 140+41± - STA. 159+71±
STA. 160+04± - STA. 163+80±
(SEE NOTE 1)

NOTES:

1. THE SECTIONS OF PROPOSED ROADWAY NOT COVERED IN THE RANGE OF STATIONS ASSOCIATED WITH THE TYPICAL SECTIONS ARE EITHER IN TRANSITION OR ARE LOCATED AT INTERSECTIONS AND THEREFORE HAVE NOT BEEN SHOWN. REFER TO CROSS SECTION SHEETS FOR MORE DETAILS.

2. CONTRACTOR SHALL REMOVE EXISTING ORGANIC MATERIAL (ABOVE RAILROAD BALLAST) THAT IS UNSUITABLE FOR REUSE AND DISPOSE OF OUTSIDE OF THE PROJECT LIMITS. IT IS ASSUMED THAT ALL OTHER EXCAVATED SUITABLE MATERIAL WILL REMAIN WITHIN THE PROJECT LIMITS. SEE SPECIAL PROVISIONS FOR DETAILS.

PAVEMENT NOTES

FULL DEPTH HOT MIX ASPHALT SHARED USE PATH

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2-1/4" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER

FOUNDATION: 2" - 8" GRAVEL BORROW (M1.03.0 TYPE B) (SEE NOTE BELOW) OVER SPECIAL BORROW AS REQUIRED (SEE NOTE BELOW)

NOTE: SUBBASE SHALL BE A MINIMUM OF 2" GRAVEL BORROW FOR LEVELING OVER RAILROAD BALLAST. SUBBASE SHALL BE 8" GRAVEL BORROW OVER SPECIAL BORROW AT FILL SECTIONS IN AREAS OF WETLANDS AND OTHER UNSUITABLE MATERIAL IN ACCORDANCE WITH SECTION 150 AND 170 OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

PAVED SHARED USE PATH OVER BRIDGES
(OVER THE NASHOBA BROOK, SEE BRIDGE PLANS FOR DETAILS)

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2-1/4" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER

FOUNDATION: VARIABLE DEPTH CRUSHED STONE (M2.01.1) OVER
2" SAND OVER
MEMBRANE WATERPROOFING OVER
EXISTING 8" REINFORCED CONCRETE DECK

FULL DEPTH HOT MIX ASPHALT CONSTRUCTION
(AT ROADWAY CROSSINGS & MAIN ST. AND COMM. AVE.)

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER
1-3/4" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER

INTERMEDIATE COURSE: 3" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
3" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER
8" GRAVEL BORROW (M1.03.0 TYPE B)

FULL DEPTH WIDENING LESS THAN 4 FEET

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER
1-3/4" SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC-12.5) OVER

BASE: 6" HIGH-EARLY-STRENGTH CEMENT CONCRETE BASE COURSE OVER

SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B)

PAVEMENT MICROMILLING & RESURFACING
(MAIN ST. & COMM. AVE.)

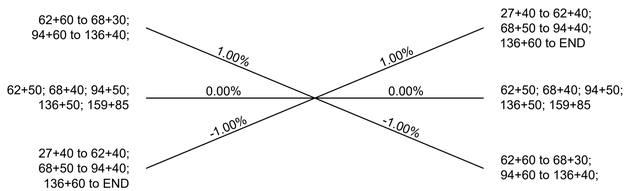
SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5)

SURFACE MILLING: 1-3/4" PAVEMENT MICRO-MILLING TO MATCH EXISTING CROSS SLOPE

STONE DUST SHOULDER

SURFACE: 4" STONE DUST (SPECIAL PROVISION ITEM 704.2) OVER GEOTEXTILE FABRIC FOR SEPARATION OVER

FOUNDATION: 2" - 8" GRAVEL BORROW (M1.03.0 TYPE B) (SEE NOTE UNDER FULL DEPTH HOT MIX ASPHALT SHARED USE PATH)



SHARED USE PATH SLOPING

CEMENT CONCRETE SIDEWALKS, REST AREAS & WHEELCHAIR RAMPS:

SURFACE COURSE: 4" CEMENT CONCRETE (AIR ENTRAINED 4000 PSI, 3/4", 610) OVER

SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B)

CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

SURFACE: 6" CEMENT CONCRETE (AIR ENTRAINED 4000 PSI, 3/4", 610) OVER

FOUNDATION: 8" GRAVEL BORROW (TYPE B)

HEAVY DUTY CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

SURFACE: 8" CEMENT CONCRETE (AIR ENTRAINED 4000 PSI, 3/4", 610) OVER

FOUNDATION: 8" GRAVEL BORROW (TYPE B)

COBBLE STONE SPLITTER ISLANDS:

SURFACE COURSE: 4" COBBLE STONE OVER

SUBBASE: 4" CEMENT CONCRETE (AIR ENTRAINED 4000 PSI, 3/4", 610)

HOT MIX ASPHALT SIDEWALKS

SURFACE: 1" SUPERPAVE SURFACE COURSE - 9.5 (SSC-9.5) OVER
1-1/2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B OR EXISTING GRAVEL BORROW TO REMAIN)

HOT MIX ASPHALT DRIVEWAYS

SURFACE COURSE: 1-1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER

INTERMEDIATE COURSE: 2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

FOUNDATION: 8" GRAVEL BORROW (M1.03.0 TYPE B)

FULL DEPTH HOT MIX ASPHALT PARKING LOTS

SURFACE COURSE: 1-1/2" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER

INTERMEDIATE COURSE: 2-1/2" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0) OVER

FOUNDATION: 8" GRAVEL BORROW (M1.03.0 TYPE B) FOR LEVELING

PERVIOUS PAVERS

SURFACE COURSE: POROUS PAVER (SPECIAL PROVISION ITEM 708.35) OVER

FOUNDATION: 2" DOUBLE WASHED 1/4" LEVELING STONE OVER
4" DOUBLE WASHED 3/4" STONE OVER
18" DOUBLE WASHED 1" TO 1-1/2" CRUSHED STONE OVER

SUBBASE: GRAVEL BORROW (M1.03.0 TYPE B) AS REQUIRED

TACK COAT

ASPHALT EMULSION FOR TACK COAT (RS-1H) SHALL BE APPLIED PRIOR TO PAVING HMA OVERLAYS TO BOND LAYERS FOR FLEXURAL STRENGTH. HMA JOINT SEALANT SHALL BE APPLIED TO ALL JOINTS PRIOR TO PAVING THE SURFACE COURSE.
ASPHALT EMULSION FOR TACK COAT (RS-1H) SHALL BE APPLIED AT THE RATE OF 0.07 GAL/S.Y. FOR MILLED SURFACES AND 0.05 GAL/S.Y. FOR SMOOTH TIGHT PAVED SURFACES.

HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

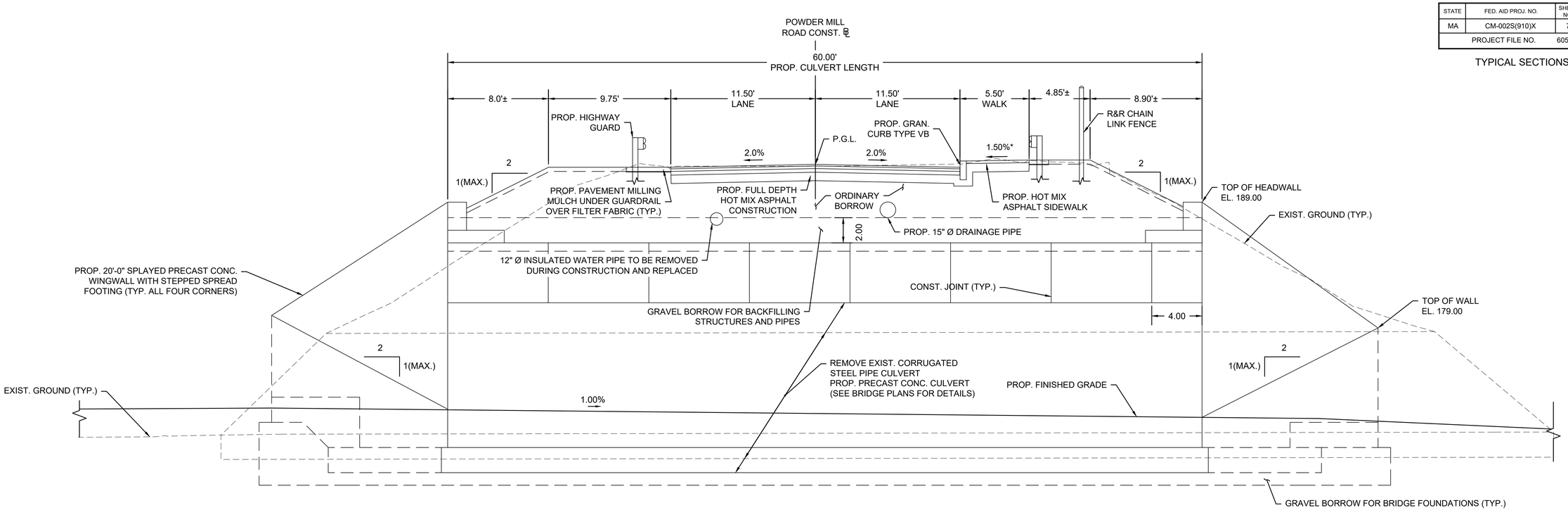
605189_HD(TYP).DWG Plotted on 17-Aug-2016 10:55 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	7	227
PROJECT FILE NO.	605189		

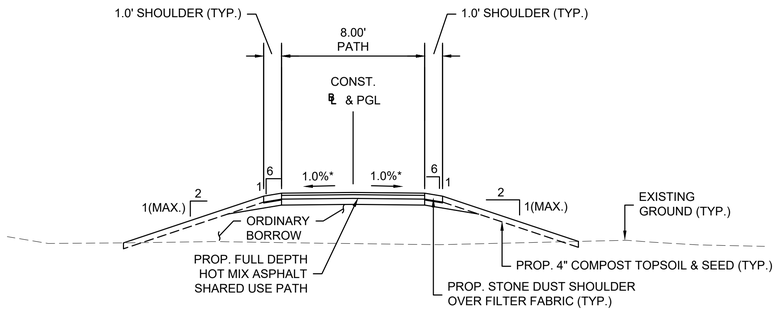
TYPICAL SECTIONS

605189_HD(TYP).DWG Plotted on 17-Aug-2016 10:56 AM



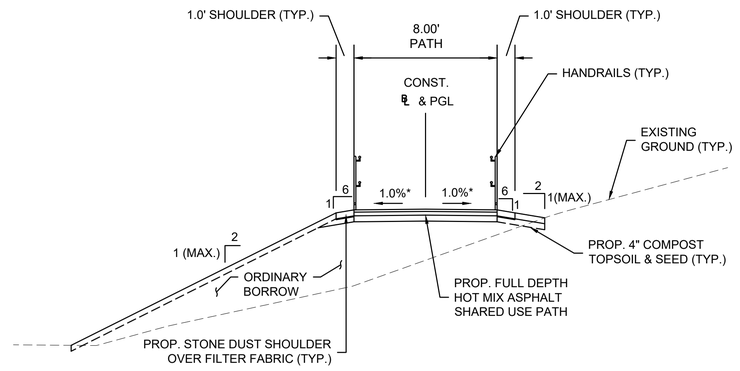
TYPICAL SECTION - POWDER MILL ROAD

SCALE 1" = 4'



TYPICAL SECTION - 8' PATH (POWDER MILL ROAD ACCESS PATH)

SCALE 1" = 4'
STA. 300+00± - STA. 301+29±
STA. 301+70± - STA. 302+32±
STA. 302+72± - STA. 305+50±



TYPICAL SECTION - 8' RAMP (POWDER MILL ROAD ACCESS PATH)

SCALE 1" = 4'
POWDER MILL STA. 301+29± - STA. 301+70±
POWDER MILL STA. 302+32± - STA. 302+72±

NOTES:

1. THE SECTIONS OF PROPOSED ROADWAY NOT COVERED IN THE RANGE OF STATIONS ASSOCIATED WITH THE TYPICAL SECTIONS ARE EITHER IN TRANSITION OR ARE LOCATED AT INTERSECTIONS AND THEREFORE HAVE NOT BEEN SHOWN. REFER TO CROSS SECTION SHEETS FOR MORE DETAILS.

2. CONTRACTOR SHALL REMOVE EXISTING ORGANIC MATERIAL (ABOVE RAILROAD BALLAST) THAT IS UNSUITABLE FOR REUSE AND DISPOSE OF OUTSIDE OF THE PROJECT LIMITS. IT IS ASSUMED THAT ALL OTHER EXCAVATED SUITABLE MATERIAL WILL REMAIN WITHIN THE PROJECT LIMITS. SEE SPECIAL PROVISIONS FOR DETAILS.

* ± 0.5% CONSTRUCTION TOLERANCE

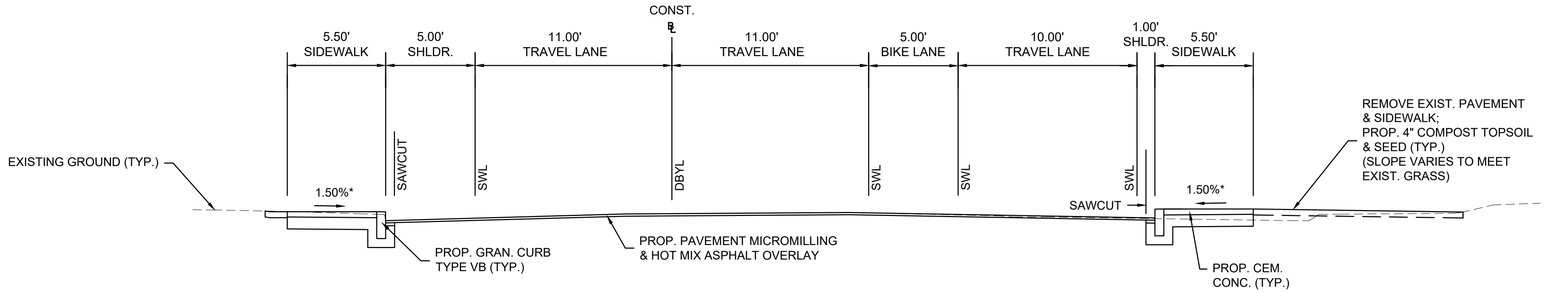
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	8	227
PROJECT FILE NO.	605189		

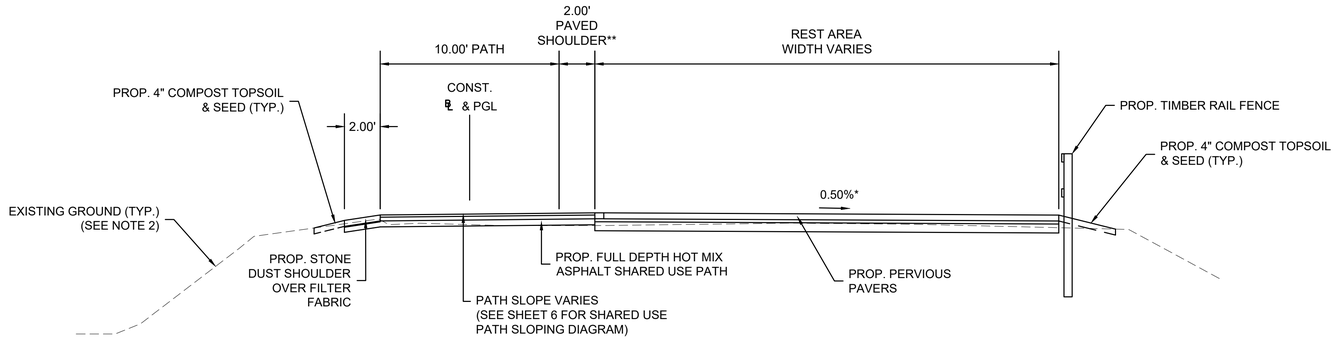
TYPICAL SECTIONS

605189_HD(TYP).DWG Plotted on 17-Aug-2016 10:56 AM



TYPICAL SECTION - MAIN STREET

SCALE 1" = 4'
MAIN STREET STA. 700+47± TO STA. 704+46±



**NO PAVED SHOULDER BETWEEN THE PATH AND REST AREA FROM STA. 117+18± TO STA. 117+65±

TYPICAL SECTION - 10' WIDE PATH WITH PERVIOUS PAVER REST AREA

SCALE 1" = 4'
STA. 117+18± TO 117+65±
STA. 138+41± TO 139+00±
STA. 139+60± TO 140+45 ±

NOTES:

1. THE SECTIONS OF PROPOSED ROADWAY NOT COVERED IN THE RANGE OF STATIONS ASSOCIATED WITH THE TYPICAL SECTIONS ARE EITHER IN TRANSITION OR ARE LOCATED AT INTERSECTIONS AND THEREFORE HAVE NOT BEEN SHOWN. REFER TO CROSS SECTION SHEETS FOR MORE DETAILS.

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* ± 0.5% CONSTRUCTION TOLERANCE

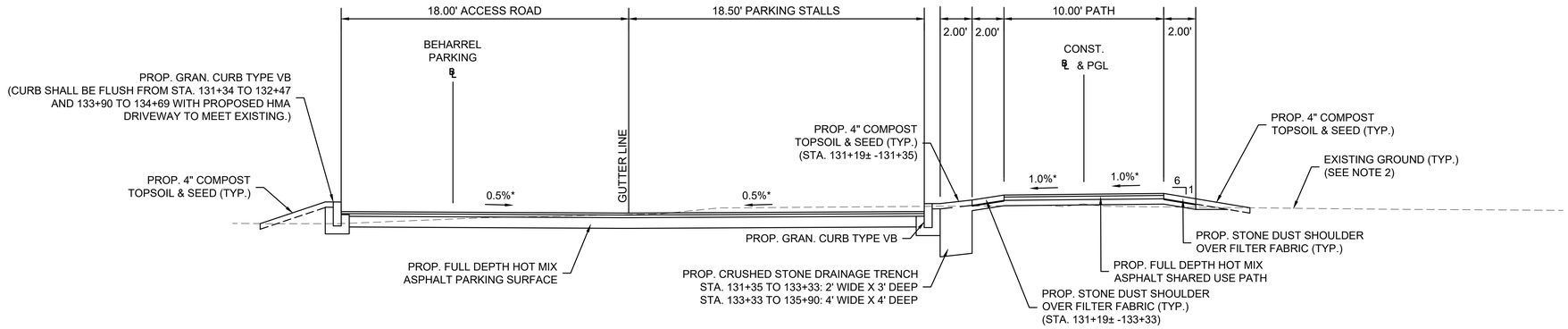
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	9	227
PROJECT FILE NO.	605189		

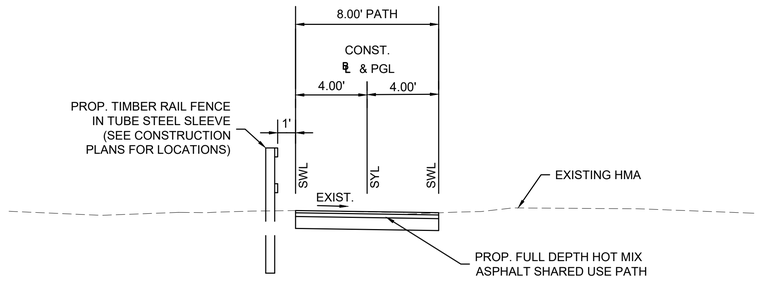
TYPICAL SECTIONS

605189_HD(TYP).DWG Plotted on 17-Aug-2016 10:56 AM



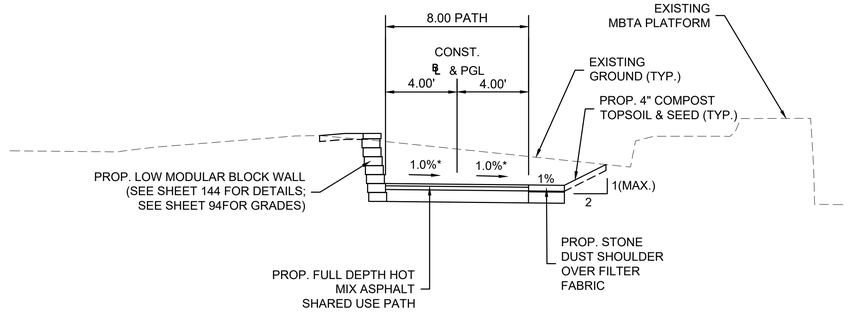
TYPICAL SECTION - 10' WIDE PATH AT BEHARRELL STREET PARKING

SCALE 1" = 4'
STA. 131+19± - STA.136+39±



TYPICAL SECTION - 8' WIDE PATH THROUGH WEST CONCORD CENTER

SCALE 1" = 4'
STA. 126+58± - STA. 129+32±



TYPICAL SECTION - 8' WIDE PATH CUT SECTION WITH LOW RETAINING WALL

SCALE 1" = 4'
STA. 129+32± - STA. 129+96±

NOTES:

1. THE SECTIONS OF PROPOSED ROADWAY NOT COVERED IN THE RANGE OF STATIONS ASSOCIATED WITH THE TYPICAL SECTIONS ARE EITHER IN TRANSITION OR ARE LOCATED AT INTERSECTIONS AND THEREFORE HAVE NOT BEEN SHOWN. REFER TO CROSS SECTION SHEETS FOR MORE DETAILS.

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* ± 0.5% CONSTRUCTION TOLERANCE

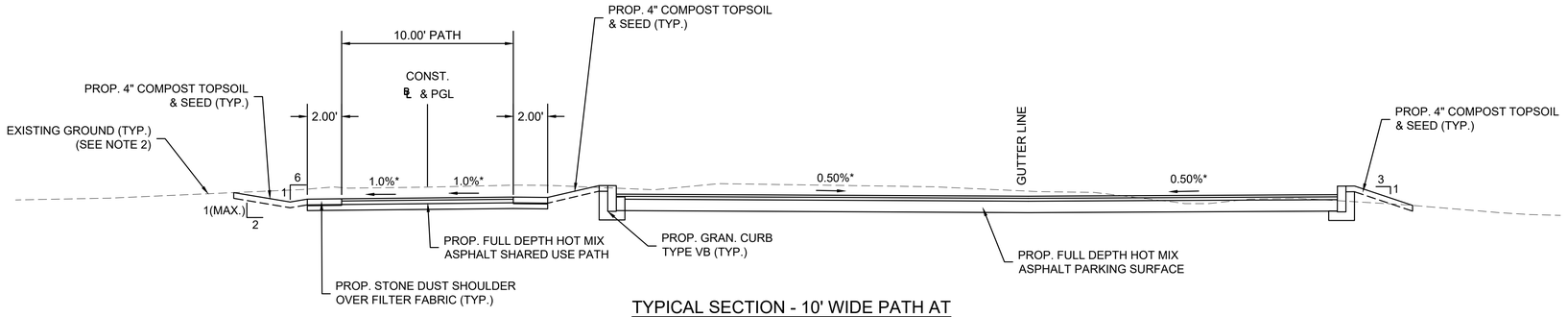
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

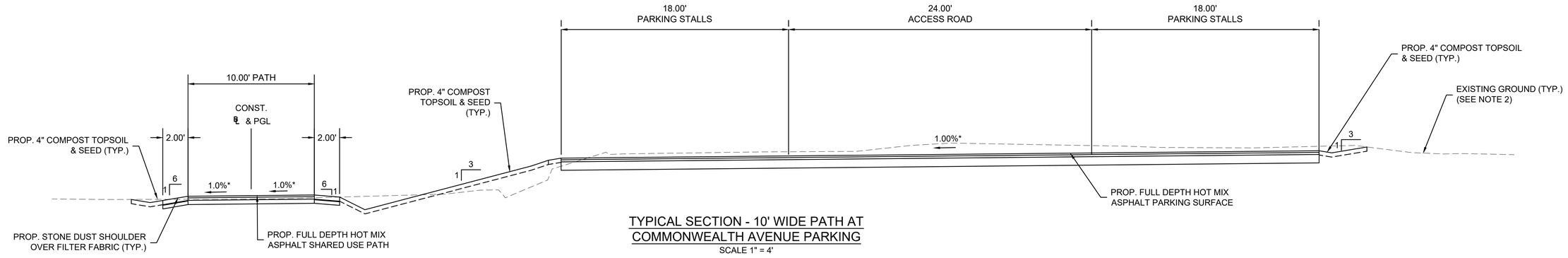
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	10	227
PROJECT FILE NO.	605189		

TYPICAL SECTIONS

605189_HD(TYP).DWG Plotted on 17-Aug-2016 10:56 AM



TYPICAL SECTION - 10' WIDE PATH AT WEST CONCORD CENTER PARKING
SCALE 1" = 4'
STA. 136+63± - STA.138+43±



TYPICAL SECTION - 10' WIDE PATH AT COMMONWEALTH AVENUE PARKING
SCALE 1" = 4'
STA. 161+87± - STA 162+83±

NOTES:

1. THE SECTIONS OF PROPOSED ROADWAY NOT COVERED IN THE RANGE OF STATIONS ASSOCIATED WITH THE TYPICAL SECTIONS ARE EITHER IN TRANSITION OR ARE LOCATED AT INTERSECTIONS AND THEREFORE HAVE NOT BEEN SHOWN. REFER TO CROSS SECTION SHEETS FOR MORE DETAILS.

2. CONTRACTOR SHALL REMOVE EXISTING ORGANIC MATERIAL (ABOVE RAILROAD BALLAST) THAT IS UNSUITABLE FOR REUSE AND DISPOSE OF OUTSIDE OF THE PROJECT LIMITS. IT IS ASSUMED THAT ALL OTHER EXCAVATED SUITABLE MATERIAL WILL REMAIN WITHIN THE PROJECT LIMITS. SEE SPECIAL PROVISIONS FOR DETAILS.

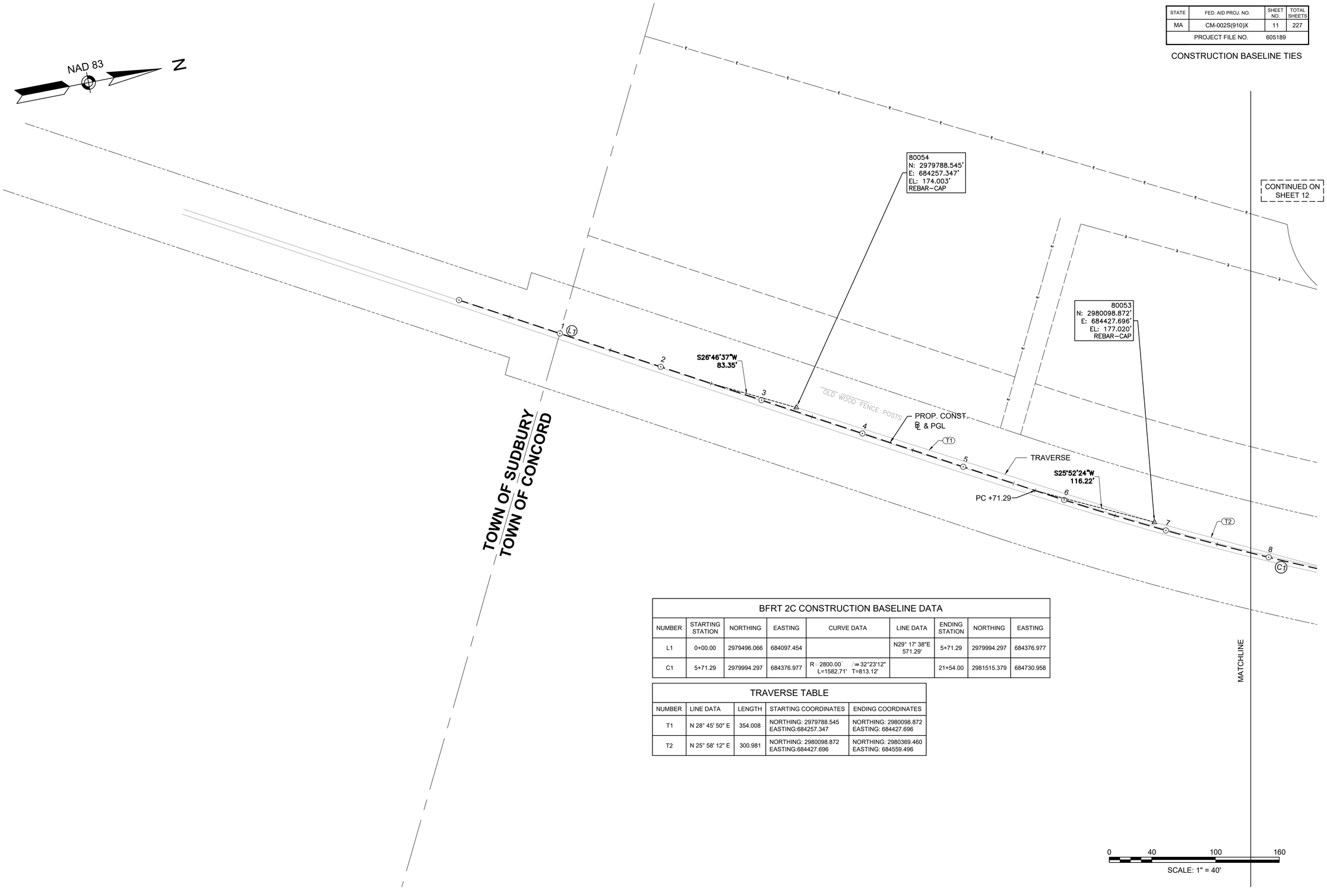
* ± 0.5% CONSTRUCTION TOLERANCE

HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	11	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES



BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	0+00.00	2979496.066	684097.454		N29° 17' 38"E 571.29'	5+71.29	2979994.297	684376.977
C1	5+71.29	2979994.297	684376.977	R=2800.00' Δ=32°23'12" L=1582.71' T=813.12'		21+54.00	2981515.379	684730.958

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T1	N 28° 45' 50" E	354.008	NORTHING: 2979788.545 EASTING:684257.347	NORTHING: 2980098.872 EASTING: 684427.696
T2	N 25° 58' 12" E	300.981	NORTHING: 2980098.872 EASTING:684427.696	NORTHING: 2980369.460 EASTING: 684559.496

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:56 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	12	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM

NAD 83

N

BFRT 2C CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	5+71.29	2979994.297	684376.977	R=2800.00' Δ=32°23'12" L=1582.71' T=813.12'		21+54.00	2981515.379	684730.958

TRAVERSE TABLE				
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T2	N 25° 58' 12" E	300.981	NORTHING: 2980098.872 EASTING:684427.696	NORTHING: 2980369.460 EASTING: 684559.496
T3	N 17° 34' 17" E	309.540	NORTHING: 2980369.460 EASTING:684559.496	NORTHING: 2980664.558 EASTING: 684652.944
T4	N 10° 43' 29" E	378.982	NORTHING: 2980664.558 EASTING:684652.944	NORTHING: 2981036.920 EASTING: 684723.469
T5	N 2° 26' 38" E	393.474	NORTHING: 2981036.920 EASTING:684723.469	NORTHING: 2981430.036 EASTING: 684740.246

CONTINUED ON SHEET 11

CONTINUED ON SHEET 13

BEGIN PROJECT
STA. 14+75.00
MEET EXISTING
N2980839.5734
E684685.4286

MATCHLINE

MATCHLINE

T2 C1 8 9 10 T3 11 12 13 14 15 T4 16 17 T5 18 19 C1 20

PROP. CONST. ℄ & PGL

TRAVERSE

SB-DH
(LEANING)

EDGE OF POND OBSCURED APPROX LOCATION

80052
N: 2980369.460'
E: 684559.496'
EL: 179.428'
REBAR-CAP

80051
N: 2980664.558'
E: 684652.944'
EL: 178.665'
REBAR-CAP

80050
N: 2981036.920'
E: 684723.469'
EL: 176.217'
REBAR-CAP

0 40 100 160

SCALE: 1" = 40'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	13	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HDBLT.DWG Plotted on 17-Aug-2016 10:57 AM

BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	5+71.29	2979994.297	684376.977	R=2800.00' Δ=32°23'12" L=1582.71' T=813.12'		21+54.00	2981515.379	684730.958
L2	21+54.00	2981515.379	684730.958		N3° 05' 34"W 345.66'	24+99.66	2981860.536	684712.308
C2	24+99.66	2981860.536	684712.308	R=2500.00' Δ=1°08'45" L=50.00' T=25.00'		25+49.66	2981910.488	684710.110
C3	25+49.66	2981910.488	684710.110	R=2500.00' Δ=1°08'45" L=50.00' T=25.00'		25+99.66	2981960.439	684707.912
L3	25+99.66	2981960.439	684707.912		N3° 05' 34"W 585.35'	31+85.01	2982544.939	684676.329
C4	31+85.01	2982544.939	684676.329	R=100.00' Δ=11°28'42" L=20.03' T=10.05'		32+05.05	2982564.918	684677.253
C5	32+05.05	2982564.918	684677.253	R=100.00' Δ=11°28'42" L=20.03' T=10.05'		32+25.08	2982584.897	684678.176
L4	32+25.08	2982584.897	684678.176		N3° 05' 34"W 80.40'	33+05.48	2982665.181	684673.838

SEE SHEET 28 FOR POWDER MILL ROAD BASELINE DATA

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T5	N 2° 26' 38" E	393.474	NORTHING: 2981036.920 EASTING:684723.469	NORTHING: 2981430.036 EASTING: 684740.246
T6	N 2° 39' 06" W	366.225	NORTHING: 2981430.036 EASTING:684740.246	NORTHING: 2981795.869 EASTING: 684723.303
T7	N 3° 24' 12" W	347.298	NORTHING: 2981795.869 EASTING:684723.303	NORTHING: 2982142.555 EASTING: 684702.686
T8	N 7° 58' 07" W	121.694	NORTHING: 2982142.555 EASTING:684702.686	NORTHING: 2982263.073 EASTING: 684685.815
T9	S 47° 43' 57" W	51.076	NORTHING: 2982263.073 EASTING:684685.815	NORTHING: 2982228.720 EASTING: 684648.018
T10	N 1° 12' 38" W	162.403	NORTHING: 2982263.073 EASTING:684685.815	NORTHING: 2982425.440 EASTING: 684682.384
T11	N 3° 01' 29" W	384.439	NORTHING: 2982425.440 EASTING:684682.384	NORTHING: 2982809.343 EASTING: 684662.098

CONTINUED ON SHEET 12

CONTINUED ON SHEET 14

SEE INSET DETAIL SHEET 14

NAD 83 N

MATCHLINE

MATCHLINE

POWDER MILL ROAD ℄ STA. 206+13.50, 22.75' RT = POWDER MILL ROAD ACCESS PATH ℄ STA. 300+00.00

BFRT 2C CONST. ℄ STA. 28+83.23 = POWDER MILL ROAD CONST. ℄ STA. 204+69.20

BFRT 2C CONST. ℄ STA. 31+79.31 = POWDER MILL ROAD ACCESS PATH CONST. ℄ STA. 305+58.08

TRAVERSE

PROP. CONST. ℄ & PGL

PROP. CONST. ℄ & PGL

90000
N: 2982228.720'
E: 684648.018'
EL: 190.533'
REBAR–CAP

80001
N: 2981430.036'
E: 684740.246'
EL: 173.530'
REBAR–CAP

80002
N: 2981795.869'
E: 684723.303'
EL: 169.910'
REBAR–CAP

80003
N: 2982142.555'
E: 684702.686'
EL: 168.937'
REBAR–CAP

80004
N: 2982425.440'
E: 684682.384'
EL: 164.475'
REBAR–CAP

80652
N: 2982263.073'
E: 684685.815'
EL: 191.978'
PK FND

TBM 15
PK SET 1" UP
ON 20" OAK
EL.=196.24

PT +99.13
PC +24.87
PT +16.71
PC +45.46
PT +29.76
PC +69.76
PT +32.60
PC +50.98
PRC +13.84
PRC +76.70
PT +32.45
PT +25.08
PRC +66.93
PC +72.60
PT +35.43
PT +19.82
PC +85.01
PRC +05.05
PC +95.18
PT +54.00
PRC +49.66
PT +99.66
PC +99.66

N6°12'41"W 85.85'
N9°38'57"W 65.59'
N6°33'58"W 115.38'
S1°38'37"E 182.19'
S79°08'19"E 183.35'
N2°54'02"W 119.65'
N2°06'25"W 139.57'
N1°30'42"W 159.51'

TUNNEL CLEARANCE AT ENTRANCE=7.7'±
TUNNEL CLEARANCE AT ENTRANCE=6.2'±

6" CRAN RET WALL
STONE WALL
STONE WALL

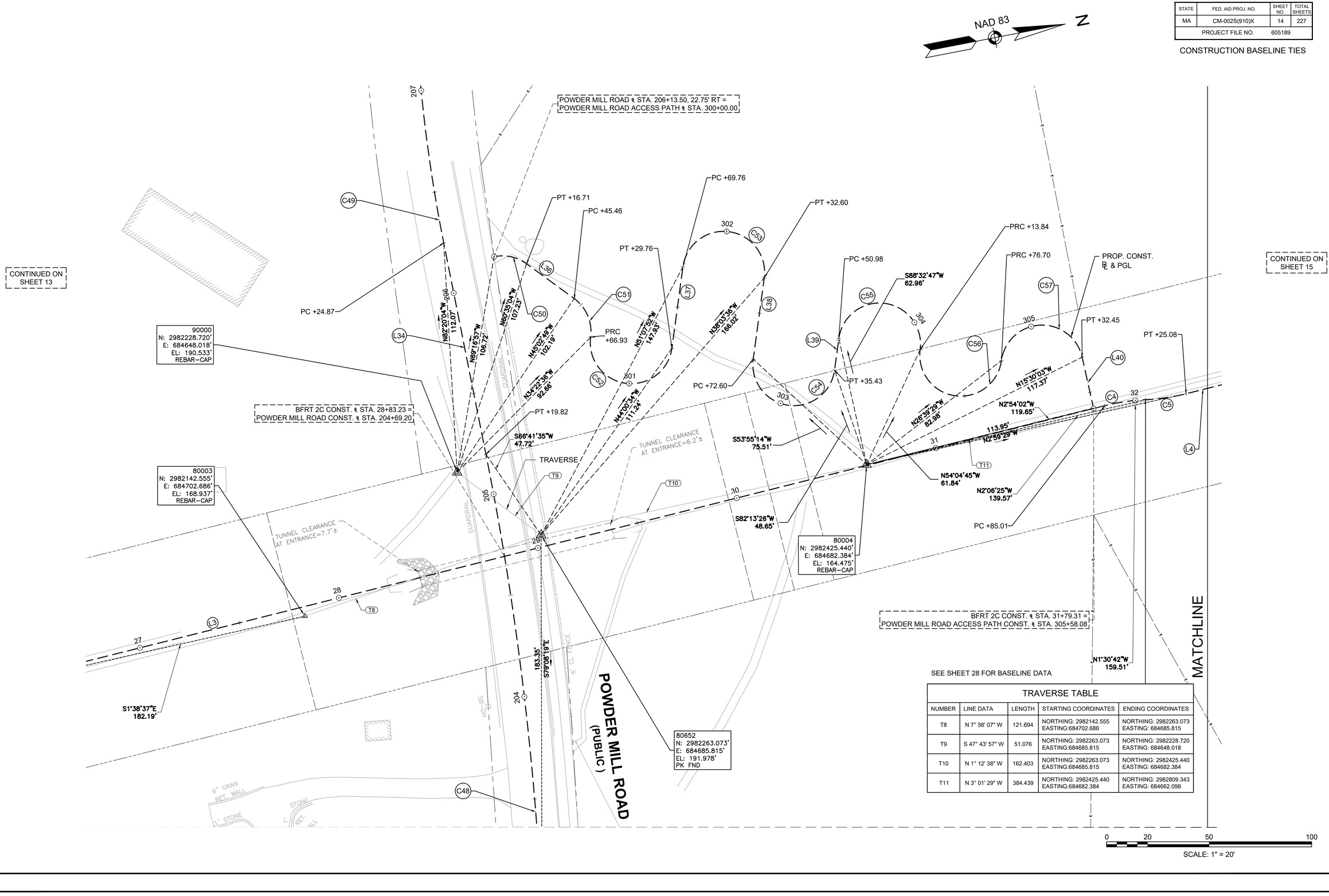
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SCALE: 1" = 40'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	14	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM



SEE SHEET 28 FOR BASELINE DATA

TRAVERSE TABLE

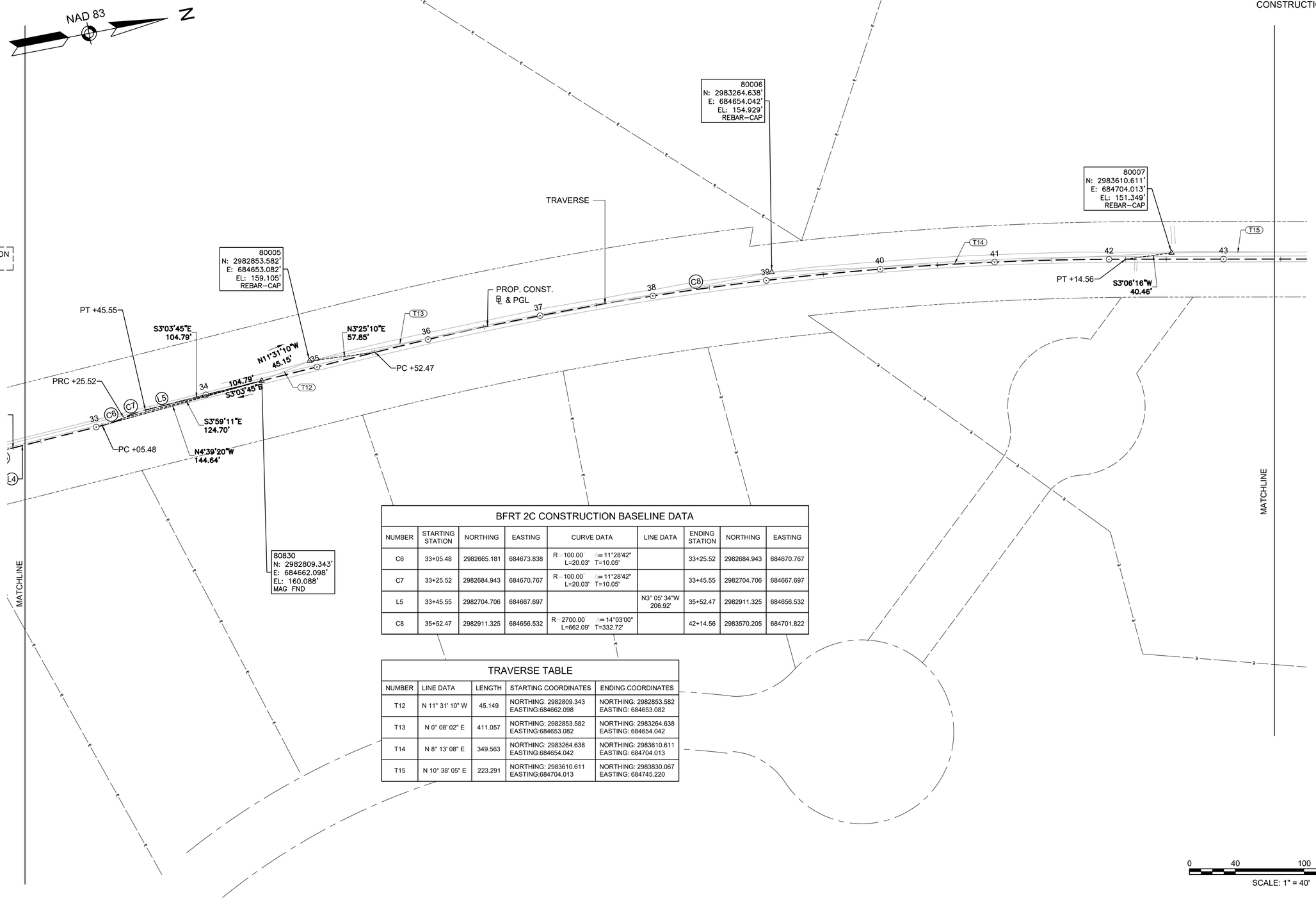
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T8	N 7° 58' 07" W	121.694	NORTHING: 2982142.555 EASTING:684702.686	NORTHING: 2982263.073 EASTING: 684685.815
T9	S 47° 43' 57" W	51.076	NORTHING: 2982263.073 EASTING:684685.815	NORTHING: 2982228.720 EASTING: 684648.018
T10	N 1° 12' 38" W	162.403	NORTHING: 2982263.073 EASTING:684685.815	NORTHING: 2982425.440 EASTING: 684682.384
T11	N 3° 01' 29" W	384.439	NORTHING: 2982425.440 EASTING:684682.384	NORTHING: 2982809.343 EASTING: 684662.098

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	15	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES



BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C6	33+05.48	2982665.181	684673.838	R= 100.00' ∆= 11°28'42" L=20.03' T=10.05'		33+25.52	2982684.943	684670.767
C7	33+25.52	2982684.943	684670.767	R= 100.00' ∆= 11°28'42" L=20.03' T=10.05'		33+45.55	2982704.706	684667.697
L5	33+45.55	2982704.706	684667.697		N3° 05' 34"W 206.92'	35+52.47	2982911.325	684656.532
C8	35+52.47	2982911.325	684656.532	R= 2700.00' ∆= 14°03'00" L=662.09' T=332.72'		42+14.56	2983570.205	684701.822

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T12	N 11° 31' 10" W	45.149	NORTHING: 2982809.343 EASTING:684662.098	NORTHING: 2982853.582 EASTING: 684653.082
T13	N 0° 08' 02" E	411.057	NORTHING: 2982853.582 EASTING:684653.082	NORTHING: 2983264.638 EASTING: 684654.042
T14	N 8° 13' 08" E	349.563	NORTHING: 2983264.638 EASTING:684654.042	NORTHING: 2983610.611 EASTING: 684704.013
T15	N 10° 38' 05" E	223.291	NORTHING: 2983610.611 EASTING:684704.013	NORTHING: 2983830.067 EASTING: 684745.220

0 40 100 160
SCALE: 1" = 40'

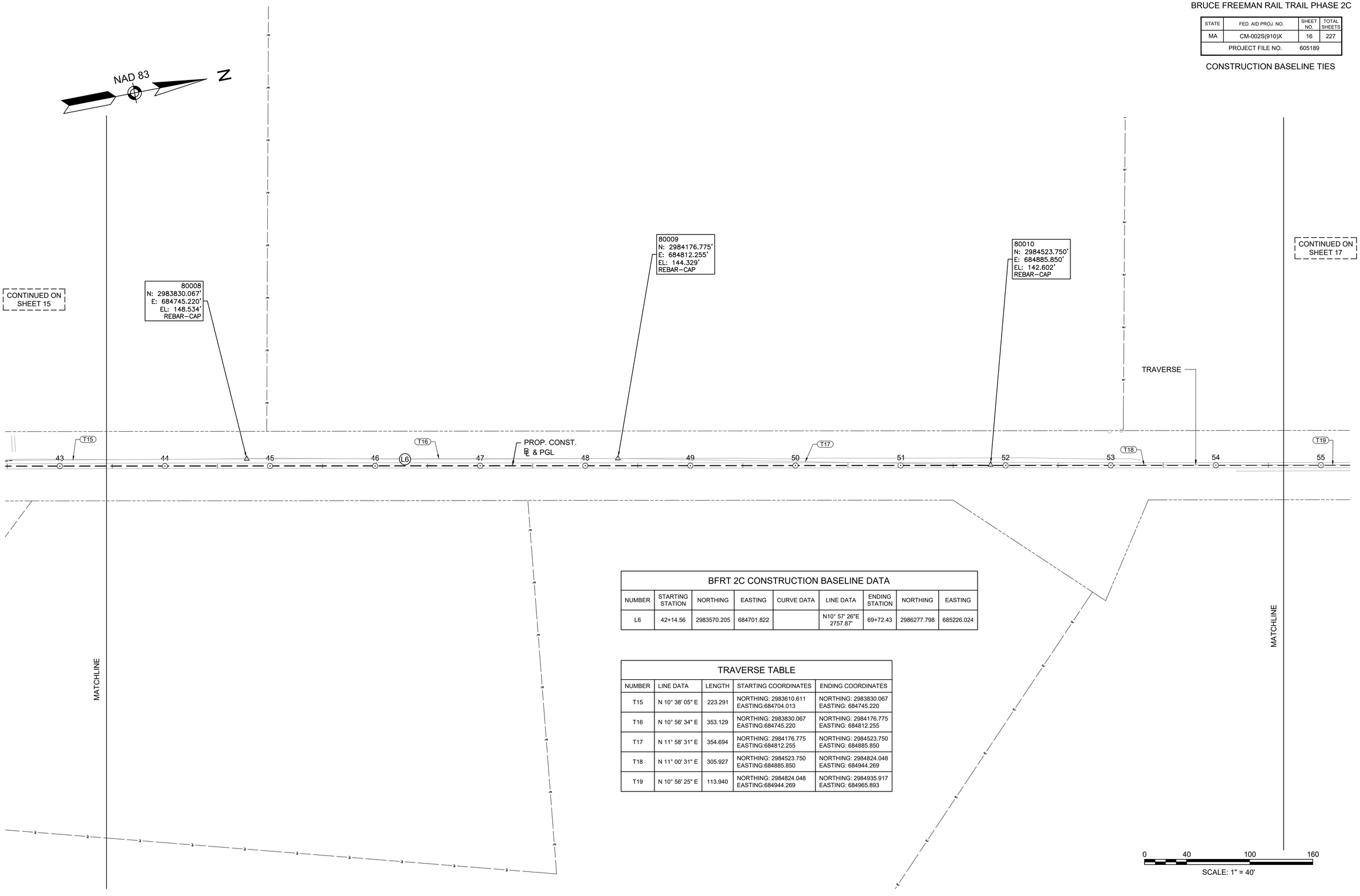
605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	16	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM



BFRT 2C CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L6	42+14.56	2983570.205	684701.822		N10° 57' 26"E 2757.87'	69+72.43	2986277.798	685226.024

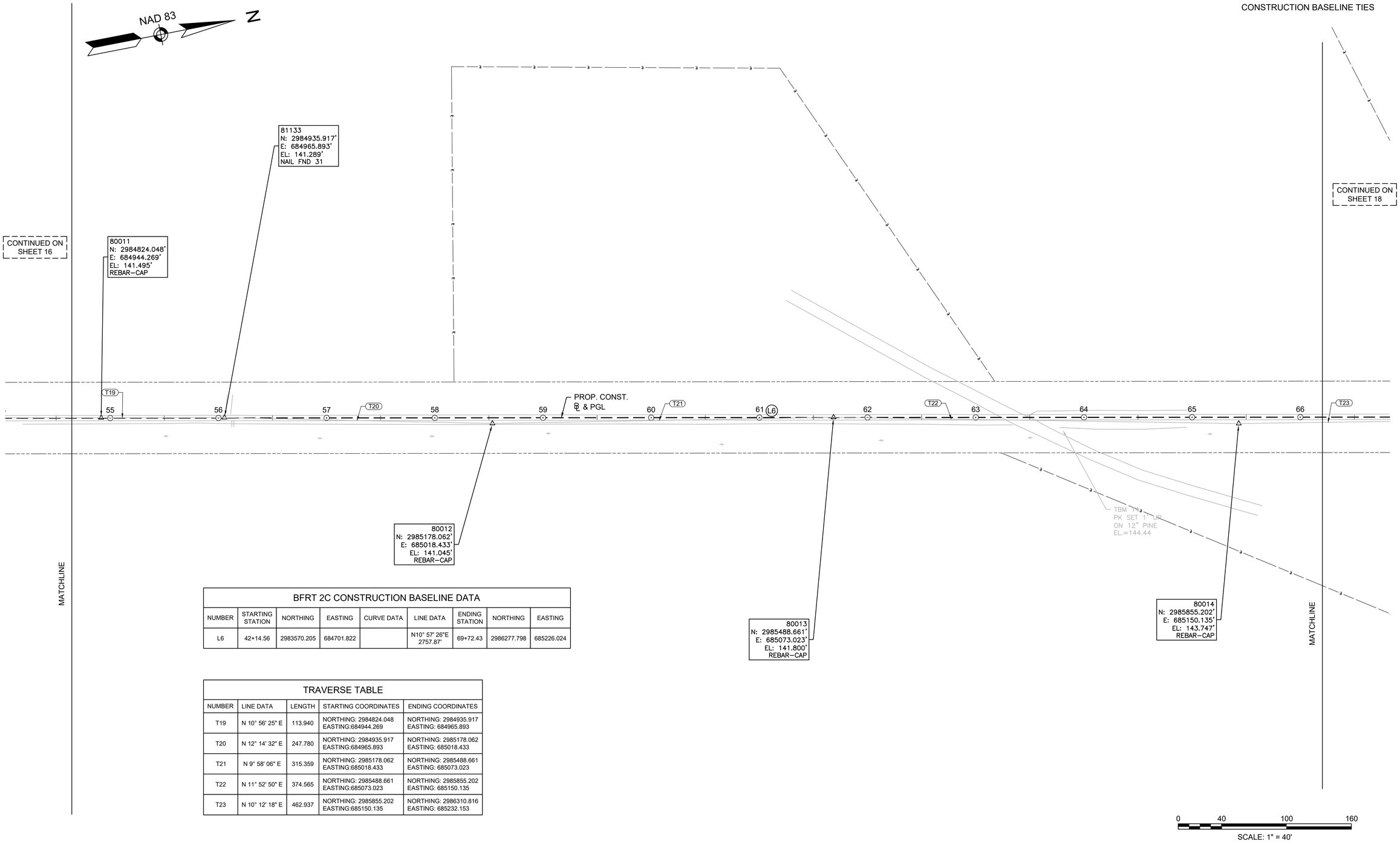
TRAVERSE TABLE				
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T15	N 10° 38' 05" E	223.291	NORTHING: 2983610.611 EASTING:684704.013	NORTHING: 2983830.067 EASTING: 684745.220
T16	N 10° 56' 34" E	353.129	NORTHING: 2983830.067 EASTING:684745.220	NORTHING: 2984176.775 EASTING: 684812.255
T17	N 11° 58' 31" E	354.694	NORTHING: 2984176.775 EASTING:684812.255	NORTHING: 2984523.750 EASTING: 684885.850
T18	N 11° 00' 31" E	305.927	NORTHING: 2984523.750 EASTING:684885.850	NORTHING: 2984824.048 EASTING: 684944.269
T19	N 10° 56' 25" E	113.940	NORTHING: 2984824.048 EASTING:684944.269	NORTHING: 2984935.917 EASTING: 684965.893

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	17	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM



BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L6	42+14.56	2983570.205	684701.822		N10° 57' 26"E 2757.87'	69+72.43	2986277.798	685226.024

TRAVERSE TABLE

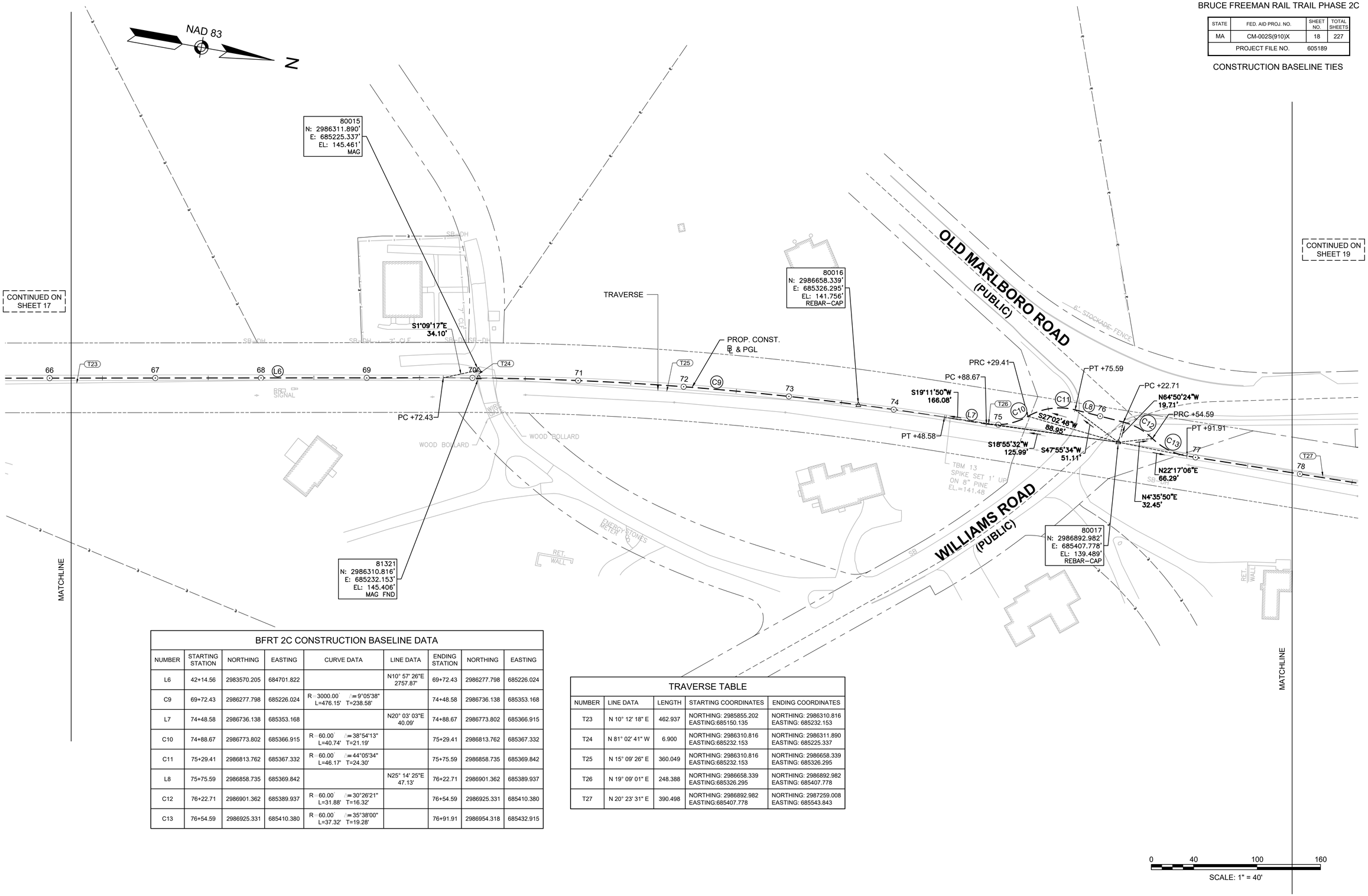
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T19	N 10° 56' 25" E	113.940	NORTHING: 2984824.048 EASTING:684944.269	NORTHING: 2984935.917 EASTING: 684965.893
T20	N 12° 14' 32" E	247.780	NORTHING: 2984935.917 EASTING:684965.893	NORTHING: 2985178.062 EASTING: 685018.433
T21	N 9° 58' 06" E	315.359	NORTHING: 2985178.062 EASTING:685018.433	NORTHING: 2985488.661 EASTING: 685073.023
T22	N 11° 52' 50" E	374.565	NORTHING: 2985488.661 EASTING:685073.023	NORTHING: 2985855.202 EASTING: 685150.135
T23	N 10° 12' 18" E	462.937	NORTHING: 2985855.202 EASTING:685150.135	NORTHING: 2986310.816 EASTING: 685232.153

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	18	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM



BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L6	42+14.56	2983570.205	684701.822		N10° 57' 26"E 2757.87'	69+72.43	2986277.798	685226.024
C9	69+72.43	2986277.798	685226.024	R=3000.00' ∆=9°05'38" L=476.15' T=238.58'		74+48.58	2986736.138	685353.168
L7	74+48.58	2986736.138	685353.168		N20° 03' 03"E 40.09'	74+88.67	2986773.802	685366.915
C10	74+88.67	2986773.802	685366.915	R=60.00' ∆=38°54'13" L=40.74' T=21.19'		75+29.41	2986813.762	685367.332
C11	75+29.41	2986813.762	685367.332	R=60.00' ∆=44°05'34" L=46.17' T=24.30'		75+75.59	2986858.735	685369.842
L8	75+75.59	2986858.735	685369.842		N25° 14' 25"E 47.13'	76+22.71	2986901.362	685389.937
C12	76+22.71	2986901.362	685389.937	R=60.00' ∆=30°26'21" L=31.88' T=16.32'		76+54.59	2986925.331	685410.380
C13	76+54.59	2986925.331	685410.380	R=60.00' ∆=35°38'00" L=37.32' T=19.28'		76+91.91	2986954.318	685432.915

TRAVERSE TABLE

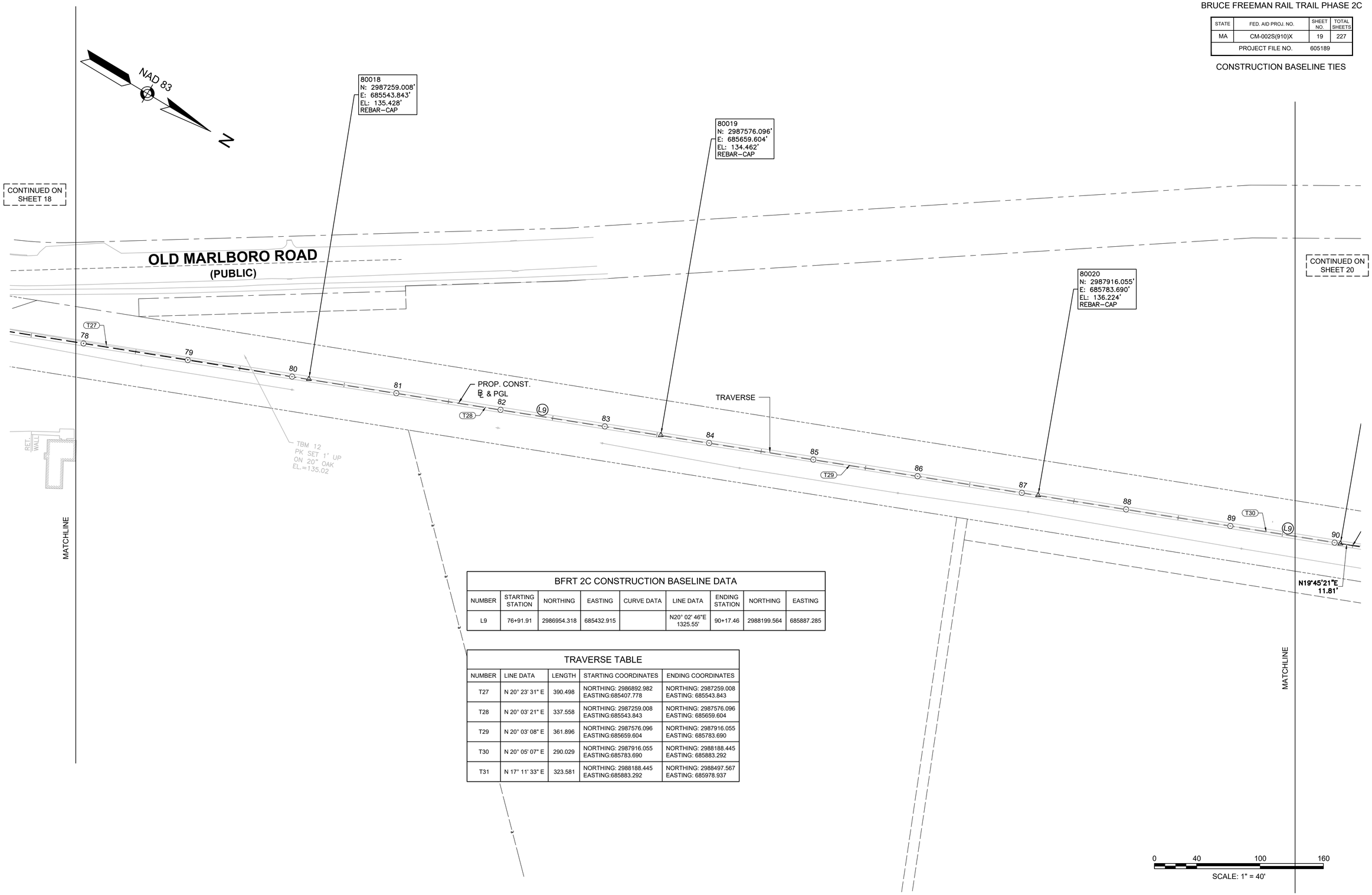
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T23	N 10° 12' 18" E	462.937	NORTHING: 2985855.202 EASTING:685150.135	NORTHING: 2986310.816 EASTING: 685232.153
T24	N 81° 02' 41" W	6.900	NORTHING: 2986310.816 EASTING:685232.153	NORTHING: 2986311.890 EASTING: 685225.337
T25	N 15° 09' 26" E	360.049	NORTHING: 2986310.816 EASTING:685232.153	NORTHING: 2986658.339 EASTING: 685326.295
T26	N 19° 09' 01" E	248.388	NORTHING: 2986658.339 EASTING:685326.295	NORTHING: 2986892.982 EASTING: 685407.778
T27	N 20° 23' 31" E	390.498	NORTHING: 2986892.982 EASTING:685407.778	NORTHING: 2987259.008 EASTING: 685543.843

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	19	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM



BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L9	76+91.91	2986954.318	685432.915		N20° 02' 46"E 1325.55'	90+17.46	2988199.564	685887.285

TRAVERSE TABLE

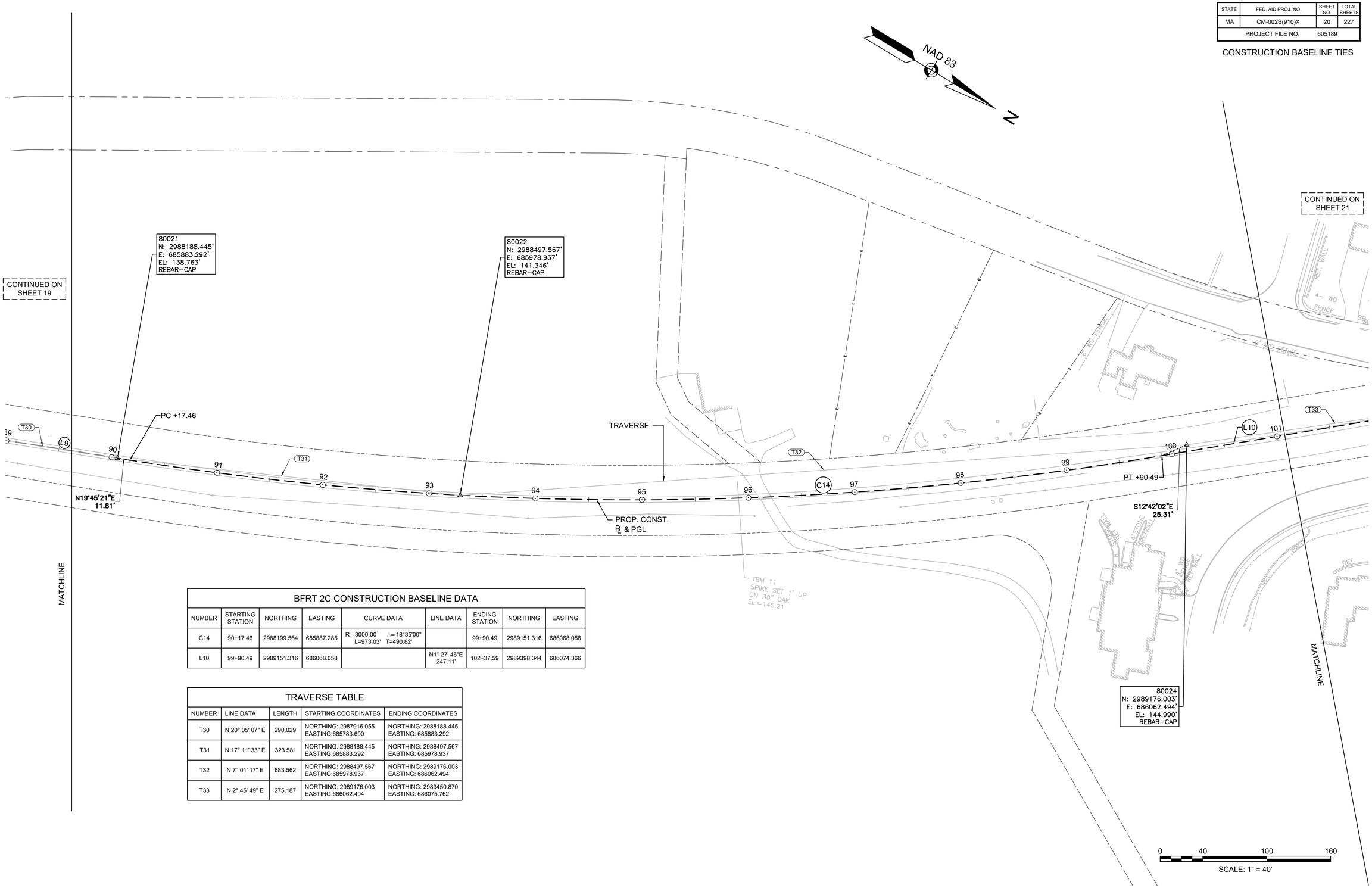
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T27	N 20° 23' 31" E	390.498	NORTHING: 2986892.982 EASTING:685407.778	NORTHING: 2987259.008 EASTING: 685543.843
T28	N 20° 03' 21" E	337.558	NORTHING: 2987259.008 EASTING:685543.843	NORTHING: 2987576.096 EASTING: 685659.604
T29	N 20° 03' 08" E	361.896	NORTHING: 2987576.096 EASTING:685659.604	NORTHING: 2987916.055 EASTING: 685783.690
T30	N 20° 05' 07" E	290.029	NORTHING: 2987916.055 EASTING:685783.690	NORTHING: 2988188.445 EASTING: 685883.292
T31	N 17° 11' 33" E	323.581	NORTHING: 2988188.445 EASTING:685883.292	NORTHING: 2988497.567 EASTING: 685978.937

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	20	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM



BFRT 2C CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C14	90+17.46	2988199.564	685887.285	R=3000.00' Δ=18°35'00" L=973.03' T=490.82'		99+90.49	2989151.316	686068.058
L10	99+90.49	2989151.316	686068.058		N1° 27' 46"E 247.11'	102+37.59	2989398.344	686074.366

TRAVERSE TABLE				
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T30	N 20° 05' 07" E	290.029	NORTHING: 2987916.055 EASTING:685783.690	NORTHING: 2988188.445 EASTING: 685883.292
T31	N 17° 11' 33" E	323.581	NORTHING: 2988188.445 EASTING:685883.292	NORTHING: 2988497.567 EASTING: 685978.937
T32	N 7° 01' 17" E	683.562	NORTHING: 2988497.567 EASTING:685978.937	NORTHING: 2989176.003 EASTING: 686062.494
T33	N 2° 45' 49" E	275.187	NORTHING: 2989176.003 EASTING:686062.494	NORTHING: 2989450.870 EASTING: 686075.762

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	21	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM

BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L10	99+90.49	2989151.316	686068.058		N1° 27' 46"E 247.11'	102+37.59	2989398.344	686074.366
C15	102+37.59	2989398.344	686074.366	R=100.00' Δ=14°32'48" L=25.39' T=12.76'		102+62.98	2989423.370	686078.212
C16	102+62.98	2989423.370	686078.212	R=100.00' Δ=39°26'28" L=68.84' T=35.85'		103+31.82	2989490.715	686073.843
L11	103+31.82	2989490.715	686073.843		N23° 25' 55"W 42.07'	103+73.89	2989529.319	686057.113
C17	103+73.89	2989529.319	686057.113	R=100.00' Δ=46°26'22" L=81.05' T=42.90'		104+54.95	2989608.170	686056.820
C18	104+54.95	2989608.170	686056.820	R=100.00' Δ=28°49'00" L=50.29' T=25.69'		105+05.24	2989657.377	686064.262
C19	105+05.24	2989657.377	686064.262	R=1846.00' Δ=14°22'12" L=462.98' T=232.71'		109+68.22	2990107.323	685960.431
L12	109+68.22	2990107.323	685960.431		N20° 10' 45"W 82.37'	110+50.59	2990184.632	685932.018
C20	110+50.59	2990184.632	685932.018	R=1000.00' Δ=5°33'38" L=97.05' T=48.56'		111+47.64	2990273.961	685894.175
C21	111+47.64	2990273.961	685894.175	R=1850.00' Δ=10°00'41" L=323.25' T=162.04'		114+70.89	2990551.426	685729.129

NAD 83
N

CONTINUED ON SHEET 20

CONTINUED ON SHEET 22

90025
N: 2989450.870'
E: 686075.762'
EL: 146.385'
REBAR–CAP

80028
N: 2990100.013'
E: 685959.905'
EL: 139.246'
REBAR–CAP

80027
N: 2989892.984'
E: 686024.642'
EL: 141.693'
REBAR–CAP

80029
N: 2990286.470'
E: 685886.098'
EL: 137.626'
REBAR–CAP

80026
N: 2989583.716'
E: 686072.990'
EL: 147.598'
REBAR–CAP

SOUTH MEADOW RIDGE

OLD MARLBORO ROAD (PUBLIC)

COTTAGE ST.

MATCHLINE

MATCHLINE

TBM 10
L.O.C BOTTOM STEP
HSE. #406 OLD
MARLBORO ROAD
EL.=147.27

REF. WELL

4- WD FENCE

S1°31'22"W 52.55'

PC +37.59

PRC +62.98

S5°05'24"E 27.61'

N2°45'25"W 39.89'

PT +31.82

PC +73.89

S16°16'16"W 56.67'

N33°28'21"W 29.32'

PRC +54.95

PCC +05.24

N6°45'27"W 74.18'

TRAVERSE

PROP. CONST. ℄ & PGL

STEPS

PCC +47.64

N4°06'42"E 7.33'

PT +68.22

N18°14'24"W 89.10'

PC +50.59

S32°50'57"E 14.89'

CHICKEN WIRE AND WD STAKE FENCE

TRAIN CTRL BOX

1.5' STONE RET WALL

4' FENCE W/WD POST

5' PVC FENCE

GRASS

DIRT

STONE WALL

20' STONE RET. WALL

4' WD FENCE

TRAVERSE TABLE				
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T33	N 2° 45' 49" E	275.187	NORTHING: 2989176.003 EASTING:686062.494	NORTHING: 2989450.870 EASTING: 686075.762
T34	N 1° 11' 44" W	132.875	NORTHING: 2989450.870 EASTING:686075.762	NORTHING: 2989583.716 EASTING: 686072.990
T35	N 8° 53' 06" W	313.024	NORTHING: 2989583.716 EASTING:686072.990	NORTHING: 2989892.984 EASTING: 686024.642
T36	N 17° 21' 51" W	216.915	NORTHING: 2989892.984 EASTING:686024.642	NORTHING: 2990100.013 EASTING: 685959.905
T37	N 21° 35' 44" W	200.533	NORTHING: 2990100.013 EASTING:685959.905	NORTHING: 2990286.470 EASTING: 685886.098
T38	N 27° 39' 36" W	176.496	NORTHING: 2990286.470 EASTING:685886.098	NORTHING: 2990442.795 EASTING: 685804.164

0 40 100 160
SCALE: 1" = 40'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	22	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM

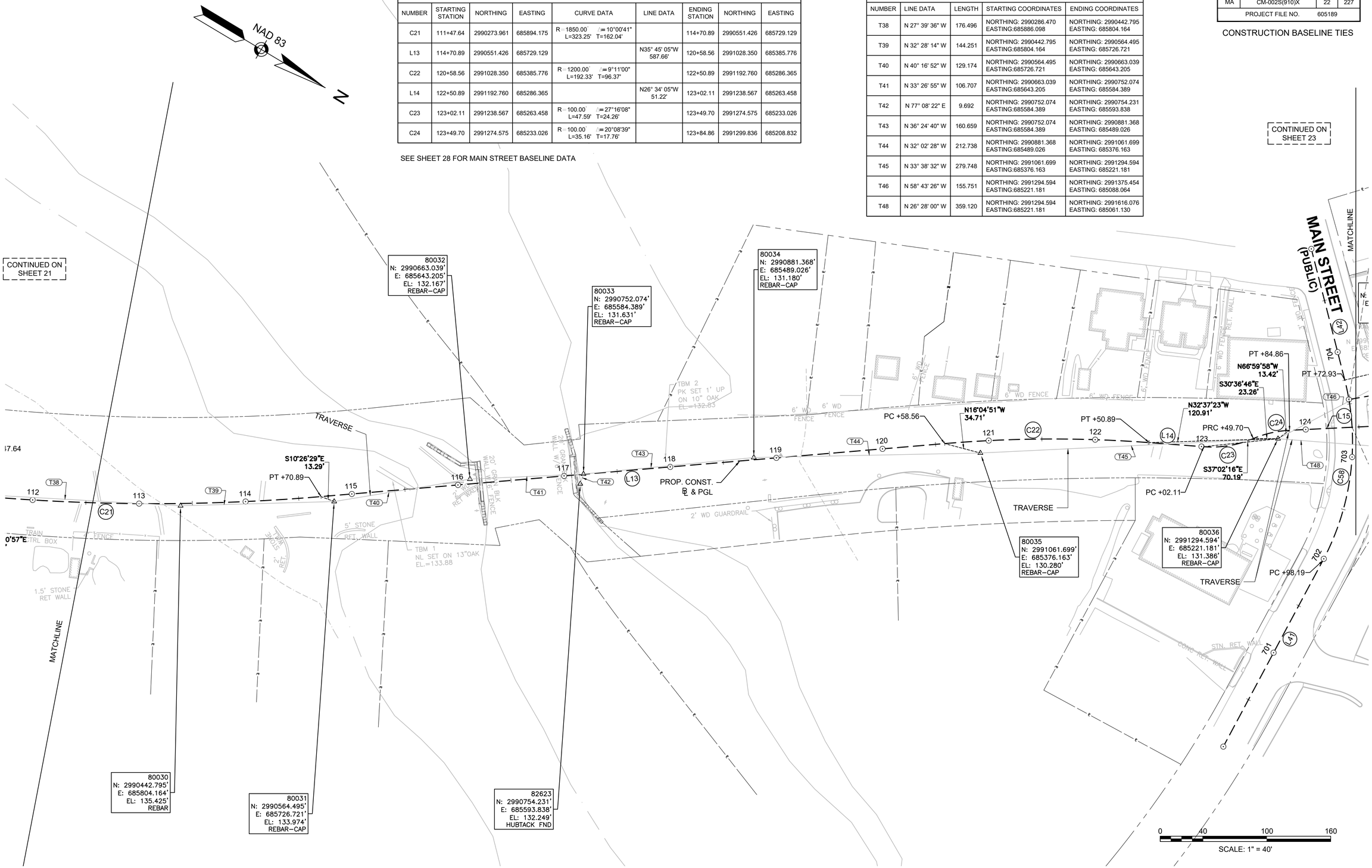
BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C21	111+47.64	2990273.961	685894.175	R= 1850.00' Δ= 10°00'41" L=323.25' T=162.04'		114+70.89	2990551.426	685729.129
L13	114+70.89	2990551.426	685729.129		N35° 45' 05"W 587.66'	120+58.56	2991028.350	685385.776
C22	120+58.56	2991028.350	685385.776	R= 1200.00' Δ= 9°11'00" L=192.33' T=96.37'		122+50.89	2991192.760	685286.365
L14	122+50.89	2991192.760	685286.365		N26° 34' 05"W 51.22'	123+02.11	2991238.567	685263.458
C23	123+02.11	2991238.567	685263.458	R= 100.00' Δ= 27°16'08" L=47.59' T=24.26'		123+49.70	2991274.575	685233.026
C24	123+49.70	2991274.575	685233.026	R= 100.00' Δ= 20°08'39" L=35.16' T=17.76'		123+84.86	2991299.836	685208.832

SEE SHEET 28 FOR MAIN STREET BASELINE DATA

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T38	N 27° 39' 36" W	176.496	NORTHING: 2990286.470 EASTING:685886.098	NORTHING: 2990442.795 EASTING: 685804.164
T39	N 32° 28' 14" W	144.251	NORTHING: 2990442.795 EASTING:685804.164	NORTHING: 2990564.495 EASTING: 685726.721
T40	N 40° 16' 52" W	129.174	NORTHING: 2990564.495 EASTING:685726.721	NORTHING: 2990663.039 EASTING: 685643.205
T41	N 33° 26' 55" W	106.707	NORTHING: 2990663.039 EASTING:685643.205	NORTHING: 2990752.074 EASTING: 685584.389
T42	N 77° 08' 22" E	9.692	NORTHING: 2990752.074 EASTING:685584.389	NORTHING: 2990754.231 EASTING: 685593.838
T43	N 36° 24' 40" W	160.659	NORTHING: 2990752.074 EASTING:685584.389	NORTHING: 2990881.368 EASTING: 685489.026
T44	N 32° 02' 28" W	212.738	NORTHING: 2990881.368 EASTING:685489.026	NORTHING: 2991061.699 EASTING: 685376.163
T45	N 33° 38' 32" W	279.748	NORTHING: 2991061.699 EASTING:685376.163	NORTHING: 2991294.594 EASTING: 685221.181
T46	N 58° 43' 26" W	155.751	NORTHING: 2991294.594 EASTING:685221.181	NORTHING: 2991375.454 EASTING: 685088.064
T48	N 26° 28' 00" W	359.120	NORTHING: 2991294.594 EASTING:685221.181	NORTHING: 2991616.076 EASTING: 685061.130


NAD 83
N
CONTINUED ON SHEET 21
CONTINUED ON SHEET 23
80032
N: 2990663.039'
E: 685643.205'
EL: 132.167'
REBAR-CAP
80033
N: 2990752.074'
E: 685584.389'
EL: 131.631'
REBAR-CAP
80034
N: 2990881.368'
E: 685489.026'
EL: 131.180'
REBAR-CAP
MAIN STREET (PUBLIC)
MATCHLINE
TRAVERSE
TBM 2
PK SET 1' UP ON 10" OAK
EL.=132.83
TBM 1
NL SET ON 13"OAK
EL.=133.88
PROP. CONST. ℄ & PGL
PT +84.86
N66°59'58"W 13.42'
PT +72.93
S30°36'46"E 23.26'
N32°37'23"W 120.91'
PRC +49.70
PC +58.56
N16°04'51"W 34.71'
PT +50.89
S37°02'16"E 70.19'
PC +02.11
PT +70.89
S10°26'29"E 13.29'
PC +98.19
80035
N: 2991061.699'
E: 685376.163'
EL: 130.280'
REBAR-CAP
80036
N: 2991294.594'
E: 685221.181'
EL: 131.386'
REBAR-CAP
80030
N: 2990442.795'
E: 685804.164'
EL: 135.425'
REBAR
80031
N: 2990564.495'
E: 685726.721'
EL: 133.974'
REBAR-CAP
82623
N: 2990754.231'
E: 685593.838'
EL: 132.249'
HUBTACK FND
6' WD FENCE
6' WD FENCE
6' WD FENCE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	23	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:57 AM

SEE SHEET 28 FOR BASELINE DATA

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T46	N 58° 43' 26" W	155.751	NORTHING: 2991294.594 EASTING:685221.181	NORTHING: 2991375.454 EASTING: 685088.064
T47	N 54° 16' 37" W	2.978	NORTHING: 2991375.454 EASTING:685088.064	NORTHING: 2991377.193 EASTING: 685085.647
T48	N 26° 28' 00" W	359.120	NORTHING: 2991294.594 EASTING:685221.181	NORTHING: 2991616.076 EASTING: 685061.130
T49	N 25° 17' 55" W	478.987	NORTHING: 2991616.076 EASTING:685061.130	NORTHING: 2992049.124 EASTING: 684856.441

NAD 83

MAIN ST (ROUTE 62) CONST. ℄ STA. 703+54.23 =
COMMONWEALTH AVE CONST. ℄ STA. 800+00.00

BFRT 2C ℄ STA. 130+77.69, 42.50' LT =
BEHARRELL PARKING ℄ STA. 500+50.00

82763
N: 2991377.193'
E: 685085.647'
EL: 133.244'
MAG 3 FND

82762
N: 2991375.454'
E: 685088.064'
EL: 0.000'
MAG FND

80037
N: 2991616.076'
E: 685061.130'
EL: 131.083'
MAG 1 FND

MAIN STREET
(PUBLIC)

COMMONWEALTH AVENUE
(PUBLIC)

MATCHLINE

TRAV POINT 4
MAGNAIL
N 2991375.4657
E 685087.9892
EL=133.32'

TRAV POINT 2
HUB & TACK
N 2991606.710
E 685061.545
EL=128.57'

TBM#3
HYDRANT BONNET BOLT
CHISL."X"ELEV.=134.45'
(NAVD 1988)

TBM#2
HYDRANT BONNET BOLT
CHISL."X"ELEV.=136.75'
(NAVD 1988)

PC +72.63
PC +53.81
PT +92.67
PI +61.45
PC +21.55
PRC +35.53
PRC +38.33
PC +97.31
PI +35.95
S75°36'43"W 320.12'
S75°40'42"W 294.62'
S67°17'50"W 296.92'
S84°01'35"W 288.40'
S62°41'10"W 270.83'
S86°13'06"W 326.45'
S86°33'02"W 323.02'
S20°04'33"W 451.16'
S19°25'55"W 490.29'
PROP. CONST ℄ & PGL
CONTINUED ON SHEET 24

PT +03.90
N38°17'37"W 198.34'
N34°34'43"W 174.55'
PRC +74.70
PC +60.64
N33°25'53"W 161.43'
N31°09'00"W 28.41'
PT +09.05
S44°04'02"E 77.12'
S89°04'11"E 78.30'
95.49'
N60°42'01"E
PT +72.93
PI +62.76
PC +57.54
N16°58'04"W 126.51'
N13°36'42"W 124.53'
N7°17'48"W 125.61'
N3°03'04"W 131.49'
N1°51'54"E 150.96'
PT +06.93
PC +99.15
PT +85.33
PC +73.87
PI +50.93
PI +20.57
N26°28'00"W 359.12'
N46°51'01"W 304.83'
N41°36'24"W 328.92'
PCC +76.75

CONTINUED ON SHEET 22

BFRT 2C CONST. ℄ STA. 124+43.63 =
MAIN ST (ROUTE 62) CONST. ℄ STA. 703+27.97

RET. WALL
1.5' WD RET WALL
4' WD FENCE
3' WD FENCE
2' WD
MONUMENTED RAILROAD BASELINE

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	24	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:58 AM

S20°04'33"W
451.16'

NAD 83

N

PROP. CONST ℄ & PGL

S19°25'55"W
490.29'

MATCHLINE

CONTINUED ON SHEET 23

CONTINUED ON SHEET 25

BFRT 2C ℄ STA. 136+46.20, 0.13' LT =
BEHARRELL PARKING ℄ STA. 506+31.85

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T49	N 25° 17' 55" W	478.987	NORTHING: 2991616.076 EASTING:685061.130	NORTHING: 2992049.124 EASTING: 684856.441
T50	N 31° 25' 24" W	220.666	NORTHING: 2992049.124 EASTING:684856.441	NORTHING: 2992237.427 EASTING: 684741.395
T51	N 24° 33' 08" W	109.260	NORTHING: 2992237.427 EASTING:684741.395	NORTHING: 2992336.808 EASTING: 684695.995

80038
N: 2992049.124'
E: 684856.441'
EL: 127.430'
MAG FND CHP:

2' CONC RET WALL

TRAV PT 2
HUB/TACK
2991406.710
684815.540
EL= 128.57

4' WD FENCE

8' WD FENCE

MONUMENTED RAILROAD BASELINE

PCC +76.75

PT +14.48

PC +73.14

PCC +42.92

PRC +97.66

PT +57.56

PC +30.55

PT +31.85

PT +91.30

PRC +40.13

PC +07.83

PT +66.07

PI +04.09

S16°05'38"W
61.24'

S24°42'04"W
49.18'

S55°47'30"W
129.11'

N82°23'04"W
66.03'

N63°29'00"W
52.40'

N54°31'30"W
65.11'

N43°50'15"W
107.38'

S60°08'37"W
25.80'

N61°04'33"W
36.43'

N41°56'24"W
57.21'

N21°40'16"W
74.69'

N65°53'20"E
9.34'

BFRT 2C ℄ STA. 135+63.08, 46.43' RT =
WCC PARKING ℄ STA. 600+00.00

BFRT 2C CONST. ℄ STA. 136+46.20 =
BEHARRELL PARKING CONST. ℄ STA. 506+31.85

BEHARRELL PARKING CONST. ℄ STA. 506+69.07 =
WCC PARKING CONST. ℄ STA. 600+87.91

80039
N: 2992237.427'
E: 684741.395'
EL: 126.331'
REBAR–CAP

TRAVERSE

SEE SHEET 28 FOR ADDITIONAL BASELINE DATA

BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C33	133+76.75	2991824.551	684838.734	R=200.00' Δ=10°48'35" L=37.73' T=18.92'		134+14.48	2991862.016	684842.723
L25	134+14.48	2991862.016	684842.723		N0° 40' 22"E 58.66'	134+73.14	2991920.675	684843.412
C34	134+73.14	2991920.675	684843.412	R=510.00' Δ=7°50'19" L=69.77' T=34.94'		135+42.92	2991990.283	684839.464
C35	135+42.92	2991990.283	684839.464	R=60.00' Δ=13°59'05" L=14.64' T=7.36'		135+57.56	2992004.447	684835.891
L26	135+57.56	2992004.447	684835.891		N21° 09' 02"W 72.99'	136+30.55	2992072.517	684809.556
C36	136+30.55	2992072.517	684809.556	R=300.00' Δ=11°36'11" L=60.75' T=30.48'		136+91.30	2992126.580	684782.066
L27	136+91.30	2992126.580	684782.066		N32° 45' 14"W 116.53'	138+07.83	2992224.583	684719.019
C37	138+07.83	2992224.583	684719.019	R=60.00' Δ=30°50'35" L=32.30' T=16.55'		138+40.13	2992255.045	684709.513
C38	138+40.13	2992255.045	684709.513	R=60.00' Δ=24°46'01" L=25.94' T=13.17'		138+66.07	2992279.982	684703.159

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	25	227
PROJECT FILE NO. 605189			

CONSTRUCTION BASELINE TIES

826

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:58 AM

BFRT 2C CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L28	138+66.07	2992279.982	684703.159		N26° 40' 39"W 210.62'	140+76.69	2992468.178	684608.598
C39	140+76.69	2992468.178	684608.598	R=100.00' Δ=18°53'54" L=32.98' T=16.64'		141+09.67	2992499.540	684598.873
C40	141+09.67	2992499.540	684598.873	R=100.00' Δ=19°11'03" L=33.48' T=16.90'		141+43.15	2992531.346	684588.923
L29	141+43.15	2992531.346	684588.923		N26° 57' 48"W 1059.09'	152+02.25	2993475.314	684108.708

NAD 83

N

MATCHLINE

CONTINUED ON SHEET 24

80040
N: 2992379.875'
E: 684672.950'
EL: 125.756'
REBAR–CAP

N36°04'58"W
109.26'

N31°45'32"W
140.74'

PC +76.69

PRC +09.67

PT +43.15

N29°01'07"W
173.22'

82833
N: 2992336.808'
E: 684695.995'
EL: 126.410'
MAG FND

BROOK

TBM 3
SQUARE IRON ROD
SET AT NW END OF BRIDGE
EL.=127.10

80041
N: 2992600.006'
E: 684560.876'
EL: 124.950'
REBAR–CAP

82928
N: 2992664.966'
E: 684525.643'
EL: 125.156'
MAG FND

TRAVERSE

WINTHROP STREET
(PUBLIC)

80042
N: 2992884.306'
E: 684415.837'
EL: 125.622'
REBAR–CAP

PROP. CONST.
℄ & PGL

2' CONC RET. WALL

3' STONE RET. WALL

PILE

DIRT PILE

80043
N: 2993267.511'
E: 684221.821'
EL: 128.377'
REBAR–CAP

CONTINUED ON SHEET 26

MATCHLINE

TRAVERSE TABLE				
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T51	N 24° 33' 08" W	109.260	NORTHING: 2992237.427 EASTING:684741.395	NORTHING: 2992336.808 EASTING: 684695.995
T52	N 28° 09' 05" W	48.845	NORTHING: 2992336.808 EASTING:684695.995	NORTHING: 2992379.875 EASTING: 684672.950
T53	N 26° 58' 54" W	247.018	NORTHING: 2992379.875 EASTING:684672.950	NORTHING: 2992600.006 EASTING: 684560.876
T54	N 28° 28' 27" W	73.900	NORTHING: 2992600.006 EASTING:684560.876	NORTHING: 2992664.966 EASTING: 684525.643
T55	N 26° 35' 36" W	245.290	NORTHING: 2992664.966 EASTING:684525.643	NORTHING: 2992884.306 EASTING: 684415.837
T56	N 26° 51' 11" W	429.521	NORTHING: 2992884.306 EASTING:684415.837	NORTHING: 2993267.511 EASTING: 684221.821
T57	N 25° 44' 21" W	173.231	NORTHING: 2993267.511 EASTING:684221.821	NORTHING: 2993423.554 EASTING: 684146.591

0 40 100 160
SCALE: 1" = 40'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	26	227
PROJECT FILE NO. 605189			

CONSTRUCTION BASELINE TIES

605189_HDi(BLT).DWG Plotted on 17-Aug-2016 10:58 AM

SEE SHEET 28 FOR ADDITIONAL BASELINE DATA

BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C41	152+02.25	2993475.314	684108.708	R=100.00' Δ=14°27'13" L=25.23' T=12.68'		152+27.47	2993498.995	684100.212
C42	152+27.47	2993498.995	684100.212	R=100.00' Δ=14°27'13" L=25.23' T=12.68'		152+52.70	2993522.677	684091.715
L30	152+52.70	2993522.677	684091.715		N26° 57' 48"W 632.04'	158+84.74	2994086.012	683805.135
C43	158+84.74	2994086.012	683805.135	R=100.00' Δ=19°41'51" L=34.38' T=17.36'		159+19.12	2994118.707	683795.067
C44	159+19.12	2994118.707	683795.067	R=60.00' Δ=50°39'03" L=53.04' T=28.39'		159+72.16	2994161.955	683767.418
L31	159+72.16	2994161.955	683767.418		N57° 55' 01"W 37.49'	160+09.65	2994181.867	683735.655
C45	160+09.65	2994181.867	683735.655	R=60.00' Δ=41°49'56" L=43.81' T=22.93'		160+53.46	2994216.081	683709.872
C46	160+53.46	2994216.081	683709.872	R=60.00' Δ=15°56'10" L=16.69' T=8.40'		160+70.14	2994231.271	683703.092
L32	160+70.14	2994231.271	683703.092		N32° 01' 15"W 79.43'	161+49.57	2994298.614	683660.978
C47	161+49.57	2994298.614	683660.978	R=1300.00' Δ=12°28'12" L=282.93' T=142.03'		164+32.51	2994520.352	683486.138

TRAVERSE TABLE

NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T57	N 25° 44' 21" W	173.231	NORTHING: 2993267.511 EASTING:684221.821	NORTHING: 2993423.554 EASTING: 684146.591
T58	N 23° 35' 20" W	259.095	NORTHING: 2993423.554 EASTING:684146.591	NORTHING: 2993660.999 EASTING: 684042.908
T59	N 27° 11' 26" W	328.393	NORTHING: 2993660.999 EASTING:684042.908	NORTHING: 2993953.102 EASTING: 683892.848
T60	N 26° 34' 19" W	261.121	NORTHING: 2993953.102 EASTING:683892.848	NORTHING: 2994186.642 EASTING: 683776.044
T61	S 1° 51' 04" W	61.515	NORTHING: 2994186.642 EASTING:683776.044	NORTHING: 2994125.159 EASTING: 683774.056
T62	N 44° 57' 25" W	94.071	NORTHING: 2994186.642 EASTING:683776.044	NORTHING: 2994253.210 EASTING: 683709.575
T63	N 32° 51' 02" W	93.120	NORTHING: 2994253.210 EASTING:683709.575	NORTHING: 2994331.439 EASTING: 683659.062
T64	N 32° 31' 23" E	58.338	NORTHING: 2994331.439 EASTING:683659.062	NORTHING: 2994380.628 EASTING: 683690.427
T65	N 42° 54' 31" W	162.299	NORTHING: 2994331.439 EASTING:683659.062	NORTHING: 2994450.314 EASTING: 683548.564

CONTINUED ON SHEET 25
CONTINUED ON SHEET 27
CONTINUED ON SHEET 27 INSET

NAD 83
N

COMMONWEALTH AVENUE (PUBLIC) 1877/78 COUNTY LAYOUT

80044
N: 2993423.554'
E: 684146.591'
EL: 131.238'
MAGNAIL

80045
N: 2993660.999'
E: 684042.908'
EL: 132.876'
MAGNAIL

80046
N: 2993953.102'
E: 683892.848'
EL: 135.128'
MAGNAIL

90001
N: 2994003.924'
E: 683742.612'
EL: 135.703'
MAGNAIL

83331
N: 2994125.159'
E: 683774.056'
EL: 136.401'
PKFND

80047
N: 2994186.642'
E: 683776.044'
EL: 137.526'
MAGNAIL

80048
N: 2994253.210'
E: 683709.575'
EL: 136.445'
MAGNAIL

7022
N: 2994285.849'
E: 683736.822'
EL: 138.490'
PKFND

80049
N: 2994331.439'
E: 683659.062'
EL: 136.953'
SSM FND

90002
N: 2994380.628'
E: 683690.427'
EL: 140.641'
REBAR–CAP

BFRT 2C CONST. ℄ STA. 159+84.93 = COMMONWEALTH AVE CONST. ℄ STA. 836+54.61

MCI ACCESS CONST. ℄ STA. 900+00.00 = COMMONWEALTH AVE CONST. ℄ STA. 837+16.92

COMMONWEALTH AVE CONST. ℄ STA. 838+07.17 = COMM. PARKING LOT CONST. ℄ STA. 400+00.00

MATCHLINE

0 40 100 160
SCALE: 1" = 40'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	27	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:58 AM

NAD 83

N

SEE SHEET 28 FOR ADDITIONAL BASELINE DATA

BFRT 2C CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C47	161+49.57	2994298.614	683660.978	R=1300.00 Δ=12°28'12" L=282.93' T=142.03'		164+32.51	2994520.352	683486.138

TRAVERSE TABLE				
NUMBER	LINE DATA	LENGTH	STARTING COORDINATES	ENDING COORDINATES
T64	N 32° 31' 23" E	58.338	NORTHING: 2994331.439 EASTING:683659.062	NORTHING: 2994380.628 EASTING: 683690.427
T65	N 42° 54' 31" W	162.299	NORTHING: 2994331.439 EASTING:683659.062	NORTHING: 2994450.314 EASTING: 683548.564

90050
N: 2994450.314'
E: 683548.564'
EL: 137.316'
REBAR–CAP

CONTINUED ON SHEET 26

PROP. CONST. ℄ & PGL

TRAVERSE

PI 0

T65

C47

163

164

END PROJECT
STA. 163+80.00
MEET EXISTING
N2994482.1625
E683522.1679

162

S26°38'52"E
146.39'

L48

PT +31.54

BFRT 2C CONST. ℄ STA. 163+19.32 =
COMM. PARKING LOT CONST. ℄ STA. 402+72.44

401

402

PC +07.00

T64

C64

S18°56'38"E
135.37'

90002
N: 2994380.628'
E: 683690.427'
EL: 140.641'
REBAR–CAP

TRAVERSE

839

840

841

842

843

MATCHLINE

0 40 100 160
SCALE: 1" = 40'

CONTINUED ON SHEET 26

L58

908

909

PROP. CONST. ℄ & PGL

910

PI +46.43

911

912

L59

913

914

0 40 100 160
SCALE: 1" = 40'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	28	227
PROJECT FILE NO.	605189		

CONSTRUCTION BASELINE TIES

605189_HD(BLT).DWG Plotted on 17-Aug-2016 10:58 AM

POWDER MILL ROAD ACCESS PATH CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C50	300+00.00	2982266.472	684548.202	R=20.00' Δ=47°53'02" L=16.71' T=8.88'		300+16.71	2982281.386	684554.610
L36	300+16.71	2982281.386	684554.610		N47° 11' 29"E 28.75'	300+45.46	2982300.921	684575.699
C51	300+45.46	2982300.921	684575.699	R=20.00' Δ=61°30'35" L=21.47' T=11.90'		300+66.93	2982305.192	684595.702
C52	300+66.93	2982305.192	684595.702	R=20.00' Δ=180°00'00" L=62.83' T=INFINITY'		301+29.76	2982343.080	684608.528
L37	301+29.76	2982343.080	684608.528		N71° 17' 56"W 40.00'	301+69.76	2982355.906	684570.639
C53	301+69.76	2982355.906	684570.639	R=20.00' Δ=180°00'00" L=62.83' T=INFINITY'		302+32.60	2982393.794	684583.465
L38	302+32.60	2982393.794	684583.465		S71° 17' 56"E 40.00'	302+72.60	2982380.968	684621.353
C54	302+72.60	2982380.968	684621.353	R=20.00' Δ=180°00'00" L=62.83' T=INFINITY'		303+35.43	2982418.857	684634.178
L39	303+35.43	2982418.857	684634.178		N71° 17' 56"W 15.55'	303+50.98	2982423.843	684619.448
C55	303+50.98	2982423.843	684619.448	R=20.00' Δ=180°04'56" L=62.86' T=27890.59'		304+13.84	2982461.722	684632.301
C56	304+13.84	2982461.722	684632.301	R=20.00' Δ=180°04'56" L=62.86' T=27889.97'		304+76.70	2982499.601	684645.153
C57	304+76.70	2982499.601	684645.153	R=20.00' Δ=159°43'42" L=55.76' T=111.87'		305+32.45	2982538.537	684651.018
L40	305+32.45	2982538.537	684651.018		N88° 25' 46"E 25.63'	305+58.08	2982539.240	684676.637

POWDER MILL ROAD CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L33	200+00.00	2982185.943	685157.973		N81° 42' 21"W 295.18'	202+95.18	2982228.524	684865.876
C48	202+95.18	2982228.524	684865.876	R=1500.00' Δ=8°34'50" L=224.64' T=112.53'		205+19.82	2982244.194	684641.994
L34	205+19.82	2982244.194	684641.994		S89° 42' 48"W 105.05'	206+24.87	2982243.669	684536.950
C49	206+24.87	2982243.669	684536.950	R=750.00' Δ=13°18'46" L=174.26' T=87.53'		207+99.13	2982262.959	684364.150
L35	207+99.13	2982262.959	684364.150		N76° 58' 25"W 294.48'	210+93.62	2982329.335	684077.245

MAIN ST (ROUTE 62) CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L41	700+00.00	2991398.991	685495.702		S87° 14' 11"W 198.19'	701+98.19	2991389.435	685297.744
C58	701+98.19	2991389.435	685297.744	R=236.00' Δ=42°25'24" L=174.74' T=91.59'		703+72.93	2991320.041	685141.702
L42	703+72.93	2991320.041	685141.702		S44° 48' 47"W 127.07'	705+00.00	2991229.897	685052.144

COMMONWEALTH AVE CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L50	800+00.00	2991332.771	685155.393		N40° 38' 50"W 57.54'	800+57.54	2991376.428	685117.912
C59	800+57.54	2991376.428	685117.912	R=68.00' Δ=43°24'03" L=51.51' T=27.06'		801+09.05	2991399.766	685073.369
L51	801+09.05	2991399.766	685073.369		N84° 02' 53"W 382.90'	804+91.95	2991439.472	684692.531
L52	804+91.95	2991439.472	684692.531		N56° 33' 47"W 955.41'	814+47.36	2991965.923	683895.249
L53	814+47.36	2991965.923	683895.249		N3° 41' 05"W 2142.41'	835+89.77	2994103.901	683757.560
L54	835+89.77	2994103.901	683757.560		N0° 51' 05"W 1310.23'	849+00.00	2995413.988	683738.088

BEHARRELL PARKING CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L43	500+50.00	2991541.124	684705.793		N15° 16' 28"W 47.31'	500+97.31	2991586.765	684693.329
C60	500+97.31	2991586.765	684693.329	R=43.00' Δ=54°39'20" L=41.02' T=22.22'		501+38.33	2991625.375	684701.574
C61	501+38.33	2991625.375	684701.574	R=475.06' Δ=55°23'55" L=459.33' T=249.41'		505+97.66	2992057.874	684790.996
C62	505+97.66	2992057.874	684790.996	R=25.00' Δ=78°20'36" L=34.18' T=20.37'		506+31.85	2992086.913	684803.414
L44	506+31.85	2992086.913	684803.414		N62° 19' 33"E 37.22'	506+69.07	2992104.200	684836.377

WCC PARKING CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L45	600+00.00	2992026.349	684877.205		N27° 40' 27"W 104.09'	601+04.09	2992118.531	684828.861
L46	601+04.09	2992118.531	684828.861		N32° 45' 14"W 166.99'	602+71.08	2992258.972	684738.513

COMM. PARKING LOT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L47	400+00.00	2994321.278	683754.329		S89° 08' 55"W 18.33'	400+18.33	2994321.005	683736.004
C63	400+18.33	2994321.005	683736.004	R=40.00' Δ=55°03'59" L=38.44' T=20.85'		400+56.77	2994337.611	683702.961
L48	400+56.77	2994337.611	683702.961		N35° 47' 07"W 150.23'	402+07.00	2994459.480	683615.115
C64	402+07.00	2994459.480	683615.115	R=15.00' Δ=93°43'02" L=24.54' T=16.01'		402+31.54	2994462.282	683593.405
L49	402+31.54	2994462.282	683593.405		S50° 29' 52"W 40.90'	402+72.44	2994436.263	683561.843

MCI ACCESS CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L55	900+00.00	2994231.038	683755.670		S27° 53' 39"E 290.29'	902+90.29	2993974.478	683891.479
C65	902+90.29	2993974.478	683891.479	R=36.00' Δ=45°21'22" L=28.50' T=15.04'		903+18.79	2993956.848	683912.921
L56	903+18.79	2993956.848	683912.921		S73° 15' 02"E 200.19'	905+18.98	2993899.155	684104.619
L57	905+18.98	2993899.155	684104.619		S85° 45' 40"E 51.45'	905+70.43	2993895.352	684155.926
L58	905+70.43	2993895.352	684155.926		S73° 01' 45"E 476.01'	910+46.43	2993756.413	684611.205
L59	910+46.43	2993756.413	684611.205		N16° 48' 15"E 403.57'	914+50.00	2994142.748	684727.877

BFRT 2C CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L15	123+84.86	2991299.836	685208.832		N33° 41' 34"W 77.90'	124+62.76	2991364.651	685165.618
L16	124+62.76	2991364.651	685165.618		N5° 40' 34"E 57.82'	125+20.57	2991422.183	685171.336
C25	126+73.87	2991506.749	685081.066	R=15.00' Δ=43°47'18" L=11.46' T=6.03'		126+85.33	2991500.044	685072.111
C27	127+60.64	2991510.172	684999.129	R=15.00' Δ=53°40'54" L=14.05' T=7.59'		127+74.70	2991519.168	684989.002
C28	127+74.70	2991519.168	684989.002	R=20.00' Δ=83°39'51" L=29.20' T=17.90'		128+03.90	2991531.123	684965.153
L21	128+03.90	2991531.123	684965.153		S74° 47' 33"W 149.91'	129+53.81	2991491.800	684820.494
C29	129+53.81	2991491.800	684820.494	R=60.00' Δ=17°58'23" L=18.82' T=9.49'		129+72.63	2991489.769	684801.860
C30	129+72.63	2991489.769	684801.860	R=16.00' Δ=71°45'46" L=20.04' T=11.57'		129+92.67	2991501.479	684787.215
L22	129+92.67	2991501.479	684787.215		N15° 28' 19"W 43.29'	130+35.95	2991543.197	684775.668
L23	130+35.95	2991543.197	684775.668		S74° 50' 49"W 25.50'	130+61.45	2991536.530	684751.052
L24	130+61.45	2991536.530	684751.052		N15° 06' 41"W 60.09'	131+21.55	2991594.545	684735.386
C31	131+21.55	2991594.545	684735.386	R=15.00' Δ=53°25'48" L=13.99' T=7.55'		131+35.53	2991607.756	684738.099
C32	131+35.53	2991607.756	684738.099	R=515.00' Δ=26°50'09" L=241.21' T=122.86'		133+76.75	2991824.551	684838.734

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
NONE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	29	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 10:59 AM

DENSE FOLIAGE

LIMIT OF 100' BUFFER ZONE TO BVW

NAD 83

N

EXIST RR LAYOUT LINE

TOWN OF CONCORD
50' FLOWAGE EASEMENT
PB 388/1975

N/F
ELIZABETH Z. HOMES
BK/PG 20733/306
#211
STONE ROOT LN.

DENSE FOLIAGE

PROP. CONST. ℄ & PGL

RET. EXIST. RAILS AND TIES (TYP.)

OLD WOOD FENCE POSTS

DENSE FOLIAGE

95' CONCORD 2E EASEMENT 403/PG 679 388/1975

℄

50' RIGHT OF WAY
PB 490/1969
BK/PG 11682/239

1 2 3 4 5 6

MATCHLINE

CONTINUED ON SHEET 30

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

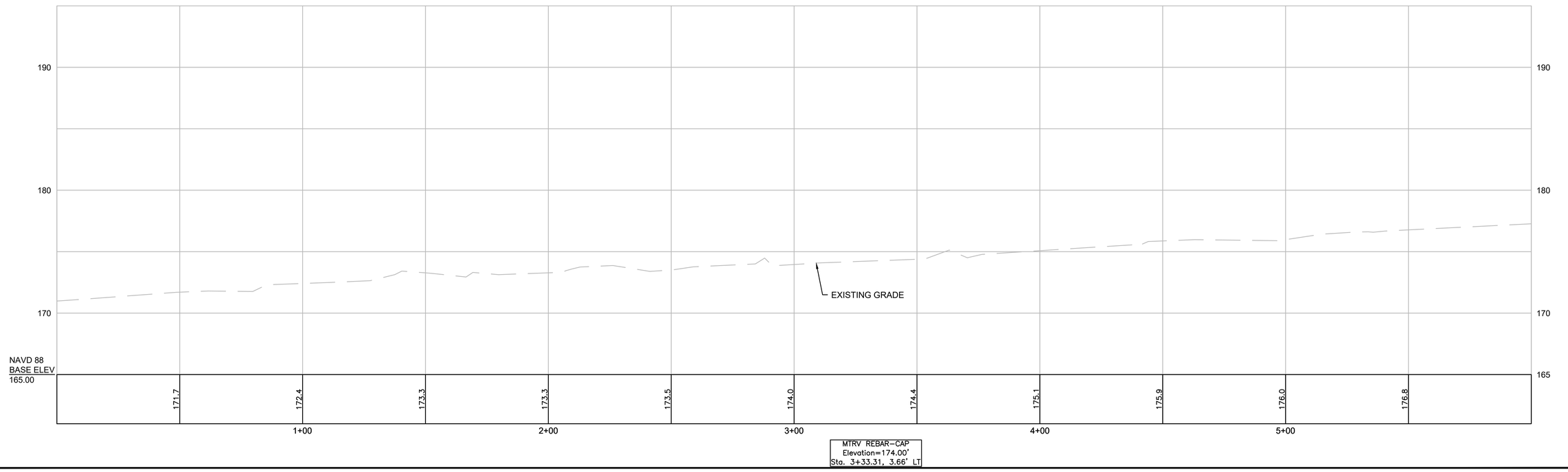
EXIST RR LAYOUT LINE

TOWN OF SUDBURY
TOWN OF CONCORD

N/F
TOWN OF CONCORD
BK/PG 1089/192
#48B
FITCHBURG TPKE

DENSE FOLIAGE

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

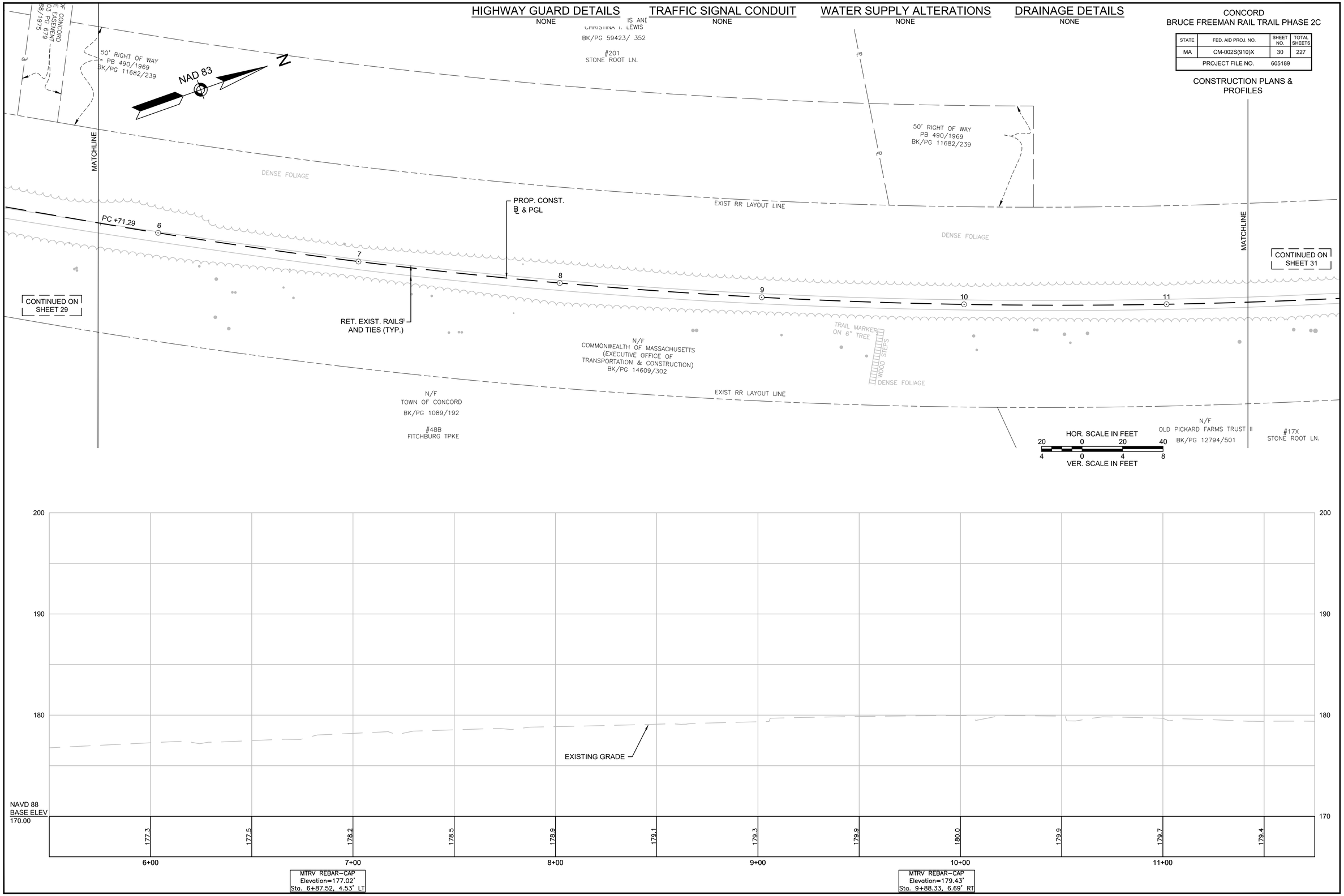
DRAINAGE DETAILS
NONE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	30	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 10:59 AM



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
NONE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	31	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:00 AM

N/F
ANDREW W. DICK AND
DEBORAH A. ELLWOOD
BK/PG 56939/ 124
#173
STONE ROOT LN.

NAD 83

APPROX. LIMIT OF 100' BUFFER ZONE TO BANK

PROP. CONST. ℄ & PGL

EXIST RR LAYOUT LINE

RET. EXIST. RAILS AND TIES (TYP.)

DENSE FOLIAGE

PATH

10.00'

6"

CONTINUED ON SHEET 30

MATCHLINE

11 12 13 14 15 16 17

PROP. COMPOST AND SEED OVER MODIFIED ROCKFILL (SEE SHEET 139 FOR DETAILS)

PROP. COMPOST FILTER TUBES (TYP.)

PROP. CLEARING AND GRUBBING (TYP.)

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

WF#1-103
WF#1-104
WF#1-105

N/F
DAVID MADISON AND
CHRISTINE NUGENT
BK/PG 17554/283
#7A
WHITE AVE.

CONTINUED ON SHEET 32

EXIST RR LAYOUT LINE

LIMIT OF BANK

WF#1-101
WF#1-102
WF#1-106
WF#1-100

WETLAND NO. 1 (BANK)

EDGE OF POND OBSCURED APPROX LOCATION

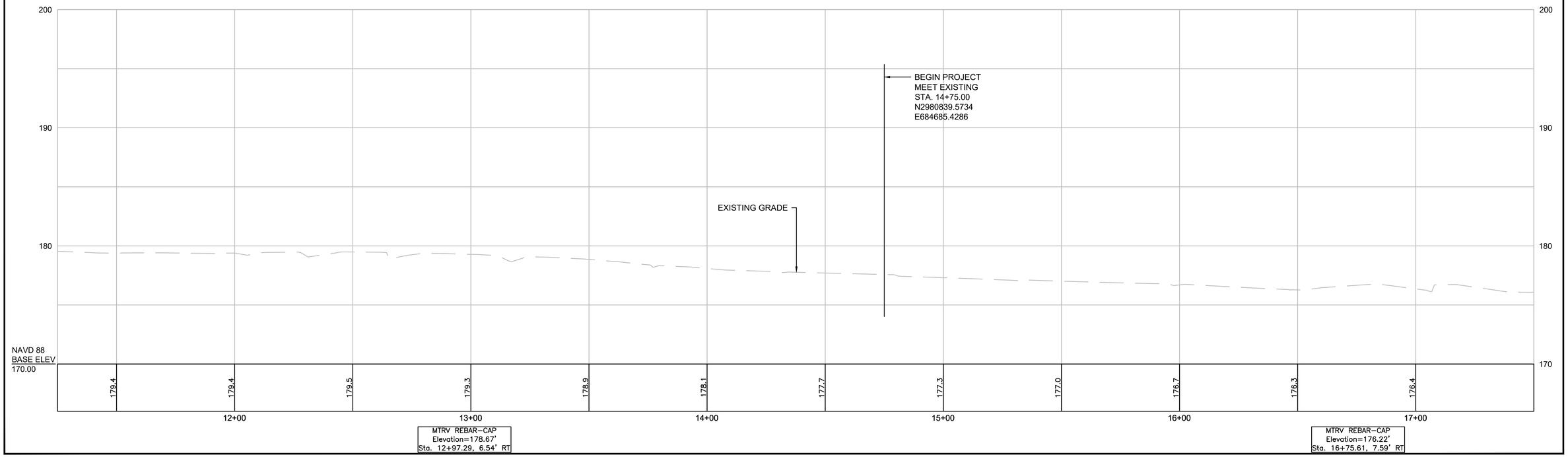
WHITE POND

N/F
OLD PICKARD FARMS TRUST II
BK/PG 12794/501

#17X
STONE ROOT LN.

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
NONE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	32	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:00 AM

NAD 83

N/F
WALTER W. BIRGE III AND
SUSAN HILL
BK/PG 43886/198

#109
STONE ROOT LN.

N/F
GREGORY J. MUELLER
AND AMY E. MUELLER
BK/PG 50209/138

#95
STONE ROOT LN.

N/F
CHRISTOPHER W. JONES AND
JENNIFER A. FENTON-JONES
BK/PG 52779/402

#83
STONE ROOT LN.

#65
STONE ROOT LN.

LIMIT OF 100' BUFFER TO ISOLATED LAND SUBJECT TO FLOODING

EXIST RR LAYOUT LINE

DENSE FOLIAGE

PATH

MATCHLINE

CONTINUED ON SHEET 31

CONTINUED ON SHEET 33

17 18 19 20 21 22 23

PROP. CONST. ℄ & PGL

THE AREA BETWEEN STA. 21+50 AND STA. 27+40 SHALL BE ROUGH GRADED TO AVOID PONDING. REMOVAL OF EXISTING TREES SHALL BE MINIMIZED AND ONLY AT THE DIRECTION OF THE ENGINEER. SEE PROFILE AND CROSS SECTIONS FOR DETAILS.

PT +54.00

APPROX. LIMIT OF 100' BUFFER ZONE TO BANK

RET. EXIST. RAILS AND TIES

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

LIMIT OF GRADING AND REMOVAL OF EXIST. RAILS AND TIES. MEET EXIST.

REM. EXIST. RAILS AND TIES

LIMIT OF ISOLATED LAND SUBJECT TO FLOODING AND CERTIFIED VERNAL POOL

WF#1-105

N/F
DAVID KADISON AND
CHRISTINE NUGENT
BK/PG 17554/283

#74
WHITE AVE.

N/F
KENNETH C. MILLER AND
DORCAS MILLER
BK/PG 25487/522

#75
WHITE AVE.

WF#1-106

WF#1-107

N/F
DAVID KADISON AND
CHRISTINE L. NUGENT
BK/PG 17554/ 283

#70
WHITE AVE.

WF#2-103

WF#2-102

WF#2-104

WF#3-101

WETLAND
NO. 2
(ILSF)

N/F
DAVID D. BRANTLEY
BK/PG 54782/239

#60
WHITE AVE.

WF#2-100

N/F
KEITH A. BERGMAN AND
MARGARET CARROLL-BERGMAN
BK/PG 56772/169

#56
WHITE AVE.

N/F
ARMAND PORAZZO, JR
BK/PG 27029/461

#7Y
MITCHELL RD.

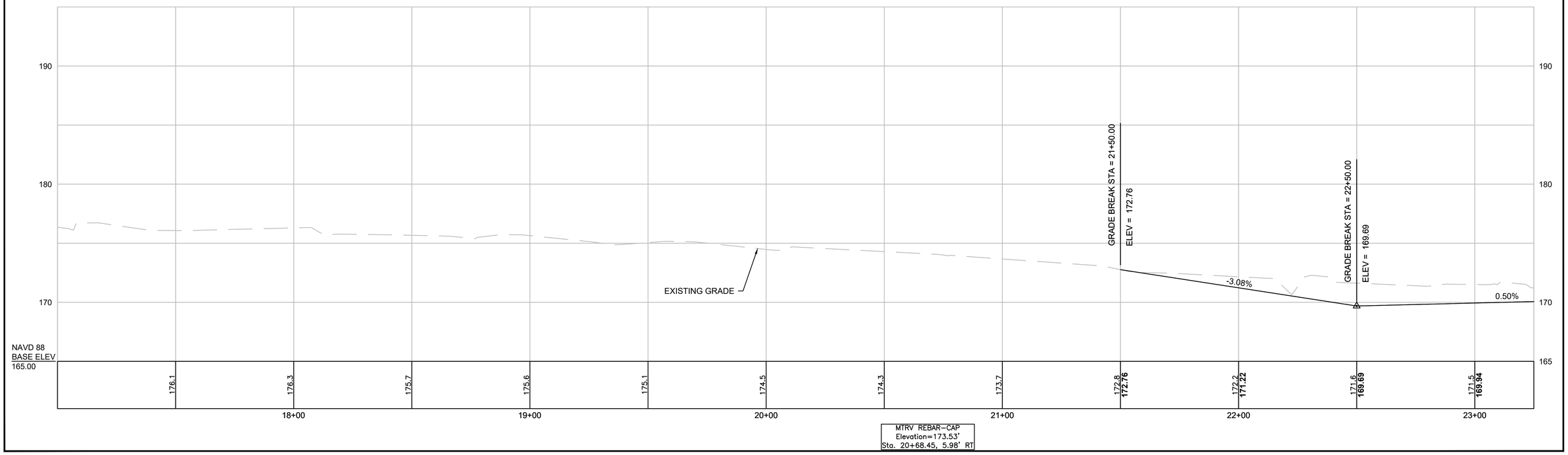
N/F
GREGG BENSON WINN AND
ELIZABETH WINN
BK/PG 63741/86

WF#2-105

#68
MITCHELL RD.

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8



MTRV REBAR-CAP
Elevation=173.53'
Sta. 20+68.45, 5.98' RT

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

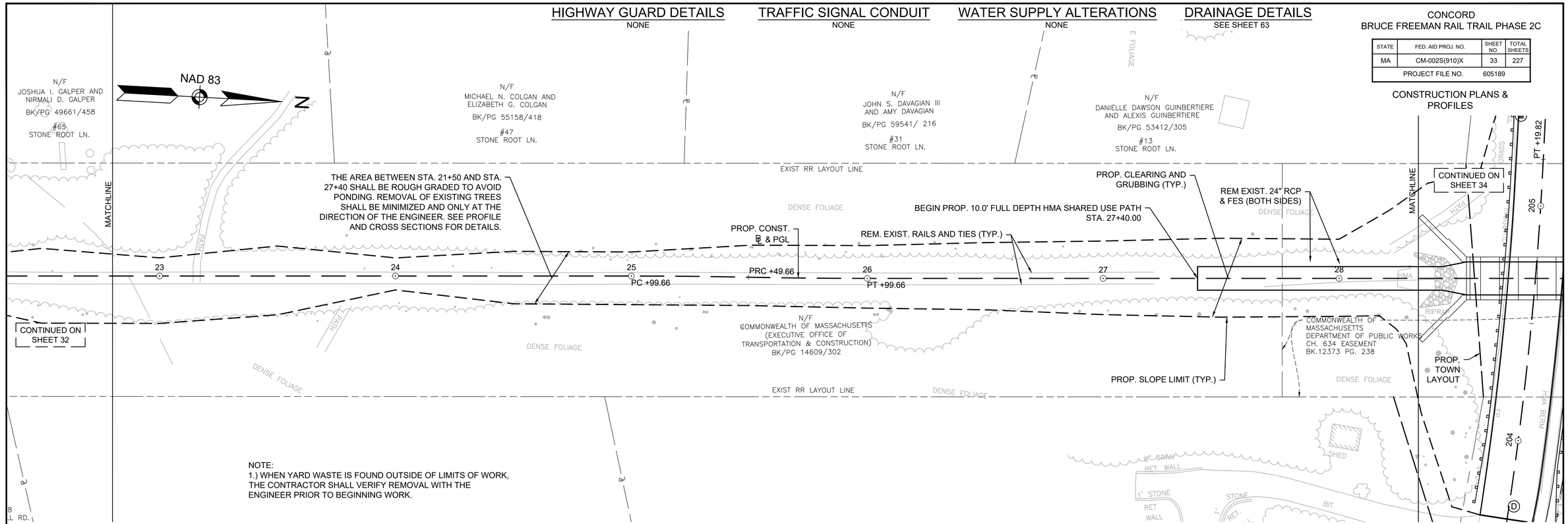
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 63

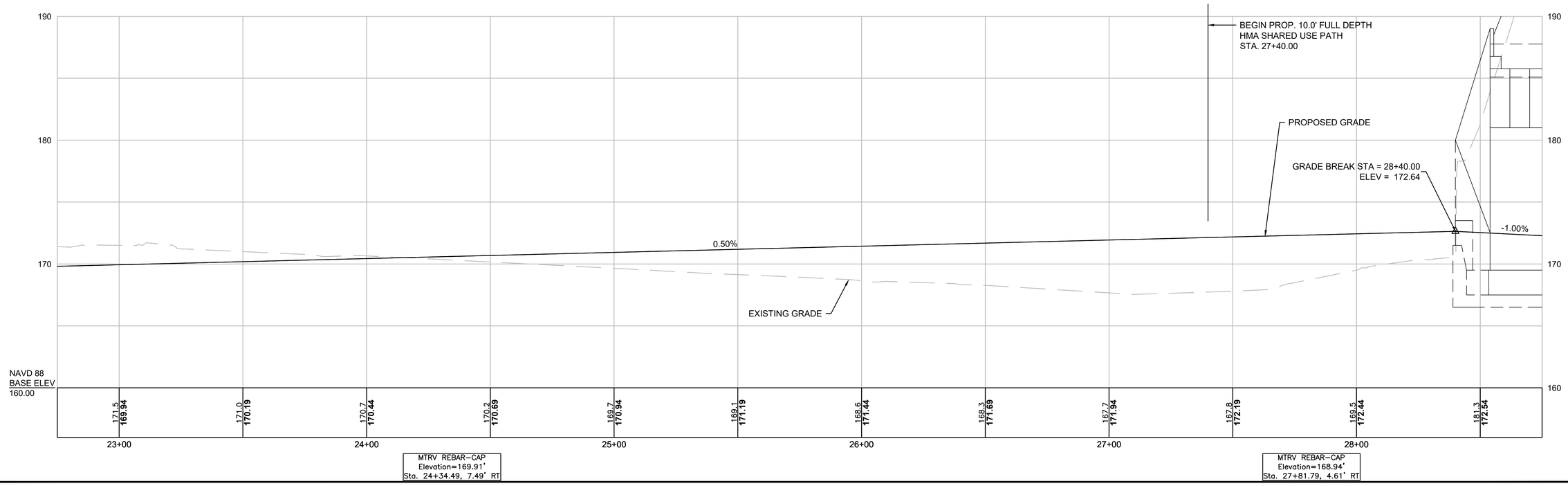
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	33	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES



NOTE:
1.) WHEN YARD WASTE IS FOUND OUTSIDE OF LIMITS OF WORK, THE CONTRACTOR SHALL VERIFY REMOVAL WITH THE ENGINEER PRIOR TO BEGINNING WORK.



605189_HD(CO).DWG Plotted on 17-Aug-2016 11:01 AM

HIGHWAY GUARD DETAILS

203+22, 24.75' RT TO 203+52, 22.75' RT - ITEM 619.4
203+52, 22.75' RT TO 203+90, 18' RT - ITEM 619.1
203+90, 18' RT TO 205+50, 18' RT - ITEM 619.1
205+50, 18' RT TO 205+80, 18' RT - ITEM 619.4
203+70, 14.5' LT TO 204+05, 13.5' LT - ITEM 619.4
204+05, 13.5' LT TO 205+44, 13.4' LT - ITEM 619.1
205+44, 13.4' LT TO 205+64, 14.75' LT - ITEM 619.1
205+64, 14.75' LT TO 206+06, 23.1' LT - ITEM 619.1
206+06, 23.1' LT TO 206+35, 23.1' LT - ITEM 619.4

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 63

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	34	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:01 AM

NAD 83

N

CONTINUED ON SHEET 33

CONTINUED ON SHEET 36

MATCHLINE

MATCHLINE

POWDER MILL ROAD (PUBLIC)

#30Y
POWDER MILL RD.

N/F
DANIELLE DAWSON GUINBERTIERE
AND ALEXIS GUINBERTIERE
BK/PG 53412/305

BK 27932/PG44
CONSERVATION RESTRICTIONS

LIMIT OF WORK STA. 206+38 MEET EXIST.

MEET EXIST. HMA SIDEWALK

POWDER MILL ROAD ℄ STA. 206+13.50, 22.75' RT = POWDER MILL ROAD ACCESS PATH ℄ STA. 300+00.00

PROP. COMPOST FILTER TUBES (TYP.)

PROP. TEMP. EASE. (TYP.)

PROP. PERM. EASE. (TYP.)

PROP. TIMBER RAIL FENCE (STA. 300+71 TO STA. 301+26 RT STA. 301+82 TO STA. 302+33 LT STA. 302+76 TO STA. 303+33 RT STA. 303+62 TO STA. 304+22 LT STA. 304+18 TO STA. 304+73 RT) (SEE SHEET 142 FOR DETAILS)

PC +24.87

PROP. GRANITE PIER (SEE SHEET 146 FOR DETAILS)

PT +16.71

PROP. 8' HMA ACCESS RAMP WITH HANDRAILS (SEE SHEET 141 FOR DETAILS)

PC +69.76

PT +32.60

PROP. CLEARING AND GRUBBING (TYP.)

PROP. CLEARING AND GRUBBING (TYP.)

PROP. SLOPE LIMIT (TYP.)

PC +45.46

PROP. LEVEL LANDING (TYP.)

LIMIT OF BANK OF INTERMITTENT STREAM

LIMIT OF PROP. FULL DEPTH HMA CONST. STA. 205+65 MEET EXIST.

PRC +66.93

PROP. TEMP. EASE. (TYP.)

PROP. COMPOST TOPSOIL & SEED (TYP.)

PROP. SLOPE LIMIT (TYP.)

PROP. 5.5' HMA SIDEWALK (TYP.)

PT +19.82

PT +29.76

PROP. CONST. ℄ & PGL

PC +72.60

PT +35.43

PC +50.98

PROP. 8.0' HMA SHARED USE PATH

BFRT 2C CONST. ℄ STA. 31+79.31 = POWDER MILL ROAD ACCESS PATH CONST. ℄ STA. 305+58.08

EXIST RR LAYOUT LINE

PROP. W-BEAM HWY GUARD (TYP.)

PROP. GRAN. CURB TYPE VB

PROP. W-BEAM HWY GUARD (TYP.)

PRC +13.84

PRC +76.70

PROP. TIMBER RAIL FENCE (STA. 33+32 TO STA. 33+71 LT) (SEE SHEET 142 FOR DETAILS)

REM. EXIST. RAILS AND TIES (TYP.)

PROP. CONST. ℄ & PGL

REM EXIST. 24" RCP & FES (BOTH SIDES)

PROP. SWALE (TYP.)

PROP. 2' STONE DUST SHOULDER (TYP.)

PT +32.45

PROP. SLOPE LIMIT (TYP.)

PC +05.48

PRC +25.52

PT +25.08

PT +45.55

PROP. 72" CLF WITH 3.0' WIDE OPENING

PROP. BRIDGE NO. C-19-015 SEE BRIDGE PLANS FOR DETAILS

PROP. COMPOST TOPSOIL & SEED (TYP.)

PROP. CLEARING AND GRUBBING (TYP.)

PC +85.01

PRC +05.05

PROP. SWALE (TYP.)

PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)

PROP. TIMBER RAIL FENCE (STA. 33+29 TO 33+71 RT) (SEE SHEET 142 FOR DETAILS)

PROP. SLOPE LIMIT (TYP.)

PROP. EOP

PROP. TOWN LAYOUT

R&R CLF

PROP. FULL DEPTH HMA CONSTRUCTION (SEE SHEET 152 FOR DETAILS)

PROP. 2' STONE DUST SHOULDER (TYP.)

BFRT 2C CONST. ℄ STA. 28+83.23 = POWDER MILL ROAD CONST. ℄ STA. 204+69.20

LIMIT OF 100' BUFFER ZONE TO BANK

PROP. CONST. ℄ & PGL

PROP. CLEARING AND GRUBBING (TYP.)

PROP. W-BEAM HWY GUARD BURIED END

PROP. TEMP. EASE. (TYP.)

PROP. COMPOST TOPSOIL & SEED (TYP.)

LIMIT OF FULL DEPTH CONSTRUCTION STA. 203+65 MEET EXIST.

PROP. SLOPE LIMIT (TYP.)

PC +95.18

MEET EXIST. HMA SIDEWALK

LIMIT OF WORK STA. 203+22.00 MEET EXIST.

N/F
TOWN OF CONCORD
BK/PG 11686/318

#30Y
POWDER MILL RD.

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

N/F
SCOTT B. DYNES AND
LINDA LEE DYNES
BK/PG 36654/541

#85
JENNIE DUGAN RD.

N/F
DONALD R. FITZGERALD
BK/PG 24694/321
JENNIE DUGAN RD.

#85

N/F
ALEXANDER M. ERNEST
AND MEMISOGLU ASLI
BK/PG 46007/136

#97
JENNIE DUGAN RD.

0 20 50 100
SCALE: 1" = 20'

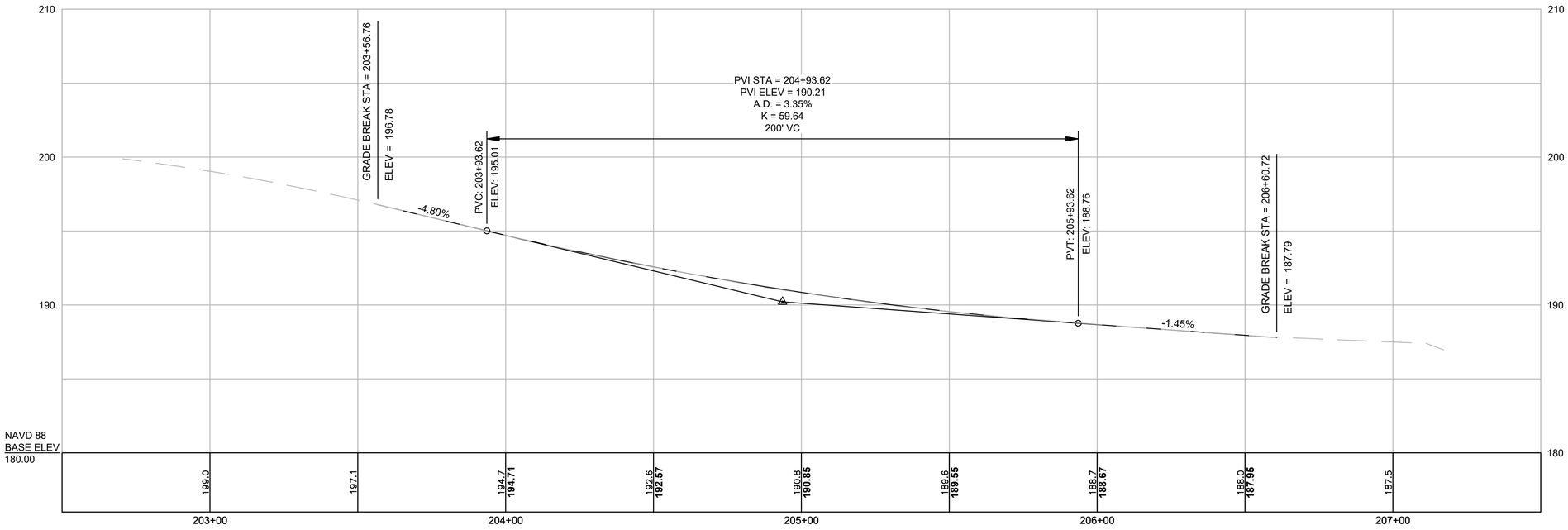
FOR PROFILES SEE SHEET 35 & 61

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	35	227
PROJECT FILE NO.	605189		

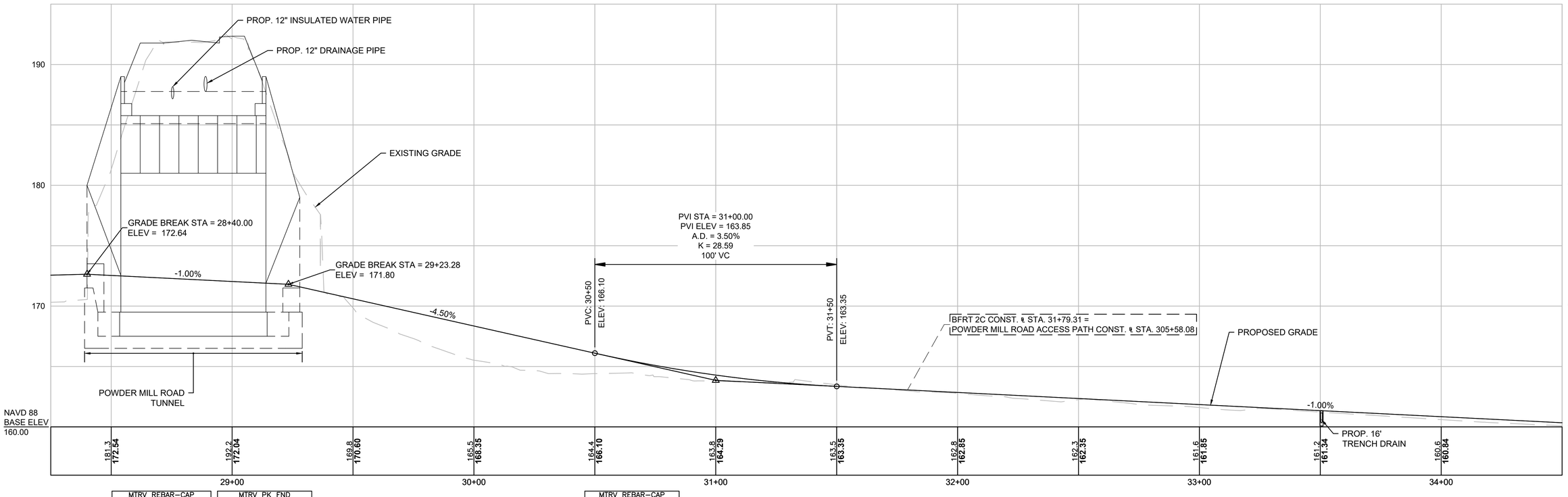
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:01 AM



POWDER MILL ROAD

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



MTRV REBAR–CAP
Elevation=190.53'
Sta. 28+70.78, 45.33' LT

MTRV PK FND
Elevation=191.98'
Sta. 29+03.05, 5.74' LT

MTRV REBAR–CAP
Elevation=164.47'
Sta. 30+65.36, 0.40' LT

BRUCE FREEMAN RAIL TRAIL

FOR CONSTRUCTION PLAN SEE SHEET 34

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 64

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	36	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

NAD 83

MATCHLINE

#53Y POWDER MILL RD.

WETLAND NO. 3 (BVW)

WETLAND NO. 3 (BANK)

LIMIT OF BORDERING VEGETATED WETLAND AND BANK

EXIST RR LAYOUT LINE

PROP. TIMBER RAIL FENCE (STA. 34+16 TO STA. 36+35 LT) (SEE SHEET 142 FOR DETAILS)

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. GRANITE MARKER (16.25, CONCORD) (SEE SHEET 144 FOR DETAILS)

PROP. COMPOST FILTER TUBES (TYP.)

PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)

PROP. SLOPE LIMIT (TYP.)

PROP. CONST. ℄ & PGL

PROP. COMPOST TOPSOIL & SEED (TYP.)

PROP. TIMBER RAIL FENCE (STA. 38+16 TO STA. 41+85 LT) (SEE SHEET 142 FOR DETAILS)

(RET.) ROCK

PC +52.47

CONTINUED ON SHEET 34

DENSE FOLIAGE

PROP. 48" THREE-RAIL BOLTED TIMBER FENCE (STA. 34+66 TO STA. 35+86 RT) (SEE SHEET 142 FOR DETAILS)

REM. EXIST. RAILS AND TIES (TYP.)

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION) BK/PG 14609/302

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. SLOPE LIMIT (TYP.)

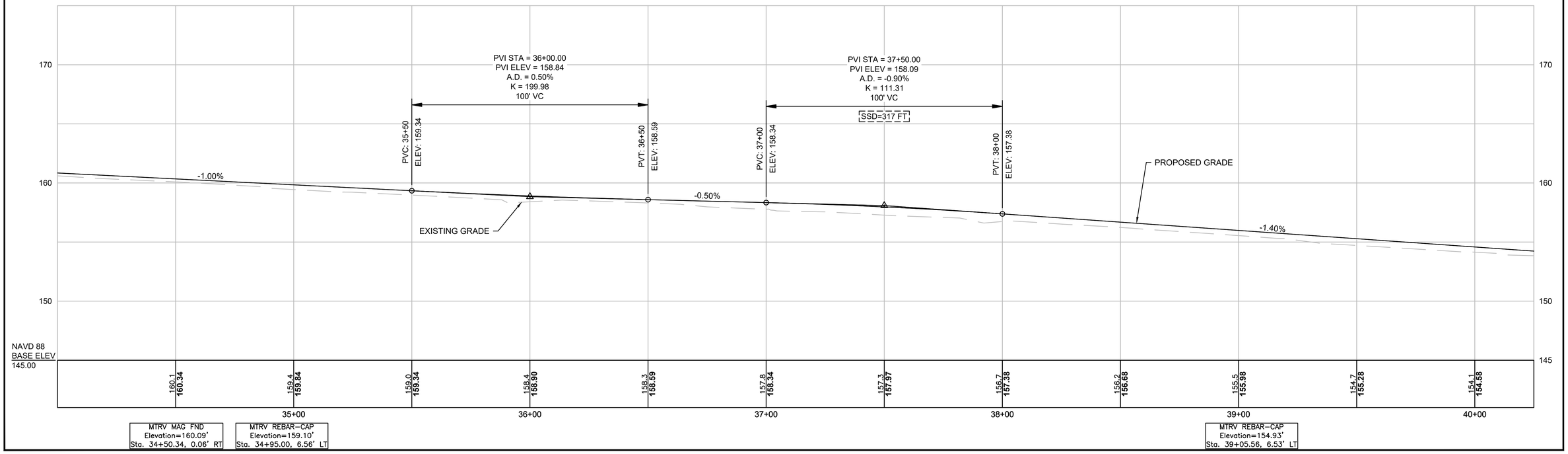
PROP. SWALE (TYP.)

LIMIT OF 100' BUFFER ZONE TO BVW & BANK

PROP. CLEARING AND GRUBBING (TYP.)

CONTINUED ON SHEET 37

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



605189_HD(CO).DWG Plotted on 17-Aug-2016 11:02 AM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

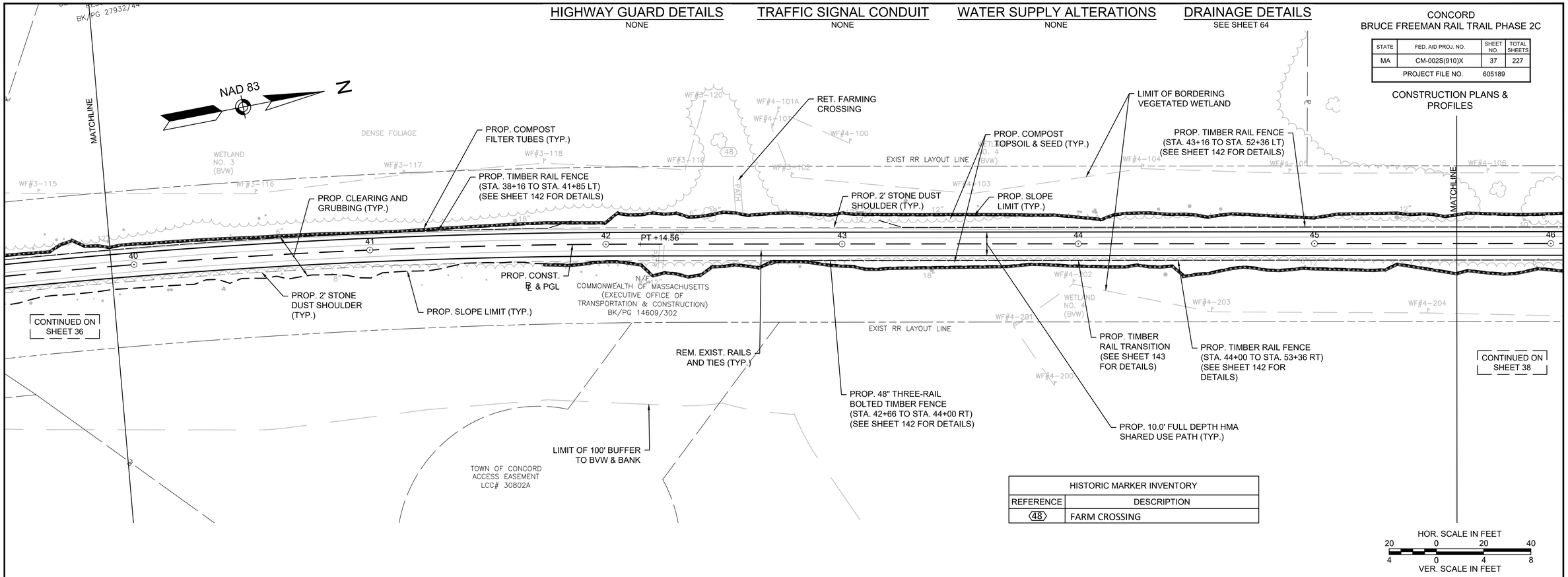
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 64

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

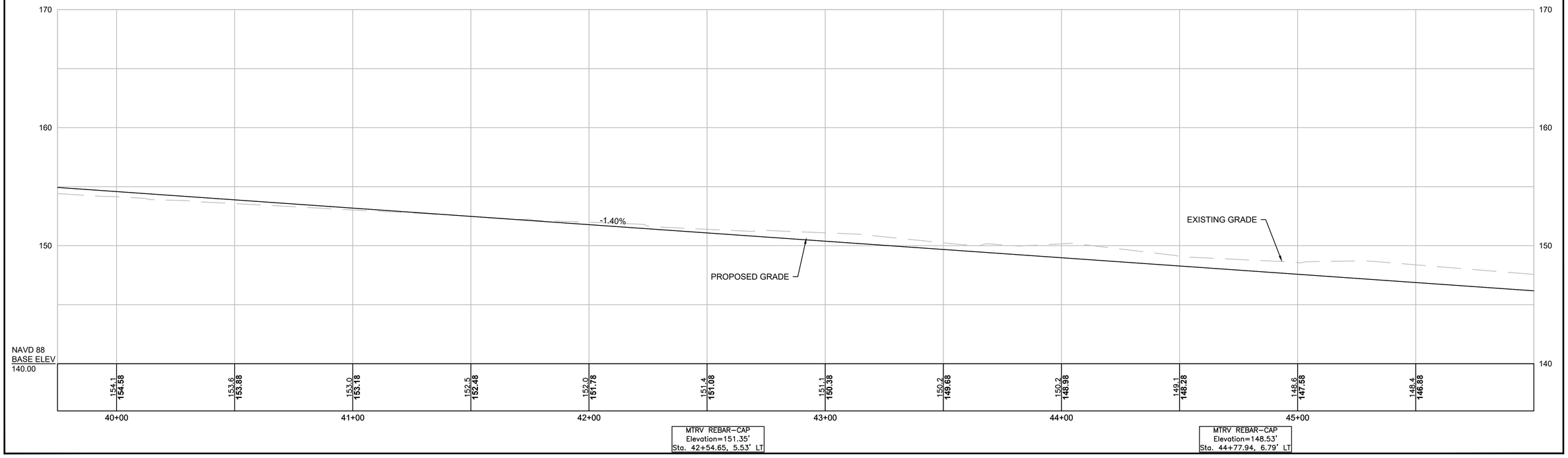
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	37	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
48	FARM CROSSING

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



605189_HD(CO).DWG Plotted on 17-Aug-2016 11:02 AM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

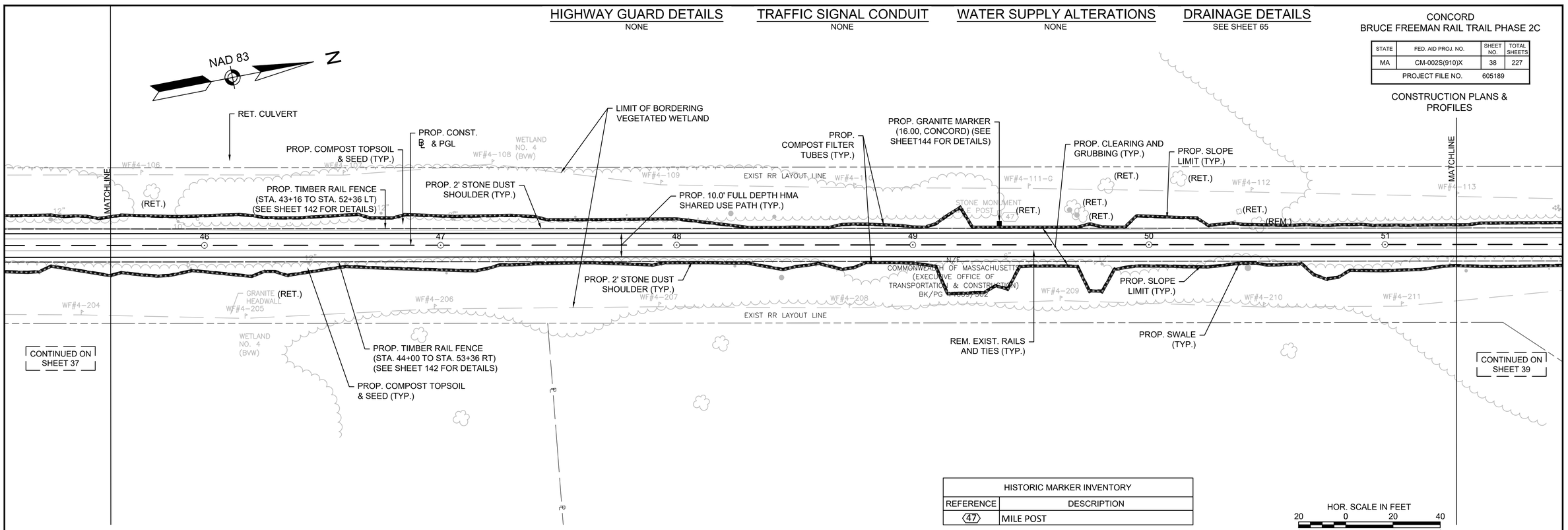
DRAINAGE DETAILS
SEE SHEET 65

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	38	227
PROJECT FILE NO.	605189		

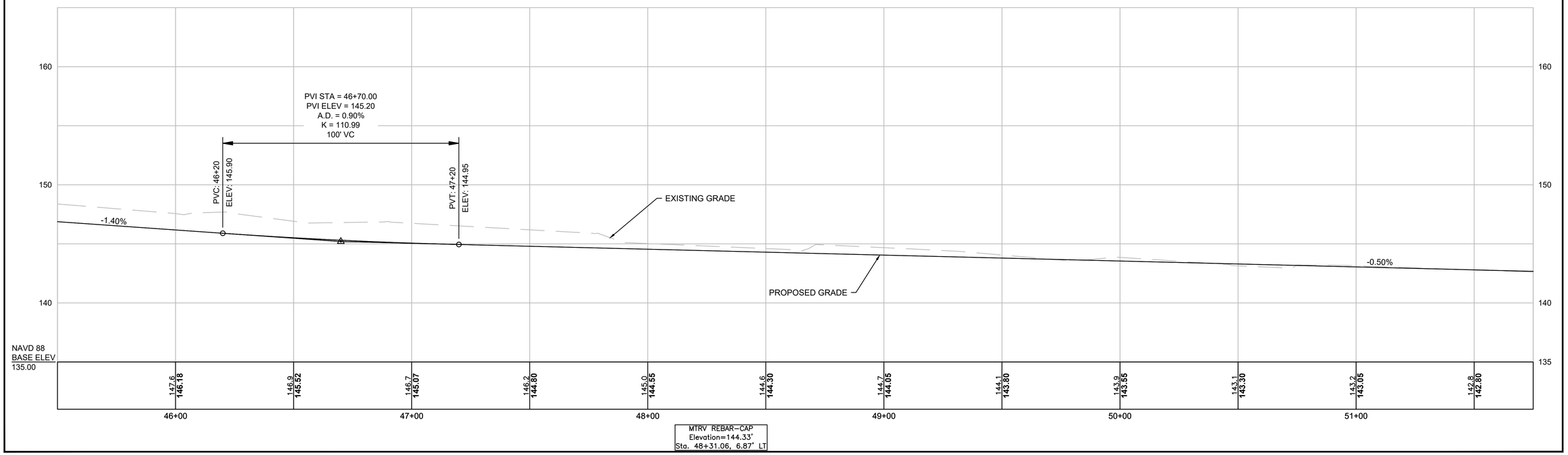
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:03 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
⟨47⟩	MILE POST

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 65

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	39	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:03 AM

NAD 83 N

MATCHLINE

CONTINUED ON SHEET 38

CONTINUED ON SHEET 40

LIMIT OF 100' BUFFER ZONE TO BVW

PROP. TIMBER RAIL FENCE (STA. 43+16 TO STA. 52+36 LT) (SEE SHEET 142 FOR DETAILS)

PROP. COMPOST TOPSOIL & SEED (TYP.)

PROP. SLOPE LIMIT (TYP.)

(RET.)

PROP. COMPOST FILTER TUBES (TYP.)

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. SWALE (TYP.)

PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

PROP. CLEARING AND GRUBBING (TYP.)

PROP. TIMBER RAIL FENCE (STA. 56+81 TO STA. 57+21 LT) (SEE SHEET 142 FOR DETAILS)

WETLAND NO. 4 (BVW)

WF#4–113 WF#4–114 WF#4–115 WF#4–116 WF#4–211 WF#4–212 WF#4–213 WF#4–214 WF#4–215 WF#4–216 WF#4–217 WF#4–218 WF#4–219 WF#4–220 WF#4–221 WF#4–222 WF#4–223–G WF#4–225

51 52 53 54 55 56 57

LIMIT OF BORDERING VEGETATED WETLAND

REM. EXIST. RAILS AND TIES (TYP.)

PROP. COMPOST FILTER TUBES (TYP.)

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. SLOPE LIMIT (TYP.)

PROP. COMPOST TOPSOIL & SEED (TYP.)

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

PROP. SWALE (TYP.)

PROP. TIMBER RAIL FENCE (STA. 56+81 TO STA. 57+21 RT) (SEE SHEET 142 FOR DETAILS)

PROP. TIMBER RAIL FENCE (STA. 44+00 TO STA. 53+36 RT) (SEE SHEET 142 FOR DETAILS)

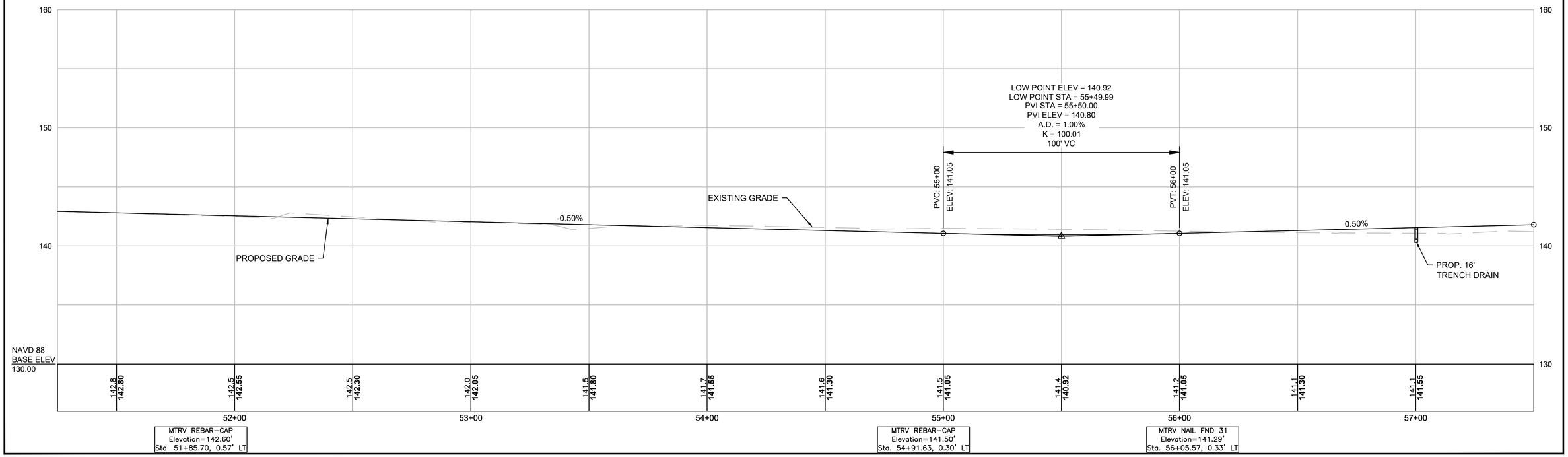
EXIST RR LAYOUT LINE

EXIST RR LAYOUT LINE

N/F
TOWN OF CONCORD
BK/PG 12343/391

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

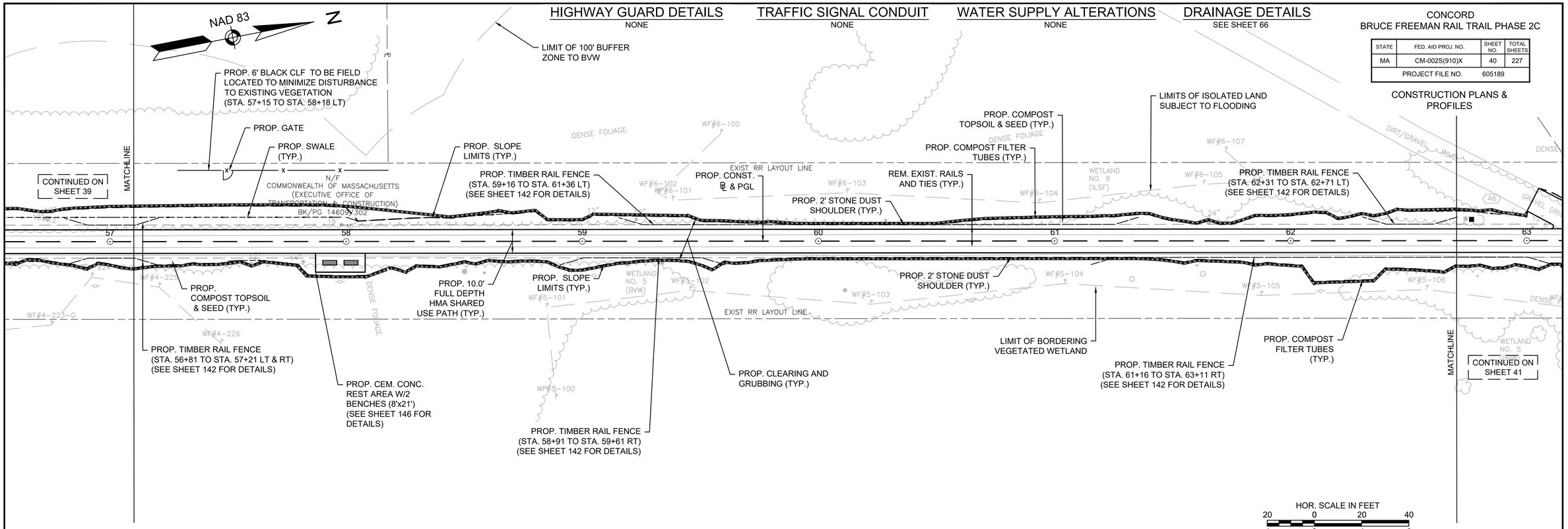
DRAINAGE DETAILS
SEE SHEET 66

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

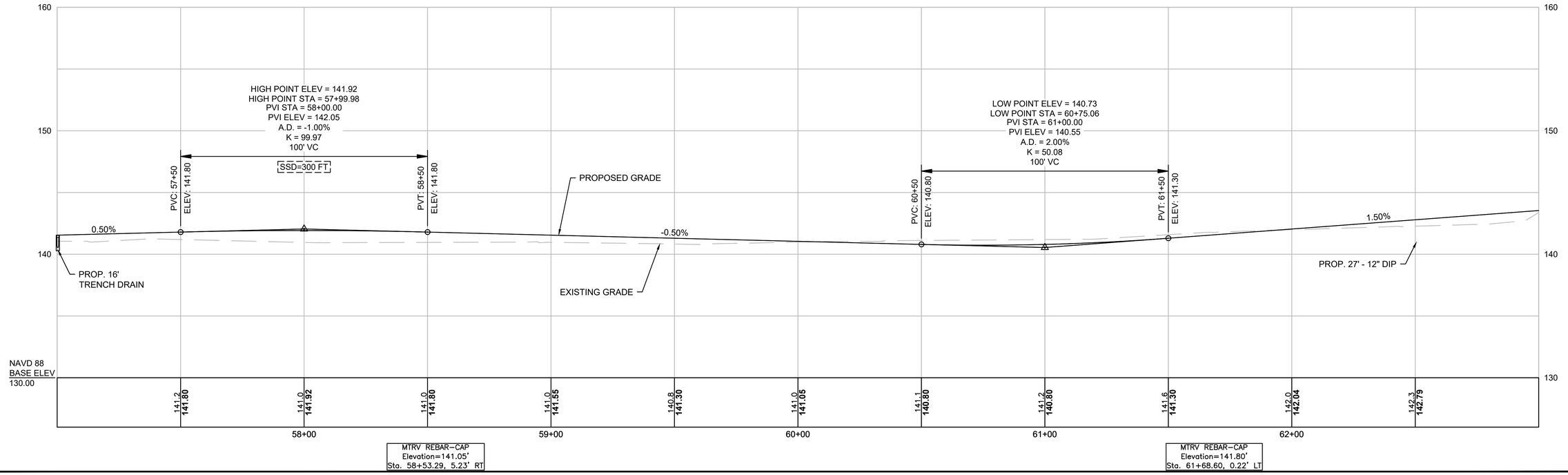
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	40	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:03 AM



HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



MTRV REBAR–CAP
Elevation=141.05'
Sta. 58+53.29, 5.23' RT

MTRV REBAR–CAP
Elevation=141.80'
Sta. 61+68.60, 0.22' LT

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

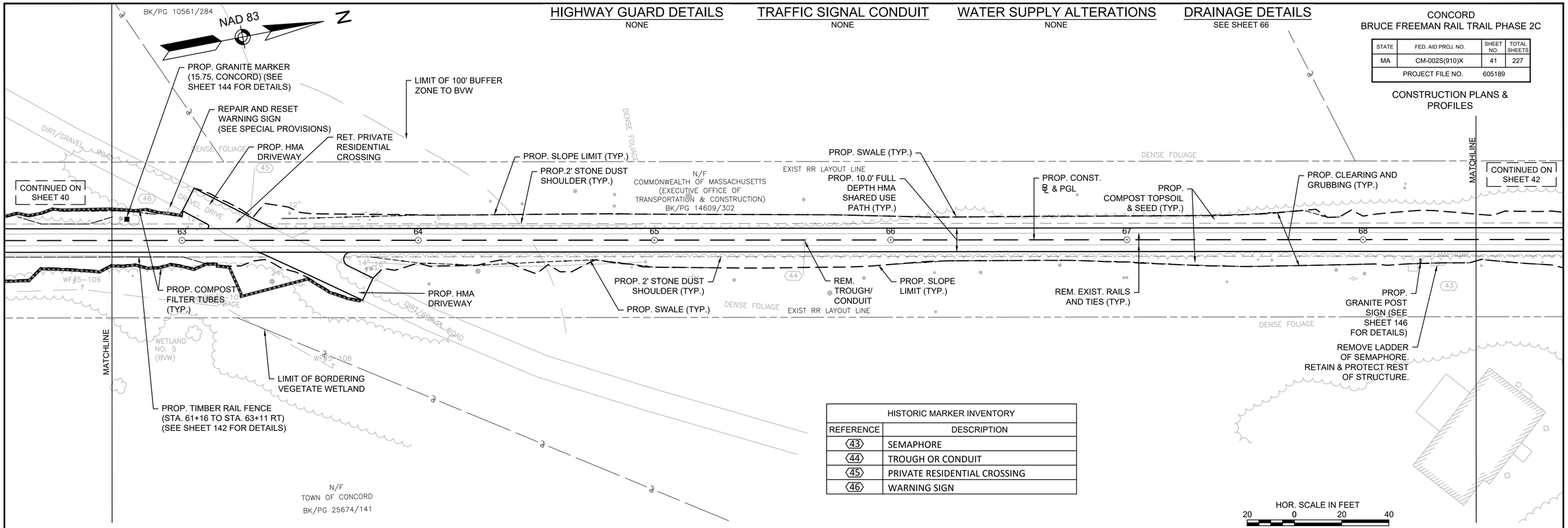
DRAINAGE DETAILS
SEE SHEET 66

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	41	227
PROJECT FILE NO.	605189		

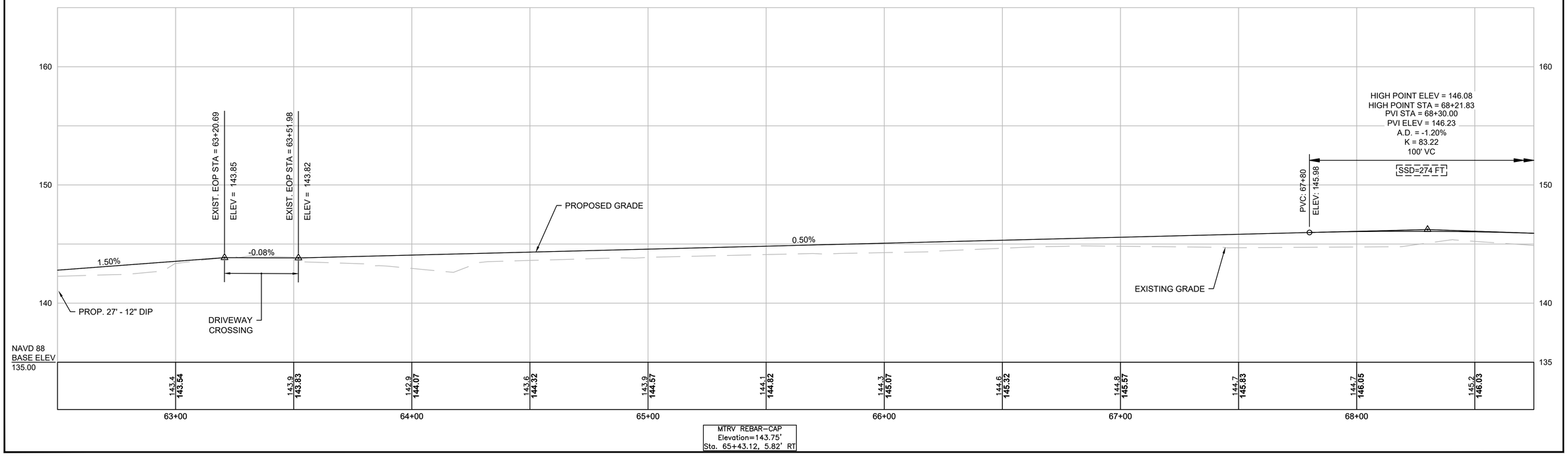
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:04 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
⟨43⟩	SEMAPHORE
⟨44⟩	TROUGH OR CONDUIT
⟨45⟩	PRIVATE RESIDENTIAL CROSSING
⟨46⟩	WARNING SIGN

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

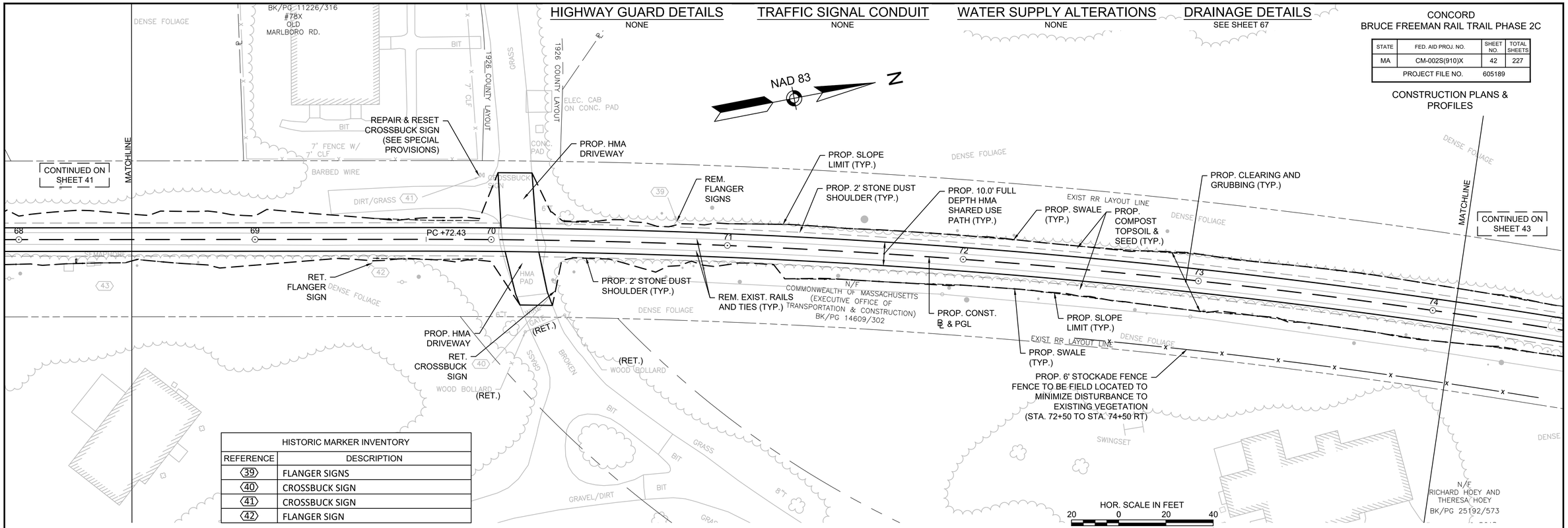
DRAINAGE DETAILS
SEE SHEET 67

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

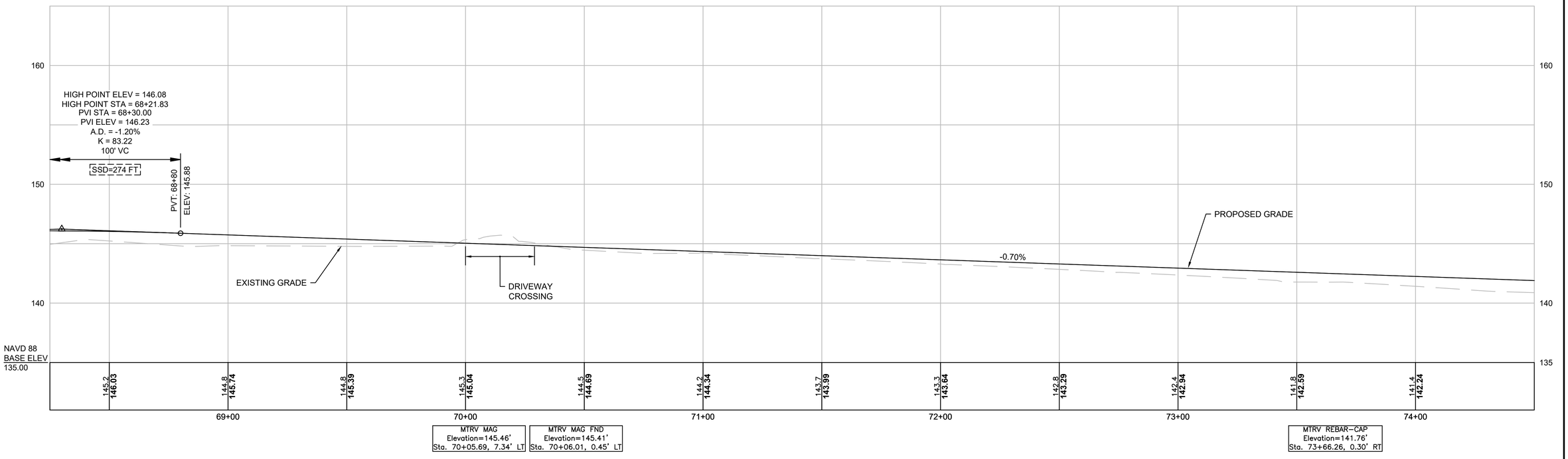
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	42	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:04 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
39	FLANGER SIGNS
40	CROSSBUCK SIGN
41	CROSSBUCK SIGN
42	FLANGER SIGN



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

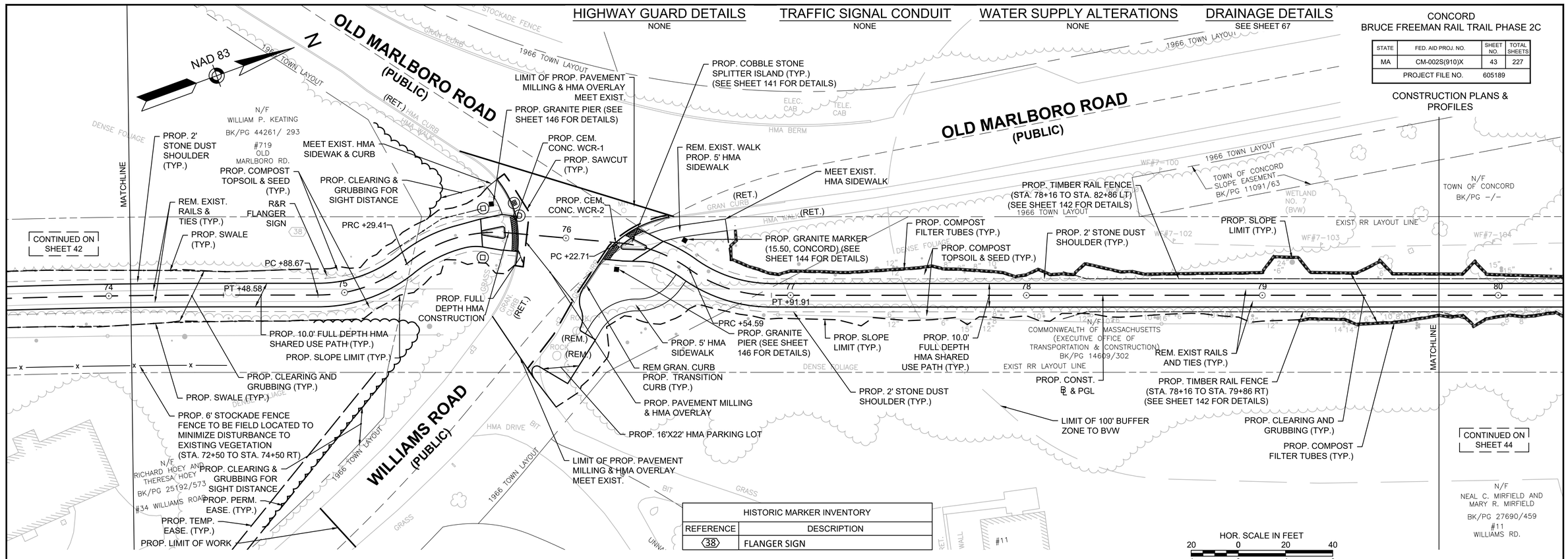
DRAINAGE DETAILS
SEE SHEET 67

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	43	227
PROJECT FILE NO.	605189		

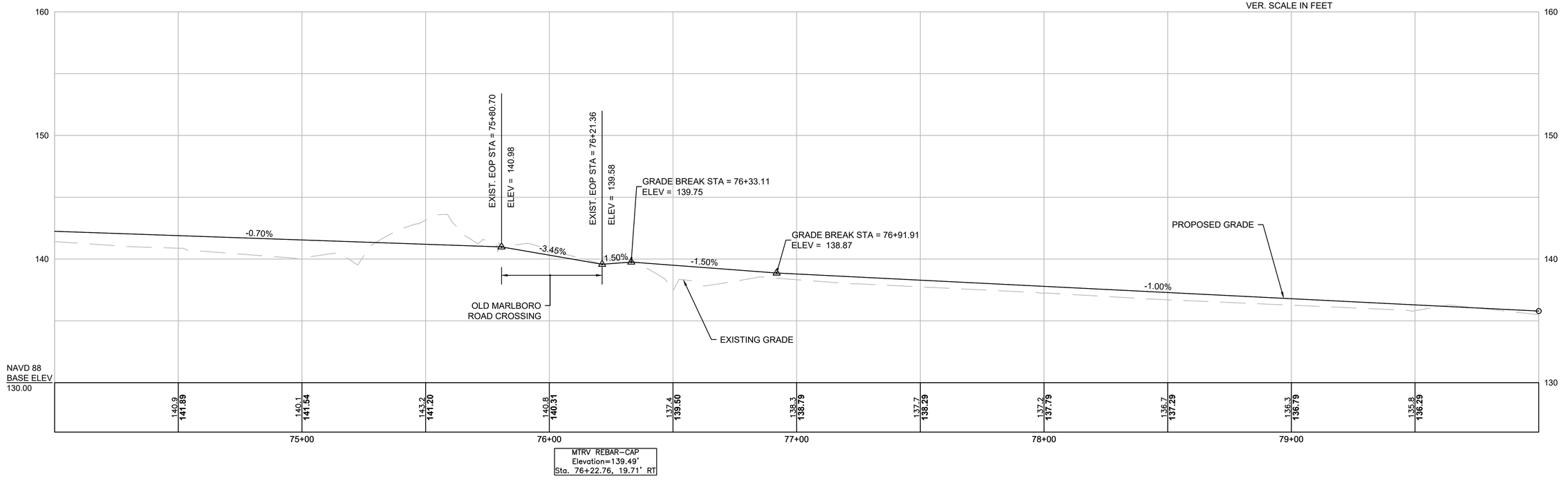
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:05 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
38	FLANGER SIGN

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

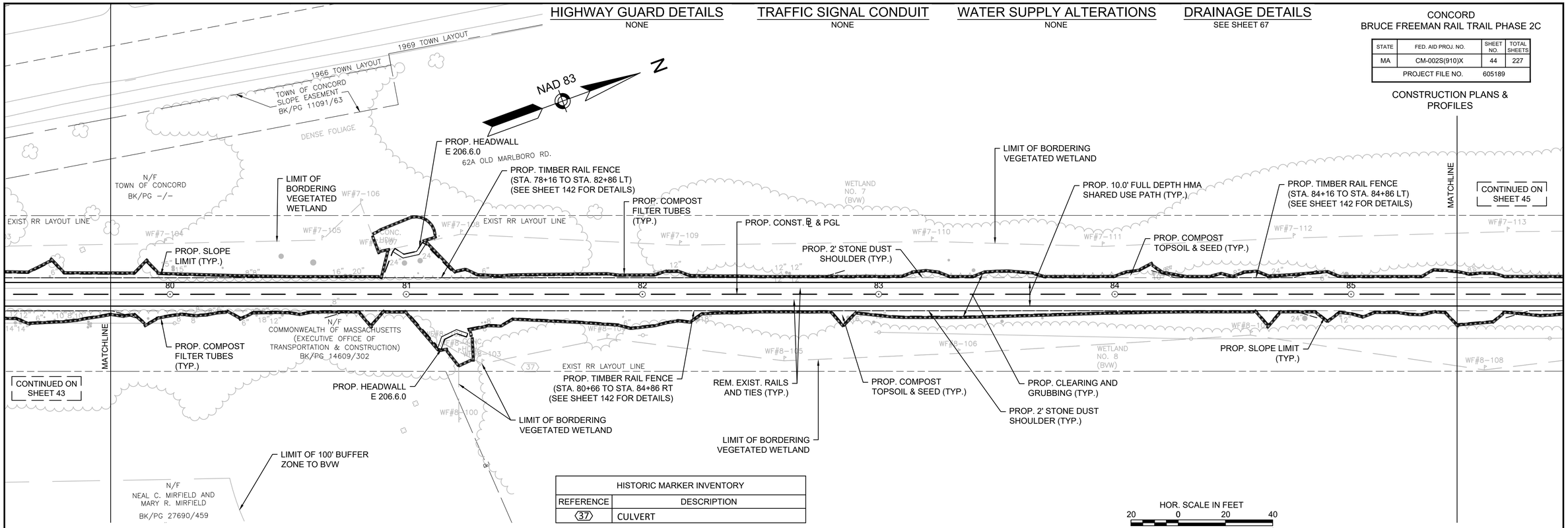
DRAINAGE DETAILS
SEE SHEET 67

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	44	227
PROJECT FILE NO.	605189		

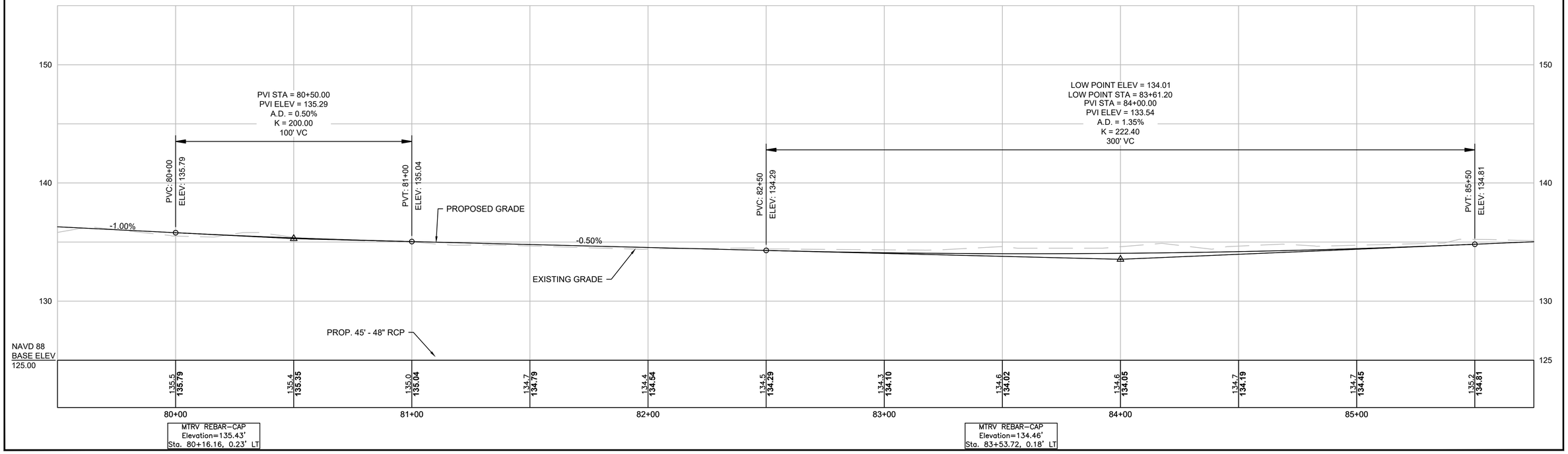
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:05 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
37	CULVERT

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

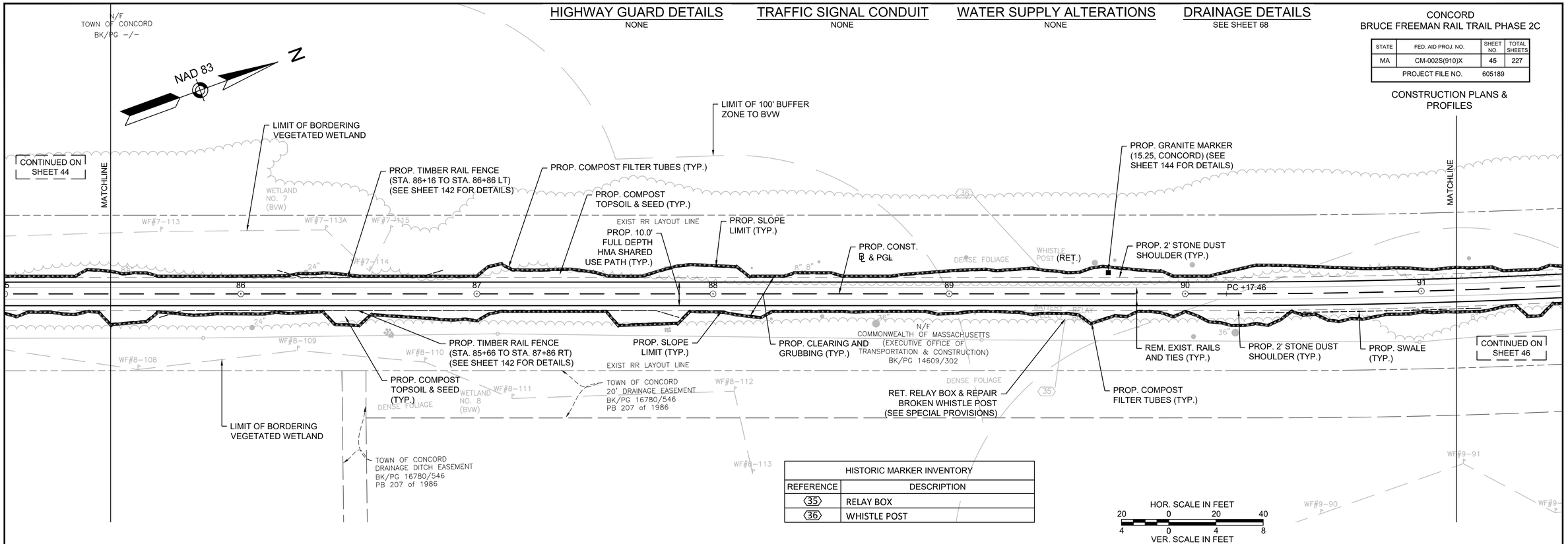
DRAINAGE DETAILS
SEE SHEET 68

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	45	227
PROJECT FILE NO.	605189		

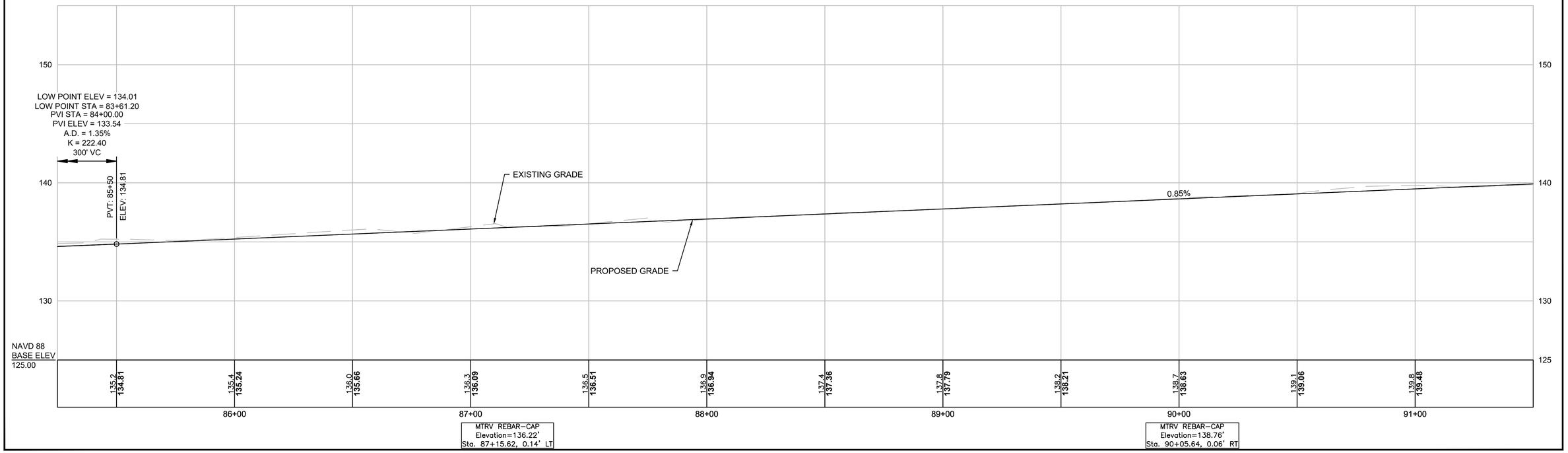
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:05 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
35	RELAY BOX
36	WHISTLE POST

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

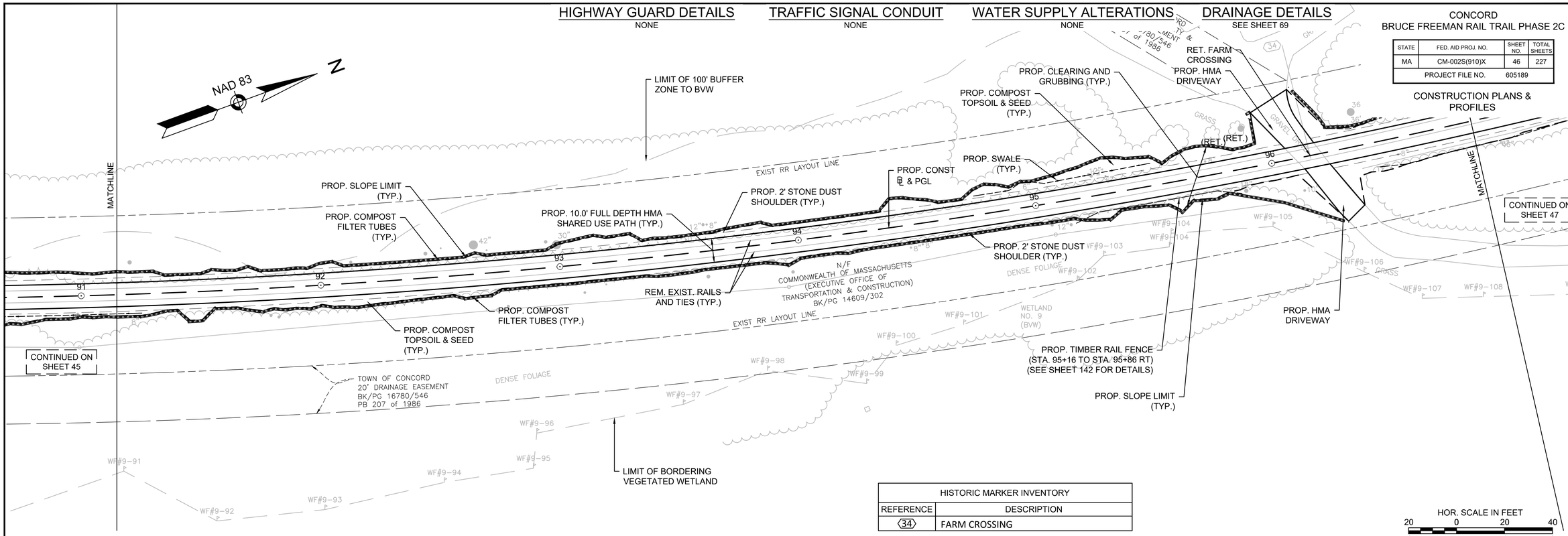
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 69

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

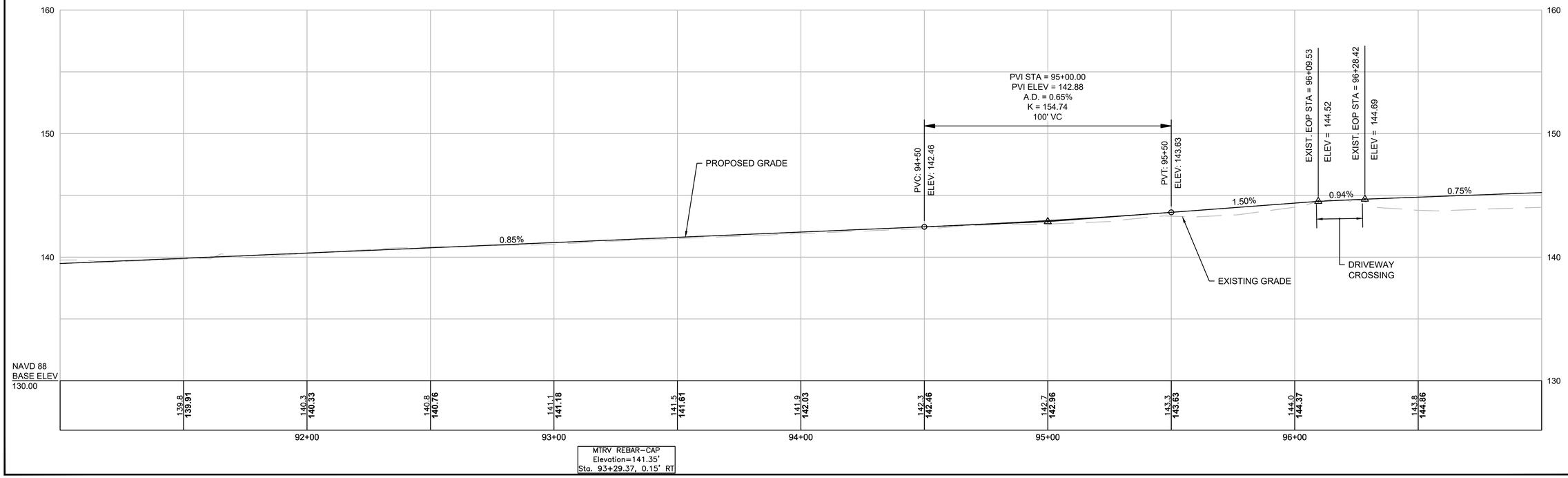
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	46	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
(34)	FARM CROSSING

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



MTRV REBAR–CAP
Elevation=141.35'
Sta. 93+29.37, 0.15' RT

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:06 AM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

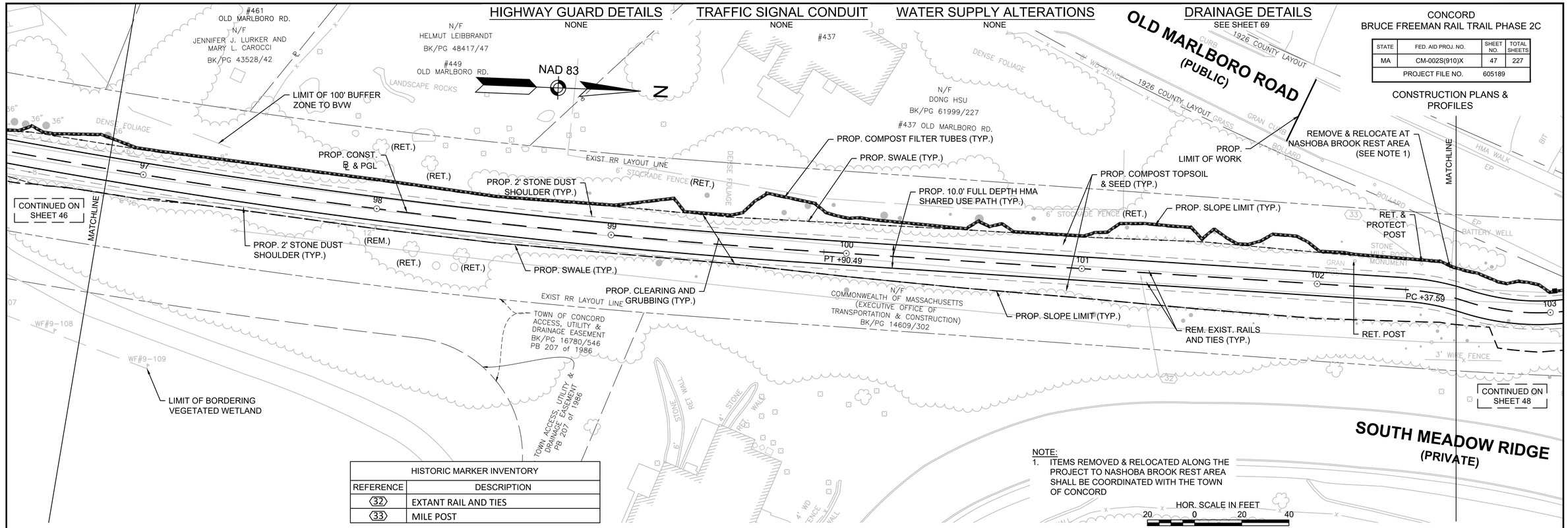
DRAINAGE DETAILS
SEE SHEET 69

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	47	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

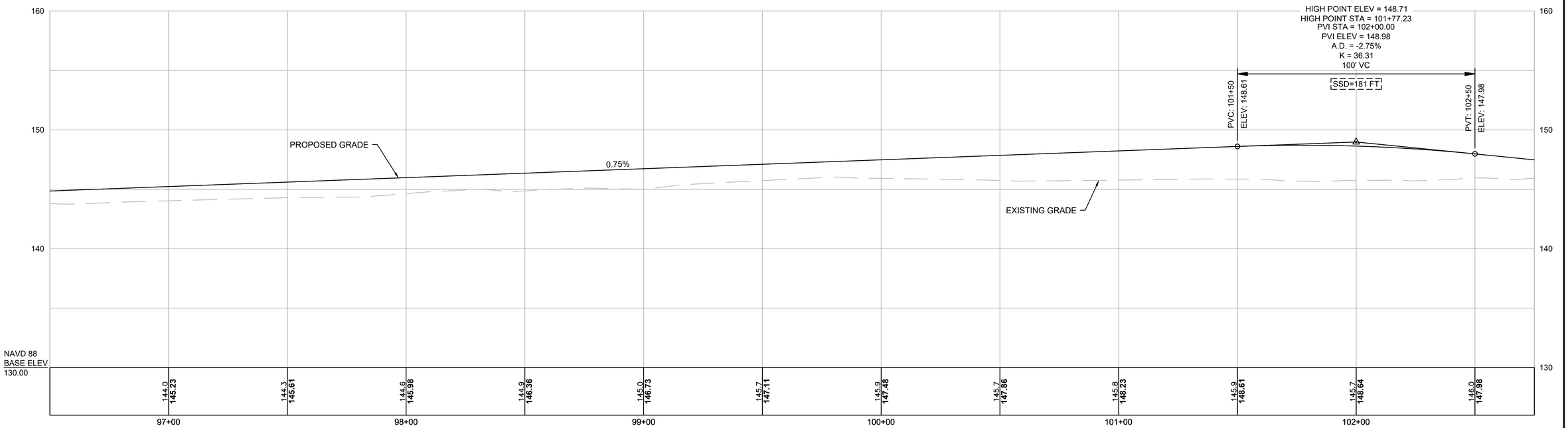
605189_HD(CO).DWG Plotted on 17-Aug-2016 11:06 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
32	EXTANT RAIL AND TIES
33	MILE POST

NOTE:
1. ITEMS REMOVED & RELOCATED ALONG THE PROJECT TO NASHOBA BROOK REST AREA SHALL BE COORDINATED WITH THE TOWN OF CONCORD

HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 70

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	48	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

NAD 83

N

EXIST RR LAYOUT LINE

PROP. TREE TRIMMING WITHIN LAYOUT TO ENSURE ADEQUATE SIGHT LINES TO RECTANGULAR RAPID-FLASH BEACONS (STA. 101+80 LT TO STA. 103+10 LT)

END PROP. PAVEMENT MILLING & HMA OVERLAY. MEET EXIST.

PROP. HMA SIDEWALK MEET EXIST.

PROP. GRANITE MARKER (15.00, CONCORD) (SEE SHEET 144 FOR DETAILS)

REM. EXIST. CURB
PROP. GRAN. TRANSITION CURB

PROP. TIMBER RAIL FENCE TO BE FIELD LOCATED TO MINIMIZE DISTURBANCE TO EXISTING VEGETATION (STA. 103+72 TO STA. 104+00 LT) (SEE SHEET 142 FOR DETAILS)

PROP. GRANITE PIER (SEE SHEET 146 FOR DETAILS)

PROP. CEM. CONC. WCR-4

PROP. COBBLE STONE SPLITTER ISLAND (TYP.) (SEE SHEET 141 FOR DETAILS)

PROP. HMA SIDEWALK MEET EXIST.

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. CONST. ℄ & PGL

PROP. COMPOST FILTER TUBES (TYP.)

PROP. SWALE (TYP.)

PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)

PROP. CLEARING AND GRUBBING (TYP.)

PROP. SLOPE LIMIT (TYP.)

PROP. COMPOST TOPSOIL & SEED (TYP.)

PROP. SLOPE LIMIT (TYP.)

PROP. TIMBER RAIL FENCE (STA. 104+05 TO STA. 105+00 RT) (SEE SHEET 142 FOR DETAILS)

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. SWALE (TYP.)

PROP. LIMIT OF WORK

PROP. TREE TRIMMING WITHIN LAYOUT TO ENSURE ADEQUATE SIGHT LINES TO RECTANGULAR RAPID-FLASH BEACONS (STA. 104+10 RT TO STA. 105+15 RT)

PROP. LIMIT OF WORK

END PROP. PAVEMENT MILLING & HMA OVERLAY. MEET EXIST.

PROP. FULL DEPTH HMA CONSTRUCTION

PROP. SAWCUT (TYP.)

REM. GRAN. CURB

PROP. CEM. CONC. WCR-3

PROP. GRANITE PIER (SEE SHEET 146 FOR DETAILS)

PROP. CLEARING AND GRUBBING (TYP.)

PRC +62.98

PC +73.89

PT +31.82

PRC +54.95

PCC +05.24

MATCHLINE

CONTINUED ON SHEET 47

CONTINUED ON SHEET 49

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION, & CONSTRUCTION) BK/PG 14609/302

N/F ERIC HOLM BK/PG 60903/483

N/F PETER M. STANDISH JR. AND ANNE O. STANDISH BK/PG 20679/540

#368 OLD MARLBORO RD.

#368

#148

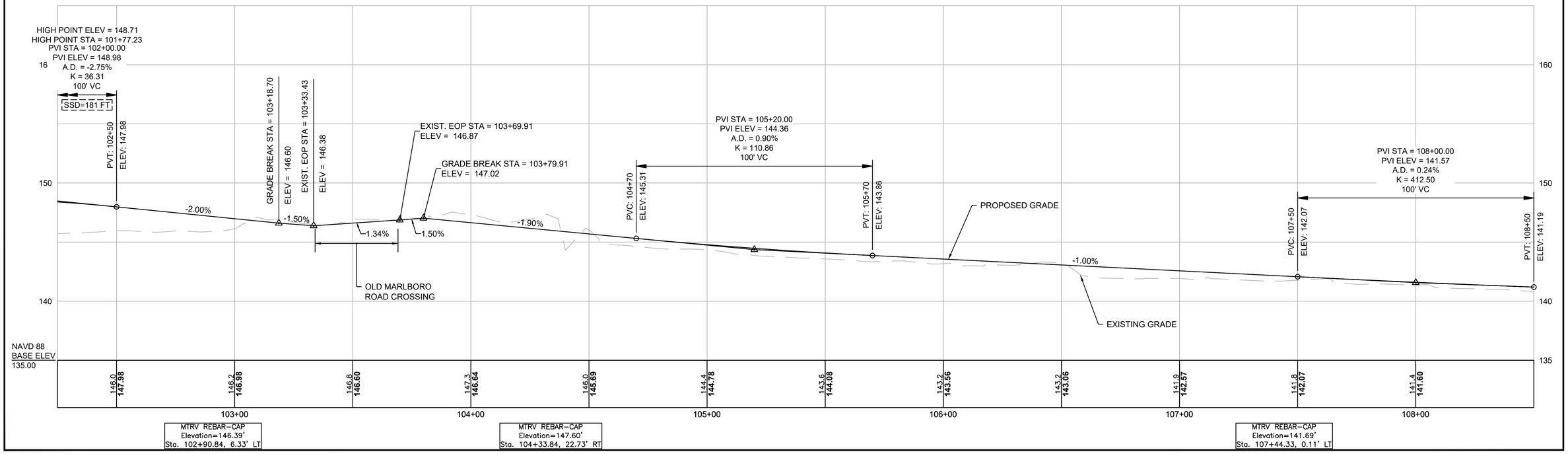
SOUTH MEADOW RIDGE (PRIVATE)

OLD MARLBORO ROAD (PUBLIC)

1926 COUNTY LAYOUT

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8



605189_HD(CO).DWG Plotted on 17-Aug-2016 11:07 AM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

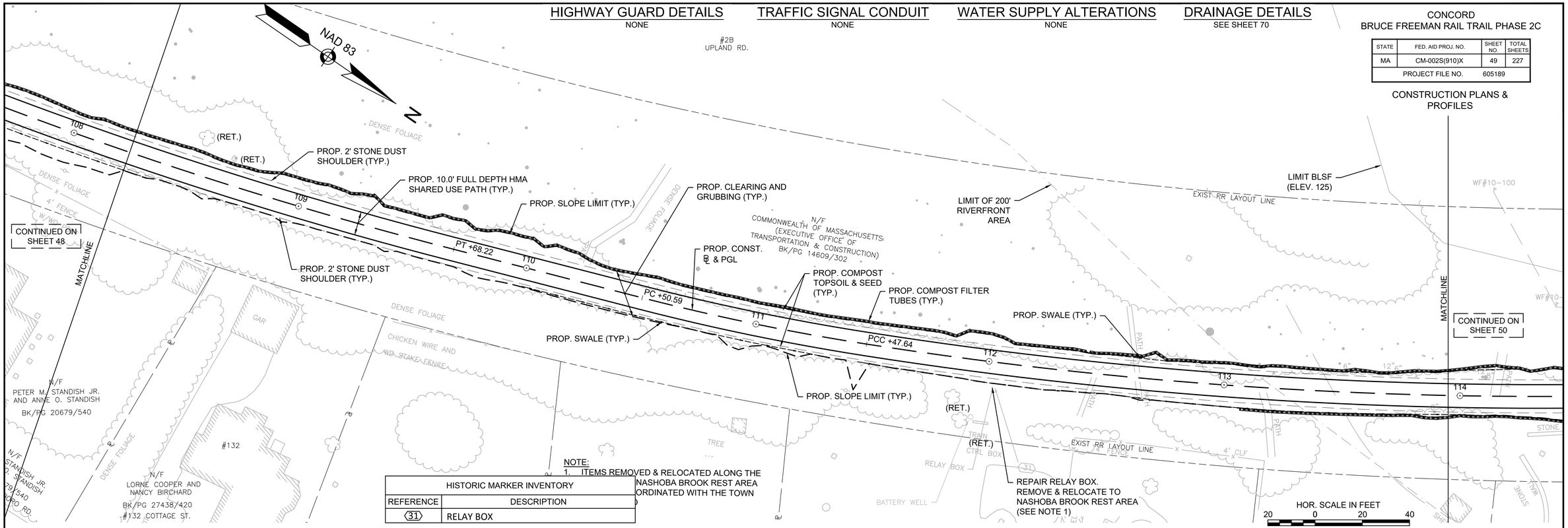
DRAINAGE DETAILS
SEE SHEET 70

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	49	227
PROJECT FILE NO.	605189		

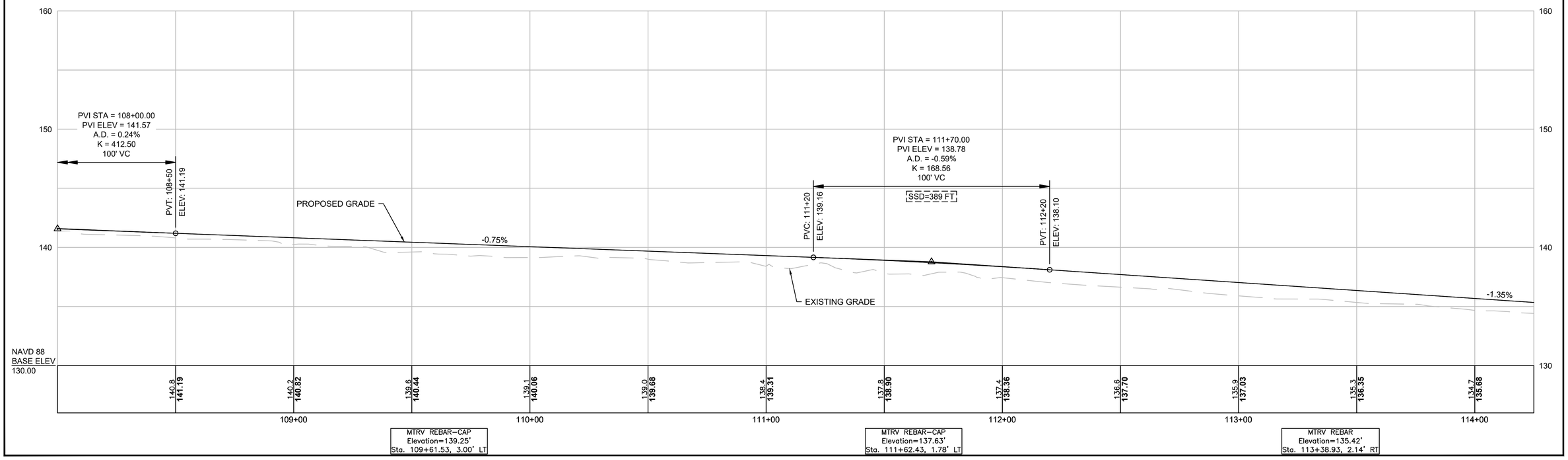
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:07 AM



NOTE:
1. ITEMS REMOVED & RELOCATED ALONG THE NASHOBA BROOK REST AREA TO BE COORDINATED WITH THE TOWN

HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
31	RELAY BOX



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

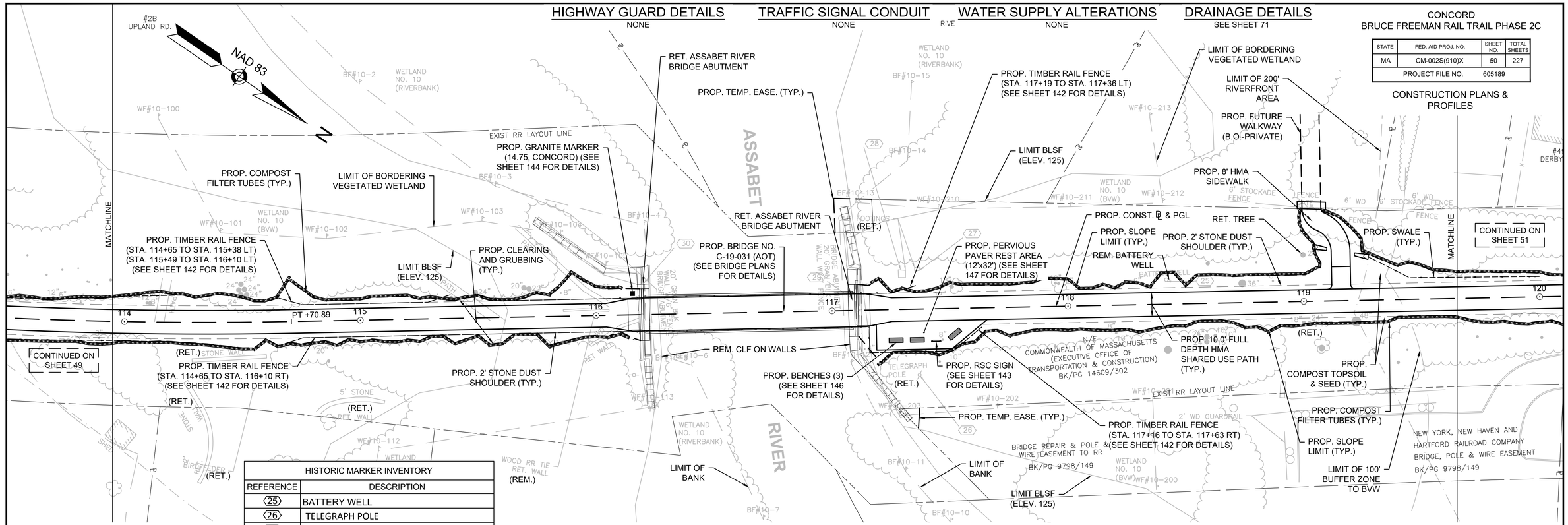
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 71

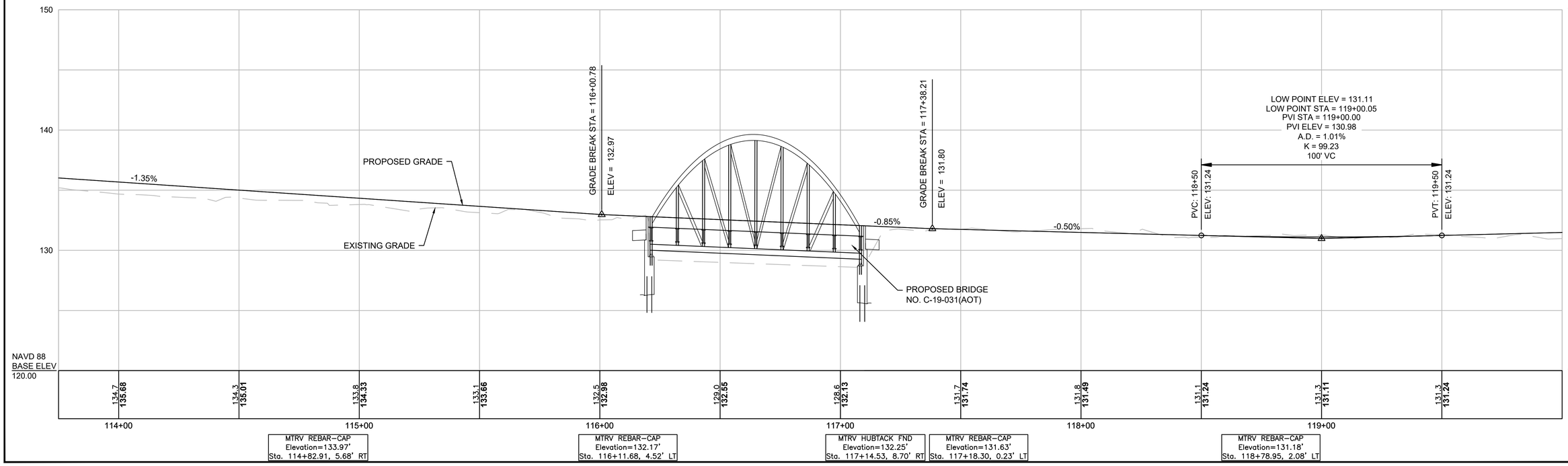
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	50	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
⟨25⟩	BATTERY WELL
⟨26⟩	TELEGRAPH POLE
⟨27⟩	FOOTING
⟨28⟩	FOOTING
⟨29⟩	ASSABET RIVER NORTH BRIDGE ABUTMENT
⟨30⟩	ASSABET RIVER SOUTH BRIDGE ABUTMENT



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HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
(SEE SHEET 117 FOR DETAILS)

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 72

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	51	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

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NAD 83

#45 DERBY ST.
#49 DERBY ST.
#37 DERBY ST.
#39 DERBY ST.
#31 DERBY ST.
#3 DERBY ST.
#17–#19
#25–#27 DERBY ST.
#13
#11 DERBY ST.

BK/PG 34982/ 253
N/F ROGER C. FEINSTEIN AND FIONA STEVENSON FEINSTEIN
BK/PG 34957/ 350
N/F DANIEL HOLIN AND LISETTE ZINNER
BK/PG 34044/ 326
BK/PG 10956/247
N/F CATHERINE QUINLAN
BK/PG 37671/143
N/F PAUL MORAN AND JULIE MORAN
BK/PG 64254/ 459
N/F CRJ REAL ESTATE LLC
BK/PG 58832/ 583
#1237 MAIN ST.

MAIN STREET (PUBLIC)

LIMIT OF PROP. PAVEMENT MILLING & OVERLAY. STA. 704+46 MEET EXIST.
LIMIT OF PROP. PAVEMENT MILLING & OVERLAY. STA. 801+30 MEET EXIST.
(RET.) FLAGPOLE #1237
REM. EXIST. CEM. CONC. WALK
PROP. 5' CEM. CONC. SIDEWALK
MAIN ST (ROUTE 62) CONST. ℄ STA. 703+54.23 = COMMONWEALTH AVE CONST. ℄ STA. 800+00.00
BFRT 2C CONST. ℄ STA. 124+43.63 = MAIN ST (ROUTE 62) CONST. ℄ STA. 703+27.97
PROP. CEM. CONC. WCR-5
PROP. LAYOUT
PROP. GRANITE PIER (SEE SHEET 146 FOR DETAILS)
PROP. CEM. CONC. WCR-7
PROP. CEM. CONC. WCR-8
PROP. TRAFFIC EQUIPMENT (TYP.) (SEE SHEET 117 FOR DETAILS)
PROP. CEM. CONC. SIDEWALK AT DRIVEWAY (DW-3)
R&R PLANTER (B.O.-DPW)
R&R PLANTER (B.O.-DPW)
PROP. SAWCUT (TYP.)
REM. BRICK WALK
PROP. FULL DEPTH HMA CONSTRUCTION
PROP. FULL DEPTH HMA DRIVEWAY
REM. PAVEMENT & SIDEWALK. PROP. COMPOST TOPSOIL & SEED (TYP.)
PROP. PERVIOUS PAVER PATH (SEE SHEET 147 FOR DETAILS)
PROP. GRAN. CURB TYPE VB (FLUSH W/ PAVERS)
R&R PAVERS & GRAN. POSTS
REM. CURB
PROP. LIMIT OF WORK. MEET EXIST. PAVERS
R&R PAVERS
REM. PAVEMENT & SIDEWALK. PROP. COMPOST TOPSOIL & SEED (TYP.)
SEE NOTE 1
PROP. GRAN. CURB TYPE VB (3" REVEAL)
PROP. CEM. CONC. WCR-6
PROP. DISPLAY BOARD (SEE SHEET 145 FOR DETAILS)
PROP. BIKE RACKS (3) (SEE SHEET 144 FOR DETAILS)
GRANITE MONUMENT BENCH IN MULCH
RET. BENCH AND MONUMENT
PROP. PAVEMENT MILLING & HMA OVERLAY
PROP. 5.5' CEM. CONC. SIDEWALK
PROP. FULL DEPTH HMA PARKING LOT
PROP. HEAVY DUTY CEM. CONC. SIDEWALK AT DRIVEWAY (DW-2)
PROP. FULL DEPTH HMA PARKING LOT
PROP. HEAVY DUTY CEM. CONC. SIDEWALK AT DRIVEWAY (DW-1)
PROP. GRAN. CURB TYPE VB (3" REVEAL)
PROP. CEM. CONC. WCR-11
PROP. GRAN. CURB TYPE VB (3" REVEAL)
PROP. GRAN. CURB TRANSITION TYPE VB
MEET EXIST. HMA DRIVEWAY
LIMIT OF PROP. PAVEMENT MILLING & OVERLAY. STA. 700+38 MEET EXIST.
PROP. CEM. CONC. WCR-10
PROP. 5.5' CEM. CONC. SIDEWALK
PROP. LIMIT OF WORK MEET EXIST.
PROP. TEMP. EASE. (TYP.)
PROP. GRAN. CURB - TYPE VB (TYP.)
PROP. SAWCUT (TYP.)
PROP. GRAN. CURB - TYPE VB (TYP.)
R&R BENCH
PROP. 5.5' CEM. CONC. SIDEWALK
PROP. FULL DEPTH HMA CONSTRUCTION
PROP. TEMP. EASEMENT (TYP.)
PROP. SLOPE LIMIT (TYP.)
PROP. LAYOUT (TYP.)
PROP. CEM. CONC. WCR-9
PROP. CONST. ℄
RET. VGC & FENCE AT BACK OF EXIST. WALK
PROP. 5.5' CEM. CONC. SIDEWALK

MAIN STREET (1885 COUNTY LAYOUT - 50.00' WIDE - PUBLIC)

COMMONWEALTH AVENUE (PUBLIC)

CONTINUED ON SHEET 50
CONTINUED ON SHEET 53
PROP. COMPOST FILTER TUBES (TYP.)
PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)
PROP. SWALE (TYP.)
PROP. 2' STONE DUST SHOULDER (TYP.)
PROP. CONST. ℄ & PGL
PROP. SLOPE LIMIT (TYP.)
PROP. 2' STONE DUST SHOULDER (TYP.)
PROP. SLOPE LIMIT (TYP.)
PROP. COMPOST TOPSOIL & SEED (TYP.)
PROP. COMPOST FILTER TUBES (TYP.)
PROP. CLEARING AND GRUBBING (TYP.)
PROP. GRANITE PIER (SEE SHEET 146 FOR DETAILS)
PROP. GRAN. CURB TYPE VB (3" REVEAL)
PROP. CONST. ℄

PC +58.56
PT +50.89
PC +02.11
PRC +49.70
PT +84.86
PI +62.76
PT +72.93
PT +98.19
PT +109.05
PT +106.93
PI +20.57
PC +57.54
MEET EXIST. SIDEWALK

120 121 122 123 124 125 126 701 702 703 704 801

EXIST RR LAYOUT LINE
MATCHLINE
(RET.)
(R&D)
(R&R)

NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY BRIDGE, POLE & WIRE EASEMENT BK/PG 9798/149
BRIDGE REPAIR & POLE & WIRE EASEMENT TO RR BK/PG 9798/149
NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY BRIDGE, POLE & WIRE EASEMENT BK/PG 9798/149

N/F JEROME L. ROBERTSON & NANCY A. ROBERTSON
BK/PG 64431/178
N/F RICHARD R. BEERS
BK/PG 15663/191
N/F A&D REAL ESTATE LLC
BK/PG 29616/576
1200 MAIN ST.
N/F BOSTON CONSOLIDATED GAS COMPANY OF CONCORD
BK/PG 33531/524
30' POLE & WIRE EASEMENT
BK/PG 7927/522

NOTE:
1. ALL EXISTING ITEMS WITHIN JUNCTION PARK (STA. 125+10 TO STA. 126+50) SHALL BE RETAINED, UNLESS OTHERWISE NOTED.

0 20 50 100
SCALE: 1" = 20'

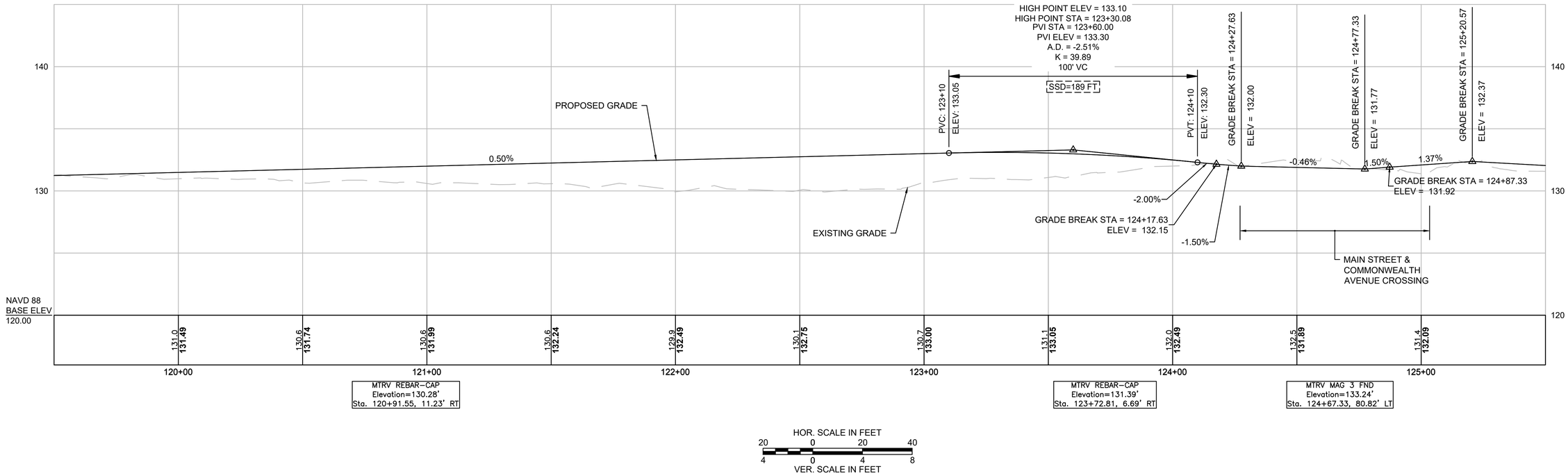
FOR PROFILE SEE SHEET 52

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	52	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS &
PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:08 AM



HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 51

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 73

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	53	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 12:28 PM

MA 63

CONTINUED ON SHEET 51

PI +20.57

PC +157.54

801

PT +09.05

802

803

804

805

806

COMMONWEALTH AVENUE (PUBLIC)

CHURCH STREET (PUBLIC)

MASSACHUSETTS BAY TRANSIT AUTHORITY (FITCHBURG LINE)

1877 COUNTY LAYOUT LINE

EXIST RR LAYOUT LINE

EXIST RR BASELINE & LAYOUT LINE

MATCHLINE

PROP. LIMIT OF WORK, MEET EXIST. PAVERS

SEE NOTE 1

PROP. GRANITE POST SIGN (SEE SHEET 146 FOR DETAILS)

PI +50.93

SAWCUT CEM. CONC. AT PROP. EOP (STA. 126+56 TO 127+90)

PROP. TEMP. EASEMENT

PROP. PERM. EASEMENT BK 19422 PG 334

PC +74.70

PROP. 7' GAP IN TIMBER RAIL FENCE

PROP. TEMP. EASEMENT

PT +06.93

PROP. PERM. EASEMENT

R&S GRAN. POSTS (6)

REM. FLUSH CURB (STA. 126+65 TO 127+07)

PC +99.15

PT +85.38

PC +73.87

RET. CEM. CONC. (HMA PATH TO MEET)

PC +60.64

PROP. SAWCUT (TYP.)

RECOMMENDED DUMPSTER LOCATION

PROP. TIMBER RAIL FENCE IN STEEL SLEEVE (STA. 126+75 TO STA. 127+82 LT STA. 127+95 TO STA. 129+26 LT) (SEE SHEET 142 FOR DETAILS)

PROP. 8.0' FULL DEPTH HMA SHARED USE PATH

PROP. CLEARING AND GRUBBING (TYP.)

PROP. SLOPE LIMIT (TYP.)

PROP. MBTA PICKET FENCE (TYP.) (TO BE INSTALLED BY OTHERS-MBTA) (SEE SHEET 143 FOR DETAILS)

PROP. TEMP. EASEMENT

PROP. CONST. EASEMENT & PGL

PROP. LOW MODULAR BLOCK WALL (STA. 129+32.TO STA.129+79) (SEE SHEET 144 FOR DETAILS)

PC +53.81

PCC +72.63

PROP. CEM. CONC. SIDEWALK

PROP. SLOPE LIMIT (TYP.)

PROP. CEM. CONC. WCR-12

PT +92.67

PROP. 8.0' RAIL CROSSING (B.O.-MBTA)

PROP. SIGNAL HOUSE (B.O.-MBTA)

PI +35.95

PROP. CLEARING AND GRUBBING

PI +61.45

PROP. CEM. CONC. WCR-13

PROP. HMA WALK MEET EXIST.

R&R TRASH RECEPTACLE

REM. CURB

PROP. GRAN. CURB TYPE VB (TYP.)

PROP. SAWCUT (TYP.)

PROP. CEM. CONC. WCR-14

PROP. HMA WALK MEET EXIST.

R&D BOLLARDS

PROP. COMPOST, TOPSOIL & SEED (TYP.)

EOTC EASEMENT PC +97.31

PI +81.95

PRC +35.53

PRC +38.33

CONTINUED ON SHEET 54

FOR PROFILE SEE SHEET 55

N/F KARL H. KLASSON AND JAKOB WOHN BK/PG 19525/273 #29 COMMONWEALTH AVE

N/F RIP PROPERTY MANAGEMENT LLC BK/PG 54601/ 504 #23 COMMONWEALTH AVE

N/F 41-47 COMMONWEALTH AVENUE CONDOMINIUM MASTER DEED BK/PG 64052/419 #41-47 COMMONWEALTH AVE

N/F TOWN OF CONCORD BK 11508 PG 600 #1276 MAIN ST.

N/F VERNCO CONCORD LLC BK/PG 46969/366 #49 COMMONWEALTH AVE

N/F VERNCO CONCORD LLC BK/PG 46969/368 #7 CHURCH ST.

N/F KIL CHA HUBBARD BK/PG 44437/63

N/F GEORGE C. VERNET BK/PG 38602/481 #1 CHURCH ST.

N/F TOWN OF CONCORD BK 11800 PG 501

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTR BK/PG 14609/302

N/F VDA CONCORD ASSISTED LIVING, INC. BK/PG 28597/233

N/F COMMONWEALTH LLC BK/PG 60380/ 262

BOSTON CONSOLIDATED GAS COMPANY BK/PG 3353/524 30' POLE & WIRE EASEMENT

BOSTON GAS COMPANY EASEMENT BK/PG 11721/43 PB 8 OF 1969

BOSTON GAS 20' EASEMENT BK/PG 11686/446 PB 531 of 1969

TOWN OF CONCORD 25' RIGHT OF WAY BK/PG 11800/501

TOWN OF CONCORD RIGHT OF WAY BK/PG 11800/501

0 20 50 100
SCALE: 1" = 20'

NOTE:
1. ALL EXISTING DISPOSITIONS WITHIN JUNCTION PARK (STA. 125+10 TO STA. 126+50) SHALL BE RETAINED, UNLESS OTHERWISE NOTED.
2. FOR PROFILE SEE SHEET 55

HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
22	FLANGER SIGN
23	UNION STATION

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

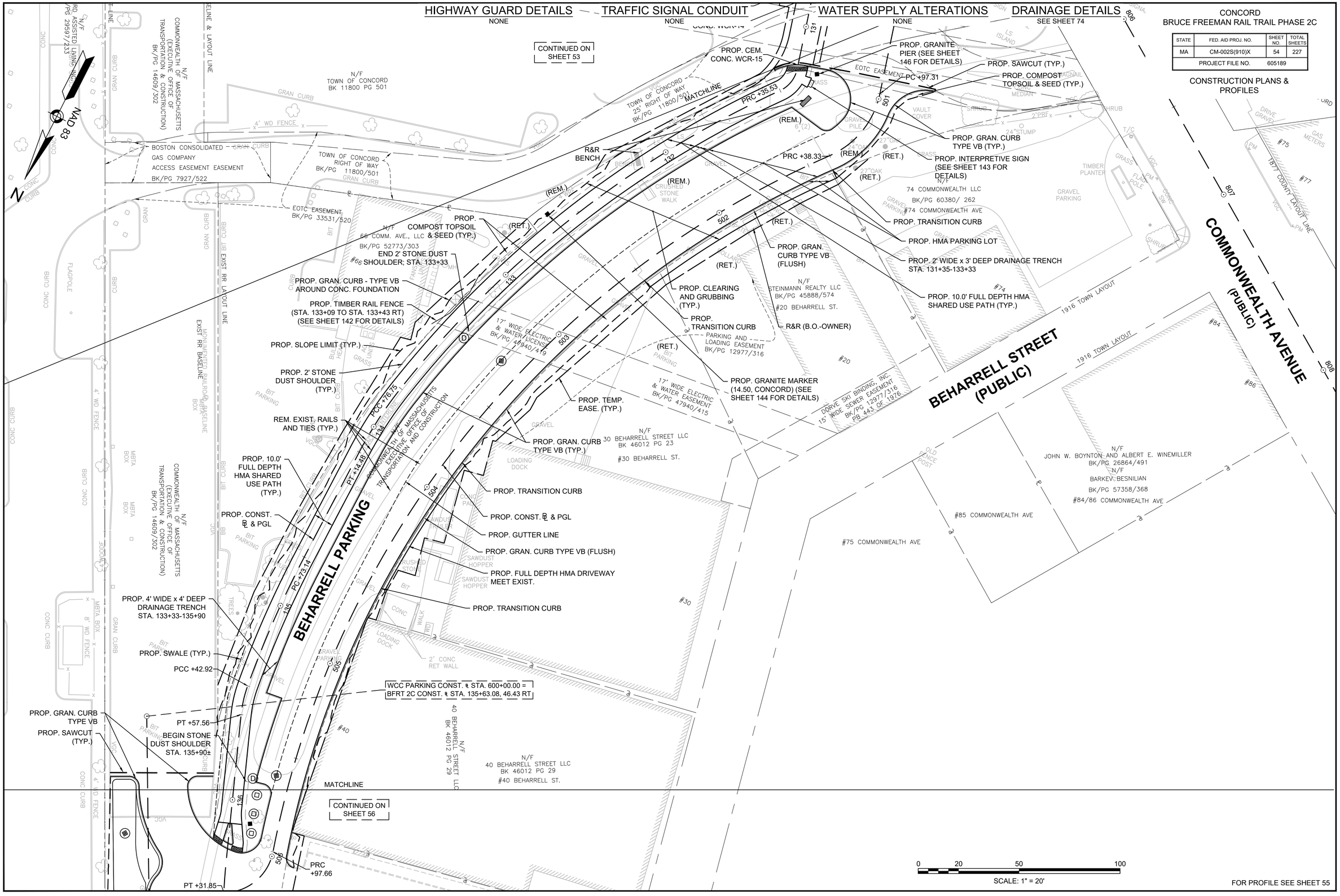
DRAINAGE DETAILS
SEE SHEET 74

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	54	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:09 AM

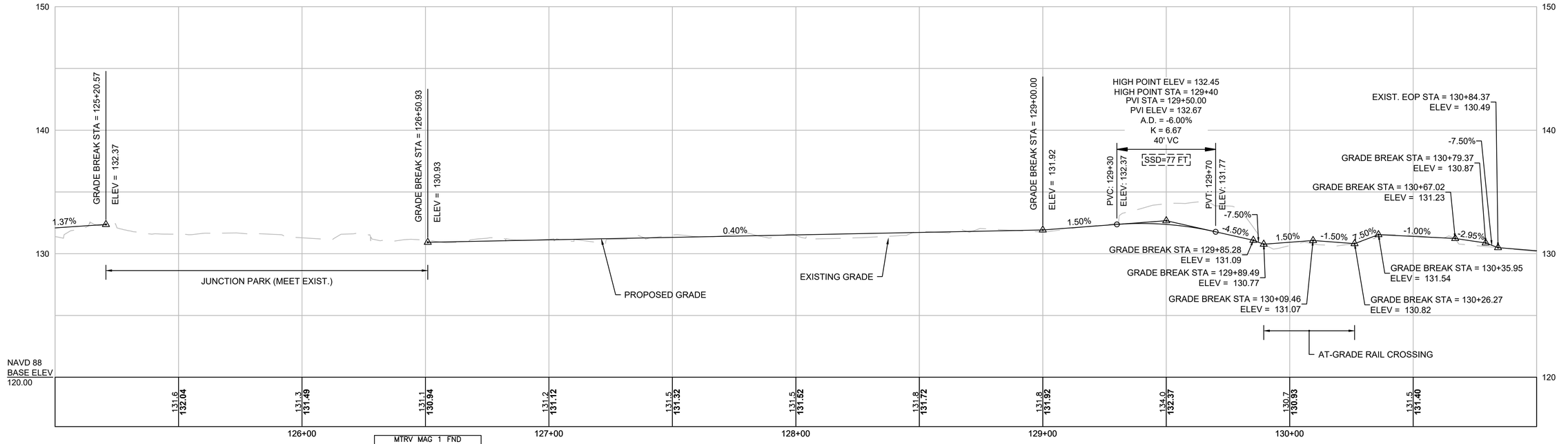

CONTINUED ON SHEET 53
MATCHLINE
CONTINUED ON SHEET 56
FOR PROFILE SEE SHEET 55
NAD 83
N
BEHARRELL PARKING
BEHARRELL STREET (PUBLIC)
COMMONWEALTH AVENUE (PUBLIC)
1916 TOWN LAYOUT
1877 COUNTY LAYOUT LINE
PROP. GRANITE PIER (SEE SHEET 146 FOR DETAILS)
PROP. CEM. CONC. WCR-15
PROP. SAWCUT (TYP.)
PROP. COMPOST TOPSOIL & SEED (TYP.)
PROP. GRAN. CURB TYPE VB (TYP.)
PROP. INTERPRETIVE SIGN (SEE SHEET 143 FOR DETAILS)
PROP. TRANSITION CURB
PROP. HMA PARKING LOT
PROP. 2' WIDE x 3' DEEP DRAINAGE TRENCH STA. 131+35-133+33
PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)
PROP. CLEARING AND GRUBBING (TYP.)
PROP. GRANITE MARKER (14.50, CONCORD) (SEE SHEET 144 FOR DETAILS)
PROP. TEMP. EASE. (TYP.)
PROP. GRAN. CURB TYPE VB (TYP.)
PROP. CONST. ℄ & PGL
PROP. GUTTER LINE
PROP. GRAN. CURB TYPE VB (FLUSH)
PROP. FULL DEPTH HMA DRIVEWAY MEET EXIST.
PROP. 4' WIDE x 4' DEEP DRAINAGE TRENCH STA. 133+33-135+90
PROP. SWALE (TYP.)
WCC PARKING CONST. ℄ STA. 600+00.00 = BFRT 2C CONST. ℄ STA. 135+63.08, 46.43 RT
PROP. SAWCUT (TYP.)
BEGIN STONE DUST SHOULDER STA. 135+90±
PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)
PROP. CONST. ℄ & PGL
PROP. TRANSITION CURB
PROP. COMPOST TOPSOIL & SEED (TYP.)
END 2' STONE DUST SHOULDER; STA. 133+33
PROP. GRAN. CURB - TYPE VB AROUND CONC. FOUNDATION
PROP. TIMBER RAIL FENCE (STA. 133+09 TO STA. 133+43 RT) (SEE SHEET 142 FOR DETAILS)
PROP. SLOPE LIMIT (TYP.)
PROP. 2' STONE DUST SHOULDER (TYP.)
REM. EXIST. RAILS AND TIES (TYP.)
PROP. TRANSITION CURB
R&R (B.O.-OWNER)
R&R BENCH
PROP. GRAN. CURB TYPE VB (TYP.)
PROP. TRANSITION CURB
PROP. CONST. ℄ & PGL
PROP. GUTTER LINE
PROP. GRAN. CURB TYPE VB (FLUSH)
PROP. FULL DEPTH HMA DRIVEWAY MEET EXIST.
PROP. TRANSITION CURB
PROP. 2' WIDE x 3' DEEP DRAINAGE TRENCH STA. 131+35-133+33
PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)
PROP. GRAN. CURB TYPE VB
PROP. SAWCUT (TYP.)
BEGIN STONE DUST SHOULDER STA. 135+90±
PROP. 4' WIDE x 4' DEEP DRAINAGE TRENCH STA. 133+33-135+90
PROP. SWALE (TYP.)
PROP. COMPOST TOPSOIL & SEED (TYP.)
END 2' STONE DUST SHOULDER; STA. 133+33
PROP. GRAN. CURB - TYPE VB AROUND CONC. FOUNDATION
PROP. TIMBER RAIL FENCE (STA. 133+09 TO STA. 133+43 RT) (SEE SHEET 142 FOR DETAILS)
PROP. SLOPE LIMIT (TYP.)
PROP. 2' STONE DUST SHOULDER (TYP.)
REM. EXIST. RAILS AND TIES (TYP.)
PROP. TRANSITION CURB
R&R (B.O.-OWNER)
R&R BENCH
PROP. GRAN. CURB TYPE VB (TYP.)

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	55	227
PROJECT FILE NO.	605189		

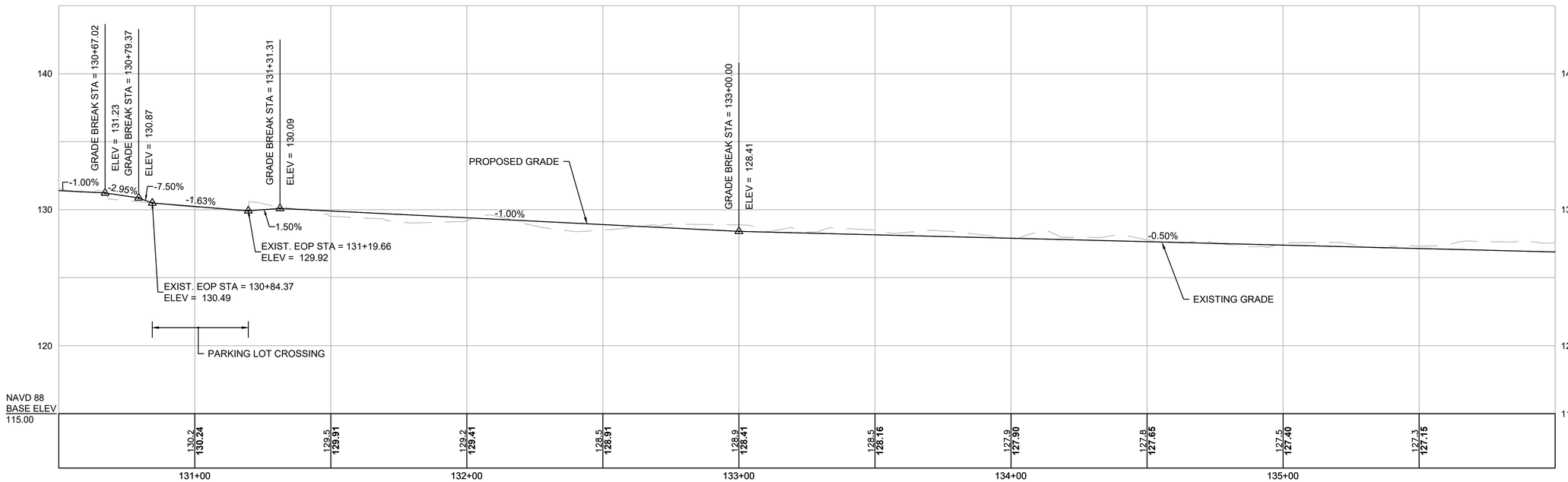
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:09 AM



MTRV MAG 1 FND
Elevation=131.08'
Sta. 126+50.93, 95.21' RT

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



MTRV MAG FND CHP:
Elevation=127.43'
Sta. 135+91.81, 35.29' RT

FOR CONSTRUCTION PLAN SEE SHEETS 53& 54

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

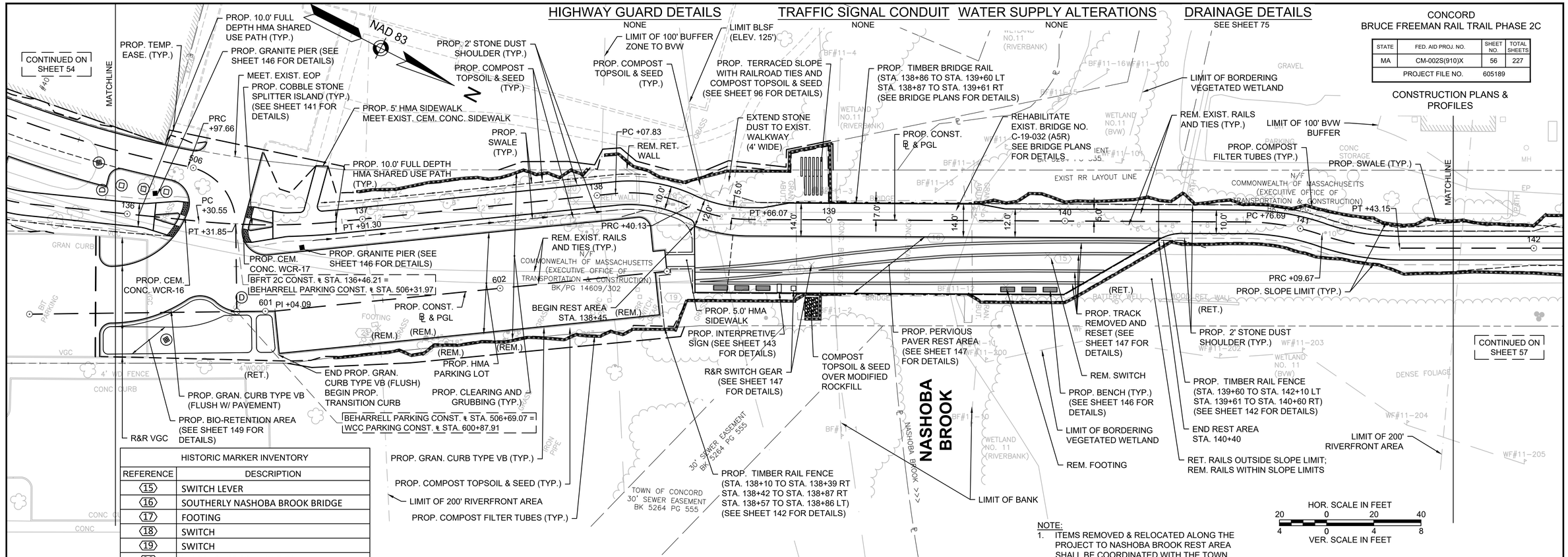
DRAINAGE DETAILS
SEE SHEET 75

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	56	227
PROJECT FILE NO.	605189		

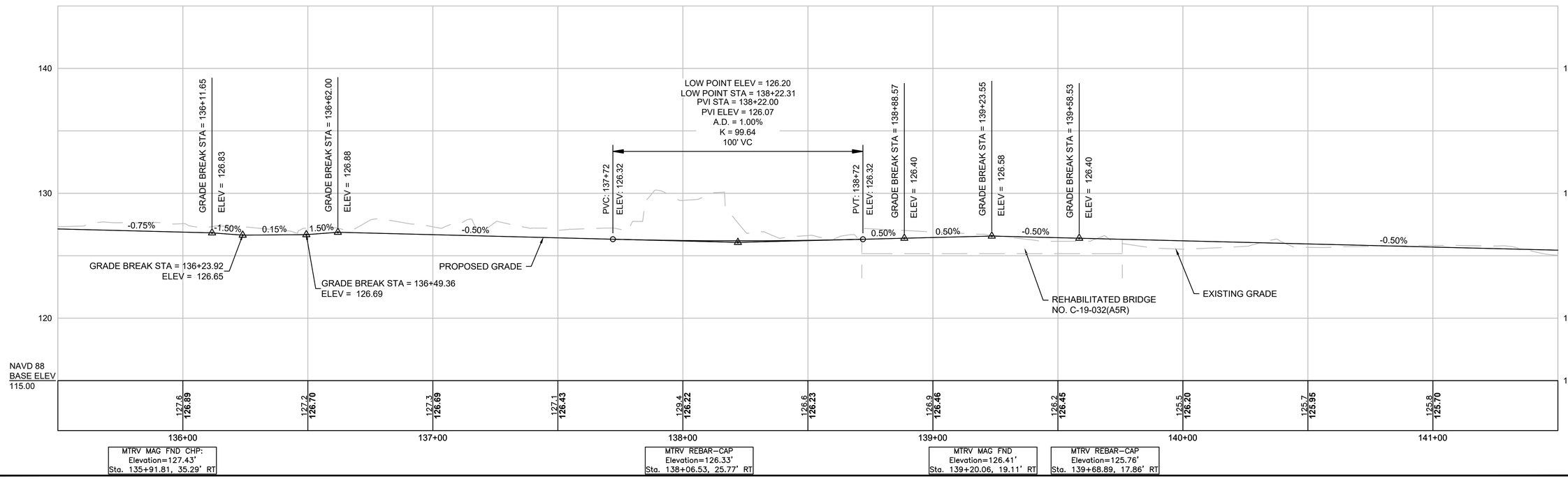
CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:10 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
15	SWITCH LEVER
16	SOUTHERLY NASHOBA BROOK BRIDGE
17	FOOTING
18	SWITCH
19	SWITCH
20	WAREHOUSE FOUNDATION
21	FOOTING

NOTE:
1. ITEMS REMOVED & RELOCATED ALONG THE PROJECT TO NASHOBA BROOK REST AREA SHALL BE COORDINATED WITH THE TOWN OF CONCORD



TRAFFIC SIGNAL CONDUIT
NONE

HIGHWAY GUARD DETAILS
NONE

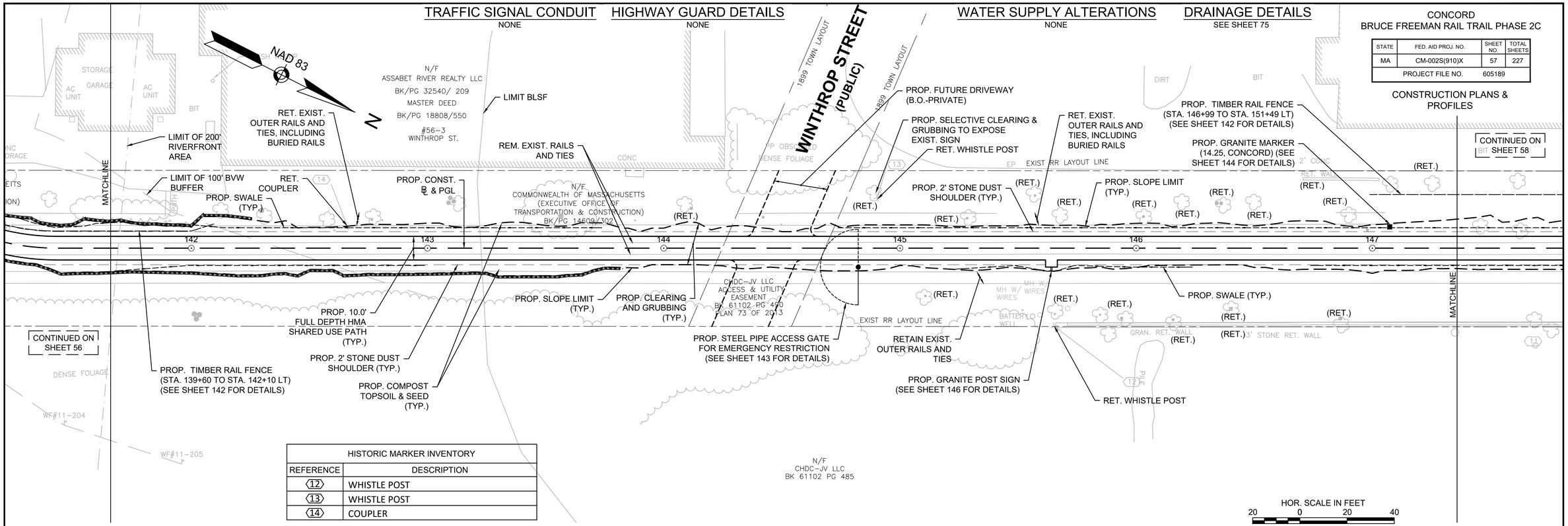
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 75

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

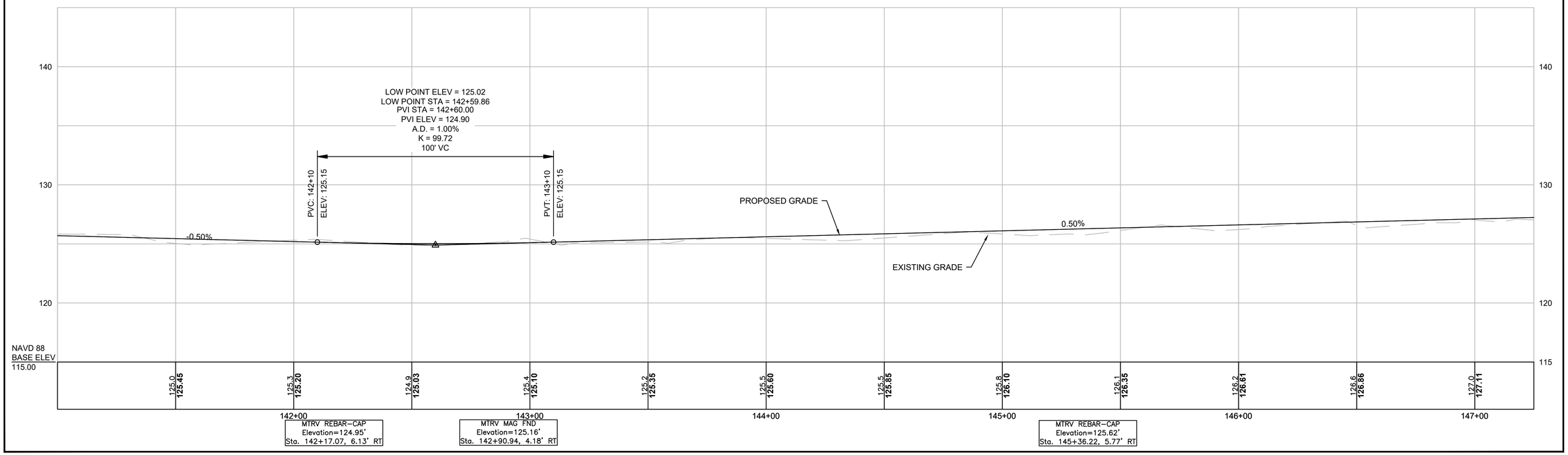
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	57	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
⟨12⟩	WHISTLE POST
⟨13⟩	WHISTLE POST
⟨14⟩	COUPLER

HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET



605189_HD(CO).DWG Plotted on 17-Aug-2016 11:10 AM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

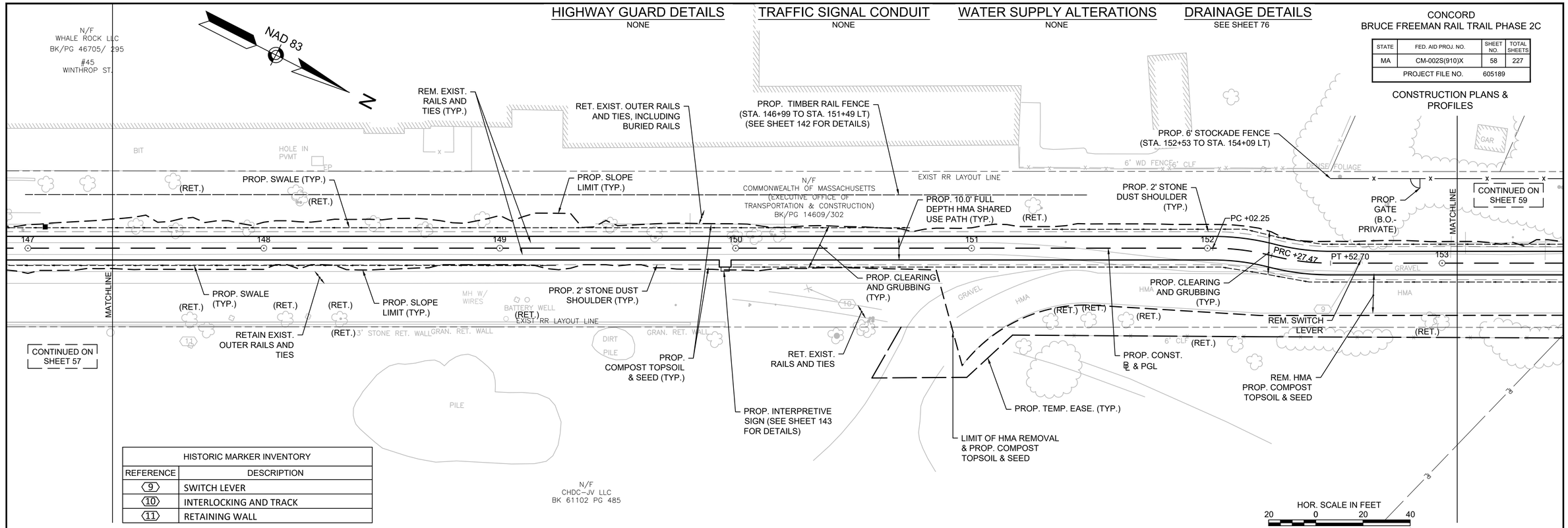
DRAINAGE DETAILS
SEE SHEET 76

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

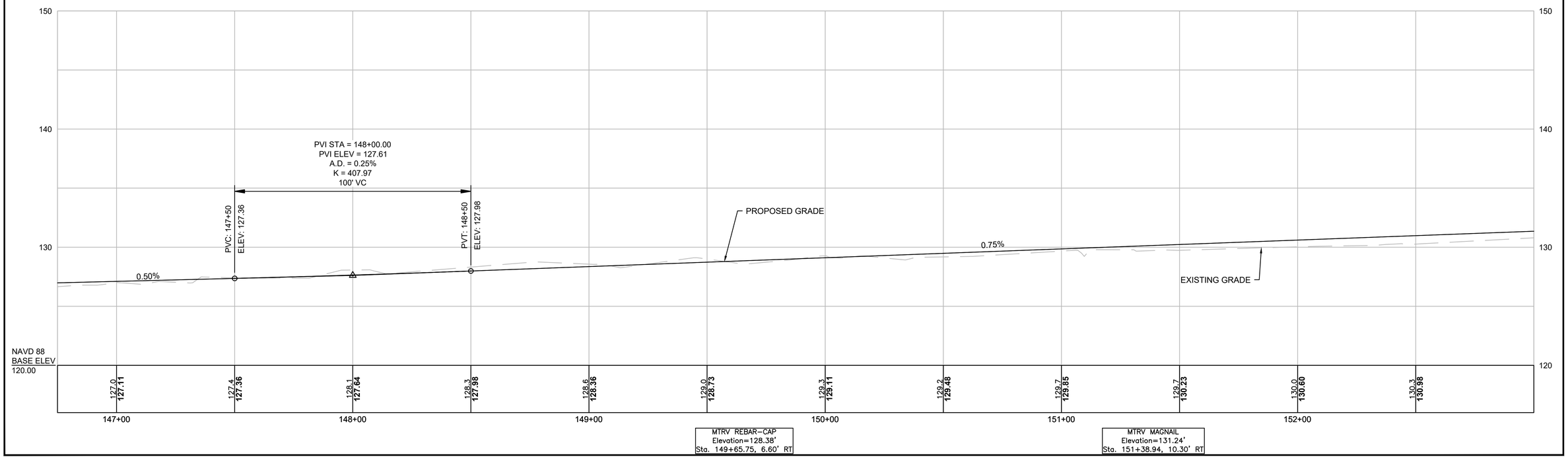
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	58	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:10 AM



HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
⟨9⟩	SWITCH LEVER
⟨10⟩	INTERLOCKING AND TRACK
⟨11⟩	RETAINING WALL



DRAINAGE DETAILS
SEE SHEET 76

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	59	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:11 AM

COMMONWEALTH AVENUE (PUBLIC)
1877/78 COUNTY LAYOUT

NAD 83

#308

#330

N/F
RICHARD F. OFRIA
BK/PG 57811/130

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

N/F
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE ORDER 22EX, PAGE 479

PROP. 6' STOCKADE FENCE (STA. 152+53 TO STA. 154+09 LT)

PROP. GATE (B.O.-PRIVATE)

PROP. SLOPE LIMIT (TYP.)

PROP. 10.0' FULL DEPTH HMA SHARED USE PATH (TYP.)

REM. EXIST. RAILS AND TIES (TYP.)

PROP. CONST. ℄ & PGL

PROP. COMPOST TOPSOIL & SEED (TYP.)

PROP. SWALE (TYP.)

PROP. 2' STONE DUST SHOULDER (TYP.)

PROP. CLEARING AND GRUBBING FOR GUY WIRE INSTALLATION

RET. MILE POST

MATCHLINE

EXIST RR LAYOUT LINE

PROP. CLEARING AND GRUBBING (TYP.)

REM. HMA. PROP. COMPOST TOPSOIL & SEED

PROP. SLOPE LIMIT (TYP.)

PROP. 6' CLF; TIE INTO EXISTING (STA. 157+16 TO STA. 159+51 RT)

PC +90.29

PT +18.79

R&R 10' CLF

PROP. TEMP. EASE. (TYP.)

PROP. 12' WIDE FULL DEPTH HMA DRIVEWAY

REM. HMA. PROP. COMPOST TOPSOIL & SEED

20' CONC WALL ARCH

CONTINUED ON SHEET 58

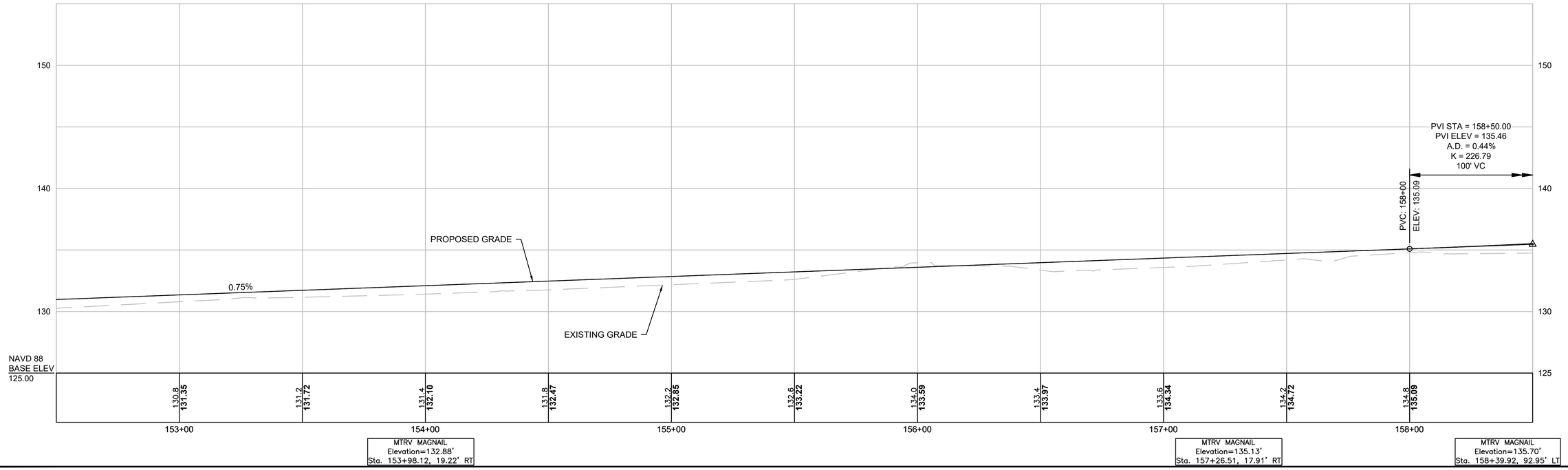
CONTINUED ON SHEET 60

CONTINUED ON SHEET 61

HISTORIC MARKER INVENTORY	
REFERENCE	DESCRIPTION
8	MILE POST

HOR. SCALE IN FEET
20 0 20 40

VER. SCALE IN FEET
4 0 4 8



HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

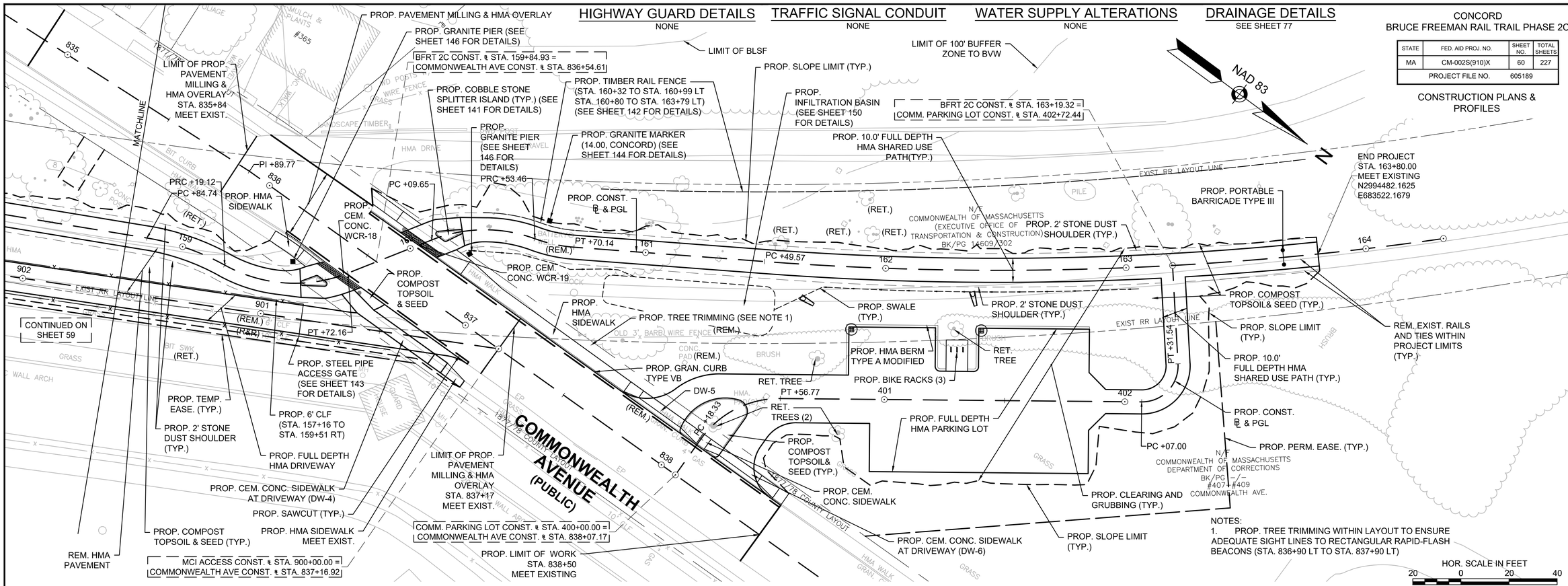
WATER SUPPLY ALTERATIONS
NONE

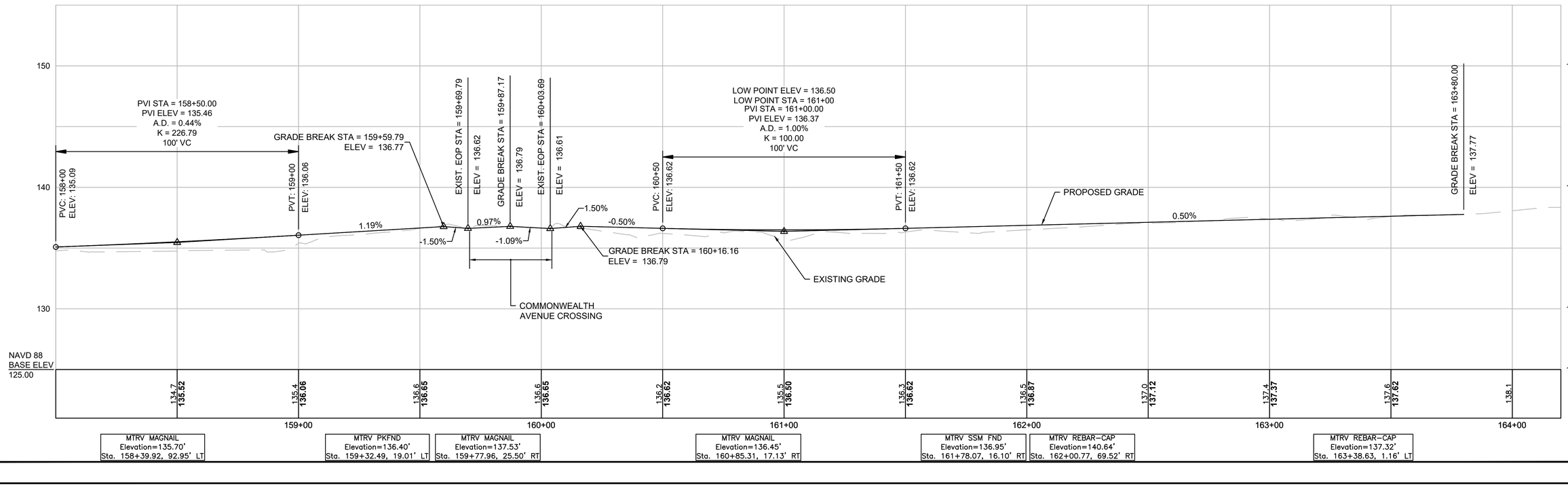
DRAINAGE DETAILS
SEE SHEET 77

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	60	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES





605189_HD(CO).DWG Plotted on 17-Aug-2016 11:11 AM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

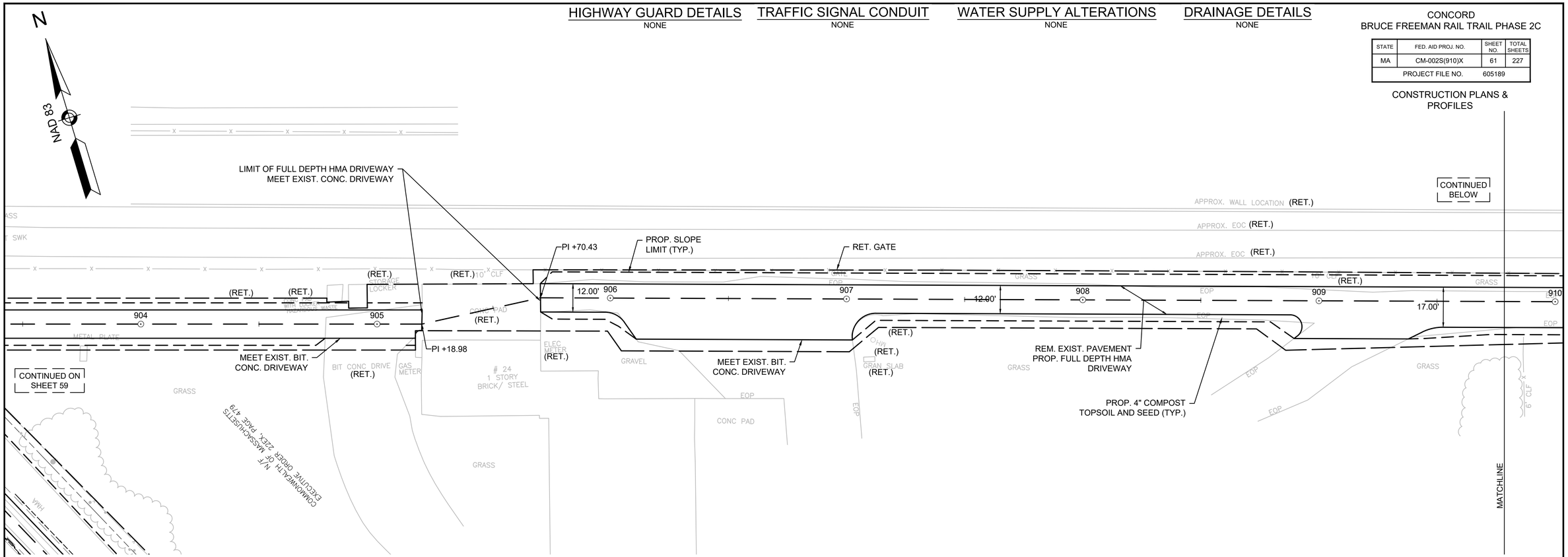
DRAINAGE DETAILS
NONE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	61	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

605189_HD(CO).DWG Plotted on 17-Aug-2016 11:12 AM



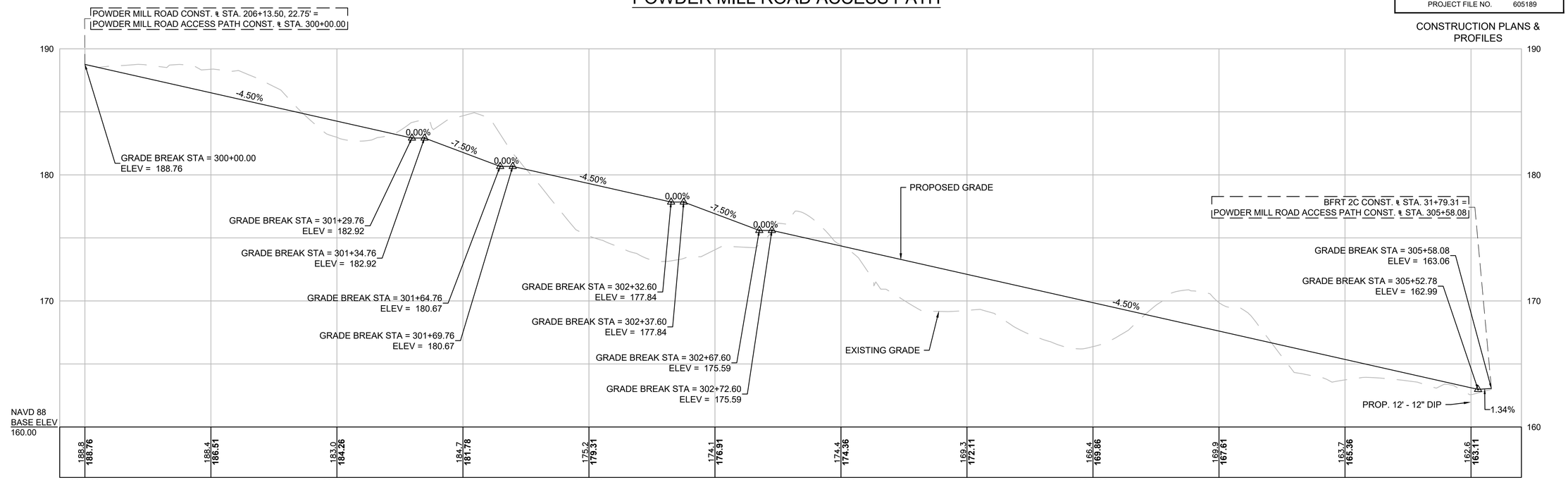
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	62	227
PROJECT FILE NO.	605189		

CONSTRUCTION PLANS & PROFILES

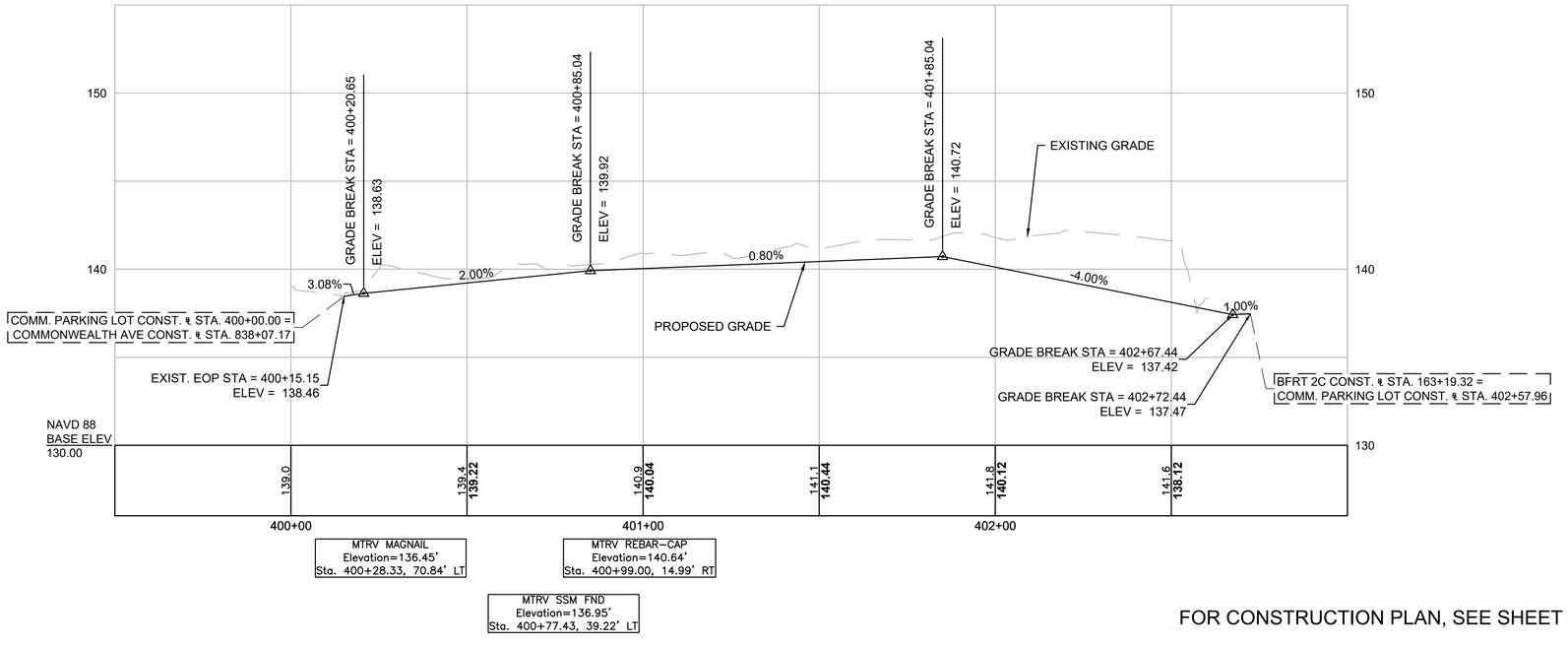
605189_HD(CO).DWG Plotted on 17-Aug-2016 11:12 AM

POWDER MILL ROAD ACCESS PATH



FOR CONSTRUCTION PLAN, SEE SHEET 34

COMM. AVE. PARKING LOT



FOR CONSTRUCTION PLAN, SEE SHEET 60

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	63	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HD(DU).DWG Plotted on 17-Aug-2016 11:13 AM

NAD 83 N

EXIST RR LAYOUT LINE

DENSE FOLIAGE

PROP. CONST. ℄ & PGL

BEGIN PROP. 10.0' FULL DEPTH HMA SHARED USE PATH STA. 27+40.00

REM. EXIST. 24" RCP & FES (BOTH SIDES)

PRC +49.66

PC +99.66

PT +99.66

23 24 25 26 27 28

PATH

HMA

RIPRAP

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS CH. 634 EASEMENT BK.12373 PG. 238

MATCHLINE

CONTINUED BELOW

PT +19.82

205

DMH R=191 I1=84.38 I2=86.28 I3=84.38 I4=85.58

GRASS

WATER

12" RCP

POWDER MILL ROAD ℄ STA. 206+13.50, 22.65' R = POWDER MILL ROAD ACCESS PATH ℄ STA. 301+62.31

PROP. DMH STA. 205+45, 7.6' RT RIM=189.60 INV. (DMH)=185.45 INV. (CB LT)=185.95 INV. (CB RT)=185.65 INV. OUT=183.10 (CONN. TO EXIST.)

PROP. 12" COUPLING, CONN. TO EXIST.; PROP. 12" GATE VALVE AND BOX (12" DI CAP AND THRUST BLOCKS DURING CONSTRUCTION)

PT +16.71

PC +45.46

PRC +66.93

CONNECT TO EXIST. 2' - 12" RCP

PROP. CBCI STA. 205+38, 10.5' RT RIM=189.70 INV.OUT=185.70

PC +69.76

PT +29.76

PT +32.60

PC +72.60

PROP. CBCI STA. 205+38,10.5' LT RIM=190.10 INV.OUT=186.10

15' - 12" RCP

PROP. 169' - 12" RCP SEE NOTE 3.

REM. EXIST. 24" RCP & FES (BOTH SIDES)

CONTINUED ABOVE

MATCHLINE

206

205

204

(REM.)

DMH R=191 I1=84.38 I2=86.28 I3=84.38 I4=85.58

HMA

UNDERGROUND TUNNEL

RIPRAP

PROP. 27'-12" INSULATION ON PROP. WATER LINE

POWDER MILL ROAD (PUBLIC)

BFRT 2C CONST. ℄ STA. 28+83.23 = POWDER MILL ROAD CONST. ℄ STA. 204+69.20

TOWN OF CONCORD 20' WATER EASEMENT BK. 14647 PG. 1

PATH

DENSE FOLIAGE

PROP. 1" CORP. STOP; TEMPORARY CURB STOP AND BOX; TEMPORARY 10'-1" COPPER SERVICE; TEMPORARY YARD HYDRANT

REM. EXIST. WITHIN LIMITS OF EXCAVATION. PROP. 180'-12" CEMENT LINED DIP WATERLINE

PROP. DMH STA. 203+72, 2.0' RT RIM=196.08 INV. IN.=189.14 (CONN. TO EXIST.) TEMP. INV. OUT=193.00 PERM. INV. OUT=188.80 (SEE SHEET 152)

PROP. 12" GATE VALVE AND VALVE BOX (12" DI CAP AND THRUST BLOCKS DURING CONSTRUCTION) PROP. 12" COUPLING, CONN. TO EXIST

SEE SHEET 152 FOR TEMPORARY DRAINAGE DIVERSION AND STAGING PLAN FOR BRIDGE CONSTRUCTION

NAD 83 N

WF#BF 3A R15 WF#BF 3A R30 WF#BF 3A R14 WF#BF 3A R35 WF#BF 3A R36 WF#BF 3A R33 WF#BF 3A R31 WF#BF 3A R34 WF#BF 3A R13 WF#BF 3A R32 WF#BF 3A R11 WF#BF 3A R37 WF#BF 3A R12 WF#BF 3A R10 WF#BF 3A R38 WF#BF 3A R39 WF#BF 3A R9 WF#BF 3A R40 WF#BF 3A R41 WF#BF 3A R42 WF#BF 3A R8 WF#BF 3A R7 WF#BF 3A R6 WF#BF 3A R3 WF#BF 3A R4

PC +50.98

PRC +13.84

PT +35.43

PT +32.45

PRC +76.70

INV.=161.50

INV.=161.60

PROP. 12'-12" DIP CROSS CULVERT

PROP. SWALE (TYP.)

PROP. 16' TRENCH DRAIN (SEE SHEET 141FOR DETAILS)

PROP. CONST. ℄ & PGL

INV.=160.27 PROP. STONE FOR PIPE END 6'X5.5'

INV.=160.43 PROP. STONE FOR PIPE END 6'X2.5'

BFRT 2C CONST. ℄ STA. 31+79.31 = POWDER MILL ROAD ACCESS PATH CONST. ℄ STA. 305+58.08

30 31 32 33 34

CONTINUED ON SHEET 64

NOTES

1. CONTRACTOR TO PERFORM TEST PIT. VERIFY EXIST. PIPE INVERT PRIOR TO ORDERING STRUCTURE.
2. CONTRACTOR TO DETERMINE STRUCTURE INVERT BASED ON TEST PITS OF EXIST. PIPE INVERTS.

GENERAL NOTES

1. OFFSETS TO CATCH BASINS AT CURB LINE ARE TO THE CURB OR EOP. ALL OTHER STRUCTURE OFFSETS ARE TO THE CENTER OF THE STRUCTURE.
2. LEACHING BASINS SHALL HAVE COVERS AS NOTED.
3. REMOVE EXIST. PIPE DURING EXCAVATION FOR CULVERT INSTALLATION. INSTALL TEMPORARY DRAINAGE PRIOR TO REMOVING EXIST. DRAINAGE. SEE ITEM 297.1. INSTALL PROP. 12" PIPE DURING BACKFILL FOR CULVERT CONSTRUCTION.

0 20 50 100

SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	64	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HD(DU).DWG Plotted on 17-Aug-2016 11:13 AM

NAD 83

MATCHLINE

WF#BF 3A R2
WF#BF 3A R3
WF#BF 3A R1
WF#BF 3A R4
WF#3-100
WETLAND NO. 3 (BVW)
WF#3-101
WF#3-102
WF#3-103
WF#3-104
WF#3-105
BF#3-106
BF#3-107
BF#3-108
BF#3-109
BF#3-110
BF#3-111
WETLAND NO. 3 (BANK)
WF#3-112
WF#3-113
WF#3-114
WF#3-115
DENSE FOLIAGE
EXIST RR LAYOUT LINE
PROP. SWALE (TYP.)
PROP. CONST. ℄ & PGL
ROCK
PC +52.47
34
35
36
37
38
39
40
CONTINUED ON SHEET 63
CONTINUED BELOW
PROP. SWALE (TYP.)
EXIST RR LAYOUT LINE
MATCHLINE

NAD 83

MATCHLINE

DENSE FOLIAGE
WETLAND NO. 3 (BVW)
WF#3-115
WF#3-116
WF#3-117
WF#3-118
WF#3-119
WF#3-120
WF#4-101A
WF#4-101
WF#4-100
WETLAND NO. 4 (BVW)
EXIST RR LAYOUT LINE
WF#4-102
WF#4-103
WF#4-104
WF#4-105
WF#4-106
PATH
MATCHLINE
40
41
42
43
44
45
46
PROP. CONST. ℄ & PGL
WF#4-200
WF#4-201
WF#4-202
WF#4-203
WF#4-204
WETLAND NO. 4 (BVW)
CONTINUED ABOVE
CONTINUED ON SHEET 65
TOWN OF CONCORD
ACCESS EASEMENT
LCC# 30802A

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	65	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:14 AM

NAD 83 N

MATCHLINE

RET. CULVERT

PROP. CONST. ℄ & PGL

WETLAND NO. 4 (BVW)

WF#4–106 WF#4–107 WF#4–108 WF#4–109 WF#4–110 WF#4–111–G WF#4–112 WF#4–113

EXIST RR LAYOUT LINE

STONE MONUMENT I.E. POST

46 47 48 49 50 51

12" 12" 6" 6" 12" 12" 12

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	66	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HD(DU).DWG Plotted on 17-Aug-2016 11:14 AM

NAD 83 N

MATCHLINE

CONTINUED ON SHEET 65

CONTINUED BELOW

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

INV.=140.65
PROP. 27'-12" DIP CROSS CULVERT

INV.=140.38

MATCHLINE

DENSE FOLIAGE

WETLAND NO. 6 (ILSF)

WETLAND NO. 5 (BVW)

DIRT/GRAVEL ROAD

GRAVEL DRIVE

UP

46

57 58 59 60 61 62 63

WF#4-224 WF#4-225 WF#4-226 WF#4-227

WF#5-100 WF#5-101 WF#5-102 WF#5-103 WF#5-104 WF#5-105 WF#5-106

WF#6-100 WF#6-101 WF#6-102 WF#6-103 WF#6-104 WF#6-105 WF#6-106 WF#6-107

NAD 83 N

STA. 62+95, 10' LT
INV.=140.95
PROP. STONE FOR PIPE END 6'x5'

PROP. CONDUITS FOR FUTURE USE. (B.O.-CMLP)
CONTRACTOR TO COORDINATE WITH CMLP AND CONCORD DPW PRIOR TO PATH CONSTRUCTION

PROP. 42' TRENCH DRAIN (SEE SHEET 141FOR DETAILS)

STA. 63+36, 8.5' LT
INV.=142.20
PROP. STONE FOR PIPE END 6'X5'

STA. 63+74, 8.5' RT
INV.=141.00
PROP. STONE FOR PIPE END 6'X5'

PROP. SWALE (TYP.)

PROP. 45' TRENCH DRAIN (SEE SHEET 141FOR DETAILS)

STA. 63+31, 20' RT
INV.=140.00
PROP. STONE FOR PIPE END 6'X5'

RET.

PROP. CONST. ℄ & PGL

PROP. SWALE (TYP.)

RET.

CONTINUED ABOVE

CONTINUED ON SHEET 67

45 44 43

63 64 65 66 67 68

WF#5-106 WF#5-107 WF#5-108

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	67	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:14 AM

NAD 83 N

MATCHLINE

DENSE FOLIAGE

BIT

1926 COUNTY LAYOUT

GRASS

MH

ELEC. CAB ON CONC. PAD

RET.

7' FENCE W/ 7' CLF

CONC. PAD

BARBED WIRE

PROP. 24' TRENCH DRAIN (SEE SHEET 141FOR DETAILS)

STA. 70+01, 8' LT
INV.=143.60
PROP. STONE FOR PIPE END 6'X5'

STA. 70+25, 8' LT
INV.=143.40
PROP. STONE FOR PIPE END 6'X5'

DIRT/GRASS

6" CLASSBUCK

EXIST RR LAYOUT LINE

PROP. SWALE (TYP.)

68 69 PC +72.43 70 71 72 73 74

STA. 70+02, 8' RT
INV.=143.60
PROP. STONE FOR PIPE END 6'X5'

STA. 70+26, 7.5' RT
INV.=143.40
PROP. STONE FOR PIPE END 6'X5'

HMA PAD

PROP. CONST. ℄ & PGL

CONTINUED ON SHEET 66

PROP. 24' TRENCH DRAIN (SEE SHEET 141FOR DETAILS)

6" CT WIRE GATE

SSMH

BROKEN

WOOD BOLLARD

RET.

BURIED

GRASS

SWINGSET

CONTINUED BELOW

GRAVEL/DIRT

OLD MARLBORO ROAD (PUBLIC)

STOCKADE FENCE

24" RCP

GRAN CURB

1966 TOWN LAYOUT

CB R=138.98' I1=132.88 I2=132.88 I3=132.88

DRAINAGE OUTFALL

PROP. CB
STA. 75+77, 12.8 LT
RIM=140.50
INV.=136.50

PROP. 15'-12" RCP

PROP. 6'-12" RCP CONN. TO EXIST.

PROP. CIT (ADJ.)
RIM= 140.55
INV. IN(CB)=136.40
INV. IN(LB)=138.03
INV. OUT=136.09± (EXIST.)

PROP. TEST PIT (GAS)

LIMIT OF WORK MEET EXIST.

ADJ. (B.O.-CMLP)

PROP. LEACHING BASIN W/F&G
STA. 75+65, 10.4' LT
RIM=141.10
INV.IN=137.00
INV.OUT=138.10

PROP. SWALE (TYP.)

PROP. 18' 12" RCP

ADJ.

76

PROP. GUY POLE & GUY (B.O.-CMLP)

TOWN OF CONCORD SLOPE EASEMENT BK/PG 11091/63

WETLAND NO. 7 (BVW)

WF#7-100 WF#7-101 WF#7-102 WF#7-103 WF#7-104

PROP. CONST. ℄ & PGL

74 75 77 78 79 80

CONTINUED ABOVE

R&R UP & GUY (B.O.-CMLP) TO BE LOCATED TO AVOID CONFLICT WITH THE GAS LINE.

CONTINUED ON SHEET 68

PROP. LEACHING BASIN W/F&G
STA. 75+63, 10.0' RT
RIM=140.90
INV.=137.20

PROP. SWALE (TYP.)

WILLIAMS ROAD (PUBLIC)

LIMIT OF WORK MEET EXIST.

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	68	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:15 AM

NAD 83 N

1969 TOWN LAYOUT
1966 TOWN LAYOUT
TOWN OF CONCORD SLOPE EASEMENT BK/PG 11091/63
DENSE FOLIAGE
UP
MATCHLINE
EXIST RR LAYOUT LINE
WF#7-104
WF#7-105
WF#7-106
WF#7-107
WF#7-108
WF#7-109
WF#7-110
WF#7-111
WF#7-112
WF#7-113
CONC. HDWL
PROP. CONC. AND FIELD STONE MASONRY PIPE END CS E 206.6.0
STA. 81+01, 19.8' LT
BURIED PIPE INV.=123.20
STREAM BED ELEV.=125.20
PROP. 45'-48" RCP EMBEDDED 2' WITH NATURAL STREAMBED SUBSTRATE IN PIPE BOTTOM
PROP. CONST. ℄ & PGL
WETLAND NO. 7 (BVW)
80
81
82
83
84
85
REM. EXIST. 30" CULVERT
CONTINUED ON SHEET 67
CONTINUED BELOW
WF#8-103
WF#8-104
WF#8-105
WF#8-106
WF#8-107
WF#8-108
WETLAND NO. 8 (BVW)
PROP. CONC. FIELD STONE MASONRY PIPE END CS E 206.6.0
STA. 81+20, 19.2' RT
BURIED PIPE INV. = 121.80
STREAM BED ELEV.=123.80
WF#8-100

NAD 83 N

MATCHLINE
WETLAND NO. 7 (BVW)
WF#7-113
WF#7-113A
WF#7-115
WF#7-114
EXIST RR LAYOUT LINE
CONTINUED ABOVE
PROP. CONST. ℄ & PGL
DENSE FOLIAGE
WHISTLE POST
86
87
88
89
90
91
EASTERN RELAY WELL & DUCT
PROP. SWALE (TYP.)
CONTINUED ON SHEET 69
WF#8-108
WF#8-109
WF#8-110
WF#8-111
WF#8-112
WF#8-113
WETLAND NO. 8 (BVW)
EXIST RR LAYOUT LINE
TOWN OF CONCORD 20' DRAINAGE EASEMENT BK/PG 16780/546 PB 207 of 1986
TOWN OF CONCORD DRAINAGE DITCH EASEMENT BK/PG 16780/546 PB 207 of 1986
WF#9-91
WF#9-90

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	69	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:15 AM

NAD 83 N

MATCHLINE

CONTINUED ON SHEET 68

PROP. SWALE (TYP.)

EXIST RR LAYOUT LINE

TOWN OF CONCORD
20' DRAINAGE EASEMENT
BK/PG 16780/546
PB 207 of 1986

PROP. CONST. ℄ & PGL

PROP. SWALE (TYP.)

PROP. 30' TRENCH DRAIN (SEE SHEET 141FOR DETAILS)

STA. 96+01, 7' LT
INV.=142.66
PROP. STONE FOR PIPE END 6'X5'

STA. 96+31, 7.0' LT
INV.=143.06
PROP. STONE FOR PIPE END 6'X5'

CONTINUED BELOW

STA. 96+06, 13.5' RT
INV.=142.65
PROP. STONE FOR PIPE END 6'X5'

PROP. 30' TRENCH DRAIN (SEE SHEET 141 FOR DETAILS)

STA. 96+38, 11' RT
INV.=143.07
PROP. STONE FOR PIPE END 6'X5'

WETLAND NO. 9 (BVW)

#461
OLD MARLBORO RD.

#437

#416

OLD MARLBORO ROAD

LIMIT OF WORK

CONTINUED ABOVE

CONTINUED ON SHEET 70

TOWN OF CONCORD
ACCESS, UTILITY & DRAINAGE EASEMENT
BK/PG 16780/546
PB 207 of 1986

0 20 50 100
SCALE: 1" = 20'

SOUTH MEADOW RIDGE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	70	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:15 AM

NAD 83

N

SOUTH MEADOW RIDGE

OLD MARLBORO ROAD
(PUBLIC)

#2B
UPLAND RD.

MATCHLINE

CONTINUED ON SHEET 69

CONTINUED ABOVE

CONTINUED BELOW

CONTINUED ON SHEET 71

EXIST RR LAYOUT LINE

RET.

R&R UP & LIGHT
(B.O.-CMLP)
PROP. 10'-4" SCH 80
PVC RISER AND SWEEP
(B.O.-CMLP)

PROP. SWALE (TYP.)

PROP. CONST.
℄ & PGL

PROP. TEST
PIT (GAS)

ADJ. (B.O.-CMLP)

ADJ. (REM.)

ADJ.

PT +31.82

PC +73.89

PROP. 25'-12" DI
CONN. TO EXIST.

PRC +62.98

PRC +54.95

PCC +05.24

PROP. CB
STA. 103+41, 8.2' RT
RIM=146.30
INV.=144.89

LIMIT OF WORK

1926 COUNTY LAYOUT

103 104 105 106 107 108 109 110 111 112 113 114

#406 #416 #368 #148 #132

DENSE FOLIAGE

4' FENCE W/WD POST

4' CLF

3' WIRE FENCE

5' PVC FENCE

CHICKEN WIRE AND WD STAKE FENCE

GRAN CURB

HMA WALK

CONC STEPS

FLAGSTONE

STONE WALL

MULCH & BUSHES

GRASS

WOOD BOLLARD

BOLLARD

BATTERY WELL

SEPTIC TANK

LEACHING TRENCH

SHED

WD STORAGE CONTAINER

GAR

TREE HOUSE

TRAIN CTRL BOX

RELAY BOX

ELEC BOX

BRK PAVERS

STONES

0 20 50 100

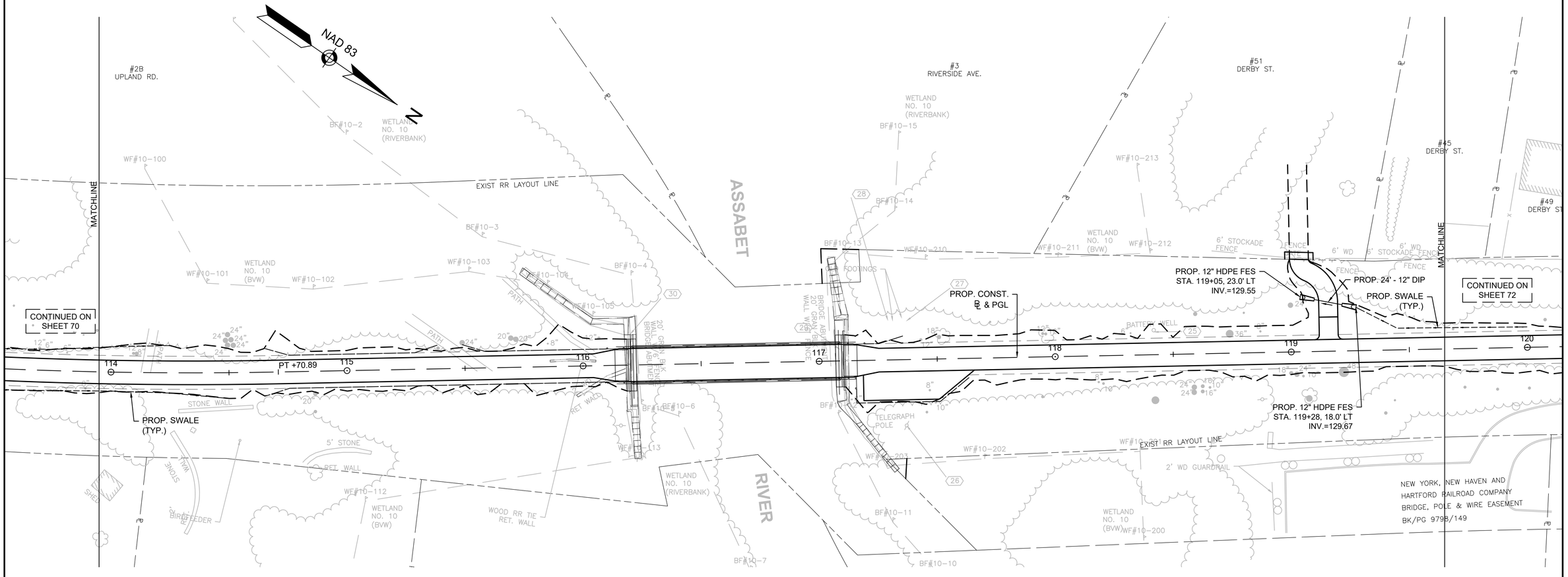
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	71	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HD(DU).DWG Plotted on 17-Aug-2016 11:16 AM



0 20 50 100

SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	72	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:16 AM

NAD 83

N

#45 DERBY ST.
#49 DERBY ST.
#31 DERBY ST.
#25–#27 DERBY ST.
#17–#19
#13

6' WD FENCE
6' STOCKADE FENCE
MATCHLINE
GAR
SHED
EXIST RR LAYOUT LINE

PROP. SWALE (TYP.)
PROP. CONST. ℄ & PGL
120
PC +58.56
121
122
PT +50.89
123
PC +02.11
RET.
CONTINUED ON SHEET 71

NEW YORK, NEW HAVEN AND HARTFORD RAILROAD COMPANY
BRIDGE, POLE & WIRE EASEMENT
BK/PG 9798/149

LIMIT OF WORK
MAIN STREET (PUBLIC)
FLAGPOLE
#12.37
MAIN ST (ROUTE 62) CONST. ℄ STA. 703+54.23 =
COMMONWEALTH AVE CONST. ℄ STA. 800+00.00
ADJ. (B.O.-GAS)
ADJ. (B.O.-CMLP)
BFRT 2C CONST. ℄ STA. 124+43.63 =
MAIN ST (ROUTE 62) CONST. ℄ STA. 703+27.97
ADJ. CBCI R=132.24 I1=127.84 I2=127.87
R&R WATER FAUCET CUT AND CAP SERVICE AT WATER MAIN
PRC +49.70
124
PT +84.86
PROP. MAST ARM (TYP.) (SEE TRAFFIC SIGNAL PLANS)
GRANITE MONUMENT BENCH IN MULCH
POSTS
R&S EXISTING SIGNAL EQUIPMENT (TYP.)
703
REMOD.
704
PI +72.83
PI +62.76
1885 COUNTY LAYOUT
1909 COUNTY LAYOUT
ADJ. (B.O.-CMLP)
ADJ. (B.O.-VERIZON)
ADJ. (B.O.-GAS)
PC +57.54
RET
PT +109.05
801
PROP. HYD. SEE NOTE 1
125
RET. REM.
PI +20.57
REM.
EXIST RR LAYOUT LINE
MATCHLINE
BOSTON CONSOLIDATED GAS COMPANY 30' POLE & WIRE EASEMENT BK/PG 7927/522
CONTINUED ON SHEET 73

MAIN STREET (1885 COUNTY LAYOUT - 50.00' WIDE - PUBLIC)
702
PC +98.19
ADJ. (B.O.-GAS)
30' WIDE UTILITY EASEMENT
REPLACE FRAME AND GRATE WITH FRAME AND COVER
INV. GICI=126.55
INV. OUT=125.47
PROP. MOD. GICI (SEE SHEET 146 FOR DETAILS)
STA. 701+52, 24.4' RT
RIM=129.10
INV.=126.60
PROP. 2'-8" DIP
701
LIMIT OF WORK
GAS STATION
CONC SLAB
GAS PUMPS
CONC PAD
CONC RET. WALL
STN. RET. WALL
FLAG POLE
GRASS
BIT. PARKING
HMA CURB
GRAN CURB
CONC
DMH R=128.44 I=122.00 I=120.84
DMH R=132.08' I1=122.58' (in) I2=121.74' (out)
DMH R=131.19' I1=121.49 I2=121.34
STONE POSTS
METAL
GRAN STEPS W/ BRK PAVERS

NOTES
1. R&D EXIST. GATE VALVE AND GATE BOX;
PROP. 6" GATE VALVE & BOX;
R&S EXIST. HYD.
PROP. HYDRANT
PROP. 4'-6" CEMENT LINED DIP

0 20 50 100
SCALE: 1"= 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	73	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:16 AM

CONTINUED ON SHEET 72

CONTINUED ON SHEET 74

NAD 83

N

COMMONWEALTH AVENUE (PUBLIC)

1877 COUNTY LAYOUT LINE

MASSACHUSETTS BAY TRANSIT AUTHORITY (FITCHBURG LINE)

CHURCH STREET (PUBLIC)

MATCHLINE

PI +20.57

PT +85.33

PI +50.93

PC +99.15

PC +73.87

ADJ. (B.O.-GAS)

PT +06.93

ADJ. (B.O.-GAS)

PROP. CB
STA. 127+90. 8.5' RT
RIM=131.34
INV. OUT=127.44
PROP. 12" HOOD

PROP. 8'-12" RCP
CONN. TO EXIST.

REM. CB

PC +60.64

PROP. CONST. ℄ & PGL

PRC +74.70

PT +03.90

PC +53.81

PCC +72.63

PT +92.67

PI +35.95

PI +61.45

PI +91.95

R&R LP

SEE RAILROAD CROSSING PLANS (B.O.-MBTA)

BFRT 2C ℄ STA. 130+77.79, 42.50' L =
BEHARRELL PARKING ℄ STA. 500+50.10

EOTC EASEMENT

PC +97.31

PRC +35.53

PRC +38.33

BOSTON CONSOLIDATED GAS COMPANY ACCESS EASEMENT EASEMENT BK/PG 7927/522

TOWN OF CONCORD RIGHT OF WAY BK/PG 11800/501

BOSTON GAS 20' EASEMENT BK/PG 11686/446 PB 531 of 1969

BOSTON GAS COMPANY EASEMENT BK/PG 11721/43 PB 61 OF 1969

BOSTON CONSOLIDATED GAS COMPANY 30' POLE & WIRE EASEMENT BK/PG 7927/522

EXIST RR LAYOUT LINE

EXIST RR BASELINE & LAYOUT LINE

12' WIDE PASSAGEWAY

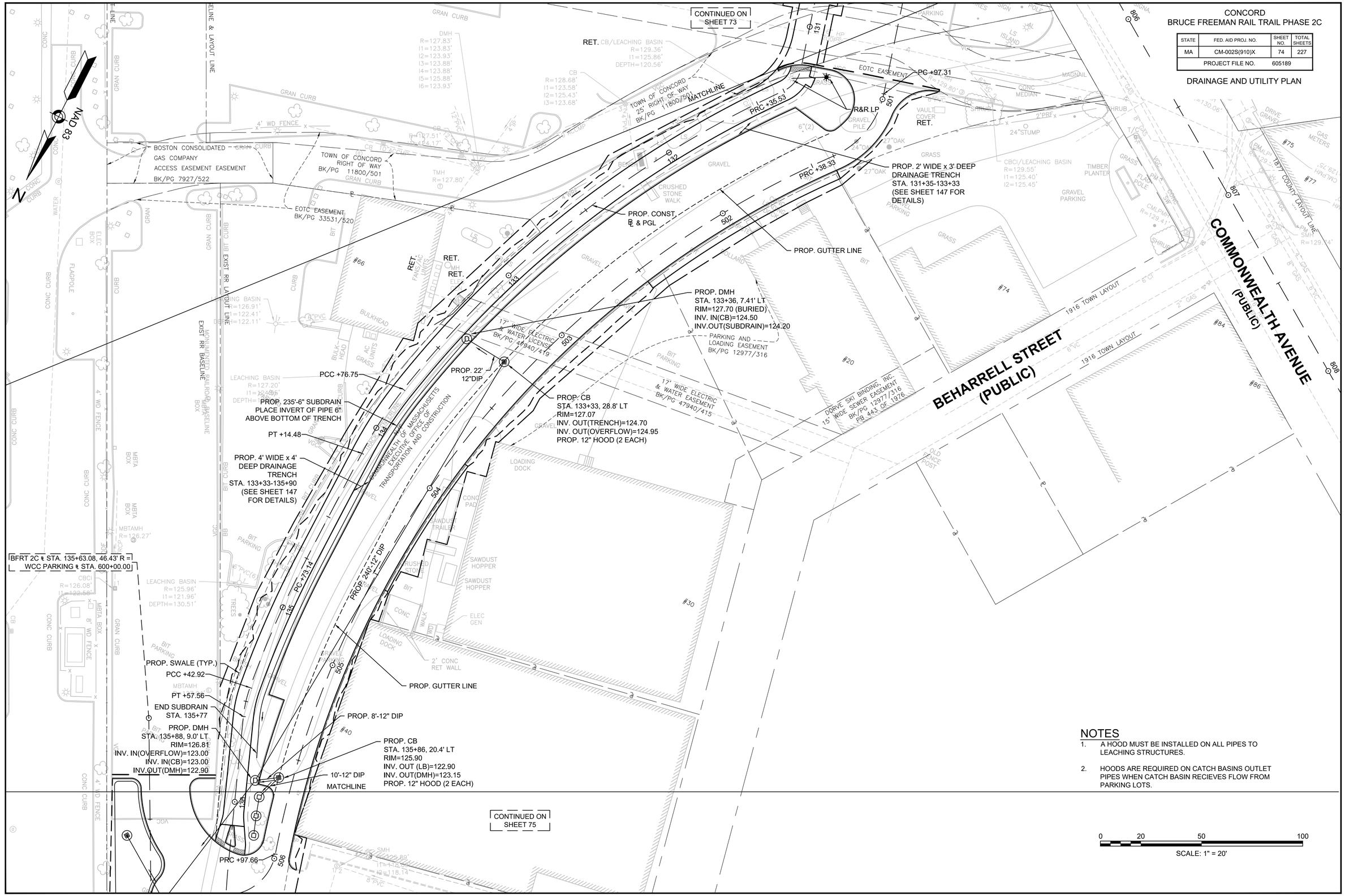
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	74	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:16 AM



NOTES

1. A HOOD MUST BE INSTALLED ON ALL PIPES TO LEACHING STRUCTURES.
2. HOODS ARE REQUIRED ON CATCH BASINS OUTLET PIPES WHEN CATCH BASIN RECIEVES FLOW FROM PARKING LOTS.

0 20 50 100

SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	75	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 18-Aug-2016 6:27 AM

PROP. 6' O.D. LEACHING BASIN W/F&C STA. 136+06, 11.2' LT RIM=126.50 INV.=122.80

PROP. 6' O.D. LEACHING BASIN W/F&C STA. 136+16, 11.0' LT RIM=126.50 INV.=122.80

ADJ

PROP. 10' 12" RCP

MATCHLINE

NAD 83

N

BFRT 2C CONST. ℄ STA. 136+46.21 = BEHARRELL PARKING CONST. ℄ STA. 506+31.97

REMOD.

RET.

PROP. CONST. ℄ & PGL

30' SEWER EASEMENT BK 5264 PG 555

EXIST RR LAYOUT LINE

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION) BK ××× PG ×××

WETLAND NO.11 (RIVERBANK)

WETLAND NO.11 (BVW)

GRAVEL

BIT

PARKING

OBS WELL

CONC STORAGE

ABAND WELL

MH

EP

EARTH

506

PRC +97.66

136

137

138

139

140

141

142

PROP. SWALE (TYP.)

PROP. 10' 12" RCP

PT +11.95

PROP. 71' 15" RCP

PROP. 6' O.D. LEACHING BASIN W/F&C STA. 135+96, 11.8' LT RIM=126.50 INV.=122.80

GRAN. CURB

PARKING

VGC

602

601

PI +04.09

PROP. 236'-15" RCP

PROP. OUTFALL INV.=119.15 REMOVE AND REPLACE GRANITE BLOCKS AS NEEDED. CUT BLOCK TO FIT NEW PIPE. MORTAR OPENING.

RET.

PROP. 5 S.Y. COMPOST AND SEED OVER MODIFIED ROCKFILL REMOVE EXISTING MATERIAL TO DEPTH REQUIRED TO MATCH EXISTING GRADE

NASHOBA BROOK

BRIDGE

BATTERY WELL

WOOD RET. WALL

CONTINUED BELOW

CONTINUED ON SHEET 74

4' WD FENCE

4' WOODF

CONC CURB

PROP. 34' 12" DIP

PROP. DMH STA. 136+50, 30.9' RT RIM=126.53 INV. IN(STANDPIPE)=123.50 INV. IN(DMH)=121.69 INV.OUT=121.50

PROP. STANDPIPE (SEE SHEET 149 FOR BIORETENTION DETAILS)

BFRT 2C ℄ STA. 136+48.25, 37.03' R = BEHARRELL PARKING ℄ STA. 506+69.07

TOWN OF CONCORD 30' SEWER EASEMENT BK 5264 PG 555

WF#11-1 WF#11-2 WF#11-3 WF#11-4 WF#11-10 WF#11-11 WF#11-12 WF#11-13 WF#11-14 WF#11-15 WF#11-16 WF#11-100 WF#11-101 WF#11-102 WF#11-200 WF#11-201 WF#11-202 WF#11-203 WF#11-204 WF#11-205

WETLAND NO. 11 (RIVERBANK)

WETLAND NO. 11 (BVW)

DENSE FOLIAGE

NOTES

1. A HOOD MUST BE INSTALLED ON ALL PIPES TO LEACHING STRUCTURES.
2. HOODS ARE REQUIRED ON CATCH BASINS OUTLET PIPES WHEN CATCH BASIN RECIEVES FLOW FROM PARKING LOTS.

WINTHROP STREET (PUBLIC)

1899 TOWN LAYOUT

TRASH RECEP

ELEC BOX METAL POLES

STORAGE GARAGE AC UNIT AC UNIT

CB

BIT

DIRT

CONC

DENSE FOLIAGE

EP EXIST RR LAYOUT LINE

2' CONC RET. WALL

9 METAL POLES

PROP. SWALE (TYP.)

PROP. CONST. ℄ & PGL

143 144 145 146 147

WDC-JV LLC ACCESS & UTILITY EASEMENT BK 61102 PG 420 PLAN 73 OF 2013

MH W/ WIRES

BATTERY WELL

GRAN. RET. WALL

3' STONE RET. WALL

PILE

PROP. CONDUITS FOR FUTURE USE. (B.O.-CMLP) CONTRACTOR TO COORDINATE WITH CMLP AND CONCORD DPW PRIOR TO PATH CONSTRUCTION

PROP. 30' - 18" UTILITY SLEEVE FOR FUTURE WATER LINE (SEE SPECIAL PROVISIONS FOR DETAILS)

PROP. 30' - 6" UTILITY SLEEVE FOR FUTURE GAS LINE (SEE SPECIAL PROVISIONS FOR DETAILS)

CONTINUED ABOVE

CONTINUED ON SHEET 76

0 20 50 100

SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	76	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HDI(DU).DWG Plotted on 17-Aug-2016 11:17 AM

NAD 83
N

BIT
HOLE IN PVMT
EP
6' FENCE
9 METAL POLES
MATCHLINE
EXIST RR LAYOUT LINE
STORAGE
6' WD FENCE
6' CLF
DENSE FOLIAGE
GAR
PROP. CONST. ℄ & PGL
PROP. SWALE (TYP.)
147
148
149
150
151
152
153
PC +02.25
PRC +27.47
PT +52.70
GRAVEL
HMA
MH W/ WIRES
BATTERY WELL
3' STONE RET. WALL
GRAN. RET. WALL
DIRT PILE
PILE
CONTINUED ON SHEET 75
CONTINUED BELOW

#308
#330A
6' WD GATE
6' STOCKADE
8' STOCKADE
1.5' PKT FENCE
BRICK STEPS
GRAN. CURB
COMMONWEALTH AVENUE
HMA WALK
1877/78 COUNTY LAYOUT
RET 835
LIMIT OF WORK
SEWER
WATER
OHW
BIT CURB
RET UP
PROP. GUY (B.O.-CMLP)
RET
154
155
156
157
158
159
PC +90.29
PT +18.79
902
903
904
EXIST RR LAYOUT LINE
EMH
MH
10' CLF
BIT SWK
GRASS
20' CONC WALL ARCH
CONTINUED ABOVE
CONTINUED ON SHEET 77

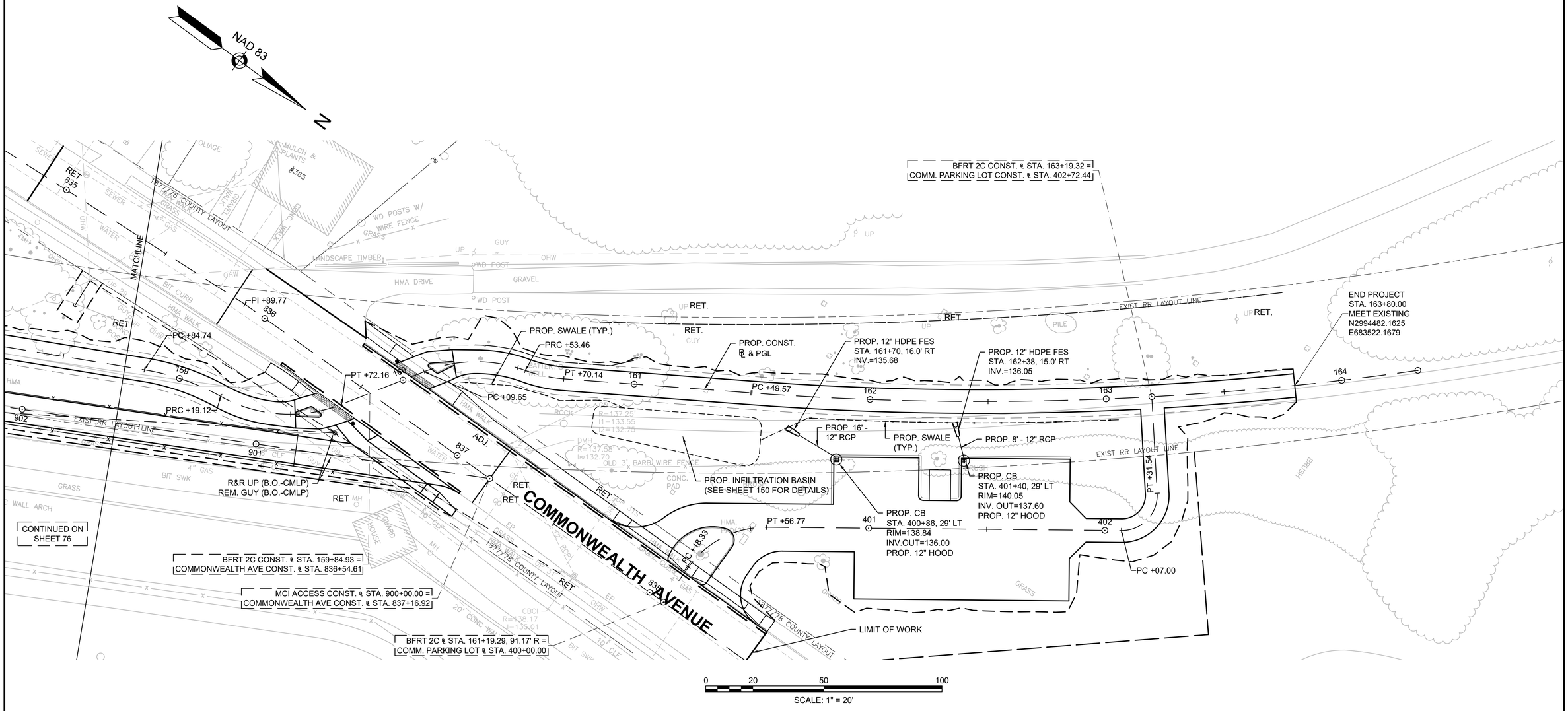
0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	77	227
PROJECT FILE NO.	605189		

DRAINAGE AND UTILITY PLAN

605189_HD(DU).DWG Plotted on 17-Aug-2016 11:17 AM



CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	78	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:18 AM

NAD 83 N

EXIST RR LAYOUT LINE

DENSE FOLIAGE

PROP. CONST. ℄ & PGL

PRC +49.66

PC +99.66

PT +99.66

BEGIN PROP. 10.0' FULL DEPTH HMA SHARED USE PATH STA. 27+40.00

TUNNEL CLEARANCE AT ENTRANCE=7.7'±

MATCHLINE

GUARDRAIL

PT +19.82

205

23 24 25 26 27 28

CONTINUED BELOW

0 20 50 100

SCALE: 1" = 20'

POWDER MILL ROAD (PUBLIC)

193' COUNTY LAYOUT LINE

206

PC +24.

POWDER MILL ROAD CONST. ℄ STA. 206+13.50, 22.75' RT = POWDER MILL ROAD ACCESS PATH CONST. ℄ STA. 300+00.00

8.00'

PT +16.71

PC +45.46

PRC +66.93

PC +69.76

PT +32.60

PT +29.76

PC +72.60

PC +50.98

PRC +13.84

PT +35.43

PT +32.45

PRC +76.70

8.00'

302

303

304

305

306

307

CONTINUED ABOVE

+51.45

11.13'

11.49'

+50.17

+41.45

11.47'

PT +19.82

PT

11.50'

+19.82

205

BFRT 2C CONST. ℄ STA. 28+83.23 = POWDER MILL ROAD CONST. ℄ STA. 204+69.20

TUNNEL CLEARANCE AT ENTRANCE=6.2'±

+44.00

+54.00

+14.00

+24.00

29 30 31 32 33 34

10.00'

14.00'

C2

14.00'

10.00'

PROP. CONST. ℄ & PGL

10.00'

CONTINUED ON SHEET 79

DENSE FOLIAGE

FOLIAGE

BFRT 2C CONST. ℄ STA. 31+79.31 = POWDER MILL ROAD ACCESS PATH CONST. ℄ STA. 305+58.08

EXIST RR LAYOUT LINE

204

PCC

11.50'

+98.33

11.43'

+88.66

+85.15

11.26'

PC

C1

Curve Table			
Curve #	Delta	Radius	Length
C1	5° 24' 39"	211.00	19.93
C2	5° 06' 19"	1511.50	134.68

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	79	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

NAD 83

N

MATCHLINE

DENSE FOLIAGE

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

10.00'

34 35 PC +52.47 36 37 38 39 40

CONTINUED ON SHEET 78

CONTINUED BELOW

0 20 50 100

SCALE: 1" = 20'

NAD 83

N

MATCHLINE

DENSE FOLIAGE

EXIST RR LAYOUT LINE

40 41 42 43 44 45 46

10.00'

PROP. CONST. ℄ & PGL

CONTINUED ABOVE

CONTINUED ON SHEET 80

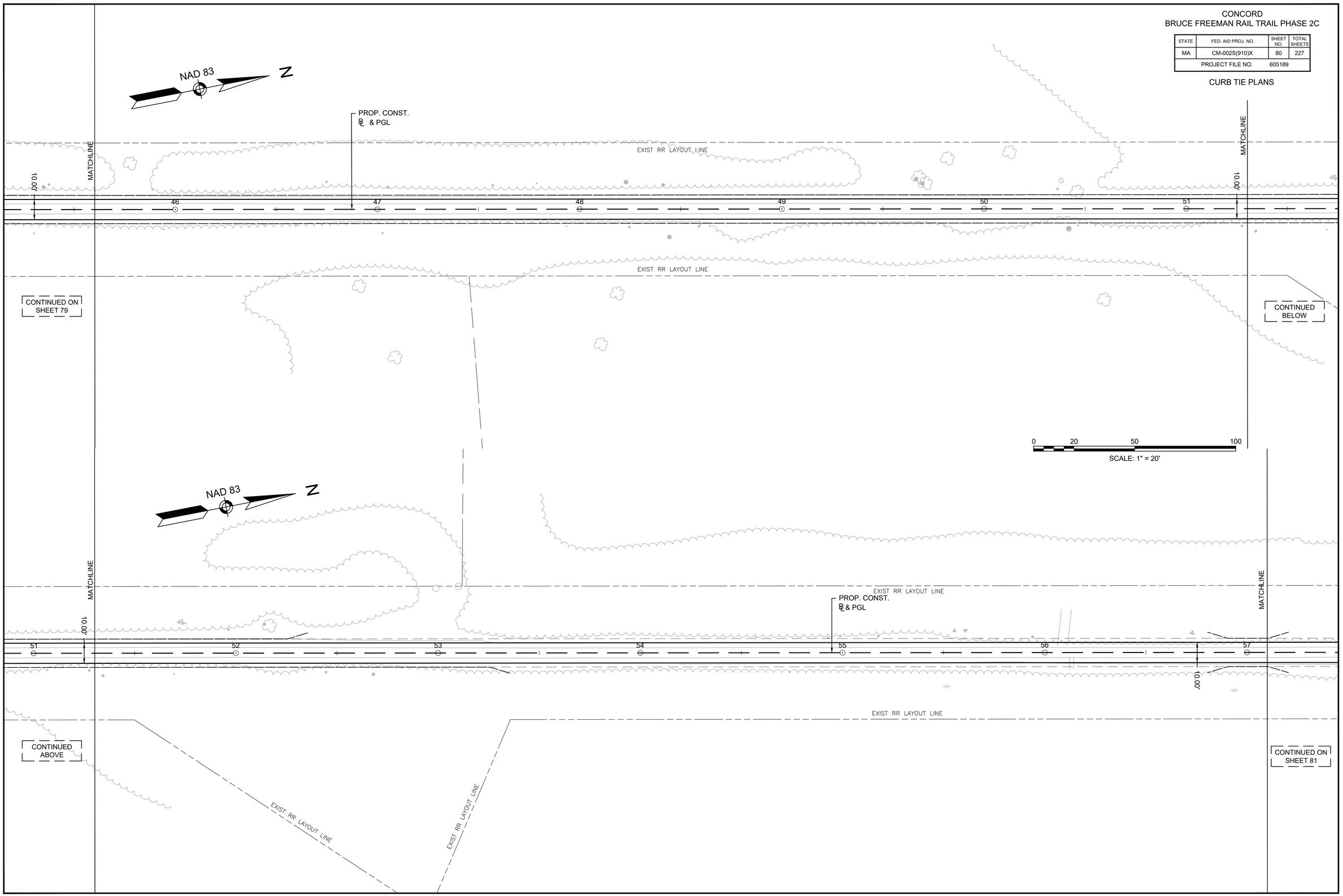
605189_HD(CT).DWG Plotted on 17-Aug-2016 11:18 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	80	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:19 AM



CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	81	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:19 AM

NAD 83 N

MATCHLINE

DENSE FOLIAGE

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

+87.00 +08.00

57 58 59 60 61 62 63

10.00'

8.00'

13.00' 13.00'

21:00'

CONTINUED ON SHEET 80

CONTINUED BELOW

MATCHLINE

0 20 50 100

SCALE: 1" = 20'

NAD 83 N

DENSE FOLIAGE

SB–DH

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

MATCHLINE

12.55' 22.15'

63 64 65 66 67 68

+00.17 +05.11 +76.43 +80.83

R = 3.00'

16.03'

25.38'

10.00'

CONTINUED ON SHEET 82

CONTINUED ABOVE

MATCHLINE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	82	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:19 AM

NAD 83 N

DENSE FOLIAGE

1926 COUNTY LAYOUT

7" CLF

SB–DH

MATCHLINE

14'±

23'±

24'±

6"T

68 69 PC +72.43 70 71 72 73 74

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

10.00'

6"T WIRE GATE

WOOD BOLLARD

CONTINUED ON SHEET 81

CONTINUED BELOW

0 20 50 100

SCALE: 1" = 20'

OLD MARLBORO ROAD (PUBLIC)

1966 TOWN LAYOUT

FOLIAGE

CTR. R= 1.00 +65.06 0.00'

CTR. R= 1.00 +72.86 1.50' LT

CTR. R= 1.00 +68.59

CTR. R= 1.00' +78.30 1.33' LT

CTR. R= 1.00 +27.58 1.50' LT

CTR. R= 1.00 +33.46 0.00'

PT +75.59

C5

C3

C4

C6

C7

C8

C9

C10

C11

R = 65.00'

+64.06

+45.32

5.09'

PRC

PRC +29.41

PC +88.67

5.00'

PCC

R = 30.00'

R = 55.00'

+31.54

CTR. R= 1.00 +73.20 1.50' RT

PC +09.31 20.43' RT

CTR. R= 1.00 +24.61 1.50' RT

PC +22.71

+40.02

+46.27

PRC +54.59

PT +91.91

R=10.00'

R=20.00'

+54.02

PRC +09.11 29.62' RT

R=2.00'

R=5.00'

END PROP. PAVEMENT MILLING & HMA OVERLAY. MEET EXIST.

WILLIAMS ROAD (PUBLIC)

74 75 76 77 78 79 80

CONTINUED ABOVE

CONTINUED ON SHEET 83

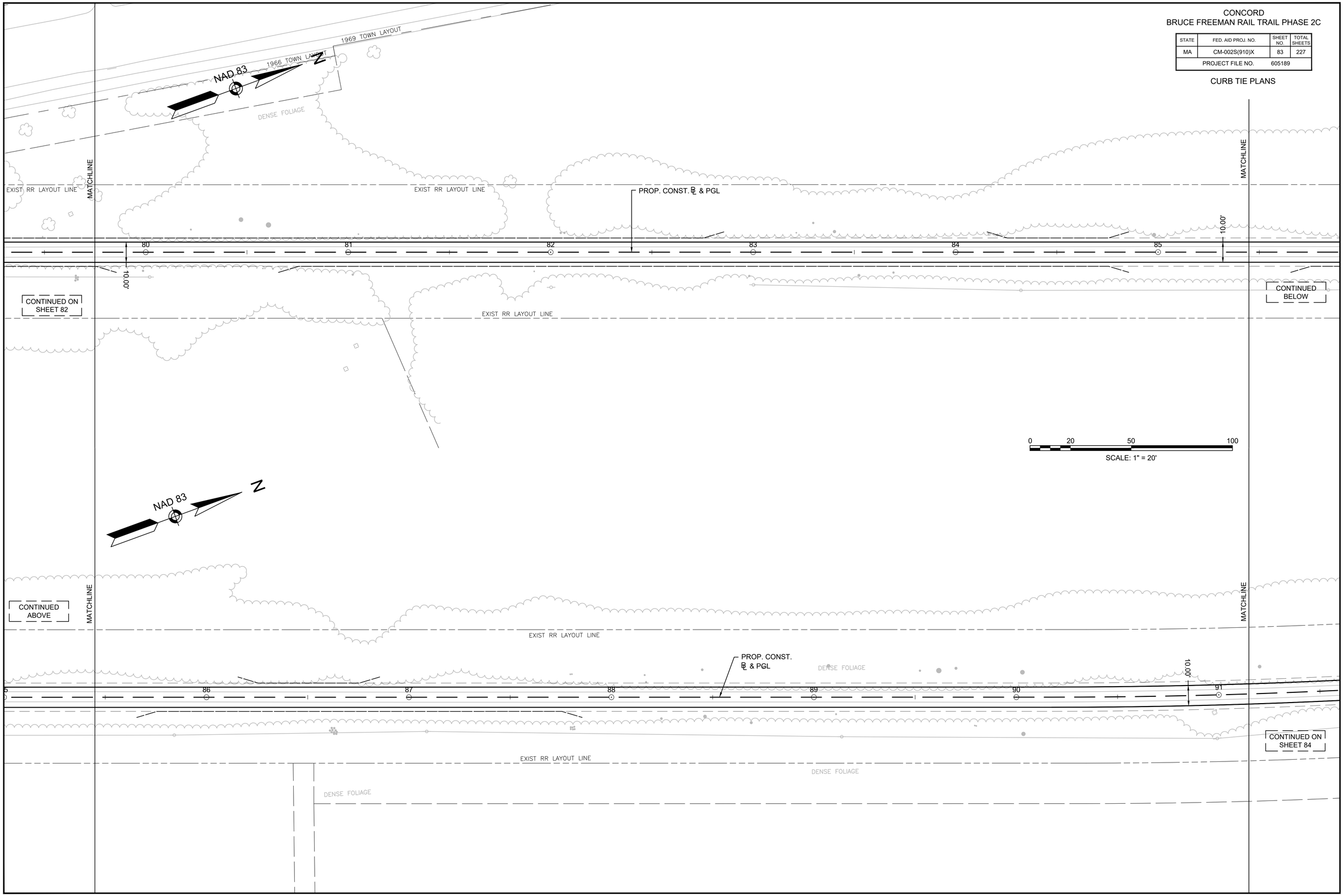
Curve Table			
Curve #	Delta	Radius	Length
C3	158° 32' 52"	1.00	2.77
C4	101° 29' 42"	1.00	1.77
C5	96° 13' 57"	1.00	1.68
C6	24° 14' 13"	41.69	17.64
C7	6° 36' 08"	52.96	6.10
C8	17° 52' 08"	45.78	14.28
C9	138° 47' 57"	1.00	2.42
C10	154° 44' 20"	1.00	2.70
C11	60° 44' 13"	1.00	1.06

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	83	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:19 AM



CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	84	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:20 AM

NAD 83 N

MATCHLINE

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

91 92 93 94 95 96 97

25'±

11'±

10.00'

9'±

28'±

DENSE FOLIAGE

CONTINUED ON SHEET 83

CONTINUED BELOW

#461 OLD MARLBORO RD.

#437

#416

0 20 50 100
SCALE: 1" = 20'

FENCE

1926 COUNTY LAYOUT

SB

SB-DH

WS FENCE

OLD MARLBORO ROAD
(PUBLIC)

97 98 99 100 101 102

CONTINUED ABOVE

CONTINUED ON SHEET 85

SOUTH MEADOW RIDGE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	85	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

Curve Table			
Curve #	Delta	Radius	Length
C12	157° 22' 19"	1.00	2.75
C13	55° 16' 06"	1.00	0.96
C14	147° 21' 35"	1.00	2.57
C15	152° 02' 52"	1.00	2.65
C16	156° 32' 42"	1.00	2.73
C17	51° 24' 26"	1.00	0.90

NAD 83

N

END PROP. PAVEMENT MILLING & HMA OVERLAY. MEET EXIST.

MATCHLINE

EXIST RR LAYOUT LINE

CTR. R= 1.00 +81.79 1.50' LT

CTR. R= 1.00 +91.03 0.00'

CTR. R= 1.00 +24.97 1.50' LT

CTR. R= 1.00 +19.02 0.00'

CTR. R= 1.00 +85.54 1.50' RT

CTR. R= 1.00 +28.12 1.50' RT

PT +31.82

PC +73.89

PRC +62.98

PRC +54.95

PCC +05.24

PROP. CONST. ℄ & PGL

PROP. LIMIT OF WORK

CONTINUED ON SHEET 84

CONTINUED BELOW

SOUTH MEADOW RIDGE

OLD MARLBORO ROAD (PUBLIC)

192K COUNTY LAYOUT

1926 COUNTY LAYOUT

STONE WALL

36" STUMP

DENSE FOLIAGE

4' FENCE W/WD POST

5' PVC FENCE

4' WD FENCE

CONC STEPS

#368

#148

#416

#406

SB-DH

SB

SRAN

0 20 50 100

SCALE: 1" = 20'

#2B UPLAND RD.

CONTINUED ABOVE

CONTINUED ON SHEET 86

CHICKEN WIRE AND STAKE FENCE

#132

TRAIN CTRL BOX

BATTERY WELL

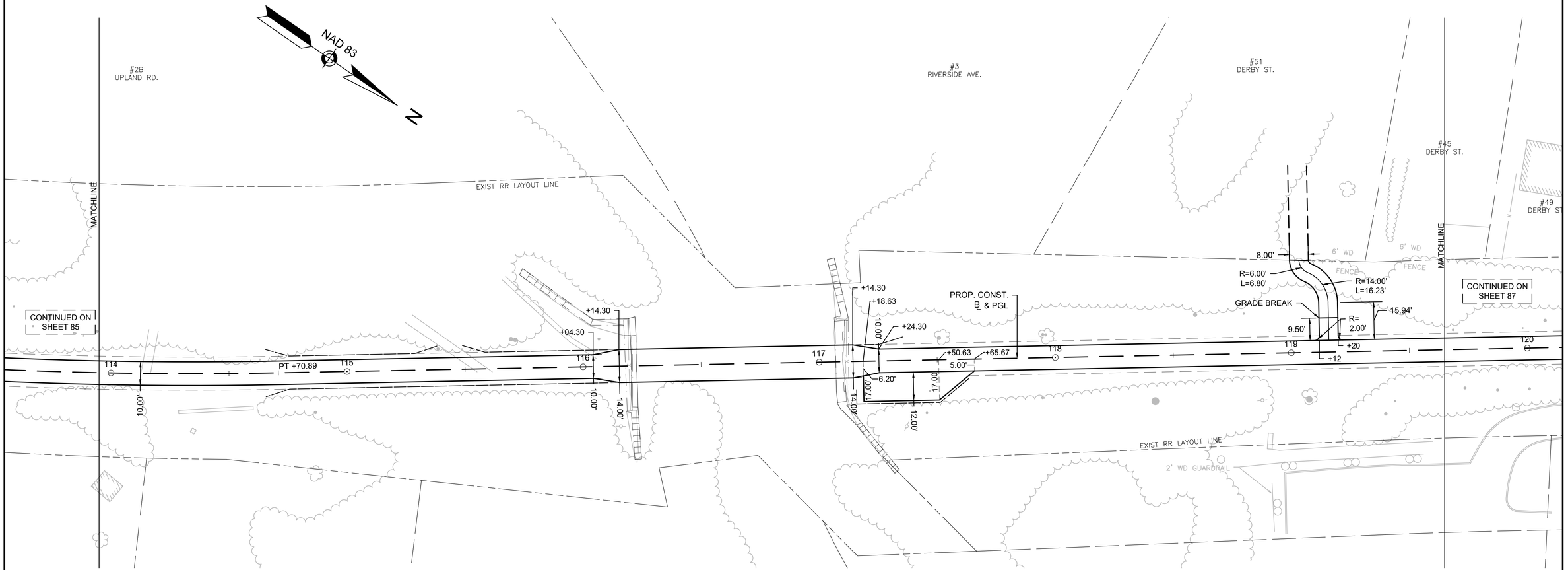
605189_HD(CT).DWG Plotted on 17-Aug-2016 11:20 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	86	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:20 AM



CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	87	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:20 AM

NAD 83

N

#45 DERBY ST.
#49 DERBY ST.
#31 DERBY ST.
#25–#27 DERBY ST.
#17–#19
#13
#1237
#21
#19
#17
#15

MATCHLINE

6' WD FENCE

EXIST RR LAYOUT LINE

PROP. CONST. ℄ & PGL

MAIN STREET (PUBLIC)

1885 COUNTY LAYOUT

1909 COUNTY LAYOUT

END PROP. PAVEMENT MILLING & HMA OVERLAY. MEET EXIST.

MAIN ST (ROUTE 62) CONST. ℄ STA. 703+54.23 = COMMONWEALTH AVE CONST. ℄ STA. 800+00.00

BFRT 2C CONST. ℄ STA. 124+43.63 = MAIN ST (ROUTE 62) CONST. ℄ STA. 703+27.97

+20
PC +58.56
PT +50.89
PC +02.11
PRC +49.70
PT +84.86
PI +62.76
PI +20.57
PT +09.05
PC +57.54
+69.77
+77.02
+96.93
+93.16
PT +72.63
+53.38
+46.74
+26.67
+58.73
+04.54
PC +98.19
+78.33
+57.38
+43.92
+22.61
+93.84
+87.77
+56.26
+68.79
+56.25
PC +90.57
9.50' RT
CTR. R= 5.00
+86.25
11.50' LT
CTR. R=3.00
+56.26
19.24' LT

CONTINUED ON SHEET 86

CONTINUED ON SHEET 88

PROP. LIMIT OF WORK MEET EXIST.

END PROP. PAVEMENT MILLING & HMA OVERLAY. MEET EXIST.

2' WD FENCE

Curve Table			
Curve #	Delta	Radius	Length
C18	74° 20' 00"	20.00	25.95
C20	110° 56' 09"	20.00	38.72
C21	6° 00' 45"	200.00	20.99
C22	25° 49' 15"	263.00	118.52
C23	37° 40' 38"	220.00	144.67
C25	65° 09' 11"	50.00	56.85
C26	22° 05' 41"	60.00	23.14
C27	24° 18' 46"	40.00	16.97
C28	9° 54' 56"	5.00	0.87

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	88	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:20 AM

NAD 83

N

CONTINUED ON SHEET 87

PC +57.54

PI +20.57

MATCHLINE

801

PT +09.05

802

803

804

805

806

807

501

COMMONWEALTH AVENUE
(PUBLIC)

CHURCH STREET
(PUBLIC)

MASSACHUSETTS BAY TRANSIT AUTHORITY
(FITCHBURG LINE)

MONUMENTED RAILROAD BASELINE

EXIST RR LAYOUT LINE

EXIST RR BASELINE & LAYOUT LINE

1877 COUNTY LAYOUT LINE

2' WD FENCE

6' WD FENCE

4' WD FENCE

#15 #17 #19 #21 #23-25 #29-37 #41-47 #49 #51 #53 #55 #57 #7 #9 #75 #77

126

PC +73.87
PT +85.33
PT +06.93
PI +50.93
PC +99.15
PC +60.64
PROP. CONST. ℄ & PGL
PRC +74.70
PT +03.90

125

PC +53.81

PCC +72.63
PT +92.67

130

PI +91.95

BFRT 2C CONST. ℄ STA. 130+77.79, 42.50' LT =
BEHARRELL PARKING CONST. ℄ STA. 500+50.10

8.00'

PI +61.45
PI +35.95
+52.44 7.02' RT
PC +82.33 9.09' RT
CTR. R= 2.0'
+82.34 7.09' RT
PT +84.34 7.10' RT
PT +68.56 8.28' LT
PT +82.41 8.20' LT
CTR. R= 2.0'
+82.40 6.20' LT
PC +84.40 6.19' LT

131

PC +97.31

MATCHLINE

PRC +35.53

132

PRC +38.33

CONTINUED ON SHEET 89

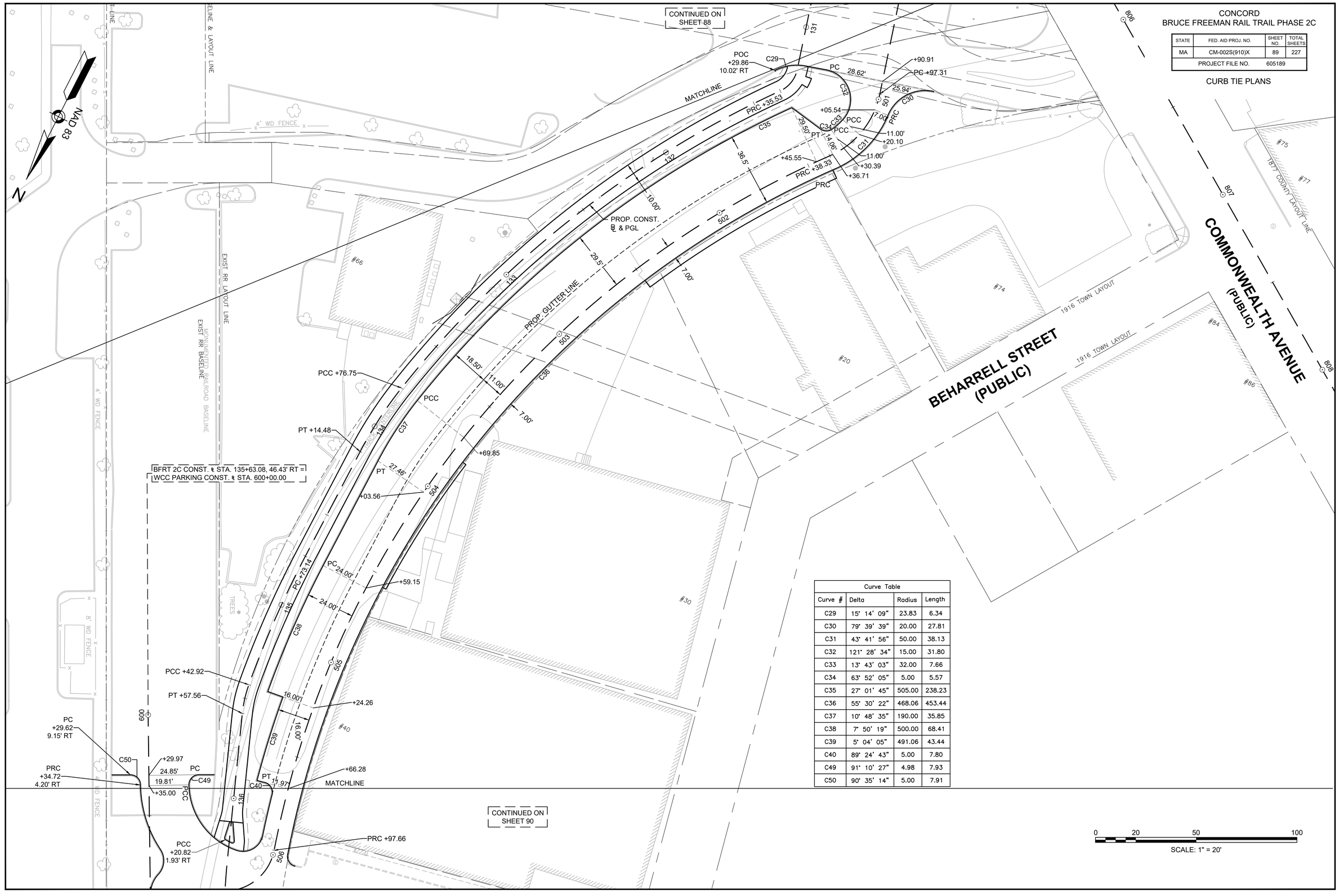
0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	89	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:21 AM



Curve Table			
Curve #	Delta	Radius	Length
C29	15° 14' 09"	23.83	6.34
C30	79° 39' 39"	20.00	27.81
C31	43° 41' 56"	50.00	38.13
C32	121° 28' 34"	15.00	31.80
C33	13° 43' 03"	32.00	7.66
C34	63° 52' 05"	5.00	5.57
C35	27° 01' 45"	505.00	238.23
C36	55° 30' 22"	468.06	453.44
C37	10° 48' 35"	190.00	35.85
C38	7° 50' 19"	500.00	68.41
C39	5° 04' 05"	491.06	43.44
C40	89° 24' 43"	5.00	7.80
C49	91° 10' 27"	4.98	7.93
C50	90° 35' 14"	5.00	7.91

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	90	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:21 AM

NAD 83
N

MATCHLINE
#40
PRC +71.16 7.00' RT
PCC +98.35 7.01' LT
PRC +97.66
CTR. R= 1.00 +21.15 1.50' LT
PRC +91.57 7.00' RT
POT +01.29 12.06' LT
PT +31.85
POT +14.73 22.44' LT
BFRT 2C CONST. ℄ STA. 136+46.21 = BEHARRELL PARKING CONST. ℄ STA. 506+31.97
CTR. R= 1.00 +53.34 1.50' LT
C41
506
C42
C43
PCC +10.05 17.45' RT
C44
C45
136
C47
PC +49.29 0.37' RT
C54
C55
5.00'
10.00'
C56
137
C57
PT +59.99 12.70' RT
PCC +20.82 1.93' RT
CTR. R= 1.00 +12.66 0.00'
CTR. R= 1.00 +19.92 1.50' RT
C48
C46
CTR. R= 1.00 +60.95 0.00'
602
24.00'
600
C52
C53
601
PI +04.09
C51
PRC +66.85 5.26' LT
PT +89.48 0.00'
+04.09 0.00'
CTR. R= 1.00 +52.61 1.50' RT
+04.09 18.00' RT
4' WD FENCE
PRC +79.16 4.12' LT
BEHARRELL PARKING CONST. ℄ STA. 506+69.07 = WCC PARKING CONST. ℄ STA. 600+87.91
CONTINUED ON SHEET 89
+17.99
+25.54
138
10.29'
PC
14.01'
PT R-3.00'
C58
+66.08 9.00' LT
+71.08 9.00' LT
+66.08 0.00'
+66.08 18.00' RT
+71.08 0.00' RT
+44.94 7.00' RT
NASHOBA BROOK
5.00'
7.00'
PROP. CONST. ℄ & PGL
14.00'
139
12.00'
GRADE BREAK
+48.26 18.39' RT
+49.36 23.17' RT
+51.40 33.82' RT
EXIST RR LAYOUT LINE
140
+99.71 31.10' RT
R-25.00'
PC +41.10 7.00' RT
141
142
MH
MATCHLINE
CONTINUED BELOW
DENSE FOLIAGE

BFRT 2C CONST. ℄ STA. 138+42.12, 29.16' RT = WCC PARKING CONST. ℄ STA. 602+71.08

Curve Table			
Curve #	Delta	Radius	Length
C41	85° 43' 32"	5.00	7.48
C42	2° 27' 41"	482.00	20.71
C43	97° 19' 37"	10.00	16.99
C44	119° 26' 04"	1.00	2.08
C45	158° 18' 35"	1.00	2.76
C46	76° 21' 08"	1.00	1.33
C47	5° 54' 12"	32.50	3.35
C48	69° 58' 47"	35.00	42.75

Curve Table			
Curve #	Delta	Radius	Length
C51	32° 53' 59"	59.13	33.95
C52	76° 21' 40"	10.00	13.33
C53	43° 28' 49"	15.00	11.38
C54	114° 29' 22"	1.00	2.00
C55	86° 48' 08"	1.00	1.51
C56	158° 42' 30"	1.00	2.77
C57	110° 54' 11"	10.00	19.36
C58	90° 00' 00"	5.00	7.85

0 20 50 100
SCALE: 1" = 20'

NAD 83
N

MATCHLINE
MH
10.00'
142
143
144
145
146
147
EXIST RR LAYOUT LINE
PROP. CONST. ℄ & PGL
MATCHLINE
CONTINUED ABOVE
DENSE FOLIAGE
1899 TOWN LAYOUT
WINTHROP STREET (PUBLIC)
1899 TOWN LAYOUT
OP OBSCURED
DENSE FOLIAGE
MH W/ WIRES
MH W/ WIRES
EXIST RR LAYOUT LINE
PILE
CONTINUED ON SHEET 91

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	91	227
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CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:21 AM

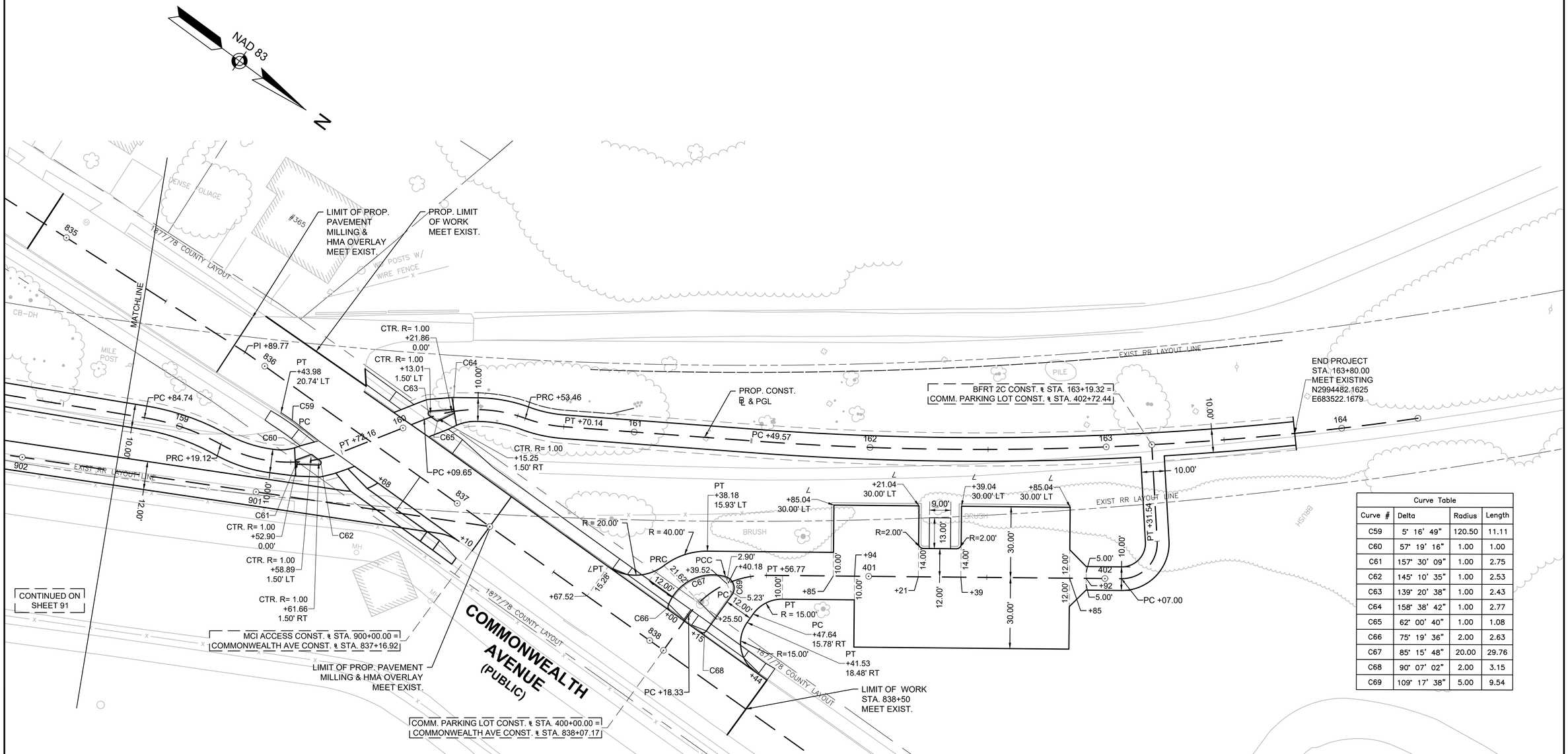
NAD 83
N
MATCHLINE
147
148
149
150
PROP. CONST. ℄ & PGL
151
152
PC +02.25
PRC +27.47
PT +52.70
153
10.00'
EXIST RR LAYOUT LINE
6' WD FENCE
DENSE FOLIAGE
CB-DH
MH W/ WIRES
DIRT PILE
PILE
CONTINUED ON SHEET 90
CONTINUED BELOW
0 20 50 100
SCALE: 1" = 20'
#308
#330A
6' WD GATE
6' WD FENCE
1877/78 COUNTY LAYOUT
835
MILE POST
154
155
156
157
158
159
PC +90.29
PT +18.79
902
903
904
12.00'
EMH
MH
CONTINUED ABOVE
CONTINUED ON SHEET 93
CONTINUED ON SHEET 92

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	92	227
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CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:21 AM



Curve Table			
Curve #	Delta	Radius	Length
C59	5° 16' 49"	120.50	11.11
C60	57° 19' 16"	1.00	1.00
C61	157° 30' 09"	1.00	2.75
C62	145° 10' 35"	1.00	2.53
C63	139° 20' 38"	1.00	2.43
C64	158° 38' 42"	1.00	2.77
C65	62° 00' 40"	1.00	1.08
C66	75° 19' 36"	2.00	2.63
C67	85° 15' 48"	20.00	29.76
C68	90° 07' 02"	2.00	3.15
C69	109° 17' 38"	5.00	9.54

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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MA	CM-002S(910)X	93	227
PROJECT FILE NO.	605189		

CURB TIE PLANS

605189_HD(CT).DWG Plotted on 17-Aug-2016 11:21 AM

N
NAD 83

CONTINUED BELOW

12.00'
904
905
PI +18.98
PI +70.43
12.00'
+97.81
906
+05.97
+11.02
6.00'
10.22'
17.34'
907
+02.55
+12.46
6.00'
17.34'
908
+87.84
6.00'
16.00'
+89.53
909
+37.90
+43.76
16.00'
13.09'
11.00'
99.25'
17.00'
910

CONTINUED ON SHEET 91

CONTINUED ABOVE

N
NAD 83

0 20 50 100
SCALE: 1" = 20'

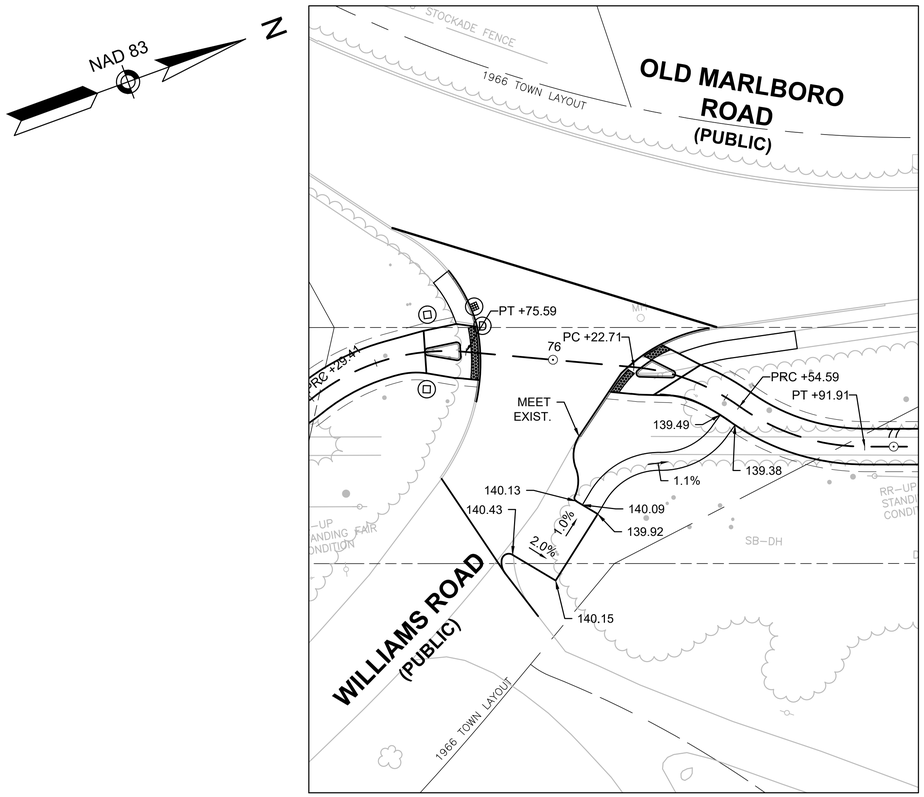
26.00'
910
17.00'
11.00'
+19.07
6.00'
+30.39
31.19'
+39.07
6.00'
PI +46.43
+62.48
+63.21
+65.21
6.00'
8.00'
8.00'
+76.22
26.00'
+90.36
6.00'
+78.58
+76.58
16.00'
911
912
+48.52
+52.41
+55.83
16.00'
12.35'
11.00'
913
+64.74
+68.38
+71.88
11.00'
7.43'
6.00'
914
LIMIT OF WORK
STA. 913+80.00
MEET EXISTING

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	94	227
PROJECT FILE NO.	605189		

GRADING PLAN

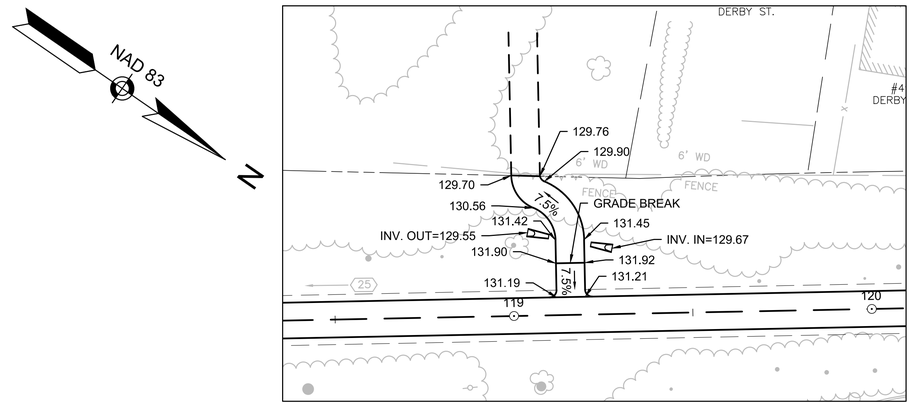
605189_HD(GR).DWG Plotted on 17-Aug-2016 11:22 AM



WILLIAMS ROAD PARKING AREA

0 20 50 100

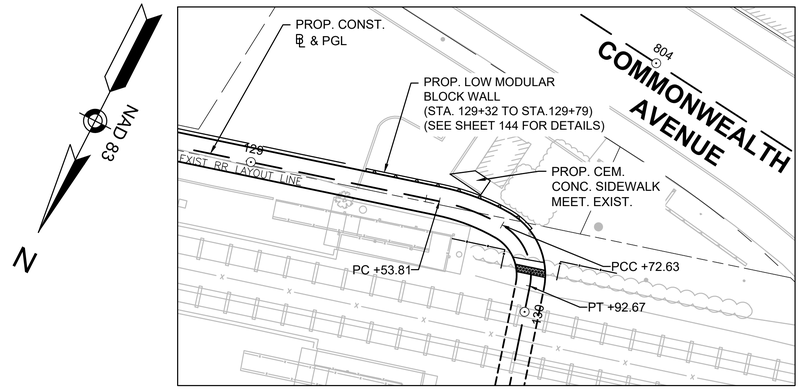
SCALE: 1" = 20'



ACCESS PATH NEAR STA. 119+20LT

0 20 50 100

SCALE: 1" = 20'



LOW MODULAR BLOCK WALL

0 20 50 100

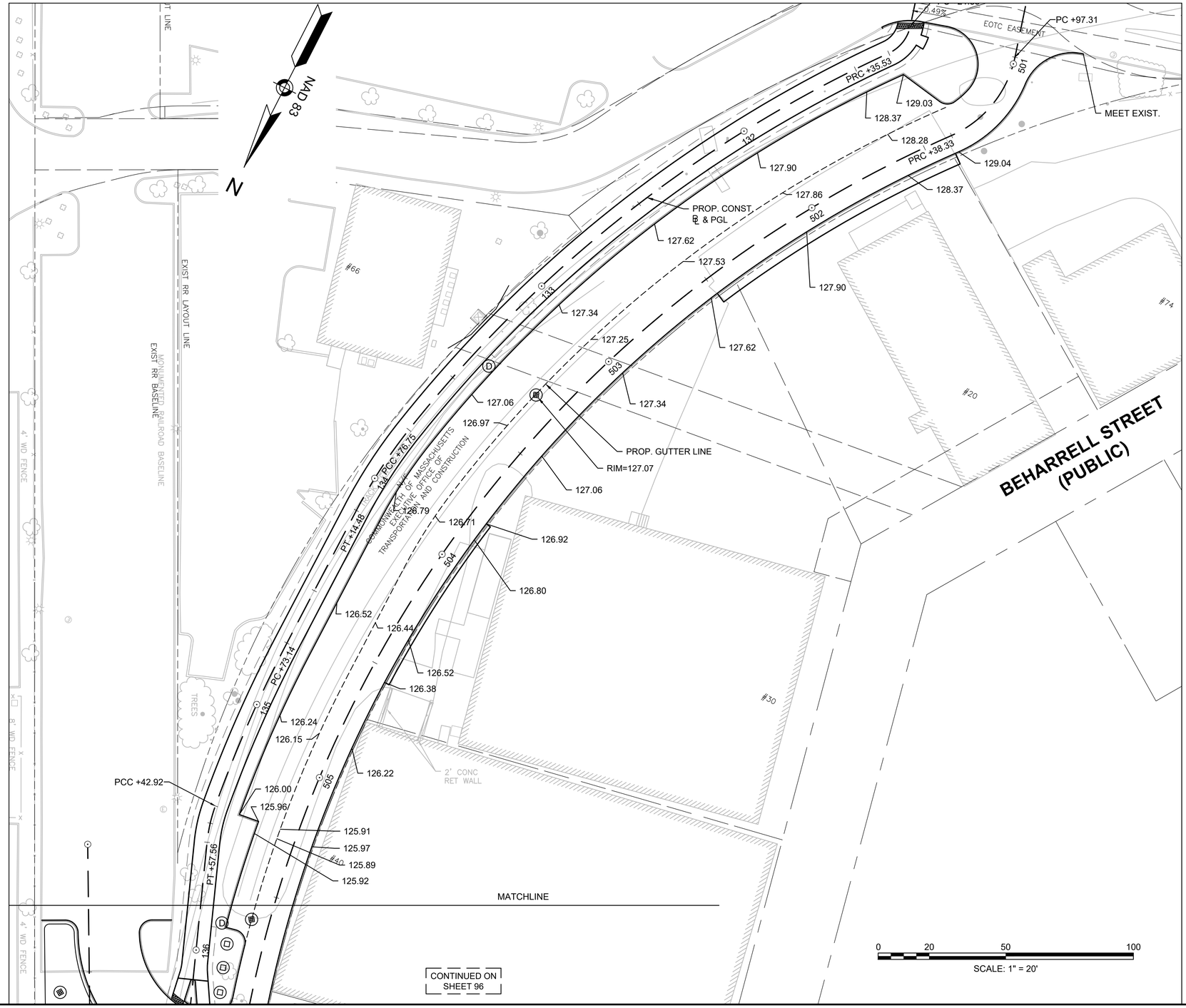
SCALE: 1" = 20'

LOW MODULAR BLOCK WALL ELEVATIONS		
STATION	TOP OF WALL	BOTTOM OF WALL*
129+35	133.79	132.60
129+40	134.20	132.59
129+45	134.38	132.54
129+50	134.49	132.46
129+55	134.59	132.35
129+60	134.68	132.20
129+65	134.69	132.02
129+70	134.20	131.81
129+75	134.17	131.59
*BOTTOM OF WALL IS MEASURED AT THE FACE OF WALL AND EDGE OF TRAIL		

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	95	227
PROJECT FILE NO.	605189		

GRADING PLAN



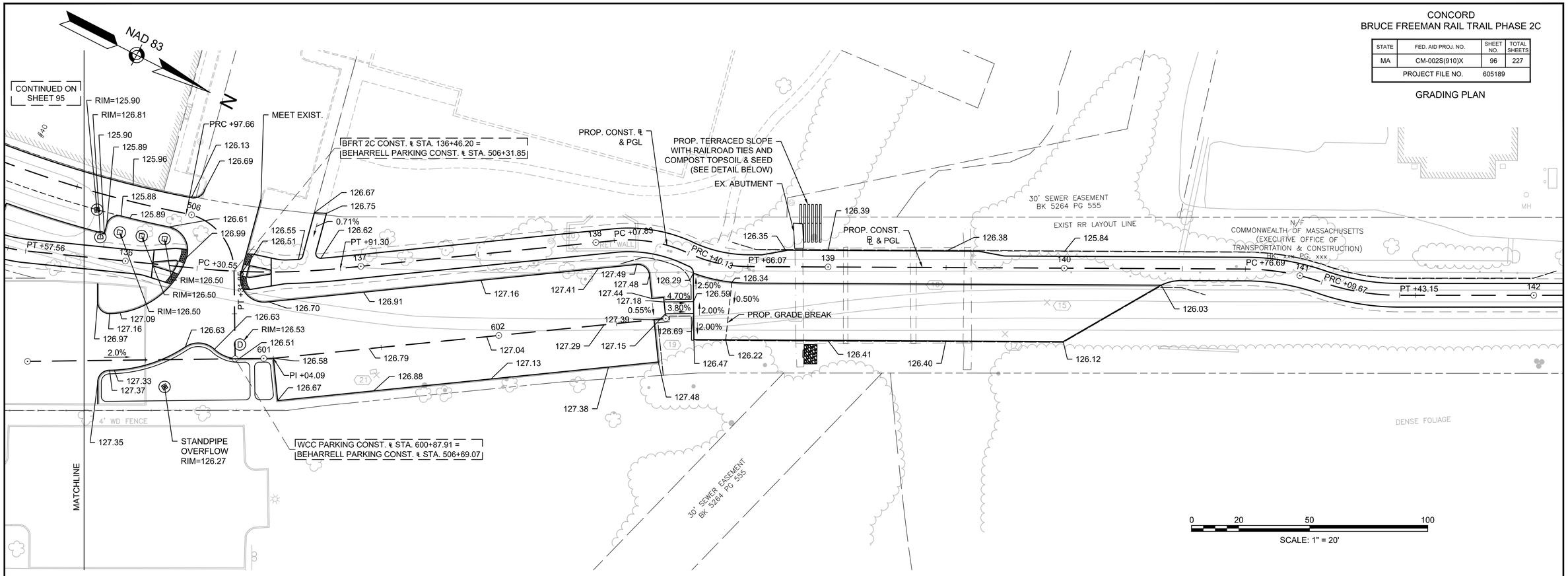
605189_HD(GR).DWG Plotted on 17-Aug-2016 11:22 AM

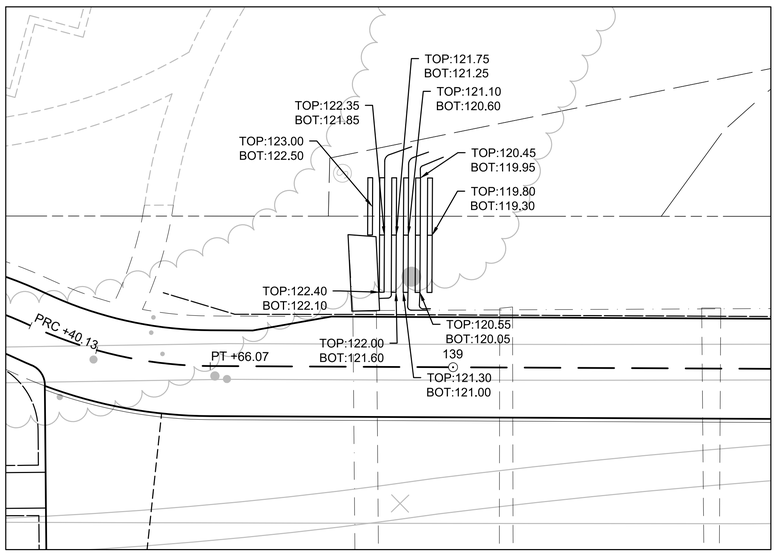
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	96	227
PROJECT FILE NO.	605189		

GRADING PLAN

605189_HD(GR).DWG Plotted on 17-Aug-2016 11:23 AM



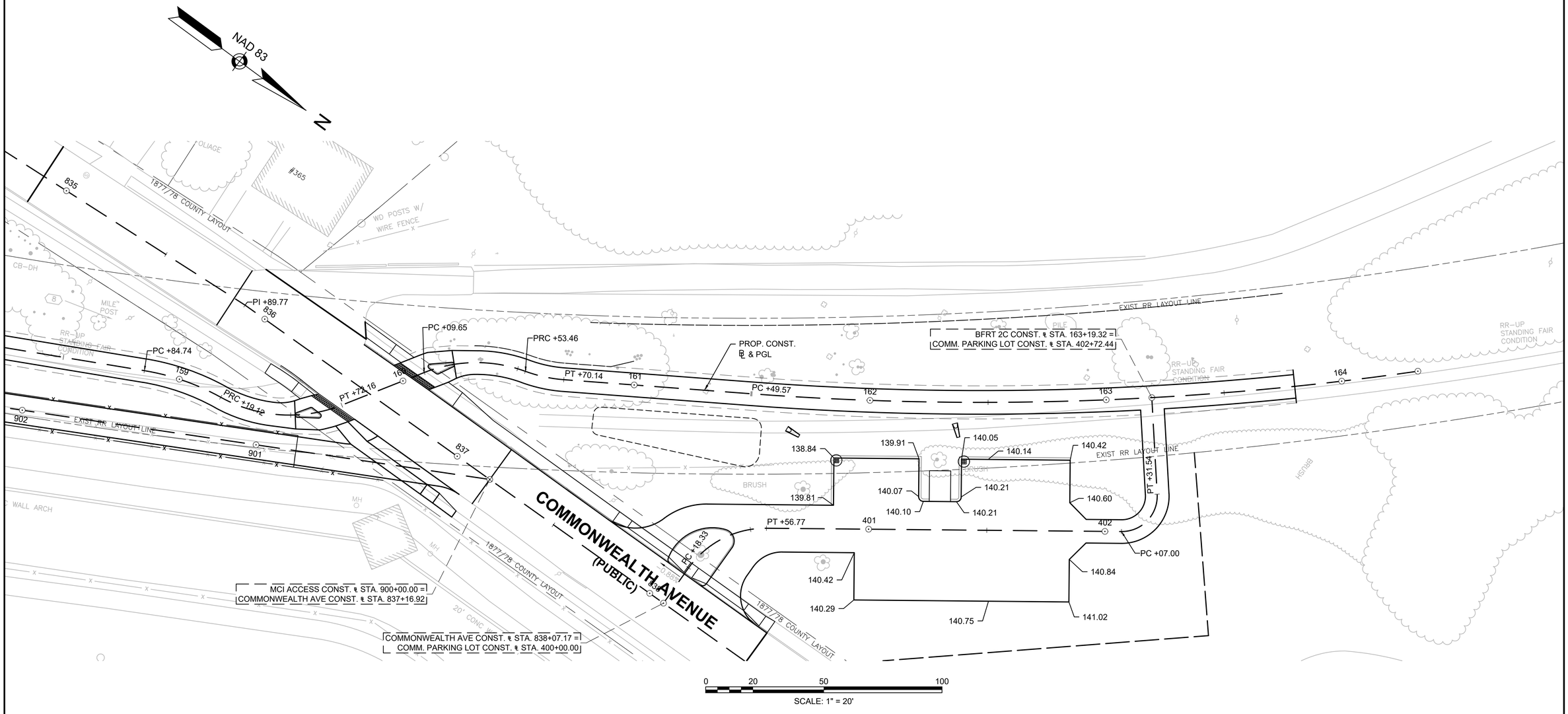


CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	97	227
PROJECT FILE NO.	605189		

GRADING PLAN

605189_HD(GR).DWG Plotted on 17-Aug-2016 11:23 AM

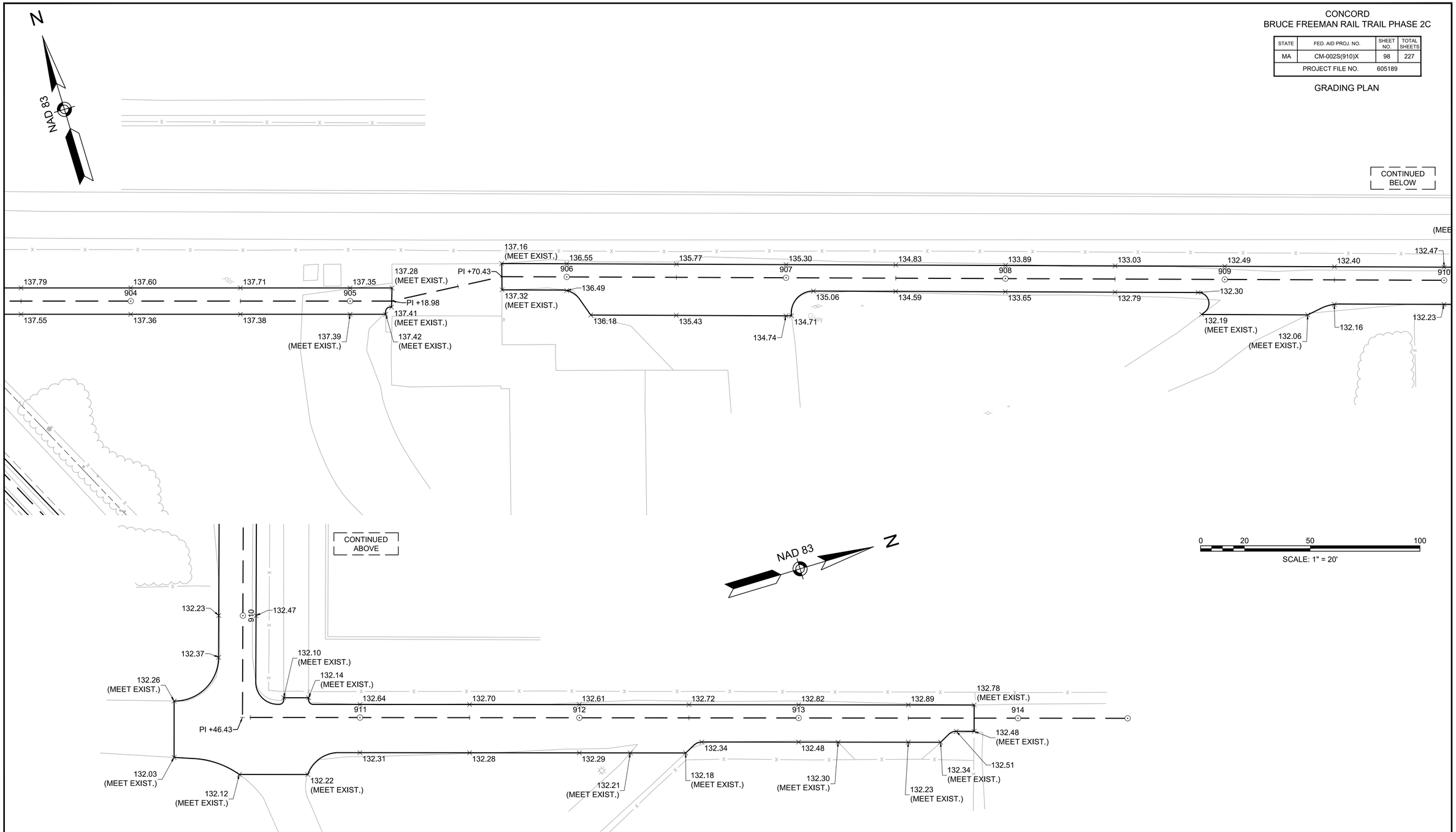


CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	98	227
PROJECT FILE NO.	605189		

GRADING PLAN

605189_HD(GR).DWG Plotted on 17-Aug-2016 11:23 AM



CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	99	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PMMS).DWG Plotted on 17-Aug-2016 11:24 AM

NAD 83

N/F
JOSHUA I. GALPER AND NIRMALI D. GALPER
BK/PG 49661/458
#65
STONE ROOT LN.

N/F
MICHAEL N. COLGAN AND ELIZABETH G. COLGAN
BK/PG 55158/418
#47
STONE ROOT LN.

N/F
JOHN S. DAVAGIAN III AND AMY DAVAGIAN
BK/PG 59541/ 216
#31
STONE ROOT LN.

N/F
DANIELLE DAWSON GUINBERTIERE AND ALEXIS GUINBERTIERE
BK/PG 53412/305
#13
STONE ROOT LN.

EXIST RR LAYOUT LINE

DENSE FOLIAGE

BEGIN PROP. 10.0' FULL DEPTH HMA SHARED USE PATH STA. 27+40.00

MATCHLINE

CONTINUED BELOW

PT +19.82

205

23 24 25 PRC +49.66 26 27 28

PC +99.66

PT +99.66

10.00'

14.00'

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

"SPEED LIMIT 20"
"NO PARKING
TOW AWAY ZONE"

6" DBYL (T) (200')

0 20 50 100
SCALE: 1" = 20'

POWDER MILL ROAD ℄ STA. 206+13.50, 22.75' R =
POWDER MILL ROAD ACCESS PATH ℄ STA. 300+00.00

(RET)
"NO PARKING"

CONTINUED ABOVE

PC +24

206

193' COUNTY LAYOUT LINE

PT +16.71

R8-3a

PC +45.46

PT +32.60

PC +69.76

PRC +66.93

PT +29.76

PC +72.60

PC +50.98

PRC +13.84

PT +35.43

301 302 303 304 305

PRC +76.70

PT +32.45

SP-4
SP-5
M4-6
SP-4
W16-9p

8.00'

POWDER MILL ROAD

GUARDRAIL

BFRT 2C CONST. ℄ STA. 28+83.23 =
POWDER MILL ROAD CONST. ℄ STA. 204+69.20

M4-6 (2)
SP-4 (2)

(R&D)
"SPEED LIMIT 20"
"NO PARKING
TOW AWAY ZONE"

R2-1(20)

(R&D)
"SPEED LIMIT 30"
"NO PARKING
TOW AWAY ZONE"

R2-1(30)

204

R8-3a

BFRT 2C ℄ STA. 31+79.31, 0.00' =
POWDER MILL ROAD ACCESS PATH ℄ STA. 305+58.08

M4-5
D3-1-1
M6-1L

M4-5
D3-1-1
M6-1R
PC +85.01

PRC +05.05

PT +25.08

PT +45.55

PC +05.48

PRC +25.52

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

CONTINUED ON SHEET 100

FOLIAGE

DENSE FOLIAGE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	100	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:24 AM

NAD 83

MATCHLINE

DENSE FOLIAGE

EXIST RR LAYOUT LINE

SWAMP

34 35 36 37 38 39 40

10.00'

CONTINUED ON SHEET 99

CONTINUED BELOW

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

BK/PG 27932/44

0 20 50 100
SCALE: 1" = 20'

40 41 42 PT +14.56 43 44 45 46

48

CONTINUED ABOVE

CONTINUED ON SHEET 101

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	101	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:25 AM

NAD 83 N

MATCHLINE

EXIST RR LAYOUT LINE

10.00'

46 47 48 49 50 51

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

EXIST RR LAYOUT LINE

CONTINUED ON SHEET 100

CONTINUED BELOW

SWAMP

℄

0 20 50 100
SCALE: 1" = 20'

NAD 83 N

MATCHLINE

EXIST RR LAYOUT LINE

SP-1 SP-2

51 52 53 54 55 56 57

10.00'

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

EXIST RR LAYOUT LINE

CONTINUED ABOVE

EXIST RR LAYOUT LINE

EXIST RR LAYOUT LINE

N/F
TOWN OF CONCORD
BK/PG 12343/391

CONTINUED ON SHEET 102

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	102	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:25 AM

N/F
CONCORD PUBLIC
SCHOOLS
BK/PG 10561/284

NAD 83 N

MATCHLINE

DENSE FOLIAGE

EXIST RR LAYOUT LINE

S1-1

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)

SYL

R5-3
R1-1

W2-1

10.00'

CONTINUED ON SHEET 101

CONTINUED BELOW

MATCHLINE

BK/PG 10561/284

NAD 83 N

0 20 50 100
SCALE: 1" = 20'

DENSE FOLIAGE

SB-DH

EXIST RR LAYOUT LINE

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)

SYL

R5-3
R1-1
SL
CW
W2-1
13.00'
10.00'

CONTINUED ABOVE

CONTINUED ON SHEET 103

MATCHLINE

N/F
TOWN OF CONCORD
BK/PG 25674/141

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	103	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:25 AM

NAD 83 N

BK/PG 11226/316
#78X
OLD
MARLBORO RD.

DENSE FOLIAGE

1926 COUNTY LAYOUT

7" CLF

SB-DH

MATCHLINE

R5-3
R1-1
SL
6"T
W2-1
EXIST RR LAYOUT LINE
PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)
68
69
70
71
72
73
74
SYL
CW
10.00'
13.00'
41
42
43
39
40
WOOD BOLLARD
6"T WIRE GATE
N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302
CONTINUED ON SHEET 102
CONTINUED BELOW
SWINGSET
N/F
LEO J. BOYLE JR. AND
HOLLY O'SULLIVAN
BK/PG 25577/600
N/F
RICHARD HOEY AND
THERESA HOEY
BK/PG 25192/573

1966 TOWN LAYOUT
DYCL

0 20 50 100
SCALE: 1" = 20'

OLD MARLBORO ROAD

N/F
WILLIAM P. KEATING
BK/PG 44261/ 293
#719
OLD
MARLBORO RD.
W11-15
W11-15p
W16-6pR
W11-15
W11-15p
W16-6pL
W11-15
W11-15p
W16-7pL
5' (TYP.)
PROP. STOP AHEAD
MARKINGS
D3-1-2
MNT. B.T.B.
21.00'
MH
R5-3
R1-1(B)
SL
PC +88.67
150' PRC 725.41
PC +22.71
PROP. STOP AHEAD
MARKINGS
W3-1(B)
10.00'
38
74
75
76
77
78
79
80
SYL
PT +48.58
PRC +54.59
PT +91.91
AHEAD
STOP
(R&D)
"STOP"
"WILLIAMS RD"
R1-1
R7-8
R7-8p
6" SWL (T) (TYP)
8.00'
SB-DH
DENSE FOLIAGE
EXIST RR LAYOUT LINE
N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302
CONTINUED ABOVE
CONTINUED ON SHEET 104
N/F
TOWN OF CONCORD
BK/PG -/-
N/F
RICHARD HOEY AND
THERESA HOEY
BK/PG 25192/573
#34 WILLIAMS ROAD
PROP. BICYCLE
XING MARKINGS
XING
WILLIAMS ROAD
W11-15
W11-15P
W16-9P
RET. WALL
#11
N/F
NEAL C. MIRFIELD AND
MARY R. MIRFIELD
BK/PG 27690/459
#11
WILLIAMS RD.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	104	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:25 AM

NAD 83

1969 TOWN LAYOUT

1966 TOWN LAYOUT

SWAMP

DENSE FOLIAGE

62A OLD MARLBORO RD.

N/F
TOWN OF CONCORD
BK/PG -/-

MATCHLINE

EXIST RR LAYOUT LINE

10.00'

80 81 82 83 84 85

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

37

CONTINUED ON SHEET 103

CONTINUED BELOW

N/F
NEAL C. MIRFIELD AND
MARY R. MIRFIELD
BK/PG 27690/459

0 20 50 100
SCALE: 1" = 20'

N/F
TOWN OF CONCORD
BK/PG -/-

NAD 83

36

35

86 87 88 89 90 PC +17.46 91

CONTINUED ABOVE

CONTINUED ON SHEET 105

DENSE FOLIAGE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	105	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:26 AM

NAD 83 N

MATCHLINE

EXIST RR LAYOUT LINE

10.00'

91 92 93 94 95 96 97

42" 30" 12"•8" 6" 12"•8" 8"•8" 8"•8" 12"•8" 12" 8" 10" 6" 8"

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

DENSE FOLIAGE

W11-5
W2-1

SP-1

W11-15
W11-15p

CONTINUED ON SHEET 104

CONTINUED BELOW

0 20 50 100
SCALE: 1" = 20'

#461
OLD MARLBORO RD.
N/F
JENNIFER J. LURKER AND
MARY L. CAROCCI
BK/PG 43528/42

N/F
HELMUT LEIBBRANDT
BK/PG 48417/47
#449
OLD MARLBORO RD.

#437

N/F
DONG HSU
BK/PG 61999/227
#437 OLD MARLBORO RD.

OLD MARLBORO ROAD

1926 COUNTY LAYOUT

#416

N/F
DIGI LLC
BK/PG 60116/ 277
#406 OLD MARLBORO RD

FENCE
SB-DH
SB
BOLLARD
GRAN

PROP. BICYCLE XING MARKINGS

W11-15
W11-15p
W16-9p

CONTINUED ABOVE

CONTINUED ON SHEET 106

PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)

PC +37.59

PT +90.49

98 99 100 101 102 103

SYL

W3-1(B)

STOP AHEAD

TOWN ACCESS, UTILITY & DRAINAGE EASEMENT PB 207 of 1986

RET. WALL
4' STONE
STONE RET. WALL
4' WD FENCE
WOOD RAIL

SOUTH MEADOW RIDGE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	106	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

MAJOR ITEMS REQUIRED - ITEM 824.01

QUANTITY	DESCRIPTION
2	WIRELESS RADIO CONTROLLED BOX
2	SOLAR POWERED PANEL
2	BATTERY BACKUP
2	BACK-TO-BACK RECTANGULAR RAPID FLASH BEACON
2	15' SIGNAL POST, BASE AND FOUNDATION
2	PEDESTRIAN PUSH BUTTON WITH INTEGRATED R10-25 SIGN
2	W11-15 SIGNS
2	W11-16p SIGNS
2	W16-7pL/R SIGNS

PLUS ALL MISCELLANEOUS EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.

NOTE: FLASHING BEACON SHALL BE ACTIVATED BY PUSH BUTTON AND SHALL FLASH FOR 17 SECONDS

NAD 83

N

SCALE: 1" = 20'

SOUTH MEADOW RIDGE

OLD MARLBORO ROAD

#2B UPLAND RD.

#406 OLD MARLBORO RD.

#368 OLD MARLBORO RD.

#148

#132 COTTAGE ST.

N/F DIGI LLC BK/PG 60116/ 277

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION) BK/PG 14609/302

N/F ERIC HOLM BK/PG 60903/483

N/F PETER M. STANDISH JR. AND ANNE O. STANDISH BK/PG 20679/540

N/F LORNE COOPER AND NANCY BIRCHARD BK/PG 27438/420

PROP. RECTANGULAR RAPID FLASHING BEACON ASSEMBLY (SEE DETAIL "A" ON SHEET 113)

PROP. STOP AHEAD MARKINGS

PROP. BICYCLE XING MARKINGS

PROP. 6" SYL (T) (TYP.) (200' FROM CROSSWALK)

W11-15 W11-15p W16-7pR

W11-15 W11-15p W16-7pL

W11-15 W11-15p W16-9p

R1-1(B)

R5-3

W3-1(B)

SP-1

EXIST RR LAYOUT LINE

RR LAYOUT LINE

1926 COUNTY LAYOUT

MATCHLINE

CONTINUED ON SHEET 105

CONTINUED BELOW

CONTINUED ABOVE

CONTINUED ON SHEET 107

PT +68.22

PC +50.59

PCC +47.64

DENSE FOLIAGE

4' FENCE W/WD POST

CHICKEN WIRE AND WD STAKE FENCE

WD STORAGE CONTAINER

CONC STEPS

TRAIN CTRL BOX

BATTERY WELL

STONE WALL

5" PVC

36" STUMP

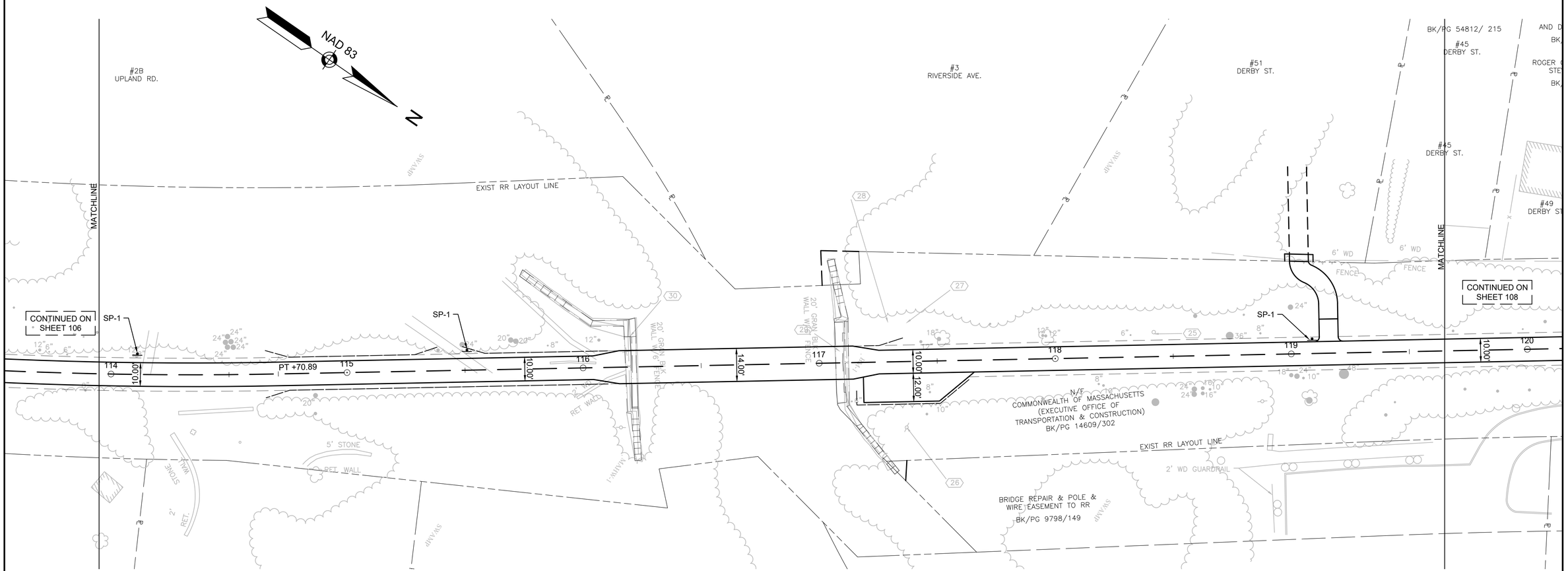
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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	107	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:26 AM


NAD 83
N
#2B
UPLAND RD.
#3
RIVERSIDE AVE.
#51
DERBY ST.
#45
DERBY ST.
#45
DERBY ST.
#49
DERBY ST
BK/PG 54812/ 215
MATCHLINE
MATCHLINE
EXIST RR LAYOUT LINE
CONTINUED ON SHEET 106
CONTINUED ON SHEET 108
SP-1
SP-1
SP-1
PT +70.89
114
115
116
117
118
119
120
10.00'
10.00'
14.00'
10.00'
12.00'
10.00'
20' GRAN. BLK. RET. WALL W/ 6' FENCE
20' GRAN. BLK. RET. WALL
RET. WALL
5' STONE RET. WALL
STONE WALL
2' RET.
6' WD FENCE
6' WD FENCE
2' WD GUARDRAIL
N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302
BRIDGE REPAIR & POLE &
WIRE EASEMENT TO RR
BK/PG 9798/149
EXIST RR LAYOUT LINE
SWAMP
SWAMP
SWAMP

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	108	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

MAIN ST (ROUTE 62) ℄ STA. 703+54.23, 0.00' =
COMMONWEALTH AVE ℄ STA. 800+00.00

605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:26 AM

NAD 83

N

SCALE: 1" = 20'

0 20 50 100

BRUCE FREEMAN RAIL TRAIL

MAIN STREET (ROUTE 62)

COMMONWEALTH AVENUE

N/F WILLIAM J. HURLEY AND JULIA L. HURLEY BK/PG 54812/ 215 #45 DERBY ST.

N/F LEE STEPPACHER AND DANIEL M. STEPPACHER BK/PG 34982/ 253

N/F ROGER C. FEINSTEIN AND FIONA STEVENSON FEINSTEIN BK/PG 34957/ 350 #37 DERBY ST. #39 DERBY ST.

N/F DANIEL HOLIN AND [illegible] ZINNER BK/PG [illegible]/ 326 #31 DERBY ST.

N/F JAMES L.WHELAN JR. AND JUDITH A. WHELAN BK/PG 10956/247 #25–#27 DERBY ST.

DAVID KNAUSS BK/PG 57761/396

N/F CATHERINE QUINLAN BK/PG 37671/143 #19 DERBY ST.

N/F PAUL MORAN AND JULIE MORAN BK/PG 64254/ 459 11–13 DERBY ST.

N/F CRJ REAL ESTATE LLC BK/PG 58832/ 583 #1237 MAIN ST.

N/F DOUBLE 9 PROP BK 34347 PG #1238 MAIN

#45 DERBY ST. #49 DERBY ST. #17–#19 #13 FLAGPOLE #1237

6' WD FENCE

MATCHLINE

CONTINUED ON SHEET 107

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION) BK/PG 14609/302

EXIST RR LAYOUT LINE

PROP. 6" SYL (T) (TYP.) (200' FROM CROSSWALK)

BFRT 2C CONST. ℄ STA. 124+43.63 = MAIN ST (ROUTE 62) CONST. ℄ STA. 703+27.97

PC +58.56 PT +50.89 PC +02.11 PRC +49.70 PT +84.86 PI +62.76 PC +57.54 PT +09.05

PROP. STOP AHEAD MARKINGS

PROP. BIKE LANE MARKING (TYP.)

BRIDGE REPAIR & POLE & WIRE EASEMENT TO RR BK/PG 9798/149

N/F JEROME L. ROBERTSON & NANCY A. ROBERTSON BK/PG 64431/178

N/F JEROME L. ROBERTSON BK/PG 13241/68

N/F RICHARD R. BEERS BK/PG 15663/191

N/F A&D REAL ESTATE LLC BK/PG 29616/576 1200 MAIN ST.

CONTINUED ON SHEET 109

R3-5a R3-17 R8-3a R10-22 R3-3 R5-3 R5-10a(sp) R9-5 (ON SIGNAL POST) SP-4 SP-5 W3-3 R3-2 R3-17 R3-17bP R2-1(20) D3-1-3 MNT. B.T.B. SP-3 R3-7R R2-1(30) R3-7R R3-17

(R&D) "NO LEFT TURN SYMBOL" "NO LEFT TURN" "NO TURN ON RED" "NO PARKING"

(R&D) "STOP" (R&D) "DO NOT ENTER"

(R&D) "STOP HERE ON RED"

(R&D) "COMMONWEALTH AVE"

(RET) "ENTERING FIRE TRUCK EXITING" "FIRE STATION"

(R&D) "NO U-TURN" (R&D) "NO LEFT TURN" "SPEED LIMIT 20" (R&D) "RIGHT LANE MUST TURN RIGHT"

(R&D) "SPEED LIMIT 30"

(R&D) "RIGHT LANE MUST TURN RIGHT"

PROP. SHARROW MARKING (TYP.)

12" SWL (TYP.) 6" SWL(T) (175') 6" DBYL(T) (90') 6"SWL(T)(60') 6"DWL(T)(56') 6"SWL (T)(25') 6"DWL(T)(40') 6"SWL(T)(70') 6"DBYL(T)(80') 6"SWL(T)(240') 6"DBYL(T)(155') 6"SWL(T)(140') 6"SWL(T)(180') 6"DBYL(T) (70') 6"DBYL(T) (70') 6"DWL(T)(88') 6"DWL(T)(88') 6"DWL(T)(32') 6"DBYL(T)(35') 6"DBYL(T)(35') 6"SWL(T)(35')

120 121 122 123 124 125 701 702 703

10.00' 11' 5' 6' 2.00' 6.00' 10'

SL SYL CW CCW

1885 COUNTY LAYOUT 1909 COUNTY LAYOUT

RET. WALL CONC. RET. WALL STN. RET. WALL

6' WD FENCE

GRAN. POSTS (TYP.) GRAN STEPS W/ BRK PAVERS METAL

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	109	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

605189_HD(PMMS).DWG Plotted on 17-Aug-2016 11:26 AM

CONTINUED ON SHEET 108

COMMONWEALTH AVENUE

BRUCE FREEMAN RAIL TRAIL

MATCHLINE

NAD 83

PC +57.54

801 PT +09.05

802

803

804

805

806

807

PI +91.95

PC +53.81

PCC +72.63

PT +92.67

PI +61.45

PI +35.95

PC +21.55

PC +97.31

PRC +38.33

PT +03.90

PC +60.64

PRC +74.70

PT +85.33

PC +99.15

PI +50.93

PC +73.87

PT +106.85

(RET, TYP.) "CLUB CAR CAFE CUSTOMER PARKING ONLY..."

(RET) MONUMENT

STONE POST

METAL POSTS

BENCH

GRAN. POSTS (TYP.)

TRASH RECEP

MBTA BOX

MONUMENTED RAILROAD BASELINE

EXIST RR LAYOUT LINE

EXIST RR BASELINE & LAYOUT LINE

SP-3

D11-1 M6-1L(B)

D11-1 M6-1R(B)

W10-1 W10-9

R5-10b(sp)

R8-10a

R&R SIGN M6-1R

R&R SIGN M6-1L

REMOVE CONFLICTING PAVEMENT MARKINGS

RECOMMENDED DUMPSTER LOCATION

PROP. RAILROAD CROSSING PAVEMENT MARKING (SEE DETAIL SHEET 2)

PROPOSED RAIL TRAIL CROSSING(B.O.-MBTA)

BEHARRELL PARKING ℄ STA. 500+50.00, 0.00' = COMMONWEALTH AVE ℄ STA. 805+36.90

(R&R) "CLUB CAR CAFE CUSTOMER PARKING ONLY"

(R&D) "CLUB CAR CAFE PARKING VIOLATORS WILL BE TOWED"

(R&R) "PARKING FOR WOODS HILL TABLE ONLY"

(R&D) "PARKING FOR WOODS HILL TABLE ONLY"

(R&R) "PARKING FOR WOODS HILL TABLE ONLY"

6"SWL(T) (TYP.)

6"SYL(T)

8"SYL(T)

20.00'

22.00'

22.00'

22.00'

18.50'

9.00'

8.00'

13.00'

LOW

128

129

132

501

N/F TOWN OF CONCORD BK 11508 PG 600 #1276 MAIN ST.

N/F 41–47 COMMONWEALTH AVENUE CONDOMINIUM MASTER DEED BK/PG 64052/419 #41–47 COMMONWEALTH AVE

N/F KARL H. KLASSON AND JAKOB WOHN BK/PG 19525/273 #29 COMMONWEALTH AVE

N/F RIP PROPERTY MANAGEMENT LLC BK/PG 54605/ 504 #23 COMMONWEALTH AVE

N/F 24 COMMONWEALTH AVENUE ASSOCIATES LLC BK/PG 61508/569

N/F VERNCO CONCORD LLC BK/PG 46969/366 #49 COMMONWEALTH AVE

N/F TOWN OF CONCORD BK 11508 PG 600

N/F TOWN OF CONCORD BK/PG 33531/524

N/F MASSACHUSETTS BAY TRANSIT AUTHORITY BK 19422 PG 554

N/F TOWN OF CONCORD BK 11800 PG 501

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION) BK/PG 14609/302

N/F VOA CONCORD ASSISTED LIVING INC. BK/PG 29597/233

N/F 74 COMMONWEALTH LLC BK/PG 60380/ 262

N/F VERNCO CONCORD LLC BK/PG 46969/368 #7 CHURCH ST.

N/F GEORGE C. VERNET BK/PG 38602/481 #1 CHURCH ST.

N/F KIL CHA HUBBARD BK/PG 44437/63

1877 COUNTY LAYOUT LINE

#41–47 #49 #51 #53 #55 #57 #7 #9 #75 #77

23 BRADFORD

BIKE RACKS (5)

RED CROSS DONOR BOXES

FENCE POST 5' OC (ONLY)

MONUMENT

RET WALL

1.5' WD RET WALL

2' WD FENCE

4' WD FENCE

6' WD FENCE

CONTINUED ON SHEET 110

0 20 50 100

SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	110	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

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CONTINUED ON SHEET 109

CONTINUED ON SHEET 111

MATCHLINE

MATCHLINE

N/F TOWN OF CONCORD BK 11800 PG 501

N/F COMMONWEALTH OF MASSACHUSETTS (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION) BK/PG 14609/302

N/F RD ASSISTED LIVING INC BK/PG 29597/233

N/F 68 COMM. AVE., LLC BK/PG 52773/303 #66

N/F 74 COMMONWEALTH LLC BK/PG 60380/ 262 #74 COMMONWEALTH AVE

N/F STEINMANN REALTY LLC BK/PG 45888/574 #20 BEHARRELL ST.

N/F 30 BEHARRELL STREET LLC BK 46012 PG 23 #30 BEHARRELL ST.

N/F 40 BEHARRELL STREET LLC BK 46012 PG 29 #40 BEHARRELL ST.

N/F JOHN W. BOYNTON AND ALBERT E. WINEMILLER BK/PG 26864/491

N/F BARKEV BESNILIAN BK/PG 57358/368 #84/86 COMMONWEALTH AVE

#85 COMMONWEALTH AVE

#75 COMMONWEALTH AVE

1916 TOWN LAYOUT

1877 COUNTY LAYOUT LINE

EXIST RR LAYOUT LINE

EXIST RR BASELINE

NEWTON RIVER RAILROAD BASELINE

R5-10a(sp)

(RET) "NO PARKING"

R6-2R

R1-1(B)

R6-2L

PC +97.31

PRC +38.33

W10-1

W10-9

W3-1(B)

6" SWL (T) (TYP)

VEHICULAR CIRCULATION PATTERN. ARROWS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT TO BE CONSTRUCTED.

PROP. 60° PARKING STALL TYP

PROP. 45° PARKING STALL TYP.

PROP. 6" SYL (T) (TYP.) (200' FROM CROSSWALK)

6" SWL (T) (TYP)

(RET, TYP.) "PARKING SPACE NUMBERS"

R7-8 R7-8p

R7-8 R7-8p

W2-1

PROP. ROAD XING MARKINGS

VEHICULAR CIRCULATION PATTERN. ARROWS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND ARE NOT TO BE CONSTRUCTED.

2' CONC RET WALL

BFRT 2C ℄ STA. 135+63.08, 46.43' R = WCC PARKING ℄ STA. 600+00.00

PRC +97.88

MBTA BOX

8' WD FENCE

4' WD FENCE

FLAGPOLE

0 20 50 100

SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	111	227
PROJECT FILE NO.	605189		

TRAFFIC SIGNS & PAVEMENT MARKINGS

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NAD 83

MATCHLINE

BFRT 2C ℄ STA. 136+46.31, 0.59' L =
BEHARRELL PARKING ℄ STA. 506+31.39

R6-1 (PBS)
R1-1
R5-1
R5-3
W11-15
W11-15p
W16-7pR
SL
PRC +97.66
506
17.00'
5' (TYP.)
PROP. ROAD XING MARKINGS
W2-1
136
137
138
139
140
141
142
PC +30.55
PT +91.30
PT +14.95
CW
PC +07.83
6" SYL (T)
10.00'
PRC +40.13
PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)
12.00'
5.00'
14.00'
7.00'
PT +66.07
EXIST RR LAYOUT LINE
SP-1
PC +76.69
PRC +09.67
PT +43.15
SP-4
SP-5
N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302
602
601
PI +04.09
24.00'
18.00'
8.00'
6" SWL (T)
6" SWL (T) (TYP)
R7-8
R7-8P
PROP. PARKING STALLS
(18' DEEP X 9' WIDE, TYP.)
BEHARRELL PARKING ℄ STA. 506+69.07, 0.00' =
WCC PARKING ℄ STA. 600+87.91
CONTINUED ON SHEET 110
CONTINUED BELOW
CONC STORAGE
MH
4' WD FENCE
DENSE FOLIAGE
SWAMP
MASHOBA BROOK >>>

0 20 50 100
SCALE: 1" = 20'

TRASH RECEP
N/F
ASSABET RIVER REALTY LLC
BK/PG 32540/ 209
MASTER DEED
BK/PG 18808/550
#56-3
WINTHROP ST.

1899 TOWN LAYOUT
1899 TOWN LAYOUT

OP OBSCURED
DENSE FOLIAGE

N/F
WHALE ROCK LLC
BK/PG 46705/ 295
#45
WINTHROP ST.

2" CONC RET. WALL

PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)
SYL
W2-1
R1-1
R5-3
SL
CW
13.00'
PROP. ROAD XING MARKINGS
SIGN TO BE PROVIDED BY THE PRISON
PROP. GATE
EXIST RR LAYOUT LINE
MH W/ WIRES
3' STONE RET. WALL
PILE
CONTINUED ABOVE
CONTINUED ON SHEET 112
N/F
CHDC-JV LLC
BK 61102 PG 485

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	112	227
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TRAFFIC SIGNS & PAVEMENT MARKINGS

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N/F
WHALE ROCK LLC
BK/PG 46705/ 295
#45
WINTHROP ST.

NAD 83
N

HOLE IN PVMT

6' WD FENCE

DENSE FOLIAGE

EXIST RR LAYOUT LINE

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

MATCHLINE

147 148 149 150 151 152 153

PC +02.25
PRC +27.47
PT +52.70

10.00'

MH W/ WIRES

3' STONE RET. WALL

DIRT PILE

PILE

(RET)
"NO DUMPING"

CONTINUED ON SHEET 111

CONTINUED BELOW

0 20 50 100
SCALE: 1" = 20'

N/F
CHDC-JV LLC
BK 61102 PG 485

#308
#330A

NAD 83
N

6' WD GATE
6' WD FENCE

EXIST RR LAYOUT LINE

N/F
RICHARD F. OFRIA
BK/PG 57811/130

COMMONWEALTH AVENUE

1877/78 COUNTY LAYOUT

PROP. BICYCLE XING MARKINGS

835

W11-15
W11-15p
W16-9p

CB-DH

MILE POST
CONC POST

PROP. 6" SYL (T) (TYP.)
(200' FROM CROSSWALK)

SP-1

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

MATCHLINE

152.70 153 154 155 156 157 158 159

10.00'

6" SYL (T)

CSOP

MH

W3-1(B)

12.00'

EXIST RR LAYOUT LINE

CONTINUED ABOVE

CONTINUED ON SHEET 113

EMH

MH

20' CONC WALL ARCH

12.00'

N/F
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE ORDER 22EX, PAGE 479

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	113	227
PROJECT FILE NO.	605189		

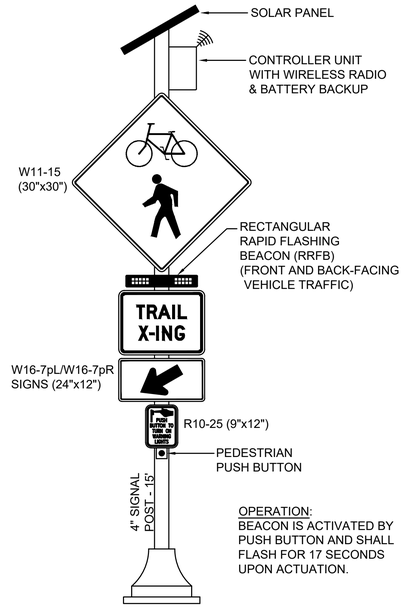
TRAFFIC SIGNS & PAVEMENT MARKINGS

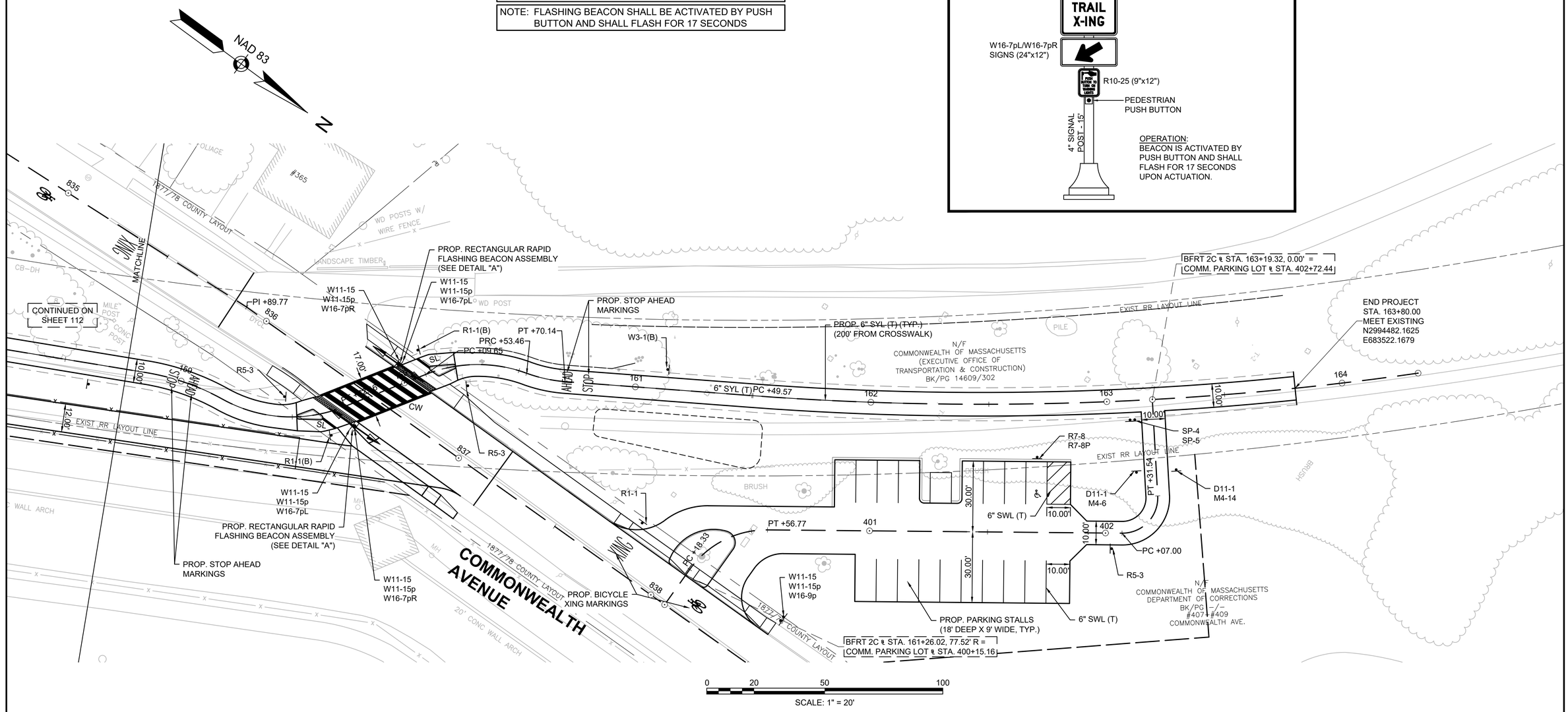
605189_HD(PM&S).DWG Plotted on 17-Aug-2016 11:27 AM

MAJOR ITEMS REQUIRED - ITEM 824.02	
QUANTITY	DESCRIPTION
2	WIRELESS RADIO CONTROLLED BOX
2	SOLAR POWERED PANEL
2	BATTERY BACKUP
2	BACK-TO-BACK RECTANGULAR RAPID FLASH BEACON
2	15' SIGNAL POST, BASE AND FOUNDATION
2	PEDESTRIAN PUSH BUTTON WITH INTEGRATED R10-25 SIGN
2	W11-15 SIGNS
2	W11-16p SIGNS
2	W16-7pL/R SIGNS
PLUS ALL MISCELLANEOUS EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.	

NOTE: FLASHING BEACON SHALL BE ACTIVATED BY PUSH BUTTON AND SHALL FLASH FOR 17 SECONDS

DETAIL "A"
RECTANGULAR RAPID FLASHING BEACON - RRFB





CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	114	227
PROJECT FILE NO.	605189		

TRAFFIC SIGN SUMMARY SHEET

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
R1-1	30"	30"	STOP			12	RED	WHITE	WHITE	P5 (12 REQ'D)	6.25	75.00
R1-1(B) (ON PATH)	18"	18"	STOP			7	RED	WHITE	WHITE	P5 (7 REQ'D)	2.25	15.75
R2-1(20)	24"	30"	SPEED LIMIT 20			2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	5.00	10.00
R2-1(30)	24"	30"	SPEED LIMIT 30			2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	5.00	10.00
R3-2	30"	30"				2	WHITE	RED CIRCLE; BLACK ARROW	BLACK	P5 (1 REQ'D) 1 on M.A.	6.25	12.50
R3-3	24"	24"	NO TURNS			1	WHITE	BLACK	BLACK	P5 (1 REQ'D)	4.00	4.00
R3-5a	30"	36"	ONLY			1	WHITE	BLACK	BLACK	P5 (1 REQ'D)	7.50	7.50
R3-7R	30"	30"	RIGHT LANE MUST TURN RIGHT			2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	6.25	12.50
R3-17	24"	18"	BIKE LANE			5	BLACK/ WHITE	WHITE SYMBOL; BLACK LEGEND	BLACK	P5 (4 REQ'D) 1 w/R3-5a	3.00	15.00
R3-17bP	24"	8"	ENDS			3	WHITE	BLACK	BLACK	MNT w/R3-17	1.33	4.00
R5-1	30"	30"	DO NOT ENTER			2	WHITE	RED SYMBOL; WHITE LEGEND	–	P5 (2 REQ'D)	6.25	12.50
R5-3	24"	24"	NO MOTOR VEHICLES			16	WHITE	BLACK	BLACK	P5 (16 REQ'D)	4.00	64.00
R5-10a(sp)	30"	36"	BICYCLISTS DISMOUNT BIKE WALK ON PATH			2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	7.50	15.00
R6-1 (PBS)	30"	12"	ONE WAY			2	BLACK	BLACK; WHITE ARROW	WHITE	MNT w/R5-1	2.50	5.00
R6-2L	18"	24"	ONE WAY			1	WHITE	BLACK	BLACK	P5 (1 REQ'D)	3.00	3.00
R6-2R	18"	24"	ONE WAY			1	WHITE	BLACK	BLACK	MNT BTB w/R6-2L	3.00	3.00
R7-8	12"	18"	RESERVED PARKING			5	WHITE	GREEN/ BLUE	GREEN	P5 (5 REQ'D)	1.50	7.50
R7-8P	18"	9"	VAN ACCESSIBLE			5	WHITE	GREEN	GREEN	MNT w/R7-8	1.13	5.63
R8-3a	24"	24"				6	WHITE	RED CIRCLE/ DIAGONAL; BLACK LETTER	BLACK	P5 (6 REQ'D)	4.00	24.00
R9-5	12"	18"	USE PED SIGNAL			1	WHITE	BLACK	BLACK	ON SIGNAL POST	1.50	1.50
R10-22	12"	18"	TO REQUEST GREEN WAIT ON			3	WHITE	BLACK	BLACK	P5 (3 REQ'D)	1.50	4.50
W2-1	18"	18"				10	YELLOW	BLACK	BLACK	P5 (10 REQ'D)	2.25	22.50
W3-1(B) (ON PATH)	18"	18"				7	YELLOW	BLACK/ RED	BLACK	P5 (7 REQ'D)	2.25	15.75
W3-3	18"	18"				1	YELLOW	BLACK/ RED/ GREEN	BLACK	P5 (1 REQ'D)	2.25	2.25
W10-1	24"	24"				2	YELLOW	BLACK	BLACK	P5 (2 REQ'D)	3.14	6.28
W11-5	30"	30"				2	YELLOW	BLACK	BLACK	MNT w/W2-1	6.25	12.50
W11-15	30	30				20	YELLOW	BLACK	BLACK	2-P5 (12 REQ'D)	6.25	75.00
										8 MNT ON 15' SIGNAL POST	PAY UNDER ITEM 824.01-824.02	
W11-15p	24"	18"	TRAIL X-ING			20	YELLOW	BLACK	BLACK	12 MNT w/W11-15	3.00	36.00
										8 MNT ON 15' SIGNAL POST	PAY UNDER ITEM 824.01-824.02	
W16-6pL	24"	18"				1	YELLOW	BLACK	BLACK	MNT w/W11-15	3.00	3.00
W16-6pR	24"	18"				1	YELLOW	BLACK	BLACK	MNT w/W11-15	3.00	3.00
W16-7pL	24"	12"				5	YELLOW	BLACK	BLACK	1 MNT w/W11-15	2.00	2.00
										4 MNT ON 15' SIGNAL POST	PAY UNDER ITEM 824.01-824.02	
W16-7pR	24"	12"				6	YELLOW	BLACK	BLACK	2 MNT w/W11-15	2.00	4.00
										4 MNT ON 15' SIGNAL POST	PAY UNDER ITEM 824.01-824.02	
W16-9p	24"	12"	AHEAD			6	YELLOW	BLACK	BLACK	MNT w/W11-15	2.00	12.00
S1-1	30	30				1	YELLOW/ GREEN	BLACK	BLACK	P5 (1 REQ'D)	6.25	6.25
M4-5	12"	4"	TO			2	GREEN	WHITE	WHITE	2 MNT w/D3-1-1	0.33	0.67
M4-6	12"	6"	END			4	GREEN	WHITE	WHITE	MNT w/D11-1	0.50	2.00
M4-14	12"	6"	BEGIN			1	GREEN	WHITE	WHITE	MNT w/D11-1	0.50	0.50
M6-1L(B)	21"	15"				1	GREEN	WHITE	WHITE	MNT w/D11-1	2.19	2.19

MUTCD STANDARD

MASSDOT STANDARD

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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	115	227
PROJECT FILE NO.	605189		

TRAFFIC SIGN SUMMARY SHEET

SIGN SUMMARY FOR RAIL TRAIL CROSSING

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
R8-10a	12"	18"	STOP HERE WHEN FLASHING	MUTCD STANDARD		2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	1.50	3.00
R5-10b(sp)	30"	18"	BIKE RIDING ACROSS TRACKS NOT ALLOWED	MUTCD STANDARD		2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	3.75	7.50
W10-9P	18"	12"	NO TRAIN HORN	MUTCD STANDARD		2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	1.50	3.00

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
M6-1L	21"	15"		MUTCD STANDARD		1	WHITE	BLACK	BLACK	MNT w/R&R SIGN	2.19	2.19
M6-1R(B)	21"	15"		MUTCD STANDARD		1	GREEN	WHITE	WHITE	MNT w/D11-1	2.19	2.19
M6-1R	21"	15"		MUTCD STANDARD		1	WHITE	BLACK	BLACK	MNT w/R&R SIGN	2.19	2.19
SP-1	24"	12"	PRIVATE PROPERTY	3"C 3"C	2"C 2"C 2"C	16	WHITE	RED	RED	P5 (16 REQ'D)	2.00	32.00
SP-2	30"	24"	ENTERING SENSITIVE WILDLIFE AREA	4"B 4"B 4"B	3" 3" 3" 3"	1	WHITE	BLACK	BLACK	P5 (1 REQ'D)	5.00	5.00
SP-3	12"	18"	WALK YOUR BIKE	SYMBOL (6"x6") 1.5"C 1.5"C 1.5"C	2.00" 1.00" 1.50" 0.50" 0.50" 2.00"	6	WHITE	BLACK	BLACK	P5 (6 REQ'D)	1.50	9.00
SP-4	30"	24"	BRUCE FREEMAN RAIL TRAIL	4"B 4"B 4"B	3" 3" 3" 3"	8	BROWN	WHITE	WHITE	2-P5 (8 REQ'D)	5.00	40.00
SP-5	24"	36"	TRAIL RULES SIGN (REF. SPEC 832.1)			5	WHITE	BLACK	BLACK	MNT w/SP-4	PAY UNDER ITEM 832.1	
D3-1-1	VAR.	12"	Powder Mill Rd * INCLUDE TOWN EMBLEM	6"B/4.5"B,4.5"B	3" 3"	2	GREEN	WHITE	WHITE	MNT w/M4-5	PAY UNDER ITEM 874.	
D3-1-2	VAR.	12"	Williams Rd * INCLUDE TOWN EMBLEM	6"B/4.5"B,4.5"B	3" 3"	1	GREEN	WHITE	WHITE	P5 (1 REQ'D)	PAY UNDER ITEM 874.	
D3-1-3	VAR.	12"	Commonwealth Ave * INCLUDE TOWN EMBLEM	6"B/4.5"B,4.5"B	3" 3"	1	GREEN	WHITE	WHITE	MNT w/R3-2	PAY UNDER ITEM 874.	
D11-1	24"	18"	BIKE ROUTE	MUTCD STANDARD		4	GREEN	WHITE	WHITE	P5 (4 REQ'D)	3.00	12.00

*TOWN EMBLEM SHALL BE 6 INCHES IN DIAMETER AND PRINTED IN COLOR.

NOTES:
1. ALL WARNING, REGULATORY AND ROUTE MARKERS SHALL BE FABRICATED WITH HIGH INTENSITY ENCAPSULATED LENS REFLECTIVE SHEETING (SEE SECTION M9.30.0) TYPE III OR IV.
2. ALL SIGNS NOTED AS "(R&R)" SHALL BE MOUNTED ON NEW P5 POSTS OR AS OTHERWISE INDICATED.
3. ALL P5 POSTS SHALL BE TELESCOPIC SQUARE TYPE POSTS.
4. QUANTITIES OF SIGNS AND POSTS SHOWN ON THIS SHEET MAY DIFFER FROM THE PAVEMENT MARKING AND SIGNING PLANS. WHERE DIFFERENCES OCCUR, THE PAVEMENT MARKINGS AND SIGNING PLANS SHALL PREVAIL.
5. ALL STOP AND YIELD SIGNS PROPOSED IN THIS CONTRACT ARE SUBJECT TO FIELD INVESTIGATION BY THE DISTRICT OFFICE OF THE MASSACHUSETTS HIGHWAY DEPARTMENT TO JUSTIFY WARRANTS BEFORE INSTALLATION.
6. NUMERICAL LIMITS AND JUSTIFICATION FOR THE LIMITS AND JUSTIFICATION FOR THE SPEED AND ADVISORY EXIT SPEED AND ADVISORY EXIT SPEED SIGNS SHALL BE OBTAINED FROM THE SPEED ZONING UNIT OF THE TRAFFIC DEPARTMENT BEFORE FABRICATION AND/OR ERECTION.

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TRAFFIC LEGEND ABBREVIATIONS & NOTES

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TRAFFIC SIGNAL LEGEND

EXISTING	PROPOSED	
		CONTROL CABINET GROUND MOUNTED (WITH & WITHOUT CONC. PAD)
		CONTROL CABINET POLE MOUNTED
		FLASHING BEACON CONTROL & METER PEDESTAL
PB		PULL BOX (12" x 12" OR AS NOTED)
		MAST ARM, SHAFT & BASE (ARM LENGTH AS NOTED)
TS		SIGNAL POST & BASE (ALPHA-NUMERIC DESIGNATION NOTED)
		VEHICULAR SIGNAL HEAD (ALPHA-NUMERIC DESIGNATION NOTED)
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED (ALPHA-NUMERIC DESIGNATION NOTED)
		FLASHING BEACON (ALPHA-NUMERIC DESIGNATION NOTED)
		PEDESTRIAN SIGNAL HEAD (ALPHA-NUMERIC DESIGNATION NOTED)
		EMERGENCY PREEMPTION DETECTOR (OPTICOM)
		PEDESTRIAN PUSH BUTTON, SIGN & SADDLE
		WIRE LOOP DETECTOR (6' x 6' OR AS NOTED)
		HIGH MAST POLE OR TOWER
RD		MAGNETOMETER
		RADAR DETECTOR
		SIGNAL & LIGHTING MAST ARM
		TRAFFIC SIGN & POST
ø1	ø1	CONTROLLER PHASE ACTUATED
		ZONE OF DETECTION FOR SPECIAL DETECTORS
		ZONE OF VISIBILITY FOR PROGRAMMED SIGNAL
		TRAFFIC SIGNAL HEAD (12" LENSES OR AS NOTED)
OHW	OHW	OVERHEAD WIRE(S)
		DIRECT BURIAL CABLE
E		TRAFFIC SIGNAL CONDUIT
		CONDUIT CROSSING ROADWAY WITH CONTROLLED DENSITY FILL

GENERAL ABBREVIATIONS

MAX	MAXIMUM
MIN	MINIMUM
BO	BY OTHERS
PROP	PROPOSED
R & D	REMOVE AND DISPOSE
R & R	REMOVE AND RESET
R & S	REMOVE AND STACK
REM	REMOVE
RET	RETAIN

TRAFFIC SIGNAL ABBREVIATIONS

R	STEADY CIRCULAR RED
Y	STEADY CIRCULAR AMBER
G	STEADY CIRCULAR GREEN
RL	STEADY RED LEFT ARROW
YL	STEADY AMBER LEFT ARROW
GL	STEADY GREEN LEFT ARROW
GV	STEADY GREEN VERTICAL ARROW
RR	STEADY RED RIGHT ARROW
YR	STEADY AMBER RIGHT ARROW
GR	STEADY GREEN RIGHT ARROW
FR	FLASHING CIRCULAR RED
FY	FLASHING CIRCULAR AMBER
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
W	WALK - LUNAR WHITE
DW	DON'T WALK - PORTLAND ORANGE
FDW	FLASHING DON'T WALK - PORTLAND ORANGE
L	DETECTOR - LOCK
NL	DETECTOR - NON-LOCK
	VEHICLE MOVEMENT
	PEDESTRIAN MOVEMENT
	PERMISSIVE VEHICULAR MOVEMENT
	DETECTOR CONTROLLING PHASE

ONLY SHOWN ON PHASING DIAGRAMS

DON'T WALK / WALK / COUNTDOWN TIMER

GENERAL NOTES

1. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS NOTED OTHERWISE.
2. IF EXISTING SIGNS (AS NOTED ON PLANS) ARE MISSING IN THE FIELD, THEY SHOULD BE REPLACED BY THE CONTRACTOR
3. ALL PROPOSED PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.

TRAFFIC SIGNAL NOTES

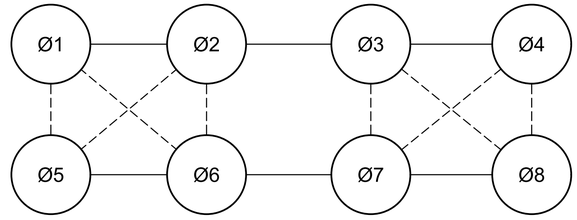
1. SEE CONSTRUCTION AND TRAFFIC PLANS FOR ADDITIONAL DETAILS.
2. PROPOSED CONTROLLERS SHALL BE A NEMA TS2, KEYBOARD ENTRY, MENU-DRIVEN TYPEWHERE AN EXISTING UNDERGROUND UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
3. POLE-MOUNTED SIGNALS SHALL BE MOUNTED TO PROVIDE A 2-FOOT MINIMUM CLEARANCE BETWEEN VERTICAL PROJECTION OF THE CURBLINE AND THE SIGNAL VISOR. WHEN FEASIBLE, INSTALL AT BACK OF SIDEWALK UNLESS OTHERWISE NOTED. PROVIDE SPECIAL MOUNTING HARDWARE AS REQUIRE.
4. CONSTRUCTION OF THE TRAFFIC CONTROL SIGNAL SYSTEMS SHOWN ON THE FOLLOWING DRAWINGS SHALL CONFORM TO THE MASSACHUSETTS HIGHWAY DEPARTMENT'S "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES", 1988 ED. AS AMENDED, AND THE FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", 2009 EDITION AS AMENDED.
5. ALL TRAFFIC CONTROL SIGNAL EQUIPMENT SHALL BE LISTED ON THE CURRENT MASSDOT'S "APPROVED LIST" AND IS SUBJECT TO THE APPROVAL OF THE DESIGN ENGINEER AND/OR THE MASSDOT.
6. ALL OVERHEAD CONDUCTORS FOR SIGNAL HOUSINGS SHALL BE STRANDED WIRE.
7. ALL PROPOSED WIRE LOOP DETECTORS SHALL BE CENTERED WITHIN RESPECTIVE LANES UNLESS OTHERWISE NOTE.
8. ALL PROPOSED LENSES SHALL HAVE TUNNEL VISORS.
9. ALL MAST ARM MOUNTED SIGNALS SHALL BE RIGIDLY MOUNTED.
10. FLASHING OPERATION PER 2009 M.U.T.C.D., SECTION 4D.28 - 4D.31.
11. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT SHALL NOT CHANGE DURING THE CHANGE INTERVAL(S).
12. ALL NEW TRAFFIC CONTROLLER CABINETS SHALL BE EQUIPPED WITH A LEVER-TYPE METER BY-PASS. SPECIFICATIONS FOR THE BY-PASS MUST BE APPROVED BY THE APPROPRIATE UTILITY COMPANY.
13. WHERE CALLED FOR ON THE PLANS, THE PROPOSED LOCATIONS OF THE OPTICOM DETECTOR UNITS AND CONFIRMATION BEACON ARE PERCEIVED BEST BUT NOT FINAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE OPTIMUM PLACEMENT IN COOPERATION WITH THE LOCAL MUNICIPALITY'S FIRE FIGHTING DEPARTMENT. THE OPTICAL DETECTOR UNITS SHALL HAVE AN UNOBSTRUCTED LINE-OF-SIGHT VIEW ALONG THE ROUTE OF APPROACHING PRIORITY VEHICLE.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING AND VERIFYING THAT THERE IS SUFFICIENT CLEARANCE BETWEEN ALL PROPOSED TRAFFIC SIGNAL POLES AND EXISTING AND RELOCATED OVERHEAD UTILITY LINES. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR COORDINATING WITH THE AFFECTED UTILITY COMPANIES RELATIVE TO THE SCOPE OF ANY REQUIRED RELOCATIONS. THIS SHALL BE PERFORMED WITHIN TEN DAYS AFTER AWARD OF THE CONTRACT.
15. THE CONTRACTOR SHALL REMOVE AND DELIVER ALL EXISTING TRAFFIC SIGNAL EQUIPMENT WITHIN THE PROJECT LIMITS TO THE APPROPRIATE OWNER'S MAINTENANCE DEPOT EXCEPT FOR LOCATIONS NOTED ON THE PLANS.

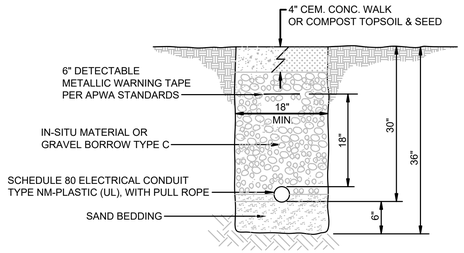
LOOP DETECTOR NOTES

1. SEE LOOP DETECTOR DETAIL SHEET FOR SPLICE PATTERN AND OTHER INFORMATION.
2. DELAY AND EXTENSION TIMES ARE IN SECONDS.
3. DELAY TIME SHALL BE EFFECTIVE ONY DURING THE RED PORTION OF THE PHASE THAT IS CALLED BY A DETECTOR.

NEMA DUAL RING PHASING NOTES

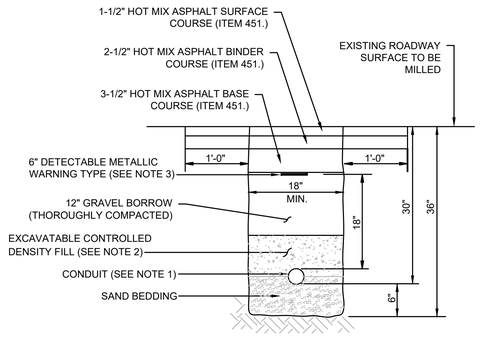
1. PHASES ASSOCIATED BY A SOLID LINE SHALL NOT OPERATE CONCURRENTLY.
2. PHASES ASSOCIATED BY A DASHED LINE MY OPERATE CONCURRENTLY.





TRAFFIC SIGNAL CONDUIT TRENCH DETAIL
(IN SIDEWALK OR LANDSCAPE AREA)

NOT TO SCALE



NOTES:
1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL), WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
2. CONTROLLED DENSITY FILL SHALL MEET THE REQUIREMENTS OF SUBSECTION M4.08.0.
3. WARNING TAPE COLOR SHALL BE PER APWA STANDARDS.
4. HMA SURFACE, INTERMEDIATE AND BASE COURSE SHALL BE PAID FOR UNDER ITEM 451.
5. EXCAVATABLE CONTROLLED DENSITY FILL ONLY REQUIRED IN CONDUIT TRENCHES LOCATED WITHIN AREAS OF EXIST. ROADWAY PAVEMENT THAT DO NOT REQUIRE FULL DEPTH PAVEMENT CONSTRUCTION.

TRAFFIC SIGNAL CONDUIT TRENCH DETAIL
(IN ROADWAY TO BE MILLED)

NOT TO SCALE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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TRAFFIC SIGNAL PLANS

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BRUCE FREEMAN RAIL TRAIL
COMMONWEALTH AVENUE
MAIN STREET (ROUTE 62)
MAIN STREET (ROUTE 62)
BRUCE FREEMAN RAIL TRAIL
EXIST RR LAYOUT LINE
1877 COUNTY LAYOUT
1885 COUNTY LAYOUT
1909 COUNTY LAYOUT
PROP. 10' SIGNAL POST w/BASE & FOUNDATION (STA. 800+47, 29' RT)
PROP. 10' SIGNAL POST w/BASE & FOUNDATION (STA. 703+23, 40' RT)
R&S EXIST. TRAFFIC SIGNAL EQUIPMENT (TYP.)
PROP. VIDEO DETECTION ZONE (TYP.)
PROP. 12"X12" PULLBOX (TYP.)
PROP. 3" CONDUIT (TYP.)
PROP. 25' MAST ARM w/CORED PIER FDN. (STA. 703+85, 33' RT)
PROP. VIDEO DETECTION CAMERA (TYP.)
REC#1
REC#2
REC#3
PREEMPTION STROBE
PROP. 25' MAST ARM w/CORED PIER FDN. (STA. 703+20, 24' LT)
PROP. ELECTRIC SERVICE CONNECTION W/CMLP APPROVED HANDHOLE (POLYMER CONC.)
PROP. 3" ELECTRIC CONDUIT
PROP. TRAFFIC CONTROLLER w/CABINET, FOUNDATION & CONC. PAD (STA. 703+56, 23' LT)
PROP. 15' MAST ARM w/CORED PIER FDN. (STA. 703+46, 23' LT)
PT +00.93
PI +50.93
PC +85.33
PT +00.05
PC +57.58
PT +62.76
PT +72.98
PC +20.57
PT +84.86
PRC +49.70
PC +02.11
PT +50.89
PC +98.19
AHEAD STOP
N/F BOSTON CONSOLIDATED GAS COMPANY BK/PG 33531/524
30' POLE & WIRE EASEMENT BK/PG 7927/522
N/F CONCORD A&D REAL ESTATE, LLC BK/PG 29616/576
1200 MAIN ST.
N/F RIP PROPERTY MANAGEMENT LLC BK/PG 54605/ 504
#23 COMMONWEALTH AVE
N/F KARL H. KLASSON AND JAKOB WOHN BK. 19525 PG 273
#1248 MAIN ST.
N/F DOUBLE PROPERTY LLC BK/PG 54167/ 347
#1240 MAIN ST.
N/F CRJ REAL ESTATE LLC BK/PG 58832/ 583
#1237 MAIN ST.
N/F PAUL MORAN AND JULIE MORAN BK/PG 64254/ 459
#11-13 DERBY ST.
N/F RICHARD R. BEERS BK/PG 15663/191
N/F BOSTON & MAINE RAILROAD COMPANY
#41-47 COMMONWEALTH AVENUE CONDOMINIUM MASTER DEED BK/PG 64052/419
#24 COMMONWEALTH AVENUE BK/PG 61508/569
#29 COMMONWEALTH AVE BK/PG 19525/273
#15 BK/PG 54605/ 504
#13
#19
#1237
#1240
#1248
#41-47
#29-37
#24
METAL POSTS
BENCH
GRAN STEPS W/ BRK PAVERS
STONE POST
GRAN POSTS (TYP.)
2' WD FENCE
6' WD FENCE
RET. WALL
STN. RET. WALL
CONC RET. WALL
30' WIDE UTILITY EASEMENT
12' WIDE PASSAGEWAY
BRK OVERHANG
PLANTER
FLAGPOLE
DRIVE
WALL
CW
SL

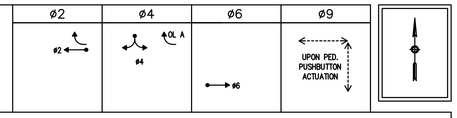
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	118	227
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TRAFFIC SIGNAL PLANS

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FULLY–ACTUATED ☑ ISOLATED ☐
SEMI–ACTUATED ☐ COORDINATED ☑
PRE–TIMED ☐ WIRE ☐ TBCU ☐

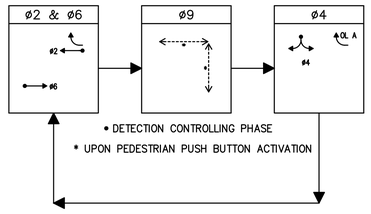


SEQUENCE AND TIMING

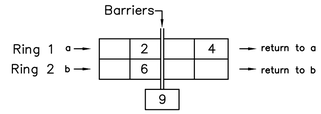
STREET	DIRECTION	HOUSINGS	1	2	3	5	6	7	8	9	10	12	13	14	FLASH OPER.
MAIN STREET (RTE 62)	EB	E,F	RV	RV	RV	RV	RV	RV	**GV**	**YV**	**RV**	RV	RV	RV	FYV
MAIN STREET (RTE 62)	WB	A,B	**G**	**Y**	**R**	R	R	R	R	R	R	R	R	R	FY
MAIN STREET (RTE 62)	WB	C,D	**G/GR**	**Y/YR**	**R**	**R/GR**	**R/YR**	**R**	R	R	R	R	R	R	FY
COMMONWEALTH AVE	SB	G,H,J	R	R	R	**G**	**Y**	**R**	R	R	R	R	R	R	FR
PEDESTRIAN		P1–P4	DW	DW	DW	DW	DW	DW	DW	DW	DW	**W**	**FDW**	**DW**	OUT
TIMING IN SECONDS															
MINIMUM INITIAL			10			8			10						EMERGENCY
PASSAGE			3			3			3						
MAXIMUM 1 (FREE OPERATION)			35			20			35						
MAXIMUM 2 (COORDINATED OPERATION)			*			*			*						
CHANGE				4	2		3	1		4	2				
PEDESTRIAN												7	11	4	
RECALL			C–MIN			OFF			C–MIN			OFF			
MEMORY			NON–LOCKING			NON–LOCKING			NON–LOCKING			LOCKING			

*SEE TABLE 2–4 FOR SPLITS.

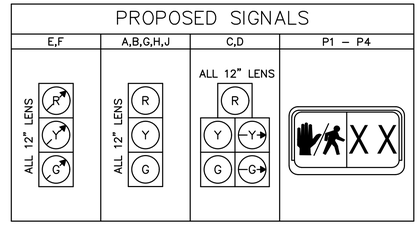
PREFERENTIAL PHASE SEQUENCE



RING STRUCTURE



PROPOSED SIGNALS



NOTES:

1. ALL INDICATIONS SHALL BE "LED" TYPE LENS IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
2. ALL OVERHEAD SIGNALS SHALL BE RIGIDLY MOUNTED. ALL SIGNAL HEADS SHALL HAVE CUT TUNNEL VISORS AND BE EQUIPPED WITH 5" SOLID BACKPLATES. BACKPLATES SHALL INCLUDE A 2" YELLOW MICRO–PRISMATIC RETRO REFLECTIVE SHEETING ALONG THE OUTER EDGE.
3. ALL PEDESTRIAN DISPLAY SHALL BE "FULL" DISPLAYS. NO OUTLINE SYMBOL SHALL BE PERMITTED.

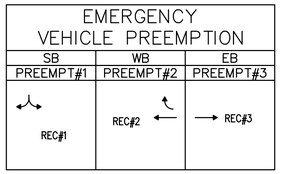
TRAFFIC CONTROLLER DATA

PARAMETER	SELECTION
PHASE ASSIGNMENTS	STD. NEMA
OVERLAPS	STD. NEMA
RINGS	DUAL
DUAL ENTRY	ON (Ø2 & Ø6)
SIMULTANEOUS GAP OUT DISABLED	YES(Ø2 & Ø6)
MINIMUM YELLOW IN SECONDS	3
MAX II BY INTERNAL CLOCK	YES
NIGHT TIME FLASH BY INTERNAL CLOCK	NOT USED
TYPE OF INTERCONNECT TO MASTER	WIRE
REMOTE MUTCD FLASH BY MASTER	YES
MAXIMUM MODE	MAX 2
COORDINATION MODE	PERMISSIVE
FORCE MODE	CYCLE
OFFSET MODE	END OF GREEN
OFFSET SEEK METHOD	SHORTWAY

MAJOR ITEMS REQUIRED

QUANTITY	DESCRIPTION
1	TRAFFIC CONTROLLER & CABINET NEMA TS2–TYPE 1 w/FDN.
1	SERVICE CONNECTION (OVERHEAD FROM UTILITY POLE)
1	25' MAST ARM ASSEMBLY, BASE & FDN.
1	25' MAST ARM ASSEMBLY, BASE & FDN.
1	15' MAST ARM ASSEMBLY, BASE & FDN.
1	10' SIGNAL POST, BASE & FDN.
7	SIGNAL HEAD, 3 SECTION
2	SIGNAL HEAD, 5 SECTION
4	PEDESTRIAN HOUSING GRAPHIC LED WITH COUNTDOWN TIMER
3	AUDIBLE & VIBRO–TACTILE PEDESTRIAN PUSH BUTTON INTEGRATED SIGN & SADDLE w/LED CONFIRMATION LIGHT
1	VIDEO DETECTION SYSTEM WITH FOUR (4) CAMERAS INCL. 1 SPARE
4	PULL BOX 12"x12" – SD2.031
3	UNIDIRECTIONAL SINGLE CHANNEL OPTICAL DETECTOR (RECEIVER)
2	PREEMPTION 2–CHANNEL PHASE SELECTOR
1	PREEMPTION CONFIRMATION STROBE (CLEAR)
PLUS ALL MISCELLANEOUS EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE OPERATING TRAFFIC CONTROL SIGNAL.	

EMERGENCY VEHICLE PREEMPTION



EMERGENCY VEHICLE PREEMPTION OPERATION

1. EMERGENCY VEHICLE PREEMPTION SIGNAL SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS (RECEIVERS) LOCATED AT THE INTERSECTION.
2. PREEMPTION SIGNALS SHALL BE SERVICED ON A FIRST COME FIRST SERVED BASIS.
3. IN RESPONSE TO A PREEMPTION SIGNAL RECEIVED BY OPTICAL DETECTOR REC#1 (OR REC#2, REC#3), THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PREEMPTION SIGNAL #1 (OR #2, #3) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PREEMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME THE RELEVANT CLEARANCE INTERVALS AND SERVICE THE SUBSEQUENT EMERGENCY VEHICLE PREEMPTION SIGNAL IF NECESSARY. NORMAL SIGNAL OPERATION SHALL RESUME PROVIDED THAT ALL PREEMPTION SIGNALS HAVE CEASED.
4. NORMAL VEHICLE CLEARANCES SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PREEMPTION DEMAND.
5. PREEMPTION STROBE SHALL BE ILLUMINATED ONLY WHEN THE PRE–EMPTED PHASE IS ON GREEN.

TABLE 2-4 COORDINATION DATA FOR MAIN ST (RTE 62) AT COMMONWEALTH AVE

FUNCTION	PURPOSE	OFFSET VALUE IN SECONDS	CYCLE LENGTH
OFFSET 1	COORDINATED PATTERN NO. 1 MON-FRI: 7:00am-10:00am	76	90
OFFSET 2	COORDINATED PATTERN NO. 1 MON-FRI: 3:00pm-7:00pm	20	90

COORD POINT SHALL BE AT THE START OF GREEN OF THE FIRST PHASE, SHOWN BY * BELOW.

MAXIMUM PHASE TIME IN SECONDS

FUNCTION	PHASE 1		PHASE 2 *		PHASE 3		PHASE 4	
SPLIT 1	w/o Ø9	w/Ø9	w/o Ø9	w/Ø9	w/o Ø9	w/Ø9	w/o Ø9	w/Ø9
	(NOT USED)		61	38	(NOT USED)		29	29
SPLIT 2			66	43			24	24
FUNCTION	PHASE 5		PHASE 6 *		PHASE 7		PHASE 8	
SPLIT 1	w/o Ø9	w/Ø9	w/o Ø9	w/Ø9	w/o Ø9	w/Ø9	w/o Ø9	w/Ø9
	(NOT USED)		61	38	(NOT USED)		(NOT USED)	
SPLIT 2			66	43				

VIDEO DETECTION DATA

DETECTION ZONE NO.	ø CALLED	ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
⟨1⟩	2	2	B	–	–
⟨2⟩	2	2	B	–	–
⟨3⟩	6	6	B	–	–
⟨4⟩	4	4	B	–	–

TRAFFIC MANAGEMENT NOTES

GENERAL

1. ALL TRAFFIC MANAGEMENT AND WORK ZONE TRAFFIC CONTROL MEASURES SHALL CONFORM TO THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.), MASSDOT - HIGHWAY DIVISION'S "STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TRAFFIC MANAGEMENT PLANS", THE STANDARD SPECIFICATIONS, AND THE FOLLOWING NOTES.

2. THE TEMPORARY TRAFFIC CONTROL PLANS CONTAINED HEREIN ARE GIVEN AS A GUIDE FOR TYPICAL WORK ZONE TRAFFIC CONTROL APPLICATIONS FOR THE TYPES OF WORK ANTICIPATED FOR THIS PROJECT. THEY ARE NOT INTENDED TO COVER ALL POSSIBLE CONSTRUCTION OPERATIONS WHICH THE CONTRACTOR MAY CHOOSE TO EMPLOY. WORK ZONE TRAFFIC CONTROL FOR OTHER CONSTRUCTION OPERATIONS OR OTHER TRAFFIC SITUATIONS IF APPLICABLE SHALL BE IN ACCORDANCE WITH THE REFERENCES LISTED IN NOTE NO. 1 AND AS APPROVED OR DIRECTED BY THE ENGINEER.

3. WITH THE EXCEPTION OF THE PERMANENT LANE CLOSURES REQUIRED FOR STAGED CONSTRUCTION, LANE RESTRICTIONS MAY NOT REMAIN OVERNIGHT OR DURING NON-WORKING HOURS. AFTER EACH WORKING DAY, TRAFFIC CONTROL DEVICES THAT ARE NOT REQUIRED SHALL BE MOVED OFF THE ROADWAY OR FULL DEPTH CONSTRUCTION AREA AND PLACED SO AS NOT TO IMPEDE PEDESTRIAN AREAS, ABUTTER ACCESS OR CAUSE CONFUSION TO MOTORISTS. IN CERTAIN CIRCUMSTANCES, ANN ONLY WITH THE APPROVAL OF MASSDOT AND THE ENGINEER, LANE RESTRICTIONS MAY REMAIN OVERNIGHT.

4. CONTRACTOR SHALL PROVIDE A SAFE TEMPORARY PEDESTRIAN ACCESS WHERE EXISTING SIDEWALKS OR OTHER PEDESTRIAN AREAS ARE AFFECTED BY CONSTRUCTION WORK. CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.

5. PLACE ALL CONSTRUCTION SIGNING, TRAFFIC CONTROL DEVICES AND TEMPORARY PAVEMENT MARKINGS FOR EACH PHASE PRIOR TO COMMENCEMENT OF CONSTRUCTION.

6. ONE (1) THRU TRAVEL LANE HAVING A MINIMUM WIDTH OF 11'-0" MUST BE PROVIDED FOR BOTH DIRECTIONS (LANE MAY BE SHARED AND DIRECTION OF TRAVEL TO ALTERNATE UNDER POLICE OFFICER OR FLAGGER CONTROL) DURING ALL PHASES OF CONSTRUCTION AS SHOWN ON THE TEMPORARY TRAFFIC CONTROL PLANS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MINIMUM LANE WIDTH IS MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.

7. WHEN WORK INFRINGES UPON THE TRAVELED WAY, WORK SHALL BE RESTRICTED TO OFF-PEAK HOURS ONLY (NORMALLY 9:00am TO 4:00pm, MONDAY TO FRIDAY). THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF ROAD CLOSURE.

8. TAPER LENGTH FORMULAE FOR CHANNELIZATION DEVICES: ENGLISH UNITS:
   L = WxS FOR SPEED EQUAL TO OR GREATER THAN 45 M.P.H.
   L = WS²/60 FOR SPEED EQUAL TO OR LESS THAN 40 M.P.H.
   WHERE: L = MIN. LENGTH OF TAPER, S = POSTED SPEED, W = OFFSET WIDTH.

9. ADVISORY SPEED LIMIT, IF USED, SHALL BE SET IN THE FIELD BY THE ENGINEER. W13-1 PLATES SHALL BE USED WHERE APPROPRIATE.

10. FLASHING ARROW PANEL SHALL BE SET IN "ARROW MODE" WHEN USED FOR ACTUAL LANE CLOSURES ONLY. FOR SHOULDER CLOSURES, BULBS TO BE ILLUMINATED IN A NON-DIRECTIONAL CAUTION CONFIGURATION TO AVOID UNNECESSARY LANE SHIFTS.

11. DISTANCES SHOWN ON THE TEMPORARY TRAFFIC CONTROL PLANS ARE A GUIDE ONLY, AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.

GRADE DIFFERENCES

12. WHERE THERE IS A LONGITUDINAL DIFFERENCE IN ELEVATION BETWEEN EXISTING PAVEMENT AND ADJACENT TRAVEL SURFACE (UNDER REPAIR OR RECONSTRUCTION), THE CONTRACTOR SHALL PATCH A TEMPORARY HMA WEDGE WITH A 12:1 (OR FLATTER) SLOPE FOR SMOOTH TRANSITION. SEE DETAIL, THIS SHEET.

13. CROSS-SECTIONAL GRADE DIFFERENCES IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF REFLECTORIZED DRUMS.

14. CROSS-SECTIONAL GRADE DIFFERENCES IN EXCESS OF 4" DURING NON-WORKING HOURS SHALL BE PROTECTED BY BACKFILLING WITH A WEDGE OF EARTHWORK TO BE COMPACTED AT 4:1 SLOPE AND WILL ALSO REQUIRE DELINEATION BY USE OF DRUMS.

15. A MINIMUM SLOPE OF 4:1 MUST BE MAINTAINED AFTER WORKING HOURS DURING SUBBASE AND BASE COURSE INSTALLATION ALONG EDGE OF THE TRAVELWAY (SEE DETAIL, THIS SHEET). A MAXIMUM SLOPE OF 8:1 MUST BE MAINTAINED ON ALL ABUTTER ACCESS DRIVES AND A MAXIMUM SLOPE OF 12:1 MUST BE MAINTAINED ON ALL SIDEWALKS.

CONSTRUCTION SIGNING

16. ALL CONSTRUCTION SIGNS SHALL BE BLACK LEGEND ON A REFLECTORIZED ORANGE BACKGROUND UNLESS OTHERWISE NOTED.

17. CONSTRUCTION SIGNING SHOWN ON THE ADVANCE SIGNING PLAN SHALL REMAIN IN PLACE FOR THE ENTIRE PROJECT DURATION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

18. STANDARD ORANGE OR FLUORESCENT RED-ORANGE FLAGS (16"x16" MIN.) MAY BE ATTACHED TWO (2) EACH ON ALL ADVANCE WARNING SIGNS. FLAGS SHALL NOT INTERFERE WITH A CLEAR VIEW OF THE SIGN FACE. IF USED, THE COST FOR THE FLAGS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE SIGNS WITH NO ADDITIONAL PAYMENT.

19. EXISTING GUIDE SIGNS SHALL BE TEMPORARILY RESET AS DIRECTED BY THE ENGINEER.

20. ALL SIGNS, INCLUDING EXISTING, THAT ARE NOT REPRESENTATIVE OF ACTUAL WORK CONDITIONS SHALL BE EITHER COVERED OR REMOVED WHEN NOT APPLICABLE.

21. IF USED, ALL W20-4 AND W20-5 SIGNS SHALL BE TAKEN DOWN OR COVERED AT THE CLOSE OF EACH DAY UNLESS LANE RESTRICTIONS ARE PERMITTED TO REMAIN OVERNIGHT IN ACCORDANCE WITH NOTE NO. 3 ABOVE.

22. USE W20-7b OR W20-7a SIGNS ONLY WHILE POLICE OR FLAGGERS ARE DIRECTING TRAFFIC. THEY SHALL BE TAKEN DOWN OR COVERED AT THE CLOSE OF EACH DAY OR WHEN NOT IN USE.

PAVEMENT MARKINGS

23. PAVEMENT MARKINGS WHICH ARE NO LONGER APPLICABLE SHALL BE REMOVED. APPLY TEMPORARY MARKINGS WHERE SHOWN ON THE TEMPORARY TRAFFIC CONTROL PLANS.

24. ON PROJECTS WHERE PAVEMENT OVERLAY IS NOT DESIGNATED, EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH TEMPORARY TRAFFIC CONTROLS SHOULD BE COVERED TEMPORARILY WITH BLACKOUT TAPE, AS DIRECTED BY THE ENGINEER, FOR THE FULL DURATION OF THE PHASE IN PROGRESS. TEMPORARY PAINTED OR REMOVABLE TAPE MARKINGS SHALL BE USED AS NECESSARY FOR ALL PHASES OF CONSTRUCTION.

CHANNNELIZATION

25. THE MAXIMUM SPACING BETWEEN CHANNELIZATION DEVICES (DRUMS OR CONES) SHALL BE APPROXIMATELY EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MINIMUM SPACING SHALL BE 25' O.C.

26. REFLECTORIZED CONES SHALL BE 36" HIGH.

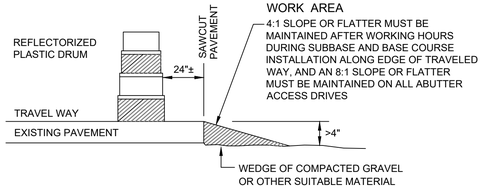
27. PLASTIC DRUMS MUST PASS THE CRITERIA SET FORTH IN NCHRP 350 "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES." IF THEY DO NOT MEET THESE CRITERIA, THEY MUST BE REMOVED FROM THE PROJECT.

28. TEMPORARY IMPACT ATTENUATORS MUST MEET THE PERFORMANCE STANDARDS OF NCHRP 350.

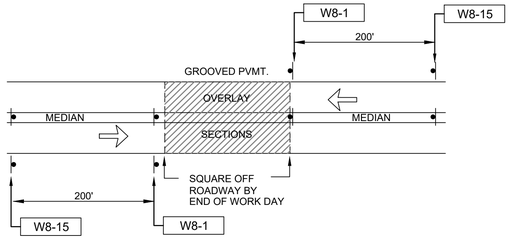
29. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY MUST PASS THE CRITERIA SET FORTH IN NCHRP 350 "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES." IF THEY DO NOT MEET THIS CRITERIA, THEY MUST BE REMOVED FROM THE PROJECT.

TRAFFIC MANAGEMENT LEGEND

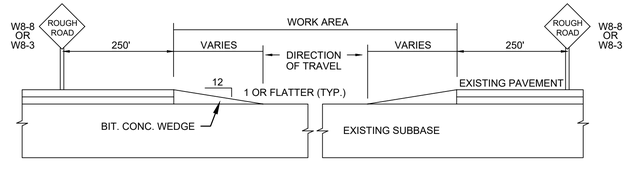
- WORK AREA
- DIRECTION OF TRAVEL
- REFLECTORIZED DRUM OR CONE
- A — REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT
- P / — POLICE OFFICER OR FLAGGER CONTROL
- PORTABLE TYPE III BARRICADE (4' WIDE, MIN.)
- FLASHING ARROW BOARD (30"x 60" STD. SIZE WITH 13 LAMPS, MIN.)
- TEMPORARY PRECAST CONCRETE BARRIER WITH TEMPORARY FENCE & WHITE REFLECTORS
- TEMPORARY IMPACT ATTENUATOR
- PAVEMENT MARKINGS TO COVER OR REMOVE (SEE NOTES 23 & 24)
- PORTABLE CHANGEABLE MESSAGE SIGN
- MOVABLE IMPACT ATTENUATOR



AFTER WORK HOURS TREATMENT FOR LATERAL SLOPING



AFTER WORK HOURS TREATMENT FOR AREAS RECEIVING OVERLAY



TEMPORARY RAMP

PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL CONFORM TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AS AMENDED AND SHOULD BE PLACED ON THE SHOULDER OF THE ROADWAY OR IF PRACTICAL SET WELL AWAY FROM THE TRAVEL LANE. MESSAGE SIGNS SHOULD BE PROTECTED WITH RETROREFLECTIVE TEMPORARY TRAFFIC CONTROL DEVICES WHEN PLACED WITHIN THE AVAILABLE CLEAR ZONE OR ELSE SHIELDED WITH A BARRIER OR CRASH CUSHION. THE FINAL LOCATION AND USE OF THE PCMS SHALL BE DETERMINED BY THE ENGINEER.

FOURTEEN (14) DAYS PRIOR TO ROAD CLOSURE, PCMS SHALL BE INSTALLED WITH THE FOLLOWING SUGGESTED MESSAGE:

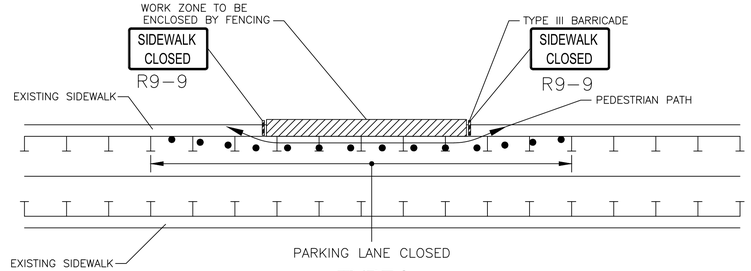
MESSAGE 1A:

	P	O	W	D	E	R	
	M	I	L	L		R	D
	C	L	O	S	E	D	

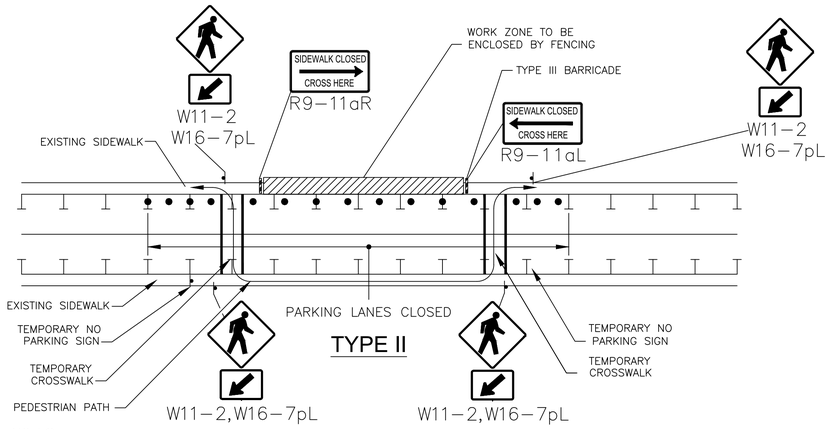
MESSAGE 1B:

*	J	U	L	Y		6	
S	E	E	K		A	L	T
	R	O	U	T	E		

*DATE TO BE DETERMINED BY THE ENGINEER



TYPE I



TYPE II

NOTES
1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
5. BYPASS IS TO BE USED IN CONJUCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
6. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THIS WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT X 5 FOOT PASSING ZONE. (FOR SHORT TERM SETUPS < 10 HOURS, THIS CONDITION MAY BE WAIVED. A NOTE WOULD NEED TO BE INCLUDED IN THE TTCP THAT STATES HOW THE CONTRACTOR SHOULD ADDRESS THIS ISSUE.)

PEDESTRIAN BYPASS

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	119	227
PROJECT FILE NO.	605189		

TEMPORARY TRAFFIC CONTROL PLANS

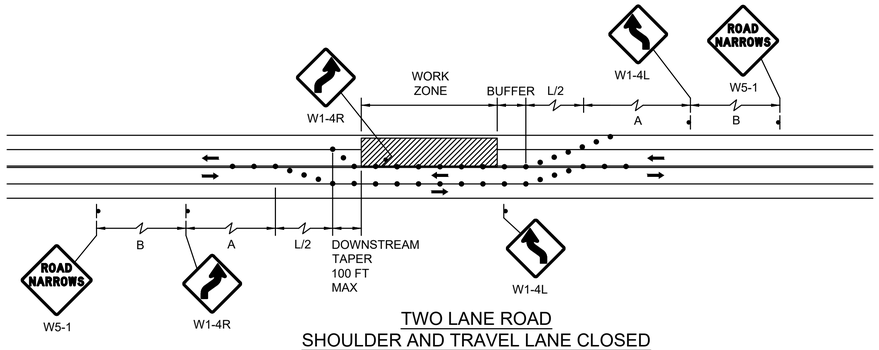
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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

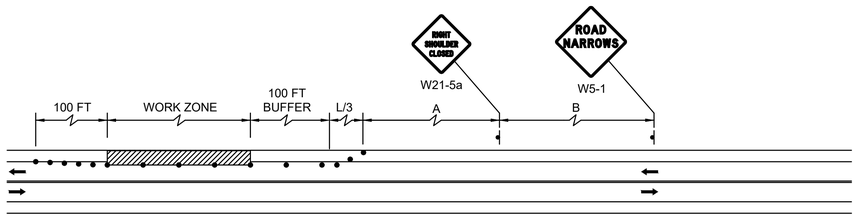
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	120	227
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TEMPORARY TRAFFIC CONTROL PLANS

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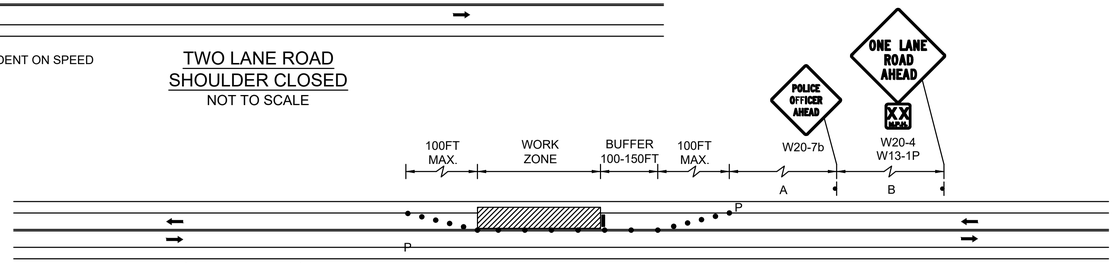


TWO LANE ROAD
SHOULDER AND TRAVEL LANE CLOSED
NOT TO SCALE



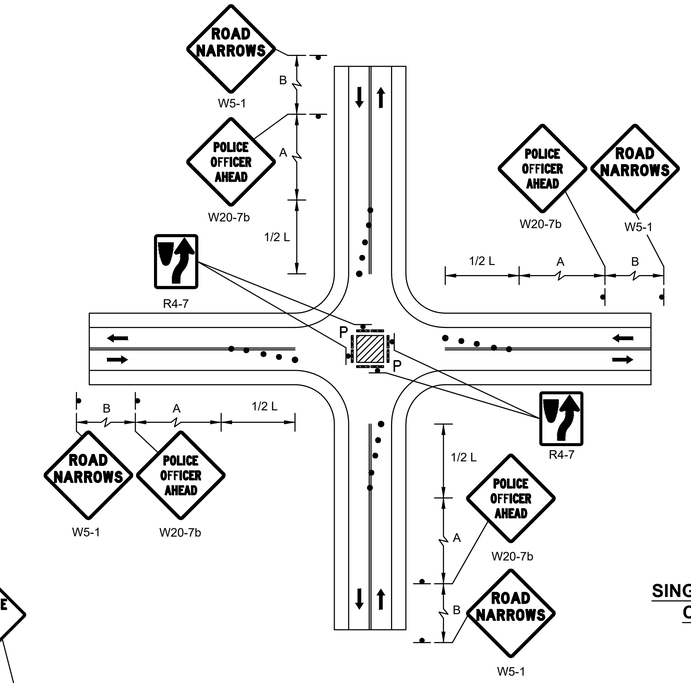
DRUM SPACING DEPENDENT ON SPEED

TWO LANE ROAD
SHOULDER CLOSED
NOT TO SCALE

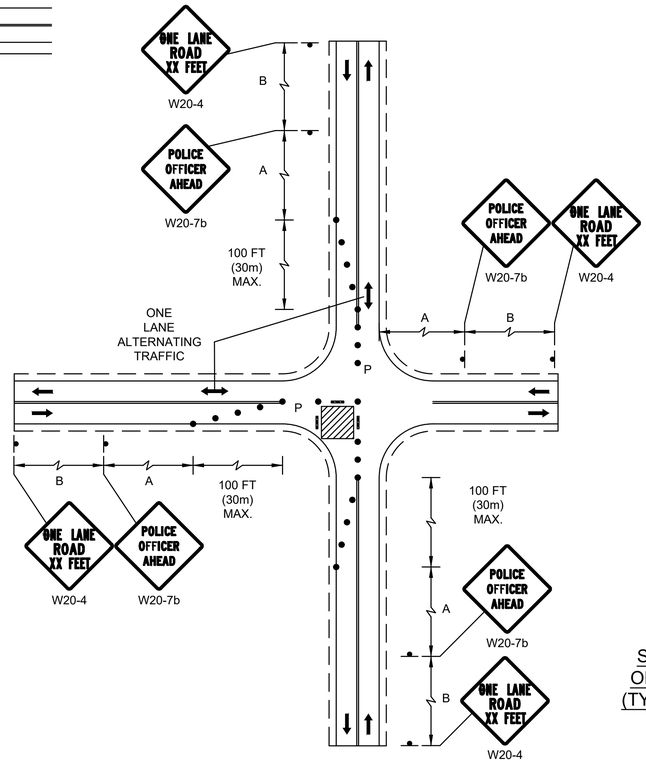


* - FOR FLAGGER CONTROL, REPLACE W20-7b WITH W20-7A

TWO LANE ROAD
ONE LANE ALTERNATING TRAFFIC
WITH POLICE DETAIL
NOT TO SCALE



SINGLE LANE APPROACH
CENTER CLOSURE
NOT TO SCALE



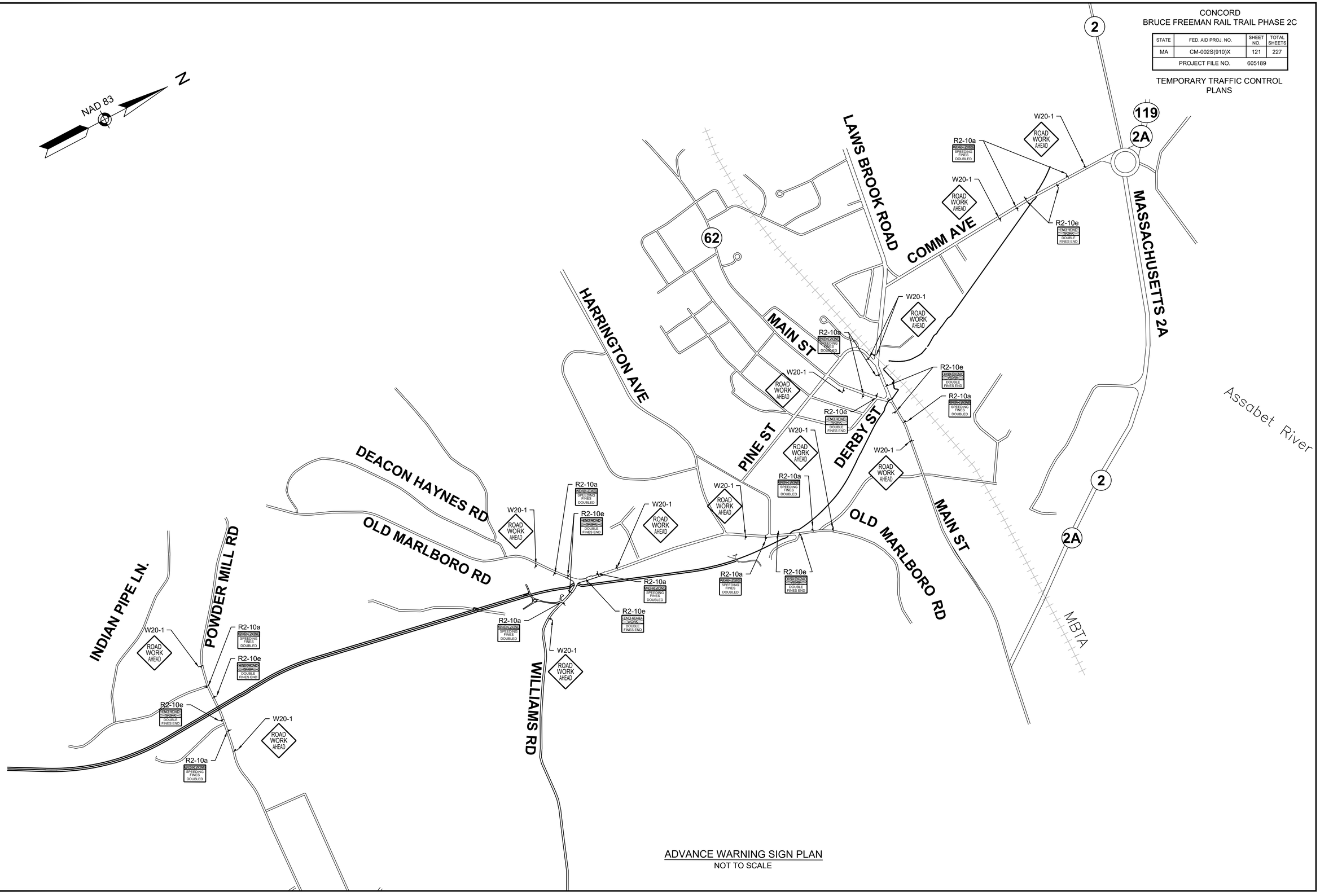
SINGLE LANE APPROACH
ONE QUADRANT CLOSURE
(TYPICAL ALL APPROACHES)
NOT TO SCALE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	121	227
PROJECT FILE NO.	605189		

TEMPORARY TRAFFIC CONTROL PLANS

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ADVANCE WARNING SIGN PLAN
NOT TO SCALE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	122	227
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TEMPORARY TRAFFIC CONTROL PLANS

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TARBELL SPRING ROAD
MINISTERIAL DRIVE
OLD MARLBORO ROAD
OLD ROAD TO 9 ACRE CORNER
OLD MILL ROAD
CATERINA HEIGHTS
DEACON HAYNES ROAD
OLD MARLBORO ROAD
BRUCE FREEMAN RAIL TRAIL
WILLIAMS ROAD
MATTISON DRIVE
ROLLINGWOOD LANE
HEATHS BRIDGE ROAD
SPRING ROAD
BARTONS WAY
DRUM HILL ROAD
BLUEBERRY LANE
POWDER MILL ROAD
OLD PICKARD ROAD
INDIAN PIPE LANE
HUNTERS RIDGE ROAD
DEER GRASS LANE
STONE ROOT LANE
JENNIE DUGAN ROAD
MITCHELL ROAD
SEYMOUR STREET
LONGFELLOW ROAD
PAUL REVERE ROAD
PETER BULKELEY ROAD
POWDER MILL ROAD
PLAINFIELD ROAD
SHORE DRIVE
DOVER STREET
VARICK STREET
BOLTON STREET
ALDEN ROAD
ANSON ROAD
SEVEN STAR LANE
SUDBURY ROAD
HOLDEN WOOD ROAD
GARFIELD ROAD
SUDBURY ROAD
LAWR
WILLARD GRANT ROAD
FIELD ROAD

M4-9L
M4-9R
M4-9V
M4-9AL
M4-9AR
M4-8a
R11-3a(1/2)
M4-10L
R11-2
W20-3(350)
W20-3(700)
WORK ZONE
PORTABLE CHANGEABLE MESSAGE SIGN

CONCORD
SUDBURY

DETOUR SIGN PLAN
NOT TO SCALE

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES) WIDTH	HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
R1-6	12	36	STATE LAW TO STOP WHEN FLASHING	MASSDOT STANDARD			4	MASSDOT STANDARD			3.00	12.00
R2-10a	36	24	WORK ZONE SPEEDING FINES DOUBLED	MASSDOT STANDARD			12	MASSDOT STANDARD			6.00	72.00
R2-10e	36	48	END ROAD WORK DOUBLE FINES END	MASSDOT STANDARD			12	MASSDOT STANDARD			12.00	144.00
R4-7	30	30					4				6.25	25.00
R9-9	24	12	SIDEWALK CLOSED				2				2.00	4.00
R9-11aL	24	12	SIDEWALK CLOSED CROSS HERE				1				2.00	2.00
R9-11aR	24	12	SIDEWALK CLOSED CROSS HERE				1				2.00	2.00
R11-2	48	30	ROAD CLOSED				2				10.00	20.00
R11-3a	60	30	ROAD CLOSED MILE AHEAD LOCAL TRAFFIC ONLY				2				12.50	25.00
W1-4L	36	36		MUTCD STANDARD			2	MUTCD STANDARD			9.00	18.00
W1-4R	36	36					2				9.00	18.00
W5-1	36	36	ROAD NARROWS				6				9.00	54.00
W8-1	36	36	BUMP				4				9.00	36.00
W8-3	36	36	PAVEMENT ENDS				2				9.00	18.00
W8-8	36	36	ROUGH ROAD				2				9.00	18.00
W8-15	36	36	GROOVED PAVEMENT				2				9.00	18.00
W11-2	30	30					4				6.25	25.00
W13-1P	24	30	XX M.P.H.				2				5.00	10.00
W16-7pL	24	12					4				2.00	8.00

SUGGESTED WORK ZONE WARNING SIGN SPACING			
ROAD TYPE	DISTANCE BETWEEN SIGNS** A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350	350	350
MOST OTHER ROADWAYS*	500	500	500
FREEWAYS AND EXPRESSWAYS*	1,000	1,500	2,640

Based on: Table 6C-1 MUTCD latest edition

*ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

**DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

R2-10a, R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

SIGN SPACING MAY NEED TO BE INCREASED IF ADDITIONAL SIGNS ARE REQUIRED PER THE DETAIL/TYPICAL SETUP FIGURES.

BUFFER SPACING	
SPEED* (MPH)	DISTANCE (FT)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

*POSTED SPEED , OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	123	227
PROJECT FILE NO.	605189		

TEMPORARY TRAFFIC CONTROL PLANS

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN (INCHES) WIDTH	HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACK-GROUND	LEGEND	BORDER	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
W20-1	36	36	ROAD WORK AHEAD	MUTCD STANDARD			13	MUTCD STANDARD			9.00	117.00
W20-3	36	36	ROAD CLOSED XXX FT				4				9.00	36.00
W20-4	36	36	ONE LANE ROAD XX FT				4				9.00	36.00
W20-7a	36	36	FLAGGER				2				9.00	18.00
W20-7b	36	36	POLICE OFFICER AHEAD				4				9.00	36.00
W21-5a	36	36	RIGHT SHOULDER CLOSED				1				9.00	9.00
M4-8a	24	18	END DETOUR				2				3.00	6.00
M4-9AL	30	24	DETOUR	MASSDOT STANDARD			4	MASSDOT STANDARD			5.00	20.00
M4-9AR	30	24	DETOUR	MASSDOT STANDARD			4	MASSDOT STANDARD			5.00	20.00
M4-9L	30	24	DETOUR	MUTCD STANDARD			5	MUTCD STANDARD			5.00	25.00
M4-9R	30	24	DETOUR	MUTCD STANDARD			5	MUTCD STANDARD			5.00	25.00
M4-9V	30	24	DETOUR	MASSDOT STANDARD			8	MASSDOT STANDARD			5.00	40.00
M4-10L	48	18	DETOUR	MUTCD STANDARD			1	MUTCD STANDARD			6.00	6.00

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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	124	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:30 AM

NAD 83 N

N/F
JOSHUA I. GALPER AND
NIRMALI D. GALPER
BK/PG 49661/458
#65
STONE ROOT LN.

N/F
MICHAEL N. COLGAN AND
ELIZABETH G. COLGAN
BK/PG 55158/418
#47
STONE ROOT LN.

N/F
JOHN S. DAVAGIAN III
AND AMY DAVAGIAN
BK/PG 59541/ 216
#31
STONE ROOT LN.

N/F
DANIELLE DAWSON GUINBERTIERE
AND ALEXIS GUINBERTIERE
BK/PG 53412/305
#13
STONE ROOT LN.

EXIST RR LAYOUT LINE

DENSE FOLIAGE

BEGIN PROP. 10.0' FULL DEPTH
HMA SHARED USE PATH
STA. 27+40.00

MATCHLINE

PT +19.82

205

23 24 25 26 27 28

PC +99.66
PRC +49.66
PT +99.66

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

COMMONWEALTH OF
MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS
CH. 634 EASEMENT
BK.12373 PG. 238

CONTINUED
BELOW

0 20 50 100
SCALE: 1" = 20'

NAD 83 N

POWDER MILL ROAD
(PUBLIC)

COUNTY LAYOUT LINE

206

CONTINUED
ABOVE

PT +19.82

205

MATCHLINE

1 PS
PROTECT EXISTING LARGE TREES

POWDER MILL ROAD ℄ STA. 206+13.50, 22.75' R =
POWDER MILL ROAD ACCESS PATH ℄ STA. 300+00.00

1 PS
2 CR
2 KL
1 PS
1 BA
PC +69.76
PC +45.46
1 AC
2 CS
PRC +66.93
1 VT
2 IG
PT +29.76
1 KL
3 AM
2 QR
2 AM
1 BA
PT +26.60
4 BOULDERS
3-5' W, 3' H (MAX)
EXISTING
VEGETATION
TO REMAIN
BFRT 2C CONST. ℄ STA. 28+83.23 =
POWDER MILL ROAD CONST. ℄ STA. 204+69.20

ALL DISTURBED AREAS TO BE
SEEDED WITH RESTORATION MIX

3 AM
2 PS
2 HV
1 CR
4 BOULDERS
3-5' W, 3' H (MAX)
1 AC
1 AO
3 SF
1 KL
PC +50.98
1 QB
3 SF
PC +72.60
PT +35.43
3 VT
PRC +13.84
1 PS
2 BOULDERS
3-5' W, 3' H (MAX)
3 SF
1 BA
2 KL
1 CS
PRC +76.70
3 RA
PT +32.45
PRC +25.52
PT +25.08
PC +05.48
PT +45.55
PC +85.01
PRC +05.05
2 PS
1 AO
1 AM
3 RA
BFRT 2C CONST. ℄ STA. 31+79.31 =
POWDER MILL ROAD ACCESS PATH CONST. ℄ STA. 305+58.08

WF#BF 3A R28
WF#BF 3A R29
WF#BF 3A R15
WF#BF 3A R30
WF#BF 3A R14
WF#BF 3A R31
WF#BF 3A R33
WF#BF 3A R34
WF#BF 3A R13
WF#BF 3A R32
WF#BF 3A R11
WF#BF 3A R12
WF#BF 3A R1
WF#BF 3A R38
WF#BF 3A R3
WF#BF 3A R4
WF#BF 3A R5
WF#BF 3A R9
WF#BF 3A R39
WF#BF 3A R40
WF#BF 3A R41
WF#BF 3A R42
WF#BF 3A R8
WF#BF 3A R7
WF#BF 3A R6

DENSE FOLIAGE

EXIST RR LAYOUT LINE

MATCHLINE

204 205 206

25 30 31 32 33 34

3 IVF

TOWN OF CONCORD
20' WATER EASEMENT
BK. 14647 PG. 1

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

CONTINUED ON
SHEET 125

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AM	9	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" - 24"
CR	3	CORNUS RACEMOSA	GRAY DOGWOOD	18" - 24"
CS	3	CORNUS SERICEA	RED-OSIER DOGWOOD	18" - 24"
HV	2	HAMAMELIS VIRGINIANA	COMMON WITCHHAZEL	18" - 24"
IG	4	ILEX GLABRA	INKBERRY	18" - 24"
IVF	3	ILEX VERTICILLATA - FEMALE	WINTERBERRY MALE/FEMALE	18" - 24"
KL	6	KALMIA LATIFOLIA	MOUNTAIN LAUREL	30" - 36"
RA	11	RHUS AROMATICA "LOW GROW"	LOW GROW SUMAC	18" - 24"
SF	9	COMPTONIA PEREGRINA	SWEET FERN	18" - 24"
VT	5	VIBURNUM TRILOBUM	AMERICAN CRANBERRYBUSH VIBURNUM	18" - 24"
TREES				
PS	8	PINUS STROBUS	WHITE PINE	5' - 6'
AC	2	AMELANCHIER CANADENSIS	RAINBOW PILLAR SERVICEBERRY	5' - 6'
AO	2	ACER RUBRA 'OCTOBER GLORY'	RED MAPLE OCTOBER GLORY	1.5" - 2" CAL
BA	3	BETULA ALLEGHANIENSIS	YELLOW BIRCH	1.5" - 2" CAL
QB	1	QUERCUS BICOLOR	SWAMP WHITE OAK	1.5" - 2" CAL
QR	2	QUERCUS RUBRA	RED OAK	1.5" - 2" CAL

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	125	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

NAD 83

MATCHLINE

CONTINUED ON SHEET 124

CONTINUED BELOW

EXIST RR LAYOUT LINE

PC +52.47

DENSE FOLIAGE

WETLAND NO. 3 (BVW)

WETLAND NO. 4 (BVW)

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

0 20 50 100
SCALE: 1" = 20'

CONTINUED ABOVE

PT +14.56

TOWN OF CONCORD
ACCESS EASEMENT
LCC# 30802A

CONTINUED ON SHEET 126

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:30 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	126	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:31 AM

NAD 83 N

MATCHLINE

WETLAND NO. 4 (BVW)

WF#4-106 WF#4-107 WF#4-108 WF#4-109 WF#4-110 WF#4-111-G WF#4-112 WF#4-113

EXIST RR LAYOUT LINE

46 47 48 49 50 51

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

WF#4-204 WF#4-205 WF#4-206 WF#4-207 WF#4-208 WF#4-209 WF#4-210 WF#4-211

EXIST RR LAYOUT LINE

CONTINUED ON SHEET 125

CONTINUED BELOW

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

0 20 50 100
SCALE: 1" = 20'

NAD 83 N

MATCHLINE

WETLAND NO. 4 (BVW)

WF#4-113 WF#4-114 WF#4-115 WF#4-116

EXIST RR LAYOUT LINE

51 52 53 54 55 56 57

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

WF#4-211 WF#4-212 WF#4-213 WF#4-214 WF#4-215 WF#4-216 WF#4-217 WF#4-218 WF#4-219 WF#4-220 WF#4-221 WF#4-222 WF#4-223-G WF#4-224 WF#4-225

EXIST RR LAYOUT LINE

CONTINUED ABOVE

CONTINUED ON SHEET 127

EXIST RR LAYOUT LINE

EXIST RR LAYOUT LINE

N/F
TOWN OF CONCORD
BK/PG 12343/391

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	127	227
PROJECT FILE NO.	605189		

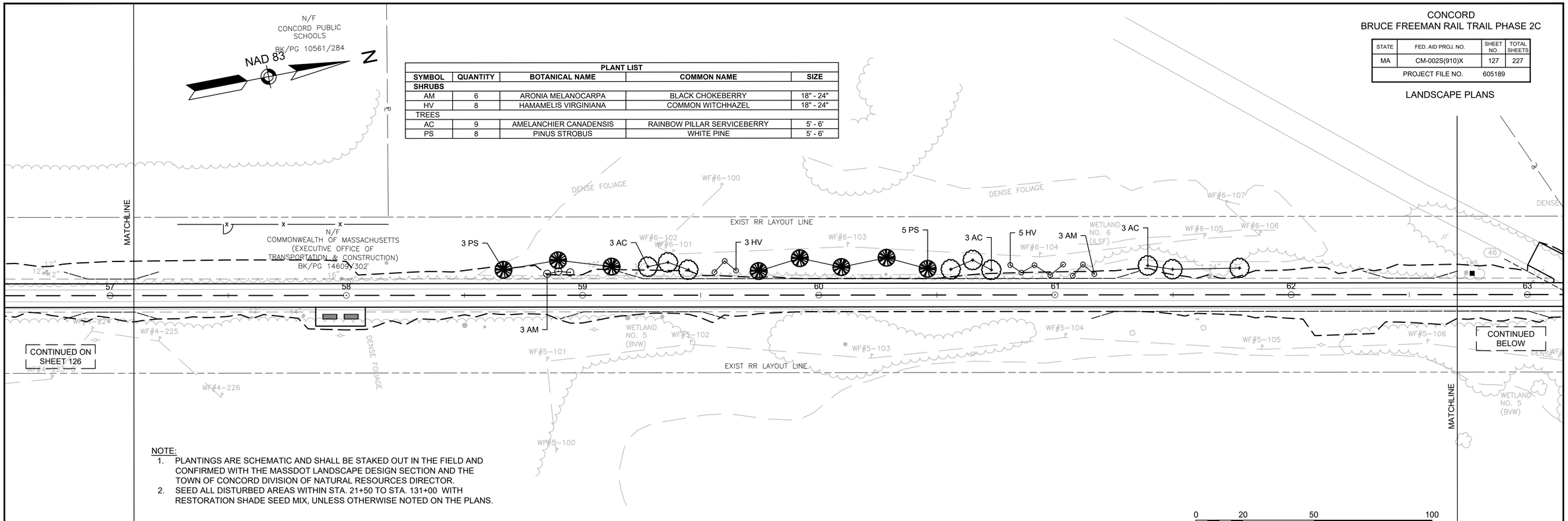
LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:31 AM

N/F
CONCORD PUBLIC
SCHOOLS
BK/PG 10561/284

NAD 83 N

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AM	6	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" - 24"
HV	8	HAMAMELIS VIRGINIANA	COMMON WITCHHAZEL	18" - 24"
TREES				
AC	9	AMELANCHIER CANADENSIS	RAINBOW PILLAR SERVICEBERRY	5' - 6'
PS	8	PINUS STROBUS	WHITE PINE	5' - 6'



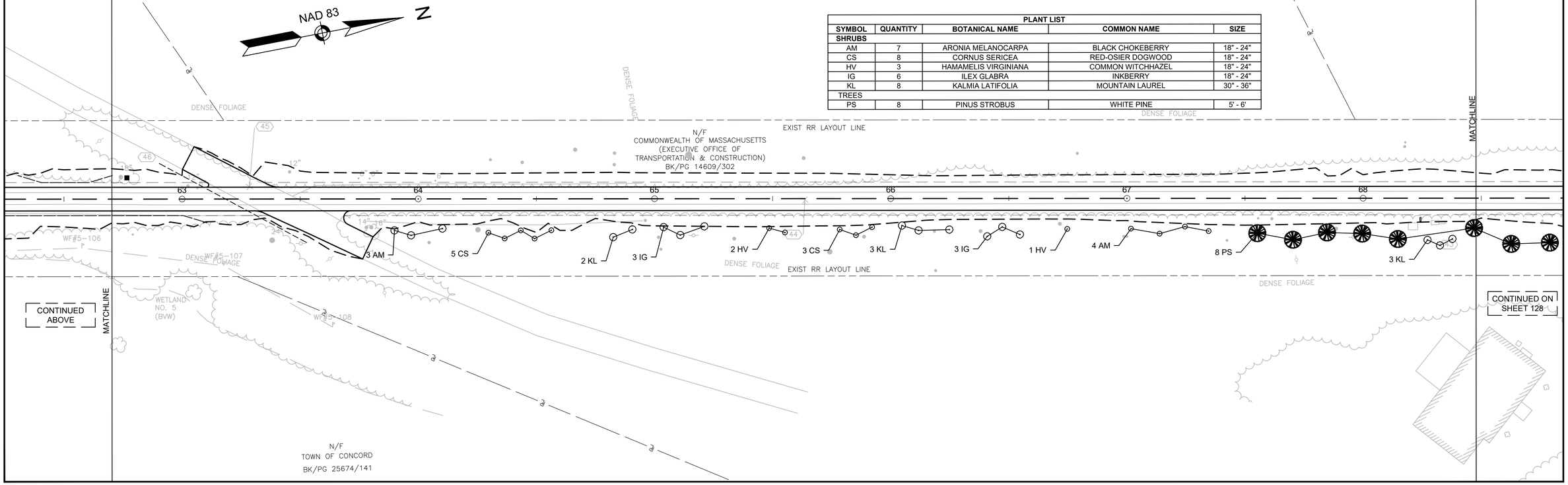
NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

0 20 50 100
SCALE: 1" = 20'

BK/PG 10561/284

NAD 83 N

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AM	7	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" - 24"
CS	8	CORNUS SERICEA	RED-OSIER DOGWOOD	18" - 24"
HV	3	HAMAMELIS VIRGINIANA	COMMON WITCHHAZEL	18" - 24"
IG	6	ILEX GLABRA	INKBERRY	18" - 24"
KL	8	KALMIA LATIFOLIA	MOUNTAIN LAUREL	30" - 36"
TREES				
PS	8	PINUS STROBUS	WHITE PINE	5' - 6'



CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	128	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:31 AM

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AM	5	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" - 24"
IG	3	ILEX GLABRA	INKBERRY	18" - 24"
KL	5	KALMIA LATIFOLIA	MOUNTAIN LAUREL	30" - 36"
VT	10	VIBURNUM TRILOBUM	AMERICAN CRANBERRYBUSH VIBURNUM	18" - 24"
TREES				
PS	6	PINUS STROBUS	WHITE PINE	5' - 6'

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

BK/PG 11226/316
#78X
OLD
MARLBORO RD.

1926 COUNTY LAYOUT

NAD 83

MATCHLINE

DENSE FOLIAGE

5 AM
5 VT
3 KL
3 IG
2 KL
3 VT
PC +72.43
CONTINUED ON SHEET 127

EXIST RR LAYOUT LINE

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

3 KL
6 PS
2 VT
CONTINUED BELOW

6" WIRE GATE
WOOD BOLLARD
SWINGSET

N/F
LEO J. BOYLE JR. AND
HOLLY O'SULLIVAN
BK/PG 25577/600

STOCKADE FENCE
1966 TOWN LAYOUT

N/F
RICHARD HOEY AND
THERESA HOEY
BK/PG 25192/573

0 20 50 100
SCALE: 1" = 20'

OLD MARLBORO ROAD
(PUBLIC)

N/F
WILLIAM P. KEATING
BK/PG 44261/ 293
#719
OLD
MARLBORO RD.

3 BOULDERS
3-5' W, 3' H (MAX)
PT +75.59
PRC +29.41
PC +88.67
PC +22.71
5 BOULDERS
3-5' W, 3' H (MAX)
PRC +54.59
5 CP
5 RA
3 CP
5 IVF
PT +91.91
3 PS
3 KL
3 TC
2 IVM
3" MULCH BED
(SEE SHEET 139 FOR DETAILS)
6 BOULDERS
3-5' W, 3' H (MAX)
CONTINUED ABOVE
CONTINUED ON SHEET 129

WETLAND NO. 7 (BVW)
WF#7-100
WF#7-101
WF#7-102
WF#7-103
WF#7-104
TOWN OF CONCORD SLOPE EASEMENT BK/PG 11091/63

N/F
TOWN OF CONCORD
BK/PG -/-

N/F
NEAL C. MIRFIELD AND
MARY R. MIRFIELD
BK/PG 27690/459

WILLIAMS ROAD
(PUBLIC)
#34 WILLIAMS ROAD

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
CP	8	CLETHRA ALNIFOLIA	SUMMERSWEET	18" - 24"
KL	3	KALMIA LATIFOLIA	MOUNTAIN LAUREL	30" - 36"
IVF	5	ILEX VERTICILLATA - FEMALE	WINTERBERRY MALE/FEMALE	18" - 24"
IVM	2	ILEX VERTICILLATA - MALE	WINTERBERRY MALE/FEMALE	18" - 24"
RA	10	RHUS AROMATICA "LOW GROW"	LOW GROW SUMAC	18" - 24"
TREES				
PS	3	PINUS STROBUS	WHITE PINE	5' - 6'
TC	3	TSUGA CANADENSIS	CANADIAN HEMLOCK	5' - 6'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	129	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:32 AM

NAD 83 N

1969 TOWN LAYOUT
1966 TOWN LAYOUT
TOWN OF CONCORD
SLOPE EASEMENT
BK/PG 11091/63
DENSE FOLIAGE
62A OLD MARLBORO RD.
N/F
TOWN OF CONCORD
BK/PG -/-
MATCHLINE
EXIST RR LAYOUT LINE
WETLAND NO. 7 (BVW)
WF#7-104
WF#7-105
WF#7-106
WF#7-107
WF#7-108
WF#7-109
WF#7-110
WF#7-111
WF#7-112
WF#7-113
80
81
82
83
84
85
CONTINUED ON SHEET 128
N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302
WF#8-100
WF#8-101
WF#8-103
WF#8-105
WF#8-106
WF#8-107
WF#8-108
WETLAND NO. 8 (BVW)
CONTINUED BELOW
N/F
NEAL C. MIRFIELD AND
MARY R. MIRFIELD
BK/PG 27690/459

0 20 50 100
SCALE: 1" = 20'

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

NAD 83 N

MATCHLINE
CONTINUED ABOVE
WETLAND NO. 7 (BVW)
WF#7-113
WF#7-113A
WF#7-115
WF#7-114
EXIST RR LAYOUT LINE
DENSE FOLIAGE
86
87
88
89
90
PC +17.46
91
N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302
WF#8-108
WF#8-109
WF#8-110
WF#8-111
WF#8-112
WF#8-113
WETLAND NO. 8 (BVW)
TOWN OF CONCORD
20' DRAINAGE EASEMENT
BK/PG 16780/546
PB 207 of 1986
TOWN OF CONCORD
DRAINAGE DITCH EASEMENT
BK/PG 16780/546
PB 207 of 1986
CONTINUED ON SHEET 130
WF#9-90
WF#9-91

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	130	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:32 AM

NAD 83 N

MATCHLINE

CONTINUED ON SHEET 129

CONTINUED BELOW

EXIST RR LAYOUT LINE

TOWN OF CONCORD
20' ACCESS, UTILITY & DRAINAGE EASEMENT
BK/PG 16780/546
PB 207 of 1986

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

WETLAND NO. 9 (BVW)

DENSE FOLIAGE

WF#9-91 WF#9-94 WF#9-95 WF#9-96 WF#9-97 WF#9-98 WF#9-99 WF#9-100 WF#9-101 WF#9-102 WF#9-103 WF#9-104 WF#9-105 WF#9-106 WF#9-107 WF#9-108

#461
OLD MARLBORO RD.
N/F
JENNIFER J. LURKER AND MARY L. CAROCCI
BK/PG 43528/42

N/F
HELMUT LEIBBRANDT
BK/PG 48417/47
#449
OLD MARLBORO RD.

#437

N/F
DONG HSU
BK/PG 61999/227
#437 OLD MARLBORO RD.

#416

N/F
DIGI LLC
BK/PG 60116/ 277
#406 OLD MARLBORO RD

FENCE
1926 COUNTY LAYOUT
WS FENCE
BOLLARD

PT +90.49

PRC +62.98

CONTINUED ABOVE

CONTINUED ON SHEET 131

0 20 50 100
SCALE: 1" = 20'

SOUTH MEADOW RIDGE
(PRIVATE)

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	131	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:32 AM

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
CS	10	CORNUS SERICEA	RED-OSIER DOGWOOD	18" - 24"
AM	5	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" - 24"
IG	8	ILEX GLABRA	INKBERRY	18" - 24"

NAD 83

N

#2B
UPLAND RD.

N/F
DIGI LLC
BK/PG 60116/ 277
#406 OLD MARLBORO RD.

#416

#406

MATCHLINE

EXIST. RR LAYOUT LINE

BOLLARD

33

PT +31.82

PRC +62.98

PC +73.89

PRC +54.95

PCC +05.24

103

104

105

106

107

108

5 CS

3 IG

5 CS

5 IG

5 AM

DENSE FOLIAGE

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

CONC

WD STORAGE CONTAINER

4' FENCE

W/WD POST

FENCE

4' WD

CONTINUED ON SHEET 130

CONTINUED BELOW

SOUTH MEADOW RIDGE
(PRIVATE)

1926 COUNTY LAYOUT

STONE WALL

36" STUMP

BOLLARDS

OLD MARLBORO ROAD
(PUBLIC)

#368 OLD MARLBORO RD.

#368

#148

5" PVC

N/F
ERIC HOLM
BK/PG 60903/483

N/F
PETER M. STANDISH JR.
AND ANNE O. STANDISH
BK/PG 20679/540

0 20 50 100
SCALE: 1" = 20'

CONTINUED ABOVE

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AM	6	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" - 24"
IG	12	ILEX GLABRA	INKBERRY	18" - 24"
CS	6	CORNUS SERICEA	RED-OSIER DOGWOOD	18" - 24"

NAD 83

N

#2B
UPLAND RD.

108

109

110

111

112

113

114

PT +68.22

PC +50.59

PCC +47.64

3 IG

6 AM

5 IG

6 CS

4 IG

DENSE FOLIAGE

4' FENCE

W/WD POST

EXIST. RR LAYOUT LINE

MATCHLINE

WF#10-100

CHICKEN WIRE AND STAKE FENCE

TRAIN CTRL BOX

BATTERY WELL

31

N/F
PETER M. STANDISH JR.
AND ANNE O. STANDISH
BK/PG 20679/540

N/F
LORNE COOPER AND
NANCY BIRCHARD
BK/PG 27438/420
#132 COTTAGE ST.

#132

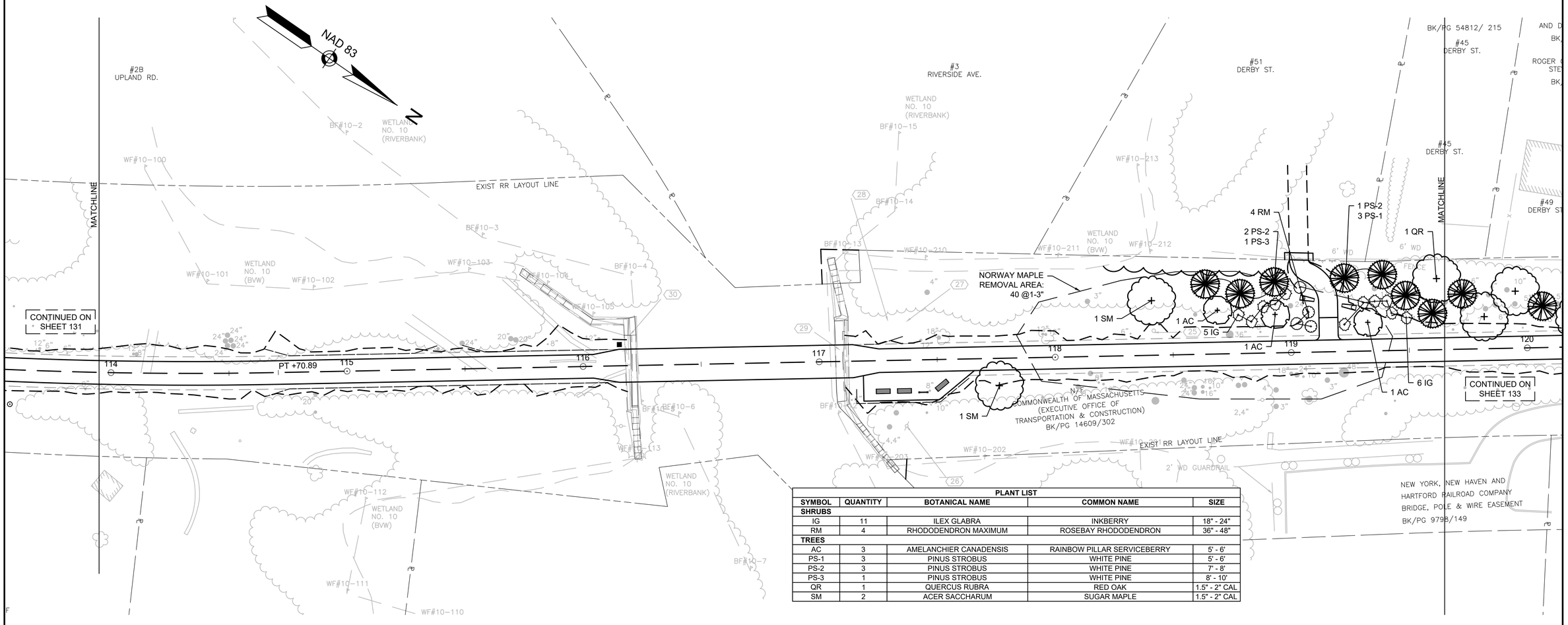
CONTINUED ON SHEET 132

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	132	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:32 AM



PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
IG	11	ILEX GLABRA	INKBERRY	18" - 24"
RM	4	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	36" - 48"
TREES				
AC	3	AMELANCHIER CANADENSIS	RAINBOW PILLAR SERVICEBERRY	5' - 6'
PS-1	3	PINUS STROBUS	WHITE PINE	5' - 6'
PS-2	3	PINUS STROBUS	WHITE PINE	7' - 8'
PS-3	1	PINUS STROBUS	WHITE PINE	8' - 10'
QR	1	QUERCUS RUBRA	RED OAK	1.5" - 2" CAL
SM	2	ACER SACCHARUM	SUGAR MAPLE	1.5" - 2" CAL

0 20 50 100
SCALE: 1" = 20'

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	133	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:33 AM

NAD 83

N

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
IG	17	ILEX GLABRA	INKBERRY	18" - 24"
RM	21	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	36" - 48"
TREES				
AC	3	AMELANCHIER CANADENSIS	RAINBOW PILLAR SERVICEBERRY	5' - 6'
BA	5	BETULA ALLEGHANIENSIS	YELLOW BIRCH	1.5" - 2" CAL
CC	5	CERCIS CANADENSIS	EASTERN REDBUD	1.5" - 2" CAL
PS-1	10	PINUS STROBUS	WHITE PINE	5' - 6'
PS-2	9	PINUS STROBUS	WHITE PINE	7' - 8'
PS-3	6	PINUS STROBUS	WHITE PINE	8' - 10'
QB	2	QUERCUS BICOLOR	SWAMP WHITE OAK	1.5" - 2" CAL
QR	3	QUERCUS RUBRA	RED OAK	1.5" - 2" CAL
SM	2	ACER SACCHARUM	SUGAR MAPLE	1.5" - 2" CAL

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	134	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:33 AM

CONTINUED ON SHEET 133

PC +57.54
PI +20.57
801
PT +09.05
MATCHLINE
802
803
804
805
806
807
COMMONWEALTH AVENUE (PUBLIC)
CHURCH STREET (PUBLIC)
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY (FITCHBURG LINE)
NAD 83
N

#15 #17 #19 #21 #23-25 #29-37 #41-47 #49 #51 #53 #55 #57 #7 #9 #24 #75 #77

N/F RIP PROPERTY MANAGEMENT LLC BK/PG 54605/ 504 #23 COMMONWEALTH AVE

N/F KARL H. KLASSON AND JAKOB WOHN BK/PG 19525/273 #29 COMMONWEALTH AVE

N/F 41-47 COMMONWEALTH AVENUE CONDOMINIUM MASTER DEED BK/PG 64052/419 #41-47 COMMONWEALTH AVE

N/F TOWN OF CONCORD BK 11508 PG 600 #1276 MAIN ST.

N/F VERNCO CONCORD LLC BK/PG 46969/366 #49 COMMONWEALTH AVE

12' WIDE PASSAGEWAY

N/F 24 COMMONWEALTH AVENUE ASSOCIATES LLC BK/PG 61508/569

1877 COUNTY LAYOUT LINE

N/F GEORGE C. VERNET BK/PG 38602/481 #1 CHURCH ST.

N/F VERNCO CONCORD LLC BK/PG 46969/368 #7 CHURCH ST.

N/F KIL CHA HUBBARD BK/PG 44437/63

N/F MASSACHUSETTS BAY TRANSIT AUTHORITY BK 19422 PG 554

BOLLARD
GRAN. POSTS
MBTA BOX
TRASH RECEP
MONUMENTED RAILROAD BASELINE
DUMPSTER

BOSTON GAS COMPANY EASEMENT BK/PG 11721/43 PB 81 OF 1969

BOSTON CONSOLIDATED GAS COMPANY BK/PG 3353/524 30' POLE & WIRE EASEMENT

N/F TOWN OF CONCORD BK/PG 7927/522

STONE POST
METAL POSTS
BENCH
2' WD FENCE

EXIST RR LAYOUT LINE
EXIST RR BASELINE & LAYOUT LINE

PC +73.87
PT +85.33
PC +99.15
PT +06.93
PI +50.98
PC +60.64
PRC +74.70
126 PT +03.90
PC +53.81
PCC +72.63
PT +92.67
PI +61.45
PI +35.95
PI +91.95
PC +97.31
PRC +35.53
PRC +38.33

125
126
128
129
130
131
132
501

BFRT 2C ℄ STA. 130+77.69, 42.50' L =
BEHARRELL PARKING ℄ STA. 500+50.00

FENCE POST 5' OC (ONLY)
RED CROSS DONOR BOXES
BIKE RACKS (5)

BOSTON GAS 20' EASEMENT BK/PG 11686/446 PB 531 of 1969

N/F TOWN OF CONCORD BK 11800 PG 501

TOWN OF CONCORD 25' RIGHT OF WAY BK/PG 11800/501

EOTC EASEMENT

N/F COMMONWEALTH OF MASSACHUSETT (EXECUTIVE OFFICE OF TRANSPORTATION & CONSTRUCTION BK/PG 14609/302

N/F VDA CONCORD ASSISTED LIVING INC. BK/PG 29597/433

4' WD FENCE
6' WD FENCE

N/F 74 COMMONWEALTH LLC BK/PG 60380/ 262

CONTINUED ON SHEET 135

0 20 50 100
SCALE: 1" = 20'

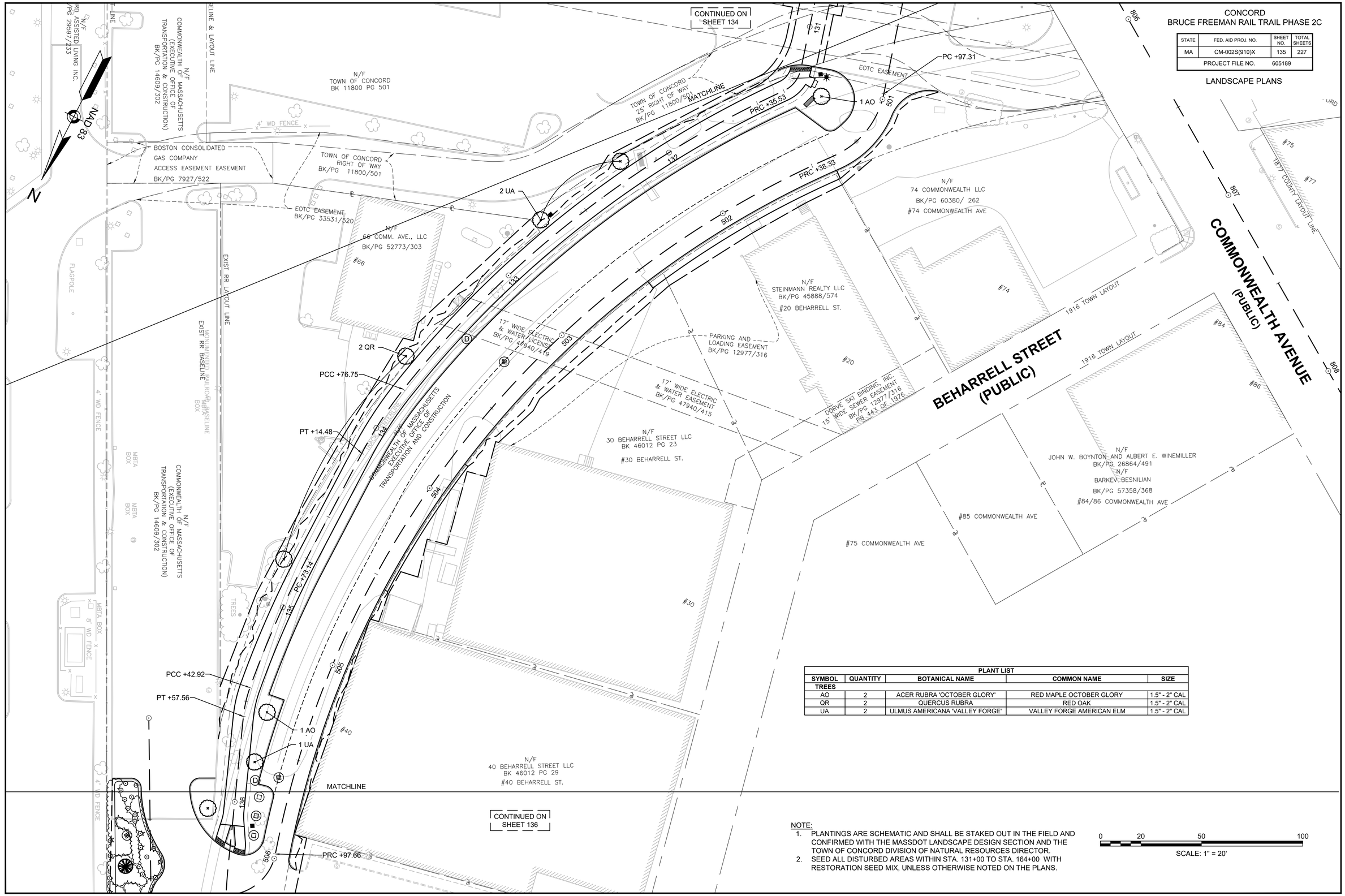
NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 21+50 TO STA. 131+00 WITH RESTORATION SHADE SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.
3. SEED ALL DISTURBED AREAS WITHIN STA. 131+00 TO STA. 164+00 WITH RESTORATION SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	135	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:33 AM



PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
AO	2	ACER RUBRA 'OCTOBER GLORY'	RED MAPLE OCTOBER GLORY	1.5" - 2" CAL
QR	2	QUERCUS RUBRA	RED OAK	1.5" - 2" CAL
UA	2	ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE AMERICAN ELM	1.5" - 2" CAL

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
2. SEED ALL DISTURBED AREAS WITHIN STA. 131+00 TO STA. 164+00 WITH RESTORATION SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	136	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:33 AM

NAD 83

MATCHLINE

PRC +97.66

BFRT 2C CONST. ℄ STA. 136+46.21 =
BEHARRELL PARKING CONST. ℄ STA. 506+31.97

3 QB

PT +91.30

PRC +40.13

PT +66.07

PC +07.83

PC +76.69

30' SEWER EASEMENT
BK 5264 PG 555

EXIST RR LAYOUT LINE

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

3 UA

2 AO

1 UA

3 MP

5 CP

PT +11.95

BEHARRELL PARKING CONST. ℄ STA. 506+69.07 =
WCC PARKING CONST. ℄ STA. 600+87.91

PT +04.09

3 AB

1 AO

5 IG

5 AR

PROP. BIORETENTION BASIN
(SEE SHEET 149 FOR DETAILS)

4' WD FENCE

CONTINUED ON
SHEET 135

CONTINUED
BELOW

WETLAND
NO.11
(RIVERBANK)

WETLAND
NO.11
(BVW)

WETLAND
NO. 11
(BVW)

WETLAND
NO. 11
(RIVERBANK)

DENSE FOLIAGE

CONC
STORAGE

MH

MASHOBA BROOK

NOTE:
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2. SEED ALL DISTURBED AREAS WITHIN STA. 131+00 TO STA. 164+00 WITH RESTORATION SEED MIX, UNLESS OTHERWISE NOTED ON THE PLANS.

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
AO	2	ACER RUBRA 'OCTOBER GLORY'	RED MAPLE OCTOBER GLORY	1.5" - 2" CAL
QB	3	QUERCUS BICOLOR	SWAMP WHITE OAK	1.5" - 2" CAL
UA	5	ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE AMERICAN ELM	1.5" - 2" CAL
BIORETENTION BASIN				
AO	1	ACER RUBRA 'OCTOBER GLORY'	RED MAPLE OCTOBER GLORY	1.5" - 2" CAL
AR	5	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	18" - 24"
CP	5	CLETHRA ALNIFOLIA	SUMMERSWEET	18" - 24"
IG	5	ILEX GLABRA	INKBERRY	18" - 24"
MP	6	MYRICA PENNSYLVANIA	NORTHERN BAYBERRY	18" - 24"
A	20	RUDBECKIA LANCINATA	GREEN-HEADED CONEFLOWER	2" PLUGS
B	18	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	2" PLUGS
C	25	LOBELIA SIPHILITICA	GREAT BLUE LOBELIA	2" PLUGS
D	25	LOBELIA CARDINALIS	CARDINAL FLOWER	2" PLUGS
E	100	MITCHELLA REPENS	PARTRIDGE BERRY	FLAT 50/CT

0 20 50 100
SCALE: 1" = 20'

TRASH RECEP

N/F
ASSABET RIVER REALTY LLC
BK/PG 32540/ 209
MASTER DEED
BK/PG 18808/550
#56-3
WINTHROP ST.

1 PN 3 RM 1 PN

3 AB

4 RM

5 IG

3 AB

3 VT 1 PN

WINTHROP STREET
(PUBLIC)

1899 TOWN LAYOUT

1899 TOWN LAYOUT

PP OBSCURED
DENSE FOLIAGE

EXIST RR LAYOUT LINE

CHDC-JV LLC
ACCESS & UTILITY
EASEMENT
BK 61102 PG 490
PLAN 73 OF 2013

MH W/ WIRES

MH W/ WIRES

EXIST RR LAYOUT LINE

N/F
WHALE ROCK LLC
BK/PG 46705/ 295
#45
WINTHROP ST.

CONTINUED
ABOVE

CONTINUED ON
SHEET 137

DENSE FOLIAGE

WF#11-204

WF#11-205

PILE

N/F
CHDC-JV LLC
BK 61102 PG 485

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
RM	7	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	36" - 48"
IG	5	ILEX GLABRA	INKBERRY	18" - 24"
VT	3	VIBURNUM TRILOBUM	AMERICAN CRANBERRYBUSH VIBURNUM	18" - 24"
TREES				
PN	3	PINUS NIGRA	AUSTRIAN PINE	5' - 6'
AB	6	ABIES BALSAMEA	BALSAM FIR	5' - 6'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	137	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:34 AM

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
RM	10	RHODODENDRON MAXIMUM	ROSEBAY RHODODENDRON	36" - 48"
VT	9	VIBURNUM TRILOBUM	AMERICAN CRANBERRYBUSH VIBURNUM	18" - 24"
TREES				
AC	5	AMELANCHIER CANADENSIS	RAINBOW PILLAR SERVICEBERRY	5' - 6'
PN	5	PINUS NIGRA	AUSTRIAN PINE	5' - 6'
PS	6	PINUS STROBUS	WHITE PINE	5' - 6'

N/F
WHALE ROCK LLC
BK/PG 46705/ 295

#45
WINTHROP ST.

NAD 83

HOLE IN PVMT

6' WD FENCE

DENSE FOLIAGE

MATCHLINE

3 AC
6 VT
3 PS
2 PN
5 RM
2 AC
3 VT
3 PS
5 RM
3 PN

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

EXIST RR LAYOUT LINE

PC +02.25
PRC +27.47
PT +52.70

147 148 149 150 151 152 153

MH W/ WIRES

DIRT PILE

PILE

CONTINUED ON SHEET 136

CONTINUED BELOW

NOTE:
1. PLANTINGS ARE SCHEMATIC AND SHALL BE STAKED OUT IN THE FIELD AND CONFIRMED WITH THE MASSDOT LANDSCAPE DESIGN SECTION AND THE TOWN OF CONCORD DIVISION OF NATURAL RESOURCES DIRECTOR.
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N/F
CHDC–JV LLC
BK 61102 PG 485

0 20 50 100
SCALE: 1" = 20'

#308

NAD 83

DENSE FOLIAGE

#330A

1877/78 COUNTY LAYOUT

COMMONWEALTH AVENUE
(PUBLIC)

N/F
RICHARD F. OFRIA
BK/PG 57811/130

6' WD GATE

EXIST RR LAYOUT LINE

6' WD FENCE

3 PS
2 PN
8 AR
7 VT

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF
TRANSPORTATION & CONSTRUCTION)
BK/PG 14609/302

CONC POST

153 154 155 156 157 158 159

CONTINUED ABOVE

CONTINUED ON SHEET 138

EMH MH MH

PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AR	8	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	18" - 24"
VT	7	VIBURNUM TRILOBUM	AMERICAN CRANBERRYBUSH VIBURNUM	18" - 24"
TREES				
PS	3	PINUS STROBUS	WHITE PINE	5' - 6'
PN	2	PINUS NIGRA	AUSTRIAN PINE	5' - 6'

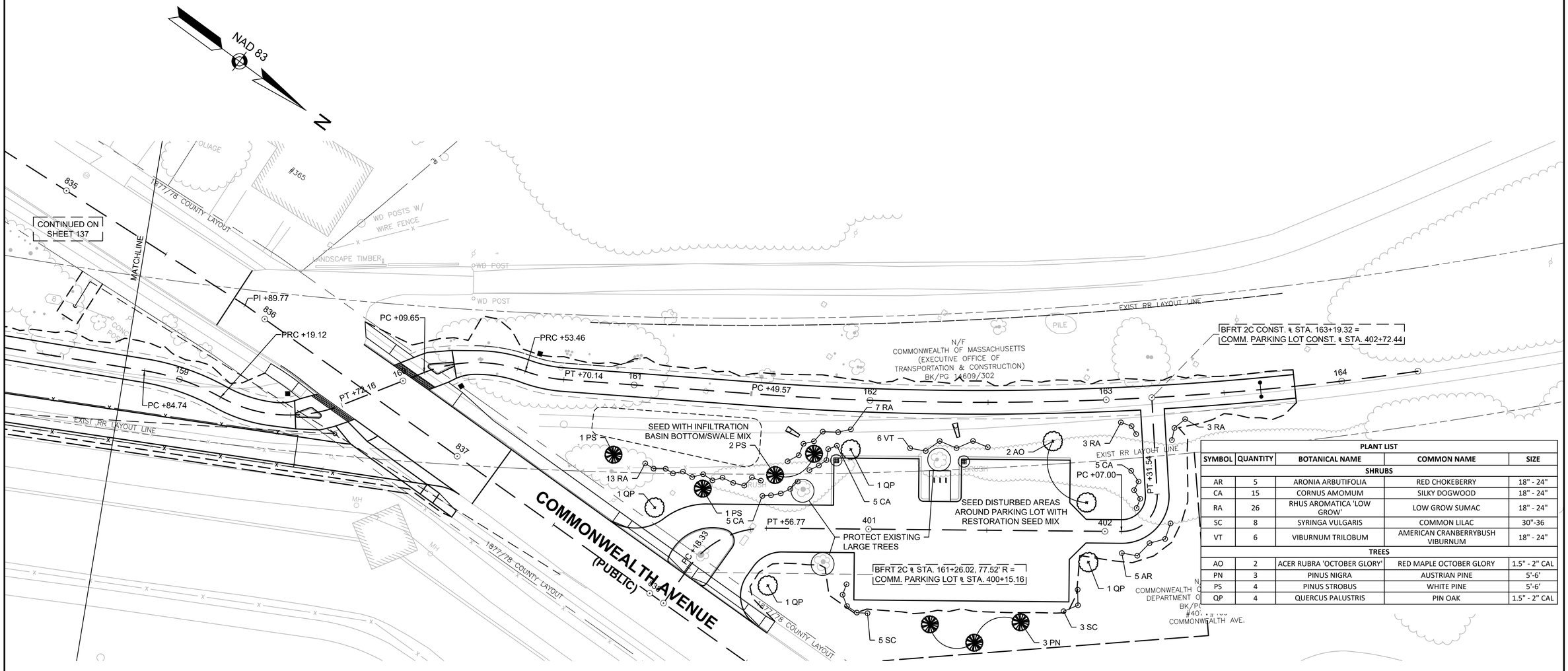
N/F
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE ORDER 22EX, PAGE 479

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	138	227
PROJECT FILE NO.	605189		

LANDSCAPE PLANS

605189_HD(LD).DWG Plotted on 17-Aug-2016 11:34 AM

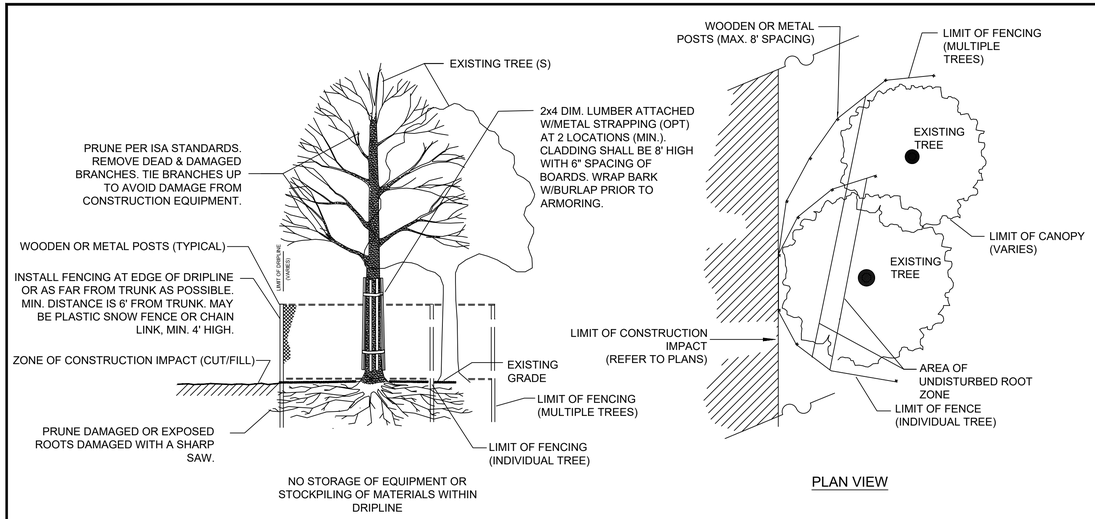


PLANT LIST				
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS				
AR	5	ARONIA ARBUTIFOLIA	RED CHOKEBERRY	18" - 24"
CA	15	CORNUS AMOMUM	SILKY DOGWOOD	18" - 24"
RA	26	RHUS AROMATICA 'LOW GROW'	LOW GROW SUMAC	18" - 24"
SC	8	SYRINGA VULGARIS	COMMON LILAC	30"-36
VT	6	VIBURNUM TRILOBUM	AMERICAN CRANBERRYBUSH VIBURNUM	18" - 24"
TREES				
AO	2	ACER RUBRA 'OCTOBER GLORY'	RED MAPLE OCTOBER GLORY	1.5" - 2" CAL
PN	3	PINUS NIGRA	AUSTRIAN PINE	5'-6'
PS	4	PINUS STROBUS	WHITE PINE	5'-6'
QP	4	QUERCUS PALUSTRIS	PIN OAK	1.5" - 2" CAL

0 20 50 100
SCALE: 1" = 20'

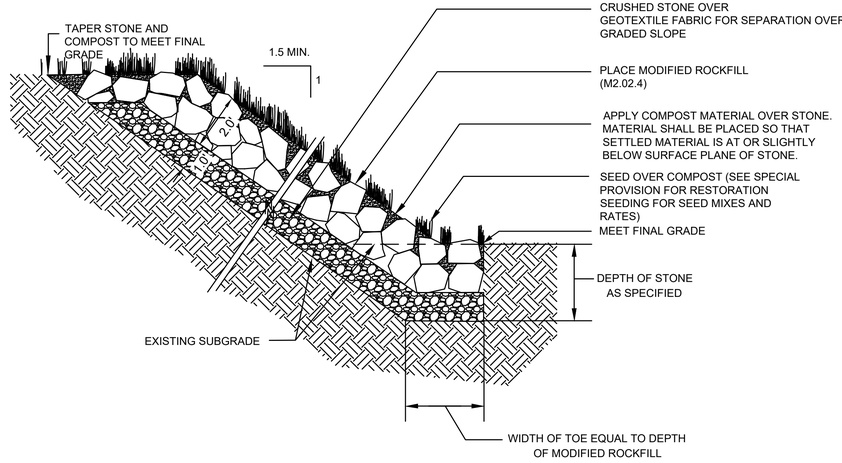
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605189_HD(CD).DWG Plotted on 17-Aug-2016 11:34 AM



TREE PROTECTION-EXISTING TREE(S)

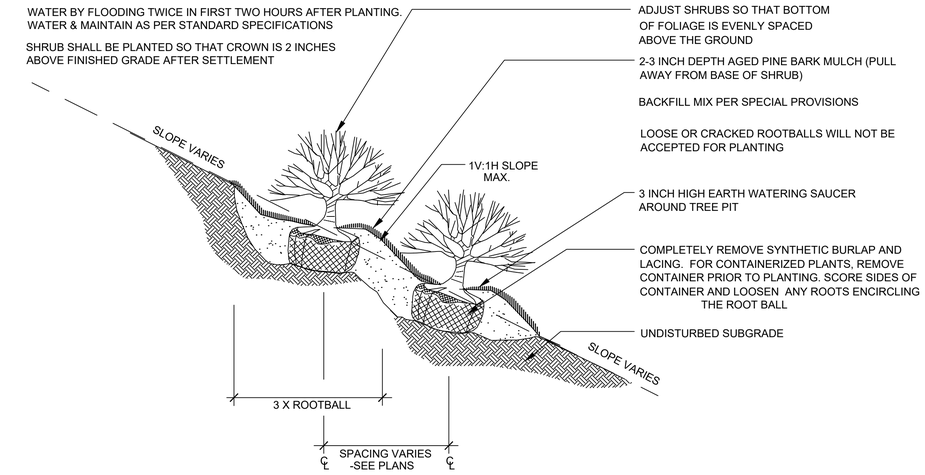
NOT TO SCALE



COMPOST AND SEED OVER MODIFIED ROCKFILL

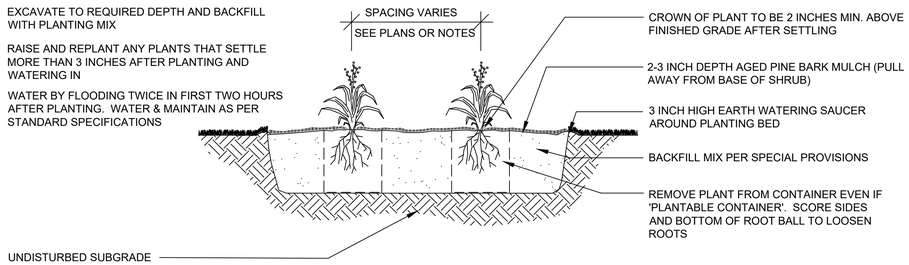
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20111021_MassDOT



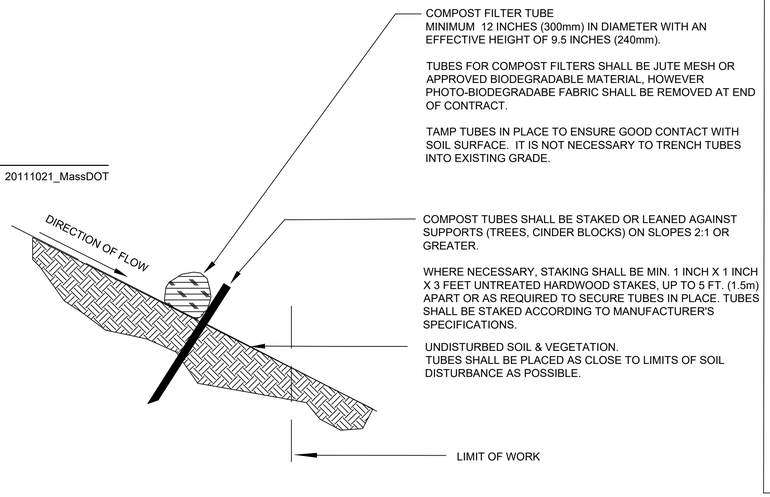
CONTAINERIZED SHRUB PLANTING (SLOPE) DETAIL

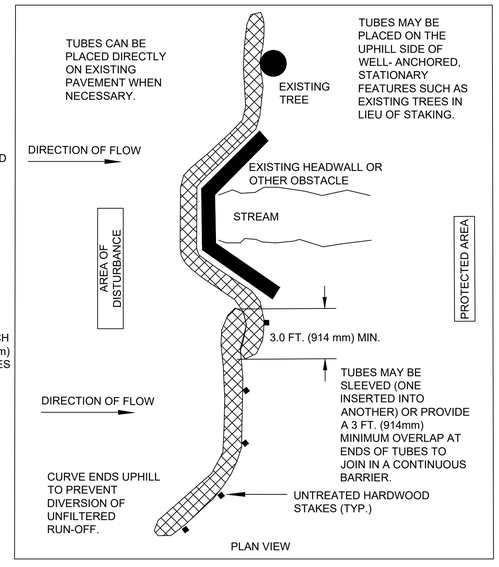
NOT TO SCALE



PERENNIAL PLANTING

NOT TO SCALE





GENERAL NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES (300mm) FOR SLOPES UP TO 50 FEET (15.24m) IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. TUBE LOCATION MAY BE SHIFTED TO ADJUST TO LANDSCAPE FEATURES, BUT SHALL PROTECT UNDISTURBED AREA AND VEGETATION TO MAXIMUM EXTENT POSSIBLE.
4. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
5. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
6. ADDITIONAL STAKING SHALL BE USED AT THE DIRECTION OF THE ENGINEER.

COMPOST FILTER TUBE DETAIL

NOT TO SCALE

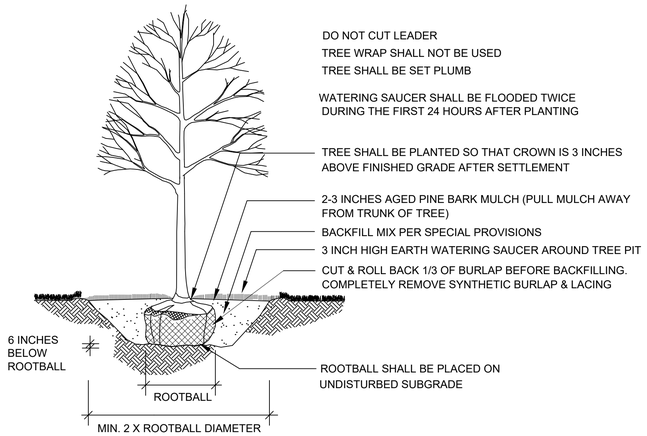
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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

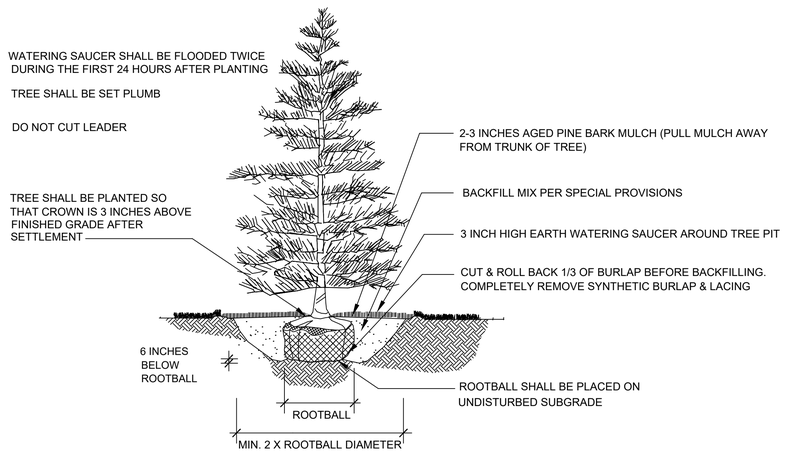
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	140	227
PROJECT FILE NO.	605189		

LANDSCAPE DETAILS

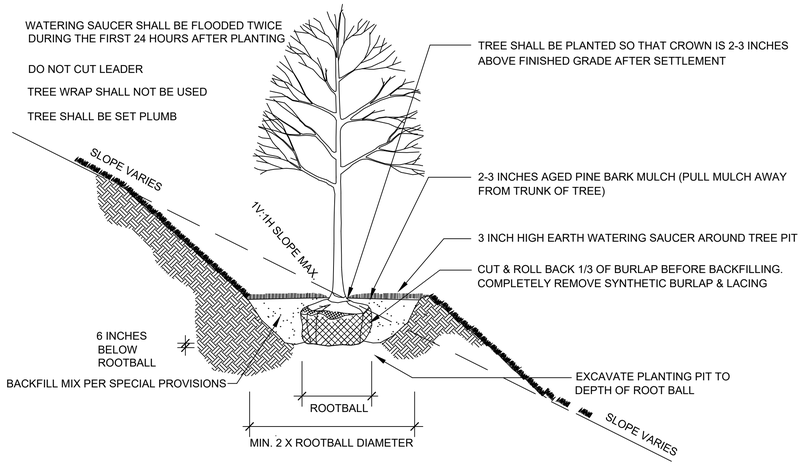
605189_HD(CD).DWG Plotted on 17-Aug-2016 11:34 AM



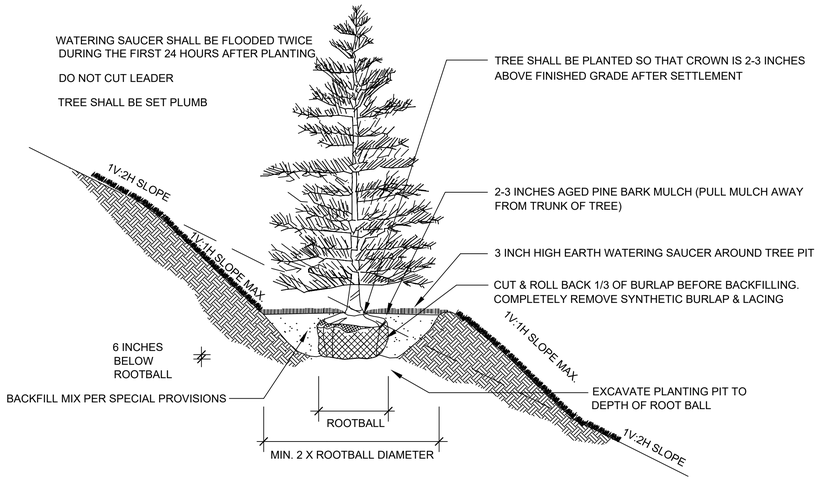
DECIDUOUS TREE PLANTING
NOT TO SCALE



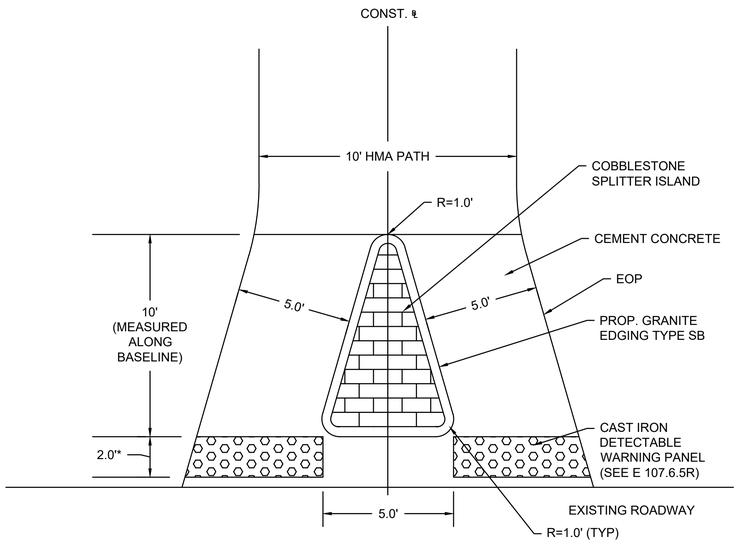
EVERGREEN TREE PLANTING
NOT TO SCALE



DECIDUOUS TREE PLANTING (SLOPE)
NOT TO SCALE



EVERGREEN TREE PLANTING (SLOPE)
NOT TO SCALE



*ENTRANCES WHICH CROSS SIDEWALKS SHALL HAVE SPLITTER ISLANDS SET BEHIND THE SIDEWALK. (SEE SHEET 153 FOR DETAILS)

CEMENT CONCRETE TRAIL ENTRANCE WITH SPLITTER ISLAND

N.T.S.

HISTORIC MARKER INVENTORY					
REFERENCE	DESCRIPTION	REFERENCE	DESCRIPTION	REFERENCE	DESCRIPTION
1	BEGINNING OF EXTANT RAILS AND TIES	17	FOOTING	33	MILE POST
2	RELAY CABINET	18	SWITCH	34	FARM CROSSING
3	RELAY BOX ON POLE	19	SWITCH	35	RELAY BOX
4	NORTHERLY NASHOBA BROOK BRIDGE	20	WAREHOUSE FOUNDATION	36	WHISTLE POST
5	FLANGER SIGN	21	FOOTING	37	CULVERT
6	WHISTLE POST	22	FLANGER SIGN	38	FLANGER SIGN
7	WHISTLE POST	23	UNION STATION	39	FLANGER SIGNS
8	MILE POST	24	CONCORD JUNCTION DIAMOND	40	CROSSBUCK SIGN
9	SWITCH LEVER	25	BATTERY WELL	41	CROSSBUCK SIGN
10	INTERLOCKING AND TRACK	26	TELEGRAPH POLE	42	FLANGER SIGN
11	RETAINING WALL	27	FOOTING	43	SEMAPHORE
12	WHISTLE POST	28	FOOTING	44	TROUGH OR CONDUIT
13	WHISTLE POST	29	ASSABET RIVER NORTH BRIDGE ABUTMENT	45	PRIVATE RESIDENTIAL CROSSING
14	COUPLER	30	ASSABET RIVER SOUTH BRIDGE ABUTMENT	46	WARNING SIGN
15	SWITCH LEVER	31	RELAY BOX	47	MILE POST
16	SOUTHERLY NASHOBA BROOK BRIDGE	32	EXTANT RAIL AND TIES	48	FARM CROSSING

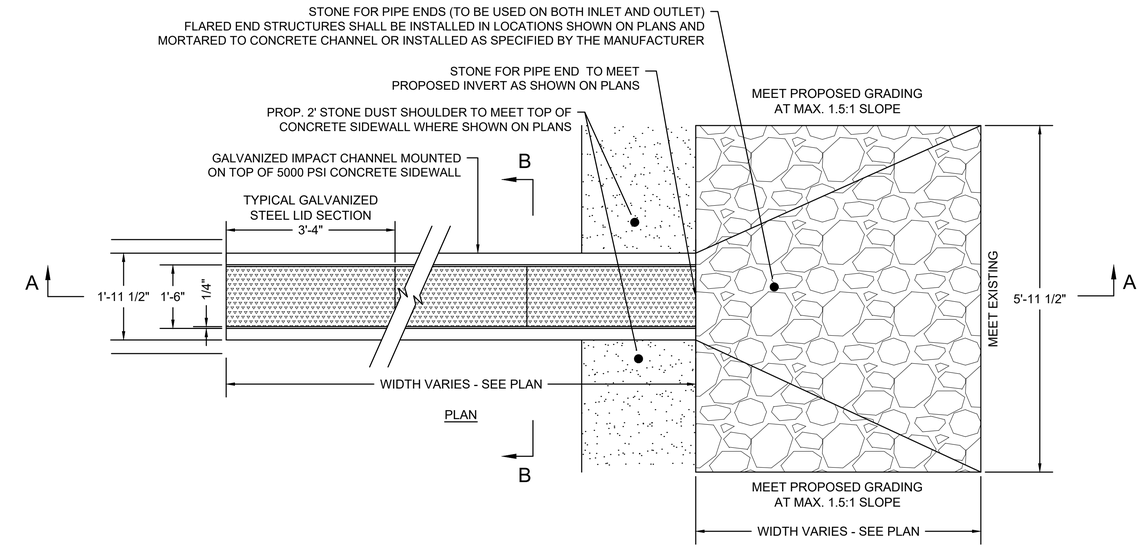
X = REFERENCE NUMBER; SEE PLANS FOR LOCATIONS

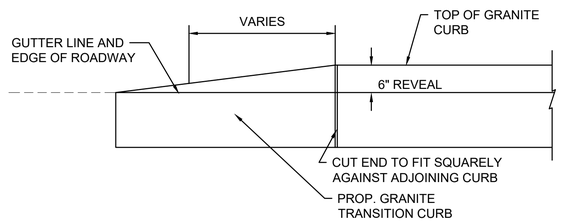
NOTE: HISTORIC MARKERS 1-7 ARE LOCATED BEYOND THE PROJECT LIMITS IN BFRT PHASE 2B

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	141	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS

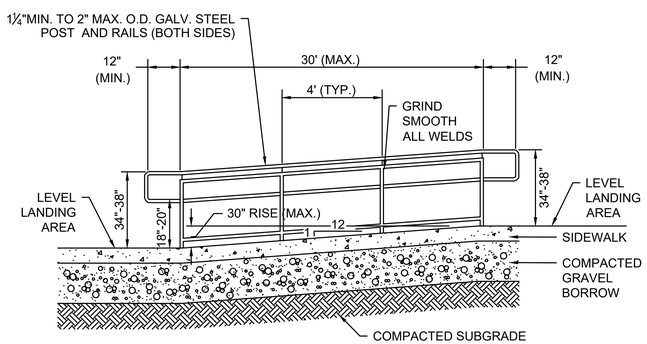


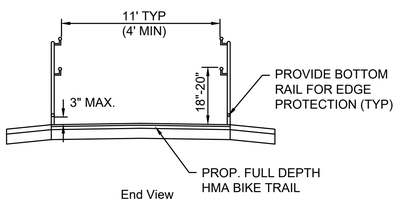


TRANSITION CURB DETAIL

N.T.S.

TO BE USED AT ALL LOCATIONS WHERE VERTICAL GRANITE CURB ENDS

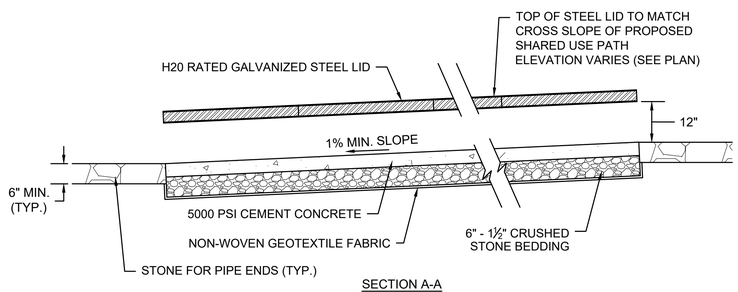




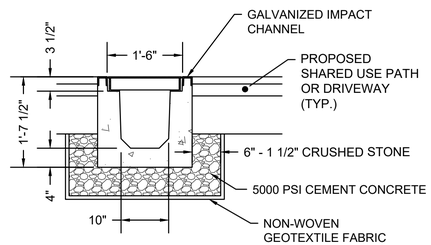
NOTE:
1. FOR ADDITIONAL DETAIL SEE 521 CMR 24.00 RAMPS.

RAMP WITH HANDRAIL

N.T.S.



SECTION A-A



SECTION B-B

NOTE: PREFABRICATED TRENCH SHALL BE A MINIMUM 12" INTERIOR DEPTH AND 10" INTERIOR WIDTH TO ENSURE ADEQAUTE CAPACITY. WALL HEIGHTS, THICKNESS, AND GALVANIZED STEEL LID DIMENSIONS MAY DIFFER FROM DETAIL ONLY IF THE PREFABRICATED TRENCH MEETS H20 LOAD DESIGN STANDARDS. FINAL TRENCH DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

TRENCH DRAIN

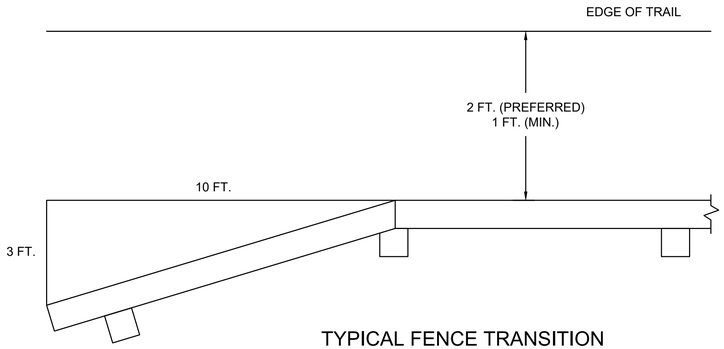
N.T.S.

605189_HD(CD).DWG Plotted on 15-Aug-2016 11:20 AM

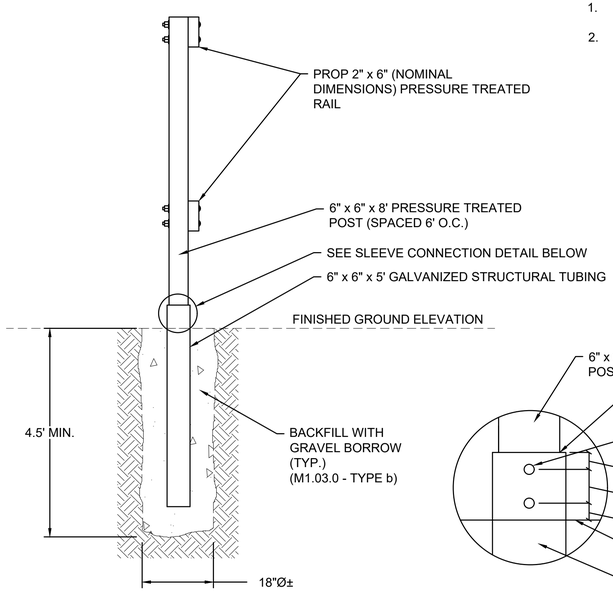
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	142	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS



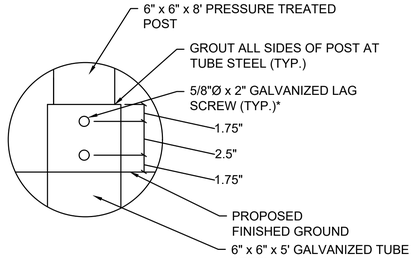
TYPICAL FENCE TRANSITION
AT FENCE APPROACHES
N.T.S.



TIMBER RAIL FENCE TUBE STEEL SLEEVE
(FOR USE IN SATURATED LOCATIONS AND THROUGH WEST CONCORD CENTER)
N.T.S.

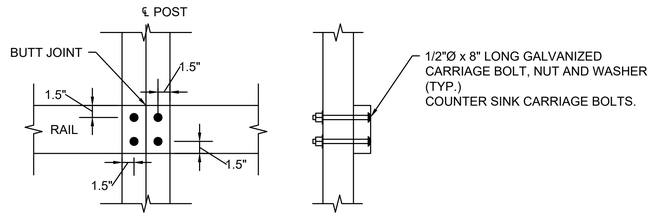
NOTES:

1. TIMBER PRESERVATIVES SHALL BE USED ON ALL WOOD TIMBER.
2. ALL CUT ENDS SHALL BE PAINTED WITH PRESERVATIVE IN THE FIELD PER MANUFACTURERS DIRECTION.

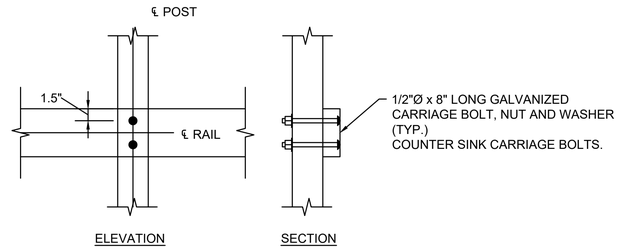


*SAME SCREWS OPPOSITE SIDE.

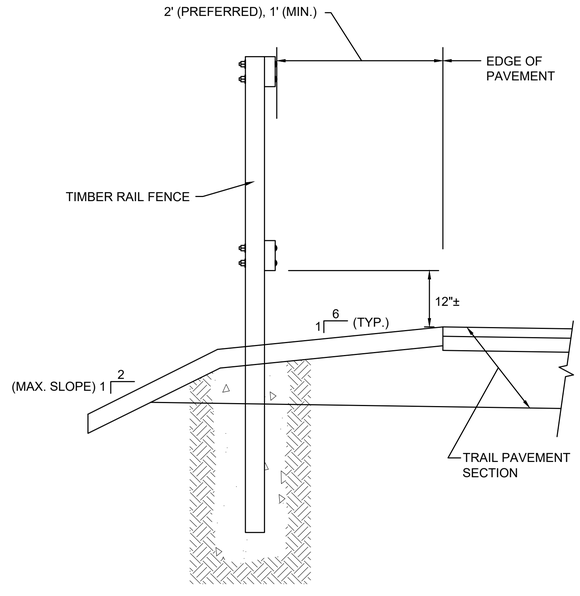
SLEEVE CONNECTION DETAIL
N.T.S.



BUTT JOINT CONNECTION
N.T.S.



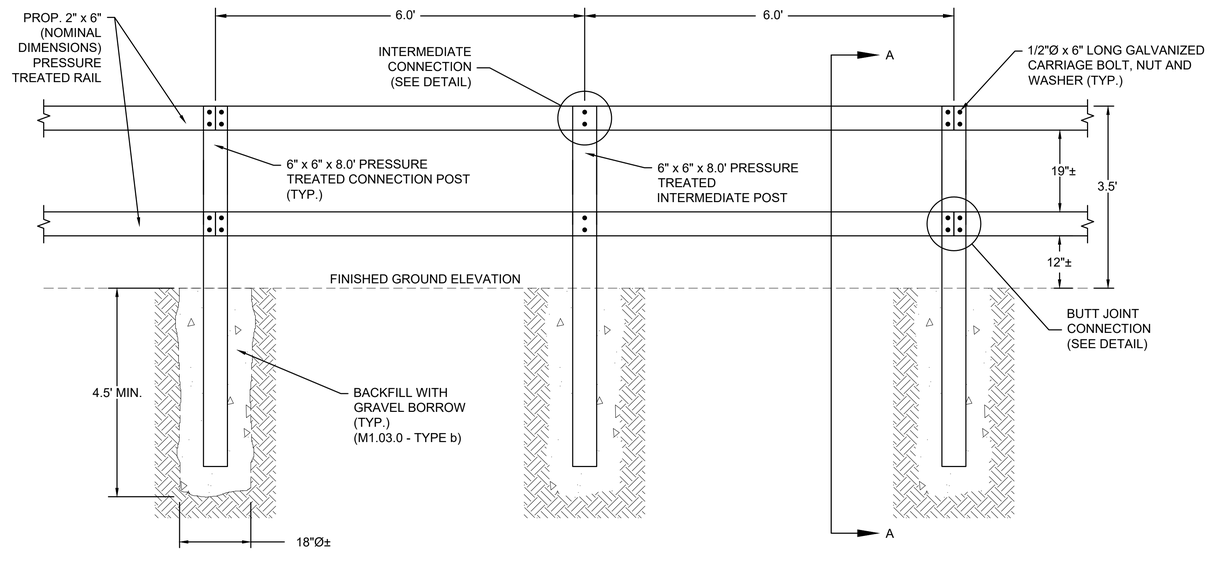
INTERMEDIATE CONNECTION
N.T.S.



SECTION A-A

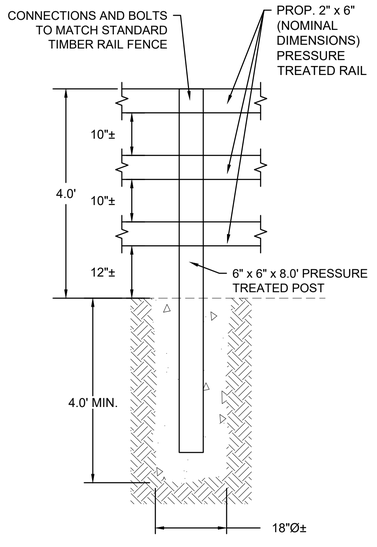
SUGGESTED TIMBER RAIL FENCE CONSTRUCTION SEQUENCE

1. AUGER OR DIG POST HOLE TO REQUIRED DIMENSIONS.
2. IF GROUND IS SATURATED, USE TUBE STEEL SLEEVE. SEE DETAIL ON THIS SHEET.
3. BACKFILL BOTTOM 6"± OF HOLE WITH GRAVEL AND COMPACT THOROUGHLY.
4. SET POST AND HOLD PLUMB DURING BACKFILLING.
5. BACKFILL WITH GRAVEL IN 12" LIFTS. COMPACT EACH LIFT THOROUGHLY.
6. CLAMP RAILS TO POSTS AND FIELD DRILL BOLT HOLES.
7. SET BOLTS, WASHERS AND NUTS.



TIMBER RAIL FENCE ELEVATION
N.T.S.
SEE PLANS FOR LOCATIONS

NOTES:
1. FOR RADII LESS THAN 165', USE CONNECTION POSTS SET AT 6.0' O.C. AND SHORTEN RAILS ACCORDINGLY.



48" THREE-RAIL BOLTED
TIMBER FENCE ELEVATION
N.T.S.

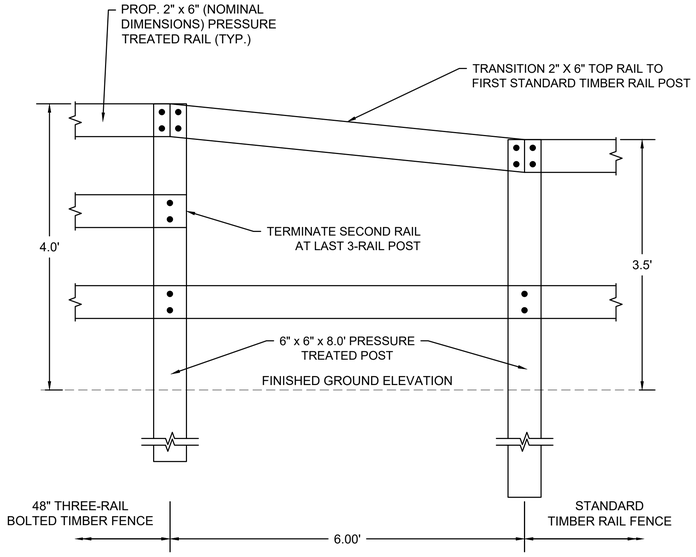
605189_HD(CD).DWG Plotted on 15-Aug-2016 11:20 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	143	227
PROJECT FILE NO.	605189		

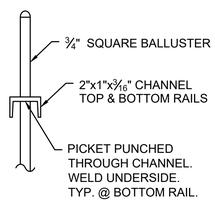
CONSTRUCTION DETAILS

605189_HD(CD).DWG Plotted on 15-Aug-2016 11:20 AM

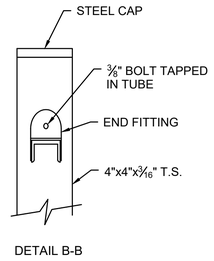


48" THREE-RAIL BOLTED TIMBER FENCE TRANSITION TO STANDARD TIMBER RAIL FENCE

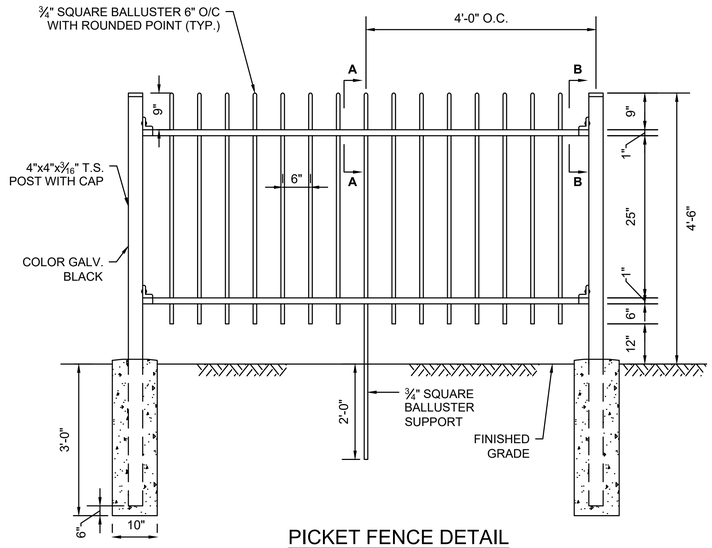
N.T.S.



DETAIL A-A

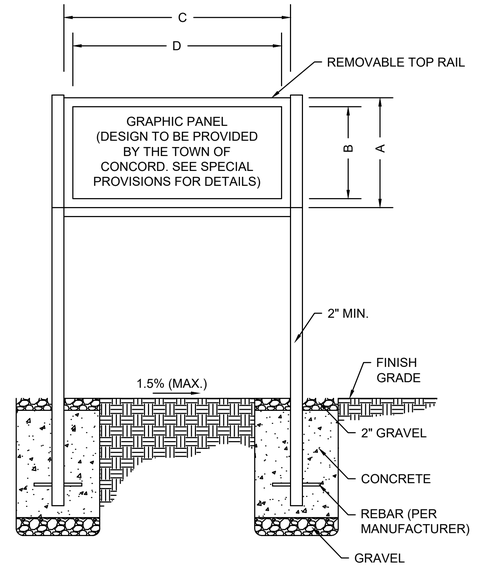


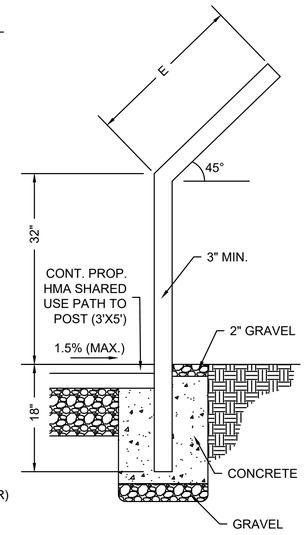
DETAIL B-B



PICKET FENCE DETAIL

N.T.S.

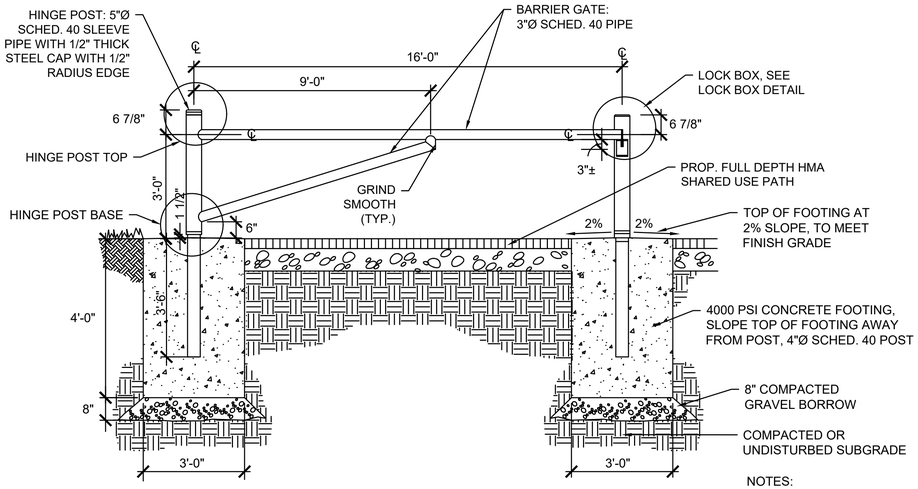




INTERPRETIVE SIGN

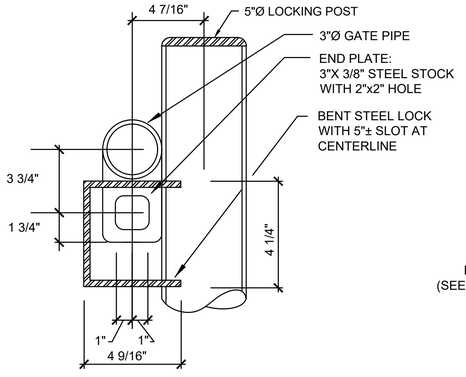
N.T.S.

DIMENSION TABLE					
SIGN TYPE	HEIGHT		WIDTH		DEPTH
	A	B	C	D	E
26" x 38"	26"	23"	38"	35"	26.5"



STEEL PIPE ACCESS GATE

N.T.S.

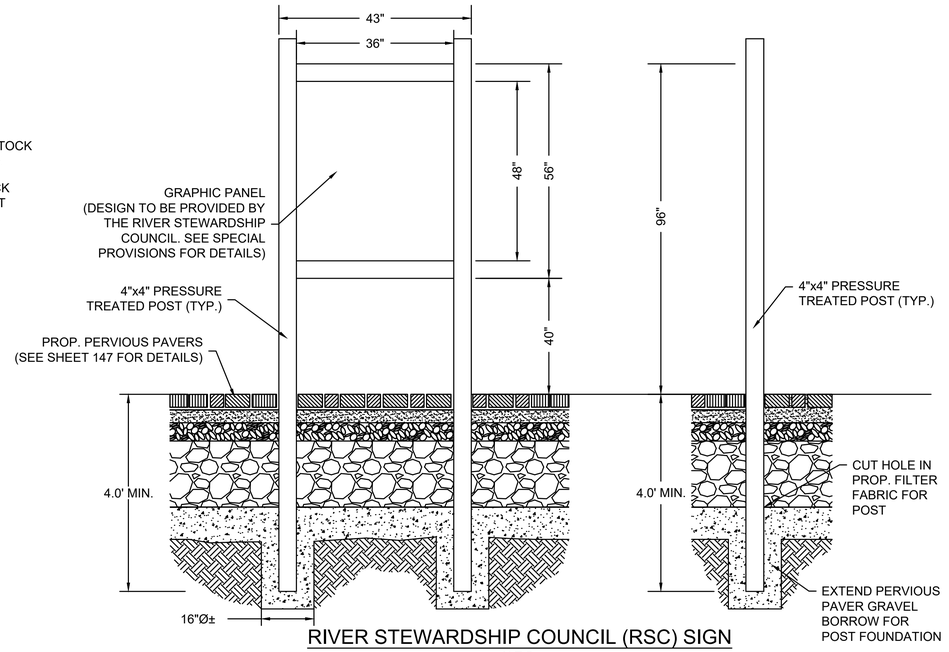


LOCK BOX DETAIL

N.T.S.

NOTES:

1. ALL STEEL SHALL BE GALVANIZED INSIDE AND OUT.
2. PROVIDE 1/2"Ø WEEP HOLES AT WELDED CONNECTIONS (3 PLACES).
3. INSTALL BRASS BUSHINGS AFTER GALVANIZING.



RIVER STEWARDSHIP COUNCIL (RSC) SIGN

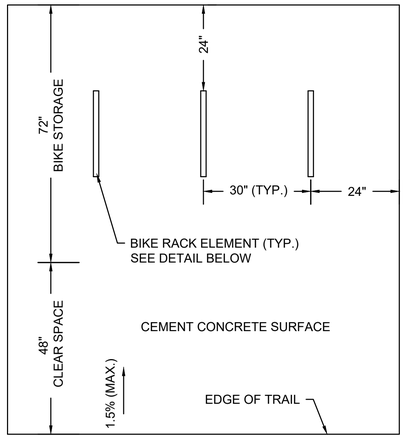
N.T.S.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	144	227
PROJECT FILE NO.	605189		

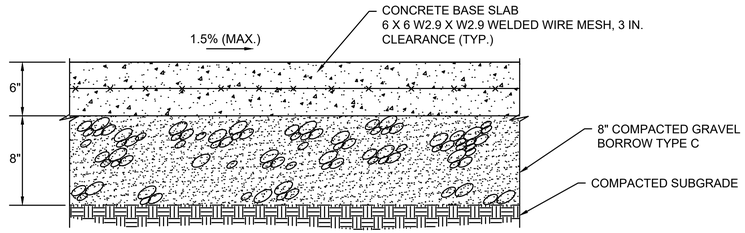
CONSTRUCTION DETAILS

605189_HDI(CD).DWG Plotted on 15-Aug-2016 11:20 AM

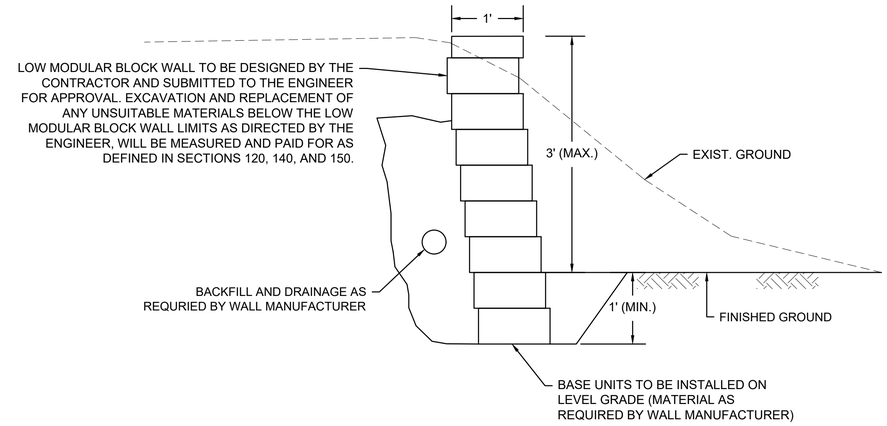


NOTES:
- ALL DIMENSIONS MINIMUM
- SEE PLANS FOR QUANTITY OF BIKE RACK ELEMENTS

BICYCLE RACK PLACEMENT

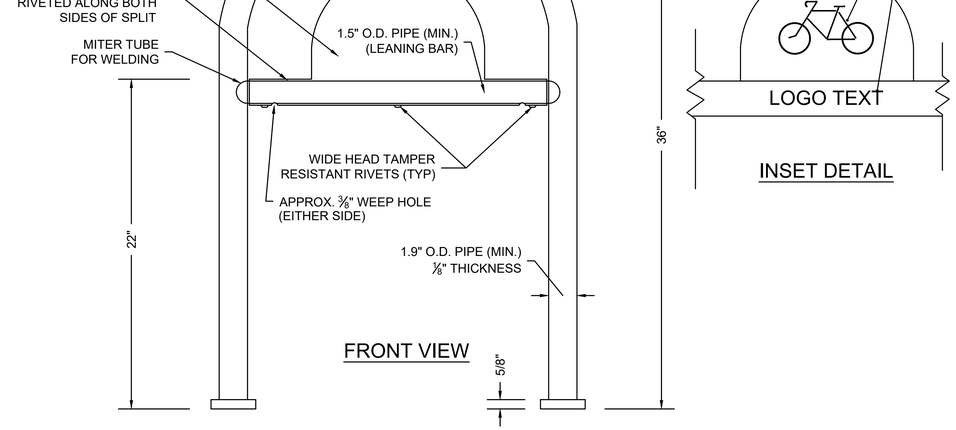


CEMENT CONCRETE FOUNDATION



LOW MODULAR BLOCK WALL (STA. 129+32 TO 129+79)

N.T.S.



INSET DETAIL

NOTES:

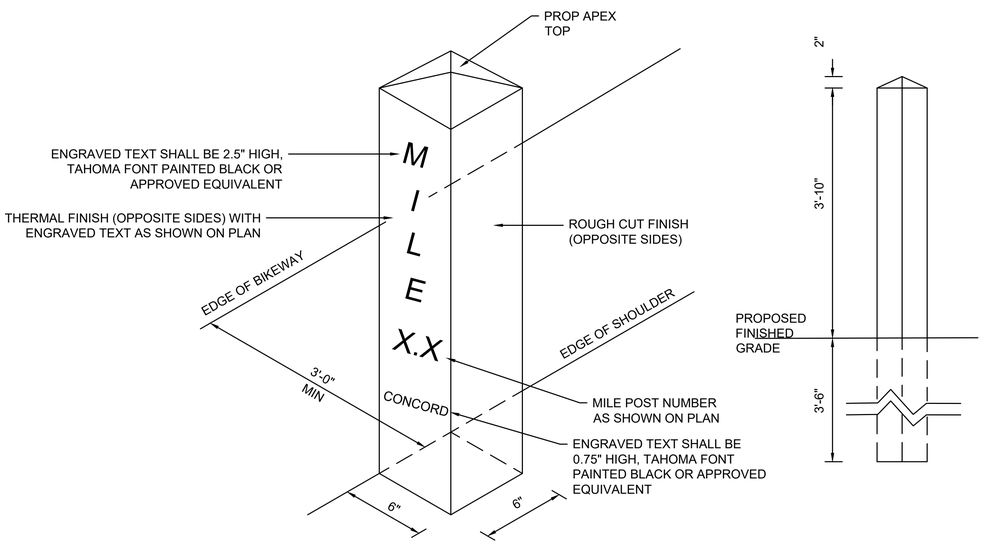
1. EACH BIKE RACK SHALL INCLUDE A LASER-CUT LOGO. LOGO DETAIL TO BE PROVIDED BY THE TOWN OF CONCORD.

2. DIMENSIONS ARE APPROXIMATE AND WILL BE DETERMINED IN COORDINATION WITH THE MANUFACTURER. BIKE RACK ELEMENTS TO BE OF THE INVERTED "U" OR "A" TYPE AS DEFINED IN "BICYCLE PARKING GUIDELINES" BY ASSOCIATION OF PEDESTRIAN AND BICYCLE PROFESSIONALS.

3. EACH BIKE RACK SHALL ACCOMMODATE TWO BICYCLES.

BICYCLE RACK ELEMENT DETAIL

N.T.S.



GRANITE MARKER

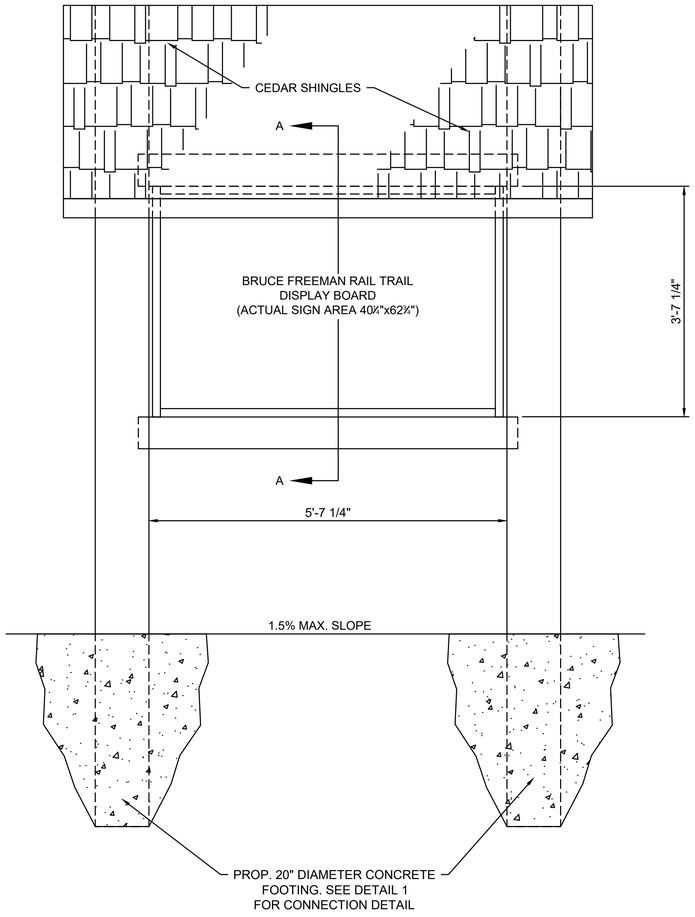
N.T.S.

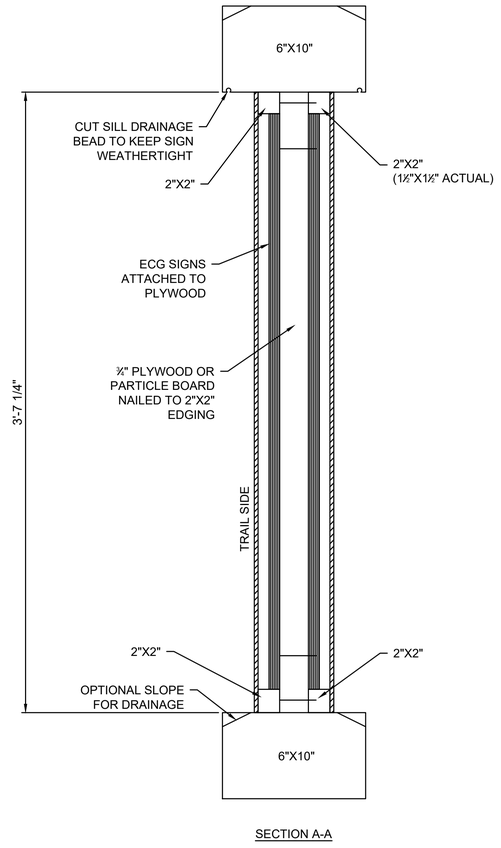
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	145	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS

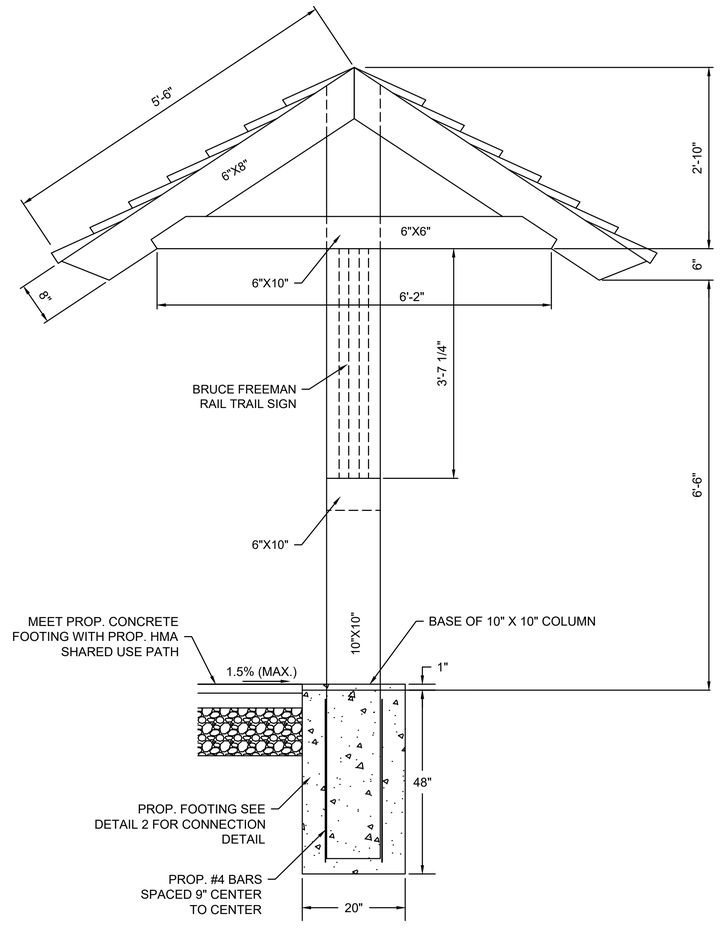
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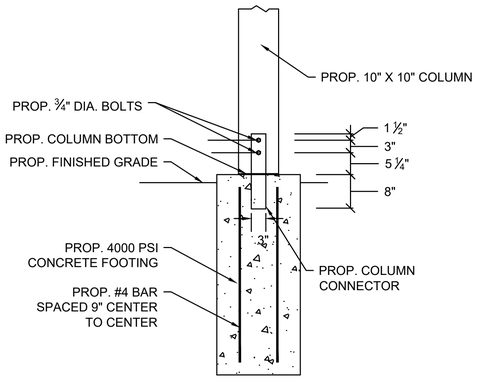




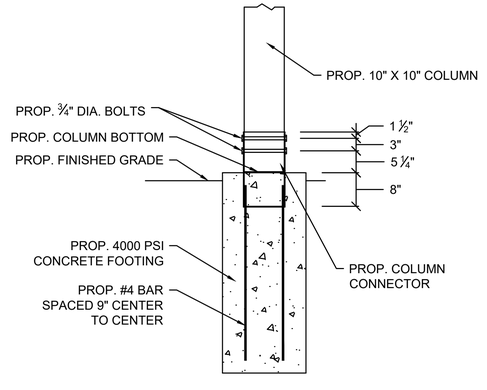
SECTION A-A

DISPLAY BOARD DETAILS
N.T.S.





COLUMN BASE - DETAIL 1
N.T.S.



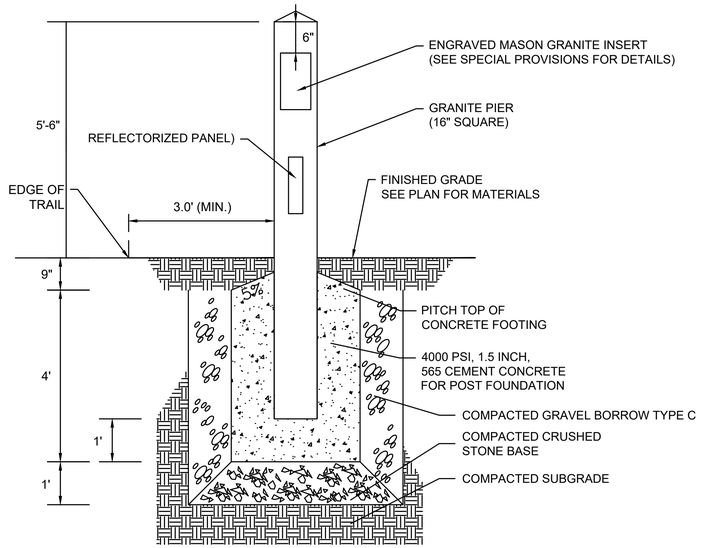
COLUMN BASE - DETAIL 2
N.T.S.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

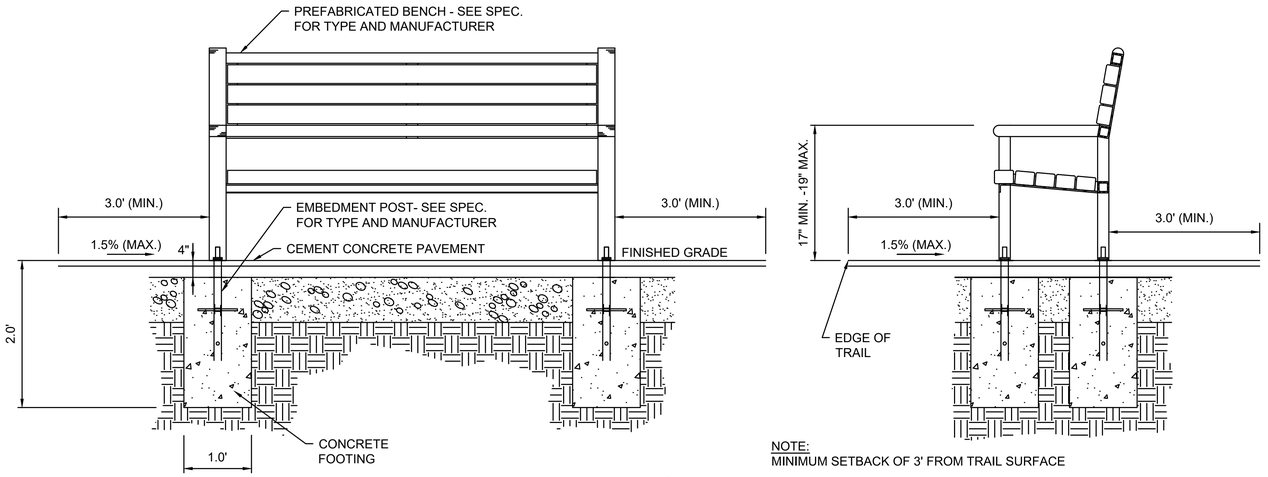
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	146	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS

605189_HD(CD).DWG Plotted on 15-Aug-2016 11:20 AM

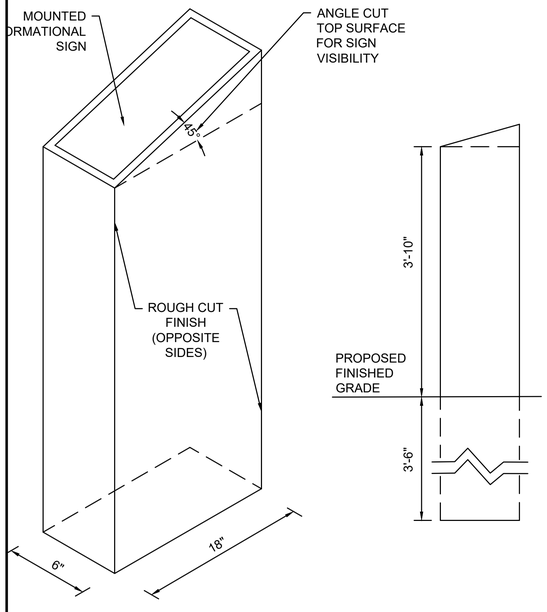


GRANITE PIER
N.T.S.



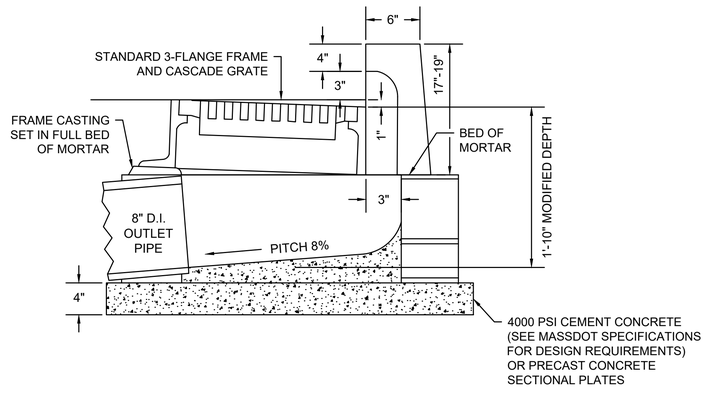
BENCH
N.T.S.

NOTE:
MINIMUM SETBACK OF 3' FROM TRAIL SURFACE

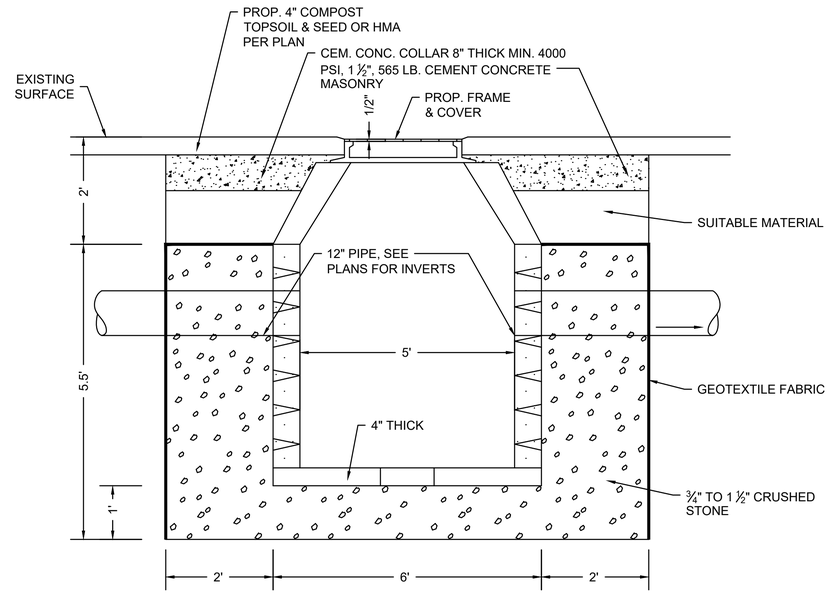


GRANITE POST SIGN
N.T.S.

NOTE:
ADDITIONAL DIMENSIONS SHALL MEET REQUIREMENTS
OF CONSTRUCTION STANDARD DETAIL E 204.2.0



MODIFIED GUTTER INLET DETAIL
N.T.S.



LEACHING BASIN
N.T.S.

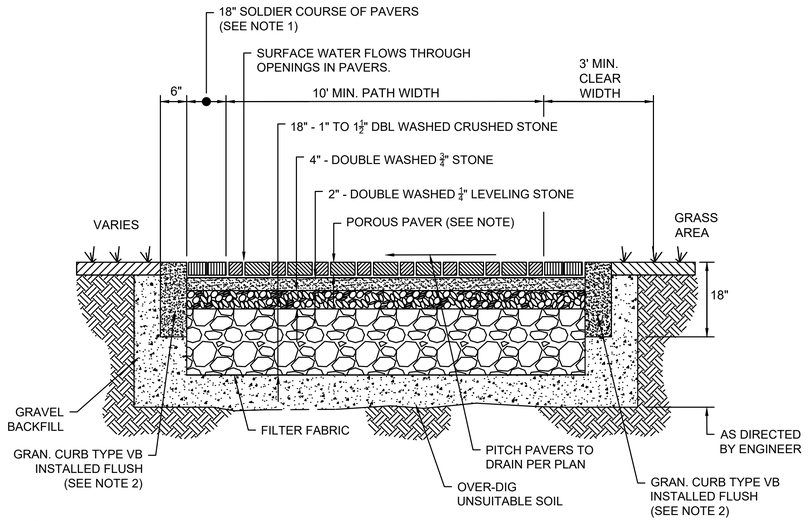
NOTES:
1. CEMENT CONCRETE FOR LEACHING BASIN SHALL BE 4000 PSI, 1 ½", 565 LB.
2. IF CONCRETE BLOCK, WALL THICKNESS = 6"
3. IF REINFORCED/PRECAST, WALL THICKNESS = 5" MIN.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	147	227
PROJECT FILE NO.	605189		

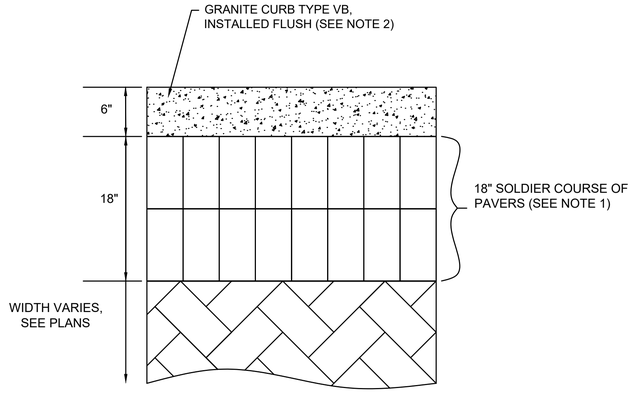
CONSTRUCTION DETAILS

605189_HD(CD).DWG Plotted on 15-Aug-2016 11:20 AM

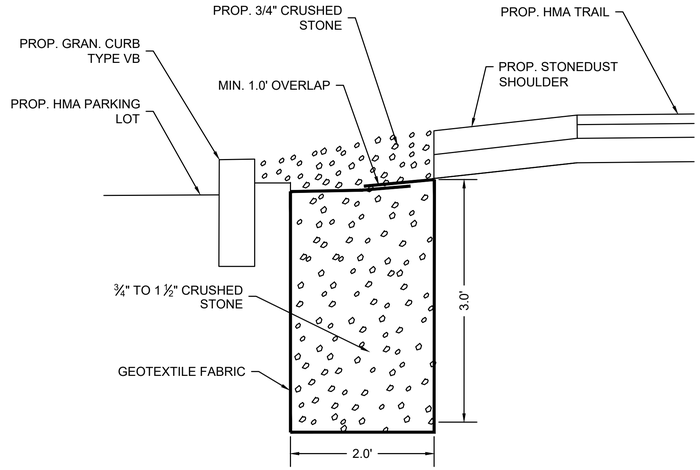


NOTE:
1. THE EXACT COLOR AND LAYOUT PATTERN SHALL MATCH EXISTING PAVERS LOCATED IN JUNCTION PARK (APPROX. STA. 125+20 TO STA. 126+50). COLOR AND PATTERN SHALL BE VERIFIED BY TOWN OFFICIALS, SEE SPECIAL PROVISIONS.
2. GRANITE CURB INSTALLED ON THE EXISTING BRIDGE DECK OVER NASHOBA BROOK SHALL BE CUT DOWN TO A HEIGHT OF 4".

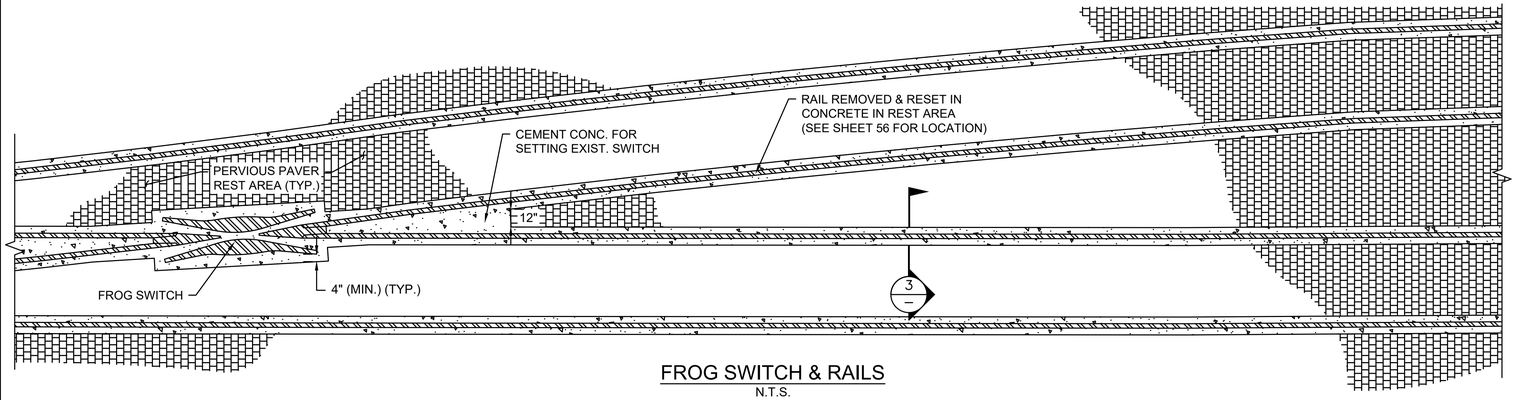
PERVIOUS PAVER TYPICAL SECTION
NOT TO SCALE



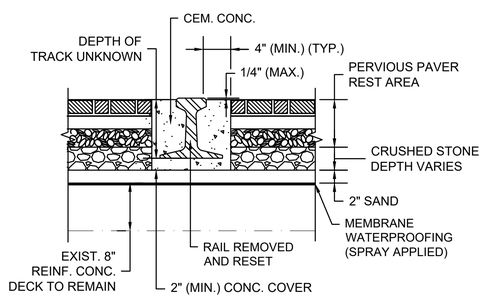
PAVER LAYOUT DETAIL
NOT TO SCALE



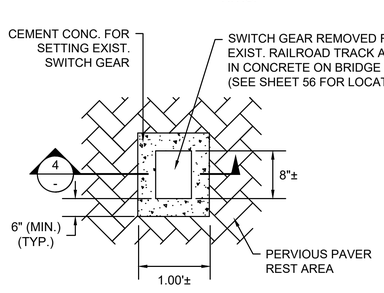
DRAINAGE TRENCH DETAIL (STA. 131+35 - 133+33)
N.T.S.



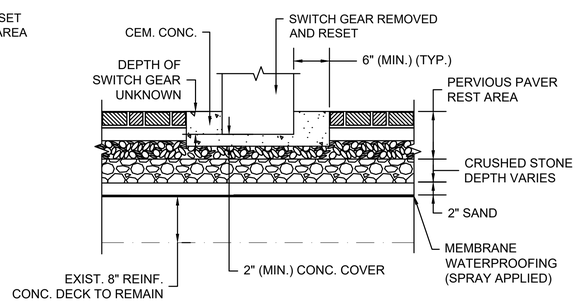
FROG SWITCH & RAILS
N.T.S.



SECTION 3
N.T.S.



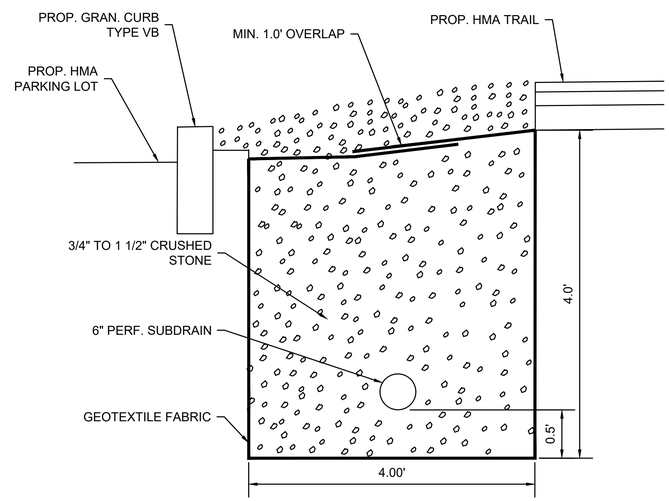
SWITCH GEAR
N.T.S.



SECTION 4
N.T.S.

NOTES:
1. DIMENSIONS OF EXISTING RAILS AND SWITCH GEAR ARE TO BE FIELD VERIFIED PRIOR TO PLACEMENT IN CONCRETE.
2. RAILS AND SWITCH GEAR SHALL BE RESET IN 4000 PSI, ¾", 610 CEMENT CONCRETE AND ANCHORED AS DIRECTED BY THE ENGINEER.

TRACK SWITCH REMOVE & RESET
N.T.S.



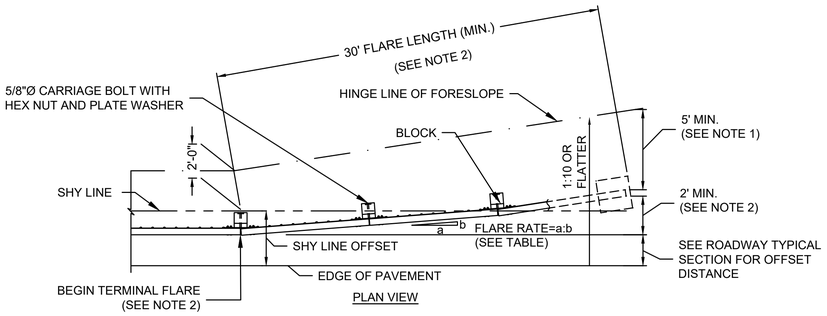
DRAINAGE TRENCH DETAIL (STA. 133+33 - 135+90)
N.T.S.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

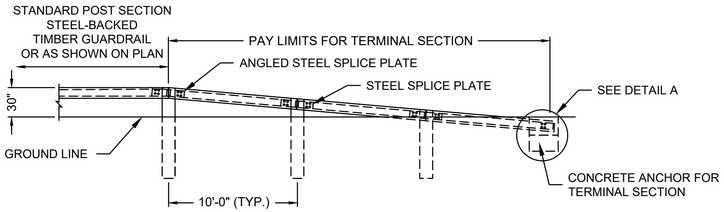
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	148	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS

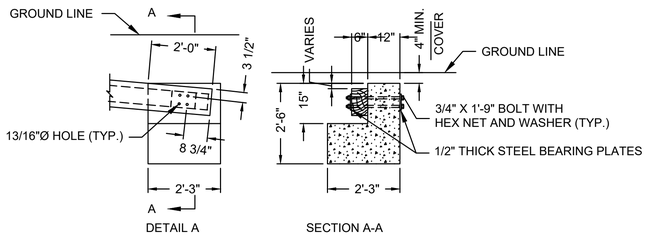
605189_HD(CD).DWG Plotted on 15-Aug-2016 11:21 AM



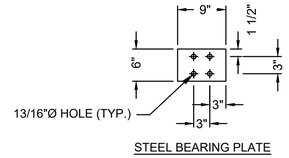
PLAN VIEW



ELEVATION VIEW



CONCRETE ANCHOR



STEEL BEARING PLATE

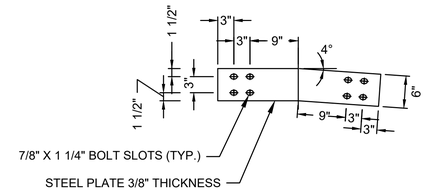
STEEL-BACKED TIMBER GUARDRAIL
TERMINAL SECTION

NOT TO SCALE

GENERAL NOTES:

1. EXTEND THE FILL WIDENING A MINIMUM OF 5 FEET BEHIND THE GUARDRAIL, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. THE GUARDRAIL FLARE SHOWN IN THE PLAN VIEW IS THE MINIMUM LENGTH AND RATE REQUIRED. AS DIRECTED BY THE ENGINEER, FLARE THE GUARDRAIL SO THAT THE TERMINAL SECTION IS OUTSIDE THE CLEAR ZONE. IF THE TERMINAL SECTION CANNOT BE LOCATED OUTSIDE THE CLEAR ZONE, IT SHOULD BE FLARED AS FAR AS PRACTICAL FROM THE ROAD AT THE MINIMUM RATE INDICATED ON THE GUARDRAIL FLARE RATES TABLE.
3. PRE-DRILL 5/8 INCH HOLE IN TIMBER RAIL AND 3/8 INCH HOLES IN THE WOOD SPACER BLOCK FOR THE 5/8 INCH LAG SCREWS.
4. USE AASHTO M270 GRADE 36W FOR ALL STRUCTURAL STEEL AND FASTENER HARDWARE AS SPECIFIED.

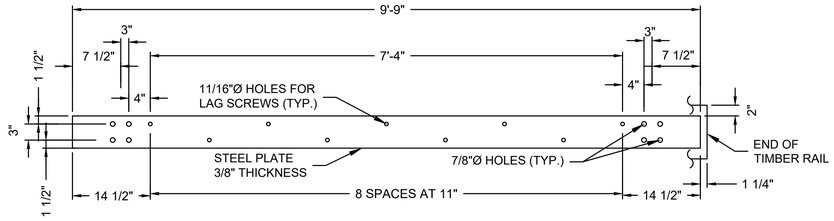
GUARDRAIL FLARE RATE TABLE			
DESIGN SPEED (MPH)	SHY LINE OFFSET (FT)	FLARE RATE INSIDE SHY LINE (a:b)	FLARE RATE OUTSIDE SHY LINE (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 AND LESS	3.5	13:1	7:1



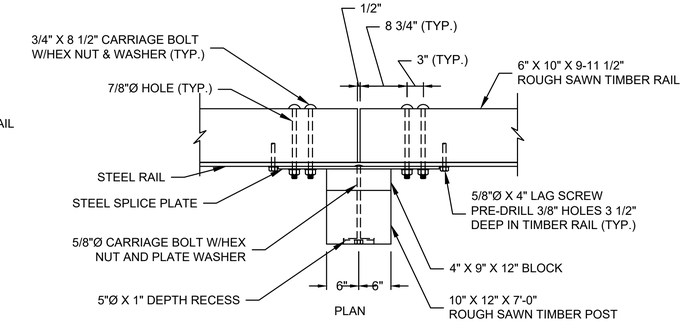
ANGLED STEEL SPLICE PLATE



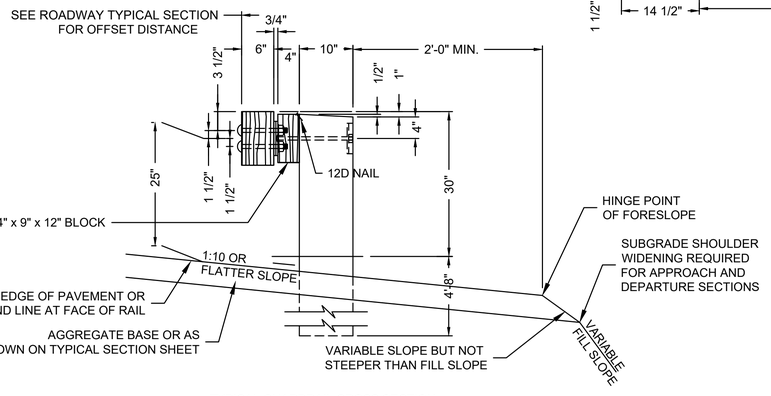
PLATE WASHER



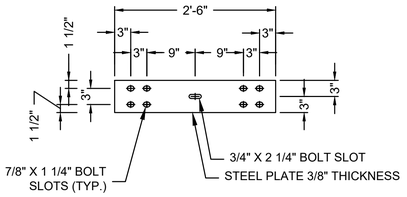
STEEL RAIL



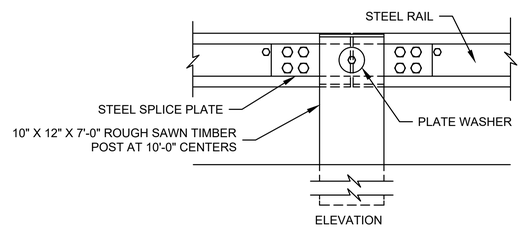
PLAN



TYPICAL GUARDRAIL CROSS SECTION



STEEL SPLICE PLATE



POST CONNECTION

STEEL-BACKED TIMBER GUARDRAIL

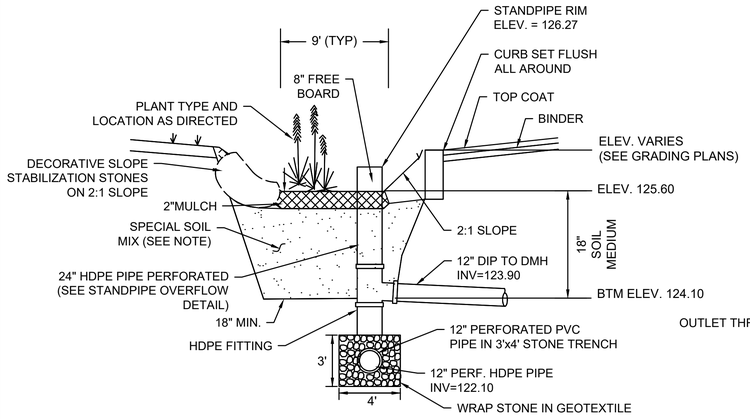
NOT TO SCALE

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	149	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS

605189_HDI(B).DWG Plotted on 15-Aug-2016 11:21 AM

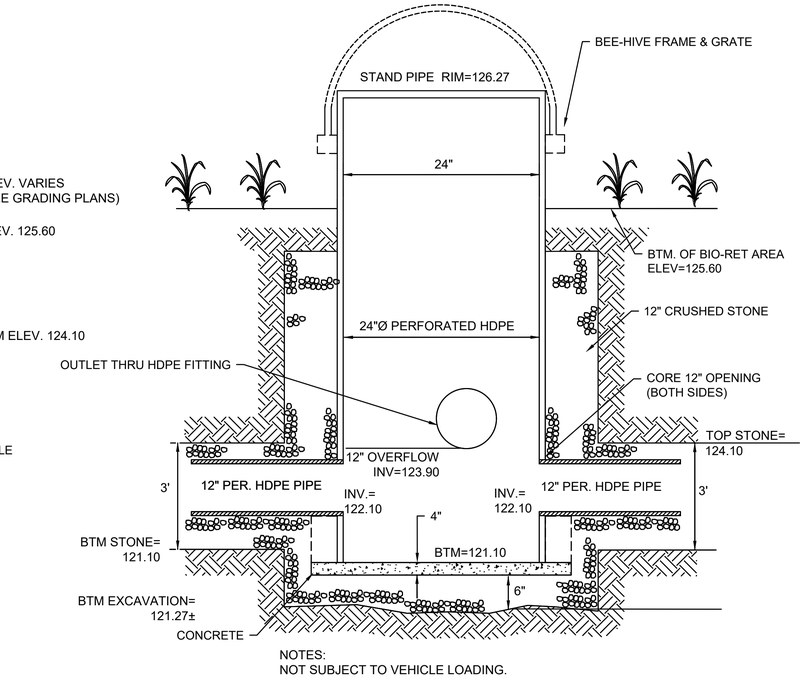


SECTION

NOTES:
1.SNOW SHOULD NEVER BE STORED IN BIO-RETENTION AREAS.
2.THE SOIL MIX FOR BIO-RETENTION AREAS SHOULD BE A MIX OF SAND, COMPOST, AND SOIL.
-40% SAND
-20 TO 30% TOPSOIL AND,
-30 TO 40% COMPOST
AND SHOULD CONFORM TO THE SPECIFICATIONS IN THE STORM-WATER HANDBOOK ('08) VOL. 2 CH. 2 PAGE 26.

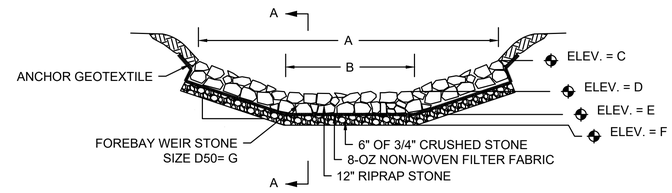
BIO-RETENTION DETAIL
NTS

BIO-RETENTION DESIGN ELEVATIONS					
	WQV	2-YR	10-YR	25-YR	100-YR
BIO-1	126.16	126.36	126.39	126.40	126.42



NOTES:
NOT SUBJECT TO VEHICLE LOADING.

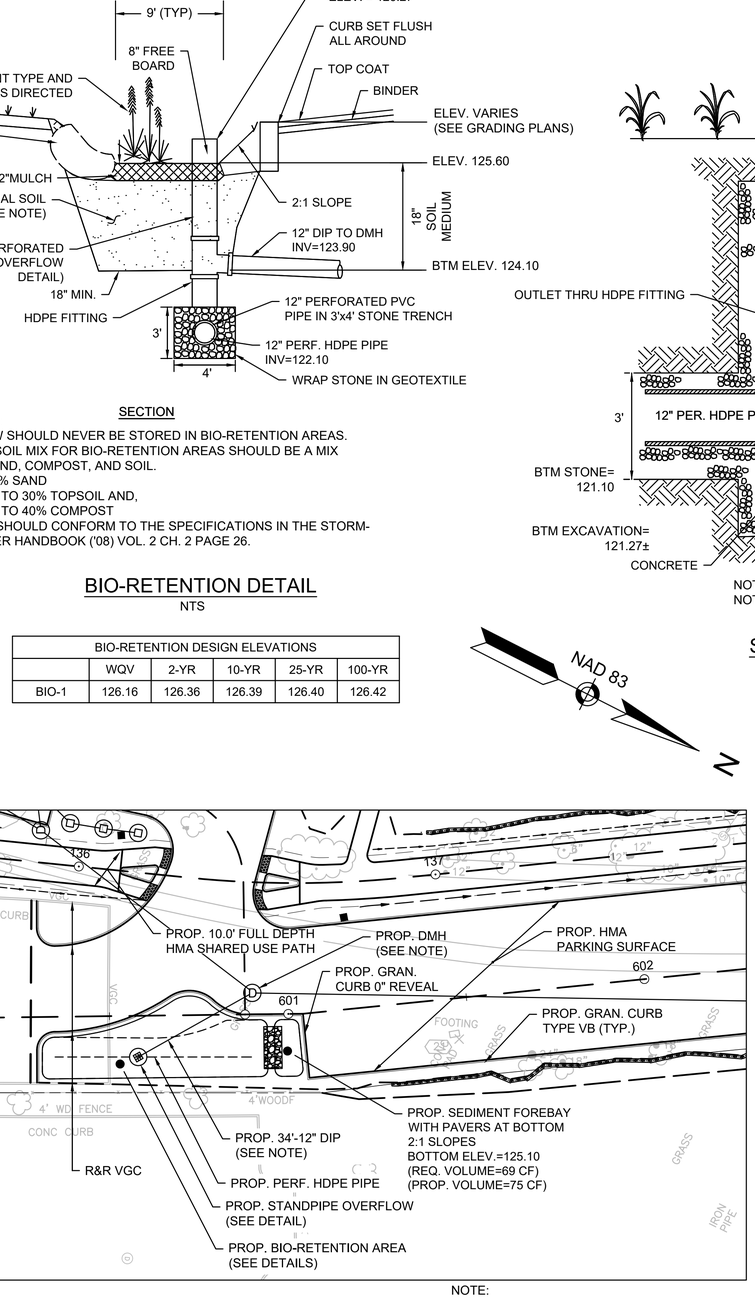
STANDPIPE OVERFLOW DETAIL
NTS



SECTION A-A

FOREBAY WEIR DESIGN TABLE							
	A	B	C	D	E	F	G
IB-1	12'	6'	126.60	126.10	125.10	124.60	6"

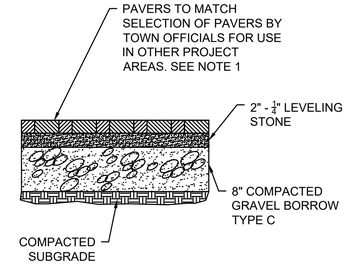
FOREBAY RIPRAP WEIR (TYP.)
NTS



PLAN VIEW
1" = 20'

NOTE:
SEE SHEET 75 FOR CLOSED DRAINAGE SYSTEM AND UTILITY INFORMATION
SEE SHEET 136 FOR LANDSCAPE PLANS

0 20 50 100
SCALE: 1" = 20'



BOTTOM OF SEDIMENT FOREBAY

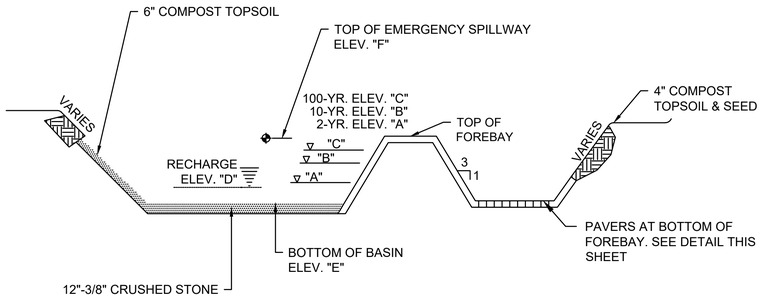
NOTES:
1. PAVERS SHALL MATCH THE TYPE SELECTED BY TOWN OFFICIALS FOR USE IN AREAS WHERE PERVIOUS PAVERS ARE PROPOSED. INSTALLATION OF PAVERS IN SEDIMENT FOREBAY IS NOT INTENDED TO BE PERVIOUS. SPACING BETWEEN PAVERS NOT REQUIRED.

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	150	227
PROJECT FILE NO.	605189		

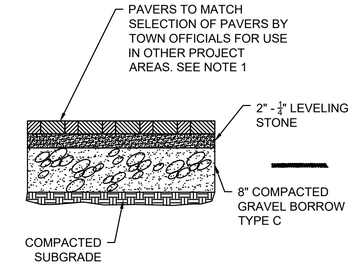
CONSTRUCTION DETAILS

605189_HD(IB).DWG Plotted on 15-Aug-2016 11:22 AM



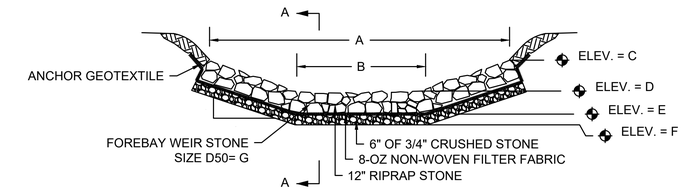
TYPICAL INFILTRATION BASIN CROSS-SECTION
NTS

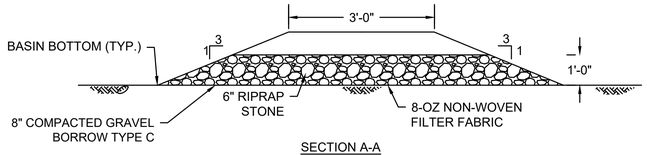
BASIN DESIGN TABLE						
	A	B	C	D	E	F
INFILTRATION BASIN	134.27	135.20	136.01	134.25	133.60	136.00



BOTTOM OF SEDIMENT FOREBAY

NOTES:
1. PAVERS SHALL MATCH THE TYPE SELECTED BY TOWN OFFICIALS FOR USE IN AREAS WHERE PERVIOUS PAVERS ARE PROPOSED. INSTALLATION OF PAVERS IN SEDIMENT FOREBAY IS NOT INTENDED TO BE PERVIOUS. SPACING BETWEEN PAVERS NOT REQUIRED.

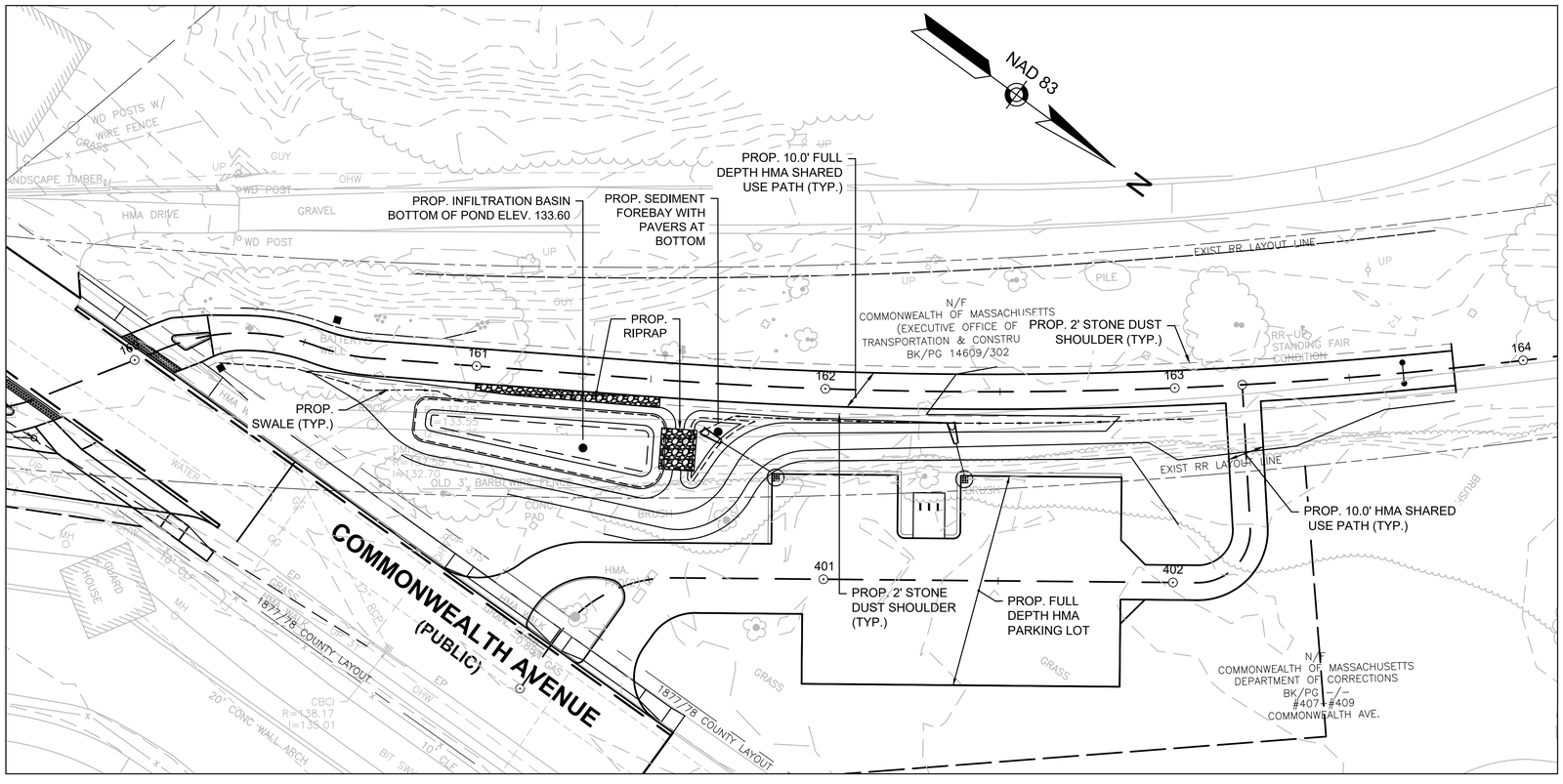




SECTION A-A

FOREBAY WEIR DESIGN TABLE							
	A	B	C	D	E	F	G
IB-1	12'	6'	136.20	135.70	134.70	134.20	6"

FOREBAY RIPRAP WEIR (TYP.)
NTS



PLAN VIEW
1" = 20'

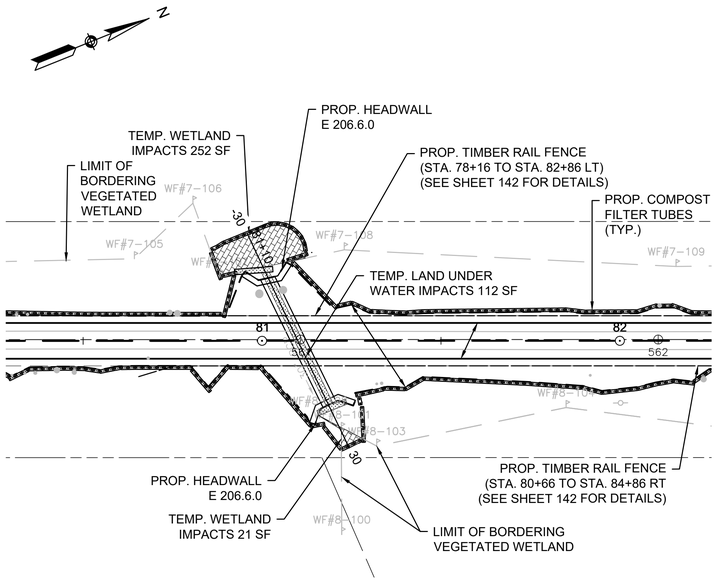
0 20 50 100
SCALE: 1" = 20'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	151	227
PROJECT FILE NO.	605189		

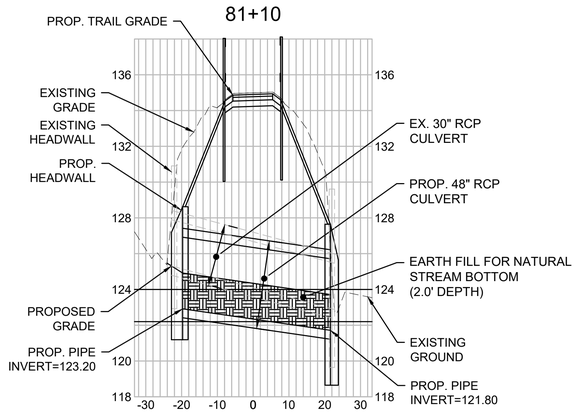
CULVERT DETAILS

605189ACOE_CULV.DWG Plotted on 15-Aug-2016 11:24 AM



PLAN

SCALE: 1" = 20'

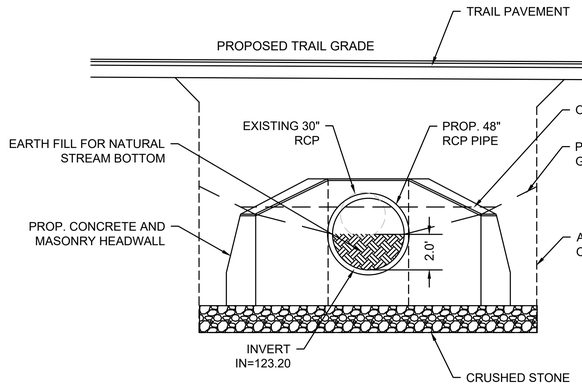


PROFILE

SCALE: 1" = 20' (HORIZONAL)
1" = 4' (VERTICAL)

CONCRETE CULVERT REPLACEMENT
STA 81+10

SCALE: AS NOTED



SECTION

SCALE: 1" = 4'

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	152	227
PROJECT FILE NO.	605189		

CONSTRUCTION DETAILS
STAGING PLAN

605189_HD(STAGING).DWG Plotted on 15-Aug-2016 11:25 AM

N/F
DANIELLE DAWSON GUINBERTIERE
AND ALEXIS GUINBERTIERE
BK/PG 53412/305

N/F
TOWN OF CONCORD
BK/PG 11686/318

NAD 83

100 FT BVW BUFFER ZONE

PROP. COMPOST FILTER TUBES (TYP.) AROUND STOCKPILE AREAS

PROP. PERM. EASE (TYP.)

TEMP. EASEMENT

POWDER MILL ROAD ℄ STA. 206+13.50, 22.65' R =
POWDER MILL ROAD ACCESS PATH ℄ STA. 301+62.31

EXISTING 12" RCP DRAINAGE PIPE

LIMITS OF FULL DEPTH ROADWAY CONSTRUCTION

INSTALL 12" GATE VALVE AND GATE BOX; CUT 12" WATER LINE; PROP. 12" DI CAP WITH THRUST BLOCKS

PROP. PERM. DRAINAGE SEE SHEET 63

PROPERTY LINE

APPROXIMATE LIMITS OF EXCAVATION FOR TUNNEL CONSTRUCTION

BFRT 2C CONST. ℄ STA. 28+83.23 =
POWDER MILL ROAD CONST. ℄ STA. 204+69.20

REM EXIST. 24" RCP & FES (BOTH SIDES)

STOCKPILE ALONG PATH

AVAILABLE STOCKPILE AREA

PC +24.87
PT +16.76
PC +69.76
PC +45.46
PRC +66.93
PT +32.60
PT +29.76
PT +19.82
PC +72.60
PC +50.98
PRC +13.84
PT +35.43
PT +32.45
PRC +76.70

TEMP. 12" FES INV.=162.80

TEMP. RIPRAP LINED CONVEYANCE SWALE

RIPRAP ENERGY DISSIPATOR AT OUTLET ELEV.=162.00

PROP. COMPOST FILTER TUBES (TYP.)

130'-12" PVC

2' EMBANKMENT

PROP. COMPOST FILTER TUBES (TYP.)

RIPRAP OUTLET PROTECTION AT PIPE OUTLET INV.=169.60

TEMP. CATCH BASIN RIM=166.00 INV.OUT=163.50

PROP. BRIDGE NO. C-19-015 SEE BRIDGE PLANS FOR DETAILS

COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS CH. 634 EASEMENT BK.12373 PG. 238

N/F
COMMONWEALTH OF MASSACHUSETTS
(EXECUTIVE OFFICE OF SPORTATION & CONSTRUCTION)
BK/PG 14609/302

100 FT BVW BUFFER ZONE

EXIST RR LAYOUT LINE

PROPERTY LINE

TEMP. EASEMENT

TEMP. HMA BERM

INSTALL 12" GATE VALVE AND GATE BOX; CUT 12" WATER LINE; PROP. 12" DI CAP WITH THRUST BLOCKS

ABUTTER DRIVEWAY

PROP. 1" CORP. STOP; TEMPORARY CURB STOP AND BOX; TEMPORARY 10'-1" COPPER SERVICE; TEMPORARY YARD HYDRANT

LIMITS OF FULL DEPTH ROADWAY CONSTRUCTION

EXISTING 12" RCP DRAINAGE PIPE

PROP. DMH (PERMANENT) WITH TEMP. FRAME AND GRATE TEMP. INV. OUT=193.00 SEE SHEET 63 FOR DRAINAGE AND UTILITY PLAN

TEMP. DRAIN MANHOLE WITH FRAME AND COVER RIM=188.5 INV.IN=186.00 INV.OUT=185.90

60'-12" PVC

50'-12" PVC

PROPERTY LINE

TEMP. EASEMENT

N/F
TOWN OF CONCORD
BK/PG 11686/318

AVAILABLE STOCKPILE AREA

POWDER MILL ROAD (PUBLIC)

NOTES

1. STOCKPILE AREAS SHOWN HEREIN REFLECT LOCATIONS OF TOWN-OWNED LAND AVAILABLE FOR USE AS STOCKPILE AREAS AND ARE PROVIDED AS SUGGESTED LOCATIONS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING STOCKPILE LOCATIONS AND MATERIAL LAYDOWN AREAS WITHIN THEIR LIMITS OF WORK ADEQUATE FOR THE SCOPE OF WORK AND CONSTRUCTION SCHEDULE PROPOSED. CONTRACTOR IS RESPONSIBLE FOR ALL CLEARING, GRUBBING, AND STABILIZATION OF STOCKPILE AND LAYDOWN AREAS AND RESTORATION OF THESE AREAS PRIOR TO PROJECT COMPLETION.

2. A TEMPORARY DRAINAGE DIVERSION SYSTEM IS REQUIRED DURING INSTALLATION OF THE POWDERMILL TUNNEL TO DIVERT RUNOFF FROM THE EXISTING ROADWAY AROUND THE EXCAVATION. A SCHEMATIC DRAINAGE DIVERSION PLAN IS SHOWN HEREIN. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SYSTEM WHICH CONVEYS THE DRAINAGE TEMPORARILY IN ACCORDANCE WITH THIS PLAN, OR THROUGH USE OF AN ALTERNATIVE METHOD THAT PREVENTS EROSION AND SEDIMENTATION AND DISSIPATES RUNOFF ENERGY PRIOR TO REACHING THE EXISTING WETLANDS. THE CONTRACTOR SHALL SUBMIT A TEMPORARY DRAINAGE DIVERSION PLAN FOR APPROVAL BY THE ENGINEER AND THE CONCORD NATURAL RESOURCES COMMISSION.

3. STOCKPILES ARE REQUIRED TO BE LOCATED OUTSIDE OF ALL BVW BUFFER ZONES AND ARE TO BE COVERED. COMPOST FILTER TUBES SHALL BE INSTALLED ALONG THE PERIMETER OF ALL MATERIAL STOCKPILES AND SHALL BE CONSIDERED INCIDENTAL TO THE WORK.

4. TEMPORARY CONVEYANCE SWALES SHALL BE LINED WITH RIPRAP TO PREVENT EROSION AND MIGRATION OF SEDIMENTS. ALL RIPRAP PLACED TEMPORARILY SHALL BE UNDERLAIN WITH FILTER FABRIC AND BE REMOVED UPON COMPLETION OF THE CULVERT REPLACEMENT AND CONNECTION OF PERMANENT DRAINAGE SYSTEM.

5. EXISTING VEGETATION SHALL BE MAINTAINED TO THE EXTENT POSSIBLE. AREAS THAT ARE DISTURBED OUTSIDE OF THE AREAS SHOWN IN THE PLANS SHALL BE RESTORED AT THE DISCRETION OF THE ENGINEER AND LANDSCAPE ARCHITECT. SEE SPECIAL PROVISIONS FOR DETAILS.

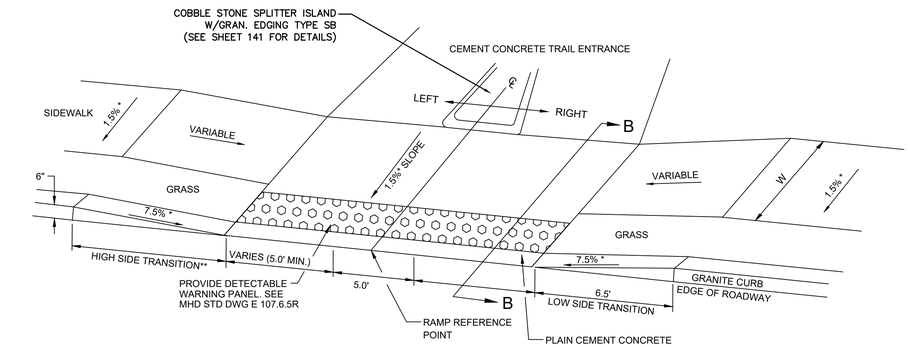
0 20 50 100
SCALE: 1" = 20'

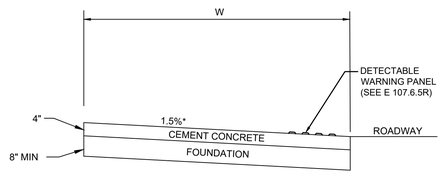
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	153	227
PROJECT FILE NO.	605189		

WHEELCHAIR RAMP AND DRIVEWAY DETAILS

605189_HD(WCR).DWG Plotted on 15-Aug-2016 11:25 AM



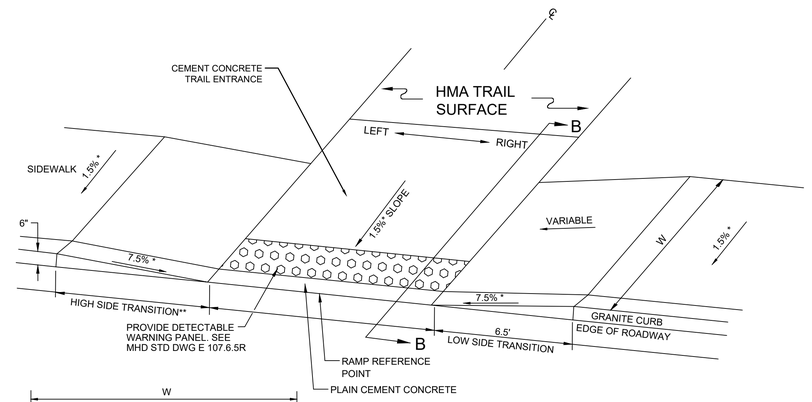


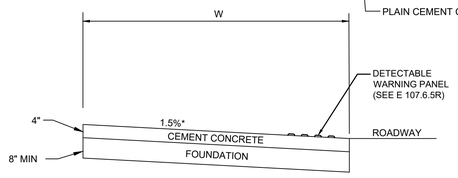
NOTES:
* CONSTRUCTION TOLERANCE ±0.5%
** SEE CONSTRUCTION STANDARD E 107.9.0

SECTION B-B

WCR #	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	WIDTH OF RAMP ENTRANCE MIN. 5.0'	DEPTH OF RAMP	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	STATION	OFFSET					LEFT SIDE	RIGHT SIDE
1	75+78	0'	5'-6"	15'-0"	15'-6"	>3% TO 4%	6'-6"	14'-0"
2	76+21	0'	N/A	15'-0"	11'-9"	>0% TO 1%	6'-6"	6'-6"
3	103+33	0'	N/A	15'-0"	14'-9"	>0% TO 1%	6'-6"	6'-6"
4	103+69	0'	5'-0"	15'-0"	10'-0"	>0% TO 1%	6'-6"	7'-8"
16	136+24	0'	N/A	15'-0"	12'-3"	>0% TO 1%	6'-6"	6'-6"
17	136+49	0'	N/A	15'-0"	12'-8"	>0% TO 1%	6'-6"	6'-6"
18	159+71	0'	5'-0"	15'-0"	10'-0"	>1% TO 2%	6'-6"	6'-6"
19	160+03	0'	5'-0"	15'-0"	10'-0"	>1% TO 2%	6'-6"	9'-0"

SIDEWALK THROUGH BIKE PATH WITH GRASS STRIP





NOTES:
* CONSTRUCTION TOLERANCE ±0.5%
SEE CONSTRUCTION STANDARD E 107.2.0
** SEE CONSTRUCTION STANDARD E 107.9.0

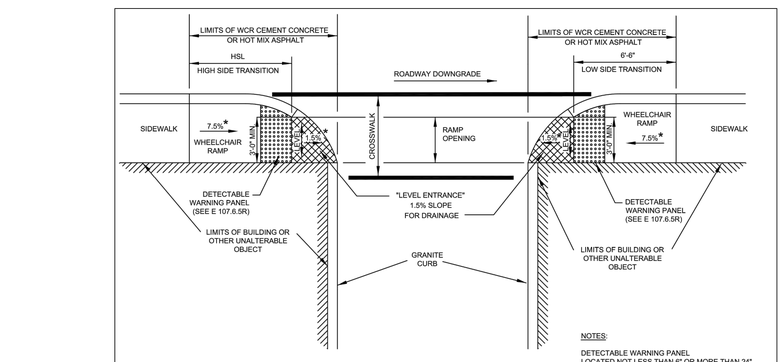
SECTION B-B

WCR #	RAMP REFERENCE POINT			WIDTH OF SIDEWALK (W)	DEPTH OF RAMP	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET				LEFT SIDE	RIGHT SIDE
5	BFRT	124+27	0'	5'-6"	10'-0"	>4% TO 5%	6'-6"	15'-0"
6	BFRT	124+78	0'	5'-6"	5'-6"	>1% TO 2%	4'-6"**	6'-6"
15	BFRT	131+19	0'	N/A	10'-0"	>0% TO 1%	6'-6"	6'-6"

**(3" CURB REVEAL)

(WCR #15 SHALL HAVE AN MBTA STANDARD DETECTABLE WARNING PANEL. SEE SPECIAL PROVISIONS.)

SIDEWALK THROUGH BIKE PATH (WITHOUT SPLITTER ISLAND)



LEGEND
HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0R)
* = TOLERANCE FOR CONSTRUCTION ±0.5%

NOTES:
DETECTABLE WARNING PANEL LOCATED NOT LESS THAN 6" OR MORE THAN 24" FROM ROADWAY EDGE (GUTTER LINE). TRUNCATED DOMES TO BE ALIGNED WITH DIRECTION OF TRAVEL.
FOR DETAILS OF TRUNCATED DOMES SEE DRAWING E 107.6.5R.
ROADWAY, GUTTER, AND FIRST 6" OF SIDEWALK TO BE ADJUSTED FOR FIELD CONDITIONS.

WCR #	RAMP REFERENCE POINT			WIDTH OF SIDEWALK	WIDTH OF OPENING	ROADWAY GUTTER SLOPE	TRANSITION LENGTH
	BASELINE	STATION	OFFSET				
9	MAIN STREET	701+39	26.5' RT	4'-6"	3'-0"	>0% TO 1%	7'-8"
10	MAIN STREET	700+77	23' RT	5'-0"	5'-0"**	>1% TO 2%	6'-6"

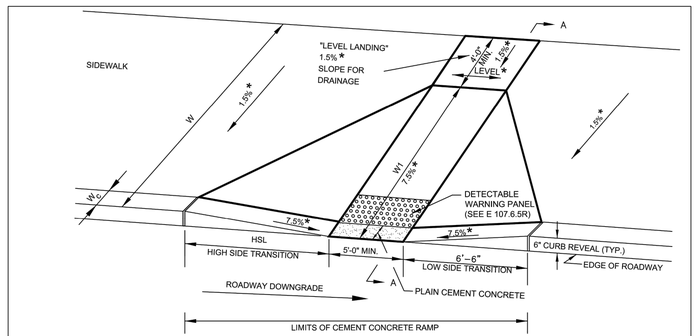
WHEELCHAIR RAMP FOR ONE CONTINUOUS DIRECTION OF PEDESTRIAN TRAVEL

**OPENING FOR DRIVEWAY CROSSING AND MAIN STREET CROSSING

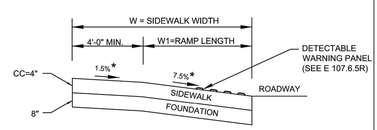
NOTE:
ALL DETECTABLE WARNING PANELS SHALL BE CAST IRON UNLESS OTHERWISE NOTED. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.

ROADWAY PROFILE GRADE	"HIGH SIDE TRANSITION LENGTH
%	ENGLISH UNITS
=0%	6'-6"
>0% TO 1%	7'-8"
>1% TO 2%	9'-0"
>2% TO 3%	11'-0"
>3% TO 4%	14'-0"
>4% TO 5%	15'-0" Max

NOTE:
*BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".



LEGEND
HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0R)
W = SIDEWALK WIDTH
W_C = CURB WIDTH
W 1 = PERPENDICULAR RAMP LENGTH
Cc = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%
USABLE SIDEWALK WIDTH PER AAB = W-Wc
RAMP LENGTH, W1 = W-4'-0" Min



SECTION A-A

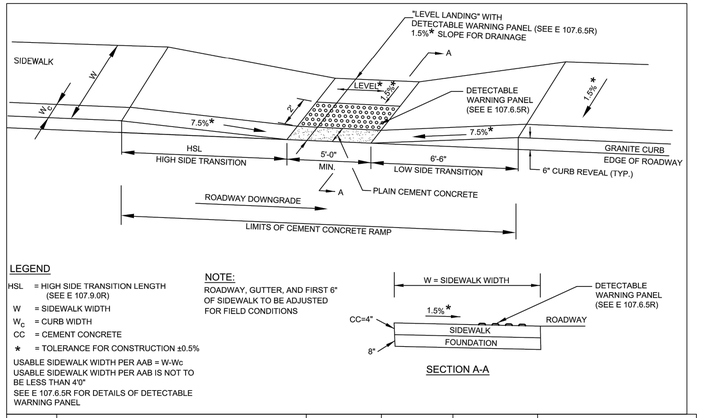
WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP MIN. 5'-0"	DEPTH OF LEVEL LANDING MIN. 4'-0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
8	COMM. AVE.	800+37	22' LT	8'-4"	>12'-4"	5'-0"	4'-0"	>2% TO 3%	11'-0"	6'-6"

WHEELCHAIR RAMP GREATER THAN 12'-4" SIDEWALK

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	154	227
PROJECT FILE NO.	605189		

WHEELCHAIR RAMP AND DRIVEWAY DETAILS



LEGEND

HSL = HIGH SIDE TRANSITION LENGTH (SEE E 107.9.0R)
W = SIDEWALK WIDTH
W_C = CURB WIDTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

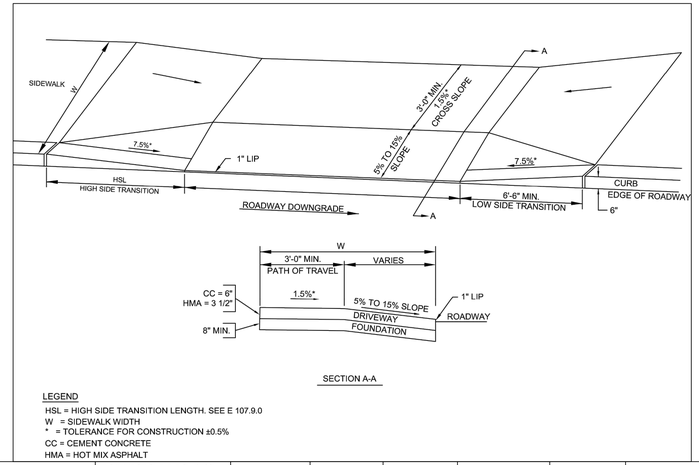
USABLE SIDEWALK WIDTH PER AAB = W-Wc
USABLE SIDEWALK WIDTH PER AAB IS NOT TO BE LESS THAN 4'0"
SEE E 107.6.5R FOR DETAILS OF DETECTABLE WARNING PANEL

NOTE:
ROADWAY, GUTTER, AND FIRST 6" OF SIDEWALK TO BE ADJUSTED FOR FIELD CONDITIONS

SECTION A-A

WCR #	RAMP REFERENCE POINT			WIDTH OF SIDEWALK	WIDTH OF RAMP MIN. 5'-0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH		
	BASELINE	STATION	OFFSET				LEFT SIDE	RIGHT SIDE	
7	COMM. AVE	800+40	25' RT	5'-6"	5'-0"	>1% TO 2%	9'-0"	3'-3"**	**(3" CURB REVEAL)
11	MAIN STREET	700+72	16' LT	5'-6"	5'-0"	>1% TO 2%	3'-3"**	4'-6"**	**(3" CURB REVEAL)

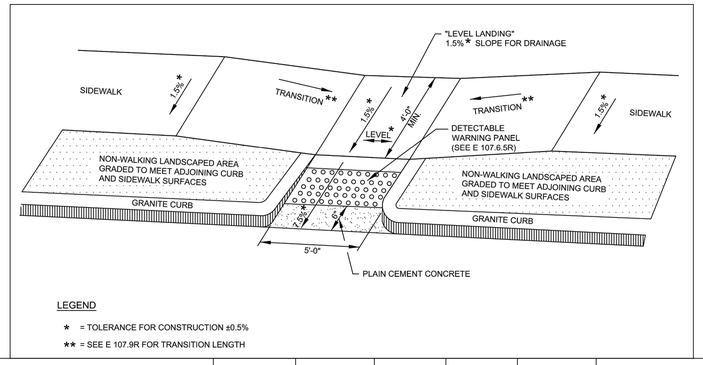
WHEELCHAIR RAMP ON NARROW SIDEWALK WITH DETECTABLE WARNING PANEL



SECTION A-A

LEGEND
HSL = HIGH SIDE TRANSITION LENGTH. SEE E 107.9.0
W = SIDEWALK WIDTH
* = TOLERANCE FOR CONSTRUCTION ±0.5%
CC = CEMENT CONCRETE
HMA = HOT MIX ASPHALT

DW #	BASELINE	RAMP REFERENCE POINT		LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK (W)	WIDTH OF DRIVEWAY (L)	DEPTH OF TRAVEL PATH MIN. 3'-3"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH		
		STATION	OFFSET						LEFT SIDE	RIGHT SIDE	
1	MAIN ST	701+12	16' LT	2'-0"	5'-6"	45'-0"	3'-6"	>1% TO 2%	3'-3"**	9'-0"	**(3" CURB REVEAL)
2	MAIN ST	702+22	16' LT	2'-0"	5'-6"	42'-0"	3'-6"	>0% TO 1%	6'-6"	7'-8"	
3	COMMONWEALTH AVE.	800+80	18' RT	2'-0"	5'-6"	32'-0"	3'-6"	>2% TO 3%	6'-6"	9'-0"	
4	COMMONWEALTH AVE.	836+80	12.5' RT	4'-6"	5'-0"	32'-0"	5'-0"	=0%	6'-6"	6'-6"	
5	COMMONWEALTH AVE.	837+87	15.25' LT	2'-0"	5'-6"	21'-6"	3'-6"	>0% TO 1%	6'-6"	9'-0"	
6	COMMONWEALTH AVE.	838+27	15.15' LT	2'-0"	5'-6"	19'-6"	3'-6"	>0% TO 1%	6'-6"	9'-0"	
SIDEWALK THROUGH DRIVEWAYS WITHOUT CURB RETURNS											



LEGEND

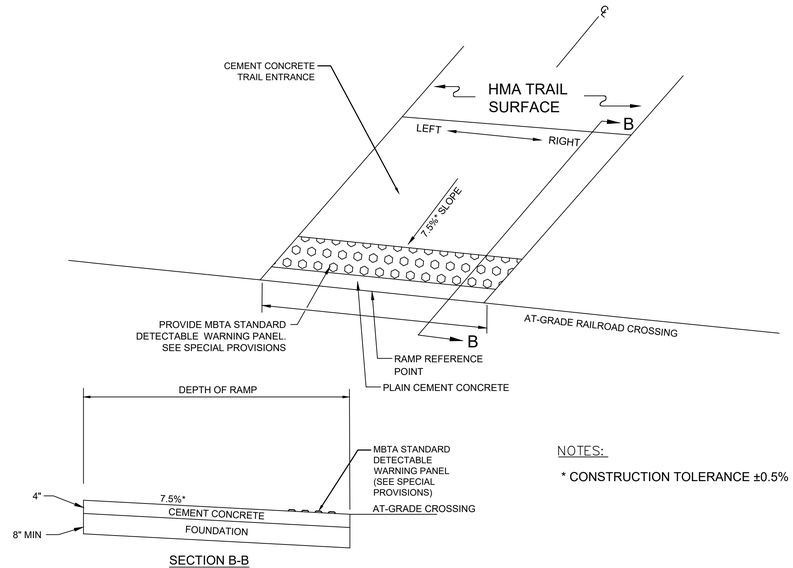
* = TOLERANCE FOR CONSTRUCTION ±0.5%
** = SEE E 107.9R FOR TRANSITION LENGTH

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP	WIDTH OF SIDEWALK	WIDTH OF RAMP MIN. 5'-0"	DEPTH OF LEVEL LANDING MIN. 4'-0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
14	BFRT 2C	134+84	0'	5'-0"	8'-0"	8'-0"	8'-0"	>0% TO 1%	6'-6"	6'-6"

(WCR #14 SHALL HAVE AN MBTA STANDARD DETECTABLE WARNING PANEL. SEE SPECIAL PROVISIONS.)

WHEELCHAIR RAMP WITH LANDSCAPING STRIP

NOTE:
ALL DETECTABLE WARNING PANELS SHALL BE CAST IRON UNLESS OTHERWISE NOTED. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION.



SECTION B-B

NOTES:

* CONSTRUCTION TOLERANCE ±0.5%

WCR #	RAMP REFERENCE POINT			WIDTH OF RAMP	DEPTH OF RAMP
	BASELINE	STATION	OFFSET		
12	BFRT	129+89	0'	8'-0"	4'-3"
13	BFRT	130+26	0'	8'-0"	9'-8"

(WCR #12 & #13 SHALL HAVE MBTA STANDARD DETECTABLE WARNING PANELS. SEE SPECIAL PROVISIONS.)

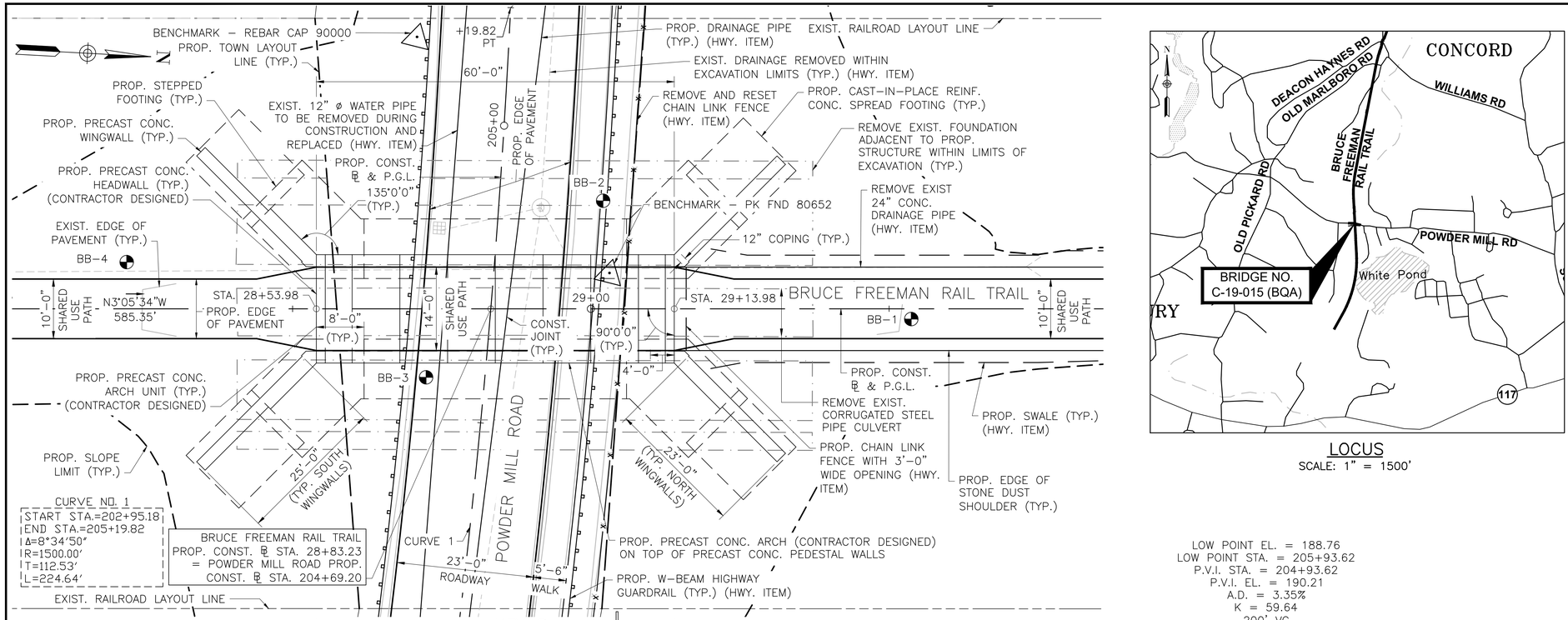
MBTA AT-GRADE CROSSING WHEELCHAIR RAMP

605189_HDWCR).DWG Plotted on 15-Aug-2016 11:25 AM

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	155	227
PROJECT FILE NO. 605189			

KEY PLAN, LOCUS MAP, AND PROFILES

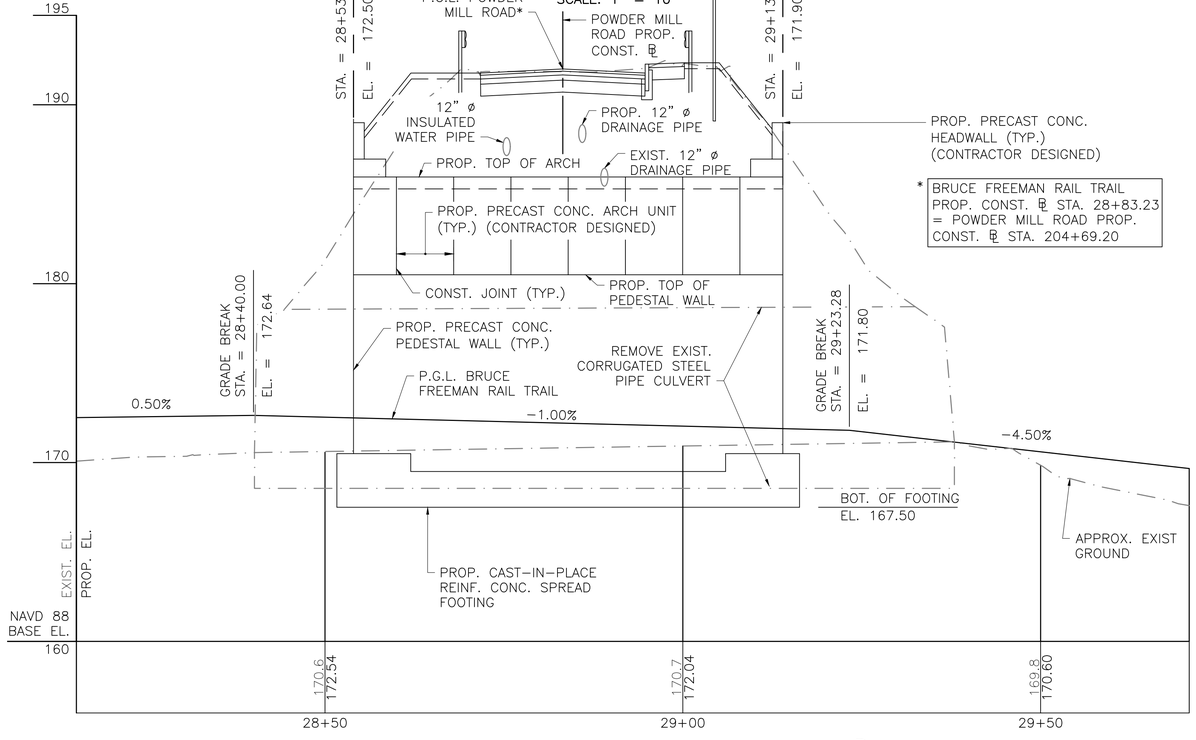


LOCUS
SCALE: 1" = 1500'

INDEX OF BRIDGE SHEETS:

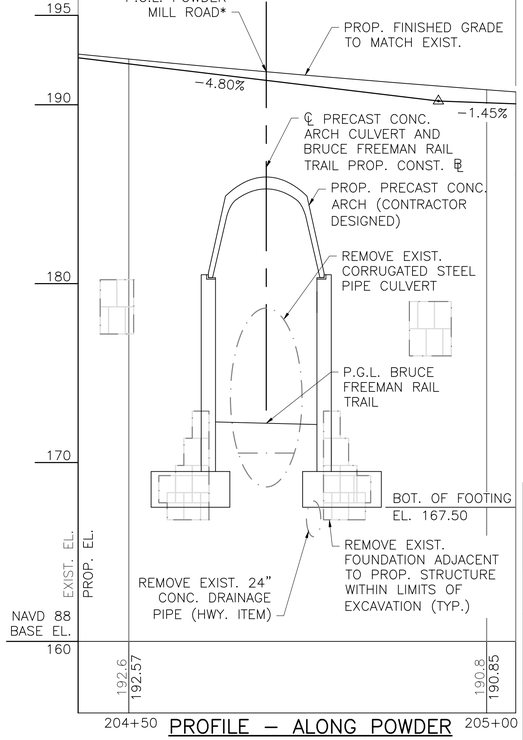
1. KEY PLAN, LOCUS MAP, AND PROFILES
2. GENERAL NOTES AND ESTIMATED QUANTITIES
3. BORING LOGS (1 OF 2)
4. BORING LOGS (2 OF 2)
5. CULVERT SECTIONS
6. CULVERT ELEVATIONS AND FORMLINER DETAILS
7. PEDESTAL WALL PLAN AND ELEVATION
8. WALL SECTIONS
9. MISCELLANEOUS DETAILS

KEY PLAN
SCALE: 1" = 10'



PROFILE – ALONG BRUCE FREEMAN RAIL TRAIL CONST. ℄ & P.G.L.
SCALE: 1" = 10' HORIZ.
¼" = 1'-0" VERT.

LOW POINT EL. = 188.76
LOW POINT STA. = 205+93.62
P.V.I. STA. = 204+93.62
P.V.I. EL. = 190.21
A.D. = 3.35%
K = 59.64
200' VC



PROFILE – ALONG POWDER MILL ROAD CONST. ℄ & P.G.L.
SCALE: 1" = 10' HORIZ.
¼" = 1'-0" VERT.

NOTE:

FOR GENERAL NOTES, SEE SHEET 2.

AUG. 27, 2016 — ISSUED FOR CONSTRUCTION

MassDOT Highway Division

PROPOSED BRIDGE
CONCORD
POWDER MILL ROAD
OVER BRUCE FREEMAN RAIL TRAIL
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

TITLE: _____ CHIEF ENGINEER _____

Greenman-Pedersen, Inc.
GPI
181 Ballardvale Street, Suite 202
Wilmington, MA 01887

605189_(C-19-015)BR1_2.DWG Plotted on 18-Aug-2016 11:44 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	156	227
PROJECT FILE NO. 605189			

GENERAL NOTES AND ESTIMATED QUANTITIES

GENERAL NOTES

DESIGN:
IN ACCORDANCE WITH THE 2014 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2015 FOR HL-93 LOADING.

MASSDOT BENCH MARK:
PK FND 80652
N2982263.073 E684685.815
STA. 29+03.05 5.74' LT
EL. 191.978'

REBAR CAP 90000
N2982228.720 E684648.018
STA. 28+70.78 45.33' LT
EL. 190.533'

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

DATE:
TO BE PLACED ON THE OUTSIDE FACE OF THE HEADWALLS. A SHEET SHOWING SIZE AND CHARACTER OF NUMERALS WILL BE FURNISHED. THE DATE USED SHALL BE THE LATEST YEAR OF THE CONTRACT COMPLETION AS OF THE DATE THE FIRST HEADWALL IS CONSTRUCTED. BOTH HEADWALLS SHALL FEATURE THE SAME DATE.

MASSDOT SURVEY NOTEBOOKS:
COPIES OF ELECTRONIC SURVEY FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION.

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

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

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

SEISMIC GROUND SHAKING HAZARD:
DESIGN RETURN PERIOD: 1000 YEARS

DESIGN SPECTRA:

As = 0.116
S_{DS} = 0.239
S_{D1} = 0.095

SITE CLASS = D

SEISMIC DESIGN CATEGORY (SDC) = A

ANCHOR BOLTS:
ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE BEFORE THE CONCRETE IS PLACED.

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

MODIFICATION CONDITION	#4 BARS	#5 BARS
1. NONE	21"	26"
2. 12" OF CONCRETE BELOW BAR	29"	36"
3. COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4. COATED BARS, ALL OTHER CASES	25"	31"
5. CONDITION 2. AND 3.	35"	44"
6. CONDITION 2. AND 4.	34"	43"

IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

CONCRETE MIXES:

(1)	(2)	(3)	TO BE USED IN CONSTRUCTION OF:
4000	1½	565	FOOTINGS, PEDESTAL WALLS, AND WINGWALLS

(1) 28 DAY COMPRESSIVE STRENGTH (PSI)
(2) MAXIMUM AGGREGATE SIZE (INCH)
(3) CEMENTITIOUS CONTENT (POUNDS/C.Y.)

CONTRACTOR DESIGNED OPTION:
THE CONTRACTOR MAY ELECT TO SUBMIT AN ALTERNATIVE DESIGN FOR SUBSTRUCTURE ELEMENTS (FOOTINGS, PEDESTAL WALLS, AND RETAINING WALLS). DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE FABRICATION OR INSTALLATION OF ANY CONTRACTOR DESIGNED ELEMENTS COMMENCES. IF THE CONTRACTOR PROPOSES PRECAST FOOTINGS, CONSTRUCTION JOINT LOCATIONS SHALL BE STAGGERED A MINIMUM OF 18" FROM PRECAST WALL UNIT CONSTRUCTION JOINTS.

THE DESIGN OF THE PEDESTAL WALL FOOTING AND STEM DETAILED HEREIN IS BASED UPON THE ASSUMED GEOMETRY OF THE ARCH UNITS SHOWN WITH A RADIUS SHAPED CEILING. THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL A VALIDATION THAT THE PEDESTAL WALL FOOTING AND STEM ARE ADEQUATE SHOULD THE GEOMETRY OF THE PRECAST ARCH UNITS VARY FROM THAT SPECIFIED ON THE PLANS BY MORE THAN 3".

CONSTRUCTION LOADING:
CONSTRUCTION SURCHARGE LOADING SHALL BE LIMITED TO 350 PSF BEHIND PROPOSED PEDESTAL WALLS AND 260 PSF BEHIND PROPOSED WINGWALLS.

POWDER MILL ROAD CLOSURE:
FOR POWDER MILL ROAD CLOSURE AND DETOUR DETAILS SEE HIGHWAY PLANS.

ANTI-GRAFFITI COATING:
THE CONTRACTOR SHALL APPLY AN ANTI-GRAFFITI CLEAR COATING TO THE EXPOSED CONCRETE PORTIONS OF THE WINGWALLS, PEDESTAL WALLS, AND ARCH THAT WILL NOT CHANGE THE APPEARANCE OF THE STAINED CONCRETE.

EXISTING FOUNDATIONS:
LIMITS OF EXISTING FOUNDATIONS SHOWN ON THESE PLANS IS UNKNOWN. THE CONTRACTOR IS ALERTED THAT THESE FOUNDATIONS MAY STILL EXIST BURIED BEHIND THE EXISTING METAL PIPE CULVERT FILL MATERIAL. PLANS FOR THE EXISTING PIPE CULVERT MAY BE SEEN AT THE OFFICE OF THE BRIDGE ENGINEER, MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, 10 PARK PLAZA, BOSTON, MASSACHUSETTS.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM DESCRIPTION	QUANTITY	UNIT
CULVERT EXCAVATION	2,670	CY
GRAVEL BORROW FOR BRIDGE FOUNDATION	180	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	1,530	CY
CULVERT STRUCTURE, CULVERT NO. C-19-015 (BQA)	1	LS

AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-015)BR1_2.DWG Plotted on 18-Aug-2016 11:44 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	157	227
PROJECT FILE NO. 605189			

BORING LOGS (1 OF 2)

BORING BB-4

massDOT Highway	NEW HAMPSHIRE BORING, INC. P.O. Box 165 Derry, NH 03038	Phone: (603)437-1610 Fax: (603) 437-0034 E Mail: nhb@nhboring.com	Boring No. BB-4 Scale 1" = 5'
City/Town: Concord	Bridge: C-19-015	Project File No: 605189	Contract No: 76859
Project: Powder Mill Road over Bruce Freeman Rail Trail *		Date & Time Started: 5/11/15 9:00 am	Total Hours:
Groundwater Depth: 19'+/-	Date & Time: 5/12/15 8:45 am	Date & Time Completed: 5/12/15 9:00 am	7
Coordinates: N 2982182.22	E 684688.08	Driller's Name: Kenneth Smith	Helper's Name: Cody Richards
Ground Elevation:170.5'	Inspector's Name: Anthony Leonido	Inspector's Company: Nobis Engineering Corp. for Greenman Peterson Inc.	

BOT. SPREAD FOOTING EL. 167.50

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches Coring Times Minute Per Foot	Recovery Inches	Field Description	Strata Changes
S-1	0' - 1'6"	5 6 10 100/0"	12"	Dry, medium dense, brown to dark brown, FINE SAND, trace fine gravel.	
				Encountered BOULDER, roller bit through.	1'6"
S-2	2'6" - 4'6"	2 6 6 8	10"	Moist, medium dense, brown, FINE SAND, trace fine gravel.	2'6"
S-3	4'6" - 6'6"	3 3 3 10	20"	Moist, loose, brown, FINE SAND.	
S-4	9' - 11'	6 6 9 8	13"	Moist, medium dense, brown, FINE TO COARSE SAND.	
S-5	14' - 16'	8 9 10 12	13"	Moist, medium dense, brown, FINE SAND.	
S-6	19' - 21'	10 9 11 13	12"	Wet, medium dense, brown, FINE SAND.	
S-7	24' - 26'	11 11 14 15	13"	Wet, medium dense, brown, FINE TO COARSE SAND, trace fine gravel.	
S-8	29' - 31'	8 8 10 15	9"	Wet, medium dense, brown, FINE SAND.	31'
				Bottom of Exploration = 31'	

Notes: * Phase II C
Changed location; moved boring prior to drilling from N2982182.96, E684697.57 to 2982182.22, E684688.08 so the monitoring well would not be installed in the middle of the trail.

Protective Device - Stand: Box:
Well Depth: 30' Solid Pipe: 18'
Stick Up Pipe: 3' Screen Pipe: 15'
Type of Drill Rig: Mobile B-51
Casing Type: NW Size: 3" Depth: 30'
Hammer Weight: 300lbs Fall: 24"
Signs: 2 Cones: 10 Arrow-Board:
Sampler Type: S/S Size: 1 3/8"
Automatic Hammer Weight:
Safety Hammer Weight: 140lbs
Donut Hammer Weight: Fall: 30"
Core Barrel Type: Size:

Penetration Resistance (N) Guide:			
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
N=Sum of Second and Third 6" Blow Counts		Hard	Over 30

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

BORING BB-3

massDOT Highway	NEW HAMPSHIRE BORING, INC. P.O. Box 165 Derry, NH 03038	Phone: (603)437-1610 Fax: (603) 437-0034 E Mail: nhb@nhboring.com	Boring No. BB-3 Scale 1" = 5'
City/Town: Concord	Bridge: C-19-015	Project File No: 605189	Contract No: 76859
Project: Powder Mill Road over Bruce Freeman Rail Trail *		Date & Time Started: 5/12/15 8:00 am	Total Hours:
Groundwater Depth: 20'+/-	Date & Time: 5/12/15 8:00 am	Date & Time Completed: 5/12/15 3:00 pm	7
Coordinates: N 2982233.36	E 684704.67	Driller's Name: Walter Hoeckele	Helper's Name: William Walsh
Ground Elevation: 192.5'	Inspector's Name: Anthony Leonido	Inspector's Company: Nobis Engineering Corp. for *	

BOT. SPREAD FOOTING EL. 167.50

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches Coring Times Minute Per Foot	Recovery Inches	Field Description	Strata Changes
				ASPHALT 4"	
S-1	6" - 2'	9 9 9	10"	Dry, medium dense, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.	
S-2	2' - 4'	8 6 11 15	13"	Dry, medium dense, brown/grey, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	
S-3	4' - 6'	27 21 6 3	10"	Dry, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	
S-4	6' - 8'	25 21 19 17	13"	Dry, dense, brown, FINE SAND, some fine to medium gravel, trace inorganic silt.	
S-5	8' - 10'	21 22 21 25	10"	Moist, dense, brown, FINE TO COARSE SAND and medium gravel, trace inorganic silt.	
S-6	10' - 12'	26 21 21 23	12"	Moist, dense, brown, FINE TO COARSE SAND and fine gravel, trace inorganic silt.	
S-7	12' - 14'	16 13 16 15	11"	Moist, medium dense, brown, FINE TO COARSE SAND, some inorganic silt, trace fine gravel.	
S-8	14' - 16'	11 12 4 7	7"	Moist, medium dense, brown, FINE TO COARSE SAND and medium gravel, trace inorganic silt.	
S-9	16' - 18'	17 22 23 19	6"	Moist dense dark brown, FINE TO COARSE SAND and fine gravel, trace inorganic silt.	
S-10	18' - 20'	12 10 8 9	9"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	
S-11	20' - 22'	8 9 6 5	3"	Wet, medium dense, brown, FINE TO COARSE SAND, fine gravel, some wood fragment, trace inorganic silt.	
S-12	22' - 24'	9 9 9 10	2"	Wet, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace wood fragments, trace inorganic silt.	
S-13	24' - 26'	15 15 12 9	5"	Wet, medium dense, brown, FINE TO COARSE SAND, some fine gravel, some inorganic silt.	26'
S-14	26' - 28'	9 8 13 14	10"	Wet, medium dense, brown, FINE SAND, trace inorganic silt.	
S-15	28' - 30'	11 10 11 13	10"	Wet, medium dense, brown, FINE SAND, trace inorganic silt.	
S-16	34' - 36'	8 14 10 16	12"	Moist, medium dense, brown, FINE SAND, trace inorganic silt.	
S-17	39' - 41'	12 15 16 22	13"	Moist, dense, brown, FINE SAND, trace coarse sand, trace inorganic silt.	44'
S-18	44' - 46'	26 28 26 30	9"	Moist very dense, brown, FINE TO COARSE SAND, some coarse gravel, trace inorganic silt.	
S-19	49' - 51'	15 14 14 15	18"	Wet, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	51'
				Bottom of Exploration = 51'	

Notes: * Phase II C * Greenman Pederson Inc.
** Safety Hammer Weight: CatHead140lbs

Protective Device - Stand: Box:
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe:
Type of Drill Rig: Dierich D-50
Casing Type: HW Size: 4" Depth: 50'
Hammer Weight: 300lbs Fall: 30"
Signs: 2 Cones: 10 Arrow-Board:
Sampler Type: S/S Size: 1 3/8"
Automatic Hammer Weight:
Safety Hammer Weight: **
Donut Hammer Weight: Fall: 30"
Core Barrel Type: Size:

Penetration Resistance (N) Guide:			
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
N=Sum of Second and Third 6" Blow Counts		Hard	Over 30

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE PLAN THUS: ⊕ BB-1
2. BORINGS ARE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
4. FIGURES IN THE COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 1 3/8" I.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
5. BORING SAMPLES ARE LOCATED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) IN LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND ROCK SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
6. ALL BORINGS WERE MADE IN MAY, 2015.
7. BORINGS WERE MADE BY NEW HAMPSHIRE BORING, INC. OF DERRY, NH UNDER THE GUIDANCE OF NOBIS ENGINEERING, INC.
8. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

GROUND WATER MONITORING WELL MEASUREMENTS (BB-4)	
DATE	ELEVATION
5/12/2015	148.0'

GROUND WATER:

THE WATER LEVELS RECORDED IN THE TABLE ARE THOSE MEASURED ON THE DATES GIVEN AND DO NOT NECESSARILY REPRESENT GROUND WATER LEVEL AT TIME OF CONSTRUCTION

DATE	DESCRIPTION
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

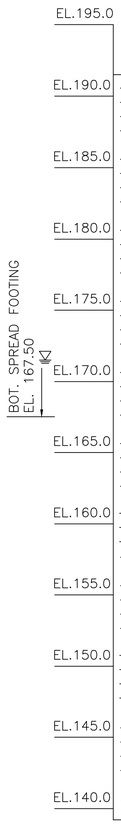
605189_(C-19-015)BR3_4.DWG Plotted on 18-Aug-2016 11:45 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	158	227
PROJECT FILE NO. 605189			

BORING LOGS (2 OF 2)

BORING BB-2



NEW HAMPSHIRE BORING, INC.
P.O. Box 165
Derry, NH 03038
Phone: (603)437-1610
Fax: (603) 437-0034
E Mail: nhb@nhboring.com

Boring No. BB-2
Scale 1" = 5'

City/Town: Concord | Bridge: C-19-015 | Project File No: 605189 | Contract No: 76859
Project: Powder Mill Road over Bruce Freeman Rail Trail * | Date & Time Started: 5/8/15 8:00 am | Total Hours: 8
Groundwater Depth: 20'+/- | Date & Time: 5/8/15 3:35 pm | Date & Time Completed: 5/8/15 4:00 pm
Coordinates: N 2982261.27 E 684674.75 | Driller's Name: Ben Cross | Helper's Name: Cody Richards
Ground Elevation: 191.5' | Inspector's Name: Pat Clarke | Inspector's Company: Nobis Engineering Corp. for *

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches Coring Times Minute Per Foot				Recovery Inches	Field Description	Strata Changes
							ASPHALT 4"	
S-1	6" - 2'6"	5	4	7	12	8"	Dry, medium dense, brown, FINE TO COARSE SAND, some coarse gravel, trace inorganic silt, trace asphalt fragments.	
S-2	4' - 6'	17	26	32	26	6"	Moist, very dense, brown, FINE TO COARSE SAND, some coarse gravel, some inorganic silt.	
S-3	6' - 8'	22	22	28	31	17"	Moist, dense, brown, FINE TO COARSE SAND, some fine to coarse gravel, some inorganic silt, trace asphalt fragments.	
S-4	8' - 10'	26	25	18	25	13"	Moist, dense, brown, FINE TO COARSE SAND, some fine to coarse gravel, some inorganic silt, trace asphalt fragments.	
S-5	10' - 12'	24	46	45	28	15"	Moist, very dense, brown, FINE TO COARSE SAND, some coarse gravel, trace inorganic silt.	
S-6	14' - 16'	5	7	12	10	12"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine to coarse gravel, some inorganic silt, trace asphalt fragments.	
S-7	16' - 18'	9	7	8	5	10"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt, trace asphalt fragments.	
S-8	18' - 20'	5	5	6	5	9"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine gravel, some inorganic silt, some asphalt fragments.	
S-9	20' - 22'	6	7	5	6	9"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine to coarse gravel, trace inorganic silt, some asphalt fragments.	
S-10	22' - 24'	12	9	7	9	6"	Moist, medium dense, black to brown, FINE TO COARSE SAND, some fine to coarse gravel, some inorganic silt.	
S-11	24' - 26'	9	6	9	10	10"	Dry, medium dense, light brown, FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.	24.5'
S-12	26' - 28'	13	22	14	16	15"	Dry, dense, orange brown, FINE SAND, some coarse gravel	
S-13	29' - 31'	25	16	14	16	0"	No recovery	
S-14	31' - 33'	14	12	12	13	13"	Dry. Medium dense, light brown, FINE TO COARSE SAND, trace fine gravel	
S-15	34' - 36'	11	14	14	14	12"	Moist, medium dense, brown, FINE TO COARSE SAND, trace fine gravel.	
S-16	39' - 41'	13	14	16	16	13"	Moist, dense, brown, FINE SAND, and coarse sand.	
S-17	44' - 46'	8	11	12	13	12"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	
S-18	49' - 51'	16	17	15	16	14"	Moist, dense, brown, FINE TO COARSE SAND, some fine to coarse gravel.	51'
							Bottom of Exploration = 51'	

Notes: * Phase II C * Greenman Pederson Inc.

Protective Device - Stand: Box:
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe:

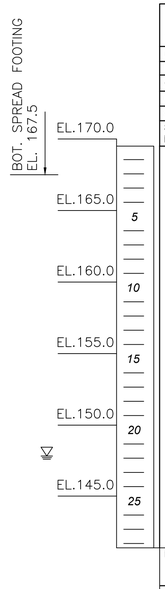
Penetration Resistance (N) Guide:

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
N=Sum of Second and Third 6" Blow Counts		Hard	Over 30

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

Type of Drill Rig: M-1 ATV
Casing Type: HW Size: 3" Depth: 34'
Hammer Weight: 140lbs Fall: 30"
Signs: 2 Cones: 12 Arrow-Board:
Sampler Type: S/S Size: 1 3/8 "
Automatic Hammer Weight:
Safety Hammer Weight: CatHead140lbs
Donut Hammer Weight: Fall: 30"
Core Barrel Type: Size:

BORING BB-1



NEW HAMPSHIRE BORING, INC.
P.O. Box 165
Derry, NH 03038
Phone: (603)437-1610
Fax: (603) 437-0034
E Mail: nhb@nhboring.com

Boring No. BB-1
Scale 1" = 5'

City/Town: Concord | Bridge: C-19-015 | Project File No: 605189 | Contract No: 76859
Project: Powder Mill Road over Bruce Freeman Rail Trail * | Date & Time Started: 5/8/15 8:30 am | Total Hours: 5
Groundwater Depth: 21.7' | Date & Time: 5/8/15 1:00 pm | Date & Time Completed: 5/8/15 1:30 pm
Coordinates: N 2982313.81 E 684690.52 | Driller's Name: Manlea Thompson | Helper's Name: Donald Palmer
Ground Elevation: 169.5' | Inspector's Name: Anthony Leonido | Inspector's Company: Nobis Engineering Corp. for *

Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches Coring Times Minute Per Foot				Recovery Inches	Field Description	Strata Changes
S-1	0' - 2'	3	4	4	8	13"	Dry, loose, brown, FINE SAND, trace inorganic silt, trace fine gravel.	
S-2	2' - 4'	17	21	22	37	20"	Dry, dense, dark brown, FINE TO COARSE SAND and fine gravel, trace inorganic silt.	4'
S-3	4' - 6'	35	42	29	31	14"	Dry, very dense, brown, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.	
S-4	10' - 12'	11	13	26	25	12"	Moist, dense, brown, FINE TO COARSE SAND, trace inorganic silt, trace medium gravel.	
S-5	15' - 17'	14	18	17	29	11"	Moist, dense, brown, FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.	
S-6	20' - 22'	17	25	25	24	11"	Wet, dense, brown, FINE TO COARSE SAND, and fine to medium gravel, trace inorganic silt.	24'
S-7	25' - 27'	9	14	20	18	12"	Wet, dense, red/brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.	27'
							Bottom of Exploration = 27"	

Notes: * Phase II C * Greenman Pedersen, Inc.

Protective Device - Stand: Box:
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe:

Penetration Resistance (N) Guide:

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
N=Sum of Second and Third 6" Blow Counts		Hard	Over 30

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

Type of Drill Rig: CME-550 X
Casing Type: HW Size: 4" Depth: 25'
Hammer Weight: 300lbs Fall: 30"
Signs: Cones: 8 Arrow-Board:
Sampler Type: S/S Size: 1 3/8 "
Automatic Hammer Weight:
Safety Hammer Weight: 140 lbs
Donut Hammer Weight: Fall: 30"
Core Barrel Type: Size:

NOTE:

FOR BORING NOTES, SEE SHEET 3

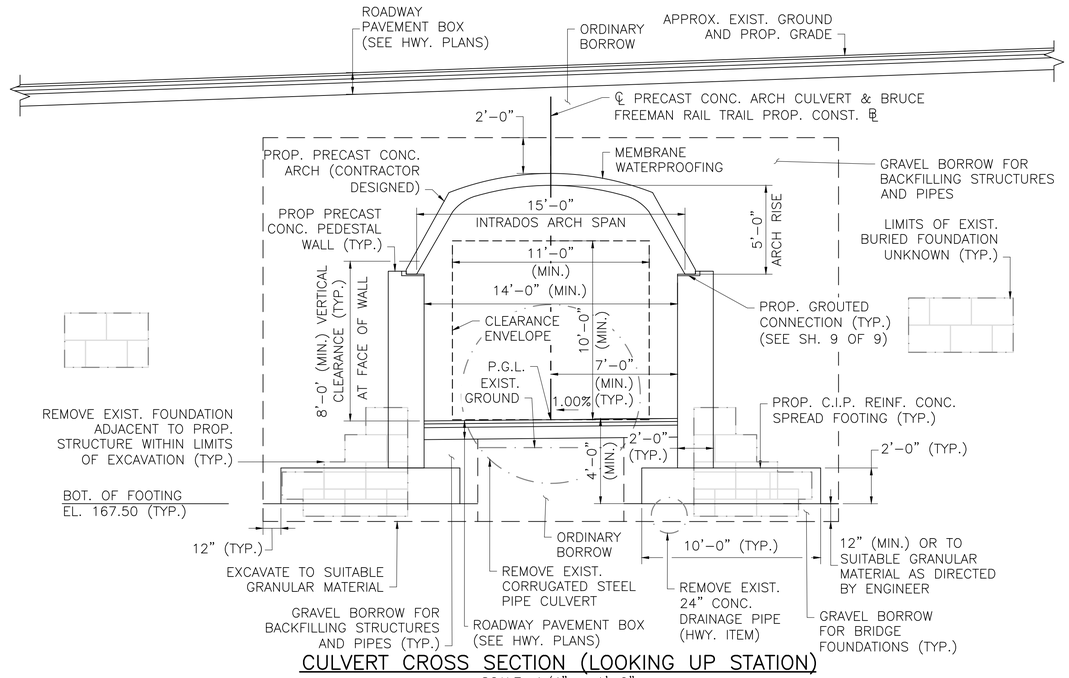
DATE	DESCRIPTION
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-015)BR3_4.DWG Plotted on 18-Aug-2016 11:45 AM
Final Structural Submittal (SF) 18-August-2016

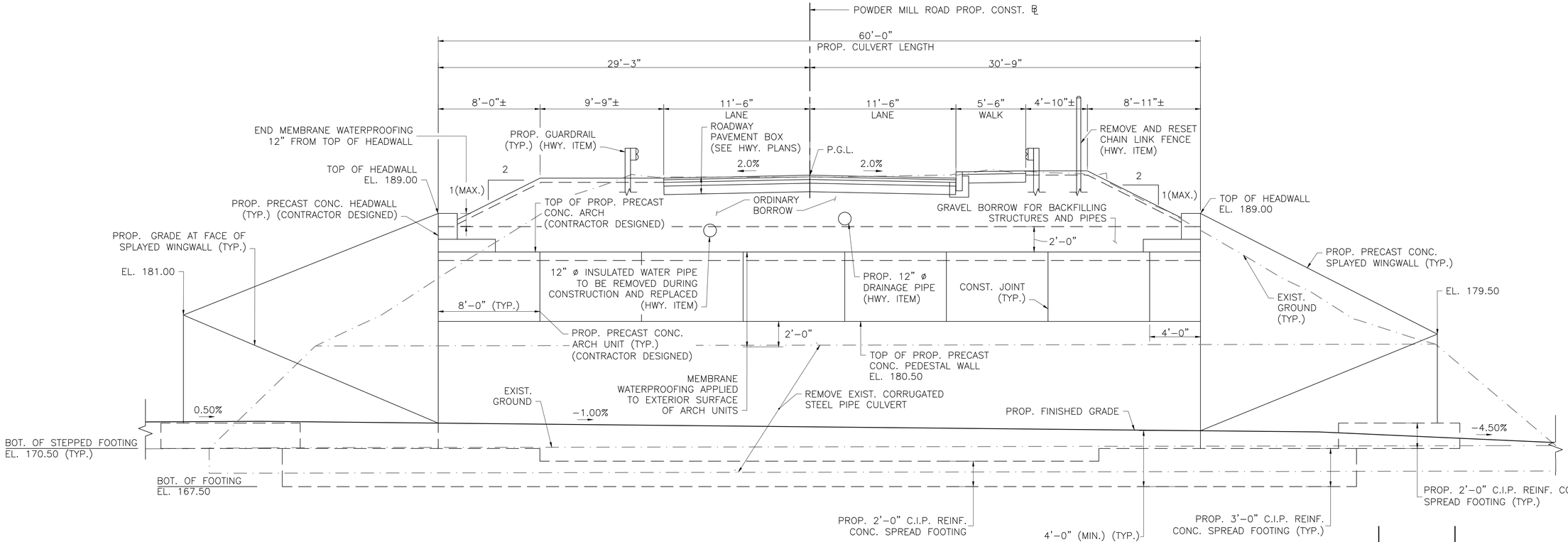
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	159	227
PROJECT FILE NO. 605189			

CULVERT SECTIONS



CULVERT CROSS SECTION (LOOKING UP STATION)
SCALE: 1/4" = 1'-0"



CULVERT LONGITUDINAL SECTION
SCALE: 1/4" = 1'-0"

DATE	DESCRIPTION
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-015)BRS_6.DWG Plotted on 18-Aug-2016 11:45 AM
Final Structural Submittal (SF) 18-August-2016

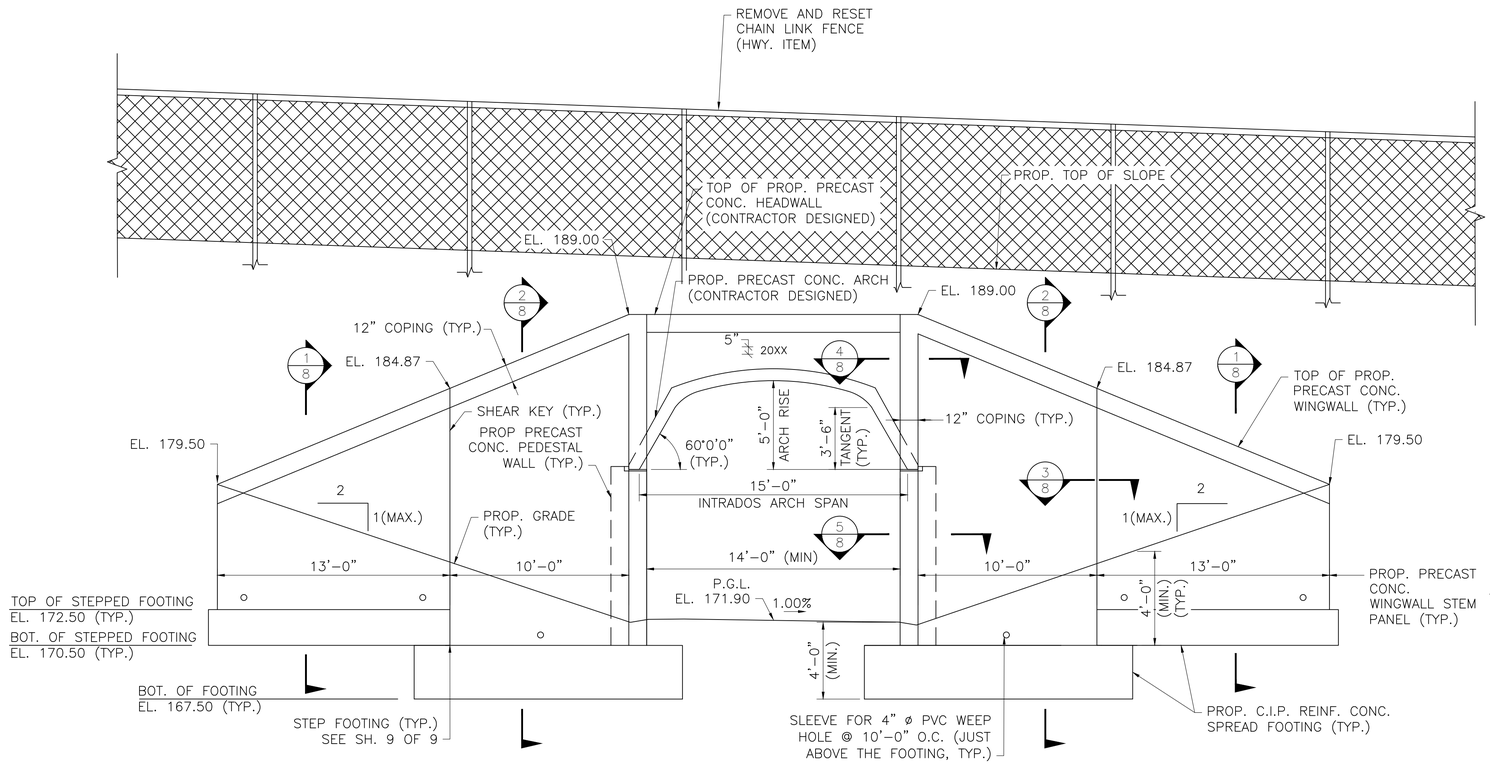
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	160	227
PROJECT FILE NO. 605189			

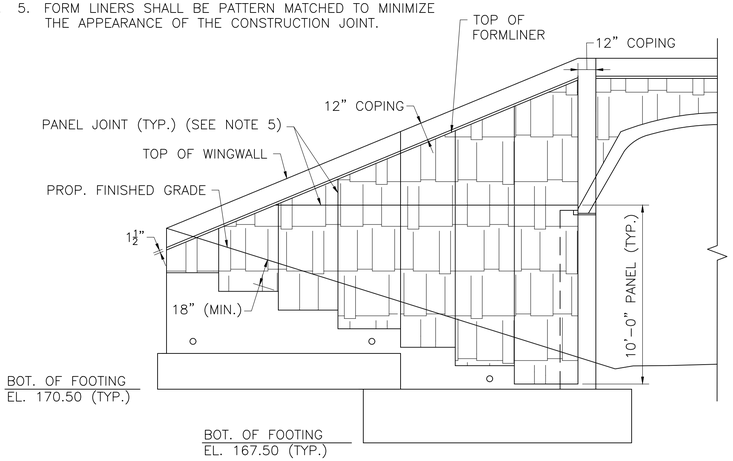
CULVERT ELEVATIONS & FORMLINER DETAILS

FORM LINER NOTES:

1. FACE OF WINGWALLS AND HEADWALLS TO RECEIVE CONCRETE FORMLINER (SEE SPECIFICATIONS).
2. FORM LINERS SHALL BE PLACED SUCH THAT THERE NO VISIBLE HORIZONTAL OR VERTICAL FORM LINER JOINTS, EXCEPT AT THE CONSTRUCTION JOINTS.
3. HORIZONTAL PANEL JOINTS SHALL BE LEVEL.
4. REFER TO SECTIONS 4 AND 5 ON SHEET 8 FOR FORM LINER DETAIL AT VERTICAL WINGWALL COPING.
5. FORM LINERS SHALL BE PATTERN MATCHED TO MINIMIZE THE APPEARANCE OF THE CONSTRUCTION JOINT.

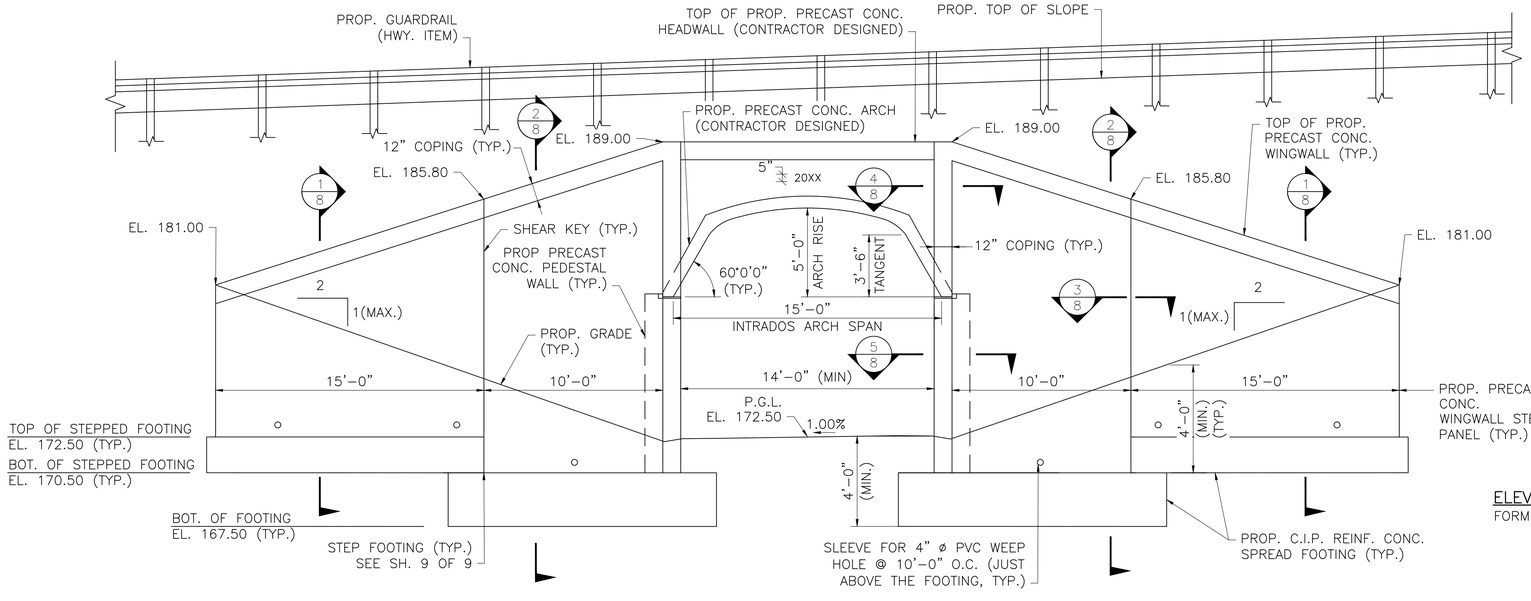


DEVELOPED NORTH ELEVATION
SCALE: 1/4" = 1'-0"

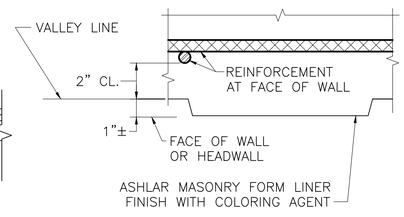


FORM LINER ELEVATION
SCALE: 1/4" = 1'-0"

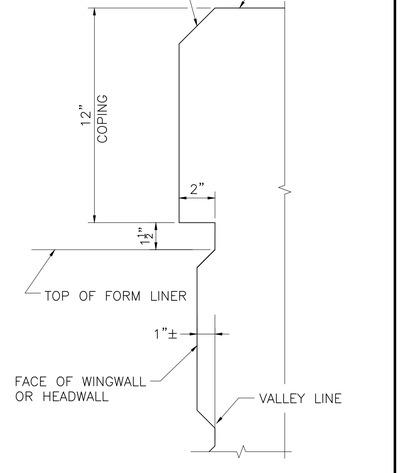
NOTE:
THE DATE SHALL BE BEDDED INTO THE CONCRETE ON BOTH HEADWALLS CENTERED HORIZONTALLY AND VERTICALLY.



DEVELOPED SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



TYPICAL FORM LINER DETAIL
SCALE: 3" = 1'-0"



FORM LINER DETAIL AT TOP OF WALL
SCALE: 3" = 1'-0"

ELEVATION NOTE:
FORM LINER NOT SHOWN FOR CLARITY

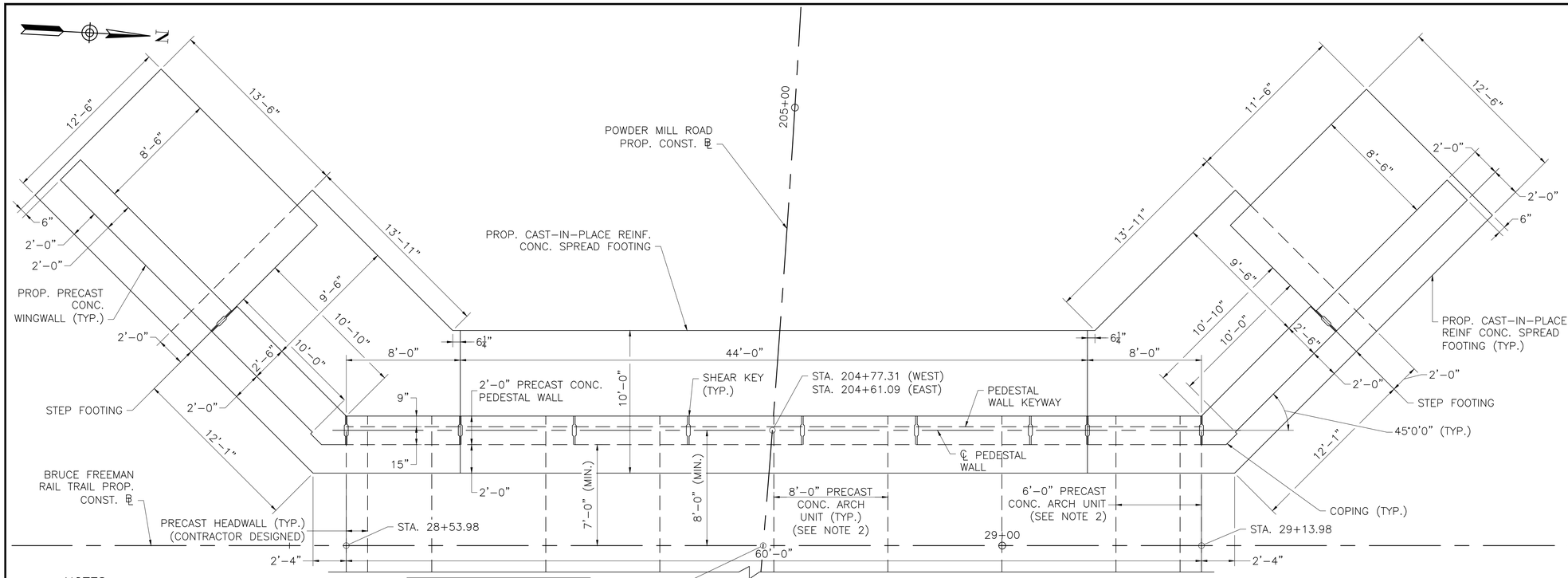
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-015)BRS_6.DWG Plotted on 18-Aug-2016 11:45 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	161	227
PROJECT FILE NO. 605189			

PEDESTAL WALL PLAN AND ELEVATION

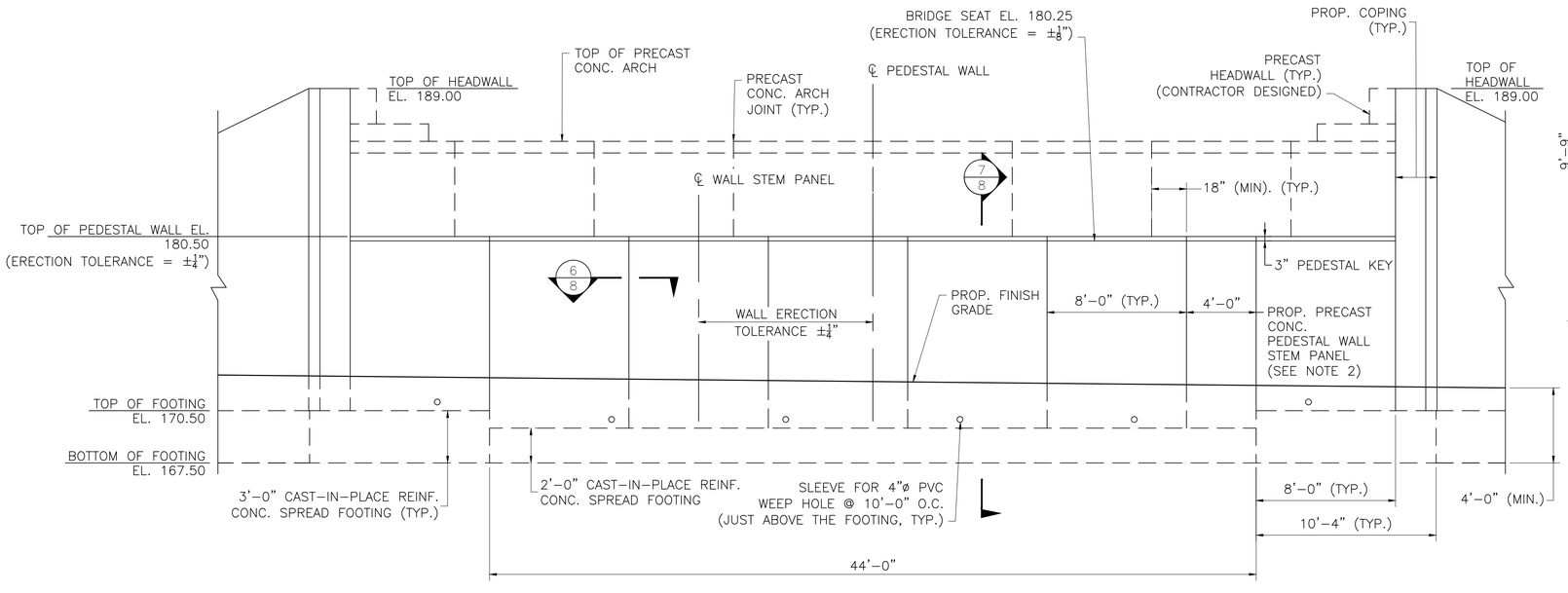


NOTES:

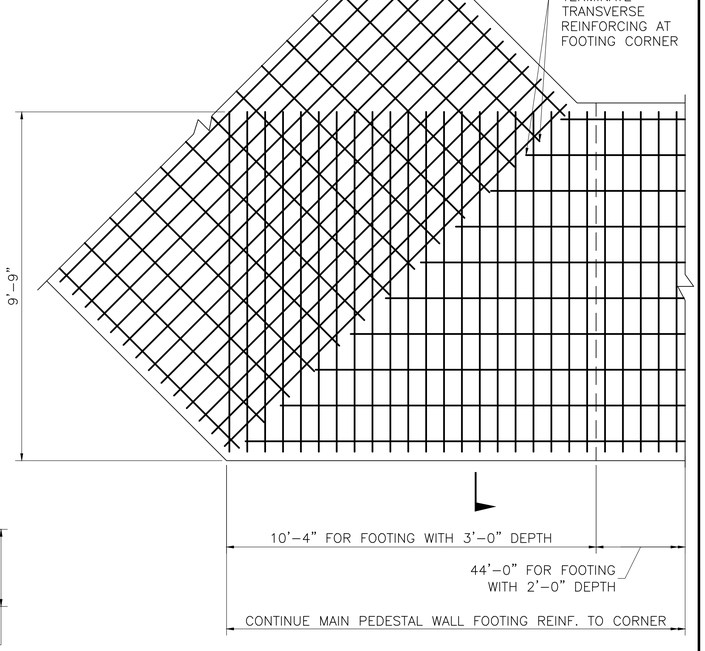
1. WEST SIDE SHOWN, EAST SIDE SIMILAR.
2. THE LENGTH OF THE PRECAST CONCRETE ARCH UNITS AND PRECAST CONCRETE PEDESTAL WALL UNITS MAY VARY FROM THE DIMENSIONS SHOWN.

BRUCE FREEMAN RAIL TRAIL PROP. CONST ℄ STA. 28+83.23 = POWDER MILL ROAD PROP. CONST ℄ STA. 204+69.20

PEDESTAL WALL PLAN
SCALE: 1/4" = 1'-0"



PEDESTAL WALL ELEVATION
SCALE: 1/4" = 1'-0"



TYPICAL PEDESTAL WALL FOOTING REINFORCING AT WINGWALL FOOTING
SCALE: 1/8" = 1'-0"

DATE	DESCRIPTION
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 7 OF 9 SHEETS BRIDGE NO. C-19-015 (BQA)

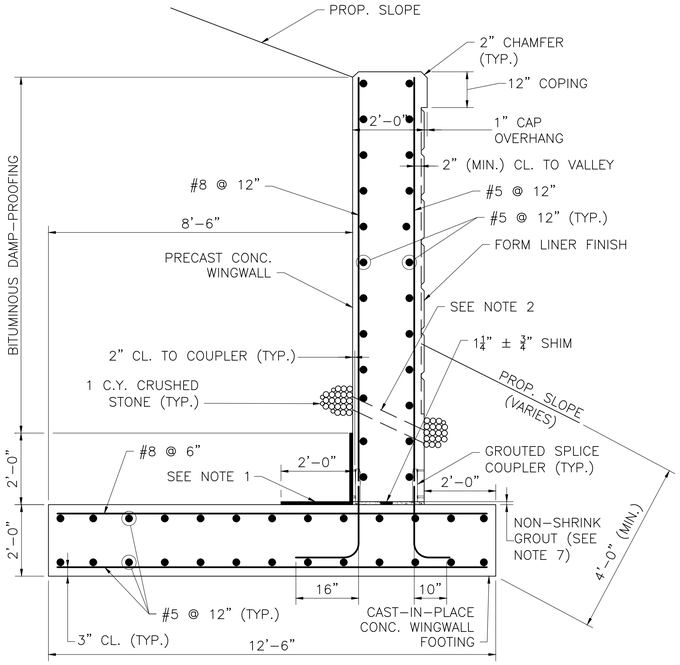
605189_(C-19-015)BR7.DWG Plotted on 18-Aug-2016 11:45 AM

Final Structural Submittal (SF) 16-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	162	227
PROJECT FILE NO. 605189			

WALL SECTIONS



SECTION 1
SCALE: 1/2" = 1'-0"

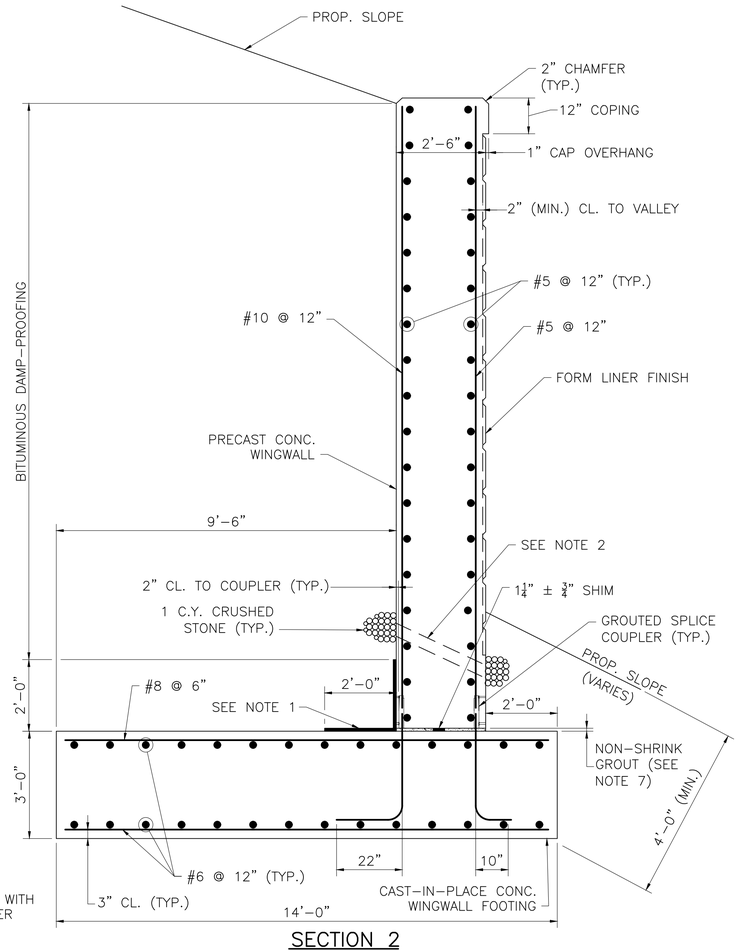
WALL NOTES:

1. MEMBRANE WATERPROOFING AND 8"x16"x2", 4000 PSI, ¾ IN, 610 CEMENT CONCRETE BLOCKS LAID IN MORTAR OR OTHER WATERPROOFING PROTECTIVE COURSE, MIN. 2" THICK AS SPECIFIED IN MHD STANDARD SPECIFICATIONS.
2. 4" ø WEEP HOLES 10'-0" O.C. (JUST ABOVE PROTECTIVE COURSE). PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
3. ALL CONCRETE SHALL BE 4000 PSI, 1½ IN, 565 CEMENT CONCRETE.
4. THE PEDESTAL WALL FACTORED BEARING PRESSURE = 7.64 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.

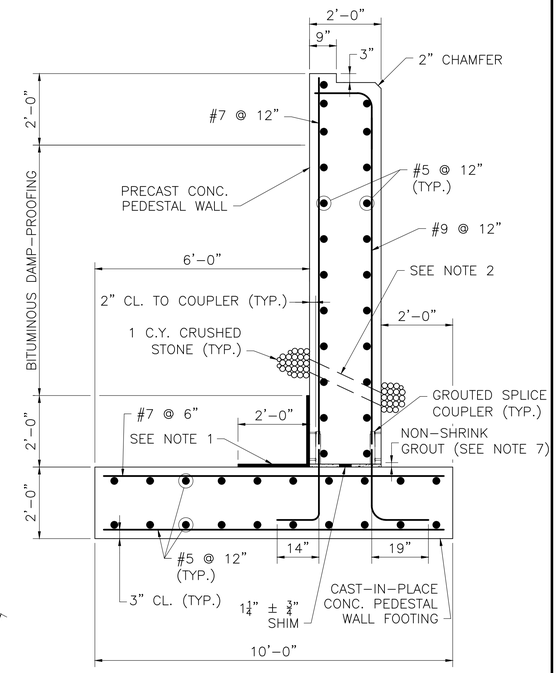
   FACTORED BEARING RESISTANCE = 7.70 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.45.
5. THE WINGWALL FACTORED BEARING PRESSURE = 5.39 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.

   FACTORED BEARING RESISTANCE = 10.20 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.55.
6. THE STEPPED WINGWALL FACTORED BEARING PRESSURE = 3.19 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS STRENGTH I LOAD COMBINATION.

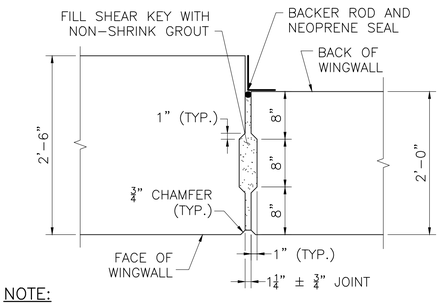
   FACTORED BEARING RESISTANCE = 10.40 KSF. FACTORED BEARING RESISTANCE IS THE PRODUCT OF THE NOMINAL BEARING RESISTANCE AND A RESISTANCE FACTOR OF 0.55.
7. PRE-BED PRECAST ELEMENT WITH NON-SHRINK GROUT WITH THICKNESS MORE THAN SHIM STACK.



SECTION 2
SCALE: 1/2" = 1'-0"

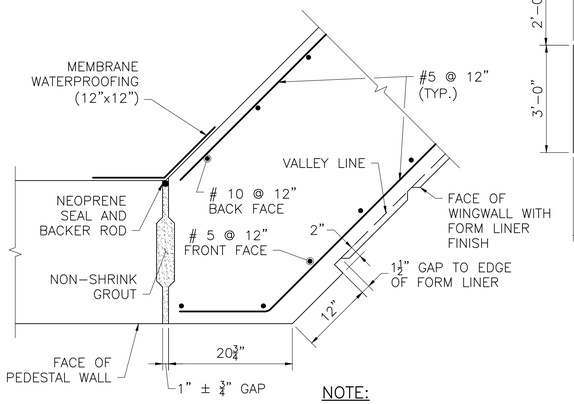


SECTION 7
SCALE: 1/2" = 1'-0"



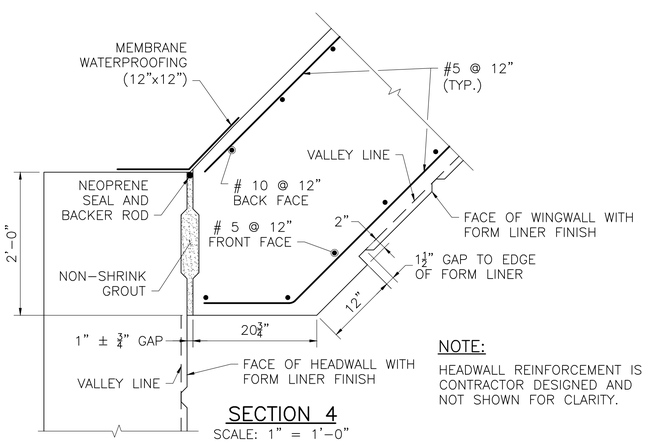
NOTE:
REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 3
SCALE: 1" = 1'-0"



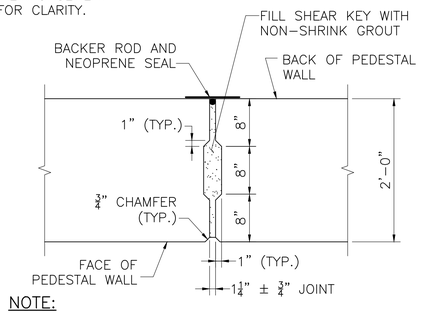
NOTE:
PEDESTAL WALL REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 5
SCALE: 1" = 1'-0"



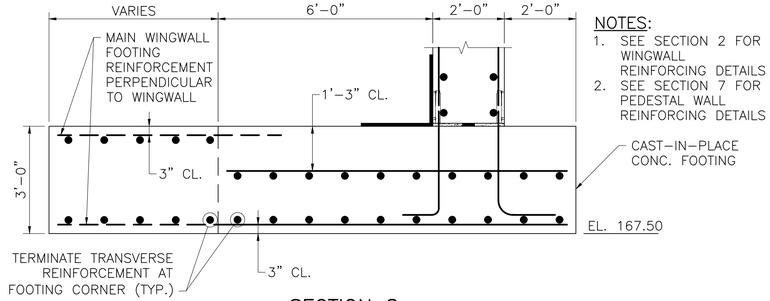
NOTE:
HEADWALL REINFORCEMENT IS CONTRACTOR DESIGNED AND NOT SHOWN FOR CLARITY.

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



NOTE:
REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 6
SCALE: 1" = 1'-0"



NOTES:
1. SEE SECTION 2 FOR WINGWALL REINFORCING DETAILS
2. SEE SECTION 7 FOR PEDESTAL WALL REINFORCING DETAILS

SECTION 8
SCALE: 1/2" = 1'-0"

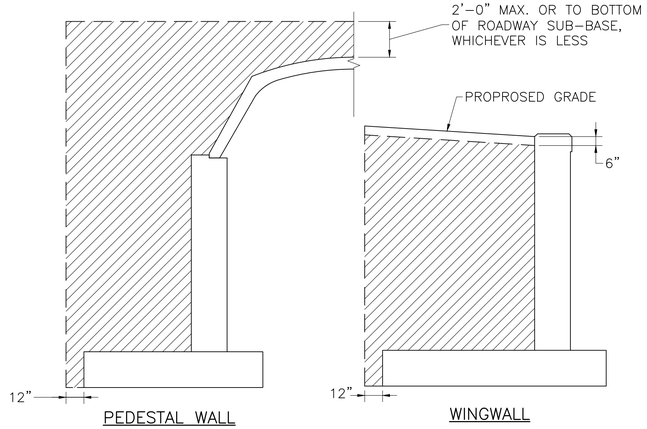
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-015)BR8.DWG Plotted on 18-Aug-2016 11:45 AM
Final Structural Submittal (SF) 18-August-2016

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	163	227
PROJECT FILE NO. 605189			

MISCELLANEOUS DETAILS

605189_(C-19-015)BR9.DWG Plotted on 18-Aug-2016 11:45 AM

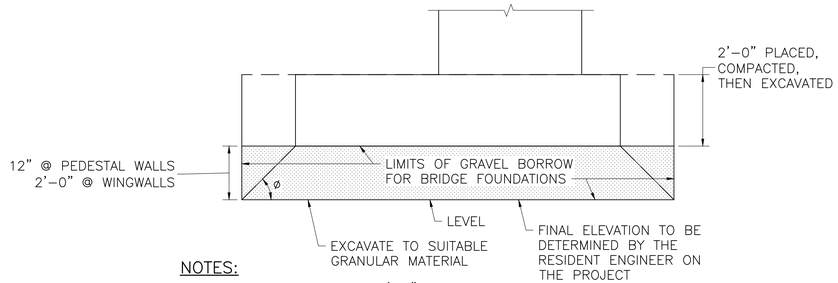


NOTE:

HATCHED AREA INDICATES LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.

LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

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

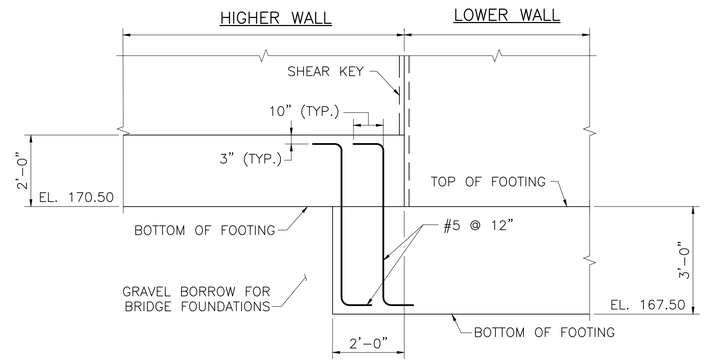


NOTES:

1. ø = 45° FOR DEPTH OF 5'-0" OR LESS.
   ø = 60° FOR DEPTH OVER 5'-0".
2. SAME TREATMENT IS TO BE USED AT ENDS OF WALLS.

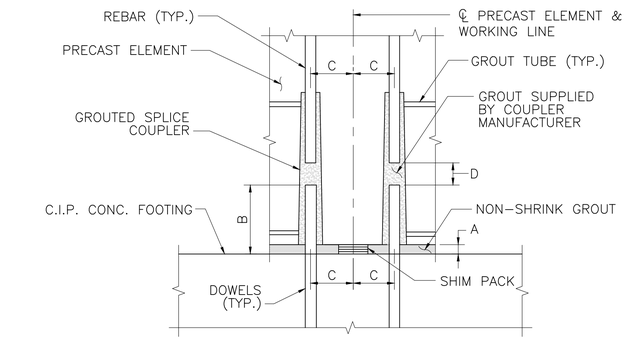
LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS

NOT TO SCALE



STEPPED-UP FOOTING DETAIL

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



NOTES:

1. USE MATCHING TEMPLATES FOR THE LOCATION OF REINFORCEMENT AND GROUTED SPLICE COUPLER PLACEMENT WITHIN THE ELEMENTS TO CONTROL THE CRITICAL DIMENSION "C".
2. CONSULT MANUFACTURER OF THE GROUTED SPLICE COUPLER FOR PROPER DIMENSIONS "B" AND "D" AND FOR TOLERANCES ON THESE AND ALL DIMENSIONS.
3. BEFORE EXECUTING GROUTED SPLICE COUPLER ASSEMBLIES, ALWAYS SEEK INSTALLATION RECOMMENDATIONS FROM THE MANUFACTURER OF THE GROUTED SPLICE COUPLER USED.
4. THE DESIGN OF THE WINGWALLS AND PEDESTAL WALLS ARE BASED UPON THE CRITICAL MAXIMUM DIMENSIONS SPECIFIED. IF THE DIMENSIONS ARE EXCEEDED THE CONTRACTOR WILL BE RESPONSIBLE FOR REDESIGNING THE WALLS.

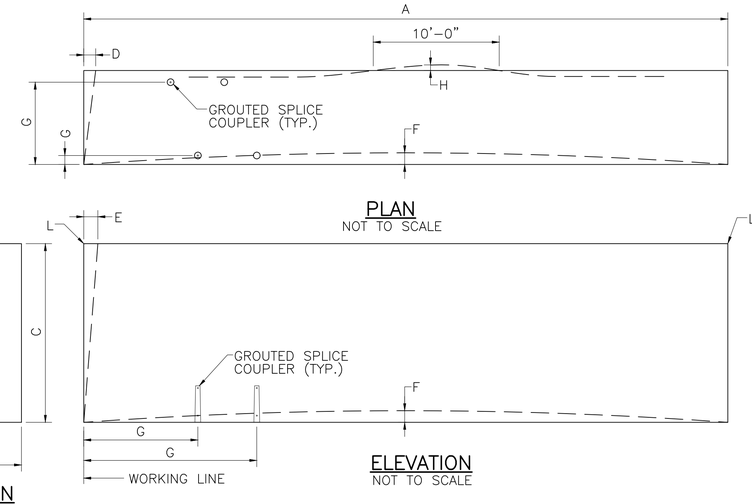
GROUTED SPLICE COUPLER DETAILS

NOT TO SCALE

GROUTED SPLICE COUPLER TOLERANCES

A	SHIM PACK HEIGHT	$1\frac{1}{4}$" ± $\frac{3}{4}$"
B	DOWEL HEIGHT	CONSULT MANUFACTURER
C	LOCATION OF REINFORCING, GROUTED SPLICE COUPLER, AND DOWELS MEASURED FROM A WORKING LINE	±$\frac{1}{4}$"
D	GAP BETWEEN DOWELS AND REINFORCING	CONSULT MANUFACTURER

GROUTED SPLICE COUPLER CRITICAL MAXIMUM DIMENSIONS		
BAR SIZE	OUTSIDE DIAMETER (IN.)	LENGTH OF COUPLER (IN.)
4	2.625	14.125
5	3.000	14.125
6	3.000	14.125
7	3.000	18.75
8	3.500	18.75
9	3.500	18.75
10	3.500	23.5
11	3.500	23.5
14	4.000	28.375
18	5.000	39.625



PLAN

NOT TO SCALE

SECTION

NOT TO SCALE

ELEVATION

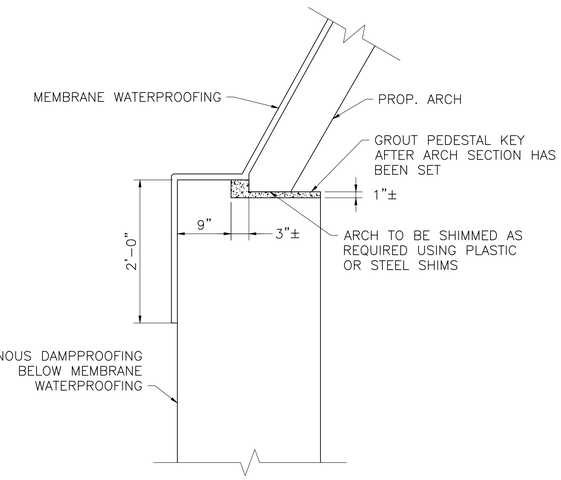
NOT TO SCALE

WALL SEGMENT ELEVATION ERECTION TOLERANCES

L	TOP ELEVATION FROM NOMINAL TOP ELEVATION	$\frac{1}{4}$"
M	MAXIMUM PLUMB VARIATION OVER HEIGHT OF PANEL	$\frac{1}{2}$"
N	PLUMB IN ANY 10 FEET OF PANEL HEIGHT	$\frac{1}{4}$"

WALL SEGMENT FABRICATION TOLERANCES

A	LENGTH	±$\frac{1}{4}$"
B	WIDTH (OVERALL)	±$\frac{1}{4}$"
C	DEPTH (OVERALL)	±$\frac{1}{4}$"
D	VARIATION FROM SPECIFIED PLAN END SQUARENESS OR SKEW	±$\frac{1}{2}$"
E	VARIATION FROM SPECIFIED ELEVATION END SQUARENESS OR SKEW	±$\frac{1}{2}$"
F	SWEEP OVER MEMBER LENGTH	±$\frac{3}{8}$"
G	LOCATION OF GROUTED SPLICE COUPLER MEASURED FROM A WORKING LINE	±$\frac{1}{4}$"
H	LOCAL SMOOTHNESS OF ANY SURFACE	±$\frac{1}{4}$" IN 10 FEET
J	LOCATION OF BLOCKOUT FOR PILES OR VOIDS	N/A
K	MAXIMUM PLUMB VARIATION OVER HEIGHT OF CMP VOID	N/A

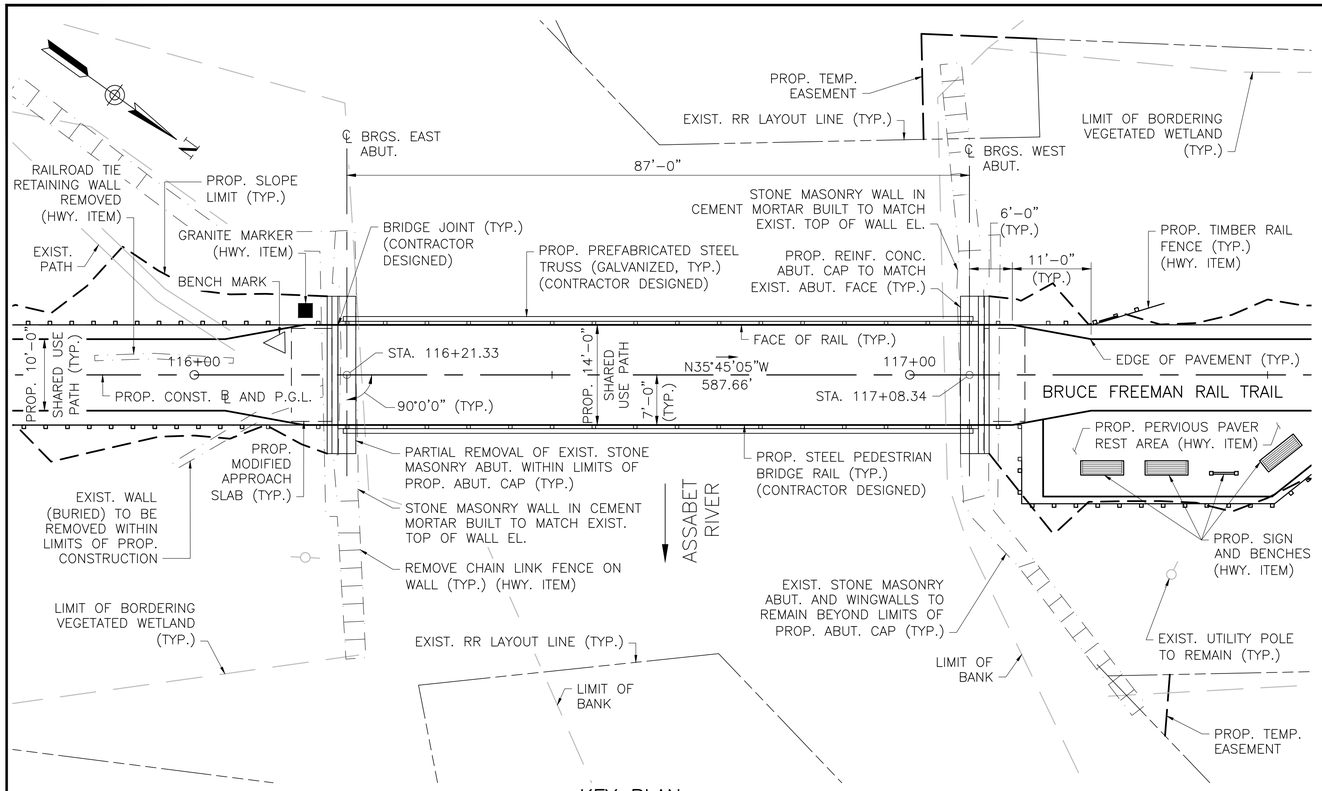


PEDESTAL WALL GROUT CONNECTION DETAIL

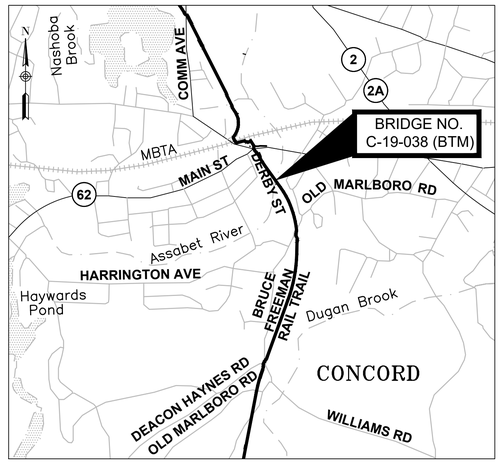
SCALE: 1" = 1'-0"

Final Structural Submittal (SF) 18-August-2016

AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



KEY PLAN
SCALE: 1" = 10'



LOCUS
SCALE: 1" = 1500'

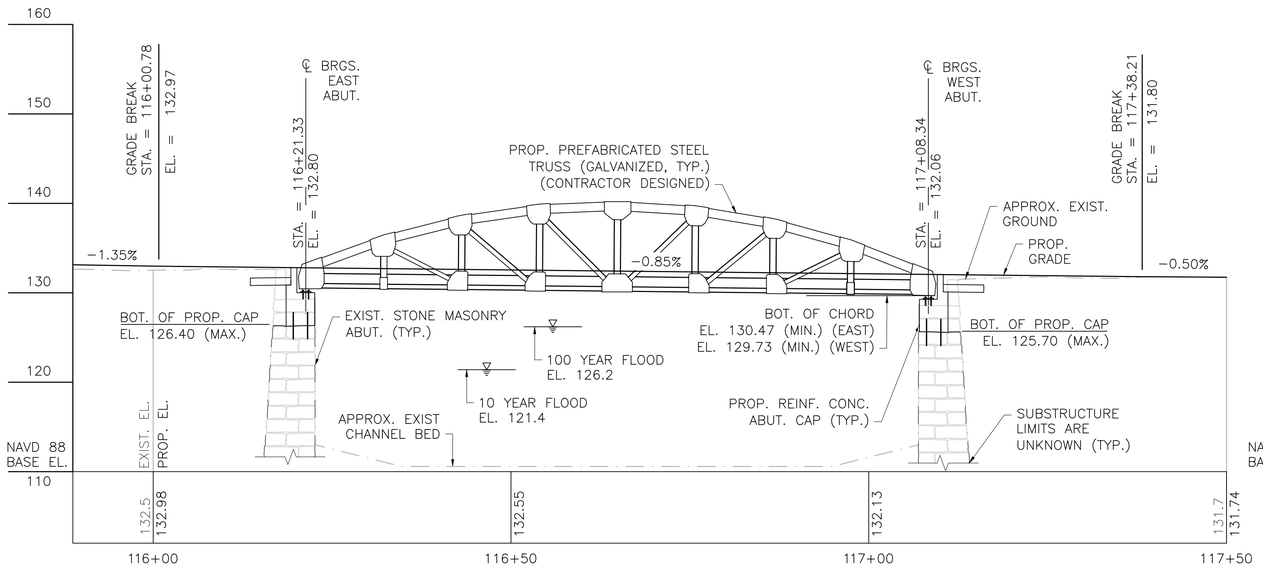
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	164	227
PROJECT FILE NO. 605189			

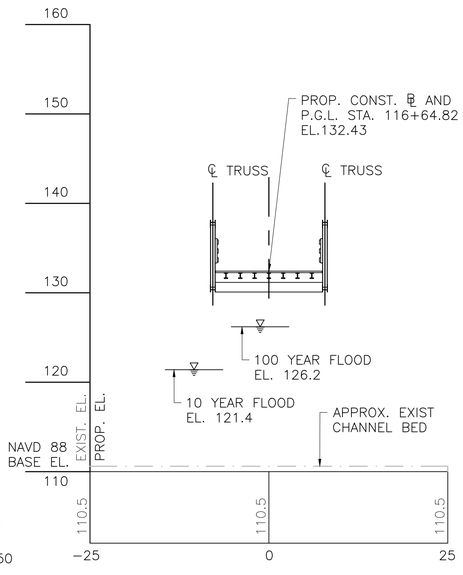
KEY PLAN, LOCUS MAP, AND PROFILES

INDEX OF BRIDGE SHEETS:

1. KEY PLAN, LOCUS MAP, AND PROFILES
2. GENERAL NOTES AND ESTIMATED QUANTITIES
3. ELEVATION AND CROSS SECTION
4. ABUTMENT CAP DETAILS
5. APPROACH SLAB AND MISC. DETAILS



PROFILE – ALONG CONST. ℄ & P.G.L.
SCALE: 1" = 10' HORIZ.
1/8" = 1'-0" VERT.



PROFILE – ALONG ASSABET RIVER
SCALE: 1" = 10' HORIZ.
1/8" = 1'-0" VERT.

NOTE:
FOR GENERAL NOTES, SEE SHEET 2.

AUG. 27, 2016	ISSUED FOR CONSTRUCTION

MassDOT Highway Division

SUPERSTRUCTURE REPLACEMENT

CONCORD

BRUCE FREEMAN RAIL TRAIL
OVER ASSABET RIVER

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Greenman-Pedersen, Inc.
GPI
181 Ballardvale Street, Suite 202
Wilmington, MA 01887

TITLE: CHIEF ENGINEER

605189_(C-19-038)BR1_2.DWG Plotted on 18-Aug-2016 11:49 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	165	227
PROJECT FILE NO. 605189			

GENERAL NOTES AND ESTIMATED QUANTITIES

GENERAL NOTES

DESIGN:
IN ACCORDANCE WITH THE 2014 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2015 AND THE 2009 AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, FOR H10 LOADING AND 90 PSF PEDESTRIAN LOADING.

MASSDOT BENCH MARK:
BENCH MARK – REBAR–CAP 80032
N 2990663.04 E 685643.21
STA. 116+11.68 4.52' LT
EL. 132.17'

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

MASSDOT SURVEY NOTEBOOKS:
COPIES OF ELECTRONIC SURVEY FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION.

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

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

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

SEISMIC GROUND SHAKING HAZARD:
DESIGN RETURN PERIOD: 1000 YEARS

DESIGN SPECTRA:

As = 0.118
S_{DS} = 0.243
S_{D1} = 0.096

SITE CLASS = D

SEISMIC DESIGN CATEGORY (SDC) = A

ANCHOR BOLTS:
ALL ANCHOR BOLTS SHALL BE SET BY TEMPLATE BEFORE THE CONCRETE IS PLACED.

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

MODIFICATION CONDITION	#4 BARS	#5 BARS
1. NONE	21"	26"
2. 12" OF CONCRETE BELOW BAR	29"	36"
3. COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4. COATED BARS, ALL OTHER CASES	25"	31"
5. CONDITION 2. AND 3.	35"	44"
6. CONDITION 2. AND 4.	34"	43"

IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

CONCRETE MIXES:

(1)	(2)	(3)	TO BE USED IN CONSTRUCTION OF:
4000	$1\frac{1}{2}$	565	APPROACH SLABS
4000	$\frac{3}{4}$	610	ABUTMENT CAPS AND BACKWALLS

(1) 28 DAY COMPRESSIVE STRENGTH (PSI)
(2) MAXIMUM AGGREGATE SIZE (INCH)
(3) CEMENTITIOUS CONTENT (POUNDS/C.Y.)

CONTRACTOR DESIGNED SUPERSTRUCTURE:
THE TRUSS BRIDGE CHORDS ARE TO BE FABRICATED OUT OF STEEL I–BEAMS WITH GUSSET PLATES. STRUCTURAL STEEL TRUSS (INCLUDING CAMBER AND TOP OF FORM ELEVATIONS), IPE TIMBER DECK, BEARINGS, ANCHOR BOLTS, STEEL RAILINGS, AND DECK JOINTS SHALL BE CONTRACTOR DESIGNED IN ACCORDANCE WITH THE 2014 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2015 AND THE 2009 AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, FOR H10 LOADING AND 90 PSF PEDESTRIAN LOADING. STEEL TRUSS SHALL BE GALVANIZED (UNPAINTED) AND STEEL BRIDGE RAIL SHALL BE GALVANIZED AND PAINTED.

THE ABUTMENT BACKWALL DESIGN ASSUMES A TOTAL STEEL TRUSS WEIGHT (INCLUDING IPE DECK) WITHIN A RANGE OF 51 KIPS TO 63 KIPS (SERVICE LOAD). IF THE WEIGHT OF THE CONTRACTOR DESIGNED TRUSS IS NOT WITHIN THE SPECIFIED RANGE, THE BACKWALL DESIGN SHALL BE COMPLETED AND STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS. THE CALCULATIONS PERFORMED SHALL BE SUPPLIED TO THE ENGINEER FOR APPROVAL.

CONSTRUCTION ACCESS RESTRICTION:
THE CONTRACTOR IS DIRECTED TO SUPPLEMENTAL SPECIFICATION SECTION 901.67 FOR RESTRICTIONS OF LOADING ON THE NEWLY CONSTRUCTED BRIDGE AND SECTION 960.61 FOR RESTRICTIONS ON THE REMOVAL OF FALSEWORK DURING ERECTION OF THE TRUSS. ANY LOADING EXCEEDING THE DESIGN LOADING SHALL BE RESTRICTED FROM TRAVELING OVER THE BRIDGE. THE CONTRACTOR MAY ELECT TO SUBMIT CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS TO THE ENGINEER FOR APPROVAL, WHICH DEMONSTRATE THAT CONSTRUCTION LOADS CAN SAFELY TRAVEL OVER THE STRUCTURE.

CONSTRUCTION SURCHARGE RESTRICTION:
DUE TO THE UNKNOWN GEOMETRY OF THE EXISTING SUBSTRUCTURE, THERE SHALL BE NO ADDITIONAL SURCHARGE LOADS APPLIED TO THE SUBSTRUCTURE DURING CONSTRUCTION THAT ARE GREATER THAN 250 POUNDS PER SQUARE FOOT. THEREFORE, CONSTRUCTION LOADING GREATER THAN 250 POUNDS PER SQUARE FOOT IS RESTRICTED FROM THE FRONT FACE OF THE EXISTING ABUTMENTS TO A DISTANCE OF 25 FEET ALONG THE BRIDGE APPROACHES. THE CONTRACTOR MAY ELECT TO PERFORM A SUBSURFACE EXPLORATION PROGRAM TO DETERMINE THE GEOMETRY OF THE EXISTING SUBSTRUCTURE AND THE SUBMIT THE RESULTS ALONG WITH CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS TO THE ENGINEER FOR APPROVAL, WHICH DEMONSTRATE THAT PROPOSED CONSTRUCTION SURCHARGE LOADS ARE ACCEPTABLE.

HYDRAULIC DATA

HYDRAULIC DESIGN DATA

DRAINAGE AREA:	117.8 SQUARE MILES
DESIGN FLOOD DISCHARGE:	2280 CUBIC FEET PER SECOND
DESIGN FLOOD FREQUENCY:	10 YEARS
DESIGN FLOOD VELOCITY:	UNKNOWN
DESIGN FLOOD ELEVATION:	121.4 FEET, NAVD

BASE (100 YEAR) FLOOD DATA

BASE FLOOD DISCHARGE:	4010 CUBIC FEET PER SECOND
BASE FLOOD ELEVATION:	126.2 FEET, NAVD

DESIGN AND CHECK SCOUR DATA

DESIGN SCOUR FLOOD EVENT RETURN FREQUENCY:	25 YEARS
CHECK SCOUR FLOOD EVENT RETURN FREQUENCY:	50 YEARS

FLOOD OF RECORD

DISCHARGE:	UNKNOWN
FREQUENCY:	UNKNOWN
MAXIMUM ELEVATION:	UNKNOWN
DATE:	AUGUST 1955
HISTORY OF ICE FLOES:	NONE DOCUMENTED IN FIS
EVIDENCE OF SCOUR AND EROSION:	NONE OBSERVED

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM DESCRIPTION	QUANTITY	UNIT
BRIDGE EXCAVATION	20	CY
GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES	5	CY
STONE MASONRY WALL IN CEMENT MORTAR	10	CY
STONE MASONRY WALL REMOVED, BRIDGE NO. C–19–038 (BTM)	40	CY
CORING AND GROUTING DOWELS	44	EA
BRIDGE SUPERSTRUCTURE, BRIDGE NO. C–19–038 (BTM)	1	LS

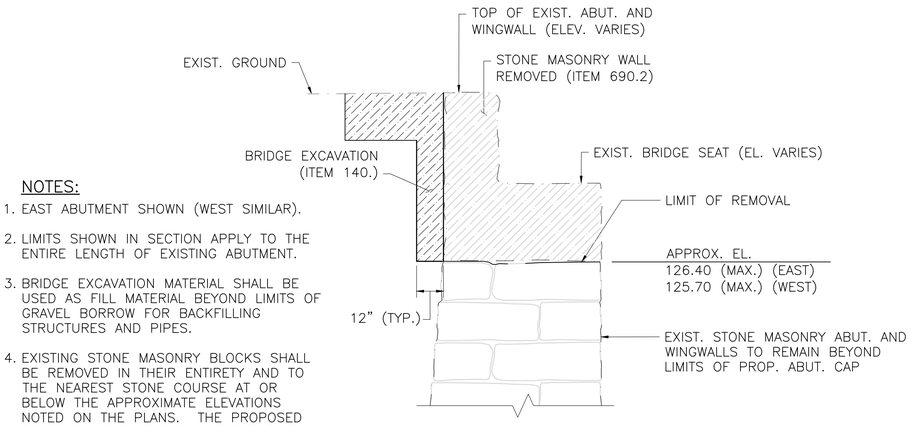
DATE	DESCRIPTION
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-038)BR1_2.DWG Plotted on 18-Aug-2016 11:49 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	166	227
PROJECT FILE NO. 605189			

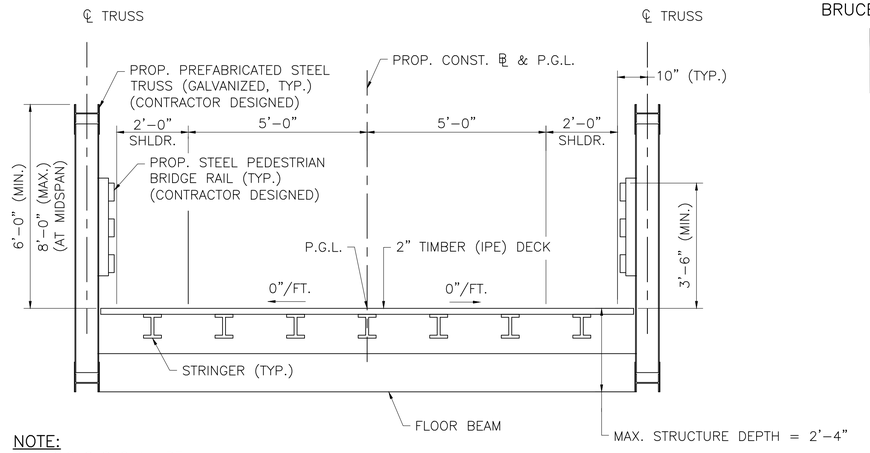
ELEVATION AND CROSS SECTION



NOTES:

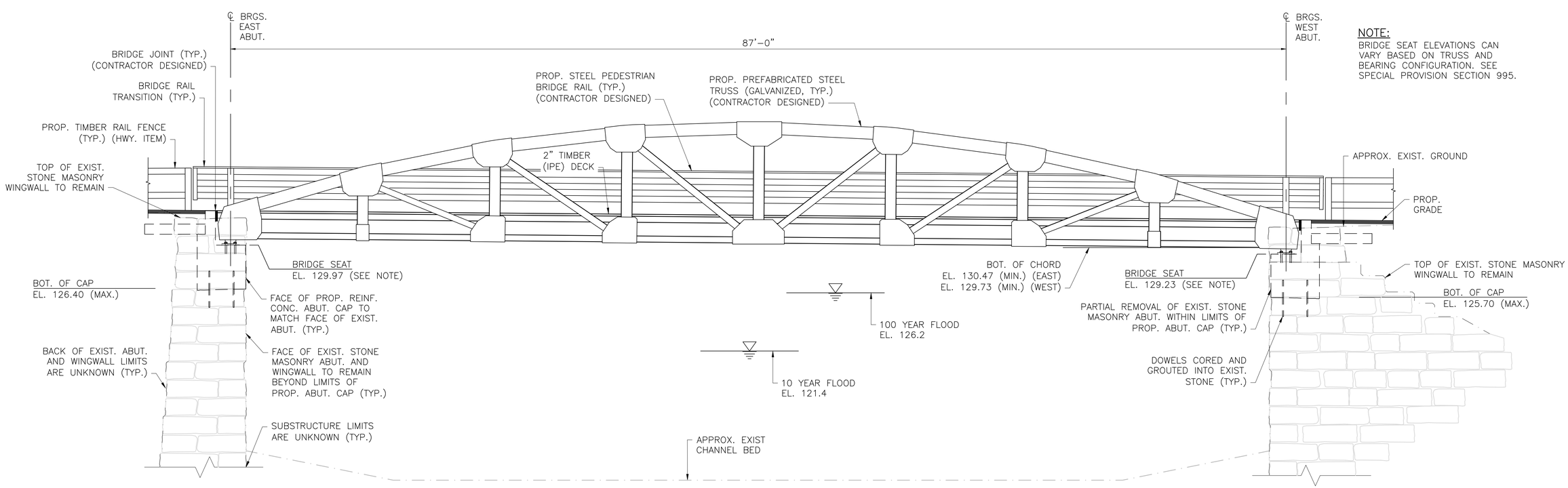
1. EAST ABUTMENT SHOWN (WEST SIMILAR).
2. LIMITS SHOWN IN SECTION APPLY TO THE ENTIRE LENGTH OF EXISTING ABUTMENT.
3. BRIDGE EXCAVATION MATERIAL SHALL BE USED AS FILL MATERIAL BEYOND LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
4. EXISTING STONE MASONRY BLOCKS SHALL BE REMOVED IN THEIR ENTIRETY AND TO THE NEAREST STONE COURSE AT OR BELOW THE APPROXIMATE ELEVATIONS NOTED ON THE PLANS. THE PROPOSED CONCRETE ABUTMENT CAP HEIGHT SHALL BE ADJUSTED ACCORDINGLY BASED ON THE EXACT STONE ABUTMENT REMOVAL ELEVATION.

EXCAVATION AND WALL REMOVAL PAYMENT LIMITS
SCALE: 3/8" = 1'-0"



NOTE:
DIMENSIONS SHOWN ARE APPROXIMATE AND WILL BE FINALIZED BY THE PREFABRICATED TRUSS DESIGNER.

PROPOSED CROSS SECTION
SCALE: 1/2" = 1'-0"



NOTE:
BRIDGE SEAT ELEVATIONS CAN VARY BASED ON TRUSS AND BEARING CONFIGURATION. SEE SPECIAL PROVISION SECTION 995.

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

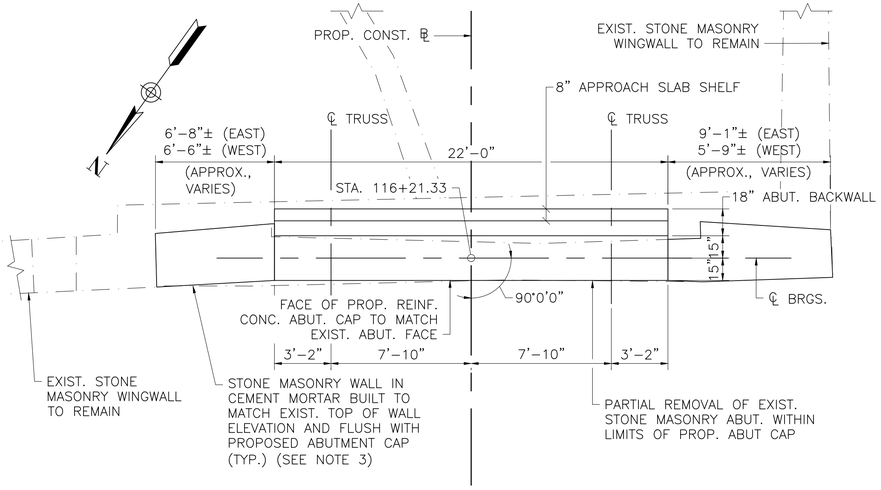
DATE	DESCRIPTION
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605189_(C-19-038)BR3.DWG Plotted on 18-Aug-2016 11:49 AM
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CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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MA	CM-002S(910)X	167	227
PROJECT FILE NO. 605189			

ABUTMENT CAP DETAILS

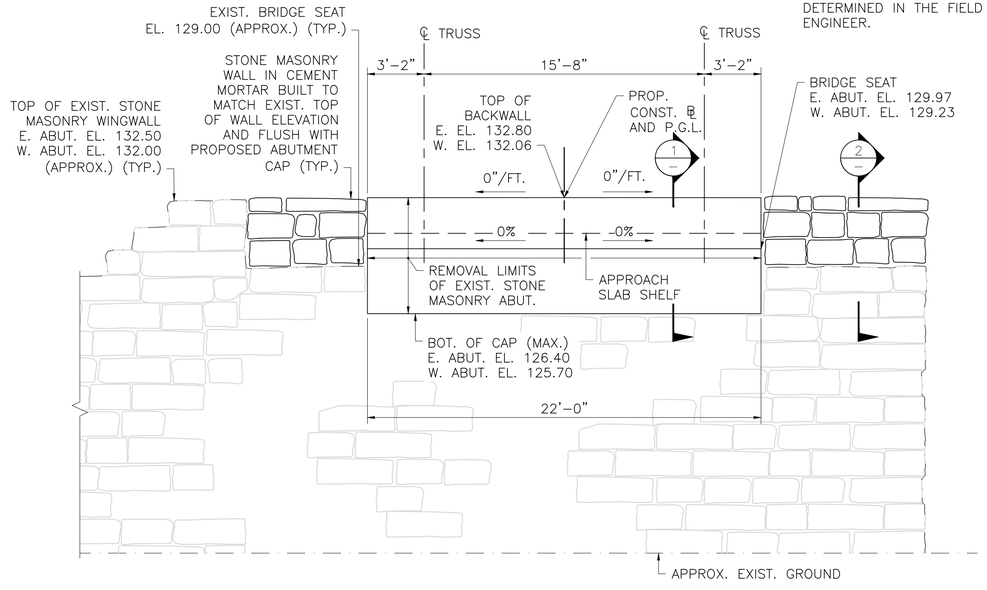


TYPICAL ABUTMENT CAP PLAN

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

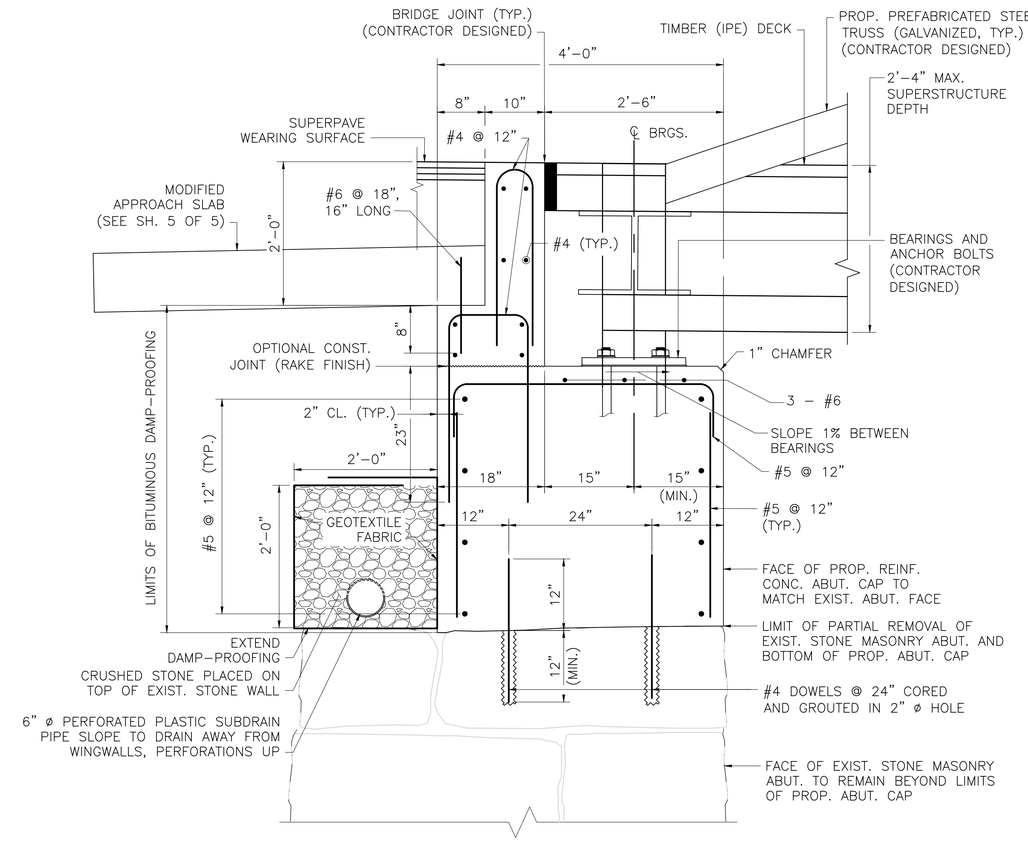
TYPICAL ABUTMENT NOTE:

1. EAST ABUTMENT SHOWN, WEST SIMILAR, BUT OPPOSITE.
2. REBAR AND DOWELS NOT SHOWN FOR CLARITY.
3. LIMITS OF STONE MASONRY WALL IN CEMENT MORTAR ARE APPROXIMATE AND VARY AT EACH CORNER. LIMITS ARE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.



TYPICAL ABUTMENT CAP ELEVATION

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

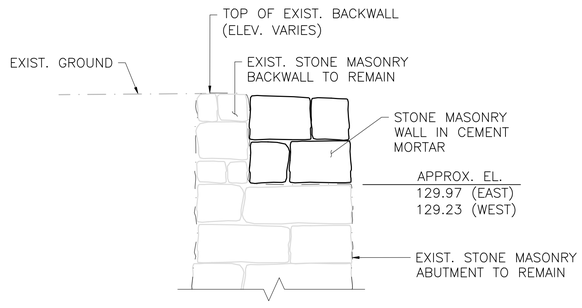


SECTION 1 – DETAILS AT ABUTMENT

SCALE: 1" = 1'-0"

DETAILS AT ABUTMENT NOTES:

1. ALL REINFORCEMENT SHOWN IN THIS DETAIL SHALL BE EPOXY COATED.
2. ALL ABUTMENT CAP AND BACKWALL CONCRETE SHALL BE 4000 PSI, $\frac{3}{4}$ IN, 610 CEMENT CONCRETE. THE OPTIONAL CONSTRUCTION JOINT SHALL BE GIVEN A RAKE FINISH WITH A $\frac{1}{4}$" MINIMUM AMPLITUDE.
3. TOP OF BACKWALL SHALL BE TROWELLED SMOOTH PARALLEL TO THE PROFILE GRADE.
4. THE DECK JOINT SHALL CONFORM TO ADA/AAB REQUIREMENTS.
5. GEOTEXTILE FABRIC AS DESCRIBED IN SECTION M9.50.
6. PIPE SHALL BE SET ON TOP OF CRUSHED STONE PLACED ON EXISTING STONE WALL AT BOTTOM OF TRENCH DUG FOR THE REMOVAL OF STONE BLOCKS.



SECTION 2 – DETAILS AT STONE MASONRY WALL

SCALE: $\frac{3}{8}$" = 1'-0"

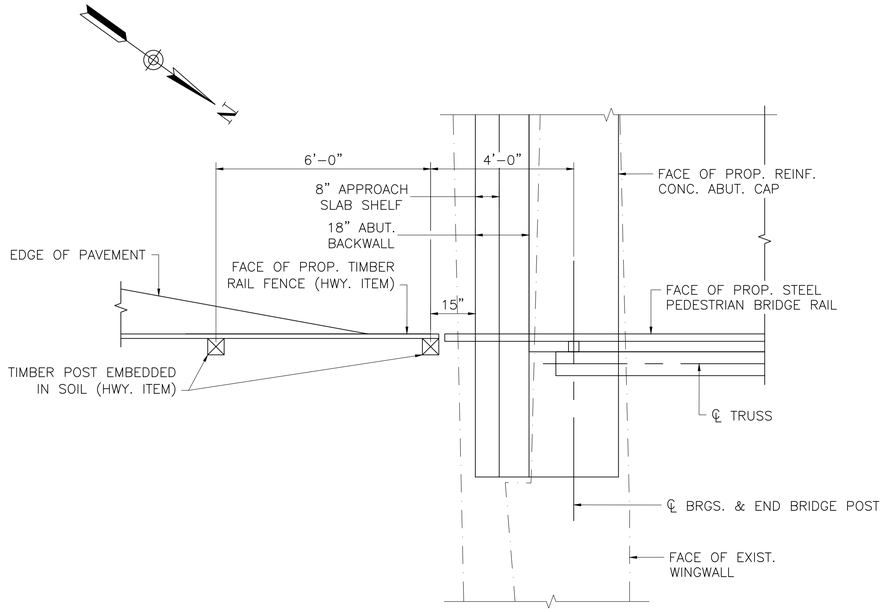
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

605189_(C-19-038)BR4.DWG Plotted on 18-Aug-2016 11:50 AM
Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	168	227
PROJECT FILE NO. 605189			

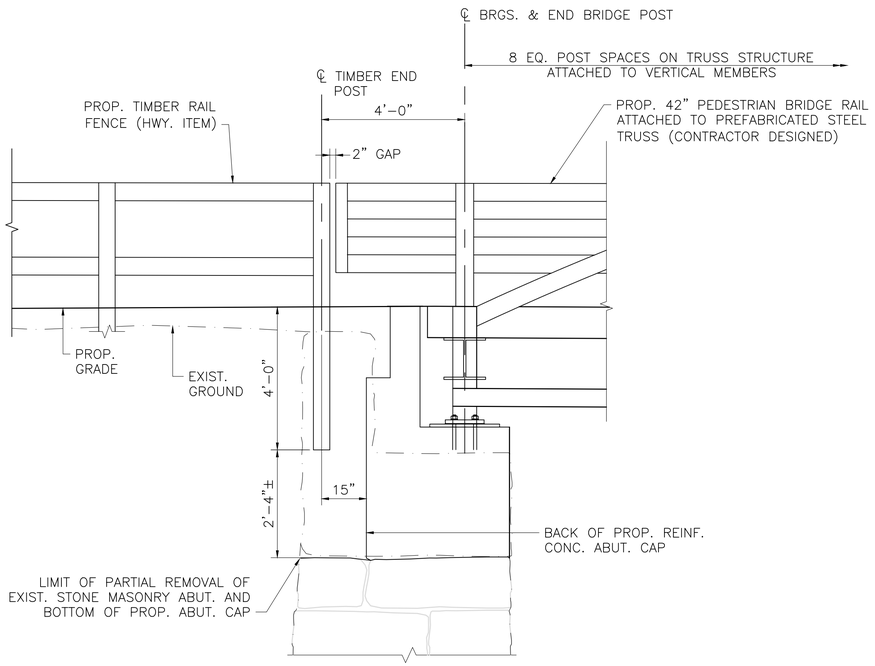
APPROACH SLAB AND MISC. DETAILS



TYPICAL BRIDGE RAIL TRANSITION – PLAN

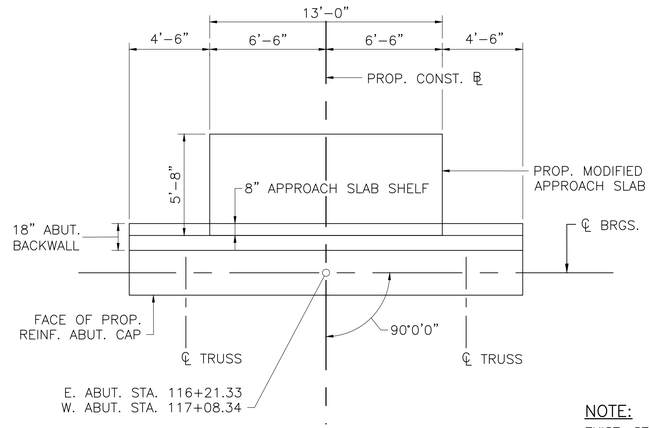
SCALE: $\frac{1}{2}$" = 1'-0"

NOTE:
NE CORNER SHOWN.
OTHERS ARE SIMILAR.



TYPICAL BRIDGE RAIL TRANSITION – ELEVATION

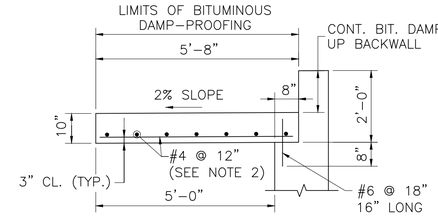
SCALE: $\frac{1}{2}$" = 1'-0"



TYPICAL APPROACH SLAB PLAN

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

NOTE:
EXIST. STONE MASONRY ABUTMENTS AND WINGWALLS NOT SHOWN FOR CLARITY.

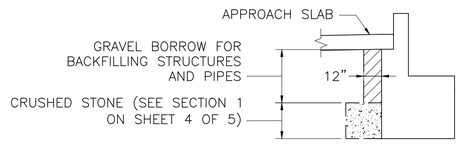


NOTES:

1. APPROACH SLAB TO BE 4000 PSI, $1\frac{1}{2}$ IN, 565 CEMENT CONCRETE.
2. PLACE LONGITUDINAL REINFORCEMENT PERPENDICULAR TO THE ABUTMENT CAP.
3. PLACE TRANSVERSE REINFORCEMENT PARALLEL TO ABUTMENT CAP.

TYPICAL APPROACH SLAB DETAILS

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



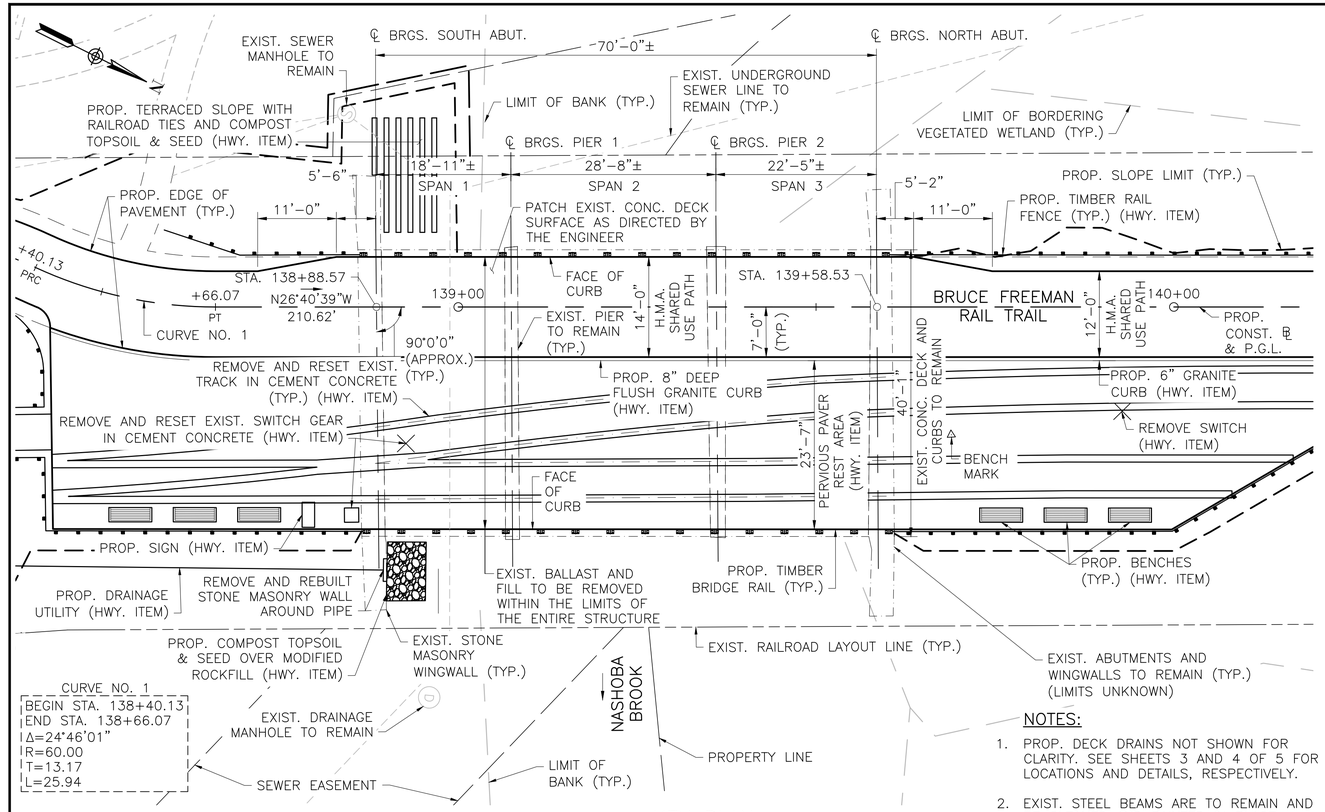
ABUTMENT CAP

LIMITS OF GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES

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

AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

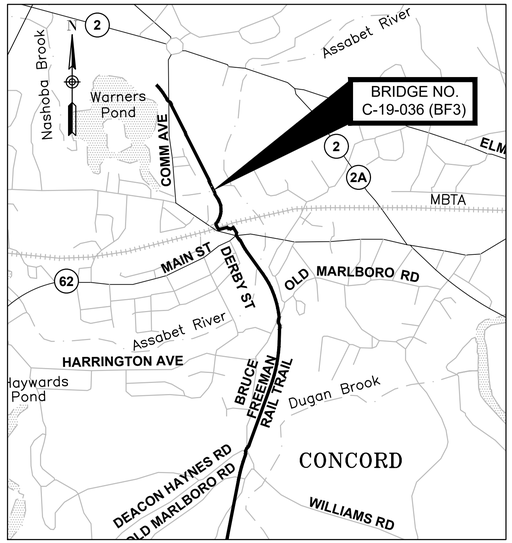
605189_(C-19-038)BR5.DWG Plotted on 18-Aug-2016 11:50 AM
Final Structural Submittal (SF) 18-August-2016



KEY PLAN
SCALE: 1" = 10'

NOTES:

1. PROP. DECK DRAINS NOT SHOWN FOR CLARITY. SEE SHEETS 3 AND 4 OF 5 FOR LOCATIONS AND DETAILS, RESPECTIVELY.
2. EXIST. STEEL BEAMS ARE TO REMAIN AND BE CLEANED AND PAINTED IN PLACE.



LOCUS
SCALE: 1" = 1500'

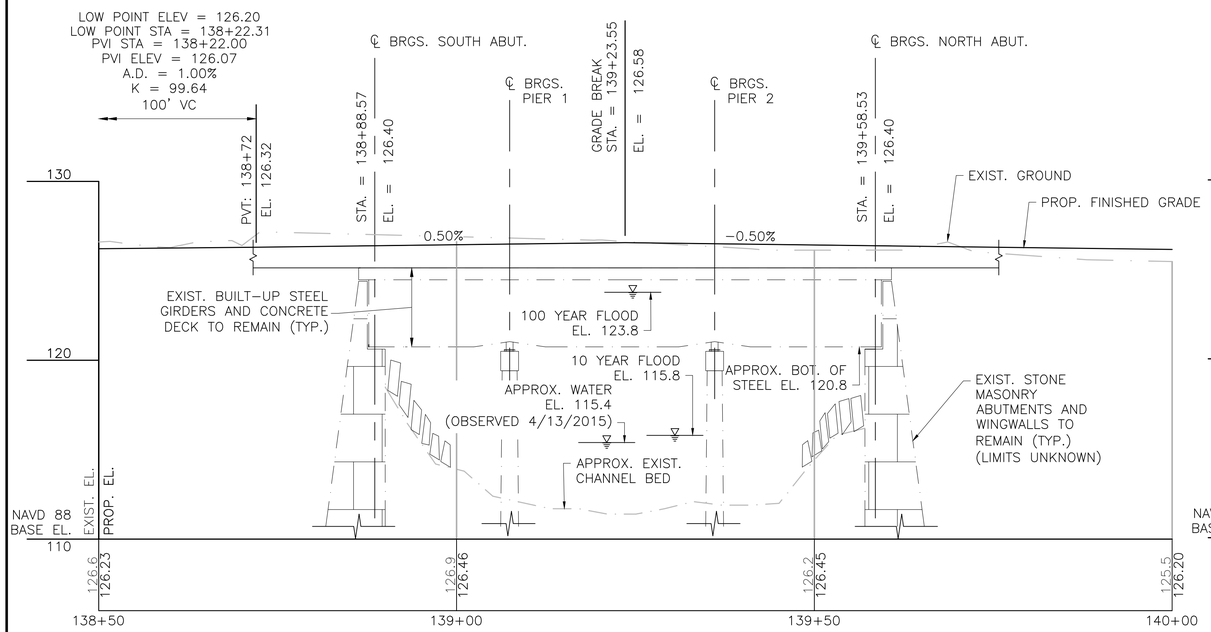
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	169	227
PROJECT FILE NO. 605189			

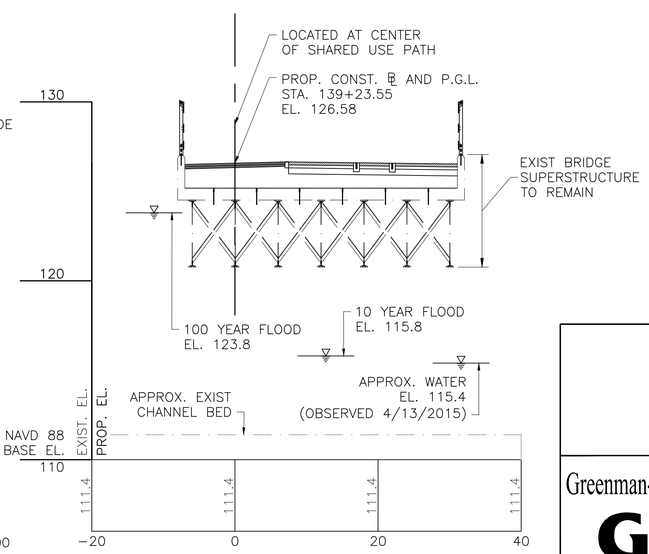
KEY PLAN, LOCUS MAP, AND PROFILES

INDEX OF BRIDGE SHEETS:

1. KEY PLAN, LOCUS MAP, AND PROFILES
2. GENERAL NOTES AND ESTIMATED QUANTITIES
3. ELEVATION AND CROSS SECTION
4–5. BRIDGE DETAILS



PROFILE – ALONG CONST. ℄ & P.G.L.
SCALE: 1" = 10' HORIZ.
¼" = 1'–0" VERT.



PROFILE – ALONG NASHOBA BROOK
SCALE: 1" = 10' HORIZ.
¼" = 1'–0" VERT.

NOTE:
FOR GENERAL NOTES, SEE SHEET 2.

AUG. 27, 2016	ISSUED FOR CONSTRUCTION

MassDOT Highway Division

BRIDGE REHABILITATION

CONCORD

BRUCE FREEMAN RAIL TRAIL
OVER NASHOBA BROOK

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Greenman-Pedersen, Inc.
GPI
181 Ballardvale Street, Suite 202
Wilmington, MA 01887

TITLE: CHIEF ENGINEER

605189_(C-19-036)BR1_2.DWG Plotted on 24-Aug-2016 10:42 AM
Final Structural Submittal (SF) 18-August-2016
V:\MAA-3015001.00 - Bruce Freeman Rail Trail Phase 2A & 2C\Phase 2C - CONCORD\605189\DWG\BR\605189_C-19-036(BR1_2).dwg 8/24/2016 10:42:03 AM EDT

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	170	227
PROJECT FILE NO. 605189			

GENERAL NOTES AND ESTIMATED QUANTITIES

GENERAL NOTES

DESIGN:
IN ACCORDANCE WITH THE 2014 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION WITH CURRENT INTERIM SPECIFICATIONS THROUGH 2015 AND THE 2009 AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, FOR H10 LOADING AND 90 PSF PEDESTRIAN LOADING.

MASSDOT BENCH MARK:
REBAR CAP 80040
N2992379.88 E684672.95
STA. 139+68.89 17.86' RT
EL. 125.76'

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

MASSDOT SURVEY NOTEBOOKS:
COPIES OF ELECTRONIC SURVEY FILES MAY BE OBTAINED FROM THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION.

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

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

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

SEISMIC GROUND SHAKING HAZARD:
DESIGN RETURN PERIOD: 1000 YEARS

DESIGN SPECTRA:

$A_S = 0.118$
$S_{DS} = 0.243$
$S_{D1} = 0.096$

SITE CLASS = D

SEISMIC DESIGN CATEGORY (SDC) = A

ANCHOR BOLTS:
ANCHOR BOLTS FOR TIMBER RAIL FENCE ON BRIDGE SHALL BE POST–INSTALLED.

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

MODIFICATION CONDITION	#4 BARS	#5 BARS
1. NONE	21"	26"
2. 12" OF CONCRETE BELOW BAR	29"	36"
3. COATED BARS, COVER < 3db, OR CLEAR SPACING < 6db	31"	39"
4. COATED BARS, ALL OTHER CASES	25"	31"
5. CONDITION 2. AND 3.	35"	44"
6. CONDITION 2. AND 4.	34"	43"

IF THE ABOVE BARS ARE SPACED 6" OR MORE ON CENTER, THE LAP LENGTH SHALL BE 80% OF THE LAP LENGTH GIVEN ABOVE. ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

CONCRETE MIXES:

(1)	(2)	(3)	TO BE USED IN CONSTRUCTION OF:
4000	$\frac{3}{4}$	610	RESET RAILROAD SWITCH AND SWITCH GEAR (HWY. ITEM)
4000	$1\frac{1}{2}$	565	PIPE END IN STONE MASONRY WINGWALL

(1) 28 DAY COMPRESSIVE STRENGTH (PSI)
(2) MAXIMUM AGGREGATE SIZE (INCH)
(3) CEMENTITIOUS CONTENT (POUNDS/C.Y.)

CONSTRUCTION ACCESS RESTRICTION:
THE CONTRACTOR IS DIRECTED TO SUPPLEMENTAL SPECIFICATION SECTION 901.67 FOR RESTRICTIONS OF LOADING ON THE NEWLY RECONSTRUCTED PORTIONS OF THE BRIDGE. ANY LOADING EXCEEDING AN H20 VEHICLE SHALL BE RESTRICTED FROM TRAVELING OVER THE BRIDGE. THE CONTRACTOR MAY ELECT TO SUBMIT CALCULATIONS STAMPED BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS TO THE ENGINEER FOR APPROVAL, WHICH DEMONSTRATE THAT CONSTRUCTION LOADS CAN SAFELY TRAVEL OVER THE STRUCTURE.

EXISTING BRIDGE DIMENSIONS:
THE EXISTING BRIDGE DIMENSIONS SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING BRIDGE DIMENSIONS PRIOR TO CONSTRUCTION.

HYDRAULIC DATA

HYDRAULIC DESIGN DATA

DRAINAGE AREA:	46.8 SQUARE MILES
DESIGN FLOOD DISCHARGE:	780 CUBIC FEET PER SECOND
DESIGN FLOOD FREQUENCY:	10 YEARS
DESIGN FLOOD VELOCITY:	3.6 FEET PER SECOND
DESIGN FLOOD ELEVATION:	115.8 FEET, NAVD

BASE (100 YEAR) FLOOD DATA

BASE FLOOD DISCHARGE:	1600 CUBIC FEET PER SECOND
BASE FLOOD ELEVATION:	123.8 FEET, NAVD

DESIGN AND CHECK SCOUR DATA

DESIGN SCOUR FLOOD EVENT RETURN FREQUENCY:	25 YEARS
CHECK SCOUR FLOOD EVENT RETURN FREQUENCY:	50 YEARS

FLOOD OF RECORD

DISCHARGE:	UNKNOWN
FREQUENCY:	UNKNOWN
MAXIMUM ELEVATION:	UNKNOWN
DATE:	AUGUST 1955
HISTORY OF ICE FLOES:	NONE DOCUMENTED IN NBIS DATABASE
EVIDENCE OF SCOUR AND EROSION:	NONE OBSERVED

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM DESCRIPTION	QUANTITY	UNIT
BLEEDER (BRIDGE DECK) PVC	48	EA
REINFORCED CONCRETE DECK EXCAVATION (FULL DEPTH)	15	SY
REINFORCED CONCRETE DECK EXCAVATION (PARTIAL DEPTH)	3	CY
BALLAST EXCAVATION	160	CY
TIMBER RAIL FENCE ON BRIDGE	160	FT
STONE MASONRY WALL REMOVED AND REBUILT IN CEMENT MORTAR BRIDGE NO. C–19–036 (BF3)	15	CY
4000 PSI CONCRETE FOR FULL DEPTH REPAIR	15	SY
4000 PSI CONCRETE FOR PARTIAL DEPTH REPAIR	3	CY
STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED	1000	LB
CLEAN (FULL REMOVAL) AND PAINT STEEL BRIDGE NO. C–19–036 (BF3)	1	LS
MEMBRANE WATERPROOFING (SPRAY APPLIED)	325	SY

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605189_(C-19-036)BR1_2.DWG Plotted on 18-Aug-2016 12:11 PM
Final Structural Submittal (SF) 18-August-2016

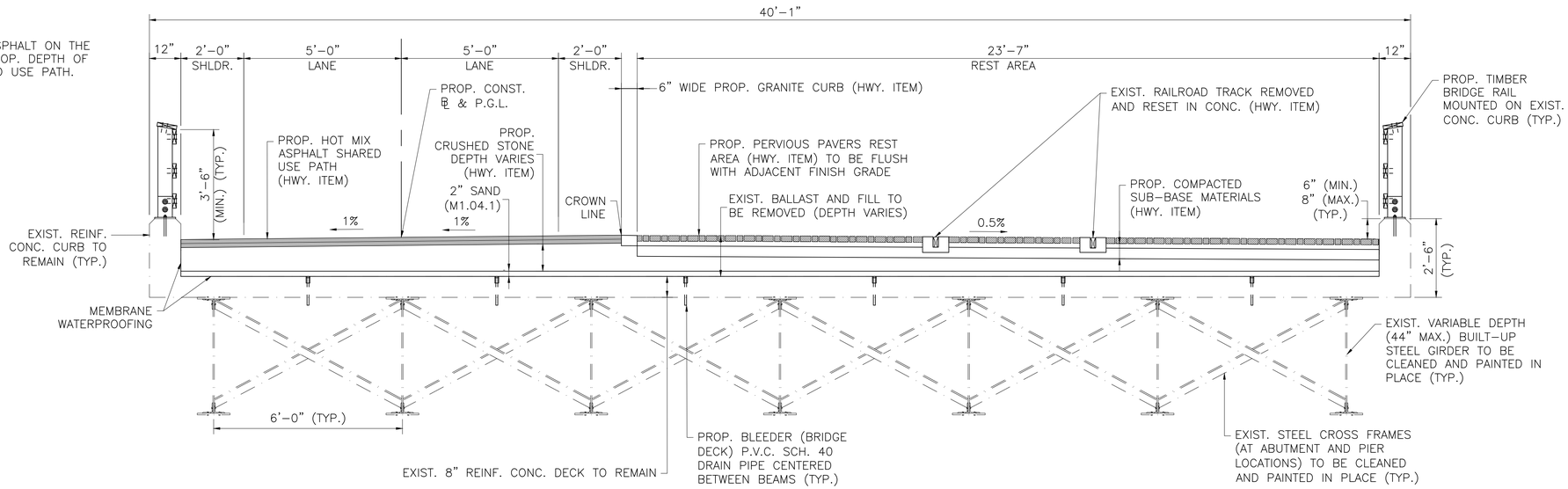
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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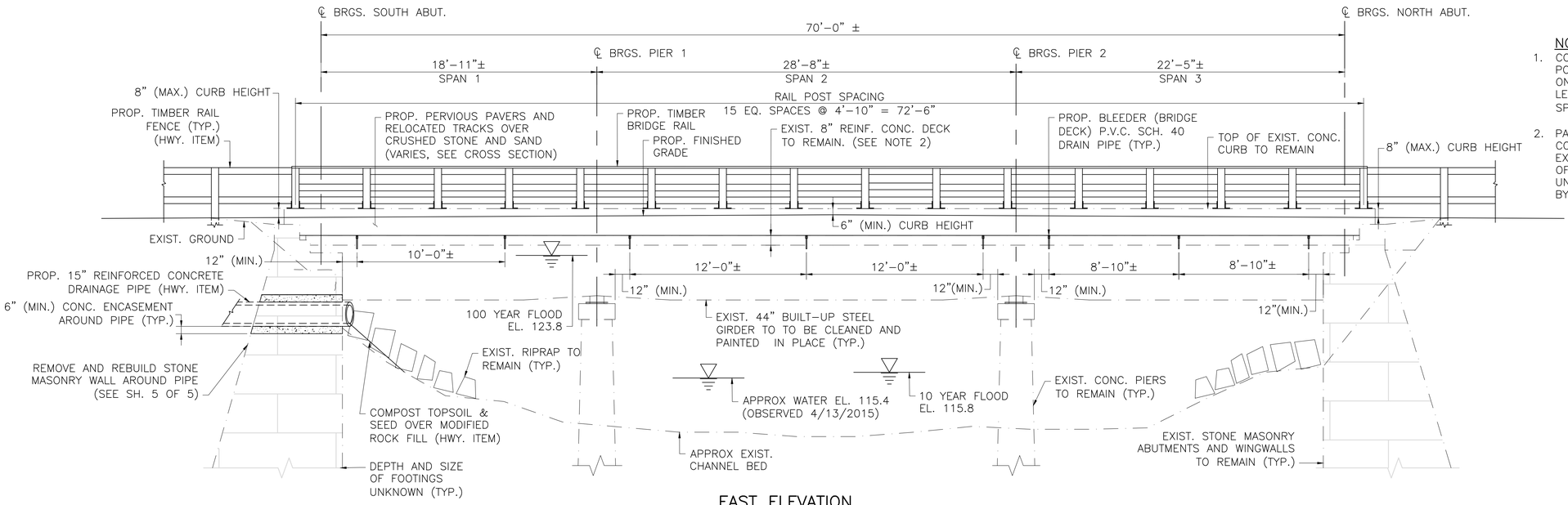
ELEVATION AND CROSS SECTION

605189_(C-19-036)BR3.DWG Plotted on 18-Aug-2016 12:11 PM

NOTE:
THE PROP. DEPTH OF ASPHALT ON THE BRIDGE MATCHES THE PROP. DEPTH OF ASPHALT ON THE SHARED USE PATH.



CROSS SECTION
SCALE: 1/2" = 1'



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

NOTES:
1. CONTRACTOR SHALL ADJUST RAIL POST SPACING AS REQUIRED BASED ON FIELD VERIFICATION OF CURB LENGTHS. THE POSTS SHALL BE SPACED AT A MAXIMUM OF 5'-0".
2. PATCH REPAIR EXIST. 8" REINF. CONC. DECK WHERE THERE ARE EXPOSED BARS ON THE TOP SIDE OF DECK AND OTHER AREAS OF UNSOUND CONCRETE AS DETERMINED BY THE ENGINEER.

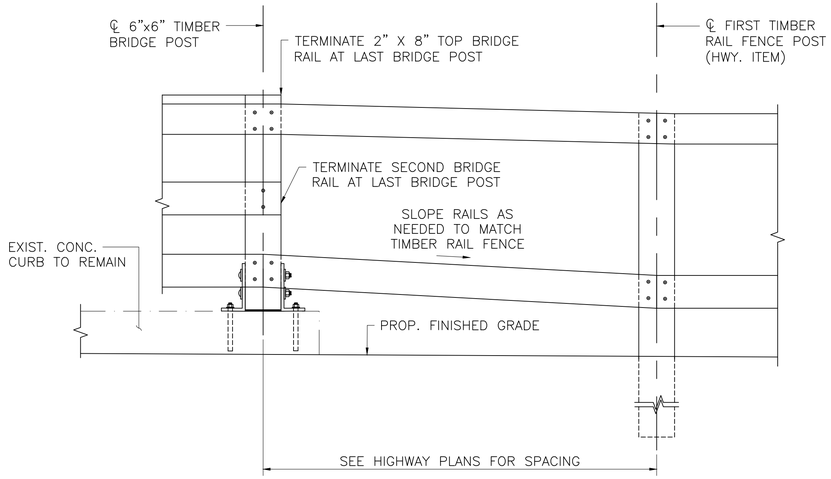
AUG. 27, 2016	ISSUED FOR CONSTRUCTION
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Final Structural Submittal (SF) 18-August-2016

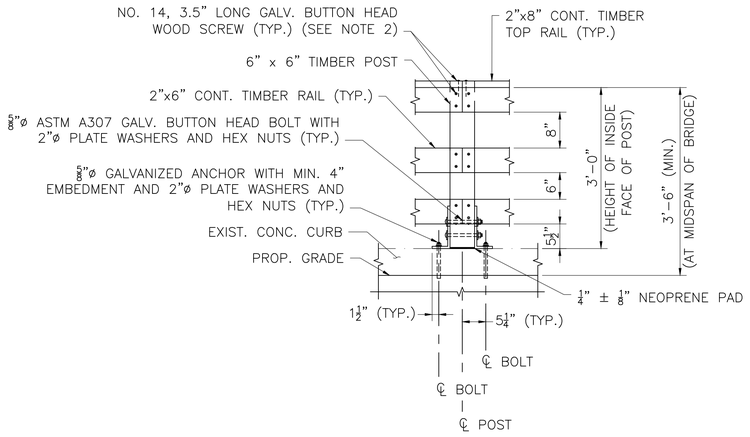
CONCORD
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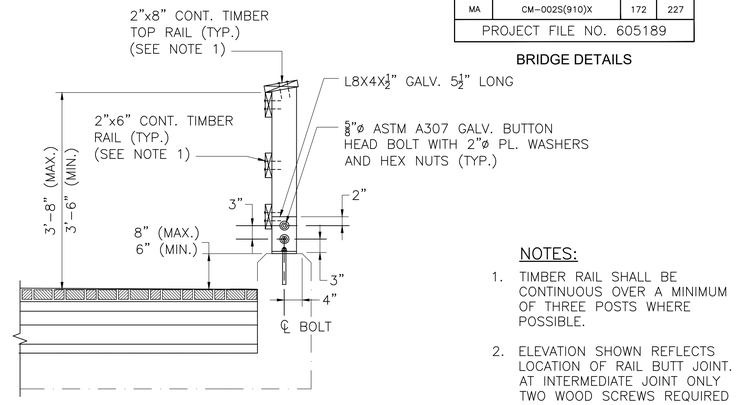
BRIDGE DETAILS



TIMBER BRIDGE RAIL TRANSITION
SCALE: 1" = 1'-0"



ELEVATION



SECTION

TIMBER BRIDGE RAIL DETAILS
SCALE: 3/4" = 1'-0"

NOTES:
1. TIMBER RAIL SHALL BE CONTINUOUS OVER A MINIMUM OF THREE POSTS WHERE POSSIBLE.
2. ELEVATION SHOWN REFLECTS LOCATION OF RAIL BUTT JOINT. AT INTERMEDIATE JOINT ONLY TWO WOOD SCREWS REQUIRED PER RAILING.
3. CURB REVEALS VARY FROM 8" AT ℄ BRGS. TO 6" AT MIDSPAN.

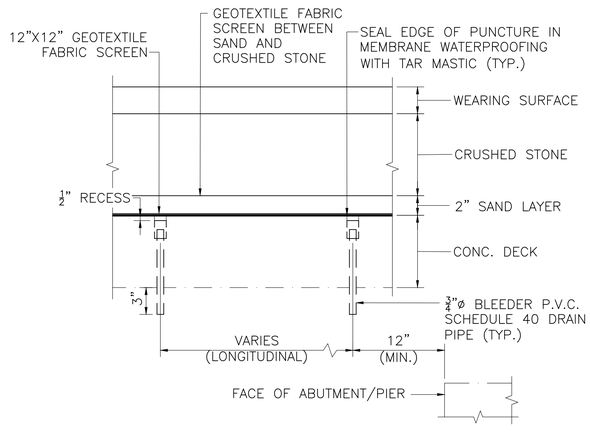
NOTE:
FOR LONGITUDINAL SPACING SEE EAST ELEVATION ON SH. 3 OF 5.

DECK PLAN
SCALE: 1 1/2" = 1'-0"

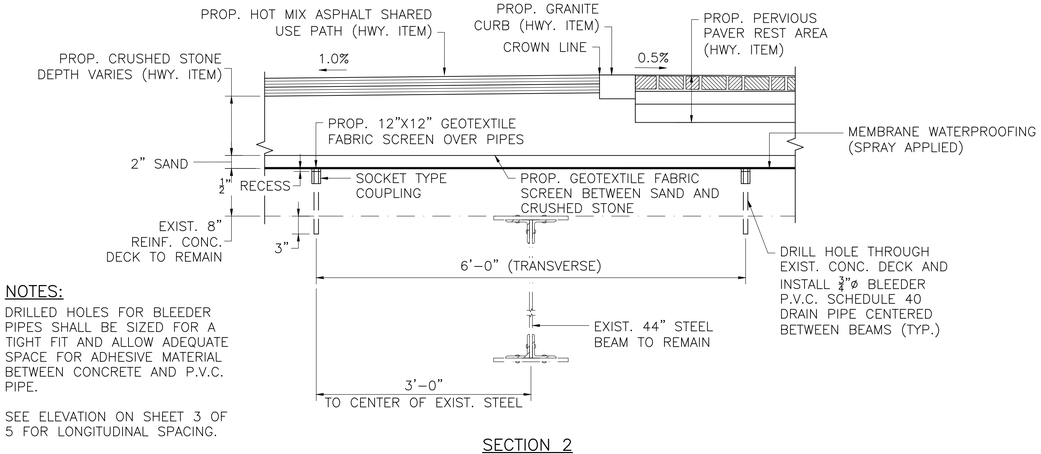
FACE OF CURB DETAILS AT REST AREA
SCALE: 1 1/2" = 1'-0"

FACE OF CURB DETAILS AT SHARED USE PATH
SCALE: 1 1/2" = 1'-0"

NOTES:
1. TURN MEMBRANE UP INTO 14"± HIGH POCKET.
2. DIMENSIONS AT THE FACE OF CURB ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS OF EXISTING CONCRETE.
3. MEMBRANE WATERPROOFING SHALL EXTEND BEYOND THE EDGE OF DECK AT THE ABUTMENTS AS DIRECTED BY THE ENGINEER.



SECTION 1
SCALE: 1 1/2" = 1'-0"



NOTES:
1. DRILLED HOLES FOR BLEEDER PIPES SHALL BE SIZED FOR A TIGHT FIT AND ALLOW ADEQUATE SPACE FOR ADHESIVE MATERIAL BETWEEN CONCRETE AND P.V.C. PIPE.
2. SEE ELEVATION ON SHEET 3 OF 5 FOR LONGITUDINAL SPACING.

SECTION 2
SCALE: 1" = 1'-0"

BLEEDER (BRIDGE DECK) P.V.C. DETAILS
SCALE: AS NOTED

AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

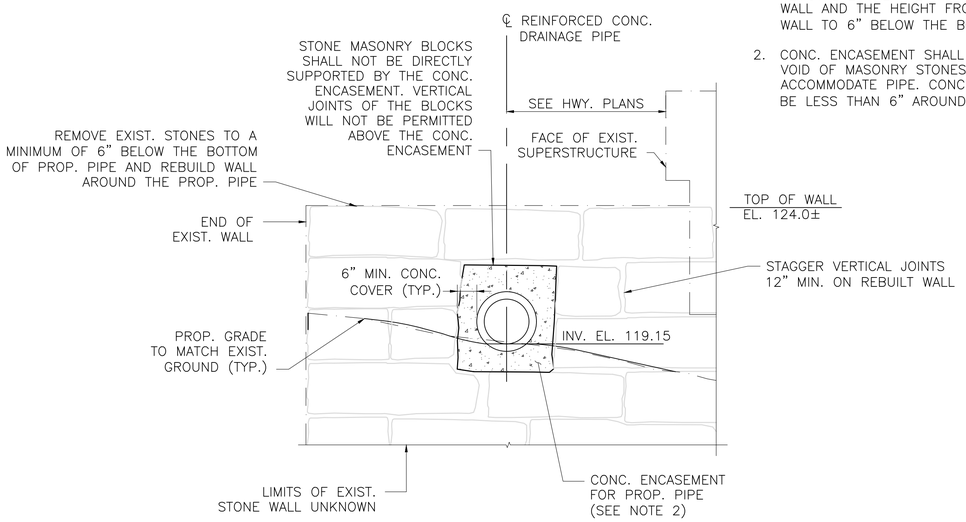
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Final Structural Submittal (SF) 18-August-2016

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

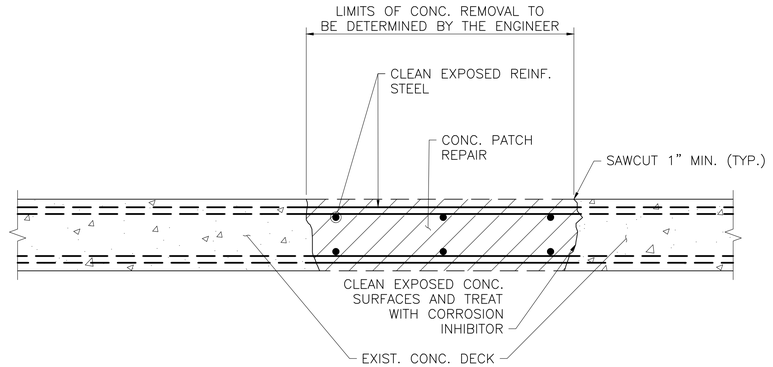
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	173	227
PROJECT FILE NO. 605189			

BRIDGE DETAILS

NOTES:
1. PAYMENT LIMITS OF EXISTING STONE MASONRY REMOVAL EQUAL THE WIDTH AND DEPTH OF THE EXIST WALL AND THE HEIGHT FROM THE TOP OF THE EXIST. WALL TO 6" BELOW THE BOTTOM OF THE PROP. PIPE.
2. CONC. ENCASEMENT SHALL BE PLACED TO FILL ENTIRE VOID OF MASONRY STONES REMOVED TO ACCOMMODATE PIPE. CONC. ENCASEMENT SHALL NOT BE LESS THAN 6" AROUND THE PIPE

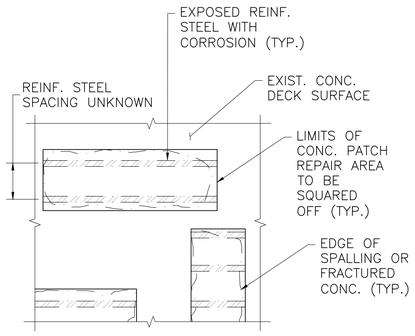


CONCRETE PIPE IN STONE MASONRY WALL DETAIL
SCALE: ½" = 1'-0"

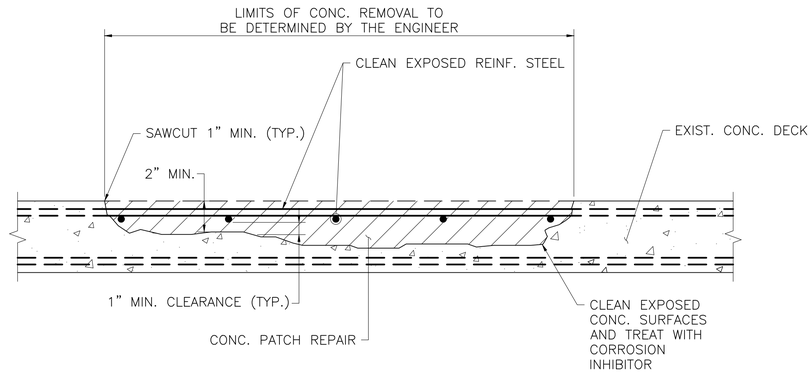


CONCRETE DECK FULL DEPTH PATCH REPAIR
SCALE: 1½" = 1'-0"

NOTES:
1. SIZE, LOCATION AND QUANTITY OF CONCRETE SPALLS ARE UNKNOWN AND SHALL BE DETERMINED BY THE ENGINEER PRIOR TO COMPLETING PATCH REPAIRS.
2. THE SURFACE OF THE EXIST. OR PREVIOUSLY CAST CONC. SHALL BE BLAST CLEANED, ROUGHENED, WETTED WITH CLEAN WATER, AND THEN FLUSHED WITH A MORTAR COMPOSED OF EQUAL PARTS OF THE CEMENT AND SAND SPECIFIED FOR THE NEW CONC., BEFORE THE NEW CONC IS PLACED ADJACENT THERETO. NEW CONC. SHALL BE PLACED BEFORE THE MORTAR HAS TAKEN INITIAL SET.
3. PATCH REPAIR CONCRETE SHALL BE 4000 PSI, ¾", 585 HP CEMENT CONC.



CONCRETE DECK PATCH REPAIR-PLAN VIEW
SCALE: 1" = 1'-0"



CONCRETE DECK PARTIAL DEPTH PATCH REPAIR
SCALE: 1½" = 1'-0"

AUG. 27, 2016	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

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Final Structural Submittal (SF) 18-August-2016

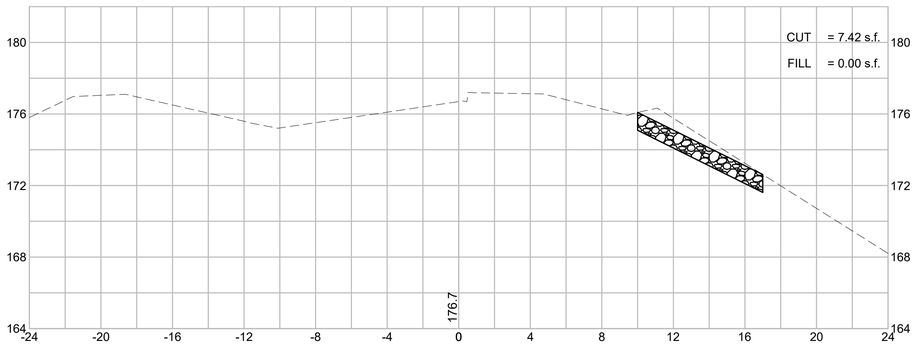
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	174	227
PROJECT FILE NO.	605189		

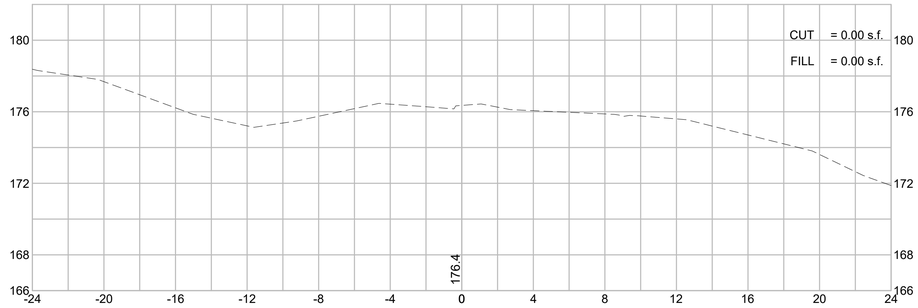
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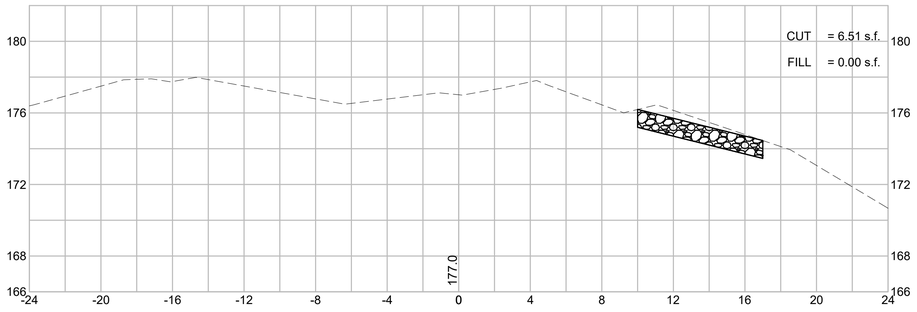
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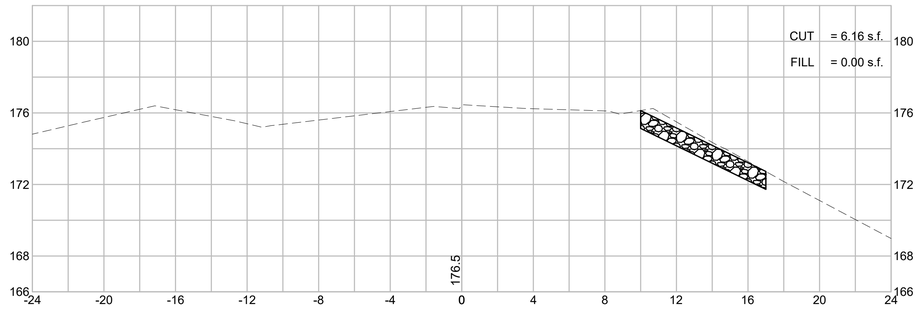
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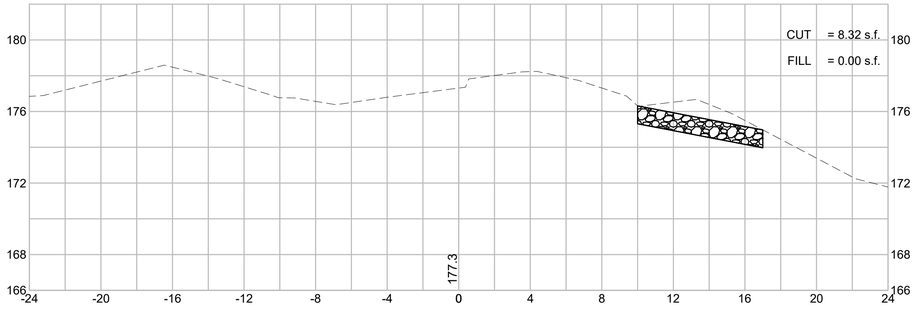
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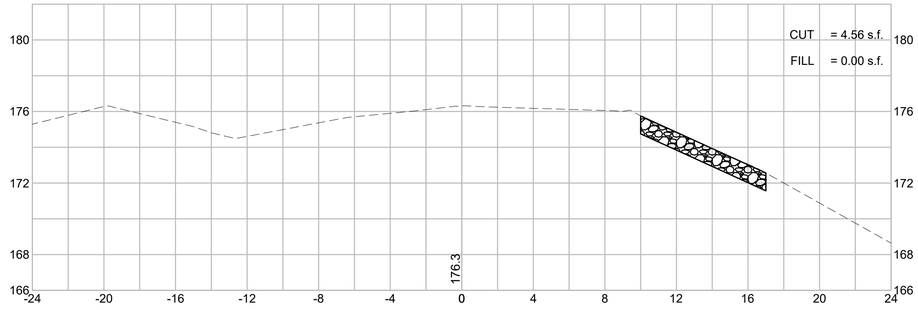
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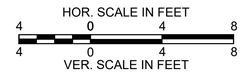


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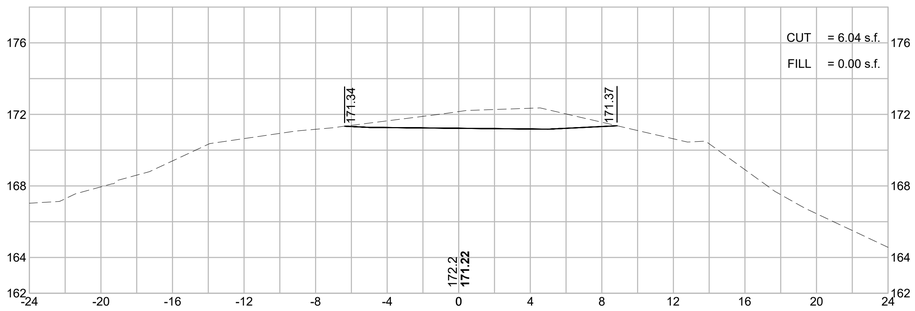
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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PROJECT FILE NO.	605189		

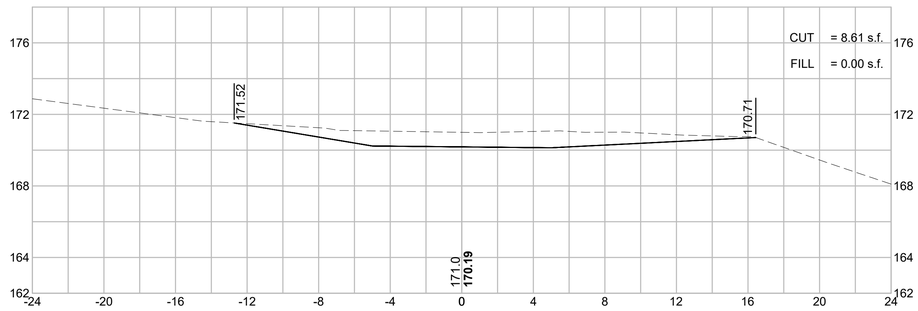
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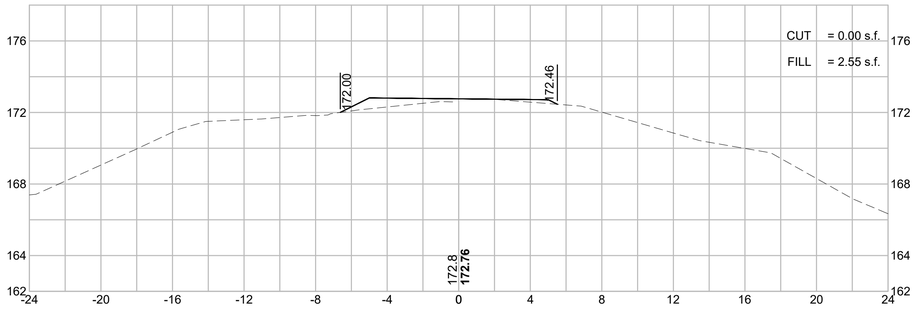
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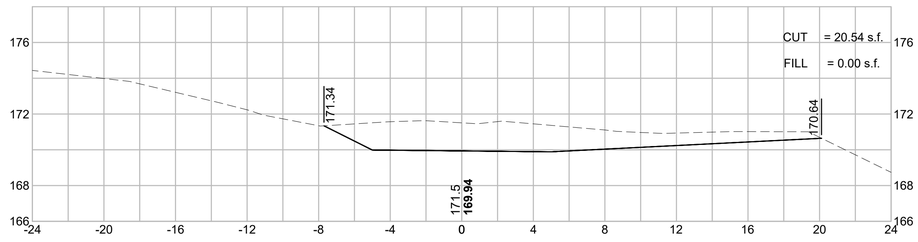
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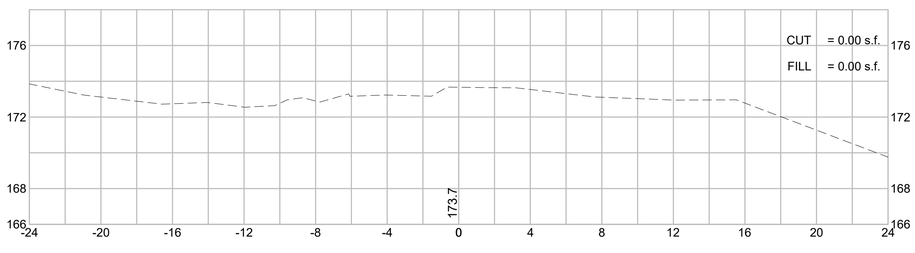
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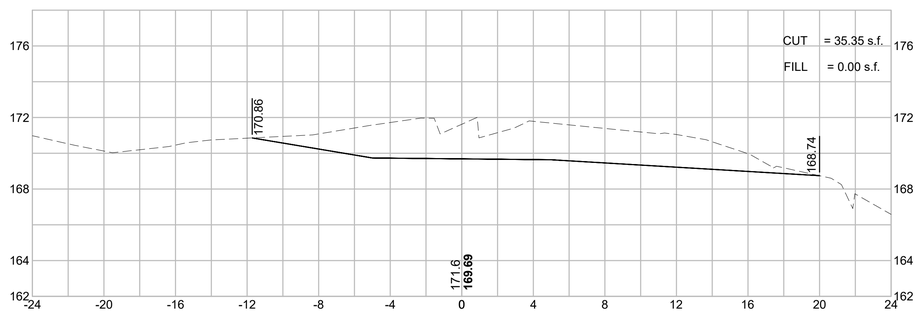
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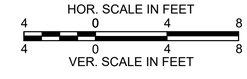


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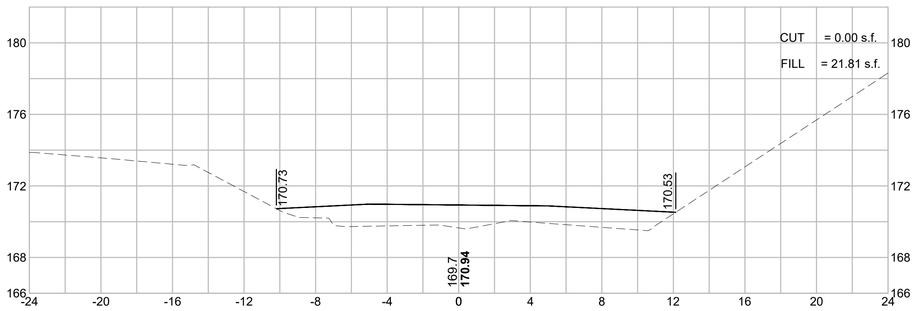
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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PROJECT FILE NO.	605189		

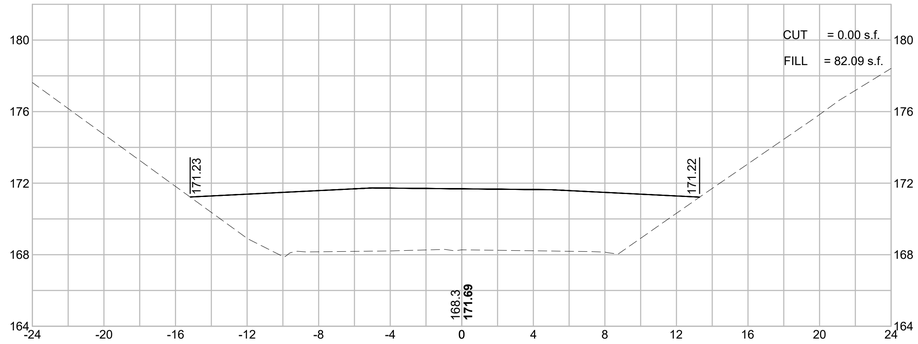
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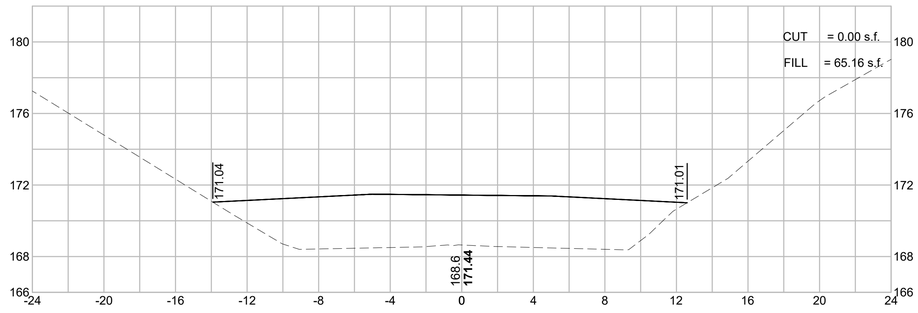
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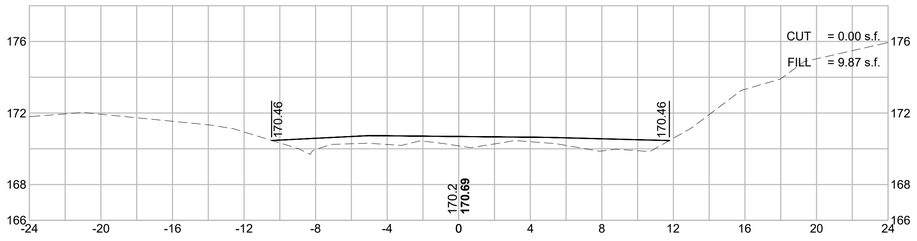
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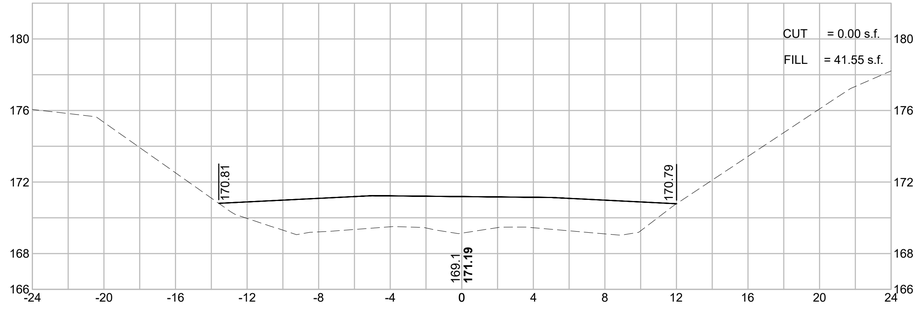
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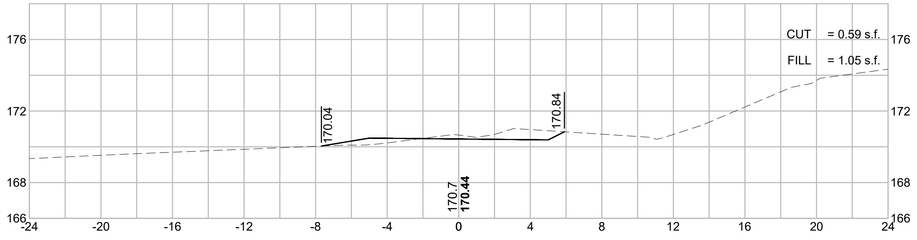
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VER. SCALE IN FEET

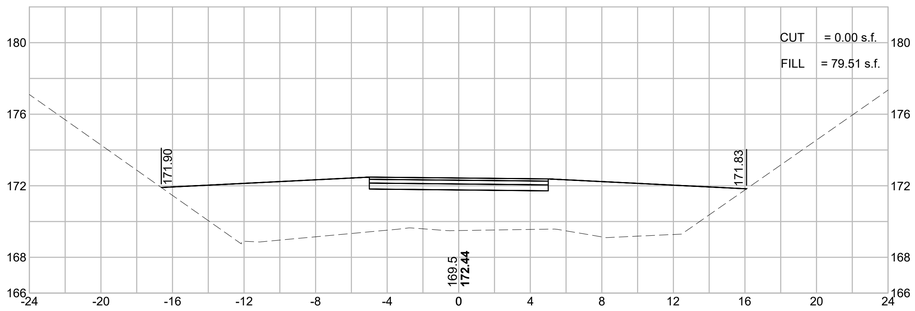
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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PROJECT FILE NO.	605189		

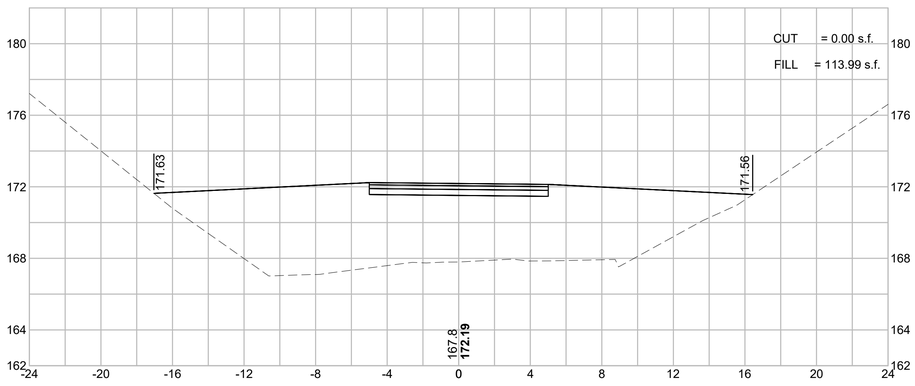
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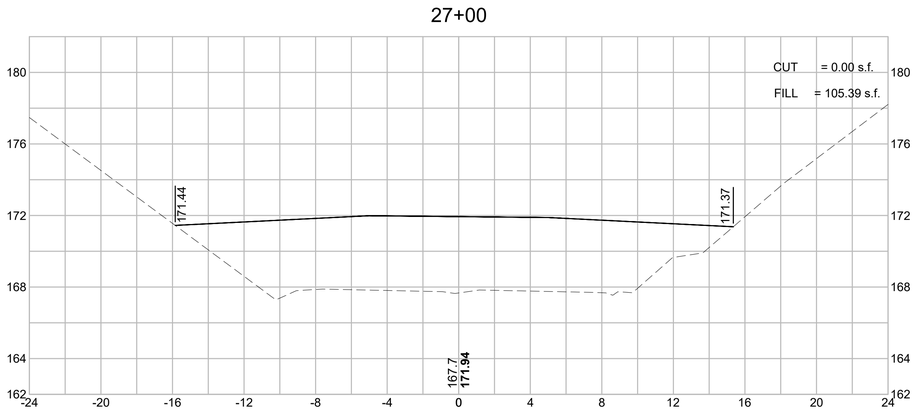
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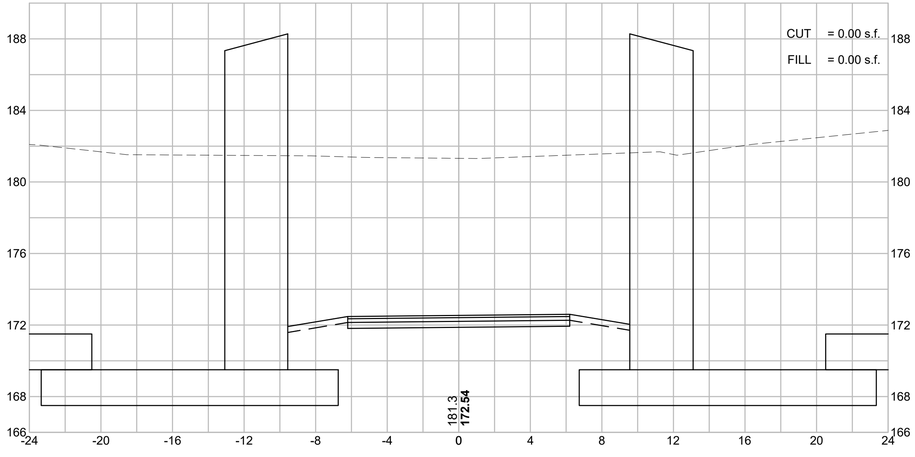
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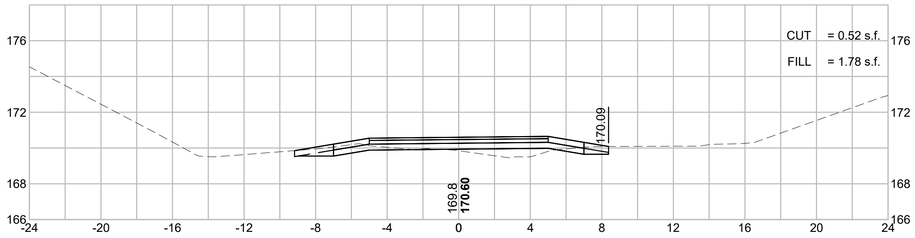
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BRUCE FREEMAN RAIL TRAIL PHASE 2C

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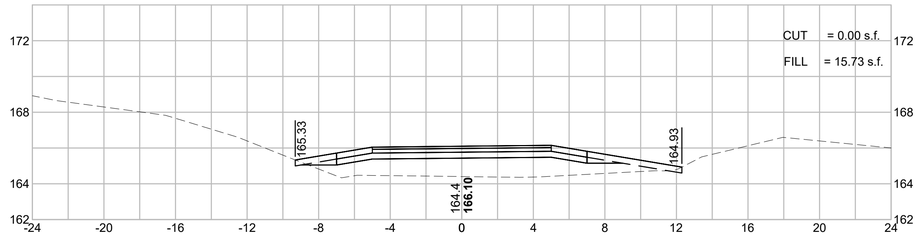
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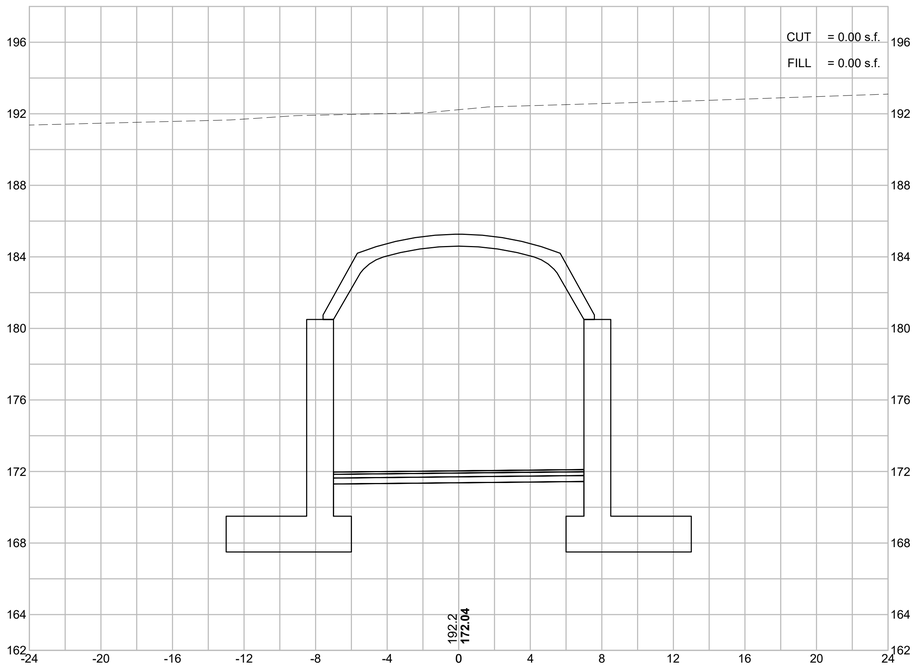
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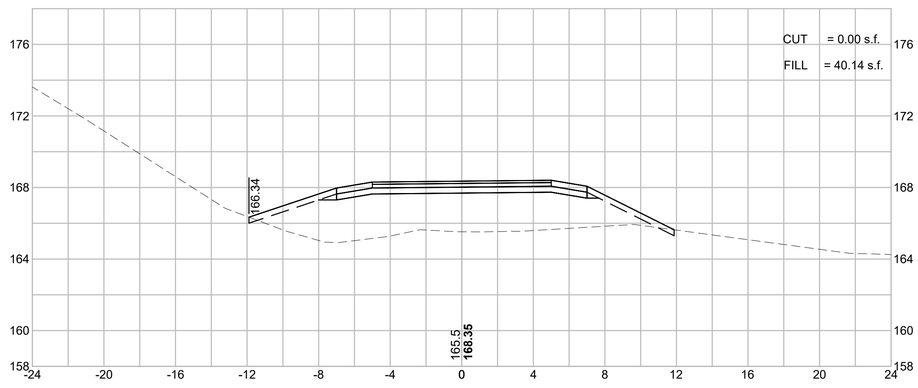
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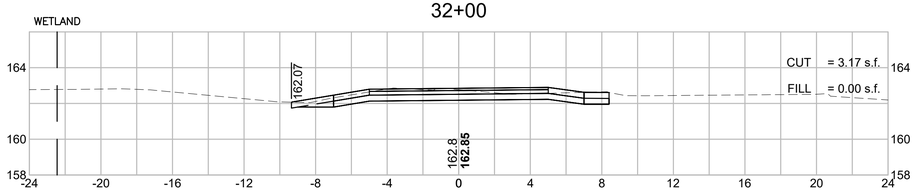
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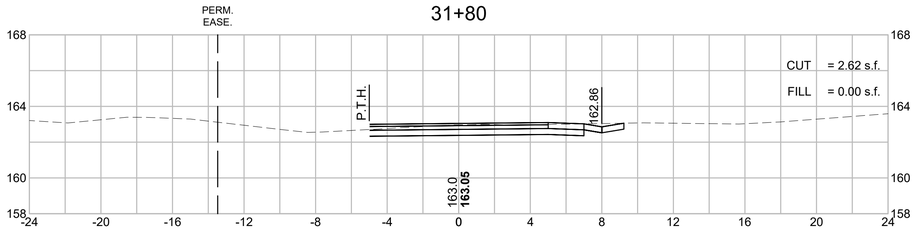
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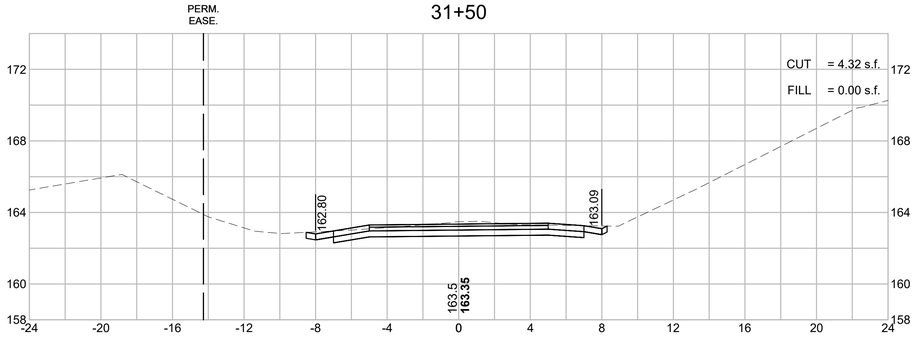
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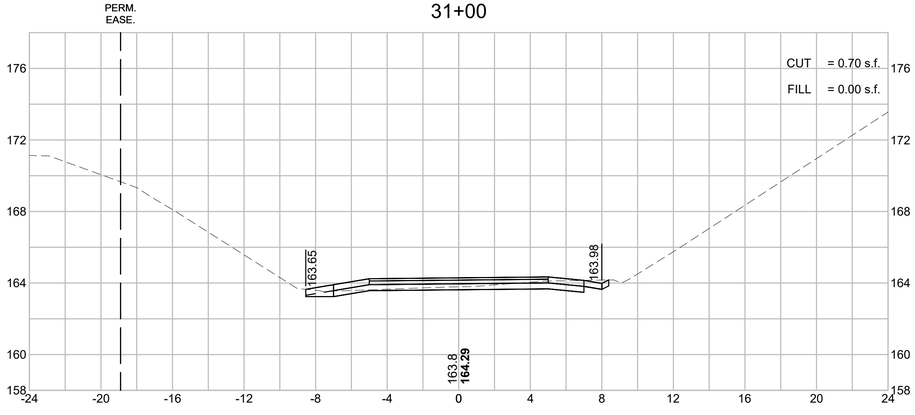
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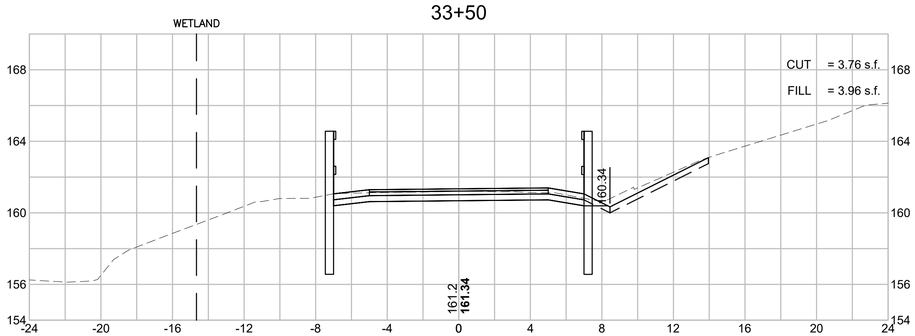
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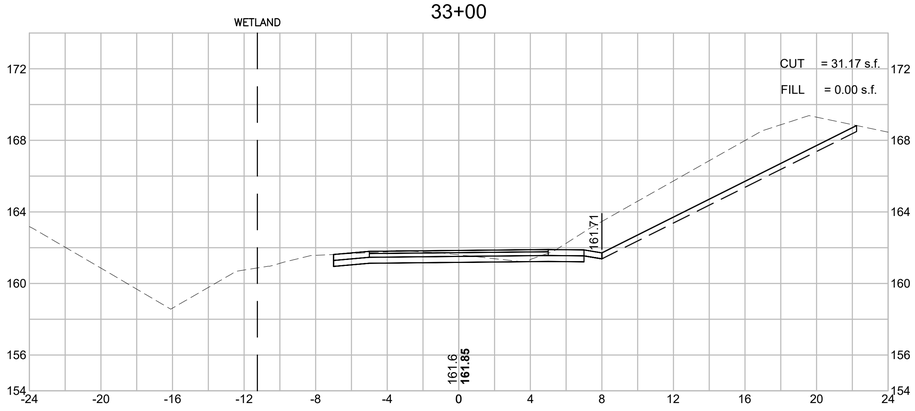
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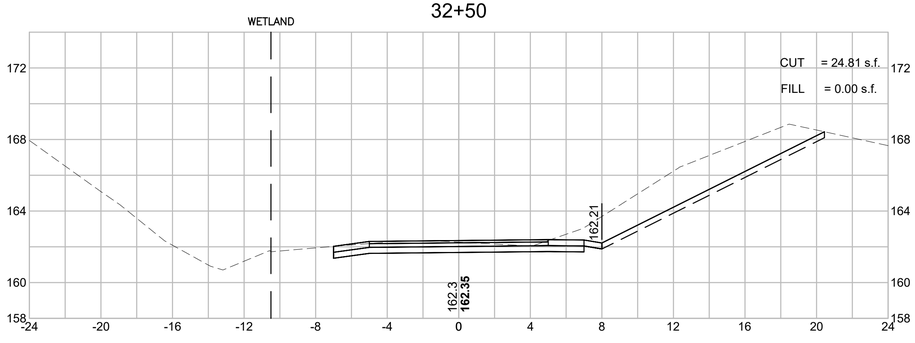
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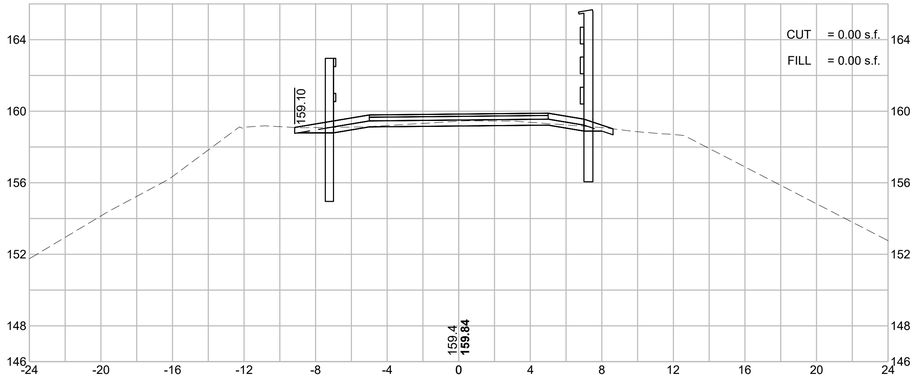
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VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

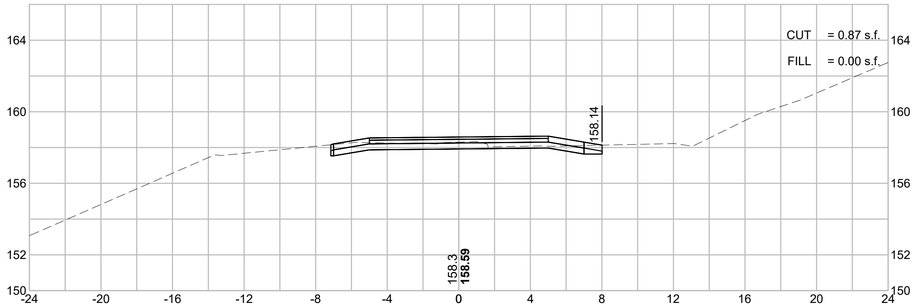
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MA	CM-002S(910)X	180	227
PROJECT FILE NO.	605189		

CROSS SECTIONS

35+00



36+50



34+50

36+00

34+00

35+50

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VER. SCALE IN FEET
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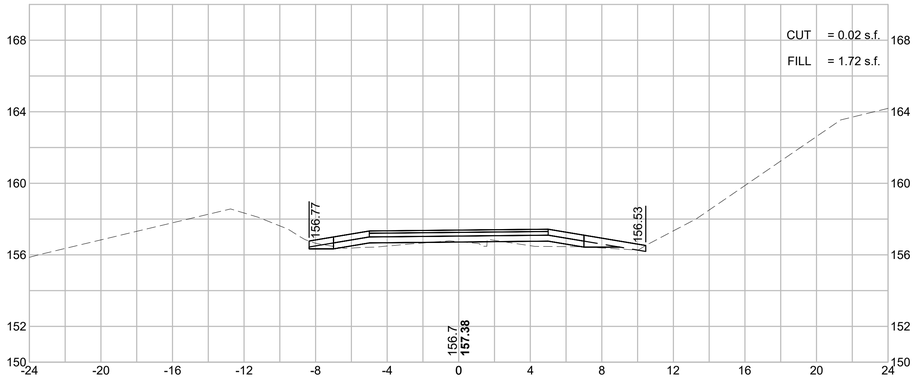
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

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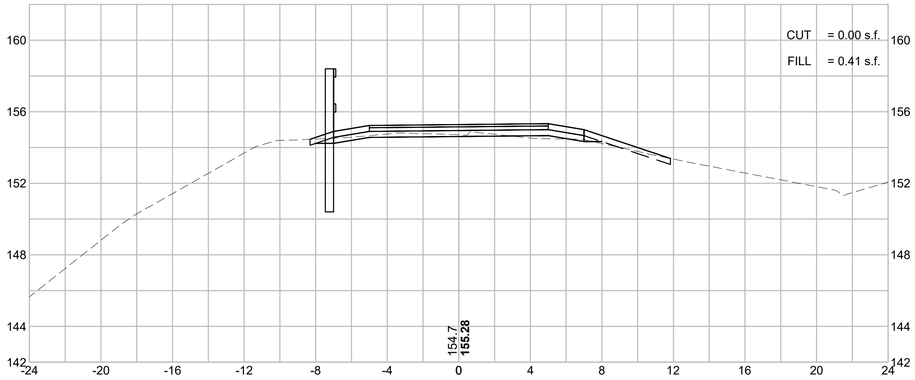
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38+00



39+50



37+50

39+00

37+00

38+50

HOR. SCALE IN FEET
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VER. SCALE IN FEET
4 0 4 8

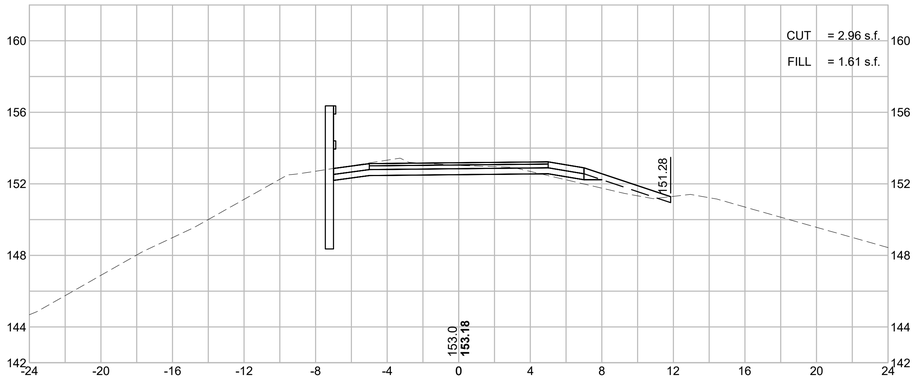
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	182	227
PROJECT FILE NO.	605189		

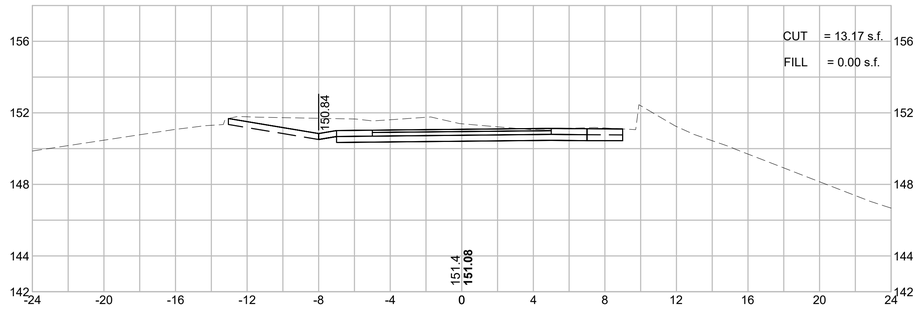
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:41 AM

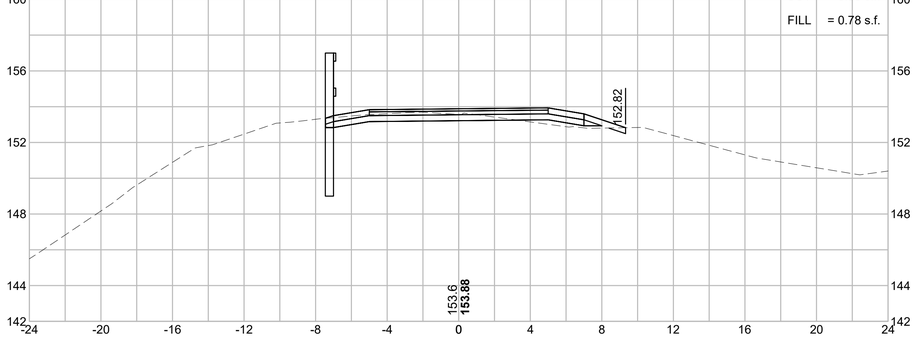
41+00



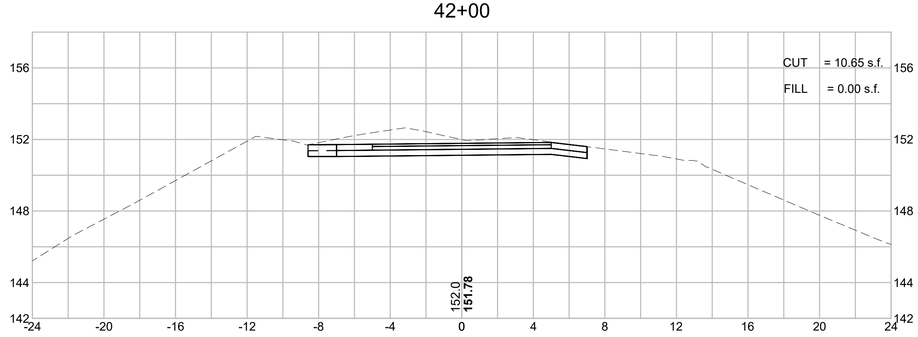
42+50



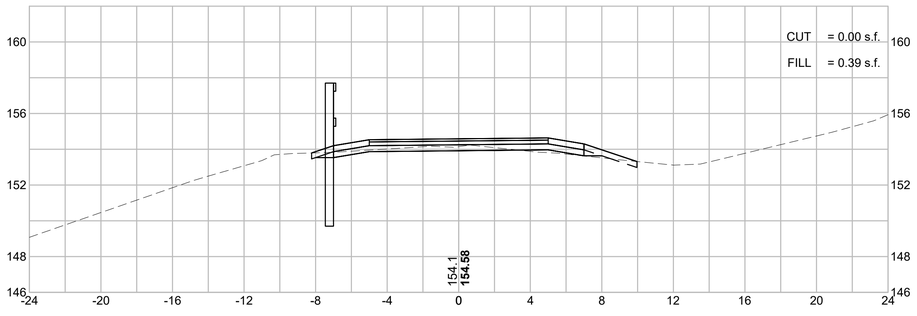
40+50



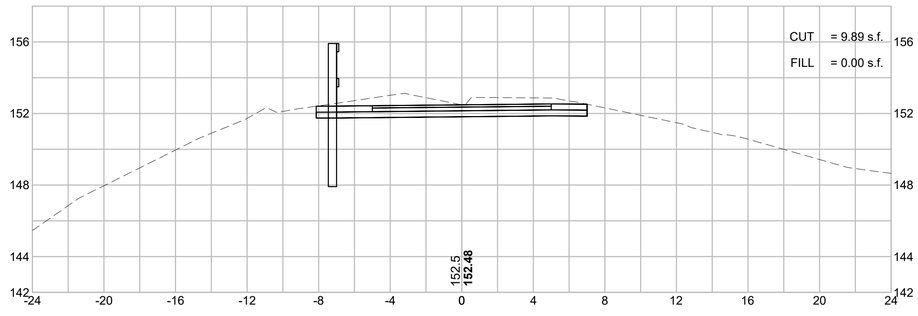
42+00



40+00



41+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

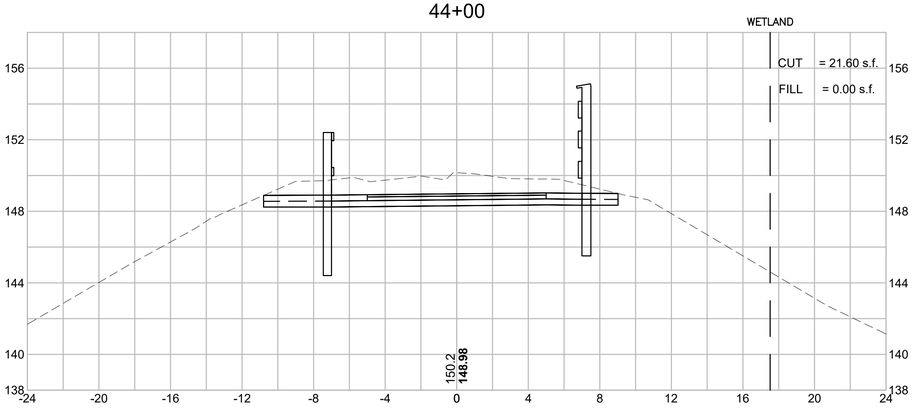
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	183	227
PROJECT FILE NO.	605189		

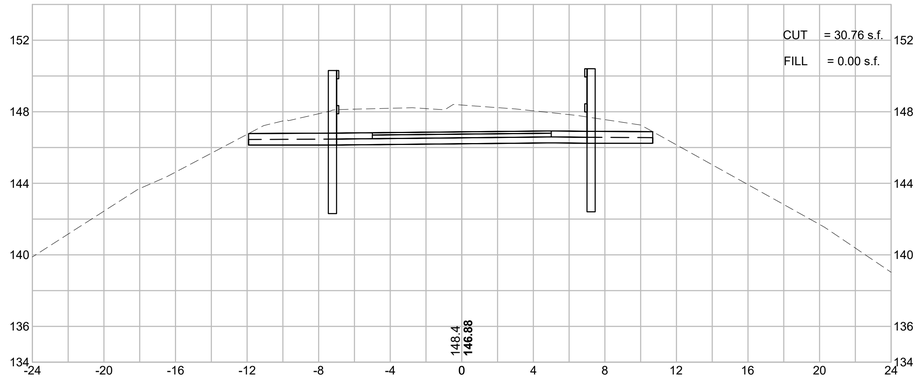
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:41 AM

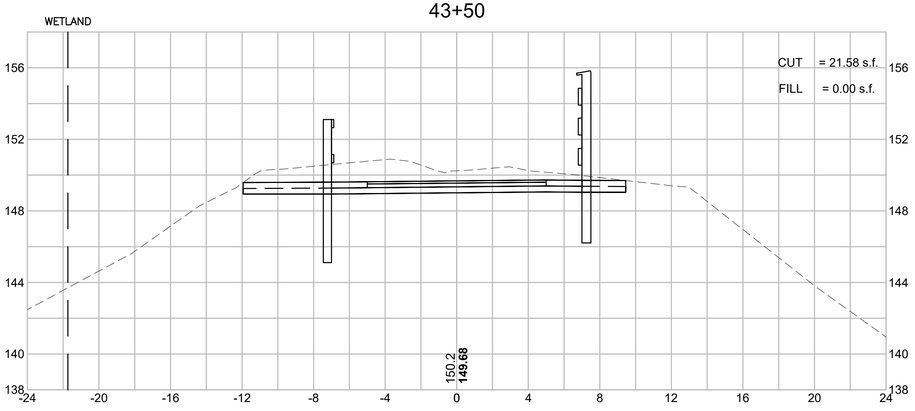
44+00



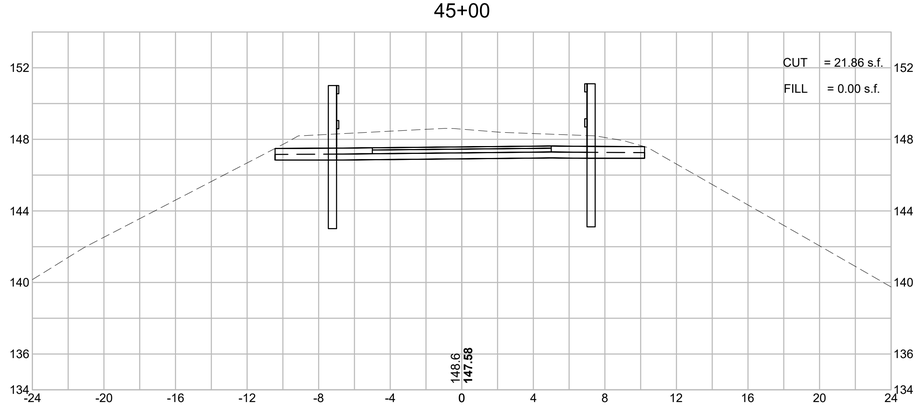
45+50



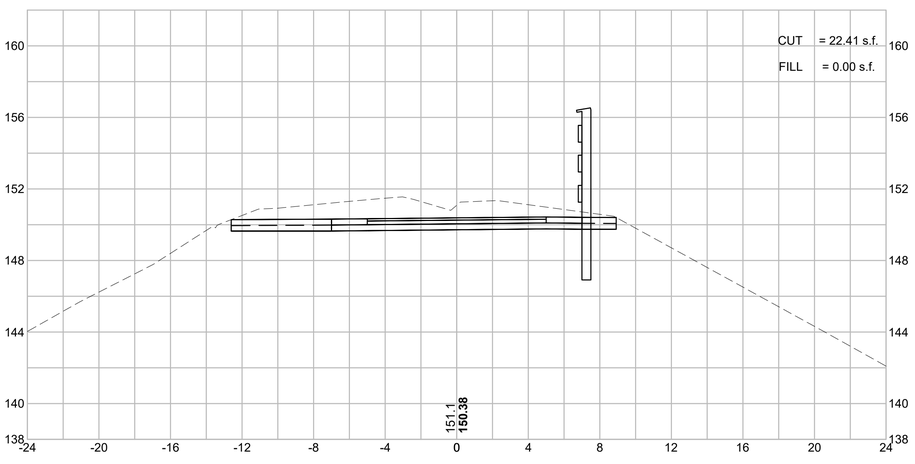
43+50



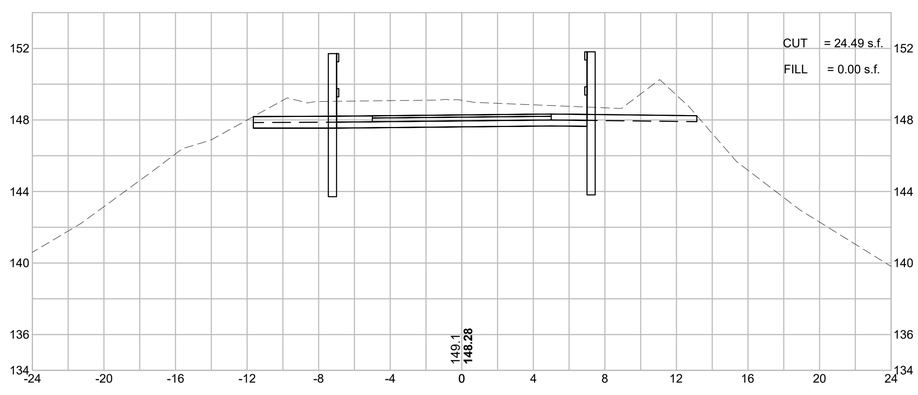
45+00



43+00



44+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

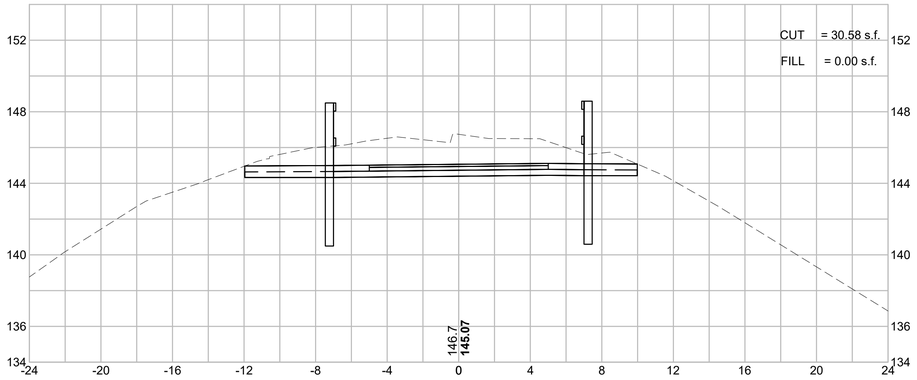
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	184	227
PROJECT FILE NO.	605189		

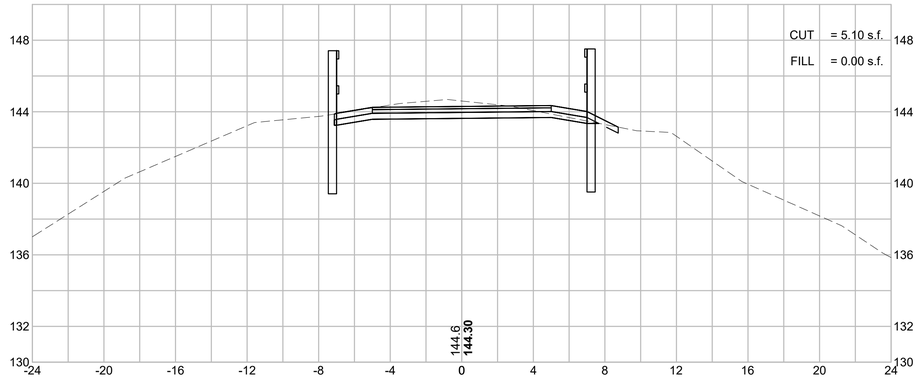
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:42 AM

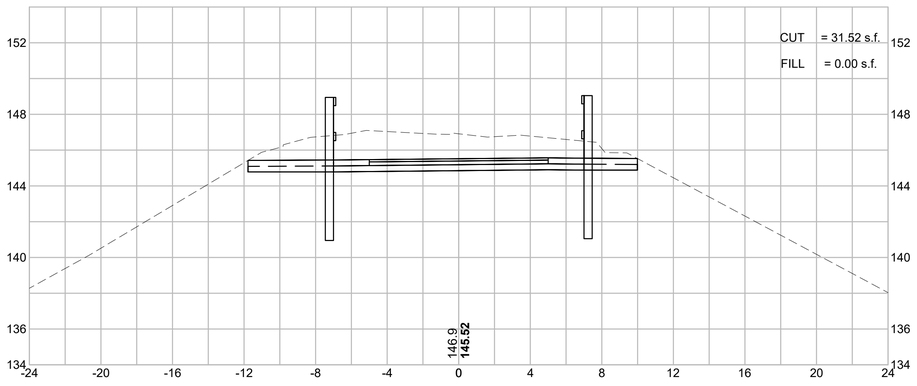
47+00



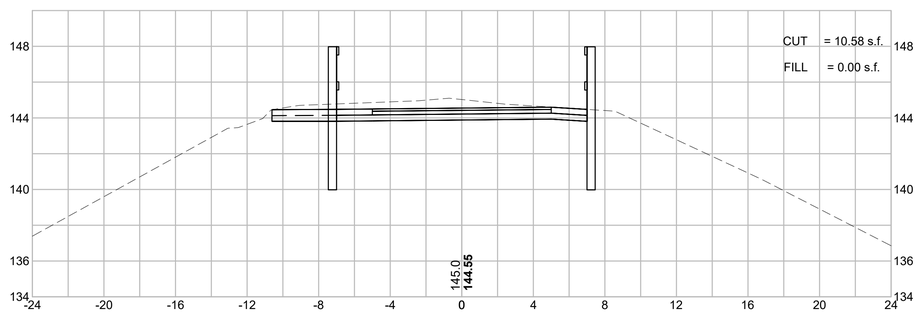
48+50



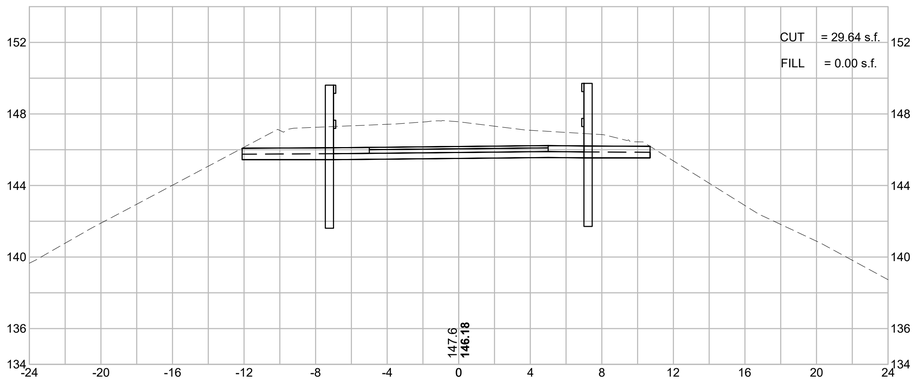
46+50



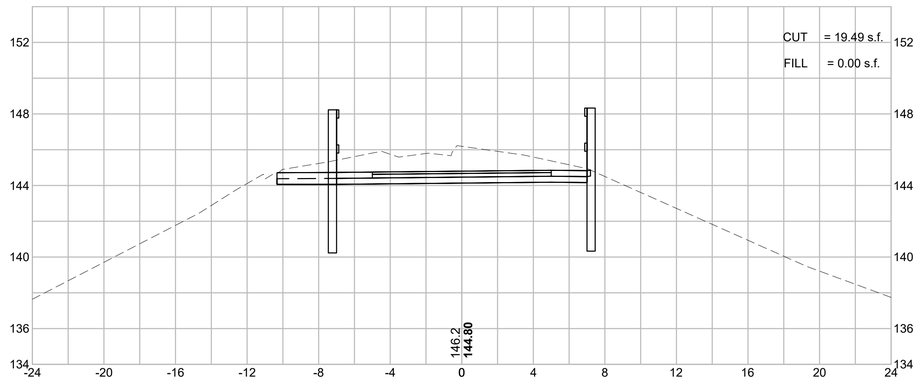
48+00



46+00



47+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

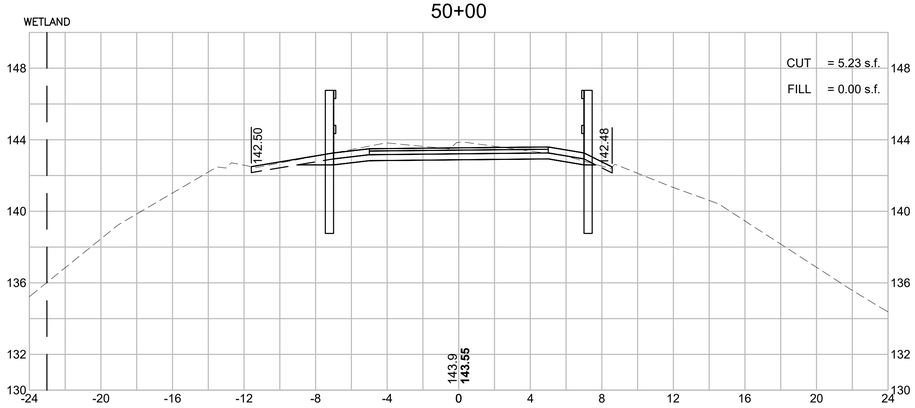
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	185	227
PROJECT FILE NO.	605189		

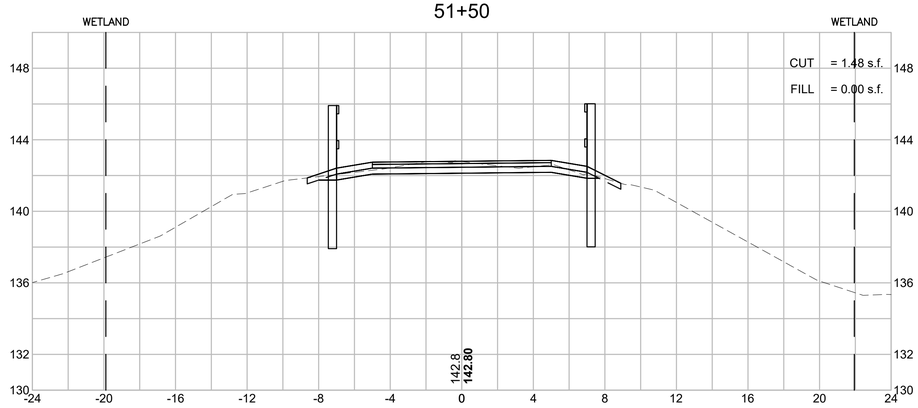
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:43 AM

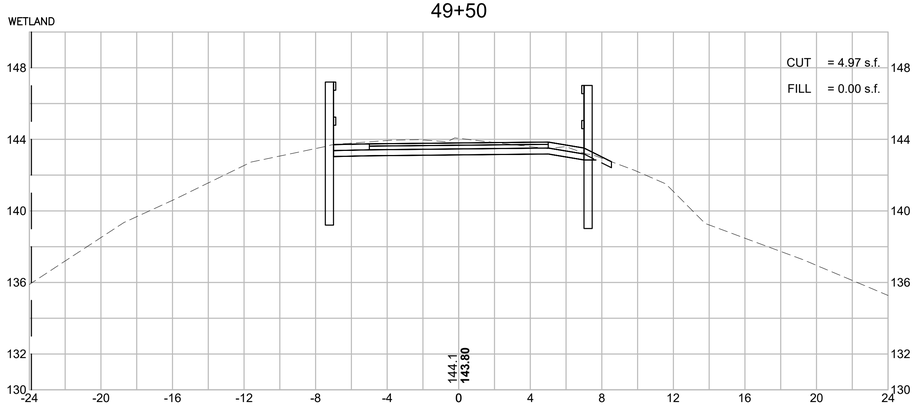
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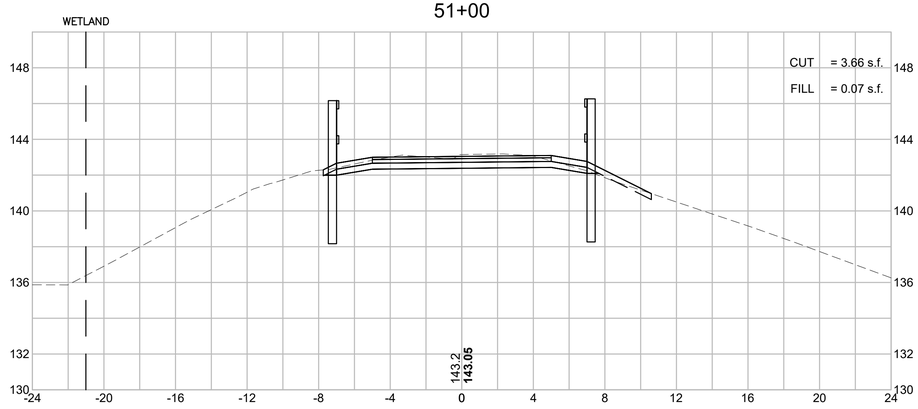
51+50



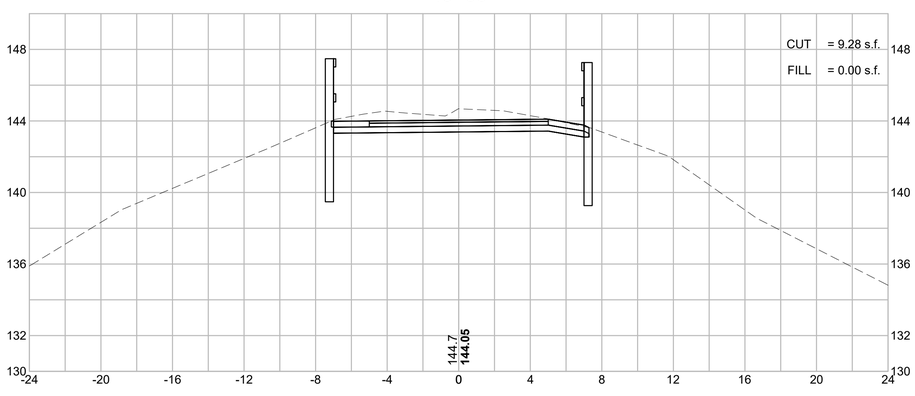
49+50



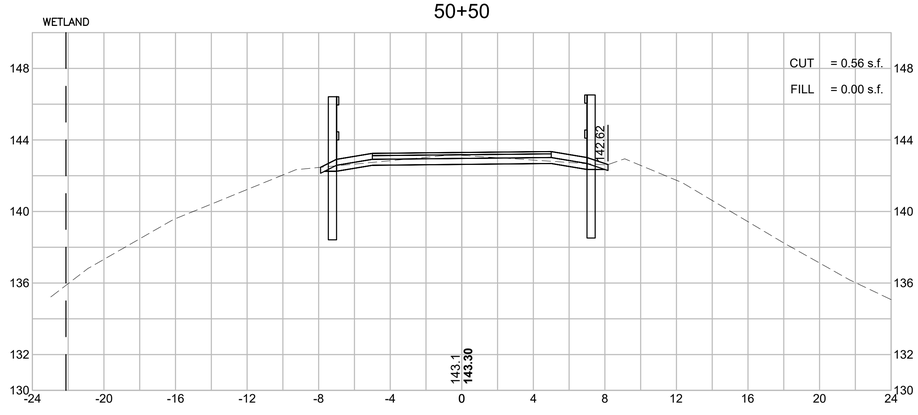
51+00



49+00



50+50



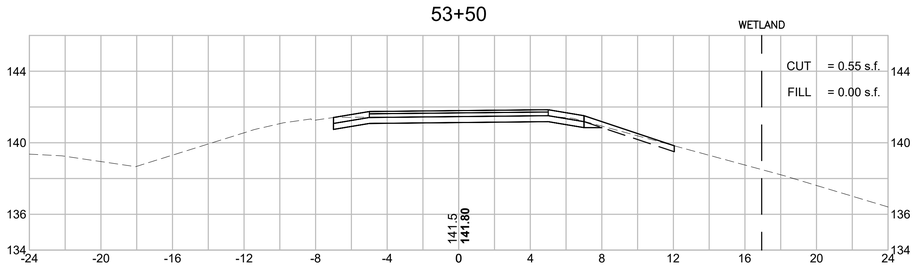
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

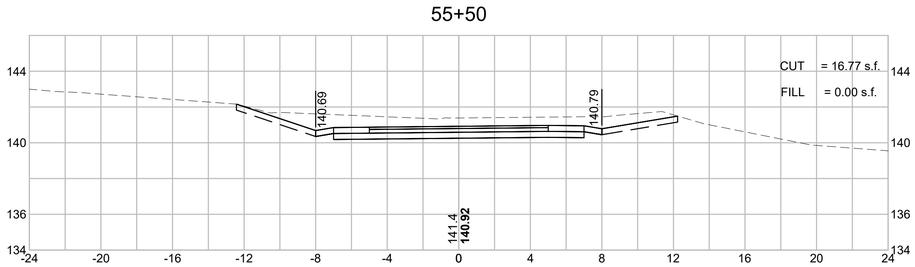
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

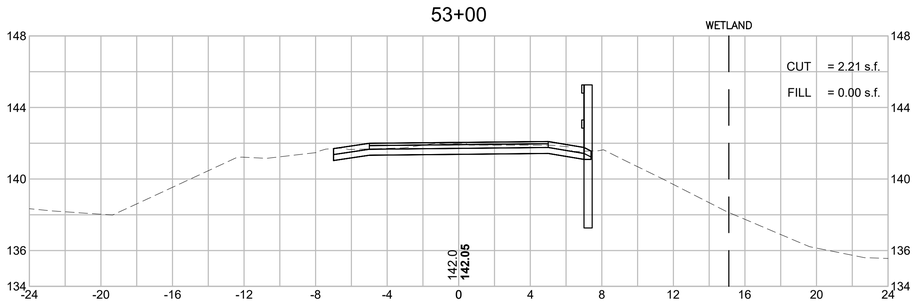
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	186	227
PROJECT FILE NO.	605189		

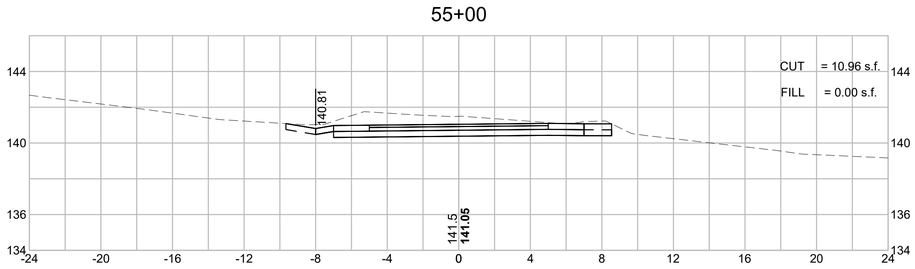
CROSS SECTIONS

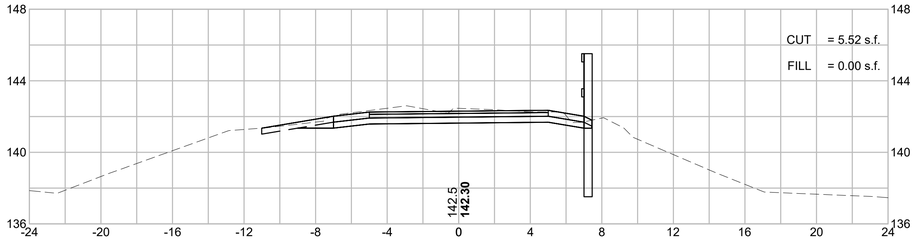
605189_HD(XS).DWG Plotted on 15-Aug-2016 11:43 AM

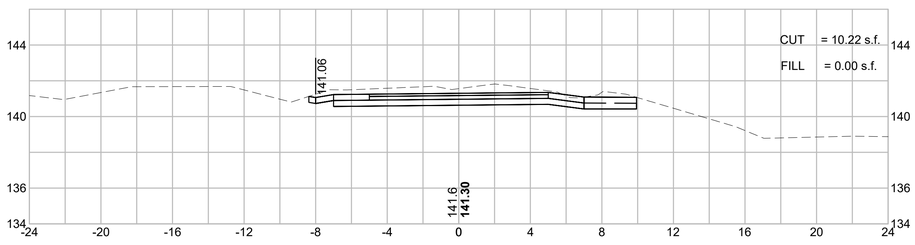


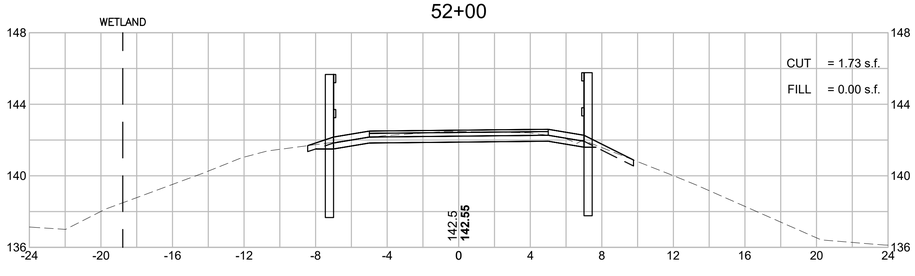


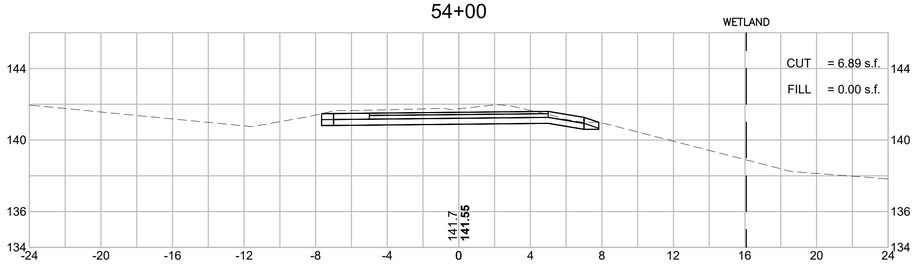












HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

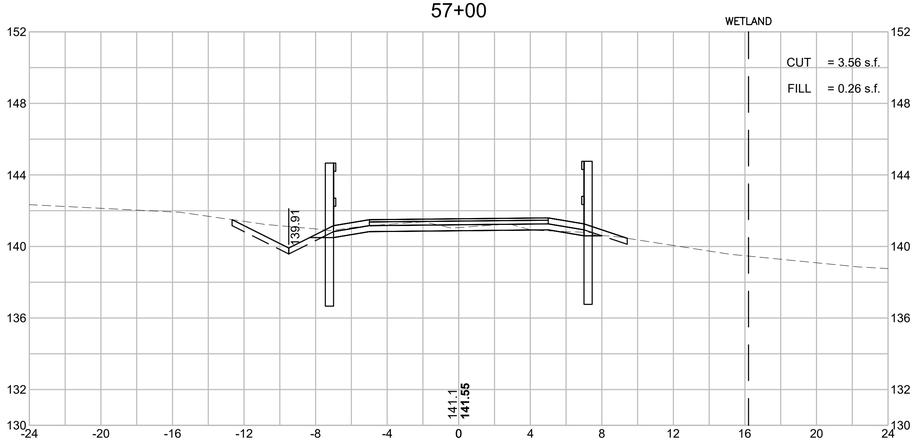
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	187	227
PROJECT FILE NO.	605189		

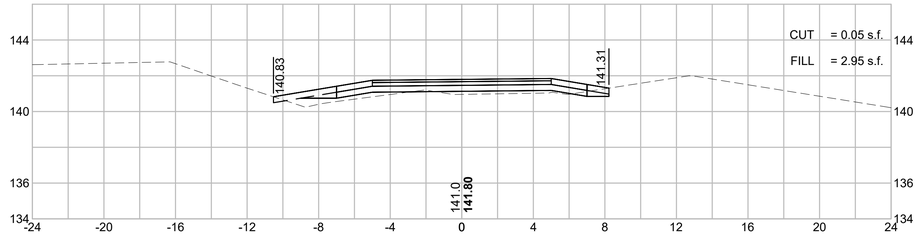
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:44 AM

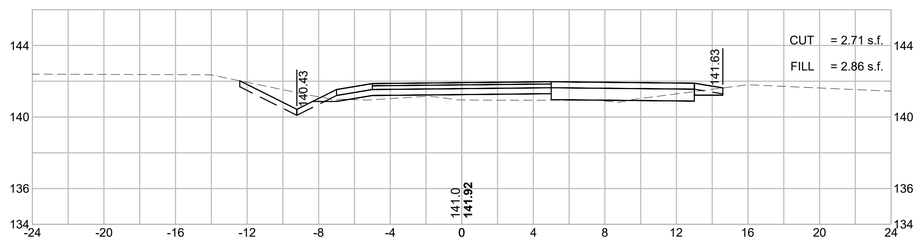
57+00



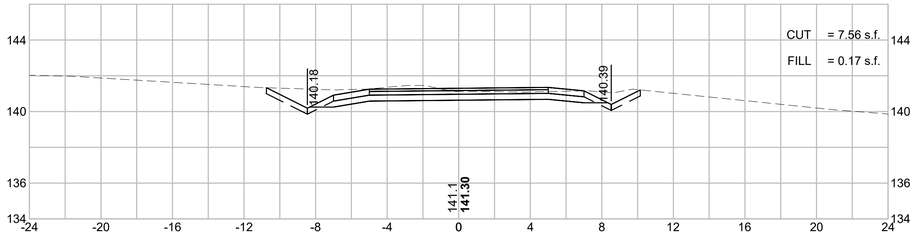
58+50



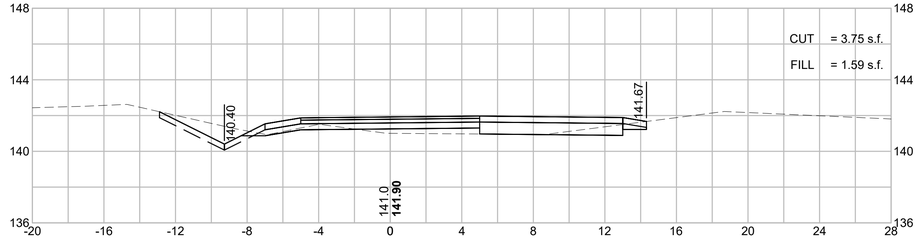
58+00



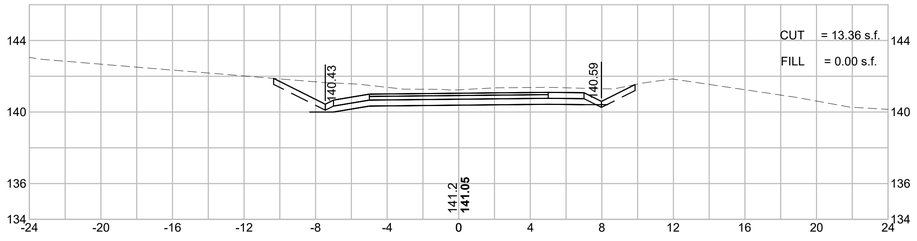
56+50



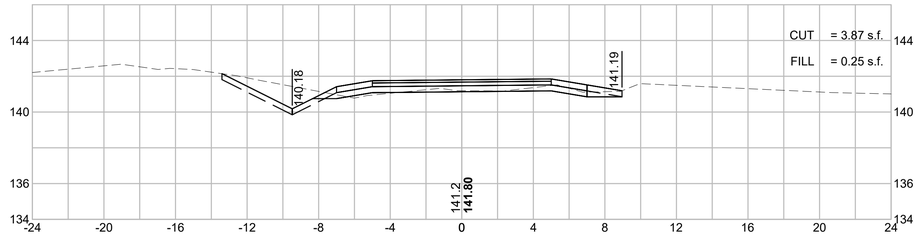
57+90



56+00



57+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

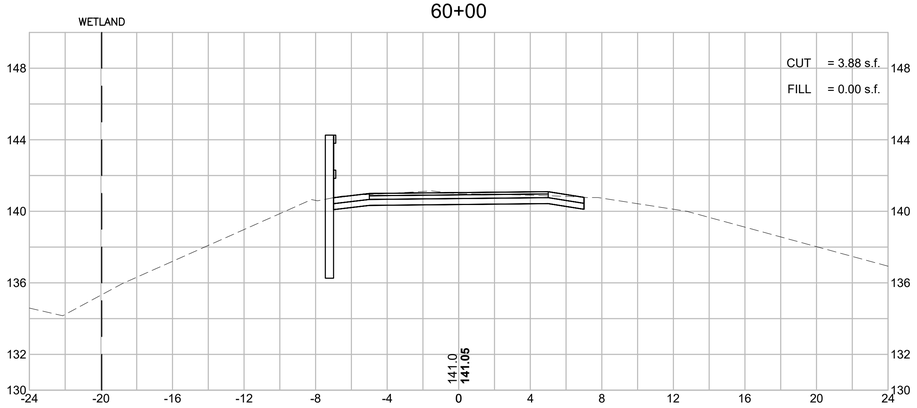
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	188	227
PROJECT FILE NO.	605189		

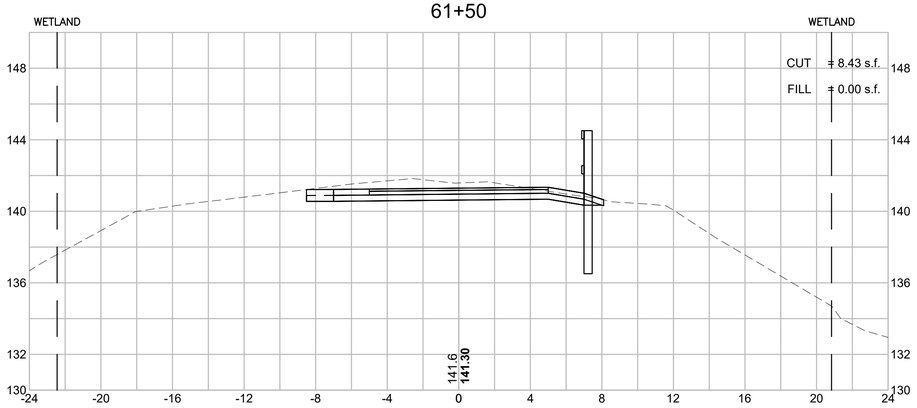
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:45 AM

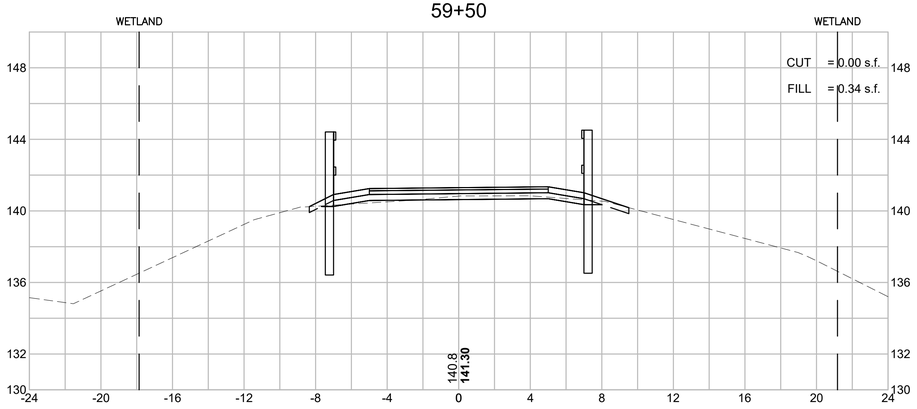
60+00



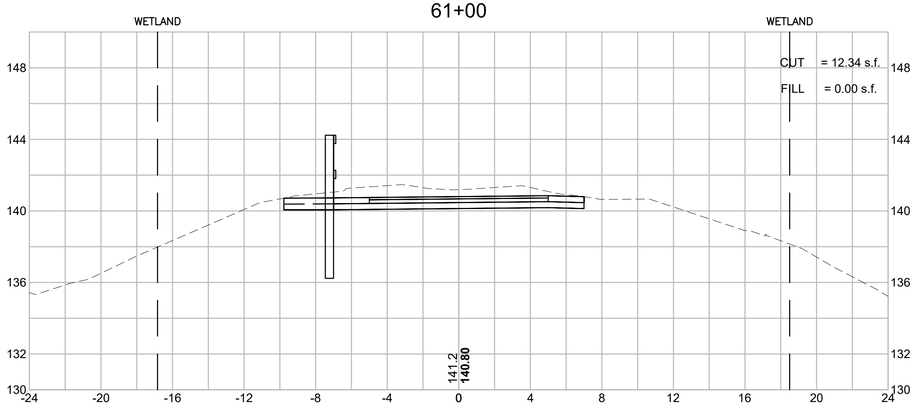
61+50



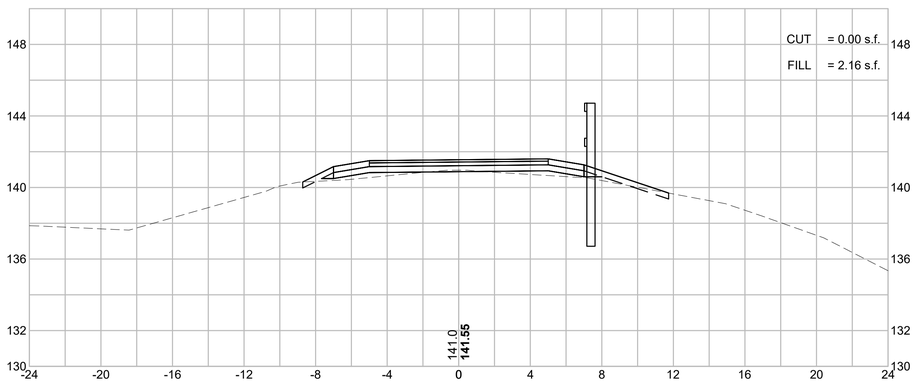
59+50



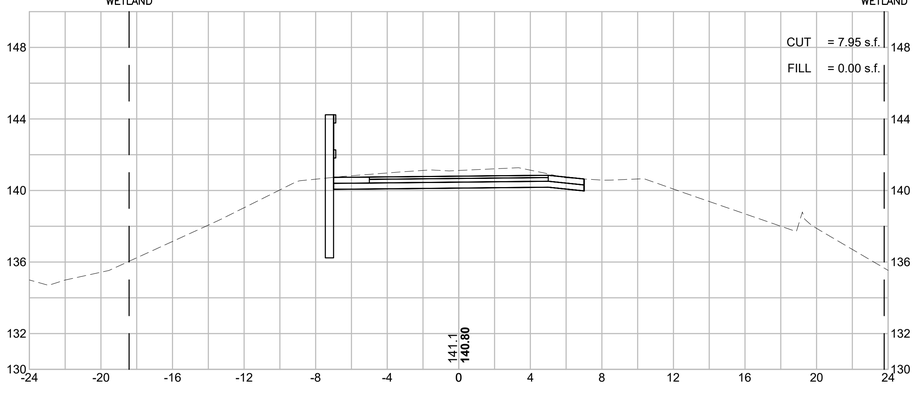
61+00



59+00



60+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

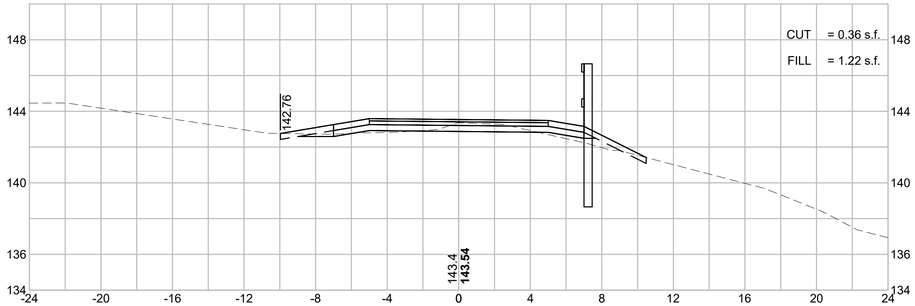
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	189	227
PROJECT FILE NO.	605189		

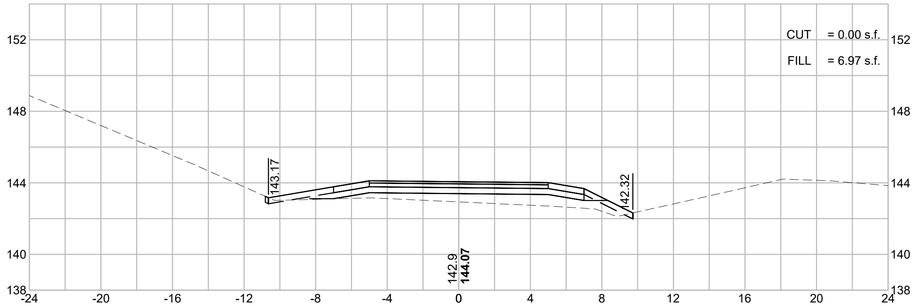
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:45 AM

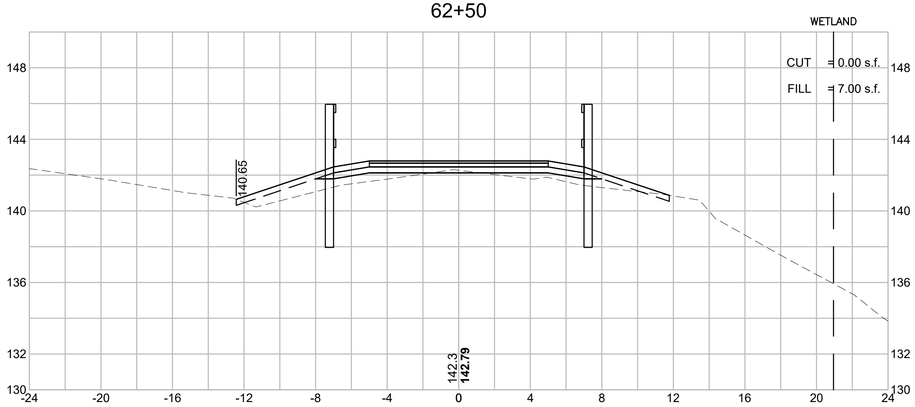
63+00



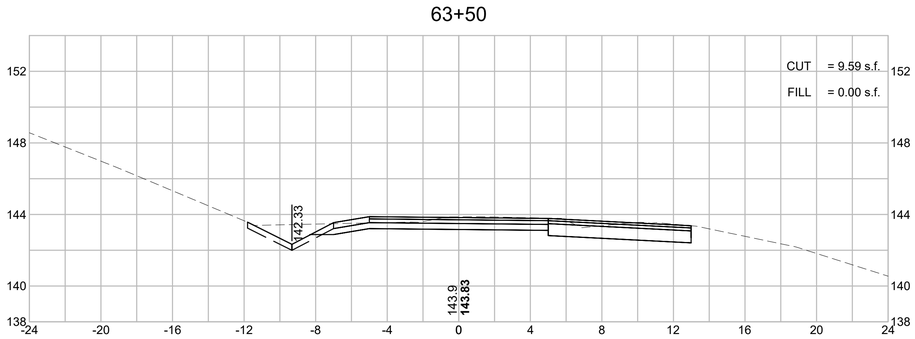
64+00



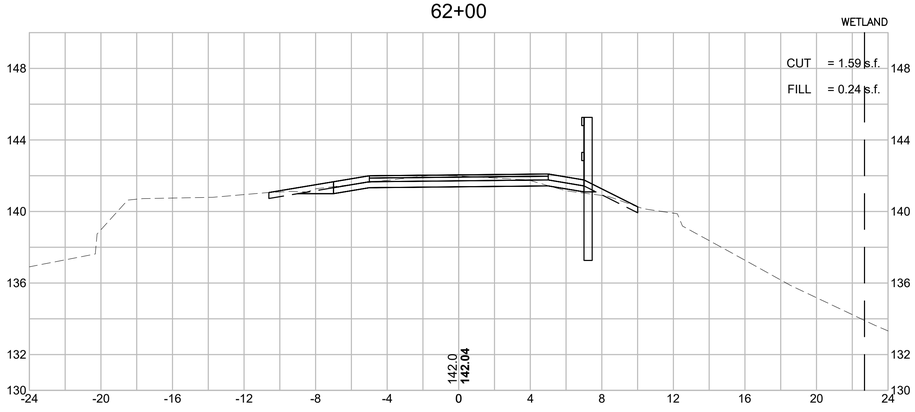
62+50



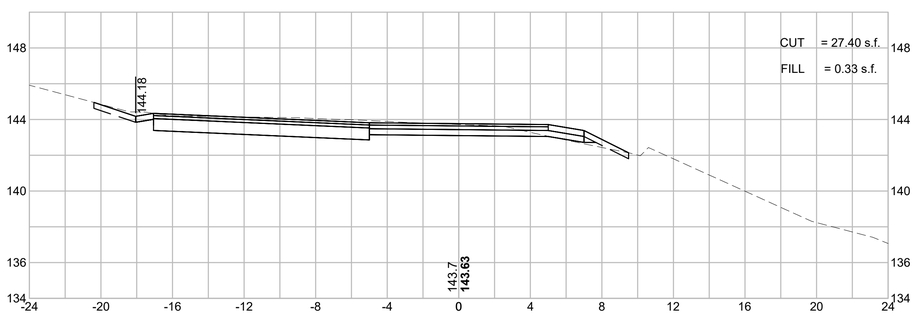
63+50



62+00



63+15



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

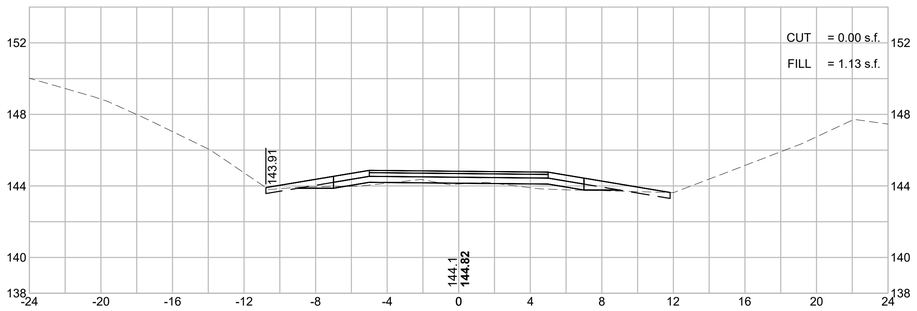
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	190	227
PROJECT FILE NO.	605189		

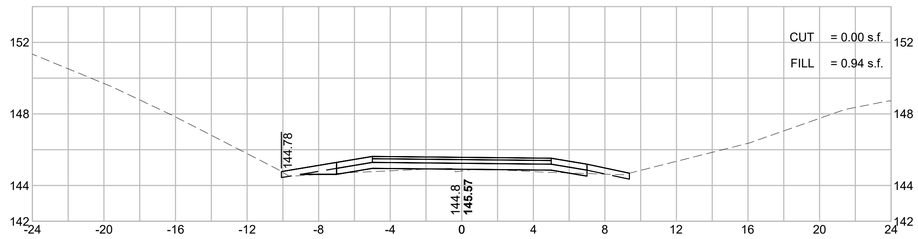
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:46 AM

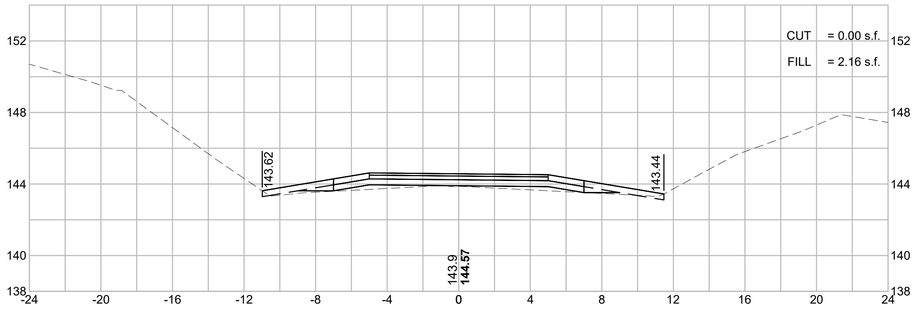
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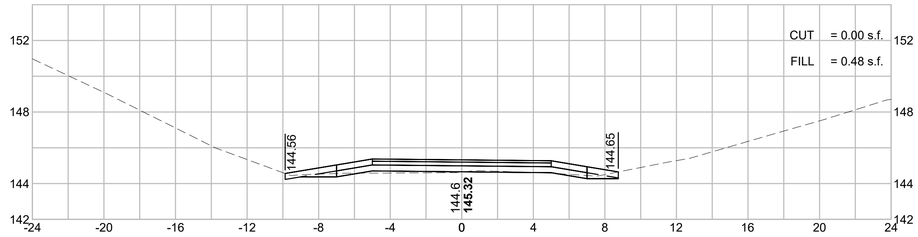
67+00



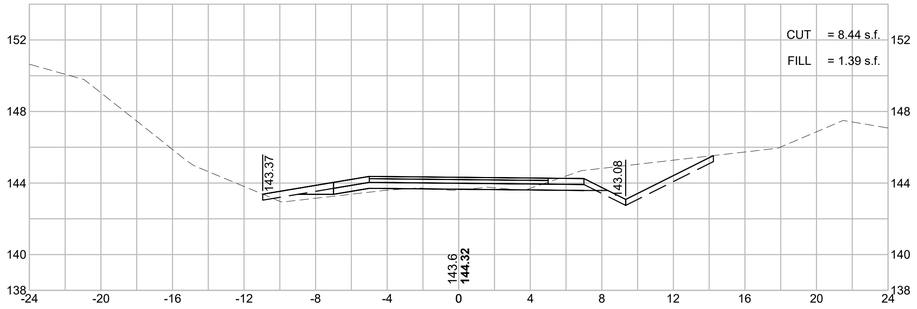
65+00



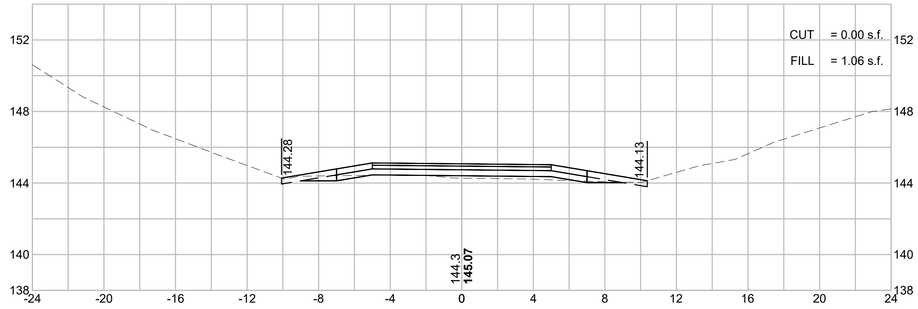
66+50



64+50



66+00



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

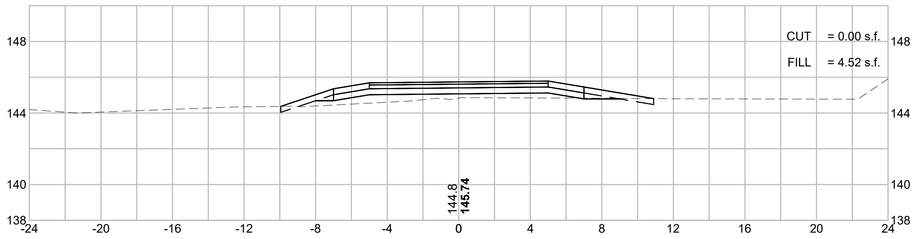
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	191	227
PROJECT FILE NO.	605189		

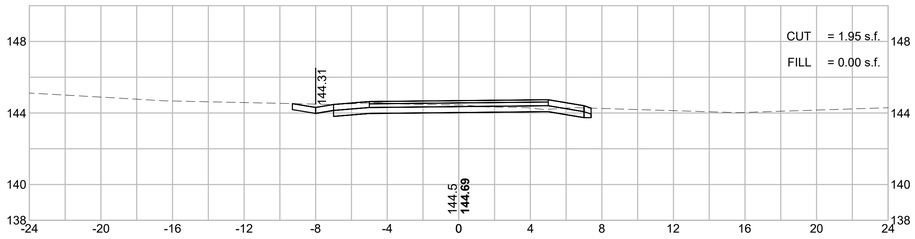
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:47 AM

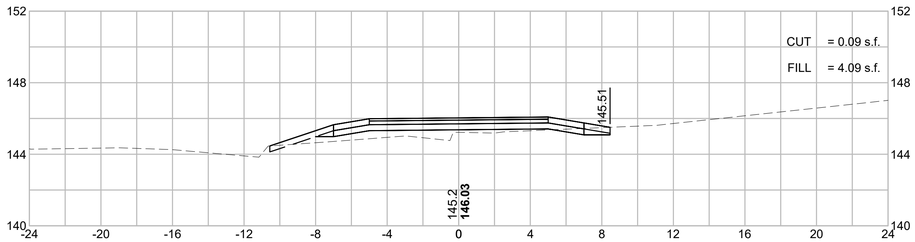
69+00



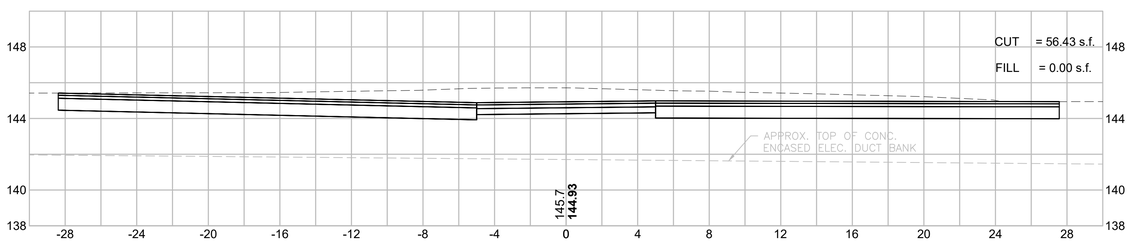
70+50



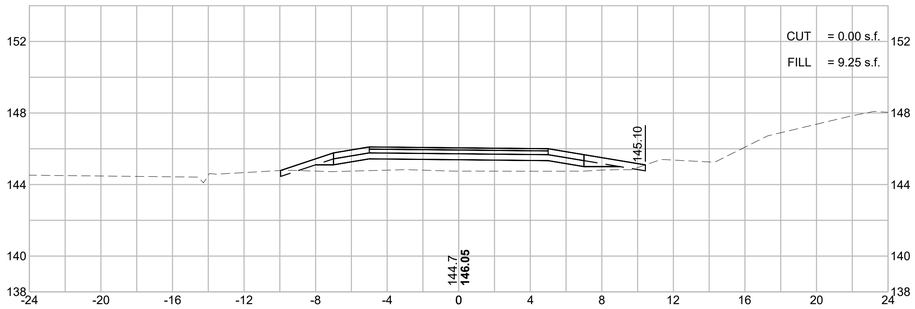
68+50



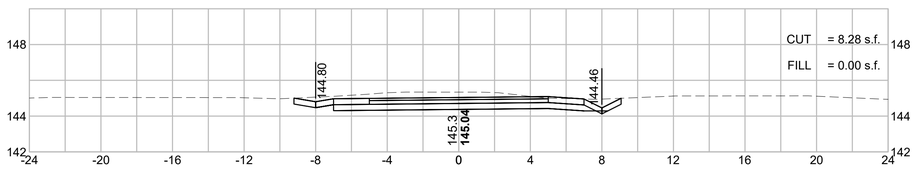
70+15



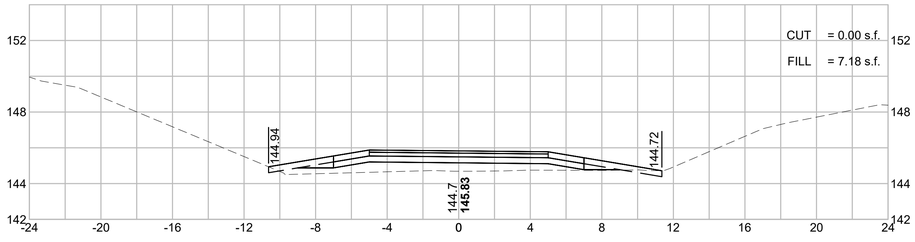
68+00



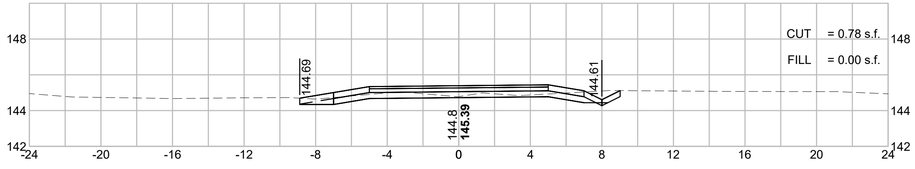
70+00



67+50



69+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

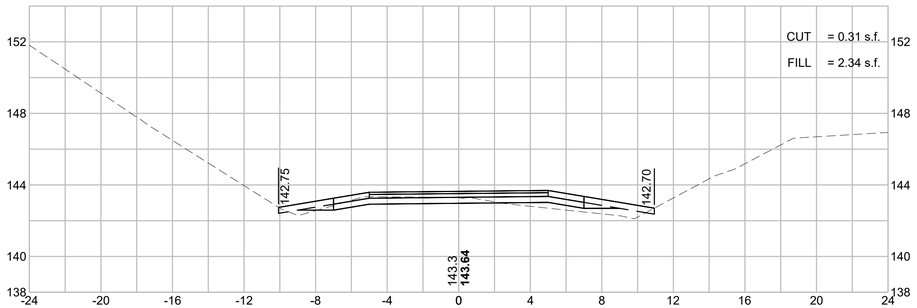
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	192	227
PROJECT FILE NO.	605189		

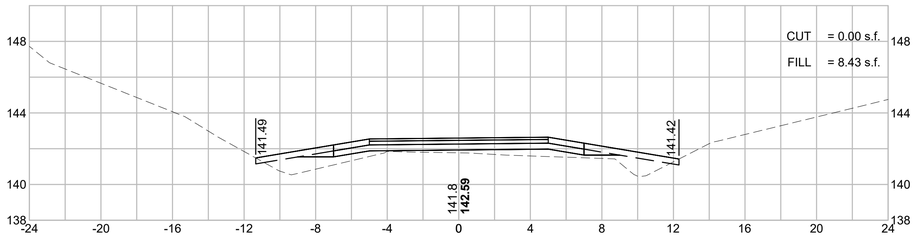
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:47 AM

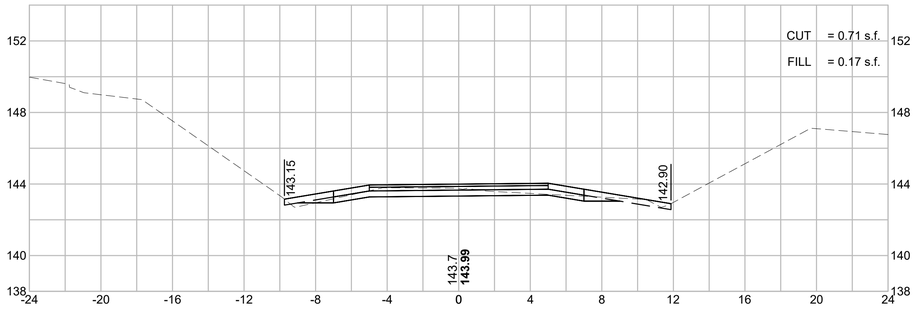
72+00



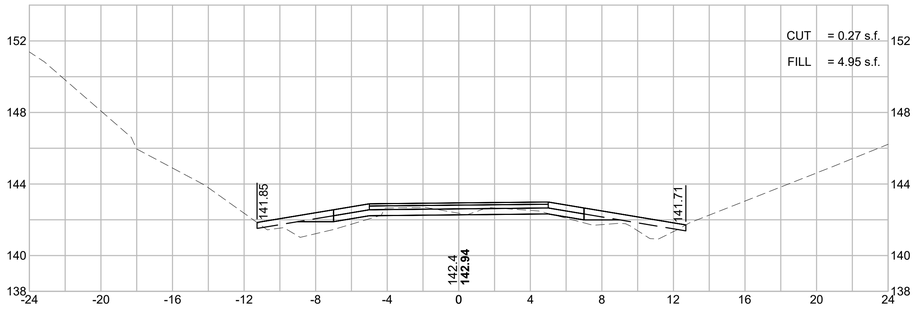
73+50



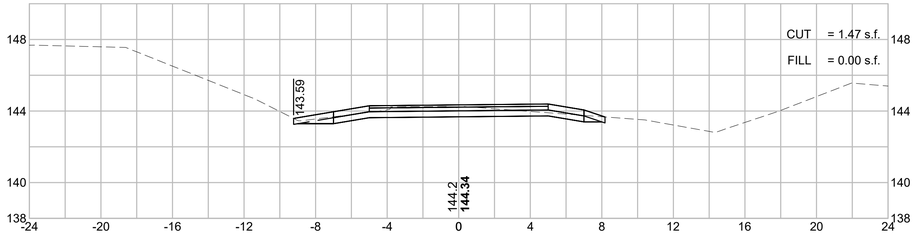
71+50



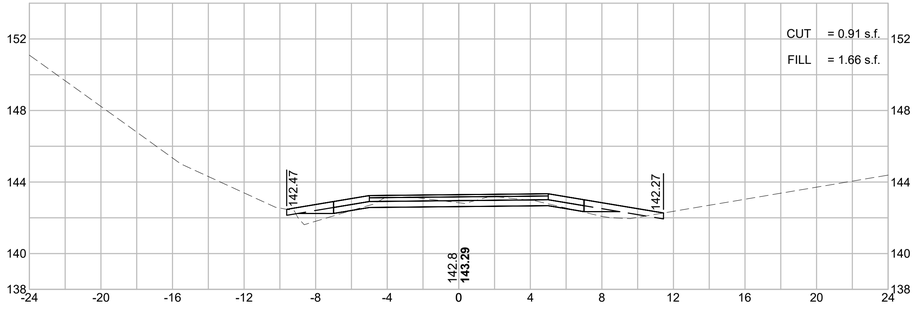
73+00



71+00



72+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

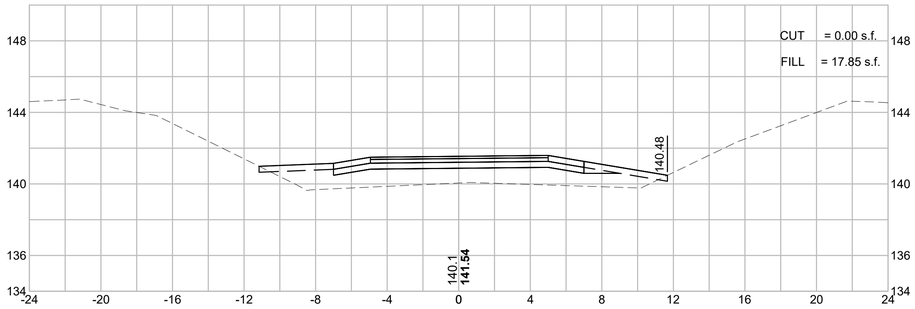
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	193	227
PROJECT FILE NO.	605189		

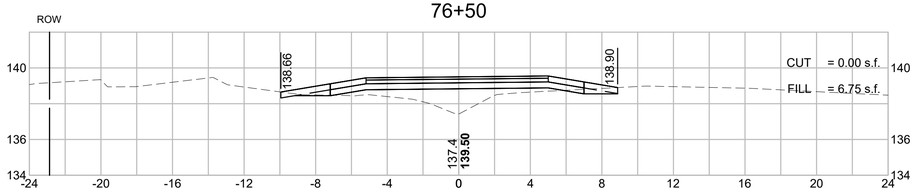
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:48 AM

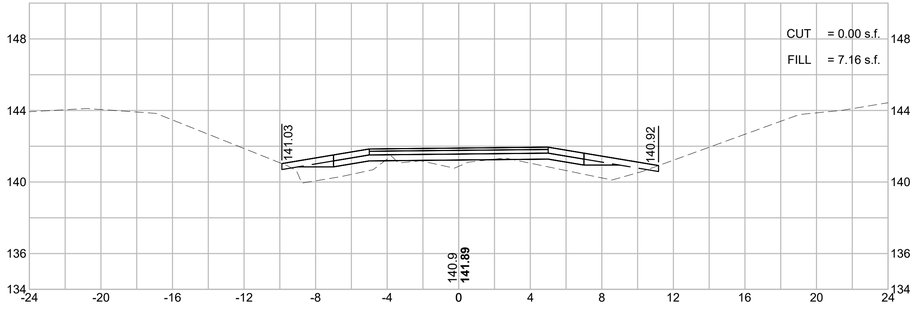
75+00



76+50

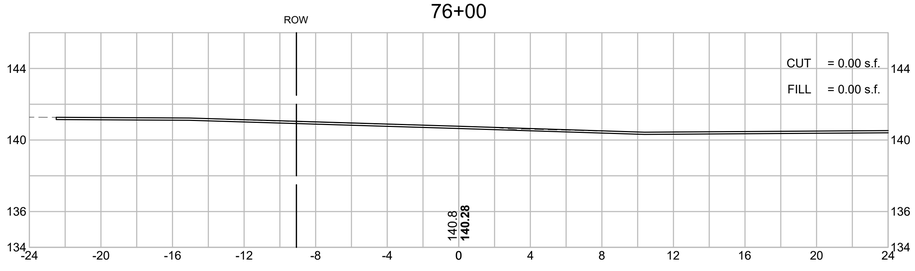


74+50

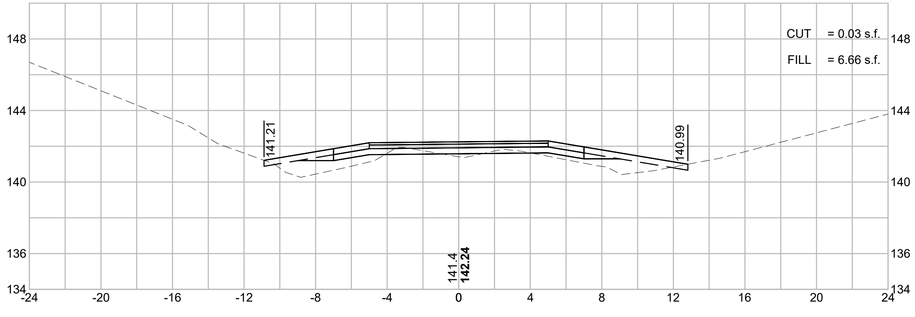


UPLP 59
+30
2'R

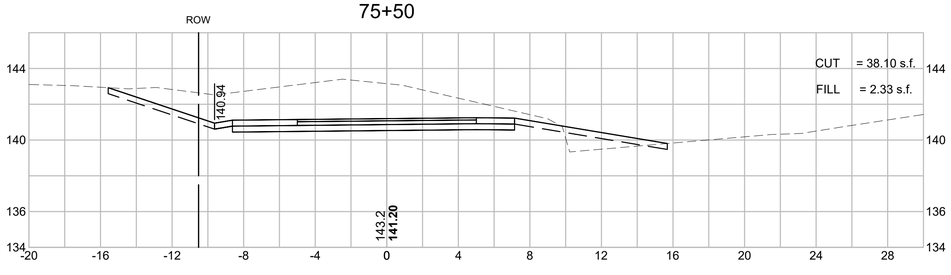
76+00



74+00



75+50



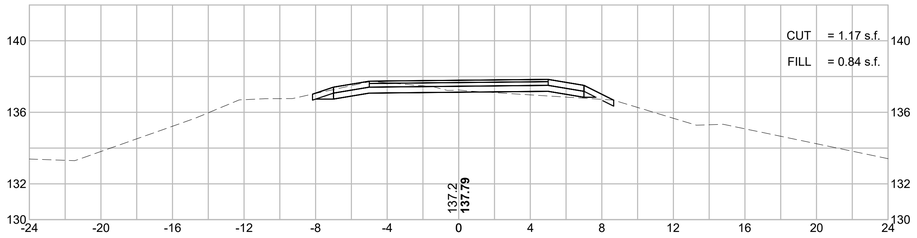
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

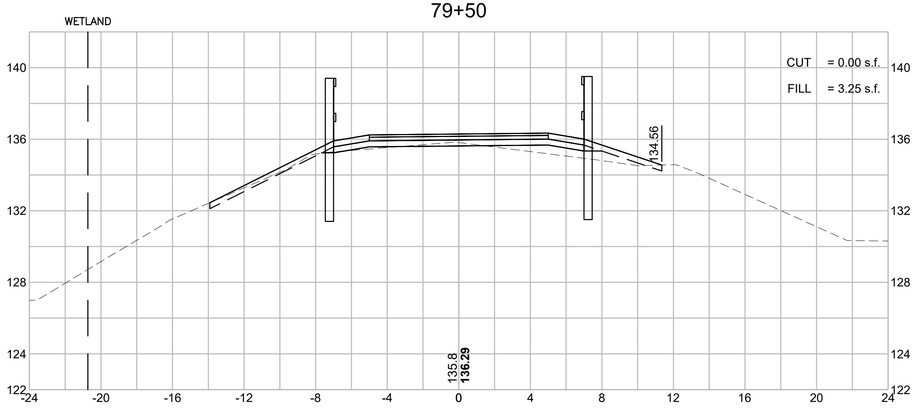
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	194	227
PROJECT FILE NO.	605189		

CROSS SECTIONS

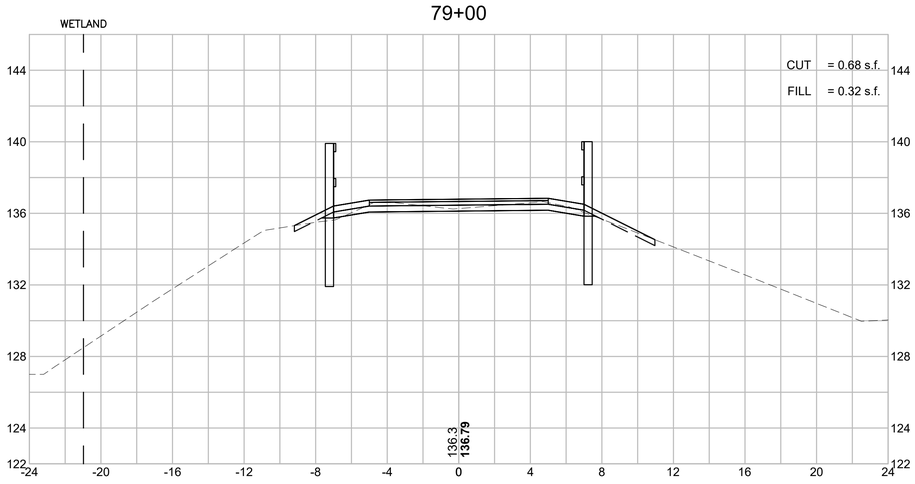
78+00



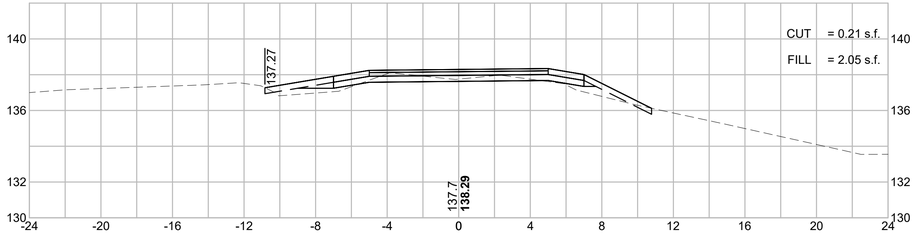
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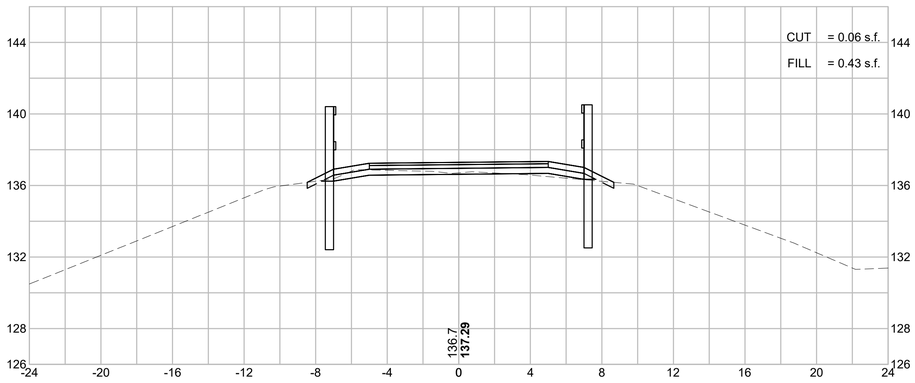
79+00



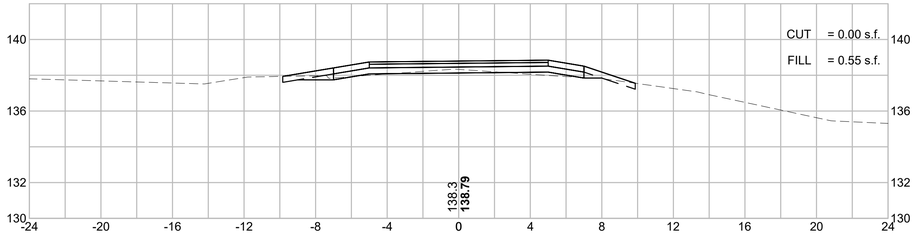
77+50



78+50



77+00



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:49 AM

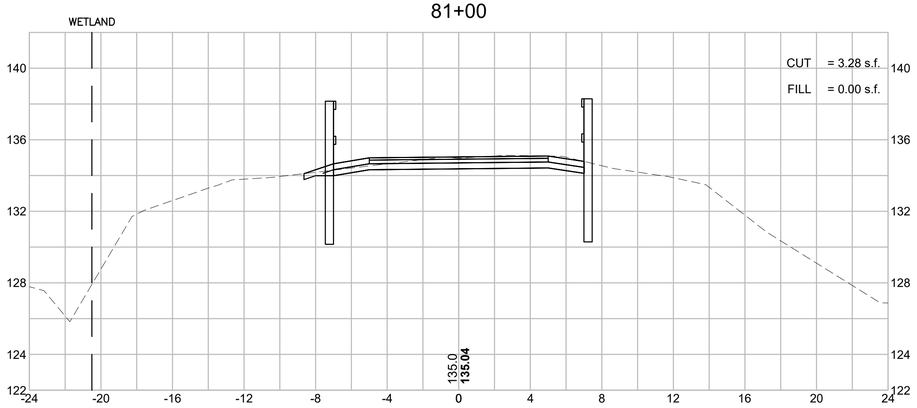
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	195	227
PROJECT FILE NO.	605189		

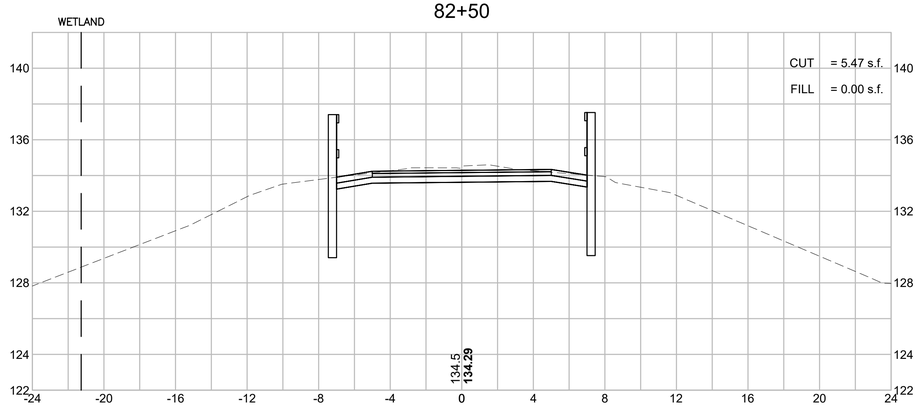
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:50 AM

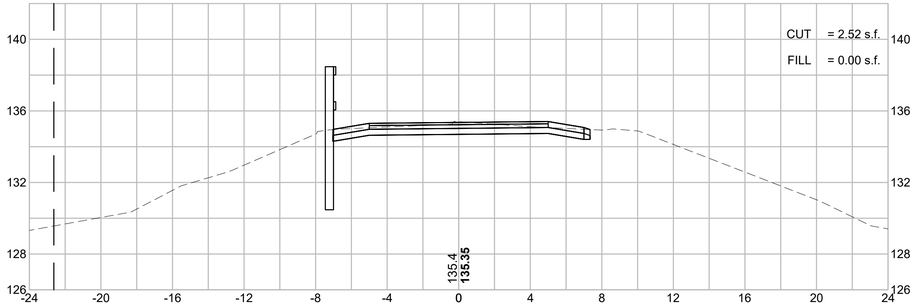
81+00



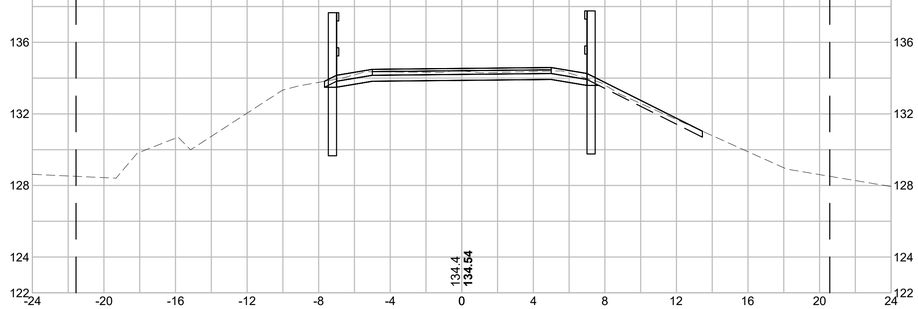
82+50



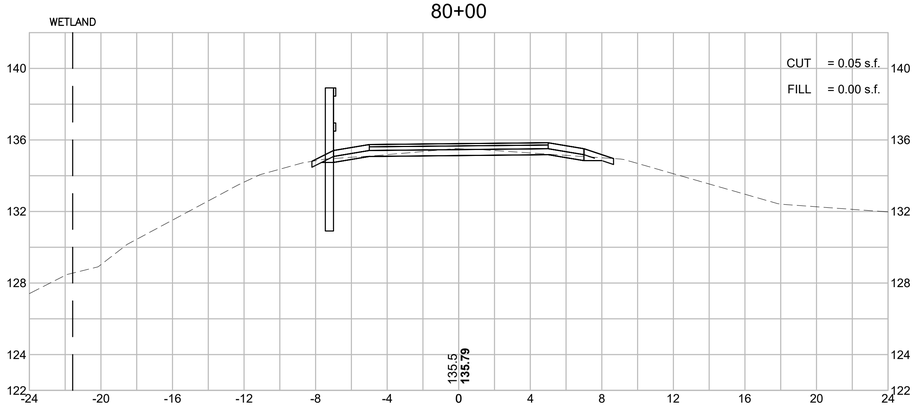
80+50



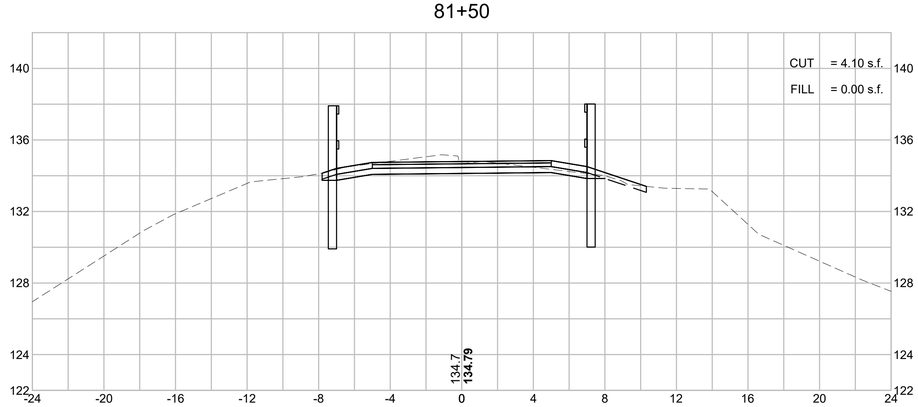
82+00



80+00



81+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

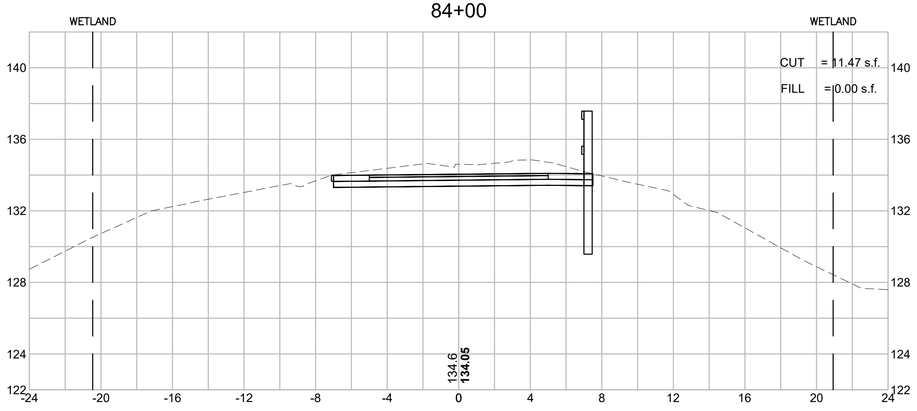
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	196	227
PROJECT FILE NO.	605189		

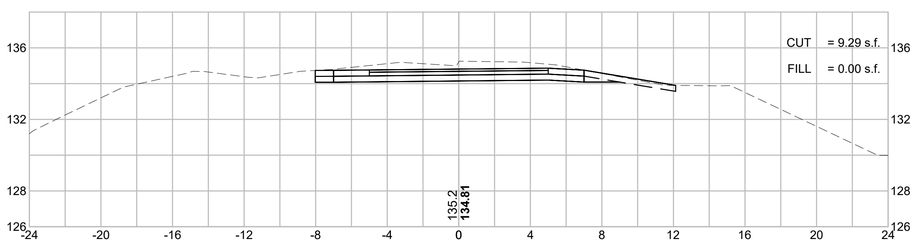
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:50 AM

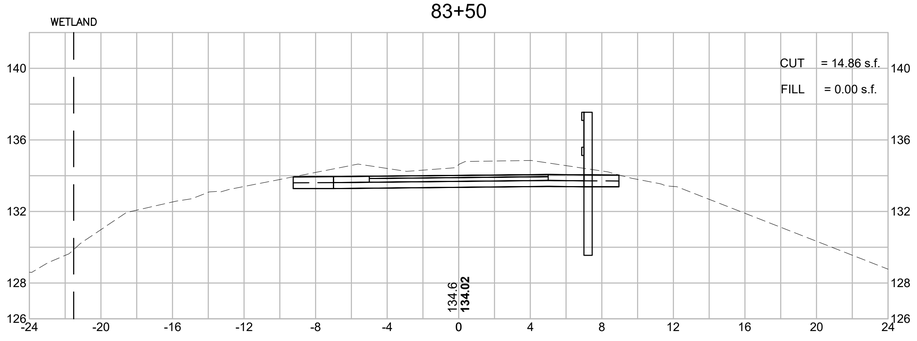
84+00



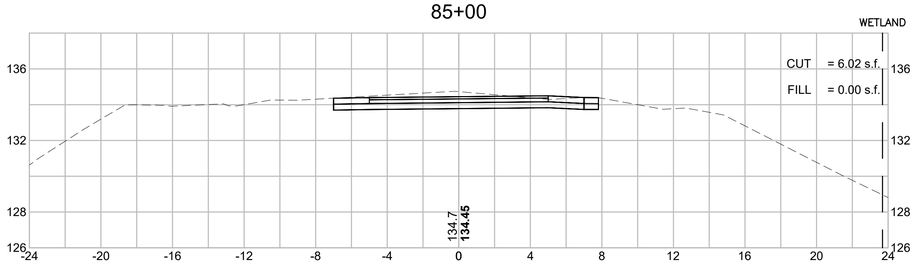
85+50



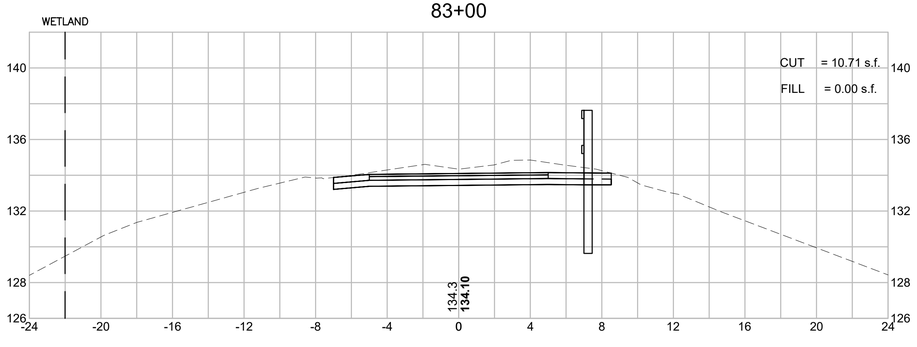
83+50



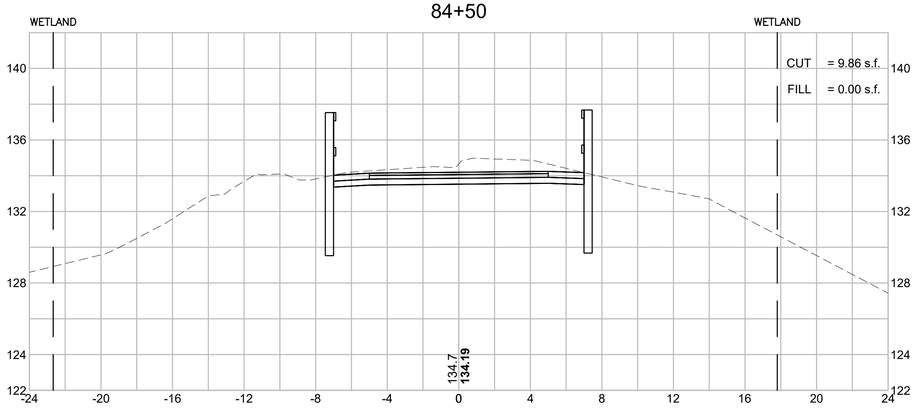
85+00

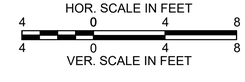


83+00



84+50





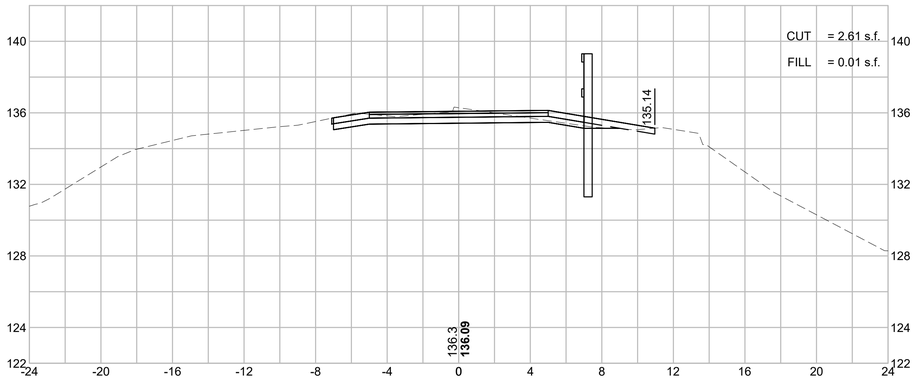
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	197	227
PROJECT FILE NO.	605189		

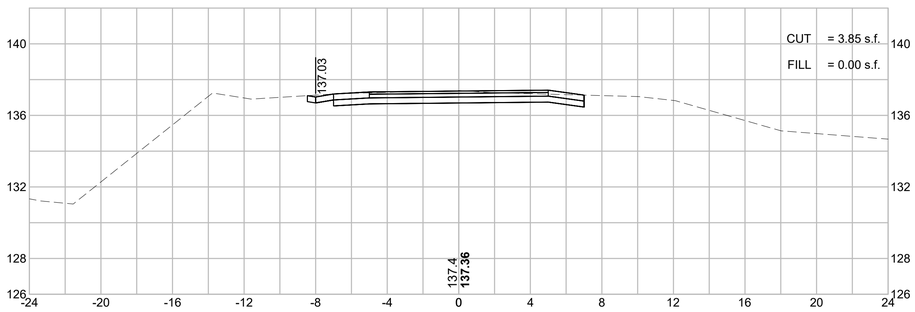
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:51 AM

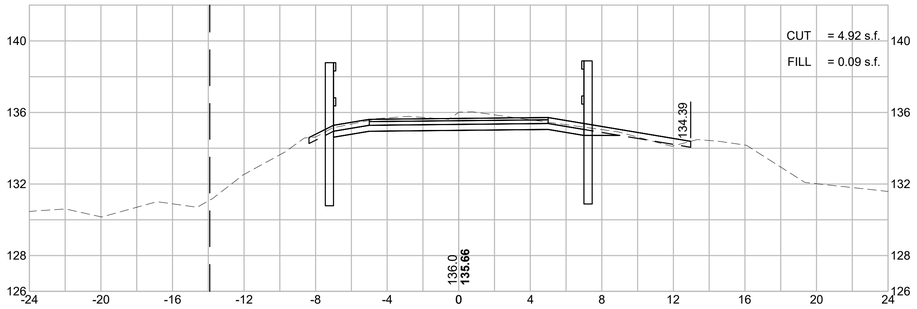
87+00



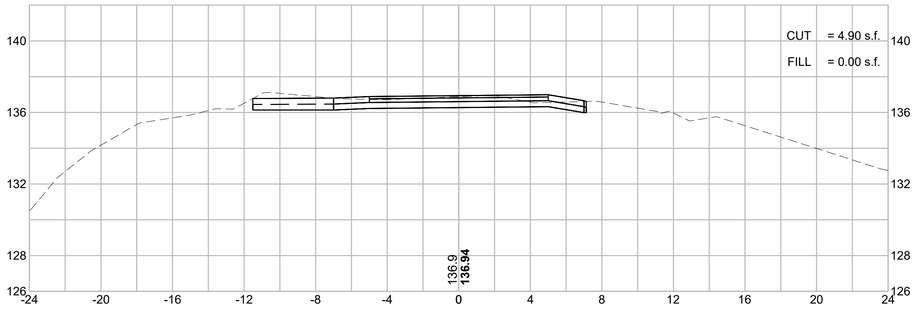
88+50



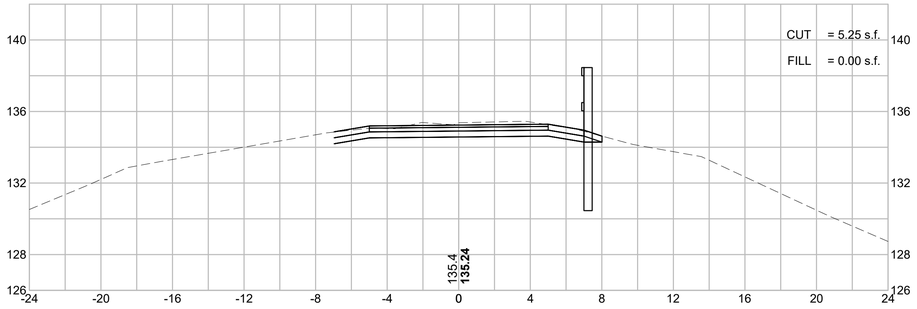
86+50



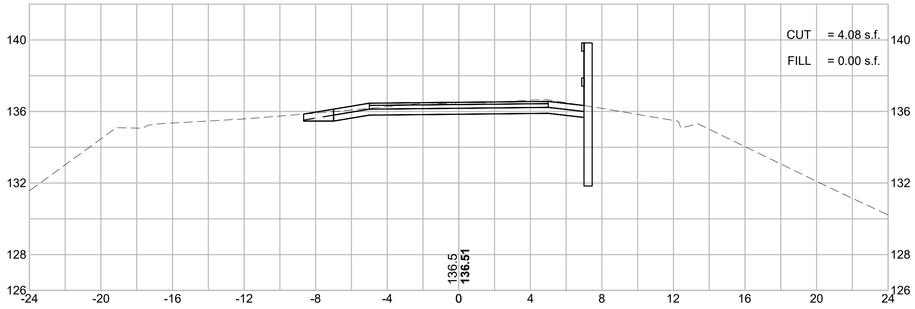
88+00



86+00



87+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

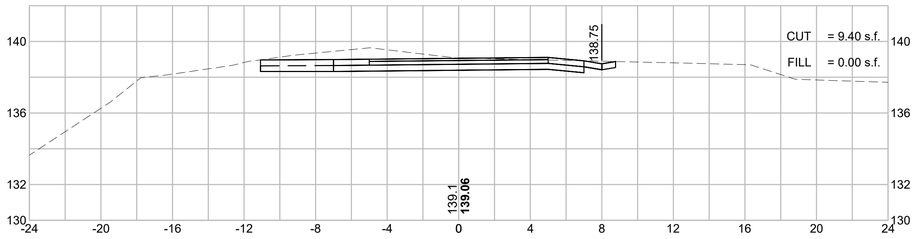
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	198	227
PROJECT FILE NO.	605189		

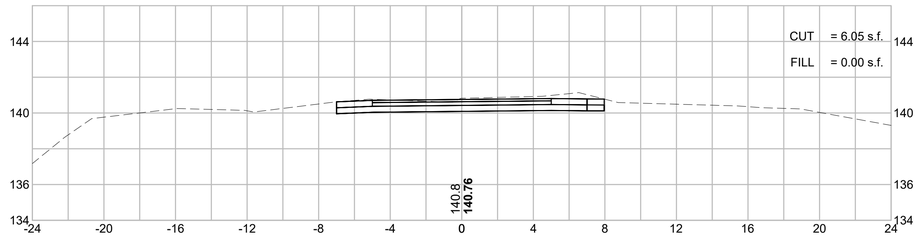
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:52 AM

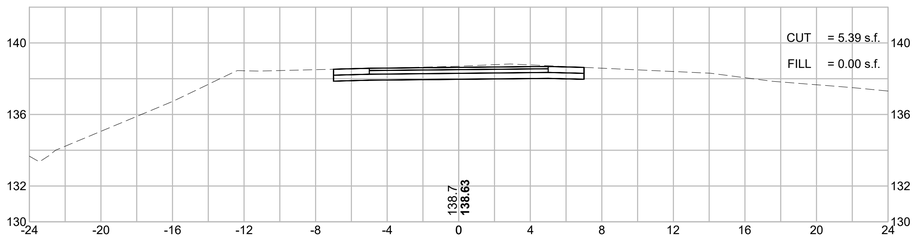
90+50



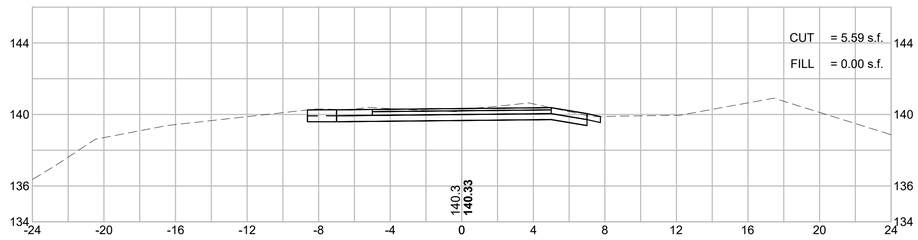
92+50



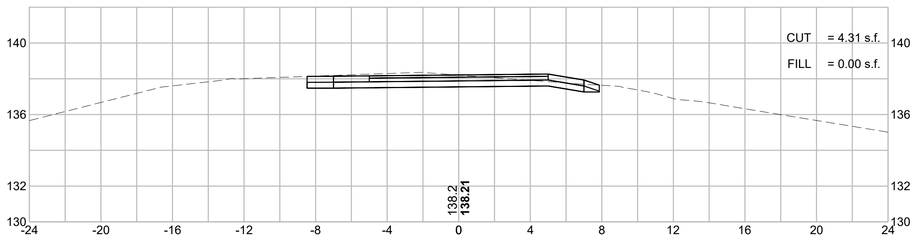
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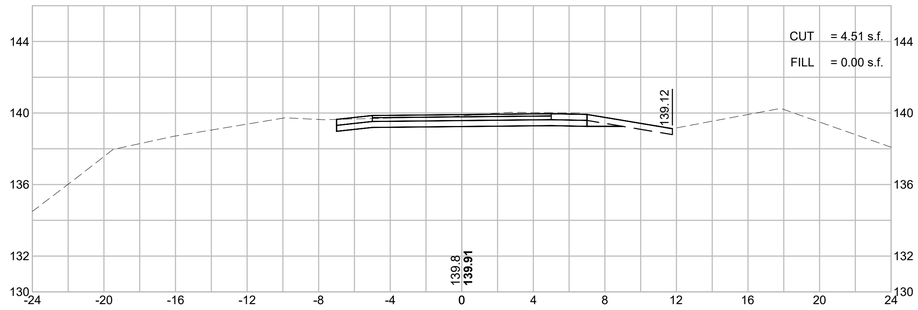
92+00



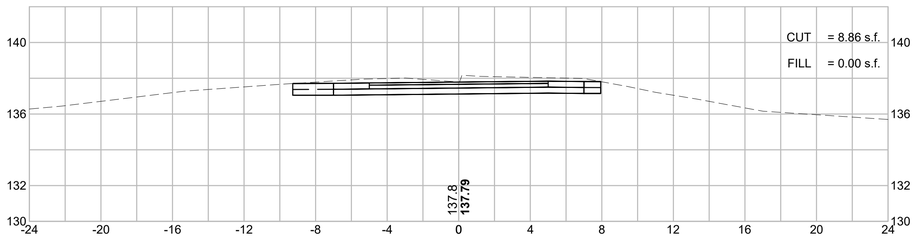
89+50



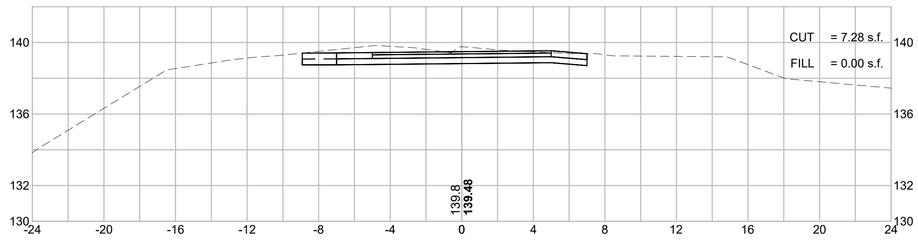
91+50



89+00



91+00



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

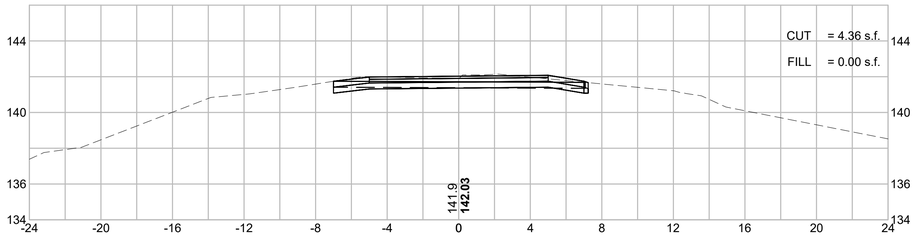
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	199	227
PROJECT FILE NO.	605189		

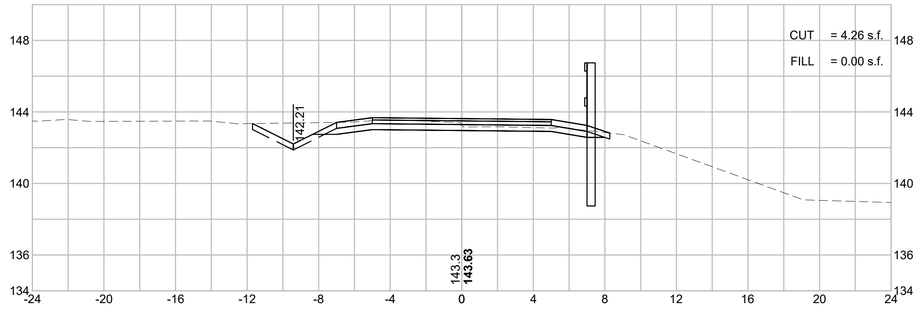
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:52 AM

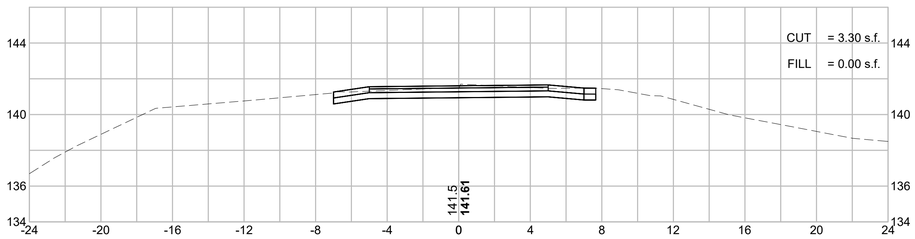
94+00



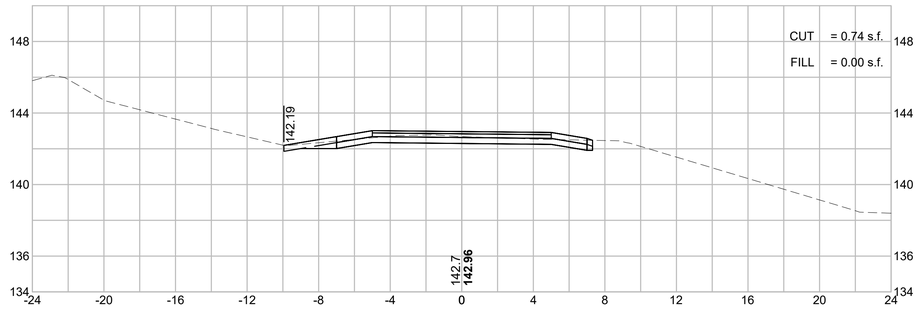
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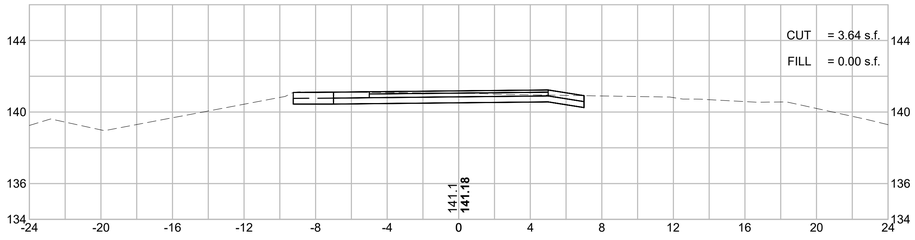
93+50



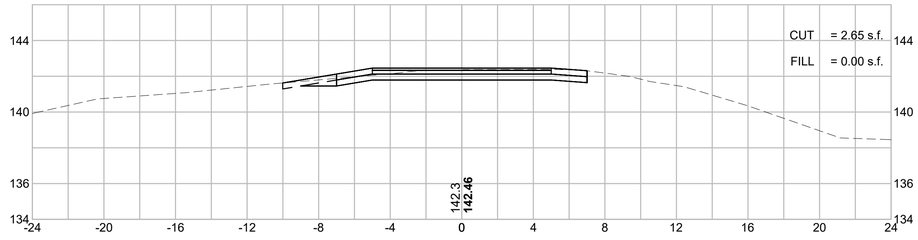
95+00



93+00



94+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

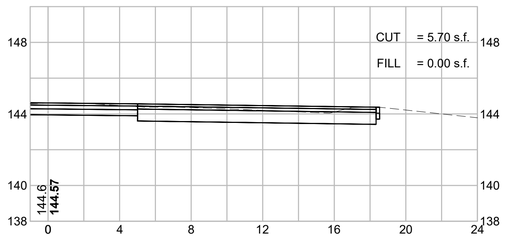
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	200	227
PROJECT FILE NO.	605189		

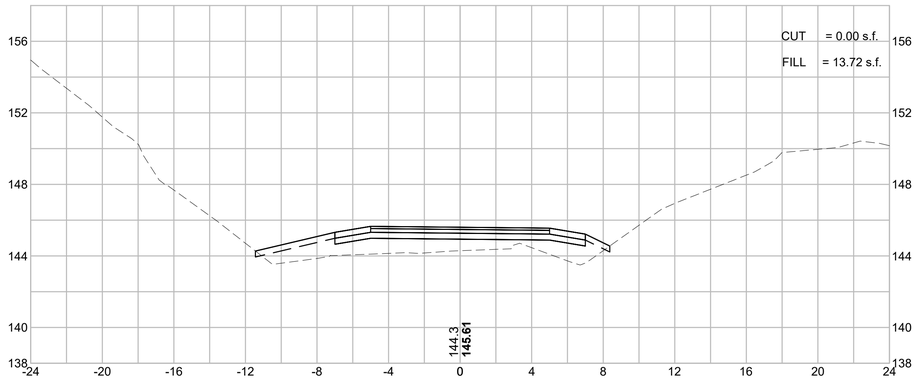
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:53 AM

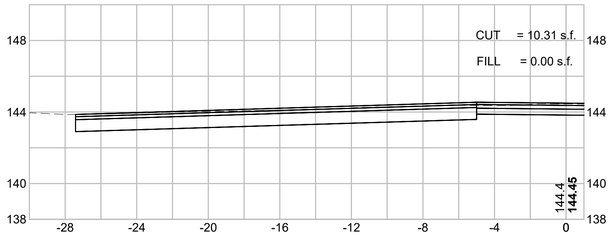
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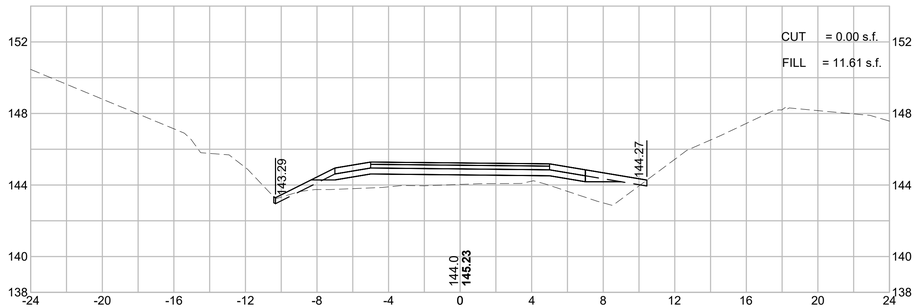
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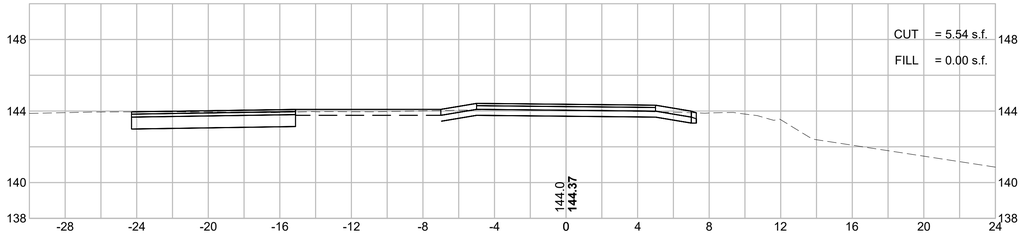
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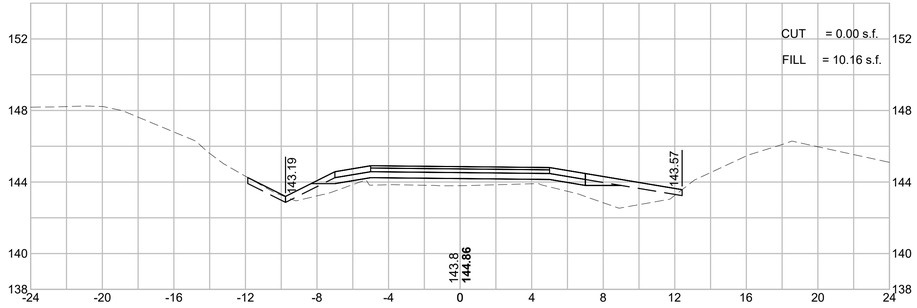
97+00



96+00



96+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

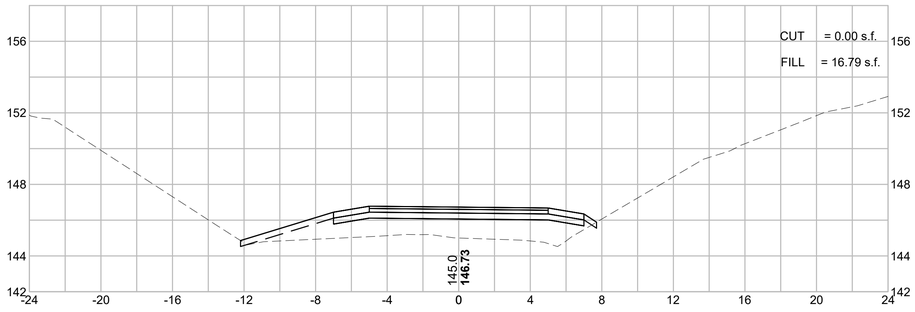
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	201	227
PROJECT FILE NO.	605189		

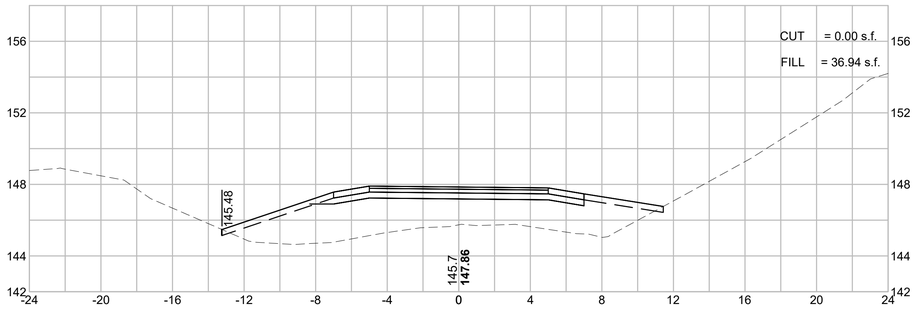
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:54 AM

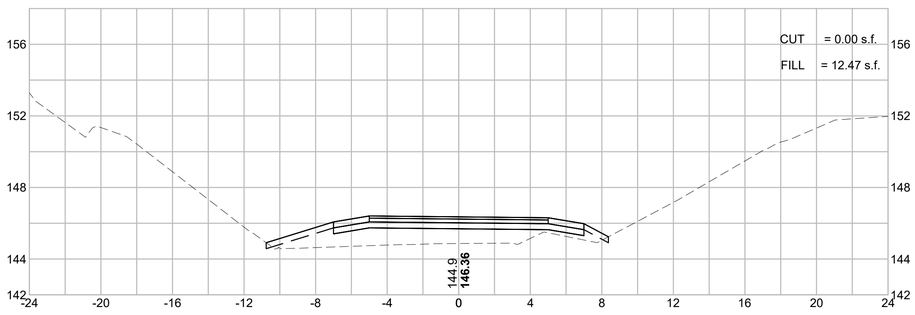
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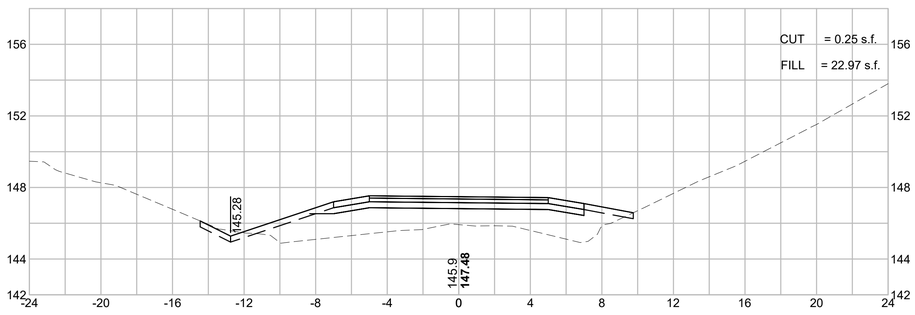
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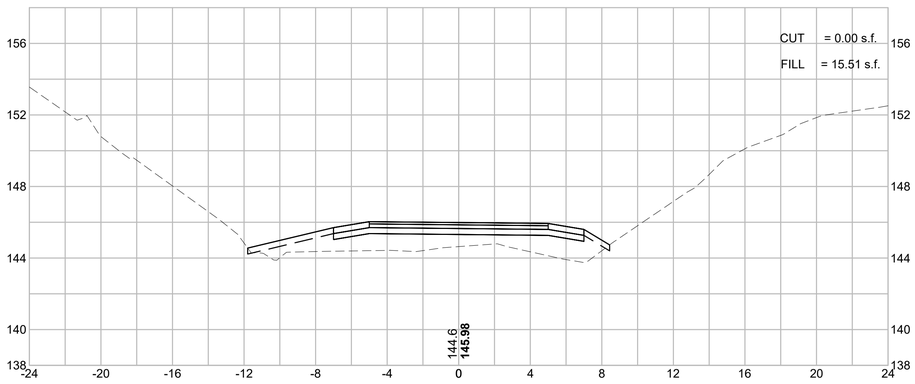
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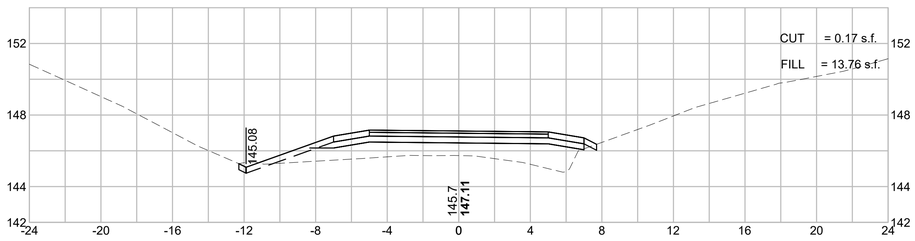
100+00



98+00



99+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

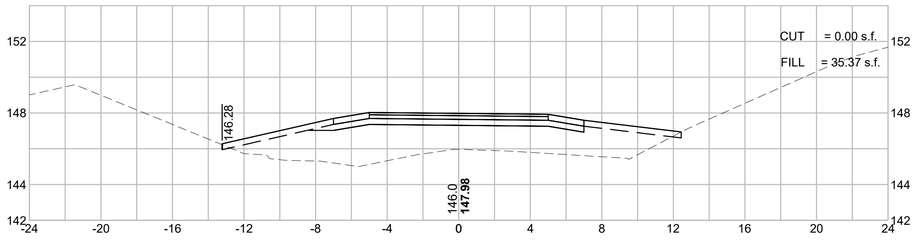
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	202	227
PROJECT FILE NO.	605189		

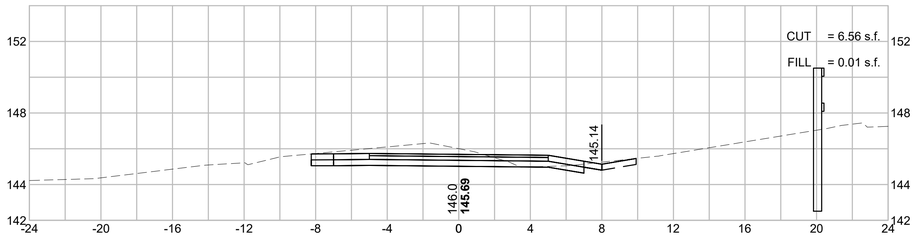
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:54 AM

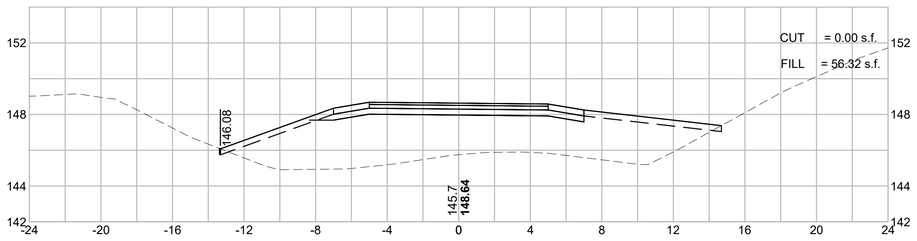
102+50



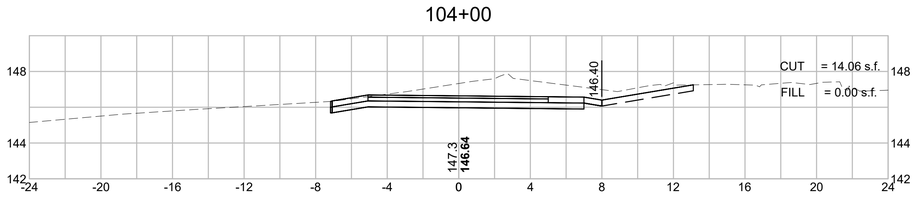
104+50



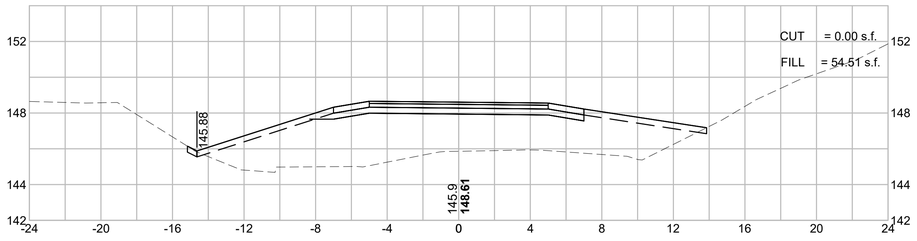
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104+00

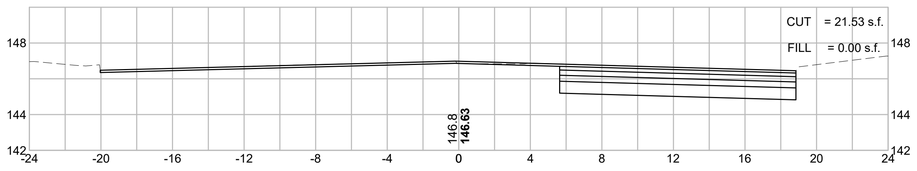


101+50

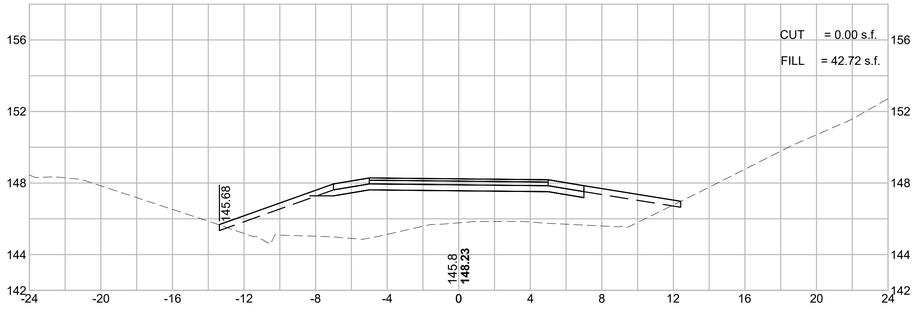


UPLP 35
+68
5' L

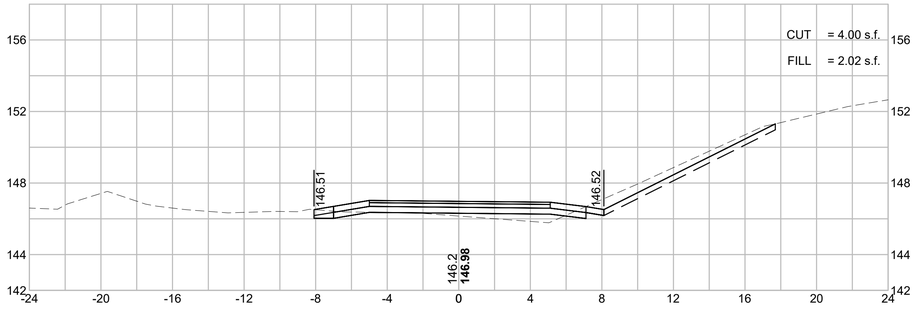
103+50



101+00



103+00



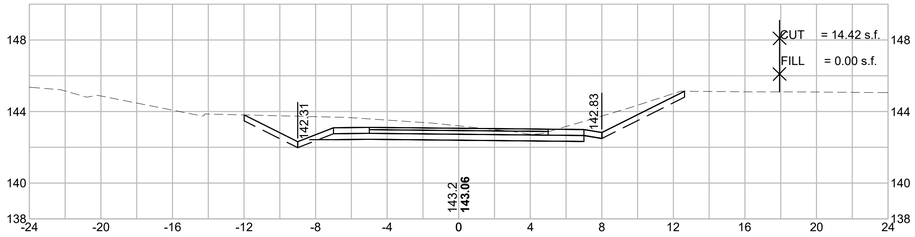
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

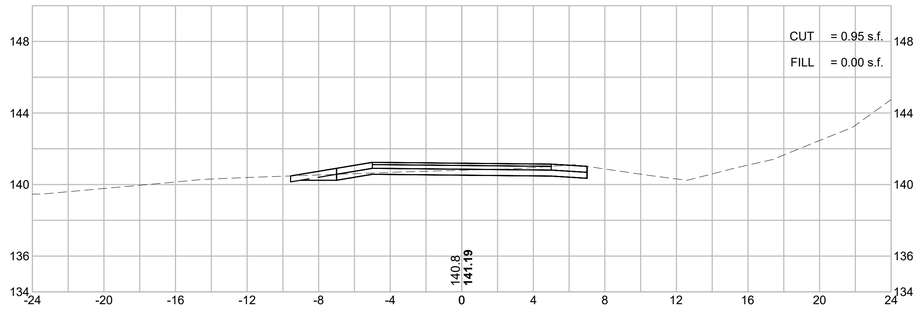
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	203	227
PROJECT FILE NO.	605189		

CROSS SECTIONS

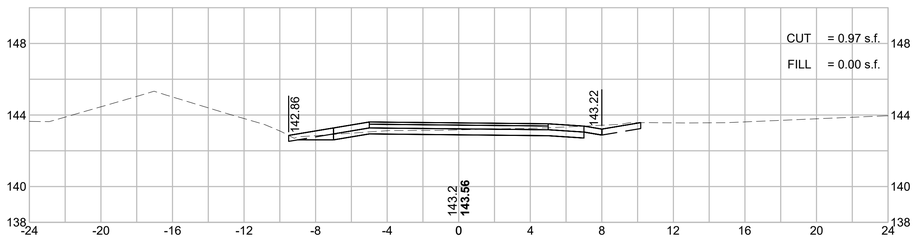
106+50



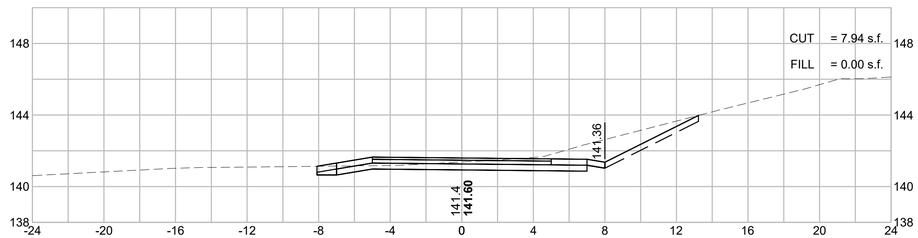
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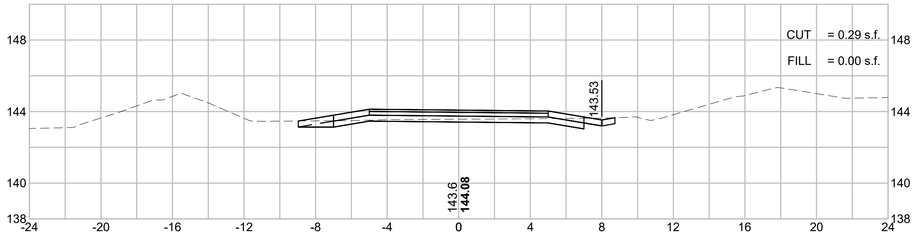
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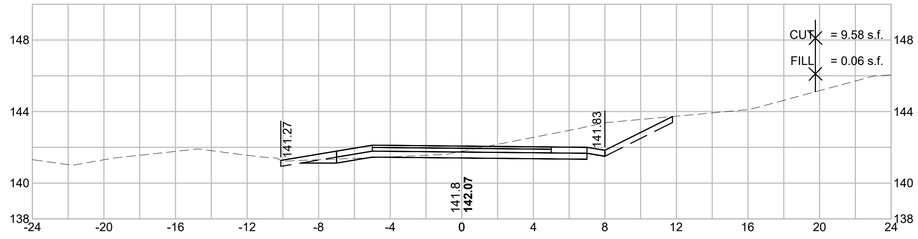
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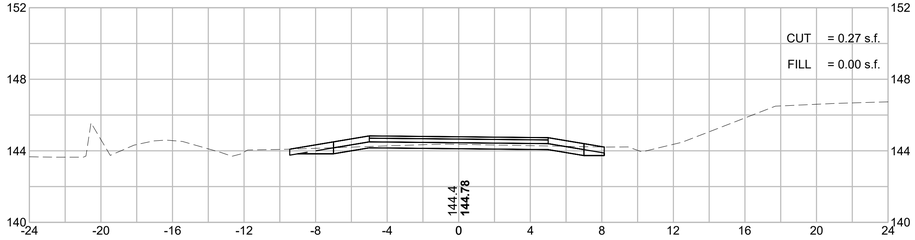
105+50



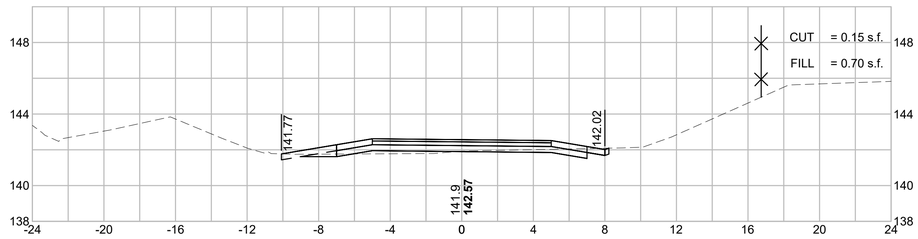
107+50



105+00



107+00



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:55 AM

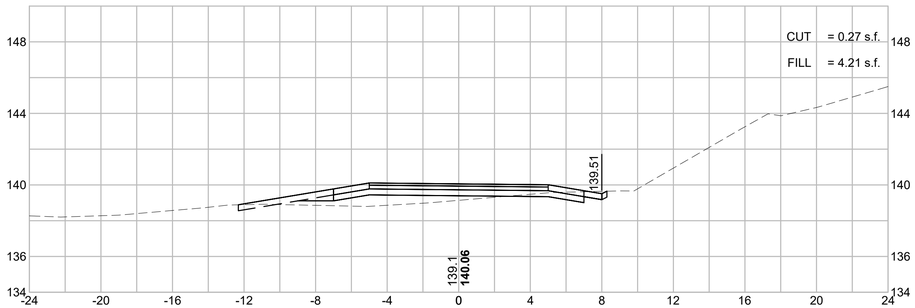
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	204	227
PROJECT FILE NO.	605189		

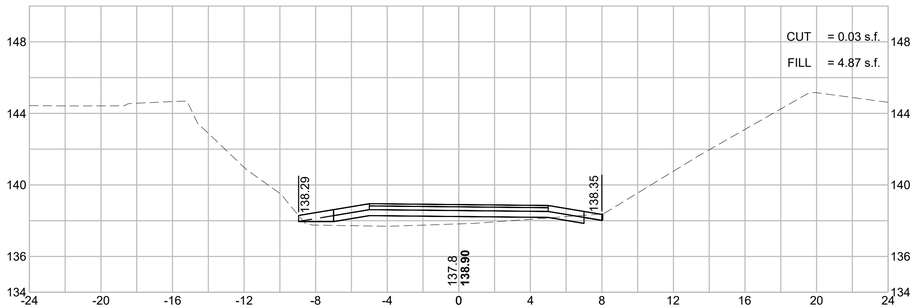
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:56 AM

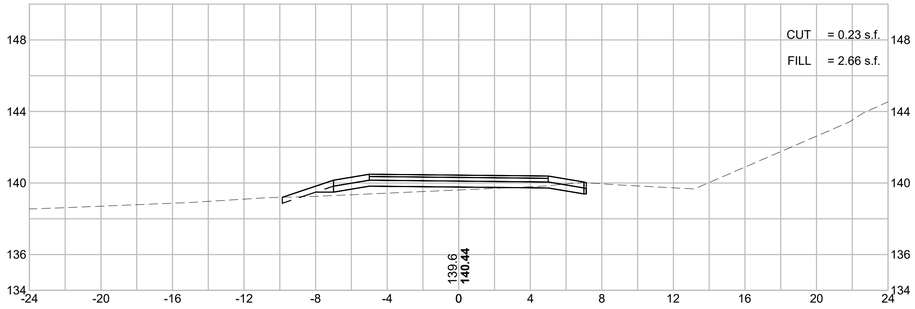
110+00



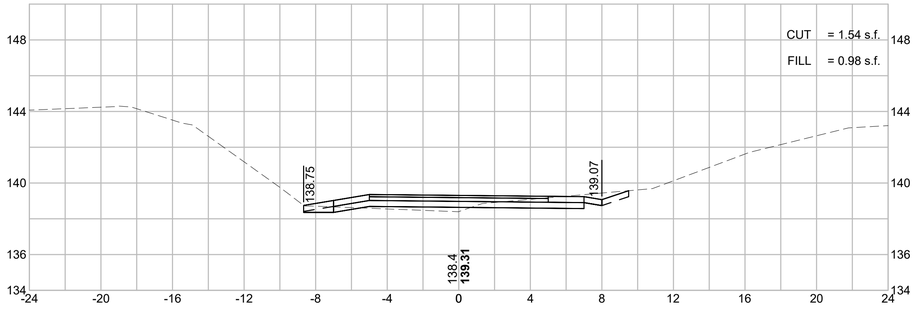
111+50



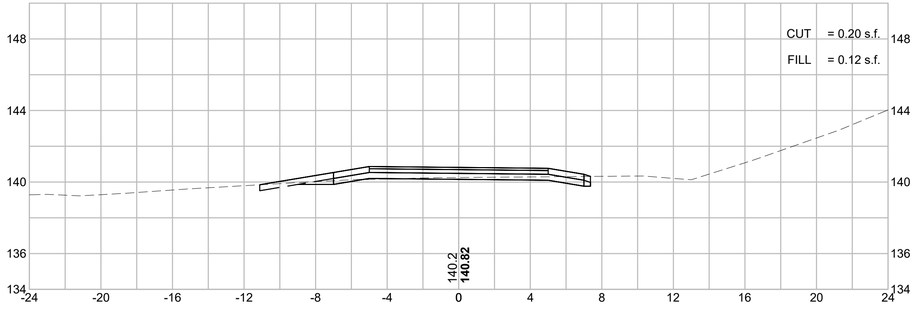
109+50



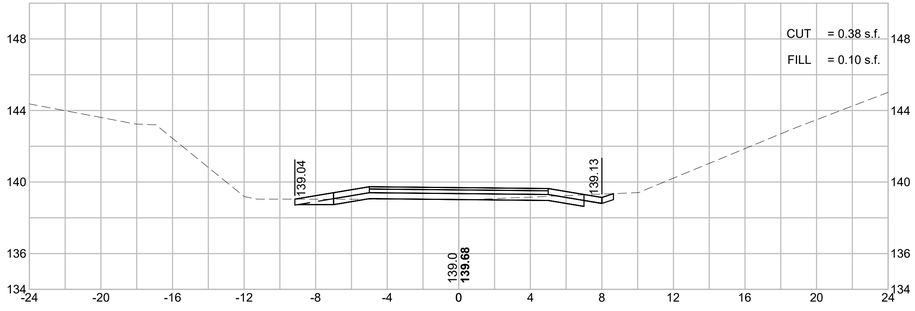
111+00



109+00



110+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

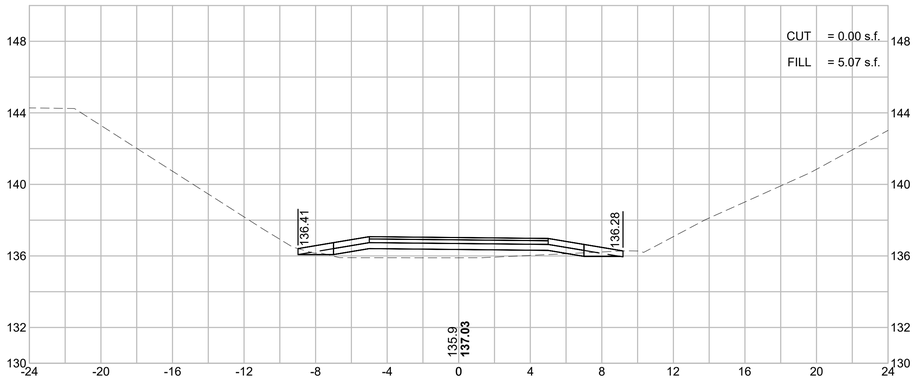
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	205	227
PROJECT FILE NO.	605189		

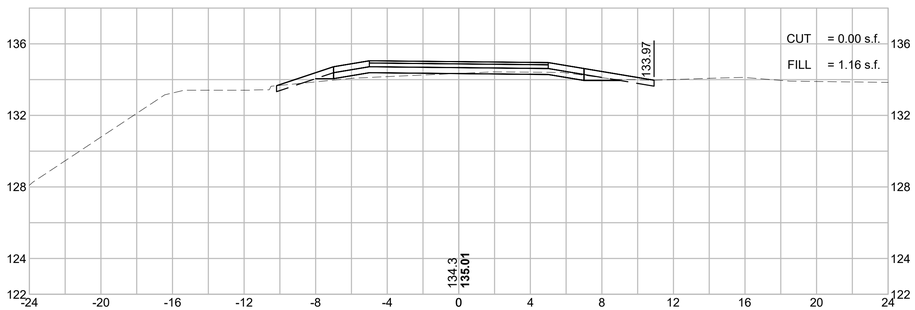
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:56 AM

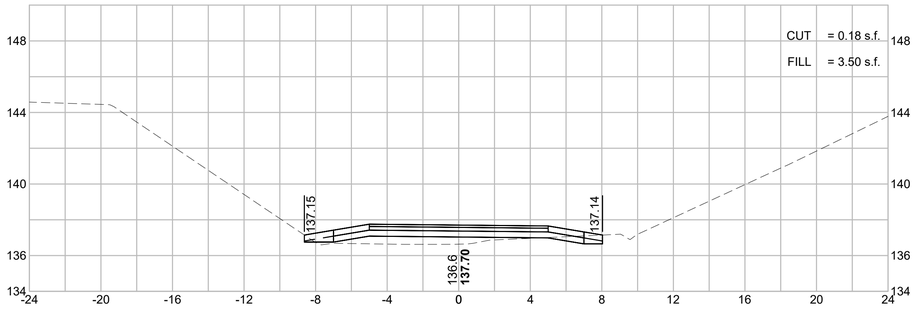
113+00



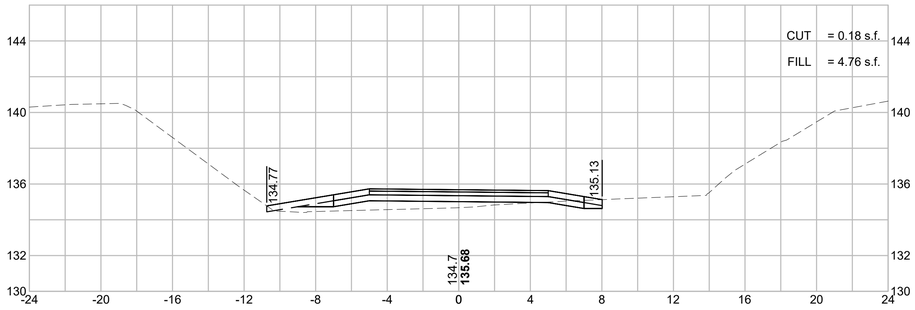
114+50



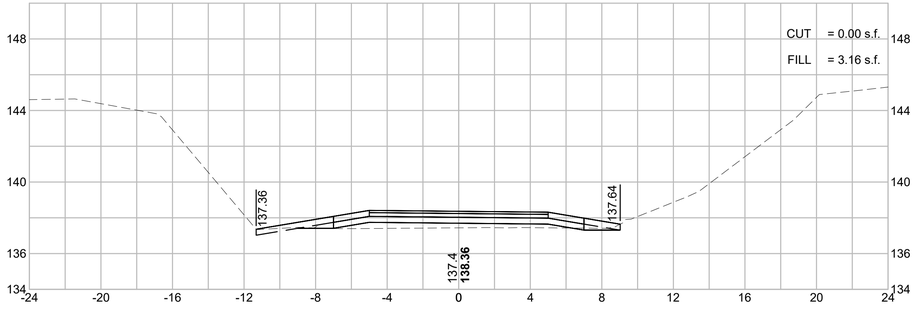
112+50



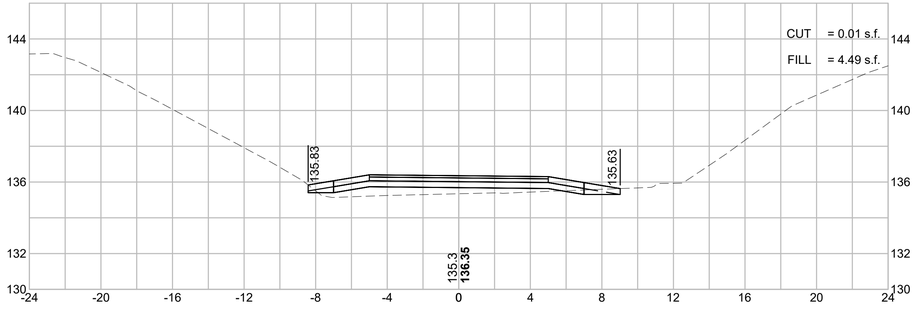
114+00



112+00



113+50



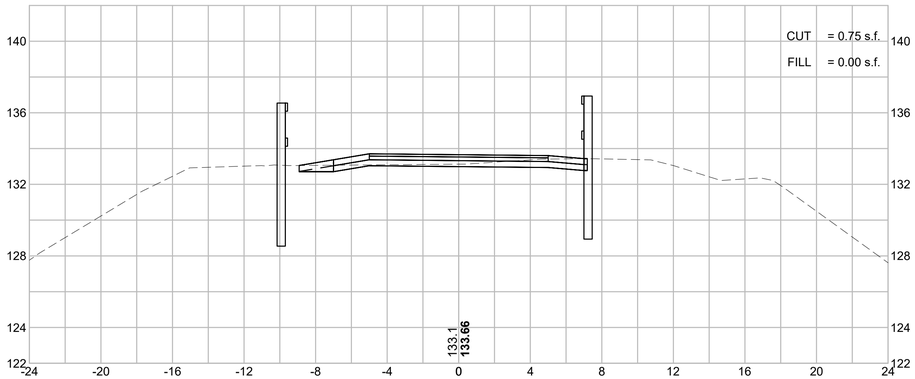
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

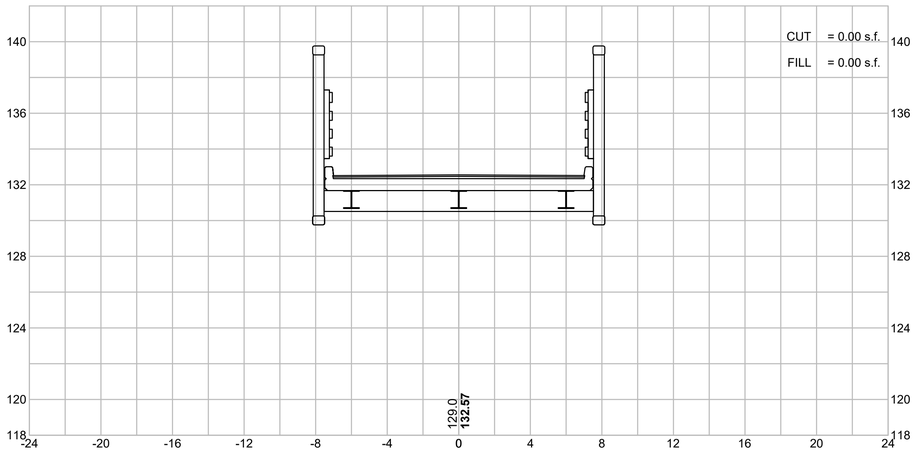
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	206	227
PROJECT FILE NO.	605189		

CROSS SECTIONS

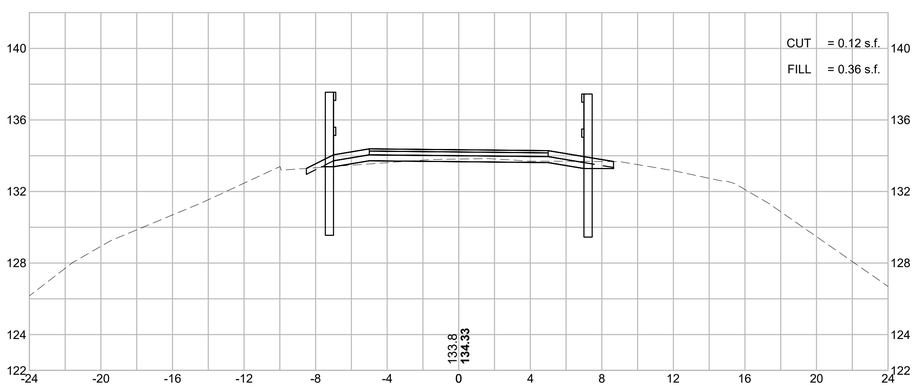
115+50



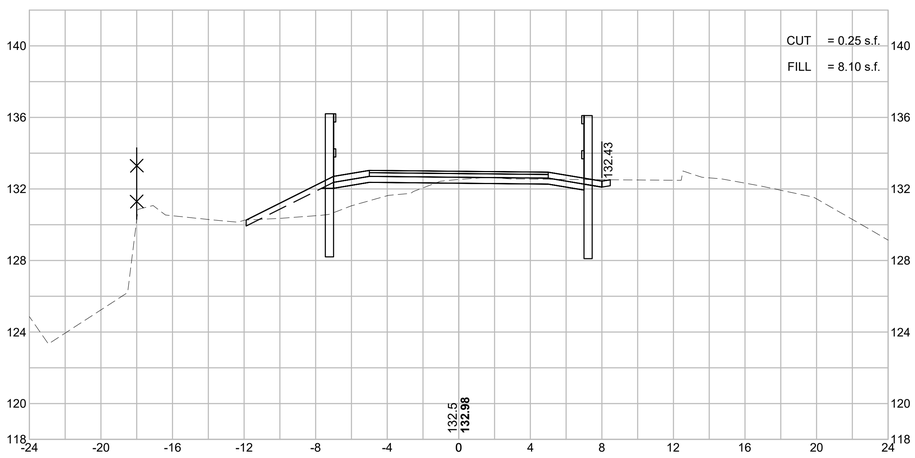
116+50



115+00



116+00



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:57 AM

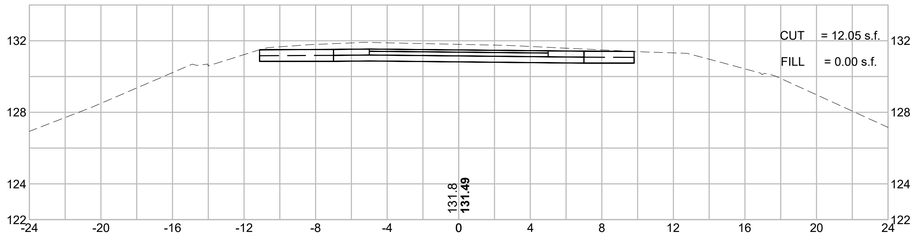
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	207	227
PROJECT FILE NO.	605189		

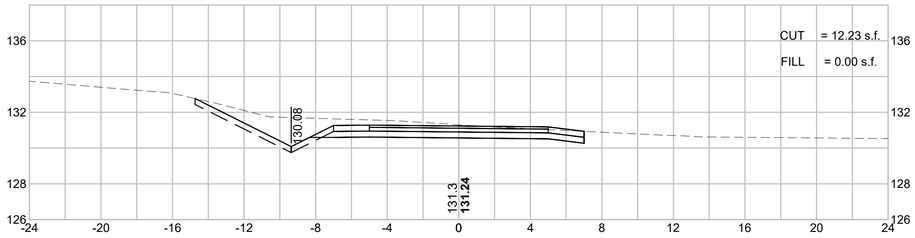
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:58 AM

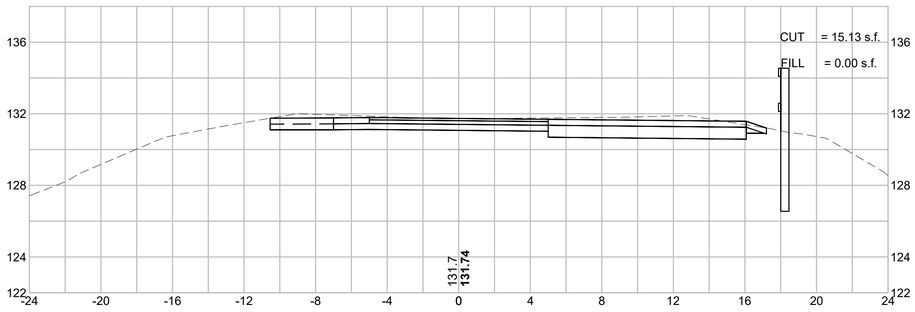
118+00



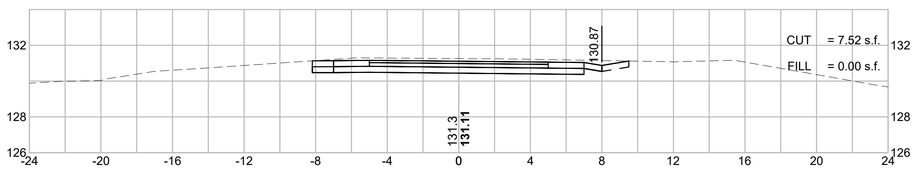
119+50



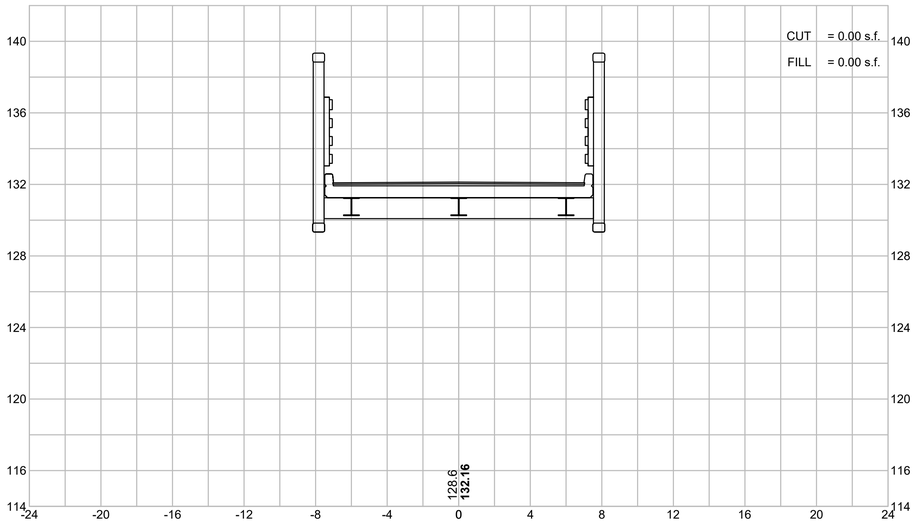
117+50



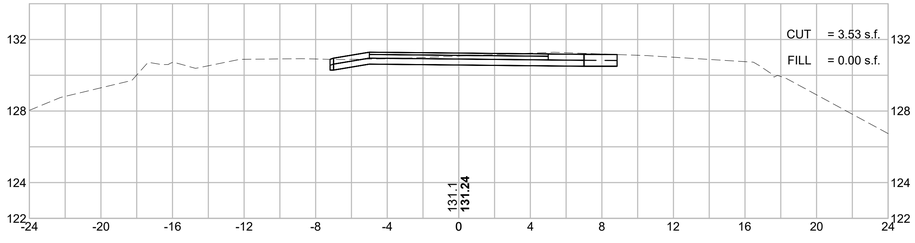
119+00



117+00



118+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

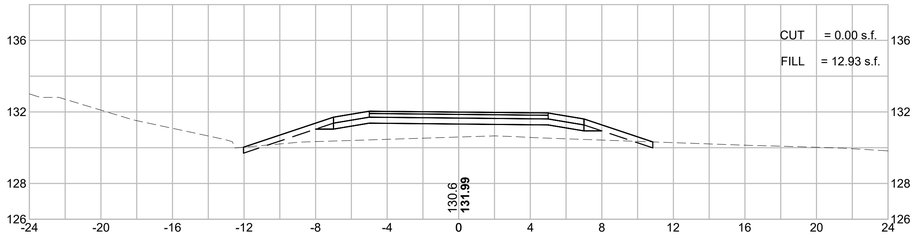
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	208	227
PROJECT FILE NO.	605189		

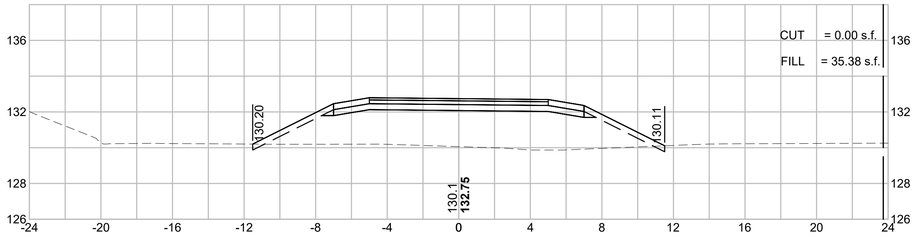
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:58 AM

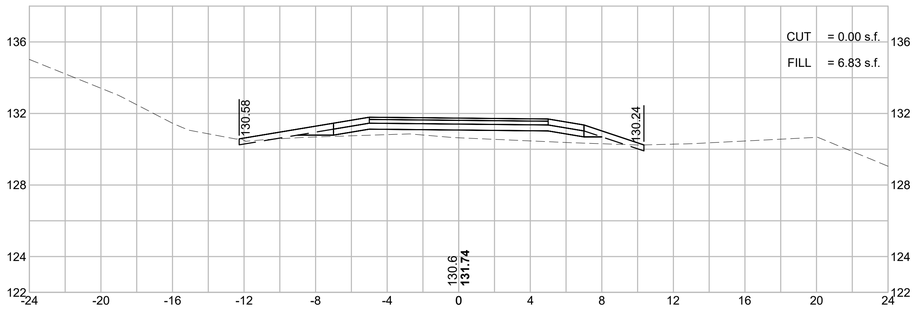
121+00



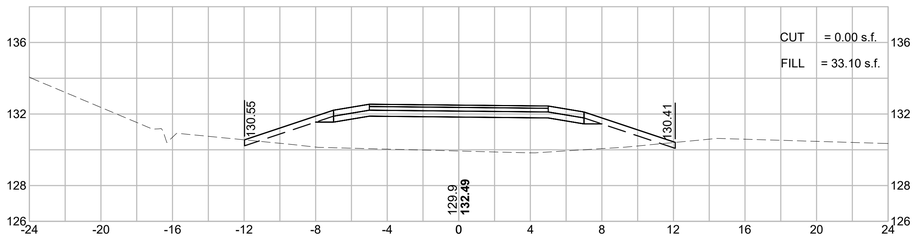
122+50



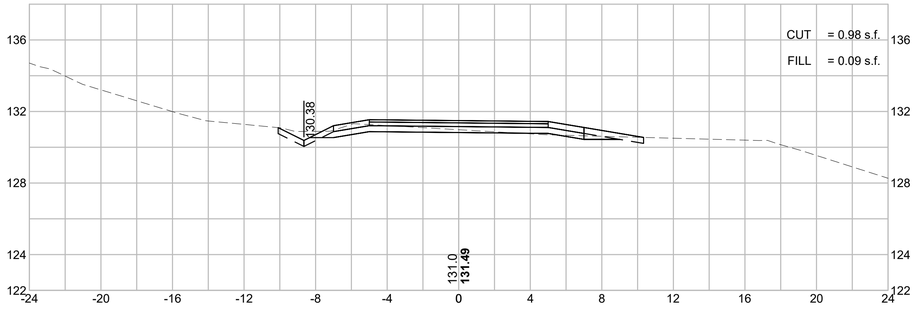
120+50



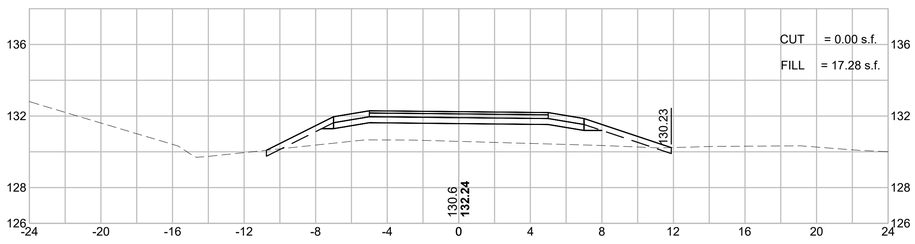
122+00



120+00



121+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

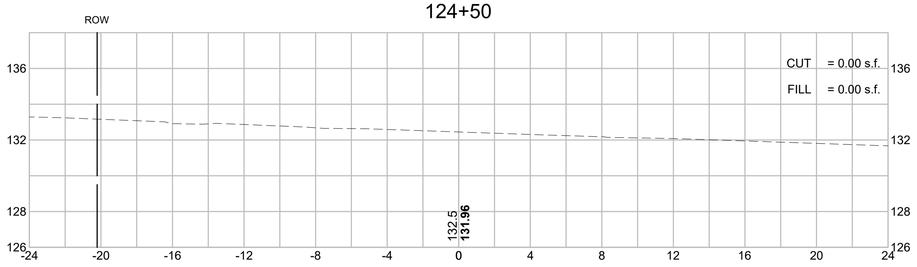
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	209	227
PROJECT FILE NO.	605189		

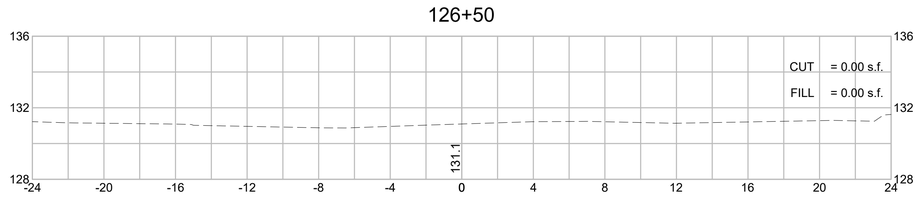
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 11:59 AM

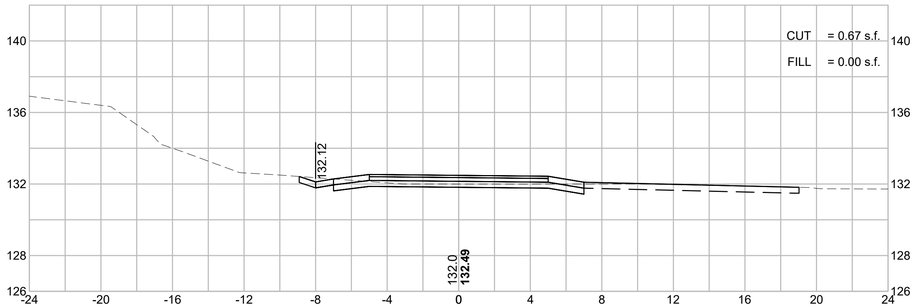
124+50



126+50

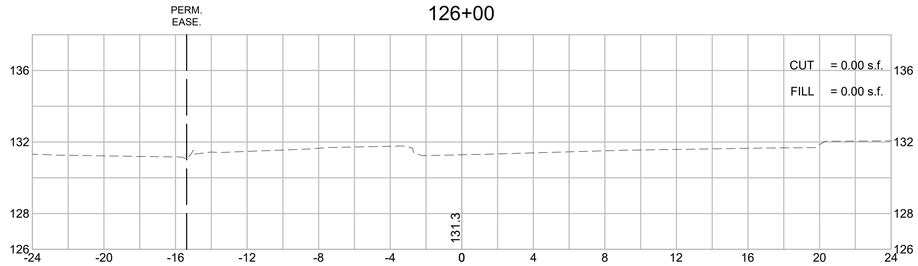


124+00



LP
+34
3'L

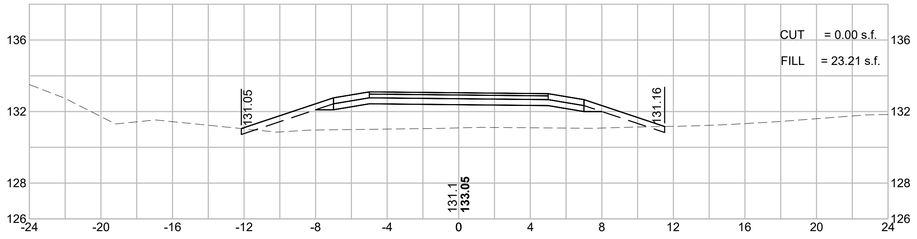
126+00



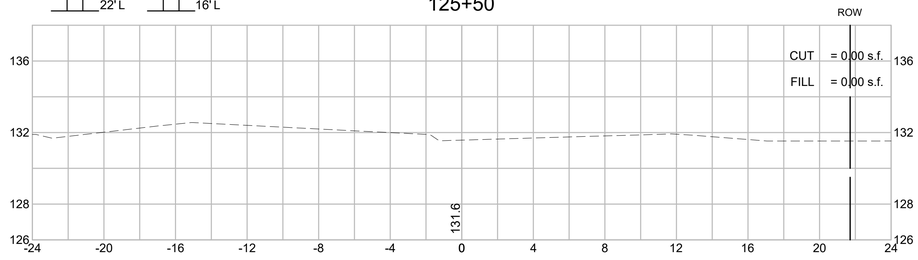
UP
+63
22'L

LP
+73
16'L

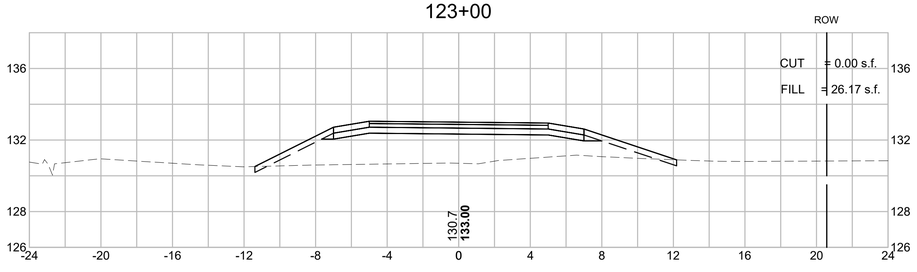
123+50



125+50

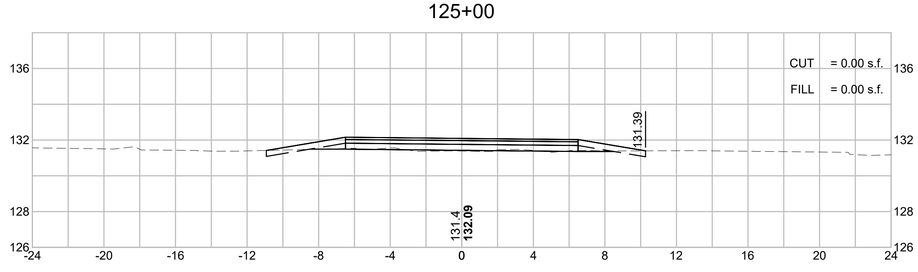


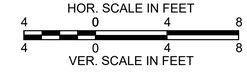
123+00



LP
+15
2'R

125+00



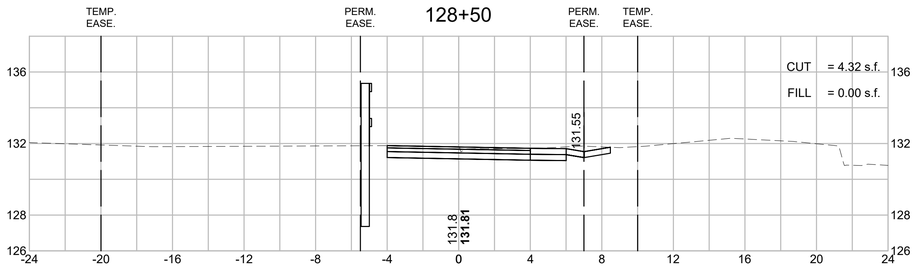


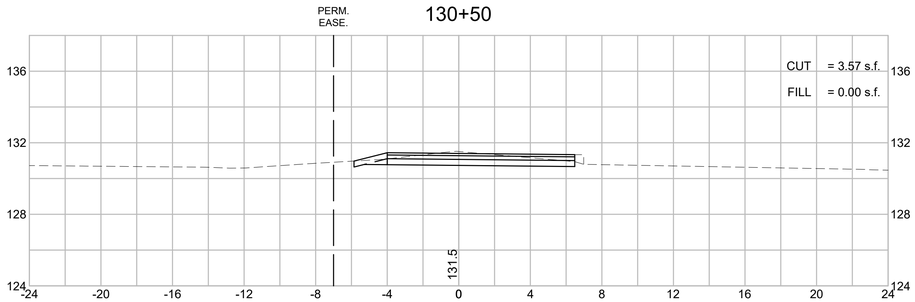
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

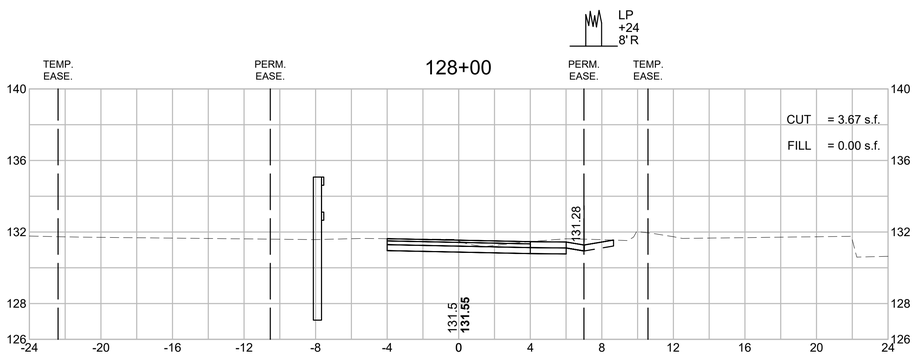
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	210	227
PROJECT FILE NO.	605189		

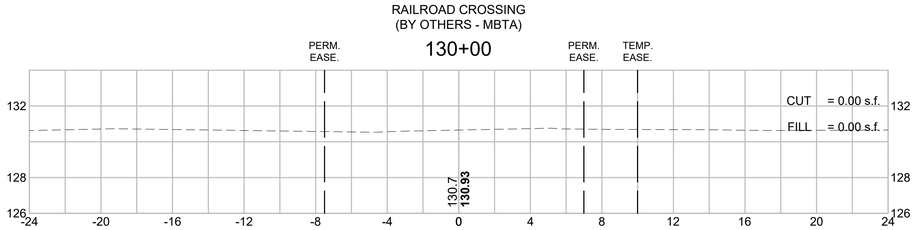
CROSS SECTIONS

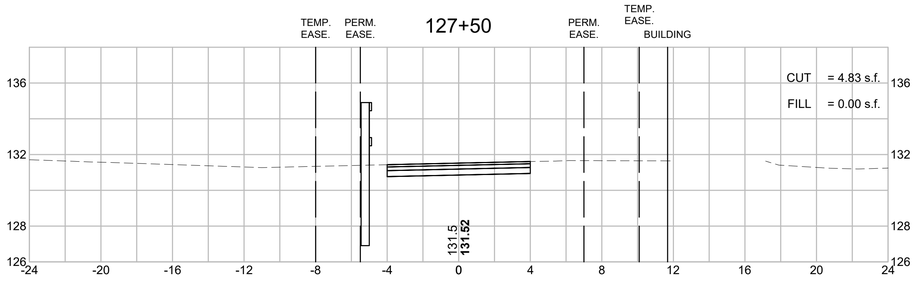
605189_HD(XS).DWG Plotted on 15-Aug-2016 12:00 PM

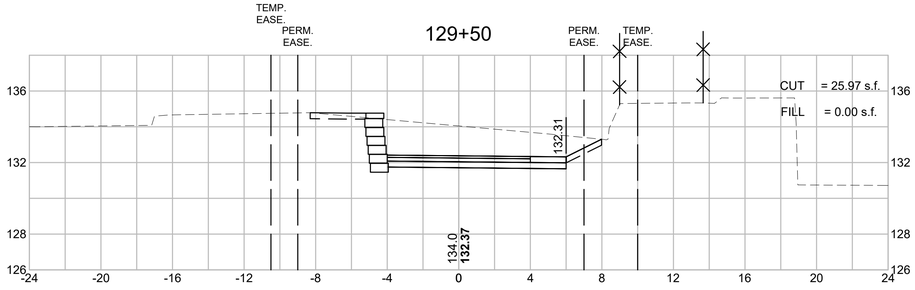


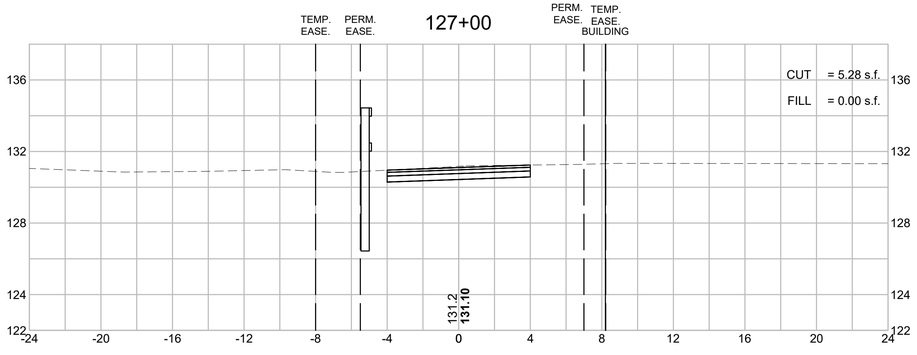


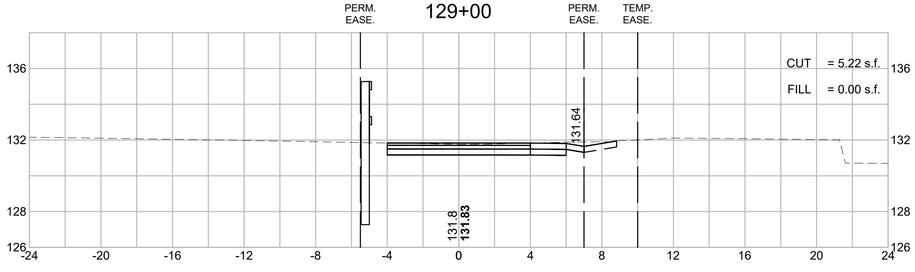












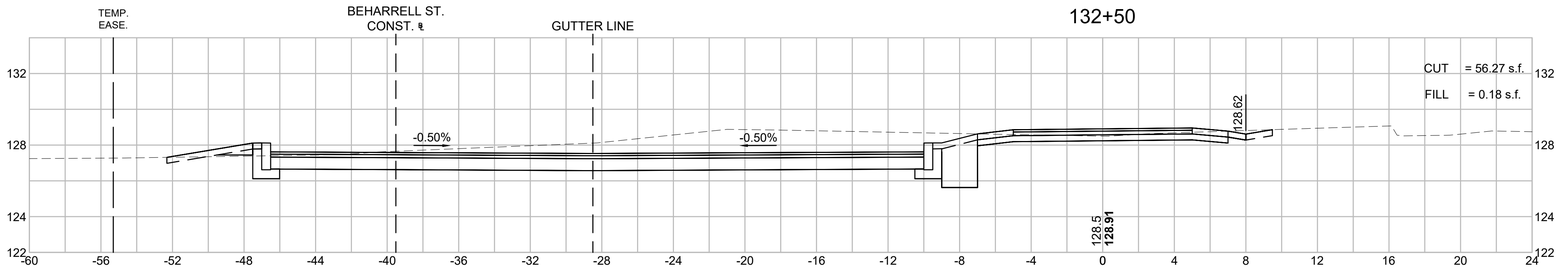
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

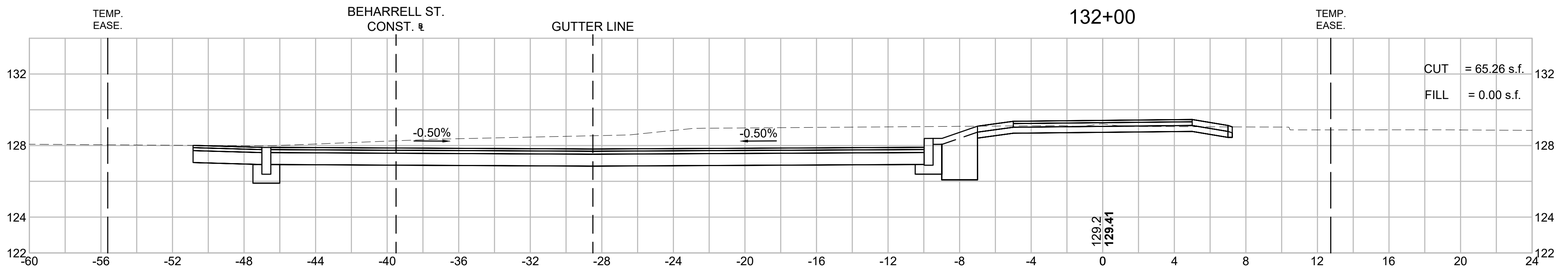
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

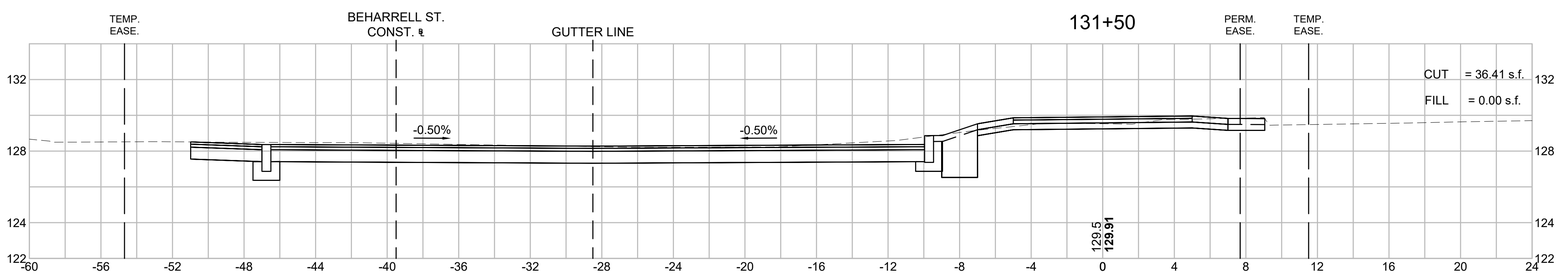
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	211	227
PROJECT FILE NO.	605189		

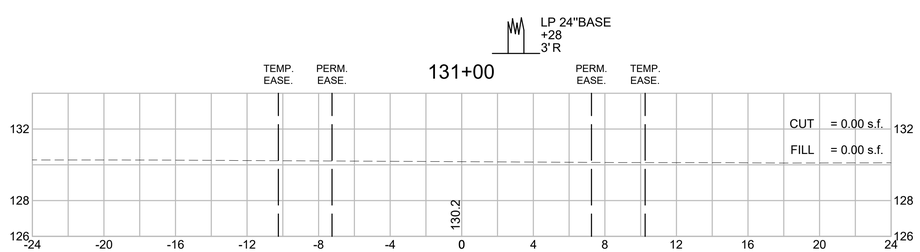
CROSS SECTIONS

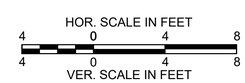
605189_HD(XS).DWG Plotted on 15-Aug-2016 12:00 PM







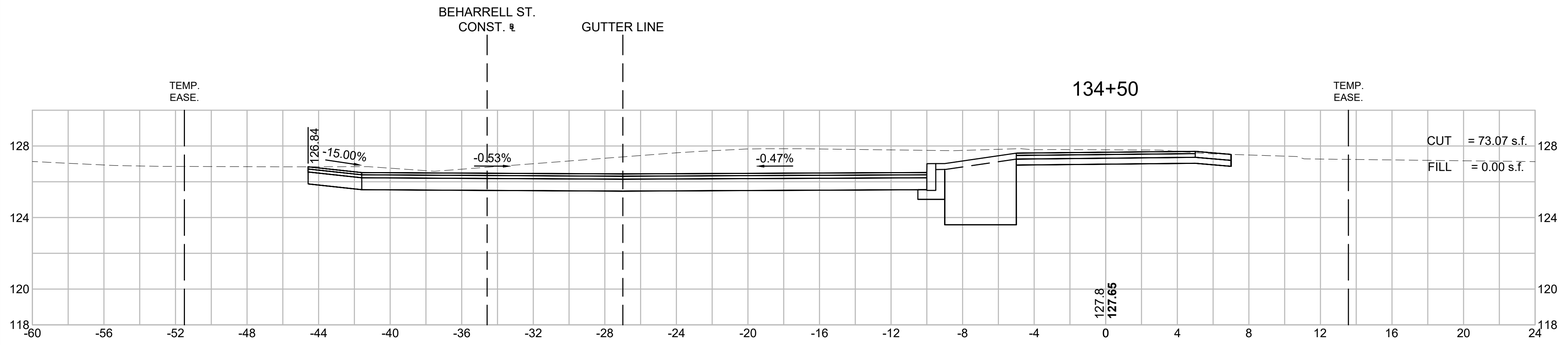


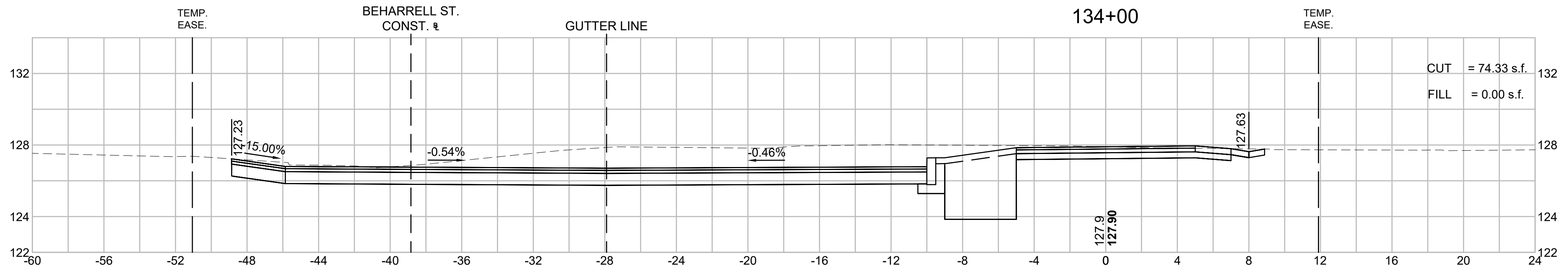


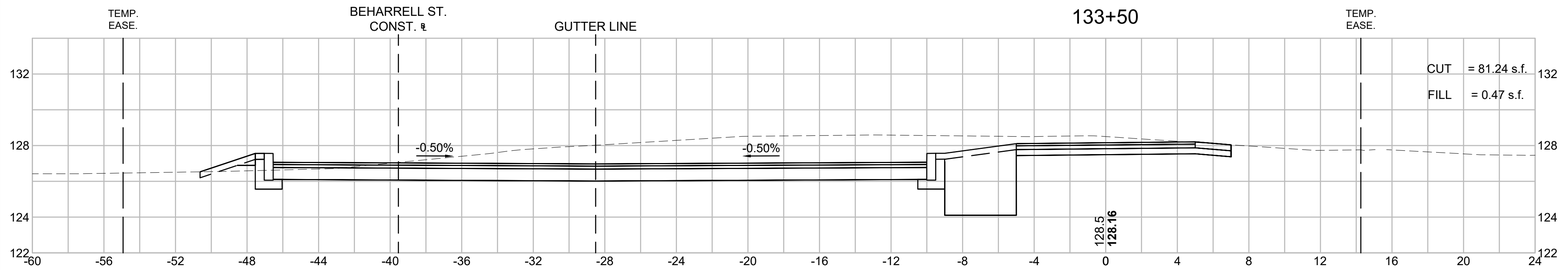
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

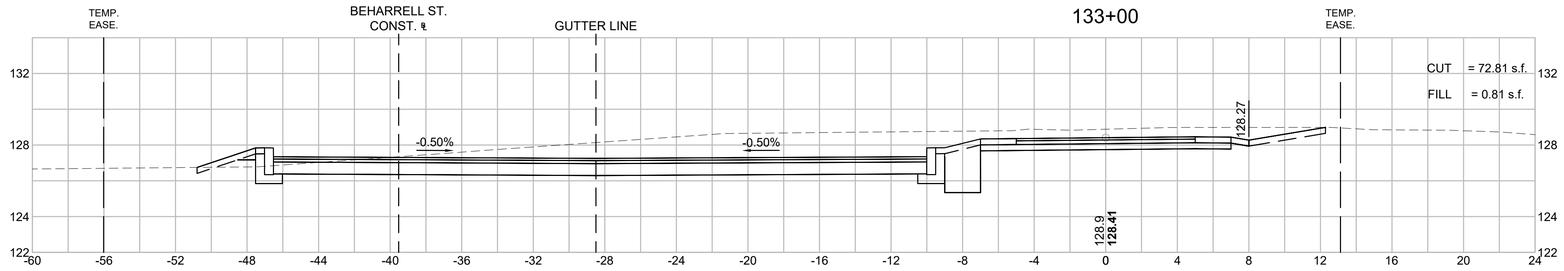
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	212	227
PROJECT FILE NO.	605189		

CROSS SECTIONS









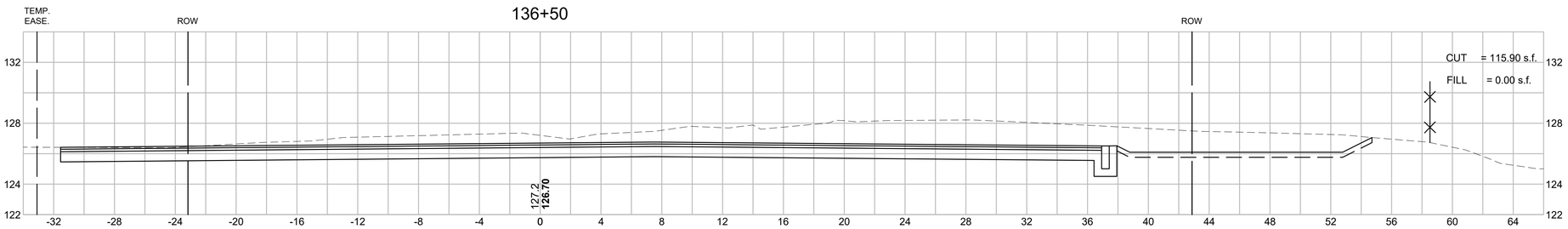
HOR. SCALE IN FEET
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4 0 4 8
VER. SCALE IN FEET

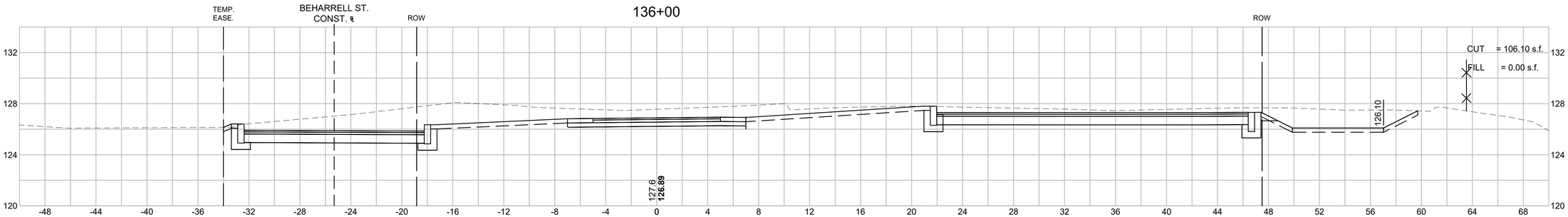
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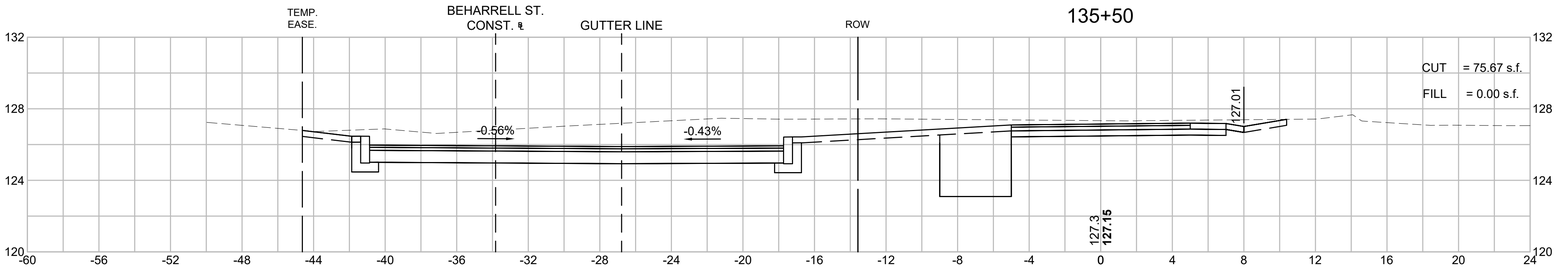
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

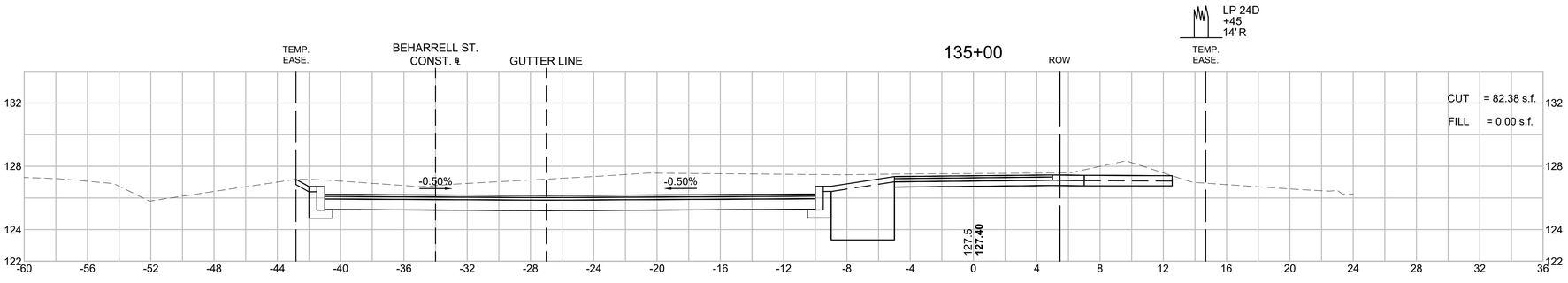
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	213	227
PROJECT FILE NO.	605189		

CROSS SECTIONS









HOR. SCALE IN FEET
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4 0 4 8
VER. SCALE IN FEET

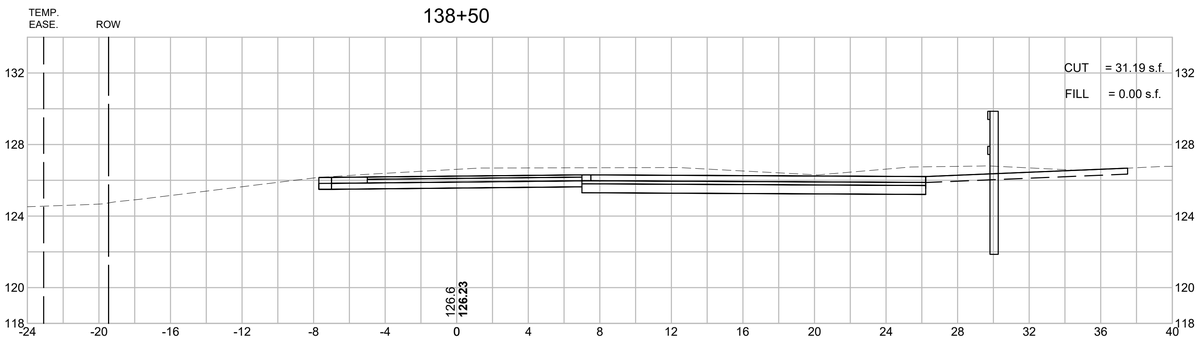
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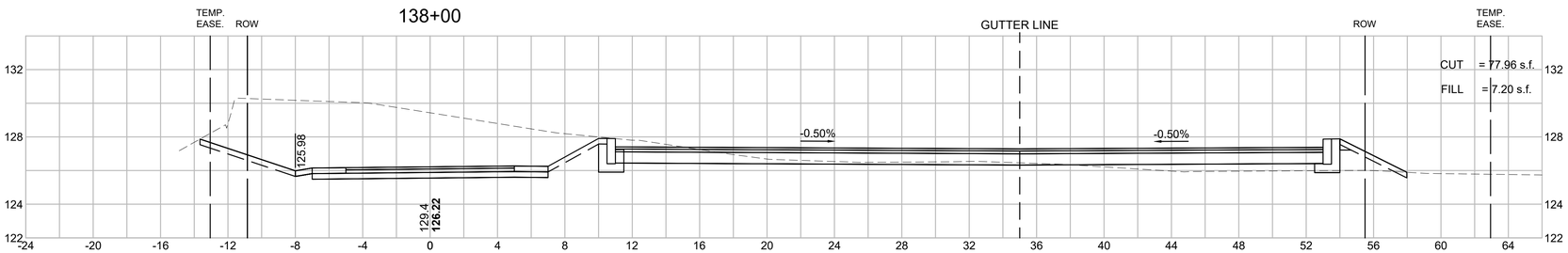
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

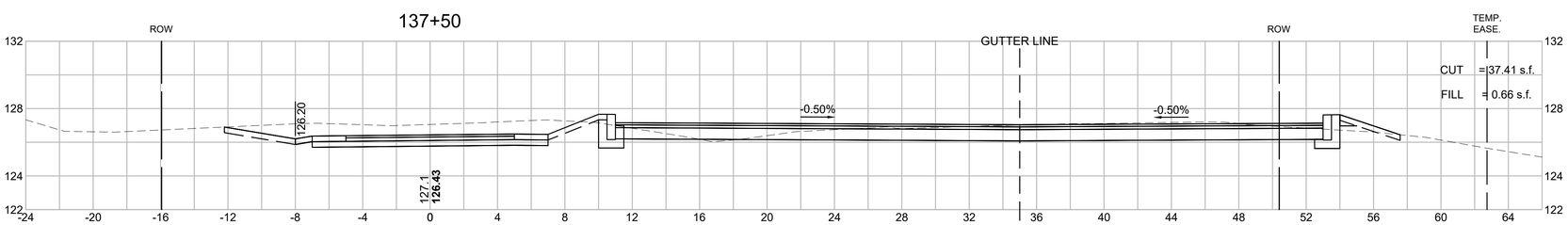
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	214	227
PROJECT FILE NO.	605189		

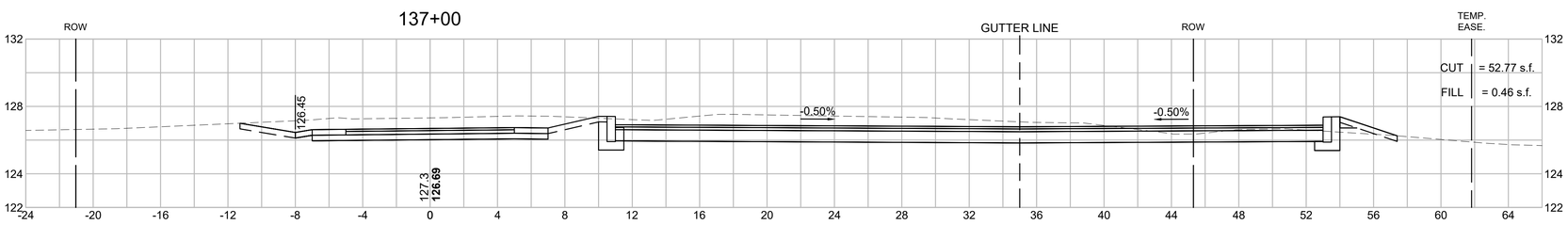
CROSS SECTIONS

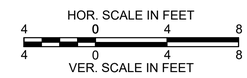
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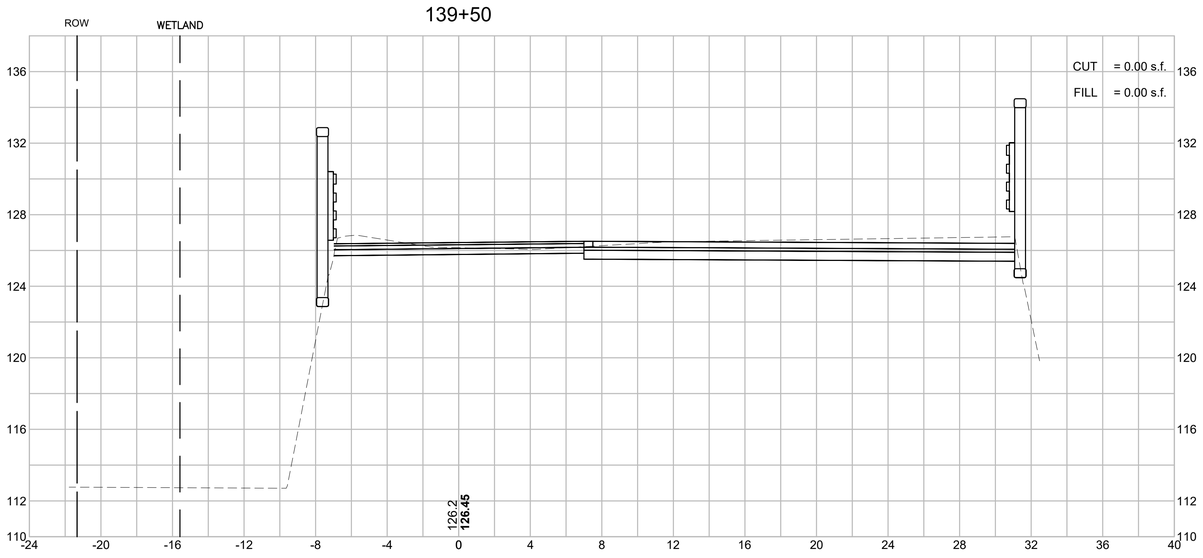


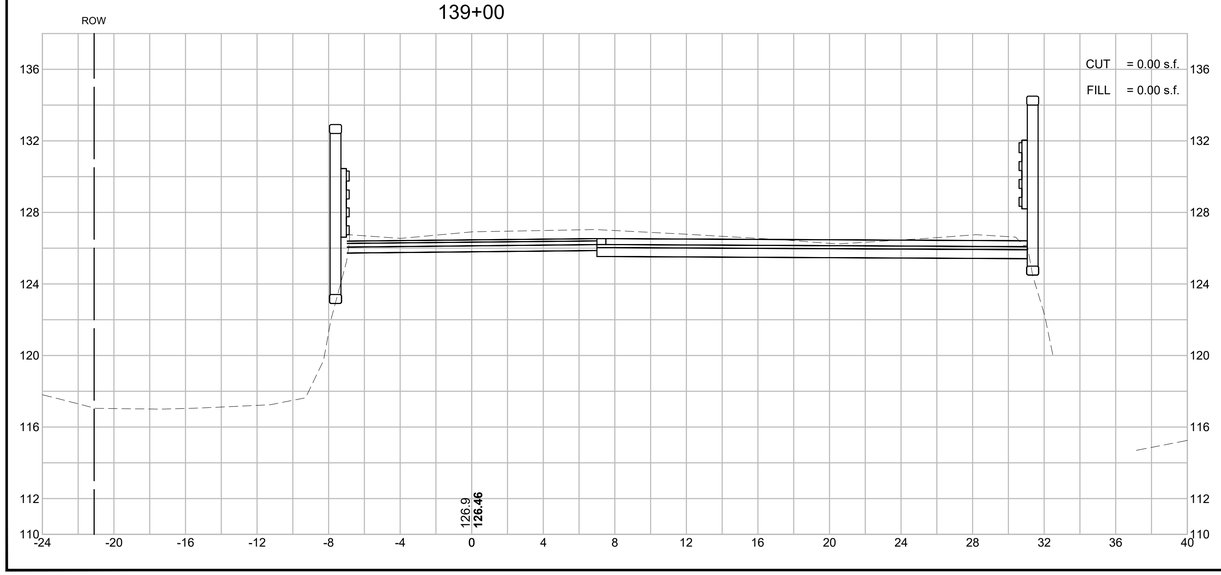
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	215	227
PROJECT FILE NO.	605189		

CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:03 PM





HOR. SCALE IN FEET
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4 0 4 8
VER. SCALE IN FEET

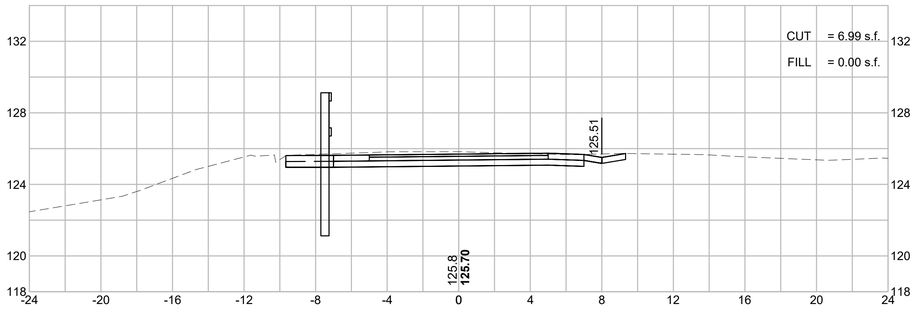
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	216	227
PROJECT FILE NO.	605189		

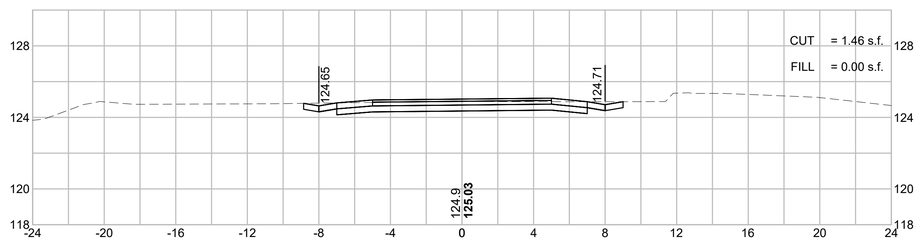
CROSS SECTIONS

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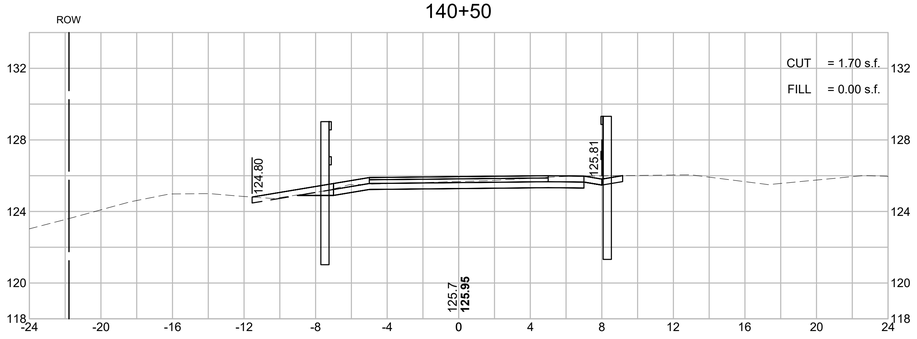
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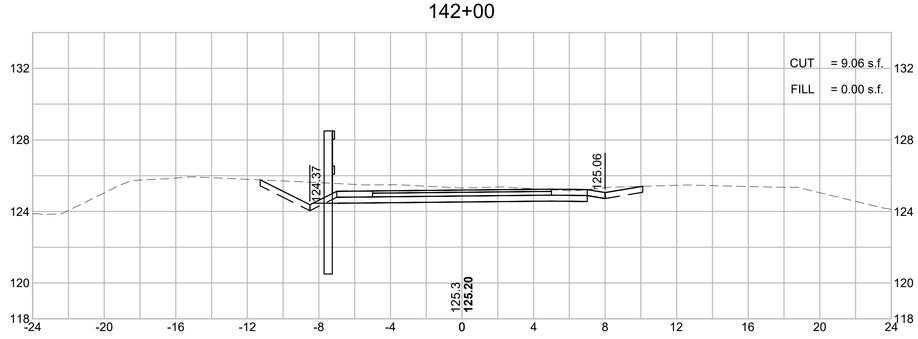
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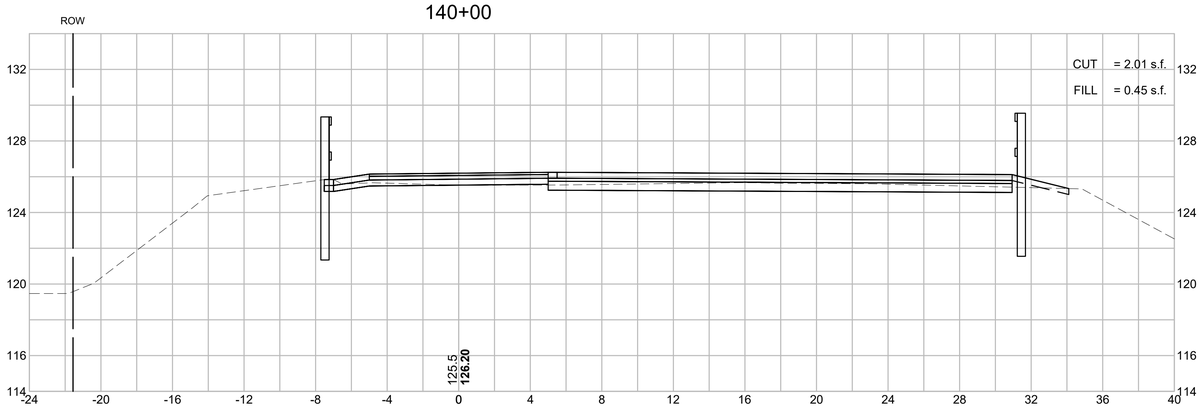
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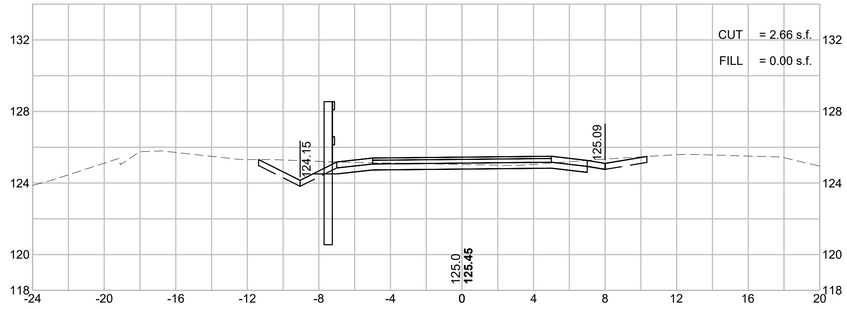
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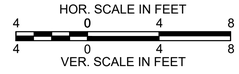


140+00



141+50





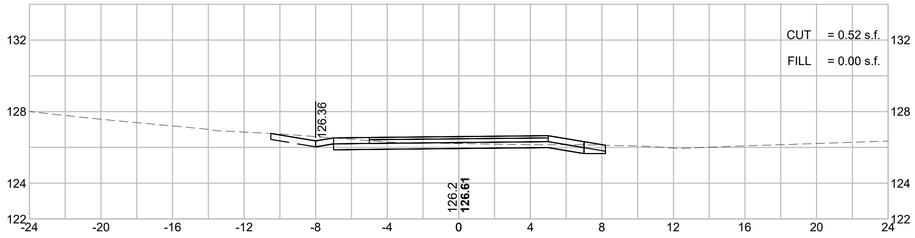
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	217	227
PROJECT FILE NO.	605189		

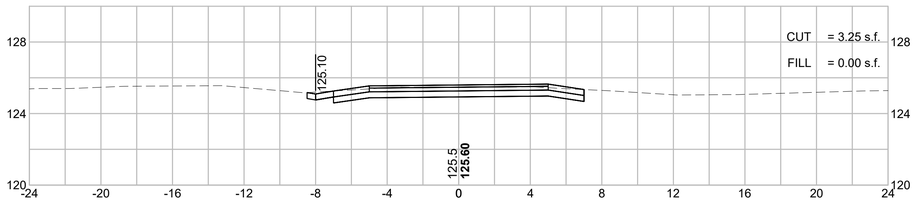
CROSS SECTIONS

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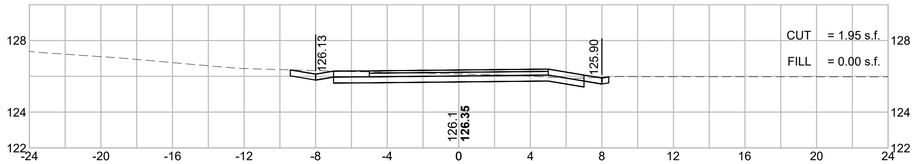
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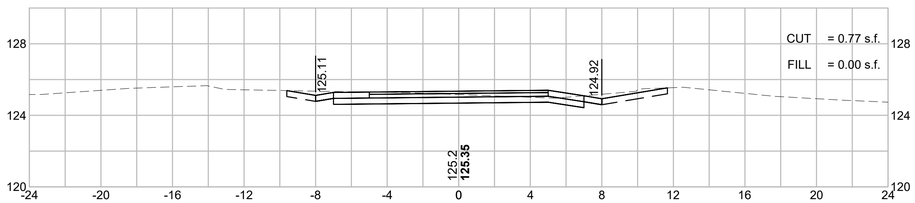
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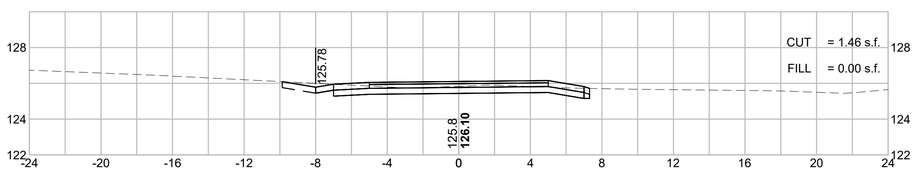
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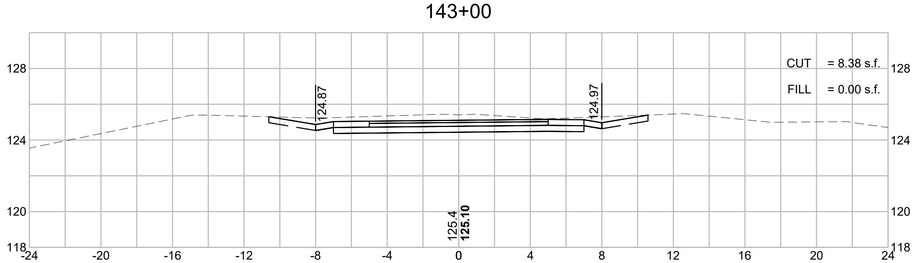
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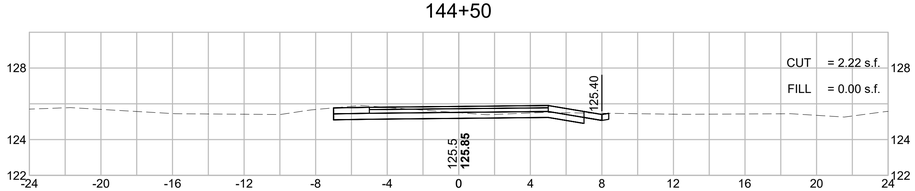
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143+00



144+50



HOR. SCALE IN FEET
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VER. SCALE IN FEET
4 0 4 8

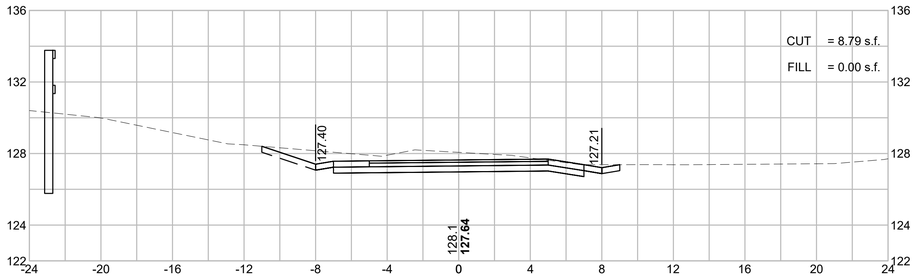
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	218	227
PROJECT FILE NO.	605189		

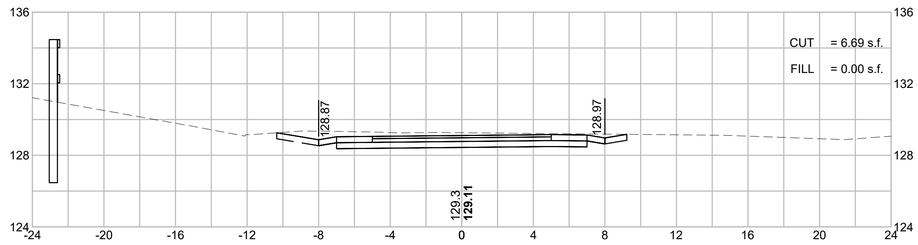
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:05 PM

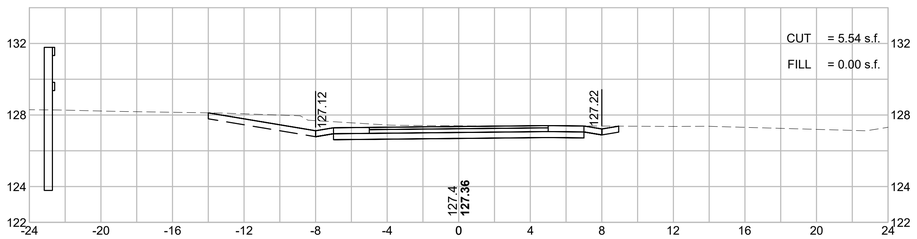
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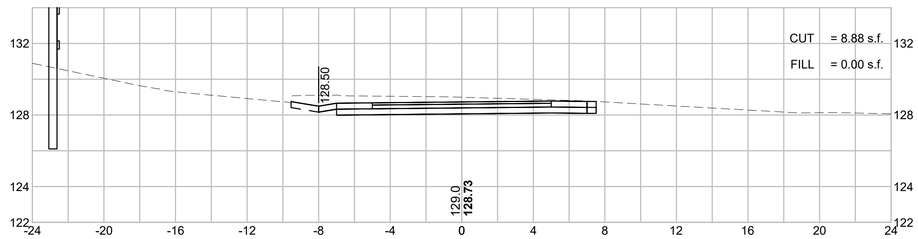
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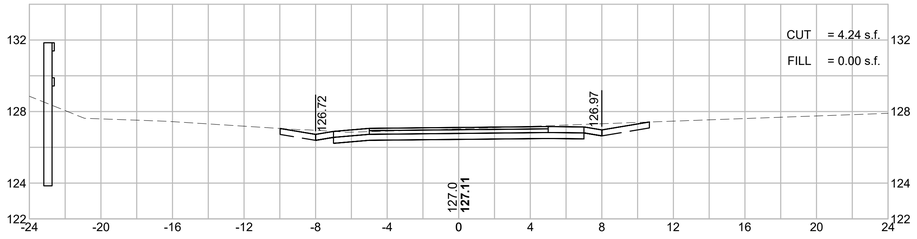
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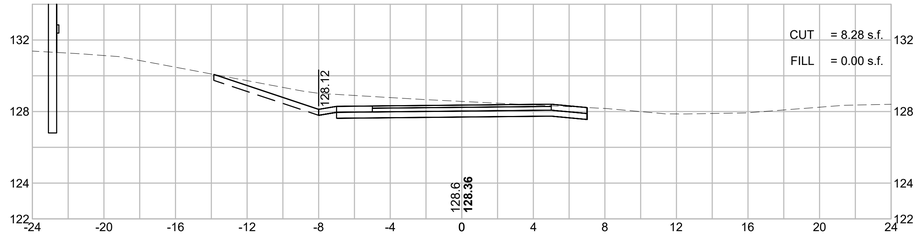
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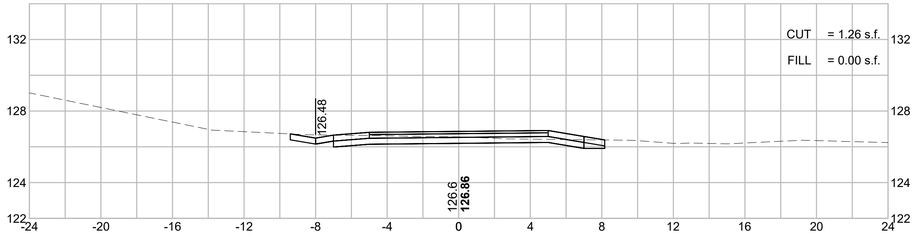
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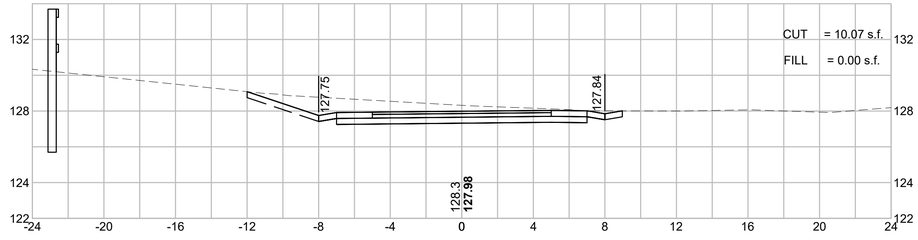
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146+50



148+50



HOR. SCALE IN FEET
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VER. SCALE IN FEET
4 0 4 8

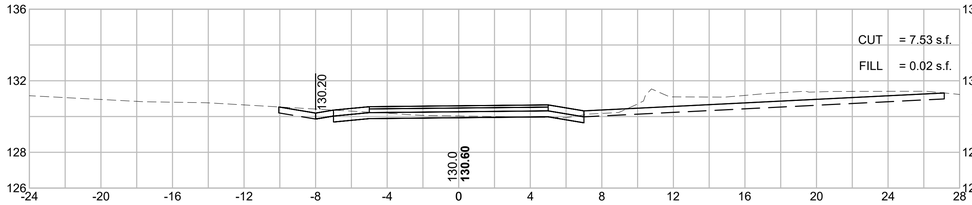
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	219	227
PROJECT FILE NO.	605189		

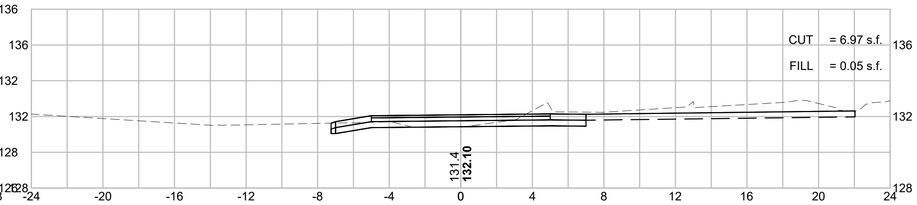
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:06 PM

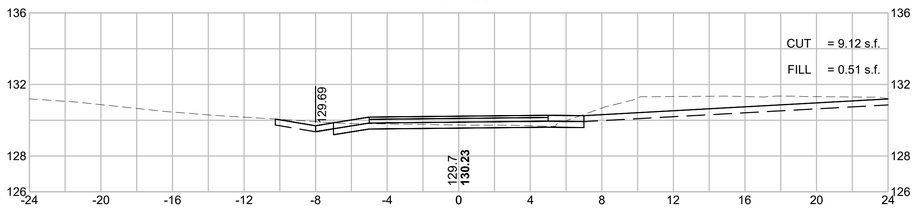
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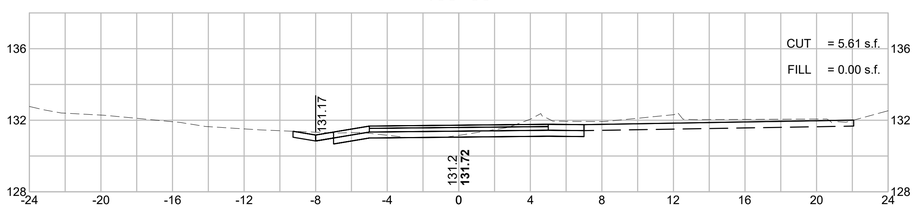
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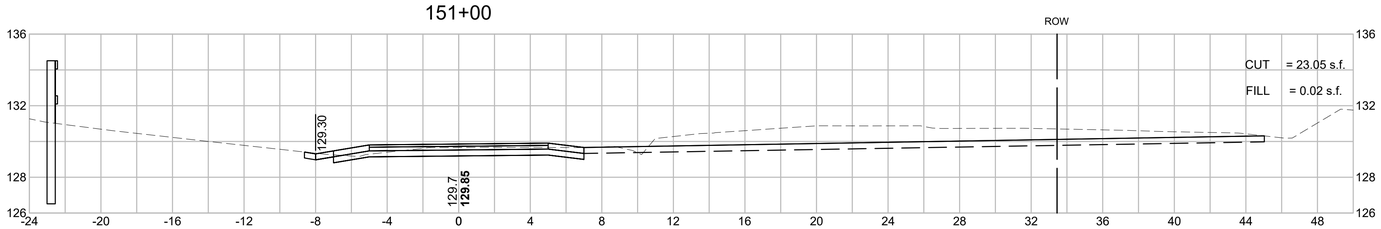
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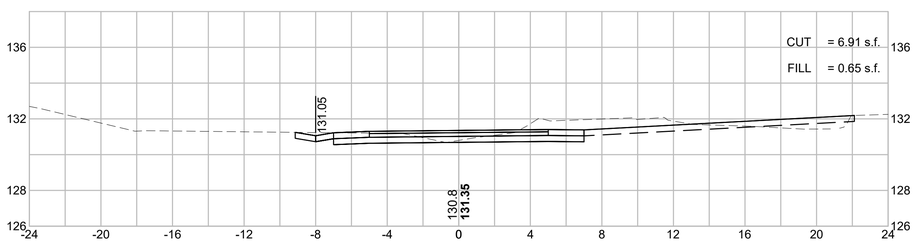
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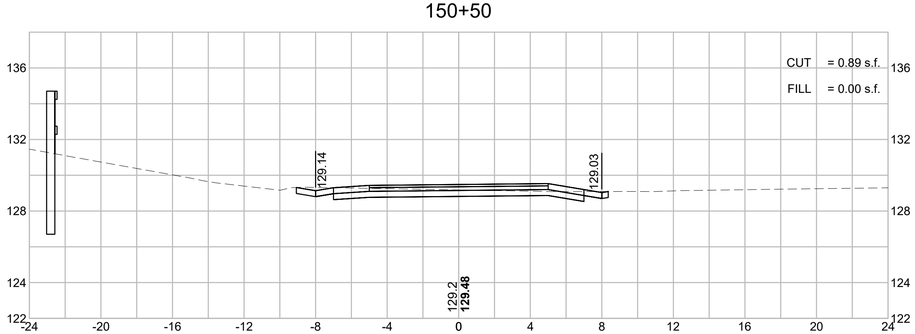
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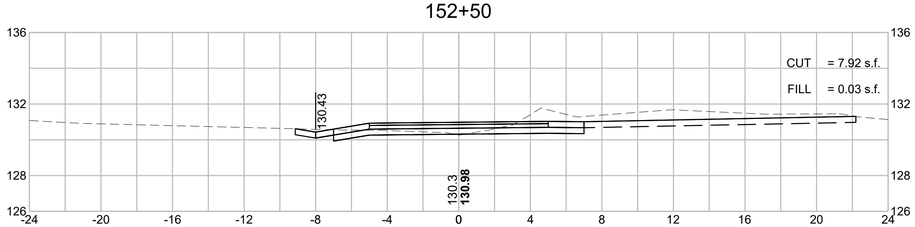
153+00



150+50



152+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

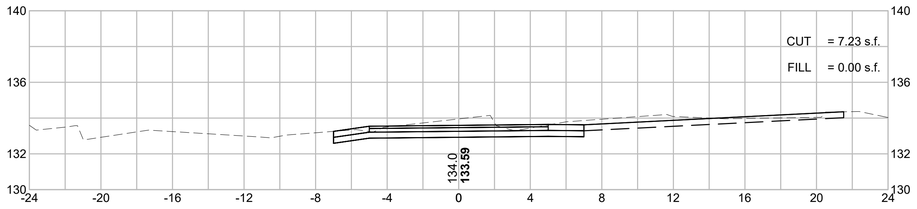
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	220	227
PROJECT FILE NO.	605189		

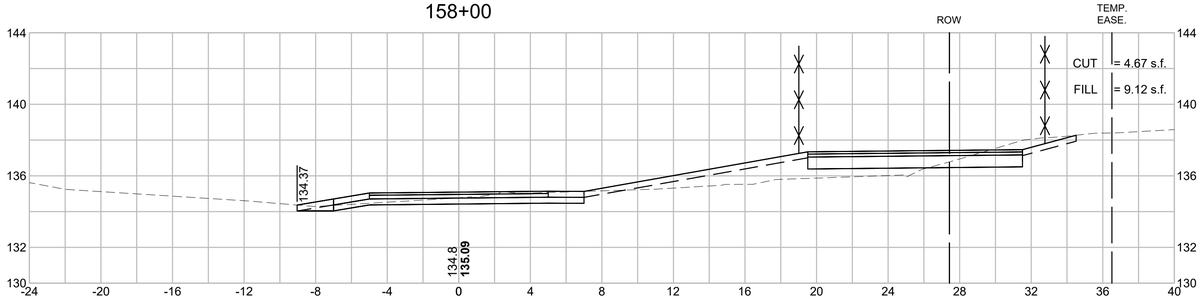
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:06 PM

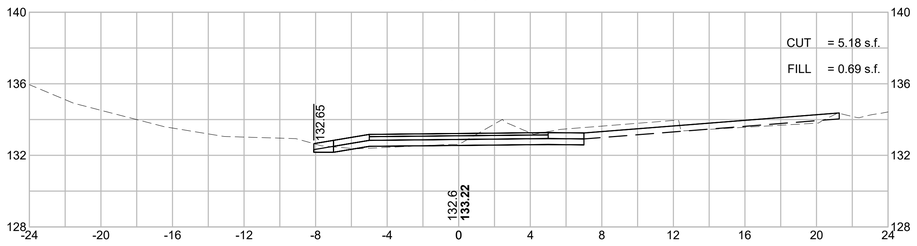
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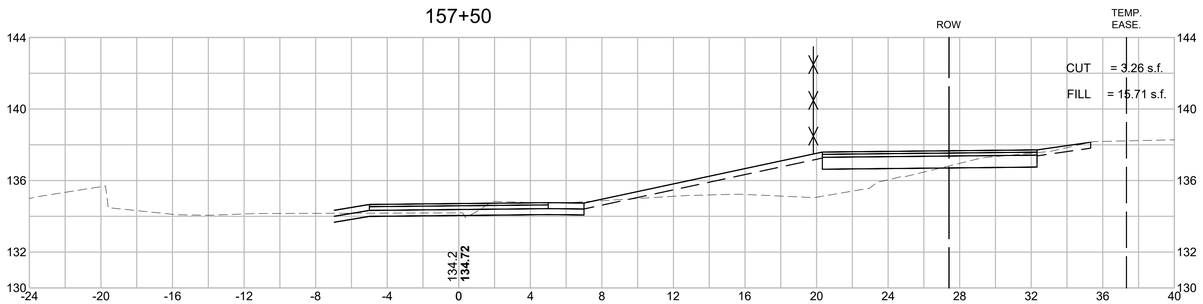
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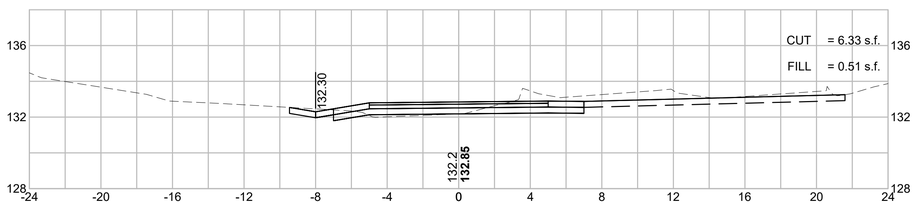
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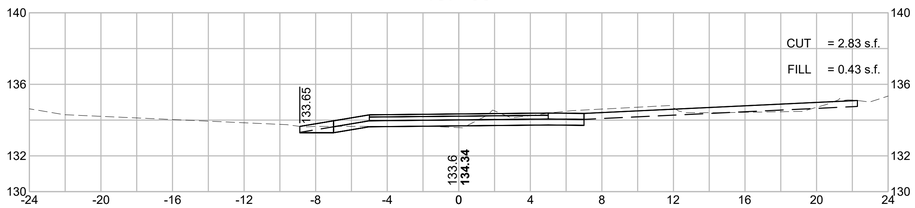
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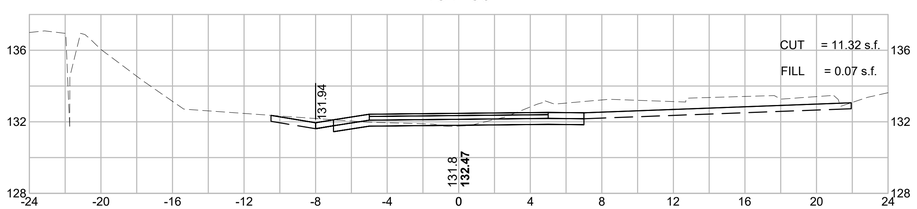
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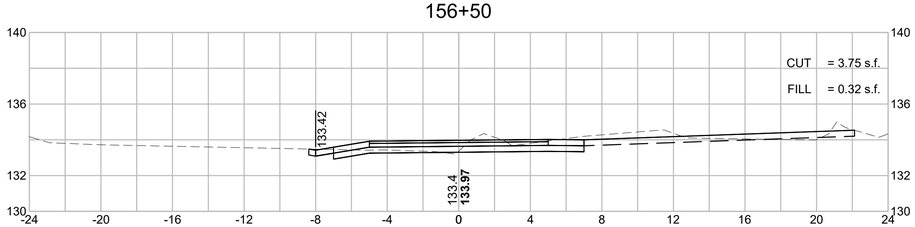
157+00



154+50



156+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

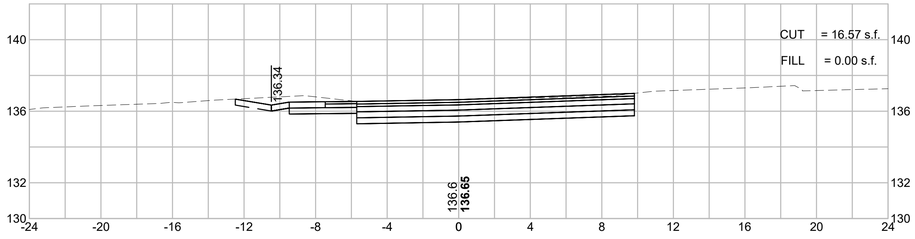
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	221	227
PROJECT FILE NO.	605189		

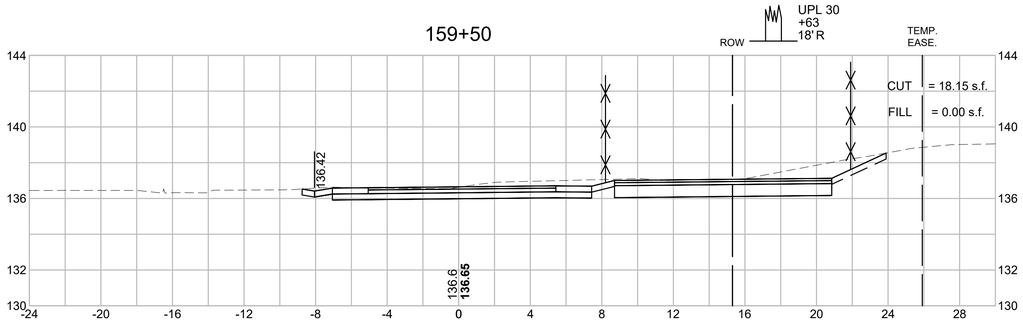
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:07 PM

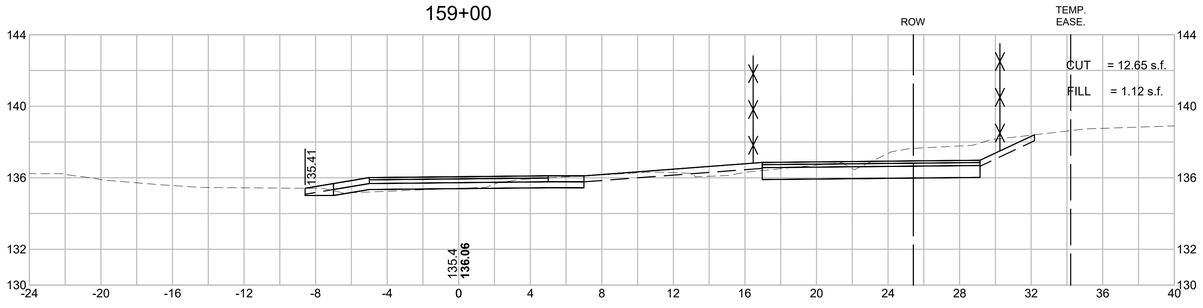
160+00



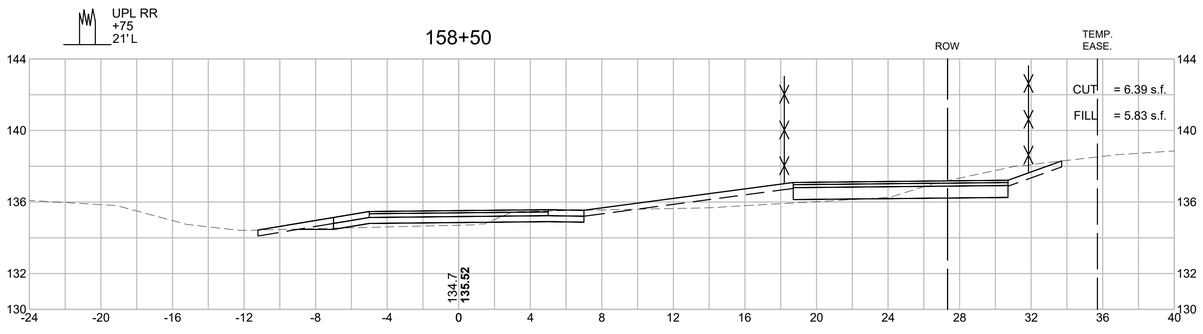
159+50



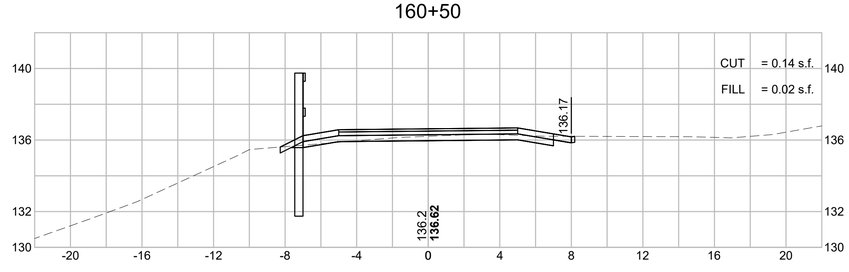
159+00

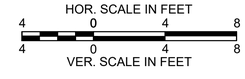


158+50



160+50



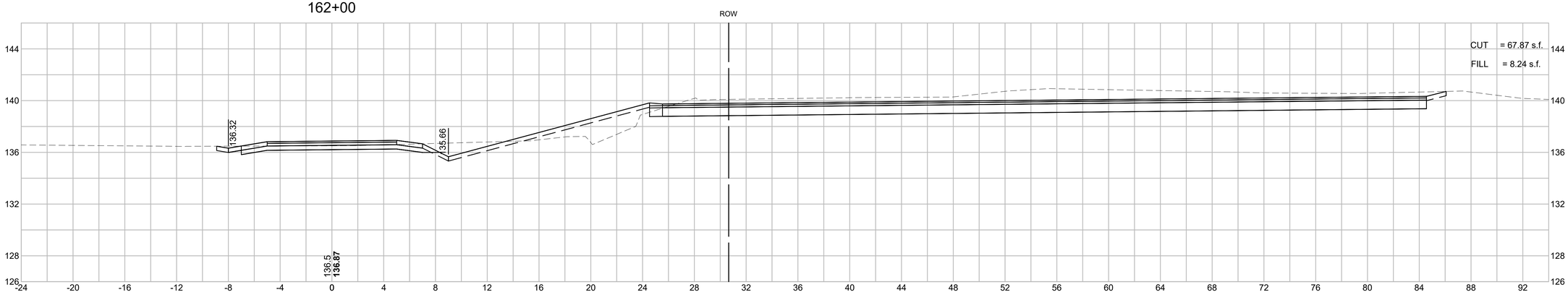


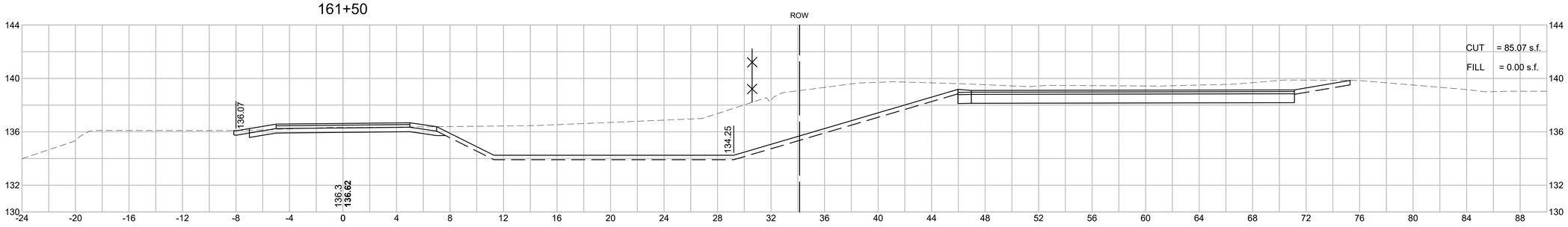
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

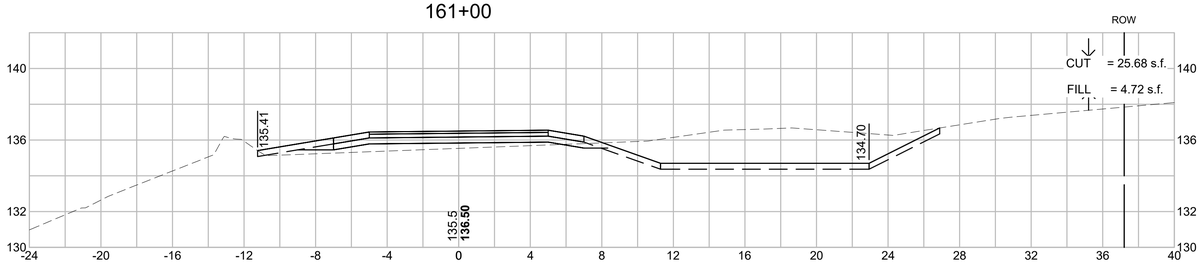
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	222	227
PROJECT FILE NO.	605189		

CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:08 PM







HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

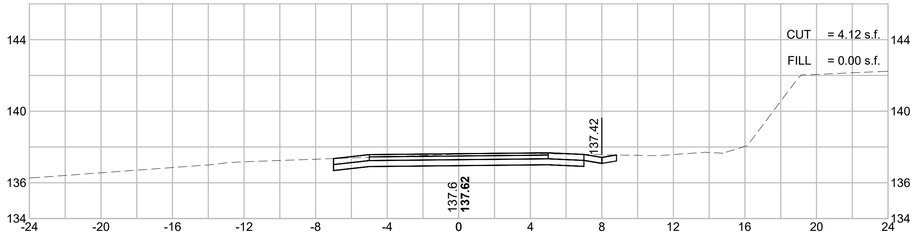
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	223	227
PROJECT FILE NO.	605189		

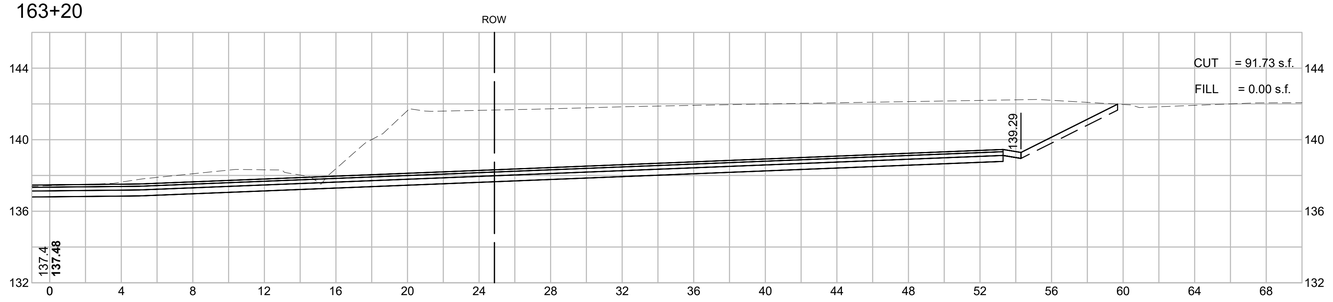
CROSS SECTIONS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:09 PM

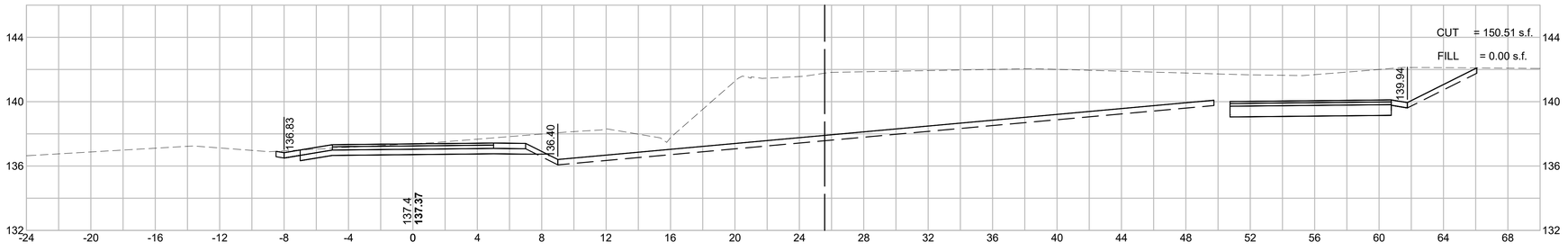
163+50



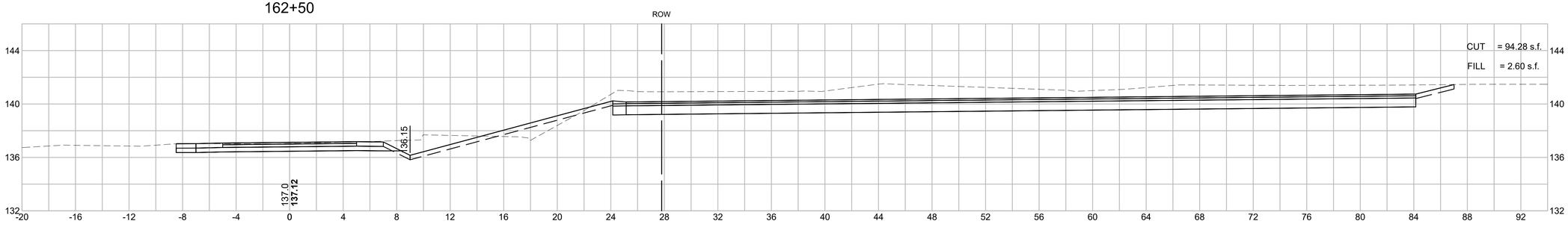
163+20



163+00



162+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

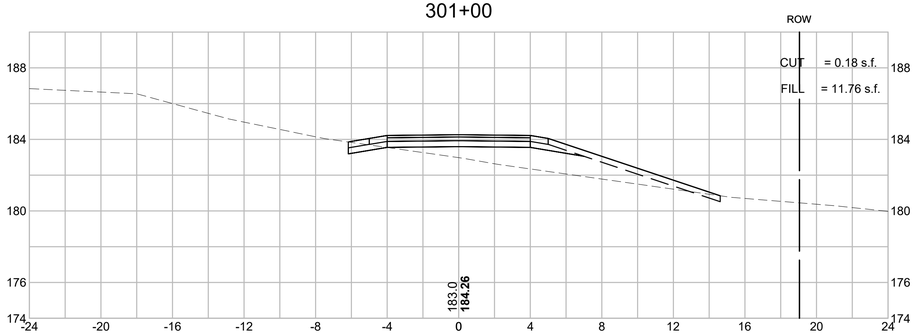
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	224	227
PROJECT FILE NO.	605189		

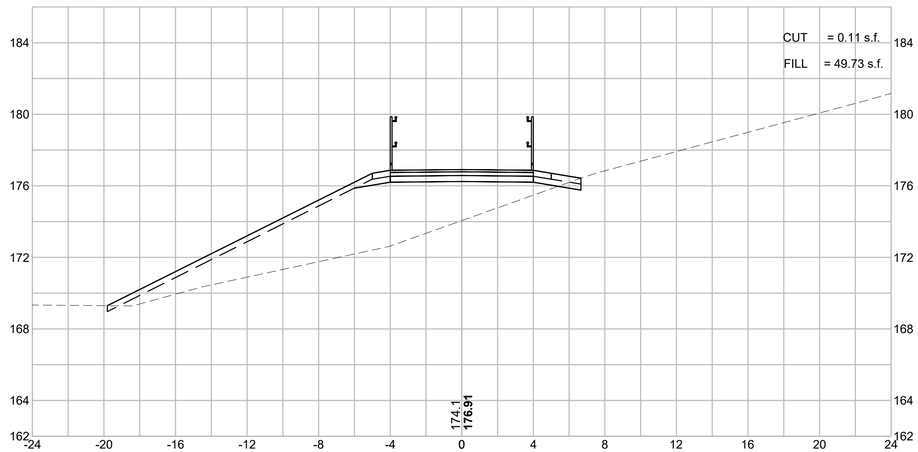
CROSS SECTIONS
POWDER MILL ROAD ACCESS

Plotted on 15-Aug-2016 12:09 PM
605189_HD(XS).DWG

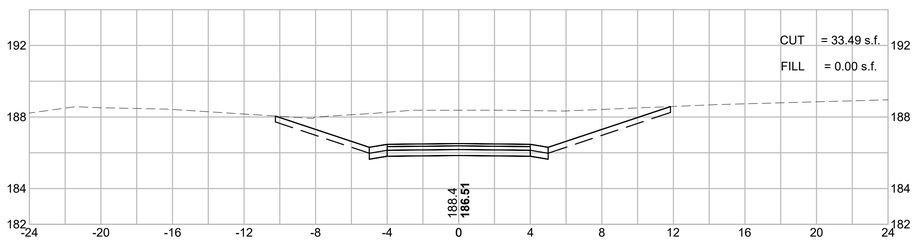
301+00



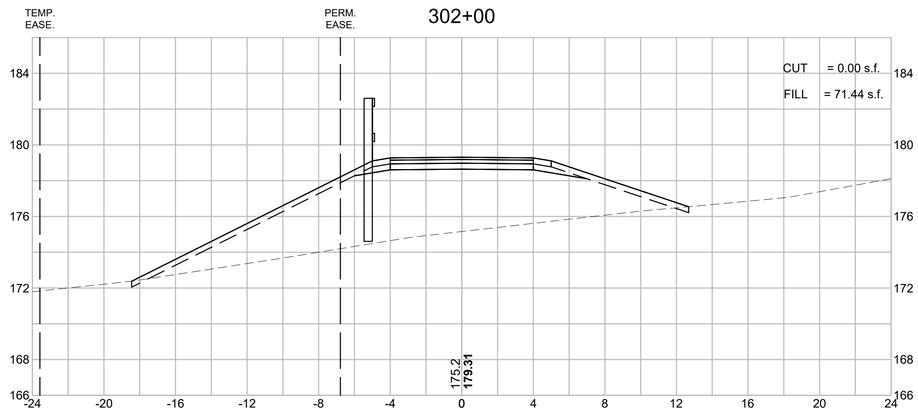
302+50



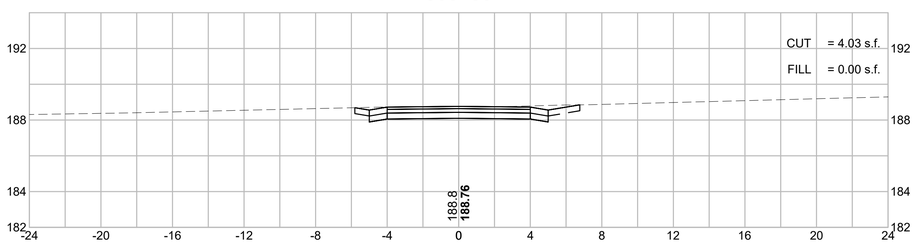
300+50



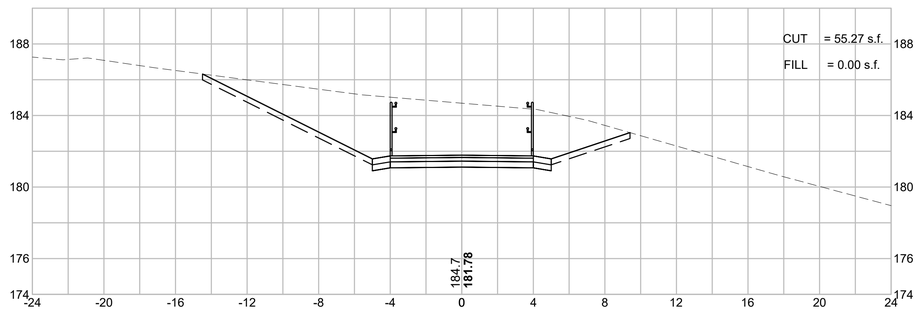
302+00



300+00



301+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

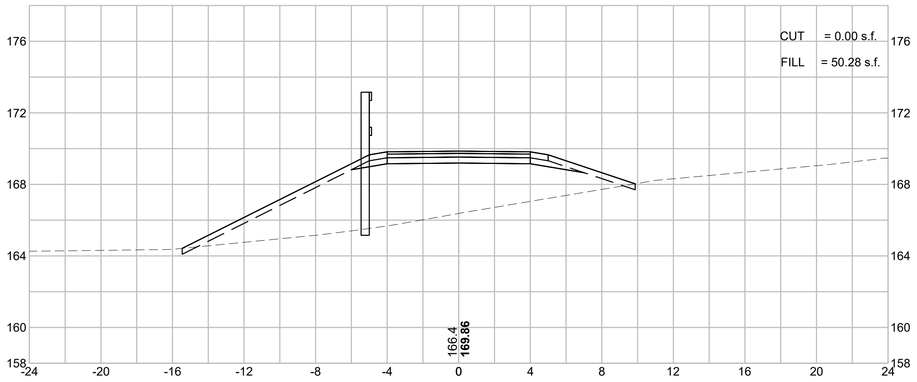
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	225	227
PROJECT FILE NO.	605189		

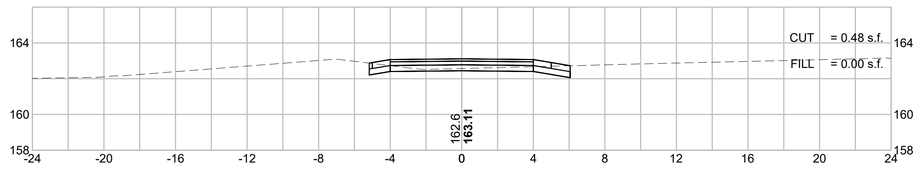
CROSS SECTIONS
POWDER MILL ROAD ACCESS

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:10 PM

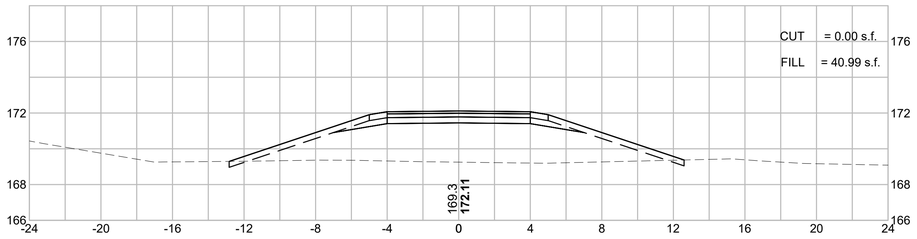
304+00



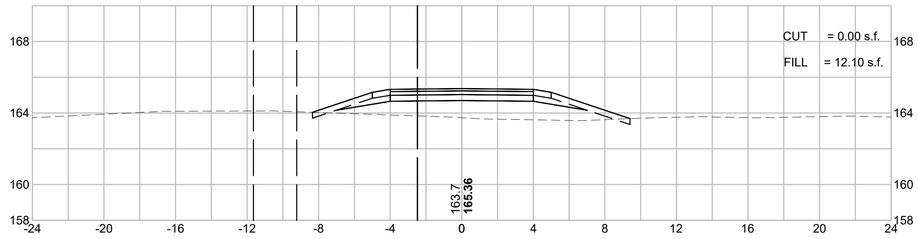
305+50



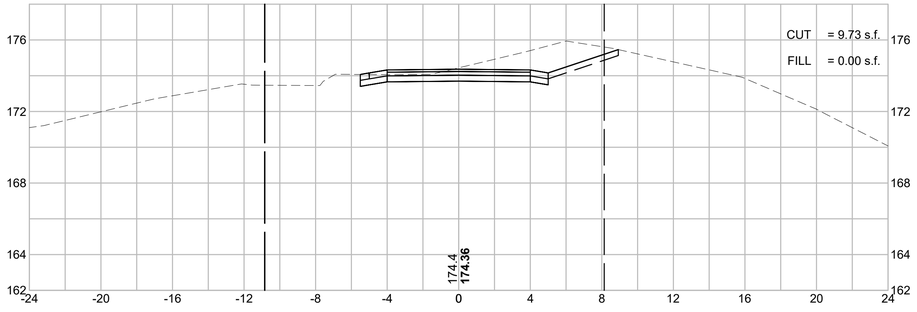
303+50



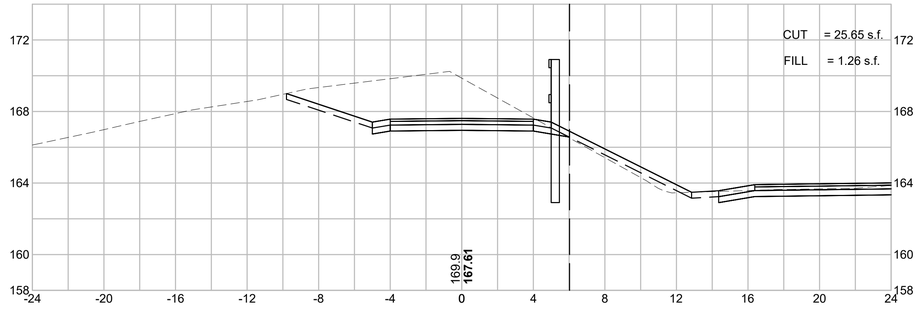
305+00



303+00



304+50



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

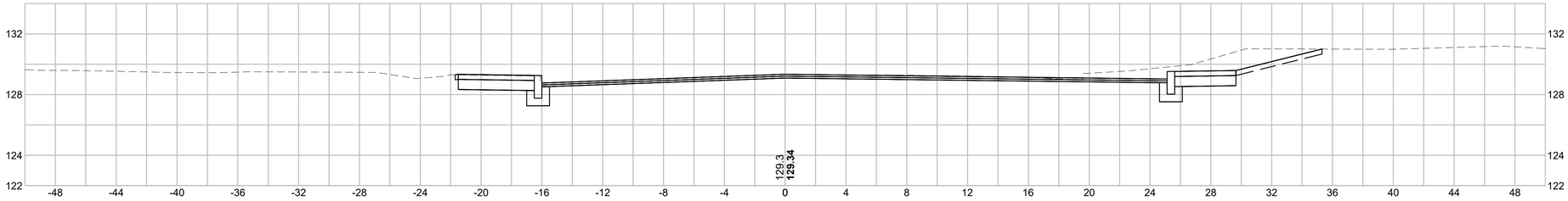
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	226	227
PROJECT FILE NO.	605189		

CROSS SECTIONS
MAIN STREET (ROUTE 62)

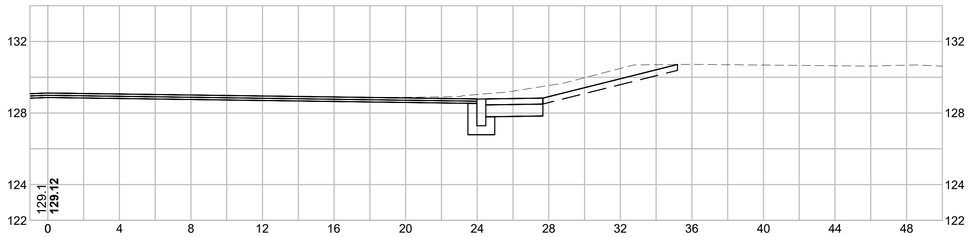
Plotted on 15-Aug-2016 12:11 PM
605189_HD(XS).DWG

701+50

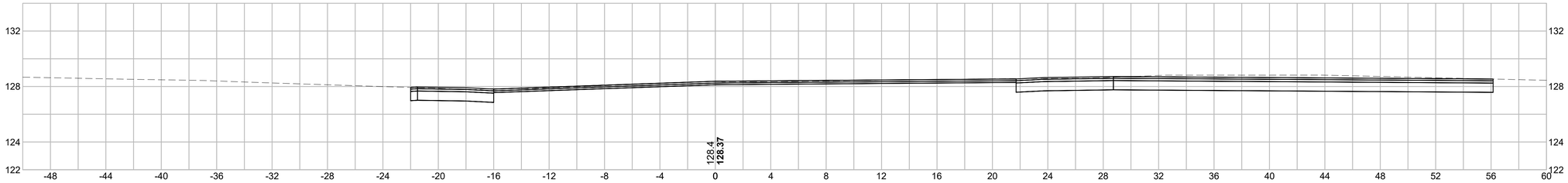


701+36

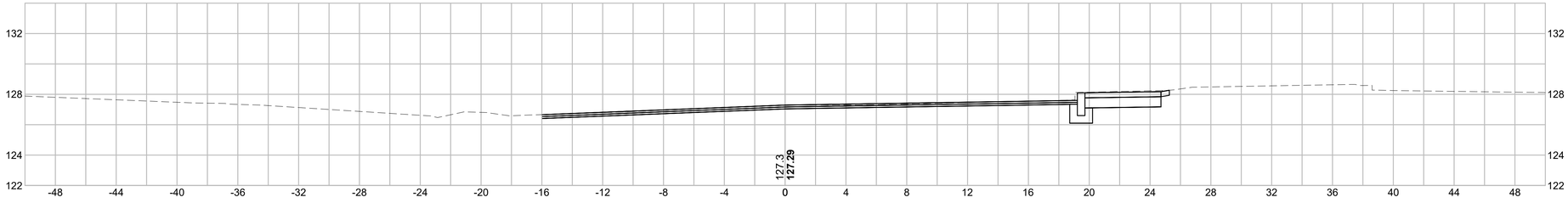
UP
+36
29' R



701+00



700+50



HOR. SCALE IN FEET
4 0 4 8
VER. SCALE IN FEET
4 0 4 8

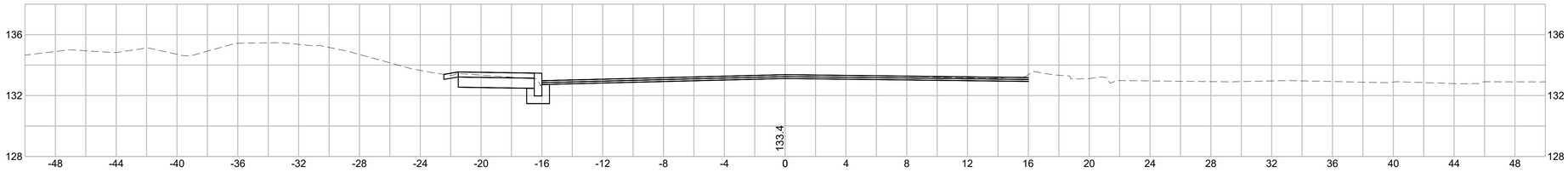
CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2C

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM-002S(910)X	227	227
PROJECT FILE NO.	605189		

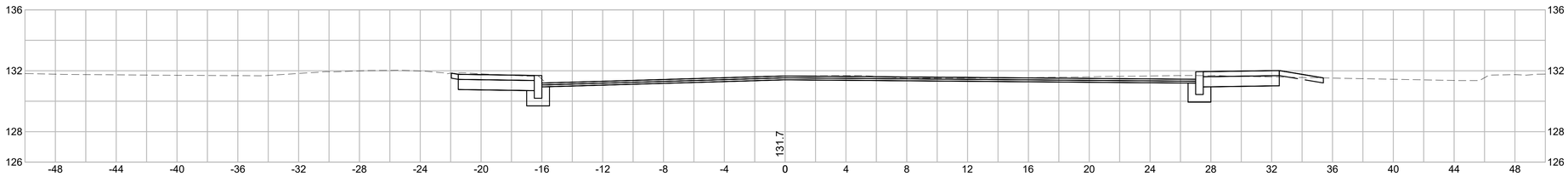
CROSS SECTIONS
MAIN STREET (ROUTE 62)

605189_HD(XS).DWG Plotted on 15-Aug-2016 12:11 PM

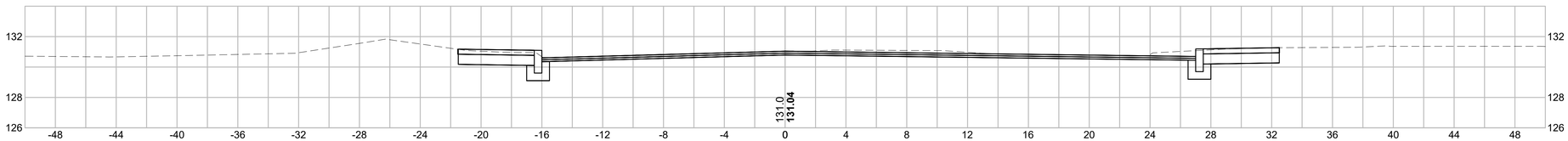
703+50



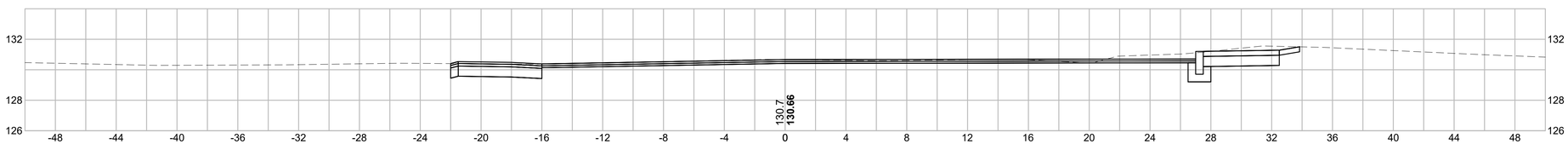
703+00



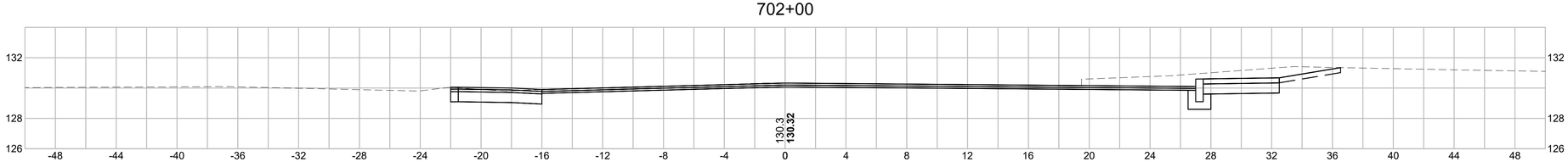
702+50



702+25



702+00



HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET