

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	158
PROJECT FILE NO.		606223	

TITLE SHEET & INDEX

PLAN AND PROFILE OF

BRUCE FREEMAN RAIL TRAIL PHASE 2B

(BRIDGE NOs. C-19-039 (BUJ), C-19-040 (BUK) & C-19-037 (BF4))

IN THE TOWNS OF

ACTON & CONCORD

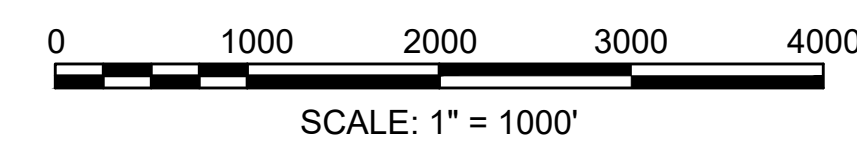
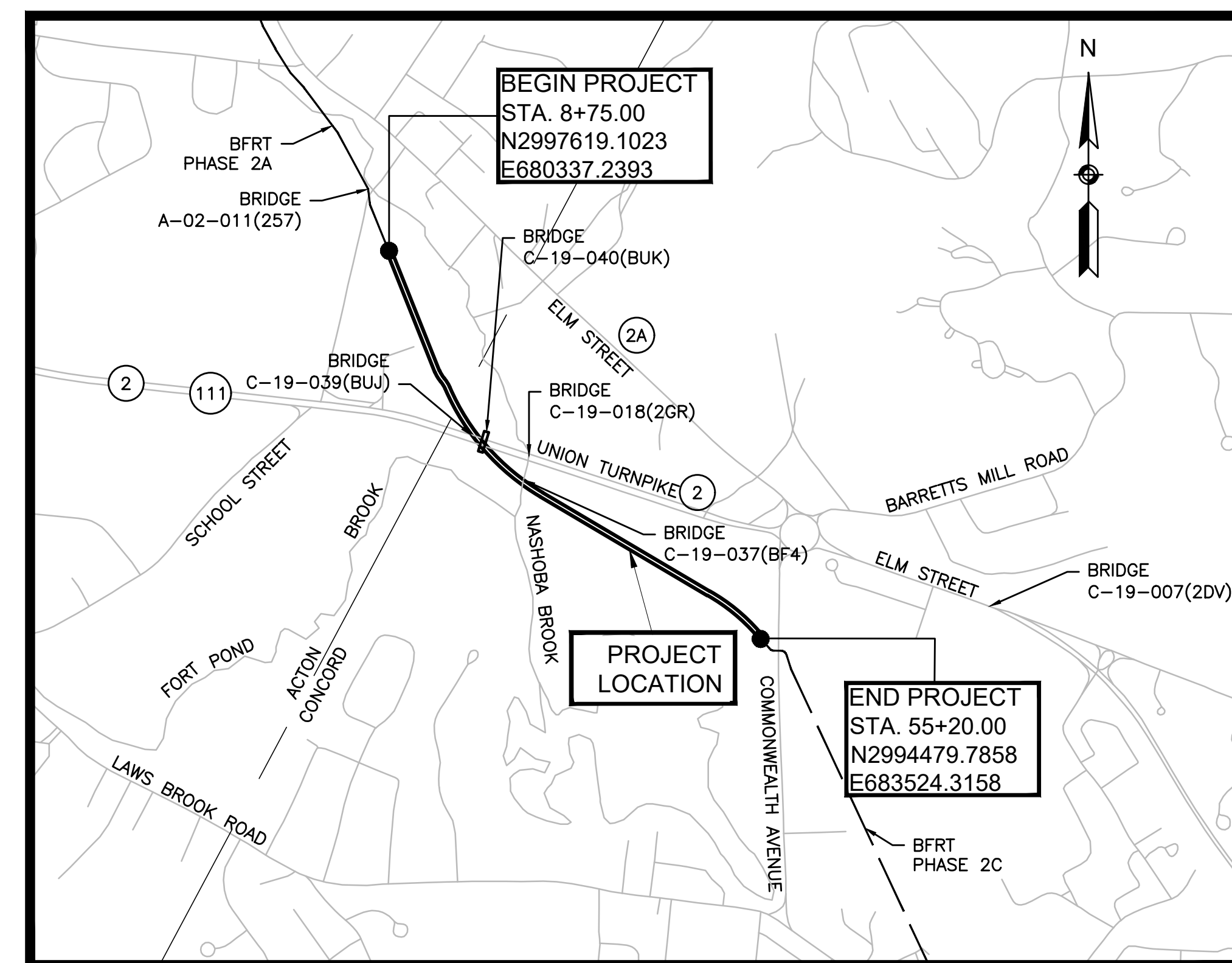
MIDDLESEX COUNTY

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE OCTOBER 2017 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, WILL GOVERN.

ADDITIONAL STANDARDS:
LRFD BRIDGE MANUAL - 2013 EDITION, AASHTO GUIDE FOR THE PLANNING, DESIGN AND OPERATION OF PEDESTRIAN FACILITIES - 1ST EDITION, AND THE GUIDE FOR THE DEVELOPMENT OF BICYCLE FACILITIES - 2012 EDITION, WILL GOVERN.

100% SUBMISSION

SHEET NO.	DESCRIPTION
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3	KEY PLAN & BORING LOCATIONS
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LENGTH OF PROJECT = 4645 FEET = 0.880 MILES

DESIGN DESIGNATION

DESIGN SPEED	18 MPH
MINIMUM HORIZONTAL CURVE RADIUS	60'
MINIMUM LENGTH OF CREST VERTICAL CURVE	25'
MAXIMUM GRADE FOR LEVEL TERRAIN	4.5%

FEBRUARY 2019

GPI Greenman-Pedersen, Inc. Engineering & Construction Services 181 Ballardvale Street, Suite 202, Wilmington, MA 01887 Tel: (978) 570-2999 Fax: (978) 658-3044 http://www.gpinet.com	2/1/19	100% DESIGN SUBMISSION	2
	6/28/18	75% DESIGN SUBMISSION	1
	3/1/17	25% DESIGN SUBMISSION	0
	DATE	DESCRIPTION	REV #



RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

APPROVED:

DIVISION ADMINISTRATOR DATE

HIGHWAY ADMINISTRATOR DATE

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		JERSEY BARRIER
		CATCH BASIN
		LEACHING CATCH BASIN
		CATCH BASIN CURB INLET
		FLAG POLE
		GAS PUMP
		MAIL BOX
		POST SQUARE
		POST CIRCULAR
		WELL
		ELECTRIC HANDHOLE
		FENCE GATE POST
		GAS GATE
		BORING HOLE
		MONITORING WELL
		TEST PIT
		HYDRANT
		LIGHT POLE
		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		RAILROAD SIGNAL
		MASSACHUSETTS HIGHWAY BOUND
		MONUMENT
		STONE BOUND
		TOWN OR CITY BOUND
		TRaverse OR TRIANGULATION STATION
		TROLLEY POLE OR GUY POLE
		TRANSMISSION POLE
		UTILITY POLE W/ FIREBOX
		UTILITY POLE WITH DOUBLE LIGHT
		UTILITY POLE W / 1 LIGHT
		UTILITY POLE
		BUSH
		TREE
		STUMP
		SWAMP / MARSH
		WATER GATE
		PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
		CONTOURS (ON-THE-GROUND SURVEY DATA)
		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		COMPOST FILTER TUBES
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD RIGHT OF WAY
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
		LEGEND "ONLY" - WHITE
		STOP LINE
		CROSSWALK
		SOLID WHITE LINE
		SOLID YELLOW LINE
		BROKEN WHITE LINE
		BROKEN YELLOW LINE
		DOTTED WHITE LINE
		DOTTED YELLOW LINE
		DOTTED WHITE LINE EXTENSION
		DOTTED YELLOW LINE EXTENSION
		DOUBLE WHITE LINE
		DOUBLE YELLOW LINE

ABBREVIATIONS

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

GENERAL NOTES

- TOPOGRAPHICAL INFORMATION WAS PROVIDED BY SURVEYING AND MAPPING CONSULTANTS, JUNE 2008. VERTICAL DATUM IS BASED ON NAVD88. HORIZONTAL DATUM IS BASED ON NAD83.
- 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.
- 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.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- 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.
- 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).
- 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.
- 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.
- ALL DISTURBED AREAS NOT DESIGNATED TO BE PAVED SHALL HAVE COMPOST TOPSOIL PLACED AND SEEDDED. THE COMPOST 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.
- THE LIMIT OF WORK AREA SHALL BE THE RIGHT OF WAY UNLESS SHOWN OTHERWISE.
- 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.
- ALL CASTINGS SHALL BE SET FLUSH WITH FINISHED GRADE.
- ALL PUBLICLY OWNED GATE BOXES, SERVICE BOXES, MANHOLE FRAMES AND COVERS SHALL BE ADJUSTED TO GRADE BY THE CONTRACTOR.
- ALL NEW SIDEWALKS AND DRIVEWAY GRADES SHALL MATCH EXISTING GRADES AT BACK OF SIDEWALK LINE UNLESS SHOWN OTHERWISE ON THE PLANS AND CROSS-SECTIONS.
- THE CONTRACTOR SHALL TAKE EVERY PRECAUTION TO PROTECT ALL EXISTING TREES AND ROOTS THAT ARE NOT DESIGNATED FOR REMOVAL.
- CONTRACTOR TO CONTACT ENGINEER PRIOR TO INSTALLATION OF BOUNDS FOR FINAL LOCATIONS.
- 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.
- 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.

ABBREVIATIONS (cont.)

GENERAL	
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAG	MAGNETIC
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY

ABBREVIATIONS (cont.)

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

TRAFFIC SIGNAL

CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY DON'T WALK
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR AMBER
FYL	FLASHING AMBER LEFT ARROW
FYR	FLASHING AMBER RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILE, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
WP	WOOD POLE
Y	STEADY CIRCULAR AMBER
YL	STEADY AMBER LEFT ARROW

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	158
PROJECT FILE NO.		606223	

LEGEND & ABBREVIATIONS

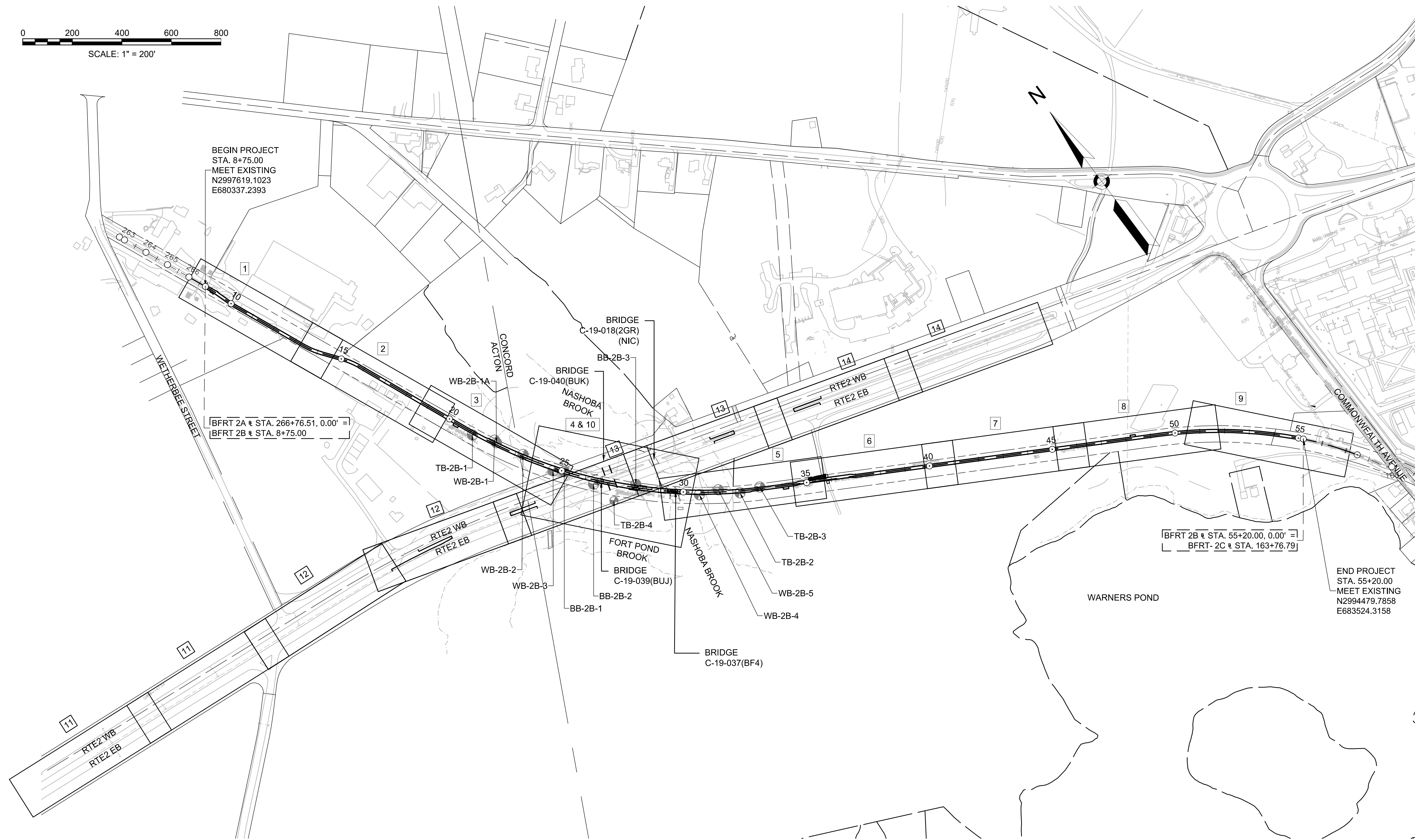
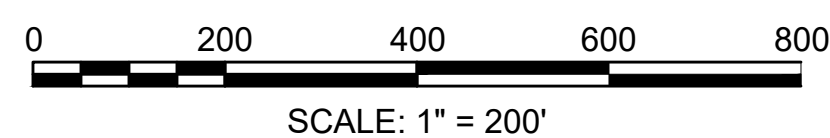
ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	158
PROJECT FILE NO.		606223	

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	12	12	13	14	15	15	16	16	17			18	19	20
CONSTRUCTION PLANS & PROFILES - SHARED USE PATH	21	22	23	24	26	27	28	29	30	25				
CONSTRUCTION PLANS - ROUTE 2											31	32	33	34
CURB TIE & GRADING PLANS	35	35	36	37	38	38	39	39	40					
TRAFFIC SIGN & PAVEMENT MARKING PLANS	41	41	42	42	43	43	44	44	45		46	47	48	49
LANDSCAPING PLANS	66	67	68	69	70	71	72	73	74					

B-# = BORING LOCATION AND NUMBER



BEGIN PROJECT
STA. 8+75.00
MEET EXISTING
N2997619.1023
E680337.2393

BFRT 2A @ STA. 266+76.51, 0.00' = 1
BFRT 2B @ STA. 8+75.00

BFRT 2B @ STA. 55+20.00, 0.00' = 1
BFRT-2C @ STA. 163+76.79

END PROJECT
STA. 55+20.00
MEET EXISTING
N2994479.7858
E683524.3158

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

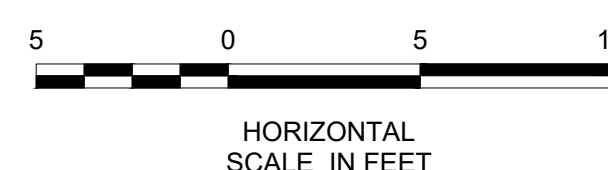
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	4	158
PROJECT FILE NO.		606223	

BORING LOGS

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.		
		P.O. Box 165		Fax: (603) 437-0034		BB-2B-1		
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'		
City/Town: Acton Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859		
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-12-14 2:00 pm		Total Hours:				
Groundwater Depth: 9'		Date & Time: 11-13-14 7:25 am		Date & Time Completed: 11-14-14 11:00 am		12.5		
Coordinates: N 2996155		E 681053		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer		
Ground Elevation: 129.5		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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'	2	3	5	3	14"	Dry, loose, brown, FINE TO COARSE SAND, some inorganic silt.	
S-2	5' - 7'	7	9	14	16	13'	Dry, medium dense, brown, FINE SAND, some coarse sand, trace inorganic silt.	
S-3	10' - 12'	8	13	15	16	10"	Wet, medium dense, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.	
S-4	15' - 16'	7	9	11	11	5"	Wet, medium dense, brown-red, FINE SAND and inorganic silt.	
S-4A	16' - 17'					4"	Wet, medium dense, gray, FINE SAND, trace inorganic silt.	
S-5	20' - 22'	3	3	5	5	17'	Wet, loose, gray, FINE SAND, some inorganic silt, trace clay.	
S-6	25' - 26'	2	4	4	4	8"	Wet, loose, brown, FINE SAND, some inorganic silt.	
S-6A	26' - 27'					8"	Wet, loose, gray, FINE SAND, some inorganic silt, trace clay.	
S-7	30' - 32'	21	22	24	15	12"	Wet, dense, gray, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.	
C-1	34' - 39'	4	2	2	3	2	48"	Top of possible BEDROCK at 33' Advanced rollerbit to 34' and began coring. Hard very weathered, moderately fractured GRANITE. Percent Recovery = 80%
C-2	39' - 44'	2	1	1	1	1	0"	No recovery, very weathered GRANITE. Rollerbit to 45', telescoped 3" casing to sample.
S-8	45' - 45'11"	34	86/5"			9"	Moist, very dense, gray, possible weathered BEDROCK.	
S-9	50' - 50'2"	120/2"				2"	Moist, very dense, brown, FINE TO MEDIUM GRAVEL, trace inorganic silt (weathered possible bedrock) Advanced rollerbit to 55' Terminated boring at 55' Bottom of Exploration = 55'	
Remarks: * AECOM (Consultants)		Boring terminated due to not being able to advanced corebarrel down the hole. Boring terminated without coring another 5 foot run to compensate for the no recovery obtained from C-2; enough information was obtained for the design engineer. Installed monitoring well at 20'				Protective Device - Stand: Box: Well Depth: 20' Solid Pipe: 13' Stick Up Pipe: 3' Screen Pipe: 10'		
Penetration Resistance (N) Guide:		Type of Drill Rig: CME 550X						
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Arrow-Board: Signs: Cones:				
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 39' Casing: NW Size: 3" Amt: 45' Hammer Weight: 300 lbs. Fall: 30"				
Very Loose	0 - 4	Very Soft	0 - 2	Sampler Type: S/S Size: 1 3/8" Automatic Hammer Weight: Safety Hammer Weight: 140 lbs. Donut Hammer Weight: Fall: 30"				
Loose	4 - 10	Soft	2 - 4	Donut Hammer Weight: Fall: 30"				
Medium Dense	10 - 30	Medium Stiff	4 - 8	Core Barrel Type: NX Size: 2.15"				
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		Hard		Over 30				

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		BB-2B-2	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-25-14 2:15 am		Total Hours:			
Groundwater Depth: 8'		Date & Time: 11-25-14 2:15 am		Date & Time Completed: 11-25-14 2:30 pm		7	
Coordinates: N 2996044		E 681118		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 129.7		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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'	2	5	6	6	10"	TOPSOIL Dry, medium dense, brown, FINE TO COARSE SAND, trace fine to medium gravel, trace inorganic silt.
S-2	5' - 7'	3	3	5	7	8"	Moist, loose, dense, brown FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.
S-3	10' - 12'	5	7	6	7	14"	Wet, medium dense, brown, FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.
S-4	15' - 17'	7	10	9	10	11"	Wet, medium dense, gray, FINE TO COARSE SAND, trace fine to medium gravel, trace inorganic silt.
S-5	20' - 22'	9	11	13	16	15"	Wet, medium dense, brown, FINE TO COARSE SAND and fine to medium gravel, some inorganic silt.
S-6	25' - 26'	5	6	5	5	7"	Wet, medium dense, brown, FINE SAND and inorganic silt.
S-6A	26' - 27'					7"	Wet, loose, gray, FINE SAND and inorganic silt.
S-7	30' - 32'	10	10	16	19	6"	Wet, medium dense, gray, COARSE TO FINE SAND and fine to medium gravel, trace inorganic silt.
S-8	35' - 36'4"	42	55	65/4"		16"	Wet, very dense, gray, FINE TO COARSE SAND, some fine to medium gravel, some inorganic silt (Till.)
S-9	40' - 41'3"	37	67	53/3"		12"	Wet, very dense, gray, FINE TO COARSE SAND, some fine to medium gravel, some inorganic silt (Till.)
S-10	45' - 46'4"	28	40	80/4"		15"	Wet, very dense, gray, FINE TO COARSE SAND, some fine to medium gravel, some inorganic silt (Till.)
S-11	50' - 50'2"	120/2"				0"	No Recovery
S-12	55' - 55'8"	86	34/2"			4"	Wet, very dense, brown-white INORGANIC SILT and fine sand, some fine gravel, trace weathered bedrock.
S-13	60' - 60'3"	120/3"				2"	Wet, very dense, brown-gray, weathered BEDROCK.
S-14	65' - 65'4"	120/4"				3"	Wet, very dense, brown-gray weathered BEDROCK. Bottom of Exploration = 65'4"
Remarks: * AECOM (Consultants)		Protective Device - Stand: Box: Well Depth: Solid Pipe: Stick Up Pipe: Screen Pipe:					
Penetration Resistance (N) Guide:		Type of Drill Rig: CME 550X					
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Arrow-Board: Signs: 2 Cones: 20			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 65'			
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"			
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8" Automatic Hammer Weight: Safety Hammer Weight: 140 lbs. Donut Hammer Weight: Fall: 30"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Core Barrel Type: Size:			
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		Hard		Over 30			

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.		
		P.O. Box 165		Fax: (603) 437-0034		BB-2B-3		
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'		
City/Town: Acton Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859		
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-17-14 8:00 am		Total Hours:				
Groundwater Depth: 7'		Date & Time: 11-18-14 11:00 am		Date & Time Completed: 11-18-14 12:00 pm		10.5		
Coordinates: N 2995941		E 681254		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer		
Ground Elevation: 128.5		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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	3	3	2	12"	Moist, loose, black, FINE TO COARSE SAND, some inorganic silt, trace fine to medium gravel.	
S-2	5' - 7'	4	6	6	8	17"	Moist, medium dense, brown COARSE TO FINE SAND, trace inorganic silt.	
S-3	10' - 12'	5	6	8	8	19"	Wet, medium dense, brown, COARSE TO FINE SAND, trace fine gravel, trace inorganic silt.	
S-4	15' - 17'	8	9	12	13	17"	Wet, medium dense, brown FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.	
S-5	20' - 22'	12	10	9	10	10"	Wet, medium dense, gray FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.	
S-6	25' - 27'	6	8	10	12	4"	Wet, medium dense, gray-brown, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.	
S-7	30' - 32'	10	9	10	10	13"	Wet, medium dense, gray, FINE TO COARSE SAND, some inorganic silt, trace fine gravel.	
S-8	35' - 35'3"	120/3"				2"	Top of weathered BEDROCK at 33' Advanced casing and roller bit through weathered bedrock to 35' Moist, very dense, gray FINE TO COARSE SAND and fine to coarse gravel, trace inorganic silt (weathered bedrock). Roller bit through weathered bedrock and began coring. Percent Recovery = 100%	
C-1	38' - 43'	5	5	4	4	5	60"	Hard, fresh, sound, gray GRANITE. Percent Recovery = 100%
C-2	43' - 48'	4	5	5	4	5	60"	Hard, fresh, sound, gray GRANITE. Percent Recovery = 100%
Remarks: * AECOM (Consultants)		Set monitoring well at 17'				Protective Device - Stand: Box: Well Depth: 17' Solid Pipe: 10' Stick Up Pipe: 3' Screen Pipe: 10'		
Penetration Resistance (N) Guide:		Type of Drill Rig: CME 550X						
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Arrow-Board: Signs: Cones:				
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: PW Size: 5" Amt: 34"				
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"				
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8" Automatic Hammer Weight: Safety Hammer Weight: 140 lbs. Donut Hammer Weight: Fall: 30"				
Medium Dense	10 - 30	Medium Stiff	4 - 8	Core Barrel Type: NX Size: 2.15"				
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		Hard		Over 30				



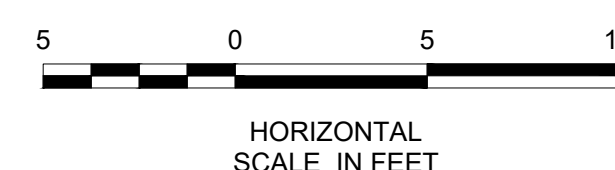
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	158
PROJECT FILE NO.		606223	

BORING LOGS

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		TB-2B-1	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-10-14 2:30 pm		Total Hours: 7.5			
Groundwater Depth: 8'4"		Date & Time: 11-11-14 2:00 pm		Date & Time Completed: 11-11-14 2:00 pm			
Coordinates: N 2996495		E 680844		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 131.0		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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'	2 6 8 13	12"	Dry, medium dense, brown, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.		5'	
S-2	5' - 7'	11 11 7 8	9"	Moist, medium dense, brown, FINE SAND, some inorganic silt.		10'	
S-3	10' - 12'	3 3 4 4	15"	Wet, loose, brown, FINE SAND and inorganic silt, trace clay.		16'	
S-4	15' - 16'	5 6 7 6	8"	Moist, medium dense, red/brown, FINE SAND, trace inorganic silt.		23'	
S-4A	16' - 17'		8"	Moist, medium dense, gray, FINE SAND, trace inorganic silt.			
S-5	20' - 22'	3 4 4 3	14"	Wet, loose, gray FINE SAND, some inorganic silt, trace clay.			
S-6	25' - 27'	11 10 13 15	9"	Wet, medium dense, gray, FINE TO COARSE SAND, trace inorganic silt, trace fine gravel. Top of BEDROCK at 27'6"		27'6"	
C-1	29' - 34'	5 5 3 4 4	60"	Advanced rollerbit to 29' through granite and began coring. Hard, fresh, sound, gray GRANITE. Percent Recovery = 100%			
C-2	34' - 36'	5 6 *	12"	Hard, severely fractured, gray GRANITE. Percent Recovery = 50%		36'	
Remarks: * AECOM (Consultants)		Protective Device - Stand: Box:					
		Well Depth: Solid Pipe:					
		Stick Up Pipe: Screen Pipe:					
Penetration Resistance (N) Guide:		Type of Drill Rig: CME 550X					
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Arrow-Board: Signs: Cones:			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 9'			
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"			
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Automatic Hammer Weight: 140 lbs.			
Dense	30 - 50	Stiff	8 - 15	Safety Hammer Weight: 140 lbs.			
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight: Fall: 30"			
N=Sum of Second and Third 6" Blow Counts		Hard		Over 30		Core Barrel Type: NX Size: 2.15"	
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less							

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		TB-2B-2	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-21-14 10:30 am		Total Hours: 5			
Groundwater Depth: 7'		Date & Time: 11-21-14 3:00 pm		Date & Time Completed: 11-21-14 3:30 pm			
Coordinates: N 2995663		E 681571		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 129.0		Inspector's Name: Jun Jie Li		Inspector's Company: Lamson 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' - 16"	2 2 20 100/0*	14"	TOPSOIL Dry, medium dense, brown, FINE TO COARSE SAND, trace inorganic silt, trace weathered cobble. Top of BEDROCK at 1'6" Rollerbit to 9', thinking advancement was through a boulder but confirmed it was bedrock at 1'6". Began coring at 9'.		16"	
C-1	9' - 14'	5 5 5 8 8	60"	Hard, fresh, slightly fractured, white-gray GNEISS. Percent Recovery = 100%			
C-1	14' - 19'	10 4 5 6 6	52"	Hard, slightly weathered, slightly fractured, white-gray GNEISS. Percent Recovery = 86%		19'	
				Bottom of Exploration = 19'			
Remarks: * AECOM (Consultants)		Protective Device - Stand: Box:					
		Well Depth: Solid Pipe:					
		Stick Up Pipe: Screen Pipe:					
Penetration Resistance (N) Guide:		Type of Drill Rig: CME 550X					
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Arrow-Board: Signs: Cones:			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 9'			
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"			
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Automatic Hammer Weight: 140 lbs.			
Dense	30 - 50	Stiff	8 - 15	Safety Hammer Weight: 140 lbs.			
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight: Fall: 30"			
N=Sum of Second and Third 6" Blow Counts		Hard		Over 30		Core Barrel Type: NX Size: 2.15"	
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less							

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		TB-2B-3	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-24-14 8:00 am		Total Hours: 5			
Groundwater Depth: 6.5'		Date & Time: 11-24-14 12:00 pm		Date & Time Completed: 11-24-14 1:00 pm			
Coordinates: N 2995634		E 681649		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 129.0		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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'	2 3 35 25	9"	TOPSOIL Dry, dense, brown, FINE TO COARSE SAND, and fine to medium gravel trace inorganic silt.		4"	
S-2	5' - 6'4"	28 40 80/4*	12"	Dry, very dense, brown, FINE TO COARSE SAND and fine to coarse gravel, trace inorganic silt, possible weathered bedrock in tip of spoon. Top of BEDROCK at 6'10" Advanced rollerbit to 9' through possible granite and began coring. Hard, gray-white GRANITE		6'10"	
C-1	9' - 14'	3 4 4 6 5	60"	Hard, gray-white GRANITE. Percent Recovery = 100%			
C-2	14' - 19'	4 5 5 6 5	60"	Hard, gray, white GRANITE. Percent Recovery = 100%		19'	
				Bottom of Exploration = 19'			
Remarks: * AECOM (Consultants)		Protective Device - Stand: Box:					
		Well Depth: Solid Pipe:					
		Stick Up Pipe: Screen Pipe:					
Penetration Resistance (N) Guide:		Type of Drill Rig: CME 550X					
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Arrow-Board: Signs: Cones:			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 9'			
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"			
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Automatic Hammer Weight: 140 lbs.			
Dense	30 - 50	Stiff	8 - 15	Safety Hammer Weight: 140 lbs.			
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight: Fall: 30"			
N=Sum of Second and Third 6" Blow Counts		Hard		Over 30		Core Barrel Type: NX Size: 2.15"	
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less							



ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

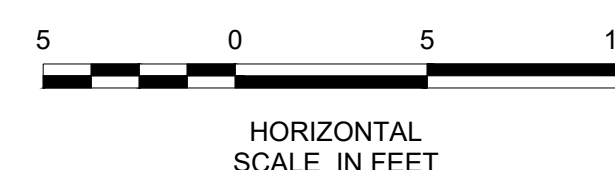
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	158
PROJECT FILE NO.		606223	

BORING LOGS

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		TB-2B-4	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town:	Acton - Concord	Bridge:	Bruce Freeman Rail Trail (Phase II-B)	Project File No:	606223	Contract No:	76859
Project:	Bruce Freeman Rail Trail Route 2 (Phase II-B)	Date & Time Started:	11-14-14 12:00 pm	Total Hours:			
Groundwater Depth:	6.4'	Date & Time:	11-14-14 3:15 pm	Date & Time Completed:	11-14-14 3:30 pm	3.5	
Coordinates:	N 2995941	E 681144	Driller's Name: Manlea Thompson	Helper's Name: Donald Palmer			
Ground Elevation:	126.5	Inspector's Name: Weijie Dong	Inspector's Company: Lamson 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'	2 3 4 4	18"	TOPSOIL Moist, loose, red-brown FINE TO COARSE SAND, some inorganic silt, trace fine gravel.	5'		
S-2	5' - 7'	6 4 5 6	14"	Wet, loose, brown FINE TO COARSE SAND, trace fine gravel, trace inorganic silt.	4'		
S-3	10' - 11'	4 5 14 14	8"	Wet, loose, brown, FINE SAND, trace inorganic silt.	11'		
S-3A	11' - 12'	6"	Wet, medium dense, brown, COARSE TO FINE SAND, trace fine gravel.				
S-4	15' - 17'	9 7 11 13	15"	Wet, medium dense, gray, FINE TO COARSE SAND, some fine to coarse gravel, trace inorganic silt.			
S-5	20' - 22'	8 8 8 8	13"	Wet, medium dense, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.			
S-6	25' - 27'	9 8 8 6	10"	Wet, medium dense, gray, FINE TO COARSE SAND, some fine to coarse gravel, trace inorganic silt.			
S-7	30' - 318"	7 7 30 80/2"	9"	Wet, dense, gray, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.			
S-8	35' - 37'	28 47 51 54	19"	Wet, very dense, gray, FINE TO COARSE SAND, some inorganic silt, trace fine to medium gravel.	37'		
Remarks: * AECOM (Consultants)				Protective Device - Stand: Box; Well Depth: Solid Pipe; Stick Up Pipe: Screen Pipe;			
Penetration Resistance (N) Guide:				Type of Drill Rig: CME 550X			
Cohesionless Soils (Sands, Gravels)				Cohesive Soils (Sills, Clays)			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Arrow-Board:	Signs:	Cones:	
Very Loose	0 - 4	Very Soft	0 - 2	Casing: HW	Size: 4"	Amt: 25'	
Loose	4 - 10	Soft	2 - 4	Hammer Weight:	300 lbs. Fall: 30"		
Medium Dense	10 - 30	Medium Stiff	4 - 8	Sampler Type: S/S	Size: 1 3/8"		
Dense	30 - 50	Stiff	8 - 15	Automatic Hammer Weight:	Safety Hammer Weight: 140 lbs.		
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight:	Fall: 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				Core Barrel Type: Size:			

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		WB-2B-1	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town:	Acton - Concord	Bridge:	Bruce Freeman Rail Trail (Phase II-B)	Project File No:	606223	Contract No:	76859
Project:	Bruce Freeman Rail Trail Route 2 (Phase II-B)	Date & Time Started:	11-07-14 11:30 am	Total Hours:			
Groundwater Depth:	8'	Date & Time:	11-10-14 7:25 am	Date & Time Completed:	11-10-14 9:00 am	5.5	
Coordinates:	N 2996414	E 680903	Driller's Name: Manlea Thompson	Helper's Name: Donald Palmer			
Ground Elevation:	130.0	Inspector's Name: Weijie Dong	Inspector's Company: Lamson 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'	2 2 3 3	6"	Dry, loose, dark brown, FINE TO COARSE SAND, trace fine to medium gravel, trace inorganic silt.			
S-2	5' - 7'	8 11 14 16	14"	Dry, medium dense, brown, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.			
S-3	10' - 12'	18 21 13 7	9"	Wet, dense, brown, COARSE TO FINE SAND and fine to coarse gravel, trace inorganic silt.	13'6"		
S-4	15' - 17'	2 5 4 5	15"	Wet, loose, brown, FINE SAND, some inorganic silt.			
S-5	20' - 22'	3 6 7 7	14"	Wet, medium dense, brown, FINE SAND, some inorganic silt, trace clay.	23'		
S-6	25' - 27'	16 27 17 14	17"	Wet, dense, brown, FINE TO COARSE SAND and fine to medium gravel, some inorganic silt (Till). Drove casing to 28', drive shoe broke had to re-locate hole. Boring Terminated at 28'	28'		
Remarks: * AECOM (Consultants)				Protective Device - Stand: Box; Well Depth: Solid Pipe; Stick Up Pipe: Screen Pipe;			
Changed location; moved boring from N2996414, E680903 to N2996412, E680903 due to drive shoe breaking in hole and started new boring WB-2B-1A.							
Penetration Resistance (N) Guide:				Type of Drill Rig: CME 550X			
Cohesionless Soils (Sands, Gravels)				Cohesive Soils (Sills, Clays)			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Arrow-Board:	Signs:	Cones:	
Very Loose	0 - 4	Very Soft	0 - 2	Casing: HW	Size: 4"	Amt: 25'	
Loose	4 - 10	Soft	2 - 4	Hammer Weight:	300 lbs. Fall: 30"		
Medium Dense	10 - 30	Medium Stiff	4 - 8	Sampler Type: S/S	Size: 1 3/8"		
Dense	30 - 50	Stiff	8 - 15	Automatic Hammer Weight:	Safety Hammer Weight: 140 lbs.		
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight:	Fall: 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				Core Barrel Type: Size:			

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		WB-2B-1A	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town:	Acton - Concord	Bridge:	Bruce Freeman Rail Trail (Phase II-B)	Project File No:	606223	Contract No:	76859
Project:	Bruce Freeman Rail Trail Route 2 (Phase II-B)	Date & Time Started:	11-10-14 2:30 pm	Total Hours:			
Groundwater Depth:	8'	Date & Time:	11-10-14 2:30 pm	Date & Time Completed:	11-10-14 2:30 pm	5.5	
Coordinates:	N 2996412	E 680903	Driller's Name: Manlea Thompson	Helper's Name: Donald Palmer			
Ground Elevation:	130.0	Inspector's Name: Weijie Dong	Inspector's Company: Lamson Engineering, Corp., for *				
Sample Number	Depth Range (Feet)	Blow Counts per 6 Inches Coring Times Minute Per Foot	Recovery Inches	Field Description	Strata Changes		
C-1	30' - 35'	5 4 4 4 4	58"	See boring log WB-2B-1 for sample descriptions to 27'. Hard, fresh slightly fractured, white GNEISS. Percent Recovery = 96%			
C-2	35' - 40'	4 3 5 3 4	57"	Hard, white, slightly to severely fractured, white GNEISS. Percent Recovery = 95%			
Remarks: * AECOM (Consultants)				Protective Device - Stand: Box; Well Depth: Solid Pipe; Stick Up Pipe: Screen Pipe;			
Penetration Resistance (N) Guide:				Type of Drill Rig: CME 550X			
Cohesionless Soils (Sands, Gravels)				Cohesive Soils (Sills, Clays)			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Arrow-Board:	Signs:	Cones:	
Very Loose	0 - 4	Very Soft	0 - 2	Casing: HW	Size: 4"	Amt: 28'	
Loose	4 - 10	Soft	2 - 4	Hammer Weight:	300 lbs. Fall: 30"		
Medium Dense	10 - 30	Medium Stiff	4 - 8	Sampler Type: S/S	Size: 1 3/8"		
Dense	30 - 50	Stiff	8 - 15	Automatic Hammer Weight:	Safety Hammer Weight: 140 lbs.		
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight:	Fall: 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				Core Barrel Type: NX Size: 2.15"			



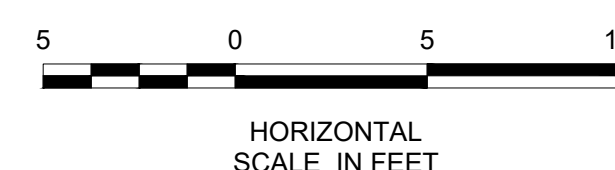
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	158
PROJECT FILE NO.		606223	

BORING LOGS

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		WB-2B-2	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-06-14 10:00 am		Total Hours: 8.5			
Groundwater Depth: 8.5'		Date & Time: 11-07-14 7:30 am		Date & Time Completed: 11-07-14 11:00 am		8.5	
Coordinates: N 2996310		E 680961		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 127.0		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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 6 7 7	10"	Dry, medium dense, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.			
S-2	5' - 7'	9 11 14 16	6"	Moist, medium dense, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.			
S-3	10' - 116"	15 13 14 7	10"	Wet, medium dense, brown, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.	116"		
S-3A	116" - 12'		5"	Wet, medium stiff, gray-brown INORGANIC SILT and fine sand.			
S-4	15' - 17'	2 3 3 3	17"	Wet, loose gray-brown FINE SAND, some inorganic silt.	15'		
S-5	20' - 206"	21 21 22 34	5"	Wet, dense, gray-brown, FINE TO COARSE SAND and fine to medium gravel, trace inorganic silt.	206"		
S-5A	206" - 22'		5"	Wet, very dense, gray-brown, FINE TO COARSE SAND, some inorganic silt, some fine to medium gravel, (Till.)			
S-6	25' - 27'	26 60 60/4"	12"	Wet, very dense, gray-brown, FINE TO COARSE SAND, some inorganic silt, some fine to medium gravel, (Till.)			
S-7	30' - 306"	120	6"	Wet, very dense, gray-brown, FINE TO COARSE SAND and inorganic silt, some fine to medium gravel, (Till.) Top of BEDROCK at 306" Advanced roller bit through granite to 34' and began coring.	306"		
C-1	34' - 39'	4 4 5 5 5	60"	Hard, fresh, sound, white-gray GRANITE. Percent Recovery = 100%			
C-2	39' - 44'	6 6 7 7 7	60"	Hard, fresh, sound, gray GRANITE. Percent Recovery = 100%	44'		
Bottom of Exploration = 44'							
Remarks: * AECOM (Consultants)				Protective Device - Stand: Box; Well Depth: Solid Pipe; Stick Up Pipe: Screen Pipe;			
Penetration Resistance (N) Guide:				Type of Drill Rig: CME 550X			
Cohesionless Soils (Sands, Gravels)				Arrow-Board: Signs: Cones:			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 30'			
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"			
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Automatic Hammer Weight:			
Dense	30 - 50	Stiff	8 - 15	Safety Hammer Weight: 140 lbs.			
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight: Fall: 30"			
N=Sum of Second and Third 6" Blow Counts				Core Barrel Type: NX Size: 2.15"			
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less							

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		WB-2B-3	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-12-14 7:30 am		Total Hours: 6.5			
Groundwater Depth: 8.5'		Date & Time: 11-12-14 2:00 pm		Date & Time Completed: 11-12-14 2:00 pm		6.5	
Coordinates: N 2996185		E 681019		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 131.0		Inspector's Name: Weijie Dong		Inspector's Company: Lamson 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' - 1'	1 1 2 2	9"	Dry, very loose, brown, FINE SAND, trace inorganic silt.	1'		
S-1A	1' - 2'		9"	Dry, soft, dark brown, ORGANIC SILT, trace fine sand, trace roots.	3'		
S-2	5' - 7'	9 8 11 13	17"	Moist, medium dense, brown, COARSE TO FINE SAND, some fine gravel, trace inorganic silt.			
S-3	10' - 12'	9 9 11 14	6"	Wet, medium dense, brown, COARSE TO FINE SAND and fine to medium gravel, some inorganic silt.			
S-4	15' - 17'	5 5 5 6	12"	Wet, medium dense, gray FINE SAND and inorganic silt.			
S-5	20' - 22'	4 3 3 4	15"	Wet, loose, brown, FINE SAND, some inorganic silt.			
S-6	25' - 266"	2 2 3 6	12"	Wet, loose, gray FINE SAND, some inorganic silt.	266"		
S-6A	266" - 27'		6"	Wet, loose, gray, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt.			
S-7	30' - 32'	17 21 30 36	16"	Wet, very dense, gray, FINE TO COARSE SAND, trace fine to medium gravel, trace inorganic silt, (Till.) Top of BEDROCK at 322" Rollerbit to 34' through granite gneiss, began coring at 34'.	322"		
C-1	34' - 39'	3 4 2 3 3	57"	Hard, slightly weathered, slightly to moderately fractured, gray-white GRANITE GNEISS. Percent Recovery = 95%			
C-2	39' - 44'	3 2 3 2 2	30"	Hard, highly weathered, extremely fractured, gray GRANITE. Percent Recovery = 50%	44'		
Bottom of Exploration = 44'							
Remarks: * AECOM (Consultants)				Protective Device - Stand: Box; Well Depth: Solid Pipe; Stick Up Pipe: Screen Pipe;			
Penetration Resistance (N) Guide:				Type of Drill Rig: CME 550X			
Cohesionless Soils (Sands, Gravels)				Arrow-Board: Signs: Cones:			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 322"			
Very Loose	0 - 4	Very Soft	0 - 2	Hammer Weight: 300 lbs. Fall: 30"			
Loose	4 - 10	Soft	2 - 4	Sampler Type: S/S Size: 1 3/8"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Automatic Hammer Weight:			
Dense	30 - 50	Stiff	8 - 15	Safety Hammer Weight: 140 lbs.			
Very Dense	Over 50	Very Stiff	15 - 30	Donut Hammer Weight: Fall: 30"			
N=Sum of Second and Third 6" Blow Counts				Core Barrel Type: NX Size: 2.15"			
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less							

massDOT		NEW HAMPSHIRE BORING, INC.		Phone: (603)437-1610		Boring No.	
		P.O. Box 165		Fax: (603) 437-0034		WB-2B-4	
		Derry, NH 03038		E Mail: nhb@nhboring.com		Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 76859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-20-14 8:00 am		Total Hours: 11.5			
Groundwater Depth: 7.5'		Date & Time: 11-20-14 8:00 am		Date & Time Completed: 11-20-14 9:00 am		11.5	
Coordinates: N 2995754.9		E 681434.5		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer	
Ground Elevation: 129.2		Inspector's Name: Kin Lam		Inspector's Company: Lamson 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'	2 3 3 3	13"	TOPSOIL Dry, loose, brown, FINE TO COARSE SAND, some inorganic silt, trace fine gravel.	4"		
S-2	5' - 6'	2 2 2 2	8"	Wet, loose, brown, FINE TO COARSE SAND, some inorganic silt.	6"		
S-2A	6' - 7'		10"	Moist, soft, black/dark brown ORGANIC SILT, trace fine sand, trace roots.	8"		
S-3	10' - 12'	3 4 5 5	6"	Wet, loose, brown, FINE TO COARSE SAND, some fine to medium gravel, trace inorganic silt. Top of BEDROCK at 121" Attempted to drive 4" casing when it crimped, pulled out of hole and advanced 5" casing down to 121", advanced rollerbit to 15' then advanced 4" casing to 15', rollerbit to 16' and began coring at 16'. Very hard sound, fresh, gray-pink-white QUARTZ GNEISS. Percent Recovery = 100%	121"		
C-1	16' - 21'	4 4 4 4 4	60"	Very hard sound, fresh, gray-pink-white QUARTZ GNEISS. Percent Recovery = 100%			
C-2	21' - 26'	5 4 4 5 4	60"	Very hard sound, fresh, gray-pink-white QUARTZ GNEISS. Percent Recovery = 100%	26'		
Bottom of Exploration = 26'							
Remarks: * AECOM (Consultants)				Protective Device - Stand: Box; Well Depth: Solid Pipe; Stick Up Pipe: Screen Pipe;			
Penetration Resistance (N) Guide:				Type of Drill Rig: CME 550X			
Cohesionless Soils (Sands, Gravels)				Arrow-Board: Signs: Cones:			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 15'			
Very Loose	0 - 4	Very Soft	0 - 2	Casing: PW Size: 5" Amt: 121"			
Loose	4 - 10	Soft	2 - 4	Hammer Weight: 300 lbs. Fall: 30"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Sampler Type: S/S Size: 1 3/8"			
Dense	30 - 50	Stiff	8 - 15	Automatic Hammer Weight:			
Very Dense	Over 50	Very Stiff	15 - 30	Safety Hammer Weight: 140 lbs.			
N=Sum of Second and Third 6" Blow Counts				Donut Hammer Weight: Fall: 30"			
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less							

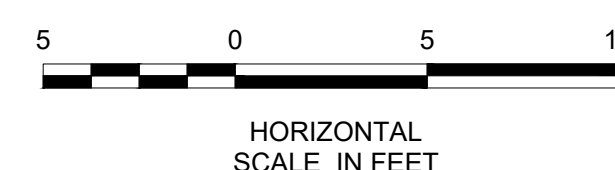


ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

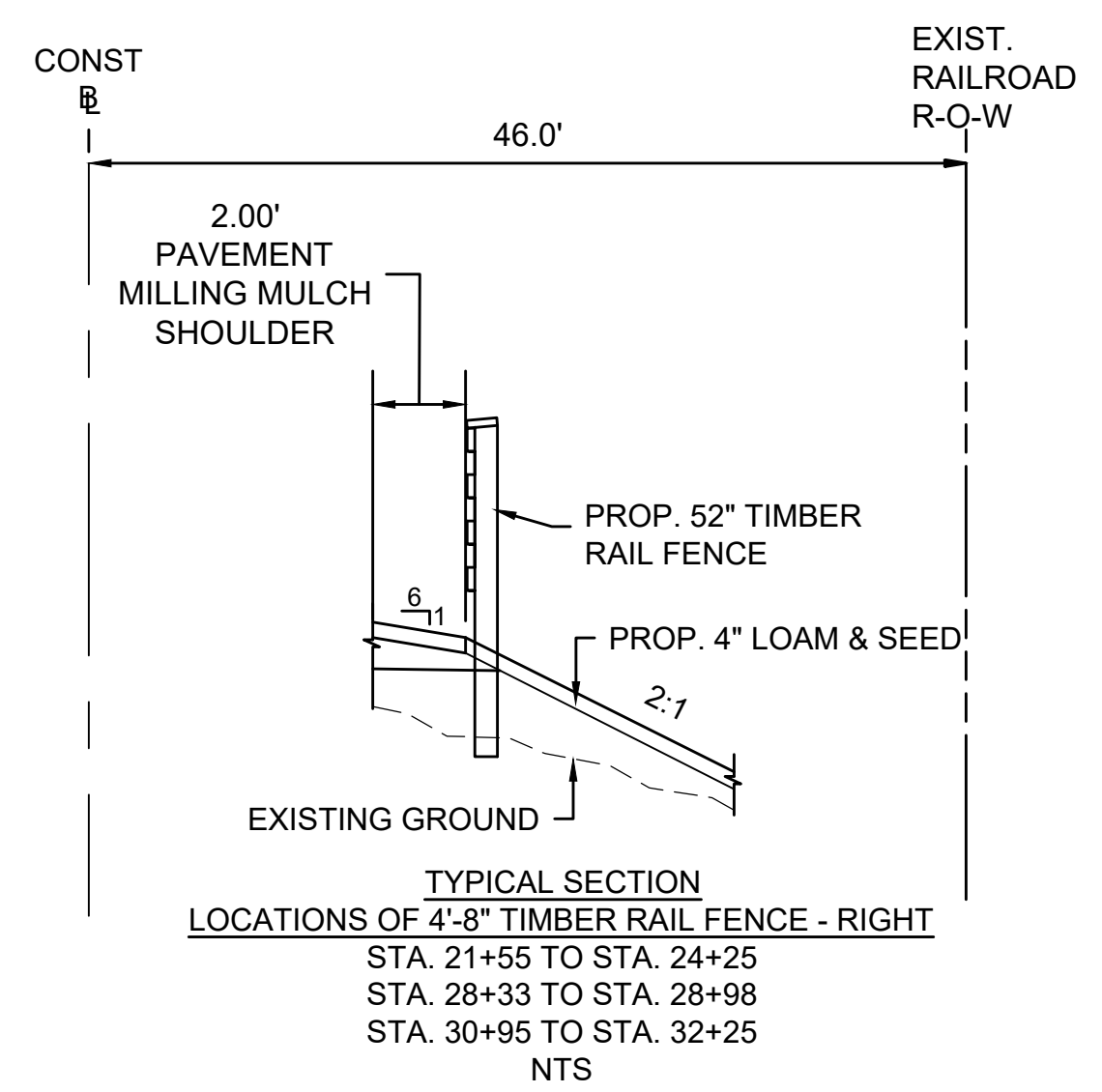
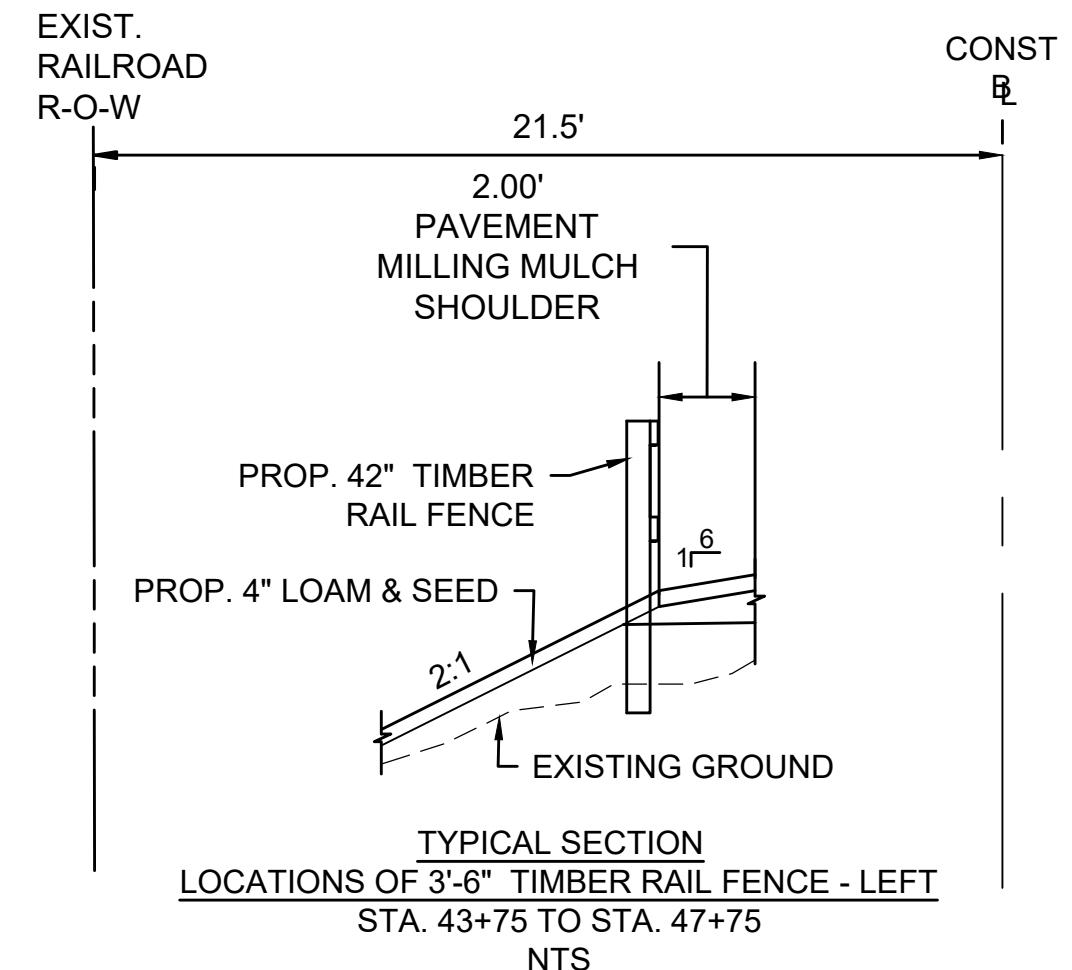
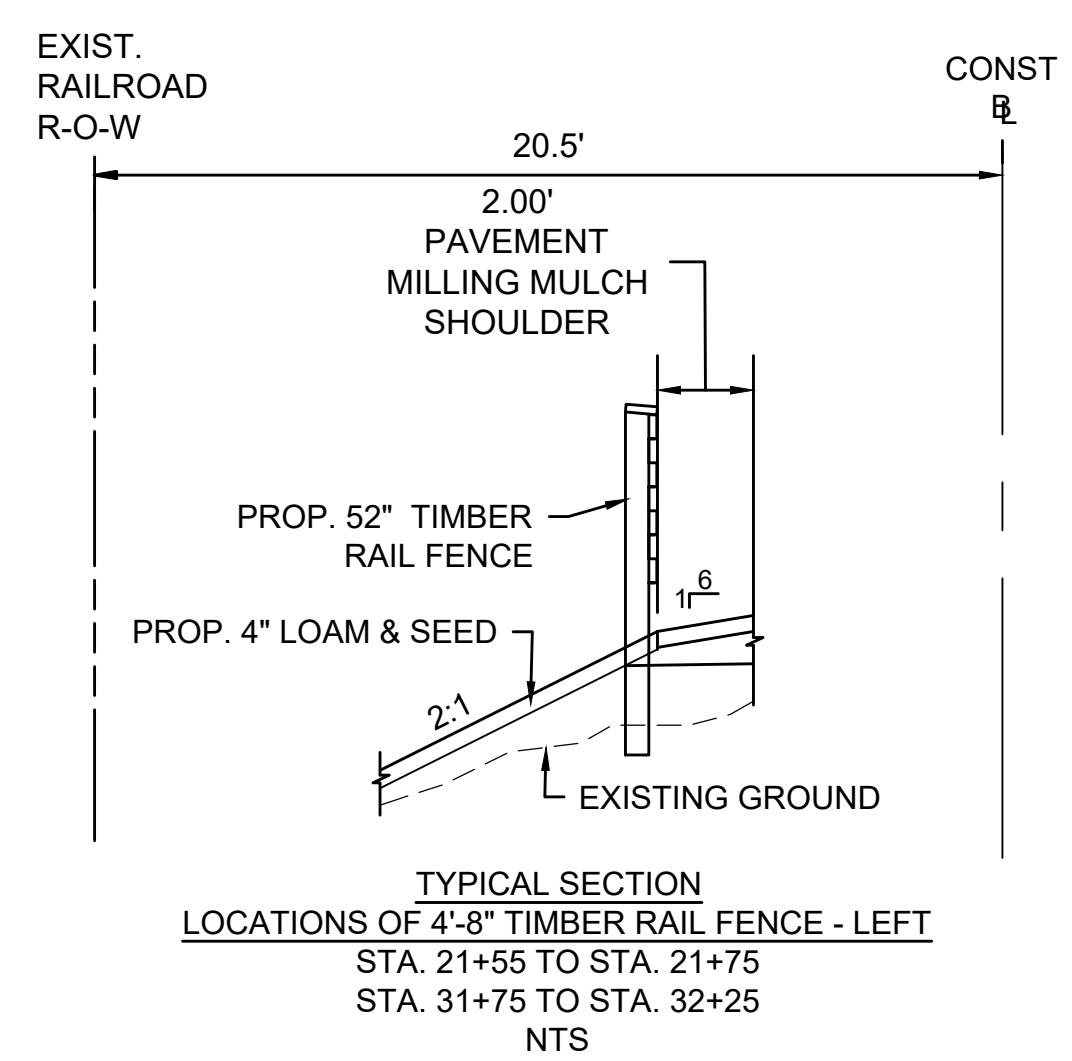
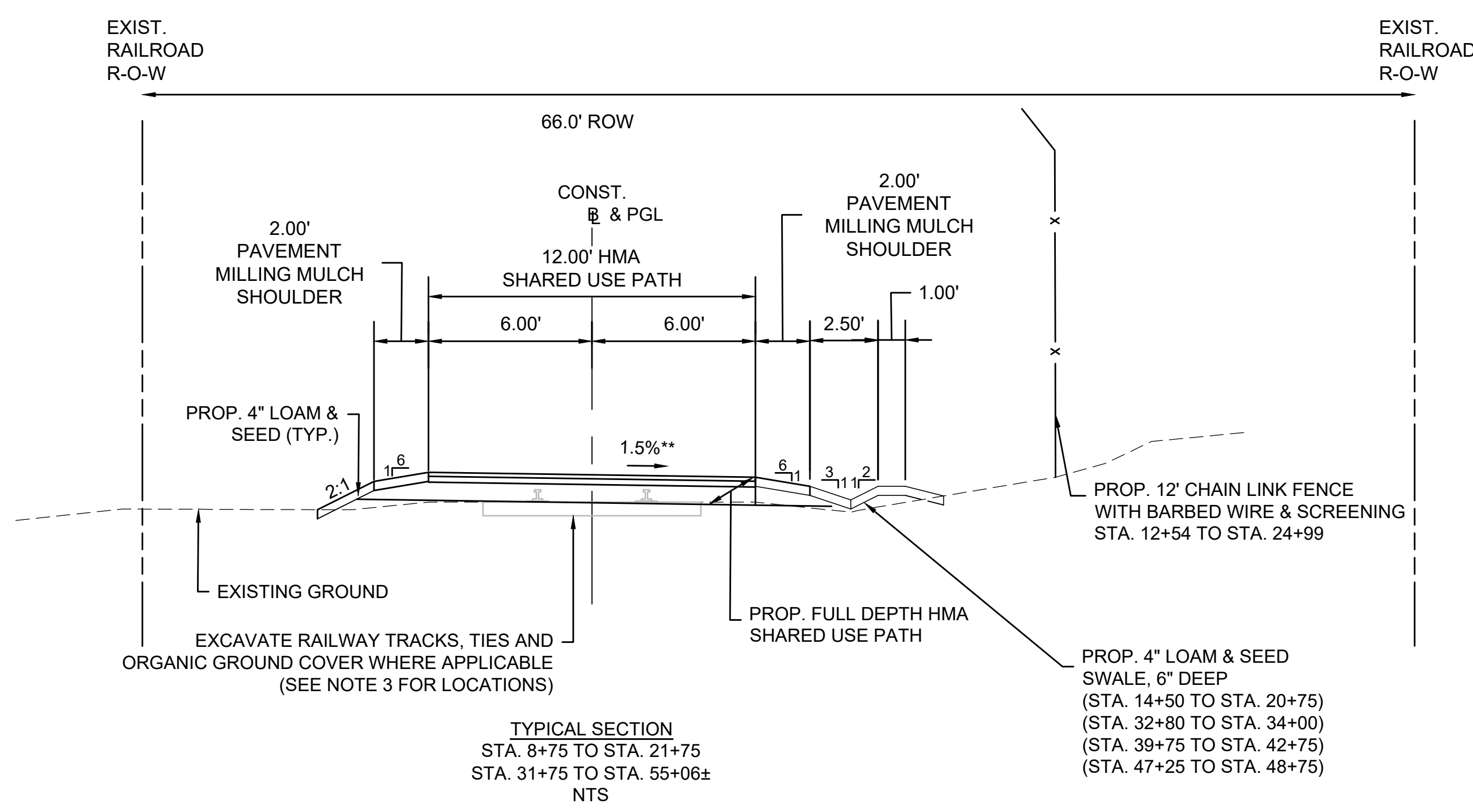
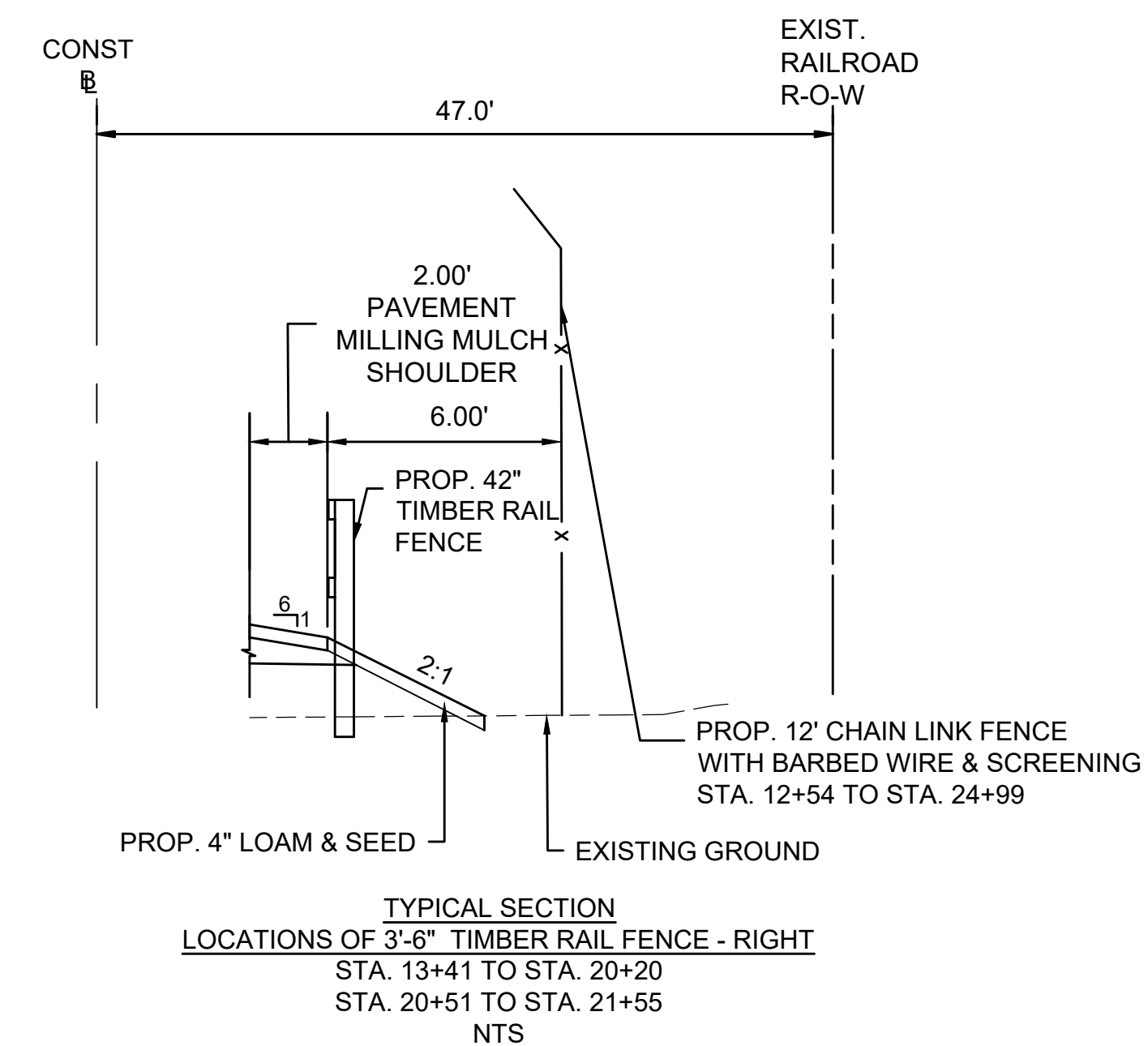
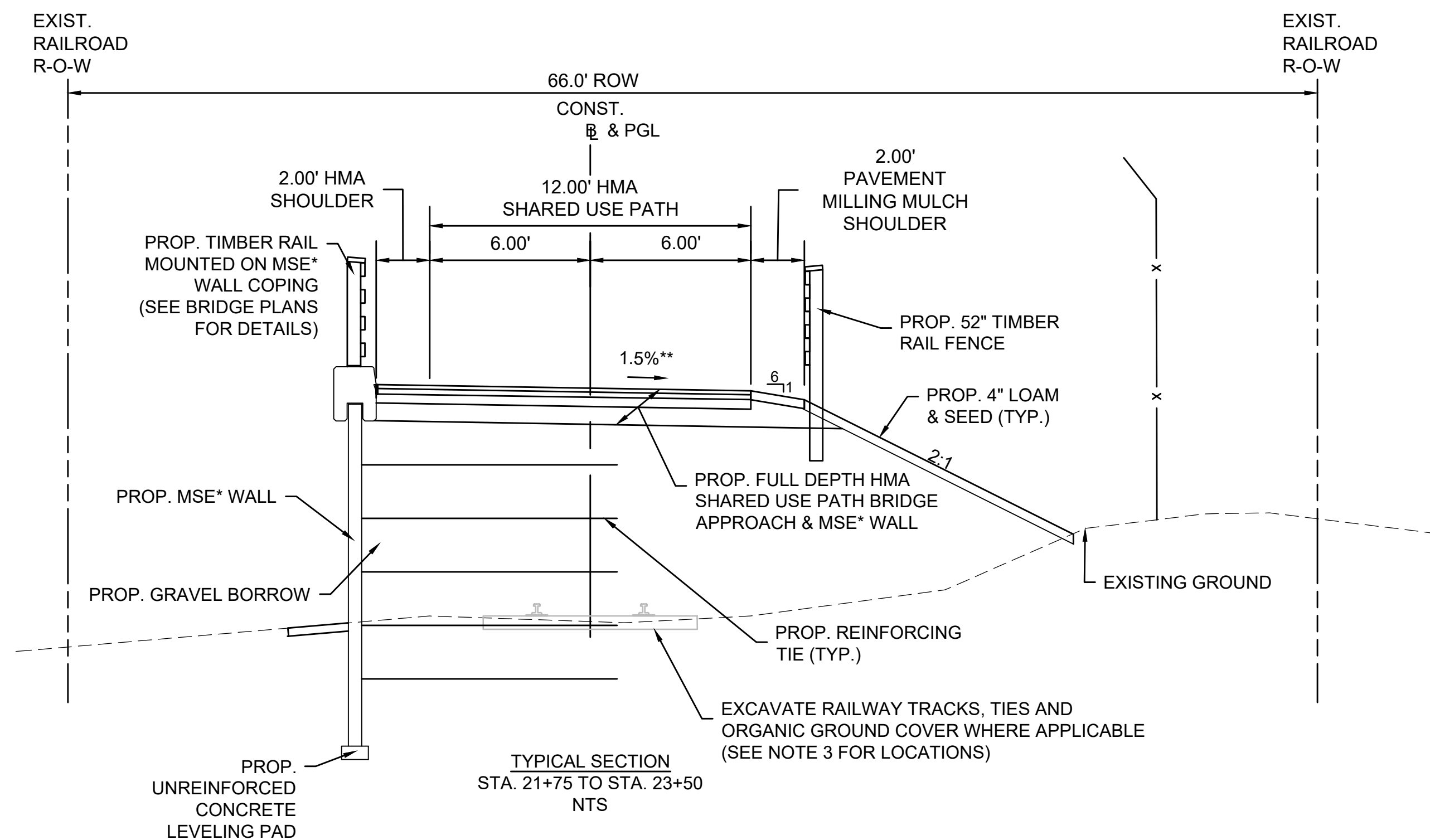
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	158
PROJECT FILE NO.		606223	

BORING LOGS

		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. WB-2B-5 Scale 1" = 5'	
City/Town: Acton - Concord		Bridge: Bruce Freeman Rail Trail (Phase II-B)		Project File No: 606223		Contract No: 78859	
Project: Bruce Freeman Rail Trail Route 2 (Phase II-B)		Date & Time Started: 11-20-14 9:30 am		Total Hours: 8.5			
Groundwater Depth: 7'		Date & Time: 11-21-14 10:00 am		Date & Time Completed: 11-21-14 10:00 am			
Coordinates: N 2995725 E 681508		Driller's Name: Manlea Thompson		Helper's Name: Donald Palmer			
Ground Elevation: 129.8		Inspector's Name: Jun Jie Li		Inspector's Company: Lamson 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' - 1'	1	2	120/0"	9"	TOPSOIL Dry, very dense, brown, FINE TO COARSE SAND, trace fine gravel, trace inorganic silt. Encountered BOULDER at 1' Advanced rollerbit to 4' and began coring breaking through boulder at 7', continued to 9' with 5" casing.	
C-1	4' - 9'	6	9	1 .5 .5	33"	BOULDER Continued to 9' with 5" casing.	
S-2	9' - 11"	9	6	4 .4	10"	Wet, medium dense, brown, FINE SAND, some inorganic silt, some fine to medium gravel. Top of BEDROCK at 12' Advanced rollerbit to 14' and began coring.	
C-2	14' - 19'	5	9	9 10 9	57"	Hard, fresh, sound, white GNEISS. Percent Recovery = 95%	
C-3	19' - 24'	3	3	4 4 4	40"	Hard, slightly fractured, gray-white GNEISS. Percent Recovery = 66%	
						Bottom of Exploration = 24'	
Remarks: * AECOM (Consultants) On core run C-3 while pulling barrel out of hole 20" of recovery was lost. Two additional attempts were made to retrieve but were unsuccessful.				Protective Device - Stand: Box: Well Depth: Solid Pipe: Stick Up Pipe: Screen Pipe: Type of Drill Rig: CME 550X			
Penetration Resistance (N) Guide:				Arrow-Board: Signs: Cones:			
Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Sills, Clays)		Casing: PW Size: 5" Amt: 9'			
Relative Density	Penetration Resistance	Consistency	Penetration Resistance	Casing: HW Size: 4" Amt: 12'			
Very Loose	0 - 4	Very Soft	0 - 2	Casing: NW Size: 3" Amt: 14'			
Loose	4 - 10	Soft	2 - 4	Hammer Weight: 300 lbs. Fall: 30"			
Medium Dense	10 - 30	Medium Stiff	4 - 8	Sampler Type: S/S Size: 1 3/8"			
Dense	30 - 50	Stiff	8 - 15	Automatic Hammer Weight:			
Very Dense	Over 50	Very Stiff	15 - 30	Safety Hammer Weight: 140 lbs.			
N=Sum of Second and Third 6" Blow Counts		Hard	Over 30	Donut Hammer Weight: Fall: 30"			
Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less				Core Barrel Type: NX Size: 2.15"			



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	158
PROJECT FILE NO.		606223	

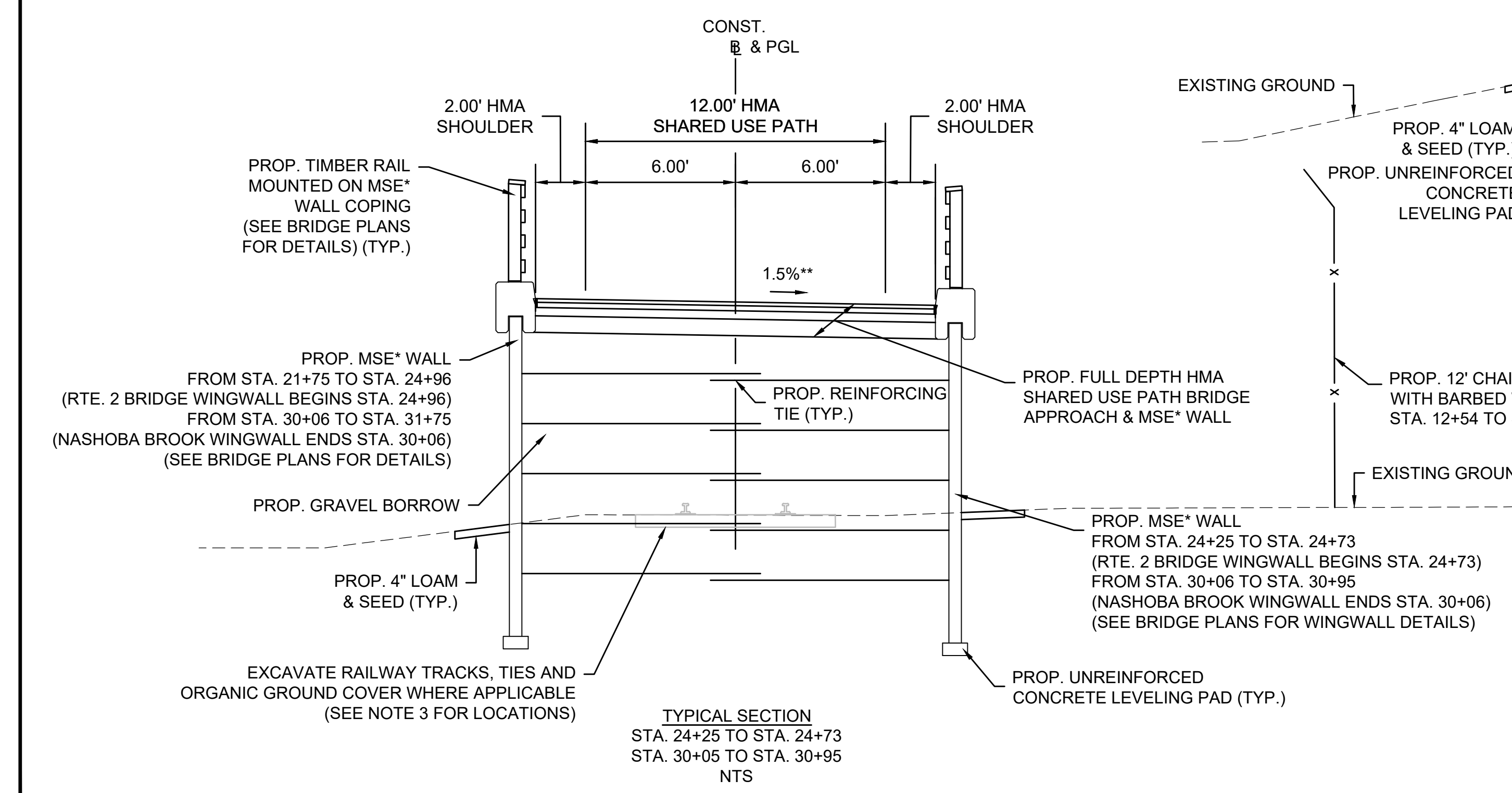
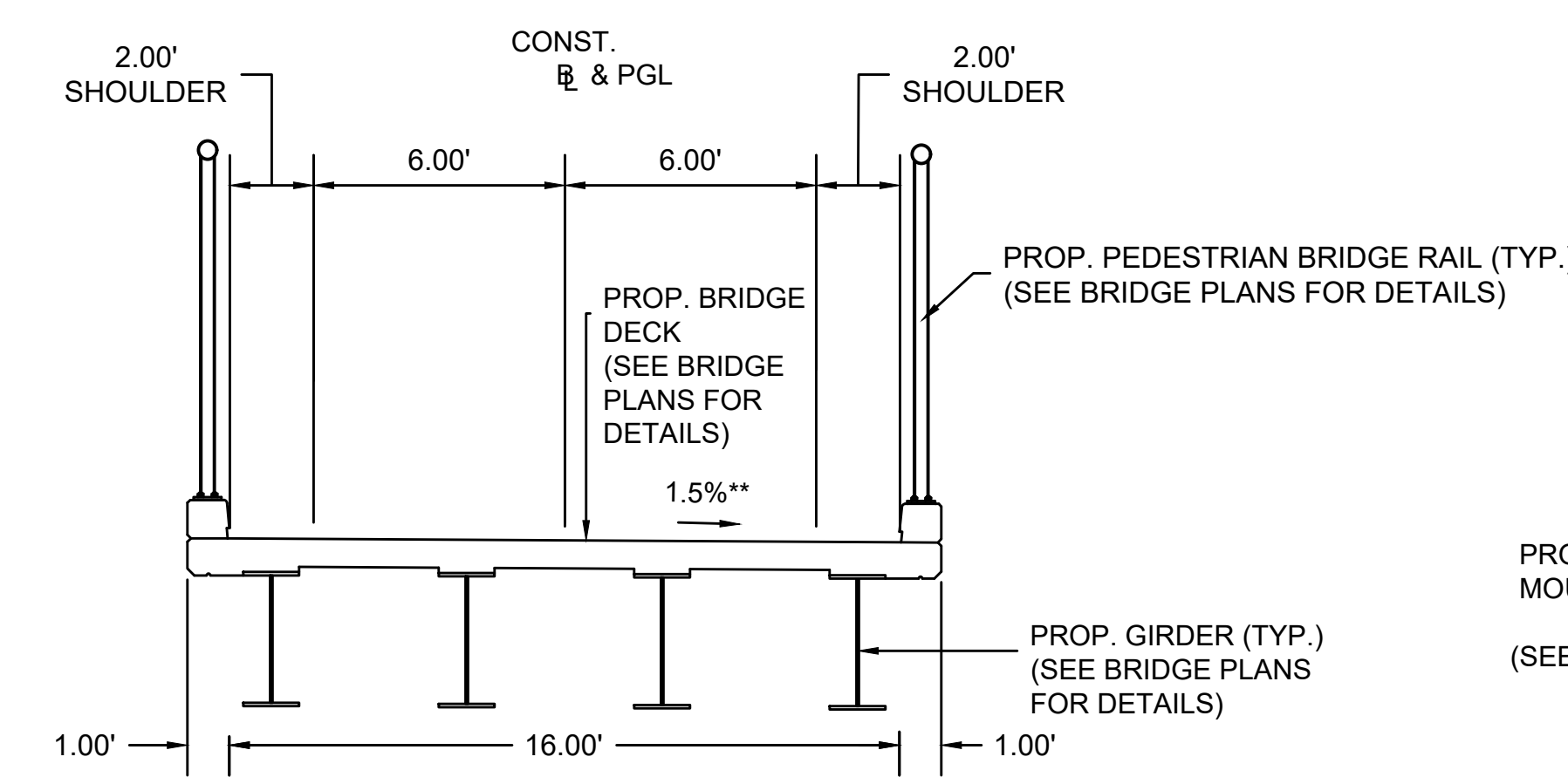
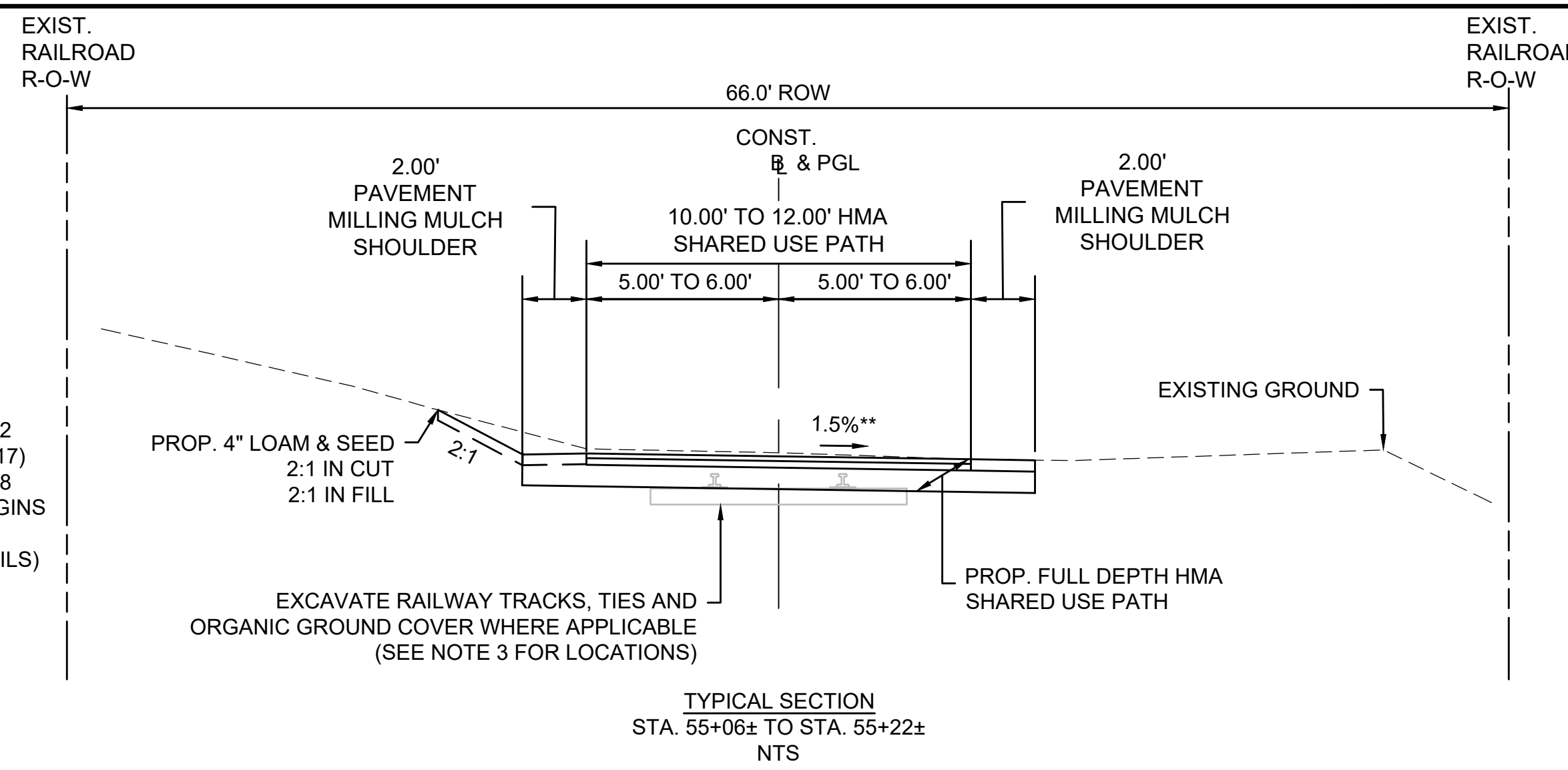
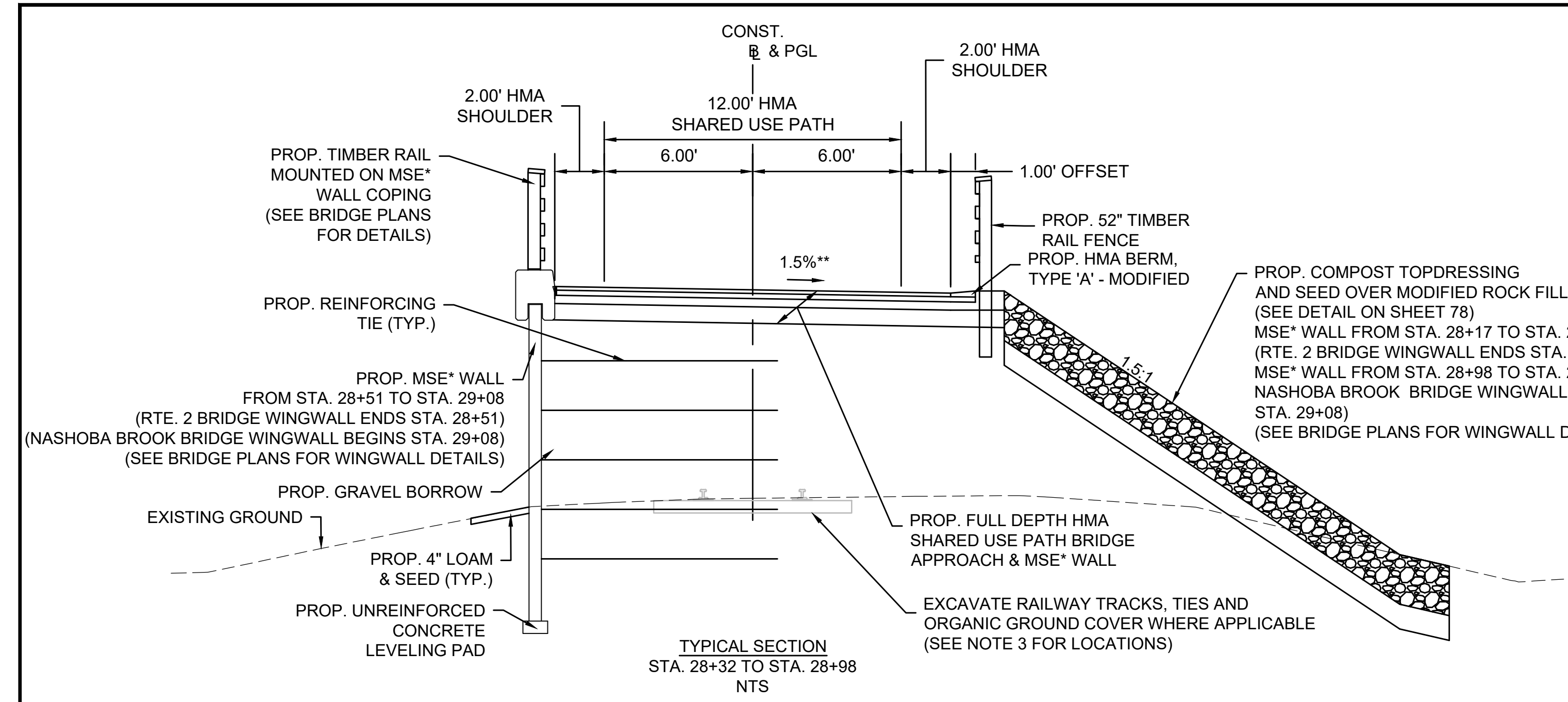


- PAVEMENT NOTES**
- PROP. FULL DEPTH HMA SHARED USE PATH BRIDGE APPROACH & MSE WALL**
- SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- INTERMEDIATE COURSE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- FOUNDATION: 4" DENSE GRADED CRUSHED STONE FOR SUBBASE OVER 8" GRAVEL BORROW (M1.03.0 TYPE B) OVER SPECIAL BORROW COMPACTED IN LAYERS NOT TO EXCEED 8"
- NOTE: IN AREAS OF FILL PLACE AN ADDITIONAL 12" OF SPECIAL BORROW, GRAVEL BORROW OR RECLAIMED PAVEMENT FOR SUBBASE TO PROVIDE FROST PROTECTION.
- PROP. FULL DEPTH HMA SHARED USE PATH**
- SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- INTERMEDIATE COURSE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B) OVER SPECIAL BORROW (TO BE USED AS DIRECTED BY ENGINEER)
- PROP. FULL DEPTH HMA CONSTRUCTION**
- SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 POLYMER (SSC-12.5-P) OVER
- INTERMEDIATE COURSE: 3" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER ASPHALT EMULSION FOR TACK COAT OVER 3" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER ASPHALT EMULSION FOR TACK COAT OVER 3" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B) GRAVEL BORROW (M1.03.0 TYPE B) (TO BE USED AS DIRECTED BY THE ENGINEER)
- PROP. PAVEMENT MICROMILLING AND OVERLAY**
- SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER
- SURFACE MILLING: 1 3/4" PAVEMENT MICROMILLING TO MATCH EXISTING CROSS SLOPE
- PROP. SHARED USE PATH SHOULDER**
- SURFACE: 4" PAVEMENT MILLING MULCH OVER WEED CONTROL FABRIC OVER
- FOUNDATION: 8" GRAVEL BORROW (M1.03.0 TYPE B)
- PROP. FULL DEPTH HMA CONSTRUCTION-TEMPORARY CROSSOVER**
- SURFACE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- INTERMEDIATE COURSE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B)
- PROP. HMA FOR BRIDGE OVER NASHOBA BROOK**
- SURFACE COURSE: 1 1/2" SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B-9.5) OVER
- PROTECTIVE COURSE: 1 1/2" SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B-9.5)
- FOUNDATION: MEMBRANE WATERPROOFING OVER 8" REINFORCED CONCRETE DECK
- PROP. GRAVEL DRIVEWAY**
- SURFACE COURSE: 12" GRAVEL BORROW (M1.03.0 TYPE B)
- PROP. REST AREAS**
- SURFACE COURSE: 1 3/4" SUPERPAVE SURFACE COURSE - 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- INTERMEDIATE COURSE: 2 1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC-19.0) OVER
- SUBBASE: 8" GRAVEL BORROW (M1.03.0 TYPE B)
- TACK COAT**
- ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT THE RATE OF 0.07 GAL/SY FOR MILLED SURFACES AND 0.05 GAL/SY FOR SMOOTH TIGHT PAVED SURFACES.

- NOTES:**
- THE SECTIONS OF PROPOSED SHARED USE PATH 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.
 - CONTRACTOR SHALL REMOVE EXISTING ORGANIC MATERIAL (ABOVE RAILROAD BALLAST) THAT IS UNSUITABLE FOR REUSE AND DISPOSE OF THIS MATERIAL 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.
 - EXCAVATE RAILROAD TRACKS AND TIES FROM STA. 14+15 TO STA. 25+64, STA. 26+39 TO STA. 26+84, AND STA. 27+64 TO STA. 55+20.
- *MSE: MECHANICALLY STABILIZED EARTH
- **TOLERANCE FOR CONSTRUCTION ±0.5%

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	158
PROJECT FILE NO.		606223	

TYPICAL SECTIONS



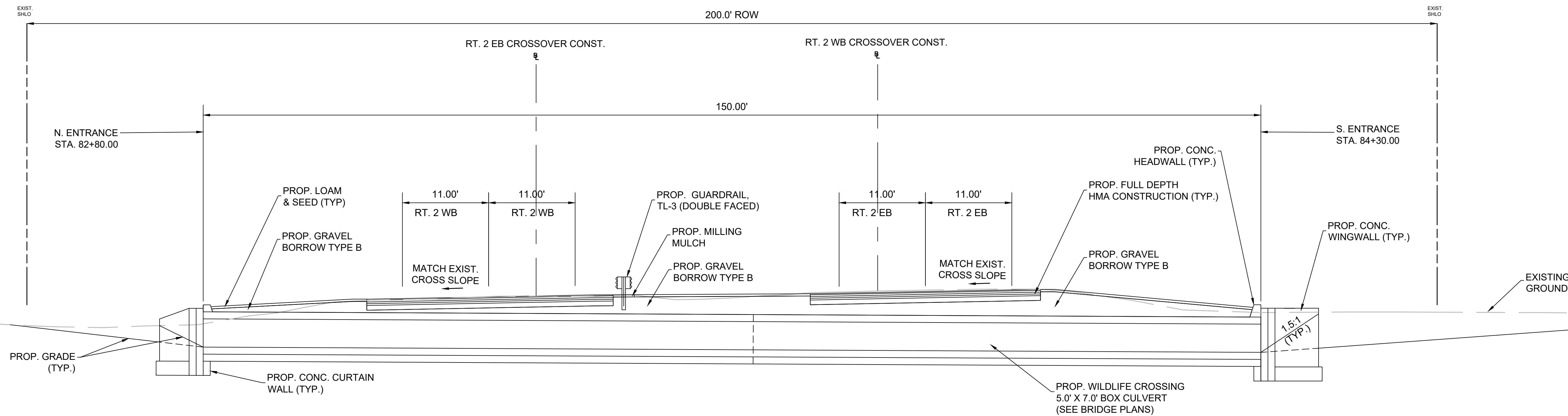
- NOTES:
1. THE SECTIONS OF PROPOSED SHARED USE PATH NOT COVERED IN THE RANGE OF STATIONS ASSOCIATED WITH THE TYPICAL SECTIONS ARE EITHER IN TRANSITION OR ARE LOCATED AT INTERSECTIONS AND THEREFORE HAVE NOT BEEN SHOWN. REFER TO CROSS SECTION SHEETS FOR MORE DETAILS.
 2. CONTRACTOR SHALL REMOVE EXISTING ORGANIC MATERIAL (ABOVE RAILROAD BALLAST) THAT IS UNSUITABLE FOR REUSE AND DISPOSE OF THIS MATERIAL 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.
 3. EXCAVATE RAILROAD TRACKS AND TIES FROM STA. 14+15 TO STA. 25+64, STA. 26+39 TO STA. 26+84, AND STA. 27+64 TO STA. 55+20.
- *MSE: MECHANICALLY STABILIZED EARTH
**TOLERANCE FOR CONSTRUCTION ±0.5%

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	158
PROJECT FILE NO.		606223	

TYPICAL SECTIONS

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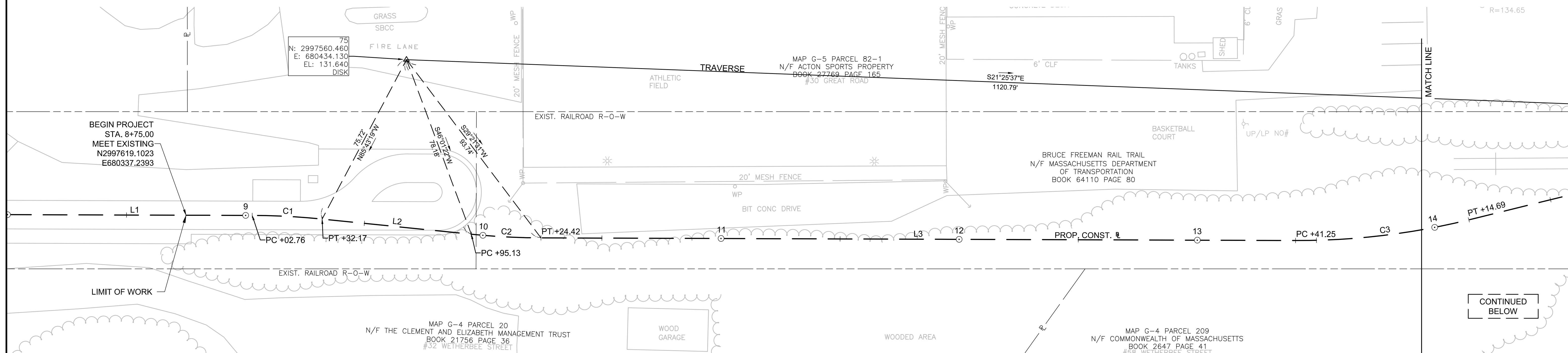
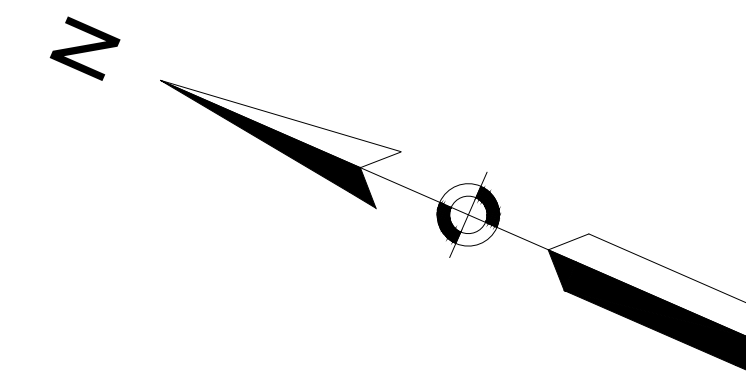


ROUTE 2 TYPICAL SECTION
OVER WILDLIFE CROSSING
NTS

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	12	158
PROJECT FILE NO.		606223	

CONSTRUCTION BASELINE TIES

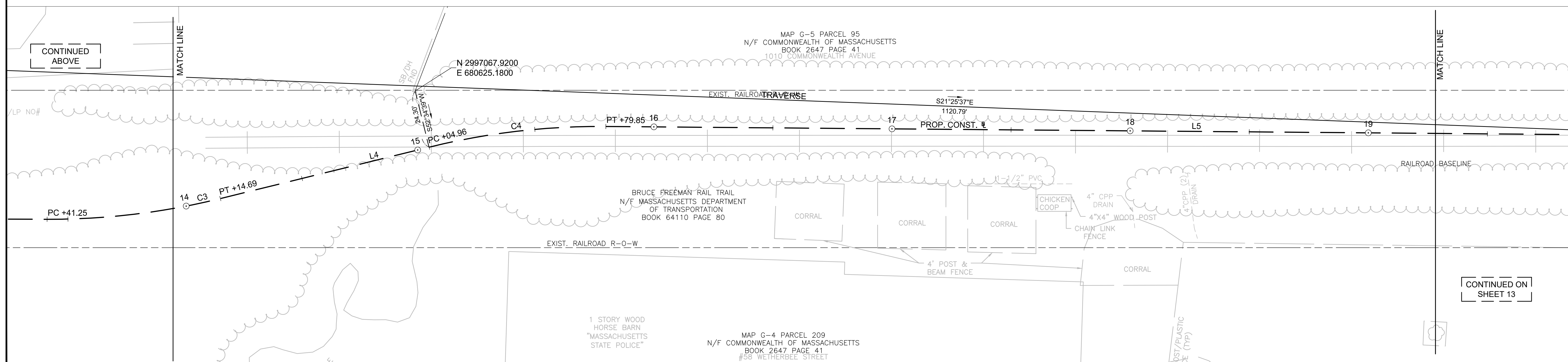


BFRT 2B CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	8+00.00	2997687.9239	680307.430		S23° 25' 09"E 102.76'	9+02.76	2997593.6328	680348.2712
C1	9+02.76	2997593.6328	680348.271	R=300.00' Δ=5°37'07" L=29.42' T=14.72'		9+32.17	2997566.1084	680358.6224
L2	9+32.17	2997566.1084	680358.622		S17° 48' 03"E 62.95'	9+95.13	2997506.1709	680377.8672
C2	9+95.13	2997506.1709	680377.867	R=300.00' Δ=5°35'44" L=29.30' T=14.66'		10+24.42	2997478.7571	680388.1705
L3	10+24.42	2997478.7571	680388.171		S23° 23' 47"E 316.82'	13+41.25	2997187.9841	680513.9767

BFRT 2B CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C3	13+41.25	2997187.9841	680513.977	R=300.00' Δ=14°01'34" L=73.44' T=36.90'		14+14.69	2997124.8046	680551.0577
L4	14+14.69	2997124.8046	680551.058		S37° 25' 21"E 90.28'	15+04.96	2997053.1103	680605.9167
C4	15+04.96	2997053.1103	680605.917	R=300.00' Δ=14°18'12" L=74.89' T=37.64'		15+79.85	2996988.5972	680643.5709
L5	15+79.85	2996988.5972	680643.571		S23° 07' 09"E 495.98'	20+75.83	2996532.4505	680838.3133

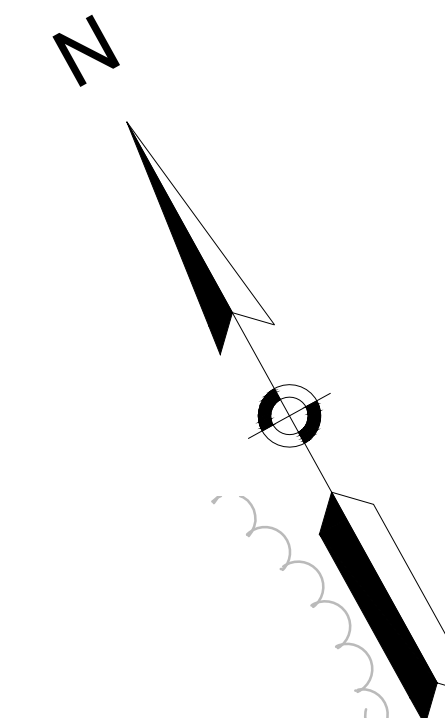
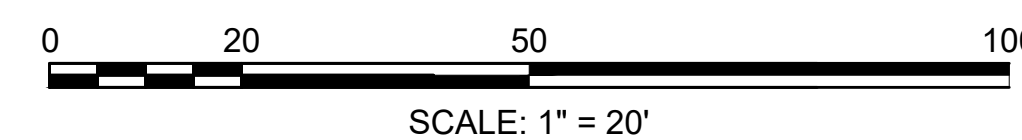


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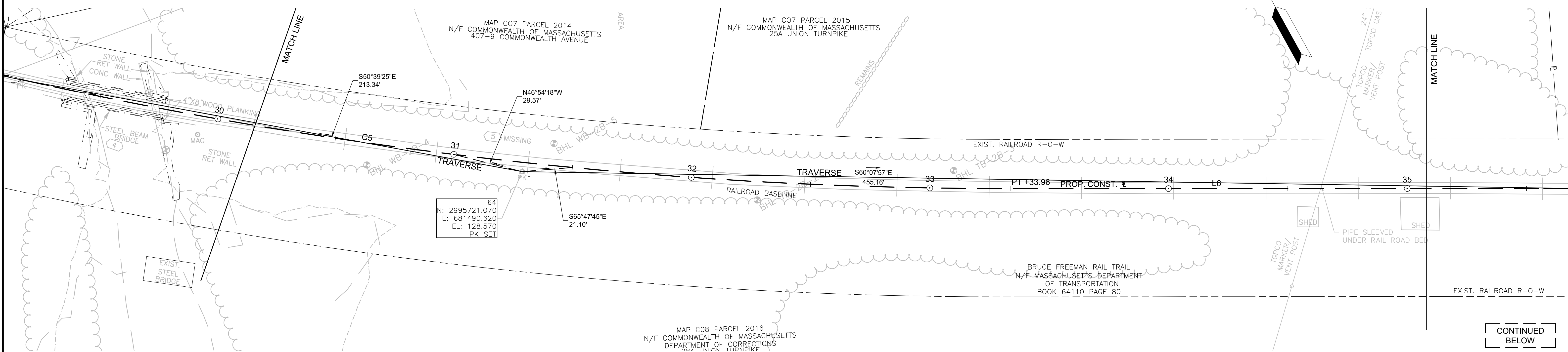
606223_HD_(BLT).DWG 4-Feb-2019

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	158
PROJECT FILE NO.		606223	

CONSTRUCTION BASELINE TIES



CONTINUED ON
SHEET 14

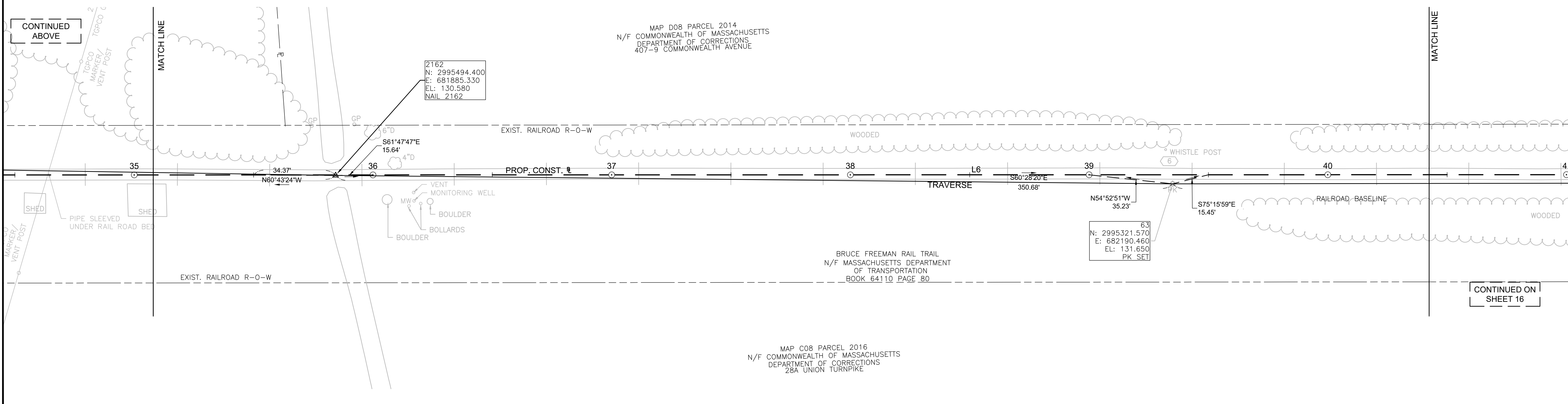


CONTINUED
BELOW

BFR2B CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C5	20+75.83	2996532.4505	680838.313	R=1900.00' Δ=37°56'23" L=1258.13' T=653.10'		33+33.96	2995615.7512	681666.2922
L6	33+33.96	2995615.7512	681666.292		S61° 03' 31"E 1596.78'	49+30.74	2994843.0483	683063.6623

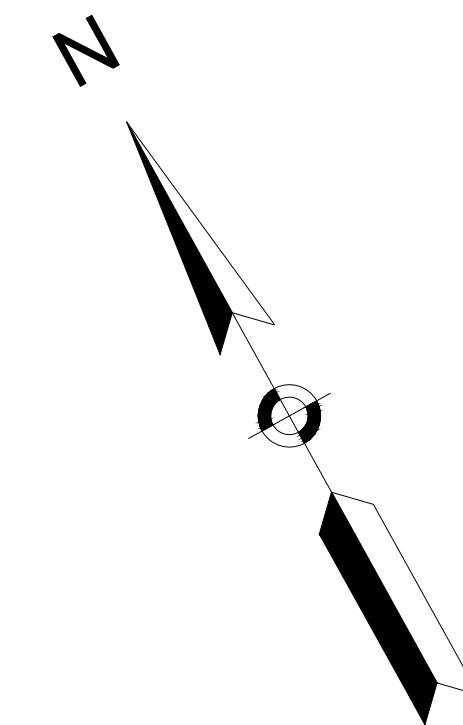
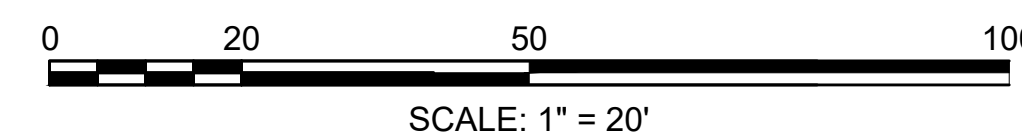
CONTINUED
ABOVE



CONTINUED ON
SHEET 16

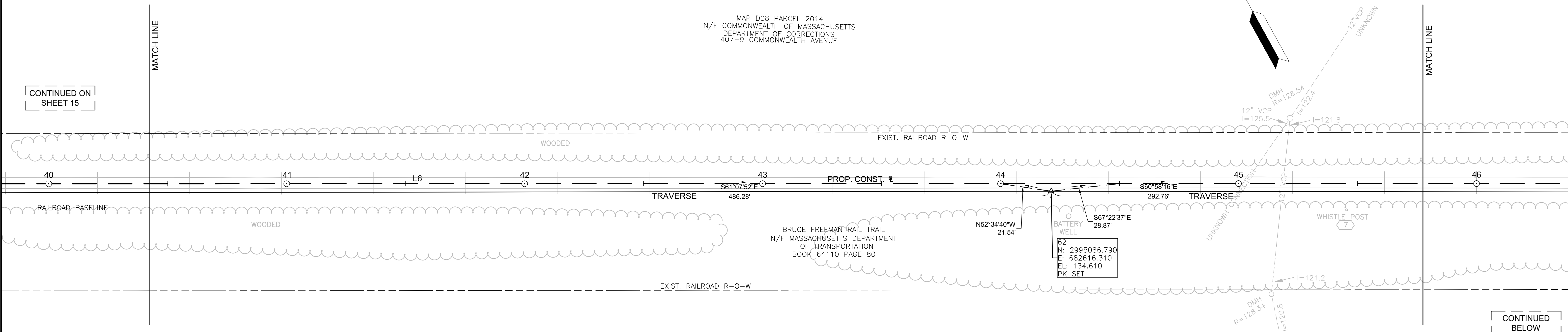
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	16	158
PROJECT FILE NO.		606223	

CONSTRUCTION BASELINE TIES



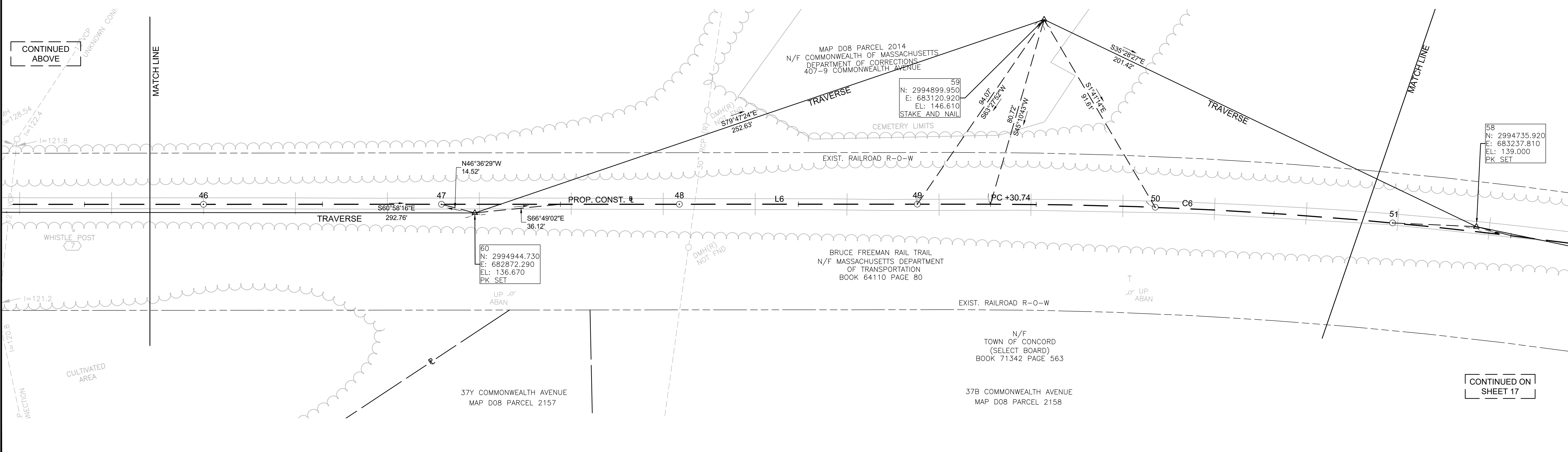
MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE

CONTINUED ON
SHEET 15



CONTINUED
BELOW

BFRT 2B CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L6	33+33.96	2995615.7512	681666.292		S61° 03' 31"E 1596.78'	49+30.74	2994843.0483	683063.6623
C6	49+30.74	2994843.0483	683063.662	R = 1814.00' Δ = 17°34'17" L = 556.31' T = 280.36'		54+87.05	2994503.9741	683501.9474



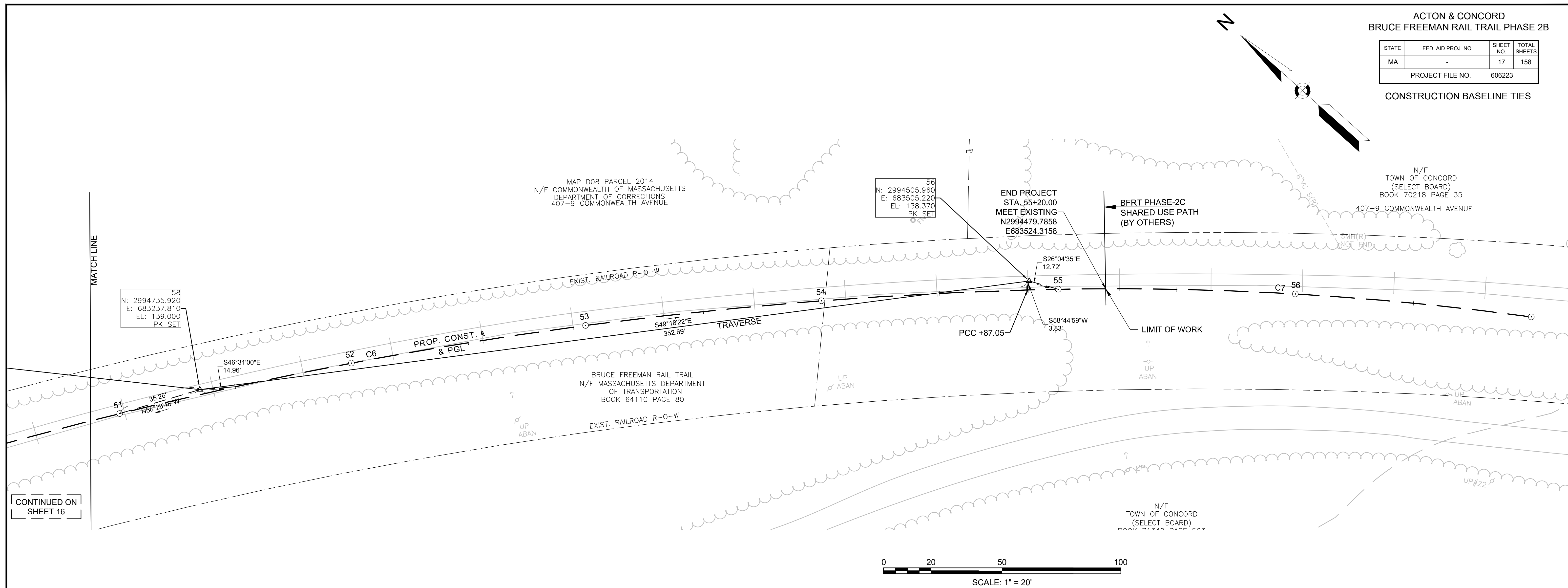
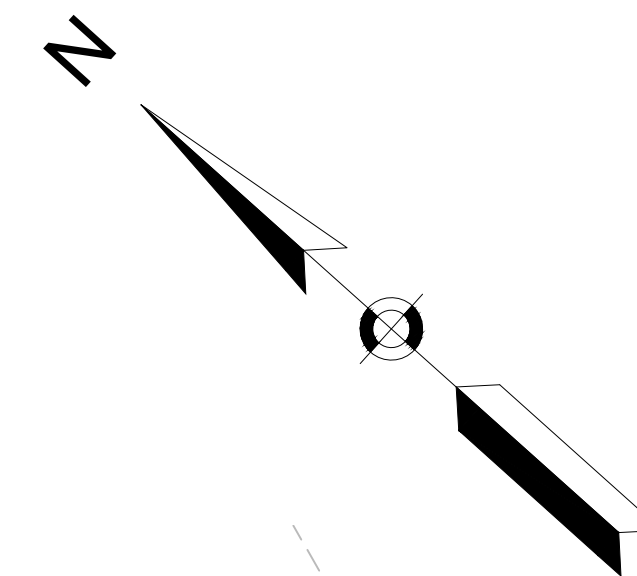
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ABOVE

CONTINUED ON
SHEET 17

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	17	158
PROJECT FILE NO.		606223	

CONSTRUCTION BASELINE TIES

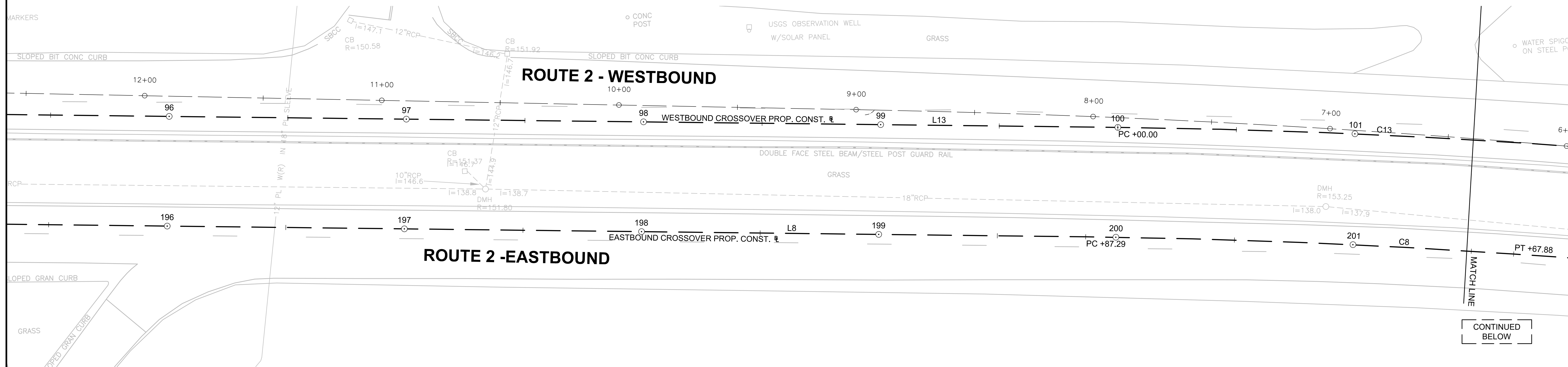
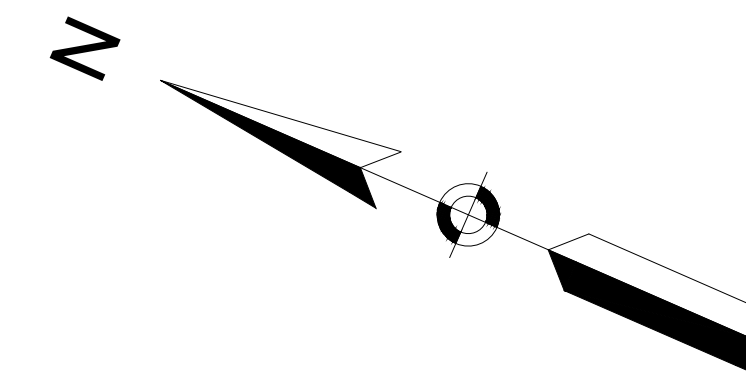


CONTINUED ON
SHEET 16

BFRT 2B CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C6	49+30.74	2994843.0483	683063.662	R=1814.00' Δ=17°34'17" L=556.31' T=280.36'		54+87.05	2994503.9741	683501.9474
C7	54+87.05	2994503.9741	683501.947	R=1300.00' Δ=9°23'07" L=212.95' T=106.71'		57+00.00	2994338.1901	683635.2164

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	18	158
PROJECT FILE NO.		606223	

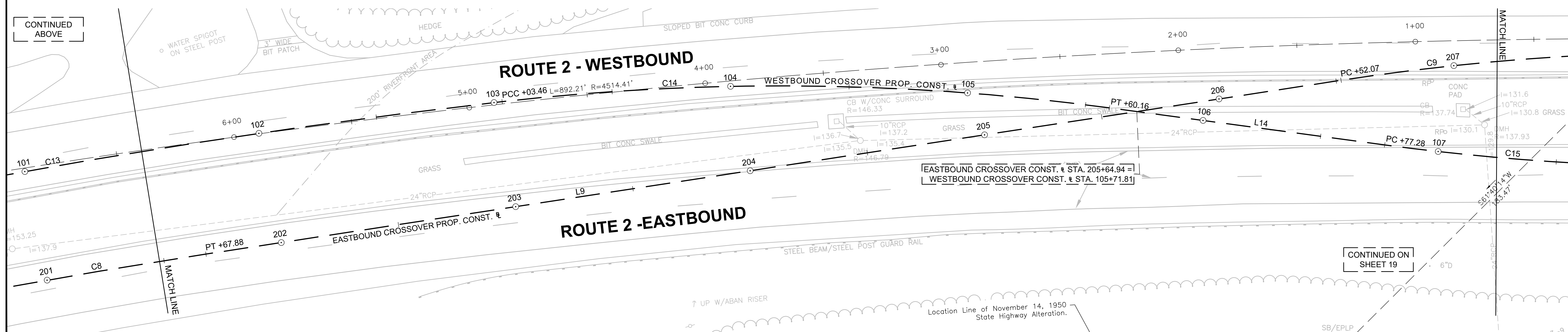
CONSTRUCTION BASELINE TIES



CONTINUED BELOW

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L8	192+00.00	2996319.7112	679292.046		S85° 26' 11"E 787.29'	199+87.29	2996257.0697	680076.8387
C8	199+87.29	2996257.0697	680076.839	R=3175.00' Δ=3°15'32" L=180.59' T=90.32'		201+67.88	2996237.5898	680256.3548
L9	201+67.88	2996237.5898	680256.355		S82° 10' 39"E 484.19'	206+52.07	2996171.6881	680736.0401
C9	206+52.07	2996171.6881	680736.040	R=1040.00' Δ=8°41'55" L=157.89' T=79.10'		208+09.97	2996138.4286	680890.2364

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L13	92+00.00	2996365.7144	679296.006		S85° 26' 38"E 800.00'	100+00.00	2996302.1676	680093.4777
C13	100+00.00	2996302.1676	680093.478	R=3172.45' Δ=5°28'50" L=303.46' T=151.85'		103+03.46	2996263.6425	680394.3663
C14	103+03.46	2996263.6425	680394.366	R=1040.00' Δ=14°08'32" L=256.70' T=129.01'		105+60.16	2996188.3193	680639.0895
L14	105+60.16	2996188.3193	680639.089		S65° 49' 16"E 117.12'	106+77.28	2996140.3499	680745.9309



CONTINUED ABOVE

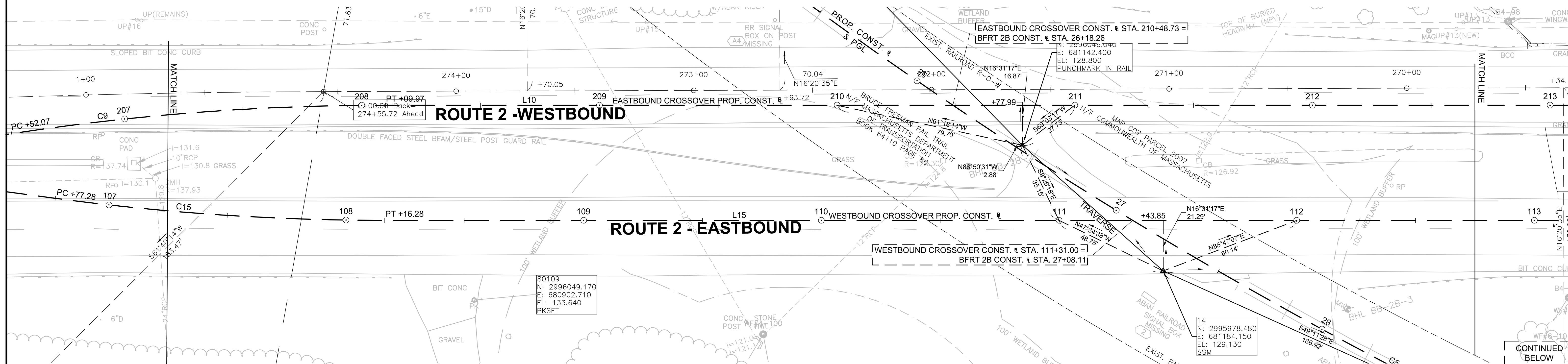
CONTINUED ON SHEET 19

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	158
PROJECT FILE NO.		606223	

CONSTRUCTION BASELINE TIES



CONTINUED ON
SHEET 18



EASTBOUND CROSSOVER CONSTRUCTION BASELINE DATA

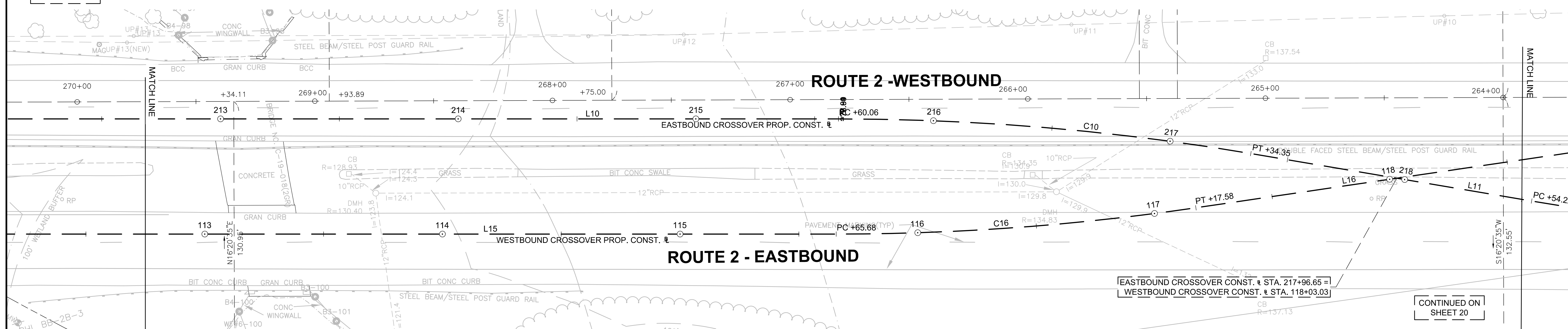
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C9	206+52.07	2996171.6881	680736.040	R=1040.00 Δ=8°41'55" L=157.89' T=79.10'		208+09.97	2996138.4286	680890.2364
L10	208+09.97	2996138.4286	680890.236		S73°28'43"E 750.10'	215+60.06	2995925.1221	681609.3639
C10	215+60.06	2995925.1221	681609.364	R=1040.00 Δ=9°36'06" L=174.28' T=87.35'		217+34.35	2995861.8242	681771.5289

WESTBOUND CROSSOVER CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C15	106+77.28	2996140.3499	680745.931	R=1040.00 Δ=7°39'28" L=139.00' T=69.60'		108+16.28	2996092.0483	680876.1565
L15	108+16.28	2996092.0483	680876.157		S73°28'43"E 749.41'	115+65.68	2995878.9380	681594.6225
C16	115+65.68	2995878.9380	681594.622	R=1040.00 Δ=8°22'05" L=151.89' T=76.08'		117+17.58	2995846.5123	681742.8770

NOTE:
1. FOR SHARED USE PATH SEE SHEETS 12-17.

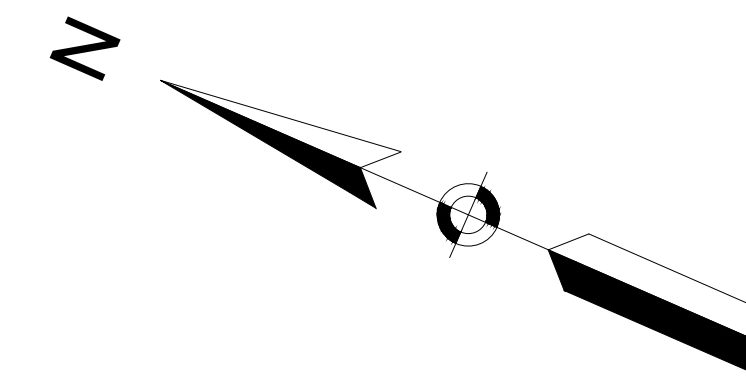
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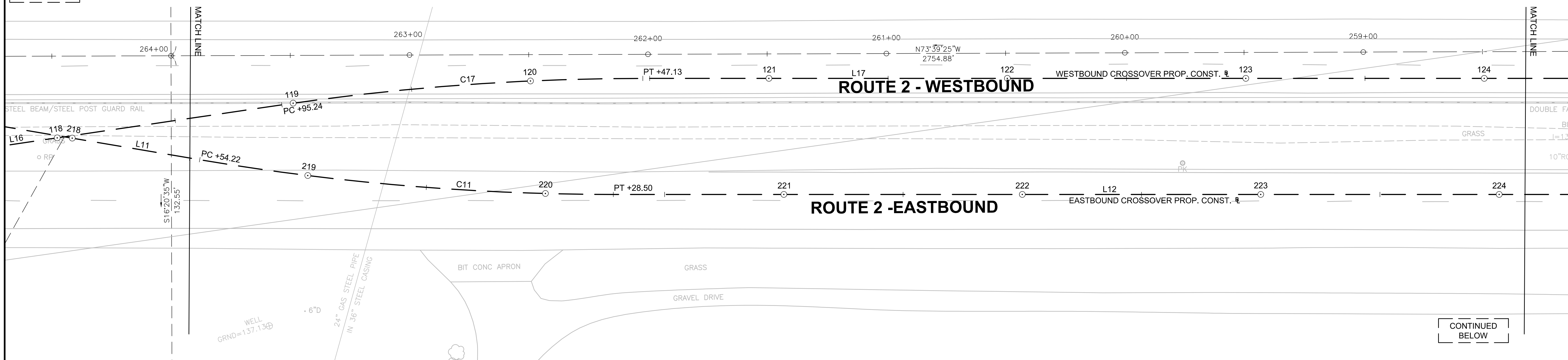
CONTINUED ON
SHEET 20

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	20	158
PROJECT FILE NO.		606223	

CONSTRUCTION BASELINE TIES



CONTINUED ON
SHEET 19



CONTINUED
BELOW

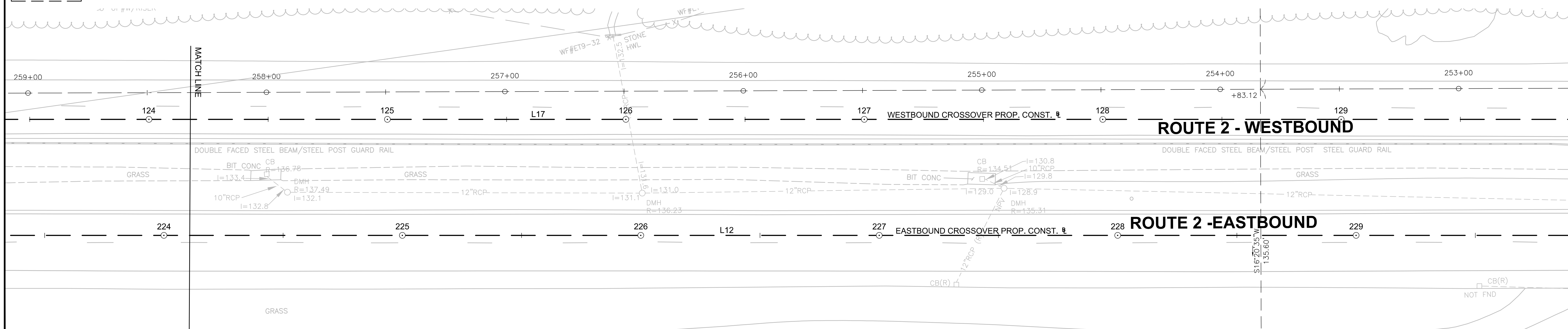
EASTBOUND CROSSOVER CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L11	217+34.35	2995861.8242	681771.529		S63° 52' 37"E 119.87'	218+54.22	2995809.0449	681879.1553
C11	218+54.22	2995809.0449	681879.155	R = 1040.00' Δ = 9°36'06" L = 174.28' T = 87.35'		220+28.50	2995745.7471	682041.3204
L12	220+28.50	2995745.7471	682041.320		S73° 28' 43"E 1091.55'	231+20.05	2995435.3411	683087.8023

WESTBOUND CROSSOVER CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L16	117+17.58	2995846.5123	681742.877		S81° 50' 48"E 177.66'	118+95.24	2995821.3167	681918.7391
C17	118+95.24	2995821.3167	681918.739	R = 1040.00' Δ = 8°22'05" L = 151.89' T = 76.08'		120+47.13	2995788.8910	682066.9936
L17	120+47.13	2995788.8910	682066.994		S73° 28' 43"E 1284.19'	133+31.32	2995423.7043	683298.1599

CONTINUED
ABOVE



CONSTRUCTION PLANS & PROFILES - SHARED USE PATH

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

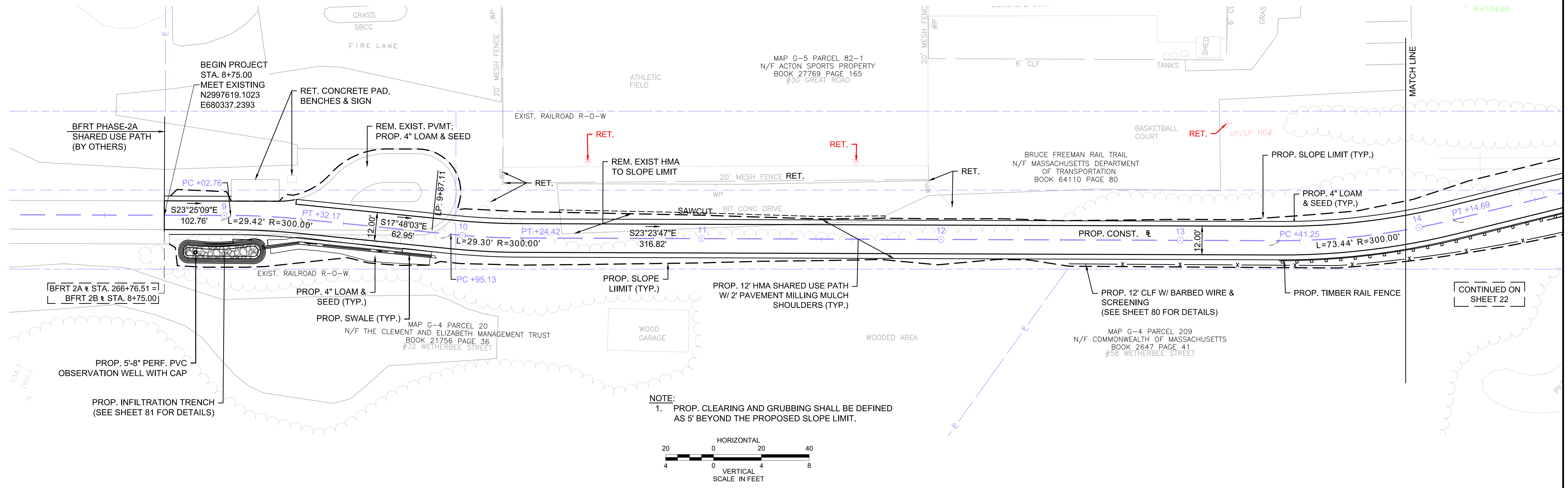
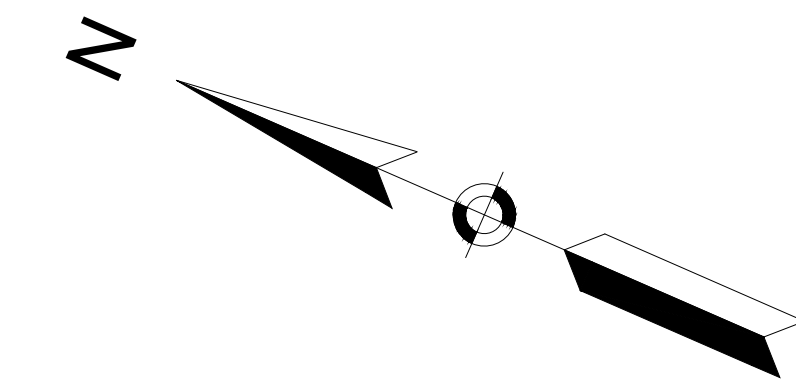
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DRAINAGE DETAILS

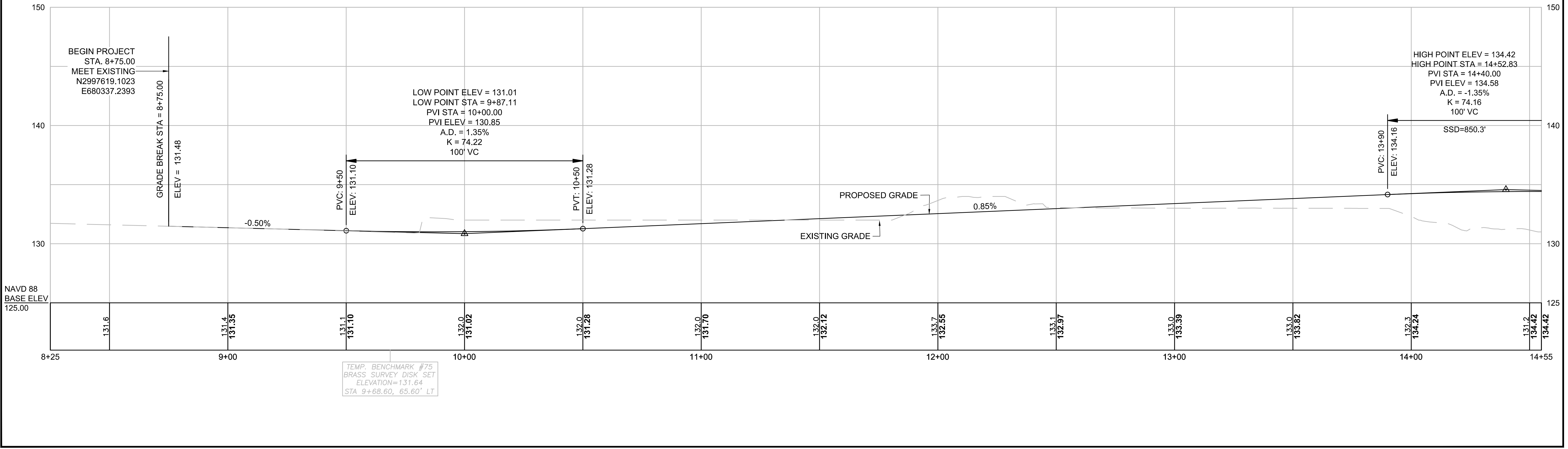
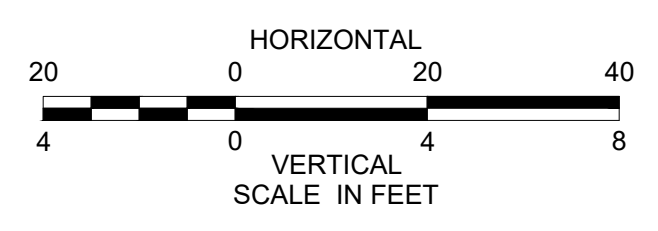
SEE BELOW

TIMBER RAIL FENCE DETAILS

STA. 13+41 RT TO STA. 20+20 RT - ITEM 655.01



NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	22	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS & PROFILES - SHARED USE PATH

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

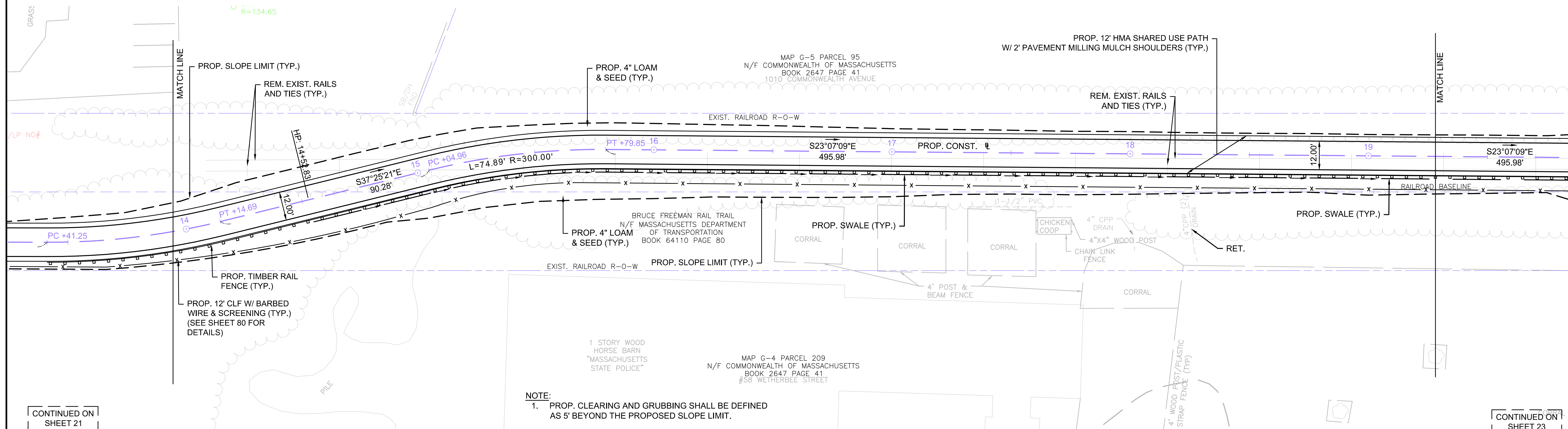
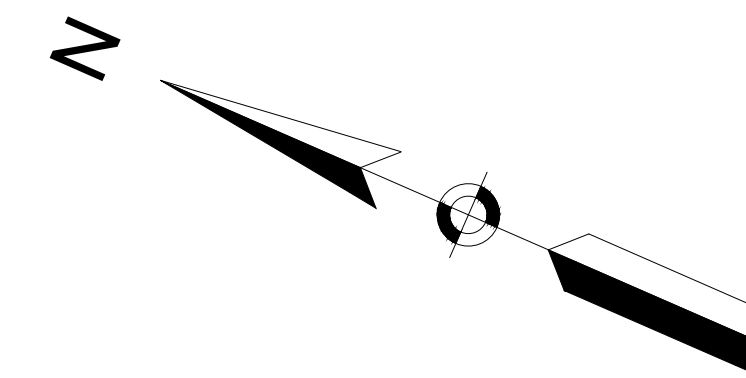
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DRAINAGE DETAILS

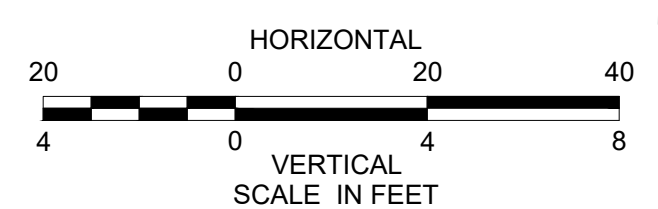
SEE BELOW

TIMBER RAIL FENCE DETAILS

STA. 13+41 RT TO STA. 20+20 RT - ITEM 655.01

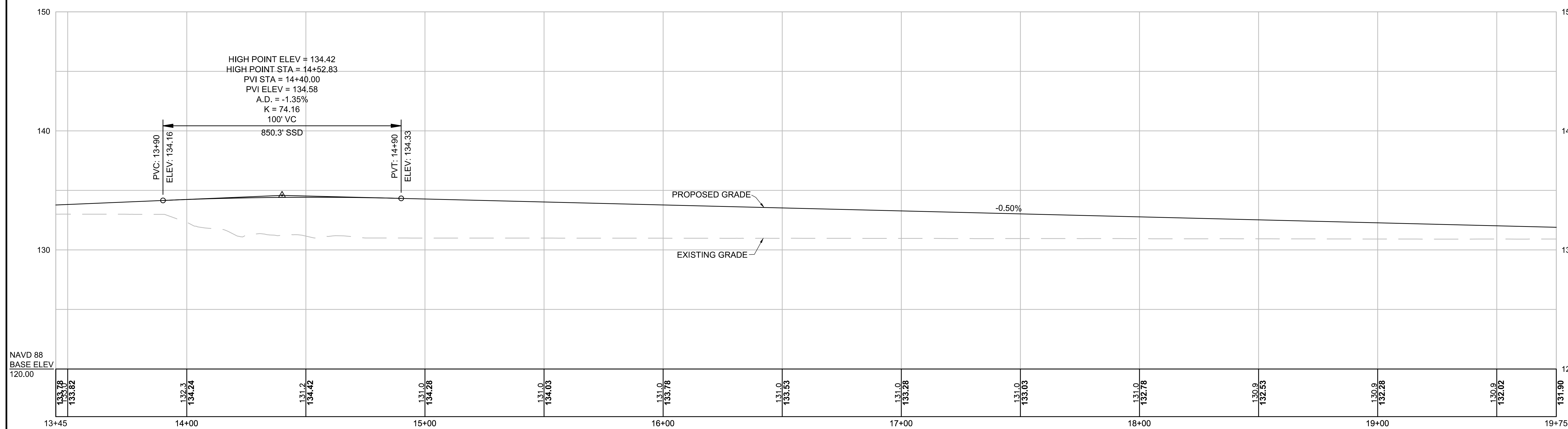


NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.



CONTINUED ON SHEET 21

CONTINUED ON SHEET 23



HIGHWAY GUARD DETAILS
SEE CONSTRUCTION PLANS - ROUTE 2

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

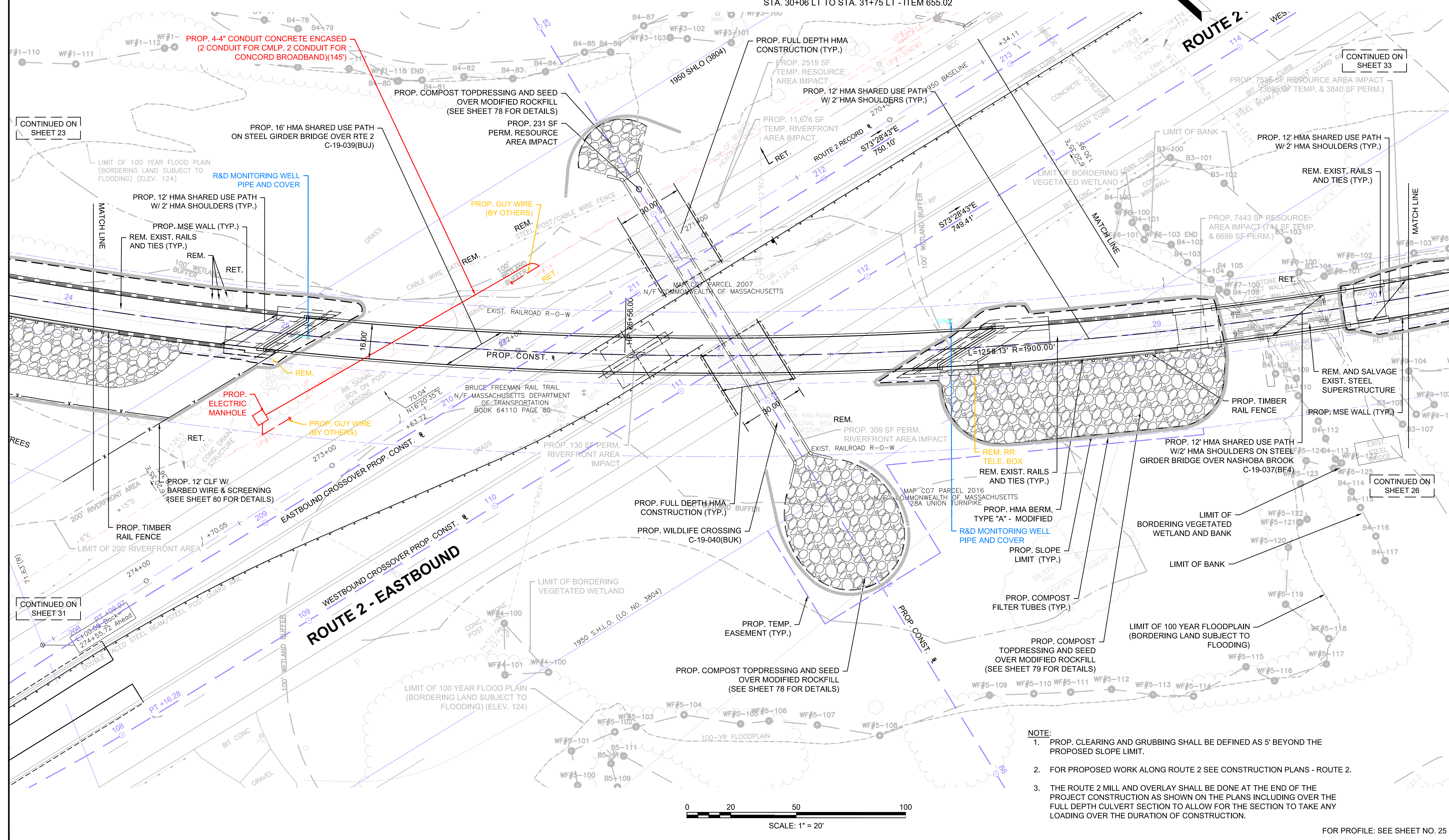
DRAINAGE DETAILS
SEE BELOW

TIMBER RAIL FENCE DETAILS
STA. 21+55 RT TO STA. 24+25 RT - ITEM 655.04
STA. 21+75 LT TO STA. 24+96 LT - ITEM 655.02
STA. 24+25 RT TO STA. 24+73 RT - ITEM 655.02
STA. 28+17 RT TO STA. 28+32 RT - ITEM 655.02
STA. 28+51 LT TO STA. 29+08 LT - ITEM 655.02
STA. 28+32 RT TO STA. 28+98 RT - ITEM 655.04
STA. 28+98 RT TO STA. 29+08 RT - ITEM 655.02
STA. 30+05 RT TO STA. 30+95 RT - ITEM 655.02
STA. 30+06 LT TO STA. 31+75 LT - ITEM 655.02

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	24	158

CONSTRUCTION PLANS &
PROFILES - SHARED USE PATH



- NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.
 2. FOR PROPOSED WORK ALONG ROUTE 2 SEE CONSTRUCTION PLANS - ROUTE 2.
 3. THE ROUTE 2 MILL AND OVERLAY SHALL BE DONE AT THE END OF THE PROJECT CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING OVER THE FULL DEPTH CULVERT SECTION TO ALLOW FOR THE SECTION TO TAKE ANY LOADING OVER THE DURATION OF CONSTRUCTION.

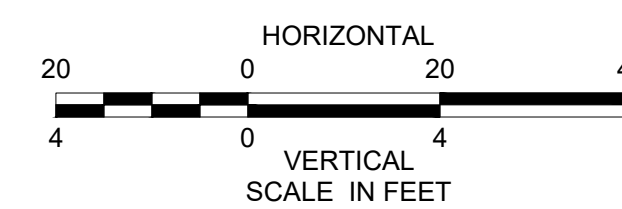
FOR PROFILE: SEE SHEET NO. 25

606223_HD_LCO.DWG 4-Feb-2019

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	25	158
PROJECT FILE NO.		606223	

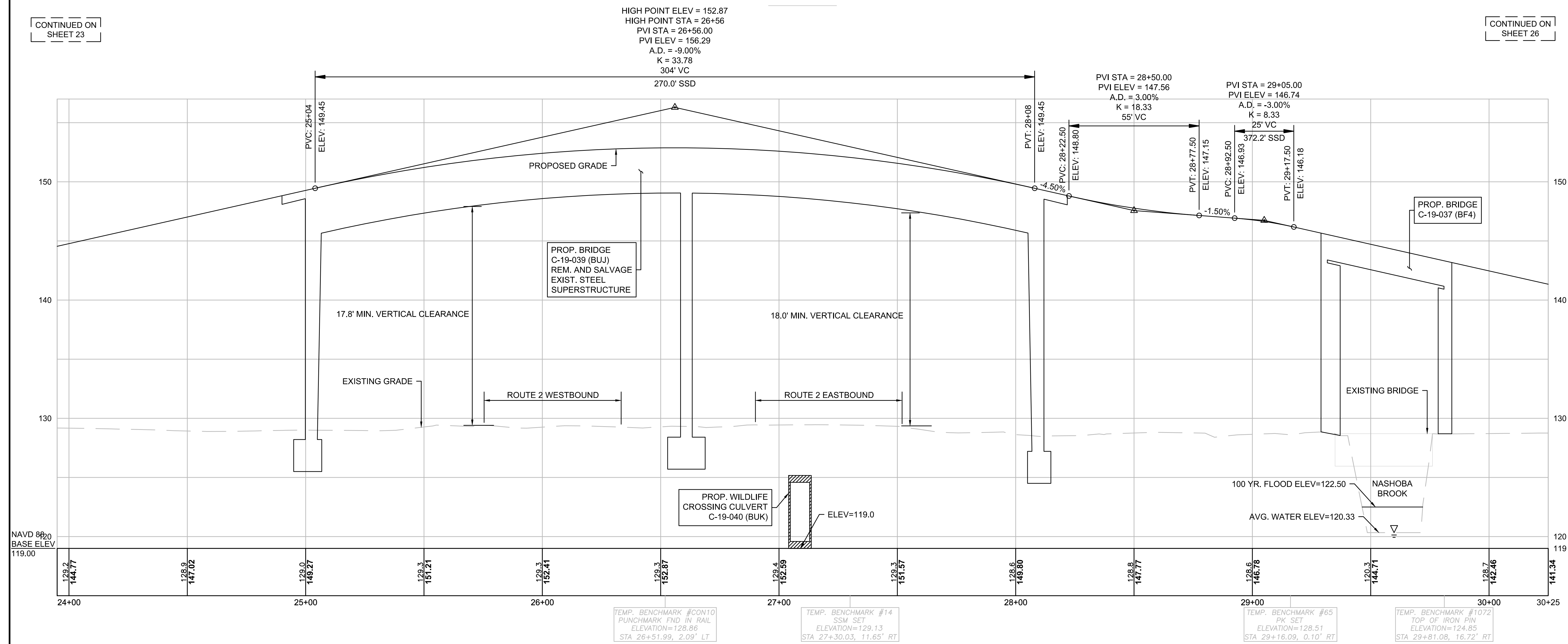
CONSTRUCTION PLANS &
PROFILES - SHARED USE PATH

606223_HD_CO.DWG 4-Feb-2019



CONTINUED ON
SHEET 23

CONTINUED ON
SHEET 26

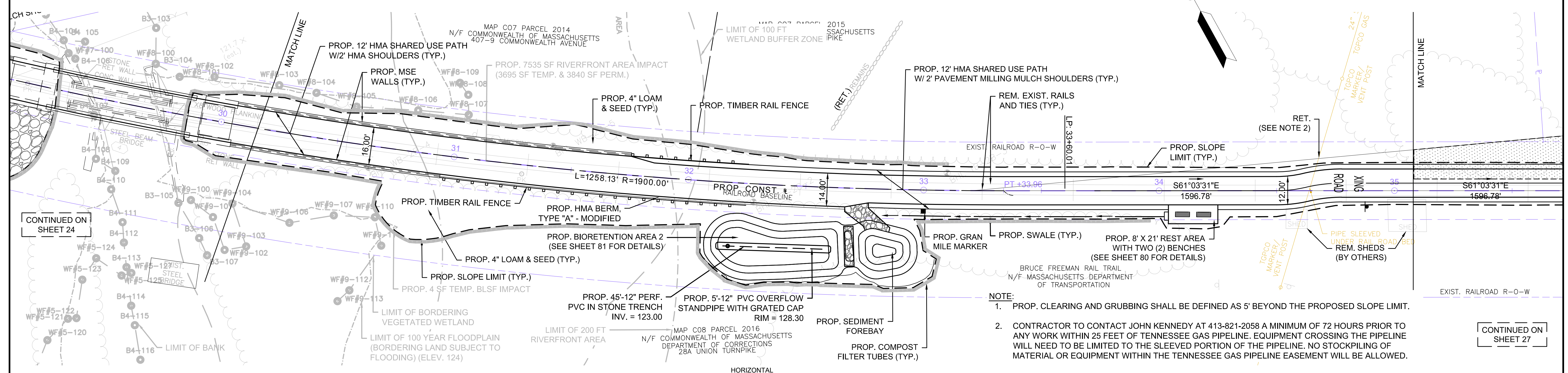
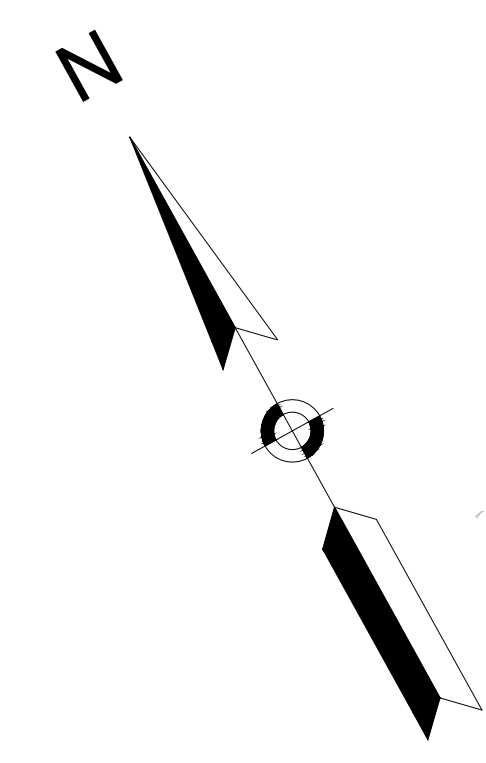


STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	26	158
PROJECT FILE NO.		606223	

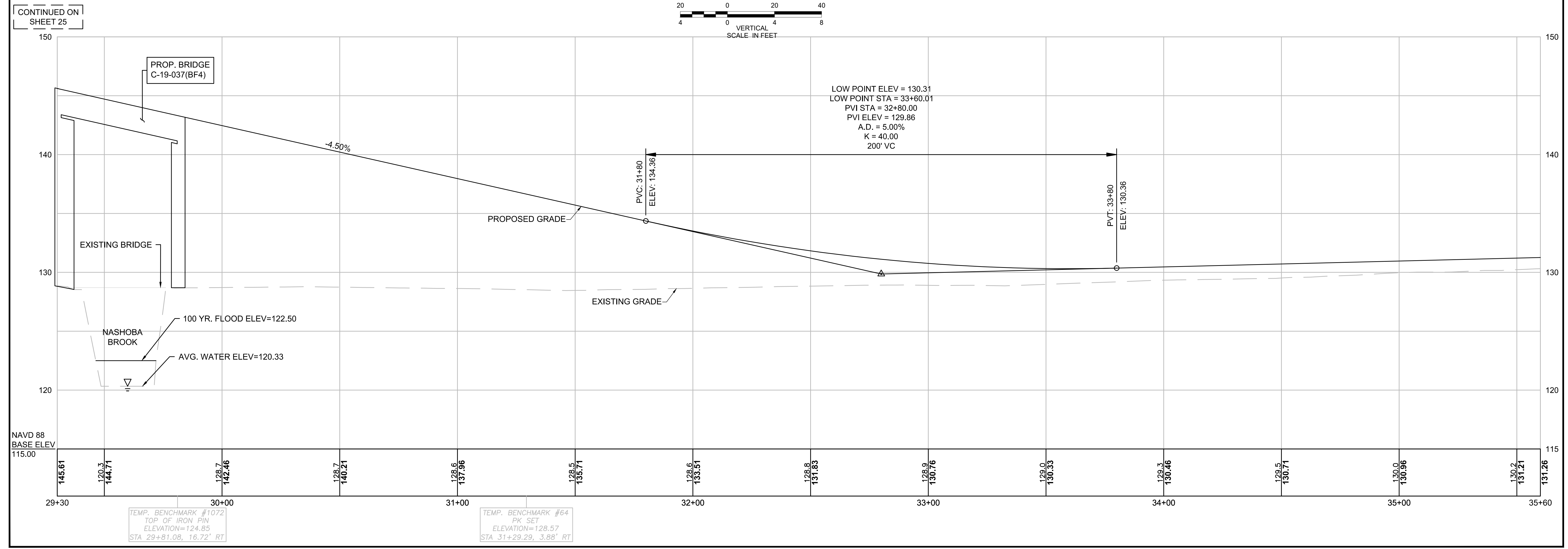
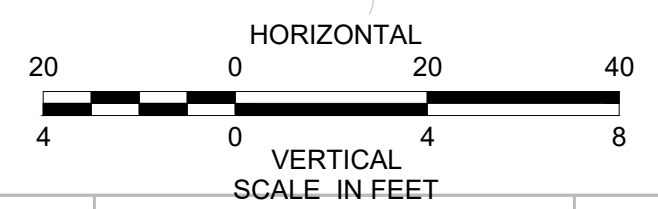
CONSTRUCTION PLANS & PROFILES - SHARED USE PATH

HIGHWAY GUARD DETAILS NONE
 TRAFFIC SIGNAL CONDUIT NONE
 WATER SUPPLY ALTERATIONS NONE
 DRAINAGE DETAILS SEE BELOW
 TIMBER RAIL FENCE DETAILS

STA. 30+05 RT TO STA. 30+95 RT - ITEM 655.02
 STA. 30+06 LT TO STA. 31+75 LT - ITEM 655.02
 STA. 30+95 RT TO STA. 32+25 RT - ITEM 655.04
 STA. 31+75 LT TO STA. 32+25 LT - ITEM 655.04



- NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.
 2. CONTRACTOR TO CONTACT JOHN KENNEDY AT 413-821-2058 A MINIMUM OF 72 HOURS PRIOR TO ANY WORK WITHIN 25 FEET OF TENNESSEE GAS PIPELINE. EQUIPMENT CROSSING THE PIPELINE WILL NEED TO BE LIMITED TO THE SLEEVED PORTION OF THE PIPELINE. NO STOCKPILING OF MATERIAL OR EQUIPMENT WITHIN THE TENNESSEE GAS PIPELINE EASEMENT WILL BE ALLOWED.



TEMP. BENCHMARK #1072
TOP OF IRON PIN
ELEVATION=124.85
STA 29+81.08, 16.72' RT

TEMP. BENCHMARK #64
PK SET
ELEVATION=128.57
STA 31+29.29, 3.88' RT

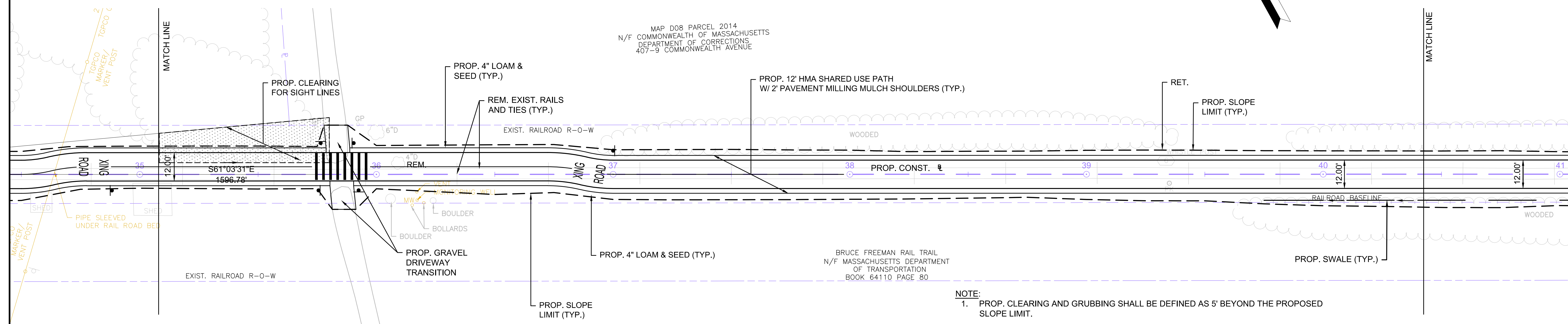
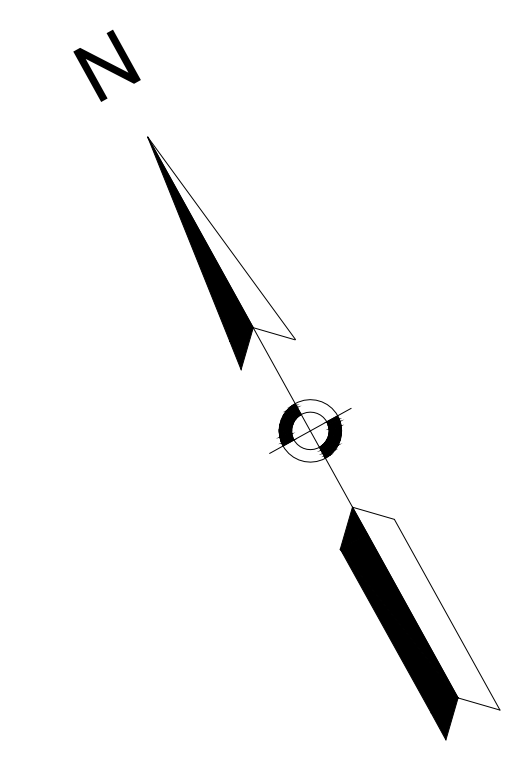
CONTINUED ON SHEET 24

CONTINUED ON SHEET 27

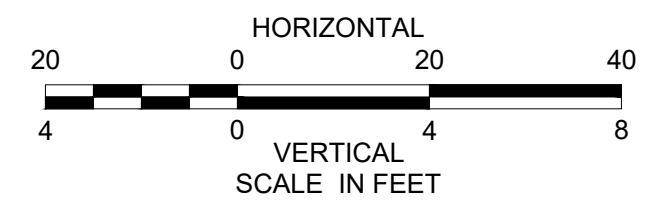
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	27	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS &
PROFILES - SHARED USE PATH

HIGHWAY GUARD DETAILS NONE
 TRAFFIC SIGNAL CONDUIT NONE
 WATER SUPPLY ALTERATIONS NONE
 DRAINAGE DETAILS SEE BELOW
 TIMBER RAIL FENCE DETAILS NONE

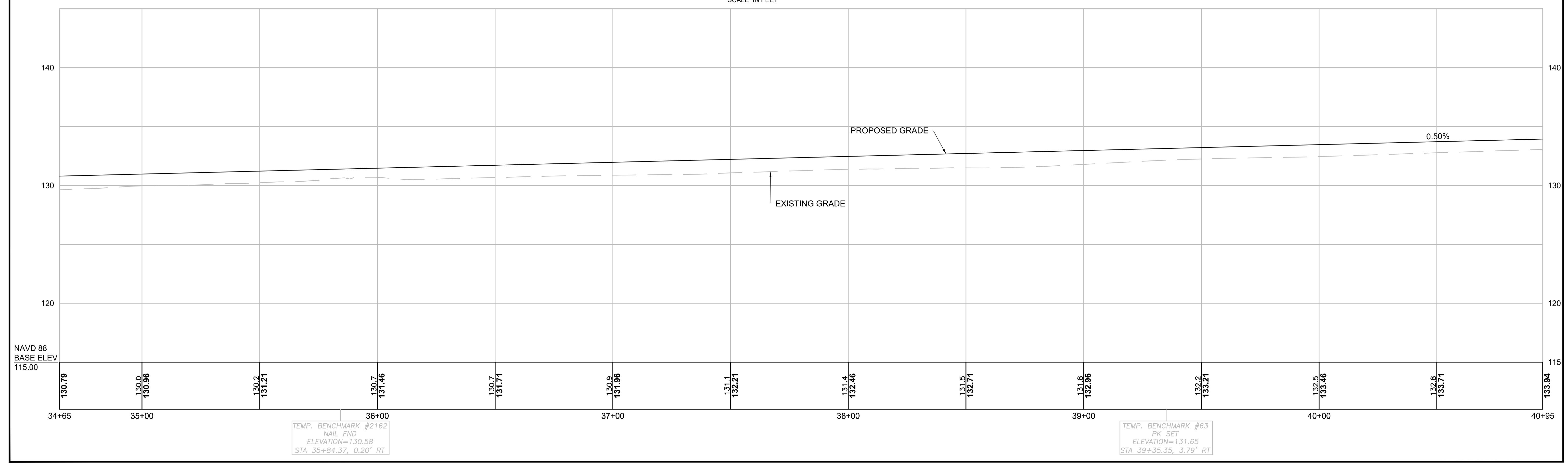


- NOTE:**
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.
 2. CONTRACTOR TO CONTACT JOHN KENNEDY AT 413-821-2058 A MINIMUM OF 72 HOURS PRIOR TO ANY WORK WITHIN 25 FEET OF TENNESSEE GAS PIPELINE. EQUIPMENT CROSSING THE PIPELINE WILL NEED TO BE LIMITED TO THE SLEEVED PORTION OF THE PIPELINE. NO STOCKPILING OF MATERIAL OR EQUIPMENT WITHIN THE TENNESSEE GAS PIPELINE EASEMENT WILL BE ALLOWED.



CONTINUED ON
SHEET 26

CONTINUED ON
SHEET 28



HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE BELOW

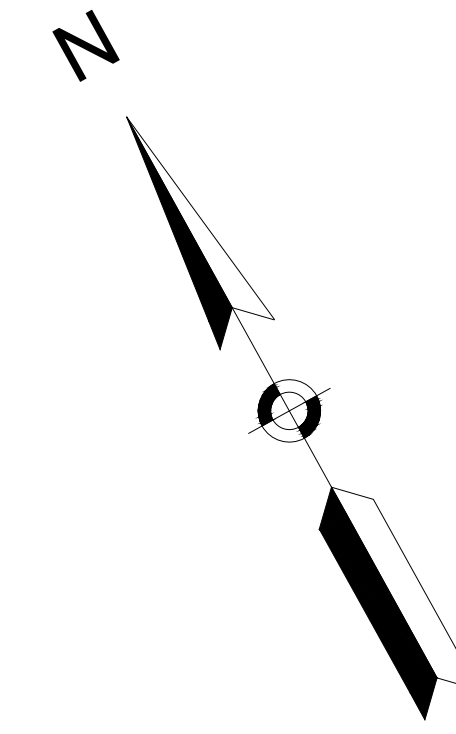
TIMBER RAIL FENCE DETAILS

STA. 43+75 LT TO STA. 47+75 LT - ITEM 655.01

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

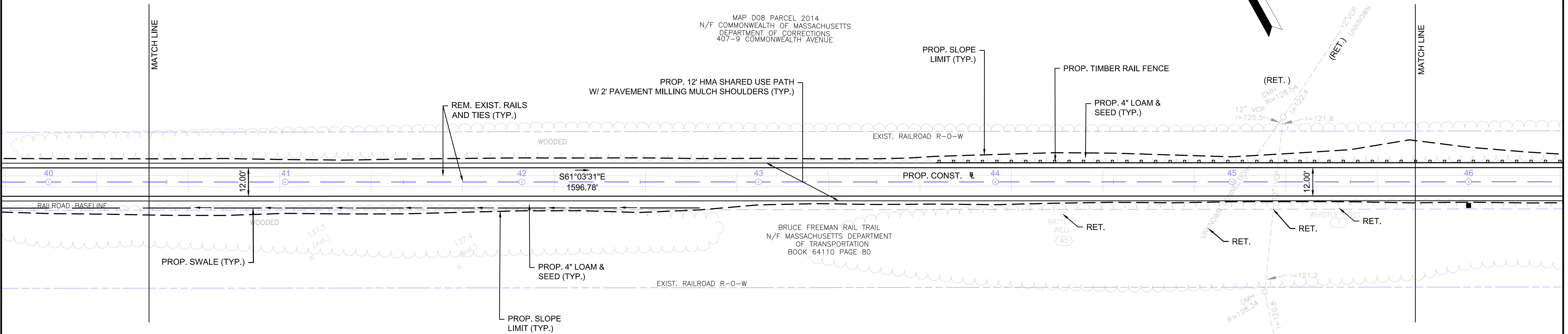
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	28	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS &
PROFILES - SHARED USE PATH



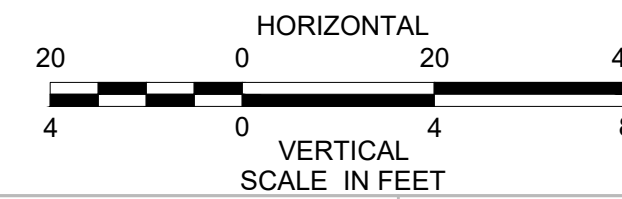
MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE

MAP C08 PARCEL 2016
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
28A UNION TURNPIKE

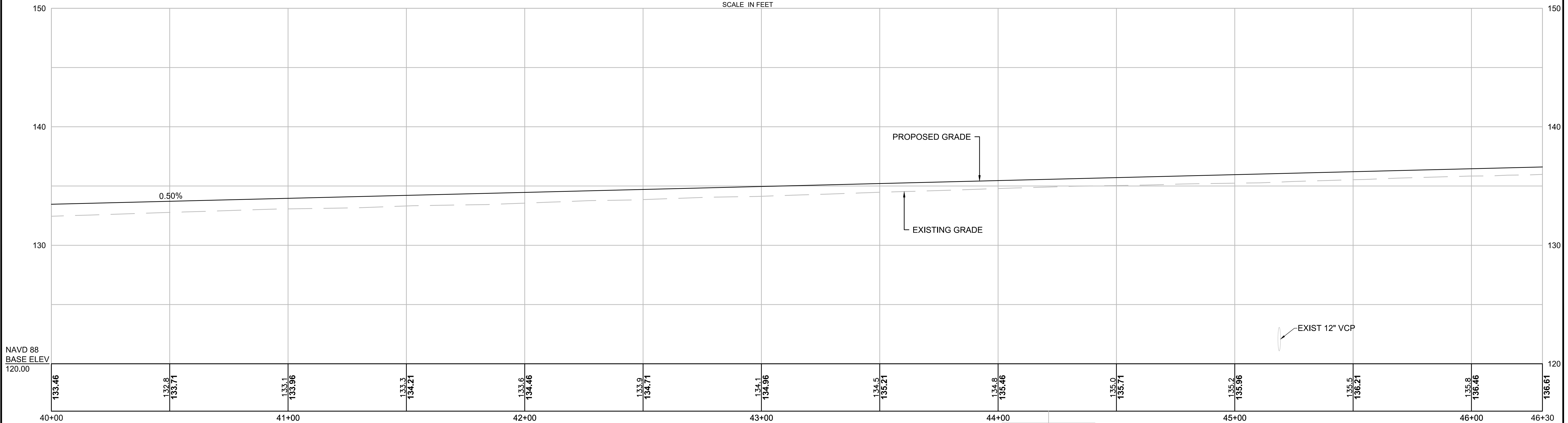


CONTINUED ON
SHEET 27

NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED
AS 5' BEYOND THE PROPOSED SLOPE LIMIT.



CONTINUED ON
SHEET 29



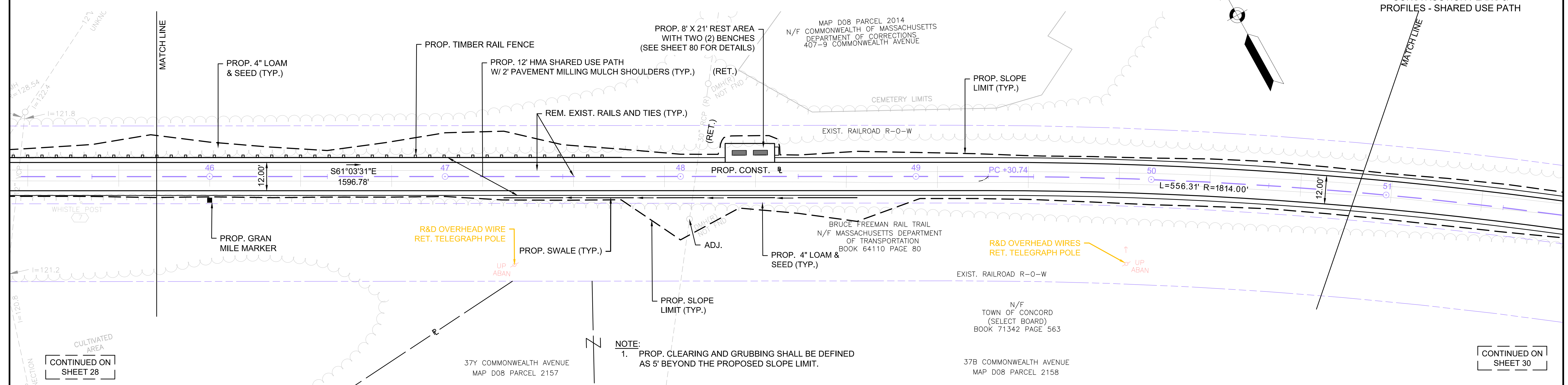
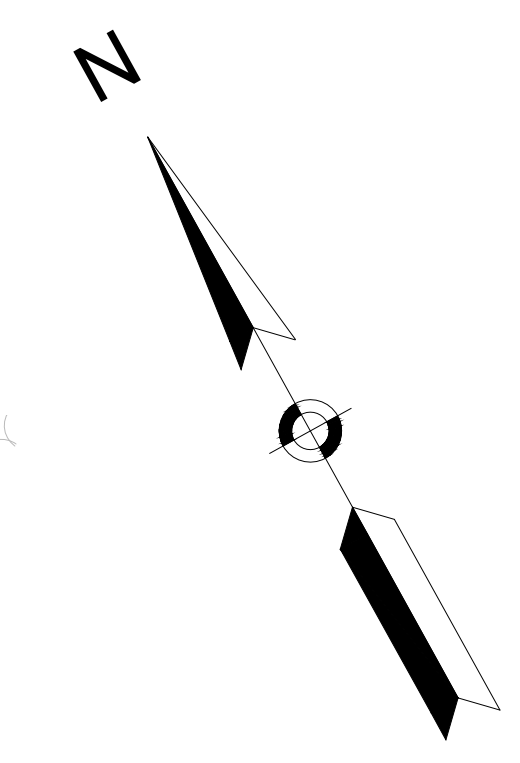
NAVD 88
BASE ELEV
120.00

TEMP. BENCHMARK #62
PK SET
ELEVATION=134.61
STA 44+21.31, 3.18' RT

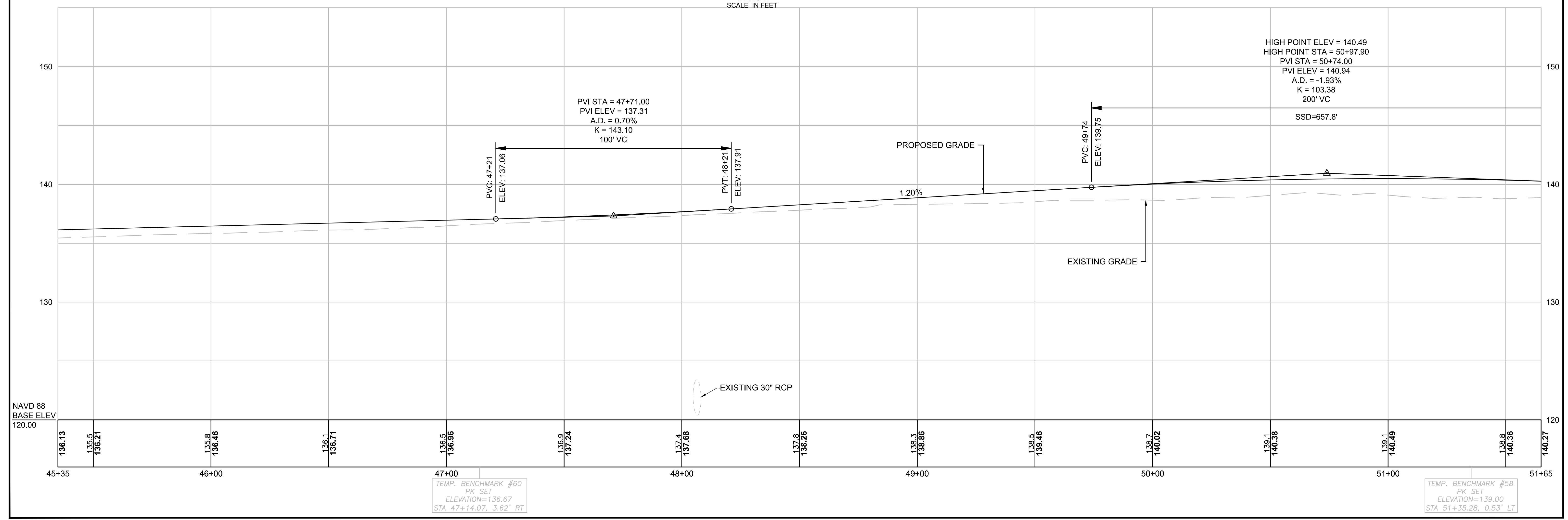
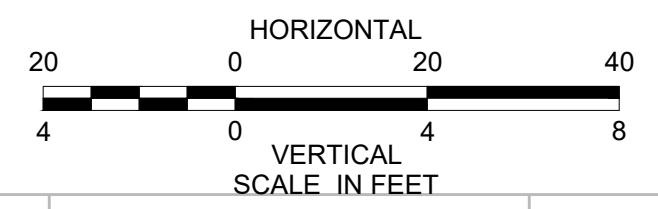
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	29	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS & PROFILES - SHARED USE PATH

HIGHWAY GUARD DETAILS NONE
 TRAFFIC SIGNAL CONDUIT NONE
 WATER SUPPLY ALTERATIONS NONE
 DRAINAGE DETAILS SEE BELOW
 TIMBER RAIL FENCE DETAILS STA. 43+75 LT TO STA. 47+75 LT - ITEM 655.01



NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.



TEMP. BENCHMARK #60
PK SET
ELEVATION=136.67
STA 47+14.07, 3.62' RT

TEMP. BENCHMARK #58
PK SET
ELEVATION=139.00
STA 51+35.28, 0.53' LT

CONTINUED ON SHEET 28

CONTINUED ON SHEET 30

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

NONE

TIMBER RAIL FENCE DETAILS

NONE

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	30	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS &
PROFILES - SHARED USE PATH

N/F
TOWN OF CONCORD
(SELECT BOARD)
BOOK 70218 PAGE 35
407-9 COMMONWEALTH AVENUE

END PROJECT
STA. 55+20.00
MEET EXISTING
N2994479.7858
E683524.3158

BFRT PHASE-2C
SHARED USE PATH
BY OTHERS

LIMIT OF WORK
10.00'

BFRT 2B @ STA. 55+20.00 =
BFRT-2C @ STA. 163+76.79

L=212.95' R=1300.00'

MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE

PROP. 12' HMA SHARED USE PATH
W/ 2' PAVEMENT MILLING MULCH SHOULDERS (TYP.)

REM. EXIST. RAILS
AND TIES (TYP.)

EXIST. RAILROAD R-O-W

PROP. CONST. @

PROP. SLOPE
LIMIT (TYP.)

PROP. 4" LOAM
& SEED (TYP.)

BRUCE FREEMAN RAIL TRAIL
N/F MASSACHUSETTS DEPARTMENT
OF TRANSPORTATION
BOOK 64110 PAGE 80

EXIST. RAILROAD R-O-W

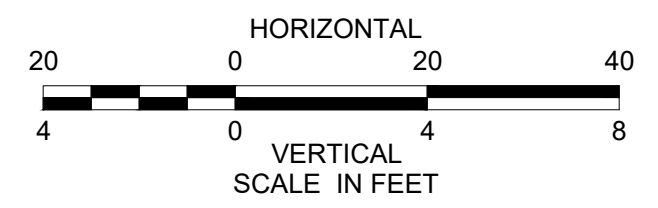
R&D OVERHEAD WIRES
RET. TELEGRAPH POLE

R&D OVERHEAD WIRES
RET. TELEGRAPH POLE

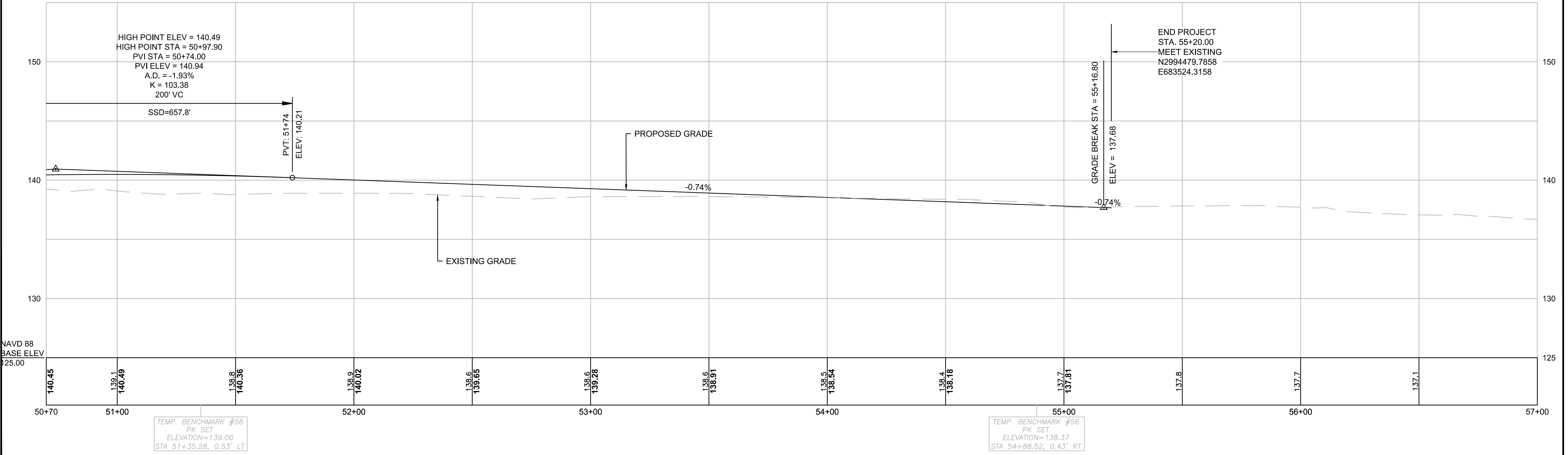
R&D OVERHEAD WIRES
RET. TELEGRAPH POLE

N/F
TOWN OF CONCORD
(SELECT BOARD)
BOOK 71342 PAGE 563
37B COMMONWEALTH AVENUE
MAP D08 PARCEL 2158

NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED
AS 5' BEYOND THE PROPOSED SLOPE LIMIT.



CONTINUED ON
SHEET 29



ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	31	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS - ROUTE 2

606223_HD_CO.DWG 4-Feb-2019

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

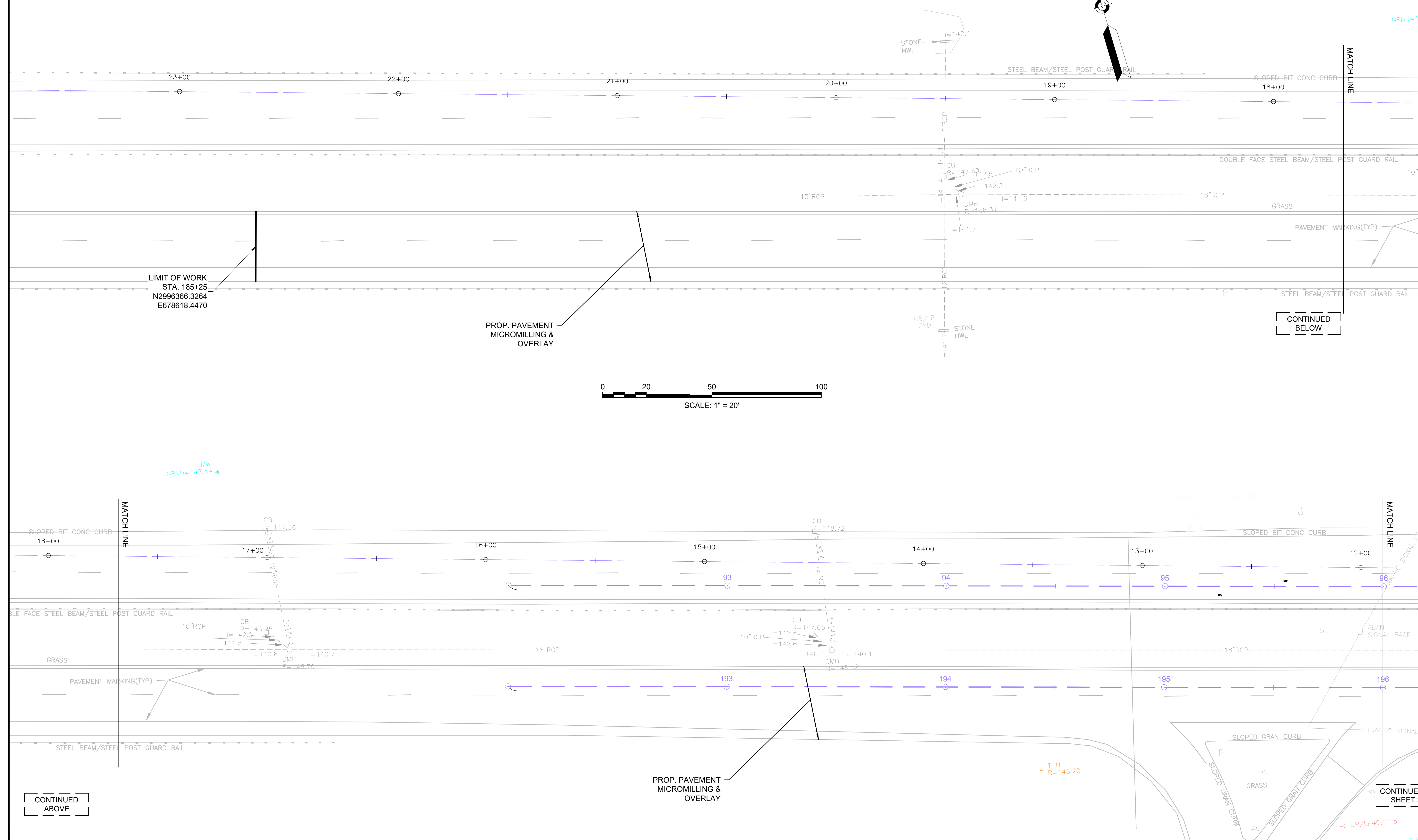
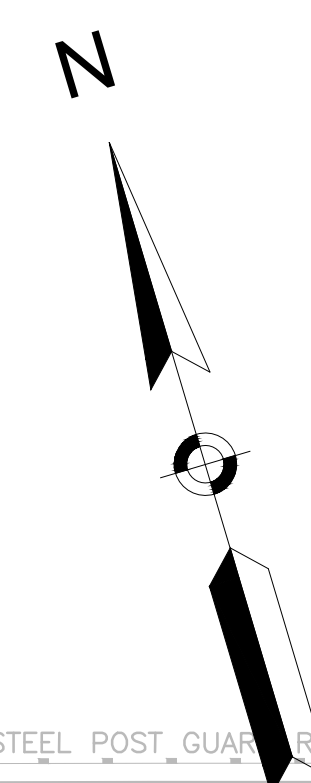
NONE

WATER SUPPLY ALTERATIONS

NONE

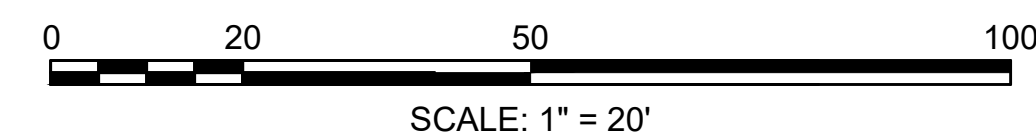
DRAINAGE DETAILS

NONE



LIMIT OF WORK
STA. 185+25
N2996366.3264
E678618.4470

PROP. PAVEMENT
MICROMILLING &
OVERLAY



CONTINUED
BELOW

CONTINUED
ABOVE

PROP. PAVEMENT
MICROMILLING &
OVERLAY

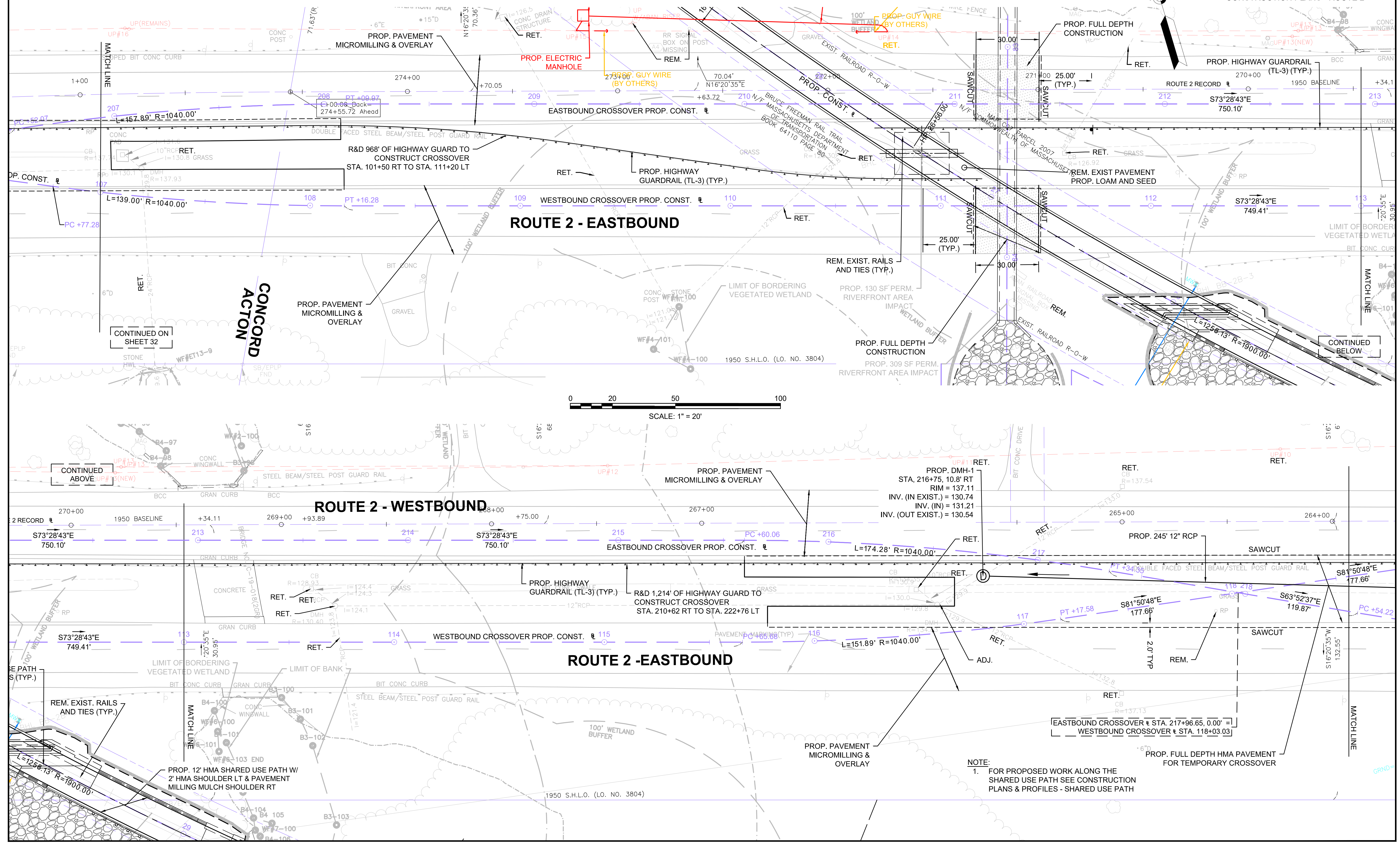
CONTINUED ON
SHEET 32

-o-UP/LP49/115
-o-12\"/>

HIGHWAY GUARD DETAILS
TRAFFIC SIGNAL CONDUIT
WATER SUPPLY ALTERATIONS
DRAINAGE DETAILS

STA. 101+50 RT - ITEM 628.25
STA. 101+58 RT TO STA. 101+92 RT - ITEM 628.21
STA. 101+92 RT TO STA. 111+20 RT - ITEM 621.13
STA. 210+62 RT TO STA. 222+35 RT - ITEM 621.13

NONE
NONE
NONE



NOTE:
1. FOR PROPOSED WORK ALONG THE SHARED USE PATH SEE CONSTRUCTION PLANS & PROFILES - SHARED USE PATH

CONTINUED ON SHEET 32

CONTINUED BELOW

CONTINUED ABOVE

EASTBOUND CROSSOVER @ STA. 217+96.65, 0.00' =
WESTBOUND CROSSOVER @ STA. 118+03.03

PROP. 12' HMA SHARED USE PATH W/
2' HMA SHOULDER LT & PAVEMENT
MILLING MULCH SHOULDER RT

PROP. FULL DEPTH HMA PAVEMENT
FOR TEMPORARY CROSSOVER

HIGHWAY GUARD DETAILS

STA. 210+62 RT TO STA. 222+35 LT - ITEM 620.13
STA. 222+35 RT TO STA. 222+69 RT - ITEM 628.21
STA. 222+69 RT TO STA. 222+76 RT - ITEM 628.25

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

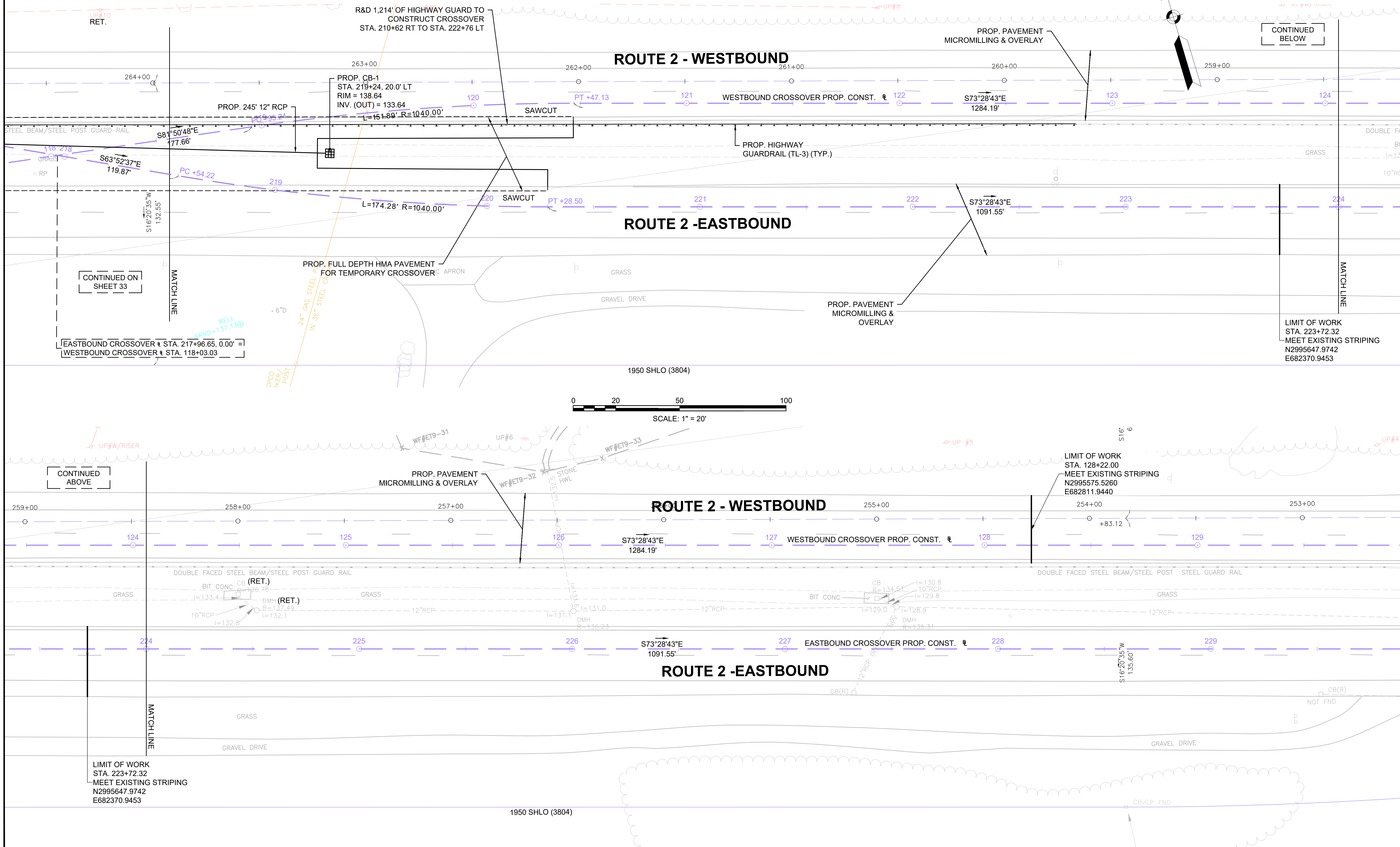
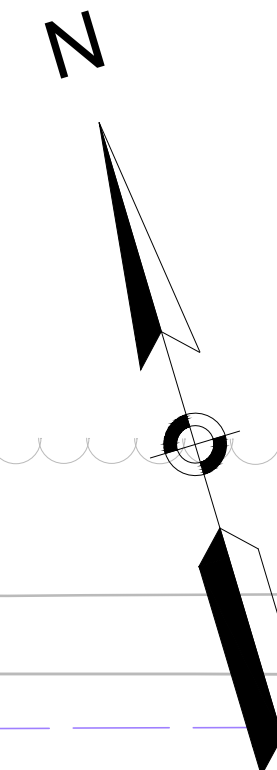
DRAINAGE DETAILS

NONE

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	34	158
PROJECT FILE NO.		606223	

CONSTRUCTION PLANS - ROUTE 2



CONTINUED ON SHEET 33

CONTINUED BELOW

CONTINUED ABOVE

LIMIT OF WORK
STA. 223+72.32
MEET EXISTING STRIPING
N2995647.9742
E682370.9453

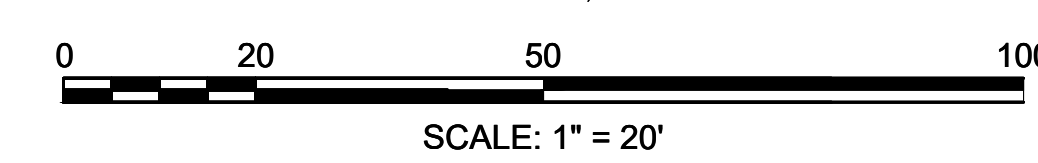
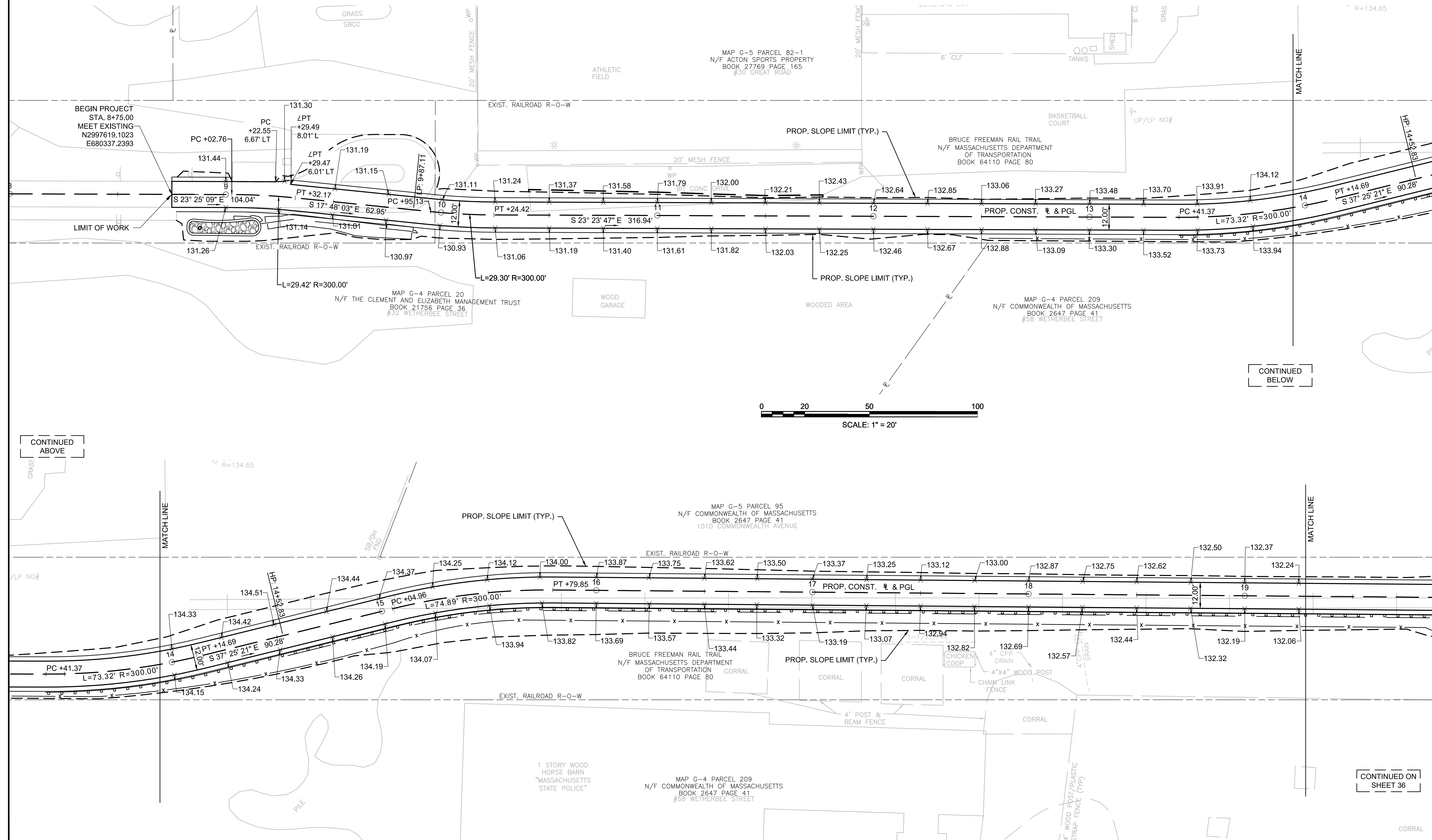
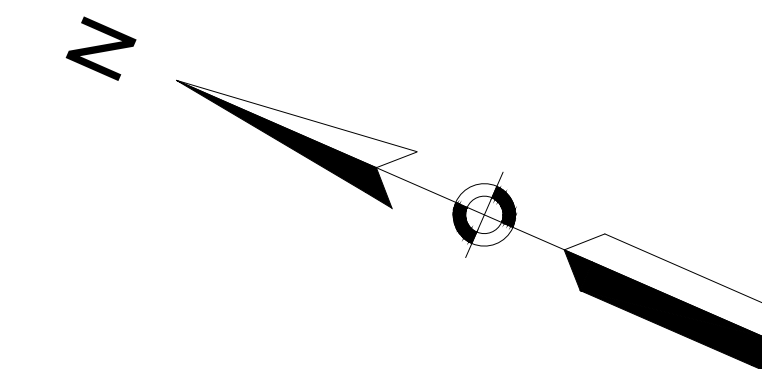
LIMIT OF WORK
STA. 128+22.00
MEET EXISTING STRIPING
N2995575.5260
E682811.9440

LIMIT OF WORK
STA. 223+72.32
MEET EXISTING STRIPING
N2995647.9742
E682370.9453

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	35	158
PROJECT FILE NO.		606223	

CURB TIE & GRADING PLANS



CONTINUED ABOVE

CONTINUED BELOW

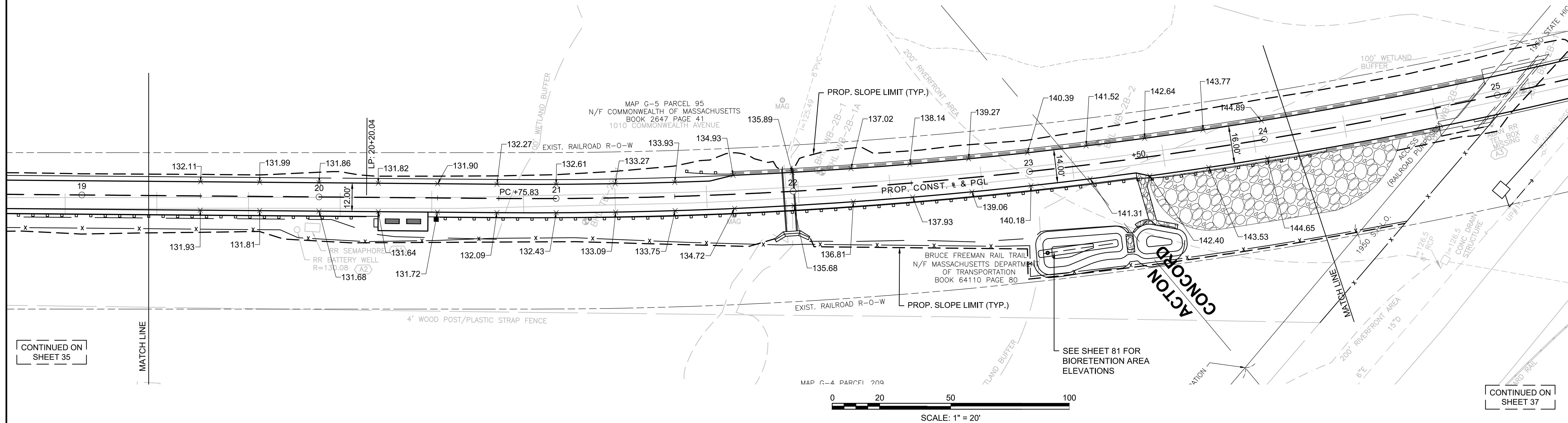
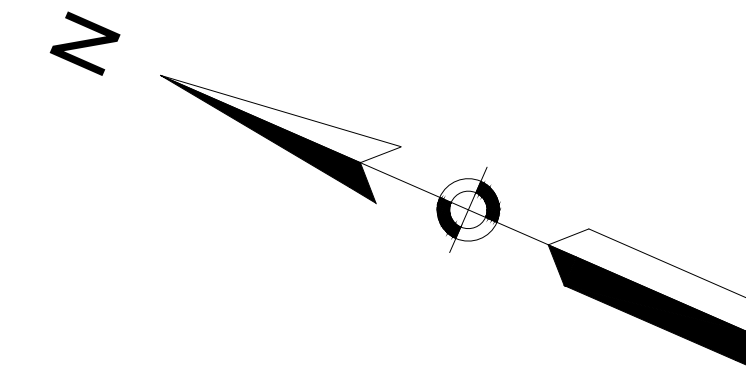
CONTINUED ON SHEET 36

606223_HD_(CTS).DWG 4-Feb-2019

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	36	158
PROJECT FILE NO.		606223	

CURB TIE & GRADING PLANS



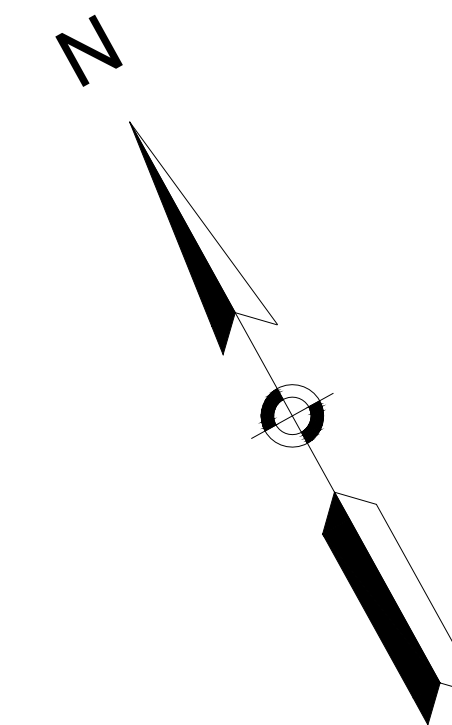
CONTINUED ON
SHEET 35

CONTINUED ON
SHEET 37

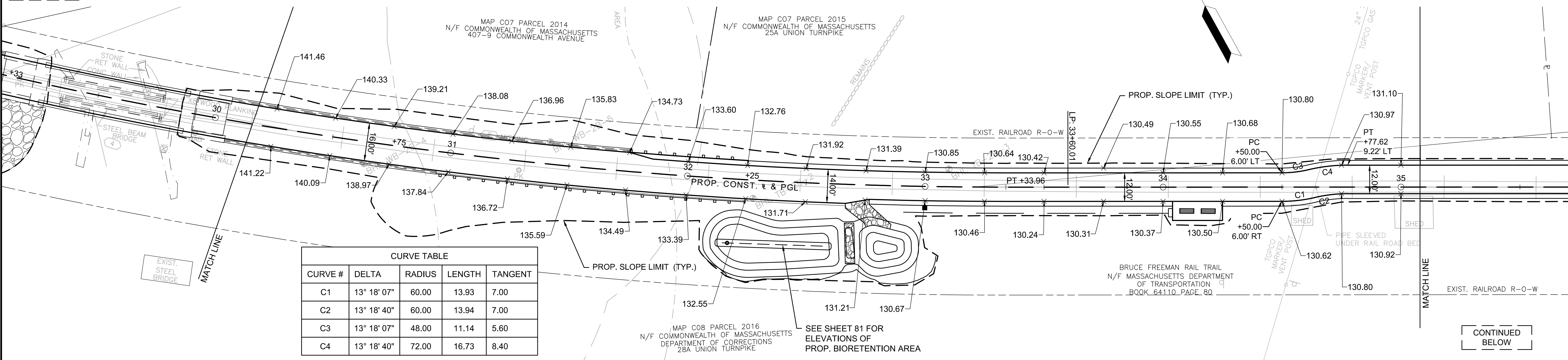
606223_HD_(CTG).DWG 4-Feb-2019

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	38	158
PROJECT FILE NO.		606223	

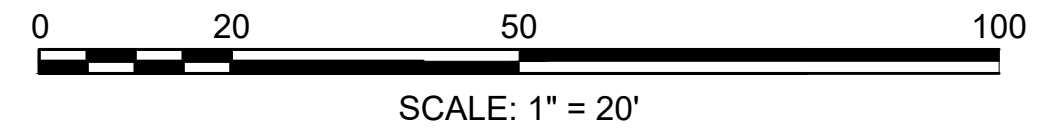
CURB TIE & GRADING PLANS



CONTINUED ON
SHEET 37

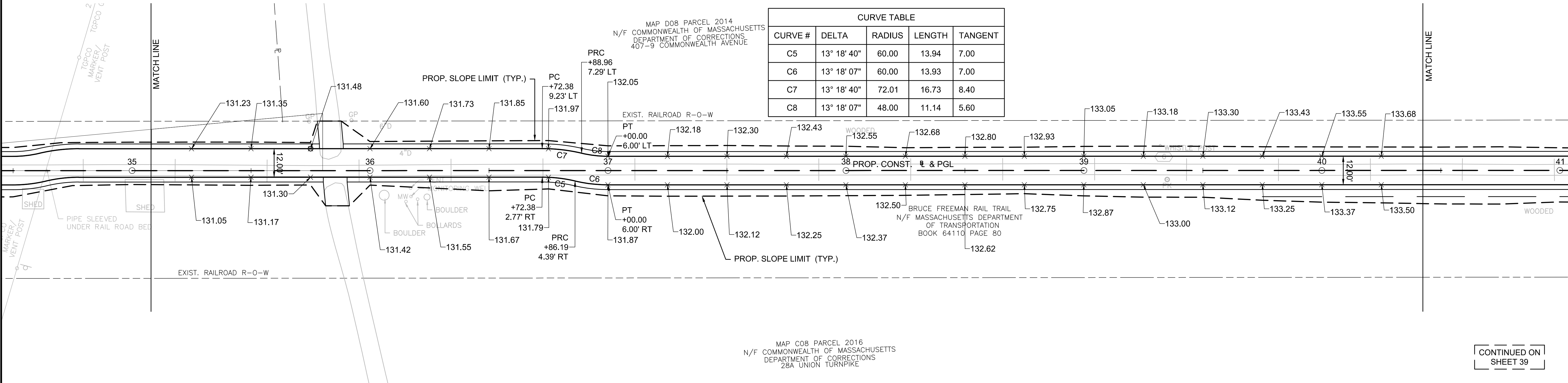


CURVE #	DELTA	RADIUS	LENGTH	TANGENT
C1	13° 18' 07"	60.00	13.93	7.00
C2	13° 18' 40"	60.00	13.94	7.00
C3	13° 18' 07"	48.00	11.14	5.60
C4	13° 18' 40"	72.00	16.73	8.40



CONTINUED
BELOW

CONTINUED
ABOVE



CURVE #	DELTA	RADIUS	LENGTH	TANGENT
C5	13° 18' 40"	60.00	13.94	7.00
C6	13° 18' 07"	60.00	13.93	7.00
C7	13° 18' 40"	72.01	16.73	8.40
C8	13° 18' 07"	48.00	11.14	5.60

CONTINUED ON
SHEET 39

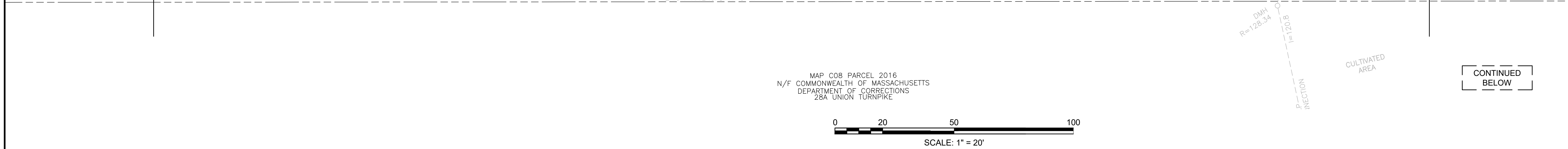
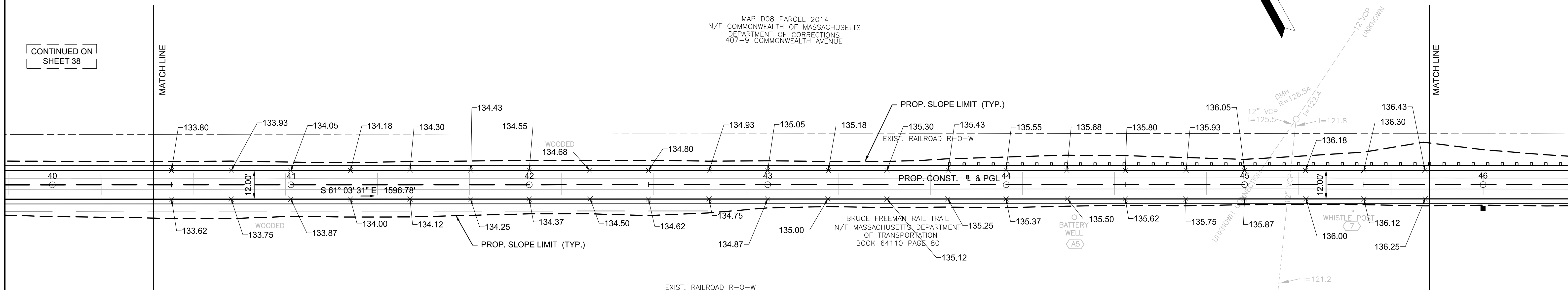
ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	39	158
PROJECT FILE NO.		606223	

CURB TIE & GRADING PLANS

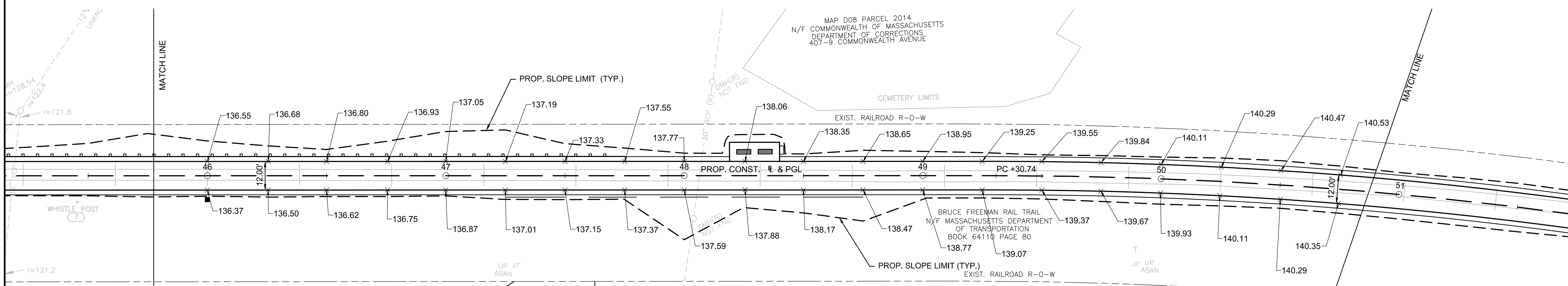
606223_HD_(CTG).DWG 4-Feb-2019

CONTINUED ON
SHEET 38



CONTINUED
BELOW

CONTINUED
ABOVE



CONTINUED ON
SHEET 40

MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE

MAP C08 PARCEL 2016
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
28A UNION TURNPIKE

MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE

MAP D08 PARCEL 2157
37Y COMMONWEALTH AVENUE

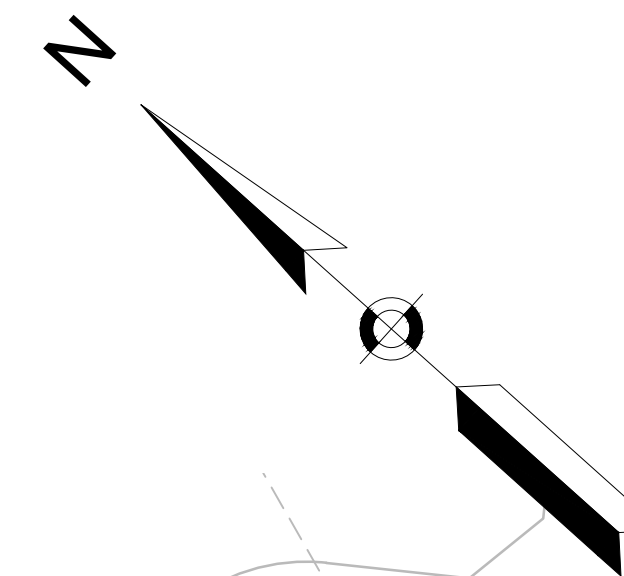
MAP D08 PARCEL 2158
37B COMMONWEALTH AVENUE

TOWN OF CONCORD
(SELECT BOARD)
BOOK 71342 PAGE 563

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	40	158
PROJECT FILE NO.		606223	

CURB TIE & GRADING PLANS



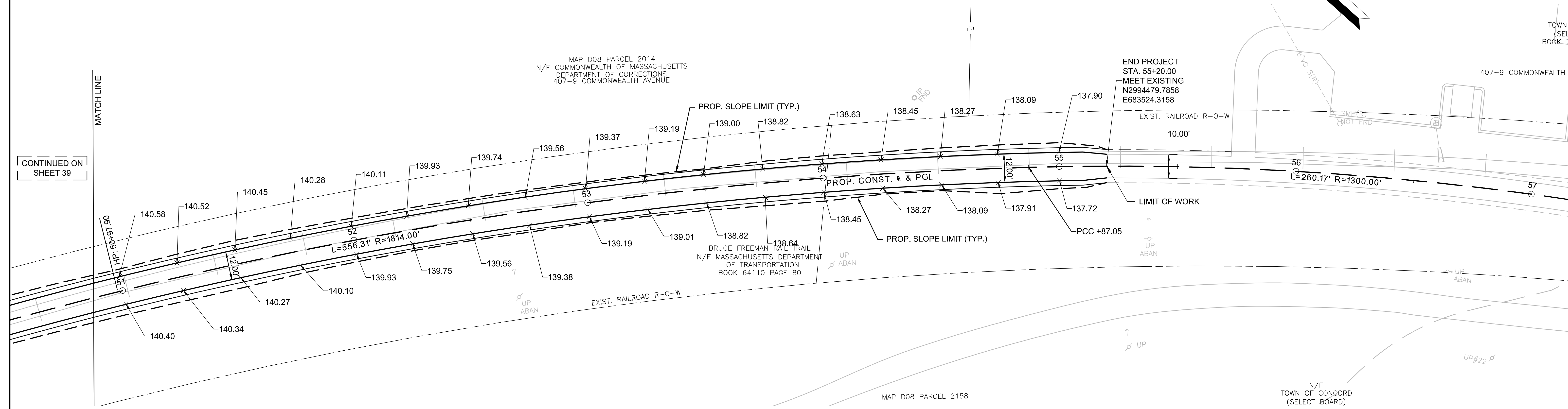
TOWN (SEL BOOK 7

407-9 COMMONWEALTH

MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE

END PROJECT
STA. 55+20.00
MEET EXISTING
N2994479.7858
E683524.3158

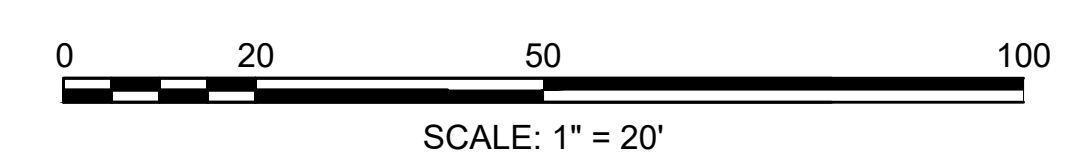
CONTINUED ON
SHEET 39



BRUCE FREEMAN RAIL TRAIL
N/F MASSACHUSETTS DEPARTMENT
OF TRANSPORTATION
BOOK 64110 PAGE 80

MAP D08 PARCEL 2158

N/F
TOWN OF CONCORD
(SELECT BOARD)

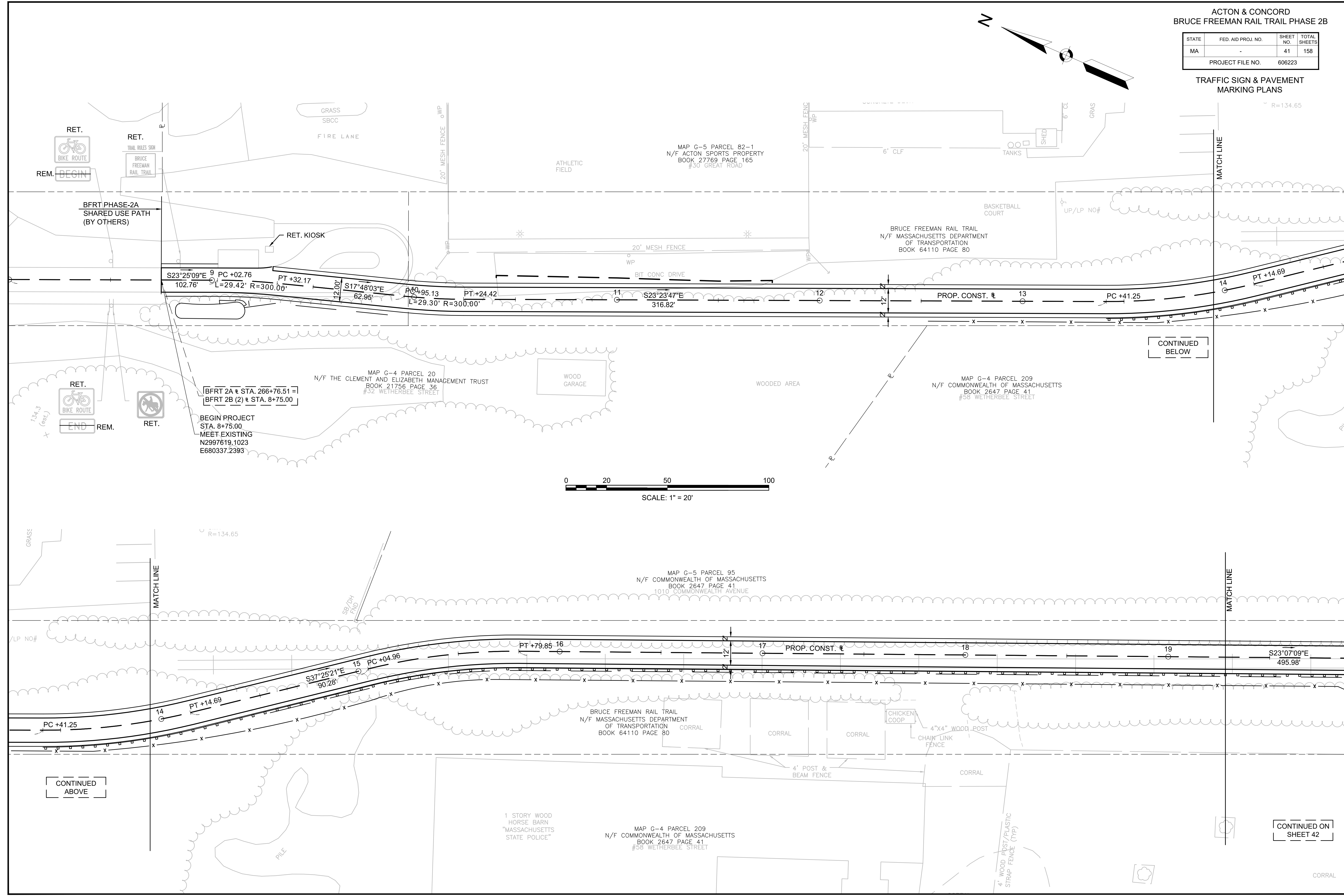
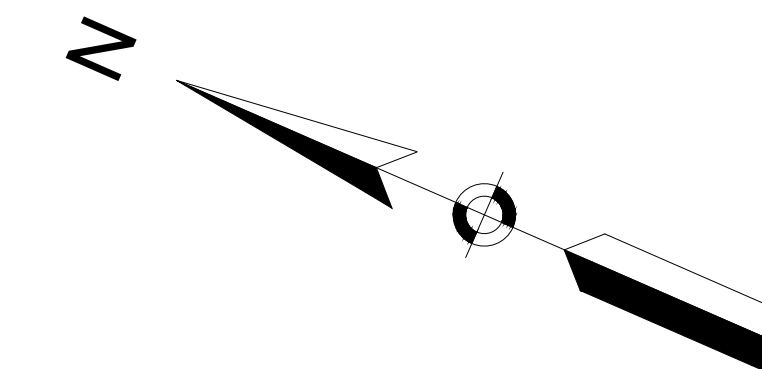


606223_HD_(CTO).DWG 4-Feb-2019

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	41	158
PROJECT FILE NO.		606223	

TRAFFIC SIGN & PAVEMENT MARKING PLANS



BFRT 2A @ STA. 266+76.51 =
BFRT 2B (2) @ STA. 8+75.00

BEGIN PROJECT
STA. 8+75.00
MEET EXISTING
N2997619.1023
E680337.2393

0 20 50 100
SCALE: 1" = 20'

CONTINUED BELOW

CONTINUED ABOVE

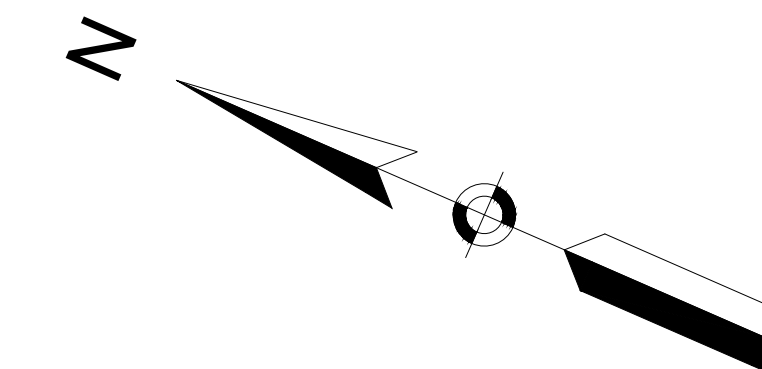
CONTINUED ON SHEET 42

606223_HD_(TSPM).DWG 4-Feb-2019

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

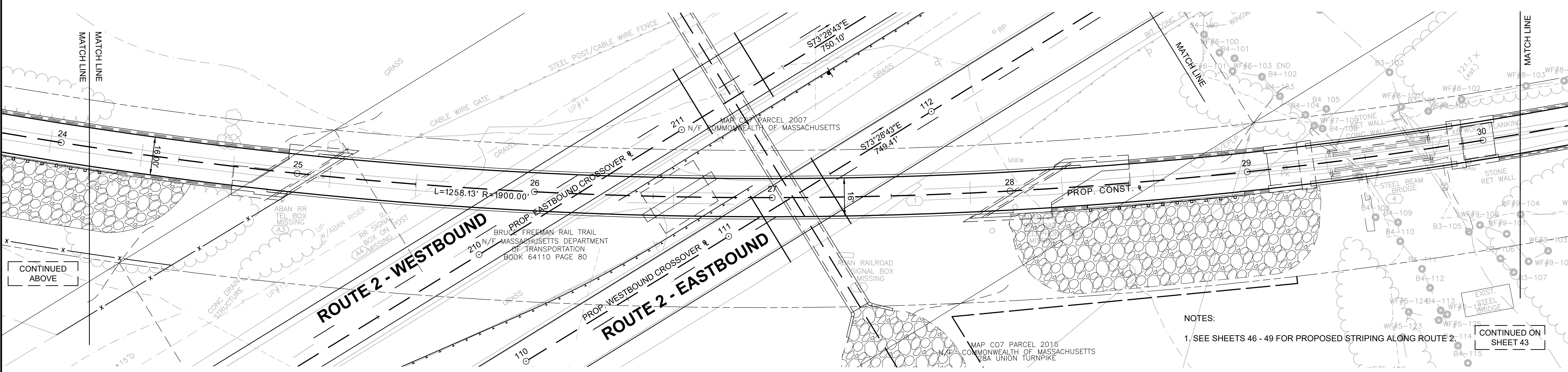
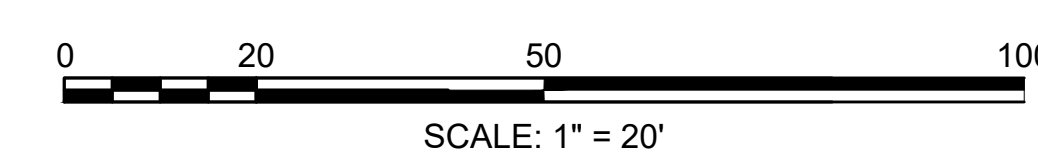
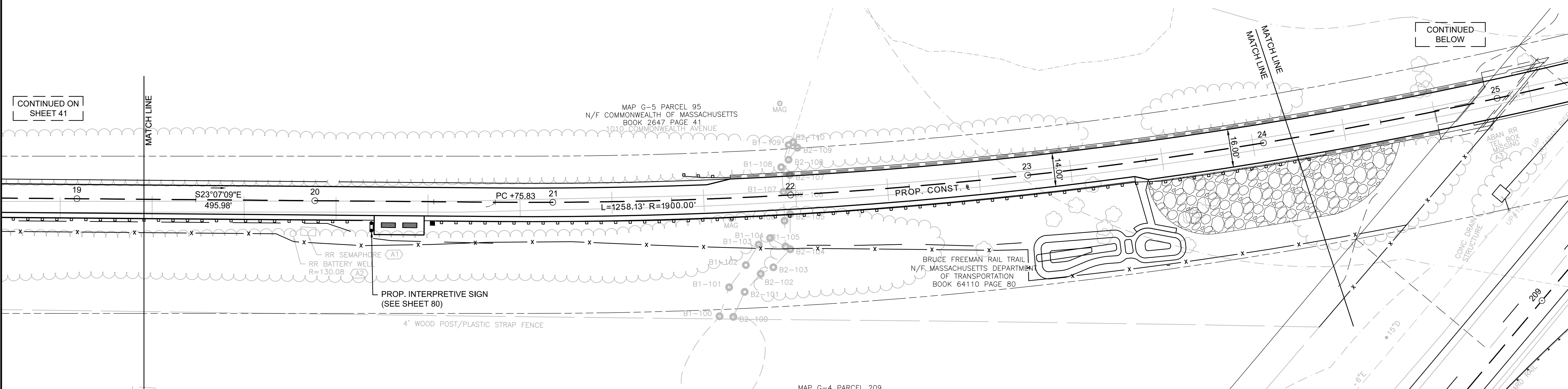
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	42	158
PROJECT FILE NO.		606223	

TRAFFIC SIGN & PAVEMENT
MARKING PLANS



CONTINUED ON
SHEET 41

CONTINUED
BELOW



CONTINUED
ABOVE

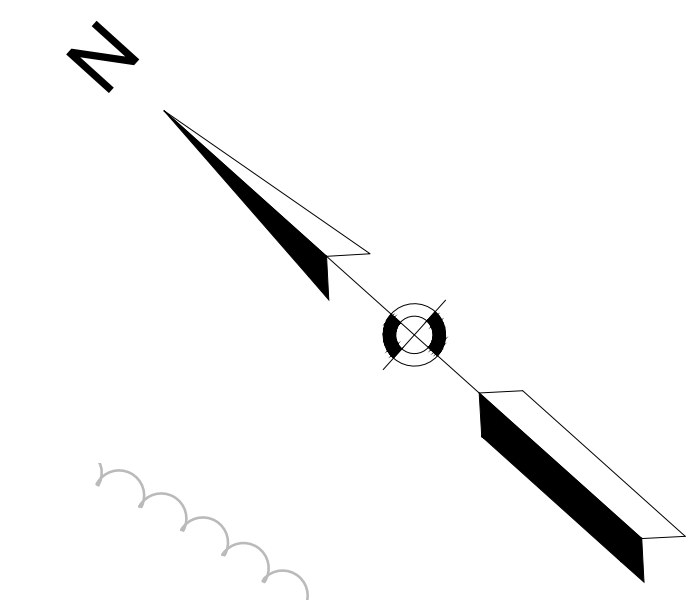
CONTINUED ON
SHEET 43

- NOTES:
- SEE SHEETS 46 - 49 FOR PROPOSED STRIPING ALONG ROUTE 2.

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	43	158
PROJECT FILE NO.		606223	

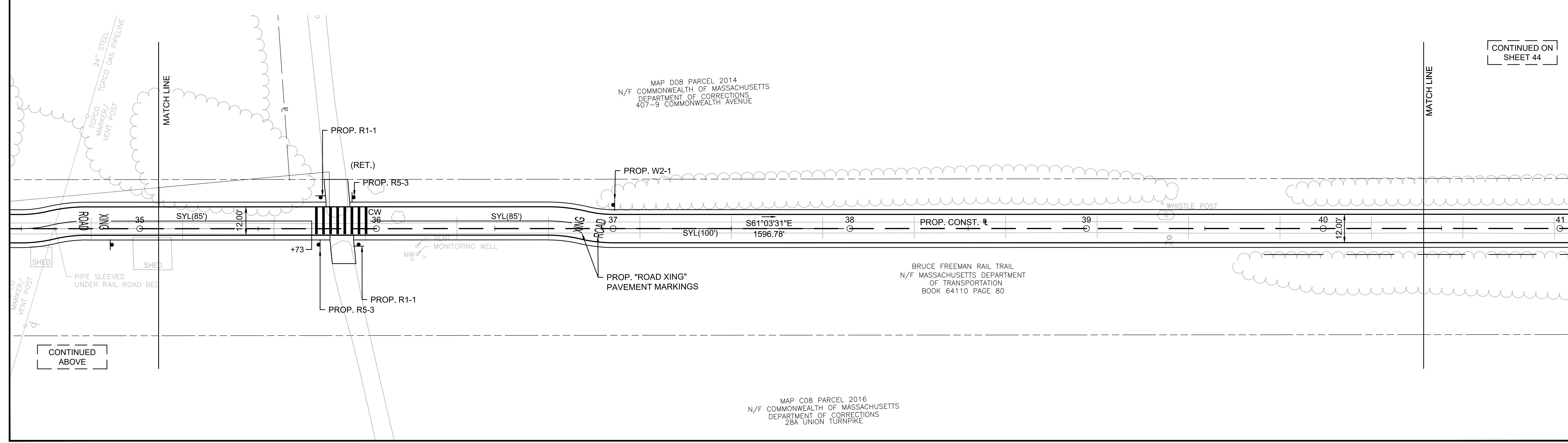
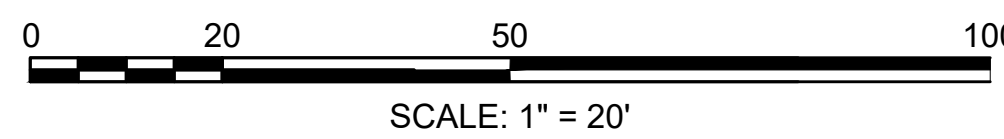
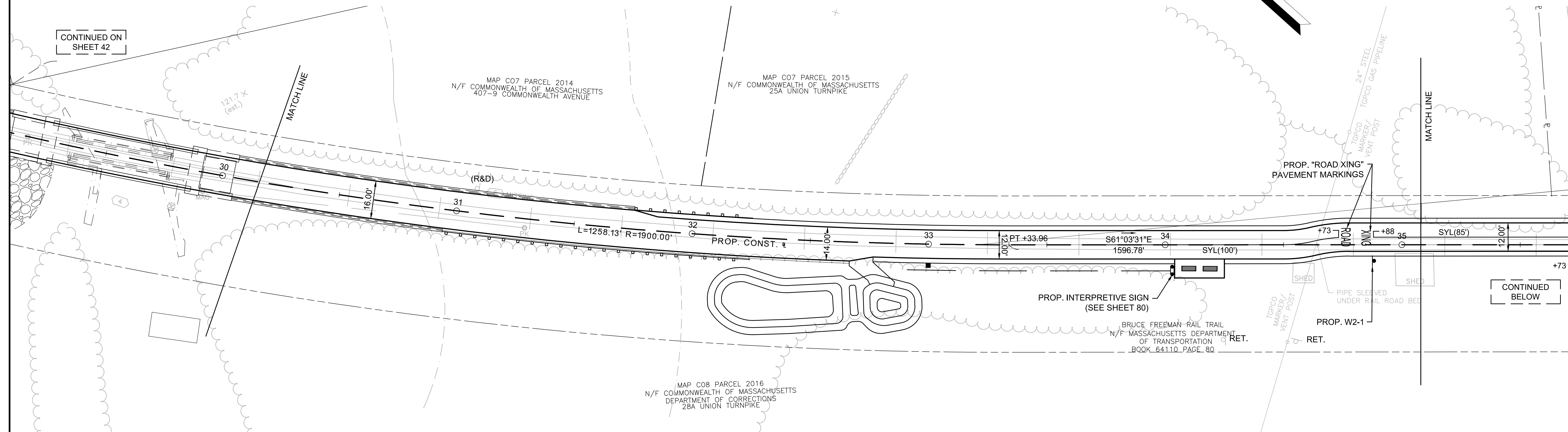
TRAFFIC SIGN & PAVEMENT MARKING PLANS



CONTINUED ON SHEET 42

CONTINUED BELOW

CONTINUED ON SHEET 44



MAP C08 PARCEL 2016
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
28A UNION TURNPIKE

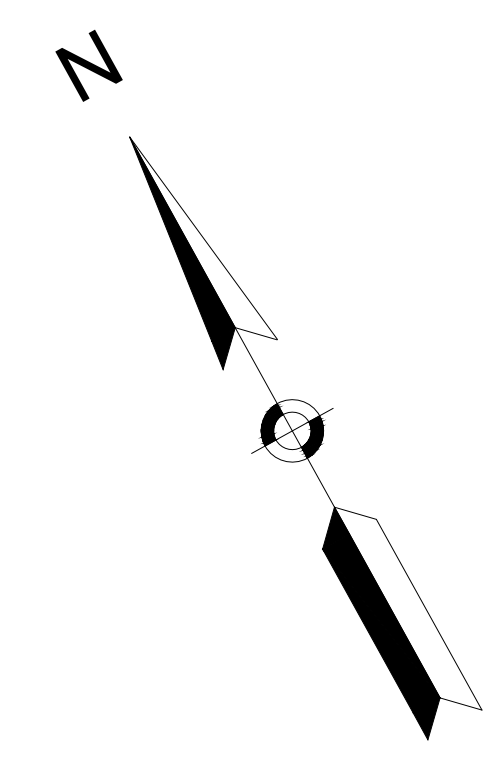
606223_HD_(TSPM).DWG 4-Feb-2019

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	44	158
PROJECT FILE NO.		606223	

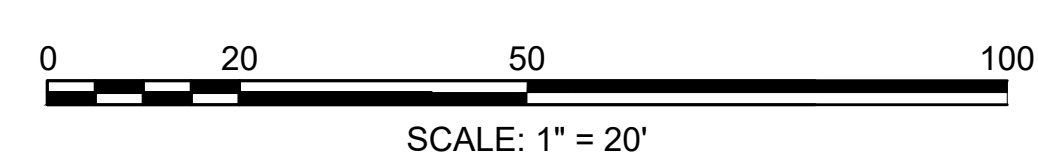
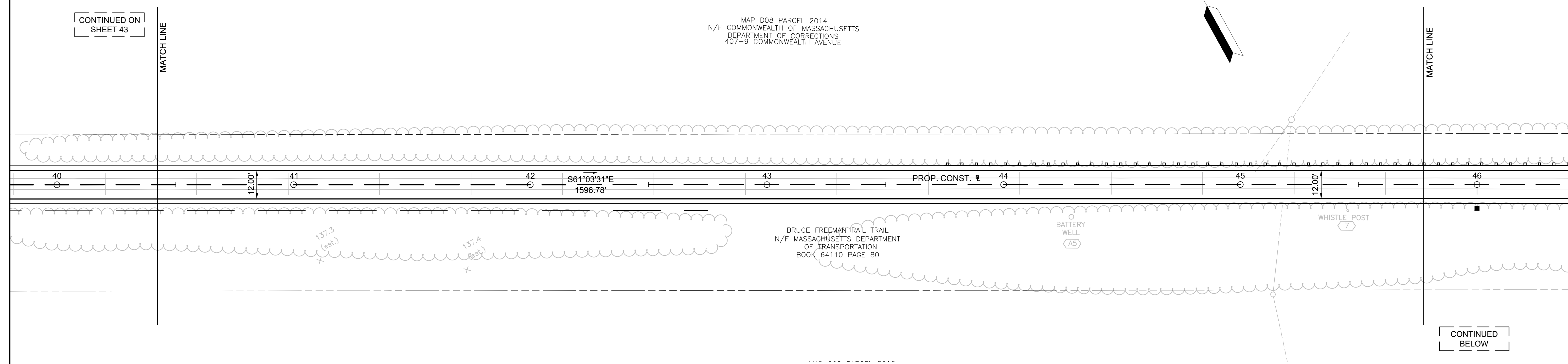
TRAFFIC SIGN & PAVEMENT
MARKING PLANS

606223_HD_(TSPM).DWG 4-Feb-2019



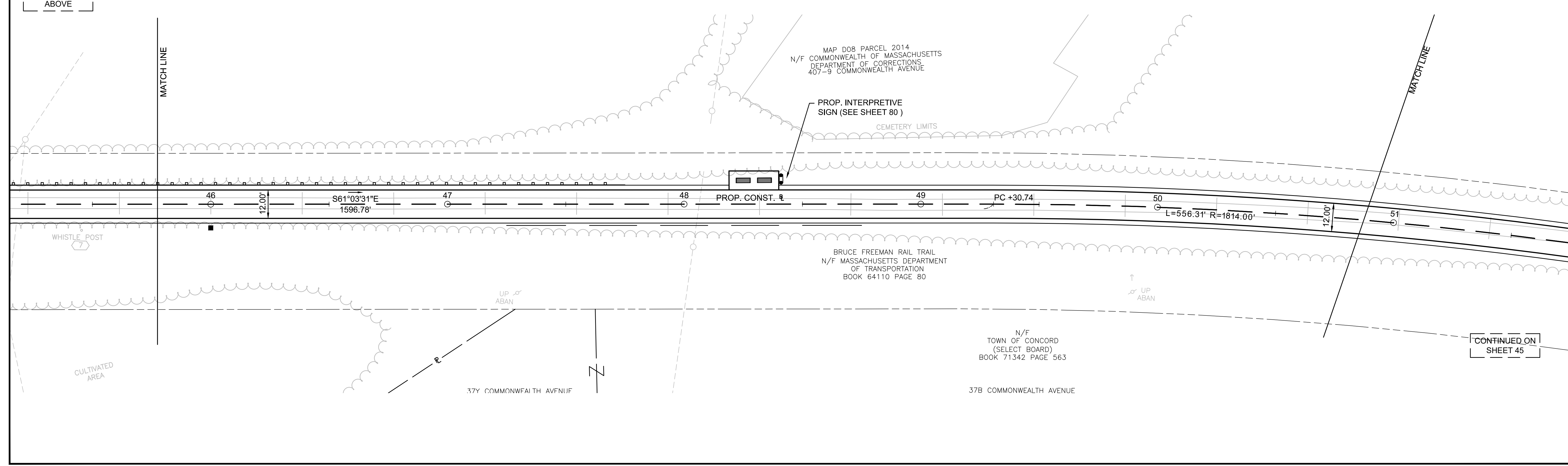
CONTINUED ON
SHEET 43

MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-9 COMMONWEALTH AVENUE



CONTINUED
BELOW

CONTINUED
ABOVE



CONTINUED ON
SHEET 45

N/F
TOWN OF CONCORD
(SELECT BOARD)
BOOK 71342 PAGE 563

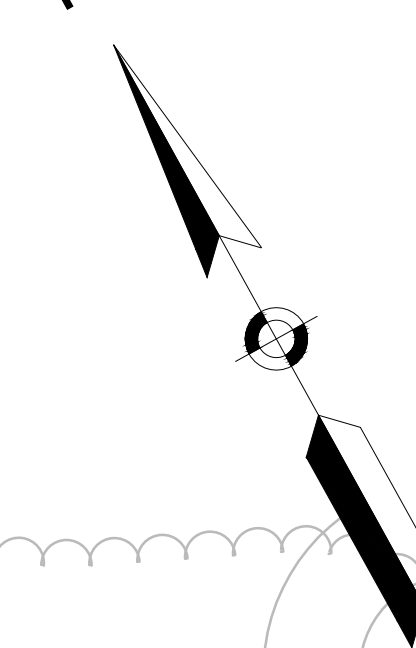


ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	45	158
PROJECT FILE NO.		606223	

TRAFFIC SIGN & PAVEMENT
MARKING PLANS

N



CONTINUED ON
SHEET 44

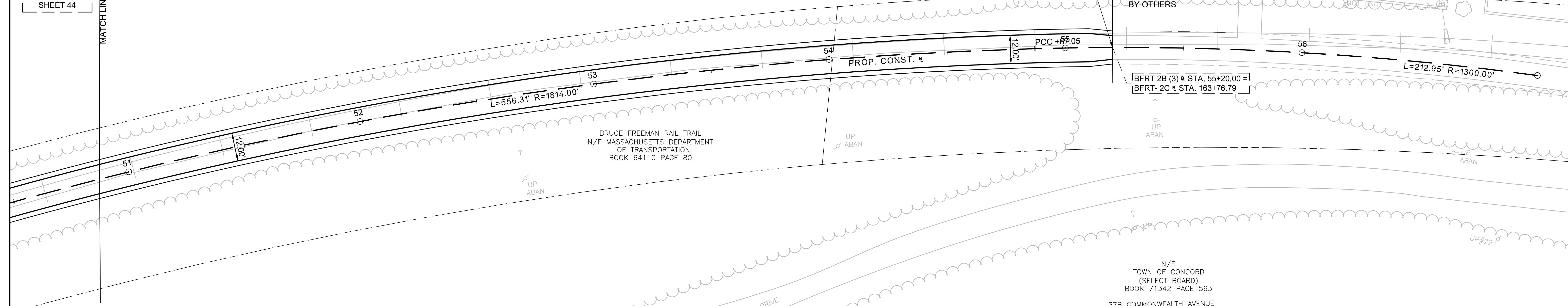
MATCH LINE

MAP D08 PARCEL 2014
N/F COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF CORRECTIONS
407-3 COMMONWEALTH AVENUE

END PROJECT
STA. 55+20.00
MEET EXISTING
N2994479.7858
E683524.3158

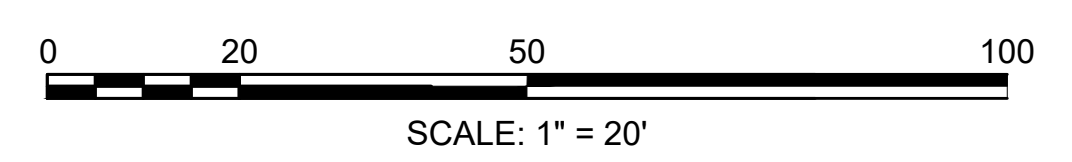
N/F
TOWN OF CONCORD
(SELECT BOARD)
BOOK 70218 PAGE 35
407-9 COMMONWEALTH AVENUE

BFRT PHASE-1IC
SHARED USE PATH
BY OTHERS



BRUCE FREEMAN RAIL TRAIL
N/F MASSACHUSETTS DEPARTMENT
OF TRANSPORTATION
BOOK 64110 PAGE 80

N/F
TOWN OF CONCORD
(SELECT BOARD)
BOOK 71342 PAGE 563
37R COMMONWEALTH AVENUE

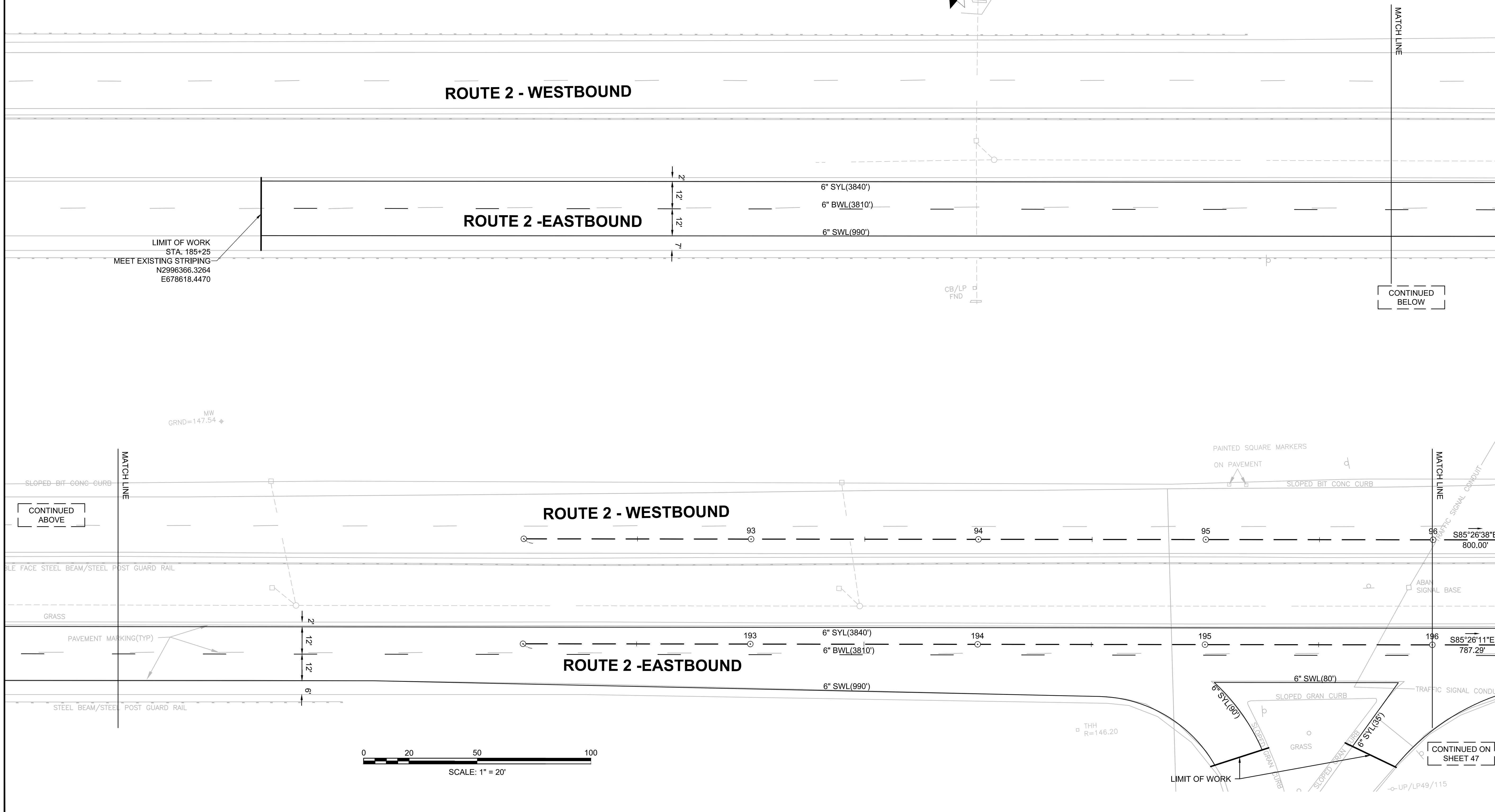


STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	46	158
PROJECT FILE NO.		606223	

TRAFFIC SIGN & PAVEMENT MARKING PLANS

NOTE:

- CONTRACTOR TO INSTALL RUMBLE STRIP (E 105.5.0) ON OUTSIDE SHOULDER ALONG ROUTE 2 AFTER FINAL STRIPING IS COMPLETED



LIMIT OF WORK
STA. 185+25
MEET EXISTING STRIPING
N2996366.3264
E678618.4470

CONTINUED ABOVE

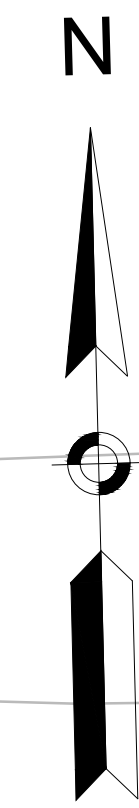
CONTINUED BELOW

CONTINUED ON SHEET 47

0 20 50 100
SCALE: 1" = 20'

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	47	158
PROJECT FILE NO.		606223	

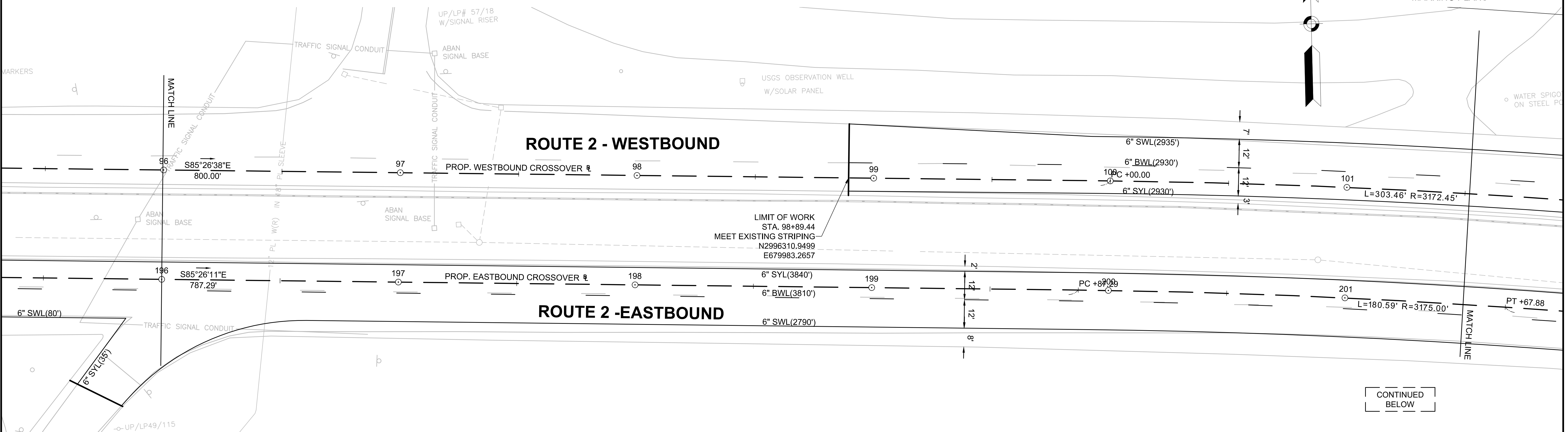
TRAFFIC SIGN & PAVEMENT MARKING PLANS



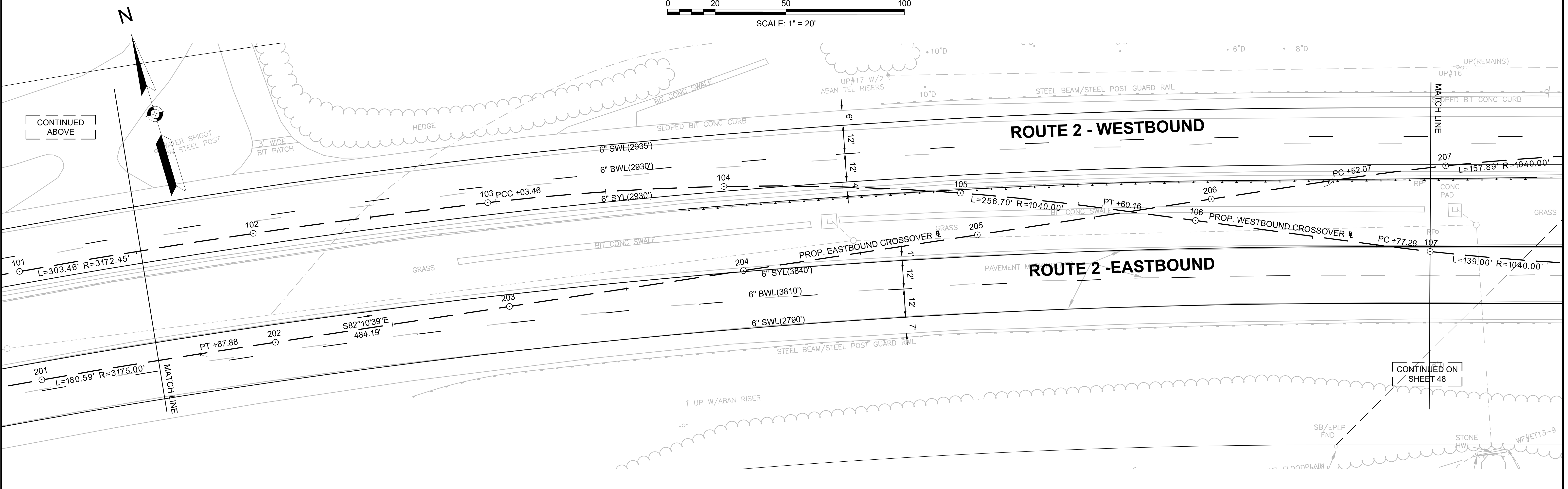
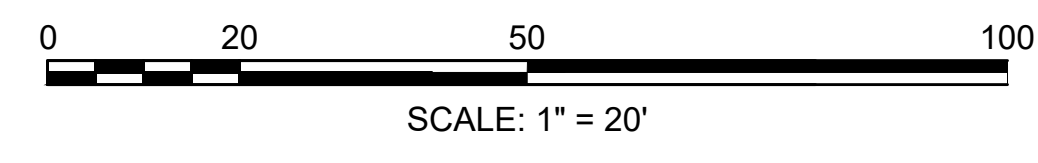
NOTE:

- CONTRACTOR TO INSTALL RUMBLE STRIP (E 105.5.0) ON OUTSIDE SHOULDER ALONG ROUTE 2 AFTER FINAL STRIPING IS COMPLETED

CONTINUED ON SHEET 46



CONTINUED BELOW



CONTINUED ABOVE

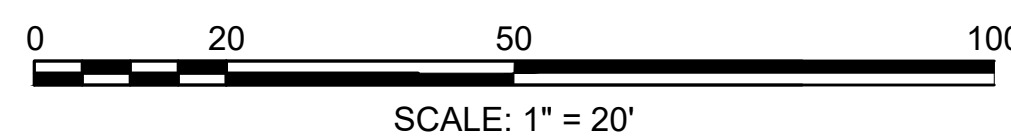
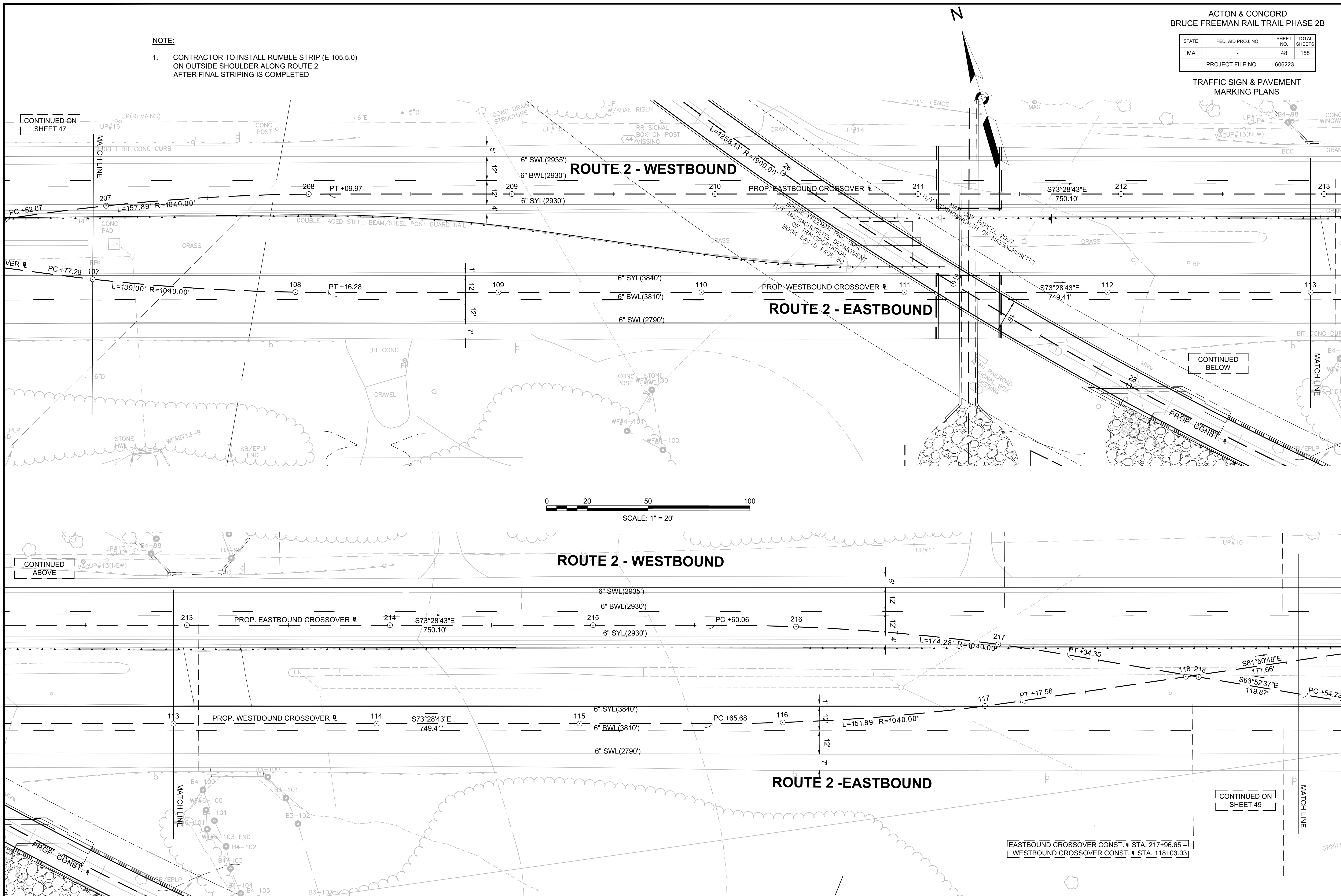
CONTINUED ON SHEET 48

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		48	158
PROJECT FILE NO.		606223	

TRAFFIC SIGN & PAVEMENT MARKING PLANS

NOTE:

- CONTRACTOR TO INSTALL RUMBLE STRIP (E 105.5.0) ON OUTSIDE SHOULDER ALONG ROUTE 2 AFTER FINAL STRIPING IS COMPLETED



CONTINUED ON SHEET 47

CONTINUED BELOW

CONTINUED ABOVE

CONTINUED ON SHEET 49

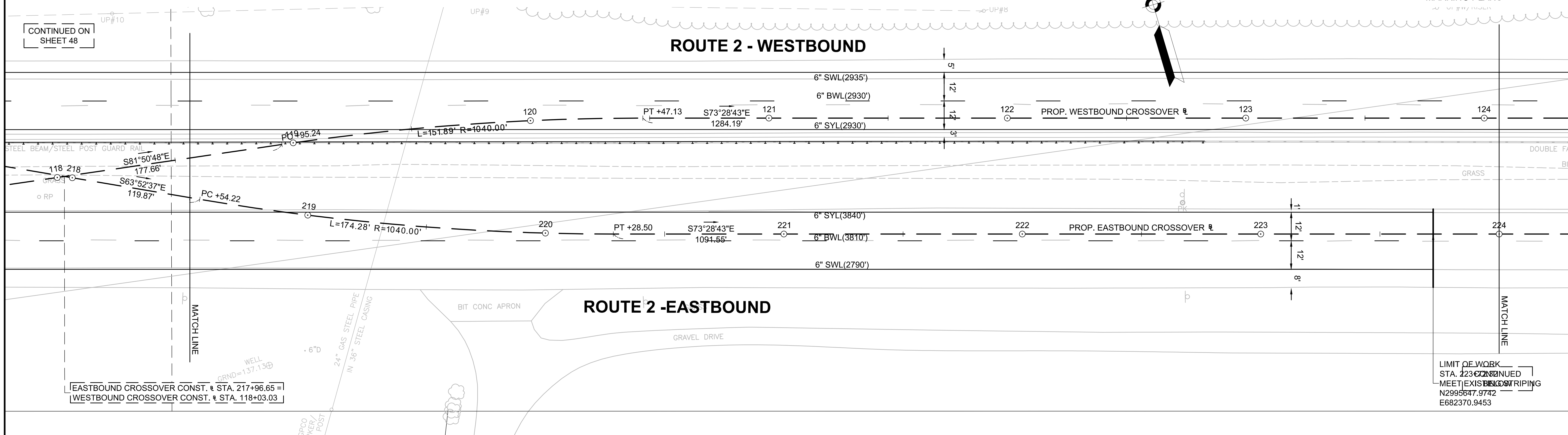
EASTBOUND CROSSOVER CONST. @ STA. 217+96.65 =
WESTBOUND CROSSOVER CONST. @ STA. 118+03.03

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	49	158
PROJECT FILE NO.		606223	

TRAFFIC SIGN & PAVEMENT MARKING PLANS

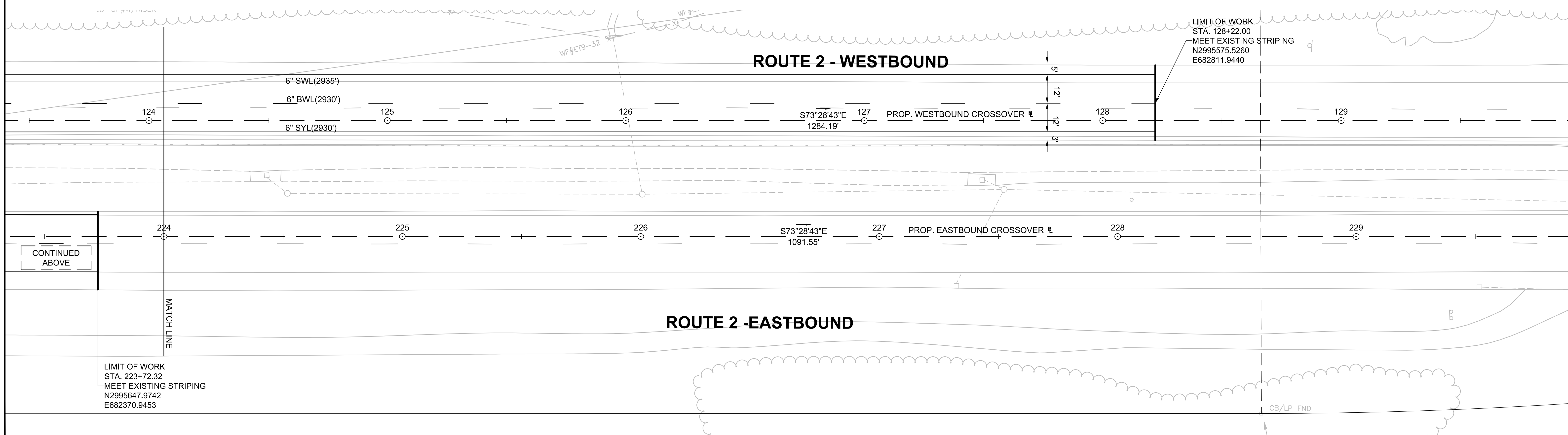
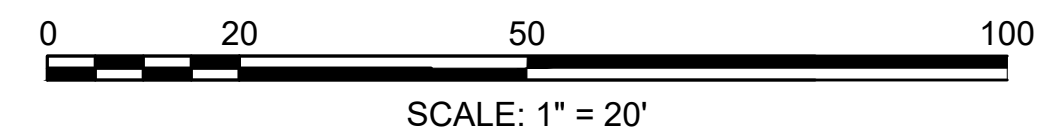
NOTE:

- CONTRACTOR TO INSTALL RUMBLE STRIP (E 105.5.0) ON OUTSIDE SHOULDER ALONG ROUTE 2 AFTER FINAL STRIPING IS COMPLETED



EASTBOUND CROSSOVER CONST. STA. 217+96.65 =
WESTBOUND CROSSOVER CONST. STA. 118+03.03

LIMIT OF WORK
STA. 223+02.00
MEET EXISTING STRIPING
N2995647.9742
E682370.9453






CONTINUED ABOVE

LIMIT OF WORK
STA. 223+72.32
MEET EXISTING STRIPING
N2995647.9742
E682370.9453

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	50	158
PROJECT FILE NO.		606223	











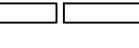

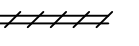

TRAFFIC SIGN SUMMARY SHEET

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACK-GROUND	LEGEND	BORDER			
R1-1	30"	30"			MUTCD STANDARD	2	RED	WHITE	WHITE	P5 (2 REQ'D)	6.25	12.50
R5-3	24"	24"			MUTCD STANDARDS	2	WHITE	BLACK	BLACK	P5 (2 REQ'D)	4.00	8.00
W2-1	18"	18"			MUTCD STANDARDS	2	YELLOW	BLACK	BLACK	P5 (2 REQ'D)	2.25	4.50

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	51	158
PROJECT FILE NO.		606223	

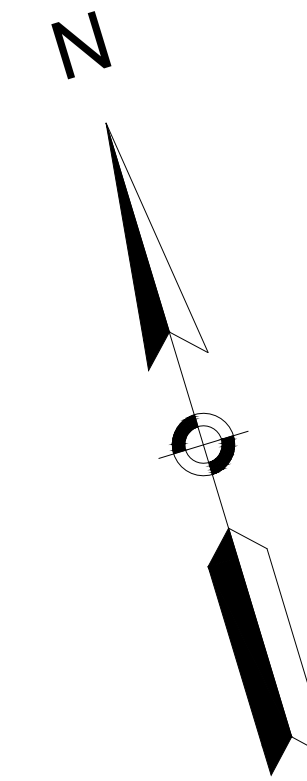
CONSTRUCTION STAGING PLANS
STAGE 1

TRAFFIC MANAGEMENT LEGEND

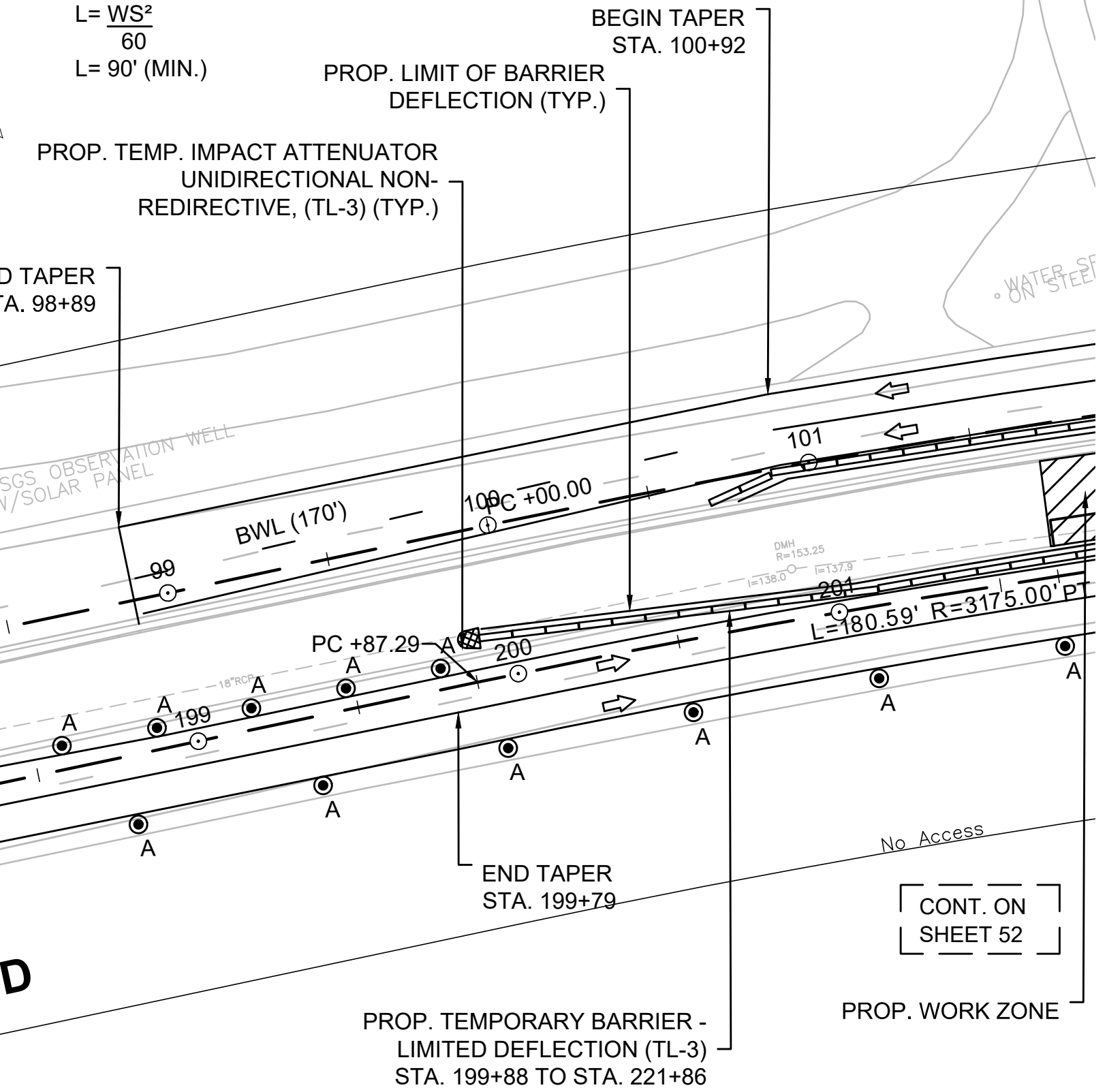
-  CONSTRUCTION SIGN
-  WORK AREA
-  DIRECTION OF TRAVEL
-  REFLECTORIZED DRUM OR CONE
-  REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  POLICE OFFICER OR FLAGGER CONTROL
-  PORTABLE TYPE III BARRICADE (4' WIDE, MIN.)
-  FLASHING ARROW BOARD (30"x 60" STD. SIZE WITH 13 LAMPS, MIN.)
-  TEMPORARY BARRIER (WITH REFLECTORIZED DELINEATORS)
-  TEMPORARY IMPACT ATTENUATOR
-  PAVEMENT MARKINGS TO COVER OR REMOVE
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK-MOUNTED ATTENUATOR (TMA)

- SUGGESTED STAGE 1 SEQUENCE OF CONSTRUCTION**
1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
 2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
 3. INSTALL TEMPORARY PAVEMENT MARKINGS.
 4. REMOVE EXISTING MEDIAN AND CONSTRUCT TEMPORARY PAVEMENT FOR MEDIAN CROSSOVERS.

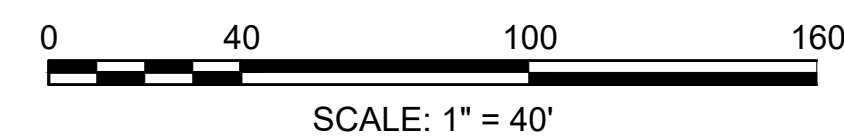
- NOTES**
1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
 2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
 3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.



TAPER DESIGN
W= 6.0'
S= 30 MPH
L= WS²
60
L= 90' (MIN.)




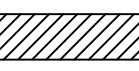
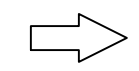




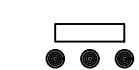






TAPER DESIGN
W= 4.0'
S= 45 MPH
L= WS
L= 180' (MIN.)



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	52	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 1

TRAFFIC MANAGEMENT LEGEND

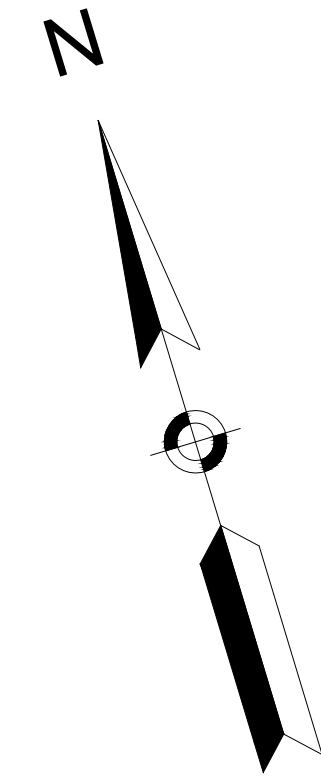
-  CONSTRUCTION SIGNS
-  WORK AREA
-  DIRECTION OF TRAVEL
-  REFLECTORIZED DRUM OR CONE
-  REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  POLICE OFFICER OR FLAGGER CONTROL
-  PORTABLE TYPE III BARRICADE (4' WIDE, MIN.)
-  FLASHING ARROW BOARD (30"x 60" STD. SIZE WITH 13 LAMPS, MIN.)
-  TEMPORARY BARRIER (WITH REFLECTORIZED DELINEATORS)
-  TEMPORARY IMPACT ATTENUATOR
-  PAVEMENT MARKINGS TO COVER OR REMOVE
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK-MOUNTED ATTENUATOR (TMA)

SUGGESTED STAGE 1 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. REMOVE EXISTING MEDIAN AND CONSTRUCT TEMPORARY PAVEMENT FOR MEDIAN CROSSOVERS.

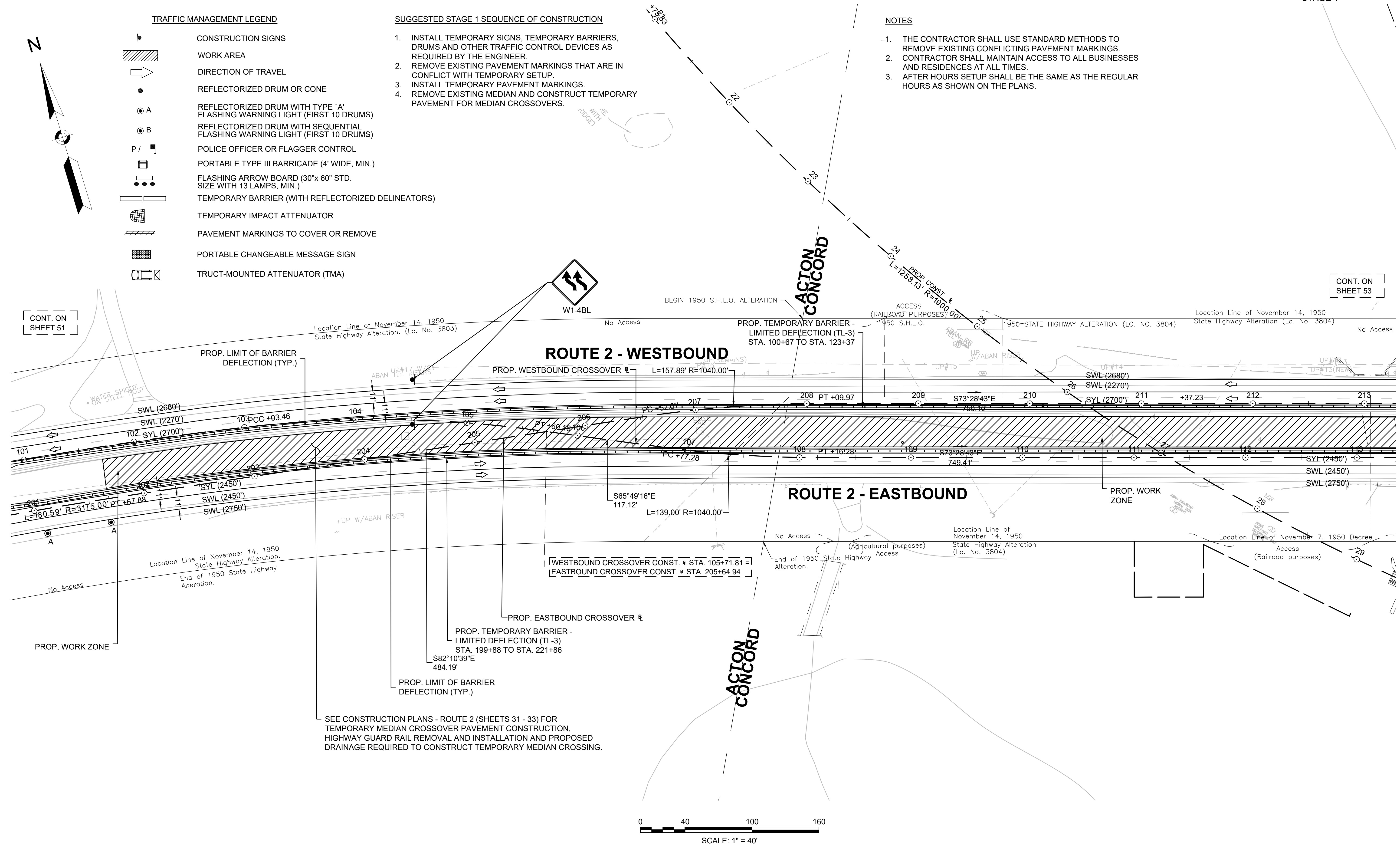
NOTES

1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.

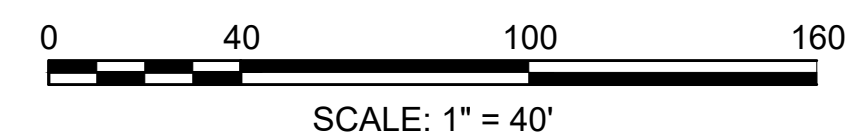


CONT. ON SHEET 51

CONT. ON SHEET 53



SEE CONSTRUCTION PLANS - ROUTE 2 (SHEETS 31 - 33) FOR TEMPORARY MEDIAN CROSSOVER PAVEMENT CONSTRUCTION, HIGHWAY GUARD RAIL REMOVAL AND INSTALLATION AND PROPOSED DRAINAGE REQUIRED TO CONSTRUCT TEMPORARY MEDIAN CROSSING.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	53	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 1

TRAFFIC MANAGEMENT LEGEND

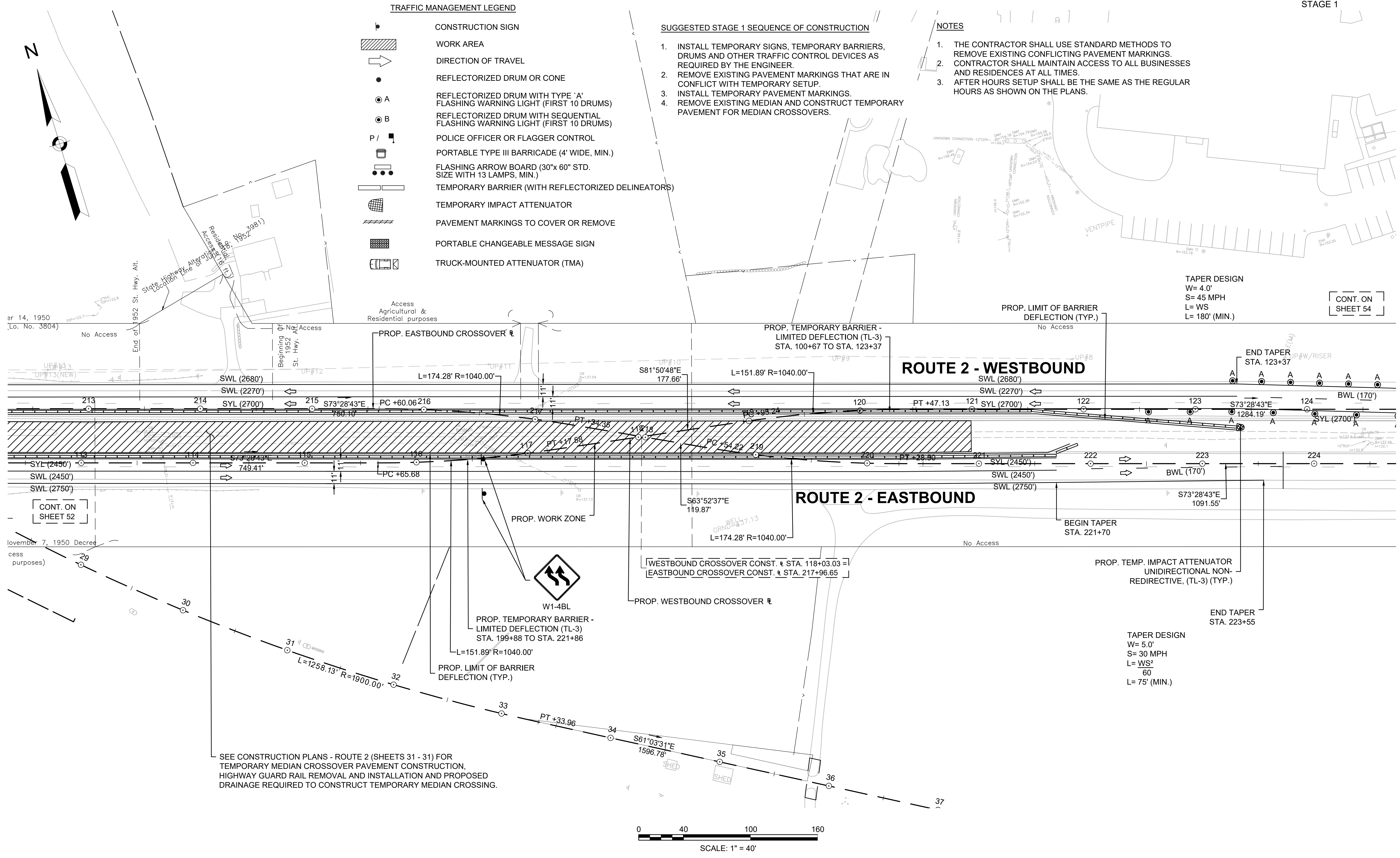
- CONSTRUCTION SIGN
- WORK AREA
- DIRECTION OF TRAVEL
- REFLECTORIZED DRUM OR CONE
- REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- POLICE OFFICER OR FLAGGER CONTROL
- PORTABLE TYPE III BARRICADE (4' WIDE, MIN.)
- FLASHING ARROW BOARD (30"x 60" STD. SIZE WITH 13 LAMPS, MIN.)
- TEMPORARY BARRIER (WITH REFLECTORIZED DELINEATORS)
- TEMPORARY IMPACT ATTENUATOR
- PAVEMENT MARKINGS TO COVER OR REMOVE
- PORTABLE CHANGEABLE MESSAGE SIGN
- TRUCK-MOUNTED ATTENUATOR (TMA)

SUGGESTED STAGE 1 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. REMOVE EXISTING MEDIAN AND CONSTRUCT TEMPORARY PAVEMENT FOR MEDIAN CROSSOVERS.

NOTES

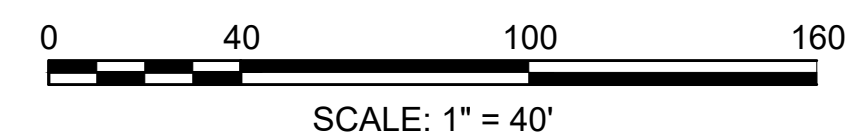
1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.



CONT. ON
SHEET 54

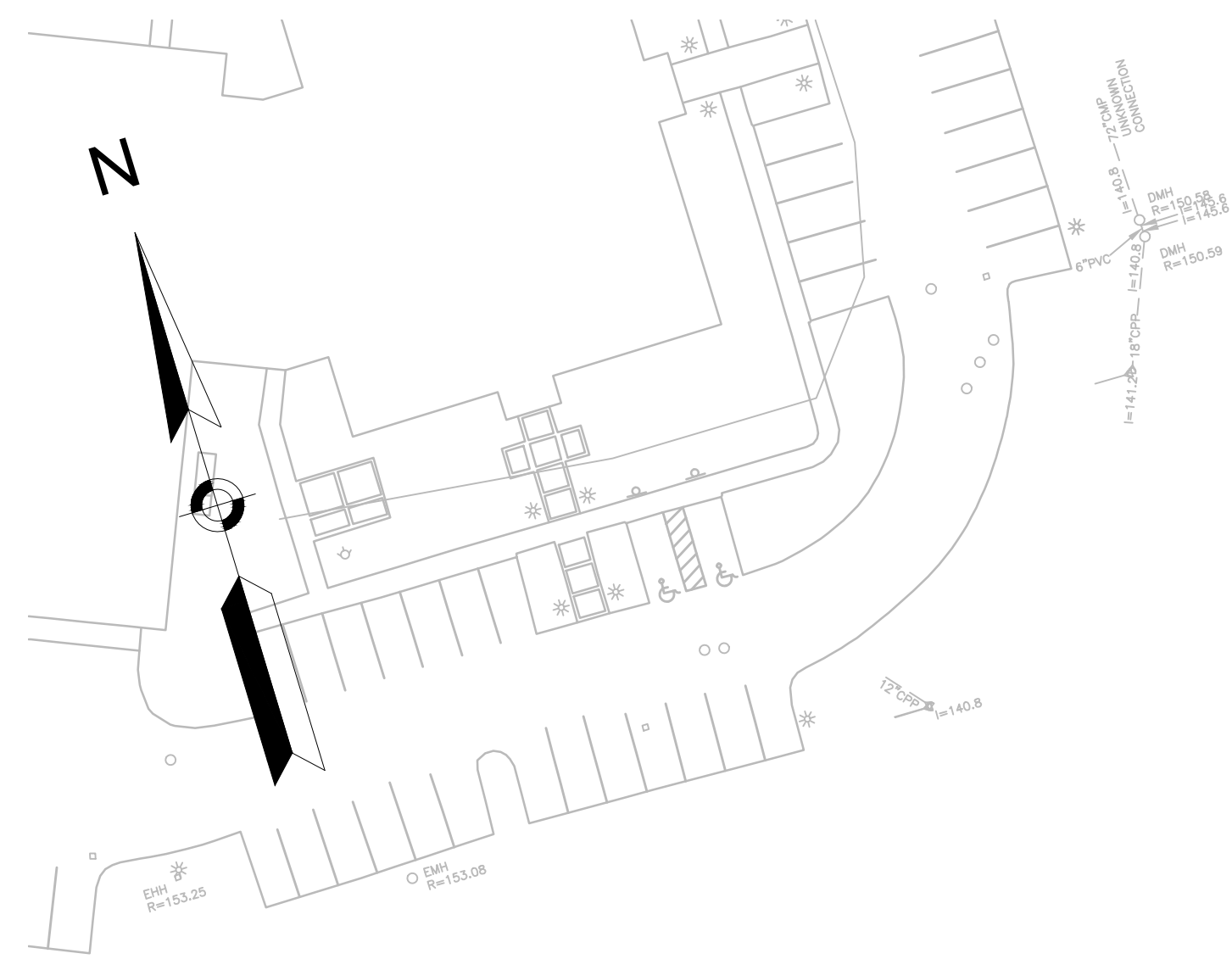
CONT. ON
SHEET 52

SEE CONSTRUCTION PLANS - ROUTE 2 (SHEETS 31 - 31) FOR TEMPORARY MEDIAN CROSSOVER PAVEMENT CONSTRUCTION, HIGHWAY GUARD RAIL REMOVAL AND INSTALLATION AND PROPOSED DRAINAGE REQUIRED TO CONSTRUCT TEMPORARY MEDIAN CROSSING.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	54	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 1



SUGGESTED STAGE 1 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. REMOVE EXISTING MEDIAN AND CONSTRUCT TEMPORARY PAVEMENT FOR MEDIAN CROSSOVERS.

NOTES

1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.

CONT. ON SHEET 53

TAPER DESIGN
W= 4.0'
S= 45 MPH
L= WS
L= 180' (MIN.)

BEGIN TAPER STA. 125+97

PROP. WESTBOUND CROSSOVER

No Access

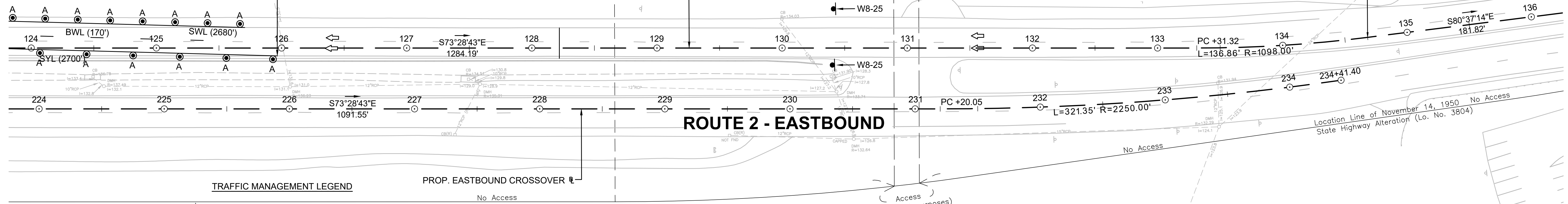
UP #5

SEE ADVANCE WARNING SIGN PLAN

W8-25

ROUTE 2 - WESTBOUND

Access (Agricultural purposes)
No Access
Location Line of November 14, 1950 State Highway Alteration (Lo. No. 3804)



ROUTE 2 - EASTBOUND

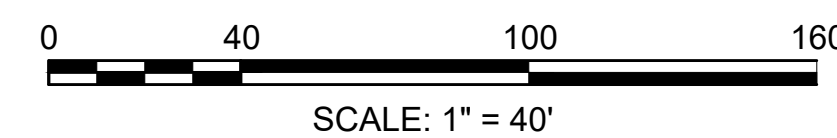
PROP. EASTBOUND CROSSOVER

No Access

Access (Agricultural purposes)

TRAFFIC MANAGEMENT LEGEND

- CONSTRUCTION SIGN
- WORK AREA
- DIRECTION OF TRAVEL
- REFLECTORIZED DRUM OR CONE
- REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- 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 BARRIER (WITH REFLECTORIZED DELINEATORS)
- TEMPORARY IMPACT ATTENUATOR
- PAVEMENT MARKINGS TO COVER OR REMOVE
- PORTABLE CHANGEABLE MESSAGE SIGN
- TRUCK-MOUNTED ATTENUATOR (TMA)



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	55	158
PROJECT FILE NO.		606223	

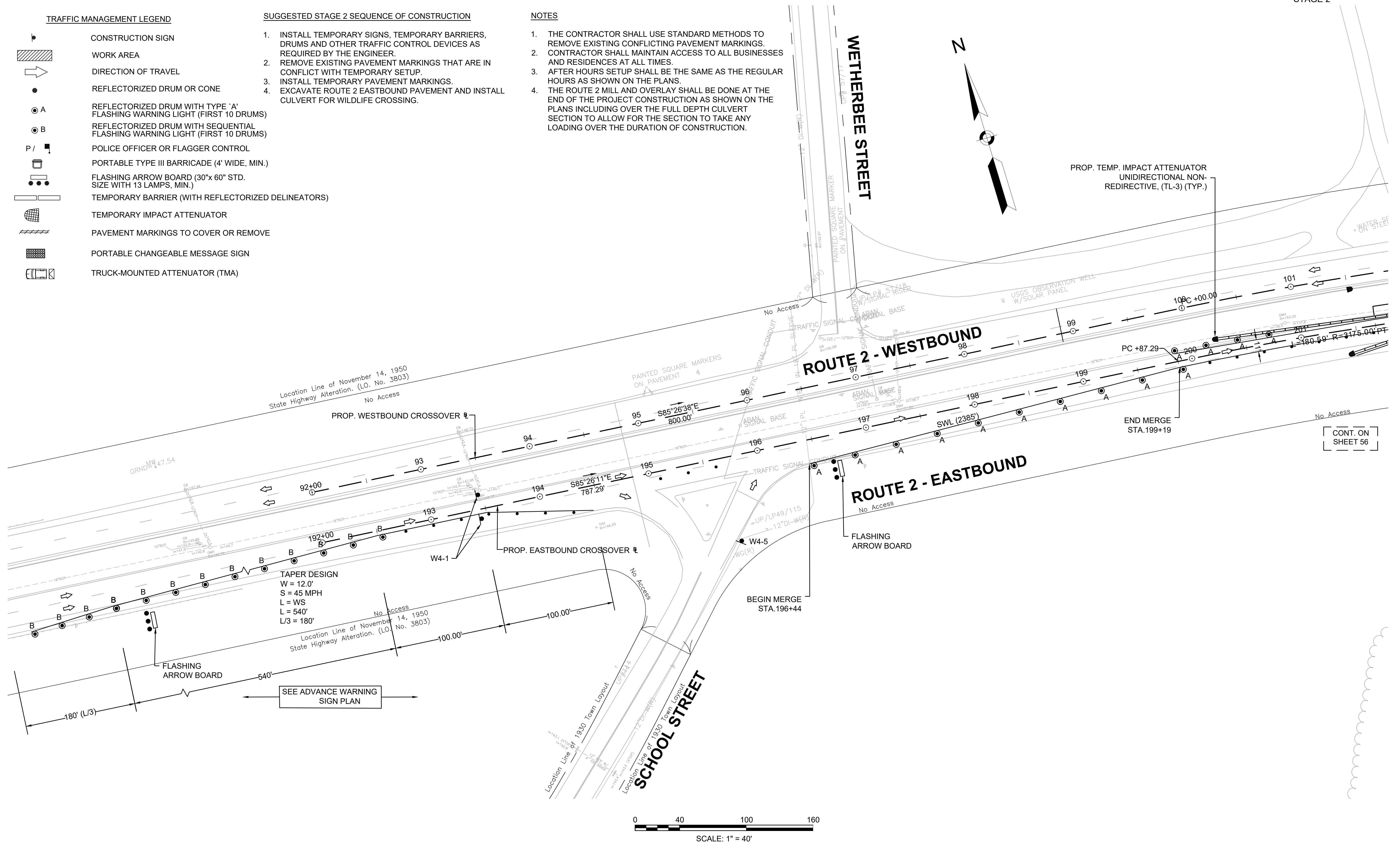
CONSTRUCTION STAGING PLANS
STAGE 2

TRAFFIC MANAGEMENT LEGEND

	CONSTRUCTION SIGN
	WORK AREA
	DIRECTION OF TRAVEL
	REFLECTORIZED DRUM OR CONE
	REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
	REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
	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 BARRIER (WITH REFLECTORIZED DELINEATORS)
	TEMPORARY IMPACT ATTENUATOR
	PAVEMENT MARKINGS TO COVER OR REMOVE
	PORTABLE CHANGEABLE MESSAGE SIGN
	TRUCK-MOUNTED ATTENUATOR (TMA)

- SUGGESTED STAGE 2 SEQUENCE OF CONSTRUCTION**
1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
 2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
 3. INSTALL TEMPORARY PAVEMENT MARKINGS.
 4. EXCAVATE ROUTE 2 EASTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.

- NOTES**
1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
 2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
 3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.
 4. THE ROUTE 2 MILL AND OVERLAY SHALL BE DONE AT THE END OF THE PROJECT CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING OVER THE FULL DEPTH CULVERT SECTION TO ALLOW FOR THE SECTION TO TAKE ANY LOADING OVER THE DURATION OF CONSTRUCTION.



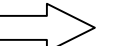



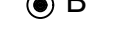


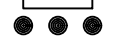
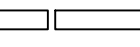

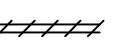



CONT. ON SHEET 56

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	56	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 2

TRAFFIC MANAGEMENT LEGEND

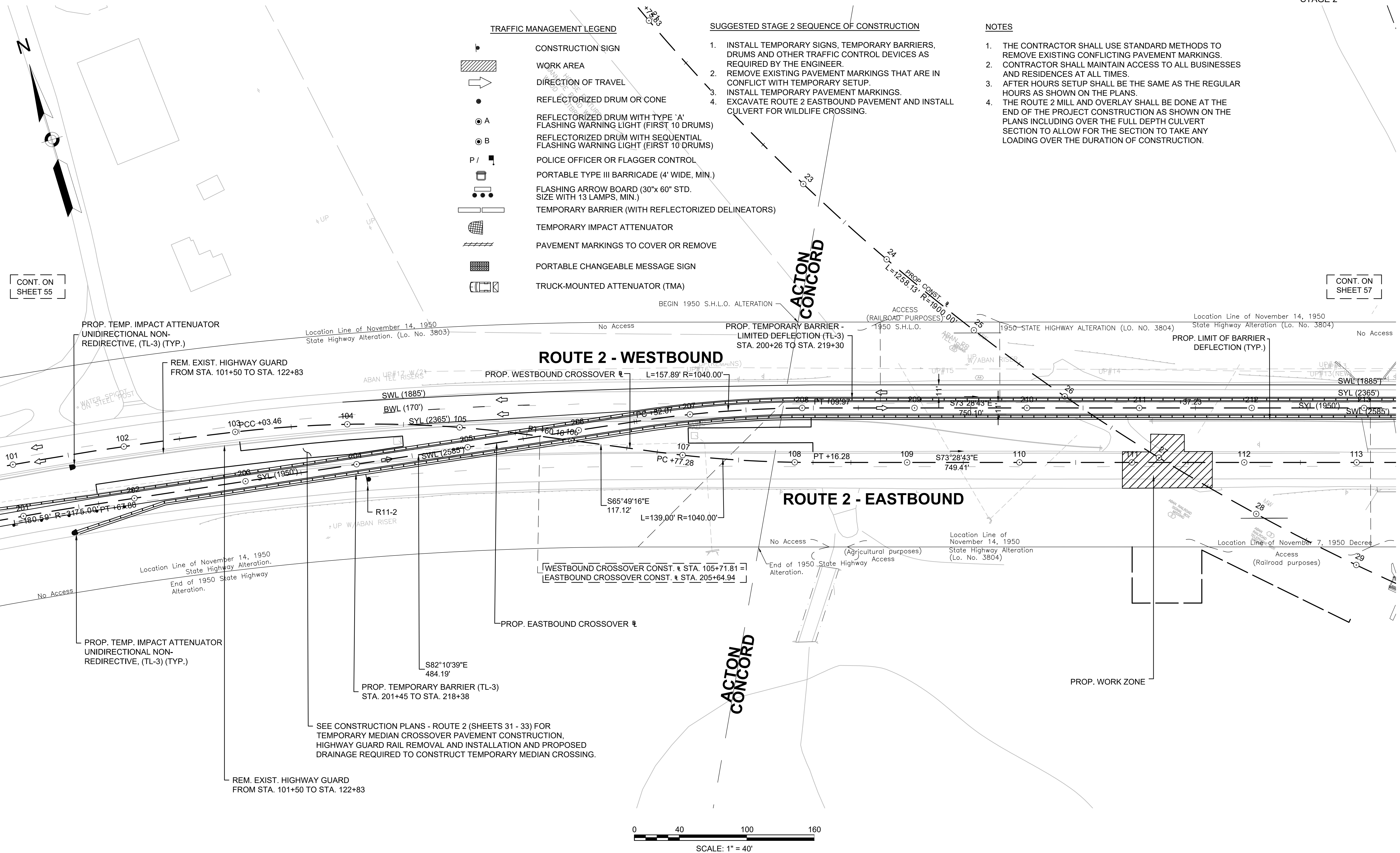
-  CONSTRUCTION SIGN
-  WORK AREA
-  DIRECTION OF TRAVEL
-  REFLECTORIZED DRUM OR CONE
-  REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  POLICE OFFICER OR FLAGGER CONTROL
-  PORTABLE TYPE III BARRICADE (4' WIDE, MIN.)
-  FLASHING ARROW BOARD (30"x 60" STD. SIZE WITH 13 LAMPS, MIN.)
-  TEMPORARY BARRIER (WITH REFLECTORIZED DELINEATORS)
-  TEMPORARY IMPACT ATTENUATOR
-  PAVEMENT MARKINGS TO COVER OR REMOVE
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK-MOUNTED ATTENUATOR (TMA)

SUGGESTED STAGE 2 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. EXCAVATE ROUTE 2 EASTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.

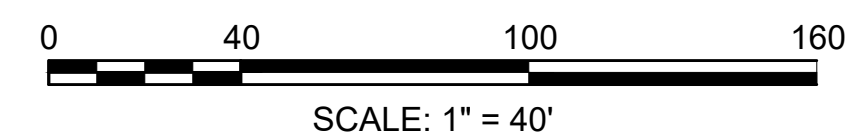
NOTES

1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.
4. THE ROUTE 2 MILL AND OVERLAY SHALL BE DONE AT THE END OF THE PROJECT CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING OVER THE FULL DEPTH CULVERT SECTION TO ALLOW FOR THE SECTION TO TAKE ANY LOADING OVER THE DURATION OF CONSTRUCTION.



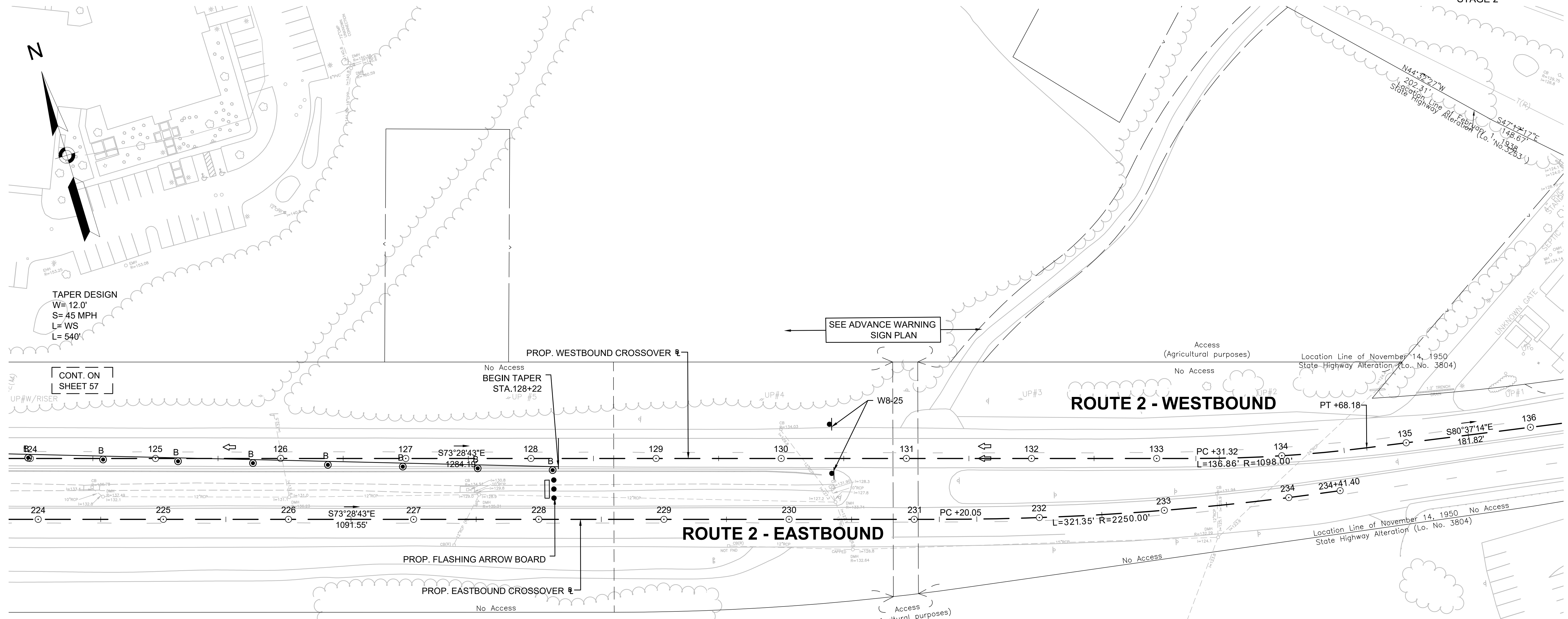
CONT. ON SHEET 55

CONT. ON SHEET 57



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	58	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 2



TAPER DESIGN
W= 12.0'
S= 45 MPH
L= WS
L= 540'

CONT. ON SHEET 57

TRAFFIC MANAGEMENT LEGEND

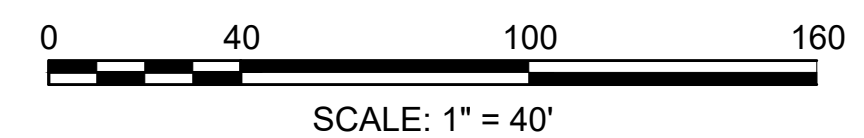
- CONSTRUCTION SIGN
- WORK AREA
- DIRECTION OF TRAVEL
- REFLECTORIZED DRUM OR CONE
- REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- POLICE OFFICER OR FLAGGER CONTROL
- PORTABLE TYPE III BARRICADE (4' WIDE, MIN.)
- FLASHING ARROW BOARD (30"x 60" STD. SIZE WITH 13 LAMPS, MIN.)
- TEMPORARY BARRIER (WITH REFLECTORIZED DELINEATORS)
- TEMPORARY IMPACT ATTENUATOR
- PAVEMENT MARKINGS TO COVER OR REMOVE
- PORTABLE CHANGEABLE MESSAGE SIGN
- TRUCK-MOUNTED ATTENUATOR (TMA)

SUGGESTED STAGE 2 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. EXCAVATE ROUTE 2 EASTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.

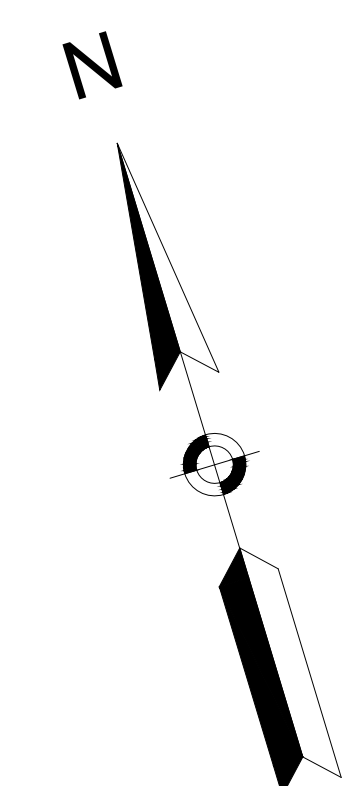
NOTES

1. THE CONTRACTOR SHALL USE STANDARD METHODS TO REMOVE EXISTING CONFLICTING PAVEMENT MARKINGS.
2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.
4. THE ROUTE 2 MILL AND OVERLAY SHALL BE DONE AT THE END OF THE PROJECT CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING OVER THE FULL DEPTH CULVERT SECTION TO ALLOW FOR THE SECTION TO TAKE ANY LOADING OVER THE DURATION OF CONSTRUCTION.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	59	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 3

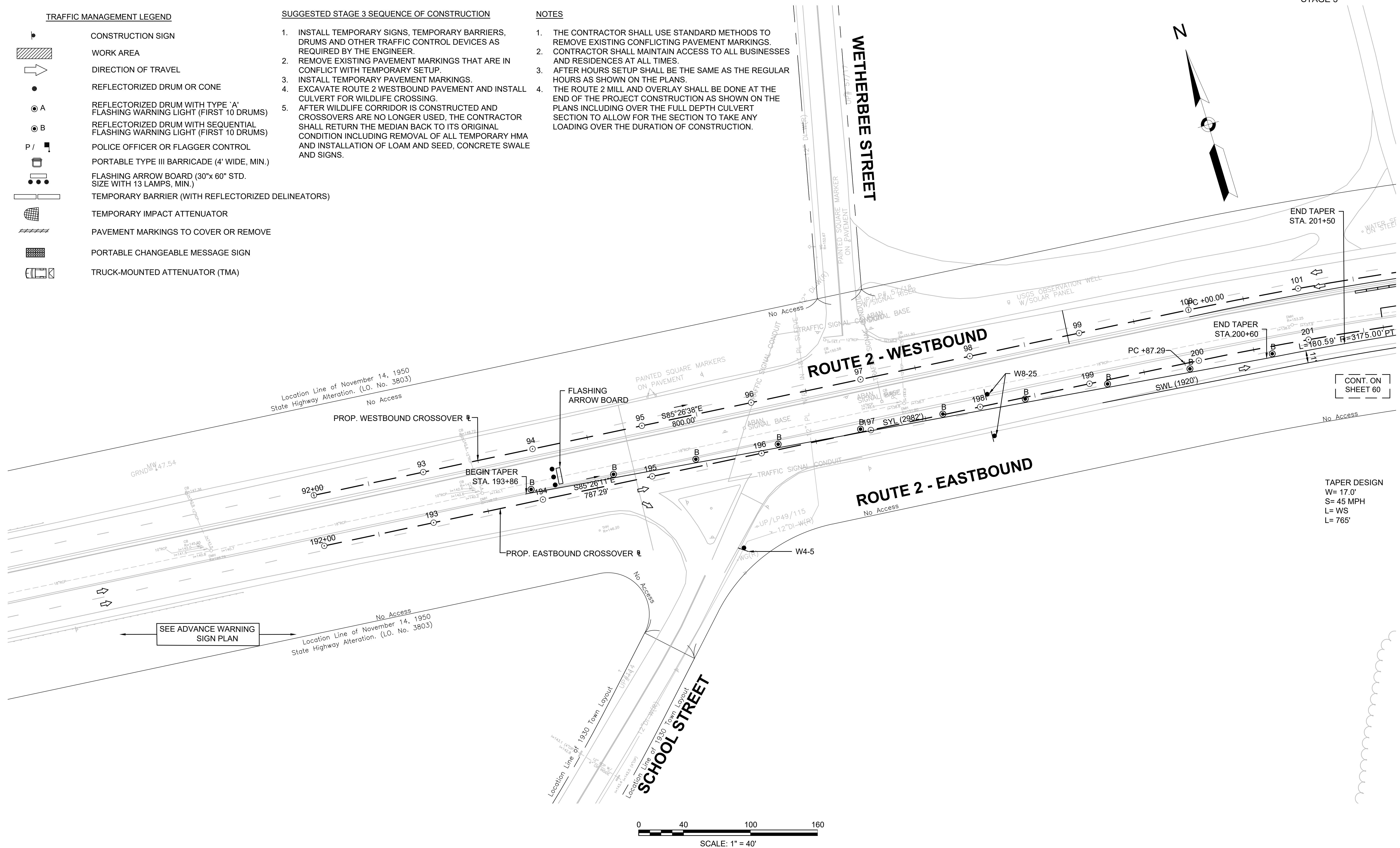


TRAFFIC MANAGEMENT LEGEND

	CONSTRUCTION SIGN
	WORK AREA
	DIRECTION OF TRAVEL
	REFLECTORIZED DRUM OR CONE
	REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
	REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
	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 BARRIER (WITH REFLECTORIZED DELINEATORS)
	TEMPORARY IMPACT ATTENUATOR
	PAVEMENT MARKINGS TO COVER OR REMOVE
	PORTABLE CHANGEABLE MESSAGE SIGN
	TRUCK-MOUNTED ATTENUATOR (TMA)

- SUGGESTED STAGE 3 SEQUENCE OF CONSTRUCTION**
1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
 2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
 3. INSTALL TEMPORARY PAVEMENT MARKINGS.
 4. EXCAVATE ROUTE 2 WESTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.
 5. AFTER WILDLIFE CORRIDOR IS CONSTRUCTED AND CROSSOVERS ARE NO LONGER USED, THE CONTRACTOR SHALL RETURN THE MEDIAN BACK TO ITS ORIGINAL CONDITION INCLUDING REMOVAL OF ALL TEMPORARY HMA AND INSTALLATION OF LOAM AND SEED, CONCRETE SWALE AND SIGNS.










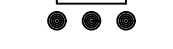
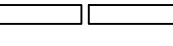

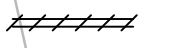

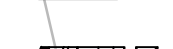
- NOTES**
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 3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.
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STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	60	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 3

TRAFFIC MANAGEMENT LEGEND

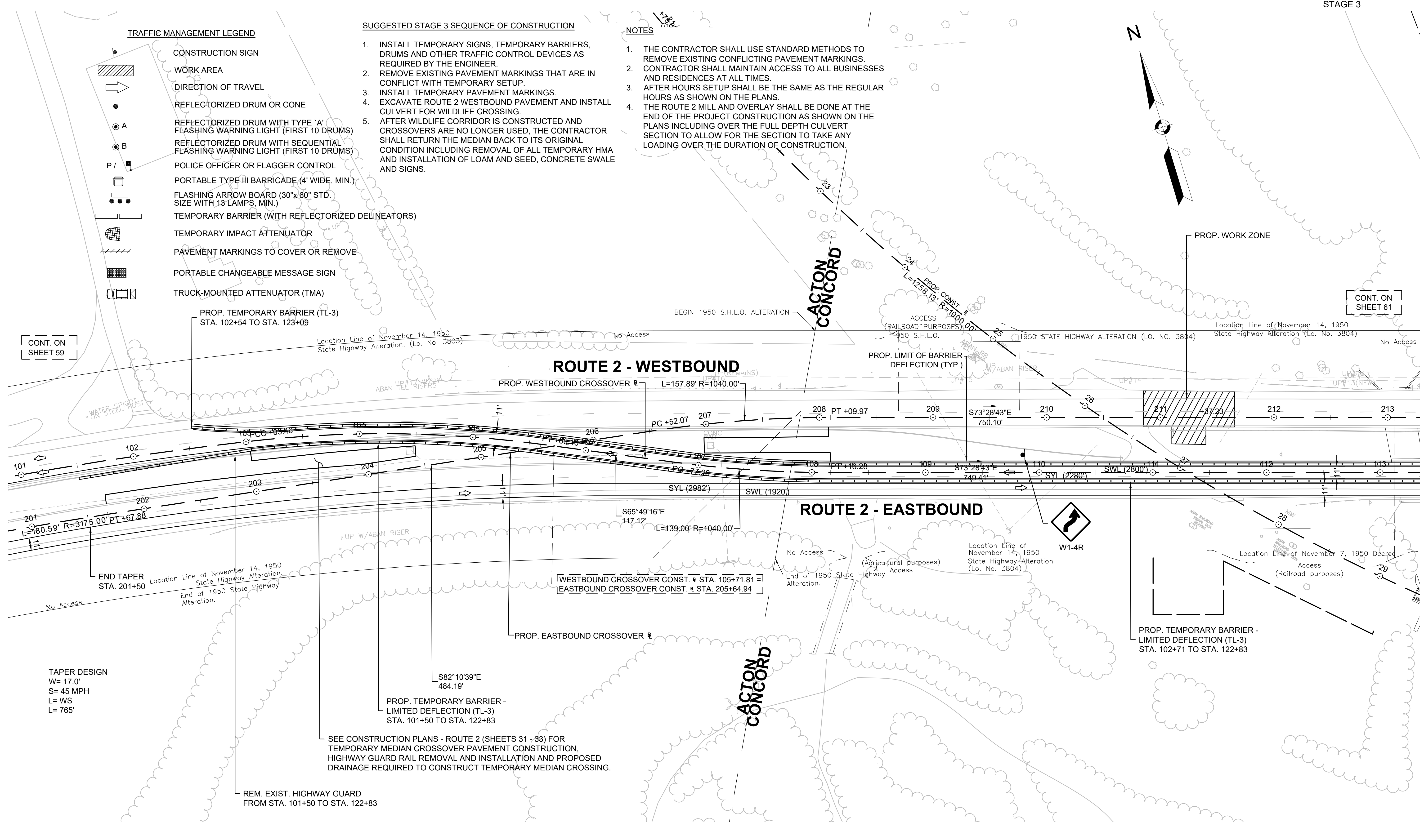
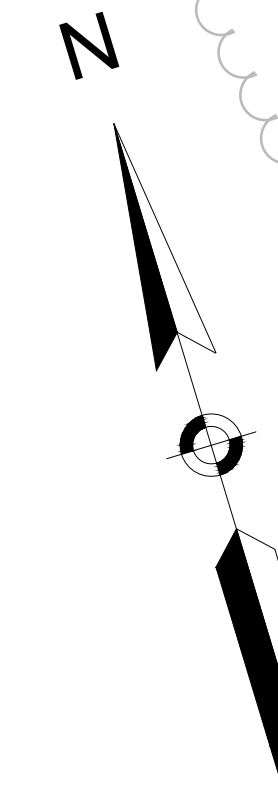
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-  WORK AREA
-  DIRECTION OF TRAVEL
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-  TEMPORARY BARRIER (WITH REFLECTORIZED DELINEATORS)
-  TEMPORARY IMPACT ATTENUATOR
-  PAVEMENT MARKINGS TO COVER OR REMOVE
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK-MOUNTED ATTENUATOR (TMA)
-  PROP. TEMPORARY BARRIER (TL-3)

SUGGESTED STAGE 3 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. EXCAVATE ROUTE 2 WESTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.
5. AFTER WILDLIFE CORRIDOR IS CONSTRUCTED AND CROSSOVERS ARE NO LONGER USED, THE CONTRACTOR SHALL RETURN THE MEDIAN BACK TO ITS ORIGINAL CONDITION INCLUDING REMOVAL OF ALL TEMPORARY HMA AND INSTALLATION OF LOAM AND SEED, CONCRETE SWALE AND SIGNS.

NOTES

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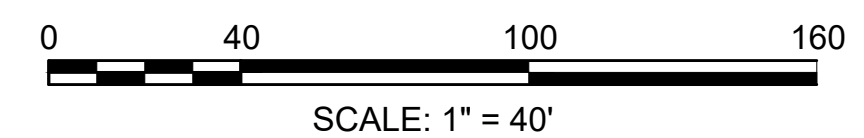
CONT. ON SHEET 59

CONT. ON SHEET 61

TAPER DESIGN
W= 17.0'
S= 45 MPH
L= WS
L= 765'

SEE CONSTRUCTION PLANS - ROUTE 2 (SHEETS 31 - 33) FOR TEMPORARY MEDIAN CROSSOVER PAVEMENT CONSTRUCTION, HIGHWAY GUARD RAIL REMOVAL AND INSTALLATION AND PROPOSED DRAINAGE REQUIRED TO CONSTRUCT TEMPORARY MEDIAN CROSSING.

REM. EXIST. HIGHWAY GUARD FROM STA. 101+50 TO STA. 122+83



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	61	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 3


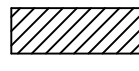
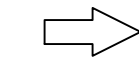



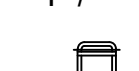
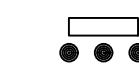
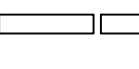



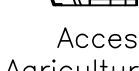


SUGGESTED STAGE 3 SEQUENCE OF CONSTRUCTION

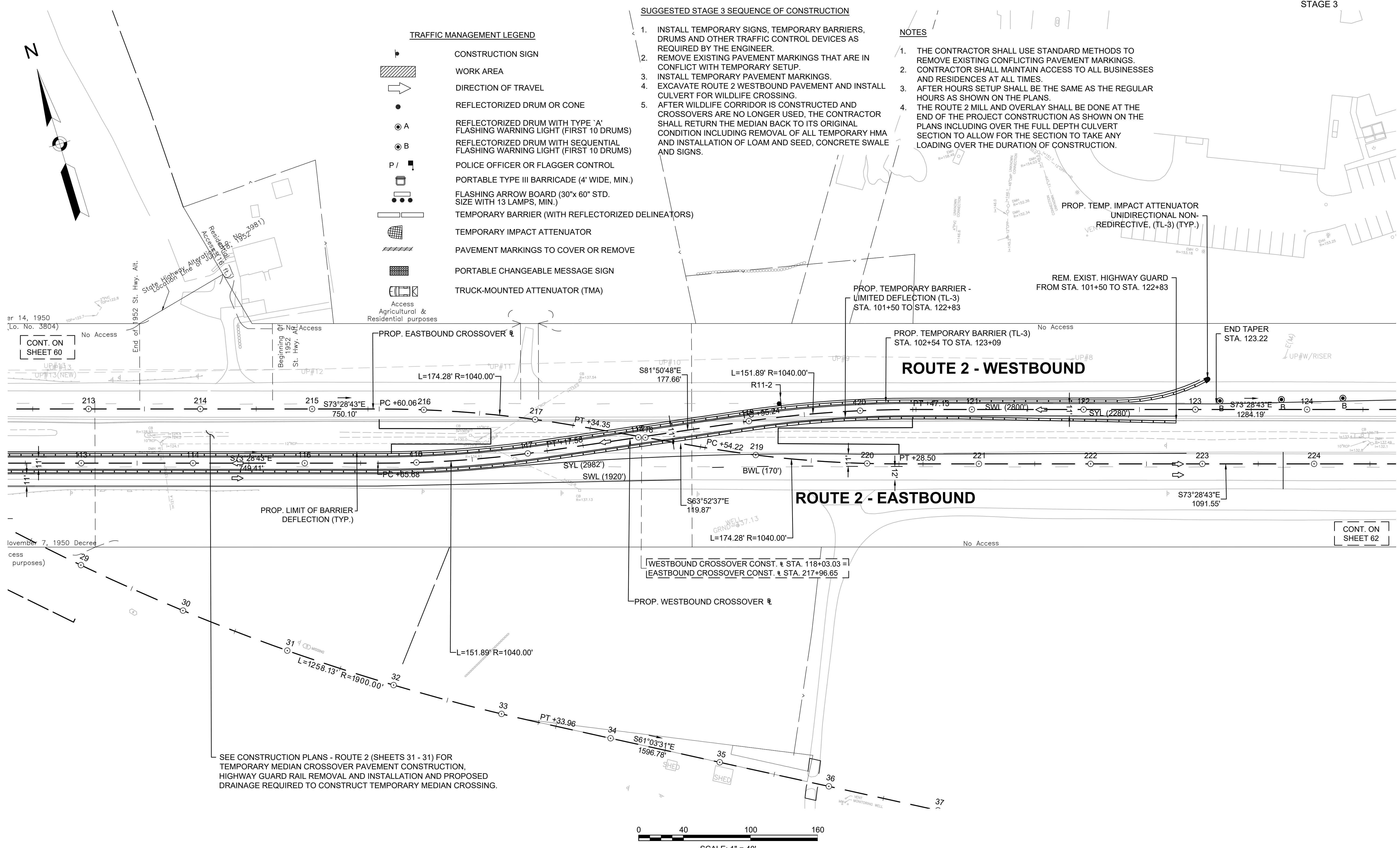
1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. EXCAVATE ROUTE 2 WESTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.
5. AFTER WILDLIFE CORRIDOR IS CONSTRUCTED AND CROSSOVERS ARE NO LONGER USED, THE CONTRACTOR SHALL RETURN THE MEDIAN BACK TO ITS ORIGINAL CONDITION INCLUDING REMOVAL OF ALL TEMPORARY HMA AND INSTALLATION OF LOAM AND SEED, CONCRETE SWALE AND SIGNS.

NOTES

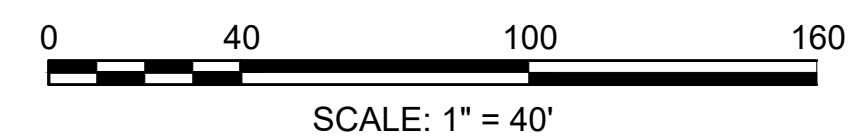
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2. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES.
3. AFTER HOURS SETUP SHALL BE THE SAME AS THE REGULAR HOURS AS SHOWN ON THE PLANS.
4. THE ROUTE 2 MILL AND OVERLAY SHALL BE DONE AT THE END OF THE PROJECT CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING OVER THE FULL DEPTH CULVERT SECTION TO ALLOW FOR THE SECTION TO TAKE ANY LOADING OVER THE DURATION OF CONSTRUCTION.

TRAFFIC MANAGEMENT LEGEND

-  CONSTRUCTION SIGN
-  WORK AREA
-  DIRECTION OF TRAVEL
-  REFLECTORIZED DRUM OR CONE
-  REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
-  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 BARRIER (WITH REFLECTORIZED DELINEATORS)
-  TEMPORARY IMPACT ATTENUATOR
-  PAVEMENT MARKINGS TO COVER OR REMOVE
-  PORTABLE CHANGEABLE MESSAGE SIGN
-  TRUCK-MOUNTED ATTENUATOR (TMA)
-  Access Agricultural & Residential purposes



SEE CONSTRUCTION PLANS - ROUTE 2 (SHEETS 31 - 31) FOR TEMPORARY MEDIAN CROSSOVER PAVEMENT CONSTRUCTION, HIGHWAY GUARD RAIL REMOVAL AND INSTALLATION AND PROPOSED DRAINAGE REQUIRED TO CONSTRUCT TEMPORARY MEDIAN CROSSING.

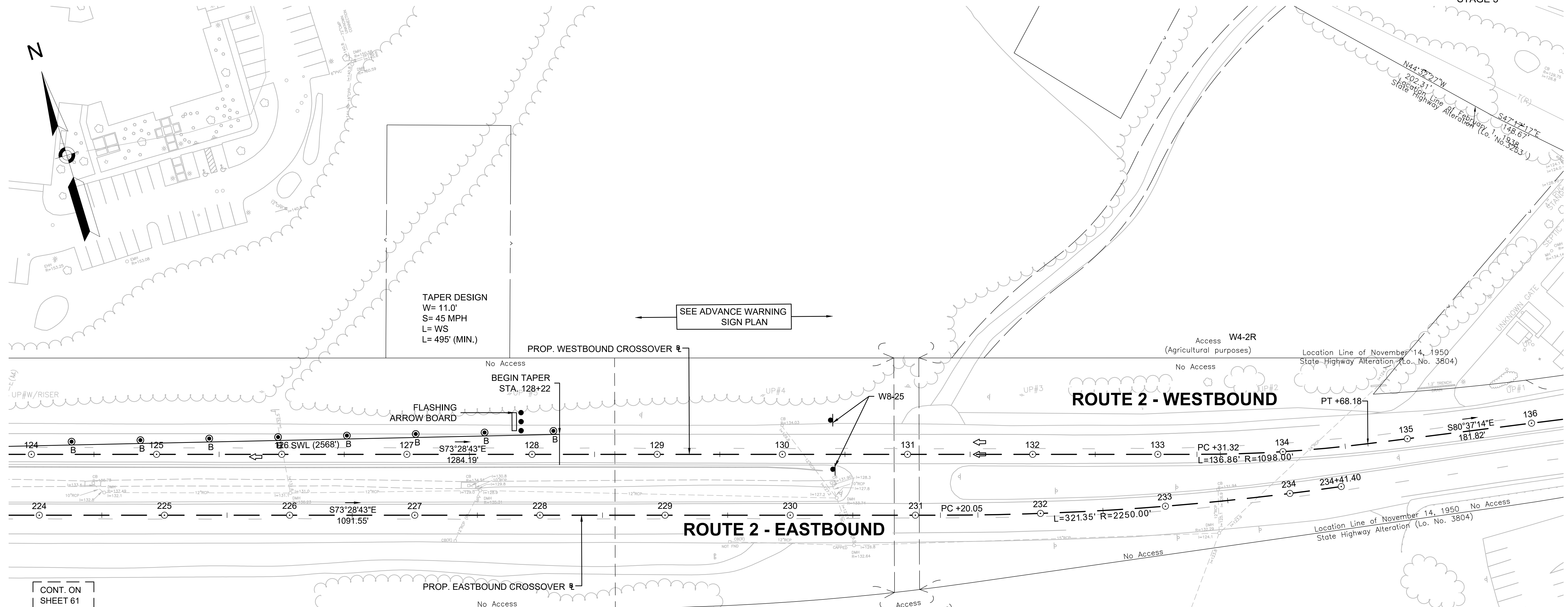


CONT. ON SHEET 60

CONT. ON SHEET 62

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	62	158
PROJECT FILE NO.		606223	

CONSTRUCTION STAGING PLANS
STAGE 3



CONT. ON
SHEET 61

TRAFFIC MANAGEMENT LEGEND

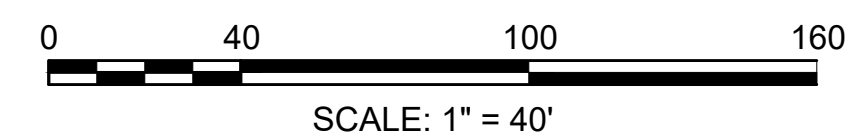
- CONSTRUCTION SIGN
- WORK AREA
- DIRECTION OF TRAVEL
- REFLECTORIZED DRUM OR CONE
- REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
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- TEMPORARY IMPACT ATTENUATOR
- PAVEMENT MARKINGS TO COVER OR REMOVE
- PORTABLE CHANGEABLE MESSAGE SIGN
- TRUCK-MOUNTED ATTENUATOR (TMA)

SUGGESTED STAGE 3 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY SIGNS, TEMPORARY BARRIERS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. EXCAVATE ROUTE 2 WESTBOUND PAVEMENT AND INSTALL CULVERT FOR WILDLIFE CROSSING.
5. AFTER WILDLIFE CORRIDOR IS CONSTRUCTED AND CROSSOVERS ARE NO LONGER USED, THE CONTRACTOR SHALL RETURN THE MEDIAN BACK TO ITS ORIGINAL CONDITION INCLUDING REMOVAL OF ALL TEMPORARY HMA AND INSTALLATION OF LOAM AND SEED, CONCRETE SWALE AND SIGNS.

NOTES

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4. THE ROUTE 2 MILL AND OVERLAY SHALL BE DONE AT THE END OF THE PROJECT CONSTRUCTION AS SHOWN ON THE PLANS INCLUDING OVER THE FULL DEPTH CULVERT SECTION TO ALLOW FOR THE SECTION TO TAKE ANY LOADING OVER THE DURATION OF CONSTRUCTION.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	63	158
PROJECT FILE NO.		606223	

TEMPORARY TRAFFIC CONTROL PLANS

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACK-GROUND	LEGEND	BORDER		
MA-R2-10a	48"	36"				6	ORANGE / WHITE	BLACK	BLACK	12.00	72.00
MA-R2-10e	36"	48"				4	ORANGE / WHITE	BLACK	BLACK	12.00	48.00
R11-2	48"	30"				1	WHITE	BLACK	BLACK	10.00	10.00
W1-4BL	48"	48"				2	ORANGE	BLACK	BLACK	16.00	32.00
W1-4R	48"	48"				2	ORANGE	BLACK	BLACK	16.00	32.00
W1-4BR	48"	48"				4	ORANGE	BLACK	BLACK	16.00	64.00
W1-6L	60"	30"				1	ORANGE	BLACK	BLACK	12.50	12.50
W4-2L	36"	36"				2	ORANGE	BLACK	BLACK	9.00	18.00
W4-2R	36"	36"				2	ORANGE	BLACK	BLACK	9.00	18.00
W4-5R	36"	36"				1	ORANGE	BLACK	BLACK	9.00	9.00
W8-1	36"	36"				5	ORANGE	BLACK	BLACK	9.00	45.00
W8-3	36"	36"				2	ORANGE	BLACK	BLACK	9.00	18.00

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)		NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA IN SQUARE FEET	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING		BACK-GROUND	LEGEND	BORDER		
W8-8	36"	36"				2	ORANGE	BLACK	BLACK	9.00	18.00
W8-15	36"	36"				4	ORANGE	BLACK	BLACK	9.00	36.00
W8-25	48"	48"				2	ORANGE	BLACK	BLACK	16.00	32.00
W13-1P	18"	18"				4	ORANGE	BLACK	BLACK	2.25	9.00
W20-1	36"	36"				4	ORANGE	BLACK	BLACK	9.00	36.00
W20-1M	36"	36"				2	ORANGE	BLACK	BLACK	9.00	18.00
W20-5L	48"	48"				2	ORANGE	BLACK	BLACK	16.00	32.00
W20-5R	36"	36"				2	ORANGE	BLACK	BLACK	9.00	18.00
W21-5a	36"	36"				1	ORANGE	BLACK	BLACK	9.00	9.00
W21-5b	36"	36"				1	ORANGE	BLACK	BLACK	9.00	9.00
W21-10	48"	48"		5"D	4"	2	ORANGE	BLACK	BLACK	16.00	32.00
W21-11a	48"	48"		5" D	4"	2	ORANGE	BLACK	BLACK	16.00	32.00
W21-11b	48"	48"		5" D	4"	2	ORANGE	BLACK	BLACK	16.00	32.00

TRAFFIC MANAGEMENT NOTES

GENERAL

- 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.
- 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.
- 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, AND ONLY WITH THE APPROVAL OF MASSDOT AND THE ENGINEER, LANE RESTRICTIONS MAY REMAIN OVERNIGHT.
- 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.
- PLACE ALL CONSTRUCTION SIGNING, TRAFFIC CONTROL DEVICES AND TEMPORARY PAVEMENT MARKINGS FOR EACH PHASE PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- ONE (1) THRU TRAVEL LANE HAVING A MINIMUM WIDTH OF 11'-0" MUST BE PROVIDED FOR BOTH DIRECTIONS 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.
- 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.
- 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.
- ADVISORY SPEED LIMIT, IF USED, SHALL BE SET IN THE FIELD BY THE ENGINEER. W13-1P PLATES SHALL BE USED WHERE APPROPRIATE.
- 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.
- DISTANCES SHOWN ON THE TEMPORARY TRAFFIC CONTROL PLANS ARE A GUIDE ONLY, AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.

GRADE DIFFERENCES

- 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.
- CROSS-SECTIONAL GRADE DIFFERENCES IN EXCESS OF 2" DURING NON-WORKING HOURS WILL REQUIRE DELINEATION BY USE OF REFLECTORIZED DRUMS.
- 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.
- 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

- ALL CONSTRUCTION SIGNS SHALL BE BLACK LEGEND ON A REFLECTORIZED ORANGE BACKGROUND UNLESS OTHERWISE NOTED.
- CONSTRUCTION SIGNING SHOWN ON THE ADVANCE SIGNING PLAN SHALL REMAIN IN PLACE FOR THE ENTIRE PROJECT DURATION, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- 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.
- EXISTING GUIDE SIGNS SHALL BE TEMPORARILY RESET AS DIRECTED BY THE ENGINEER.
- ALL SIGNS, INCLUDING EXISTING BARRICADES AND OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES THAT ARE NOT REPRESENTATIVE OF ACTUAL WORK CONDITIONS SHALL BE EITHER COVERED OR REMOVED WHEN NOT APPLICABLE.
- 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.
- 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.

TRAFFIC MANAGEMENT NOTES CONTINUED

PAVEMENT MARKINGS

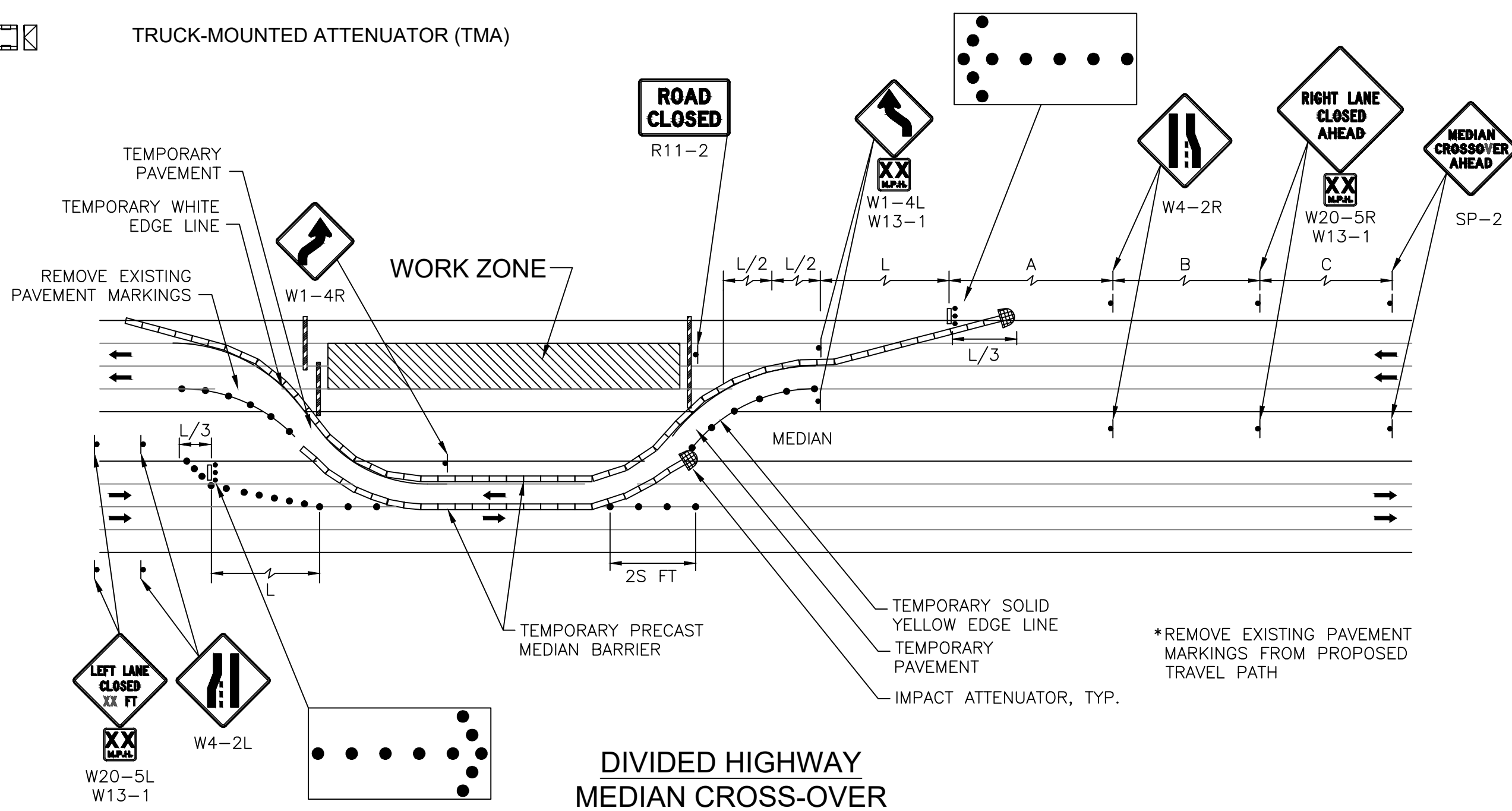
- 12. PAVEMENT MARKINGS WHICH ARE NO LONGER APPLICABLE SHALL BE REMOVED. APPLY TEMPORARY MARKINGS WHERE SHOWN ON THE TEMPORARY TRAFFIC CONTROL PLANS.
- 13. ON PROJECTS WHERE PAVEMENT OVERLAY IS NOT DESIGNATED, EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH TEMPORARY TRAFFIC CONTROLS SHOULD BE 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.

CHANNELIZATION

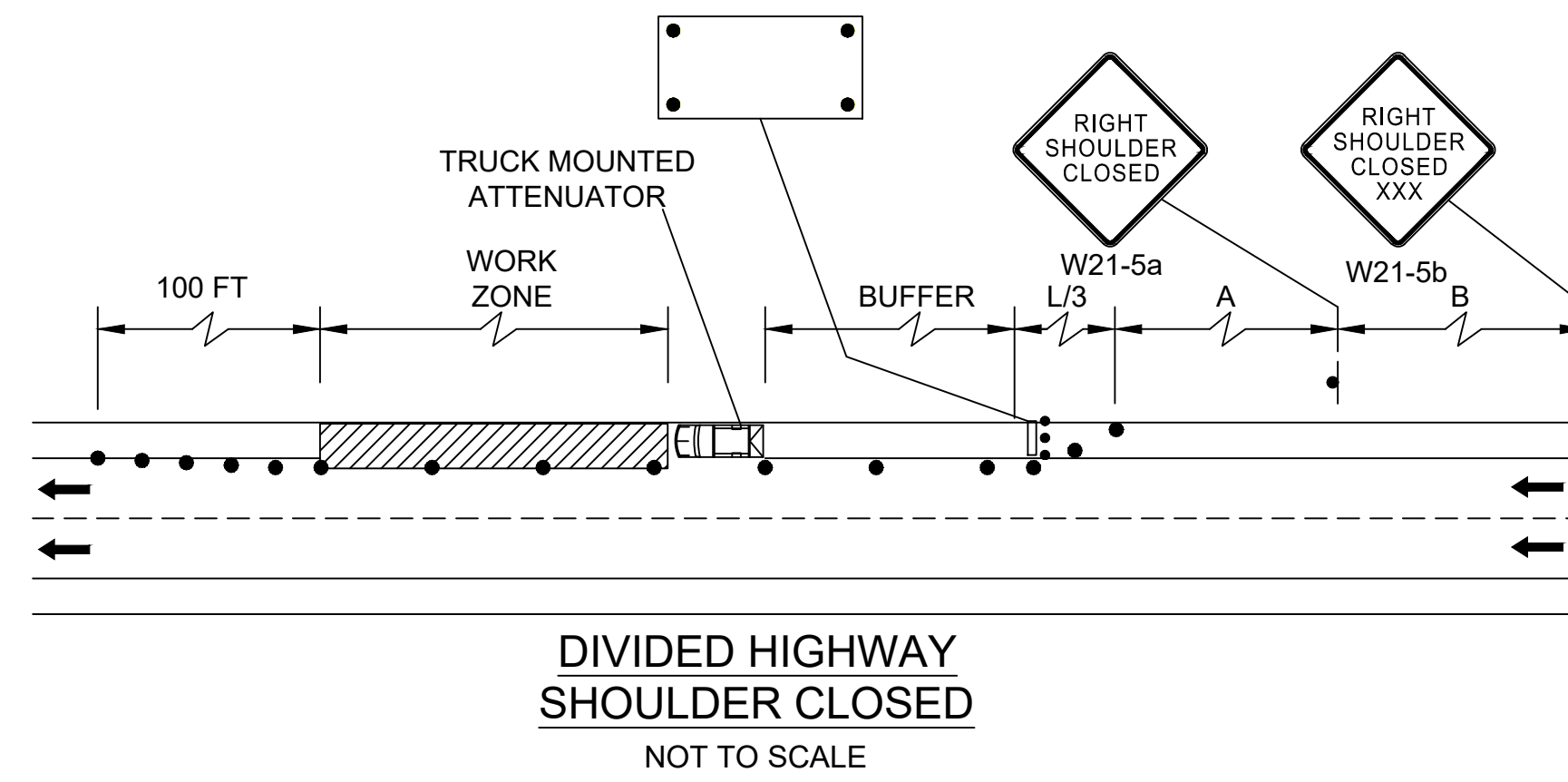
- 25. THE MAXIMUM SPACING BETWEEN CHANNELIZATION DEVICES (DRUMS OR CONES) SHALL BE APPROXIMATELY EQUAL IN FEET TO THE POSTED SPEED LIMIT. THE MINIMUM SPACING SHALL BE 25' O.C.
- 26. REFLECTORIZED CONES SHALL BE 36" HIGH.
- 27. PLASTIC DRUMS MUST PASS THE CRITERIA SET FORTH IN NCHRP 350 "RECOMMENDED PROCEDURES 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 MASH.
- 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.
- 30. THE FIRST TEN (10) PLASTIC DRUMS OF A TAPER ALONG THE SOLID YELLOW EDGE LINE SHALL BE MOUNTED WITH SEQUENTIAL FLASHING WARNING LIGHTS UNLESS OTHERWISE NOTED AS TYPE "A" LIGHTS ON THE STAGING PLANS.
- 31. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.

TRAFFIC MANAGEMENT LEGEND

- CONSTRUCTION SIGN
- WORK AREA
- DIRECTION OF TRAVEL
- REFLECTORIZED DRUM OR CONE
- REFLECTORIZED DRUM WITH TYPE 'A' FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- REFLECTORIZED DRUM WITH SEQUENTIAL FLASHING WARNING LIGHT (FIRST 10 DRUMS)
- 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 BARRIER (WITH REFLECTORIZED DELINEATORS)
- TEMPORARY IMPACT ATTENUATOR
- PAVEMENT MARKINGS TO COVER OR REMOVE
- PORTABLE CHANGEABLE MESSAGE SIGN
- TRUCK-MOUNTED ATTENUATOR (TMA)



**DIVIDED HIGHWAY
MEDIAN CROSS-OVER**



**DIVIDED HIGHWAY
SHOULDER CLOSED**
NOT TO SCALE

ALL PCMS (3 TOTAL)
ALL STAGES
THE SUGGESTED MESSAGE TWO WEEKS IN ADVANCE
OF CONSTRUCTION SHOULD READ AS FOLLOWS:

(MESSAGE 1)

R	O	A	D				
W	O	R	K				
S	T	A	R	T	S		

(MESSAGE 2)

X	X	/	X	/	X	X	
U	S	E					
C	A	U	T	I	O	I	N

PCMS-1
STAGE 1
THE SUGGESTED MESSAGE ON ROUTE 2 (EASTBOUND)
DURING STAGE 1 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

R	O	A	D				
W	O	R	K				
1							
M	I	L	E				

STAGE 2
THE SUGGESTED MESSAGE ON ROUTE 2 (EASTBOUND)
DURING STAGE 2 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

H	O	S	M	E	R		
S	T	R	E	E	T		
O	P	E	N				

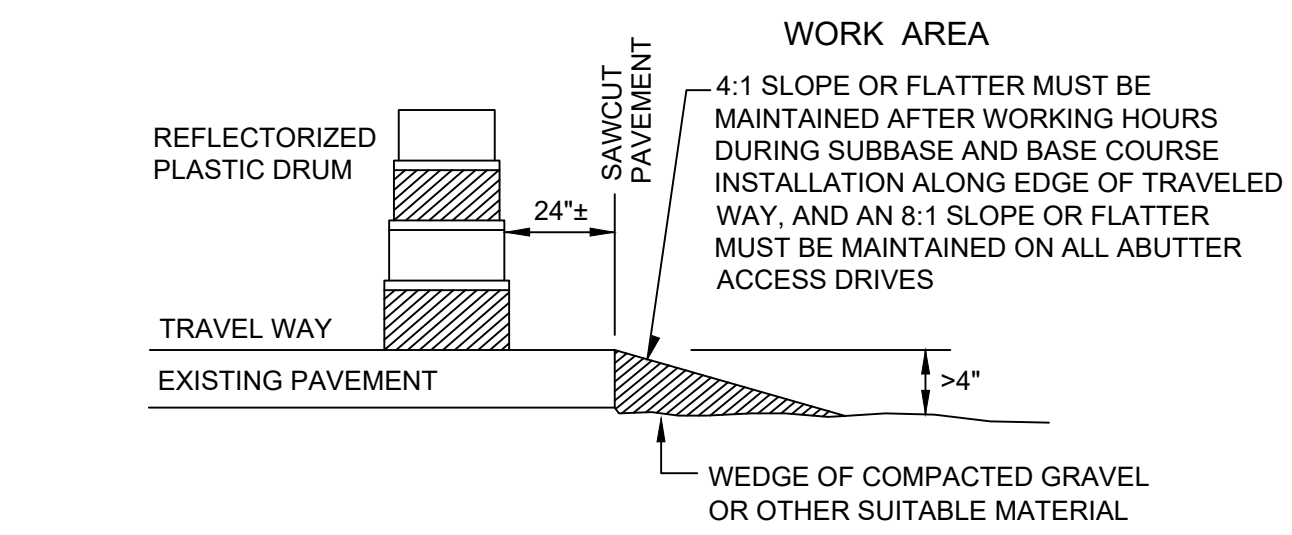
(MESSAGE 2)

D	U	R	I	N	G		
C	O	N	S	T	.		

STAGE 3
THE SUGGESTED MESSAGE ON ROUTE 2 (EASTBOUND)
DURING STAGE 3 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

R	O	A	D				
W	O	R	K				
1							
M	I	L	E				



**AFTER WORK HOURS TREATMENT
FOR LATERAL SLOPING**

PCMS-2
STAGE 1
THE SUGGESTED MESSAGE ON ROUTE 2 (EASTBOUND)
DURING STAGE 1 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

R	O	A	D				
W	O	R	K				
1							
7							
2							
M	I	L	E				

STAGE 2
THE SUGGESTED MESSAGE ON ROUTE 2 (EASTBOUND)
DURING STAGE 2 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

R	O	A	D				
W	O	R	K				
1							
7							
2							
M	I	L	E				

STAGE 3
THE SUGGESTED MESSAGE ON ROUTE 2 (EASTBOUND)
DURING STAGE 3 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

S	C	H	O	O	L		
S	T	R	E	E	T		
O	P	E	N				

(MESSAGE 2)

D	U	R	I	N	G		
C	O	N	S	T	.		

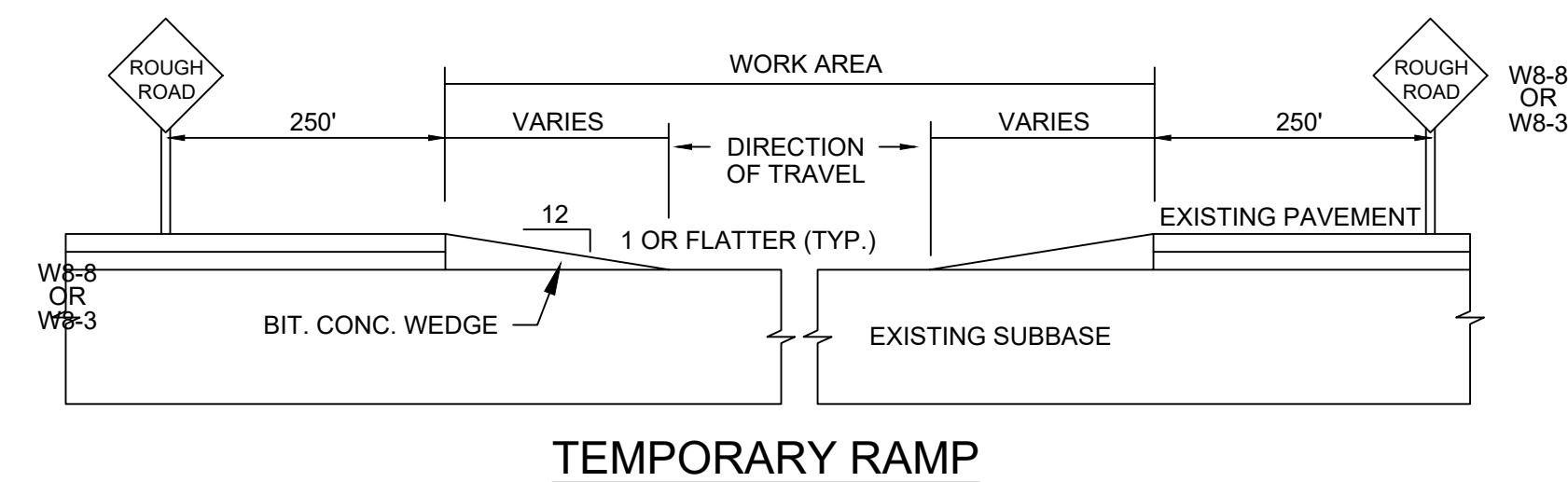
PCMS-3
ALL STAGES
THE SUGGESTED MESSAGE ON ROUTE 2 (WESTBOUND)
DURING STAGE 1 SHOULD READ AS FOLLOWS:

(MESSAGE 1)

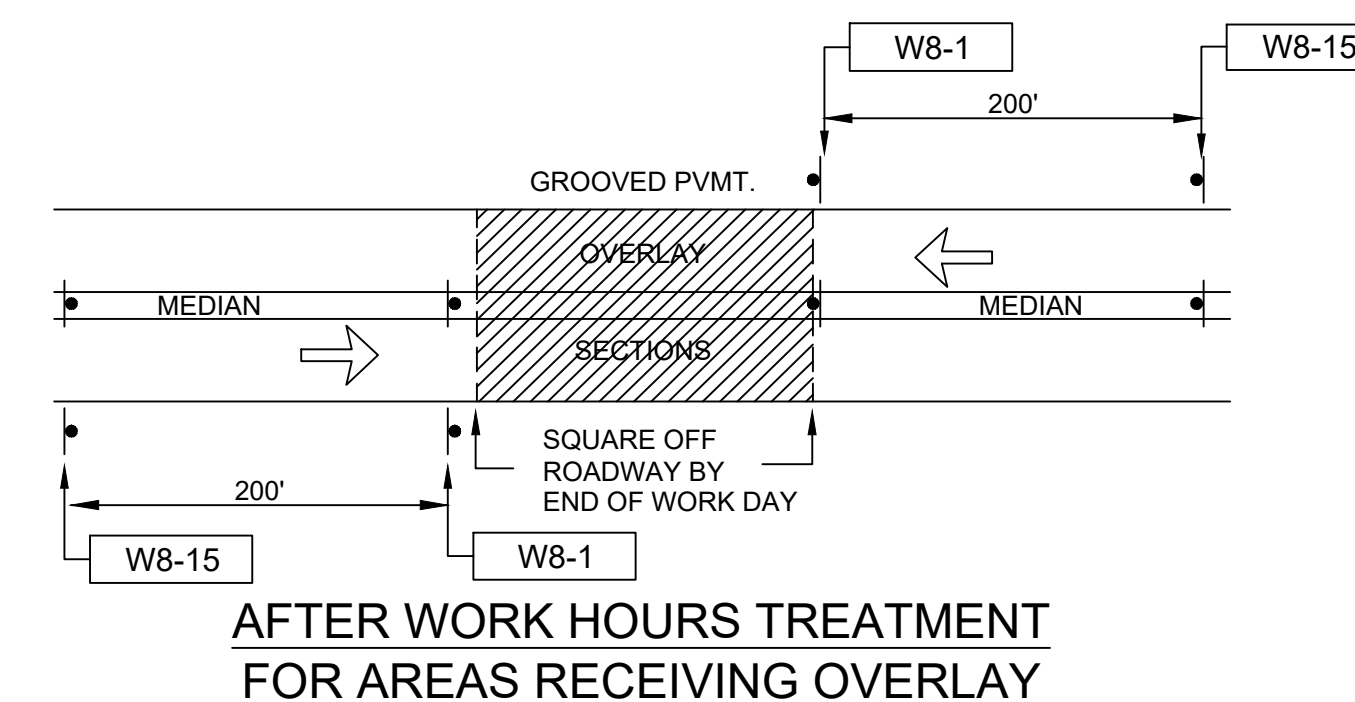
R	O	A	D				
W	O	R	K				
3							
7							
4							
M	I	L	E				

PORTABLE CHANGEABLE MESSAGE SIGNS

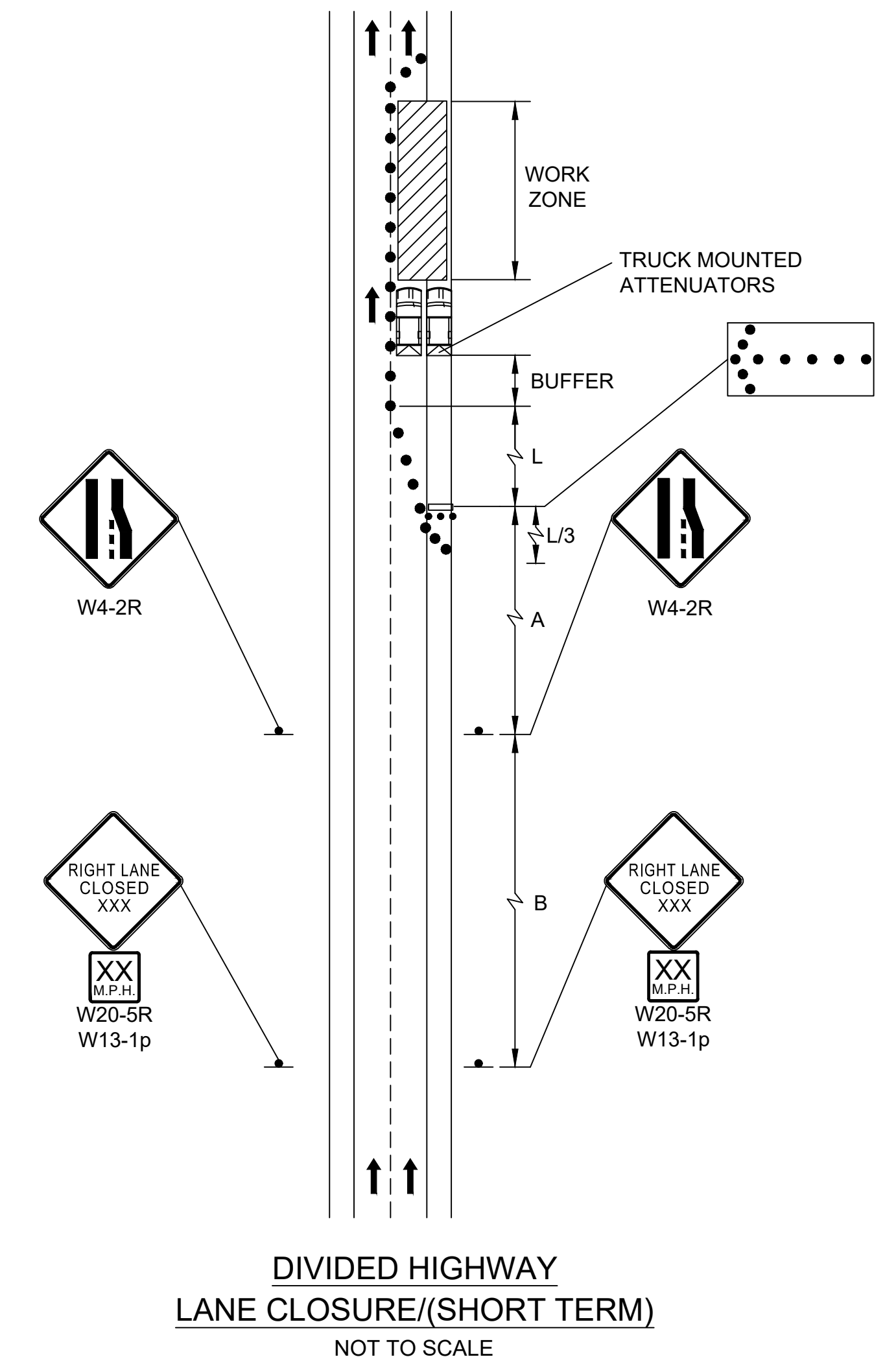
PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL CONFORM TO THE 2009 MUTCD AS AMENDED AND SHOULD BE PLACED ON THE SHOULDER OF THE ROADWAY OR IF PRACTICAL SET WELL AWAY FROM TRAVEL LANE. MESSAGE SIGNS SHOULD BE PROTECTED WITH RETROREFLECTIVE TEMPORARY TRAFFIC CONTROL DEVICES WHEN PLACED WITHIN THE AVAILABLE CLEAR ZONE OR SHIELDED WITH A BARRIER OR CRASH CUSHION. THE LOCATION AND USE OF THE PCMS SHALL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING. ALTERNATE MESSAGES MAY BE DETERMINED BY THE ENGINEER IN THE FIELD.



TEMPORARY RAMP



**AFTER WORK HOURS TREATMENT
FOR AREAS RECEIVING OVERLAY**

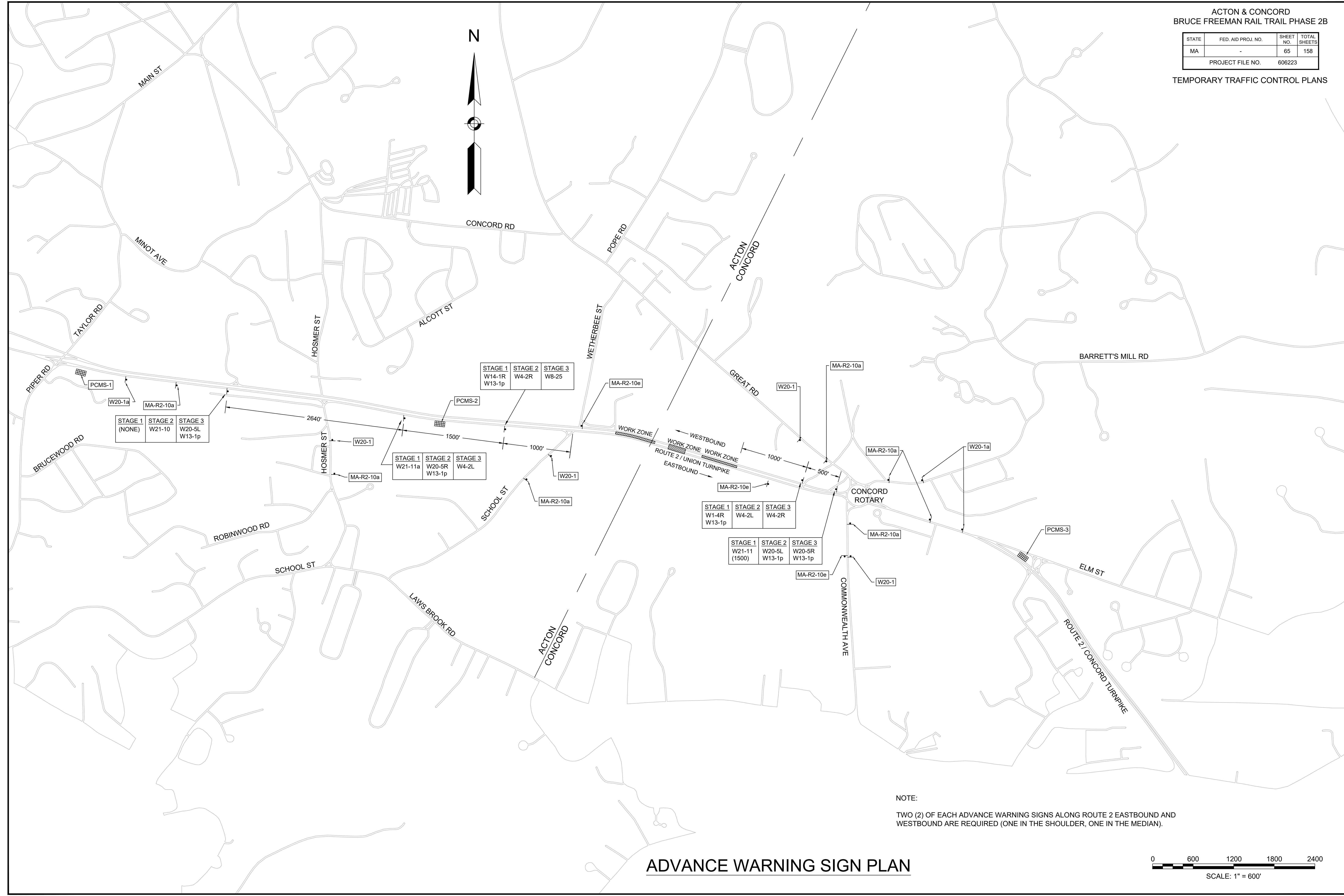


**DIVIDED HIGHWAY
LANE CLOSURE/(SHORT TERM)**
NOT TO SCALE

ACTON & CONCORD
BRUCE FREEMAN RAIL TRAIL PHASE 2B

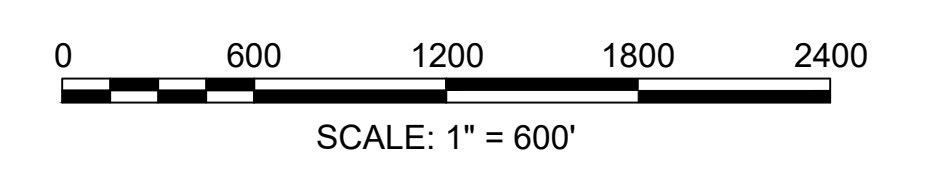
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	64	158
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TEMPORARY TRAFFIC CONTROL PLANS

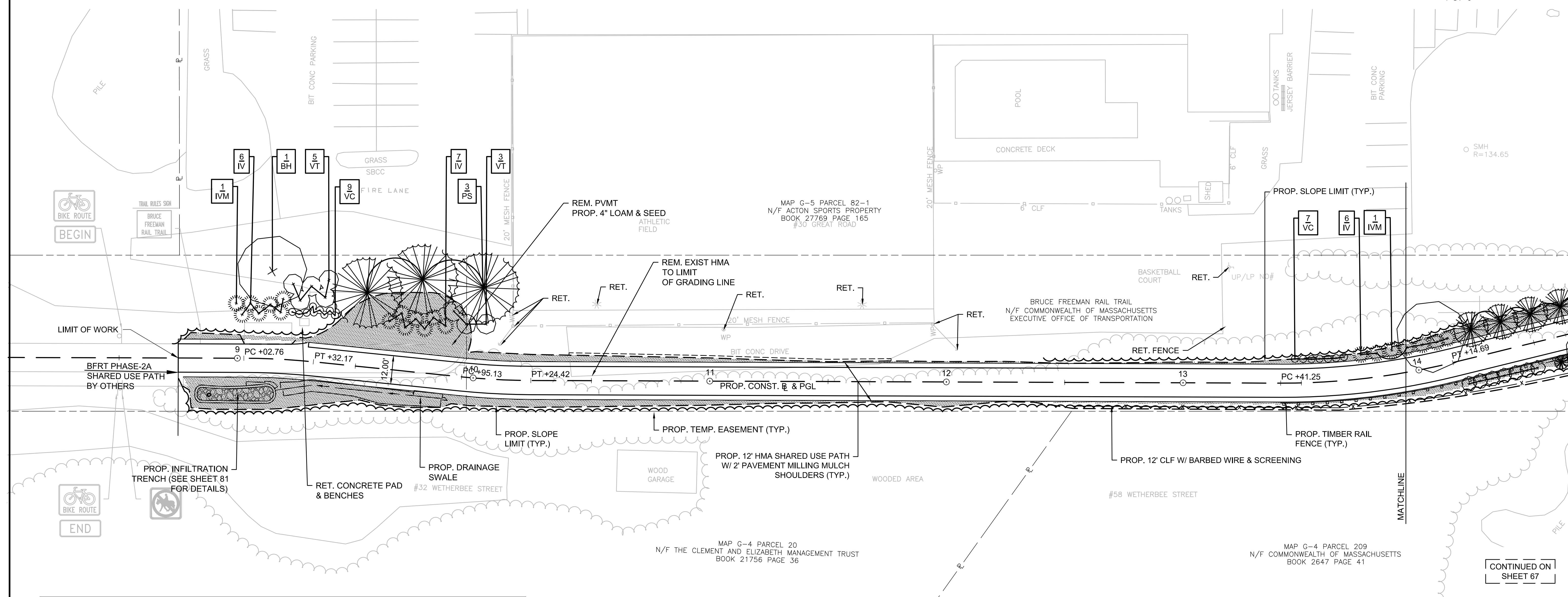
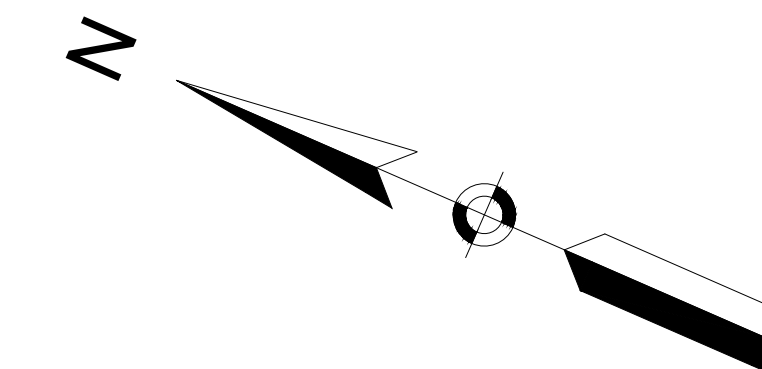


NOTE:
 TWO (2) OF EACH ADVANCE WARNING SIGNS ALONG ROUTE 2 EASTBOUND AND WESTBOUND ARE REQUIRED (ONE IN THE SHOULDER, ONE IN THE MEDIAN).

ADVANCE WARNING SIGN PLAN



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
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PLANT LIST					
QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
TREES					
1	BH	BETULA NIGRA 'HERITAGE'	RIVER BIRCH	8-10 FT. CLUMP	B&B
3	PS	PINUS STROBUS	WHITE PINE	5-6 FT.	B&B
SHRUBS					
19	IV	ILEX VERTICILLATA	WINTERBERRY	24-30 IN.	
2	IVM	ILEX VERTICILLATA	WINTERBERRY (MALE)	24-30 IN.	
16	VC	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	6-9 IN.	
8	VT	VIBURNUM TRILOBUM	AMERICAN CRANBERRY VIBURNUM	3-4 FT.	

LEGEND

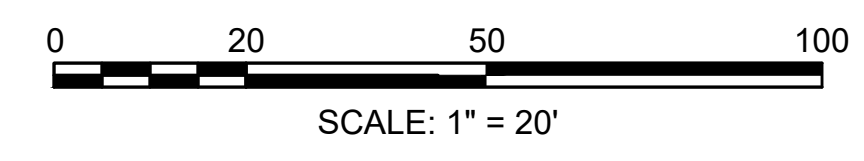
- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Pattern] PROP. NATIVE SEED
- [Pattern] PROP. WETLAND SEED
- [Pattern] PROP. NATIVE TALL SEED
- [Pattern] PROP. AGED PINE BARK MULCH

NOTE:

1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

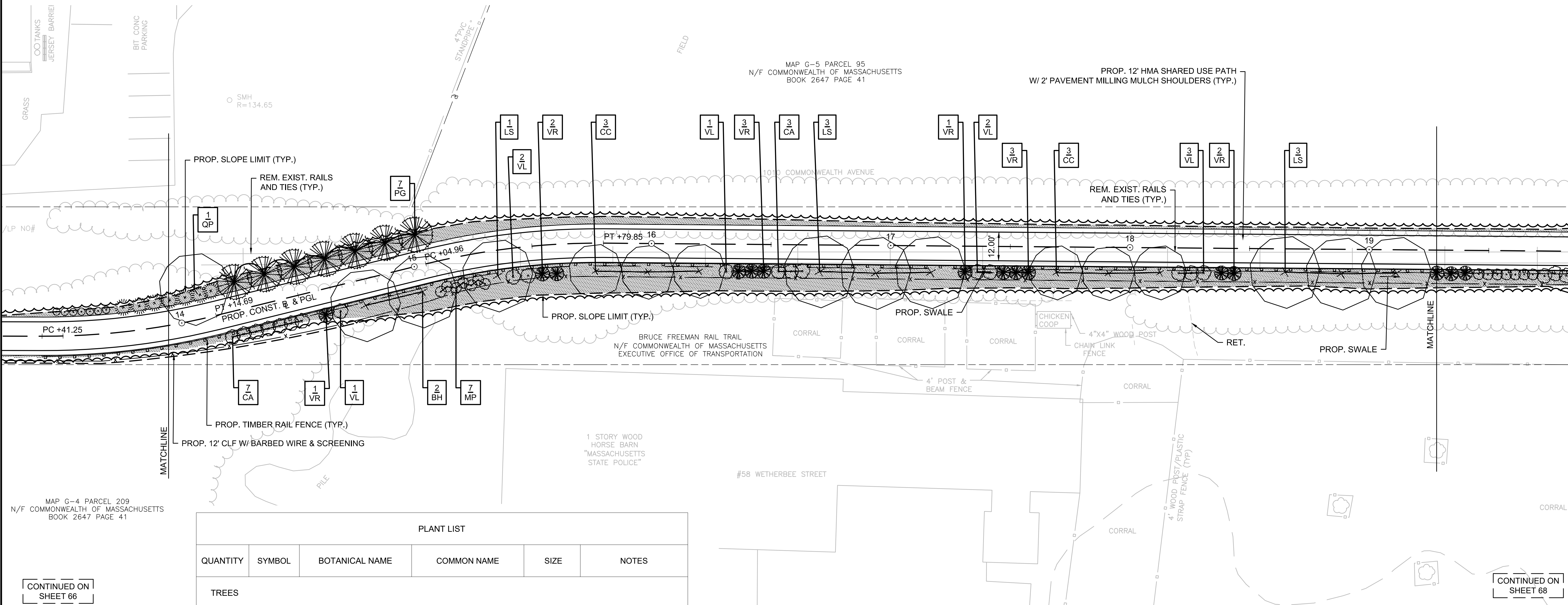
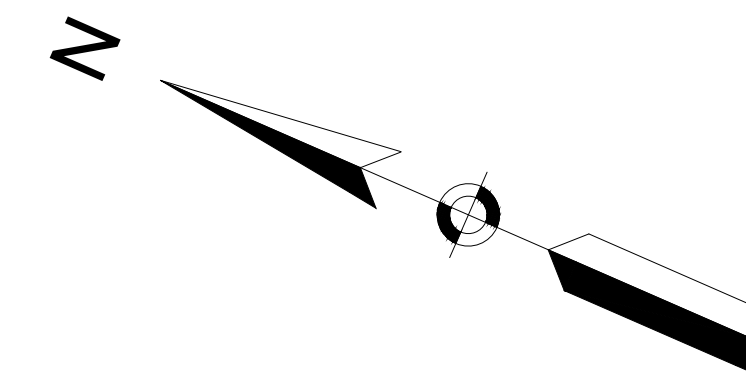
PLANTING NOTES

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE RESIDENT ENGINEER AND THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL WILL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, & SIZE.
4. UPON APPROVAL OF PLANTING, TAGS SHALL BE IMMEDIATELY REMOVED.
5. ALL PLANTS WILL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. ALL SHRUB AND PERENNIAL BEDS WILL BE WEEDED AND OTHERWISE NEATLY MAINTAINED FOR THE DURATION OF THE CONTRACT.
7. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS.



CONTINUED ON SHEET 67

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	67	158
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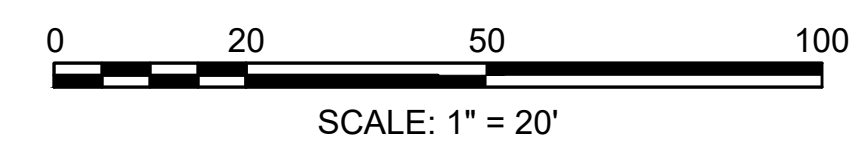
PLANT LIST					
QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
TREES					
2	BH	BETULA NIGRA 'HERITAGE'	RIVER BIRCH	8-10 FT. CLUMP	B&B
6	CC	CARPINUS CAROLINIANA	HORN BEAM	8-10 FT.	B&B
7	LS	LIQUIDAMBAR STYRACIFLUA	SWEET GUM	2-2.5 IN. CAL.	B&B
7	PG	PICEA GLAUCA	WHITE SPRUCE	5-6 FT.	B&B
1	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 IN. CAL.	B&B
SHRUBS					
10	CA	CLETHRA ALNIFOLIA	SUMMER SWEET	18-24 IN.	B&B
7	MP	MYRICA PENNSYLVANICA	BAYBERRY	2-3 FT.	B&B
9	VL	VIBURNUM LENTAGO	NANNYBERRY	24-30 IN.	B&B
12	VR	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	24-30 IN.	

LEGEND

- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Pattern] PROP. NATIVE SEED
- [Pattern] PROP. WETLAND SEED
- [Pattern] PROP. NATIVE TALL SEED
- [Pattern] PROP. AGED PINE BARK MULCH

NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

- PLANTING NOTES**
- CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
 - PLANT LOCATIONS ARE APPROXIMATE. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE RESIDENT ENGINEER AND THE LANDSCAPE ARCHITECT.
 - ALL PLANT MATERIAL WILL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, & SIZE.
 - UPON APPROVAL OF PLANTING, TAGS SHALL BE IMMEDIATELY REMOVED.
 - ALL PLANTS WILL BE MULCHED PER PLANS AND SPECIFICATIONS.
 - ALL SHRUB AND PERENNIAL BEDS WILL BE WEEDED AND OTHERWISE NEATLY MAINTAINED FOR THE DURATION OF THE CONTRACT.
 - PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS.

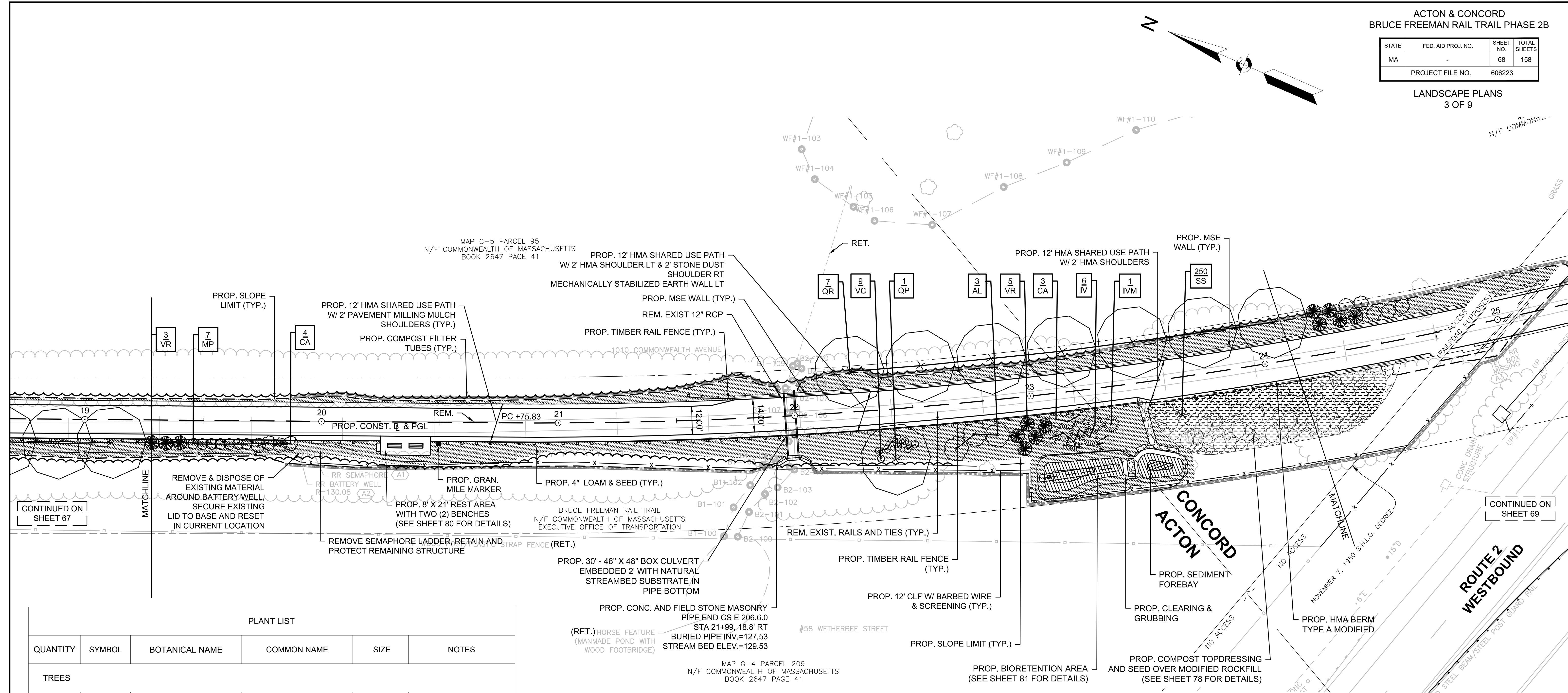


CONTINUED ON SHEET 66

CONTINUED ON SHEET 68

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	68	158
PROJECT FILE NO.		606223	

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PLANT LIST					
QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
TREES					
3	AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	4-5 FT. CLUMP	B&B
1	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 IN. CAL.	B&B
7	QR	QUERCUS RUBRA	RED OAK	2-2.5 IN. CAL.	
SHRUBS					
7	CA	CLETHRA ALNIFOLIA	SUMMERSWEET	18-24 IN.	
6	IV	ILEX VERTICILLATA	WINTERBERRY	24-30 IN.	
1	IVM	ILEX VERTICILLATA	WINTERBERRY (MALE)	24-30 IN.	
7	MP	MYRICA PENNSYLVANICA	BAYBERRY	2-3 FT.	
9	VC	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	6-9 IN.	
8	VR	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	24-30 IN.	
GRASS					
250	SS	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUE STEM	2.5' plugs	3' O.C.

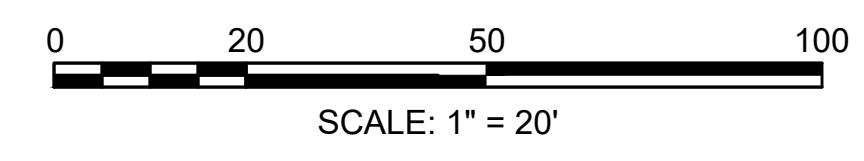
LEGEND

- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Pattern] PROP. NATIVE SEED
- [Pattern] PROP. WETLAND SEED
- [Pattern] PROP. NATIVE TALL SEED
- [Pattern] PROP. AGED PINE BARK MULCH

NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

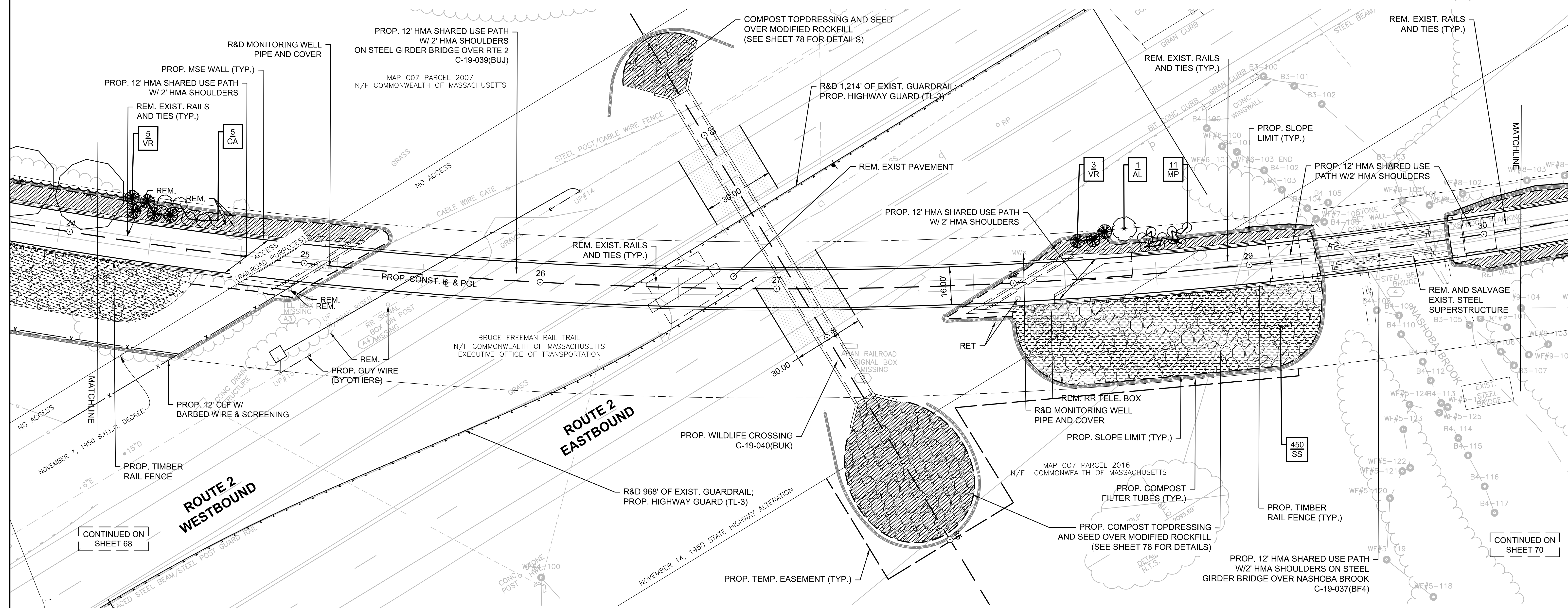
PLANTING NOTES

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- ALL PLANTS WILL BE MULCHED PER PLANS AND SPECIFICATIONS.
- ALL SHRUB AND PERENNIAL BEDS WILL BE WEEDED AND OTHERWISE NEATLY MAINTAINED FOR THE DURATION OF THE CONTRACT.
- PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS.



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	69	158
PROJECT FILE NO.		606223	

4-Feb-2019
606223_HD_(LSD).DWG



PLANT LIST					
QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
TREES					
1	AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	4-5 FT. CLUMP	B&B
SHRUBS					
5	CA	CLETHRA ALNIFOLIA	SUMMERSWEET	18-24 IN.	
11	MP	MYRICA PENSYLVANICA	BAYBERRY	2-3 FT.	
8	VR	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	24-30 IN.	B&B
GRASS					
450	SS	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUE STEM	2.5' plugs	3' O.C.

LEGEND

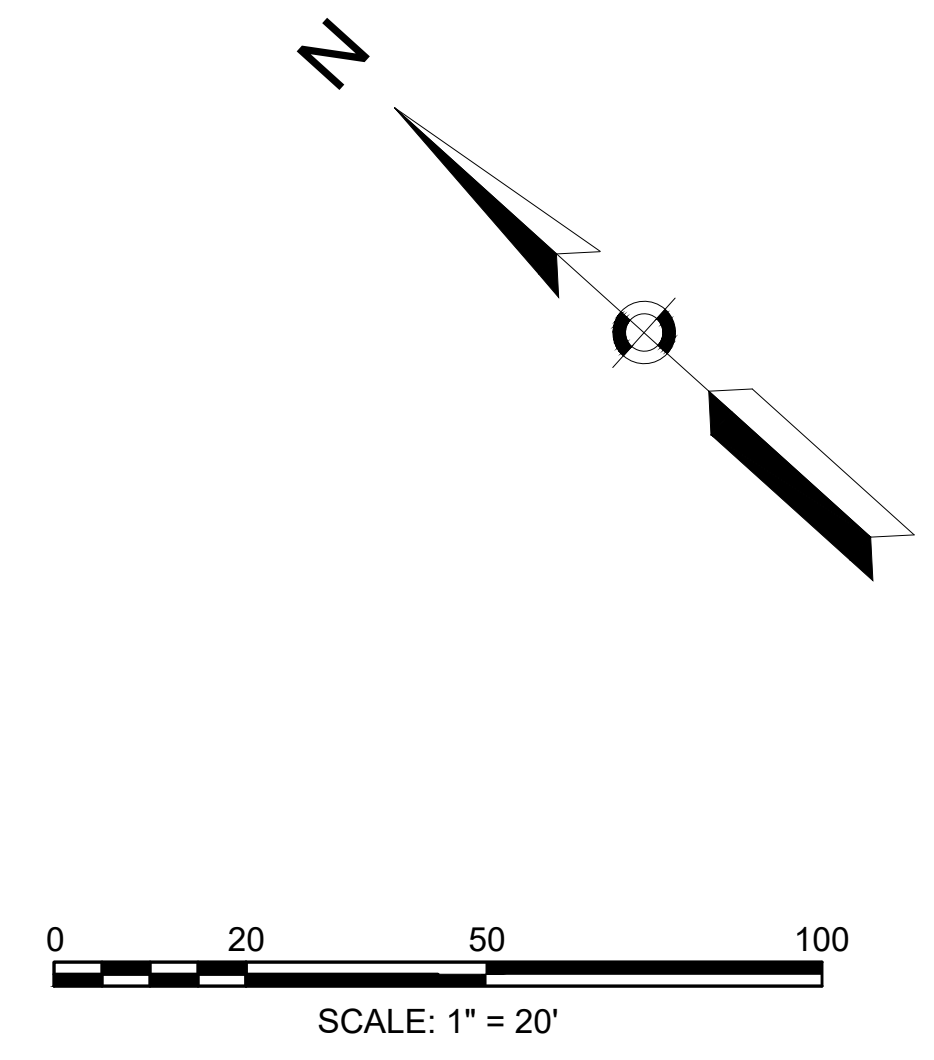
- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Stippled Box] PROP. NATIVE SEED
- [Diagonal Lines Box] PROP. WETLAND SEED
- [Cross-hatched Box] PROP. NATIVE TALL SEED
- [Dotted Box] PROP. AGED PINE BARK MULCH

NOTE:

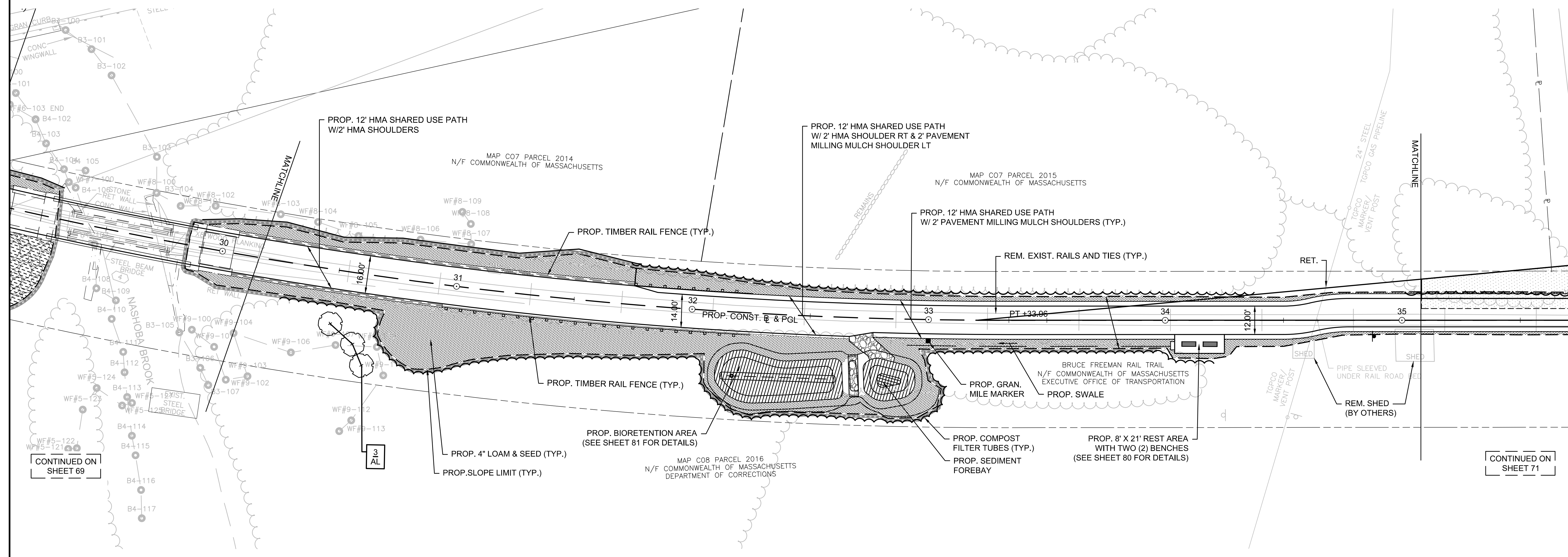
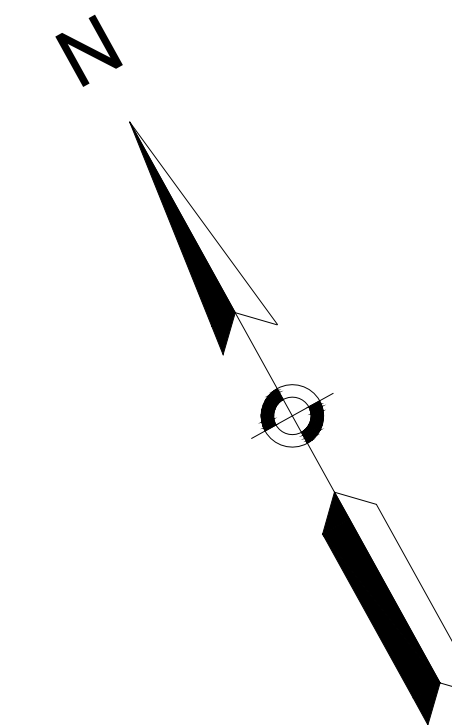
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

PLANTING NOTES

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2. PLANT LOCATIONS ARE APPROXIMATE. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE RESIDENT ENGINEER AND THE LANDSCAPE ARCHITECT.
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5. ALL PLANTS WILL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. ALL SHRUB AND PERENNIAL BEDS WILL BE WEEDED AND OTHERWISE NEATLY MAINTAINED FOR THE DURATION OF THE CONTRACT.
7. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS.



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CONTINUED ON
SHEET 69

3
AL

CONTINUED ON
SHEET 71

PLANT LIST					
QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
TREES					
3	AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	4-5 FT. CLUMP	B&B

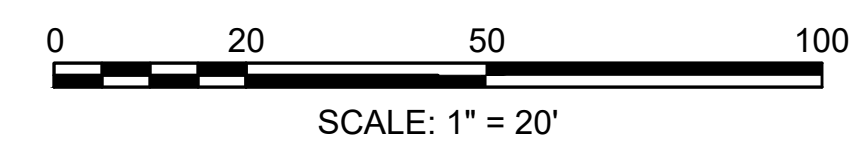
LEGEND

- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Stippled] PROP. NATIVE SEED
- [Diagonal Lines] PROP. WETLAND SEED
- [Horizontal Lines] PROP. NATIVE TALL SEED
- [Cross-hatched] PROP. AGED PINE BARK MULCH

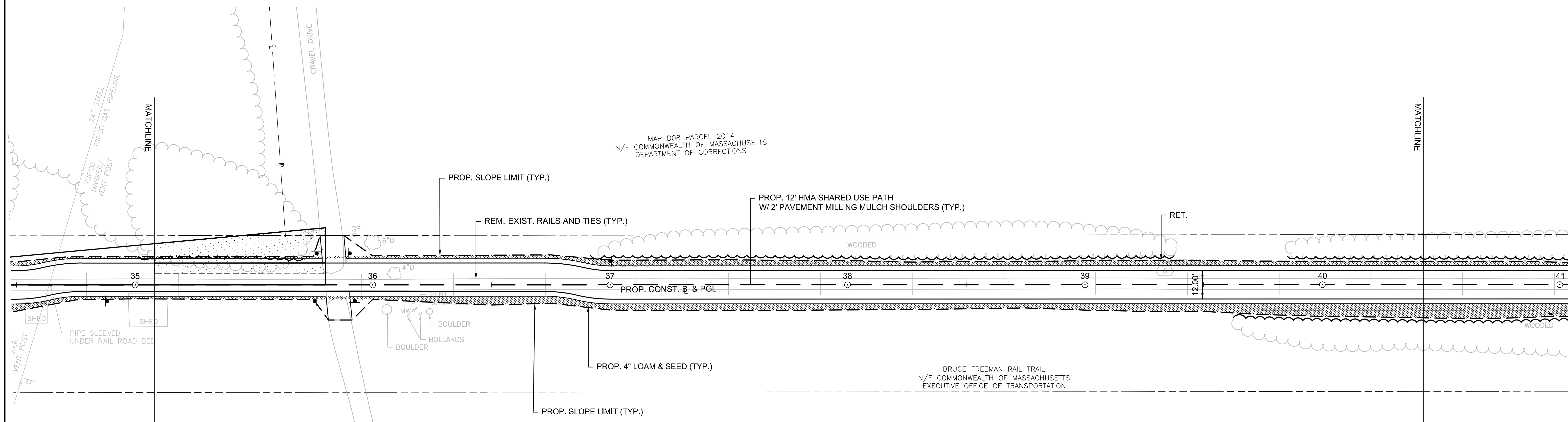
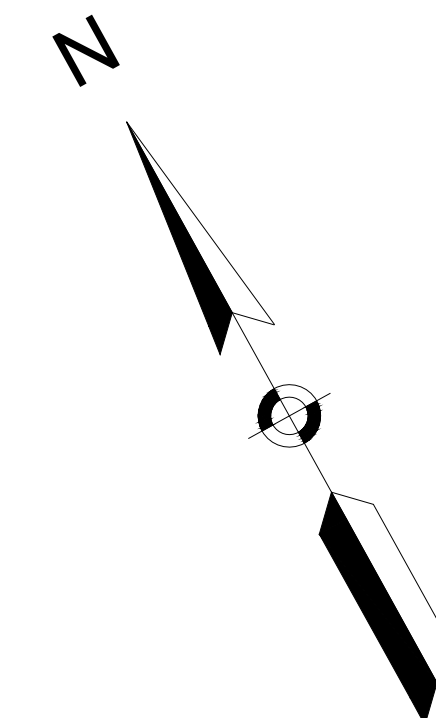
NOTE:
1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

PLANTING NOTES

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE RESIDENT ENGINEER AND THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL WILL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, & SIZE.
4. UPON APPROVAL OF PLANTING, TAGS SHALL BE IMMEDIATELY REMOVED.
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CONTINUED ON
SHEET 70

CONTINUED ON
SHEET 72

LEGEND

- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Pattern] PROP. NATIVE SEED
- [Pattern] PROP. WETLAND SEED
- [Pattern] PROP. NATIVE TALL SEED
- [Pattern] PROP. AGED PINE BARK MULCH

NOTE:

1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

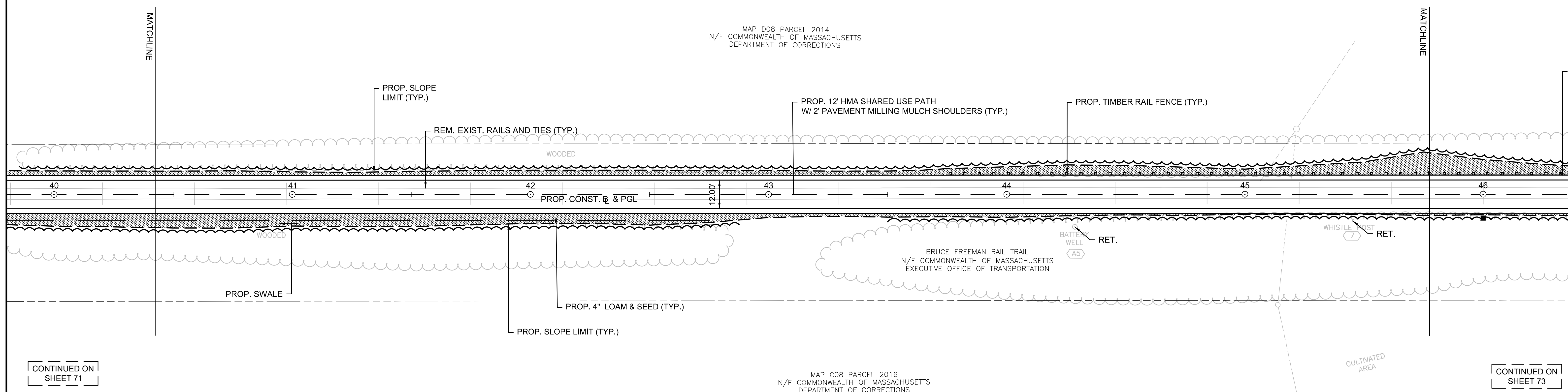
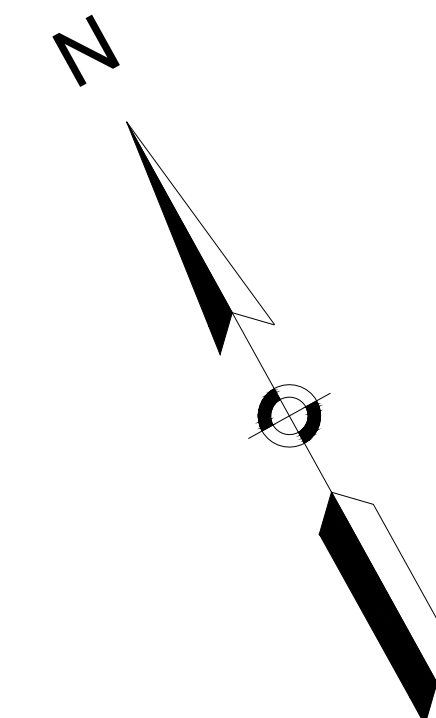
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SCALE: 1" = 20'

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CONTINUED ON
SHEET 71

CONTINUED ON
SHEET 73

LEGEND

- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Stippled Box] PROP. NATIVE SEED
- [Diagonal Lines Box] PROP. WETLAND SEED
- [Horizontal Lines Box] PROP. NATIVE TALL SEED
- [Cross-hatched Box] PROP. AGED PINE BARK MULCH

NOTE:

1. PROP. CLEARING AND GRUBBING SHALL BE DEFINED AS 5' BEYOND THE PROPOSED SLOPE LIMIT.

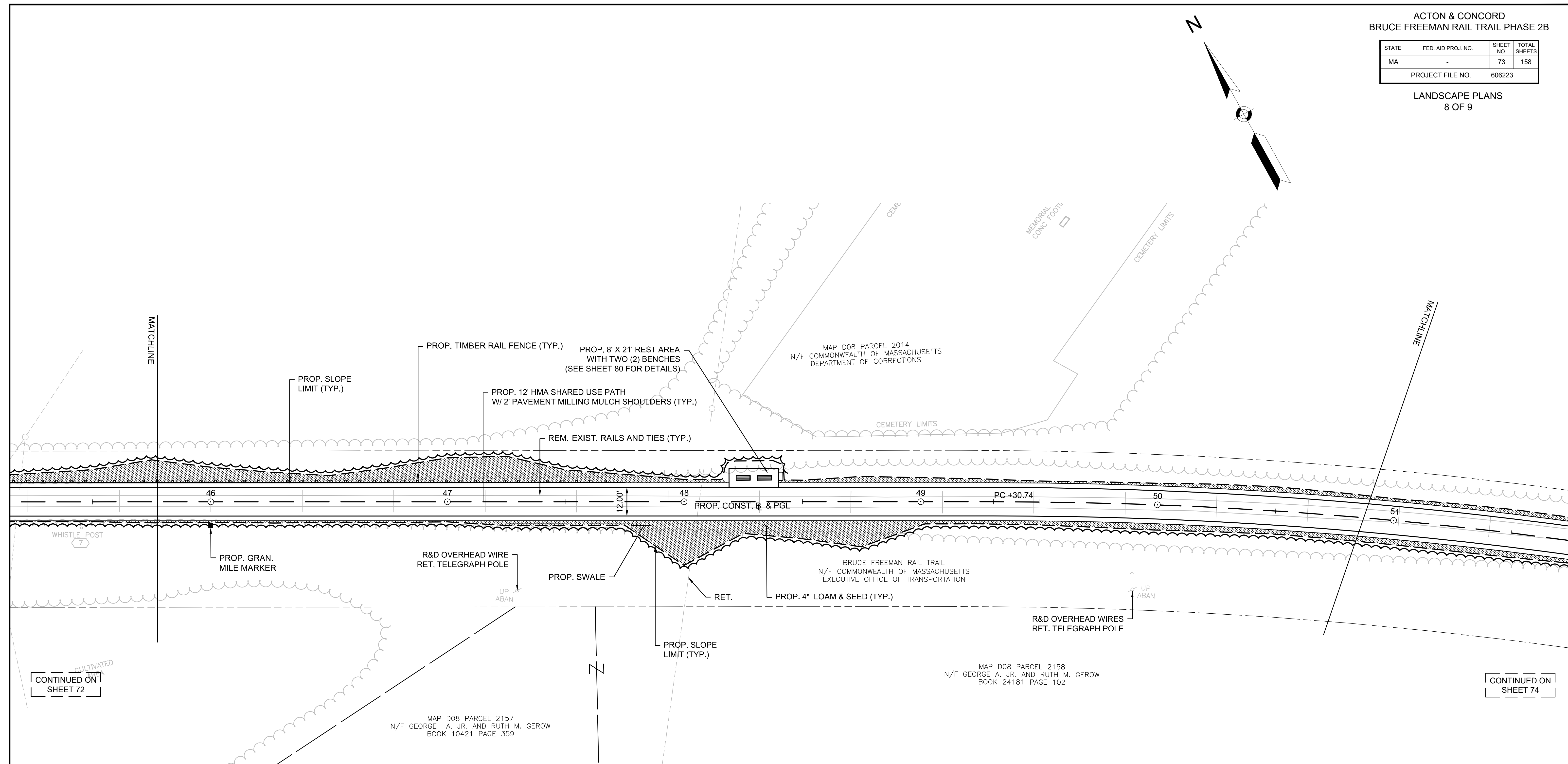
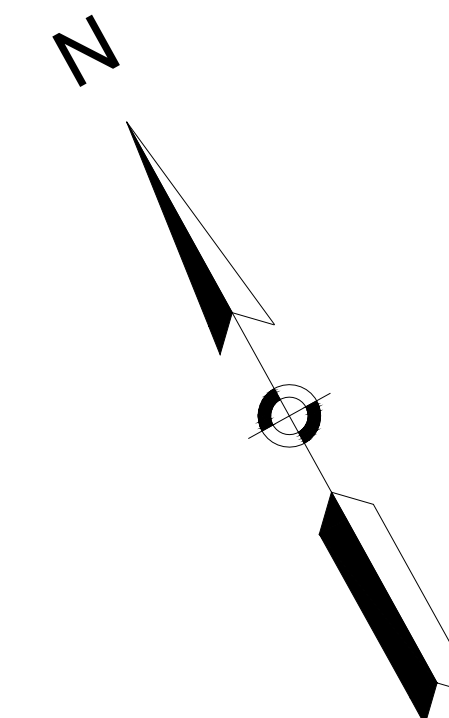
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SCALE: 1" = 20'

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	73	158
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CONTINUED ON SHEET 72

CONTINUED ON SHEET 74

LEGEND

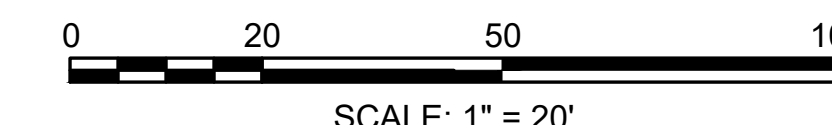
- PROP. EVERGREEN TREE (TYP.)
- PROP. EVERGREEN SHRUB (TYP.)
- + PROP. DECIDUOUS TREE (TYP.)
- + PROP. DECIDUOUS SHRUB (TYP.)
- ~ PROP. CLEARING LIMIT (TYP.)
- [Stippled Box] PROP. NATIVE SEED
- [Diagonal Lines Box] PROP. WETLAND SEED
- [Cross-hatched Box] PROP. NATIVE TALL SEED
- [Dotted Box] PROP. AGED PINE BARK MULCH

NOTE:

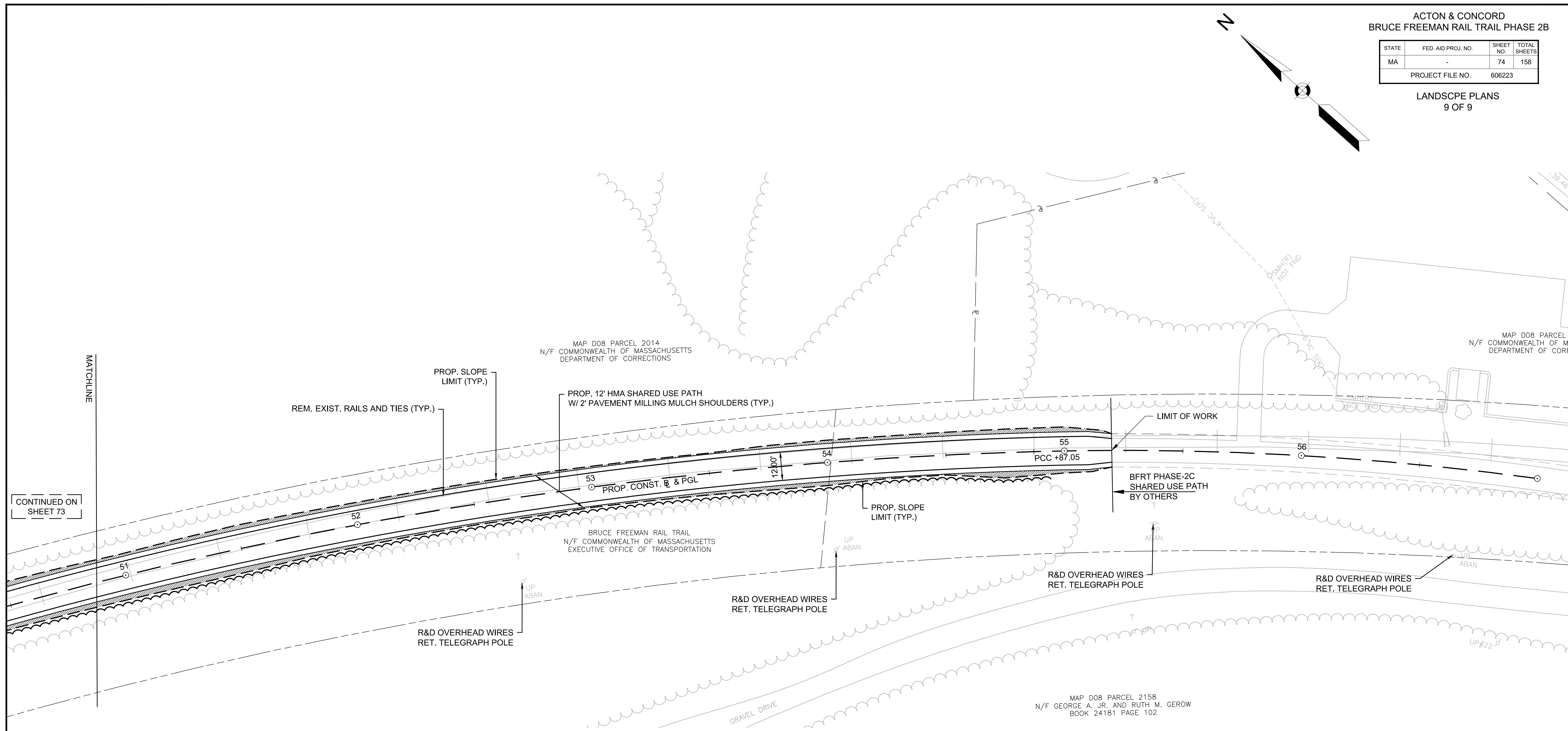
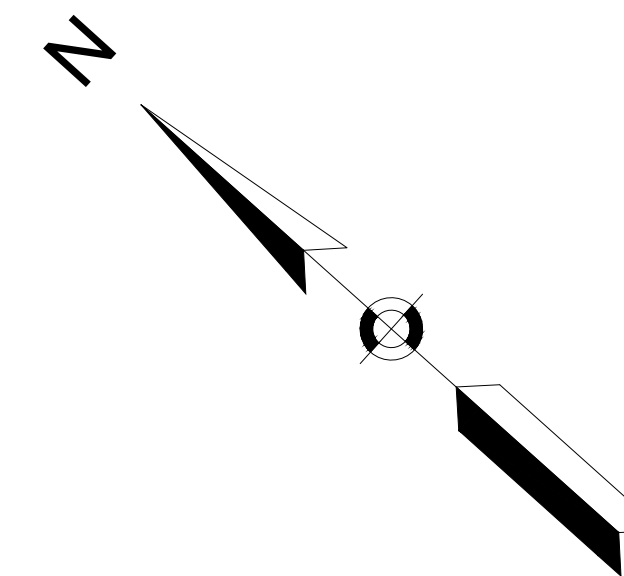
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CONTINUED ON SHEET 73

MATCHLINE

LEGEND

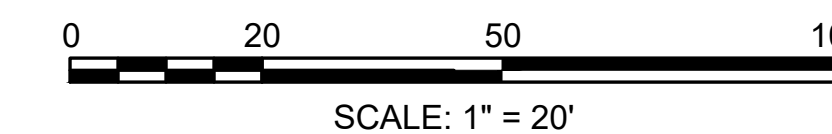
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- + PROP. DECIDUOUS TREE (TYP.)
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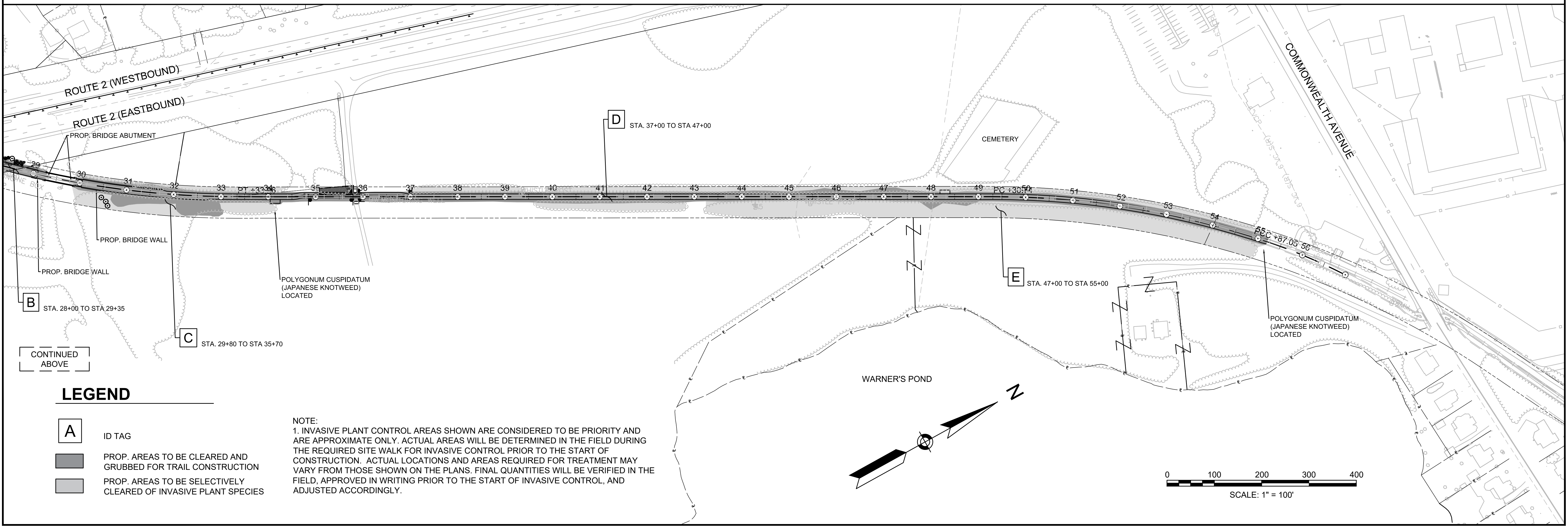
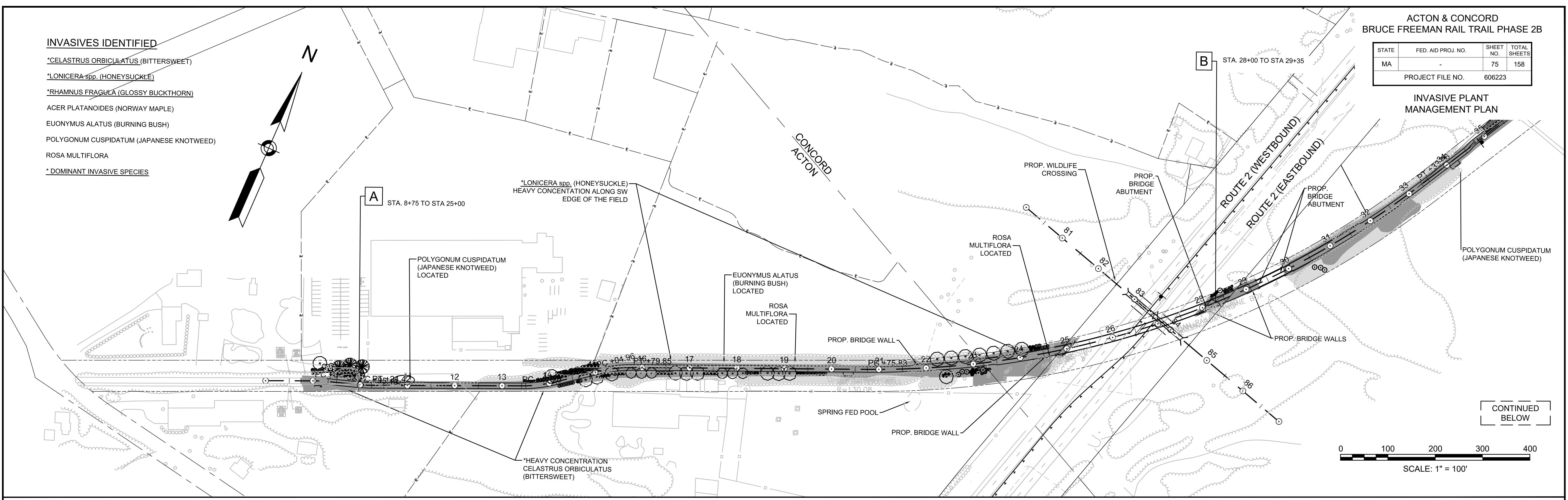
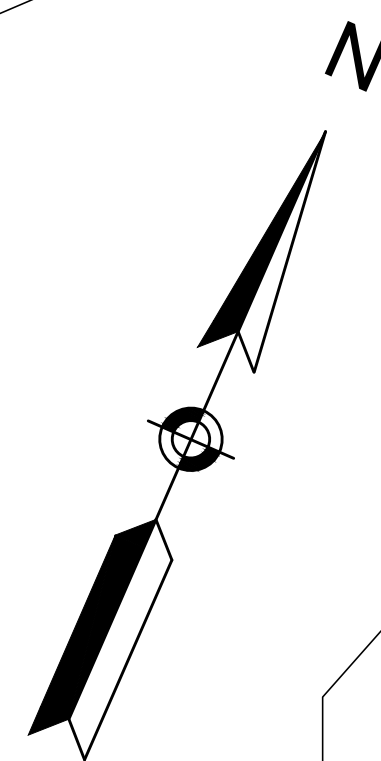


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INVASIVE PLANT
MANAGEMENT PLAN

INVASIVES IDENTIFIED

- *CELASTRUS ORBICULATUS (BITTERSWEET)
- *LONICERA spp. (HONEYSUCKLE)
- *RHAMNUS FRAGULA (GLOSSY BUCKTHORN)
- ACER PLATANOIDES (NORWAY MAPLE)
- EUONYMUS ALATUS (BURNING BUSH)
- POLYGONUM CUSPIDATUM (JAPANESE KNOTWEED)
- ROSA MULTIFLORA
- *DOMINANT INVASIVE SPECIES



LEGEND

- A** ID TAG
- PROP. AREAS TO BE CLEARED AND GRUBBED FOR TRAIL CONSTRUCTION
- PROP. AREAS TO BE SELECTIVELY CLEARED OF INVASIVE PLANT SPECIES

NOTE:
1. INVASIVE PLANT CONTROL AREAS SHOWN ARE CONSIDERED TO BE PRIORITY AND ARE APPROXIMATE ONLY. ACTUAL AREAS WILL BE DETERMINED IN THE FIELD DURING THE REQUIRED SITE WALK FOR INVASIVE CONTROL PRIOR TO THE START OF CONSTRUCTION. ACTUAL LOCATIONS AND AREAS REQUIRED FOR TREATMENT MAY VARY FROM THOSE SHOWN ON THE PLANS. FINAL QUANTITIES WILL BE VERIFIED IN THE FIELD, APPROVED IN WRITING PRIOR TO THE START OF INVASIVE CONTROL, AND ADJUSTED ACCORDINGLY.

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LANDSCAPE DETAILS

LANDSCAPE NOTES:

1. ALL DIMENSION LINES ARE EITHER PARALLEL OR PERPENDICULAR TO LINES FROM WHICH THEY ARE DRAWN UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

2. BEFORE CONSTRUCTION BEGINS, SUBMITTALS MUST BE APPROVED. ALL LOCATIONS SHALL BE STAKED IN THE FIELD. MOCKUPS CONSTRUCTED AND VERIFIED BY THE CONTRACTOR AND REVIEWED BY THE ENGINEER. ADJUSTMENTS SHALL BE MADE AT NO ADDITIONAL COST TO THE DEPARTMENT.

3. REFER TO SPECIFICATIONS FOR MATERIALS AND INSTALLATION.

PLANTING NOTES:

1. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE 'AMERICAN STANDARD FOR NURSERY STOCK' PUBLISHED BY AMERICAN ASSOCIATION OF NURSERYMEN, LATEST EDITION, OR AS INDICATED IN THE PLANT LIST, WHICH SHALL GOVERN.

2. ALL PLANT MATERIAL SHALL BE FIELD SELECTED IN NURSERIES BY THE ENGINEER AFTER PRELIMINARY TAGGING BY CONTRACTOR. ALL STOCK SHALL BE NURSERY GROWN.

3. ENGINEER SHALL REVIEW PLACEMENT OF PLANTS IN FIELD BEFORE INSTALLATION AFTER STAKING IN FIELD BY CONTRACTOR ACCORDING TO PLANTING PLANS AND SITE DETAILS. THE CONTRACTOR SHALL INFORM THE ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN PROPOSED PLANT LOCATIONS AND BELOW GRADE UTILITIES, STRUCTURES, DRAINAGE PROBLEMS, OR ANY OTHER PLANTING CONFLICT ENCOUNTERED OR ANTICIPATED AND REVIEWED WITH THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

4. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN SIZES AND QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON THE DRAWINGS. THE NUMBERS OF PLANTS GIVEN IN MASSINGS AND ON THE PLANT LIST IS APPROXIMATE AND CONTRACTOR SHALL PLANT SHRUBS AND TREES AT INDICATED SPACING AS INDICATED ON THE PLANS. THE ENGINEER HAS THE RIGHT TO REJECT INJURED, DISEASED, DESICCATED, OR INCORRECT SPECIES AT ANY TIME.

5. ALL PLANTS THAT ARE DELIVERED TO THE SITE AND NOT PLANTED IMMEDIATELY SHALL BE STORED AND WATERED PROPERLY, ACCORDING TO THE SPECIFICATIONS, IN SECURE LOCATIONS REVIEWED BY THE ENGINEER. PLANTS SHALL BE PLANTED WITHIN 5 DAYS OF DELIVERY TO SITE AS SPECIFIED IN THE STANDARD SPECIFICATIONS. ALL PLANTS SHALL HAVE ONE YEAR GUARANTEE.

6. ALL NEW AND EXISTING PLANT MATERIAL WITHIN THE LANDSCAPE LIMIT OF WORK LINE SHALL BE PRUNED AFTER PLANTING TO REMOVE ALL DEAD OR DAMAGED BRANCHES. TREE WOUND DRESSING SHALL NOT BE USED ON ANY PLANTINGS. ALL NEW PLANTINGS SHALL BE WATERED FROM DELIVERY UNTIL THE END OF THE GUARANTEE PERIOD.

7. ALL PLANTS SHALL BEAR THE SAME RELATION TO FINISHED GRADE AS TO ORIGINAL GRADE BEFORE DIGGING, UNLESS OTHERWISE DETAILED, AND SHALL HAVE A MULCHED SAUCER ACCORDING TO THE DETAILS. PLANT PITS SHALL DRAIN, OR REMEDIAL UNDER-DRAINAGE SHALL BE INSTALLED TO DRAIN OUTLETS.

8. ALL PAPER OR PLASTIC CONTAINERS, WIRE BASKETS, TWINE, AND PLASTIC OR IRON FASTENERS AND ROPE SHALL BE REMOVED FROM PLANTS BEFORE SETTING IN PLANT PIT. TURN DOWN BURLAP TWO-THIRDS.

9. EXISTING TOPSOILS SHALL BE UTILIZED FOR LOAM, OR PLANTING SOIL MIXTURES, ONLY IF TESTING INDICATES TOTAL CONFORMITY TO SPECIFICATIONS FOR LOAM BORROW. ALL GRASS, SOD, ROOTS, AND STONES OVER TWO-INCH DIAMETER SHALL BE REMOVED AND LEGALLY DISPOSED OF.

10. SHRUBS SHALL BE INSTALLED AND MAINTAINED 10' CLEAR FROM ALL HYDRANTS AND STANDPIPES TO ENSURE THEIR VISIBILITY AT ALL TIMES.

11. PLANT SPACING SHALL BE AS INDICATED ON THE DRAWINGS OR IN THE PLANT LIST. MULCH WITH 2-3" AGED PINE BARK MULCH TO LIMITS.

12. TREE PROTECTION FENCING SHALL BE INSTALLED BEFORE CONSTRUCTION VEHICLES ACCESS OR CONSTRUCTION OCCURS WITHIN 25' OF ANY EXISTING TREE TO REMAIN. FENCING SHALL BE INSTALLED AT TREE DRIPLINE OR EDGE OF ADJACENT PAVING AND IN ACCORDING TO CIVIL PLANS AND WITH REVIEW OF ENGINEER. REMOVAL SHALL BE AT COMPLETION OF CONSTRUCTION IN THE VICINITY.

LOAM & GRADING NOTES:

1. ANY DISCREPANCIES OR CONFLICTS ARISING BETWEEN EXISTING CONDITIONS AND THE GRADING PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING.

2. GRADE STAKES SHOWING DEPTH OF LOAM SHALL BE REVIEWED BY ENGINEER IN FIELD BEFORE FINAL GRADING CAN COMMENCE.

3. ALL NEW ON-GRADE PLANTINGS SHALL HAVE MODIFIED LOAM (PLANTING SOIL), INSTALLED AT A DEPTH AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS. ALL SEEDED AREAS SHALL HAVE FOUR INCH DEPTH MODIFIED LOAM. LOAM BORROW SHALL BE REQUIRED TO BE TESTED FOR CONFORMANCE WITH SPECIFICATIONS BEFORE DELIVERY OF PRODUCT FOR SPREADING. SOIL MAY NOT BE WORKED IN A WET OR FROZEN STATE OR LOAM BORROW MAY BE REJECTED BY THE ENGINEER.

4. AREAS WHERE PLANTING OR SEEDING OCCURS ON EXISTING GRADES AREAS SHALL BE CLEARED, DISCED AND/OR FILLED AND SOIL AMENDED TO MEET THE RANGES AND MINIMUM REQUIREMENTS FOR MODIFIED LOAM BORROW. IF EXISTING SOIL CANNOT BE AMENDED TO MEET SPECIFICATIONS, IT SHALL BE EXCAVATED AND REPLACED WITH APPROVED LOAM BORROW.

5. ALL EXISTING OR PROPOSED INLET COVERS, GRATES, ETC. SHALL BE SET AND ADJUSTED BY THE CONTRACTOR TO BE FLUSH WITH THE FINISHED GRADE AT NO EXTRA COST TO THE DEPARTMENT.

6. THE CONTRACTOR'S WORK SHALL BE SCHEDULED TO ALLOW THE FINISHED SUBGRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PUDDLING. PROVIDE TEMPORARY POSITIVE DRAINAGE AS REQUIRED.

7. THE PROPOSED SITE PAVEMENTS, SURFACINGS, AND PLANTED AREAS SHALL BE PITCHED IN THE DIRECTIONS SHOWN ON THE DRAWINGS. IF NOT OTHERWISE SHOWN, PROPOSED PAVEMENT AREAS SHALL BE PITCHED A MINIMUM OF ONE PERCENT IN THE DIRECTION SHOWN ON THE DRAWINGS, AND PROPOSED SEEDED AND PLANTED AREAS SHALL BE PITCHED IN A MINIMUM OF ONE PERCENT TOWARD A DRAIN INLET OR BASIN.

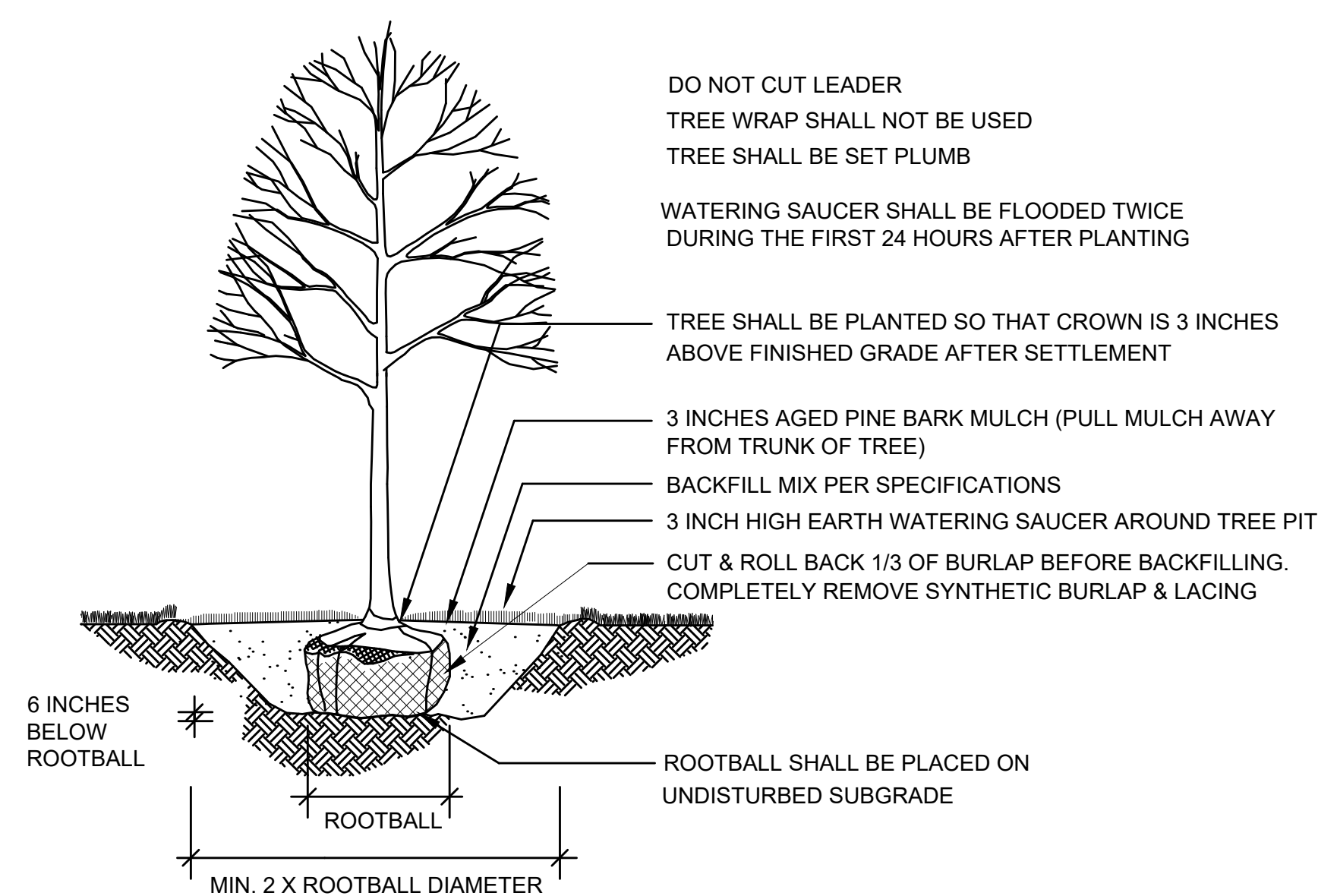
8. CONTRACTOR SHALL MEET EXISTING GRADES IN A SMOOTH MANNER, WITHOUT DISTURBING DRAINAGE CONDITIONS, AND SHALL PROTECT EXISTING VEGETATION AND PROTECTIVE FENCING. THE CONTRACTOR SHALL REQUEST THAT THE ENGINEER REVIEW THE FINISHED GRADES BEFORE PLANTING AND SEEDING BEGIN.

PLANT SCHEDULE										
TREES										
SH 1	SH 2	SH 3	SH 4	SH 5	TOTAL QTY.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	COMMENTS
-	-	3	1	3	7	AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	4-5 FT. CLUMP	B&B
1	2	-	-	-	3	BH	BETULA NIGRA 'HERITAGE'	RIVER BIRCH	8-10 FT. CLUMP	B&B
-	6	-	-	-	6	CC	CARPINUS CAROLINIANA	HORNBEAM	8-10 FT	B&B
-	7	-	-	-	7	LS	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	2-2.5 IN. CAL.	B&B
-	7	-	-	-	7	PG	PICEA GLAUCA	WHITE SPRUCE	5-6 FT.	B&B
3	-	-	-	-	3	PS	PINUS STROBUS	WHITE PINE	5-6 FT.	B&B
-	1	1	-	-	2	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 IN. CAL.	B&B
-	-	7	-	-	7	QR	QUERCUS RUBRA	RED OAK	2-2.5 IN. CAL.	B&B
SHRUBS										
-	10	7	5	-	22	CA	CLETHRA ALNIFOLIA	SUMMERSWEET	18-24 IN.	
19	-	6	-	-	25	IV	ILEX VERTICILLATA	WINTERBERRY	24-30 IN.	
2	-	1	-	-	3	IVM	ILEX VERTICILLATA	WINTERBERRY (MALE)	18-24 IN.	
-	7	7	11	-	25	MP	MYRICA PENNSYLVANICA	BAYBERRY	2-3 FT.	
16	-	9	-	-	25	VC	VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	6-9 IN.	
8	-	-	-	-	8	VT	VIBURNUM TRILOBUM	AMERICAN CRANBERRY VIBURNUM	3-4 FT..	
-	9	-	-	-	9	VL	VIBURNUM LENTAGO	NANNYBERRY	24-30 IN.	B&B
-	12	8	8		28	VR	VIBURNUM RHYTIDOPHYLLUM	LEATHERLEAF VIBURNUM	24-30 IN.	
GRASS										
		250	450		700	SS	SCHIZACHYRIUM SCOPARIUM	LITTLE BLUE STEM	2.5' plugs	3' O.C.

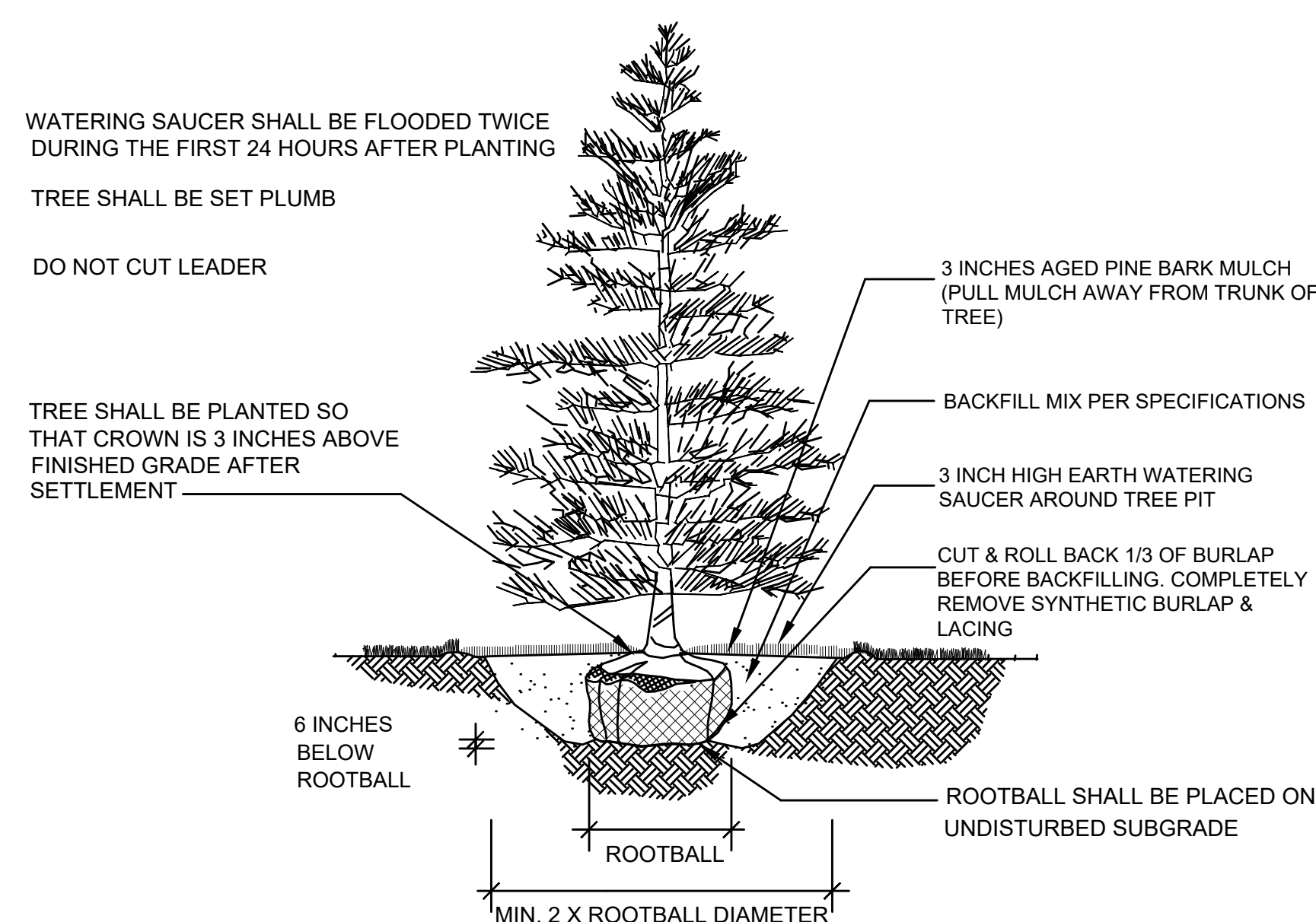
SEEDING SCHEDULE				
LEGEND	TYPE	SUB TYPE	ITEM	NOTES
NATIVE - SUN/PART SHADE UPLAND				
	NATIVE SEED MIX	TRAILSIDE - MID HEIGHT UPLAND MIX - PART SHADE	765.421	FOR TRAILSIDE USE WHERE NO MOWING / INFREQUENT MOWING EXPECTED. SEED OVER 1" COMPOST TOPDRESSING OVER 4" LOAM.
WETLAND				
	WETLAND SEED MIX	FACW - SEASONALLY FLOODED - CUSTOM MIX	765.554	FOR USE IN WETLAND MITIGATION AND BIORETENTION AREAS. SEED OVER 1" COMPOST TOP-DRESSING OVER 4" LOAM.
NATIVE FULL SUN				
	NATIVE TALL SEED MIX	UPLAND TALL MIX - FULL SUN	765.431	FOR USE ON SOUTH FACING BRIDGE SIDE SLOPES WHERE NO MOWING. SEED OVER 1" COMPOST TOP-DRESSING OVER 4" LOAM OVER MODIFIED ROCK.

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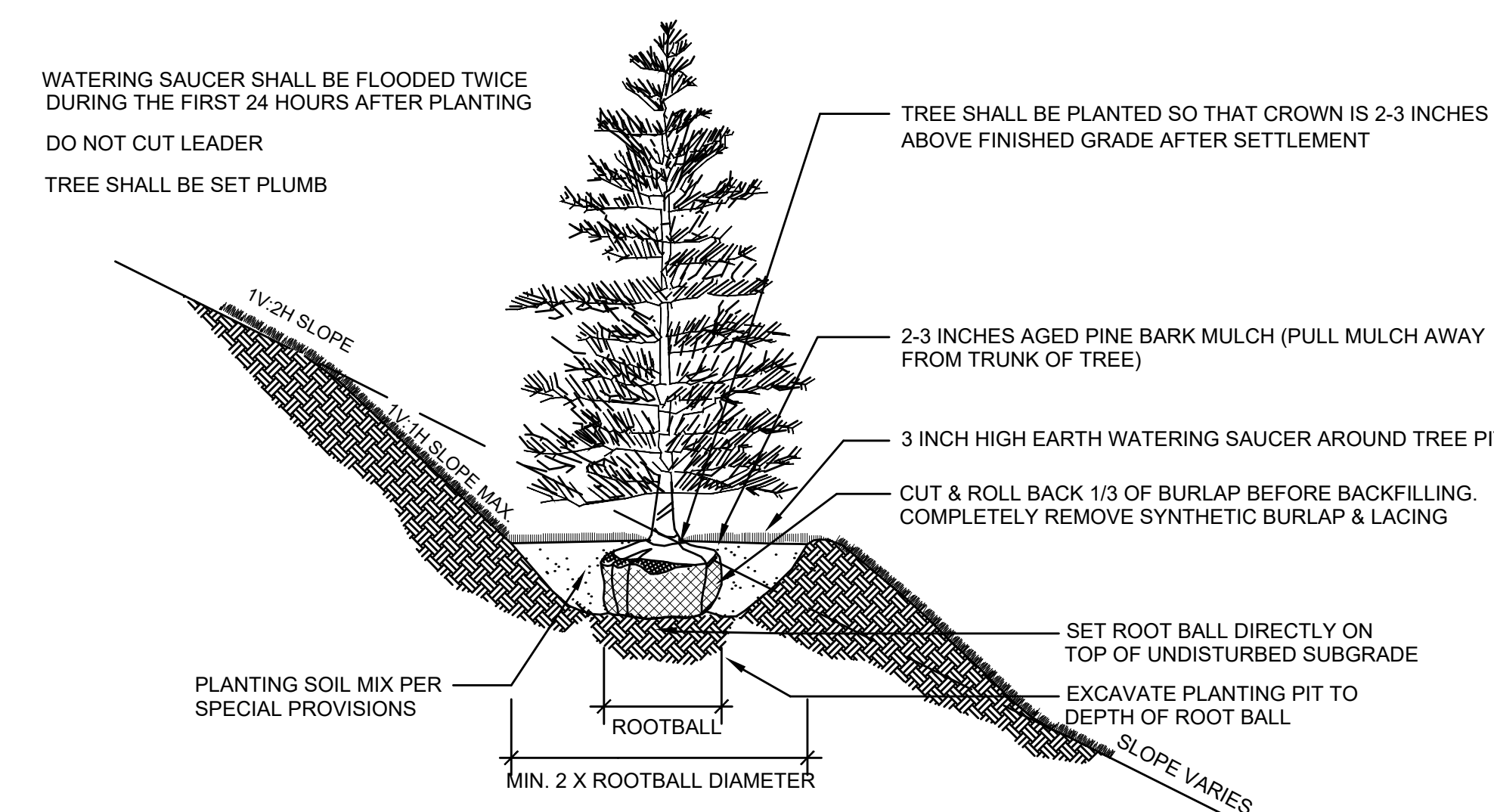
LANDSCAPE DETAILS



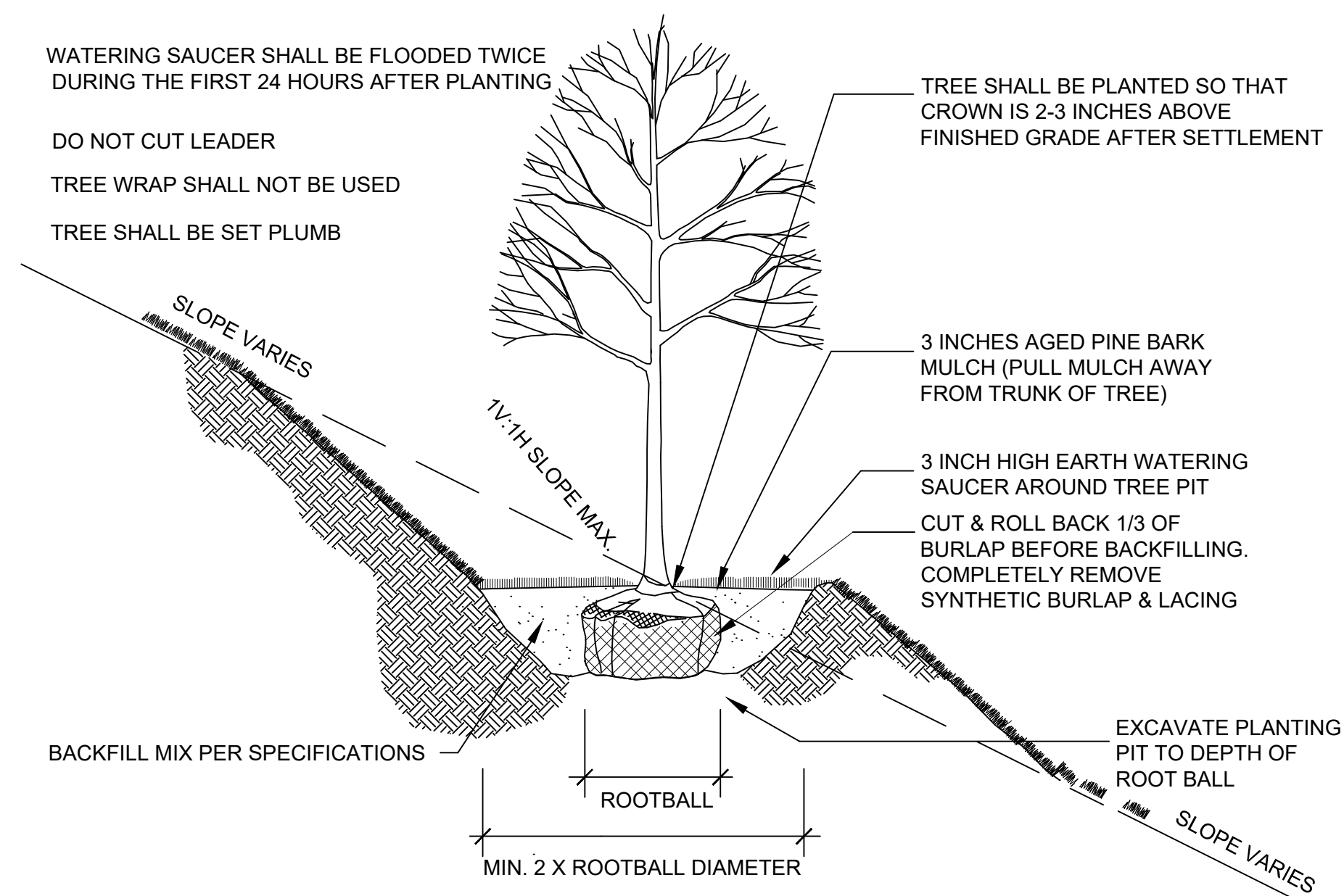
1 DECIDUOUS TREE PLANTING
NOT TO SCALE



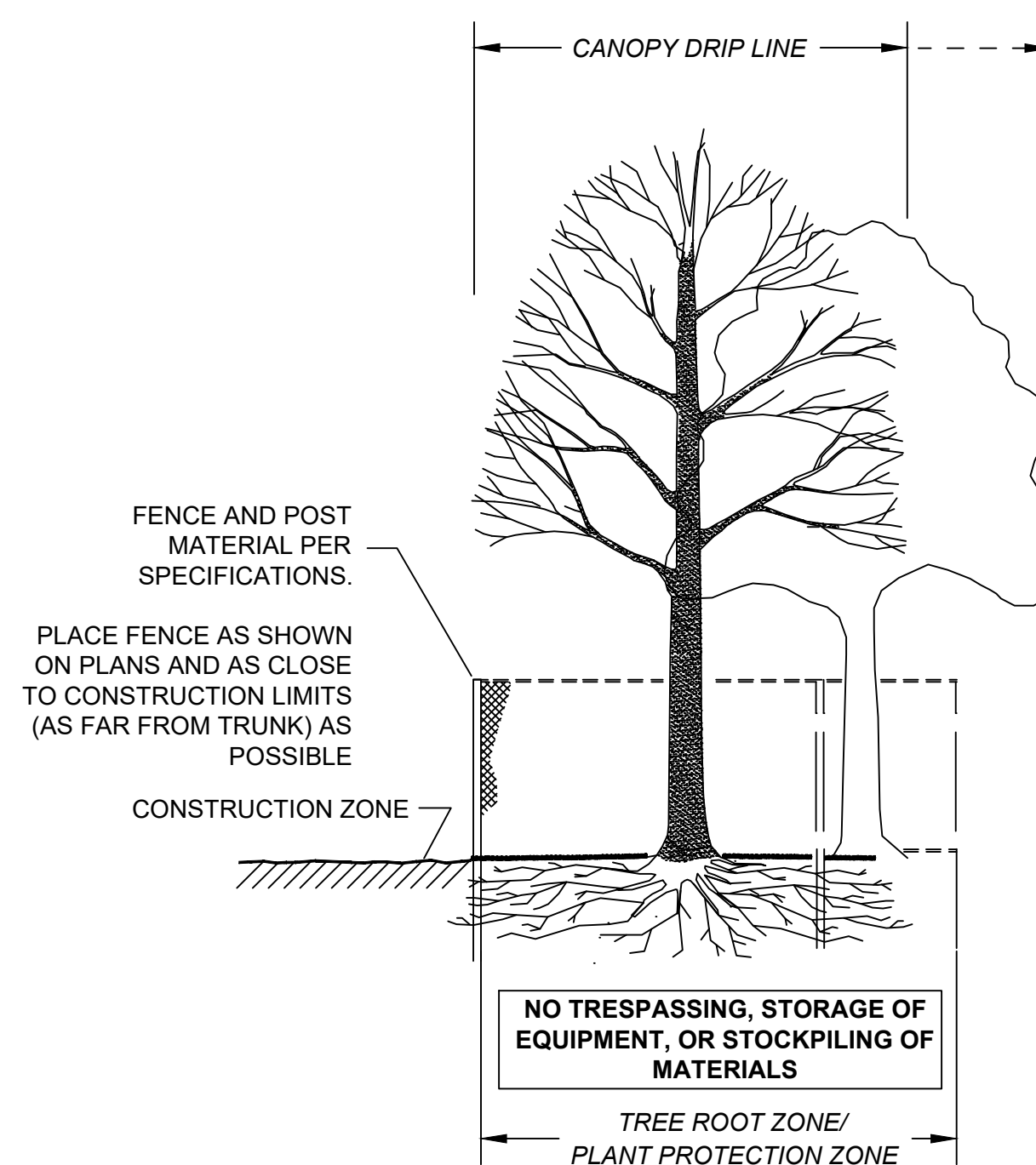
2 EVERGREEN TREE PLANTING
NOT TO SCALE



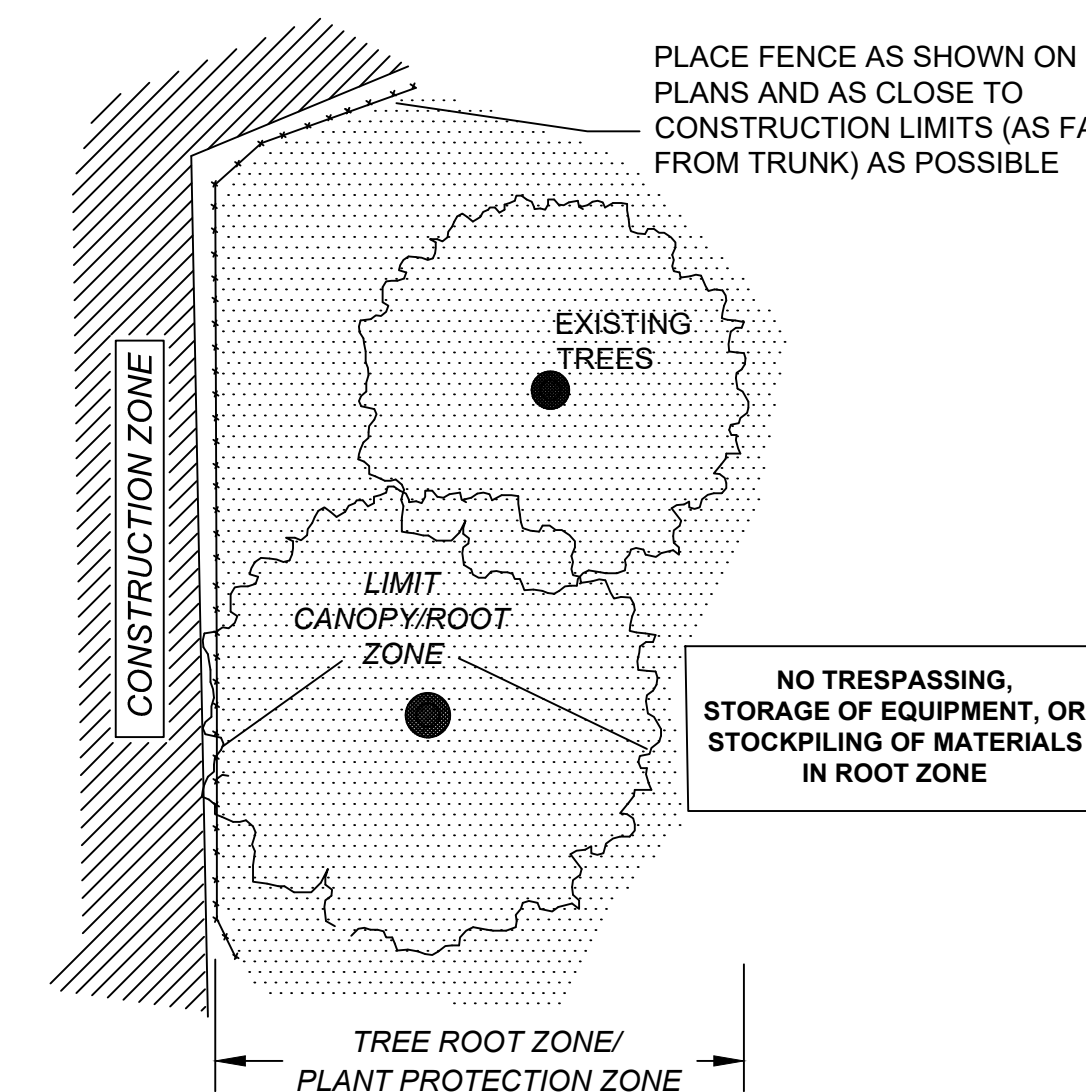
3 EVERGREEN TREE PLANTING (SLOPE)
NOT TO SCALE



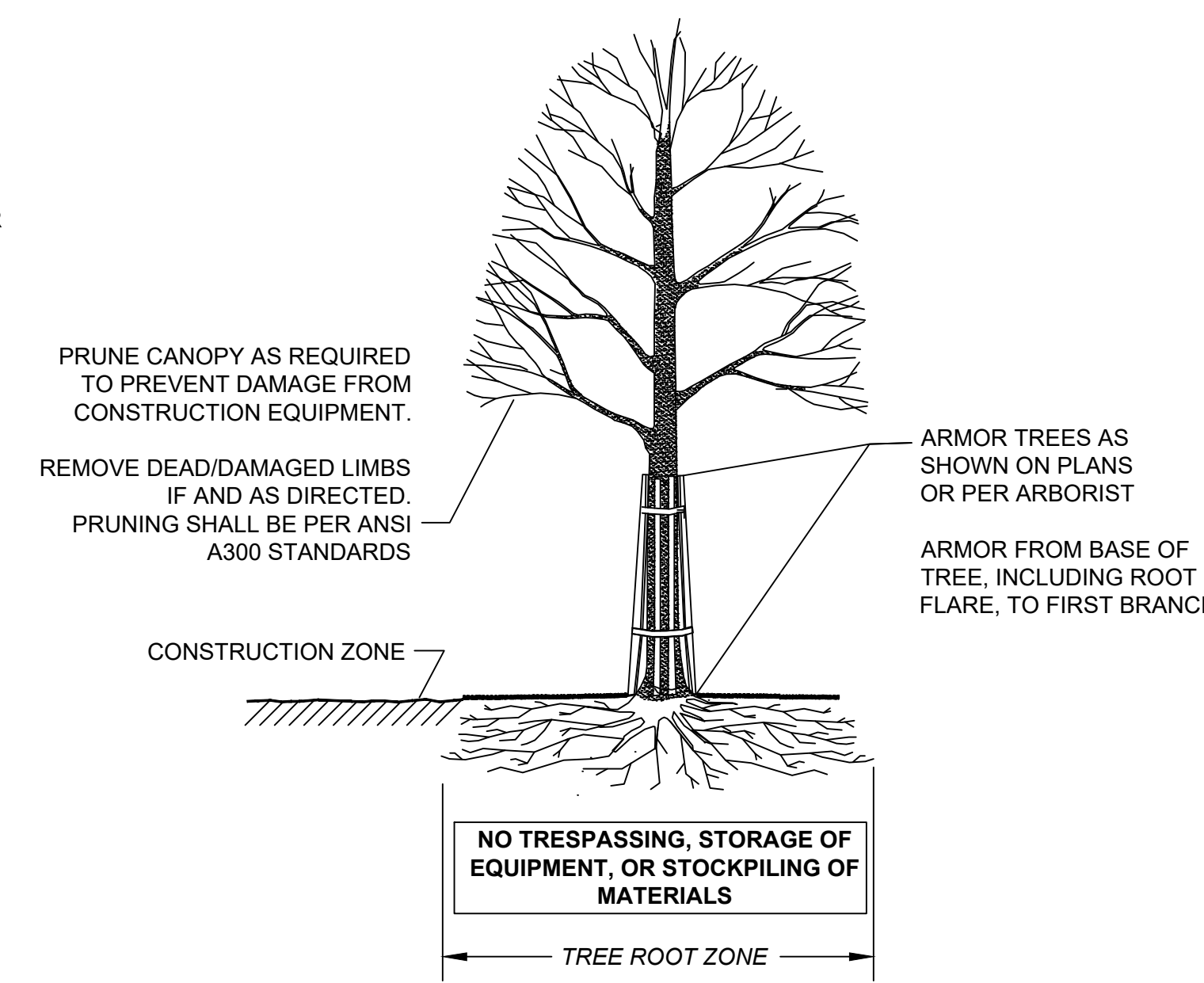
4 DECIDUOUS TREE PLANTING (SLOPE)
NOT TO SCALE



SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

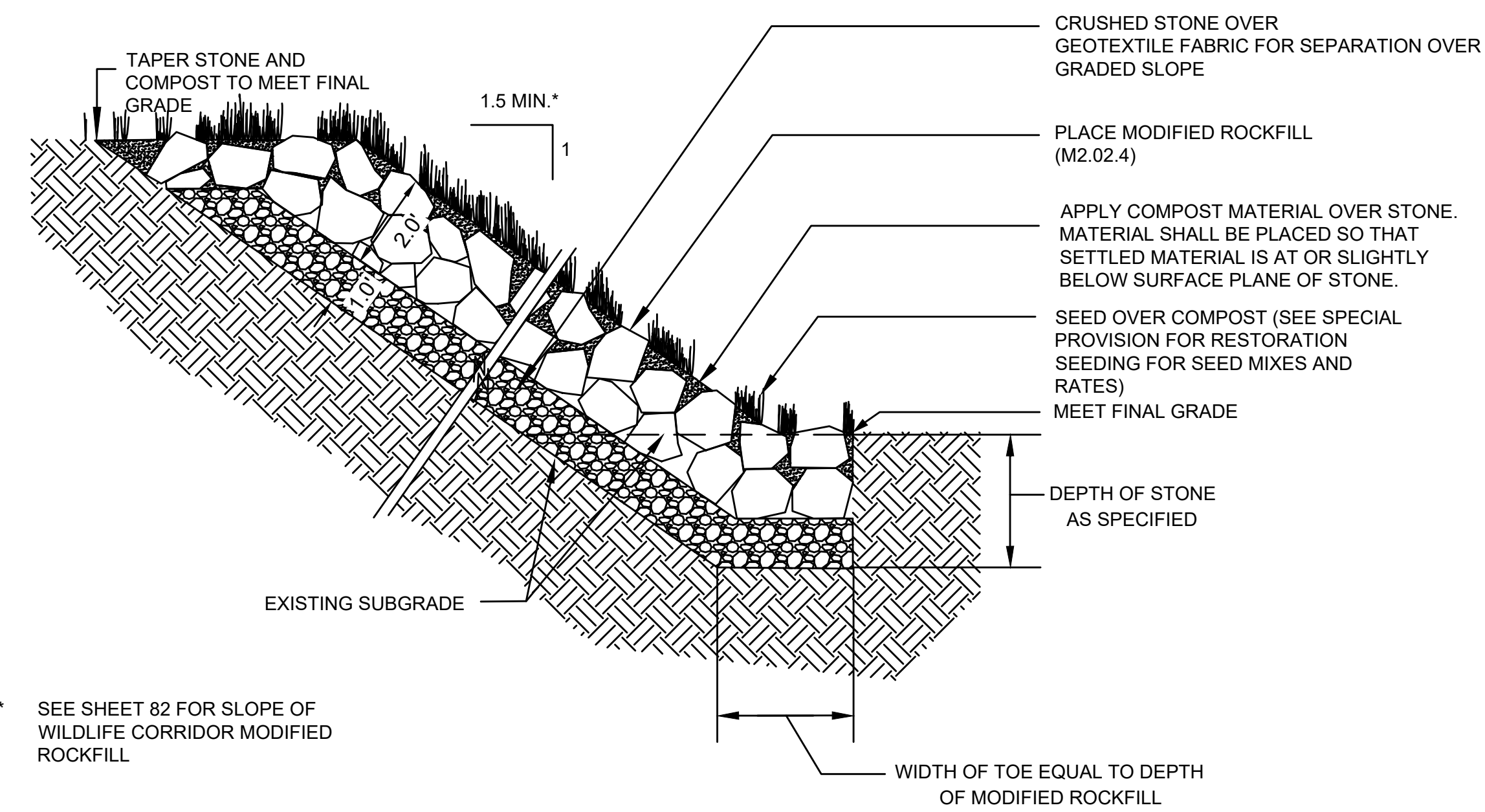


SECTION - TRUNK ARMORING & PRUNING

5 TREE PROTECTION DETAILS
NOT TO SCALE

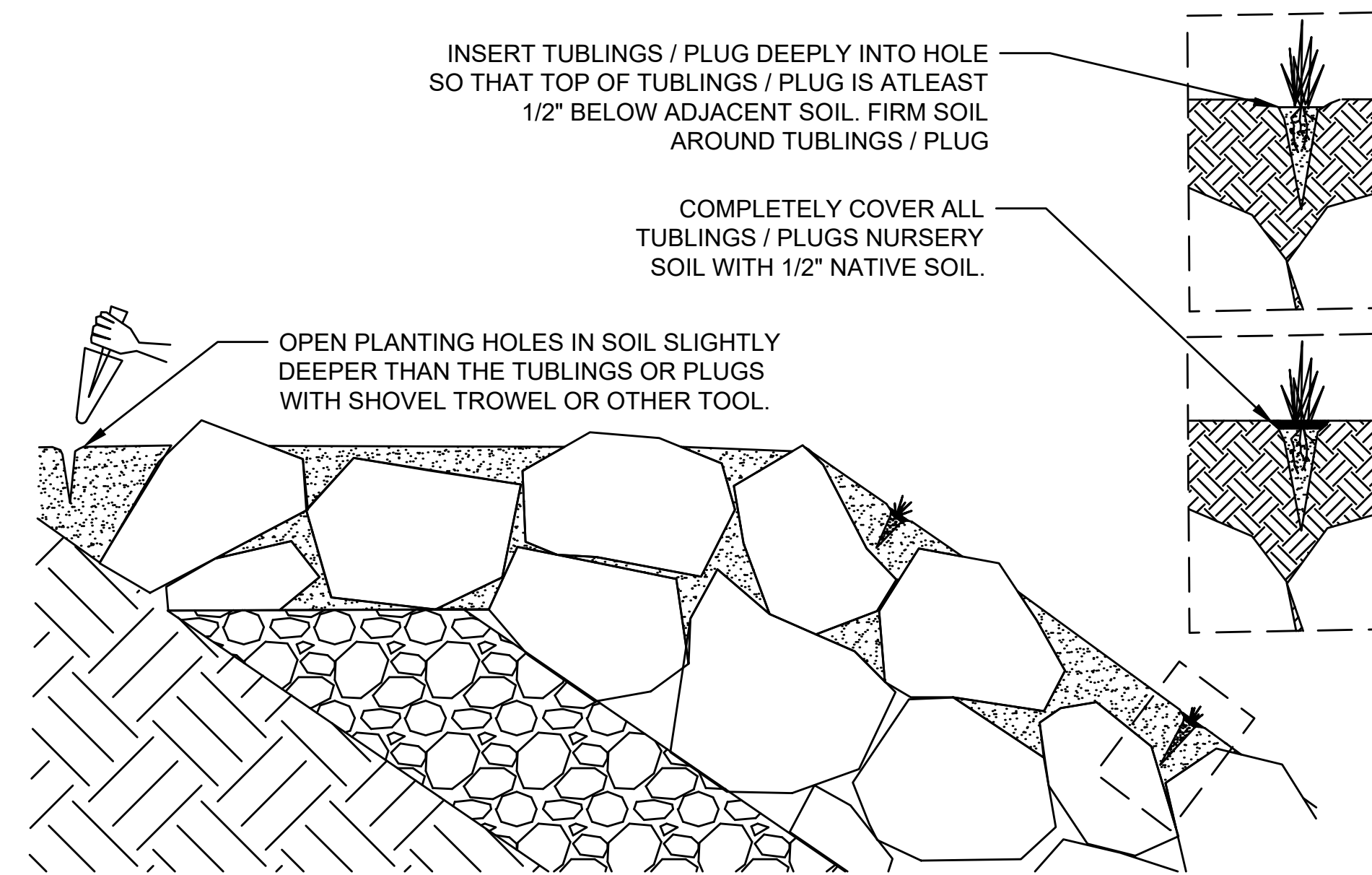
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	78	158
PROJECT FILE NO.		606223	

LANDSCAPE DETAILS

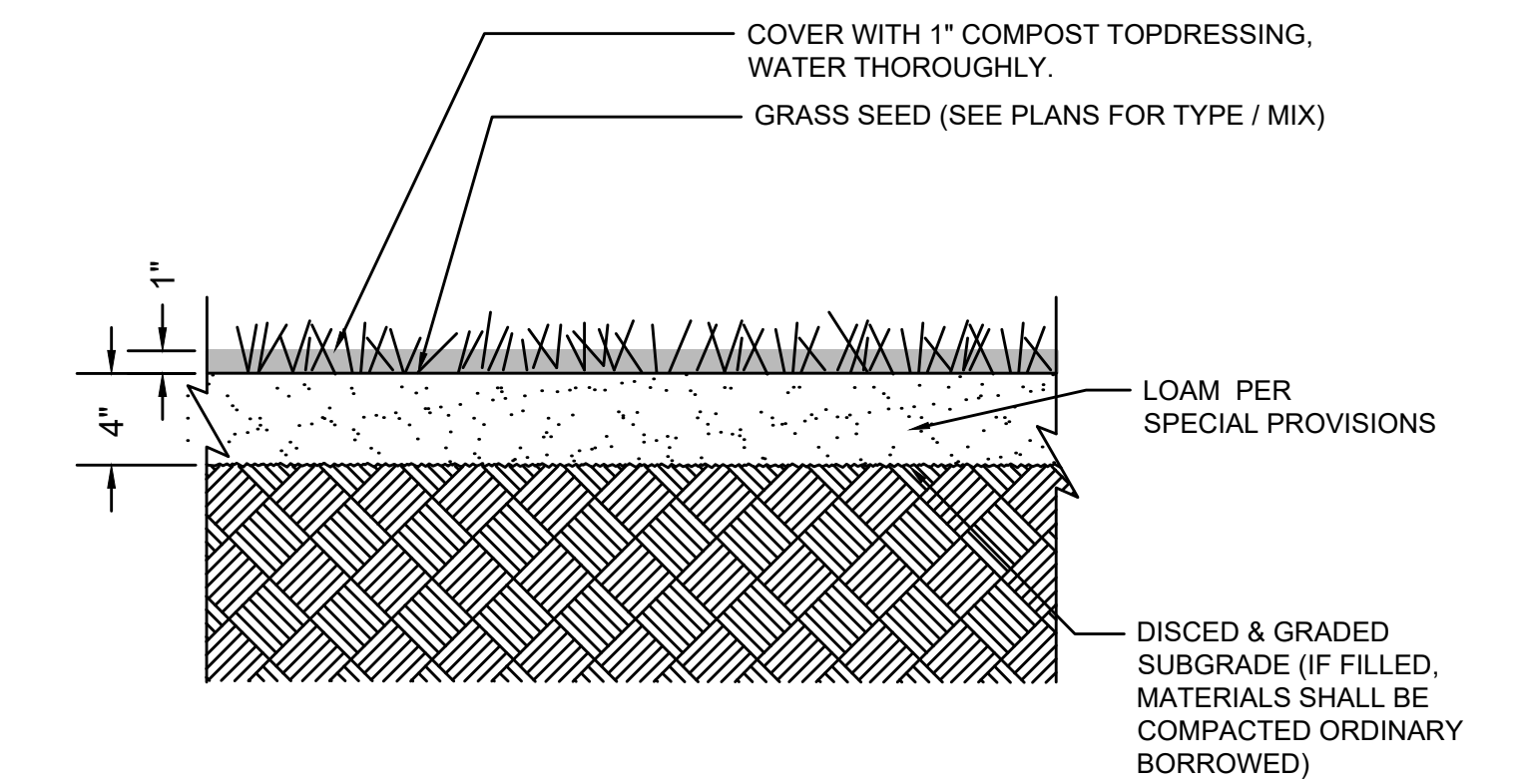


* SEE SHEET 82 FOR SLOPE OF WILDLIFE CORRIDOR MODIFIED ROCKFILL

6 COMPOST TOPDRESSING AND SEED OVER MODIFIED ROCKFILL
NOT TO SCALE 20111021_MassDOT

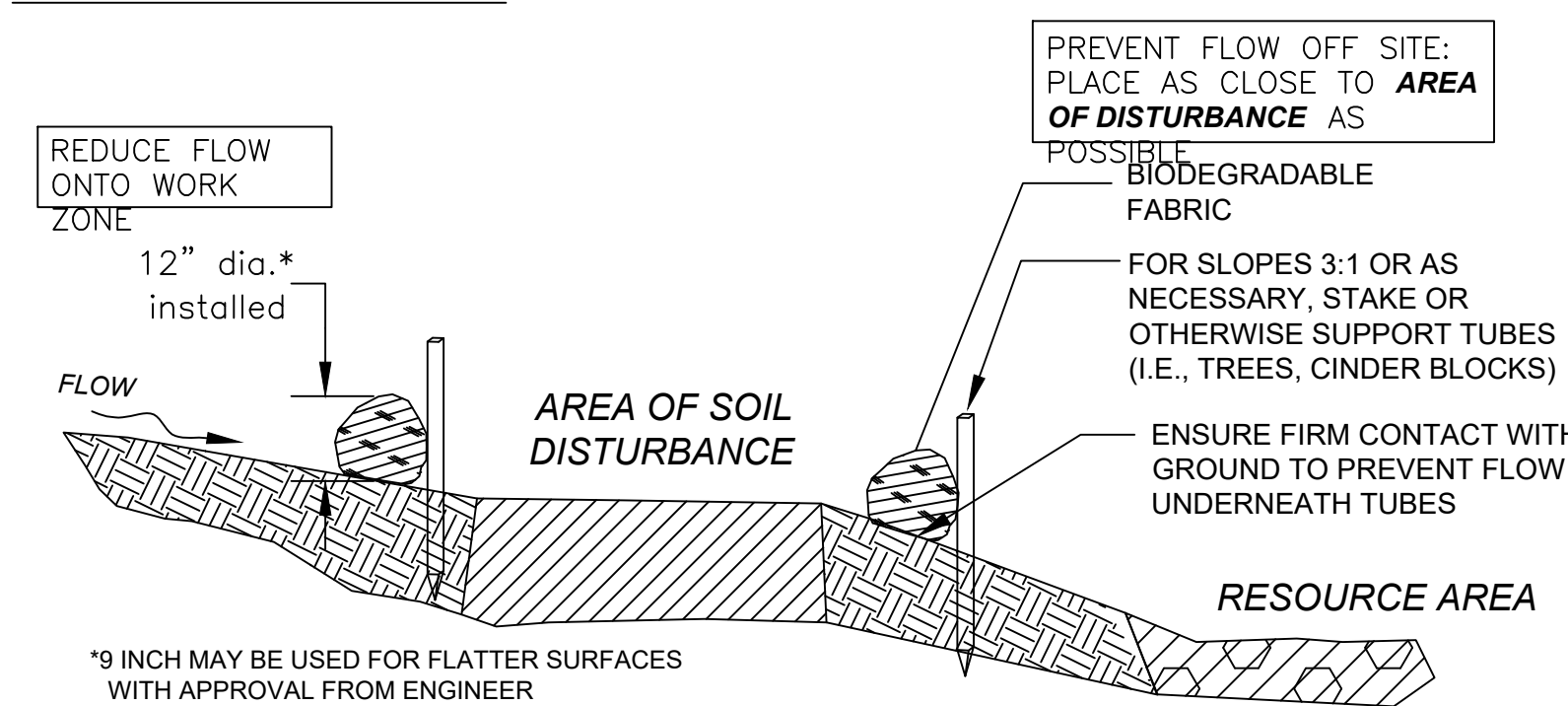


7 TUBLINGS / PLUGS IN MODIFIED ROCK FILL
NOT TO SCALE



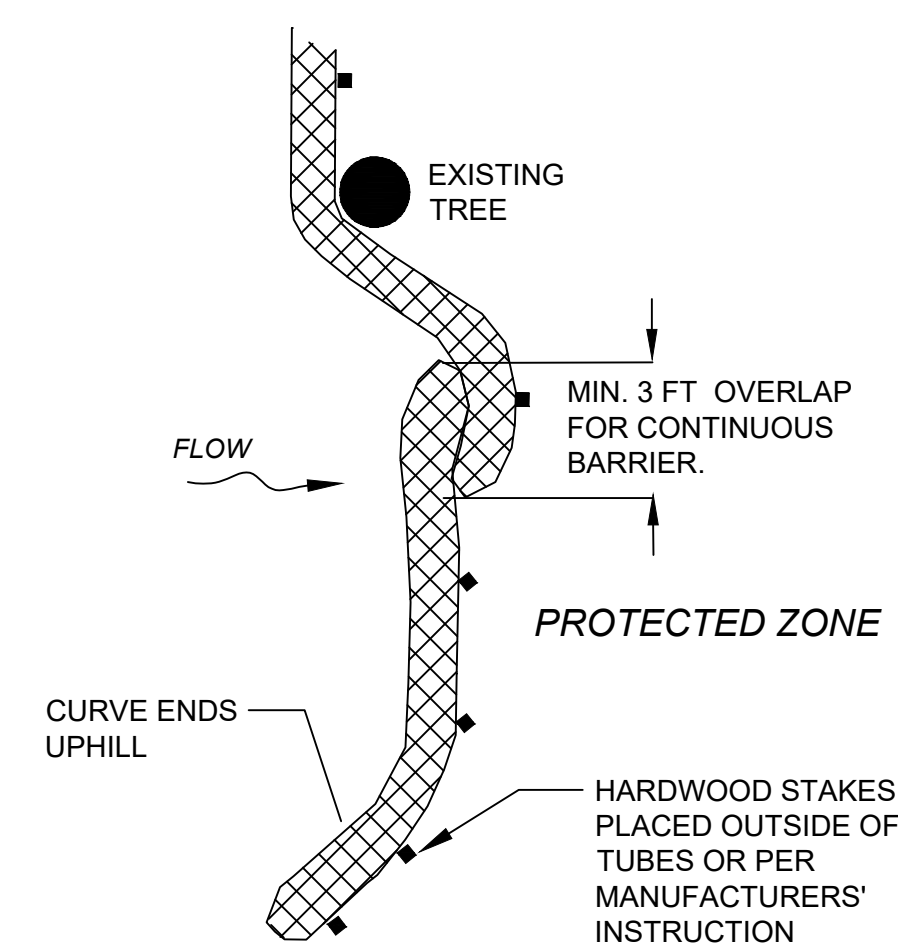
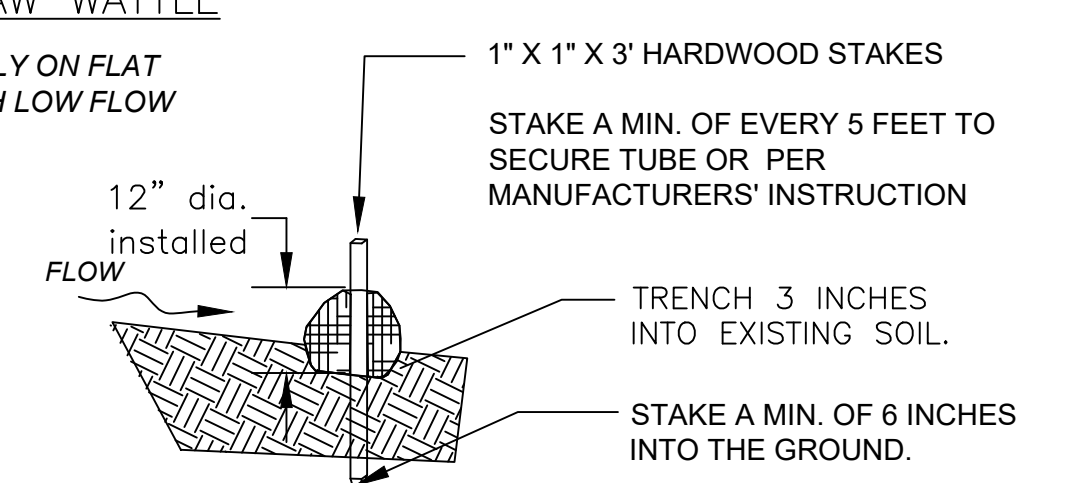
8 LOAM, SEED, & COMPOST TOPDRESSING
NOT TO SCALE

COMPOST FILTER TUBE



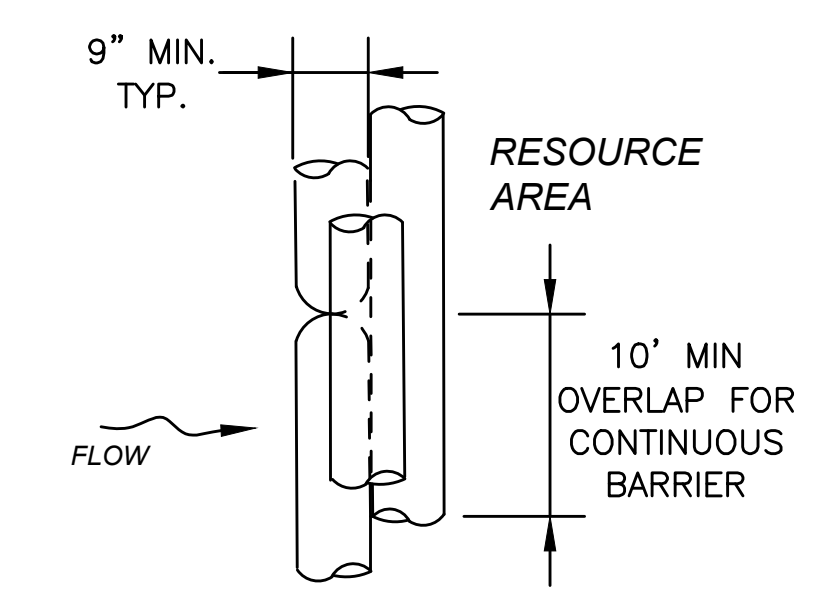
12 INCH STRAW WATTLE

TO BE USED ONLY ON FLAT SURFACES WITH LOW FLOW

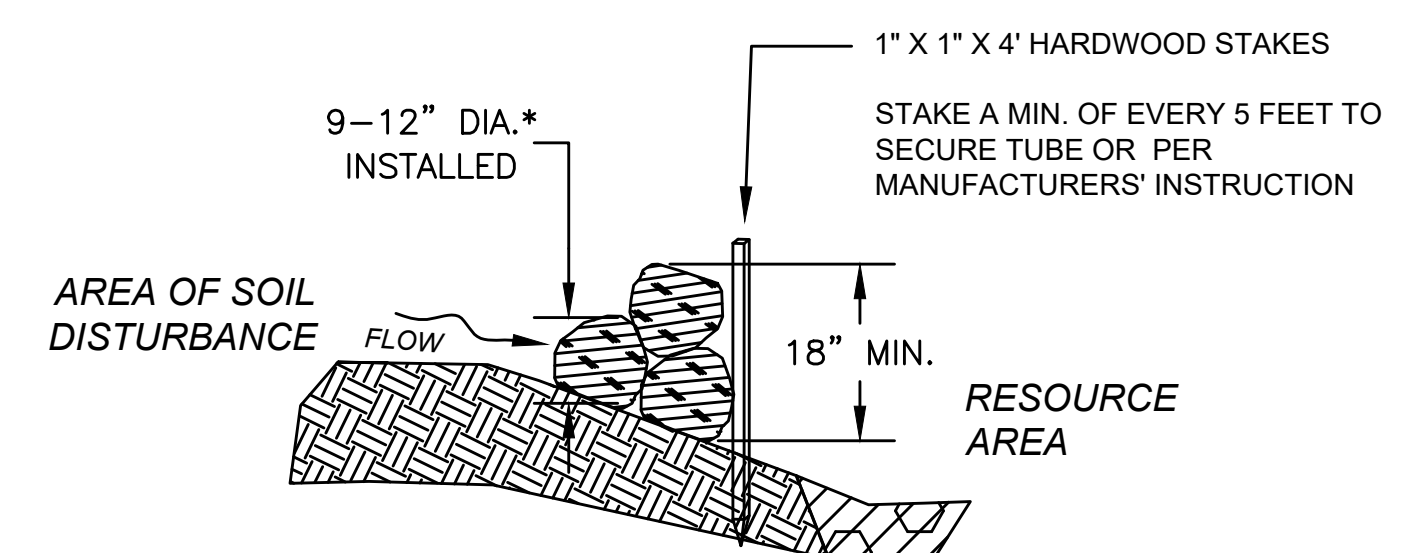


PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.
ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.
PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

PLAN VIEW



PLAN VIEW

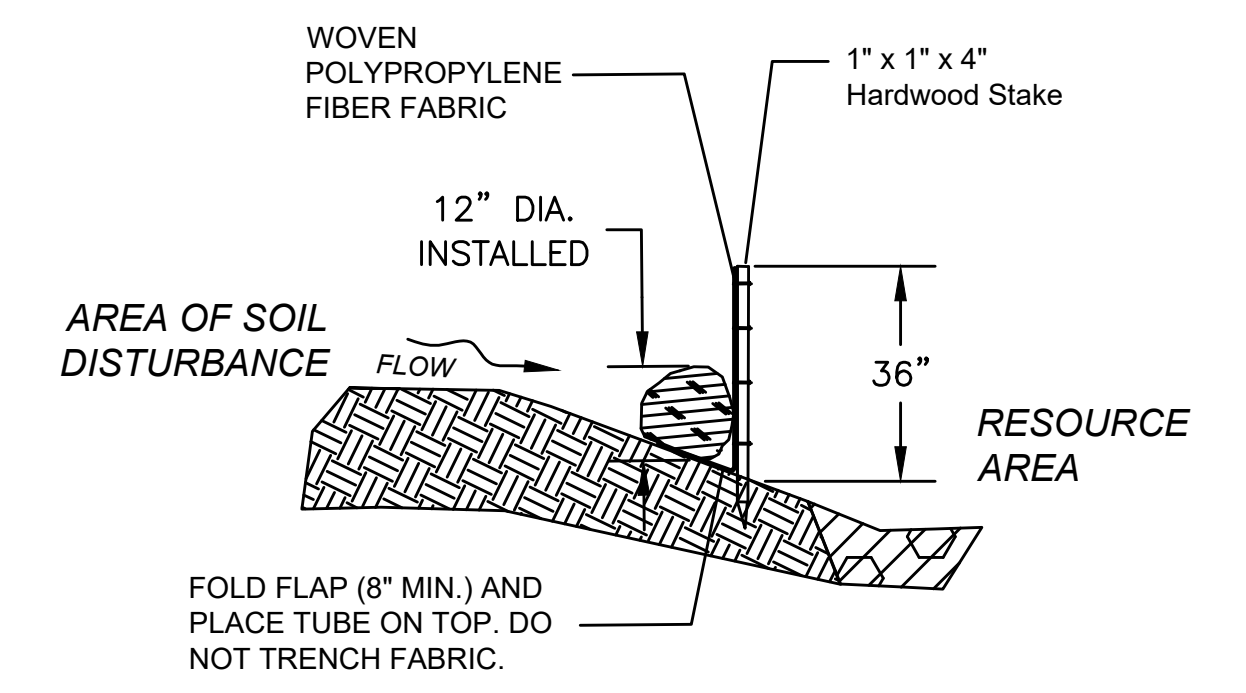


SECTION

9 SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES
NOT TO SCALE 20181210_MassDOT

10 COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
NOT TO SCALE

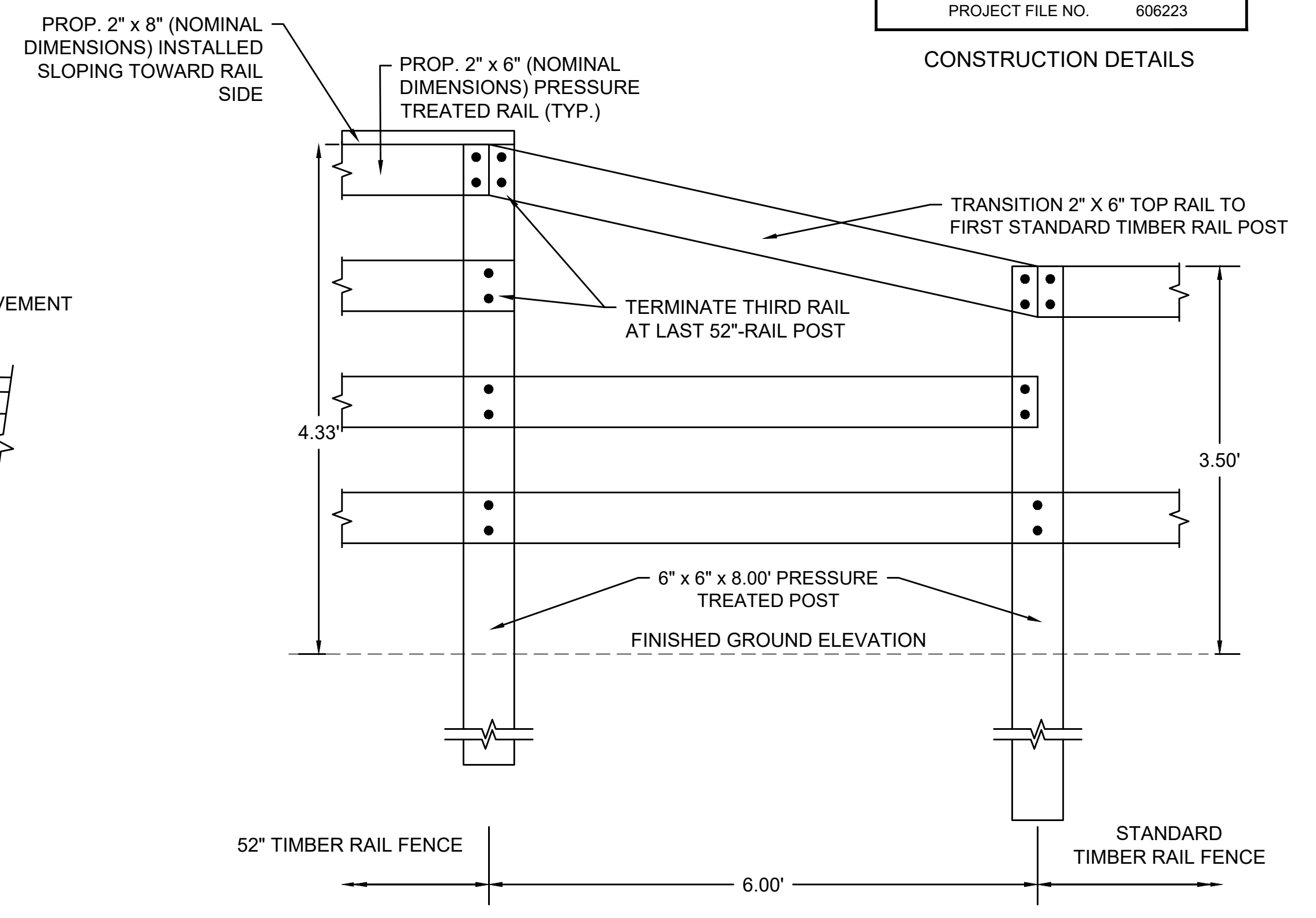
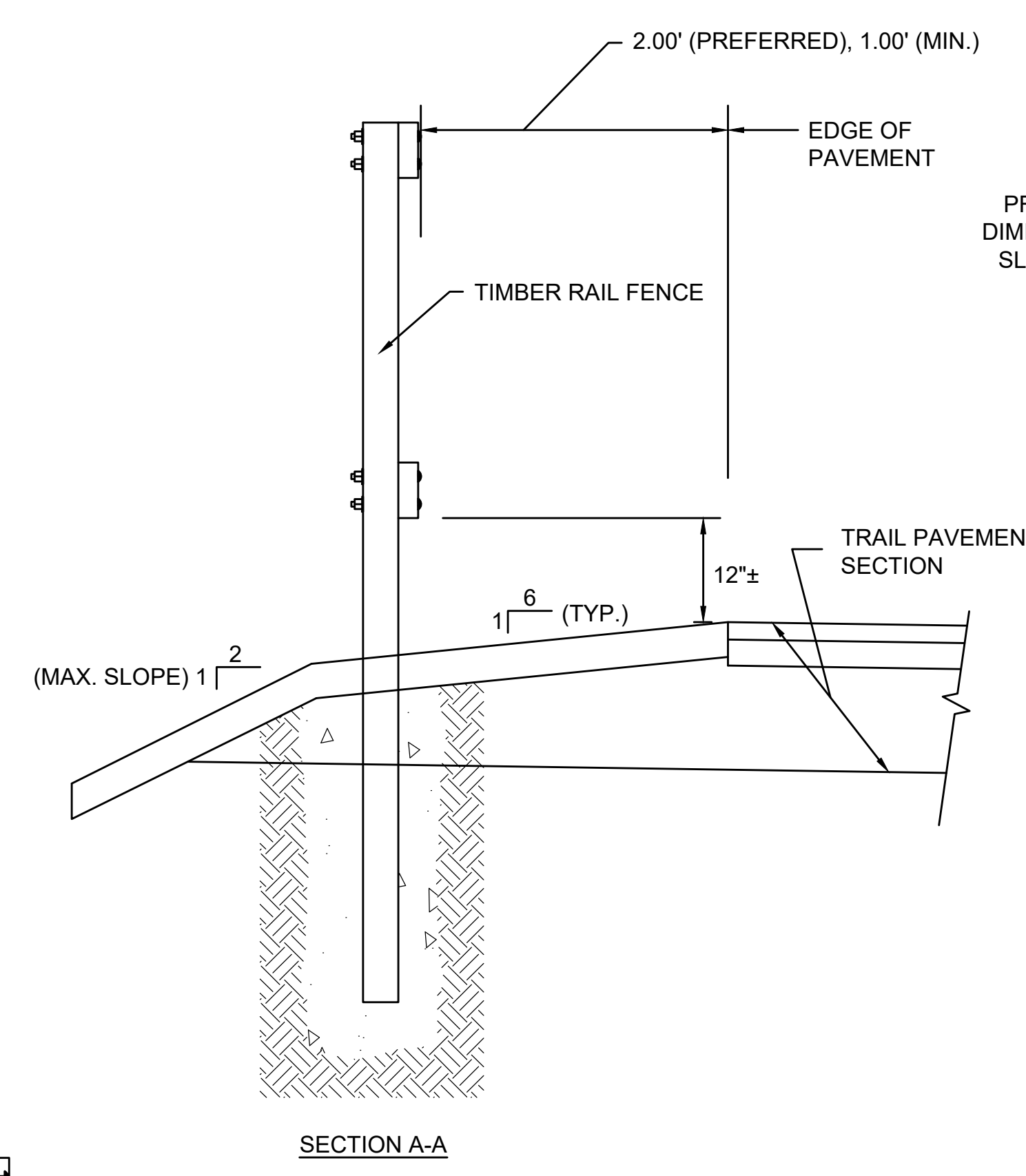
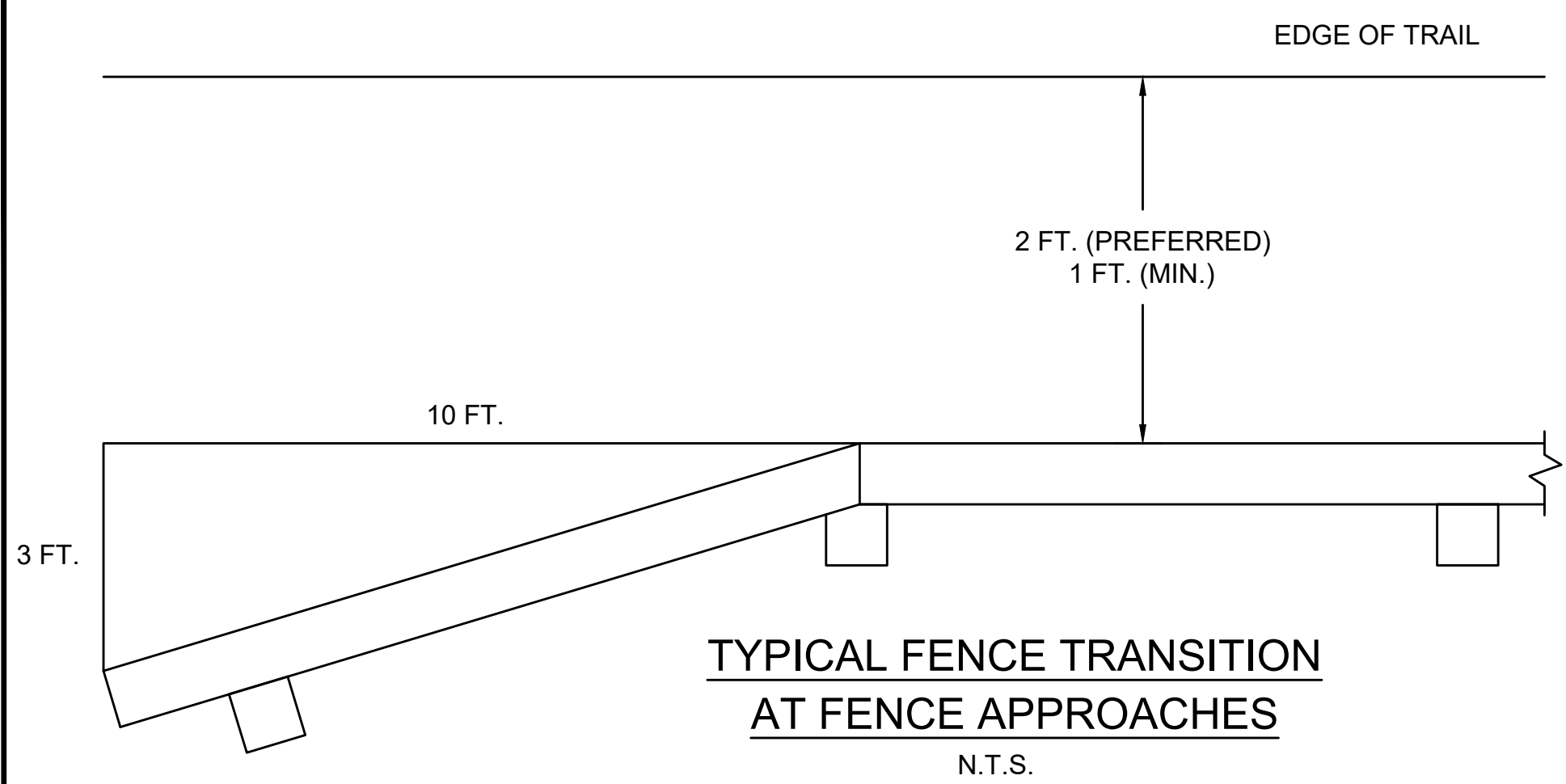
11 COMPOST FILTER TUBE & SILT FENCE
NOT TO SCALE



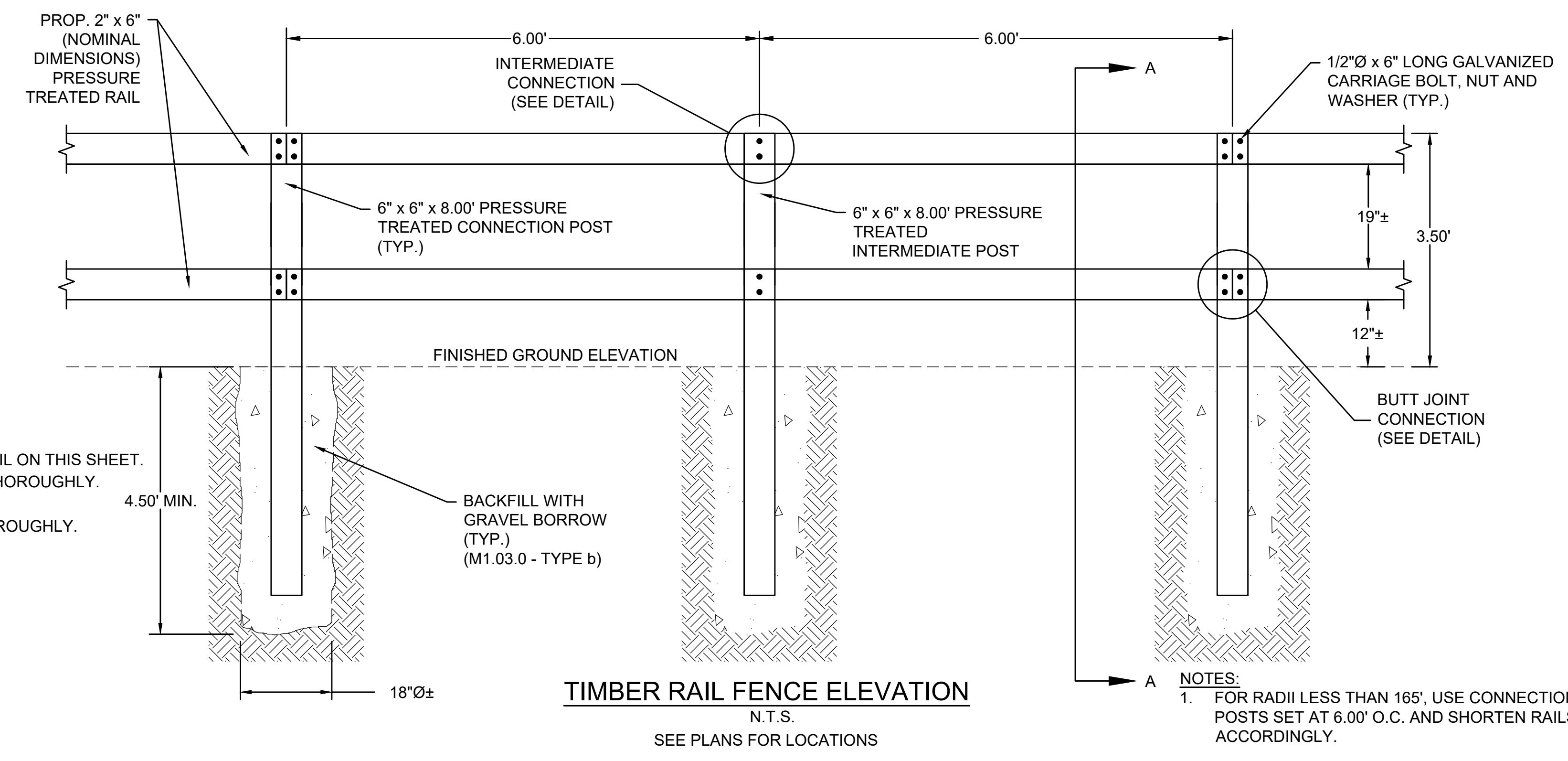
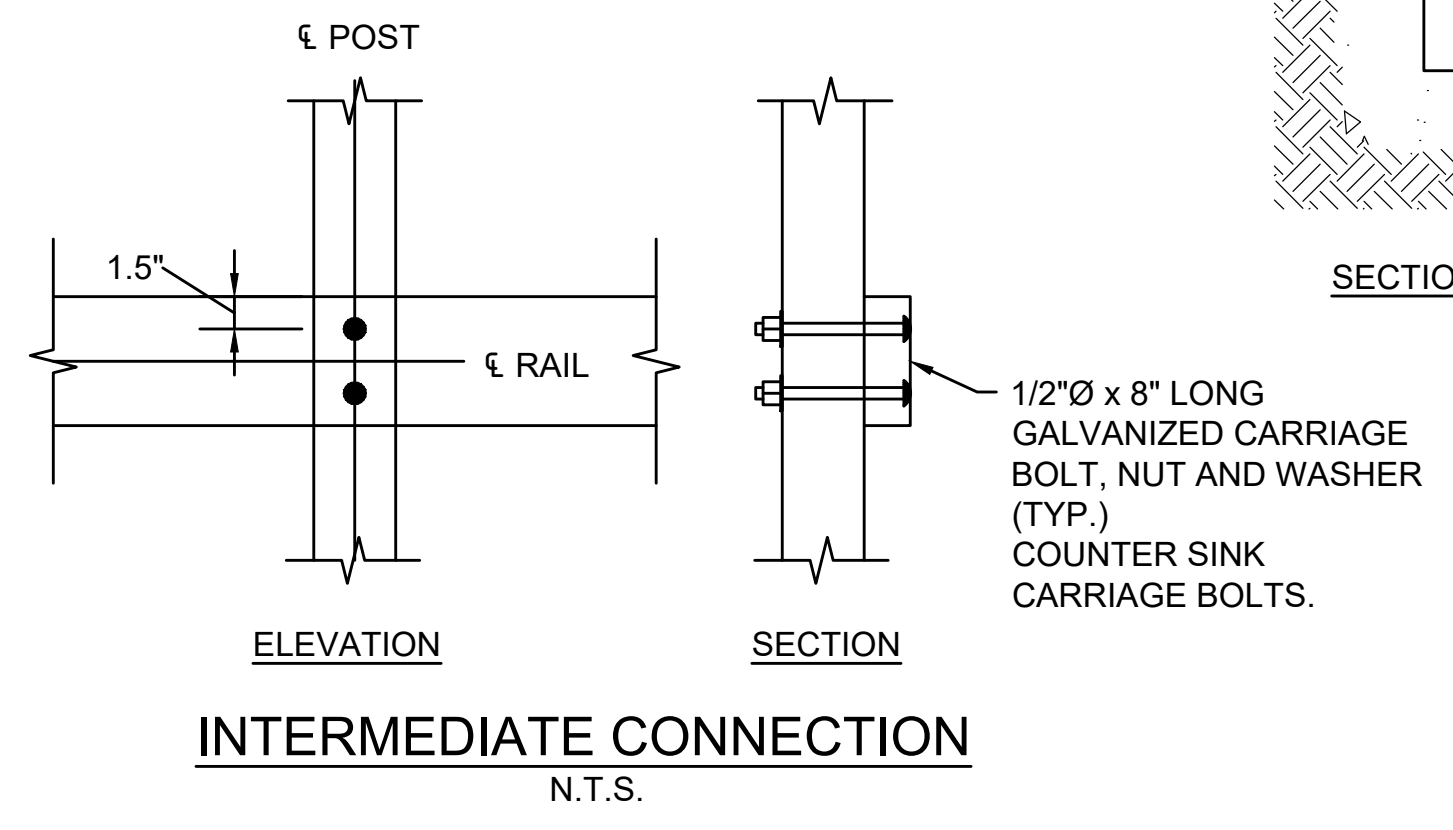
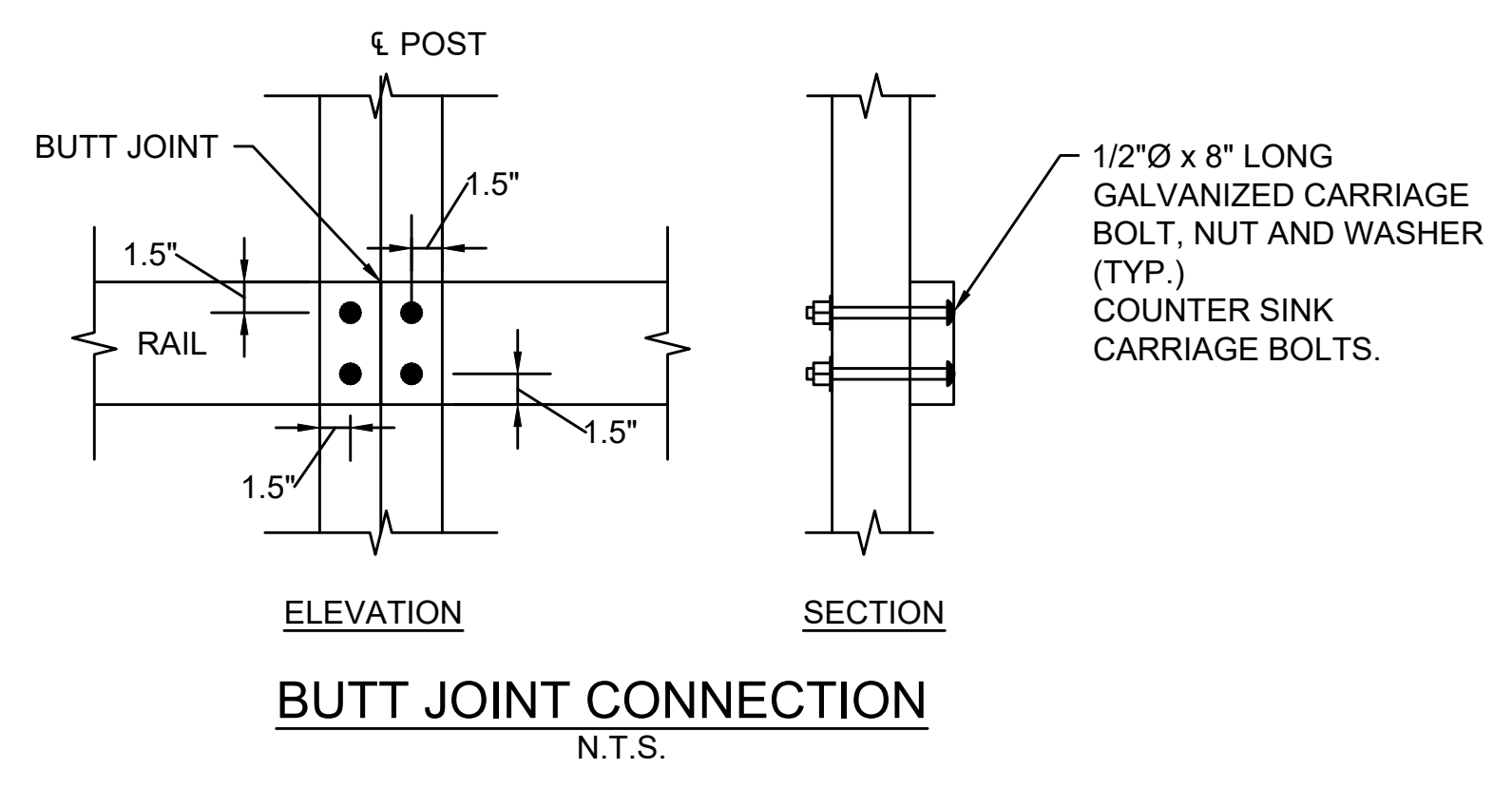
SECTION

CONSTRUCTION DETAILS

- NOTES:
- TIMBER PRESERVATIVES SHALL BE USED ON ALL WOOD TIMBER.
 - ALL CUT ENDS SHALL BE PAINTED WITH PRESERVATIVE IN THE FIELD PER MANUFACTURERS DIRECTION.

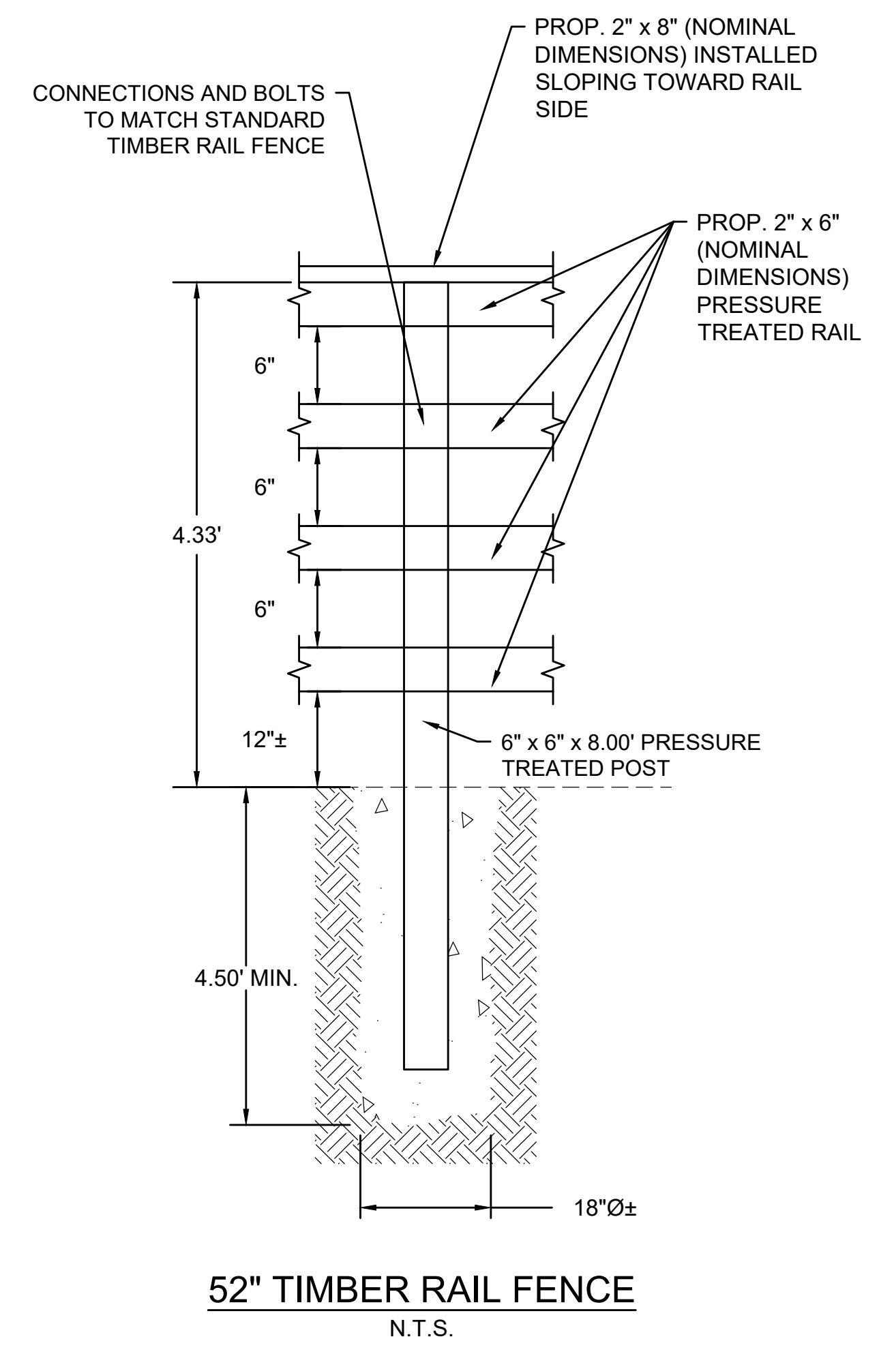


52" TIMBER RAIL FENCE TRANSITION TO STANDARD TIMBER RAIL FENCE
N.T.S.



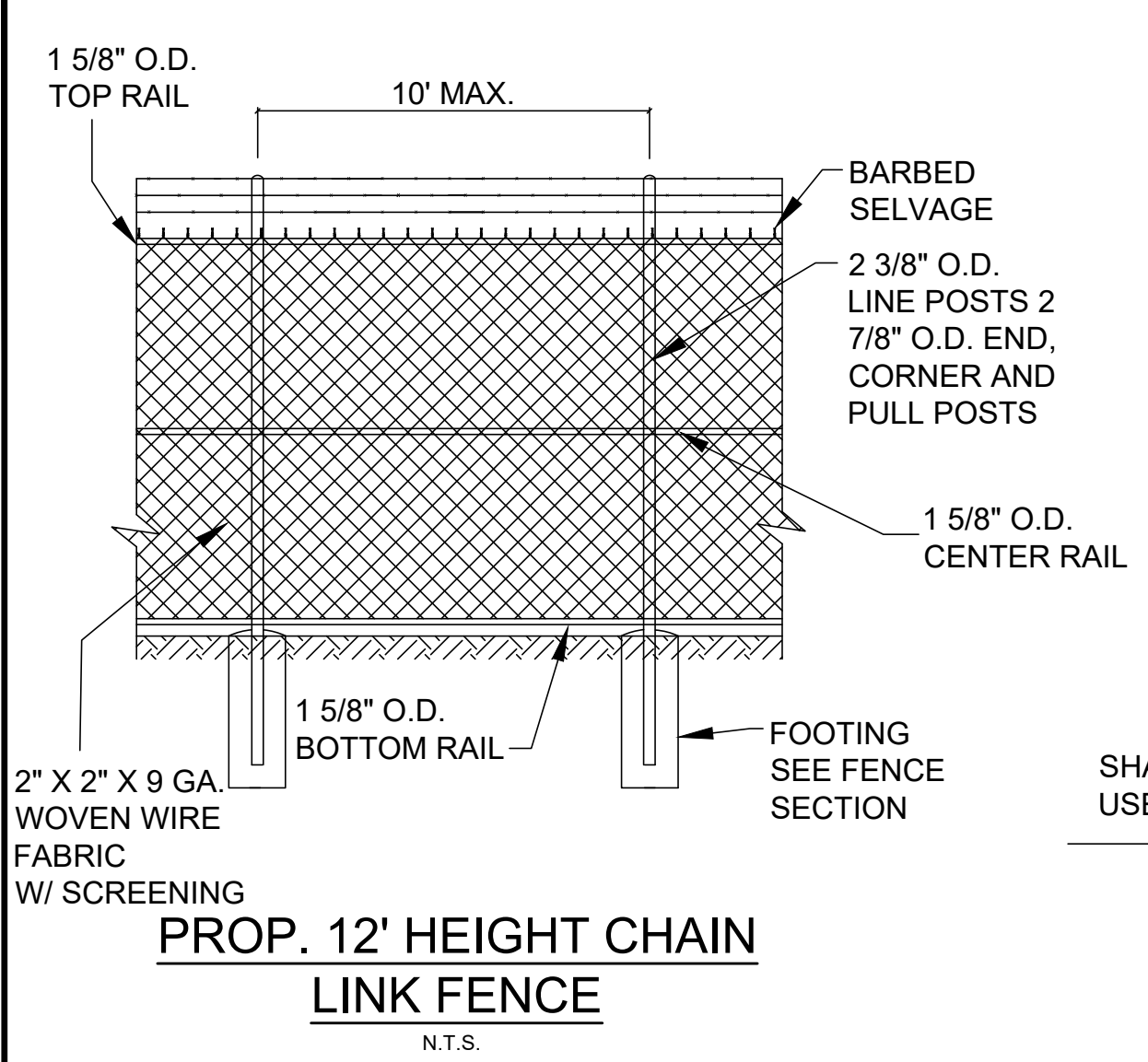
SUGGESTED TIMBER RAIL FENCE CONSTRUCTION SEQUENCE

- AUGER OR DIG POST HOLE TO REQUIRED DIMENSIONS.
- IF GROUND IS SATURATED, USE TUBE STEEL SLEEVE. SEE DETAIL ON THIS SHEET.
- BACKFILL BOTTOM 6"± OF HOLE WITH GRAVEL AND COMPACT THOROUGHLY.
- SET POST AND HOLD PLUMB DURING BACKFILLING.
- BACKFILL WITH GRAVEL IN 12" LIFTS. COMPACT EACH LIFT THOROUGHLY.
- CLAMP RAILS TO POSTS AND FIELD DRILL BOLT HOLES.
- SET BOLTS, WASHERS AND NUTS.

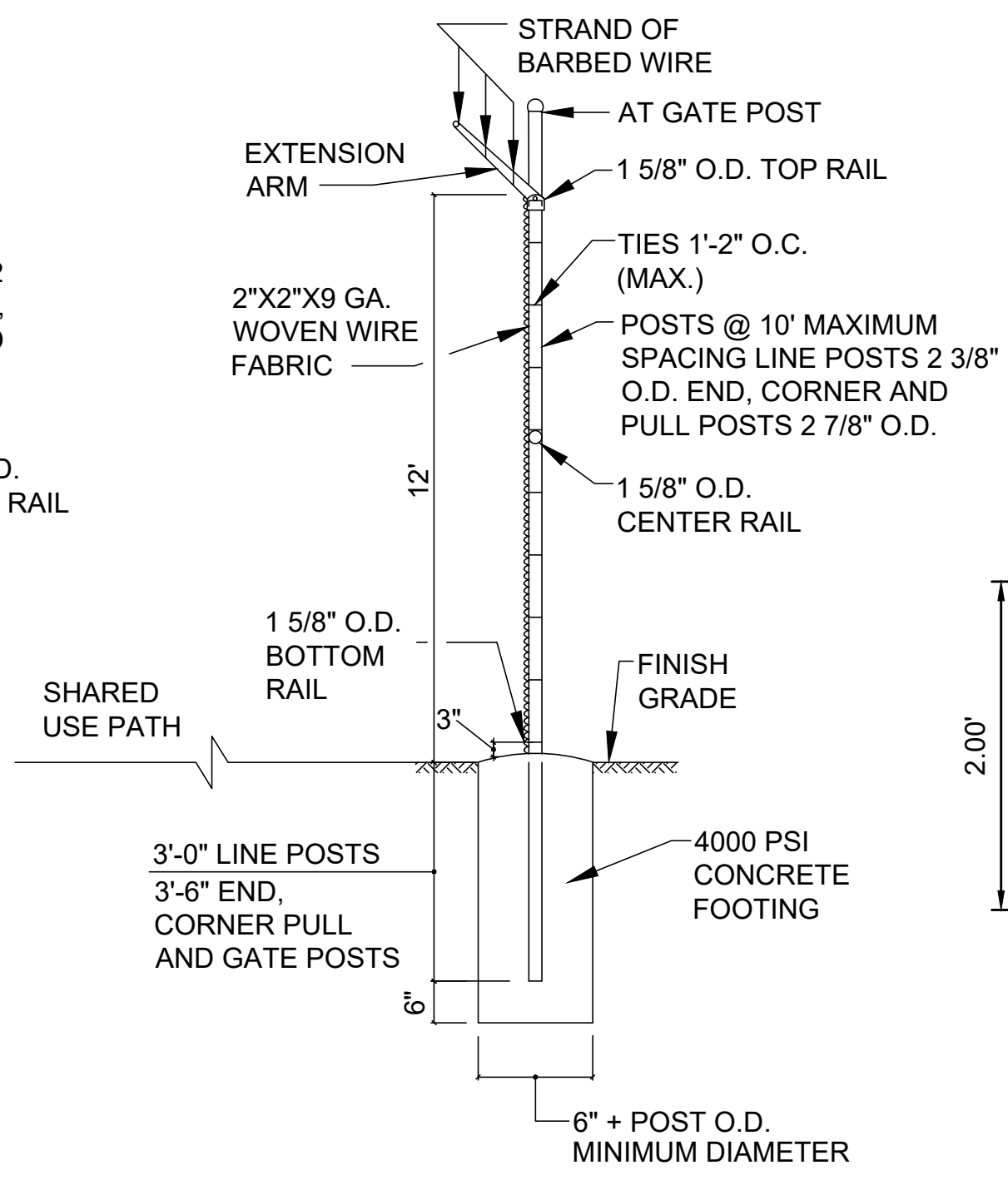


- NOTES:
- FOR RADII LESS THAN 165', USE CONNECTION POSTS SET AT 6.00' O.C. AND SHORTEN RAILS ACCORDINGLY.

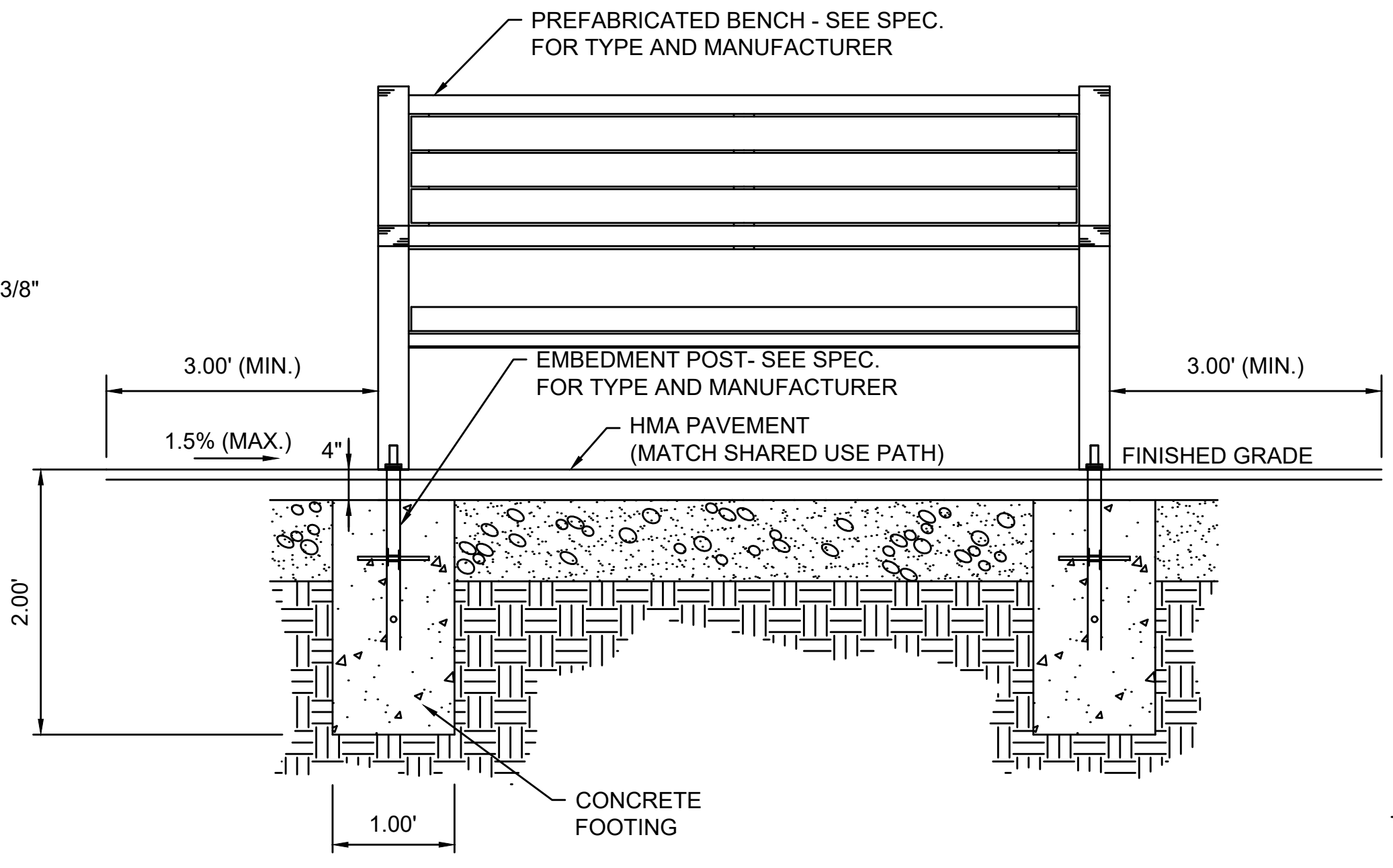
CONSTRUCTION DETAILS



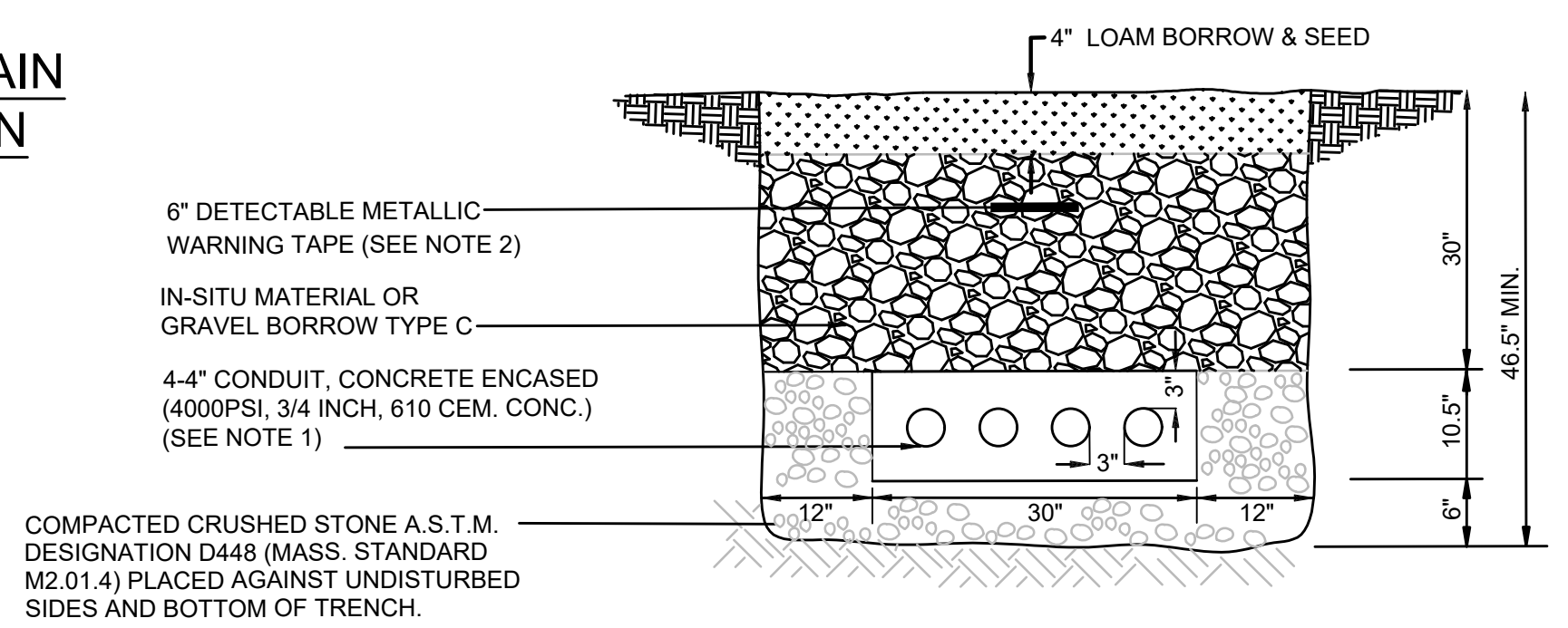
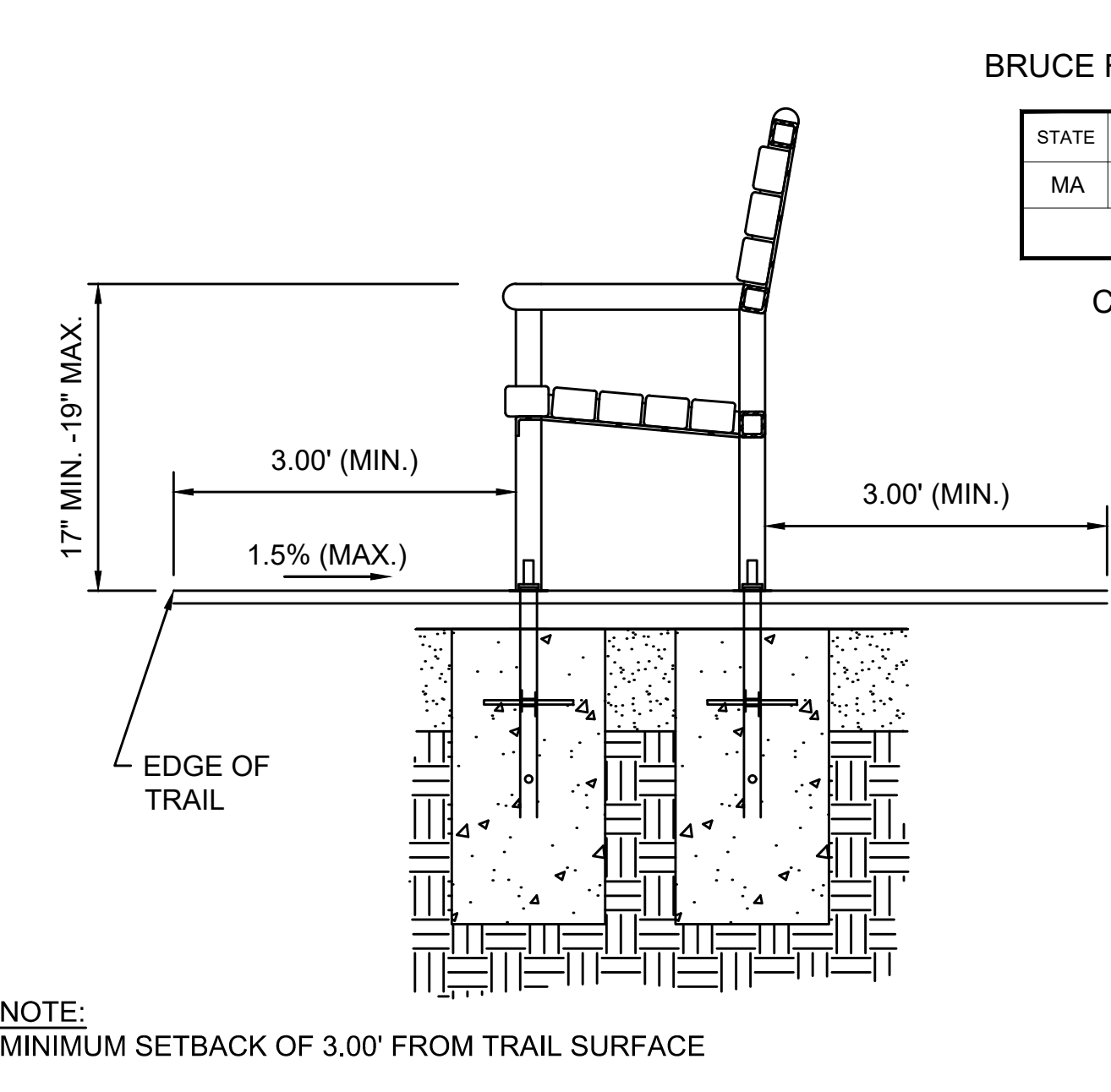
PROP. 12' HEIGHT CHAIN LINK FENCE
N.T.S.



PROP. 12' HEIGHT CHAIN LINK FENCE SECTION
N.T.S.

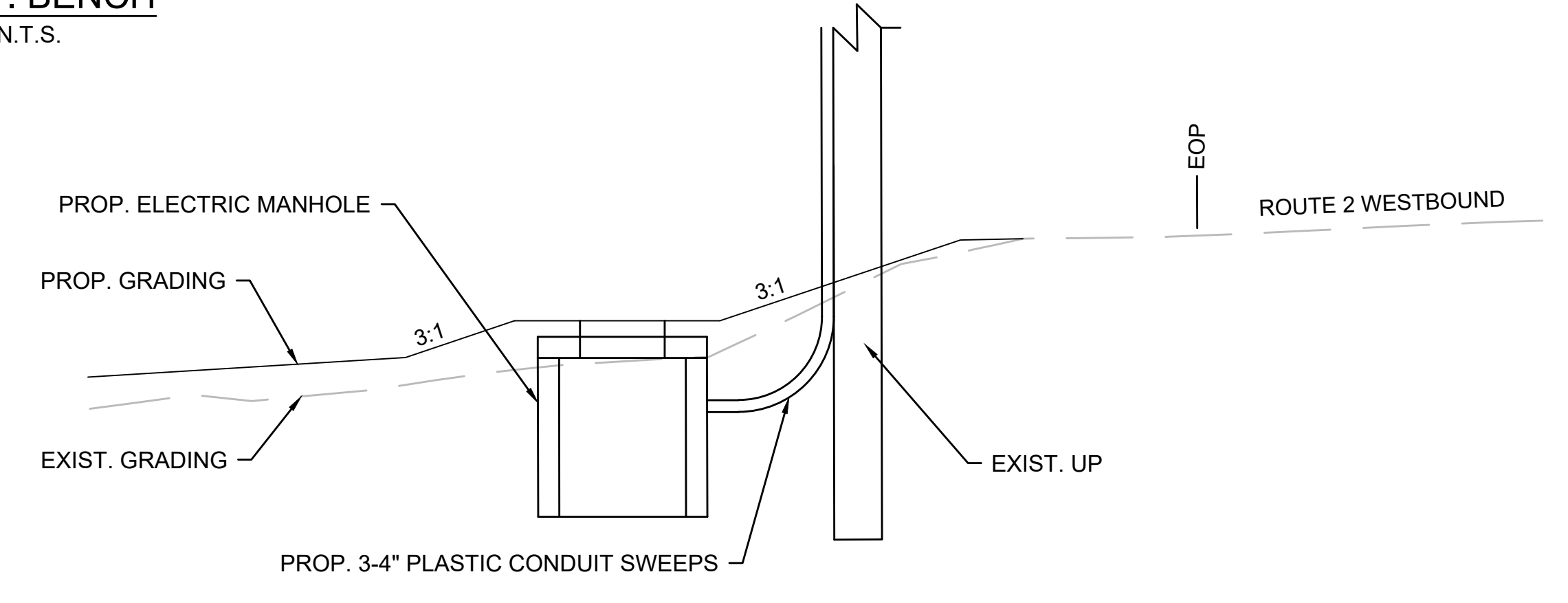


PROP. BENCH
N.T.S.

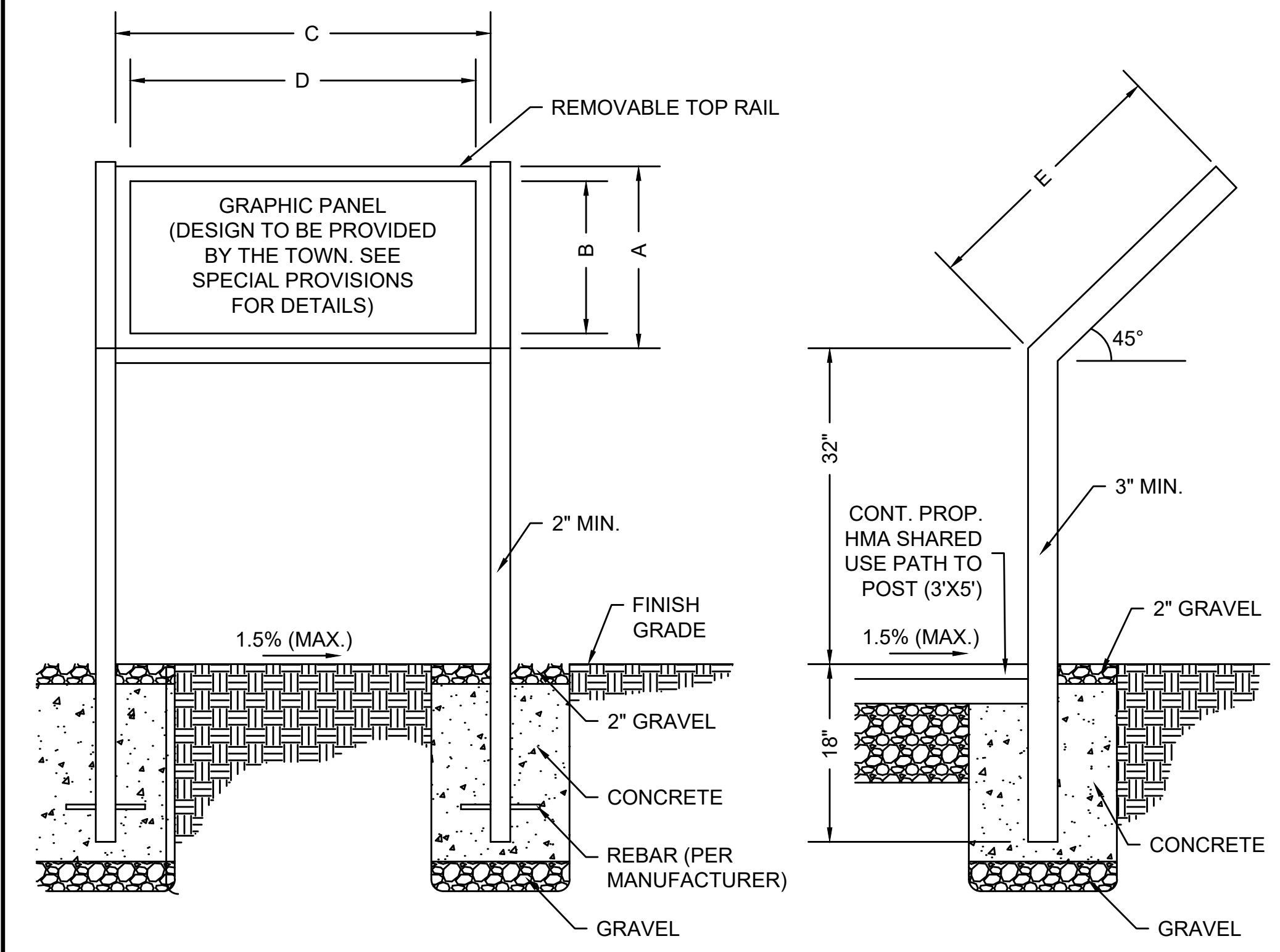


ELECTRICAL CONDUIT TRENCH DETAIL
N.T.S.

- NOTES:
- ELECTRICAL CONDUIT SHALL BE SCHEDULE 80 TYPE NM-PLASTIC (UL) WITH PULL ROPE, UNLESS OTHERWISE APPROVED BY MASSDOT.
 - WARNING TAPE COLOR SHALL BE PER APWA STANDARDS.

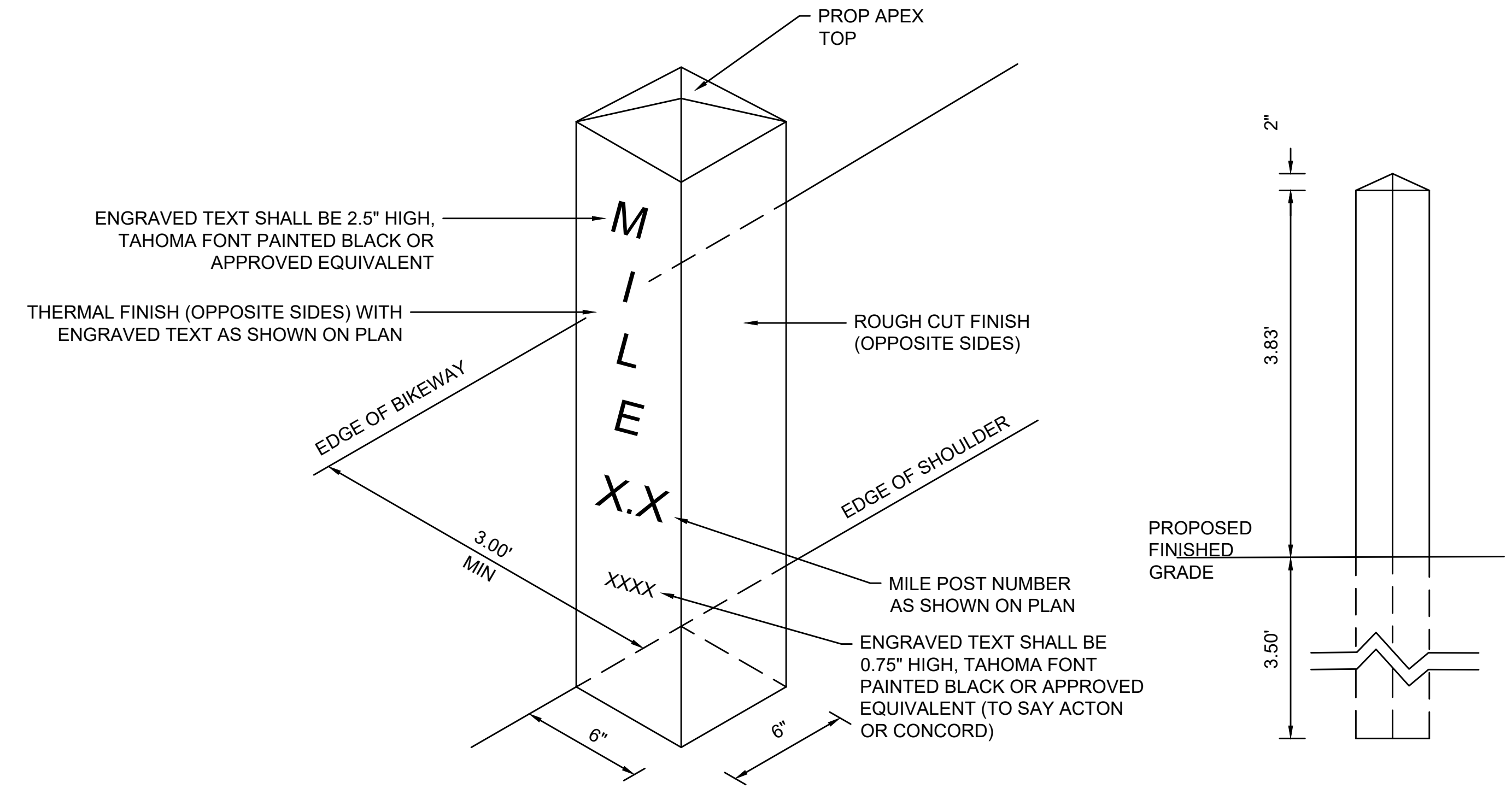


ELECTRICAL MANHOLE/UTILITY POLE DETAIL
N.T.S.



PROP. INTERPRETIVE SIGN
N.T.S.

SIGN TYPE	DIMENSION TABLE				
	HEIGHT	WIDTH	DEPTH		
	A	B	C	D	E
26" x 38"	26"	23"	38"	35"	26.5"



PROP. GRANITE MILE MARKER
N.T.S.