MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

MINUTEMAN BIKEWAY EXTENSION

IN THE TOWN OF

BEDFORD

MIDDLESEX COUNTY

FEDERAL AID PROJECT NO. TBD

75% SUBMITTAL

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	01	166
PROJECT FILE NO. 607738			

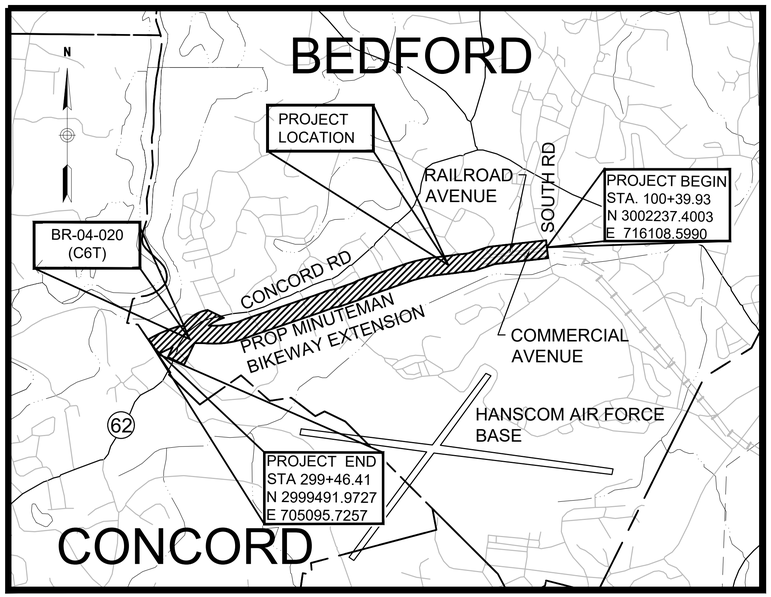
TITLE SHEET & INDEX

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THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, 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.

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0 2000 4000 6000 8000

SCALE: 1" = 2000'

LENGTH OF PROJECT = 13,116 FEET = 2.484 MILES

DESIGN DESIGNATION (MINUTEMAN BIKEWAY)

DESIGN SPEED	20 MPH

DESIGN DESIGNATION (RAILROAD AVENUE)

DESIGN SPEED	30 MPH
ADT (2017)	2,445 VPD
ADT (2037)	2,700 VPD
K	16%
D	57% EB
T (PEAK HOUR)	5.7%
T (AVERAGE DAY)	2.4%
DHV	445 VPH
DDHV	250 VPH
FUNCTIONAL CLASSIFICATION	LOCAL ROAD

DESIGN DESIGNATION (CONCORD ROAD)

DESIGN SPEED	40 MPH
ADT (2017)	9,905 VPD
ADT (2037)	10,945 VPD
K	11%
D	54% EB
T (PEAK HOUR)	0.9%
T (AVERAGE DAY)	1.0%
DHV	1,190 VPH
DDHV	645 VPH
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

DATE	DESCRIPTION	REV #
10/30/2020	75% SUBMISSION	1
3/31/2017	INITIAL SUBMISSION	0

PLAN PREPARED BY:

vhb
101 WALNUT STREET
WATERTOWN, MA 02471

massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER **DATE**

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR **DATE**

APPROVED

HIGHWAY ADMINISTRATOR **DATE**

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
MB	MB	MAIL BOX
EHH	EHH	ELECTRIC HANDHOLE
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
△		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UP	UP	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		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
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
		EROSION CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
℄		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		VIDEO DETECTION ZONE
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE (12" WIDTH)
	CW	CROSSWALK (SEE CONSTRUCTION DETAIL)
	SWL	SOLID WHITE LINE (4" WIDTH)
	SYL	SOLID YELLOW LINE (4" WIDTH)
	BWL	BROKEN WHITE LINE (4" WIDTH)
	BYL	BROKEN YELLOW LINE (4" WIDTH)
	DWL	DOTTED WHITE LINE (4" WIDTH)
	DYL	DOTTED YELLOW LINE (4" WIDTH)
	DWLex	DOTTED WHITE LINE EXTENSION (4" WIDTH)
	DYLex	DOTTED YELLOW LINE EXTENSION (4" WIDTH)
	DBWL	DOUBLE WHITE LINE (4" WIDTH)
	DBYL	DOUBLE YELLOW LINE (4" WIDTH)
		BIKE LANE WHITE

GENERAL NOTES:

1. TOPOGRAPHICAL INFORMATION FROM A SURVEY PERFORMED BY VHB IN 2011, SUPPLEMENTED BY HANCOCK ASSOCIATES, CHELMSFORD, MASSACHUSETTS IN 2011, AND UPDATED BY VHB IN 2016. THE HORIZONTAL DATUM FOR THIS SURVEY IS THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, NAD 1983, MAINLAND ZONE. THE VERTICAL DATUM FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). SAID DATUMS WERE ESTABLISHED VIA GPS.
2. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
4. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
5. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
6. TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
7. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
8. THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
9. JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.
10. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND STACKED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
11. ALL LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF .01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
12. EXISTING GRANITE CURB SUITABLE FOR RE-USE SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
13. ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED. PROPERTY LINES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN VERIFIED.
14. 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' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.

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MINUTEMAN BIKEWAY EXTENSION

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LEGEND & ABBREVIATIONS

ABBREVIATIONS

GENERAL

ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
BIT.	BITUMINOUS
BM	BENCHMARK
BOS	BOTTOM OF SLOPE
(BO)	BY OTHERS
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CBSC	CATCH BASIN SHALLOW COVER
CEM	CEMENT
CLF	CHAIN LINK FENCE
CONC	CONCRETE
ELEV (or EL.)	ELEVATION
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GRAIL	GUARDRAIL
GRAN	GRANITE
HMA	HOT MIX ASPHALT
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NTS	NOT TO SCALE
P.G.L.	PROFILE GRADE LINE
PROP	PROPOSED
PVMT	PAVEMENT
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
R&D	REMOVE AND DISCARD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
STA	STATION
TEMP	TEMPORARY
TOS	TOP OF SLOPE
TYP	TYPICAL

UTILITIES

ACCMP	ASPHALT COATED CORRUGATED METAL PIPE
CAP	CORRUGATED ALUMINUM PIPE
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
COND	CONDUIT
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HW	HEADWALL
HYD	HYDRANT
INV	INVERT
PVC	POLYVINYLCHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
TSV&B	TAPPING SLEEVE VALVE AND BOX
UP	UTILITY POLE

ALIGNMENT/GRADING

CC	CENTER OF CURVE
HP	HIGH POINT
LP	LOW POINT
PC	POINT OF CURVE
PI	POINT OF INTERSECTION
PNT	POINT
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT

EL. 25.45 — SPOT ELEVATION

PROFILES

AD	ALGEBRAIC DIFFERENCE IN RATES OF GRADES
ELEV	ELEVATION
HSD	HORIZONTAL SIGHT DISTANCE
K	RATE OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVC	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENT
PVRC	POINT OF VERTICAL REVERSE CURVE
PVCC	POINT OF VERTICAL COMPOUND CURVER
SSD	STOPPING SIGHT DISTANCE
VC	VERTICAL CURVE

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 YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW 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, TILT, 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
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

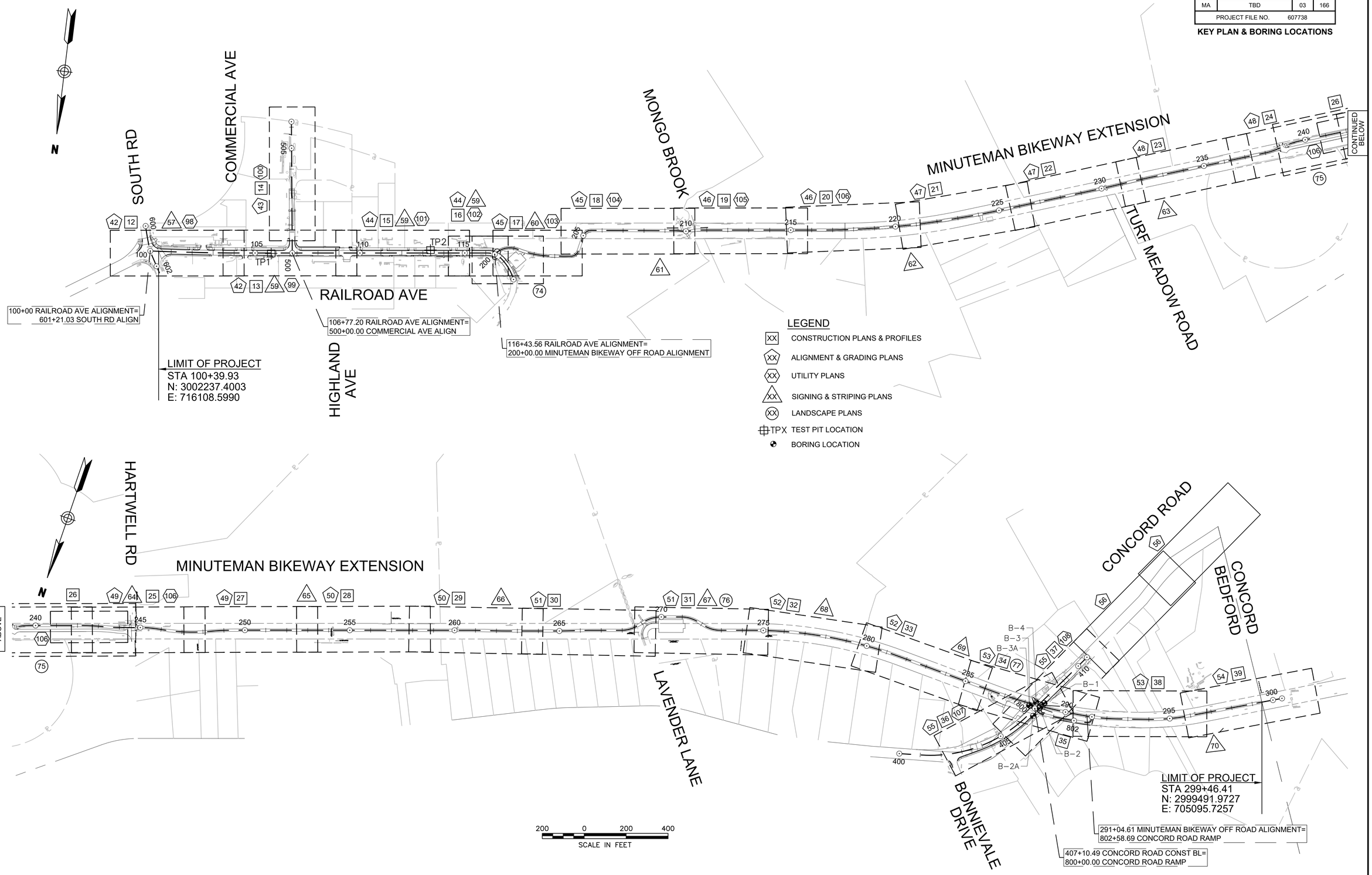
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MINUTEMAN BIKEWAY EXTENSION

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KEY PLAN & BORING LOCATIONS

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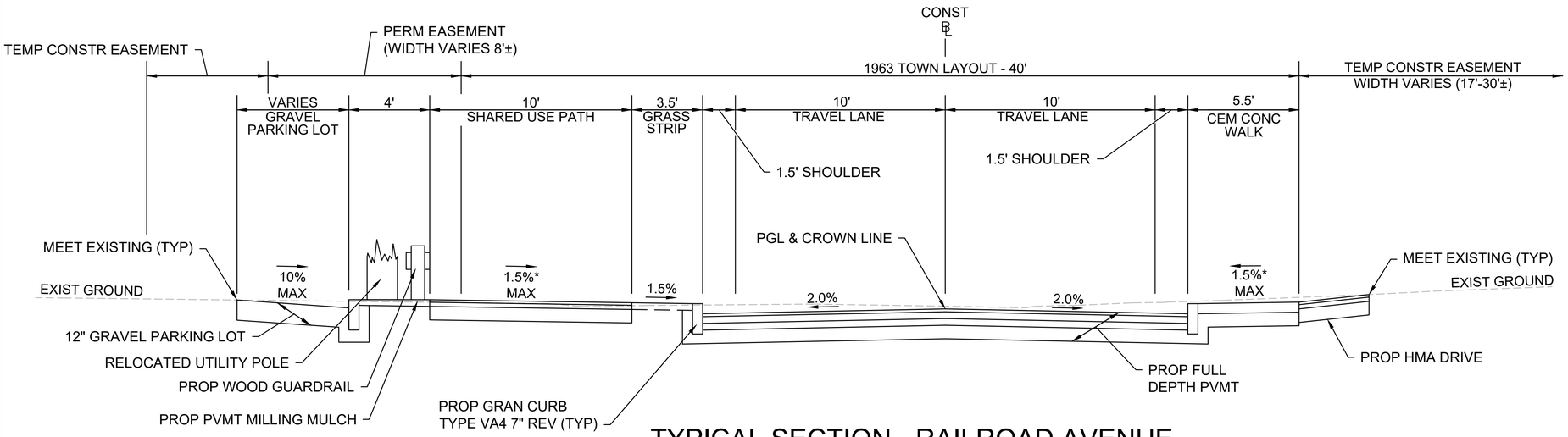


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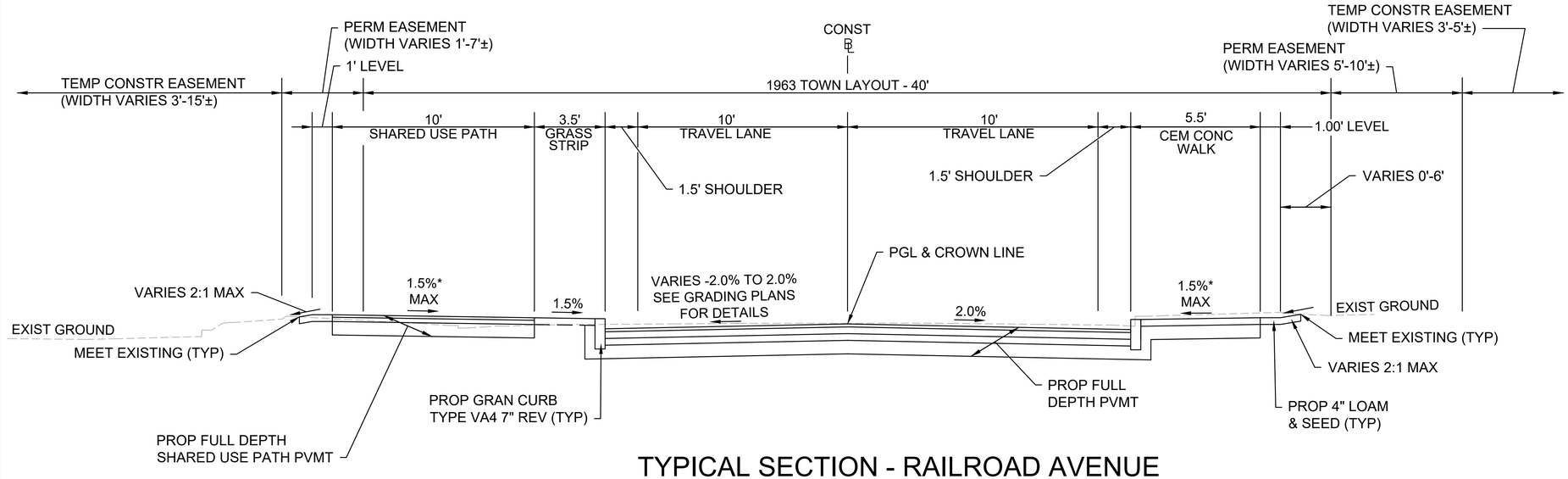
TYPICAL SECTIONS

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TYPICAL SECTION - RAILROAD AVENUE

APPROX STA 107+25± TO STA 109+62±
NTS
* 0.5% CONSTRUCTION TOLERANCE



TYPICAL SECTION - RAILROAD AVENUE

APPROX STA 100+75± TO STA 106+29±
STA 109+63± TO STA 116+12±
NTS
* 0.5% CONSTRUCTION TOLERANCE

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT

SURFACE: 1.75" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER

BASE: 4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) PLACED IN 2 LIFTS OVER

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

PROPOSED FULL DEPTH SHARED USE PATH (SUP) PAVEMENT

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER

BASE COURSE: 2.5" SUPERPAVE INTERMEDIATE 12.5 (SIC-12.5) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED PAVEMENT MICROMILLING & OVERLAY

SURFACE: 1.75" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER

PAVEMENT MILLING VARIABLE DEPTH 1.75" MIN.

PROPOSED HOT MIX ASPHALT DRIVEWAY

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER 2.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED HOT MIX ASPHALT WALK

SURFACE: 1.25" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER 1.75" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE WALK/WHEELCHAIR RAMP

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

SUBBASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

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

FOUNDATION: 8" GRAVEL BORROW, TYPE b

STAMPED CEMENT CONCRETE

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

FOUNDATION: 8" GRAVEL BORROW, TYPE b

POROUS PAVEMENT

SURFACE: 4" OPENED-GRADED FRICTION COURSE/ POROUS ASPHALT OVER 4" CHOKER COURSE

SUBBASE: 6" RESEVOIR BASE COURSE, 40% VOIDS

PROPOSED BRIDGE PAVEMENT OVERLAY

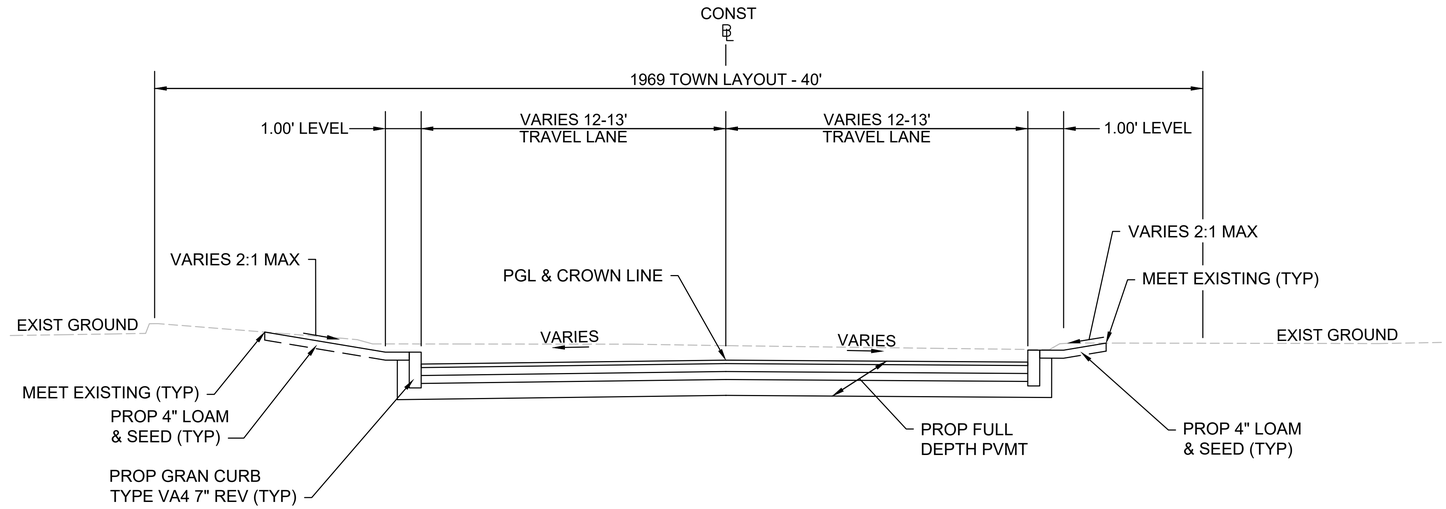
SURFACE: MIN 1.5" SUPERPAVE BRIDGE SURFACE COURSE 12.5 - POLYMER (SSC-B-12.5-P) OVER 1.5" SUPERPAVE BRIDGE PROTECTIVE COURSE 12.5 (SPC-B-12.5) OVER

SPRAY-APPLIED MEMBRANE WATERPROOFING

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TYPICAL SECTIONS



TYPICAL SECTION - COMMERCIAL AVENUE

APPROX STA 500+50± TO STA 501+35±
NTS
* 0.5% CONSTRUCTION TOLERANCE

PAVEMENT NOTES

TEMPORARY PAVEMENT

SURFACE: 4" HOT MIX ASPHALT PLACED IN 2 LIFTS

FOUNDATION: 8" GRAVEL BORROW, TYPE b

STONE DUST WALK

SURFACE: 4" STONE DUST

FOUNDATION: 8" GRAVEL BORROW, TYPE B

GRAVEL WALK/DRIVEWAY

SURFACE: 12" GRAVEL BORROW, TYPE b PLACED IN 6" LIFTS

NOTES:

1. ALL HOT MIX ASPHALT PAVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 450 QUALITY ASSURANCE FOR HMA.
2. ASPHALT EMULSION FOR TACK COAT (ITEM 452.) SHALL BE SPRAY APPLIED FOR DOUBLE OVERLAP COVERAGE AT 0.08 GALLONS PER SQUARE YARD OVER SMOOTH SURFACES AND 0.09 GALLONS PER SQUARE YARD OVER MILLED SURFACES.
3. HMA JOINT SEALANT (ITEM 453.) SHALL BE APPLIED IN SURFACE COURSE AT ALL VERTICAL COLD JOINTS PRIOR TO HMA PAVING.
4. TEMPORARY PAVEMENT SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 472. OF STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
5. ALL HOT MIX ASPHALT WALKS AND DRIVEWAYS SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 702. OF STANDARD SPECIFICATION FOR HIGHWAYS AND BRIDGES.
6. EXISTING SUBBASE MATERIAL AT SIDEWALKS AND DRIVEWAYS THAT MEETS THE REQUIREMENTS FOR GRAVEL BORROW TYPE b SHALL REMAIN IN PLACE.

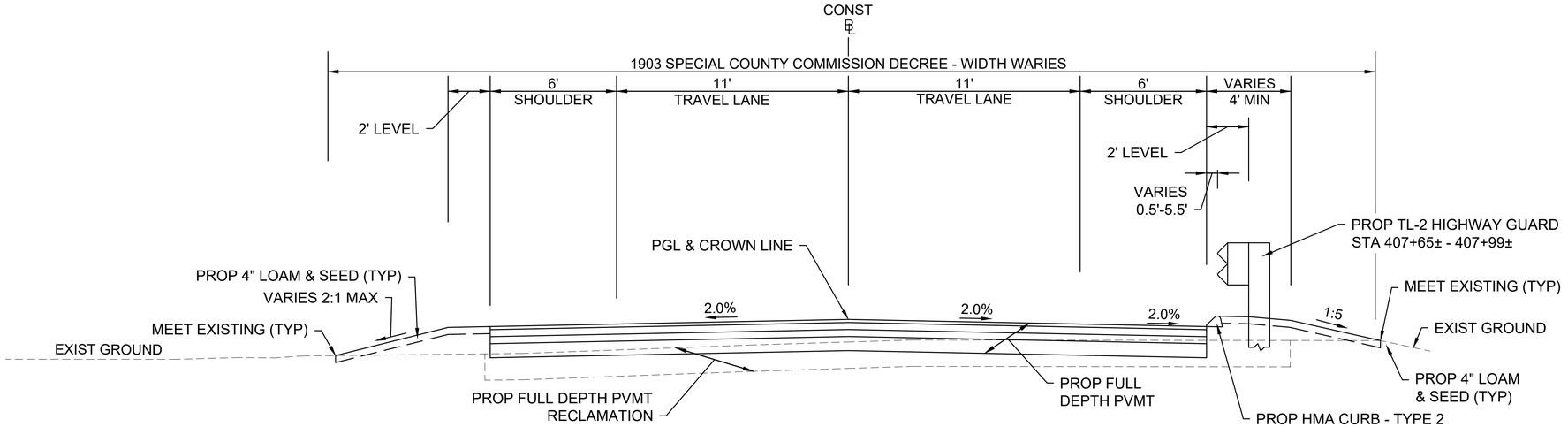
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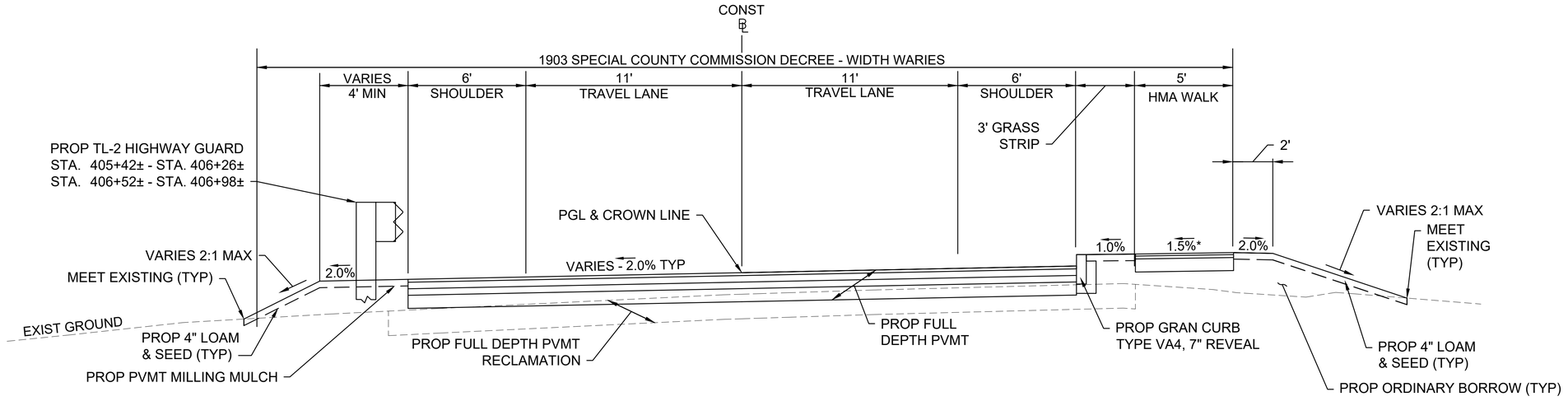
TYPICAL SECTIONS

607738_HD(TYP).DWG Plotted on 30-Oct-2020 12:05 PM



TYPICAL SECTION - CONCORD ROAD

APPROX STA 407±56 TO STA 409+23±
NTS



TYPICAL SECTION - CONCORD ROAD

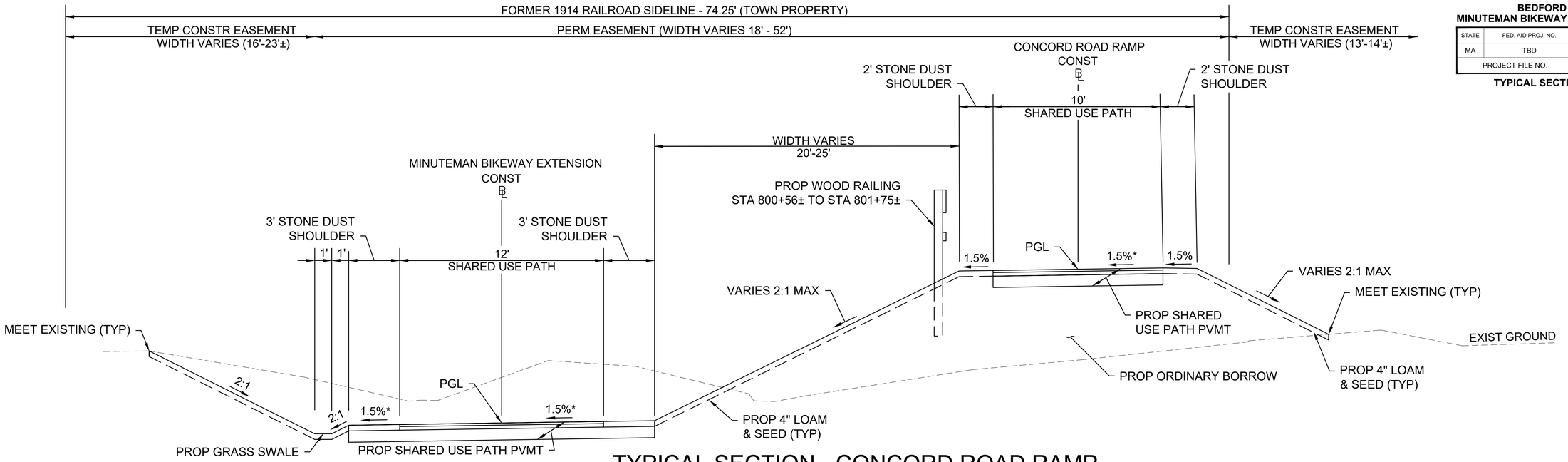
APPROX STA 403+75± TO STA 406+30±
NTS
* 0.5% CONSTRUCTION TOLERANCE

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MA	TBD	07	166
PROJECT FILE NO.	607738		

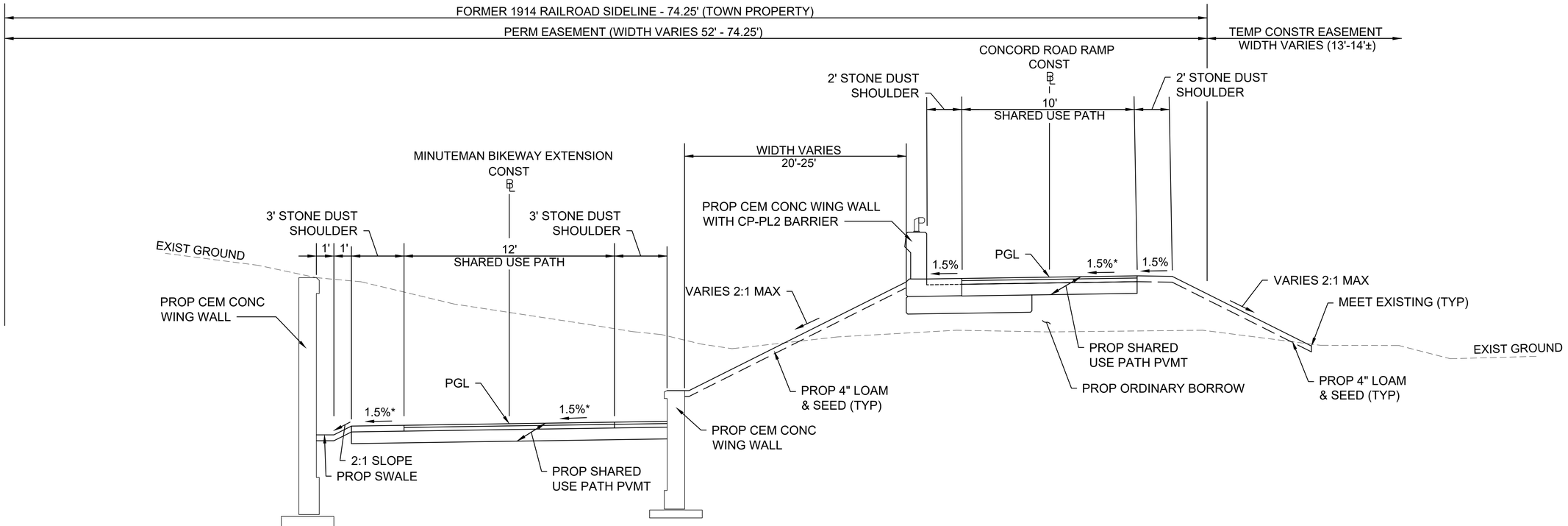
TYPICAL SECTIONS

607738_HD(TYP).DWG Plotted on 30-Oct-2020 12:05 PM



TYPICAL SECTION - CONCORD ROAD RAMP

APPROX STA 800+90± TO STA 803+04±
NTS
* 0.5% CONSTRUCTION TOLERANCE



TYPICAL SECTION - CONCORD ROAD RAMP

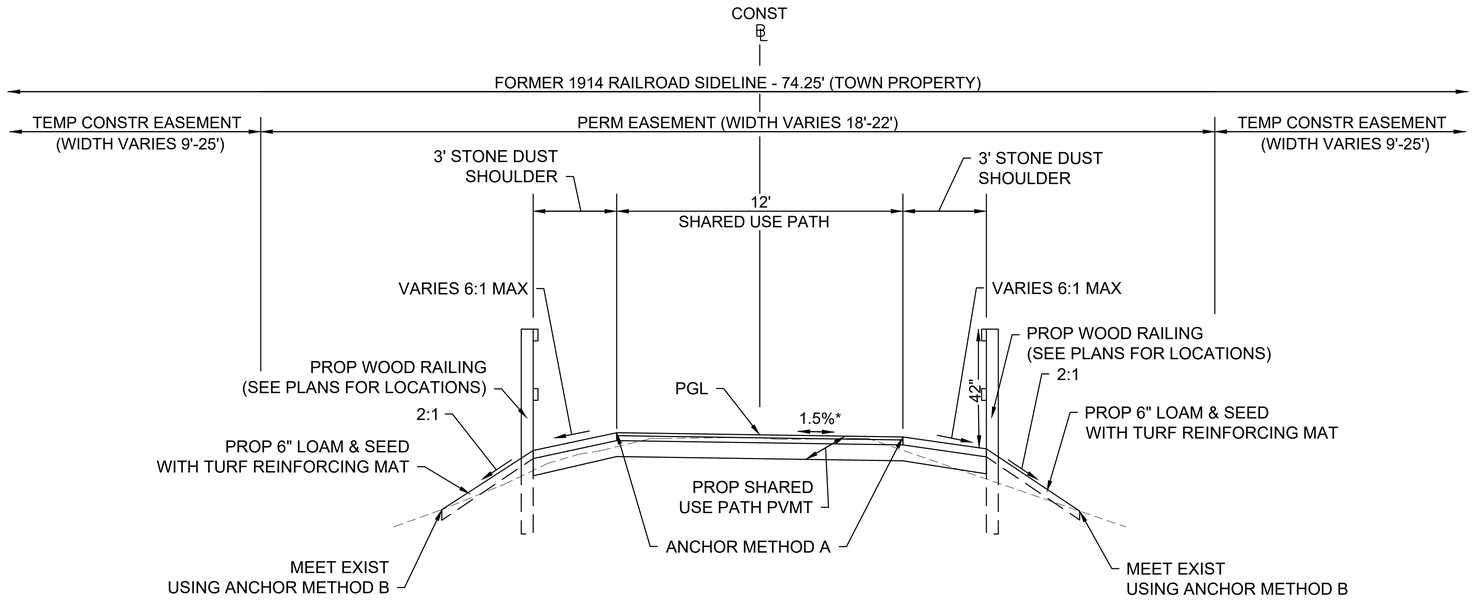
APPROX STA 800+23± TO STA 800+90±
NTS
* 0.5% CONSTRUCTION TOLERANCE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	08	166
PROJECT FILE NO.	607738		

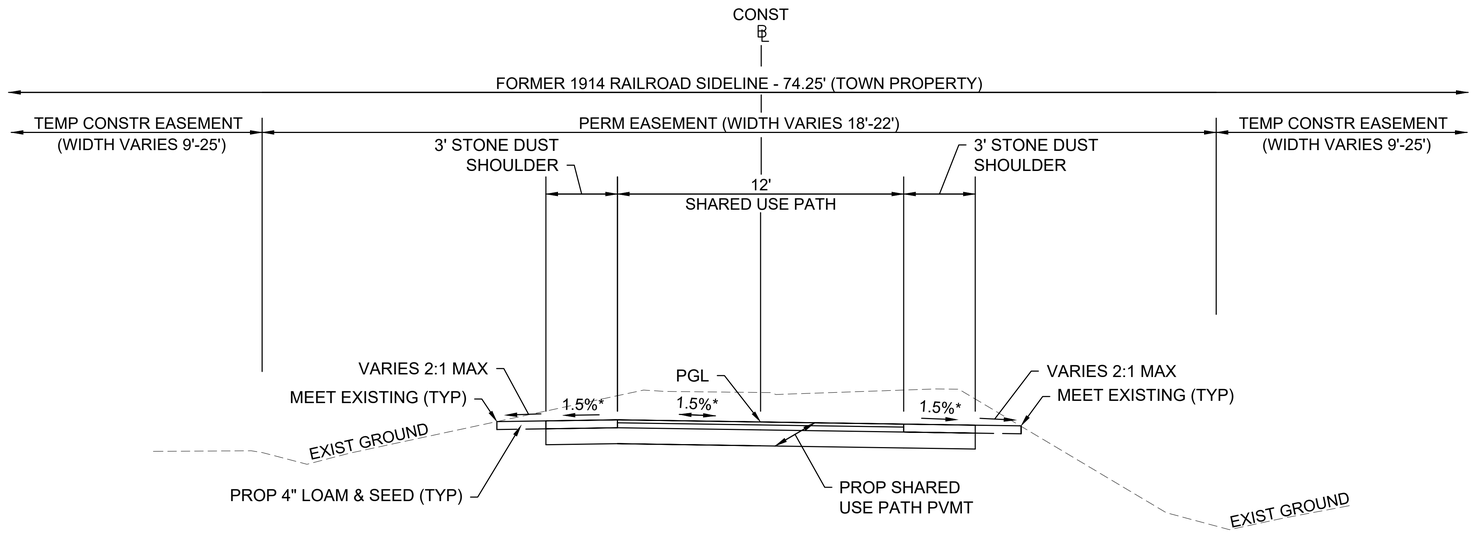
TYPICAL SECTIONS

607738_HD(TYP).DWG Plotted on 30-Oct-2020 12:05 PM



TYPICAL SECTION - MINUTEMAN BIKEWAY EXTENSION (STEEP SLOPE)

APPROX STA 204+25± TO STA 220+25±
STA 282+00± TO STA 286+05±
NTS
* 0.5% CONSTRUCTION TOLERANCE



TYPICAL SECTION - MINUTEMAN BIKEWAY EXTENSION

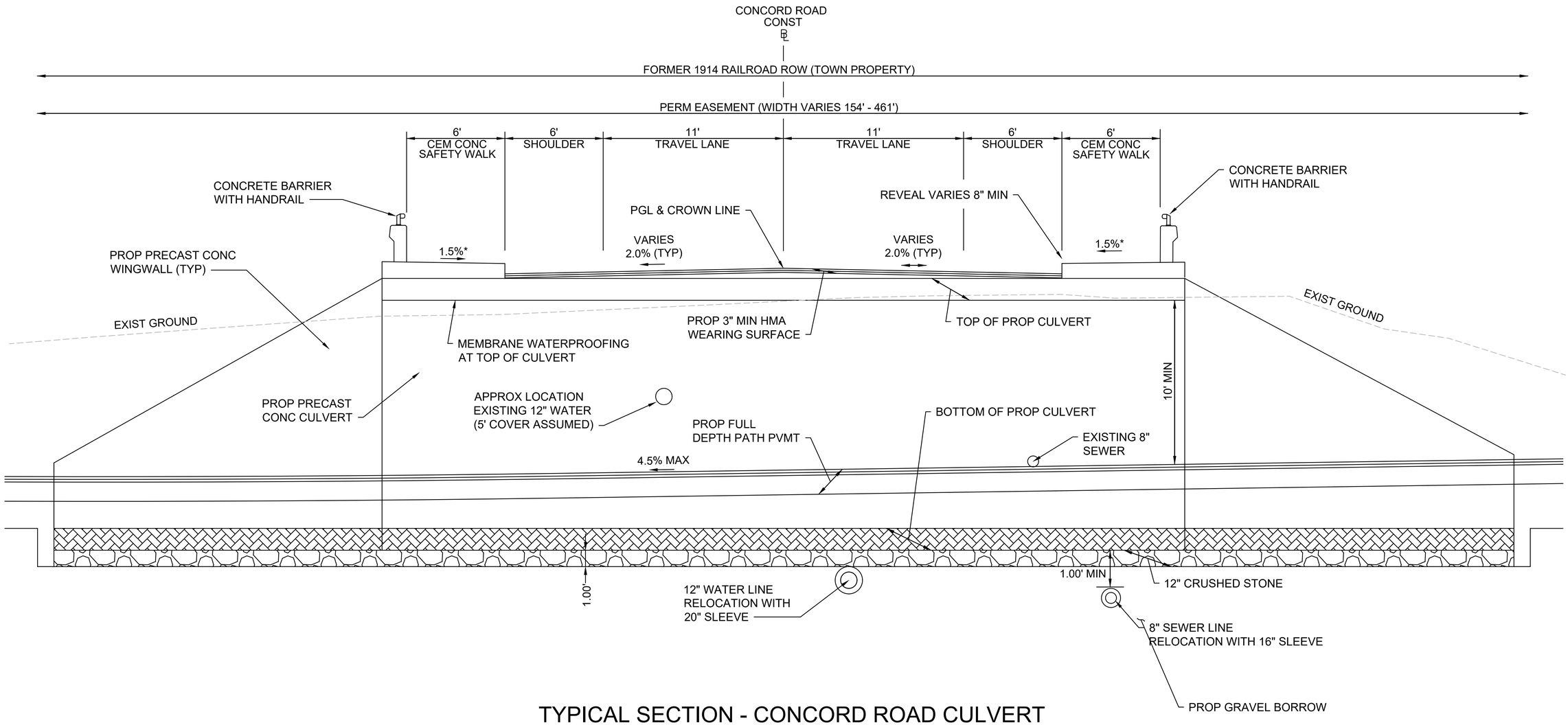
APPROX STA 200+30± TO STA 204+25±
STA 245+00± TO STA 246+25±
STA 280+30± TO STA 282+00±
STA 286+05± TO STA 288+31±
STA 291+31± TO STA 299+47±
NTS
* 0.5% CONSTRUCTION TOLERANCE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	09	166
PROJECT FILE NO.	607738		

TYPICAL SECTIONS

607738_HD(TYP).DWG Plotted on 30-Oct-2020 12:05 PM



TYPICAL SECTION - CONCORD ROAD CULVERT

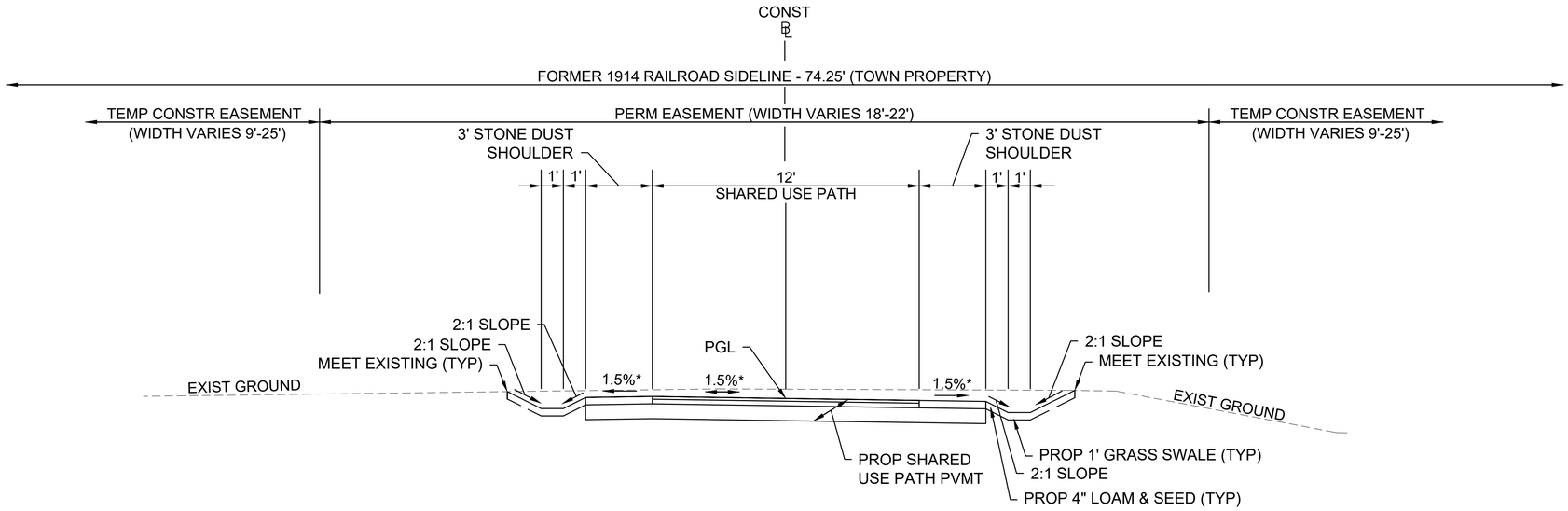
APPROX STA 407+02± TO STA 407+56±
NTS
* 0.5% CONSTRUCTION TOLERANCE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	10	166
PROJECT FILE NO.	607738		

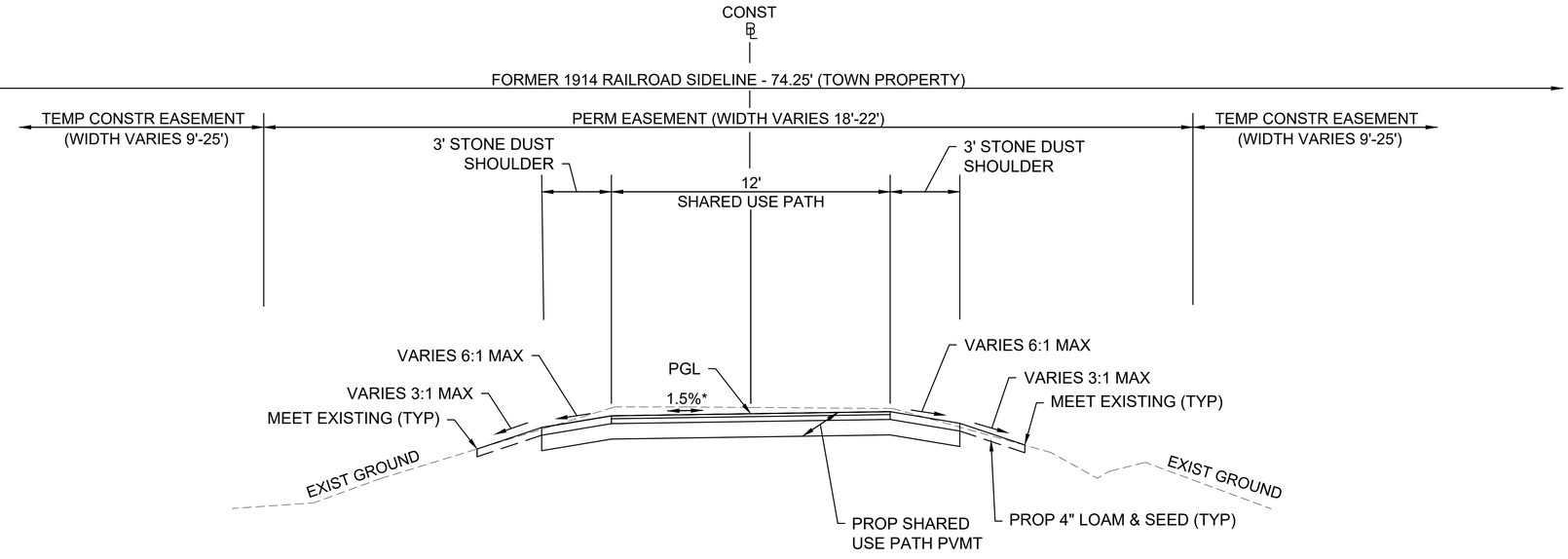
TYPICAL SECTIONS

607738_HD(TYP).DWG Plotted on 30-Oct-2020 12:06 PM



TYPICAL SECTION - MINUTEMAN BIKEWAY EXTENSION

APPROX STA 271+60± TO STA 273+80±
STA 275+80± TO STA 280+30±
STA 288+80± TO STA 290+80±
NTS
* 0.5% CONSTRUCTION TOLERANCE



TYPICAL SECTION - MINUTEMAN BIKEWAY EXTENSION

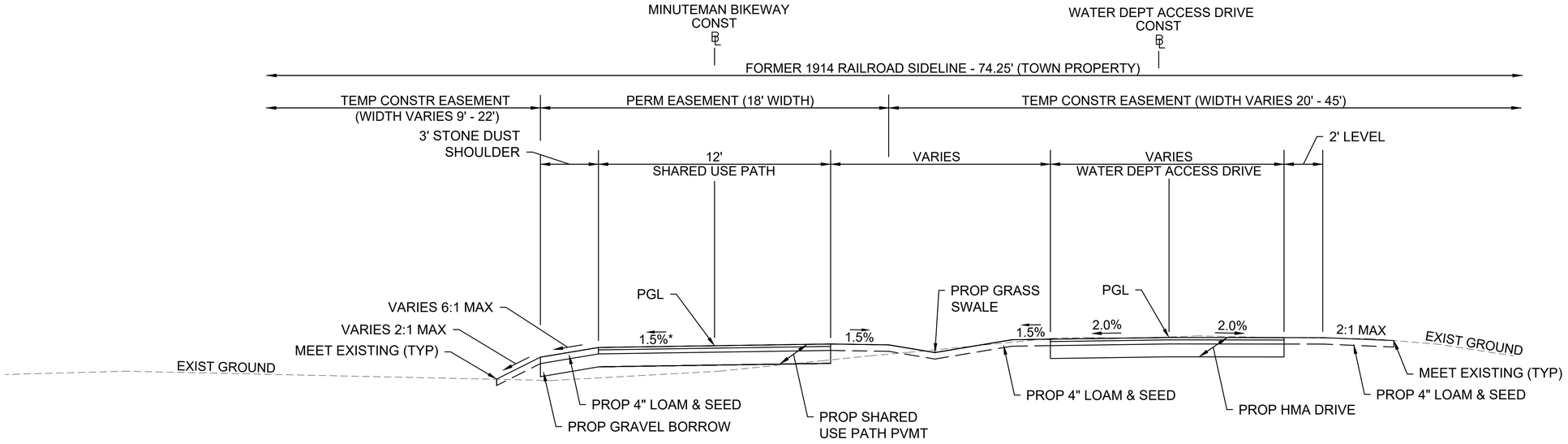
APPROX STA 220+25± TO STA 239+25±
STA 246+25± TO STA 271+60±
STA 273+80± TO STA 275+80±
NTS
* 0.5% CONSTRUCTION TOLERANCE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	11	166
PROJECT FILE NO.	607738		

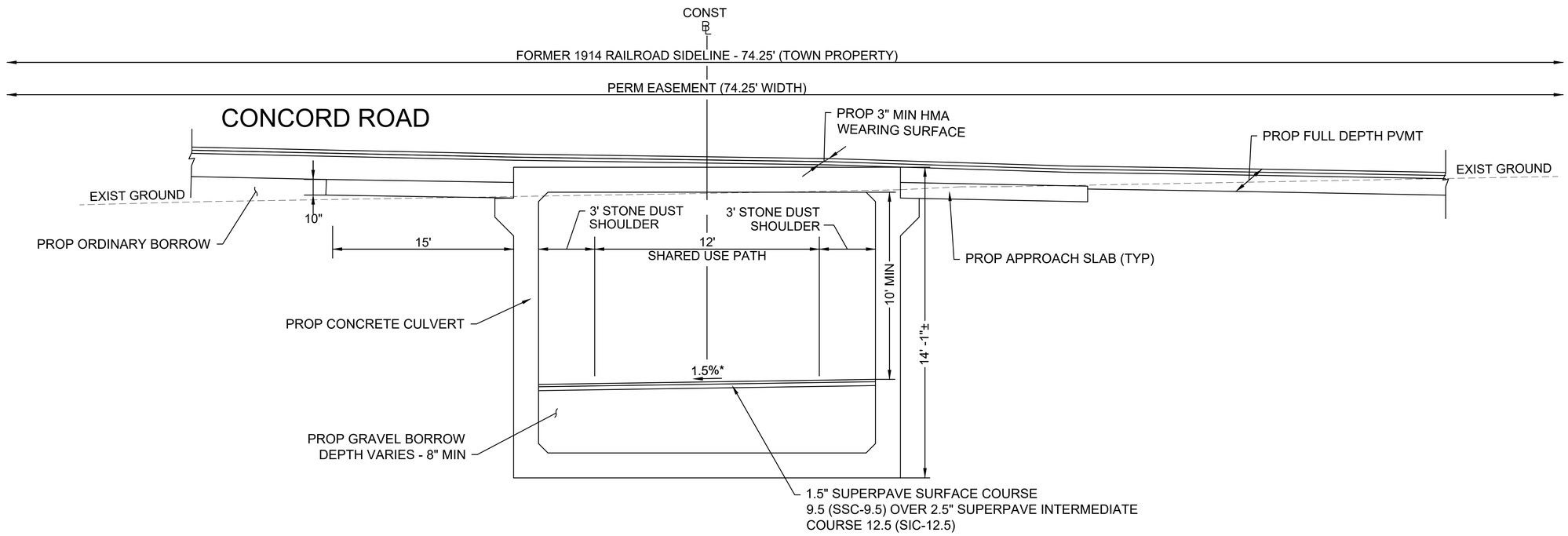
TYPICAL SECTIONS

607738_HD(TYP).DWG Plotted on 30-Oct-2020 12:06 PM



TYPICAL SECTION - MINUTEMAN BIKEWAY EXTENSION

APPROX STA 239+25± TO STA 244+00±
NTS
* 0.5% CONSTRUCTION TOLERANCE



TYPICAL SECTION - MINUTEMAN BIKEWAY EXTENSION AT CONCORD ROAD CULVERT

APPROX STA 288+31± TO STA 288+98±
NTS
* 0.5% CONSTRUCTION TOLERANCE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	12	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS: NONE

TRAFFIC SIGNAL CONDUIT: SEE SHEET 57

WATER SUPPLY ALTERATIONS: SEE SHEET 98

DRAINAGE DETAILS: SEE SHEET 98

LIMIT OF WORK
STA 600+49.09
N: 3002172.5955
E: 716171.6527

END PROP CEM CONC WALK & GRAN CURB
SAWCUT, MEET EXIST

SAWCUT, MEET EXIST WALK

PROP CEM CONC WALK

PROP MULCH

BEGIN PROP CEM CONC WALK & GRAN CURB
SAWCUT, MEET EXIST

PROP GRAN CURB 3" REVEAL

PROP MICROMILL & OVERLAY

REM SIGN

PROP GRAN CURB (TYP)

BEGIN PROP CEM CONC WALK & GRAN CURB
SAWCUT, MEET EXIST

PROP MICROMILL & OVERLAY

PROP TEMP CONSTR EASEMENT

PROP LOAM & SEED (TYP)

PROP CEM CONC WALK

PROP 10' HMA SHARED USE PATH (TYP)

PROP CRUSHED STONE

PROP 10' HMA SHARED USE PATH (TYP)

PROP LOAM & SEED (TYP)

PROP HMA DRIVE

PROP CEM CONC WALK

PROP GRAN CURB CORNER TYPE B (TYP)

RAILROAD AVE CONSTR ℄

PROP GRAN CURB (TYP)

PROP LOAM & SEED (TYP)

PROP FULL DEPTH PVMT

PROP PERM EASEMENT

PROP 5.5' CEM CONC WALK (TYP)

PROP TEMP CONSTR EASEMENT

PROP HMA DRIVE

RET BOLLARDS & CONC PAD

RET BOLLARDS

RET CONC PAD

REM CONC CURB

REM TREE

PROP TEMP CONSTR EASEMENT

PROP 10' HMA SHARED USE PATH (TYP)

PROP LOAM & SEED (TYP)

KENNETH D. LARSON
BK/PG 22973/53
111 SOUTH ROAD
MAP/LOT 63/184

LIMIT OF PAVING
STA 100+39.03
N: 3002237.4003
E: 716108.5990

100+00 RAILROAD AVE ALIGNMENT=
601+21.03 SOUTH RD ALIGN

LOOMIS STREET

SOUTH ROAD

RAILROAD AVENUE

N/F
TOWN OF BEDFORD
BK/PG 72621/200
76 LOOMIS STREET
MAP/LOT 63/161

N/F
PAUL & ELEANOR HARTLEY
BK/PG 72311/532
75 LOOMIS STREET
MAP/LOT 63/50

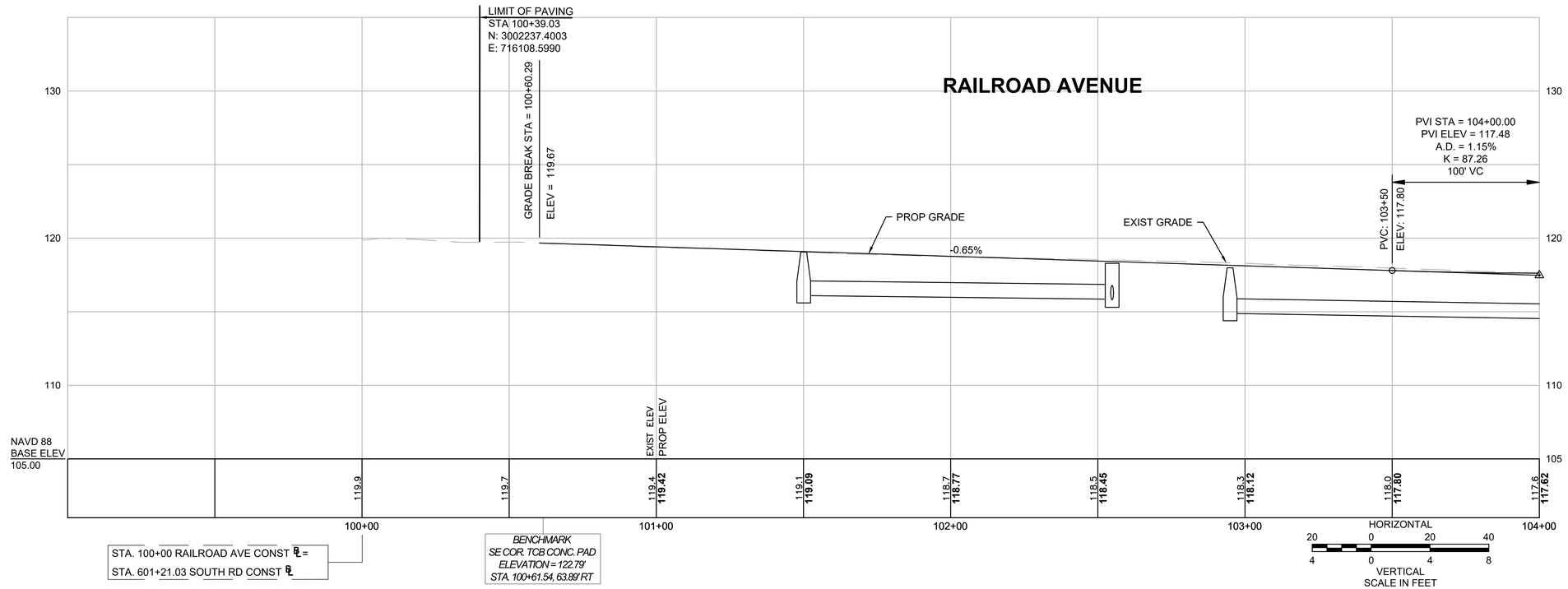
N/F
LARSON PROPERTIES LLC
BK/PG 61998/47
PB/PL 1077/1967
1 RAILROAD AVENUE
MAP/LOT 63/37

N/F
BOSTON & MAINE R R
121 SOUTH ROAD
MAP/LOT 63/183

LEGEND:
[#] WCR NUMBER
(#) DRIVEWAY NUMBER

SCALE: 1" = 20'

CONTINUED ON SHEET NO. 13



607738_HD(GEN-RAILROAD).DWG Plotted on 30-Oct-2020 12:08 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	13	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN-RAILROAD).DWG Plotted on 30-Oct-2020 12:08 PM

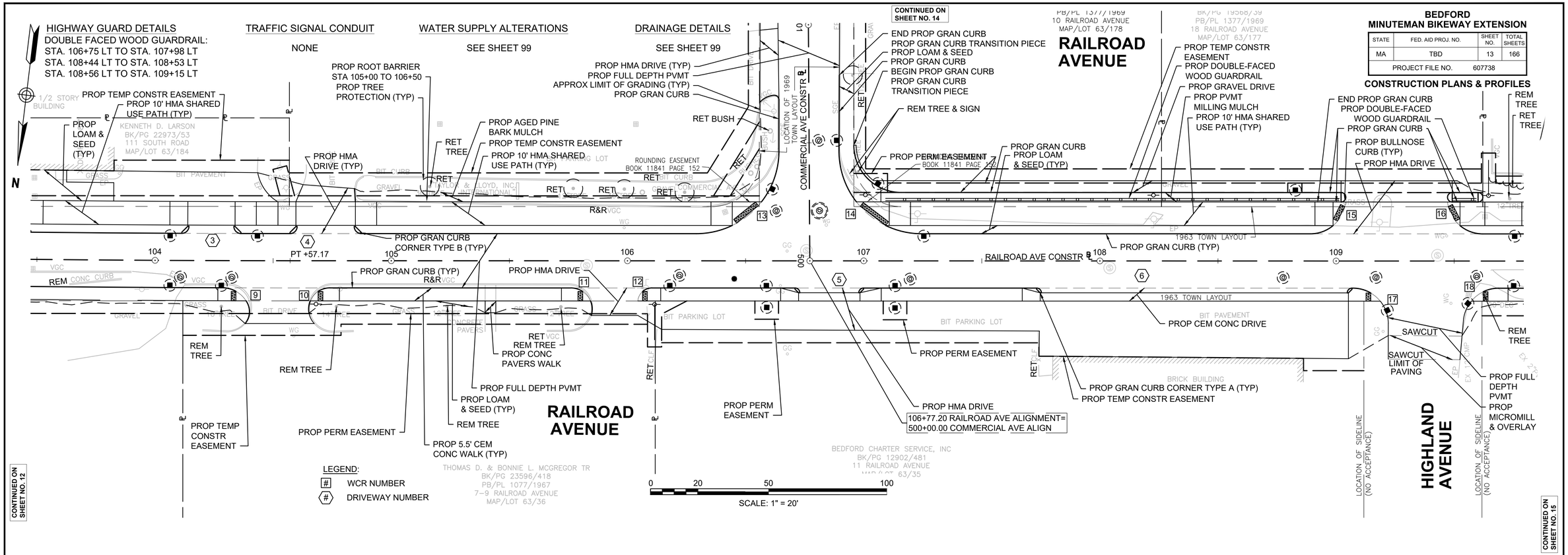
HIGHWAY GUARD DETAILS
DOUBLE FACED WOOD GUARDRAIL:
STA. 106+75 LT TO STA. 107+98 LT
STA. 108+44 LT TO STA. 108+53 LT
STA. 108+56 LT TO STA. 109+15 LT

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
SEE SHEET 99

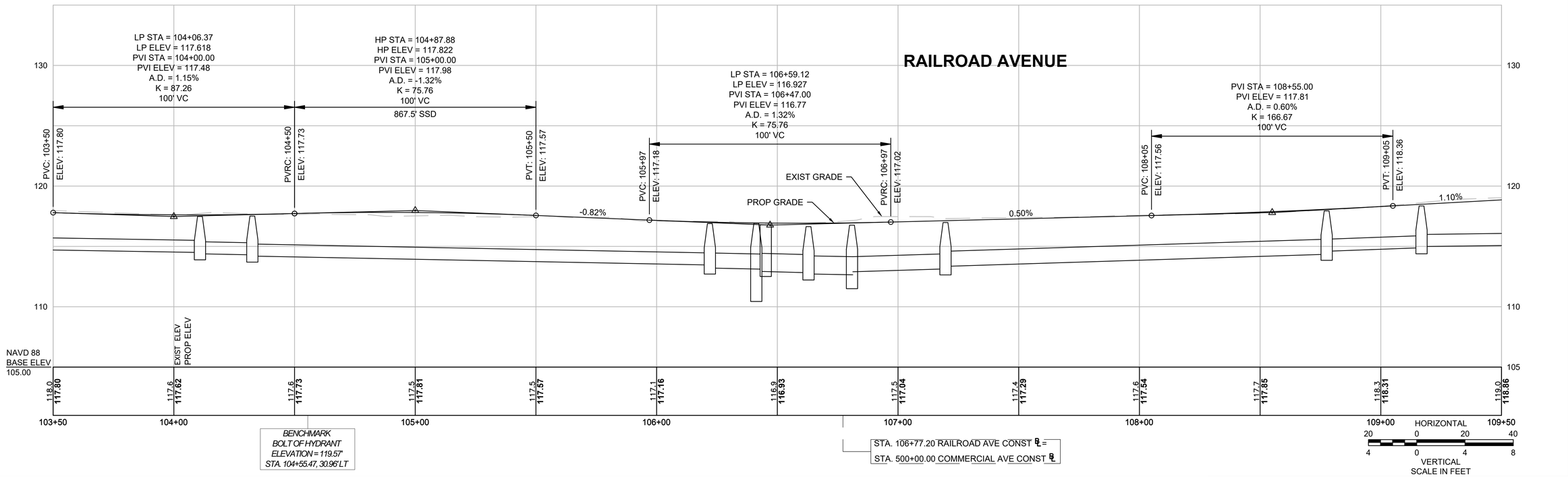
DRAINAGE DETAILS
SEE SHEET 99

CONTINUED ON SHEET NO. 14



CONTINUED ON SHEET NO. 12

CONTINUED ON SHEET NO. 15



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	14	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN-RAILROAD).DWG Plotted on 30-Oct-2020 2:43 PM

HIGHWAY GUARD DETAILS

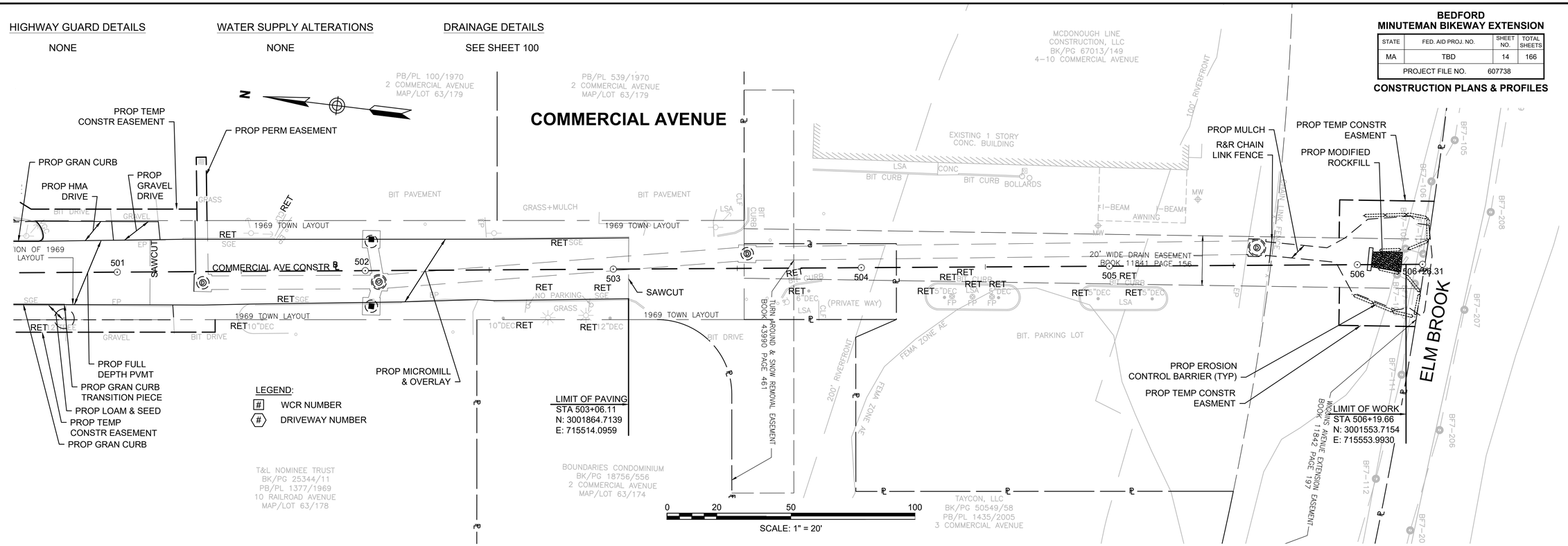
NONE

WATER SUPPLY ALTERATIONS

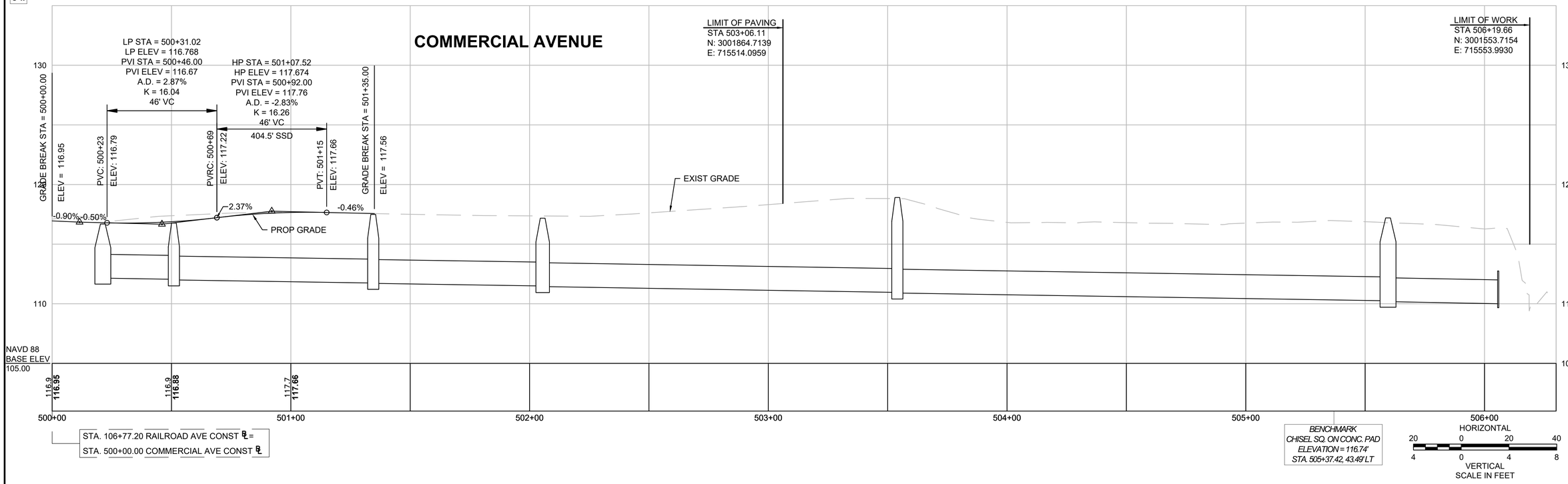
NONE

DRAINAGE DETAILS

SEE SHEET 100



CONTINUED ON SHEET NO. 13



STA. 106+77.20 RAILROAD AVE CONST ℄ =
STA. 500+00.00 COMMERCIAL AVE CONST ℄

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	607738	15	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

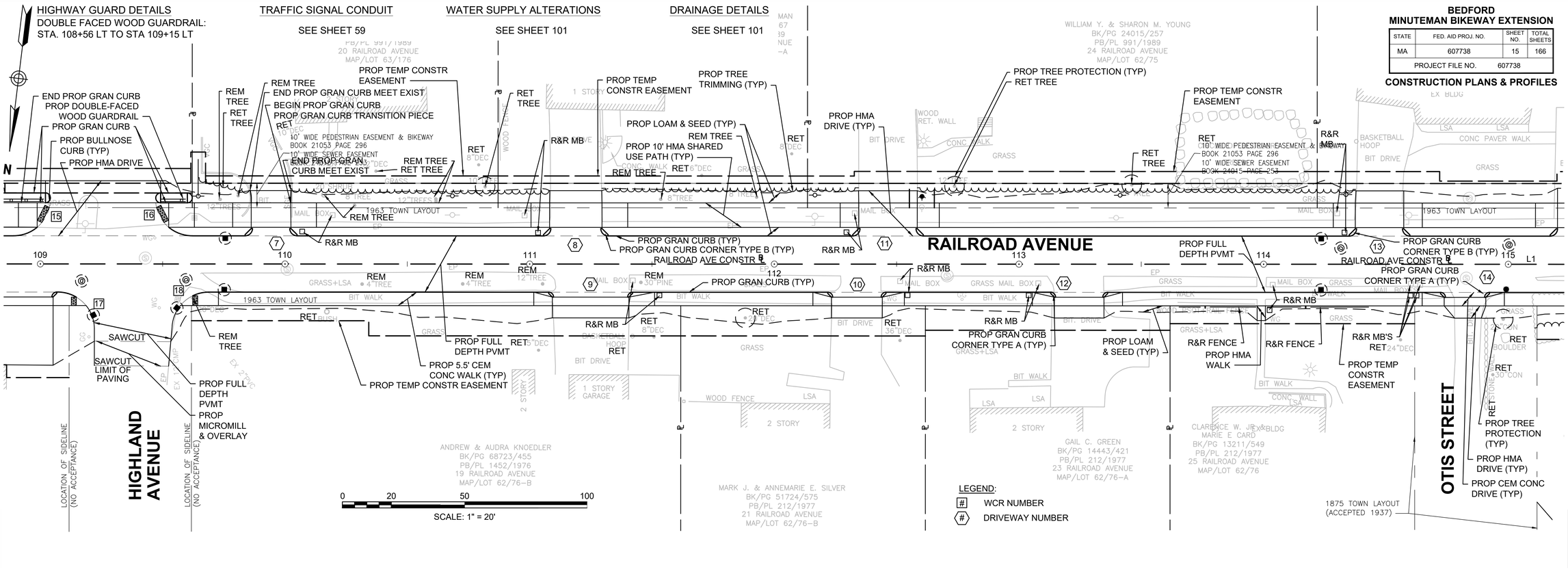
607738_HD(GEN-RAILROAD).DWG Plotted on 30-Oct-2020 12:09 PM

HIGHWAY GUARD DETAILS
DOUBLE FACED WOOD GUARDRAIL:
STA. 108+56 LT TO STA 109+15 LT

TRAFFIC SIGNAL CONDUIT
SEE SHEET 59

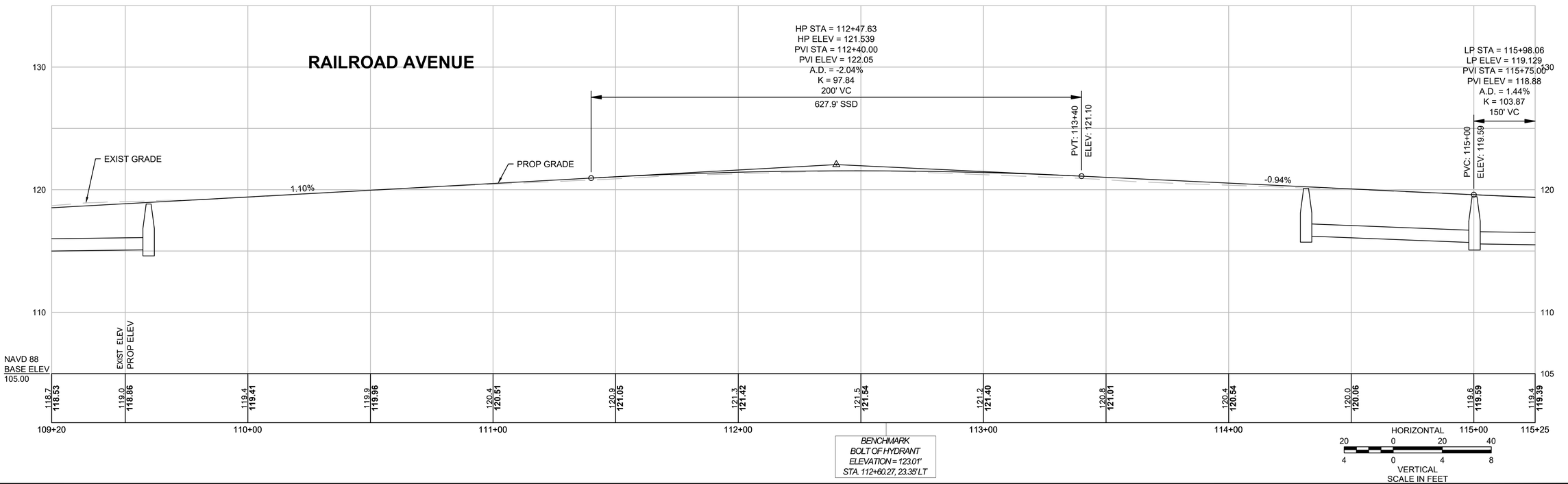
WATER SUPPLY ALTERATIONS
SEE SHEET 101

DRAINAGE DETAILS
SEE SHEET 101



LEGEND:
[#] WCR NUMBER
(#) DRIVEWAY NUMBER

CONTINUED ON SHEET NO. 13
CONTINUED ON SHEET NO. 16



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	16	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS

TANGENT END SECTION
STA 116+67 TO 117+08 RT
TRANSITION TO NCHRP 350 GUARDRAIL
STA 117+08 TO 117+21 RT
DOUBLE FACED WOOD GUARDRAIL
STA 116+63 TO 177+15 LT

TRAFFIC SIGNAL CONDUIT

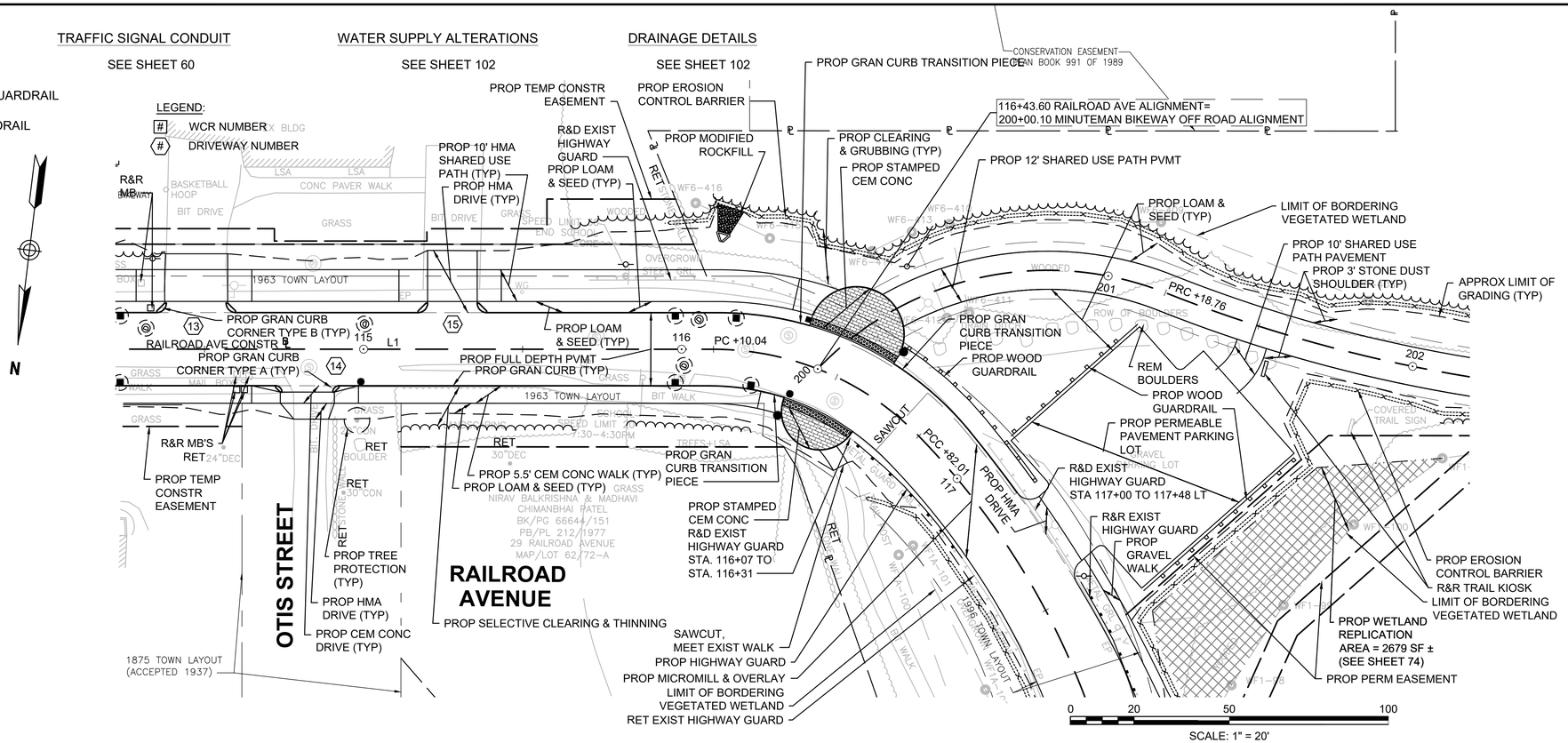
SEE SHEET 60

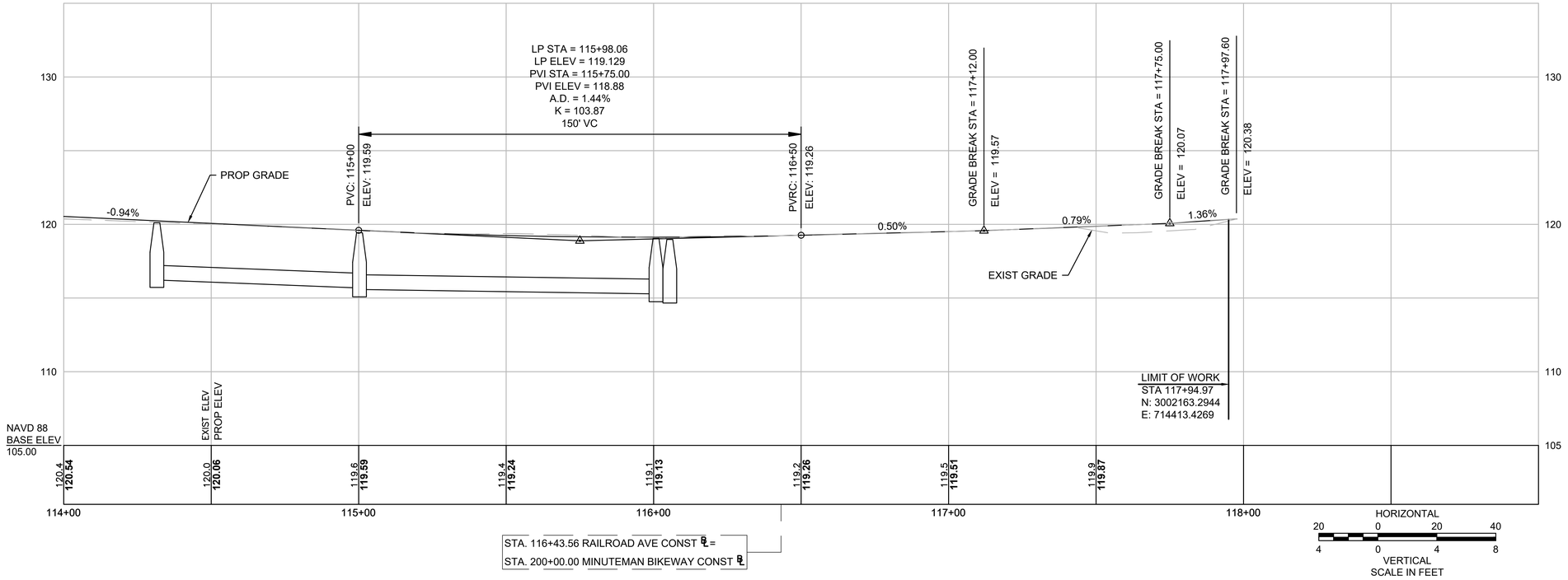
WATER SUPPLY ALTERATIONS

SEE SHEET 102

DRAINAGE DETAILS

SEE SHEET 102





STA. 116+43.56 RAILROAD AVE CONST ℄ =
STA. 200+00.00 MINUTEMAN BIKEWAY CONST ℄

CONTINUED ON SHEET NO. 15

CONTINUED ON SHEET NO. 17

607738_HD\GEN-RAILROAD).DWG Plotted on 30-Oct-2020 12:09 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	17	166
PROJECT FILE NO.	607738		

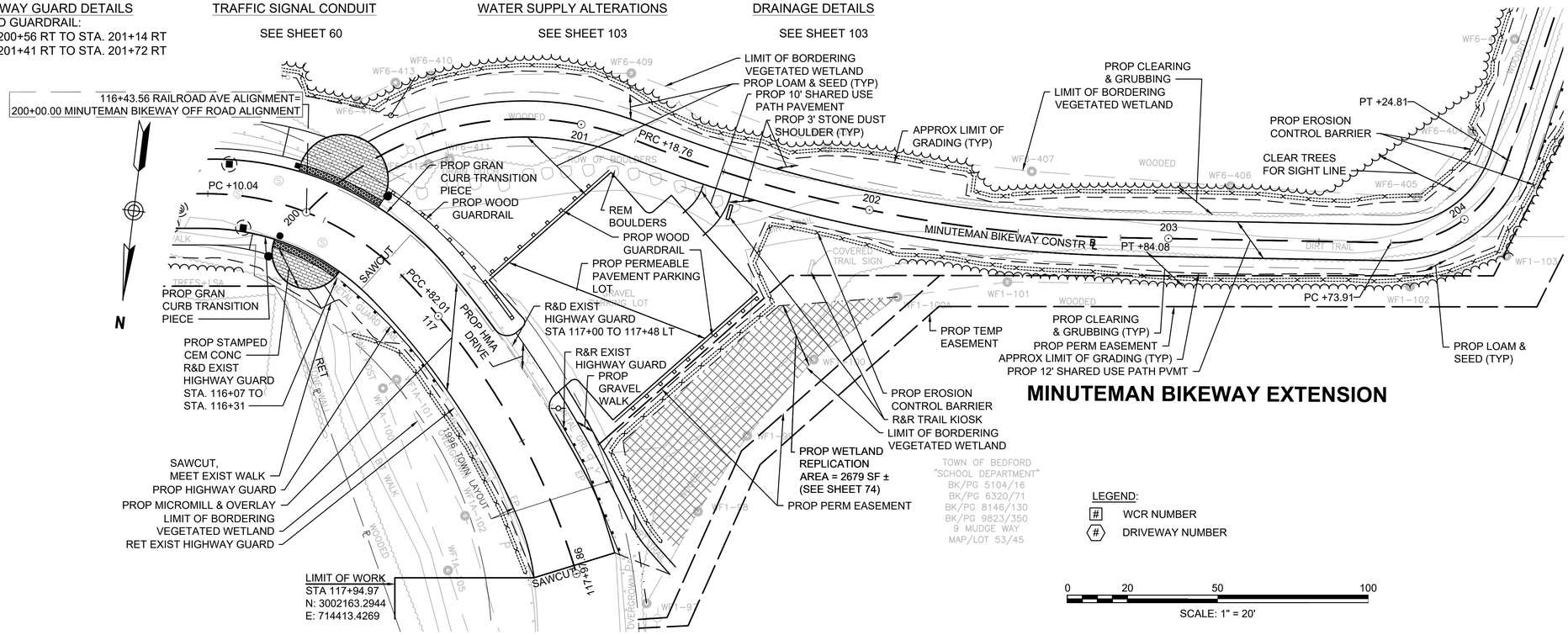
CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS
WOOD GUARDRAIL:
STA. 200+56 RT TO STA. 201+14 RT
STA. 201+41 RT TO STA. 201+72 RT

TRAFFIC SIGNAL CONDUIT
SEE SHEET 60

WATER SUPPLY ALTERATIONS
SEE SHEET 103

DRAINAGE DETAILS
SEE SHEET 103



LEGEND:
(#) WCR NUMBER
⟨#⟩ DRIVEWAY NUMBER

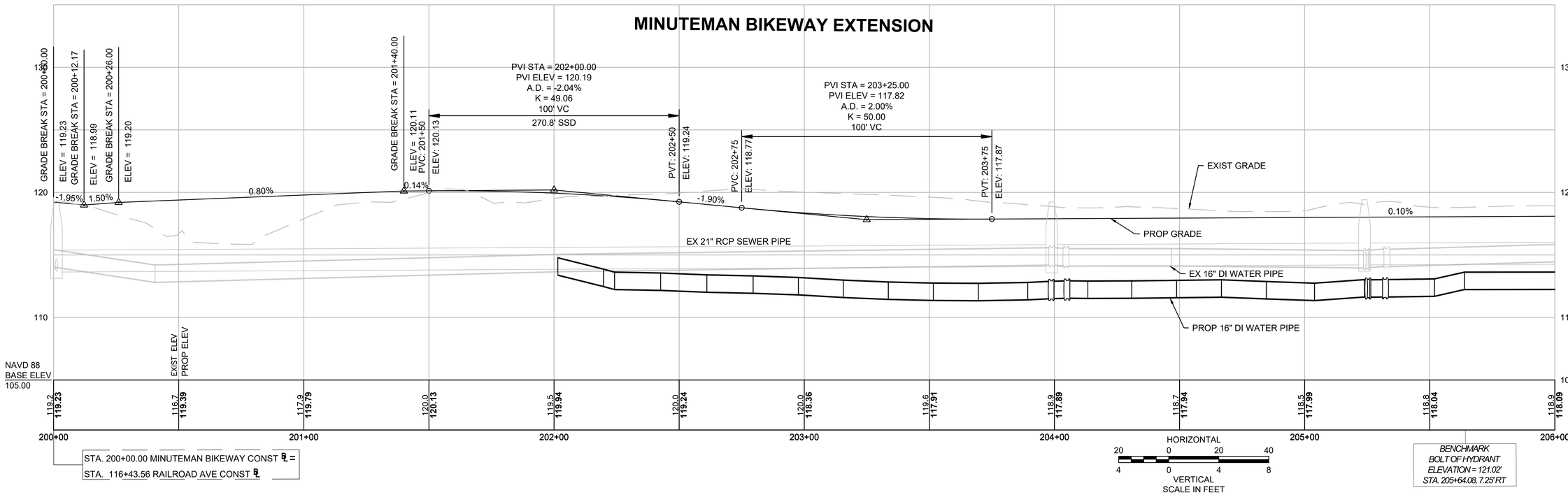
0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 16

CONTINUED ON SHEET NO. 18

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:13 PM

MINUTEMAN BIKEWAY EXTENSION



HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 104

DRAINAGE DETAILS

NONE

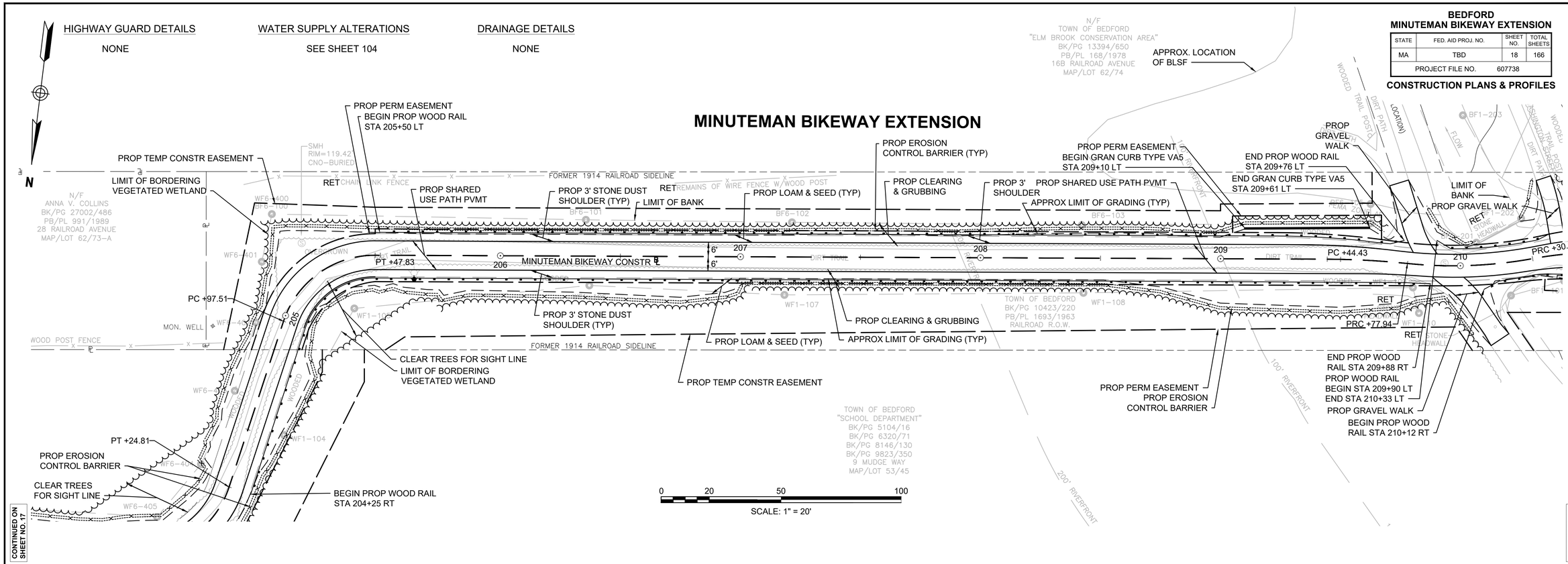
MINUTEMAN BIKEWAY EXTENSION

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	18	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

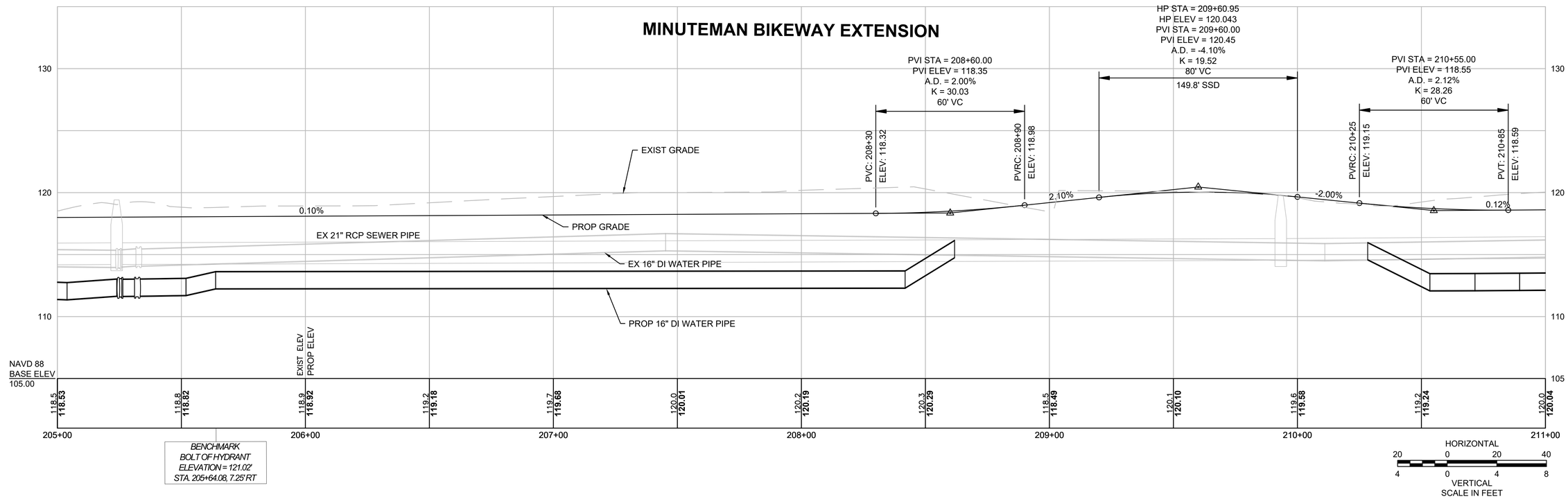
607738_HDI(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:13 PM



CONTINUED ON SHEET NO. 17

CONTINUED ON SHEET NO. 19

MINUTEMAN BIKEWAY EXTENSION



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	19	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HDI(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:13 PM

HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 105

DRAINAGE DETAILS

NONE

MINUTEMAN BIKEWAY EXTENSION

ELM BROOK CONSERVATION CONNECTION

MONGO BROOK

WASHINGTON STREET CONNECTION

WINCHESTER DRIVE CONNECTION

20' WIDE DRAIN EASEMENT (APPROX. LOCATION) BOOK 13151 PAGE 156

PEDESTRIAN EASEMENT (APPROX. LOCATION) BOOK 54906 PAGE 387

30' WIDE DRAINAGE EASEMENT BOOK 10566 PAGE 254

20' WIDE UTILITY EASEMENT (APPROX. LOCATION) BOOK 13151 PAGE 156

100' RIVERFRONT

200' RIVERFRONT

N/F
HARTWELL HILL LLC
BK/PL 49522/304
PB/PL 767/1949
22A EVANS AVENUE
MAP/LOT 70/1

N/F
JOHN P & KATHLEEN PIETRASIK
BK/PG 17991/565
PB/PL 769/1964
4 RICHARD ROAD
MAP/LOT 62/55

N/F
LADISLAV & LUDMILA STUCKA
BK/PG 13966/500
PB/PL 769/1964
6 RICHARD ROAD
MAP/LOT 62/54

N/F
ANTHONY J. & ANDRREA J. RUSSO
BK/PG 62091/585
PB/PL 769/1964
8 RICHARD ROAD
MAP/LOT 62/53

TOWN OF BEDFORD
BK/PG 10423/220
PB/PL 1693/1963
RAILROAD R.O.W.

BEGIN PROP WOOD RAIL STA 210+45 LT

APPROX. LOCATION OF BLSF

BEGIN GRAN CURB TYPE VA5 STA 210+71 LT

END PROP WOOD RAIL STA 210+75 LT

PROP PERM EASEMENT

END GRAN CURB TYPE VA5 STA 211+04 LT

PROP TEMP CONSTR EASEMENT

PROP PERM EASEMENT

REMOD SMH RIM=120.28'

RET WIRE FENCE W/WOOD POST

FORMER 1914 RAILROAD SIDELINE

PROP LOAM & SEED (TYP)

APPROX LIMIT OF GRADING (TYP)

RET REMAINS OF WOOD POST WIRE FENCE

PROP CLEARING & GRUBBING (TYP)

PROP SHARED USE PATH PVMT

PROP 3' STONE DUST SHOULDER (TYP)

LIMIT OF BANK

PROP GRAVEL WALK

RET STONE HEADWALL

PC +44.43

PRC +30.28

PT +59.11

PRC +77.94

MINUTEMAN BIKEWAY CONSTR

6'

6'

PROP RET WALL 1

PROP EROSION CONTROL BARRIER

LIMIT OF BORDERING VEGETATED WETLAND

RET CHAIN LINK FENCE

RET GATE WOOD FENCE

RET REMAINS OF WOOD POST WIRE FENCE

PROP PERM EASEMENT

LIMIT OF BANK

PROP TEMP CONSTR EASEMENT

PROP CLEARING & GRUBBING (TYP)

END PROP WOOD RAIL STA 209+88 RT

PROP WOOD RAIL BEGIN STA 209+90 LT

END STA 210+33 LT

PROP GRAVEL WALK

BEGIN PROP WOOD RAIL STA 210+12 RT

CHAIN LINK FENCE

STOCKADE FENCE

0 20 50 100

SCALE: 1" = 20'

CONTINUED ON SHEET NO. 18

CONTINUED ON SHEET NO. 20

MINUTEMAN BIKEWAY EXTENSION

PVI STA = 210+55.00
PVI ELEV = 118.55
A.D. = 2.12%
K = 28.26
60' VC

PVC: 210+25
ELEV: 119.15

PVT: 210+85
ELEV: 118.59

-2.00%

0.12%

EXIST GRADE

PROP GRADE

EX 21" RCP SEWER PIPE

EX 16" DI WATER PIPE

PROP 16" DI WATER PIPE

NAVD 88
BASE ELEV
105.00

EXIST ELEV
PROP ELEV

210+00	211+00	212+00	213+00	214+00	215+00	216+00
119.6 **119.65**	119.2 **118.76**	120.0 **118.61**	120.5 **118.67**	120.3 **118.73**	120.1 **118.79**	120.2 **118.85**	120.2 **118.91**	120.0 **118.98**	120.0 **119.04**	119.8 **119.10**	119.6 **119.16**	119.7 **119.22**

BENCHMARK
X-CUT ON SMH
ELEVATION = 120.26'
STA. 213+20.61, 1.36' LT

HORIZONTAL
20 0 20 40

VERTICAL
4 0 4 8

SCALE IN FEET

HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 106

DRAINAGE DETAILS

NONE

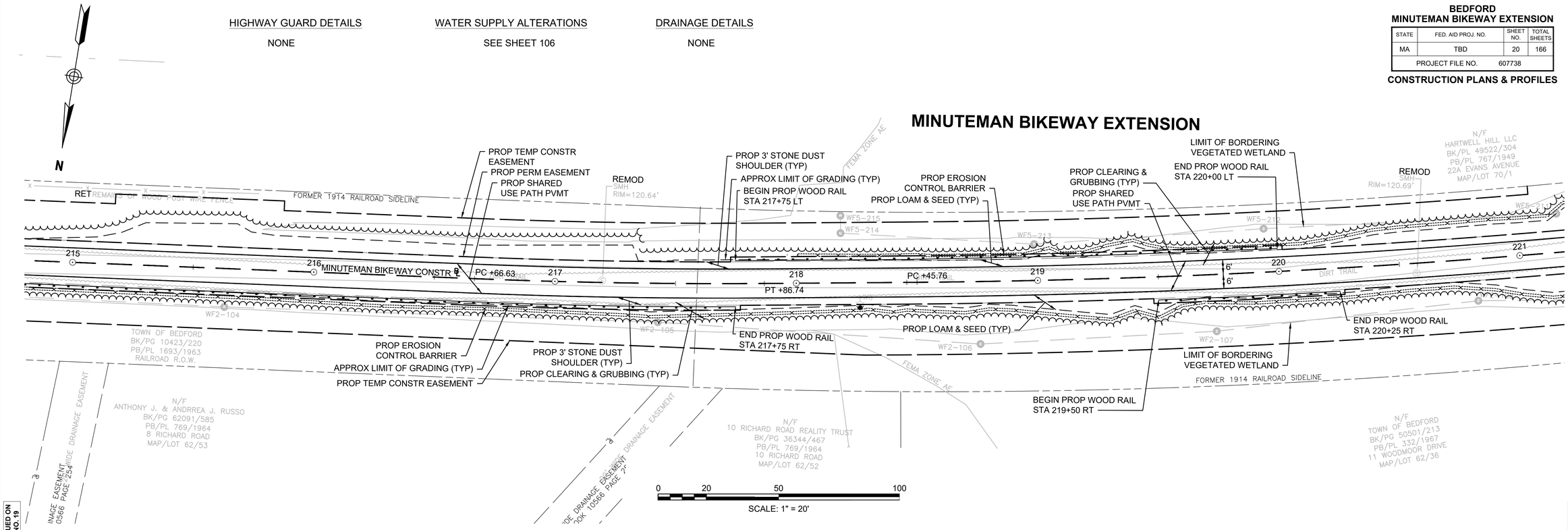
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	20	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:14 PM

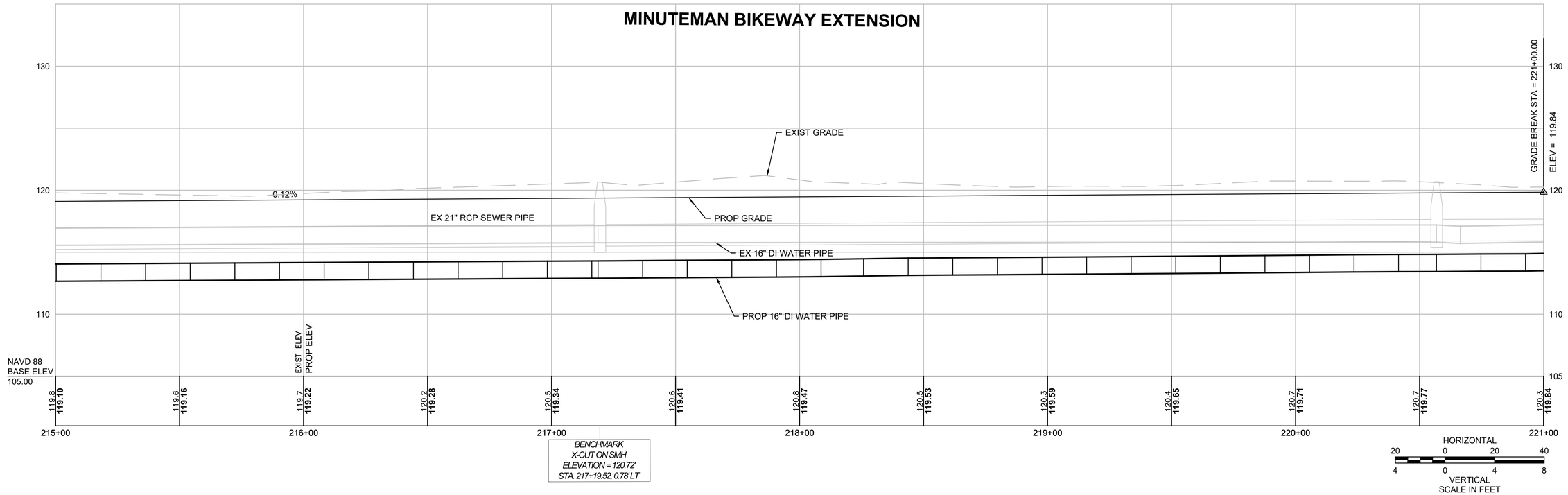
MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

MINUTEMAN BIKEWAY EXTENSION



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	21	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:14 PM

HIGHWAY GUARD DETAILS

NONE

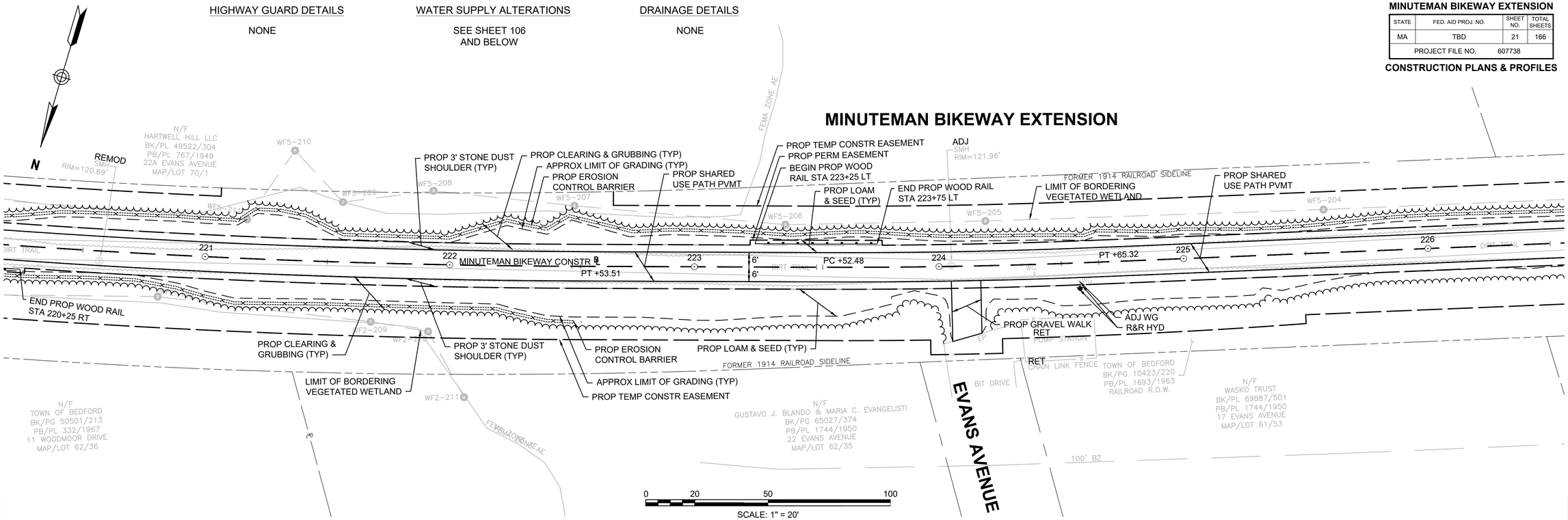
WATER SUPPLY ALTERATIONS

SEE SHEET 106
AND BELOW

DRAINAGE DETAILS

NONE

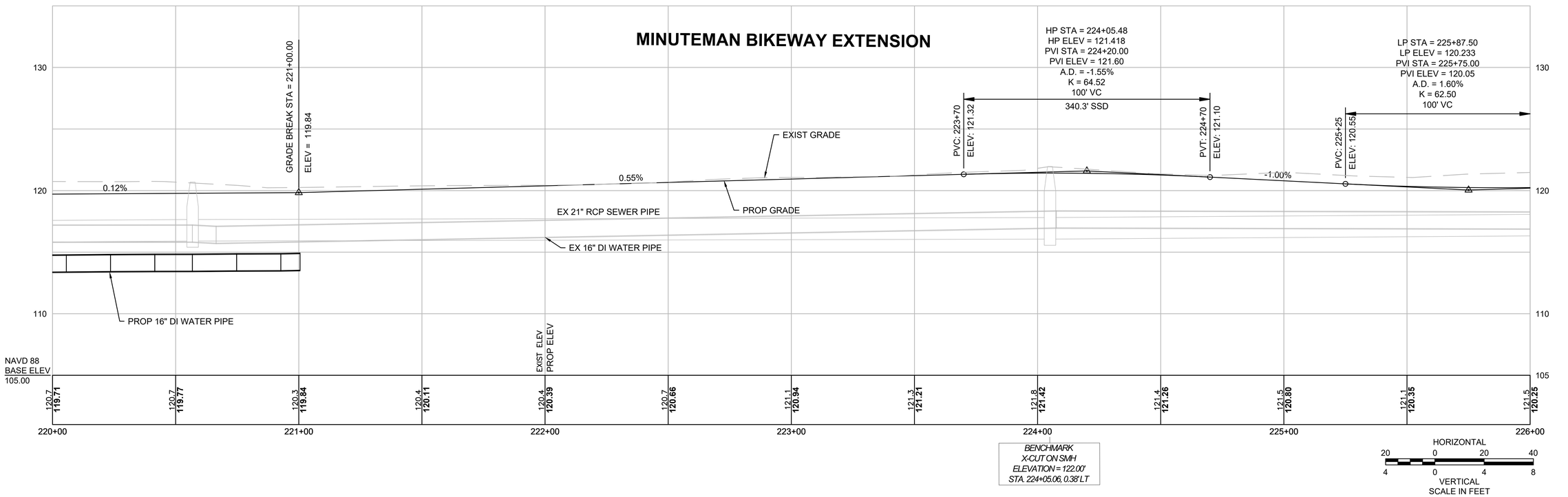
MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 20

CONTINUED ON SHEET NO. 22

MINUTEMAN BIKEWAY EXTENSION



HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

NONE

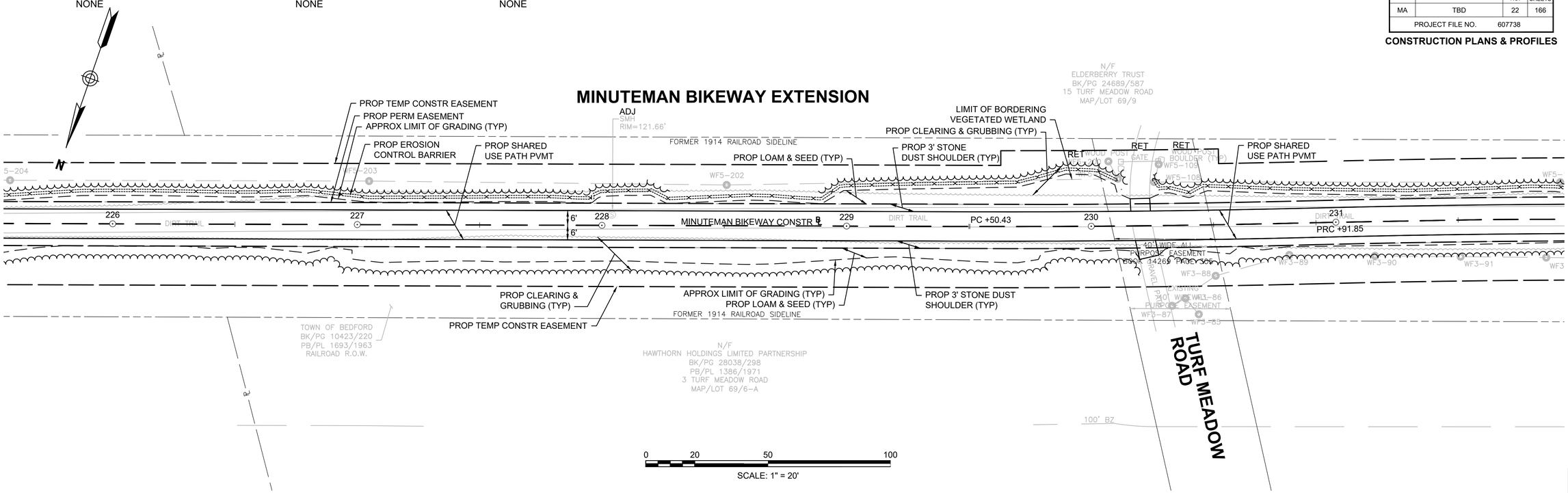
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	22	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:14 PM

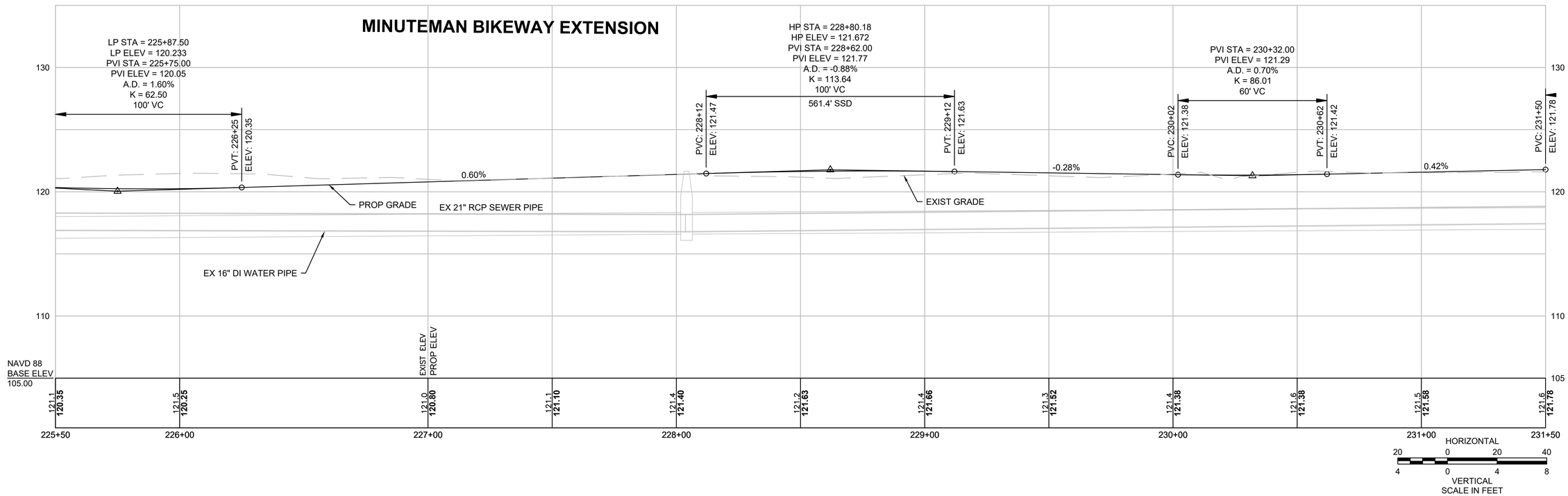
MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 21

CONTINUED ON SHEET NO. 23

MINUTEMAN BIKEWAY EXTENSION



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	23	166
PROJECT FILE NO.	607738		

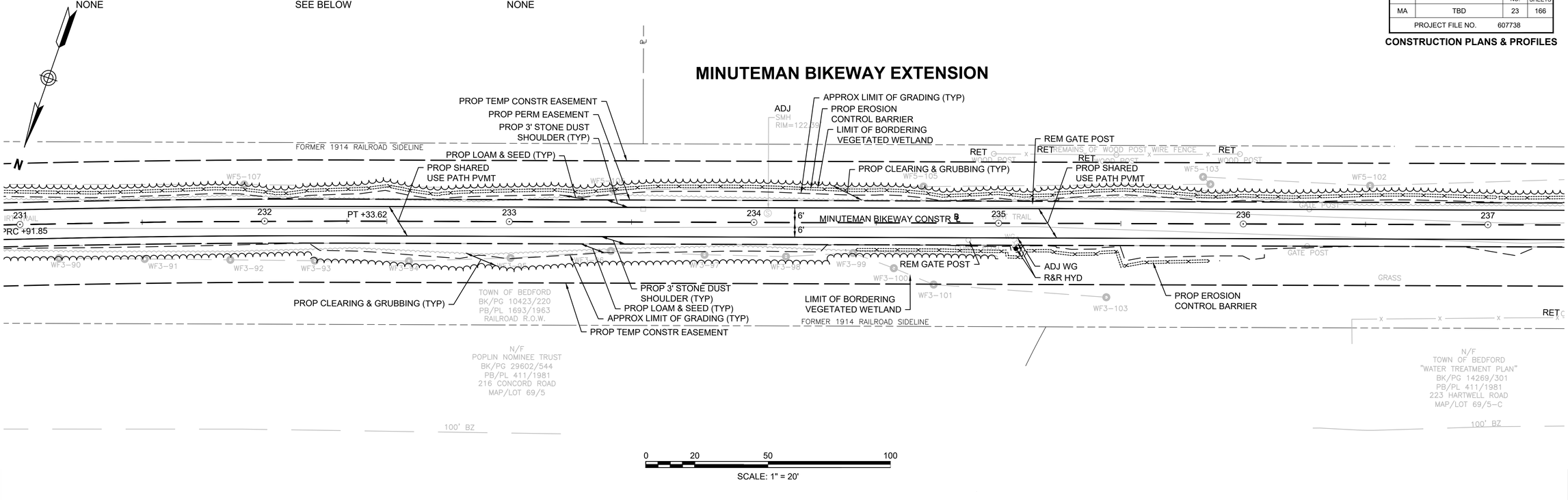
CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS
NONE

WATER SUPPLY ALTERATIONS
SEE BELOW

DRAINAGE DETAILS
NONE

MINUTEMAN BIKEWAY EXTENSION

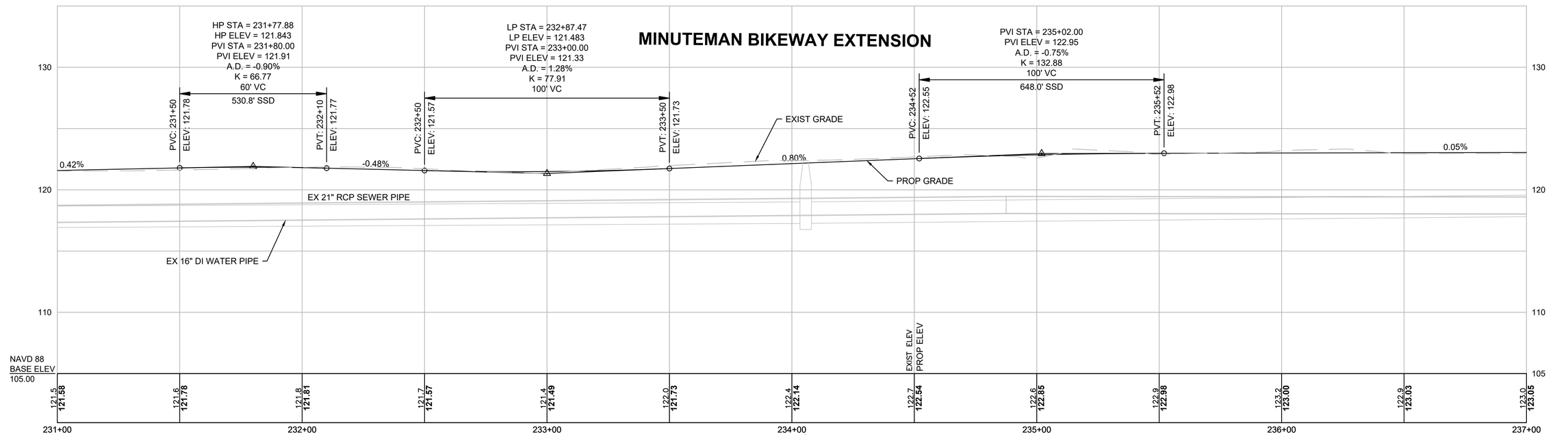


0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 22

CONTINUED ON SHEET NO. 24

MINUTEMAN BIKEWAY EXTENSION



BENCHMARK
X-CUT ON SMH
ELEVATION = 122.43'
STA. 234+05.64, 3.79' LT

HORIZONTAL
20 0 20 40
4 0 4 8
VERTICAL
SCALE IN FEET

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:15 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	24	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:15 PM

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 106

MINUTEMAN BIKEWAY EXTENSION

PB/PL 411/1981
211 HARTWELL ROAD
MAP/LOT 69/9-A

PROP TEMP CONSTR EASEMENT
PROP PERM EASEMENT
LIMIT OF BORDERING VEGETATED WETLAND
PROP LOAM & SEED (TYP)
PROP 3' STONE DUST SHOULDER (TYP)
PROP SHARED USE PATH PVMT
PROP DETECTABLE WARNING PANEL
APPROX LIMIT OF GRADING (TYP)
REM BOLLARDS
PROP SPLITTER ISLAND SEE DETAIL SHEET 85
PROP BOULDER BARRIER (TYP)
PROP TEMP CONSTR EASEMENT
PROP CLEARING & GRUBBING
PROP TEMP CONSTR EASEMENT
PROP SPLITTER ISLAND SEE DETAIL SHEET 85
PROP LOAM & SEED (TYP)
PROP SHARED USE PATH PVMT
LIMIT OF BORDERING VEGETATED WETLAND
PROP EROSION CONTROL BARRIER
PROP PERM EASEMENT
PROP MODIFIED ROCKFILL
PROP TEMP CONSTR EASEMENT
PROP HMA DRIVE
APPROX LIMIT OF GRADING (TYP)
BEGIN GRASS SWALE STA 239+22
PROP LOAM & SEED (TYP)
PROP GRASS SWALE
PROP MODIFIED ROCKFILL

WF4-108, WF4-107, WF4-106, WF4-105, WF4-104, WF4-102, WF5-100, WF5-102

PT +48.26
PC +04.53
PC +23.91
PT +67.62
PC +21.90
SAWCUT
SAWCUT
FORMER 1914 RAILROAD SIDELINE
MINUTEMAN BIKEWAY CONSTR ℄
WATER DEPT. ACCESS DRIVE CONSTR ℄
237
238
239
240
241
242
600
601
602
603
19
20
EP
ROW OF BOARDS
GRASS
WOODED
ST
RET
CHAIN LINK FENCE
100' BZ
SMH RIM=125.5

238+72.72, OFFSET: 11.32' MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT=
600+00.00 HARTWELL ROAD DRIVEWAY ALIGN

N/F
TOWN OF BEDFORD
"WATER TREATMENT PLAN"
BK/PG 14269/301
PB/PL 411/1981
223 HARTWELL ROAD
MAP/LOT 69/5-C

TOWN OF BEDFORD
BK/PG 10423/220
PB/PL 1693/1963
RAILROAD R.O.W.

WATER DEPT. ACCESS DRIVE

0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 23

CONTINUED ON SHEET NO. 25

MINUTEMAN BIKEWAY EXTENSION

GRADE BREAK STA = 237+90.00
ELEV = 123.10
GRADE BREAK STA = 238+87.00
ELEV = 122.52
GRADE BREAK STA = 239+13.00
ELEV = 122.61
GRADE BREAK STA = 240+50.00
ELEV = 123.29

PROP GRADE
EXIST GRADE
EX 21" RCP SEWER PIPE
EX 16" DI WATER PIPE

0.05%
-0.60%
0.35%
0.50%
1.00%

130
120
110
105

NAVD 88
BASE ELEV
105.00

EXIST ELEV
PROP ELEV

236+50	237+00	238+00	239+00	240+00	241+00	242+00	242+50
122.9 / 123.03	123.0 / 123.05	122.8 / 123.04	122.7 / 122.74	122.6 / 122.56	122.4 / 122.79	122.4 / 123.04	121.2 / 123.29	123.2 / 123.79	123.7 / 124.29	123.9 / 124.79	124.2 / 125.29

STA. 238+72.72 MINUTEMAN BIKEWAY CONST ℄ =
STA. 600+00.00 HARTWELL RD DRIVEWAY CONST ℄

HORIZONTAL
20 0 20 40
4 0 4 8
VERTICAL
SCALE IN FEET

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	25	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:15 PM

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
SEE SHEET 64

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET 106

MINUTEMAN BIKEWAY EXTENSION

WATER DEPT. ACCESS DRIVE

LEGEND:
[#] WCR NUMBER

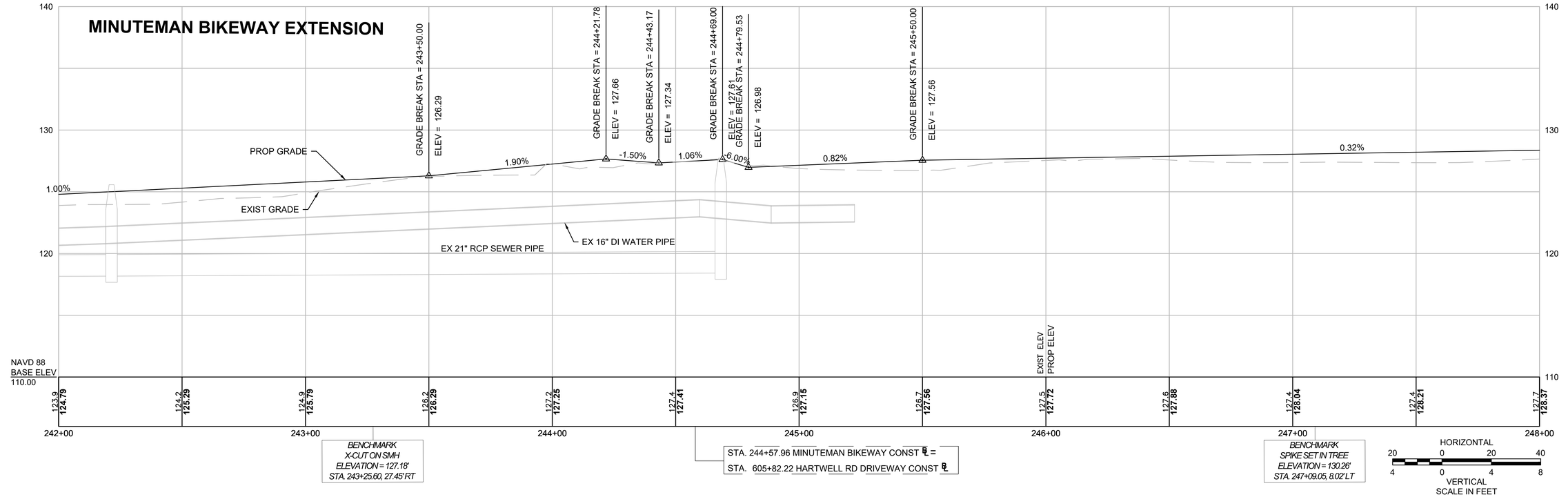
PROP PERM EASEMENT
PROP MODIFIED ROCKFILL
PROP SHARED USE PATH PVMT
PROP CLEARING & GRUBBING
LIMIT OF BORDERING VEGETATED WETLAND
APPROX LIMIT OF GRADING (TYP)
PROP LOAM & SEED (TYP)
PROP DETECTABLE WARNING PANEL
PROP SPLITTER ISLAND SEE DETAIL SHEET 85
REM BOLLARDS & BOULDERS
PROP TEMP CONSTR EASEMENT
HARTWELL ROAD
PROP MICROMILL & OVERLAY
PROP BOULDER BARRIER (TYP)
RET STONE WALL
PROP SPLITTER ISLAND SEE DETAIL SHEET 85
RET 18" GRANITE BOULDER (TYP)
PROP PERM EASEMENT
PROP TEMP CONSTR EASEMENT
PROP LOAM & SEED (TYP)
PROP SHARED USE PATH PVMT
PROP 3' STONE DUST SHOULDER (TYP)
PROP TREE PROTECTION
FORMER 1914 RAILROAD SIDELINE
PC +21.90
PRC +16.81
MINUTEMAN BIKEWAY CONSTR ℄
PT +11.72
PC +03.98
PRC +92.19
PRC +04.14
PC +92.63
WATER DEPT. ACCESS DRIVE CONSTR ℄
R&R SIGN
SAWCUT
PROP INTERPRETIVE SIGN
PROP DETECTABLE WARNING PANEL
LIMIT OF BORDERING VEGETATED WETLAND
PROP LOAM & SEED (TYP)
PROP GRASS SWALE
PROP MODIFIED ROCKFILL
PROP HMA DRIVE
END GRASS SWALE STA 242+95
APPROX LIMIT OF GRADING (TYP)
R&R GATE POST
REM BOLLARD
RET BOLLARDS
605+82.22 WATER DEPT. ACCESS DRIVE ALIGNMENT
244+57.96 MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT
PT +73.00
PROP 3' STONE DUST SHOULDER (TYP)
PROP LOAM & SEED (TYP)
PROP TEMP CONSTR EASEMENT
TOWN OF BEDFORD BK/PG 10423/220 PB/PL 1693/1963 RAILROAD R.O.W.
FORMER 1914 RAILROAD SIDELINE
10' WIDE BOOK 195

N/F POPLIN NOMINEE TRUST BK/PG 29602/544 PB/PL 411/1981 216 CONCORD ROAD MAP/LOT 69/5

N/F HAWTHORN HOLDINGS LIMITED PARTNERSHIP BK/PG 28038/302 238 HARTWELL ROAD MAP/LOT 69/16-B

0 20 50 100
SCALE: 1" = 20'

CONTINUED ON SHEET NO. 24
CONTINUED ON SHEET NO. 27



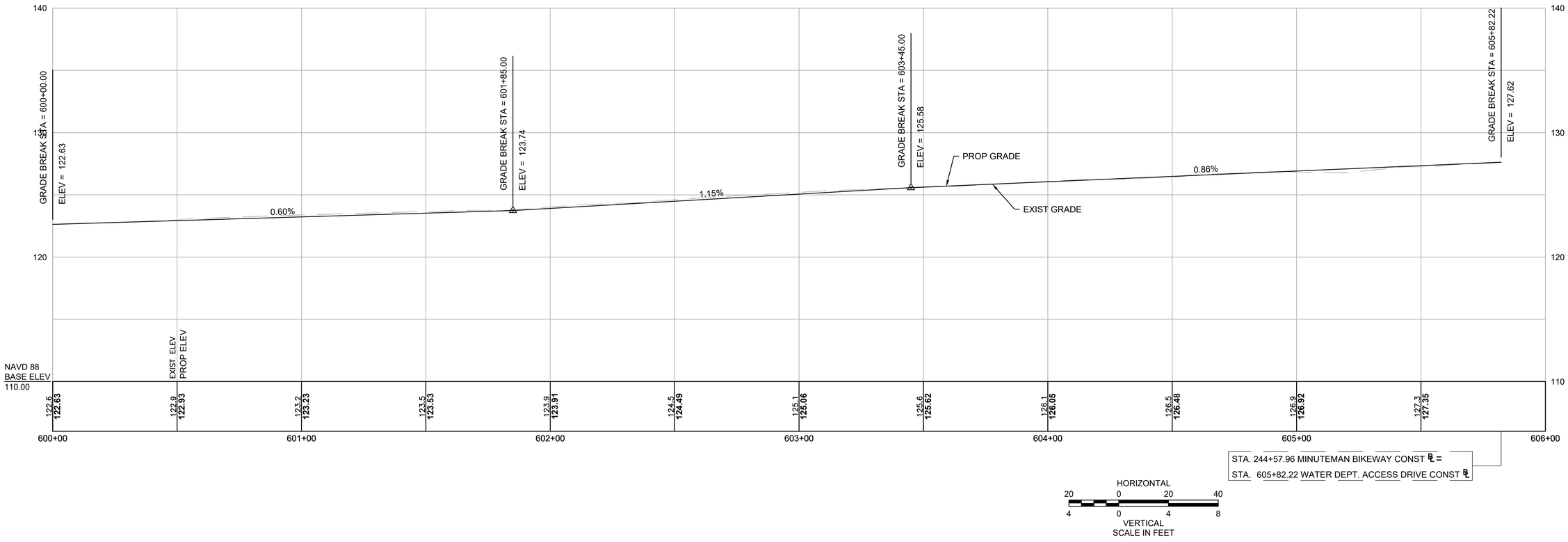
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	26	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:15 PM

WATER DEPT. ACCESS DRIVE



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	27	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:16 PM

HIGHWAY GUARD DETAILS

NONE

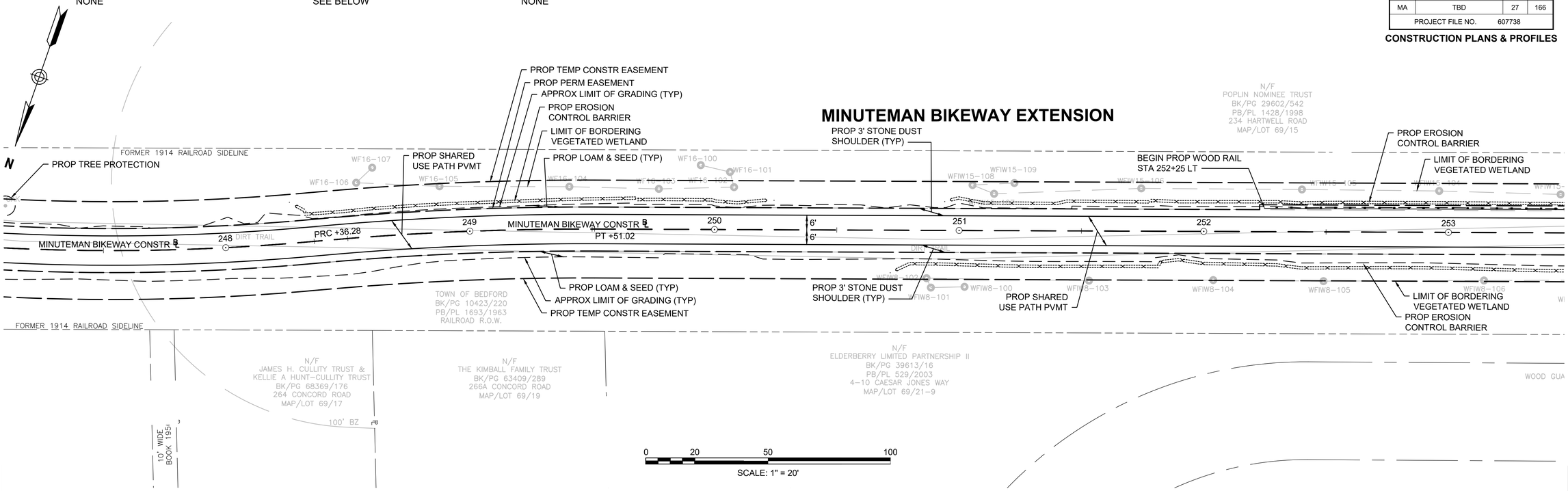
WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

NONE

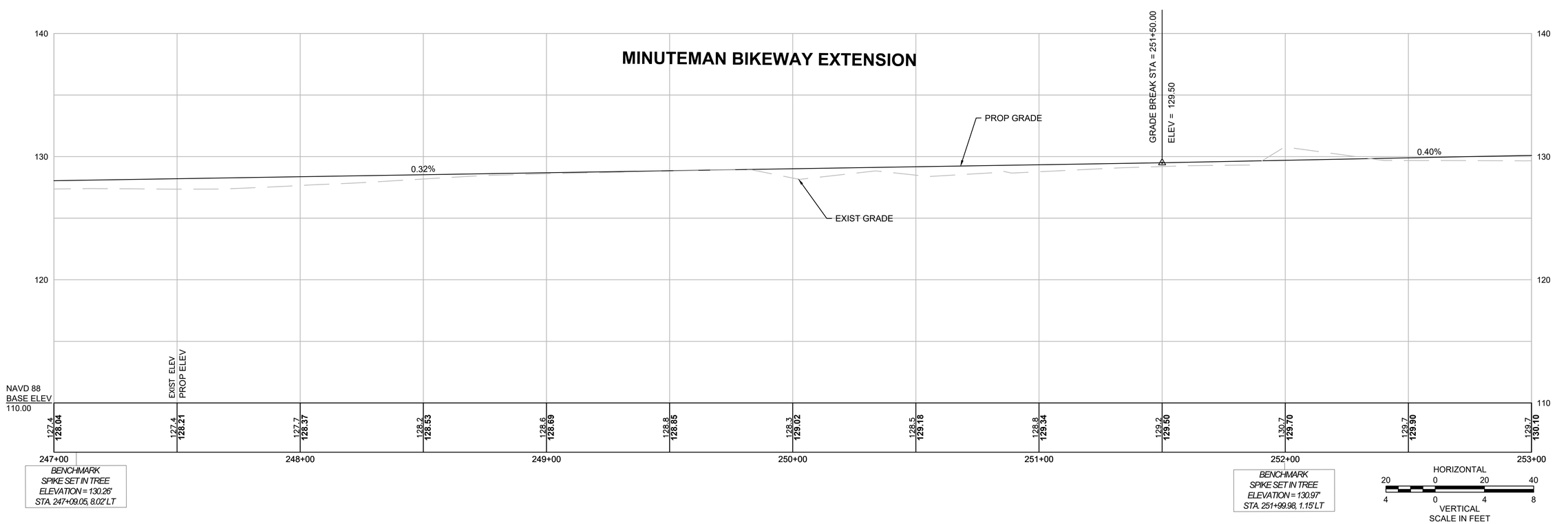
MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 25

CONTINUED ON SHEET NO. 28

MINUTEMAN BIKEWAY EXTENSION



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	28	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS

NONE

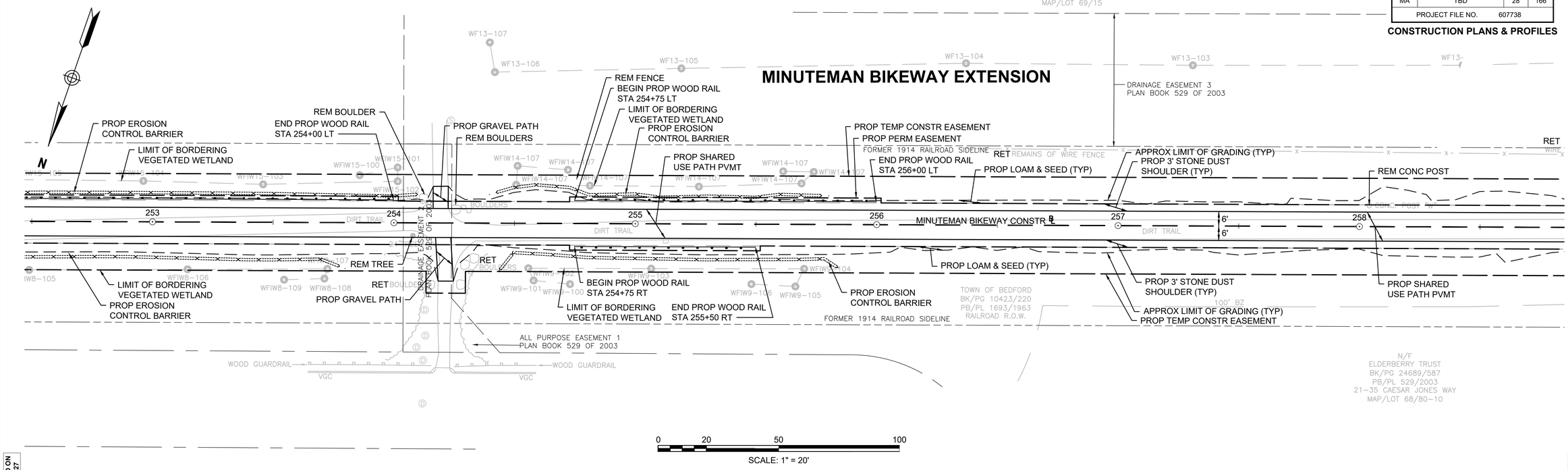
WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

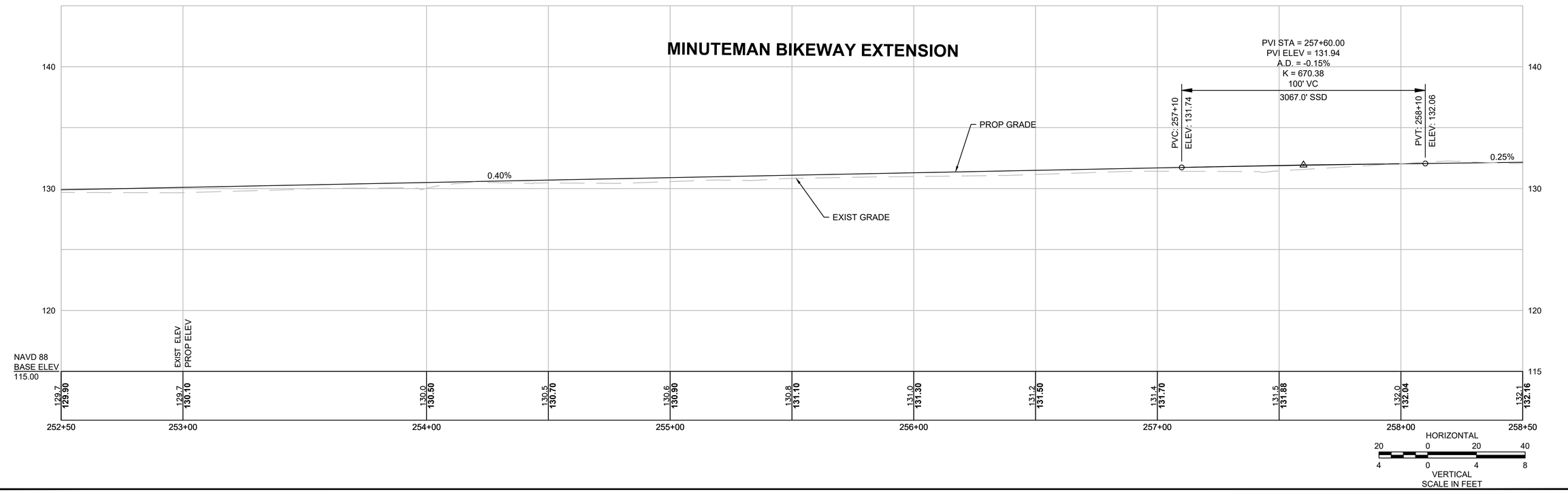
NONE

MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 27

CONTINUED ON SHEET NO. 29



607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:16 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	29	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS

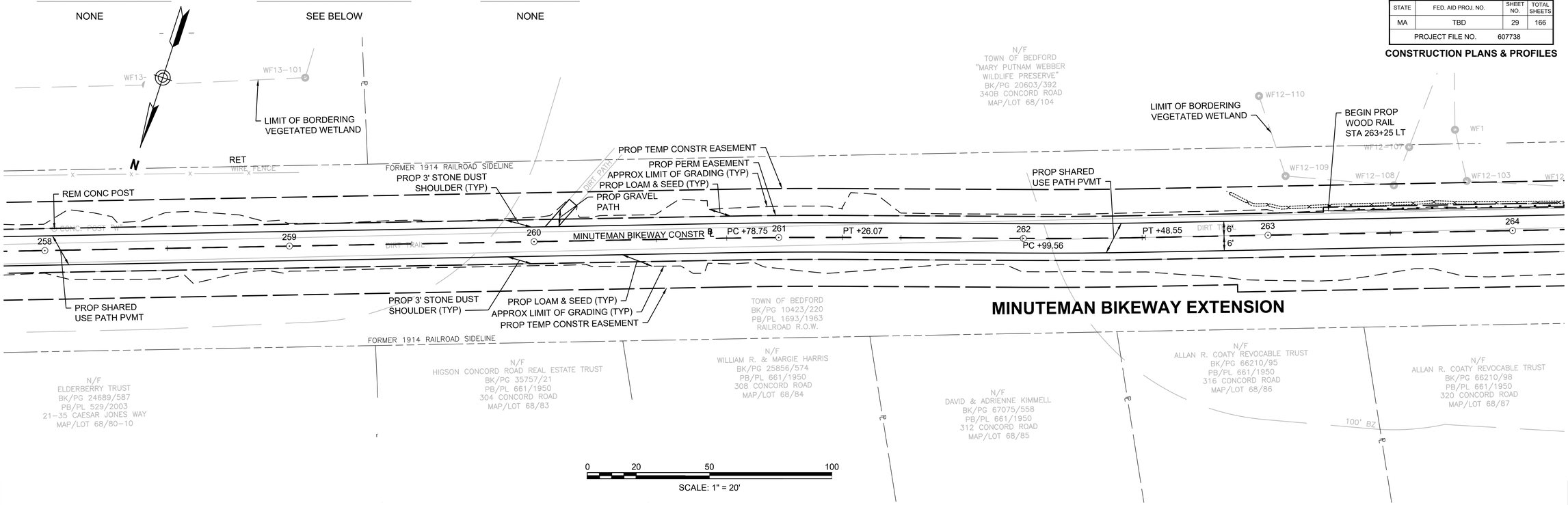
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WATER SUPPLY ALTERATIONS

SEE BELOW

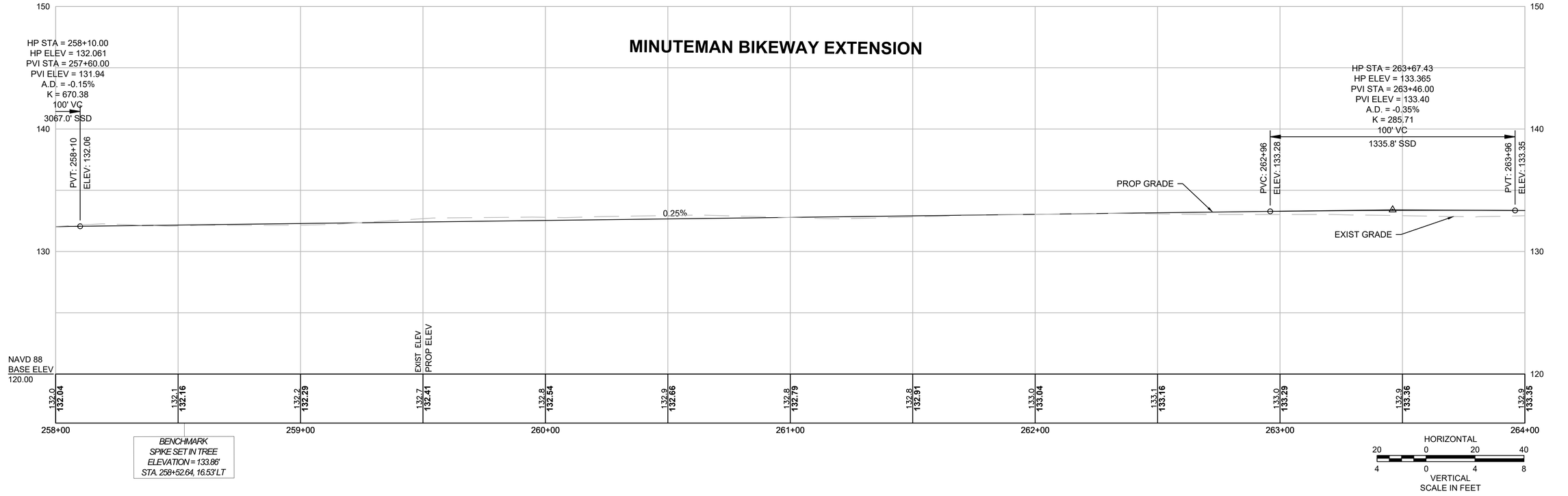
DRAINAGE DETAILS

NONE



CONTINUED ON SHEET NO. 28

CONTINUED ON SHEET NO. 30



607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:16 PM

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

SEE SHEET ##

WATER SUPPLY ALTERATIONS

SEE BELOW

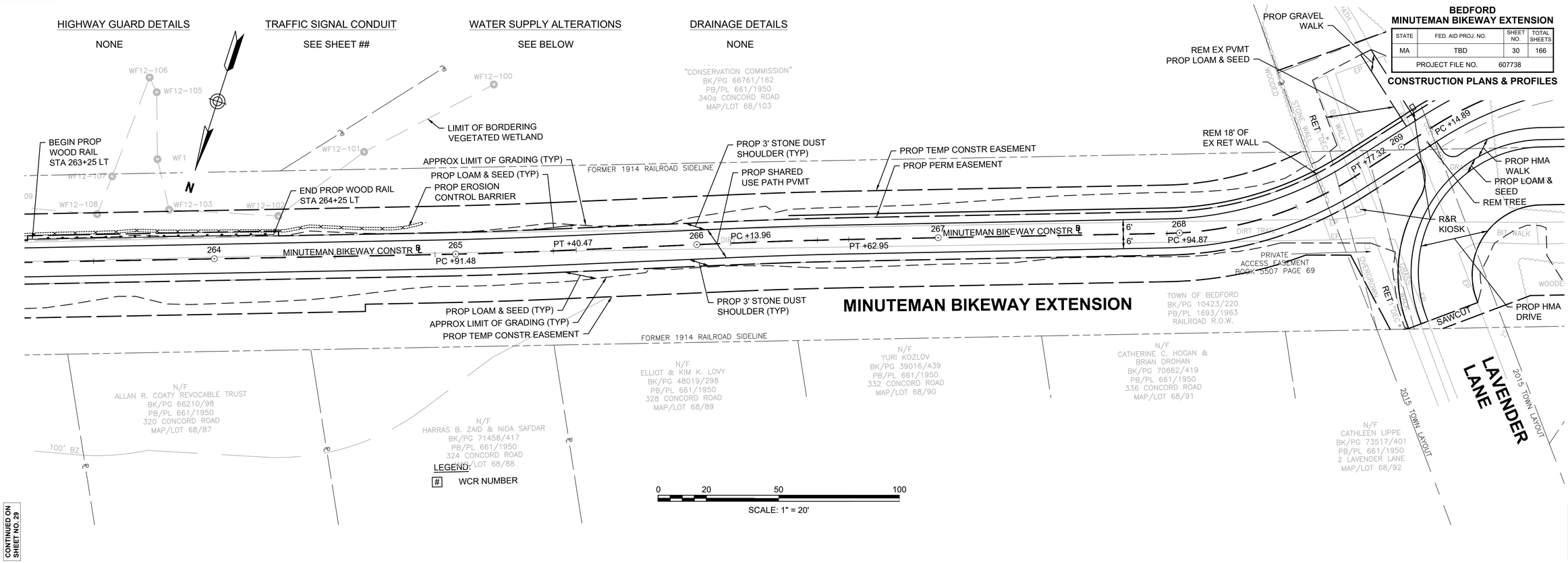
DRAINAGE DETAILS

NONE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

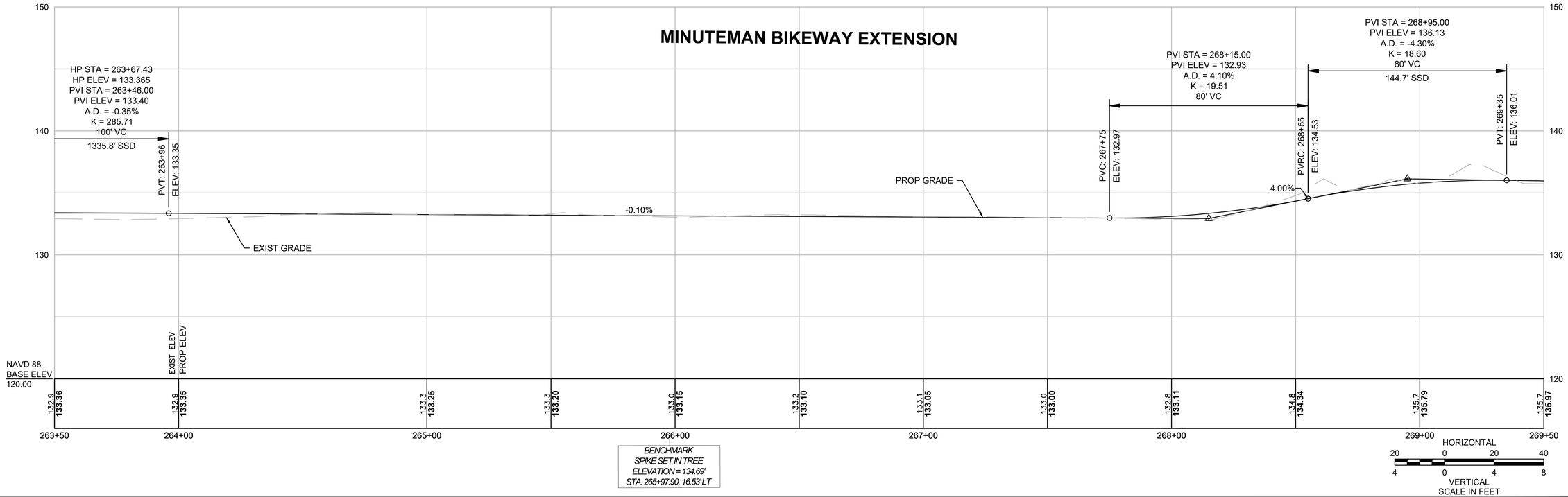
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	30	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES



CONTINUED ON SHEET NO. 29

CONTINUED ON SHEET NO. 31



607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:17 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	31	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

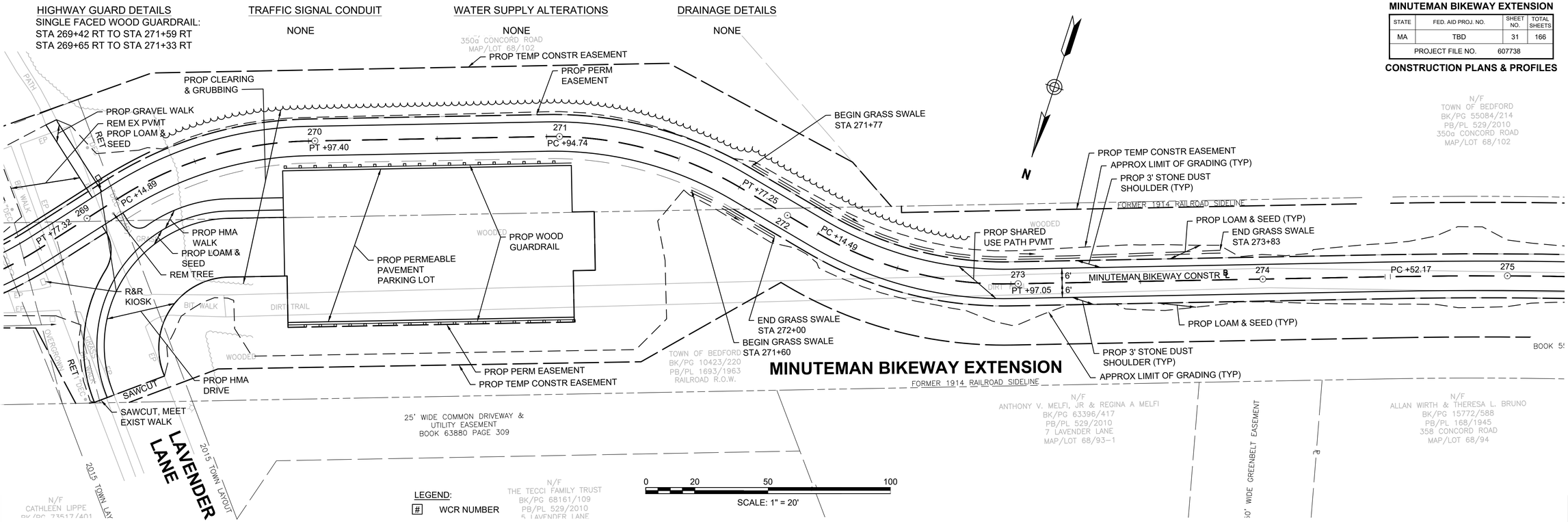
607738_HDI(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:17 PM

HIGHWAY GUARD DETAILS
SINGLE FACED WOOD GUARDRAIL:
STA 269+42 RT TO STA 271+59 RT
STA 269+65 RT TO STA 271+33 RT

TRAFFIC SIGNAL CONDUIT
NONE

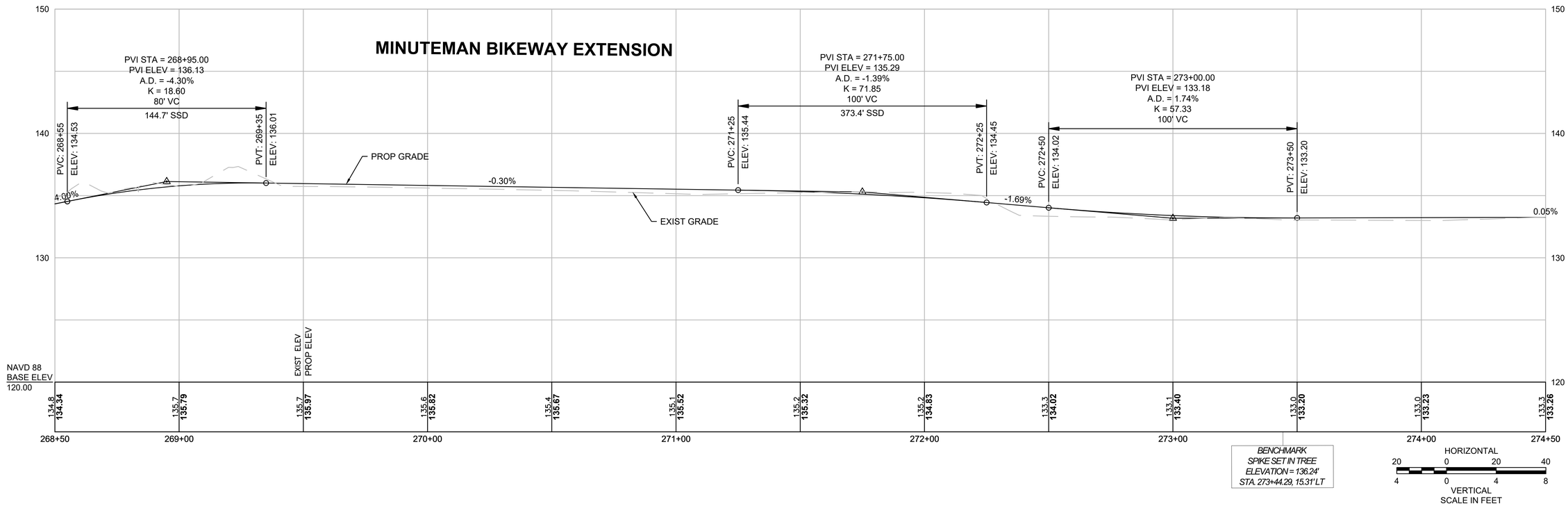
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
NONE



CONTINUED ON SHEET NO. 30

CONTINUED ON SHEET NO. 32



HIGHWAY GUARD DETAILS

NONE

DRAINAGE DETAILS

NONE

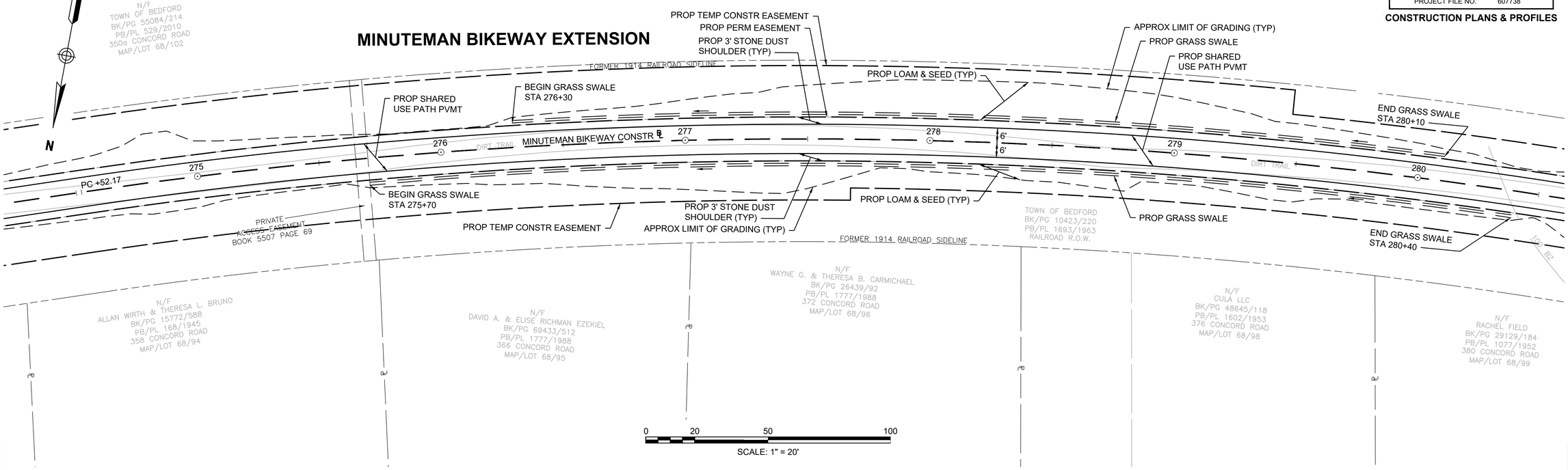
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	32	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:17 PM

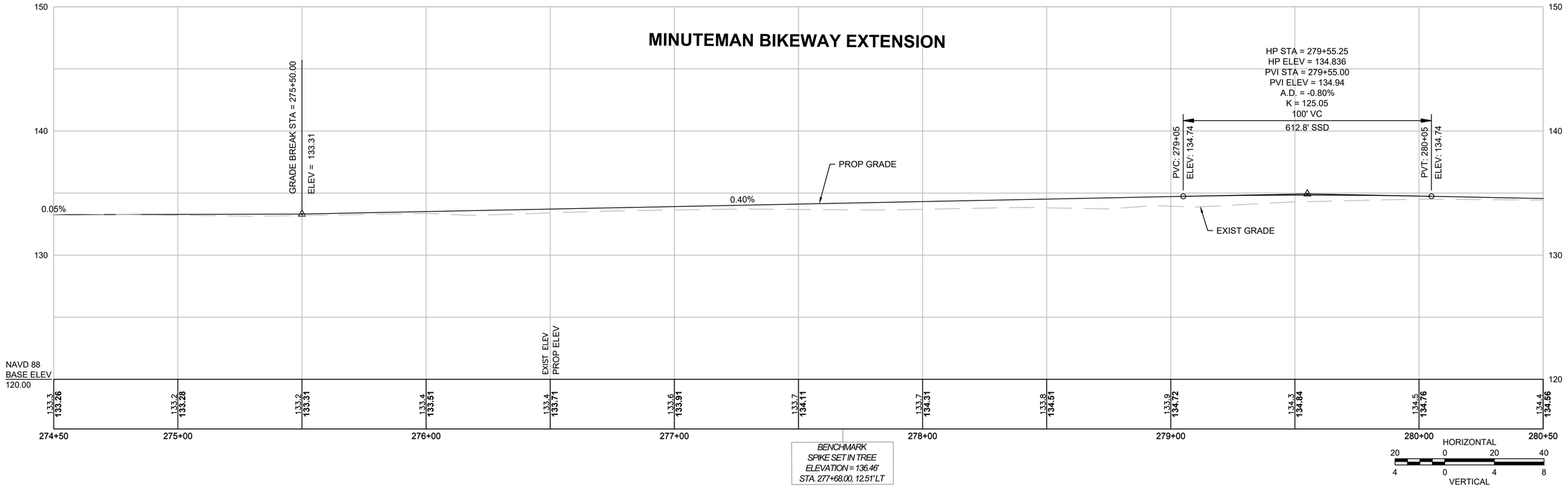
MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 31

CONTINUED ON SHEET NO. 33

MINUTEMAN BIKEWAY EXTENSION



HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

NONE

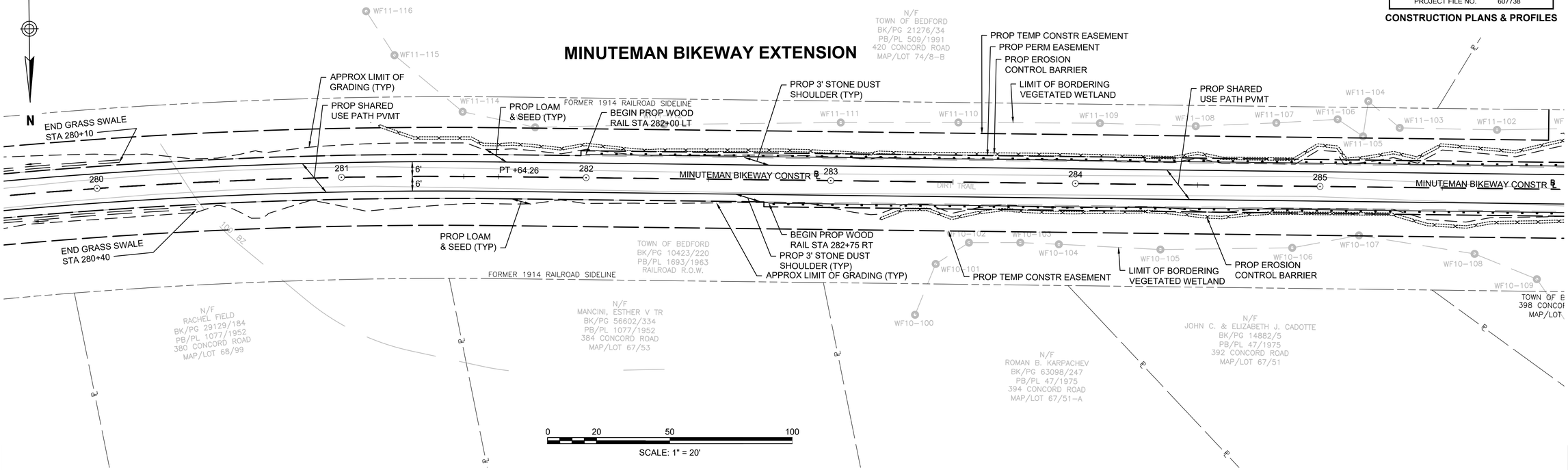
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	33	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:18 PM

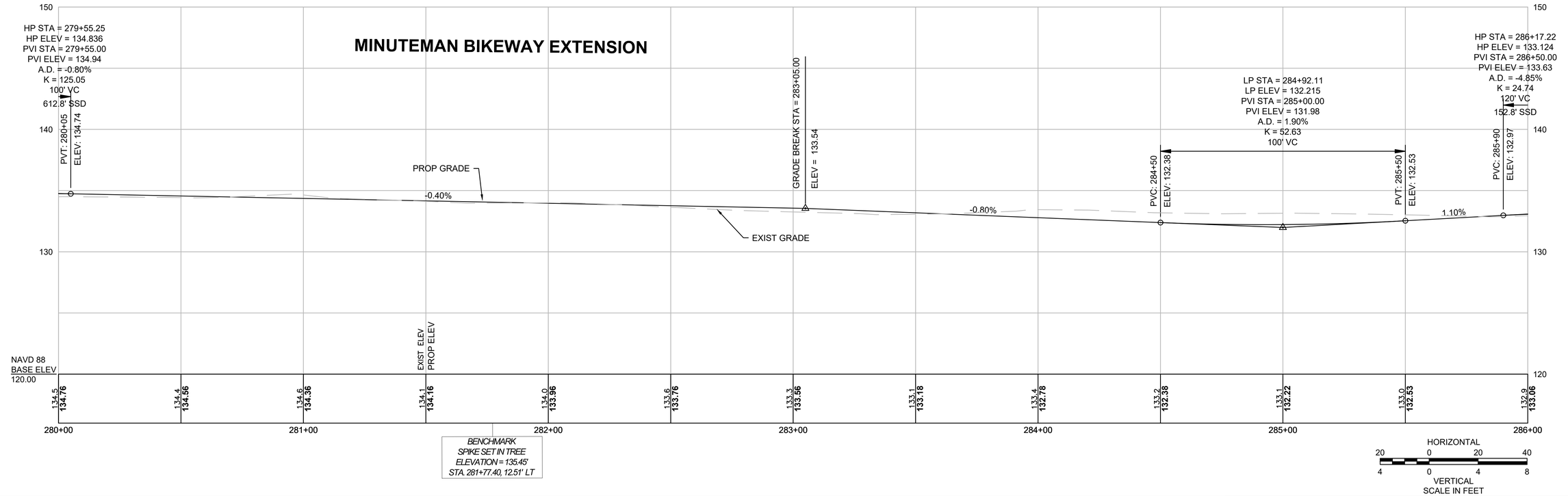
MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 32

CONTINUED ON SHEET NO. 34

MINUTEMAN BIKEWAY EXTENSION



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	34	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS
WOOD GUARDRAIL:
STA. 287+12 RT TO STA. 287+91 RT
STA. 287+22 RT TO STA. 287+82 RT

WATER SUPPLY ALTERATIONS
SEE SHEET 107

DRAINAGE DETAILS
SEE SHEET 107

MINUTEMAN BIKEWAY EXTENSION

PROP TEMP CONSTR EASEMENT
PROP PERM EASEMENT
LIMIT OF BORDERING VEGETATED WETLAND
APPROX LIMIT OF GRADING (TYP)
PROP EROSION CONTROL BARRIER
BEGIN GRASS SWALE STA 286+15
END PROP WOOD RAIL STA 286+00 LT
PROP 3' STONE DUST SHOULDER (TYP)
PROP LOAM & SEED(TYP) L=125'±
PROP CONC END POST SEE STRUCTURAL PLANS FOR DETAIL
PROP CP-PL2 BARRIER MTD ON MOMENT SLAB SEE STRUCTURAL PLANS FOR DETAIL
PROP HIGHWAY GUARD
PROP CEM CONC WINGWALL
PROP PERM EASEMENT
END GRASS SWALE STA 288+48
CONTINUED ON SHEET NO. 37
PROP CULVERT
291+28.05 MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT= 803+04.15 CONCORD ROAD RAMP
BEGIN GRASS SWALE STA 289+07
PROP CEM CONC WING WALL
LIMIT OF BORDERING VEGETATED WETLAND
PROP EROSION CONTROL BARRIER
PROP GRASS SWALE
PROP SHARED USE PATH PVMT
PROP LOAM & SEED
PCC +62.12
PT +93.43
PC +04.61
MINUTEMAN BIKEWAY CONSTR ℄
PROP CEM CONC WINGWALL
PROP RET WALL 2
PROP BICYCLE RACKS
PROP SHARED USE PATH PVMT
PROP INTERPRETIVE SIGN
PROP CONCRETE PAD
PROP EROSION CONTROL BARRIER
END PROP WOOD RAIL STA 286+09 RT
PROP TEMP CONSTR EASEMENT
BEGIN PROP WOOD RAILING STA 800+56
END PROP WOOD RAILING STA 801+75
CONCORD RD RAMP CONSTR ℄
PROP WOOD GUARDRAIL (SEE NOTES)
PROP PERMABLE PAVEMENT PARKING LOT
PROP CP-PL2 BARRIER MTD ON MOMENT SLAB SEE STRUCTURAL PLANS FOR DETAIL
PCC +38.60
PC +27.54
PT +59.35
PROP 2' STONE DUST SHOULDER (TYP)
LIMIT OF BORDERING VEGETATED WETLAND
PROP HMA SUP
PROP LOAM & SEED (TYP)
LIMIT OF BORDERING VEGETATED WETLAND
PROP DRINKING FOUNTAIN
PROP TEMP CONSTR EASEMENT
PROP LOAM & SEED(TYP)
PROP PERM EASEMENT
APPROX LIMIT OF GRADING (TYP)
PROP SHARED USE PATH PVMT
407+10.49 CONCORD ROAD CONST BL= 800+00.00 CONCORD ROAD RAMP
CONCORD ROAD
FORMER 1914 RAILROAD SIDELINE
TOWN OF BEDFORD BK/PG 10423/220 PB/PL 1693/1963 RAILROAD R.O.W.
JAMES R. & LORI ANN EGGERT BK/PG 18197/138 PB/PL 1618/1963 12 BONNIEVALE DRIVE MAP/LOT 67/45
PATRICK LYONS BK/PG 68212/426 PB/PL 1618/1963 10 BONNIEVALE DRIVE MAP/LOT 67/44
CONTINUED ON SHEET NO. 33
CONTINUED ON SHEET NO. 36
CONTINUED ON SHEET NO. 38

0 20 50 100
SCALE: 1" = 20'

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:18 PM

MINUTEMAN BIKEWAY EXTENSION

LP STA = 284+92.11
LP ELEV = 132.215
PVI STA = 285+00.00
PVI ELEV = 131.98
A.D. = 1.90%
K = 52.63
100' VC

HP STA = 286+17.22
HP ELEV = 133.124
PVI STA = 286+50.00
PVI ELEV = 133.63
A.D. = -4.85%
K = 24.74
120' VC
152.8' SSD

LP STA = 287+97.00
LP ELEV = 129.471
PVI STA = 287+75.00
PVI ELEV = 128.95
A.D. = 5.21%
K = 19.20
100' VC

HP STA = 290+67.27
HP ELEV = 132.572
PVI STA = 290+40.00
PVI ELEV = 132.81
A.D. = -2.01%
K = 59.84
120' VC
284.4' SSD

PVT: 285+50 ELEV: 132.53
PVC: 285+90 ELEV: 132.97
PVT: 287+10 ELEV: 131.38
PVC: 287+25 ELEV: 130.82
PVT: 288+25 ELEV: 129.68
PVC: 289+80 ELEV: 131.94
PVT: 291+00 ELEV: 132.48

1.10%
-3.75%
1.46%

EXIST GRADE
EXIST 4" GAS
EXIST 8" GAS
EXIST 12" WATER
PROP 4" GAS
PROP 12" WATER PIPE WITH 20" STEEL SLEEVE
EXIST 8" SEWER
8" SEWER RELOCATION
PROP GRADE

NAVD 88
BASE ELEV
120.00

EXIST ELEV / PROP ELEV

285+00	286+00	287+00	288+00	289+00	290+00	291+00
133.1 / 132.22	133.0 / 132.53	132.9 / 133.06	133.5 / 132.91	133.2 / 131.74	134.2 / 130.05	136.3 / 129.47	139.5 / 130.04	139.0 / 130.77	133.7 / 131.50	132.8 / 132.19	132.6 / 132.55	132.5 / 132.48

BENCHMARK
SPIKE SET IN TREE
ELEVATION = 140.77'
STA. 288+66.70, 47.48' LT

HORIZONTAL
20 0 20 40
4 0 4 8
VERTICAL
SCALE IN FEET

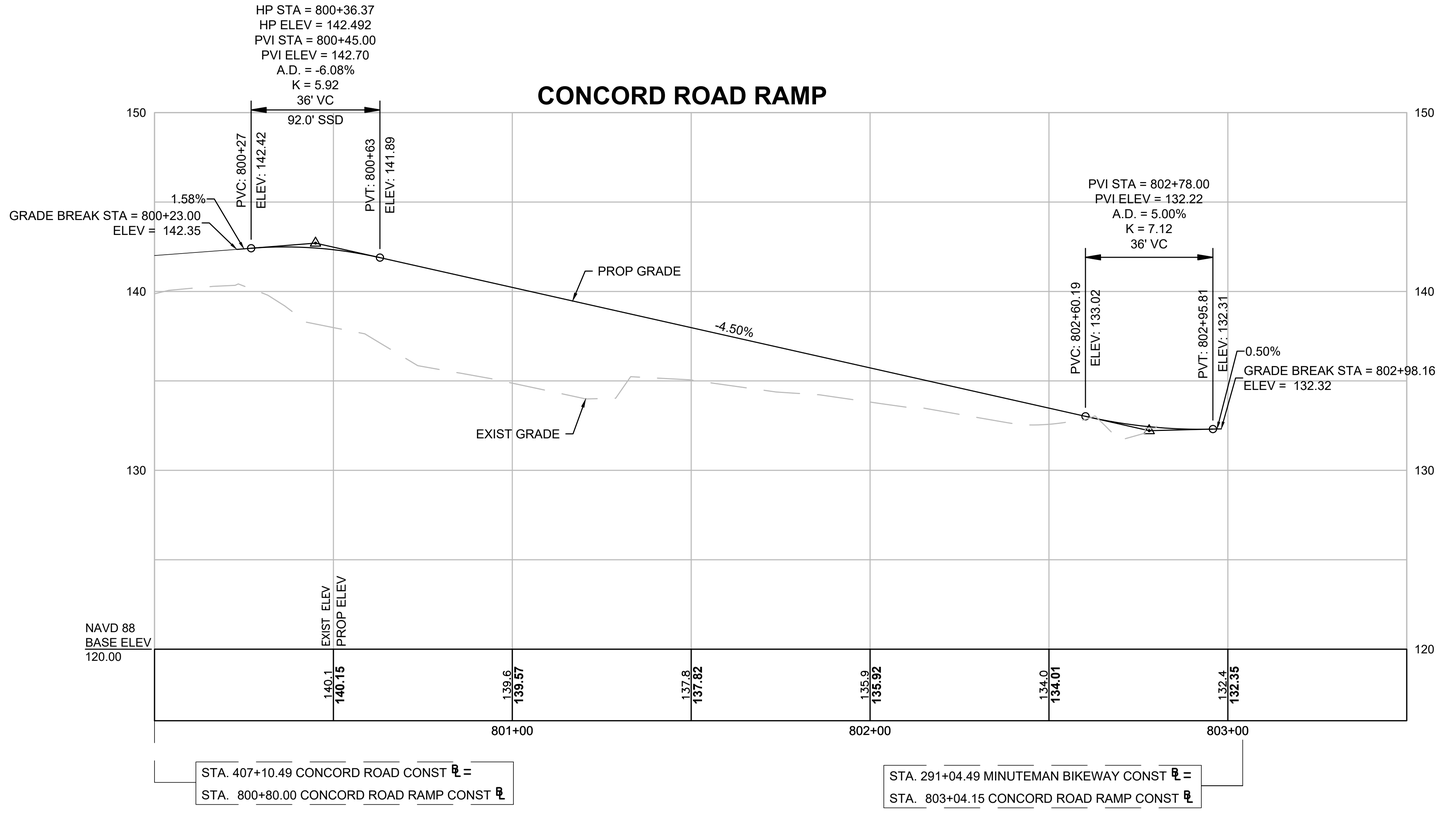
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	35	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:18 PM

CONCORD ROAD RAMP



STA. 407+10.49 CONCORD ROAD CONST ℄ =
STA. 800+80.00 CONCORD ROAD RAMP CONST ℄

STA. 291+04.49 MINUTEMAN BIKEWAY CONST ℄ =
STA. 803+04.15 CONCORD ROAD RAMP CONST ℄

HORIZONTAL
20 0 20 40
4 0 4 8
VERTICAL
SCALE IN FEET

HIGHWAY GUARD DETAILS

TRAILING ANCHORAGE STA 405+42 LT TO 405+52 LT
STRAIGHT SECTION GUARDRAIL, TL-2 (SINGLE FACED)
STA 405+52 LT TO STA 405+87 LT
TANGENT END SECTION STA 405+87 LT TO 406+26 LT

TRANSITION TO BRIDGE RAIL (E 400.3.5) STA 407+56 RT
TO STA 407+79 RT
STRAIGHT SECTION GUARDRAIL, TL-2 (SINGLE FACED)
STA 407+79 RT TO STA 407+89 RT
TRAILING ANCHORAGE STA 407+89 RT TO STA 408+00 RT

TRAILING ANCHORAGE STA 406+52 LT TO STA 406+62 LT
STRAIGHT SECTION GUARDRAIL, TL-2 (SINGLE FACED)
STA 406+62 LT TO STA 406+78 LT
TRANSITION TO BRIDGE RAIL (E 400.3.5) STA 406+78 LT
TO STA 407+01 LT

TRAILING ANCHORAGE STA 407+43 LT TO STA 407+41 LT
TRAILING ANCHORAGE STA 407+41 LT TO STA 407+39 LT

TRAFFIC SIGNAL CONDUIT

SEE SHEET 70

WATER SUPPLY ALTERATIONS

SEE SHEET 107

DRAINAGE DETAILS

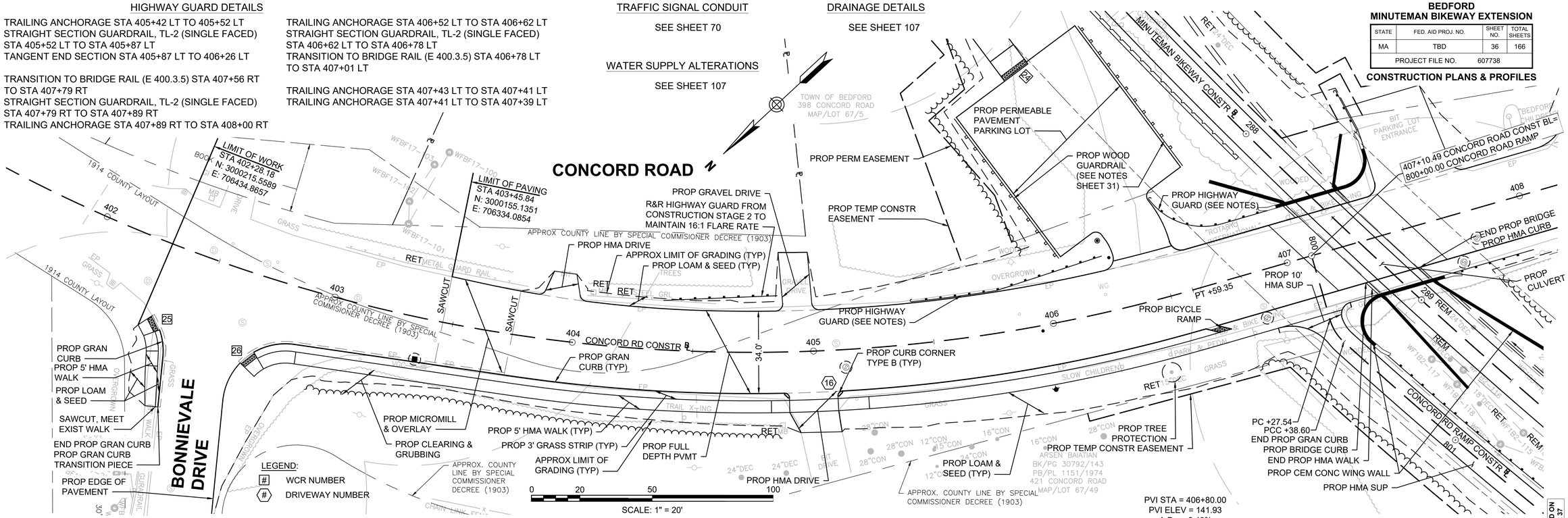
SEE SHEET 107

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	36	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HDIGEN-CONCORD).DWG Plotted on 30-Oct-2020 12:21 PM



CONTINUED ON SHEET NO. 37

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS
SEE SHEET 36	SEE SHEET 70	SEE BELOW 108	SEE SHEET 108

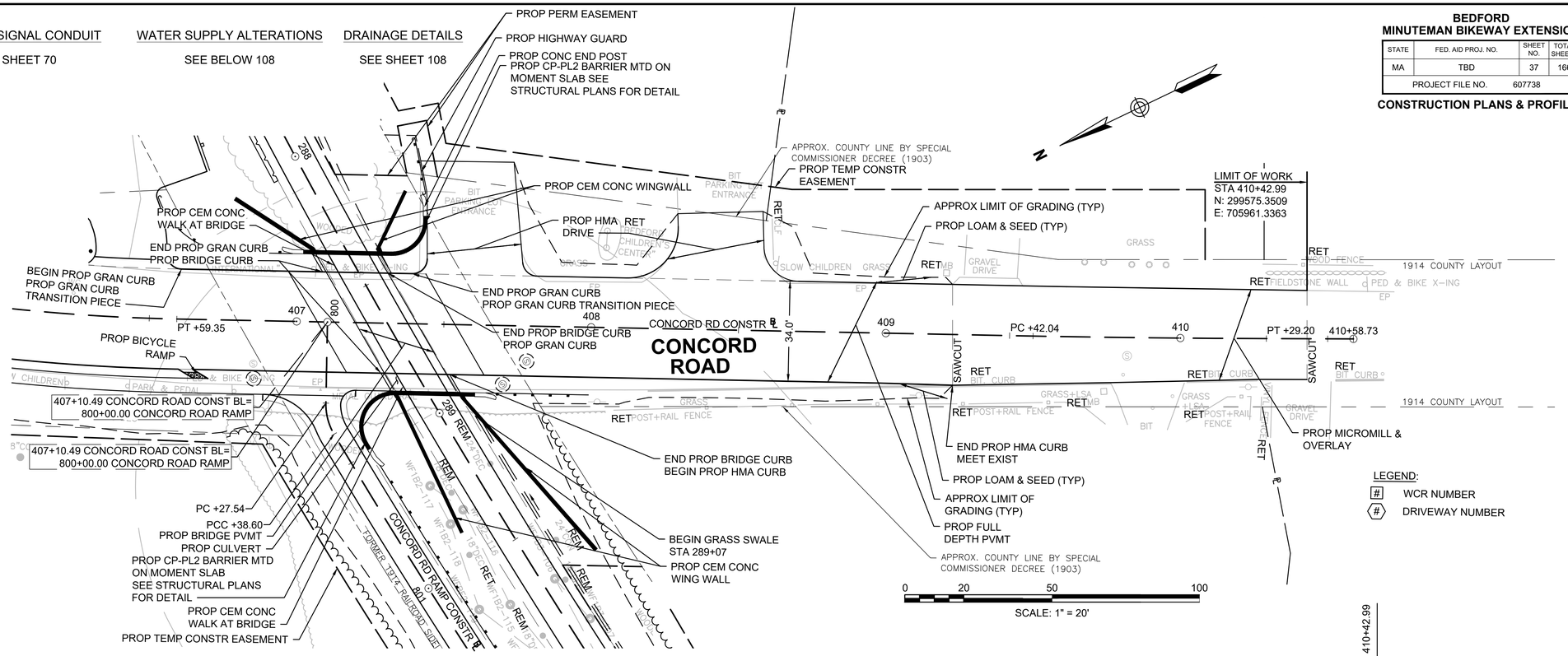
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	37	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HDIGEN-CONCORD).DWG Plotted on 30-Oct-2020 12:22 PM

CONTINUED ON SHEET NO. 36



HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

NONE

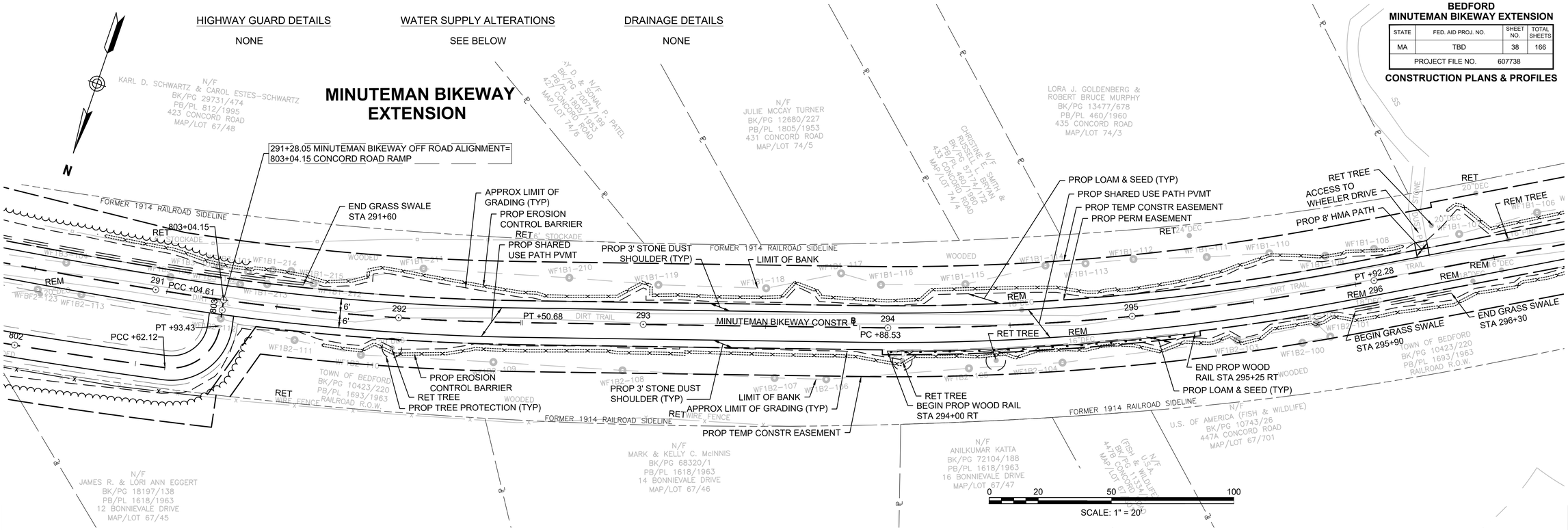
MINUTEMAN BIKEWAY EXTENSION

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	38	166
PROJECT FILE NO.	607738		

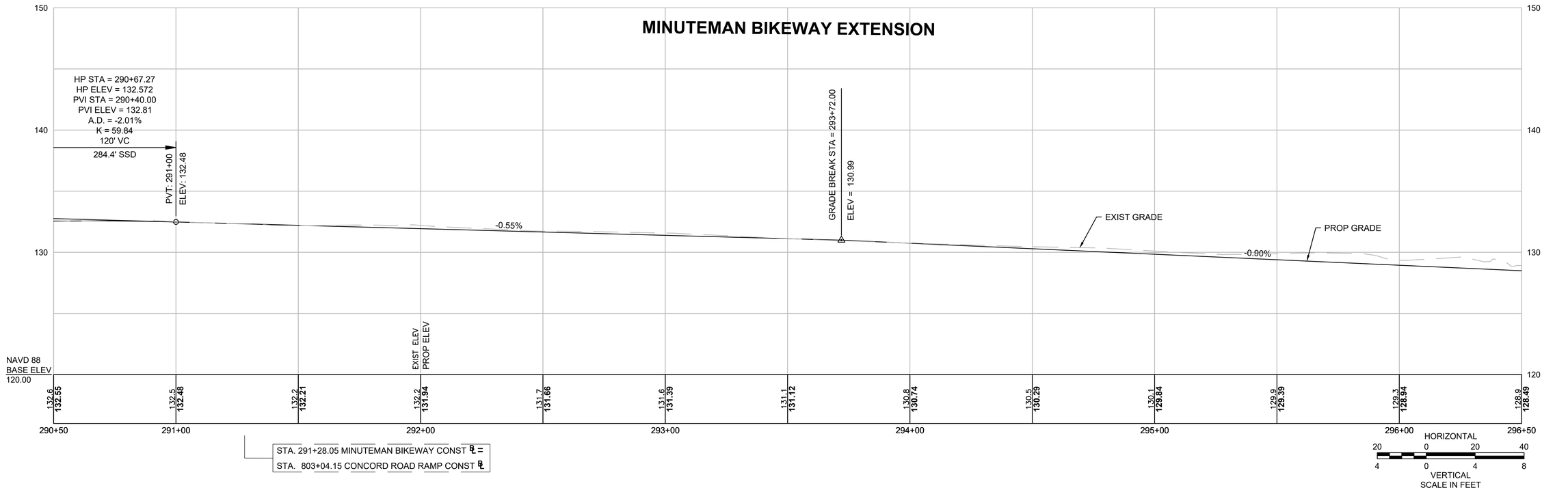
CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:25 PM



CONTINUED ON SHEET NO. 34

CONTINUED ON SHEET NO. 39



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	39	166
PROJECT FILE NO.	607738		

CONSTRUCTION PLANS & PROFILES

607738_HD(GEN BIKEWAY).DWG Plotted on 30-Oct-2020 12:25 PM

HIGHWAY GUARD DETAILS

NONE

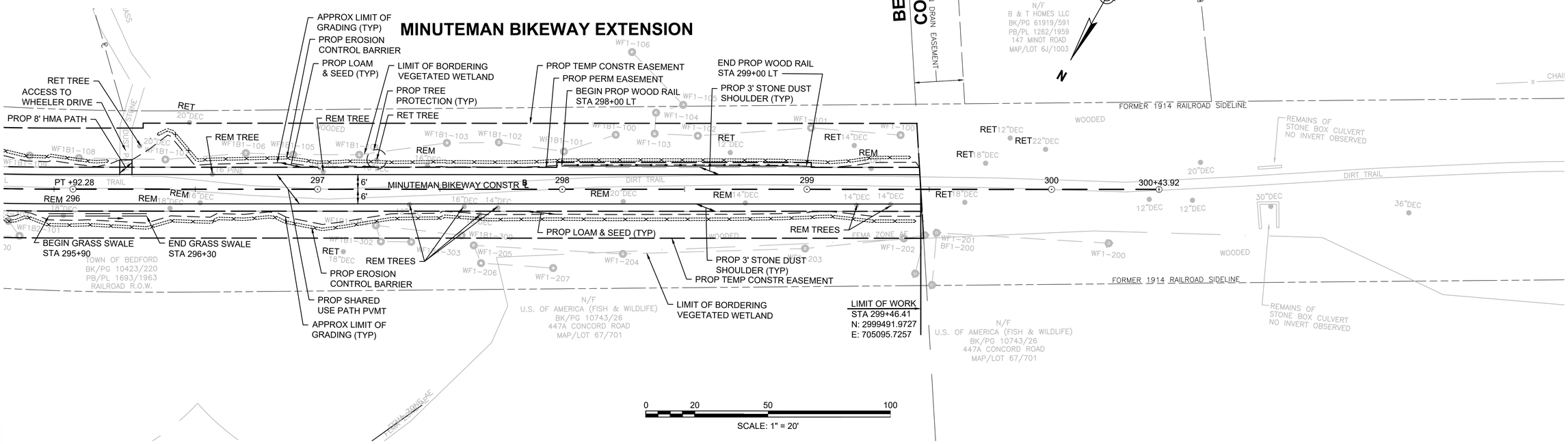
WATER SUPPLY ALTERATIONS

SEE BELOW

DRAINAGE DETAILS

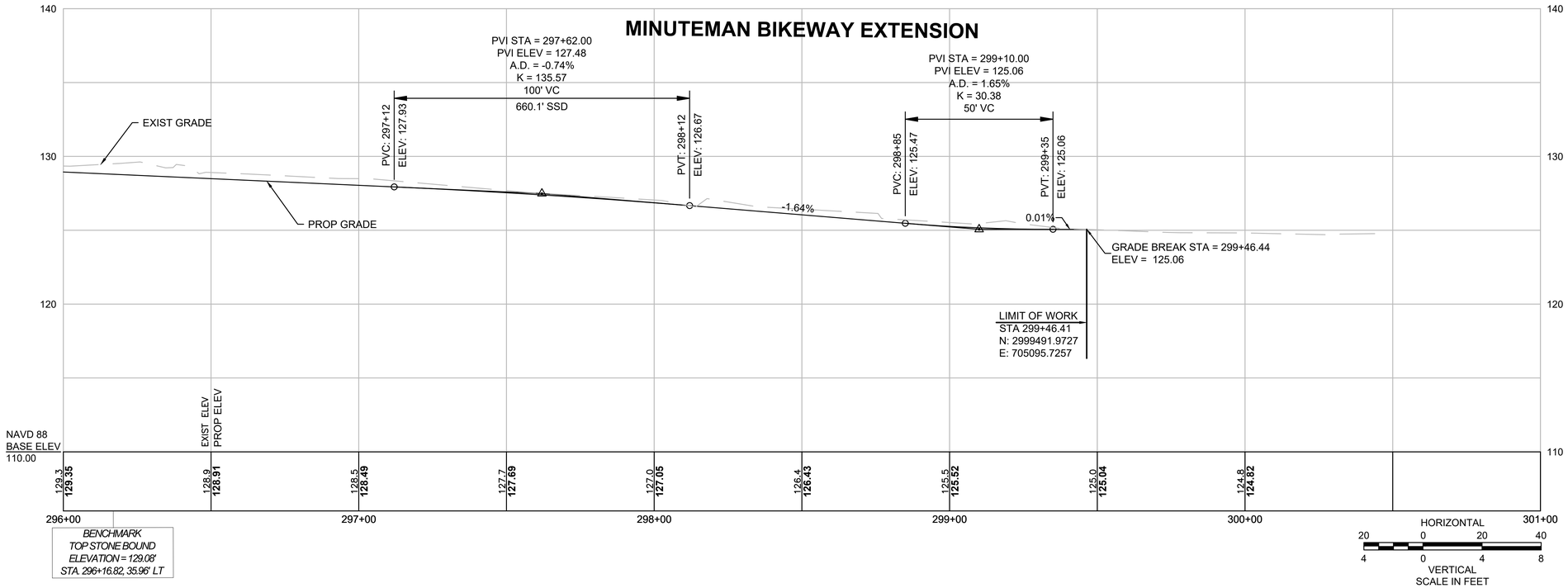
SEE BELOW

MINUTEMAN BIKEWAY EXTENSION



CONTINUED ON SHEET NO. 38

MINUTEMAN BIKEWAY EXTENSION



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	40	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HDI(ALN).DWG Plotted on 30-Oct-2020 12:28 PM

MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C6	200+00.00	3002057.5846	714515.8996	R=100.00' Δ=68°02'43" L=118.76' T=67.51'		201+18.76	3002020.536	714410.306
C7	201+18.76	3002020.5360	714410.3062	R=460.00' Δ=20°35'29" L=165.32' T=83.56'		202+84.08	3002033.131	714246.359
L4	202+84.08	3002033.1310	714246.3593		S84°05'50"W 89.83'	203+73.91	3002023.892	714157.001
C8	203+73.91	3002023.8925	714157.0007	R=40.00' Δ=72°54'03" L=50.89' T=29.54'		204+24.81	3001991.872	714121.876
L5	204+24.81	3001991.8716	714121.8756		S11°11'48"W 72.70'	204+97.51	3001920.556	714107.759
C9	204+97.51	3001920.5555	714107.7590	R=40.00' Δ=72°04'29" L=50.32' T=29.10'		205+47.83	3001888.598	714073.207
L6	205+47.83	3001888.5981	714073.2070		S83°16'17"W 396.61'	209+44.43	3001842.129	713679.332
C10	209+44.43	3001842.1295	713679.3317	R=340.00' Δ=5°38'50" L=33.51' T=16.77'		209+77.94	3001839.848	713645.912
C11	209+77.94	3001839.8482	713645.9117	R=185.00' Δ=16°12'29" L=52.33' T=26.34'		210+30.28	3001831.522	713594.421
C12	210+30.28	3001831.5220	713594.4210	R=160.00' Δ=10°19'34" L=28.84' T=14.46'		210+59.11	3001825.473	713566.267
L7	210+59.11	3001825.4727	713566.2668		S83°02'12"W 607.52'	216+66.63	3001751.820	712963.229
C13	216+66.63	3001751.8198	712963.2286	R=2500.00' Δ=2°45'10" L=120.11' T=60.07'		217+86.74	3001734.400	712844.399
L8	217+86.74	3001734.4002	712844.3994		S80°17'02"W 59.02'	218+45.76	3001724.440	712786.226
C14	218+45.76	3001724.4396	712786.2260	R=3500.00' Δ=6°40'30" L=407.74' T=204.10'		222+53.51	3001632.398	712389.242
L9	222+53.51	3001632.3975	712389.2424		S73°36'32"W 98.97'	223+52.48	3001604.468	712294.290
C15	223+52.48	3001604.4677	712294.2900	R=2500.00' Δ=2°35'10" L=112.84' T=56.43'		224+65.32	3001570.193	712186.791
L10	224+65.32	3001570.1934	712186.7912		S71°01'22"W 485.10'	229+50.43	3001412.442	711728.053
C16	229+50.43	3001412.4420	711728.0529	R=5000.00' Δ=1°37'14" L=141.43' T=70.72'		230+91.85	3001364.566	711594.982
C17	230+91.85	3001364.5664	711594.9818	R=5000.00' Δ=1°37'28" L=141.77' T=70.89'		232+33.62	3001316.580	711461.590
L11	232+33.62	3001316.5803	711461.5895		S71°01'36"W 570.91'	238+04.53	3001130.961	710921.693
C18	238+04.53	3001130.9611	710921.6927	R=244.00' Δ=10°16'05" L=43.73' T=21.92'		238+48.26	3001113.124	710881.832
L12	238+48.26	3001113.1245	710881.8321		S60°45'31"W 75.65'	239+23.91	3001076.173	710815.826
C19	239+23.91	3001076.1725	710815.8263	R=244.00' Δ=10°15'51" L=43.71' T=21.91'		239+67.62	3001058.341	710775.981
L13	239+67.62	3001058.3413	710775.9814		S71°01'22"W 254.28'	242+21.90	3000975.652	710535.521
C20	242+21.90	3000975.6516	710535.5211	R=900.00' Δ=6°02'32" L=94.91' T=47.50'		243+16.81	3000949.573	710444.309
C21	243+16.81	3000949.5729	710444.3090	R=900.00' Δ=6°02'32" L=94.91' T=47.50'		244+11.72	3000923.494	710353.096
L14	244+11.72	3000923.4937	710353.0957		S71°01'22"W 92.26'	245+03.98	3000893.493	710265.854
C22	245+03.98	3000893.4928	710265.8537	R=500.00' Δ=10°06'30" L=88.21' T=44.22'		245+92.19	3000872.295	710180.345
C23	245+92.19	3000872.2951	710180.3447	R=900.00' Δ=15°32'21" L=244.09' T=122.80'		248+36.28	3000802.620	709947.194
C24	248+36.28	3000802.6199	709947.1938	R=1200.00' Δ=5°28'44" L=114.75' T=57.42'		249+51.02	3000760.267	709840.596

MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L15	249+51.02	3000760.2674	709840.5961		S71°04'15"W 1127.73'	260+78.75	3000394.435	708773.856
C25	260+78.75	3000394.4354	708773.8562	R=2000.00' Δ=1°21'20" L=47.31' T=23.66'		261+26.07	3000379.617	708728.923
L16	261+26.07	3000379.6174	708728.9230		S72°25'35"W 73.49'	261+99.56	3000357.428	708658.863
C26	261+99.56	3000357.4285	708658.8626	R=2000.00' Δ=1°24'13" L=48.99' T=24.50'		262+48.55	3000342.066	708612.344
L17	262+48.55	3000342.0660	708612.3438		S71°01'22"W 242.93'	264+91.48	3000263.066	708382.613
C27	264+91.48	3000263.0659	708382.6127	R=2000.00' Δ=1°24'13" L=48.99' T=24.50'		265+40.47	3000246.569	708336.484
L18	265+40.47	3000246.5686	708336.4842		S69°37'10"W 73.49'	266+13.96	3000220.975	708267.594
C28	266+13.96	3000220.9753	708267.5945	R=2000.00' Δ=1°24'13" L=48.99' T=24.50'		266+62.95	3000204.478	708221.466
L19	266+62.95	3000204.4781	708221.4659		S71°01'22"W 131.91'	267+94.87	3000161.581	708096.723
C29	267+94.87	3000161.5812	708096.7225	R=150.00' Δ=31°29'39" L=82.45' T=42.30'		268+77.32	3000115.204	708029.805
L20	268+77.32	3000115.2036	708029.8052		S39°31'43"W 37.57'	269+14.89	3000086.224	708005.892
C30	269+14.89	3000086.2240	708005.8919	R=150.00' Δ=31°30'53" L=82.51' T=42.33'		269+97.40	3000039.829	707938.924
L21	269+97.40	3000039.8289	707938.9237		S71°02'36"W 97.34'	270+94.74	3000008.207	707846.859
C31	270+94.74	3000008.2066	707846.8593	R=150.00' Δ=31°30'53" L=82.51' T=42.33'		271+77.25	3000003.660	707765.517
L22	271+77.25	3000003.6601	707765.5169		N77°26'30"W 37.25'	272+14.49	3000011.759	707729.162
C32	272+14.49	3000011.7585	707729.1619	R=150.00' Δ=31°32'07" L=82.56' T=42.35'		272+97.05	3000007.194	707647.769
L23	272+97.05	3000007.1945	707647.7687		S71°01'22"W 155.12'	274+52.17	2999956.752	707501.082
C33	274+52.17	2999956.7518	707501.0824	R=2000.00' Δ=20°24'00" L=712.09' T=359.86'		281+64.26	2999848.665	706801.039
L24	281+64.26	2999848.6655	706801.0385		N88°34'38"W 460.89'	286+25.15	2999860.110	706340.295
C34	286+25.15	2999860.1099	706340.2950	R=2500.00' Δ=10°59'19" L=479.47' T=240.47'		291+04.61	2999826.120	705862.771
C35	291+04.61	2999826.1201	705862.7715	R=1000.00' Δ=8°22'08" L=146.06' T=73.16'		292+50.68	2999791.433	705721.020
L25	292+50.68	2999791.4334	705721.0197		S72°03'56"W 137.86'	293+88.53	2999748.983	705589.862
C36	293+88.53	2999748.9834	705589.8621	R=1000.00' Δ=11°40'25" L=203.74' T=102.22'		295+92.28	2999667.000	705403.727
L26	295+92.28	2999666.9996	705403.7274		S60°23'31"W 451.64'	300+43.92	2999443.861	705011.061

RAILROAD AVE ALIGNMENT CONSTRUCTION BASELINE DATA

NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C3	100+00.00	3002240.6145	716148.4032	R=10725.50' Δ=2°26'32" L=457.17' T=228.62'		104+57.17	3002194.965	715693.548
L3	104+57.17	3002194.9653	715693.5483		S83°02'52"W 1152.86'	116+10.04	3002055.423	714549.160
C4	116+10.04	3002055.4226	714549.1602	R=90.00' Δ=45°49'03" L=71.97' T=38.03'		116+82.01	3002074.685	714481.792
C5	116+82.01	3002074.6848	714481.7923	R=240.00' Δ=27°39'24" L=115.85' T=59.08'		117+97.86	3002165.938	714412.259

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	41	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HDI(ALN).DWG Plotted on 30-Oct-2020 12:28 PM

CURVE TABLE			
Curve #	Delta	Radius	Length
1	19°57'37"	68.00	23.69
2	35°29'57"	45.00	27.88
3	33°42'30"	60.00	35.30
4	31°03'40"	7.00	3.79
5	23°40'37"	50.00	20.66
6	23°40'07"	56.00	23.13
7	75°20'10"	50.00	65.74
8	31°31'17"	35.00	19.26
9	37°54'56"	16.00	10.59
10	114°11'03"	7.00	13.95
11	27°59'20"	60.00	29.31
12	29°00'00"	60.00	30.37
13	86°12'10"	15.00	22.57
14	86°32'10"	15.00	22.66
15	89°58'24"	5.00	7.85
16	89°58'24"	5.00	7.85
17	61°41'18"	12.00	12.92
18	67°15'49"	8.00	9.39
19	132°50'34"	9.00	20.87
20	106°53'16"	9.00	16.79
21	86°09'08"	6.00	9.02
22	89°57'58"	35.00	54.96
23	42°53'52"	9.00	6.74
24	95°02'50"	2.00	3.32
25	90°00'00"	20.00	31.42
26	90°15'25"	35.00	55.13
27	84°15'39"	15.00	22.06
28	84°15'39"	15.00	22.06
29	90°00'00"	15.00	23.56
30	84°57'36"	15.00	22.24
31	90°00'00"	2.00	3.14
32	95°35'09"	5.00	8.34
33	90°00'00"	2.00	3.14
34	79°40'23"	5.00	6.95
35	11°36'55"	410.00	83.12
36	10°32'51"	75.00	13.81
37	15°59'32"	75.00	20.93
38	90°00'00"	2.00	3.14
39	34°18'37"	16.00	9.58
40	35°32'18"	24.00	14.89
41	6°51'46"	345.00	41.32
42	4°03'05"	335.00	23.69
43	18°29'13"	180.50	58.24
44	12°14'22"	44.00	9.40
45	20°58'58"	36.00	13.18
46	9°24'01"	44.00	7.22
47	20°54'09"	36.00	13.13
48	16°28'58"	44.00	12.66
49	13°24'13"	189.50	44.33
50	9°07'18"	155.00	24.68
51	8°35'08"	79.00	11.84
52	8°35'08"	85.00	12.74
53	11°23'38"	165.00	32.81
54	84°12'36"	15.00	22.05
55	8°12'16"	64.00	9.16
56	36°53'10"	32.01	20.61
57	96°31'51"	45.00	75.82
58	85°39'11"	40.00	59.80
59	53°48'07"	60.00	56.34
60	64°19'02"	15.00	16.84

CURVE TABLE			
Curve #	Delta	Radius	Length
61	92°50'05"	5.00	8.10
62	34°20'58"	60.00	35.97
63	109°33'51"	55.00	105.17
64	109°33'51"	52.00	99.44
65	109°33'51"	29.00	55.46
66	85°07'19"	36.00	53.48
67	85°07'19"	24.00	35.66
68	90°00'00"	3.00	4.71
69	21°15'35"	46.00	17.07
70	90°31'59"	5.00	7.90
71	90°00'00"	3.00	4.71
72	21°59'40"	20.00	7.68
73	91°41'11"	5.00	8.00
74	25°04'32"	26.00	11.38
75	92°39'19"	26.00	42.05
76	74°42'45"	3.00	3.91
77	73°56'15"	3.00	3.87
78	24°22'46"	677.00	288.06
79	10°31'56"	500.00	91.91
80	94°16'51"	3.00	4.94
81	87°20'01"	3.00	4.57
82	14°55'43"	643.00	167.53
83	91°08'31"	5.00	7.95
84	83°59'08"	5.00	7.33
85	92°39'54"	17.00	27.49
86	87°21'37"	12.00	18.30

TRAVERSE DATA				
Point #	Elevation	Northing	Easting	Raw Description
1	119.35	3002217.5200	716193.1500	MTRV DH
2	118.51	3002188.0392	715864.1609	MTRV DH
3	117.39	3002173.6706	715444.8078	MTRV PK
4	120.95	3002132.3392	715057.2815	MTRV PK
5	119.21	3002070.3990	714605.5087	MTRV PK NAIL
6	119.74	3002036.3528	714364.3153	MSTN
7	119.06	3002022.3195	714129.6199	MTRV
8	119.55	3001894.5909	714101.2110	MTRV
9	119.84	3001873.1058	713905.7035	MTRV
10	119.60	3001829.8025	713651.2220	MTRV
11	120.35	3001810.8521	713405.8682	MTRV
12	120.00	3001771.3121	713160.6460	MTRV
13	120.86	3001745.3373	712876.3708	MTRV
14	120.27	3001679.7211	712544.0015	MTRV
15	122.03	3001589.4116	712250.5910	MTRV
16	120.65	3001457.6447	711835.8242	MTRV
17	121.64	3001294.8552	711407.8606	MTRV
18	123.06	3001126.9033	710885.0359	MTRV
20	127.94	3000843.3650	710078.0325	MTRV
21	128.98	3000738.5591	709765.1341	MTRV
22	130.88	3000578.3008	709315.8567	MTRV
23	132.68	3000458.2958	708945.2001	MTRV
24	132.64	3000317.6349	708574.3507	MTRV
25	132.96	3000189.6152	708158.9197	MTRV
26	133.35	3000047.3670	707782.2289	MTRV
27	133.61	2999920.5395	707398.8325	MTRV
28	135.73	2999841.2377	706972.5521	MTRV
29	133.51	2999859.8741	706564.5382	MTRV
30	133.58	2999869.3117	706238.6056	MTRV
34	N/A	3001221.5696	711179.7268	MTRV
35	123.18	3001200.1941	711113.1859	MTRV
36	125.18	3001002.5552	710568.9990	MTRV
37	129.61	3000653.1473	709525.6868	MTRV
38	131.76	3000516.4810	709124.9156	MTRV
39	133.30	3000101.8577	707926.5271	MTRV
40	133.14	2999975.1439	707563.9004	MTRV
41	132.89	2999866.4632	706336.9836	MTRV
50	120.17	3002030.3835	714264.4837	MTRV
51	135.48	3000098.5214	706240.9816	MTRV
52	147.76	2999531.4587	705924.5270	MTRV
53	N/A	2999768.5101	705644.7166	MTRV
54	129.40	2999665.5840	705381.7843	MTRV
55	132.99	2999439.9060	705437.7130	MTRV
56	130.17	2999594.2130	705399.4718	MTRV
57	137.12	2999893.6587	706153.1045	MTRV
58	117.53	3002042.7138	715502.3345	MTRV
59	117.10	3001619.0898	715564.3897	MTRV
60	113.62	3001525.3339	715530.0550	MTRV
61	121.02	3002286.6807	714450.3965	MTRV MPKN
62	122.27	3002117.9982	714968.8225	MTRV
63	N/A	2999074.1220	705762.2914	
64	N/A	2998917.0434	705629.7514	
65	N/A	3000211.5398	706471.8251	MTRV
66	135.82	3000102.9042	708017.7962	MTRV
67	129.76	2999951.4360	708157.5127	MTRV
68	118.48	3001808.0281	715507.6639	MTRV PK NAIL
70	137.73	2999862.4634	706065.8026	MTRV
71	122.83	3001109.5667	710849.5342	MTRV MMAG
72	121.70	3001378.5336	711647.0142	MTRV MRRS
73	119.06	3001837.4613	713596.3639	MTRV MRRS
74	133.84	3000669.4827	709385.2561	MTRV MDHL
75	129.61	3000719.6180	709532.1897	MTRV

COMMERCIAL AVE ALIGN CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L32	500+00.00	3002168.3340	715475.1454		S7°18'37"E 626.31'	506+26.31	3001547.116	715554.840

SOUTH RD ALIGN CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	600+05.02	3002130.1979	716183.6671	R=1400.00' Δ=2°19'35" L=56.84' T=28.43'		600+61.86	3002184.812	716167.921
L1	600+61.86	3002184.8121	716167.9214		N17°14'45"W 26.77'	600+88.63	3002210.378	716159.985
C2	600+88.63	3002210.3781	716159.9849	R=250.00' Δ=12°54'31" L=56.32' T=28.28'		601+44.96	3002261.843	716137.393
L2	601+44.96	3002261.8429	716137.3933		N30°09'16"W 88.89'	602+33.85	3002338.705	716092.740

CONCORD ROAD CONST BL CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L27	400+00.00	3000286.4420	706651.3322		S74°38'10"W 107.53'	401+07.53	3000257.952	706547.646
C37	401+07.53	3000257.9523	706547.6458	R=660.00' Δ=47°54'15" L=551.82' T=293.19'		406+59.35	2999918.418	706133.052
L28	406+59.35	2999918.4181	706133.0522		S26°43'55"W 282.70'	409+42.04	2999665.934	706005.890
C38	409+42.04	2999665.9345	706005.8899	R=5240.00' Δ=0°57'11" L=87.16' T=43.58'		410+29.20	2999587.767	705967.333
L29	410+29.20	2999587.7669	705967.3327		S25°46'44"W 29.53'	410+58.73	2999561.179	705954.492

CONCORD ROAD RAMP CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L30	800+00.00	2999872.7391	706110.0462		N63°16'05"W 27.54'	800+27.54	2999885.127	706085.449
C39	800+27.54	2999885.1272	706085.4493	R=20.00' Δ=31°41'10" L=11.06' T=5.68'		800+38.60	2999887.190	706074.726
C40	800+38.60	2999887.1901	706074.7258	R=2139.69' Δ=5°59'07" L=223.52' T=111.86'		802+62.12	2999855.851	705853.515
C41	802+62.12	2999855.8512	705853.5152	R=20.00' Δ=89°41'42" L=31.31' T=19.89'		802+93.43	2999832.489	705837.705
L31	802+93.43	2999832.4893	705837.7051		S10°45'34"E 10.72'	803+04.15	2999821.955	705839.707

HARTWELL AVE DRIVEWAY ALIGN CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L31	600+00.00	3001111.0518	710854.9579		S70°48'05"W 392.63'	603+92.63	3000981.937	710484.164
C42	603+92.63	3000981.9373	710484.1643	R=900.00' Δ=7°05'56" L=111.51' T=55.83'		605+04.14	3000951.877	710376.856
C43	605+04.14	3000951.8770	710376.8563	R=500.00' Δ=7°53'27" L=68.86' T=34.49'		605+73.00	3000932.859	710310.730
L32	605+73.00	3000932.8591	710310.7299		S70°00'34"W 9.22'	605+82.22	3000929.706	710302.064

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	42	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HDI(ALN).DWG Plotted on 30-Oct-2020 12:28 PM

LIMIT OF WORK
STA 600+49.09
N: 3002172.5955
E: 716171.6527

MEET EXIST +56, 44.9' RT
PT +64.97 37.9' RT
MEET EXIST +57, 25.4' RT
PC +64.83 26.0' RT
PT +61.86
L1
MEET EXIST +78, 49.0' RT
PCC +84.96 42.5' RT
EL. 118.72
TRAV #1
3" REVEAL
PCC +96.31 38.1' RT
EL. 119.14
MEET EXIST +02, 61.5' RT
MEET EXIST +08, 57.4' RT
PC +88.63
601
100
C1
MEET EXIST +49, 13.8' LT
PC +73.84 14.8' LT
EL. 119.04
PC +64.02 26.2' LT
PT, MEET EXIST +66, 37.8' LT
MEET EXIST +31, 56.7' LT
PC +27.70 50.5' LT
PT +25.63 40.3' LT
PC +35.18 30.1' LT
PT +53.53 25.0' LT
EL. 119.59
PT +50.56 11.5' LT
EL. 119.19
EL. 118.86
EL. 119.42
BC 119.18
101
PT +03.27 11.5' RT
EL. 119.09
EL. 118.86
RAILROAD AVE CONSTR ℄
PT +07.65 17.0' RT
BC 119.25
MEET EXIST +75, 18.6' RT
23.0'
EL. 118.77
EL. 118.54
102
EL. 118.45
EL. 118.22
PC +25.83 11.5' LT
EL. 118.22
PC +81.78 11.5' LT
MEET EXIST +41, 33.3' LT
PT +40.83 25.5' LT
EL. 118.41
EL. 118.54
+84
+07
+03
PC +87.92 11.5' RT
EL. 118.12
EL. 117.89
103
PT +29.45 11.5' RT
EL. 117.57
EL. 117.62
EL. 117.39
104
C3
EL. 117.62
EL. 117.39
MEET EXIST +66, 34.9' LT
PT +66.77 25.6' LT
EL. 118.23
TRAV #2
EL. 117.89
+47
EL. 117.57
EL. 117.39
EL. 117.80
+11
EL. 117.39
+36
S88°02'15"W 419.60'
SURVEY TRAVEROSE
2.00%
CONTINUED BELOW
PC +28.50 11.5' RT
BEGIN SUPER STA 104+45
EL. 117.64
PCC +39.04 17.8' RT
MEET EXIST +38, 26.6' RT
EL. 118.13
PT +92.92 16.5' RT
EL. 117.92
PC +24.46 16.5' RT
EL. 117.64
PCC +39.04 17.8' RT
MEET EXIST +38, 26.6' RT
EXISTING 2 STORY WOOD BUILDING
EXISTING 1 1/2 STORY WOOD BUILDING
BIT PARKING LOT
S84°52'46"W 330.31'
SURVEY TRAVERSE
1963 TOWN LAYOUT
1917 COUNTY LAYOUT
LOOMIS STREET
RAILROAD AVENUE
SOUTH ROAD
C2
PT +44.96
SOUTH ROAD CONSTR ℄
L2
602
602+33.85
601+21.57 SOUTH RD ALIGN=
100+00.18 RAILROAD AVE ALIGNMENT
LIMIT OF PAVING
STA 100+39.93
N: 3002237.4003
E: 716108.5990
BENCHMARK: SE COR. TCB CONC. PAD
EL=122.79'
BENCHMARK: BOLT OF HYDRANT
EL=119.57'
CONTINUED ON SHEET NO. 43
CONTINUED ABOVE
CONTINUED ON SHEET NO. 44
COMMERCIAL AVENUE
COMMERCIAL AVE CONSTR ℄
L32
MEET EXIST +67, 20.7' LT
+67.33, 20.7 LT
EL. 116.34
PC +46.56 12.8' LT
BC 116.33
END CURB +79.11
EL. 116.88
EL. 116.58
PC +46.60 12.6' RT
BC 116.52
BC 116.77
BC 117.11
BC 116.61
EL. 116.71
EL. 116.74
EL. 116.91
EL. 117.01
BC 117.77
EL. 116.93
PT +29.11 11.5' LT
EL. 117.94
10.0'
N23°42'54"W 143.03'
SURVEY TRAVERSE
PT +24.54 11.5' LT
BC 117.51
EL. 117.04
EL. 117.06
EL. 117.31
EL. 117.62
EL. 117.98
EL. 118.54
EL. 118.07
EL. 118.31
EL. 118.63
L3
PT +62.08 11.5' LT
PC +89.08 11.5' LT
EL. 117.57
EL. 117.85
EL. 117.62
EL. 118.07
+07
EL. 118.86
EL. 118.63
PC +68.84 11.5' RT
EL. 117.29
EL. 117.06
EL. 117.54
+73
EL. 117.31
108
RAILROAD AVE CONSTR ℄
107
+00
+71
EL. 116.95
EL. 116.93
PT +10.37 11.5' RT
EL. 117.08
EL. 116.71
TRAV #3
EL. 116.81
END SUPER STA 106+95
106+77.20 RAILROAD AVE ALIGNMENT=
500+00.00 COMMERCIAL AVE ALIGN
PT +07.08 11.5' RT
EL. 118.19
PC +22.08 26.5' RT
MEET EXIST +22, 41.5' RT
EL. 118.65
PT +53.90 25.2' RT
MEET EXIST +52, 41.8' RT
N83°19'44"E 479.23'
SURVEY TRAVERSE
1963 TOWN LAYOUT
BRICK BUILDING
HIGHLAND AVENUE
LOCATION OF SIDELINE (NO ACCEPTANCE)
LOCATION OF SIDELINE (NO ACCEPTANCE)
EXIST TOWN LAYOUT
LOCATION OF TOWN LAYOUT
BIT PARKING LOT
BIT CURB
GRAVEL
CONCRETE PAVERS
TAYLOR & LLOYD, INC. INTERNATIONAL
COMMERCIAL AVE.
30"TREE
36"TREE
14"TREE
12"TREE
20" DEC
BENCHMARK: SE COR. TCB CONC. PAD
EL=122.79'
BENCHMARK: BOLT OF HYDRANT
EL=119.57'

LEGEND:
(#) CURVE NUMBER (SEE TABLE SHEET 41)

0 20 50 100
SCALE: 1" = 20'

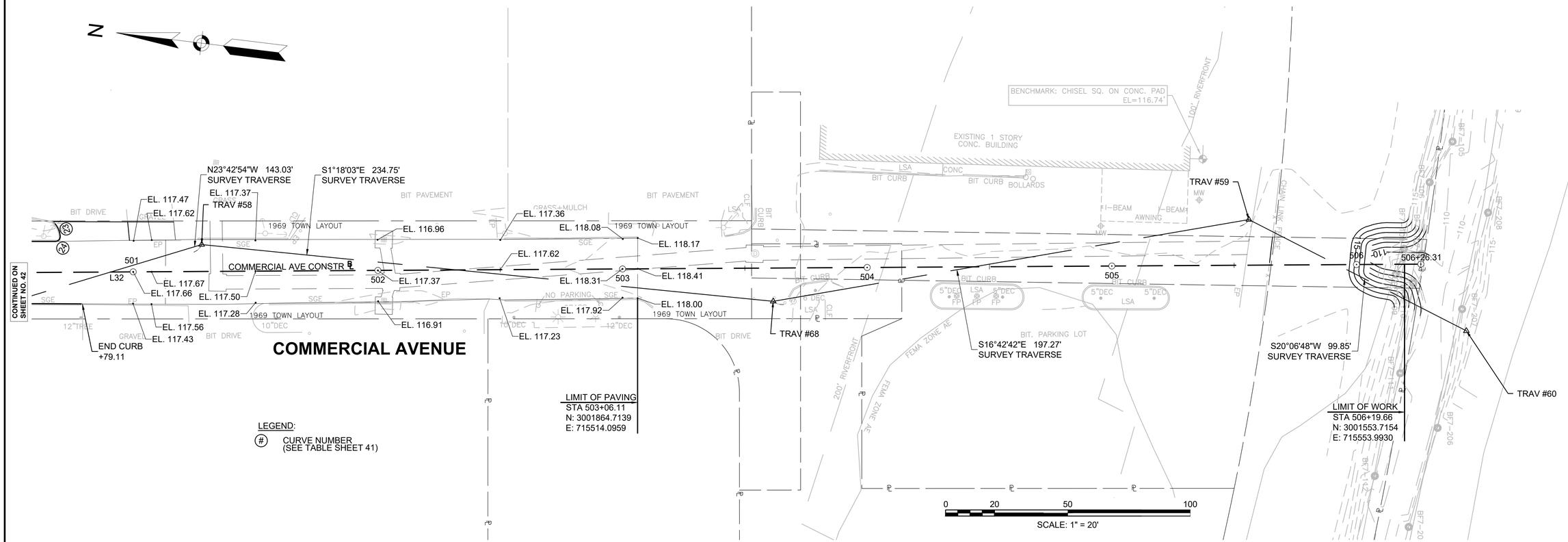
0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	43	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HD(ALN).DWG Plotted on 30-Oct-2020 12:28 PM

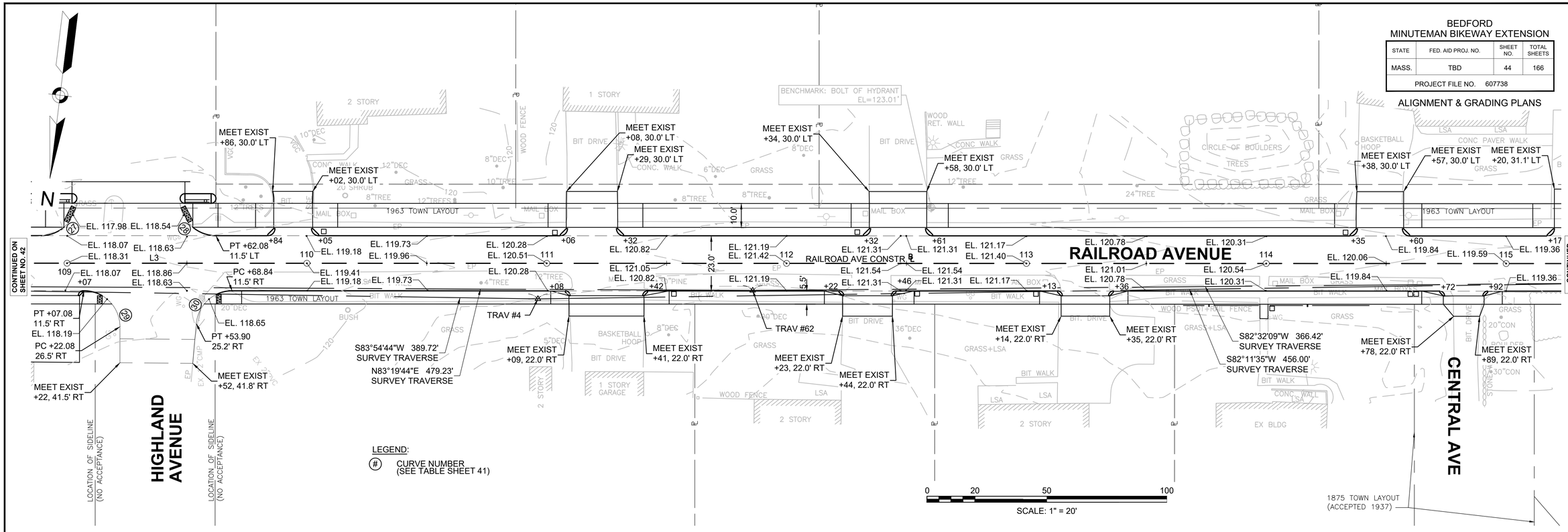


BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	44	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HDI(ALN).DWG Plotted on 30-Oct-2020 12:28 PM

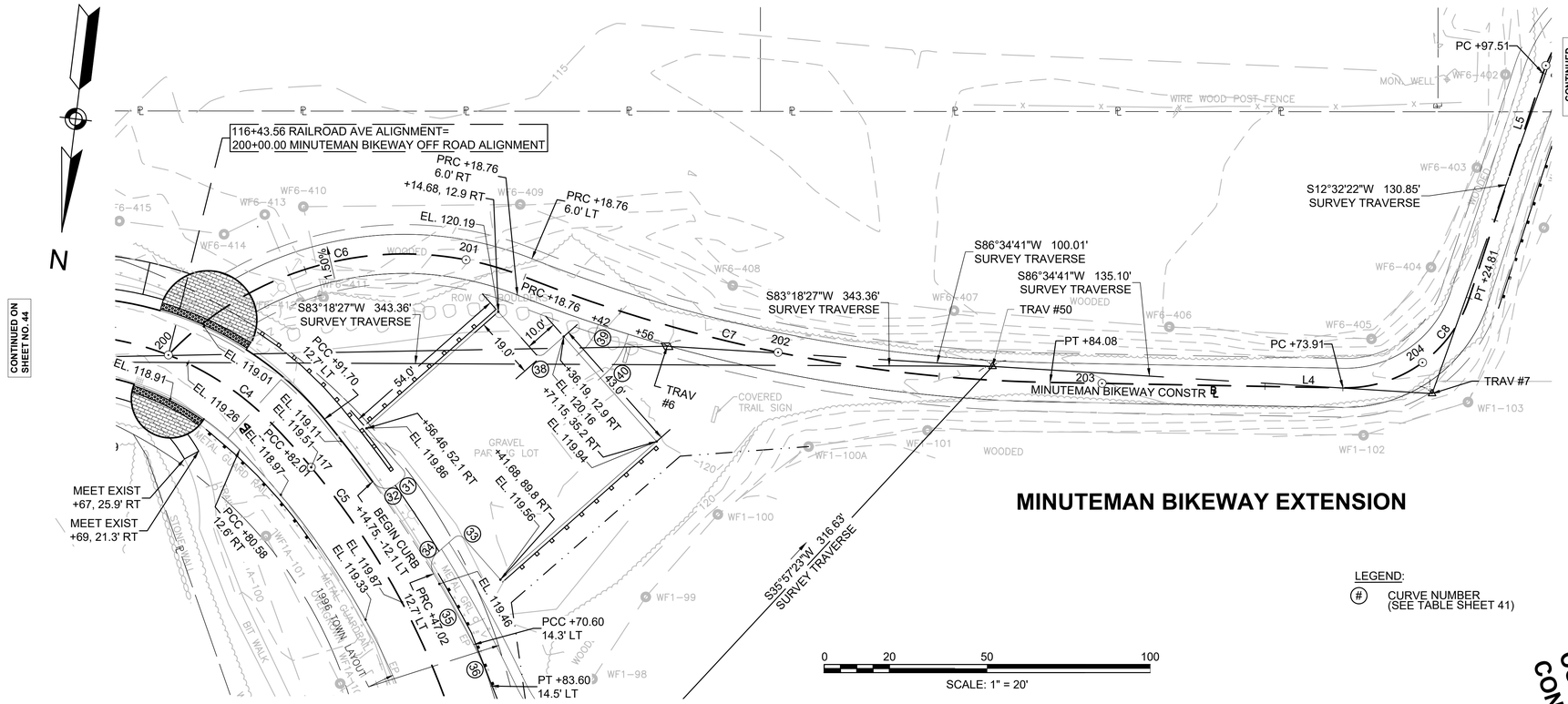


BEDFORD
MINUTEMAN BIKEWAY EXTENSION

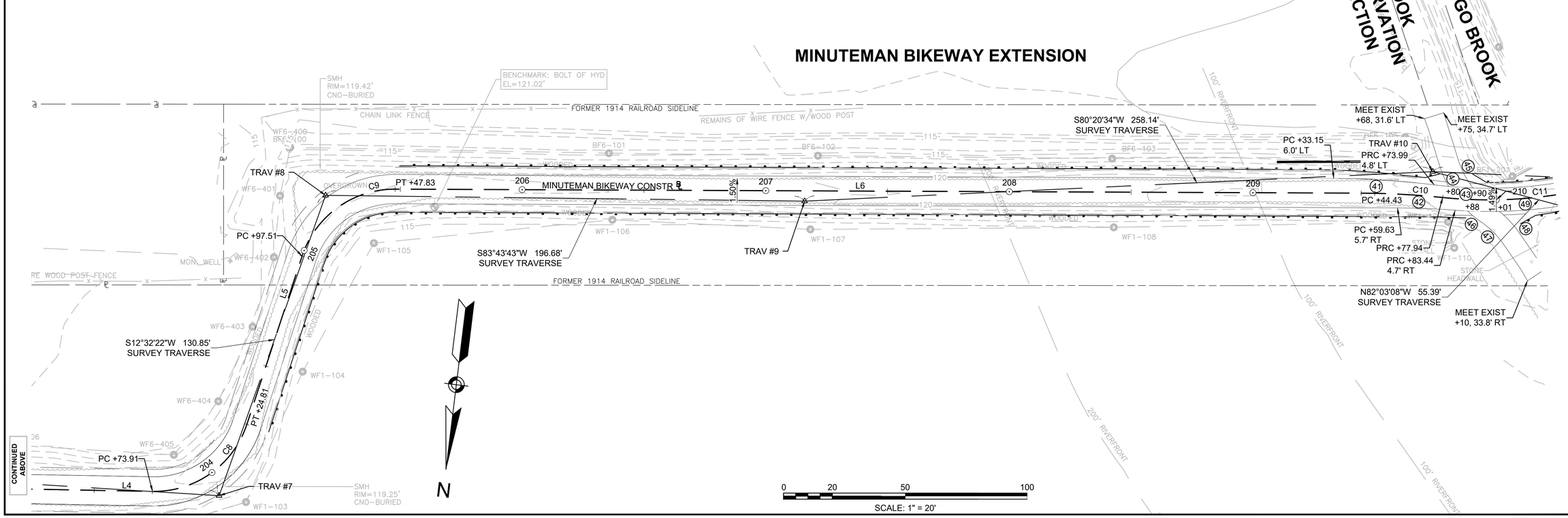
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	45	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HD(ALN).DWG Plotted on 30-Oct-2020 12:28 PM



LEGEND:
(#) CURVE NUMBER (SEE TABLE SHEET 41)



BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	46	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HD(ALN).DWG Plotted on 30-Oct-2020 2:38 PM

MINUTEMAN BIKEWAY EXTENSION

N

ELM BROOK CONSERVATION CONNECTION

MONGO BROOK

WASHINGTON STREET CONNECTION

WINCHESTER DRIVE CONNECTION

MEET EXIST +68, 31.6' LT

MEET EXIST +75, 34.7' LT

MEET EXIST +36, 31.9' LT

MEET EXIST +42, 33.1' LT

PT +65.36
6.0' LT

S85°35'00"W 246.08'
SURVEY TRAVERSE

TRAV #10

PRC +73.99
4.8' LT

PRC +33.43
4.9' LT

PC +44.43

PC +59.63
5.7' RT

PRC +77.94

PRC +83.44
4.7' RT

N82°03'08"W 55.39'
SURVEY TRAVERSE

MEET EXIST +10, 33.8' RT

TRAV #73

MEET EXIST +17, 29.6' RT

PRC +30.28
PRC +26.66
4.8' RT

PT +59.11

PT +51.95
5.8' RT

S82°02'53"W 192.35'
SURVEY TRAVERSE

TRAV #11

BENCHMARK: X-CUT ON SMH
EL=120.26'

SMH
RIM=120.28'

S80°50'25"W 248.39'
SURVEY TRAVERSE

TRAV #12

S84°46'45"W 285.46'
SURVEY TRAVERSE

MINUTEMAN BIKEWAY CONSTR ℄

211 212 213 214 215 L7

C10 C11 C12 C13 C14 L8

1.50%

WOODED

WIRE FENCE W/WOOD POST

WOOD POST WIRE FEN

FORMER 1914 RAILROAD SIDELINE

REMAINS OF WOOD POST WIRE FENCE

CHAIN LINK FENCE

GATE WOOD FENCE

STOCKADE FENCE

STONE HEADWALL

WF1-110 WF1-103

WF2-101 WF2-102 WF2-103

BF1-203 BF1-103

100' RIVERFRONT

200' RIVERFRONT

TO WASHINGTON STREET

CONTINUED ON SHEET NO. 45

CONTINUED BELOW

0 20 50 100
SCALE: 1" = 20'

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

N

MINUTEMAN BIKEWAY EXTENSION

BENCHMARK: X-CUT ON SMH
EL=120.72'

SMH
RIM=120.64'

SMH
RIM=120.69'

S84°46'45"W 285.46'
SURVEY TRAVERSE

215 L7 216 MINUTEMAN BIKEWAY CONSTR ℄ PC +66.63 217 C13 PT +86.74 218 L8 PC +45.76 219 220 C14 221

1.50% 1.50%

TRAV #13

TRAV #14

S78°49'56"W 338.78'
SURVEY TRAVERSE

S72°53'31"W 306.99'
SURVEY TRAVERSE

WF5-215 WF5-214 WF5-213 WF5-212 WF5-211

WF2-104 WF2-105 WF2-106 WF2-107 WF2-108

FEMA ZONE AE

FEMA ZONE AO

FORMER 1914 RAILROAD SIDELINE

WOOD POST WIRE FENCE

CONTINUED ABOVE

CONTINUED ON SHEET NO. 47

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	47	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HD(ALN).DWG Plotted on 30-Oct-2020 12:29 PM

MINUTEMAN BIKEWAY EXTENSION

N

SMH RIM=120.69'
WF5-210
WF5-208
WF5-209
WF5-211
WF5-207
WF5-206
WF5-205
WF5-204
WF5-108
WF2-209
WF2-210
WF2-211
115
120
FEMA ZONE AE
FORMER 1914 RAILROAD SIDELINE
SMH RIM=121.96'
BENCHMARK: X-CUT ON SMH EL=122.00'
CONTINUED ON SHEET NO. 46
C14
221
MINUTEMAN BIKEWAY CONSTR ℄
222
PT +53.51
223
L9
PC +52.48
TRAV #15
224
C15
PT +65.32
225
L10
226
CONTINUED BELOW
TRAV #14
S72°53'31"W 306.99'
SURVEY TRAVERSE
S72°22'32"W 435.19'
SURVEY TRAVERSE
MEET EXIST
+17, 27.6' RT
MEET EXIST
+05, 30.7' RT
EP
PUMP STATION
CHAIN LINK FENCE
BIT DRIVE
100' BZ

0 20 50 100
SCALE: 1" = 20'

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

MINUTEMAN BIKEWAY EXTENSION

N

SMH RIM=121.66'
WF5-204
WF5-203
WF5-202
WF3-89
WF3-88
WF3-86
WF3-87
WF3-85
WF3-91
WF3
120
FORMER 1914 RAILROAD SIDELINE
CONTINUED ABOVE
L10
226
227
228
MINUTEMAN BIKEWAY CONSTR ℄
229
PC +50.43
230
C16
231
PRC +91.85
C17
TRAV #16
S72°22'32"W 435.19'
SURVEY TRAVERSE
MEET EXIST
+16, 11.1' LT
MEET EXIST
+24, 11.2' LT
WOOD POST
GATE
WOOD POST
BOULDER (TYP)
S67°15'59"W 204.71'
SURVEY TRAVERSE
TRAV #72
S70°42'55"W 253.37'
SURVEY TRAVERSE
S69°10'27"W 457.88'
SURVEY TRAVERSE
MEET EXIST
+20, 13.7' RT
MEET EXIST
+27, 12.0' RT
100' BZ
CONTINUED ON SHEET NO. 48

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	48	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HD(ALN).DWG Plotted on 30-Oct-2020 12:29 PM

MINUTEMAN BIKEWAY EXTENSION

N

FORMER 1914 RAILROAD SIDELINE

BENCHMARK: X-CUT ON SMH
EL=122.43'

SMH
RIM=122.39'

S70°42'55"W 253.37'
SURVEY TRAVERSE

TRAV #17

S72°11'27"W 239.62'
SURVEY TRAVERSE

CONTINUED ON SHEET NO. 47

231 C17 232 PT +33.62 233 234 235 236 L11 237

MINUTEMAN BIKEWAY CONSTR ℄

S69°10'27"W 457.88'
SURVEY TRAVERSE

TRAV #34

S72°11'27"W 69.89'
SURVEY TRAVERSE

TRAV #35

S72°11'27"W 239.63'
SURVEY TRAVERSE

CONTINUED BELOW

REMAINS OF WOOD POST WIRE FENCE
WOOD POST
CONC. POST
GATE POST
GRASS
WOODED
100' BZ

WF5-107 WF5-106 WF5-105 WF5-103 WF5-104 WF5-102
WF3-91 WF3-92 WF3-93 WF3-94 WF3-95 WF3-96 WF3-97 WF3-98 WF3-99 WF3-100 WF3-101 WF3-103

120 125

0 20 50 100
SCALE: 1" = 20'

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

MINUTEMAN BIKEWAY EXTENSION

N

WF4-108 WF4-107 WF4-106 WF4-105 WF4-104 WF4-103 WF4-102

FORMER 1914 RAILROAD SIDELINE

CONTINUED ABOVE

MEET EXIST
+77, 13.0' LT

MEET EXIST
+91, 13.0' RT

S63°58'20"W 39.51'
SURVEY TRAVERSE

EL. 122.60

PT +48.26

C19 PT +67.62 240 241 MINUTEMAN BIKEWAY CONSTR ℄ 242 L13 PC +21.90 C20

PC +23.91

L12 239

EL. 122.43 EL. 122.63 EL. 122.94 EL. 123.50 EL. 124.58 EL. 125.12

EL. 124.05

L11 237 238 C18 PC +04.53 600 EL. 122.63 EL. 122.57 601 602 HARTWELL RD ACCESS DRIVE CONSTR ℄ 603 TRAV #36 L31

TRAV #71

S72°11'27"W 239.63'
SURVEY TRAVERSE

S69°07'13"W 300.25'
SURVEY TRAVERSE

TRAV #18

S68°31'20"W 339.62'
SURVEY TRAVERSE

MEET EXIST
+72, 18.3' RT

MEET EXIST
+94, 33.8' RT

PCC +31.81
12.4' RT

PT +51.02
6.0' RT

CONTINUED ON SHEET NO. 49

SMH
RIM=125.58'
INV=118.1' PIPE
INV=118.1' PIPE

FP
ROW OF BUILDING
POST
ST
GRASS
WOODED
CHAIN LINK FENCE
100' BZ

WF5-102 WF5-100 WF5-98

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	49	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

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MINUTEMAN BIKEWAY EXTENSION

HARTWELL ROAD

2010 TOWN LAYOUT (ACCEPTED 2014)

CONTINUED ON SHEET NO. 48

CONTINUED BELOW

BENCHMARK: PKNAIL IN UP
EL=127.18

SMH
RIM=125.58'
INV=118.1' PIPE
INV=118.1' PIPE

BENCHMARK: SPIKE SET IN TREE
EL=130.26'

242 L13 PC +21.90 C20 243 PRC +16.81 C21 244 L14 PT +11.72 TRAV #19 EL. 127.06 245 PC +03.98 C22 246 PRC +92.19 C23 247 248 MINUTEMAN BIKEWAY CONSTR ℄ 249

EL. 124.58
EL. 125.12
EL. 125.75
EL. 127.39

603 TRAV #36 L31 604 PC +92.63 HARTWELL RD CONSTR ℄ C42 605 PRC +04.14 C43 L32 605+82.22 PT +73.00

PCC +32.93
7.5' LT

PCC +44.40
6.0' RT

MEET EXIST
+55, 31.4' LT

MEET EXIST
+58, 66.8' RT

TRAV #20

S72°02'07"W 516.13'
SURVEY TRAVERSE

1.50%

FORMER 1914 RAILROAD SIDELINE

18"OAK(DEAD) BOULDER (TYP)

30"OAK

STONE WALL

STONE WALL

WOODED

CHAIN LINK FENCE

BOLLARDS

GRASS

GATE POST

BIKE PATH

VGC

EP

100' BZ

SMH
RIM=127.12'

WFIW 7-103

WFIW 7-102

WF4-100

WF4-101

WF4-102

WF4-103

LEGEND:

(#) CURVE NUMBER
(SEE TABLE SHEET 41)

0 20 50 100
SCALE: 1" = 20'

MINUTEMAN BIKEWAY EXTENSION

CONTINUED ABOVE

CONTINUED ON SHEET NO. 50

BENCHMARK: SPIKE SET IN TREE
EL=130.26'

BENCHMARK: SPIKE SET IN TREE
EL=130.97'

FORMER 1914 RAILROAD SIDELINE

C23 248 MINUTEMAN BIKEWAY CONSTR ℄ PRC +36.28 C24 249 PT +51.02 250 251 MINUTEMAN BIKEWAY CONSTR ℄ 252 253 L15

1.50%

TRAV #21

TRAV #37

TRAV #75

N83°21'54"W 141.38'
SURVEY TRAVERSE

S5°35'15"W 66.79'
SURVEY TRAVERSE

WFIW8-102
WFIW8-101
WFIW8-100
WFIW8-103
WFIW8-104
WFIW8-105
WFIW15-107
WFIW15-108
WFIW15-109
WFIW15-106
WFIW15-105
WFIW15-104

WF16-100
WF16-101
WF16-102
WF16-103
WF16-104
WF16-105
WF16-106
WF16-107

WOOD GUA

100' BZ

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	50	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

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MINUTEMAN BIKEWAY EXTENSION

N

WF13-107, WF13-106, WF13-105, WF13-104, WF13-103, WF13-102

BENCHMARK: SPIKE SET IN TREE EL=133.86'

FORMER 1914 RAILROAD SIDELINE — REMAINS OF WIRE FENCE — WIRE

CONCRETE POST "W"

CONTINUED ON SHEET NO. 49

WFIW15-105, WFIW15-104, WFIW15-103, WFIW15-102, WFIW15-101, WFIW14-107, WFIW14-106, WFIW14-105, WFIW14-104, WFIW14-103, WFIW14-102, WFIW14-101

MEET EXIST +16, 15.1' LT

MEET EXIST +22, 15.2' LT

TRAV #22

BOULDERS

253 L15 254 +13 +35 255 256 257 258

MINUTEMAN BIKEWAY CONSTR ℄

TRAV #38

24" RCP

WFIW8-105, WFIW8-106, WFIW8-107, WFIW8-109, WFIW8-108

WFIW9-102, WFIW9-103, WFIW9-104, WFIW9-101, WFIW9-100, WFIW9-106, WFIW9-105

BOULDERS

N83°21'54"W 141.38' SURVEY TRAVERSE

S5°35'15"W 66.79' SURVEY TRAVERSE

TRAV #37

MEET EXIST +18, 24.1' RT

MEET EXIST +25, 24.1' RT

100' BZ

FORMER 1914 RAILROAD SIDELINE

WOOD GUARDRAIL — VGC — WOOD GUARDRAIL — VGC

TRAV #75

TRAV #74

CONTINUED BELOW

LEGEND:

(#) CURVE NUMBER (SEE TABLE SHEET 41)

0 20 50 100

SCALE: 1" = 20'

MINUTEMAN BIKEWAY EXTENSION

N

WF13-100, WF13-102, WF13-101

BENCHMARK: SPIKE SET IN TREE EL=133.86'

WIRE FENCE — FORMER 1914 RAILROAD SIDELINE

CONCRETE POST "W"

CONTINUED ABOVE

259 L15 1.50% 260 1.50% MINUTEMAN BIKEWAY CONSTR ℄ 261 PC +78.75 C25 PT +26.07 L16 262 PC +99.56 C26 1.50% PT +48.55 1.50% 263 L17 264

TRAV #23

TRAV #24

WF12-106, WF12-105, WF12-110, WF12-104, WF12-109, WF12-108, WF12-103, WF12-102, WF12-107

100' BZ

CONTINUED ON SHEET NO. 51

0 20 50 100

SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	51	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

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MINUTEMAN BIKEWAY EXTENSION

FORMER 1914 RAILROAD SIDELINE

CONTINUED ON SHEET NO. 50

L17 264 265 PC +91.48 C27 PT +40.47 L18 1.50% 266 PC +13.96 C28 PT +62.95 267 MINUTEMAN BIKEWAY CONSTR ℄ L19 268 PC +94.87

S58°25'55"W 165.63'
SURVEY TRAVERSE

TRAV #25

MEET EXIST
+06, 41.2' LT

TRAV #66

269 L20 +03 +13 PT +77.32 C29

PT +57.72
23.6' RT

PT +56.77
26.5' RT

PT +46.20
49.2' RT

PC +92.26
70.1' RT

MEET EXIST
+92, 71.3' RT

22.0'

PC
MEET EXIST
+67, 65.5' RT

PC +70.76
64.4' RT

PC +72.82
64.9' RT

2015 TOWN LAYOUT

LAVENDER LANE

CONTINUED BELOW

BENCHMARK: SPIKE SET IN TREE
EL=134.69'

100' BZ

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

0 20 50 100
SCALE: 1" = 20'

MINUTEMAN BIKEWAY EXTENSION

TRAV #67

N42°41'20"W 206.07'
SURVEY TRAVERSE

MEET EXIST
+11, 40.7' LT

CONTINUED ABOVE

C30 270 PT +97.40 L21 MINUTEMAN BIKEWAY CONSTR ℄ 271 PC +94.74 C31

EL. 134.64

EL. 134.38

PT +77.25 272 L22 PC +14.49 C32

EL. 133.56

EL. 134.19

PT +59.22
18.7' RT

EL. 135.57

+85.70, 11.6 RT

+84.70, 22.5 RT

+84.18, 27.5 RT

+83.85, 30.5 RT

+82.01, 54.5 RT

TRAV #39

EL. 134.32

+78.20, 73.4 RT

+05.45, 11.6 RT

EL. 134.98

9.0'

+18.33, 29.5 RT

EL. 134.63

+07.16, 30.6 RT

+24.15, 53.1 RT

+10.27, 54.5 RT

24.0'

62.0'

117.0'

+14.12, 73.3 RT

EL. 133.74

S69°18'44"W 154.24'
SURVEY TRAVERSE

TRAV #26

S71°41'45"W 229.96'
SURVEY TRAVERSE

S89°20'35"W 91.28'
SURVEY TRAVERSE

BENCHMARK: SPIKE SET IN TREE
EL=136.24'

EL. 132.94

EL. 132.51

EL. 132.26

TRAV #40

273 PT +97.05 274 L23 1.50% PC +52.17 C33 1.50% 275

CONTINUED ON SHEET NO. 52

FORMER 1914 RAILROAD SIDELINE

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	52	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

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MINUTEMAN BIKEWAY EXTENSION

N

BENCHMARK: SPIKE SET IN TREE
EL=136.46'

FORMER 1914 RAILROAD SIDELINE

TRAV #27

EL. 133.00 EL. 133.08 EL. 133.28 EL. 133.48 EL. 133.68 EL. 133.88 EL. 134.08 EL. 134.20 EL. 134.12

TRAV #28

EL. 134.08

MINUTEMAN BIKEWAY CONSTR ℄

275 276 277 278 279 280

L23 PC +52.17 C33

1.50% 1.50%

EL. 132.94 EL. 133.06 EL. 133.26 EL. 133.46 EL. 133.66 EL. 133.86 EL. 134.06 EL. 134.26 EL. 134.38

EL. 134.30

EL. 134.14

FORMER 1914 RAILROAD SIDELINE

B7 V

20' BZ

CONTINUED ON SHEET NO. 51

CONTINUED BELOW

0 20 50 100
SCALE: 1" = 20'

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

MINUTEMAN BIKEWAY EXTENSION

N

WF11–116 WF11–115

BENCHMARK: SPIKE SET IN TREE
EL=135.45'

WF11–114 WF11–113 WF11–112 WF11–111 WF11–110 WF11–109 WF11–108 WF11–107 WF11–106 WF11–105 WF11–104 WF11–102

FORMER 1914 RAILROAD SIDELINE

EL. 134.12
TRAV #28
EL. 134.08

280 C33 281 PT +64.26 282 283 284 285 L24

MINUTEMAN BIKEWAY CONSTR ℄

N87°23'05"W 408.44'
SURVEY TRAVERSE

EL. 134.30

EL. 134.14

B7 V

WF10–102 WF10–103 WF10–104 WF10–105 WF10–106 WF10–107 WF10–108 WF10–109 WF10–101 WF10–100

TRAV #29

N88°20'29"W 227.65'
SURVEY TRAVERSE

TOWN OF E
398 CONCOR
MAP/LOT

CONTINUED ABOVE

CONTINUED ON SHEET NO. 53

0 20 50 100
SCALE: 1" = 20'

MINUTEMAN BIKEWAY EXTENSION

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	53	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HDI(ALN).DWG Plotted on 30-Oct-2020 12:30 PM

CONTINUED ON SHEET NO. 52

CONTINUED ON SHEET NO. 55

CONTINUED BELOW

291+28.05 MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT=
803+04.15 CONCORD ROAD RAMP

CONCORD ROAD

L=125'±

L24 MINUTEMAN BIKEWAY CONSTR ℄ 286

285 EL. 133.18 PC +25.15

N88°20'29"W 227.65'
SURVEY TRAVERSE

TRAV #41

EL. 124.47 EL. 124.49 EL. 125.01 EL. 126.66 EL. 129.16

N88°20'29"W 98.42'
SURVEY TRAVERSE

C34

287 288

TRAV #30
+18.75, 19.2 RT
EL. 136.79

N74°06'19"W 88.90'
SURVEY TRAVERSE

TRAV #57

EL. 136.38
+90.44, 28.8 RT
EL. 140.07
PT +88.15, 44.7 RT
PC +90.63, 48.1 RT

25.0' +15 +17 62.0'

PT +83.93, 74.3 RT
PC +87.24, 71.8 RT

+12.68, 80.9 RT
EL. 135.90

72.0'

S32°15'19"W 428.29'
SURVEY TRAVERSE

+38 +29 +2.00%

289 MINUTEMAN BIKEWAY CONSTR ℄
TRAV #70

N70°20'13"E 92.71'
SURVEY TRAVERSE

C39 PCC +38.60 CONCORD RD RAMP CONSTR ℄ C40

PC +27.54
407+10.49 CONCORD ROAD CONST BL=
800+00.00 CONCORD ROAD RAMP

PT +59.35

END SUPER
STA 407+29

EL. 130.86 EL. 131.56 EL. 131.91

S77°25'20"W 431.44'
SURVEY TRAVERSE

803+04.15
PCC +04.61
EL. 131.85

1.50%

291 +23 +31

PT +93.43

PCC +62.12

C41

TOWN OF BEDFORD
398 CONCORD ROAD
MAP/LOT 67/5

FORMER 1914 RAILROAD SIDELINE

WOODED

WIRE FENCE

ARSEN BAIATIAN

BENCHMARK: SPIKE SET IN UP

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

0 20 50 100
SCALE: 1" = 20'

MINUTEMAN BIKEWAY EXTENSION

CONTINUED ABOVE

291+28.05 MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT=
803+04.15 CONCORD ROAD RAMP

S77°25'20"W 431.44'
SURVEY TRAVERSE

EL. 131.91 803+04.15 PCC +04.61 EL. 131.85

1.50%

291 +23 +33 +31

PT +93.43

PCC +62.12

C41

EL. 131.76 EL. 131.70

C35

292

MINUTEMAN BIKEWAY CONSTR ℄
PT +50.68

293 L25

TRAV #53

S68°37'19"W 282.36'
SURVEY TRAVERSE

294
PC +88.53

C36

295

N49°43'45"W 368.73'
SURVEY TRAVERSE

SURVEY TRAVERSE
N13°55'08"W 158.97'

TRAV #56

S13°55'08"E 73.53'
SURVEY TRAVERSE

296 +13
PT +92.28

EL. 128.05

EL. 128.40
TRAV #54

BENCHMARK: TOP STONE BOUND
EL=129.08'

FORMER 1914 RAILROAD SIDELINE

WOODED

WIRE FENCE

6' STOCKADE

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	54	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HD(ALN).DWG Plotted on 30-Oct-2020 12:30 PM

MINUTEMAN BIKEWAY EXTENSION

BEDFORD
CONCORD

TRAV #55
TRAV #56
TRAV #54
SURVEY TRAVERSE N13°55'08"W 158.97'
S13°55'08"E 73.53'
SURVEY TRAVERSE
STONE BOUND EL=129.08'
EXISTING 2 STORY WOOD BUILDING
BIT PAVEMENT
GRASS +LSA
6"DEC
4"DEC
WOOD GRDS
MINUTEMAN BIKEWAY CONSTR ℄
PT +92.28
L26
EL. 128.40
EL. 128.05
MEET EXIST +46, 6.0' LT
MEET EXIST +47, 6.0' RT
LIMIT OF WORK
STA 299+46.41
N: 2999491.9727
E: 705095.7257
FORMER 1914 RAILROAD SIDELINE
REMAINS OF STONE BOX CULVERT NO INVERT OBSERVED
FEMA ZONE AE
WOODED
296 +13
+31
297
298
299
300
300+43.92
CONTINUED ON SHEET NO. 53

LEGEND:
(#) CURVE NUMBER (SEE TABLE SHEET 41)

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	55	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS

607738_HDI(ALN).DWG Plotted on 30-Oct-2020 12:30 PM

CONTINUED ON SHEET 52

CONTINUED BELOW

CONCORD ROAD

BONNIEVALE DRIVE

TRAV #65

LIMIT OF WORK
STA 402+28.18
N: 3000215.6589
E: 706434.8657

LIMIT OF PAVING
STA 403+45.84
N: 3000155.1351
E: 706334.0854

1914 COUNTY LAYOUT

APPROX COUNTY LINE BY SPECIAL COMMISIONER DECREE (1903)

CONCORD RD CONSTR ℄

S63°54'51"W 257.02'
SURVEY TRAVERSE

MEET EXIST
+46, 19.3' LT

PC +58.95
18.9' LT

MEET EXIST
+32, 30.7' RT

EL. 130.94

PC +36.76
35.2' RT

PT +89.30
23.4' RT

PT +41.63
45.3' RT

MEET EXIST
+46, 65.4' RT

EL. 131.83

MEET EXIST
+71, 37.2' RT

PC +78.26
17.1' RT

EL. 134.35

EL. 133.45

EL. 134.01

PCC +53.35
17.0' LT

EL. 134.89

EL. 135.24

EL. 135.58

EL. 136.23

S23°13'02"W 222.92'
SURVEY TRAVERSE

EL. 137.69

EL. 136.57

EL. 136.91

EL. 138.03

EL. 138.38

TRAV #51

APPROX. COUNTY LINE BY SPECIAL COMMISSIONER DECREE (1903)

APPROX. COUNTY LINE BY SPECIAL COMMISSIONER DECREE (1903)

N74°06'19"W 88.90'
SURVEY TRAVERSE

PT +88.15, 44.7 RT

PC +90.63, 48.1 RT

PT +83.93, 74.3 RT

PC +87.24, 71.8 RT

TRAV #57

EL. 137.69

EL. 139.17

EL. 140.50

EL. 140.51

PT +62.53
17.0' LT

PT +62.45
17.0' LT

EL. 141.44

EL. 141.78

EL. 141.43

EL. 141.78

EL. 139.20

EL. 139.53

EL. 139.88

EL. 140.85

PT +59.35

PT +59.06
17.0' RT

EL. 142.35

EL. 142.31

EL. 142.65

EL. 142.68

EL. 143.03

EL. 142.69

EL. 138.03

EL. 138.39

EL. 141.62

EL. 141.02

EL. 142.00

END SUPER
STA 407+29

EL. 142.31

EL. 142.65

EL. 142.35

EL. 142.02

EL. 142.31

PC +27.54

PCC +38.60

407+10.49 CONCORD ROAD CONST BL=
800+00.00 CONCORD ROAD RAMP

CONCORD RD RAMP CONSTR ℄

MINUTEMAN BIKEWAY CONSTR ℄

TRAV #70

BENCHMARK: SPIKE SET IN UP
EL=140.77'

CONTINUED ON SHEET 54

0 20 50 100
SCALE: 1" = 20'

LEGEND:
(#) CURVE NUMBER
(SEE TABLE SHEET 41)

CONTINUED ABOVE

S32°15'19"W 428.29'
SURVEY TRAVERSE

< PT +22.35
17.0' LT

LIMIT OF WORK
STA 410+42.99
N: 299575.3509
E: 705961.3363

EL. 143.28

EL. 144.17

EL. 145.18

EL. 143.62

EL. 144.45

EL. 145.47

PT +29.20

EL. 146.35
410+58.73

PC +42.04

EL. 143.97

EL. 144.20

EL. 145.37

EL. 143.28

< PT +23.04
17.2' RT

1914 COUNTY LAYOUT

TRAV #52

N70°20'13"E 92.71'
SURVEY TRAVERSE

SURVEY TRAVERSE
N49°43'45"W 396.73'

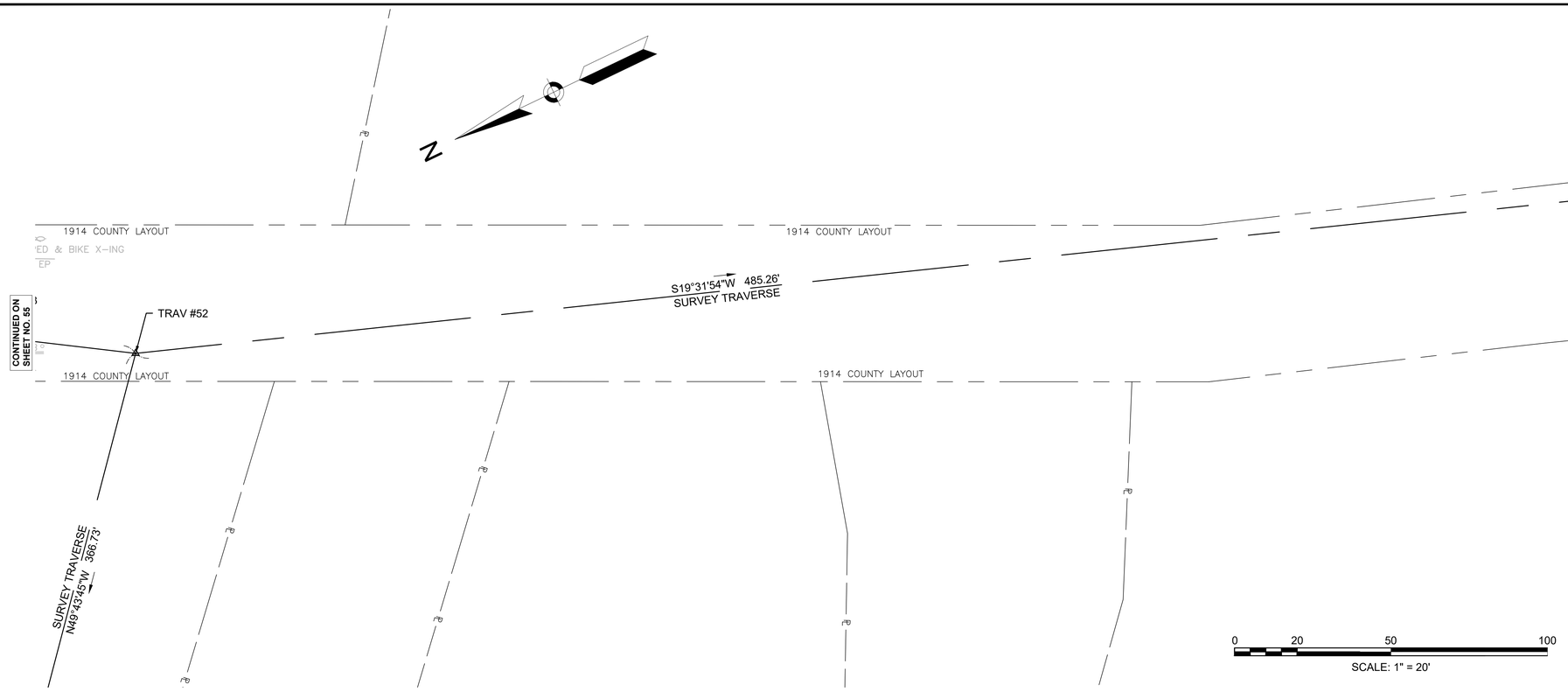
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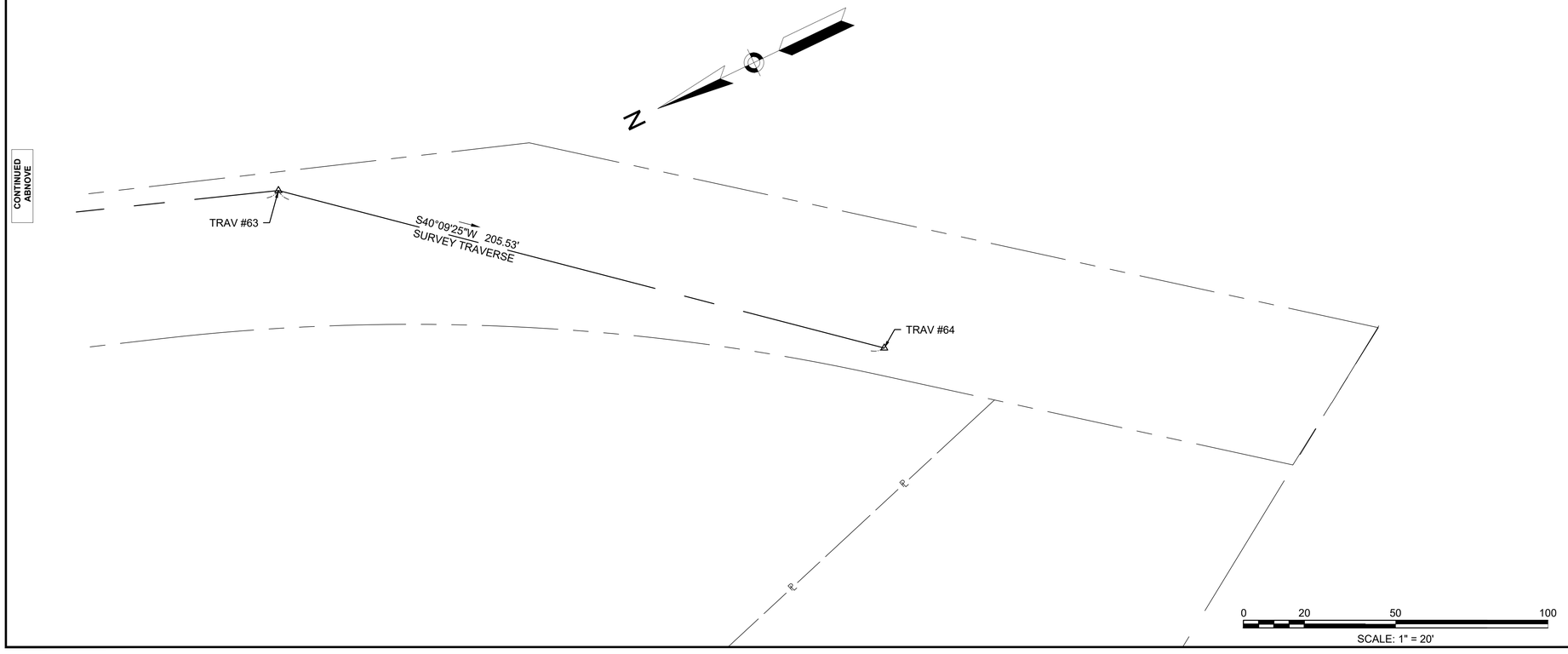
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SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	56	166
PROJECT FILE NO. 607738			

ALIGNMENT & GRADING PLANS





607738_HD(ALN).DWG Plotted on 30-Oct-2020 12:30 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	57	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:32 PM

N

SOUTH ROAD

RAILROAD AVENUE

LOOMIS STREET

SOUTH ROAD

RAILROAD AVENUE

PROP 8' ORNAMENTAL TS POST
W/PED SIGNAL HEAD
W/COUNTDOWN TIMER
W/APS PED PUSH BUTTON
W/R10-3e(L)
STA 600+68, 29' LT

3' DYL
W/9' GAP (TYP)
(STA 102+23 TO STA 104+87)

LIMIT OF WORK
STA 600+49.09
N: 3002172.5955
E: 716171.6527

PROP 8' ORNAMENTAL TS POST
W/PED SIGNAL HEAD
W/COUNTDOWN TIMER
W/APS PED PUSH BUTTON
W/R10-3e(R)
W/R9-5
STA 600+68, 37.5' RT

BREAK INTO EXIST PB

R&S EXIST PED SIGNAL HEADS
W/EXIST PED PUSH BUTTON

PROP 8' ORNAMENTAL TS POST
W/PED SIGNAL HEAD
W/COUNTDOWN TIMER
W/APS PED PUSH BUTTON
W/R10-3e(L)

BREAK INTO EXIST PB

R&S EXIST PED SIGNAL HEADS
W/EXIST PED PUSH BUTTON

PROP 8' ORNAMENTAL TS POST
W/PED SIGNAL HEAD
W/COUNTDOWN TIMER
W/APS PED PUSH BUTTON
W/R10-3e(L)
STA 601+16, 42' LT

R1-1(BIKE)
R9-5

BREAK INTO EXIST PB

SEE DETAIL (TYP)

PROP EASEMENT

SYL-160'

1963 TOWN LAYOUT

15' CW

10' CW

SEE CW DETAIL (TYP)

BREAK INTO EXIST PB

LIMIT OF PAVING
STA 100+39.93
N: 3002237.4003
E: 716108.5990

R&S EXIST PED SIGNAL HEADS
W/EXIST PED PUSH BUTTON
PROP PED SIGNAL HEADS
W/COUNTDOWN TIMERS
W/APS PED PUSH BUTTONS
W/R10-3e(L)
W/R10-3e(R)

MODIFY EXIST TS CONTROLLER AND
CABINET ASSEMBLY TO PROPOSED
CHANGES SHOWN

PROP 8' ORNAMENTAL TS POST
W/PED SIGNAL HEAD
W/COUNTDOWN TIMER
W/APS PED PUSH BUTTON
W/R10-3e(L)
CONSTRUCT FOUNDATION
OVER EXIST CONDUIT
STA 601+59, 37' RT

R&S EXIST PED SIGNAL HEADS
W/EXIST PED PUSH BUTTON

PROP 8' ORNAMENTAL TS POST
W/PED SIGNAL HEAD
W/COUNTDOWN TIMER
W/APS PED PUSH BUTTON
W/R10-3e(R)
STA 601+78, 23' RT

1917 COUNTY LAYOUT

EXIST TOWN LAYOUT

CONTINUED ON SHEET NO. 59

CONSTRUCTION NOTES

1. SEE SHEET 58 FOR TRAFFIC SIGNAL DATA.
2. RETAIN ALL EXISTING TS EQUIPMENT AND ALL TS CONDUIT UNLESS OTHERWISE NOTED.
3. EACH LOOP GROUP SHALL BE SPLICED IN SINGLE PULL BOX AND WIRED TO SEPARATE CONTROLLER INPUT.
4. ALL PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED THERMOPLASTIC. ALL PAVEMENT MARKINGS ON THE SHARED USE PATH & PARKING LOTS SHALL BE REFLECTORIZED PAINT.
5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
6. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.

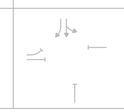
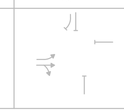
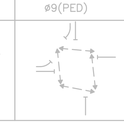
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SCALE IN FEET

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	58	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:33 PM

ø2	ø4	ø6	ø8	ø9(PED)	
					

EXISTING/PROPOSED SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (ISOLATED)

APPROACH	DIRECTION	HOUSING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	FLASH
SOUTH ROAD	NB	A,B	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	FY
SOUTH ROAD	SB	C,D	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	FY
RAILROAD AVENUE	EB	E,F,G	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	FR
LOOMIS STREET	WB	H,J,K	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	FR
PEDESTRIAN X-ING	ALL	P1-P8	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OUT
TIMING IN SECONDS																		
MINIMUM GREEN (INITIAL)			10			6			10			6						CONFLICT FLASH OPERATION ONLY
PASSAGE TIME (VEHICLE)			2			2			2			2						
MAXIMUM 1			40			15			40			15						
MAXIMUM 2			–			–			–			–						
DYNAMIC MAX			50			30			50			30						
DYNAMIC MAX STEP			5			5			5			5						
YELLOW CLEARANCE				3			3			3			3			3		
RED CLEARANCE					3			3			3			3			1	
PEDESTRIAN WALK															7			
PEDESTRIAN CLEARANCE															15			
DETECTOR MEMORY			NON-LOCK			NON-LOCK			NON-LOCK			NON-LOCK			–			
RECALL			MIN			OFF			MIN			OFF			–			

NOTES:

1. AUTOMATIC FLASHING OPERATION PER M.U.T.C.D. SECTION 4D.12.
2. * UPON PEDESTRIAN PUSH BUTTON ACTUATION
3. PERM = PERMISSIVE
4. Ø4 & Ø8 DUAL ENTRY
5. MAXIMUM 1 = NORMAL OPERATION
6. MAXIMUM 2 = NOT USED
7. FDW THRU YELLOW INTERVAL SHALL BE IN EFFECT FOR PED Ø
8. STOP ANG GO OPERATION FOR 24 HOURS PER DAY. FLASHING OPERATION FOR EMERGENCY ONLY.

SEQUENCE & TIMING NOTES:

1. IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.
2. THE RIGHT OF WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.
3. IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.

EMERGENCY VEHICLE PRE-EMPTION OPERATION.

1. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS LOCATED AT EACH INTERSECTION.
2. PRE-EMPTION SIGNALS SHALL BE SERVICED ON A PRIORITY BASIS WITH DETECTORS D1, D2, D3 OR D4 ASSIGNED DESCENDING PRIORITIES AS FOLLOWS: (D1 HIGHEST AND D4 LOWEST)
3. IN RESPONSE TO A PRE-EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL DETECTOR D1 (OR D2, D3, D4) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY VEHICLE PRE-EMPTION PHASE #1 (OR #2, #3, #4) GREEN FOR A MINIMUM OF TEN (10) SECONDS OR UNTIL PRE-EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN TIME PRE-EMPTION PHASE CLEARANCES FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS NECESSARY.
4. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
5. PRE-EMPTION STROBE SHALL BE ILLUMINATED WHENEVER ANY EMERGENCY VEHICLE PRE-EMPTION GREEN IS ON.

EXISTING PRE-EMPTION PHASING & PRIORITY

DETECTOR & PRIORITY	PRE-EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
D1	1		Ø6
D2	2		Ø2
D3	3		Ø8
D4	4		Ø4

EXISTING PREFERENTIAL PHASE SEQUENCE



LIST OF MAJOR ITEMS REQUIRED

SOUTH ROAD AT LOOMIS STREET/RAILROAD AVENUE

PAY ITEM	QUANTITY	DESCRIPTION
816.01	1	MODIFY EXIST TS CONTROLLER & CABINET TO ACCOMMODATE PROP CHANGES AS SHOWN
	6	ORNAMENTAL TS POST 8' STANDARD INCL. FOUNDATION
	8	PEDESTRIAN SIGNAL HEAD W/COUNTDOWN TIMER
	5	APS PEDESTRIAN PUSH BUTTON W/R10-3e(L) (HANDS FREE ACTIVATION)
	3	APS PEDESTRIAN PUSH BUTTON W/R10-3e(R) (HANDS FREE ACTIVATION)
	2	TYPE C, 2-CHANNEL CARD RACK LOOP DETECTOR AMPLIFIER
	6	WIRE LOOP DETECTOR
811.31	1	PULL BOX-12"x12"
804.3	125'±	3" CONDUIT, SCHEDULE 80, TYPE NM

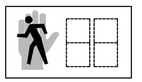
PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING TRAFFIC CONTROL SIGNAL.

EXISTING/PROPOSED LOOP DETECTOR DATA

DETECTOR NO.	NO. SECTION/ SIZE	NO. OF TURNS	OPERATIONS	DELAY /EXT	CALL PHASE	LOOP CONNECTION
1	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
2	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø6	SERIES
3	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø2	SERIES
4	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø4	SERIES
5	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø8	SERIES
6	2-6'X20' QUADRUPOLE	2-4-2	PRESENCE	0	Ø8	SERIES

NOTE: DELAY AND EXTENSION TIMINGS SHALL BE PROGRAMMED IN THE CONTROLLER ONLY

EXISTING/PROPOSED SIGNAL HEAD DATA

A,B,C,D,E,F,G,H,J,K	~~P1-P8~~	P1-P8
	 (L.E.D.) R&S P1-P8	 W/COUNTDOWN TIMER
ALL 12" LENS		

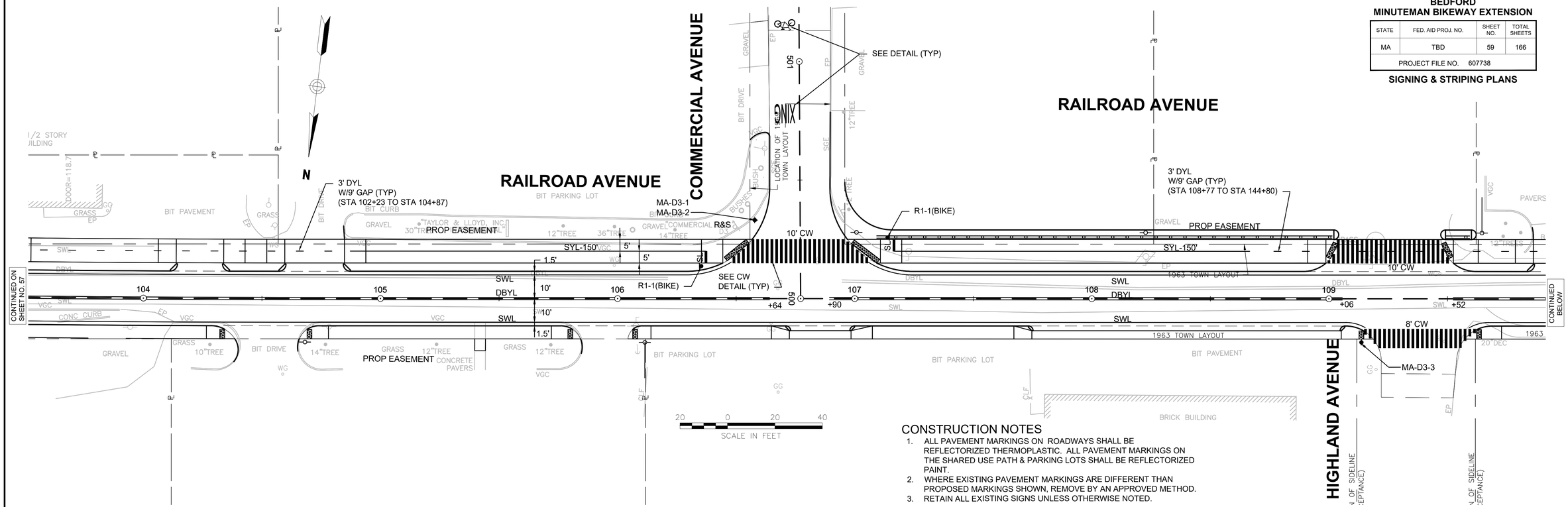
NOTE:
1. ALL PROPOSED SIGNAL DISPLAYS SHALL BE EQUIPPED WITH L.E.D. MODULES.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	59	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:33 PM



CONSTRUCTION NOTES

1. ALL PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED THERMOPLASTIC. ALL PAVEMENT MARKINGS ON THE SHARED USE PATH & PARKING LOTS SHALL BE REFLECTORIZED PAINT.
2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
3. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	60	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:33 PM

MINUTEMAN BIKEWAY EXTENSION

LIST OF MAJOR ITEMS REQUIRED

MINUTEMAN BIKE PATH AT RAILROAD AVENUE

PAY ITEM	QUANTITY	DESCRIPTION
824.211	2	TS POST STANDARD INCL. FOUNDATION
	4	L.E.D. RECTANGULAR DUAL YELLOW BEACON (RRFB) (1-SIDED)
	2	APS PEDESTRIAN PUSH BUTTON W/R10-25
	1	SIDE OF POST CONTROL CABINET
	1	SERVICE CONNECTION (OVERHEAD)
811.31	1	PULL BOX-12"X12"
832.	2	SP-1
	4	W11-2(L)
	2	W11-2(R)
	2	W16-7p(L)
	2	W16-7p(R)
	4	W16-9p

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING RRFB SYSTEM

CONSTRUCTION NOTES

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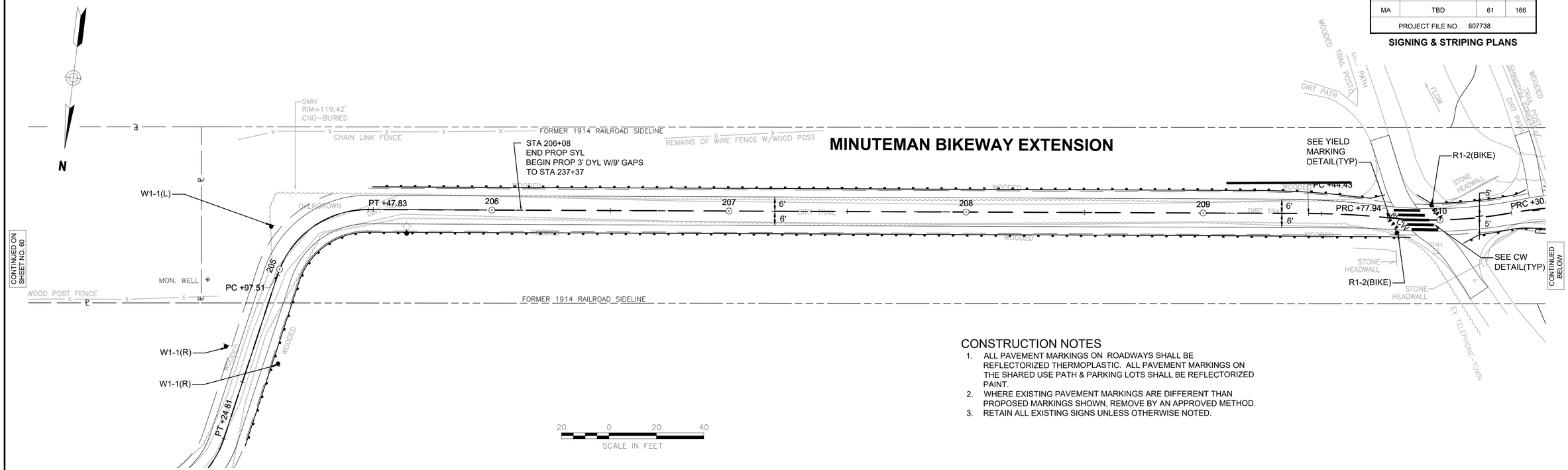
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SCALE IN FEET

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	61	166
PROJECT FILE NO. 607738			

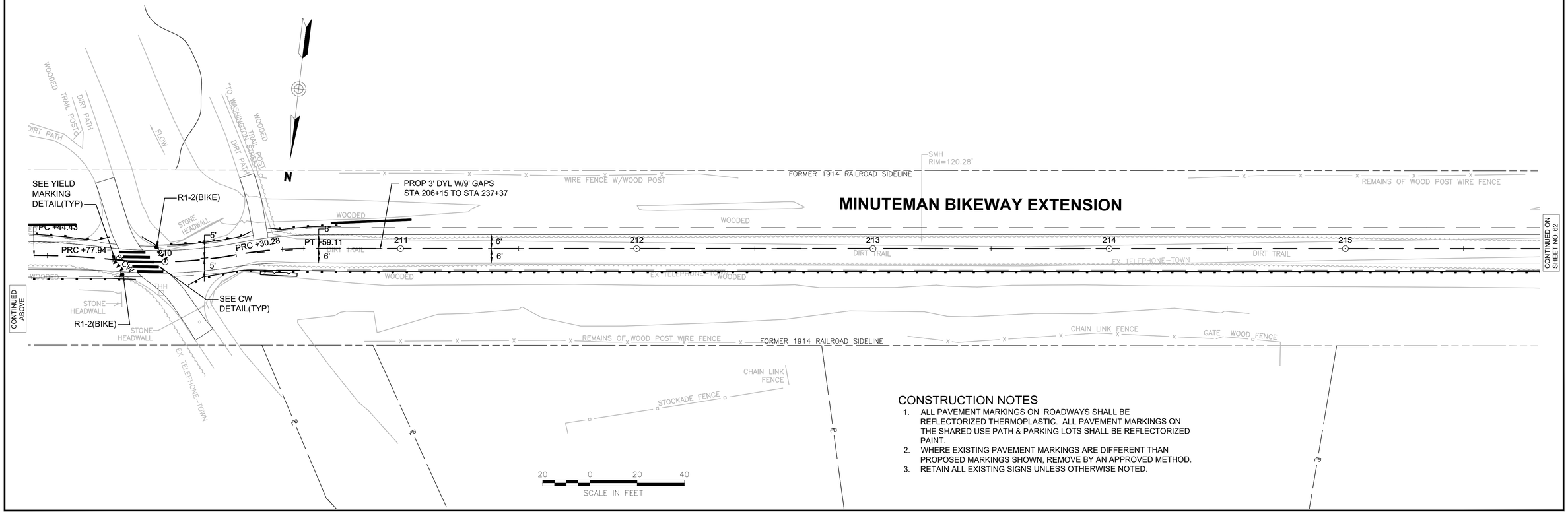
SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 2:29 PM



CONSTRUCTION NOTES

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CONSTRUCTION NOTES

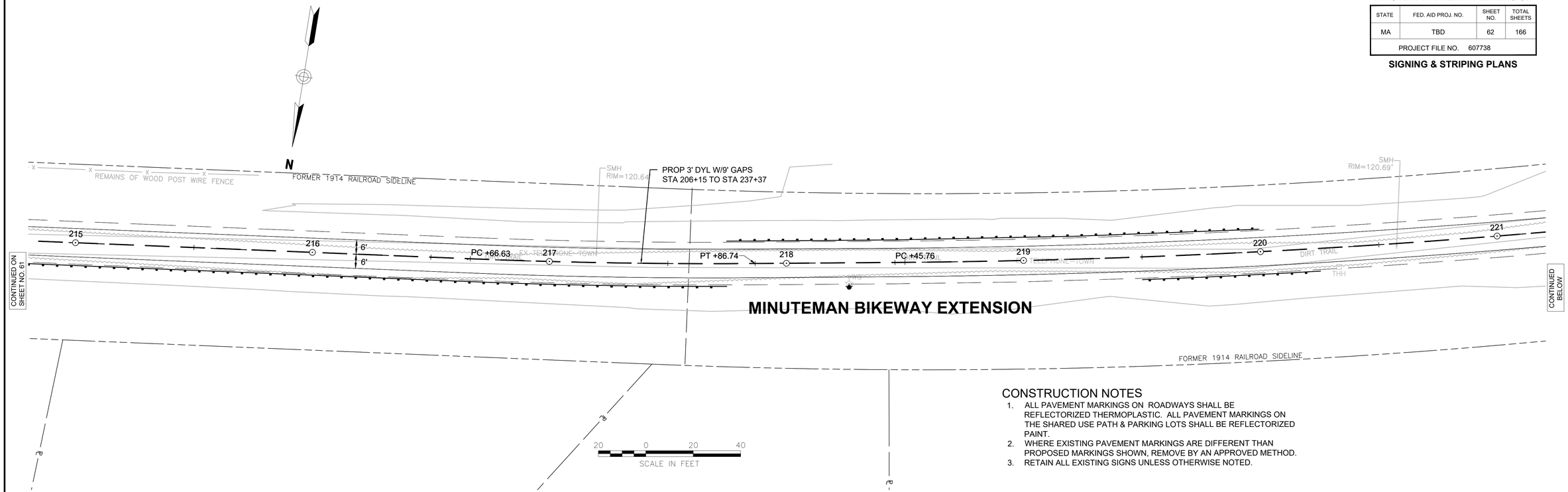
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BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	62	166
PROJECT FILE NO. 607738			

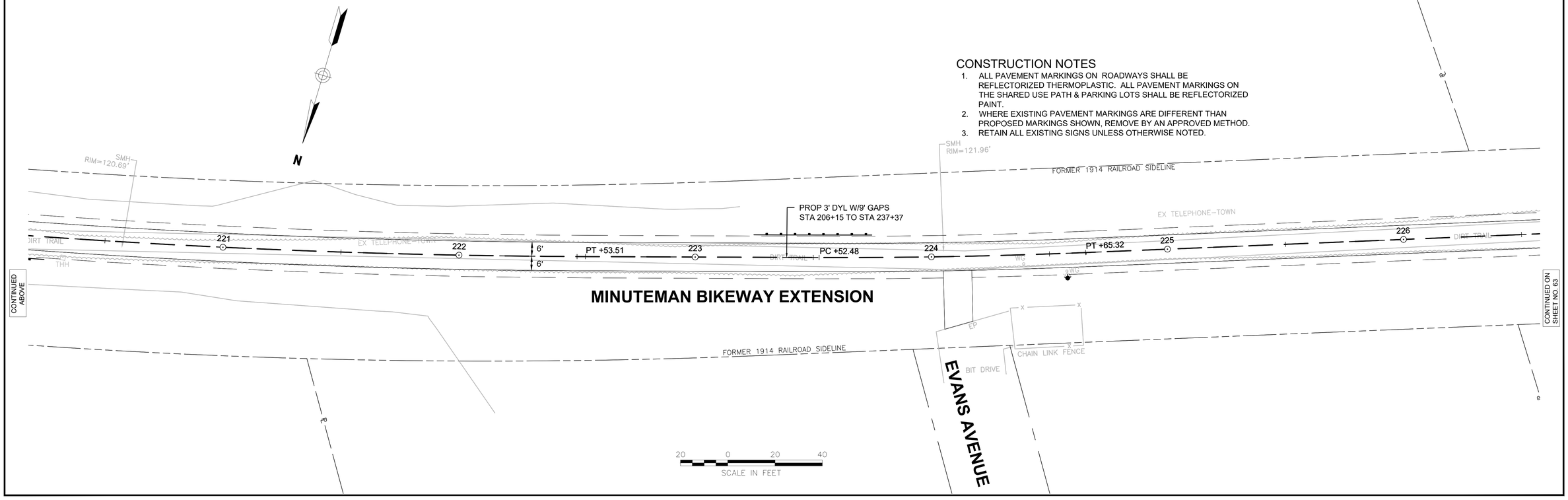
SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:33 PM



CONSTRUCTION NOTES

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CONSTRUCTION NOTES

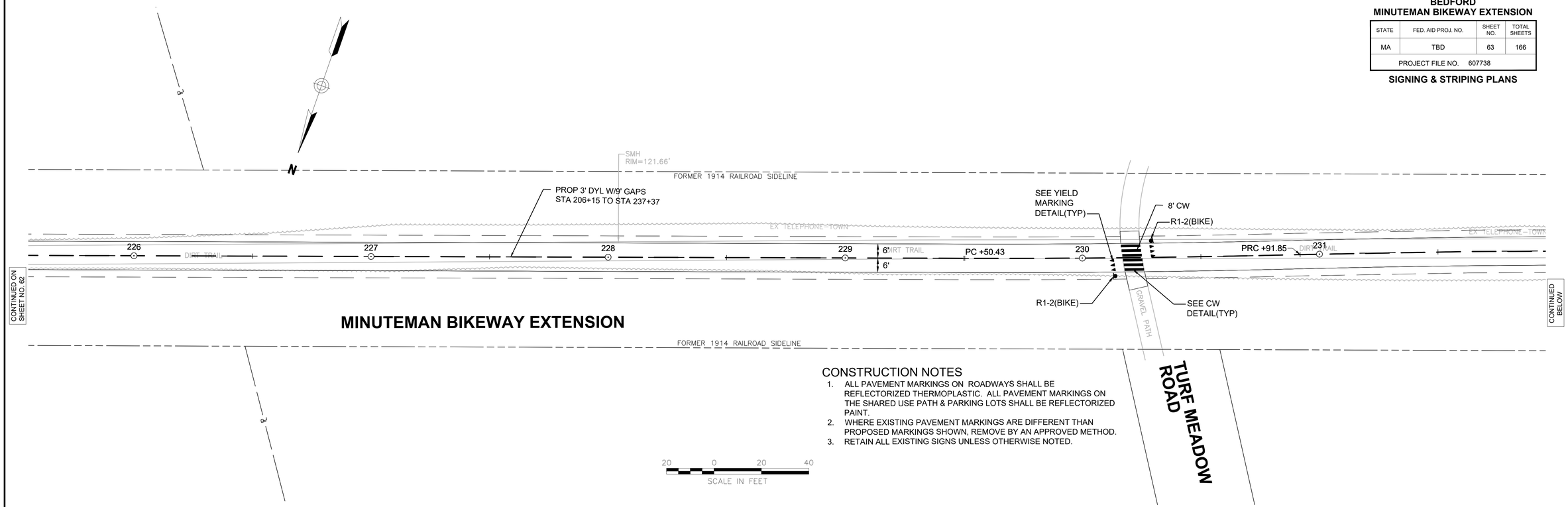
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BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	63	166
PROJECT FILE NO. 607738			

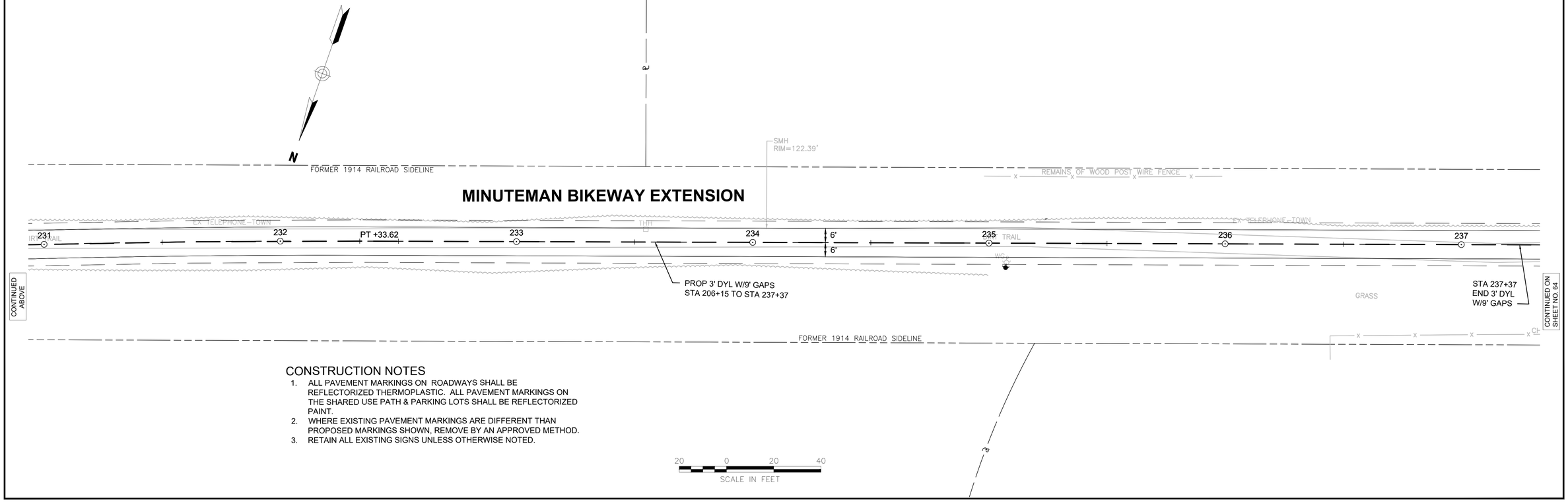
SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:34 PM



CONSTRUCTION NOTES

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CONSTRUCTION NOTES

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BEDFORD
MINUTEMAN BIKEWAY EXTENSION

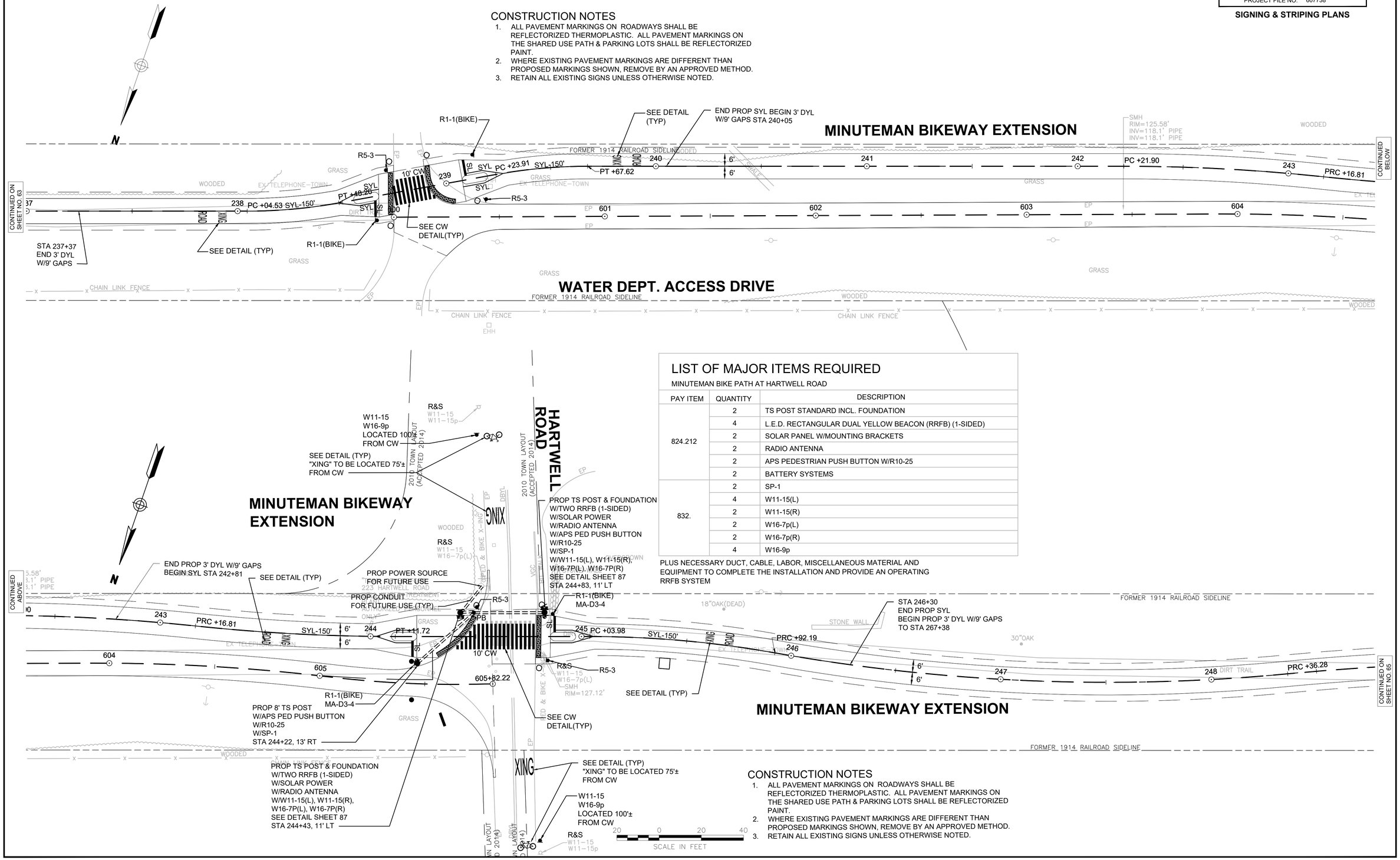
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	64	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:34 PM

CONSTRUCTION NOTES

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3. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.



LIST OF MAJOR ITEMS REQUIRED

MINUTEMAN BIKE PATH AT HARTWELL ROAD

PAY ITEM	QUANTITY	DESCRIPTION
824.212	2	TS POST STANDARD INCL. FOUNDATION
	4	L.E.D. RECTANGULAR DUAL YELLOW BEACON (RRFB) (1-SIDED)
	2	SOLAR PANEL W/MOUNTING BRACKETS
	2	RADIO ANTENNA
	2	APS PEDESTRIAN PUSH BUTTON W/R10-25
	2	BATTERY SYSTEMS
832.	2	SP-1
	4	W11-15(L)
	2	W11-15(R)
	2	W16-7p(L)
	2	W16-7p(R)
	4	W16-9p

PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING RRFB SYSTEM

CONSTRUCTION NOTES

1. ALL PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED THERMOPLASTIC. ALL PAVEMENT MARKINGS ON THE SHARED USE PATH & PARKING LOTS SHALL BE REFLECTORIZED PAINT.
2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
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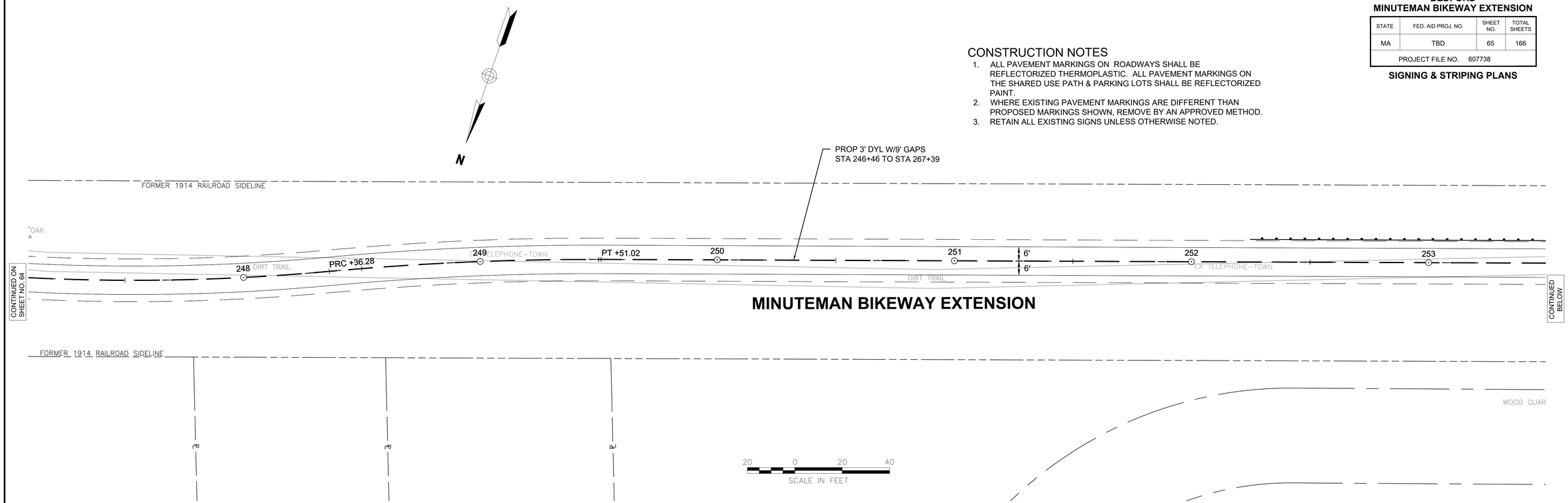
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	65	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

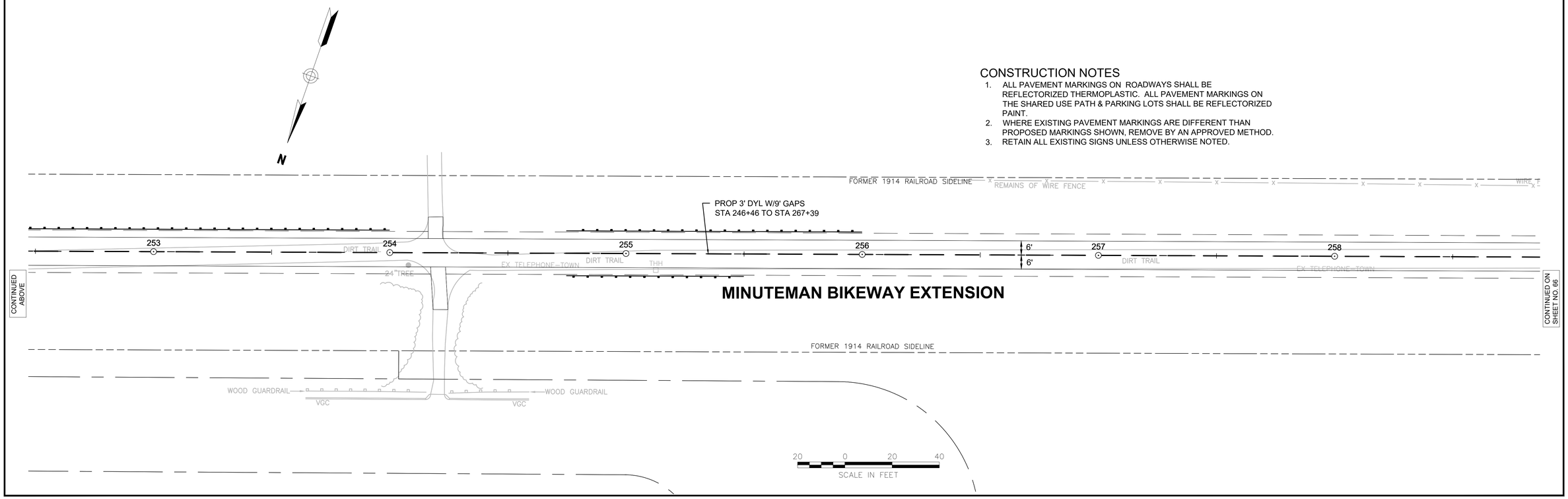
CONSTRUCTION NOTES

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607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:34 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

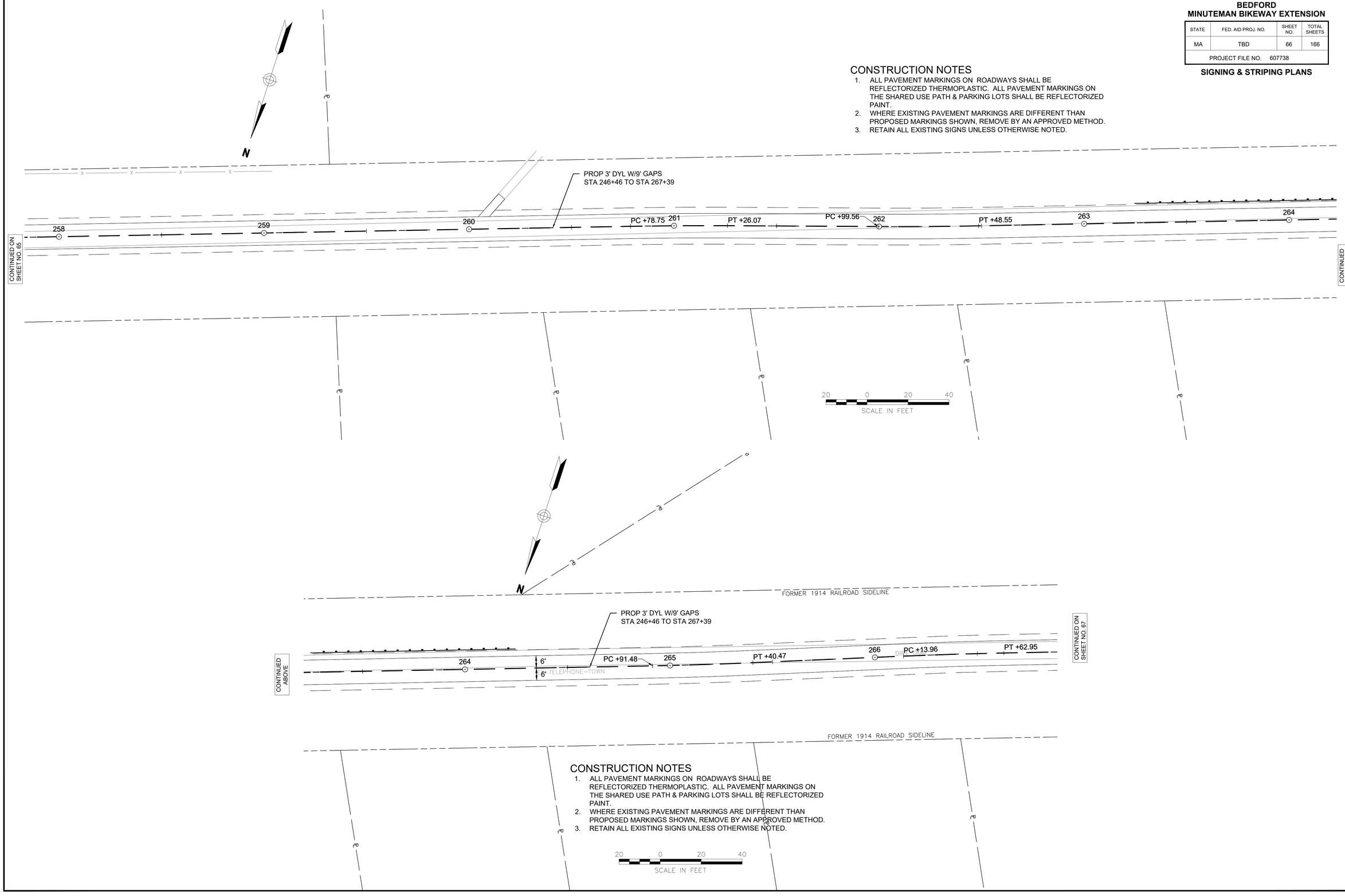
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	66	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

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CONSTRUCTION NOTES

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20 0 20 40
SCALE IN FEET

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	67	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:34 PM

N

STONE WALL
WOODED
PATH
SEE YIELD MARKING DETAIL(TYP)
R1-2(BIKE)
PC +14.89
PT +77.32
SEE CW DETAIL(TYP)
BIT WALK
EP
GRASS
1"DEC
OVERGROWN
EX. TELEPHONE-TOWN
DIRT TRAIL
ROAD SIDELINE
ER 1914 RAILROAD SIDELINE
LAVENDER LANE
2015 TOWN LAYOUT

MINUTEMAN BIKEWAY EXTENSION

PROP 3' DYL W/9' GAPS
STA 270+75 TO LIMIT OF WORK
270
PT +97.40
R7-8
R7-8a
6'
6'
271
PC +94.74
PT +77.25
272
PC +14.49
SWL 3' O.C. @ 45°
SWL
19'
8'
11'
SEE DETAIL (TYP)
4" SWL(TYP)
9'
N
WOODED
BIT WALK
DIRT TRAIL
EP
CONTINUED ON SHEET NO. 68

MINUTEMAN BIKEWAY EXTENSION

CONTINUED ON SHEET NO. 66
266
PC +13.96
PT +62.95
267
6'
6'
PC +94.87
268
PROP 3' DYL W/9' GAPS
STA 246+46 TO STA 267+38
R1-2(BIKE)
EX. TELEPHONE-TOWN
DIRT TRAIL
EP
OVERGROWN
1"DEC
GRASS
BIT WALK
WOODED

20 0 20 40
SCALE IN FEET

CONSTRUCTION NOTES

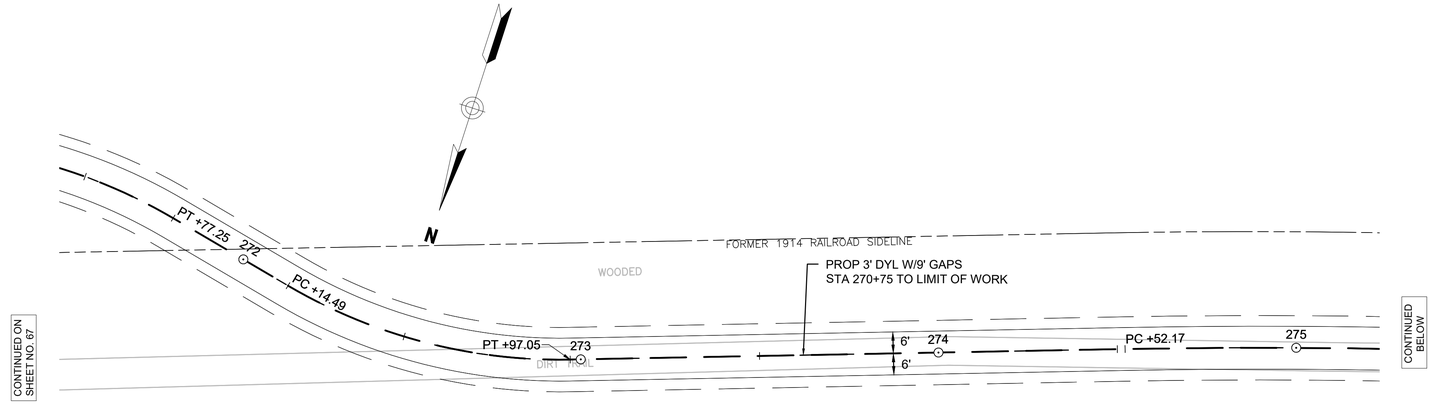
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BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	68	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

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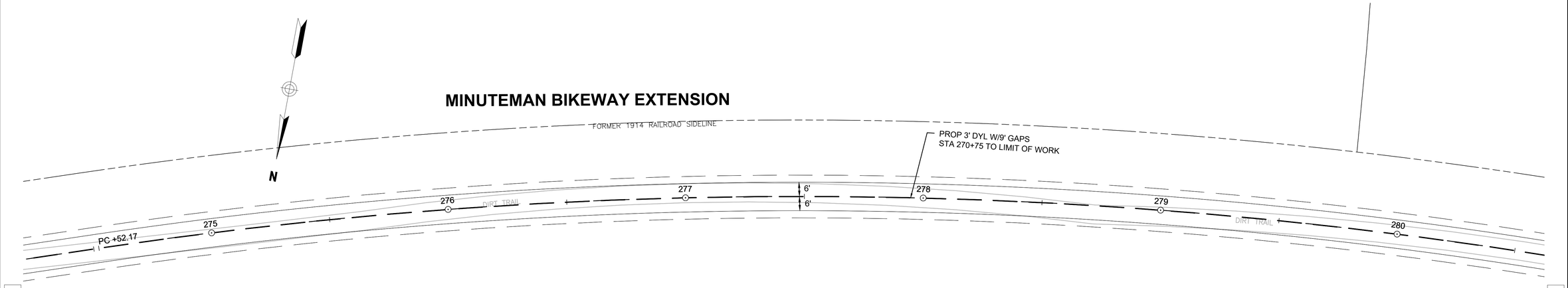


CONSTRUCTION NOTES

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20 0 20 40
SCALE IN FEET

MINUTEMAN BIKEWAY EXTENSION



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20 0 20 40
SCALE IN FEET

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	69	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:35 PM

MINUTEMAN BIKEWAY EXTENSION

N

PROP 3' DYL W/9' GAPS
STA 270+75 TO LIMIT OF WORK

FORMER 1914 RAILROAD SIDELINE

CONTINUED ON SHEET NO. 68

280 281 PT +64.26 282 6' 283 6' DIRT TRAIL 284 285 286

CONTINUED BELOW

FORMER 1914 RAILROAD SIDELINE

CONSTRUCTION NOTES

1. ALL PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED THERMOPLASTIC. ALL PAVEMENT MARKINGS ON THE SHARED USE PATH & PARKING LOTS SHALL BE REFLECTORIZED PAINT.
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20 0 20 40
SCALE IN FEET

N

CONTINUED ABOVE

285 286 PC +25.15 287 6' 6' 288 289 290 291 PC +04.61 803+04.15

D4-3(L)
D4-3(R)
MA-D3-5
PROP 3' DYL W/9' GAPS
STA 270+75 TO LIMIT OF WORK
OM-3L
OM-3R
R7-8
R7-8a
SWL 3' O.C. @ 45°
SWL
19' GRAVEL PARKING AREA
9'
2'
8'
11'
SEE DETAIL
4" SWL(TYP)
R&S
D4-3(L)
D4-3(R)
R&R
CONCORD ROAD
408 407 406 PC +38.60 PC +27.54 801 802 PC +62.12
FORMER 1914 RAILROAD SIDELINE

CONSTRUCTION NOTES

1. ALL PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED THERMOPLASTIC. ALL PAVEMENT MARKINGS ON THE SHARED USE PATH SHALL BE PREFORMED THERMOPLASTIC.
2. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
3. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.

20 0 20 40
SCALE IN FEET

CONTINUED ON SHEET NO. 70

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	70	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:35 PM

CONTINUED ON SHEET NO. 69

LT
N: 15.5589
E: 4.8657

LIMIT OF PAVING
STA 403+45.84
N: 3000155.1351
E: 706334.0654

N

CONCORD ROAD

MINUTEMAN BIKEWAY EXTENSION

D4-3(R)
MA-D3-5
D4-3(L)
PC-1+15.15
PROP 3' DYL W/9' GAPS
STA 270+75 TO LIMIT OF WORK
SWL 3' O.C. @ 45°
SEE DETAIL
R7-8
R7-8a
4" SWL(TYP)
D4-3(L)
D4-3(R)
R&R
"Rotary Intersection"
OM-3R
OM-3L
R&S
W11-15
W16-7P(L)
MEET EXIST MARKINGS
R&S
W11-15
W11-15P
APPROX. COUNTY LINE BY SPECIAL COMMISSIONER DECREE (1903)
PC-2+27.54
PCC-2+39.60
LIMIT OF WORK
STA 410+42.99
N: 299575.3509
E: 705961.3363
1914 COUNTY LAYOUT
MEET EXIST MARKINGS

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20 0 20 40
SCALE IN FEET

CONTINUED BELOW
CONTINUED ABOVE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	71	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

CONSTRUCTION NOTES

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N

MINUTEMAN BIKEWAY EXTENSION

CONTINUED ON SHEET NO. 68

FORMER 1914 RAILROAD SIDELINE
6' STOCKADE
WOODED
291
PCC +04.61
DIRT TRAIL
292
PT +50.68
293
6'
6'
PC +88.53
294
PROP 3' DYL W/9' GAPS
STA 270+75 TO LIMIT OF WORK
295
296
PT +92.28
803+04.15
PT +93.43
802
PCC +62.12
WIRE FENCE
20"DEC
18"DEC
16"DEC
12"DEC
24"DEC
16"PINE
STONE DUST PATH

20 0 20 40
SCALE IN FEET

CONTINUED BELOW

N

MINUTEMAN BIKEWAY EXTENSION

CONTINUED ABOVE

296
PT +92.28
297
298
299
300
300+43.92
SP-6
PROP 3' DYL W/9' GAPS
STA 270+75 TO LIMIT OF WORK
LIMIT OF WORK
STA 299+46.41
N: 2999491.9727
E: 705095.7257
REMAINS OF STONE BOX CULVERT NO INVERT OBSERVED
CHAIN LIN
22"DEC
30"DEC
36"DEC

20 0 20 40
SCALE IN FEET

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607738_TR(STRP).DWG Plotted on 30-Oct-2020 12:35 PM

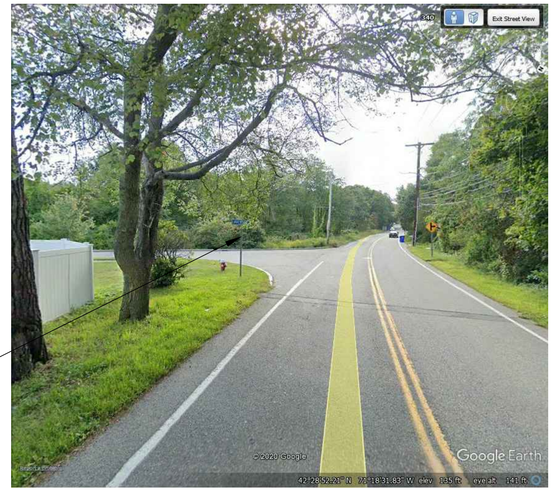
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	72	166
PROJECT FILE NO. 607738			

SIGNING & STRIPING PLANS

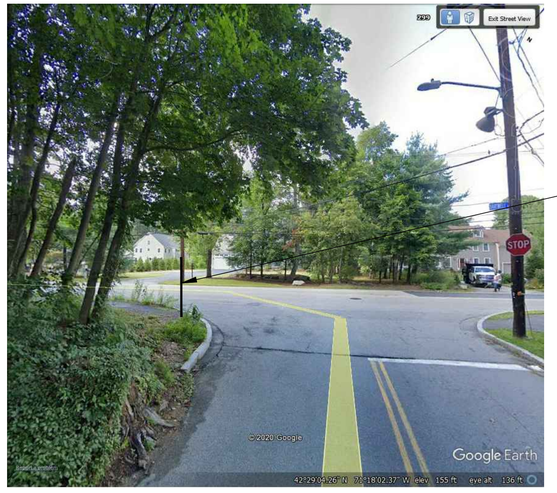
607738_TR(STRP-AER/AL).DWG Plotted on 30-Oct-2020 2:50 PM

SP-3
SP-2
MTD BACK-TO-BACK
BELOW EXIST
LAVENDER LANE
STREET NAME SIGN



CONCORD ROAD (WB) AT
LAVENDER LANE

SP-3
SP-2
MTD BACK-TO-BACK ON
PROP P-5 POST



HARTWELL ROAD (NB) AT
CONCORD ROAD

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	73	166
PROJECT FILE NO. TBD			

TEMPORARY TRAFFIC CONTROL PLANS
GENERAL NOTES & LEGEND

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
R1-1(BIKE)	18"	18"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			12	RED	WHITE	WHITE	P5-12	1.86	22.32
R1-2(BIKE)	18"X18"X18"						6	RED	WHITE	WHITE	P5-6	1.125	6.75
R5-3	24"	24"					7	WHITE	BLACK	BLACK	P5-7	4.00	28.00
R7-8	12"	18"					3	WHITE	GREEN/ BLUE	GREEN	P5-3	1.50	4.50
R7-8a	12"	6"					3	WHITE	GREEN	GREEN	3 MTD W/OTHERS	0.50	1.50
R9-5	12"	18"					1	WHITE	BLACK	BLACK	P5-1	1.50	1.50
R10-25	9"	12"					4	WHITE	BLACK	BLACK	4 MTD ON TS POST	PAID UNDER ITEMS 824.211 & 824.212	
W1-1(L)	18"	18"					2	YELLOW	BLACK	BLACK	P5-2	2.25	4.50
W1-1(R)	18"	18"					2	YELLOW	BLACK	BLACK	P5-2	2.25	4.50
W3-1	18"	18"					1	YELLOW	RED/ BLACK	BLACK	P5-1	2.25	2.25
W11-2	30"	30"					4	YELLOW	BLACK	BLACK	P5-2 2 MTD ON TS POST	6.25	25.00
W11-15	30"	30"					13	YELLOW	BLACK	BLACK	P5-4 9 MTD ON TS POST	6.25	81.25
W16-7p(L)	24"	12"					4	YELLOW	BLACK	BLACK	4 MTD ON TS POST	2.00	8.00
W16-7p(R)	24"	12"					4	YELLOW	BLACK	BLACK	4 MTD ON TS POST	2.00	8.00
W16-9p	24"	12"					5	YELLOW	BLACK	BLACK	5 MTD W/OTHERS	2.00	10.00
D4-3(L)	12"	18"					3	WHITE	GREEN	GREEN	P5-3	1.50	4.50
D4-3(R)	12"	18"					3	WHITE	GREEN	GREEN	3 MTD W/OTHERS	1.50	4.50

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
OM-3L	12"	36"		SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			2	YELLOW	BLACK	--	4 MTD W/OTHERS	3.00	8.00
OM-3R	12"	36"					2	YELLOW	BLACK	--	4 MTD W/OTHERS	3.00	8.00
MA-D3-1 (POS)	50"	12"	Railroad Ave	6	3 3	N/A	2	GREEN	WHITE	WHITE	P5-2	PAID UNDER ITEM 874	
MA-D3-2 (POS)	64"	12"	Commercial Ave	6	3 3	N/A	4	GREEN	WHITE	WHITE	P5-2	PAID UNDER ITEM 874	
MA-D3-3 (POS)	52"	12"	Highland Ave	6	3 3	N/A	2	GREEN	WHITE	WHITE	P5-2	PAID UNDER ITEM 874	
MA-D3-4 (POS)	52"	12"	Hartwell Ave	6	3 3	N/A	2	GREEN	WHITE	WHITE	P5-2	PAID UNDER ITEM 874	
MA-D3-5 (POS)	50"	12"	Concord St	6	3 3	N/A	2	GREEN	WHITE	WHITE	P5-2	PAID UNDER ITEM 874	
SP-1	9"	12"	WAIT FOR VEHICLES TO STOP BEFORE CROSSING	1"C 1"C 1"C 1"C 1"C	1.5" 1" 1" 1" 1" 1.5"	N/A	4	YELLOW	BLACK	BLACK	4 MTD ON TS POST	0.75	2.25
SP-2 (POS)	36"	9"	Minuteman Bikeway (P) 0.4 ←	3	3 3	N/A	2	BLUE	WHITE	WHITE	P5-2	2.25	4.50
SP-3 (POS)	36"	9"	Minuteman Bikeway (P) 0.4 →	3	3 3	N/A	2	BLUE	WHITE	WHITE	2 MTD W/OTHERS	2.25	4.50
SP-4 (POS)	36"	6"	Concord Center 4.4	2.5	1.75 1.75	N/A	1	BLUE	WHITE	WHITE	P5-1	1.50	1.50
SP-5 (POS)	30"	9"	Minuteman Bikeway →	3	3 3	N/A	1	BLUE	WHITE	WHITE	P5-1	2.50	2.50
SP-6	24"	18"	PAVED BIKEPATH END AHEAD	3B 3B 3B 3B 3B	2.50 2.25 2.25 2.25 2.75	N/A	1	YELLOW	BLACK	BLACK	P5-1	3.00	3.00

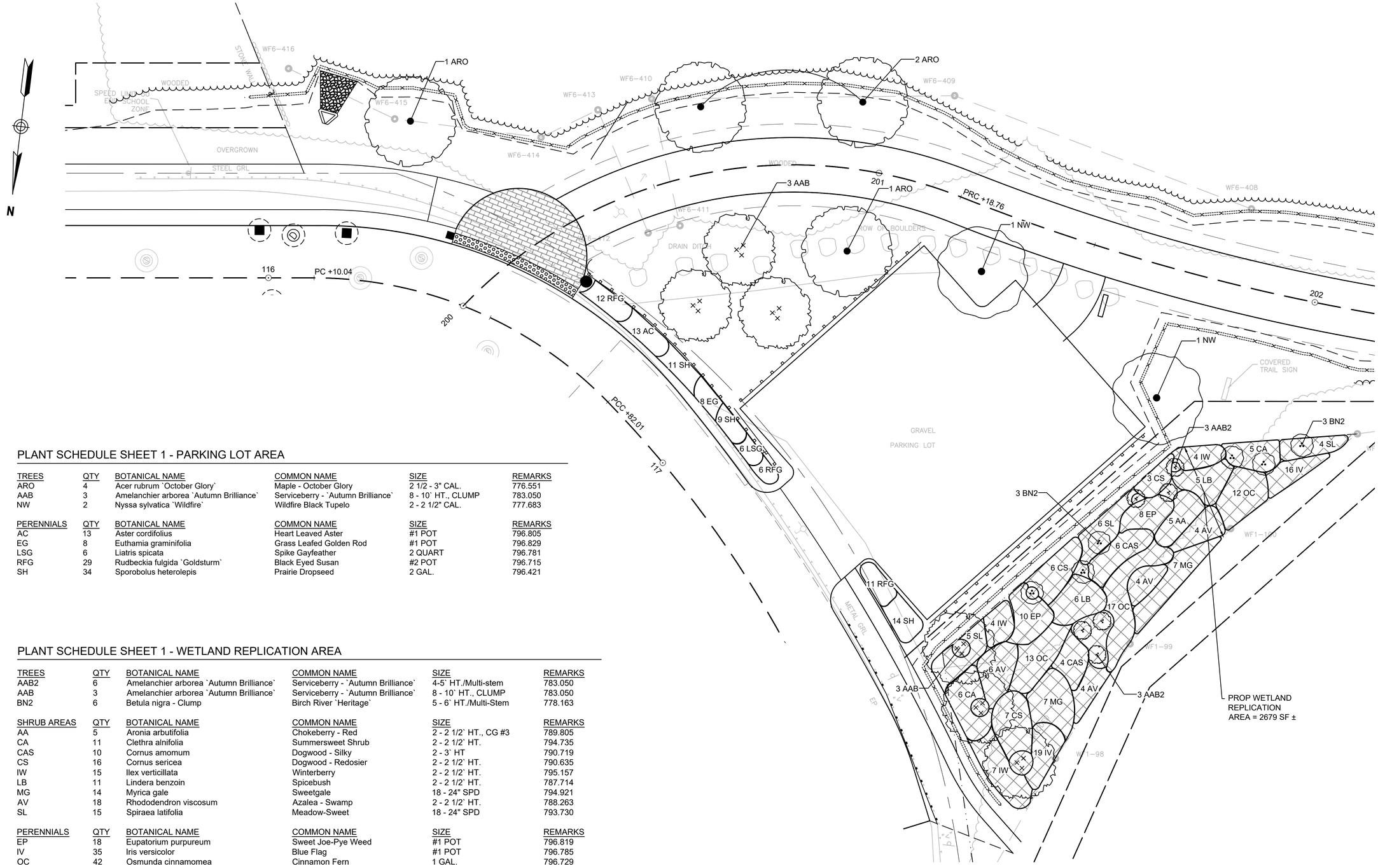
NOTES: 1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, FOR VERTICAL & LATERAL CLEARANCES.
2. POS = PAINTED ONE SIDE

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	74	166
PROJECT FILE NO.	607738		

LANDSCAPE PLANS

607738_HD(LA).DWG Plotted on 30-Oct-2020 12:39 PM



PLANT SCHEDULE SHEET 1 - PARKING LOT AREA

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
ARO	4	Acer rubrum `October Glory`	Maple - October Glory	2 1/2 - 3" CAL.	776.551
AAB	3	Amelanchier arborea `Autumn Brilliance`	Serviceberry - `Autumn Brilliance`	8 - 10` HT., CLUMP	783.050
NW	2	Nyssa sylvatica `Wildfire`	Wildfire Black Tupelo	2 - 2 1/2" CAL.	777.683

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AC	13	Aster cordifolius	Heart Leaved Aster	#1 POT	796.805
EG	8	Euthamia graminifolia	Grass Leafed Golden Rod	#1 POT	796.829
LSG	6	Liatris spicata	Spike Gayfeather	2 QUART	796.781
RFG	29	Rudbeckia fulgida `Goldsturm`	Black Eyed Susan	#2 POT	796.715
SH	34	Sporobolus heterolepis	Prairie Dropseed	2 GAL.	796.421

PLANT SCHEDULE SHEET 1 - WETLAND REPLICATION AREA

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AAB2	6	Amelanchier arborea `Autumn Brilliance`	Serviceberry - `Autumn Brilliance`	4-5` HT./Multi-stem	783.050
AAB	3	Amelanchier arborea `Autumn Brilliance`	Serviceberry - `Autumn Brilliance`	8 - 10` HT., CLUMP	783.050
BN2	6	Betula nigra - Clump	Birch River `Heritage`	5 - 6` HT./Multi-Stem	778.163

SHRUB AREAS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
AA	5	Aronia arbutifolia	Chokeberry - Red	2 - 2 1/2` HT., CG #3	789.805
CA	11	Clethra alnifolia	Summersweet Shrub	2 - 2 1/2` HT.	794.735
CAS	10	Cornus amomum	Dogwood - Silky	2 - 3` HT	790.719
CS	16	Cornus sericea	Dogwood - Redosier	2 - 2 1/2` HT.	790.635
IW	15	Ilex verticillata	Winterberry	2 - 2 1/2` HT.	795.157
LB	11	Lindera benzoin	Spicebush	2 - 2 1/2` HT.	787.714
MG	14	Myrica gale	Sweetgale	18 - 24" SPD	794.921
AV	18	Rhododendron viscosum	Azalea - Swamp	2 - 2 1/2` HT.	788.263
SL	15	Spiraea latifolia	Meadow-Sweet	18 - 24" SPD	793.730

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
EP	18	Eupatorium purpureum	Sweet Joe-Pye Weed	#1 POT	796.819
IV	35	Iris versicolor	Blue Flag	#1 POT	796.785
OC	42	Osmunda cinnamomea	Cinnamon Fern	1 GAL.	796.729

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

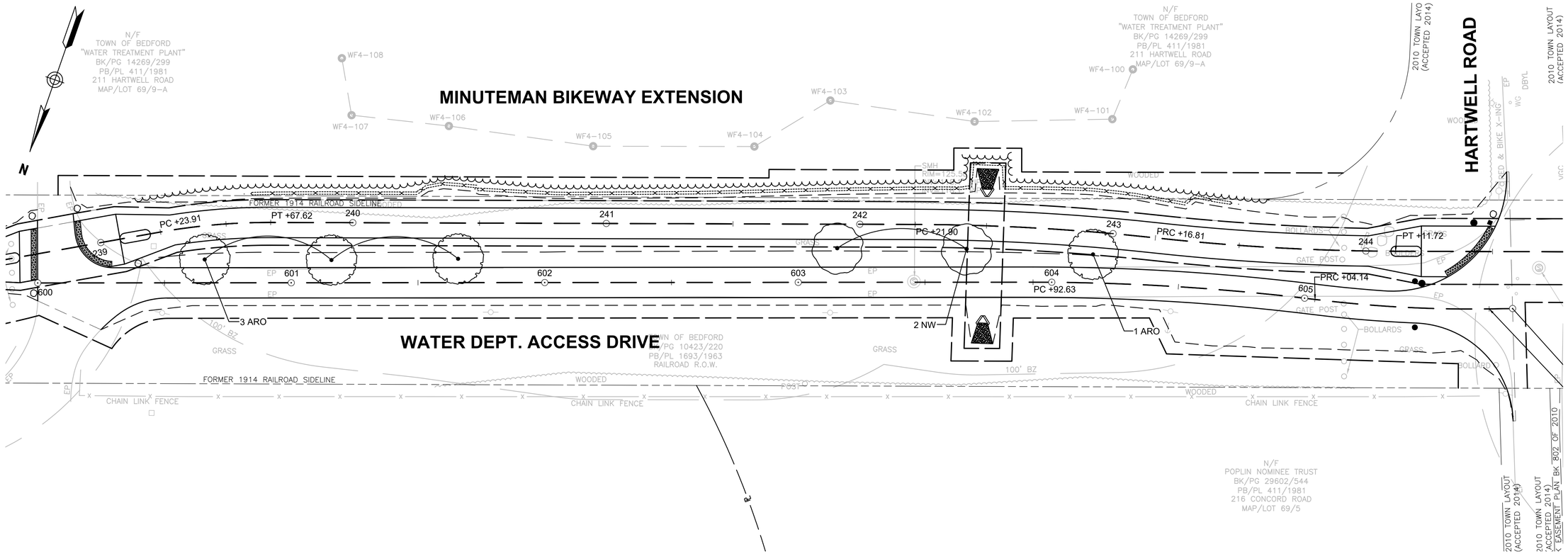
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	75	166
PROJECT FILE NO.	607738		

LANDSCAPE PLANS

607738_HD(LA).DWG Plotted on 30-Oct-2020 12:39 PM

PLANT SCHEDULE SHEET 2

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
ARO	4	Acer rubrum `October Glory`	Maple - October Glory	2 1/2 - 3" CAL.	776.551
NW	2	Nyssa sylvatica `Wildfire`	Wildfire Black Tupelo	2 - 2 1/2" CAL.	777.683

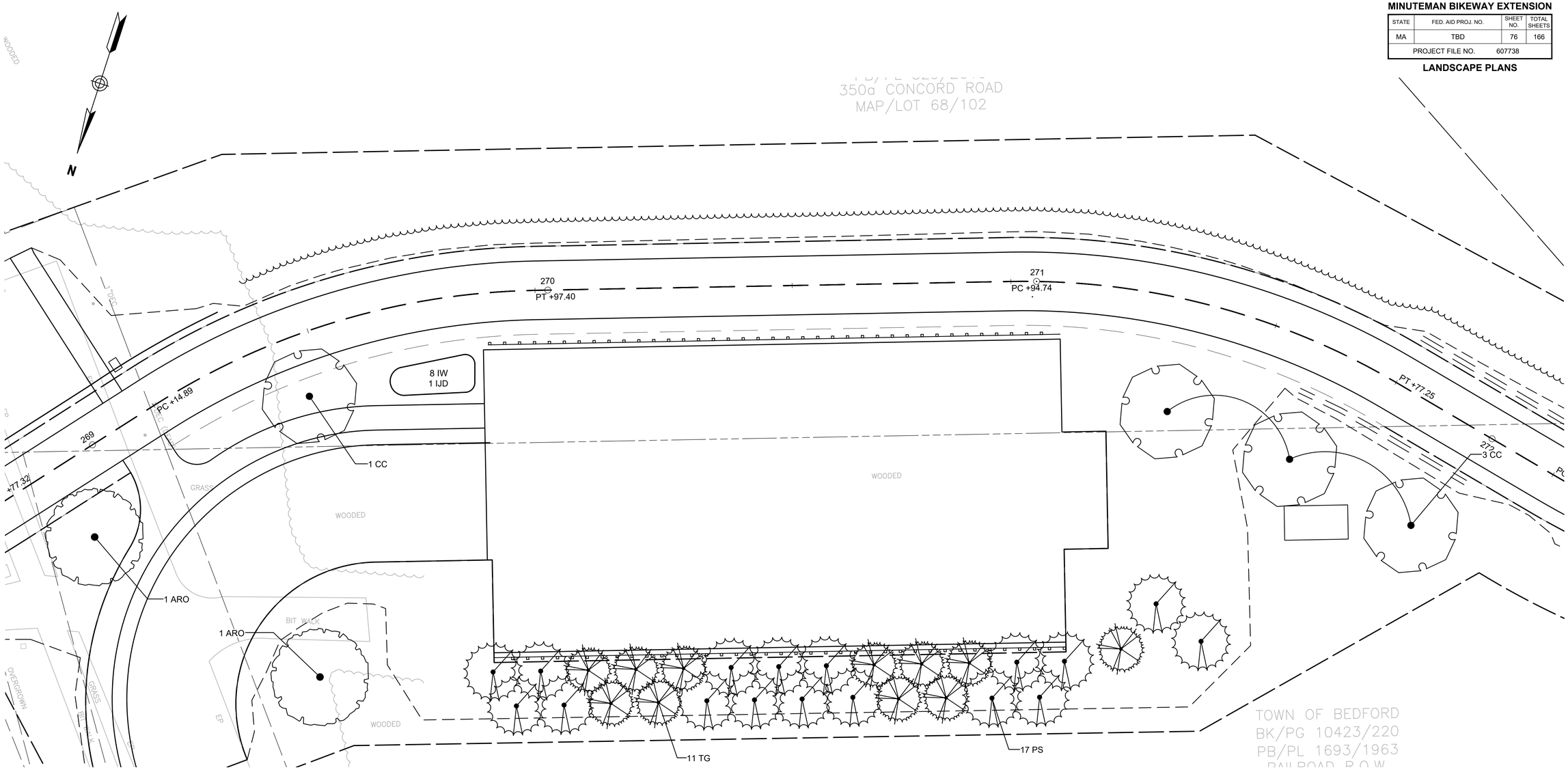


BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	76	166
PROJECT FILE NO.	607738		

LANDSCAPE PLANS

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PLANT SCHEDULE SHEET 3

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
ARO	2	Acer rubrum `October Glory`	Maple - October Glory	2 1/2 - 3" CAL.	776.551
CC	4	Cercis canadensis	Eastern Redbud	2 - 2 1/2" CAL.	782.538

EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
PS	17	Pinus strobus	White Pine	7 - 8` HT.	773.437
TG	11	Thuja plicata `Green Giant`	Arborvitae - Western Green Giant	6 - 8` HT.	772.139

SHRUB AREAS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
IW	8	Ilex verticillata	Winterberry	2 - 2 1/2` HT.	48" o.c.	795.157
IJD	1	Ilex verticillata `Jim Dandy`	Jim Dandy Winterberry	2 - 2 1/2` HT.	48" o.c.	795.153

0 10 20 30 40

SCALE: 1" = 10'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	77	166
PROJECT FILE NO.	607738		

LANDSCAPE PLANS

607738_HDI(LA).DWG Plotted on 30-Oct-2020 12:15 PM

N

PB/PL 1693/1963
RAILROAD R.O.W.

-3 TR-
WF11-100
101
L=125'±
2 QC
24"DEC
WOODED
23
2 CC
COVERED TRAIL SIGN
EP
2 ARO
1 ARO
WOODED
24
F10-110
BIT
PARKING LOT ENTRANCE
WOODED
EP
PEDL X-ING
9 RFG
8 SH
ROTARY INTERNATIONAL
WOODED
19
PCC +3
PC +27.54
14 RFG
1 ARO
20 SH
WG
WOODED
GRASS
BRUSH
EP
BARK & PEDL X-ING
GRASS
15"DEC
ARSEN BAIATIAN
BK/PG 30792/143
PB/PL 1151/1974
421 CONCORD ROAD
MAP/LOT 67/49

PLANT SCHEDULE SHEET 4

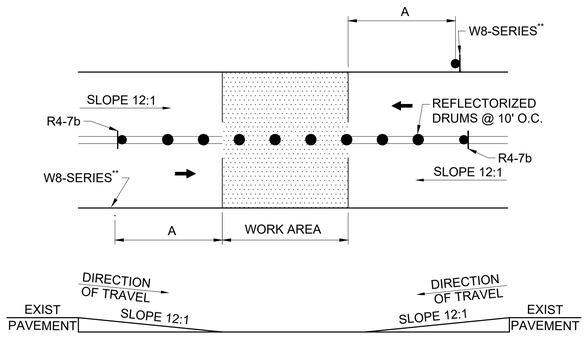
TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
ARO	4	Acer rubrum `October Glory`	Maple - October Glory	2 1/2 - 3" CAL.	776.551
CC	2	Cercis canadensis	Eastern Redbud	2 - 2 1/2" CAL.	782.538
QC	2	Quercus coccinea	Scarlet Oak	2 - 2 1/2" CAL.	777.241
TR	3	Tilia americana `Redmond`	Redmond American Linden	2 - 2 1/2" CAL.	775.140

PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
RFG	23	Rudbeckia fulgida `Goldsturm`	Black Eyed Susan	#2 POT	24" o.c.	796.715
SH	28	Sporobolus heterolepis	Prairie Dropseed	2 GAL.	24" o.c.	796.421

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

TEMPORARY TRAFFIC CONTROL GENERAL NOTES

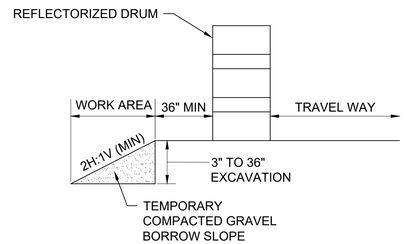
1. ALL CONSTRUCTION SIGNING, TEMPORARY TRAFFIC CONTROL DEVICES, AND ROADSIDE ELEMENTS SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS AMENDED, THE MASSDOT STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, THE LATEST REVISIONS OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, (AASHTO) ROADSIDE DESIGN GUIDE, AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, AND NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 OR THE AASHTO MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
2. WORK HOURS SHALL BE 7:00AM TO 3:30PM MONDAY THRU FRIDAY UNLESS OTHERWISE APPROVED BY MASSDOT AND THE TOWN OF BEDFORD. NO WORK IMPACTING THE TRAVEL WAY WILL BE ALLOWED DURING PEAK TRAFFIC PERIODS. PEAK PERIODS ARE DEFINED AS MONDAY THRU FRIDAY, 7:00AM TO 9:00AM AND 3:00PM TO 6:00PM.
3. NO WORK SHALL OCCUR WITHIN THE PUBLIC WAY THE DAY BEFORE, AFTER OR ON A STATE RECOGNIZED HOLIDAY UNLESS OTHERWISE APPROVED BY THE ENGINEER.
4. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (MAAB) AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) REQUIREMENTS AND PUBLIC RIGHTS-OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
5. ALL DRUMS OUTSIDE TAPERS SHALL BE SET AT 20' ON CENTER MAX. UNLESS OTHERWISE NOTED OR ADJUSTED BY THE ENGINEER.
6. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN SAFE AND REASONABLE ABUTTER ACCESS. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS.
7. THE FIRST 10 DRUMS ON TAPERS SHALL BE MOUNTED WITH SEQUENTIAL FLASHING WARNING LIGHTS AND SHALL BE OPERATING, AT A MINIMUM, BETWEEN DUSK AND DAWN, WHEN TAPER IS DEPLOYED.
8. REFLECTORIZED CONES SHALL BE A MINIMUM OF 36 INCHES IN HEIGHT.
9. CONES MAY BE USED IN LIEU OF DRUMS OUTSIDE OF TAPER AREAS.
10. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OR RESTRICTION OF ACCESS.
11. FOR DROP-OFFS 3" OR LESS WITHIN THE CLEAR ZONE, CONDITION MAY BE MITIGATED WITH W8-9 (LOW SHOULDER) SIGN OR TEMPORARY CHANNELIZATION DEVICES. FOR DROP-OFFS GREATER THAN 3" BUT NO MORE THAN 36", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO INSTALL BOTH W8-9 SIGN AND TEMPORARY CHANNELIZATION DEVICES IN ACCORDANCE WITH MASSDOT WORK ZONE SAFETY GUIDE OR W8-9 SIGN WITH A 2H:1V (MIN) WEDGE OR TO REMOVE THE HAZARD. FOR DROP-OFFS 36" OR GREATER USE TEMPORARY BARRIER IN ACCORDANCE WITH MASSDOT WORK ZONE POSITIVE PROTECTION GUIDELINES.
12. CONSTRUCTION CLEAR ZONE SHALL BE IN ACCORDANCE WITH MASSDOT BOSTON TRAFFIC GUIDELINES AS FOLLOWS:
    - 4' IF POSTED SPEED IS LESS THAN 35 MPH
    - 8' IF POSTED SPEED IS 35 MPH
    - 15' IF POSTED SPEED IS 40 MPH
13. ALL TEMP BARRIERS SHALL MEET OR EXCEED MASS TL-2 REQUIREMENTS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
14. THE CONTRACTOR SHALL PROVIDE TEMPORARY IMPACT ATTENUATORS TO PROTECT ALL BLUNT-ENDS OF TEMPORARY BARRIER OR AS REQUIRED BY THE ENGINEER. TEMPORARY IMPACT ATTENUATORS SHALL BE DESIGNED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK. ALL TEMPORARY IMPACT ATTENUATORS SHALL BE DESIGNED TO MEET OR EXCEED MASH TEST LEVEL 2 (TL-2).
15. 11' MINIMUM LANE WIDTHS SHALL BE MAINTAINED UNLESS OTHERWISE NOTED.
16. TEMPORARY TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS WHEN NOT IN USE.
17. SIGNS INSTALLED ON PORTABLE STANDS REQUIRE 12 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
18. SIGNS INSTALLED ON PORTABLE STANDS PLACED AMONG CHANNELIZATION DEVICES REQUIRE A 36 INCH MINIMUM MOUNTING HEIGHT FROM THE ROADWAY SURFACE TO THE BOTTOM OF THE SIGN.
19. SIGNS MOUNTED ON POSTS REQUIRE A MINIMUM 84 INCH MOUNTING HEIGHT FROM THE ROADWAY OR SIDEWALK SURFACE TO THE BOTTOM OF THE SIGN. CONTRACTOR SHALL MAINTAIN A MINIMUM SIDEWALK HORIZONTAL CLEAR WIDTH OF 36" AT ALL TIMES.
20. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN NCHRP 350 AND/OR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD. SIGNS SHALL NOT BE MOUNTED TO OR LEANED AGAINST DRUMS OR CONES.
21. ARROW BOARD FLASHING CAUTION SHALL FLASH IN FOUR-POINT CAUTION MODE ONLY.
22. W21-7 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF AREAS WHERE UTILITY CASTINGS HAVE BEEN RAISED IN ADVANCE OF PAVING OPERATIONS OR AS REQUESTED BY THE ENGINEER.
23. W8-15 SIGNS SHALL BE INSTALLED IN ADVANCE (100' MIN) OF PAVEMENT MILLING AREAS OR AS REQUESTED BY THE ENGINEER.
24. TEMPORARY MARKINGS SHALL BE WATER-BORNE PAINT OR SURFACE-APPLIED REMOVEBLE TAPE, AS APPROVED BY THE ENGINEER.
25. ALL TEMPORARY CROSSWALKS AND STOP LINES SHALL BE 8 INCHES WIDE.
26. ALL TEMPORARY DOUBLE YELLOW LINES (DBYL) SHALL BE 4 INCHES WIDE.
27. CONTRACTOR SHALL SECURE WORK AREAS BY APPROPRIATE MEANS, TO PREVENT UNAUTHORIZED ACCESS AT ALL TIMES.
28. THERE IS NO DESIGNATED BICYCLE LANE ON THE ROADWAY WITHIN THE PROJECT LIMITS. BICYCLES ARE EXPECTED TO SHARE THE ROAD WITH GENERAL VEHICULAR TRAFFIC AS THEY DO IN EXISTING CONDITION.
29. CONTRACTOR SHALL SETUP DAILY WORK ZONES AS NECESSARY FOR FULL DEPTH PAVEMENT CONSTRUCTION. AT THE END OF EACH WORK SHIFT, UNTIL INTERMEDIATE PAVING COURSE IS INSTALLED, CONTRACTOR TO FOLLOW THE BELOW GUIDELINES OR AS DIRECTED BY THE ENGINEER.
    A. GRAVEL PAVEMENT COURSE SHALL REMAIN OPEN TO TRAVEL FOR A MAXIMUM OF 10 CALENDAR DAYS PRIOR TO PAVING.
    B. BASE AND BINDER PAVING COURSES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND PAVEMENT NOTES. IN LOCATIONS WHERE THE ROADWAY IS NARROWED, PAVED ACCESS SHALL BE PROVIDED AT ALL ABUTTING DRIVEWAYS AND PARKING AREAS.
    C. MAINTAIN ADEQUATE ROADWAY DRAINAGE AT ALL TIMES.
30. CONTRACTOR SHALL PROVIDE 2 PORTABLE CHANGE MESSAGE SIGN (PCMS) ON CONCORD ROAD A MINIMUM OF 7 DAYS PRIOR TO AND POST START OF CONSTRUCTION AND 7 DAYS PRIOR TO AND POST CHANGE OF EACH MAJOR CONSTRUCTION STAGE.



NOTES:
1. SQUARE OFF THE FULL WIDTH OF THE ROADWAY AT THE END OF WORK DAY
2. ** CONTRACTOR SHALL INSTALL W8-1, W8-3, OR W8-8 SIGN, AS APPROPRIATE, ON ALL ROADWAYS IN ADVANCE OF THE TRANSITION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

TEMPORARY PAVEMENT TRANSITION

SCALE: NTS



NOTE:
1. CONTRACTOR SHALL INSTALL W8-9 SIGN ON ALL ROADWAYS 350 FT IN ADVANCE OF THE START OF DROP-OFF CONDITION.

TYPICAL ROADWAY DROP-OFF PROTECTION

SCALE: NTS

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	78	166
PROJECT FILE NO. TBD			

TEMPORARY TRAFFIC CONTROL PLANS
GENERAL NOTES & LEGEND

LEGEND

Ⓟ	POLICE OFFICER
Ⓢ	TRAFFIC SIGNAL
●	REFLECTORIZED DRUM
◉	REFLECTORIZED DRUM WITH TYPE A FLASHER (SEE NOTE 7)
	TEMPORARY CONSTRUCTION SIGN
▲	TRAFFIC CONE
	TYPE III BARRICADE
	TEMPORARY BARRIER
	TEMPORARY IMPACT ATTENUATOR (TYPE NOTED)
	WORK AREA (PUBLIC ACCESS RESTRICTED)
	TRAFFIC FLOW
	PEDESTRIAN ROUTE
	CONSTRUCTION FENCE
	TEMPORARY PEDESTRIAN BARRICADE
NTS	NOT TO SCALE

ADVANCE SIGN SPACING

ROAD	DISTANCE BETWEEN SIGNS (FEET) A	B	C	D
CONCORD RD	350	150	350	350
ALL OTHER ROADWAYS	100	50	100	100

LANE TAPER LENGTH FORMULAS

L=	TAPER LENGTH IN FEET
W=	WIDTH OF ROADWAY TO BE SHIFTED OR REDIRECTED IN FEET
S=	POSTED SPEED LIMIT IN MPH

POSTED SPEED	
40 MPH OR LESS	$L=\frac{WS^2}{60}$

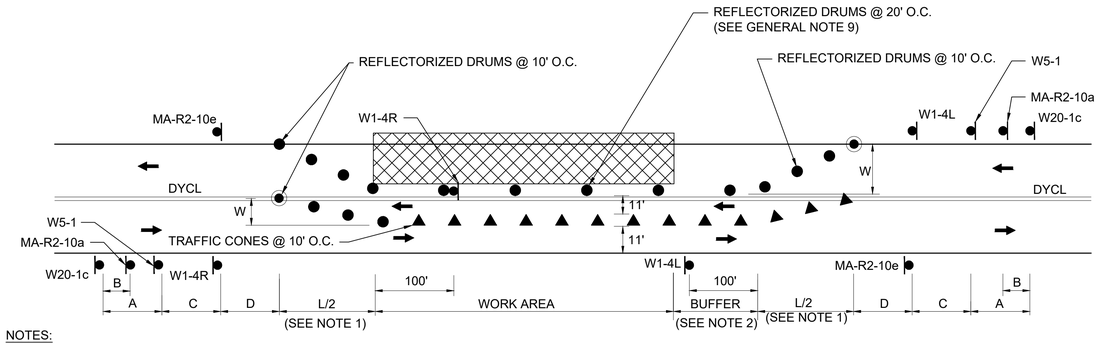
BUFFER SPACING

SPEED (MPH)	DISTANCE (FEET)
15	80
20	115
25	155
30	200
35	250
40	305

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	79	166
PROJECT FILE NO. TBD			

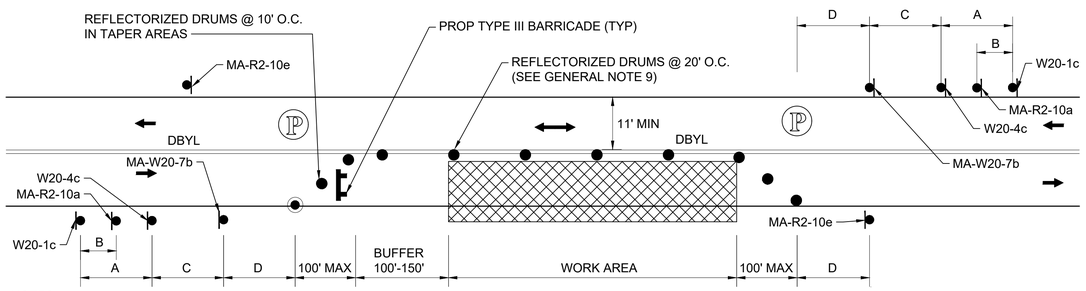
TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS



NOTES:
1. SEE TAPER LENGTH FORMULA ON SHEET 78.
2. SEE BUFFER SPACING CHART ON SHEET 78.
3. REFER TO ADVANCE SIGN SPACING TABLE ON SHEET 78.

TYPICAL TWO-WAY STREET LANE SHIFT

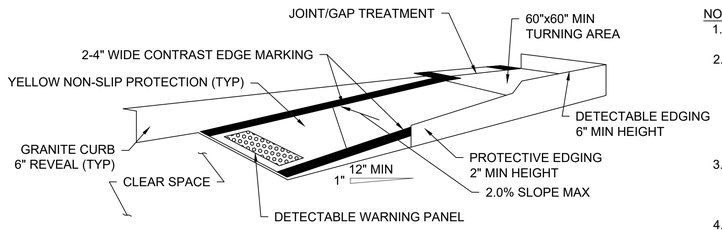
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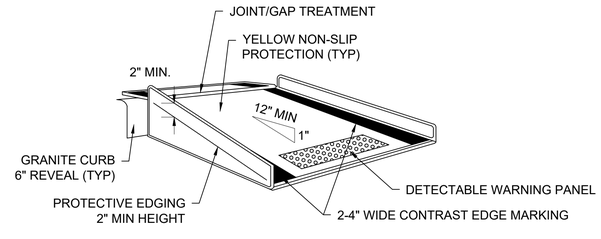
NOTES:
1. REFER TO ADVANCE SIGN SPACING TABLE ON SHEET 78.
2. SEE ADVANCE SIGN SPACING CHART ON SHEET 78.

TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC

SCALE: NTS



TEMPORARY CURB RAMP-PARALLEL TO CURB

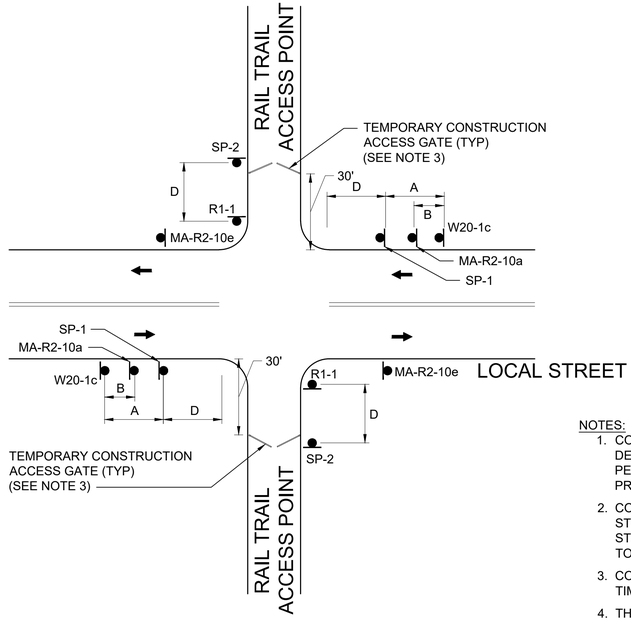


TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

NOTES:
1. CURB RAMPS SHALL BE 60" MINIMUM WIDTH WITH A FIRM, STABLE AND NON-SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2" MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
3. DETECTABLE EDGING WITH 6" MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
5. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
6. CLEAR SPACE OF 48"x48" MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5" WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5" LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25" HIGH, AND BEVELED AT 1:2 BETWEEN 0.25" AND 0.5" HEIGHT.
10. IF A TEMPORARY PEDESTRIAN RAMP LEADS TO A CROSSWALK, THEN A DETECTABLE WARNING PAD MUST BE ADHERED TO THE BASE OF THE RAMP. IF IT LEADS TO A PROTECTED PEDESTRIAN BYPASS THAT DOES NOT CONFLICT WITH VEHICULAR TRAFFIC, THEN A PAD SHALL NOT BE INSTALLED ON THE RAMP.

TEMPORARY CURB RAMPS

SCALE: NTS



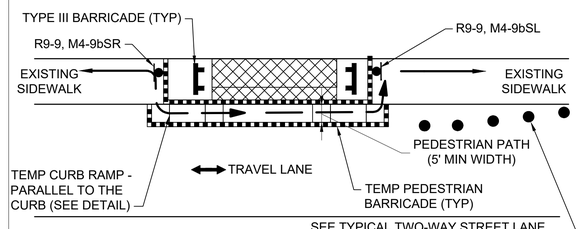
NOTES:
1. CONTRACTOR SHALL DEVELOP WORK ZONE STAGING AREAS WITH DESIGNATED PARKING FOR EMPLOYEES. PARKING OF WORKERS' PERSONAL VEHICLES ON PUBLIC PROPERTY IS STRICTLY PROHIBITED.
2. CONTRACTOR SHALL DESIGNATE MATERIAL STORAGE AND STAGING AREAS FOR OFF-SITE MATERIAL STORAGE. OFF-SITE STORAGE AREAS SHALL BE MARKED WITH REFLECTORIZED DRUMS TO CLEARLY DELINEATE AREA LIMITS.
3. CONTRACTOR SHALL RESTRICT UNAUTHORIZED ACCESS AT ALL TIMES.
4. THIS DETAIL TO BE APPLIED AT ALL CONSTRUCTION ACCESS POINTS.

TYPICAL WORKZONE ACCESS

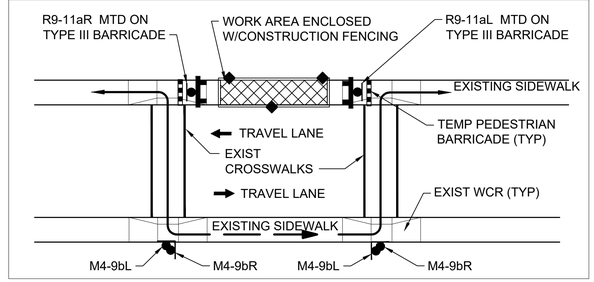
SCALE: NTS

NOTES:
1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY, ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. ⟶ INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, THE APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AT EXISTING OR TEMPORARY CROSSWALKS AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.
6. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS AND INCLUDE THE USE OF COMPLIANT TEMPORARY PEDESTRIAN BARRICADES AND TEMPORARY PEDESTRIAN CURB RAMPS AT ALL TIMES.
7. CONTRACTOR SHALL MAINTAIN AS WIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY, THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS. A 5' x 5' PASSING AREA SHALL BE PROVIDED IN INTERVALS NOT EXCEEDING 200 FEET.
8. TEMPORARY WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT, MAAB, AND ADAAG REQUIREMENTS.
9. TEMPORARY PEDESTRIAN BARRICADES SHALL BE PAID FOR UNDER ITEM 852.11 TEMPORARY PEDESTRIAN BARRICADE.
10. TEMPORARY PEDESTRIAN CURB RAMPS SHALL BE PAID FOR UNDER ITEM 852.12 TEMPORARY PEDESTRIAN CURB RAMP.

PEDESTRIAN BYPASS TYPE I



PEDESTRIAN BYPASS TYPE II



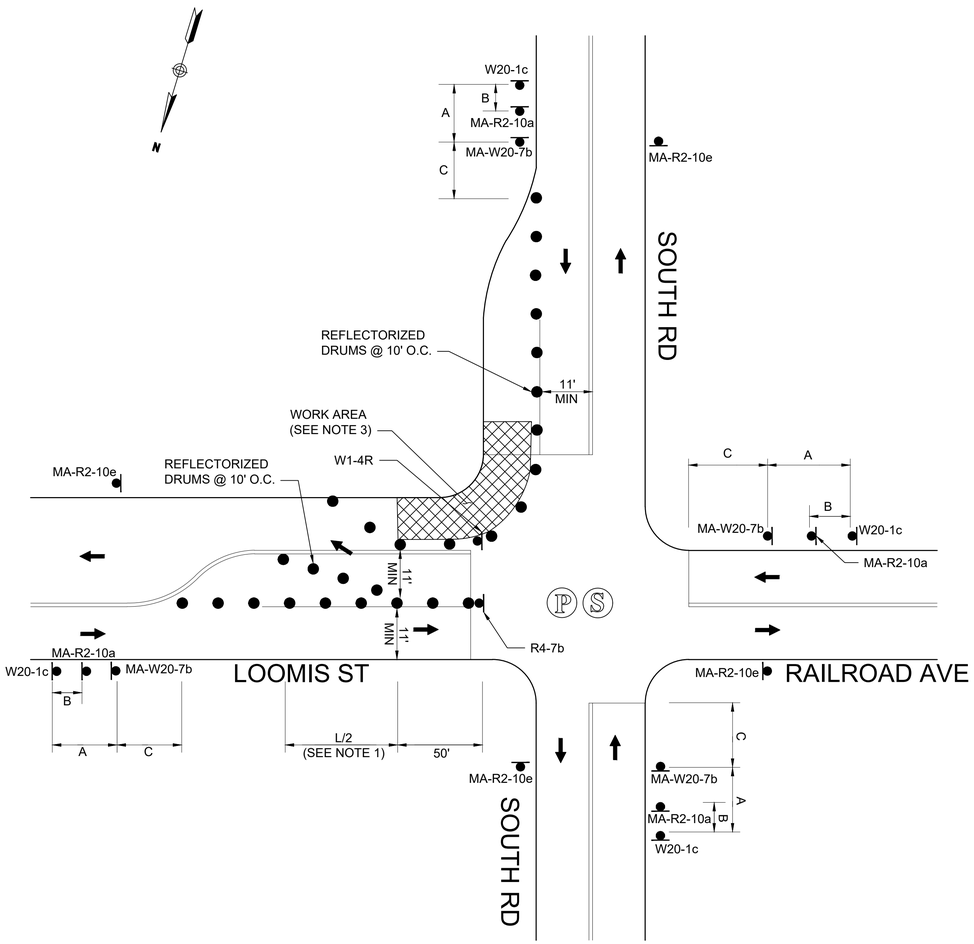
PEDESTRIAN BYPASS DETAIL

SCALE: NTS

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	80	166
PROJECT FILE NO. TBD			

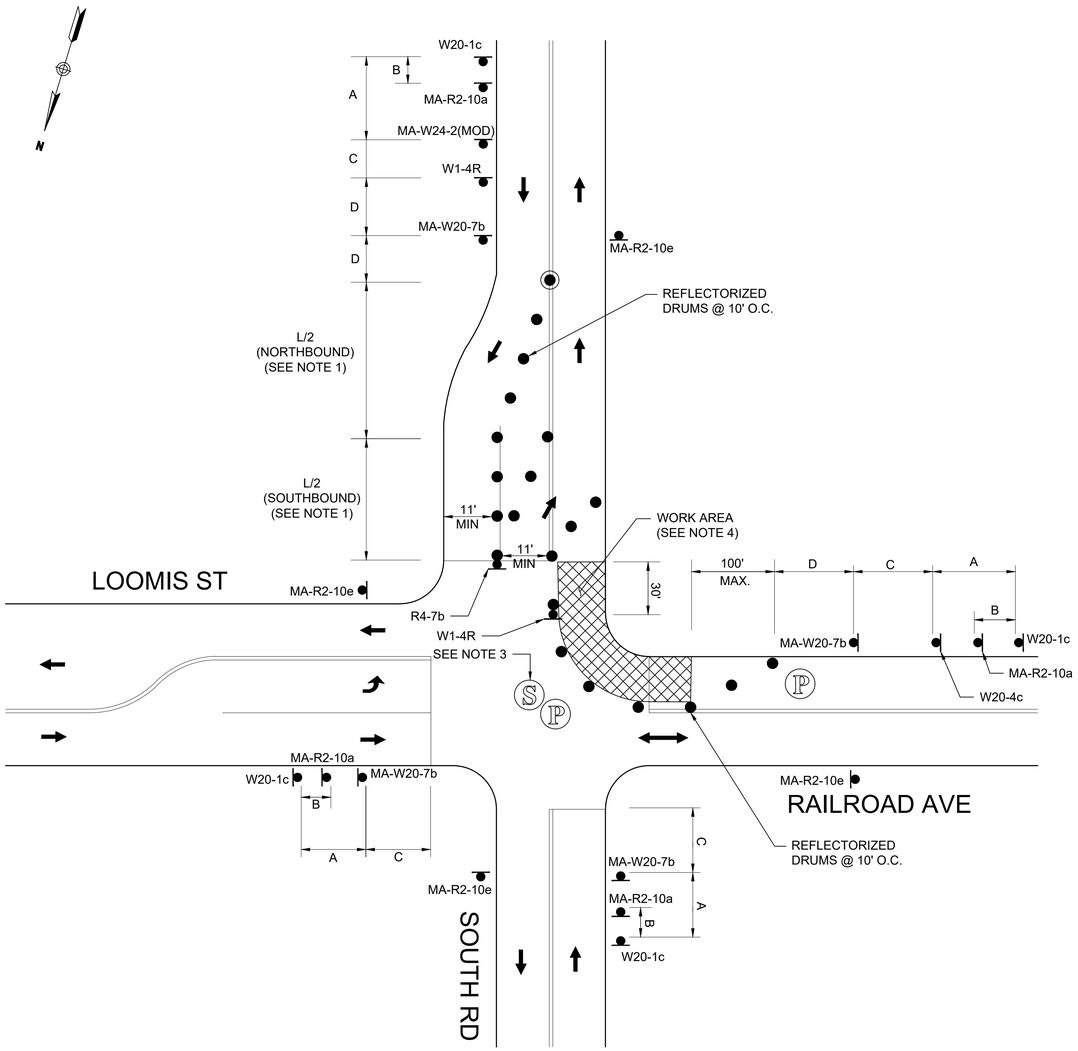
TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS



NOTES:
1. SEE TAPER LENGTH FORMULA ON SHEET 78.
2. REFER TO ADVANCE SIGN SPACING TABLE ON SHEET 78.
3. FOR SIDEWALK CLOSURE/ DETOUR, SEE PEDESTRIAN BYPASS TYPE II DETAIL ON SHEET 79.
4. TRAFFIC TO BE RESTORED BACK TO ORIGINAL CONDITION AT THE END OF EACH DAY SHIFT.

WORK ON NEAR SIDE OF INTERSECTION - LOOMIS/RAILROAD AT SOUTH RD

SCALE: NTS



NOTES:
1. SEE TAPER LENGTH FORMULA ON SHEET 78.
2. REFER TO ADVANCE SIGN SPACING TABLE ON SHEET 78.
3. EXIST TRAFFIC SIGNAL TO OPERATE IN FLASHING MODE UNDER POLICE CONTROL FOR THE DURATION OF THIS SETUP.
4. FOR SIDEWALK CLOSURE/ DETOUR, SEE PEDESTRIAN BYPASS TYPE II DETAIL ON SHEET 79.
5. TRAFFIC TO BE RESTORED BACK TO ORIGINAL CONDITION AT THE END OF EACH DAY SHIFT.

ONE LANE BI-DIRECTIONAL TRAFFIC AT INTERSECTION - LOOMIS/RAILROAD AT SOUTH RD

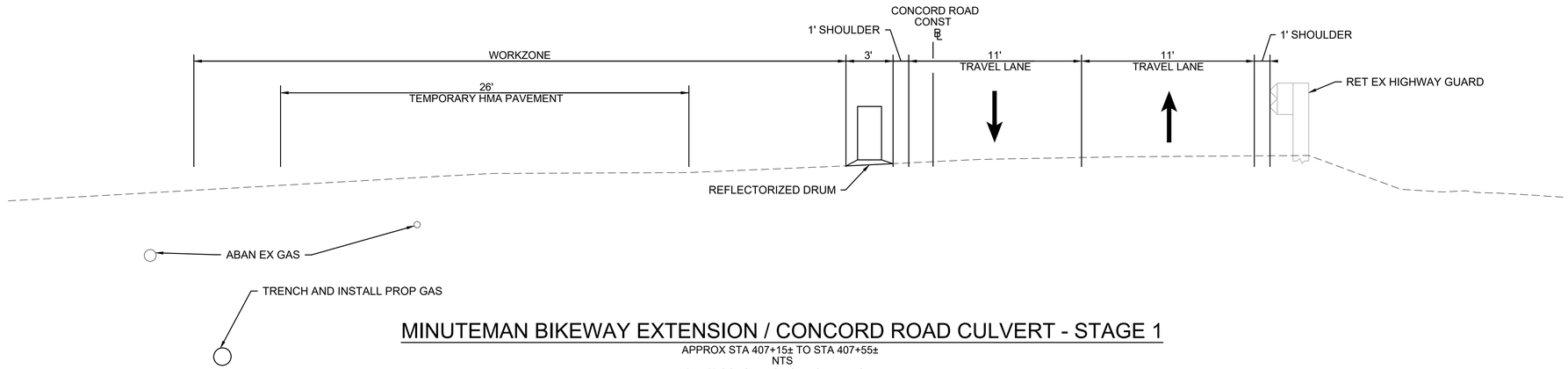
SCALE: NTS

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	81	166
PROJECT FILE NO.		TBD	

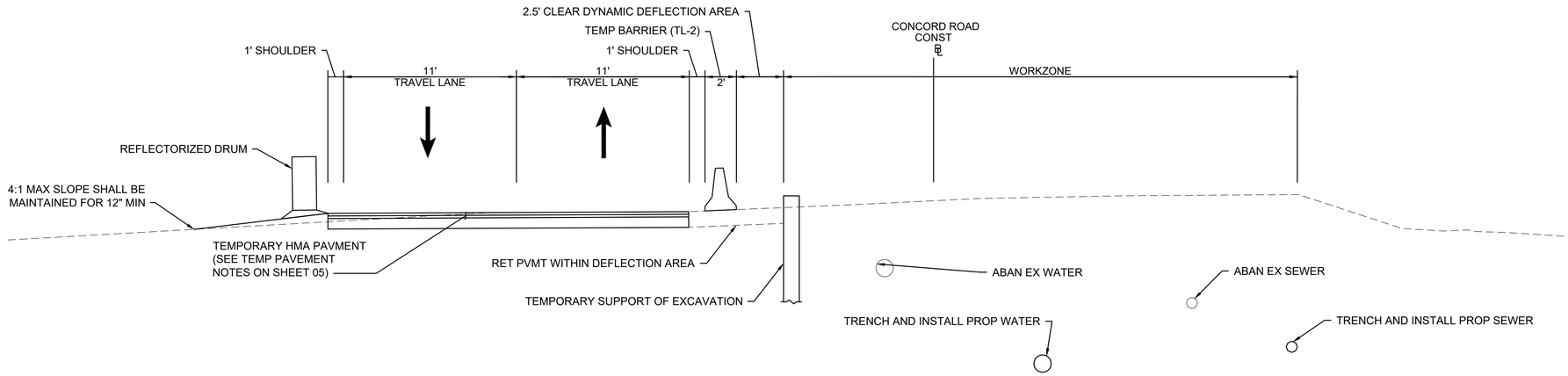
TEMPORARY TRAFFIC CONTROL PLANS
CULVERT CONSTRUCTION STAGING
TYPICAL SECTIONS

607738_(TYP-STAGING).DWG Plotted on 30-Oct-2020 12:16 PM



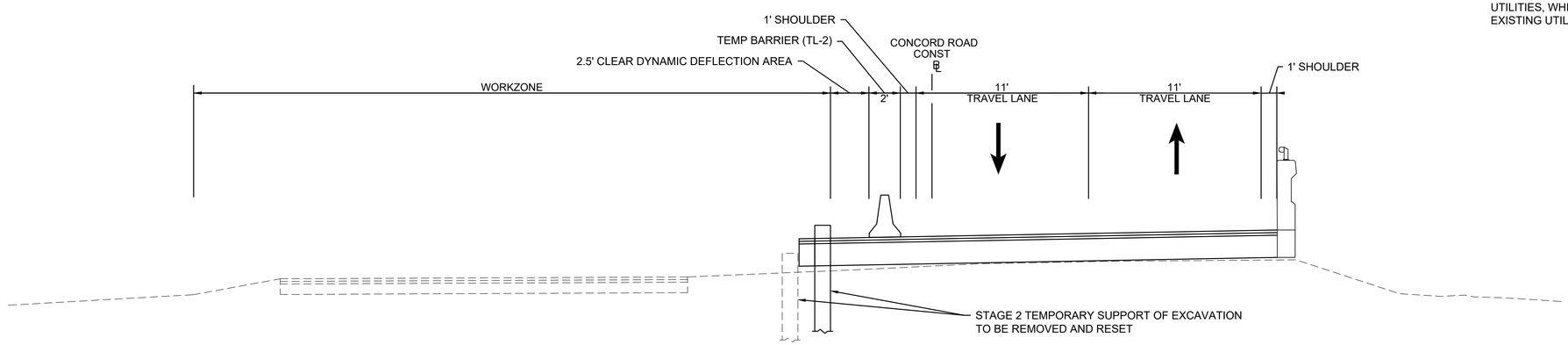
MINUTEMAN BIKEWAY EXTENSION / CONCORD ROAD CULVERT - STAGE 1

APPROX STA 407+15± TO STA 407+55±
NTS
* 0.5% CONSTRUCTION TOLERANCE



MINUTEMAN BIKEWAY EXTENSION / CONCORD ROAD CULVERT - STAGE 2

APPROX STA 407+15± TO STA 407+55±
NTS
* 0.5% CONSTRUCTION TOLERANCE



MINUTEMAN BIKEWAY EXTENSION / CONCORD ROAD CULVERT - STAGE 3

APPROX STA 407+15± TO STA 407+55±
NTS
* 0.5% CONSTRUCTION TOLERANCE

CULVERT CONSTRUCTION STAGING NOTES

STAGE 1:
- CONSTRUCT BYPASS ROAD WITH TEMPORARY PAVEMENT TO BE UTILIZED IN STAGE 2.
- CONTRACTOR TO CONSTRUCT/ADJUST GAS LINE

STAGE 2:
- EXCAVATE WEST SIDE OF CONCORD RD.
- CONTRACTOR TO CONSTRUCT/ADJUST WATER AND SEWER UTILITY LINES.
- CONSTRUCT WEST SIDE OF CONCORD RD CULVERT.
- CONSTRUCT WEST SIDE BRIDGE RAIL.
- CONSTRUCT CONCORD RD WEST SIDE FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.

STAGE 3:
- EXCAVATE REMAINING EAST SIDE OF CONCORD RD.
- CONTRACTOR TO CONSTRUCT/ADJUST GAS AND OVERHEAD UTILITY LINES.
- CONSTRUCT EAST SIDE OF CONCORD RD CULVERT.
- CONSTRUCT EAST SIDE FINAL CURB, CEMENT CONCRETE SAFETY WALK, AND BRIDGE RAIL.
- CONSTRUCT CONCORD RD EAST SIDE FULL DEPTH PAVEMENT TO INTERMEDIATE COURSE.

STAGE 4:
- CONSTRUCT WEST SIDE FINAL CURB, CEMENT CONCRETE SAFETY WALK.
- CONSTRUCT FINAL SURFACE COARSE PAVEMENT AND PAVEMENT MARKINGS.

CONSTRUCTION NOTE:

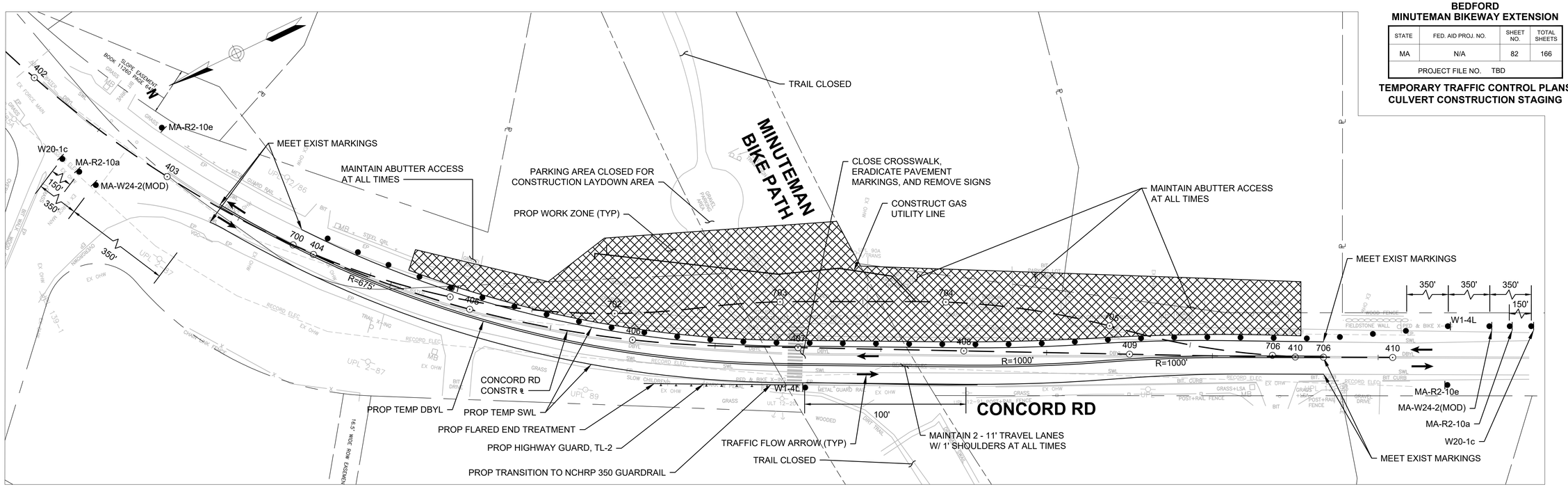
1. TRENCH AND INSTALL PROP UTILITIES PRIOR TO REMOVING OR ABANDONING EXISTING UTILITIES, WHILE MAINTAINING COVER OVER EXISTING UTILITIES

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	82	166
PROJECT FILE NO. TBD			

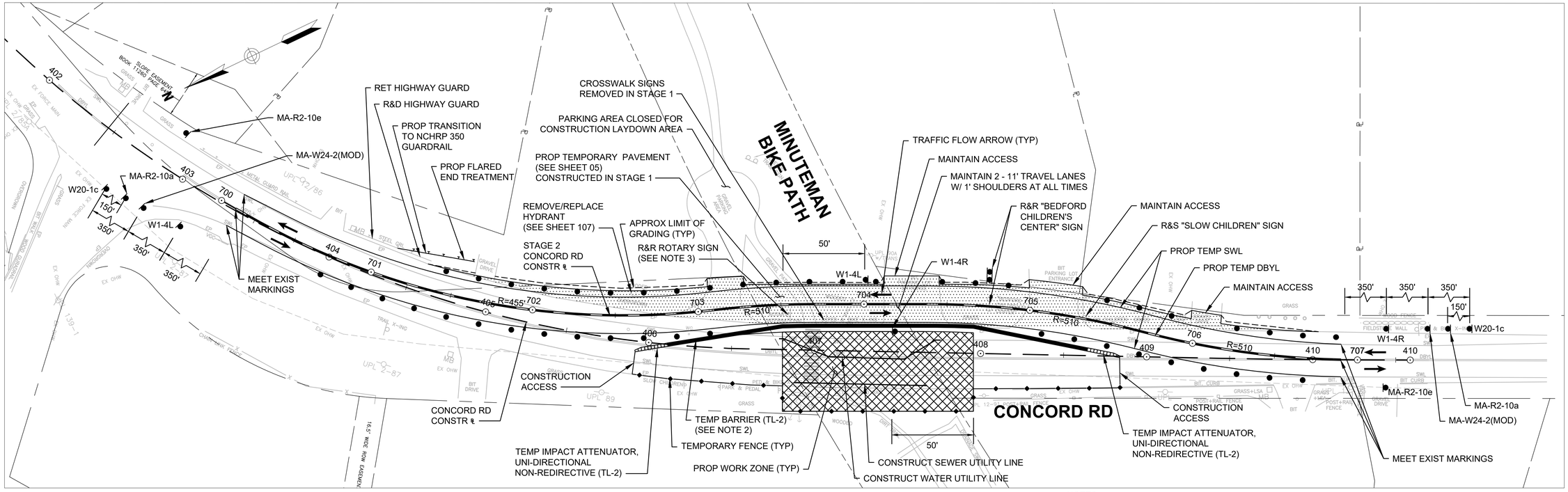
TEMPORARY TRAFFIC CONTROL PLANS
CULVERT CONSTRUCTION STAGING

607738_TR(STAGING).DWG Plotted on 30-Oct-2020 12:20 PM



STAGE 1

SCALE: 1" = 30'



STAGE 2

SCALE: 1" = 30'

NOTES:

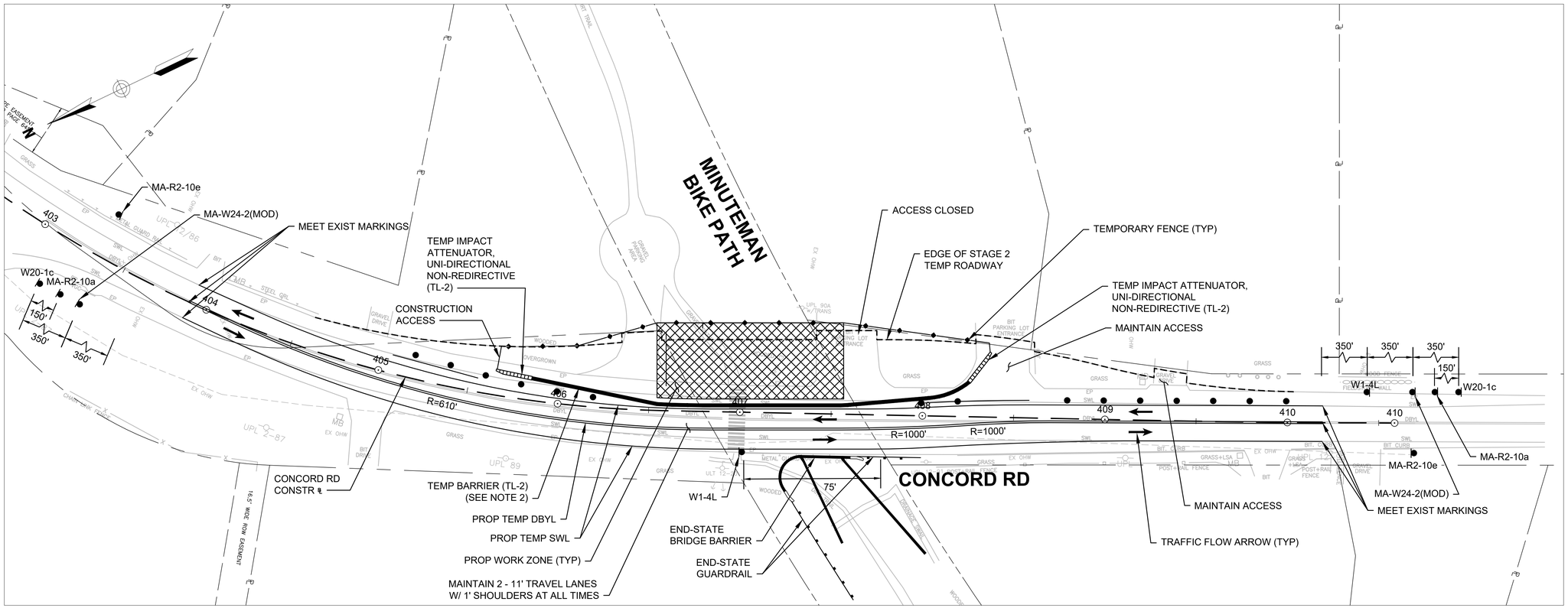
1. SEE CULVERT CONSTRUCTION STAGING TYPICAL SECTIONS ON SHEET 81 FOR ADDITIONAL INFORMATION.
2. PROP TEMP BARRIER (TL-2) DYNAMIC DEFLECTION SHALL BE 2.5 FEET MAXIMUM. BARRIER LENGTH OF NEED SHALL PROVIDE 70 FEET BEYOND THE HAZARD POINT.
3. ROTARY SIGN TO BE REMOVED DURING STAGE 2 AND 3 AND RESET PER SIGNING AND STRIPING PLAN ON SHEET 70.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	83	166
PROJECT FILE NO. TBD			

TEMPORARY TRAFFIC CONTROL PLANS
CULVERT CONSTRUCTION STAGING

607738_TR(STAGING).DWG Plotted on 30-Oct-2020 12:20 PM



STAGE 3

SCALE: 1" = 30'

NOTES:
1. SEE CULVERT STAGING TYPICAL SECTIONS ON SHEET 81 FOR ADDITIONAL INFORMATION.
2. PROP TEMP BARRIER (TL-2) DYNAMIC DEFLECTION SHALL BE 2.5 FEET MAXIMUM. BARRIER LENGTH OF NEED SHALL PROVIDE 70 FEET BEYOND THE HAZARD POINT.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	84	166
PROJECT FILE NO. TBD			

TEMPORARY TRAFFIC CONTROL PLANS
SIGN SUMMARY

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

IDENTIFI–CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK–GROUND	LEGEND	BORDER
R1-1	30"	30"	STOP	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			RED	WHITE	WHITE
MA-R2-10a	48"	36"	WORK ZONE / SPEEDING FINES DOUBLED	AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE / WHITE	BLACK	BLACK
MA-R2-10e	36"	48"	END ROAD WORK / DOUBLE FINES END				FLUOR-ESCENT ORANGE / WHITE	BLACK	BLACK
R4-7b	24"	30"	KEEP RIGHT	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			WHITE	BLACK	BLACK
R9-9	24"	12"	SIDEWALK CLOSED				WHITE	BLACK	BLACK
R9-11aL	24"	12"	SIDEWALK CLOSED ← CROSS HERE				WHITE	BLACK	BLACK
R9-11aR	24"	12"	SIDEWALK CLOSED → CROSS HERE				WHITE	BLACK	BLACK
W1-4L	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W1-4R	36"	36"					FLUOR-ESCENT ORANGE	BLACK	BLACK
W5-1	36"	36"	ROAD NARROWS				FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-1	36"	36"	BUMP				FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-3	36"	36"	PAVEMENT ENDS				FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-8	36"	36"	ROUGH ROAD				FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-9	36"	36"	LOW SHOULDER				FLUOR-ESCENT ORANGE	BLACK	BLACK
W8-15	36"	36"	GROOVED PAVEMENT				FLUOR-ESCENT ORANGE	BLACK	BLACK

TEMPORARY TRAFFIC CONTROL SIGN SUMMARY (CONTINUED)

IDENTIFI–CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			COLOR		
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK–GROUND	LEGEND	BORDER
W20-1c	36"	36"	ROAD WORK AHEAD	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
W20-4c	36"	36"	ONE LANE ROAD AHEAD				FLUOR-ESCENT ORANGE	BLACK	BLACK
MA-W20-7b	36"	36"	POLICE OFFICER AHEAD	AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
W21-7	36"	36"	UTILITY WORK AHEAD	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
MA-W24-2(MOD)	36"	36"	LANE SHIFT AHEAD	AS PER MASSDOT STANDARD			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bL	30"	24"	DETOUR ←	SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION"; AS AMENDED			FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bR	30"	24"	DETOUR →				FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bSL	30"	24"	DETOUR				FLUOR-ESCENT ORANGE	BLACK	BLACK
M4-9bSR	30"	24"	DETOUR				FLUOR-ESCENT ORANGE	BLACK	BLACK
SP-1	36"	36"	CAUTION VEHICLES ENTERING	6"C 6"C 6"C	3.5" 3.5"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK
SP-2	36"	36"	ROAD CROSSING AHEAD	6"C 6"C 6"C	3.5" 3.5"	N/A	FLUOR-ESCENT ORANGE	BLACK	BLACK

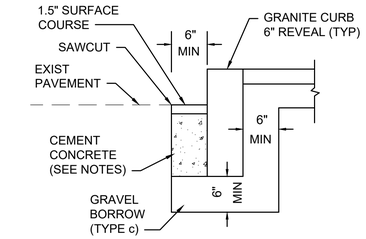
NOTES:
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS, AS AMENDED; THE 1977 MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARD DETAILS, AS AMENDED, FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 1993 EDITION, AS AMENDED; AND THE 2017 MASSDOT STANDARD SIGNS BOOK, AS AMENDED.
2. ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	85	166
PROJECT FILE NO.	607738		

CONSTRUCTION DETAILS

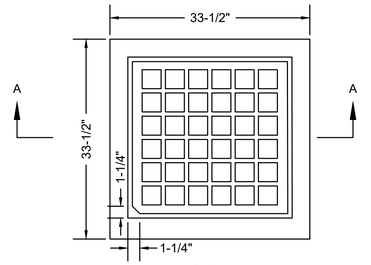
607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM



NOTES:
1. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB.
2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.

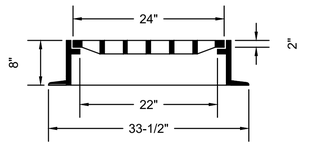
GRANITE CURB IN EXISTING PAVEMENT

SCALE: N.T.S.



PLAN

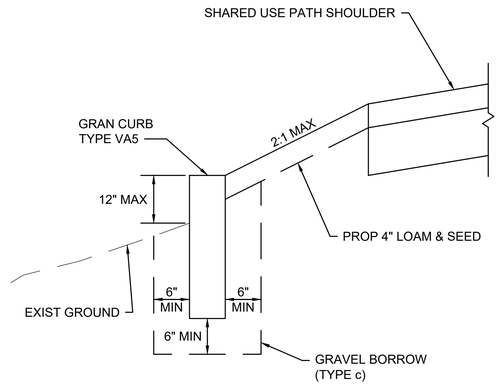
NOTES:
1. FRAME AND GRATE SHALL BE RATED FOR HS-20 LOADING.
2. MIN FRAME WEIGHT:
   4 FLANGE 295 LBS.
   3 FLANGE 265 LBS.
3. USE 3 FLANGE FRAMES AT CURB INLETS.



SECTION

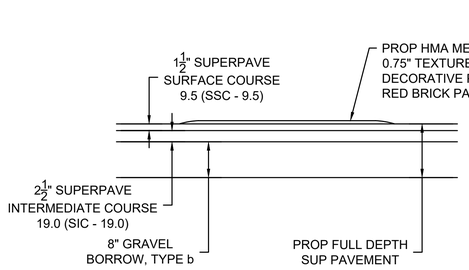
MUNICIPAL STANDARD CATCH BASIN FRAME & GRATE

SCALE: N.T.S.

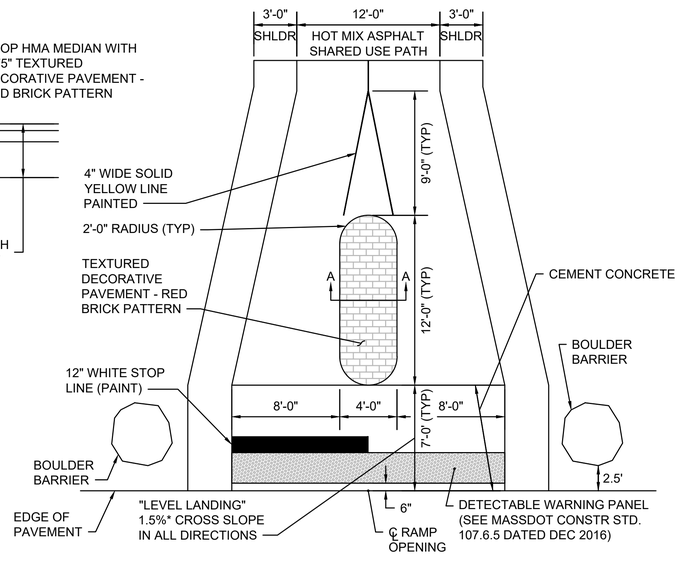


GRANITE CURB TYPE VA5 ON OFF-ROAD SHARED USE PATH SLOPES

SCALE: N.T.S.



SECTION A-A



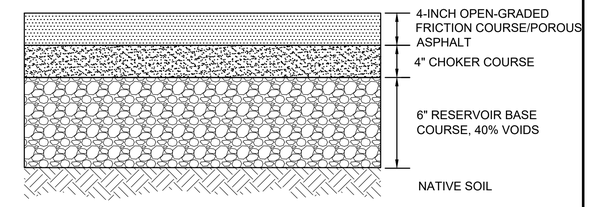
SPLITTER ISLAND DATA			
NO.	LOCATION	GUTTER SLOPE	OPENING ELEV
19	STA. 238+74.56, 0' RT/LT BIKEWAY CONSTR BL	-0.60%	122.59
20	STA. 238+99.75, 0' RT/LT BIKEWAY CONSTR BL	0.35%	122.56
21	STA. 244+44.64, 0' RT/LT BIKEWAY CONSTR BL	-1.50%	127.39
22	STA. 244+78.17, 0' RT/LT BIKEWAY CONSTR BL	0.82%	127.06

NOTE: GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE, DRAINING RIGHT TO LEFT POSITIVE

* TOLERANCE FOR CONSTRUCTION ±0.5%

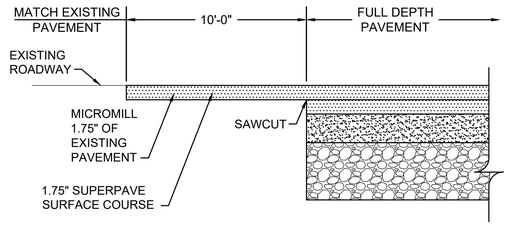
SPLITTER ISLAND

SCALE: N.T.S.



POROUS PAVEMENT

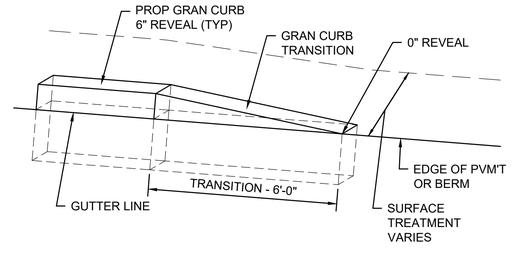
SCALE: N.T.S.



LONGITUDINAL SECTION

FULL DEPTH PAVEMENT TRANSITION

SCALE: N.T.S.



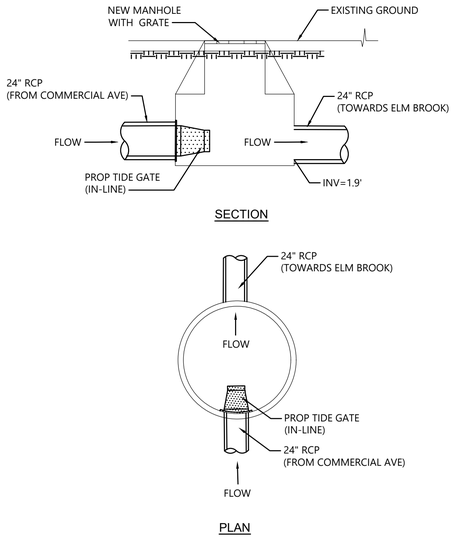
GRANITE CURB TRANSITION PIECE

SCALE: N.T.S.

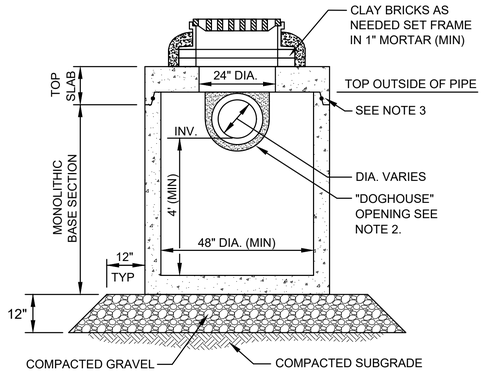
607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM

TIDE GATE IN-LINE CHECK VALVE

SCALE: N.T.S.



CATCH BASIN SHALLOW COVER (CBSC)

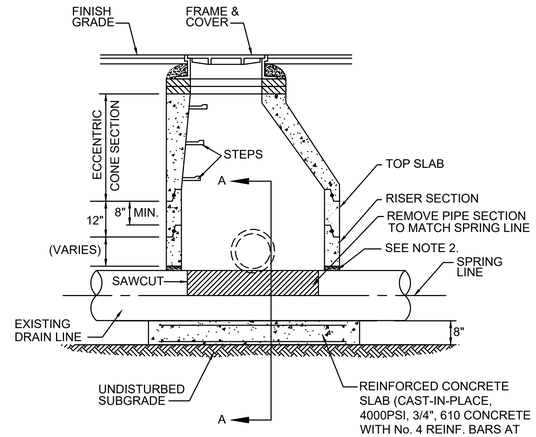


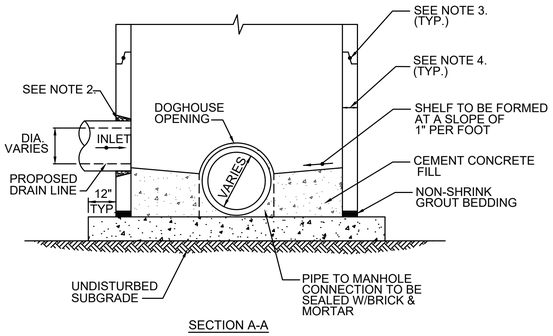
NOTES:

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE (4"DEPTH) SHALL BE SET IN FULL MORTAR BED.
5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.

DRAIN MANHOLE OVER EXISTING PIPE

SCALE: N.T.S.





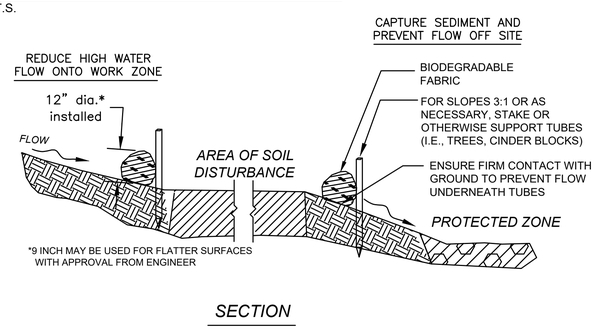
SECTION A-A

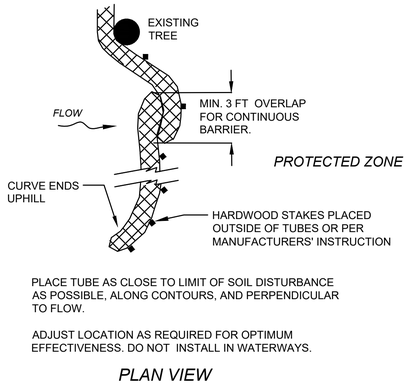
NOTES:

1. STRUCTURE SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE OPENINGS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. FOR MANHOLES OVER 9' IN DEPTH, WALL THICKNESS SHALL BE 6" MIN. FOR MANHOLES 9' OR LESS IN DEPTH, WALL THICKNESS SHALL BE 5" MIN.

COMPOST FILTER TUBE & SILT FENCE

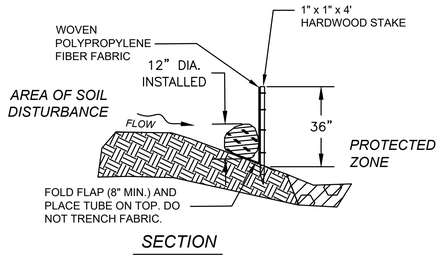
SCALE: N.T.S.





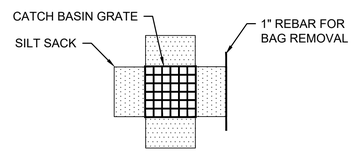
SEDIMENT BARRIER - COMPOST FILTER TUBE

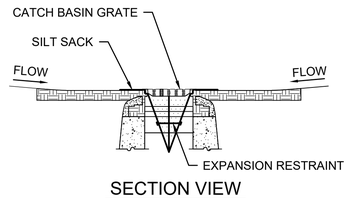
SCALE: N.T.S.



INLET PROTECTION - SILT SACK IN CATCH BASIN

SCALE: N.T.S.



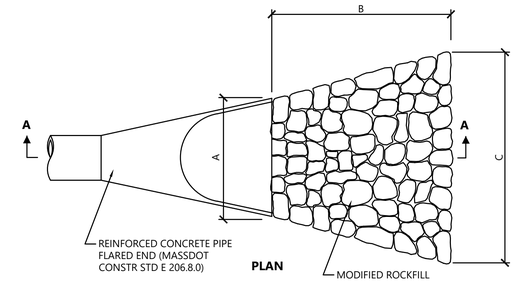


NOTES:

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

STONE FOR EROSION CONTROL AT PIPE OUTLETS

SCALE: N.T.S.



SECTION A-A

STRUCTURE NO.	STATION	A	B	C	D
73	506+05.9, 2.1' LT	6'-0"	12'-0"	8'-0"	2'-0"
135	242+50, 14.4' LT	3'-10"	6'-0"	8'-6"	2'-0"
139	116+12.2, 36.7' LT	3'-10"	4'-0"	5'-8"	2'-0"
143	242+50, 38.4 RT	3'-10"	6'-0"	8'-6"	2'-0"

NOTE:

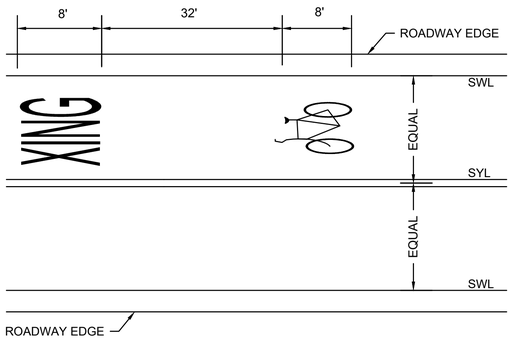
1. SEE MASSDOT CONSTR STD E 206.7.0

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	87	166
PROJECT FILE NO.	607738		

CONSTRUCTION DETAILS

607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM

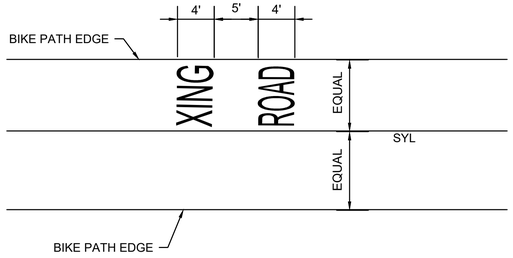


NOTES:

1. PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.

ROADWAY MARKINGS

SCALE: N.T.S.

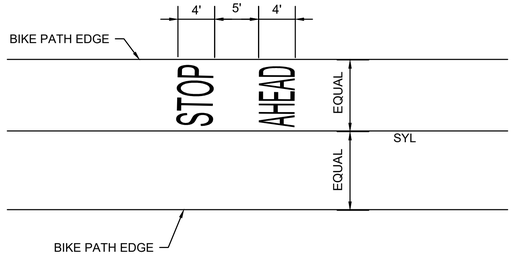


NOTES:

1. PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. PAVEMENT MARKINGS SHALL BE REFLECTIVE PAINT.

BIKE PATH MARKINGS

SCALE: N.T.S.

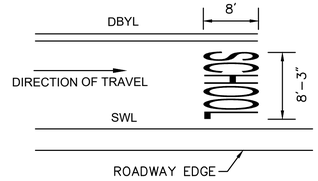


NOTES:

1. PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. PAVEMENT MARKINGS SHALL BE REFLECTIVE PAINT.

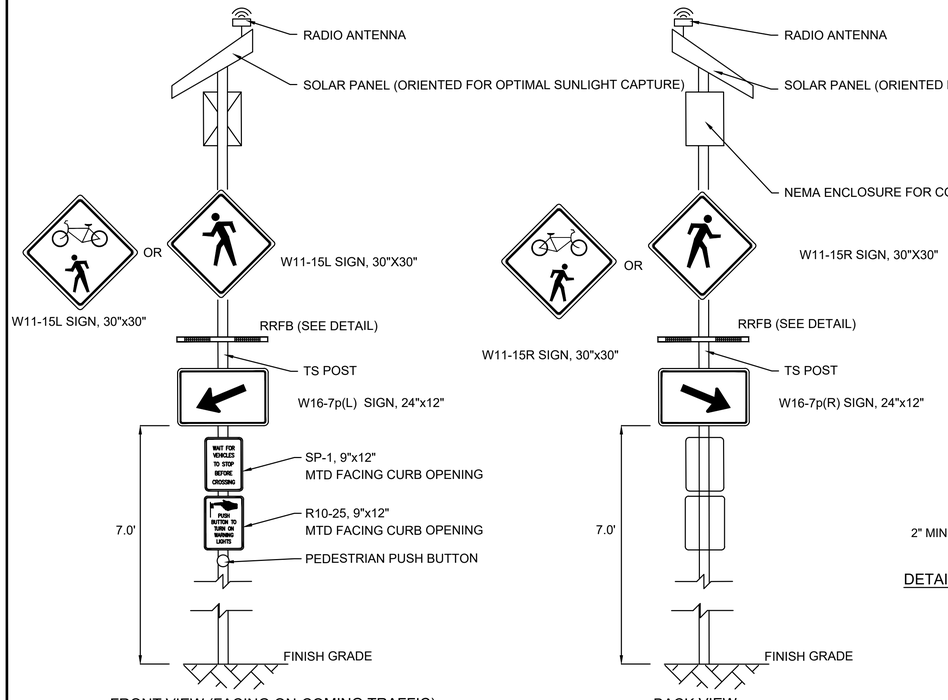
BIKE PATH MARKINGS

SCALE: N.T.S.



NOTES:

1. PAVEMENT MARKINGS AS PER MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.

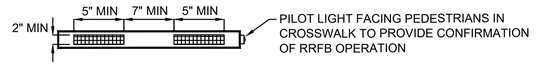


FRONT VIEW (FACING ON-COMING TRAFFIC)

BACK VIEW

OPERATIONAL NOTES:

1. RRFBS SHALL BE ACTIVATED BY PEDESTRIAN PUSH BUTTON.
2. DURATION OF RRFB UPON RECEIPT OF VALID PEDESTRIAN PUSH BUTTON ACTUATION SHALL BE INITIALLY SET FOR 10 SECONDS.
3. SEE SPECIAL PROVISIONS, ITEMS 824.211-824.213, FOR MORE DETAILS ON FUNCTIONAL REQUIREMENTS OF RRFB SYSTEM.



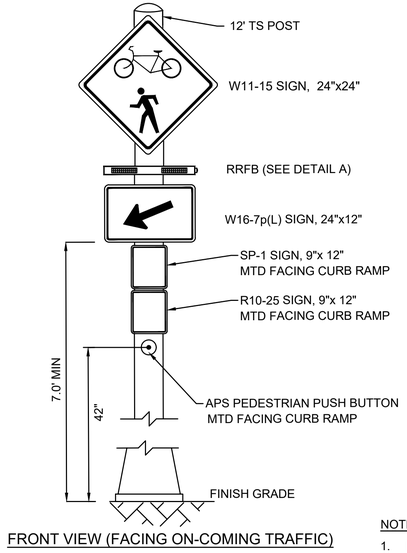
DETAIL: DUAL YELLOW BEACON (RRFB)

RECTANGULAR RAPID FLASHING BEACON (RRFB) - POST MOUNTED

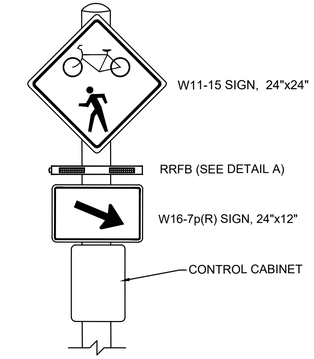
SCALE: N.T.S.

SCHOOL ZONE PAVEMENT MARKING DETAIL

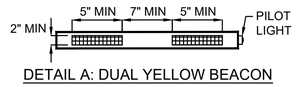
SCALE: N.T.S. DWG: PM-08 DATE: APRIL 2013



FRONT VIEW (FACING ON-COMING TRAFFIC)



BACK VIEW



DETAIL A: DUAL YELLOW BEACON

NOTES:

1. DURATION OF FLASHING UPON RECEIPT OF VALID PEDESTRIAN PUSHBUTTON ACTUATION SHALL BE INITIALLY SET FOR 15 SECONDS.
2. SEE SPECIAL PROVISIONS ITEM 824.211 FOR MORE DETAILS.

RECTANGULAR RAPID FLASHING BEACON (AC POWER)(BI-DIRECTIONAL)

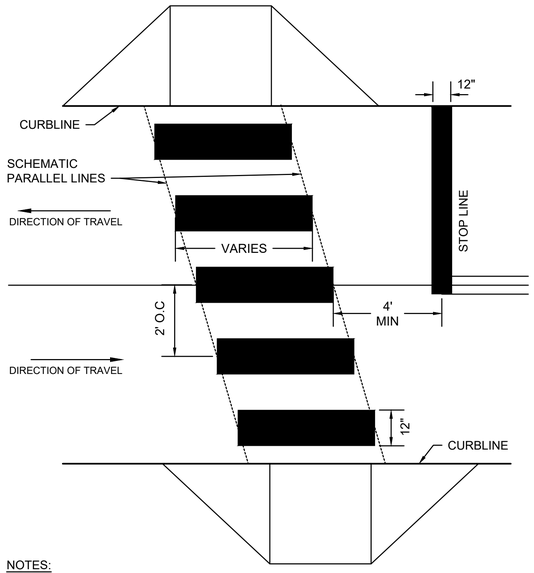
SCALE: N.T.S.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	88	166
PROJECT FILE NO.	607738		

CONSTRUCTION DETAILS

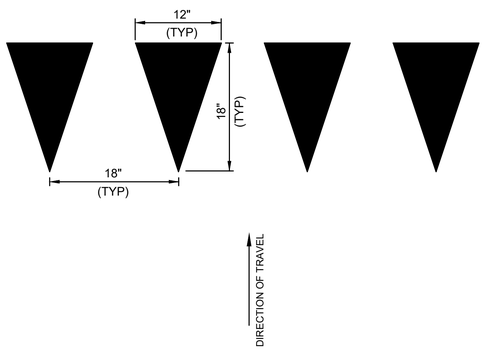
607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM



NOTES:

1. ALL EXISTING CROSSWALK MARKINGS SHALL BE FULLY ERADICATED BY APPROVED METHOD PRIOR TO THE APPLICATION OF PROPOSED MARKINGS.
2. ALL 12" THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
3. LAYOUT OF CROSSWALKS SHALL BE ORIENTATED IN THE DIRECTION OF TRAVEL AND LOCATED OUTSIDE OF THE WHEEL PATH OF VEHICLES. LAYOUT SHALL BE APPROVED BY TOWN OF BEDFORD PRIOR TO APPLICATION OF THERMOPLASTIC.
4. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMO-PLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.

CONTINENTAL-STYLE CROSSWALK - 1' WIDE LINES

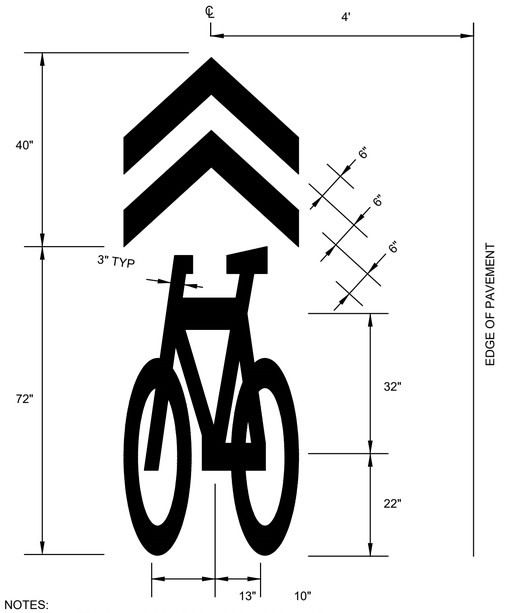


NOTES:

1. YIELD LINES SHALL CONSIST OF A ROW OF SOLID WHITE TRIANGLES.
2. IF APPLICABLE, YIELD LINES SHALL BE PLACED 4-FEET IN ADVANCE OF THE NEAREST CROSSWALK LINE.
3. MARKINGS SHALL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

YIELD LINE TRIANGLES FOR BIKE LANES

SCALE: NTS

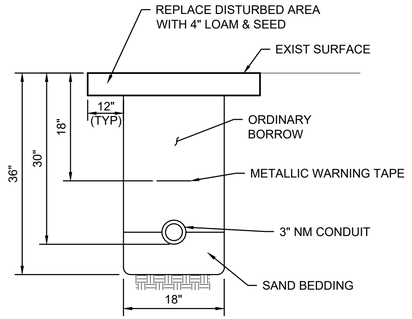


NOTES:

1. SEE MUTCD FIGURE 9C-9 FOR MORE INFORMATION.
2. SHARED LANE MARKINGS SHALL BE REFLECTORIZED PAINT.

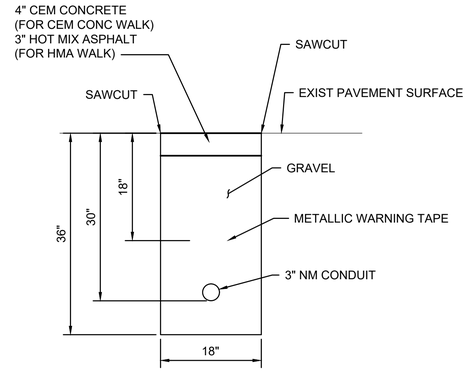
SHARROW PAVEMENT MARKING LAYOUT

SCALE: N.T.S. DWG: PM-14 DATE: MARCH 2015



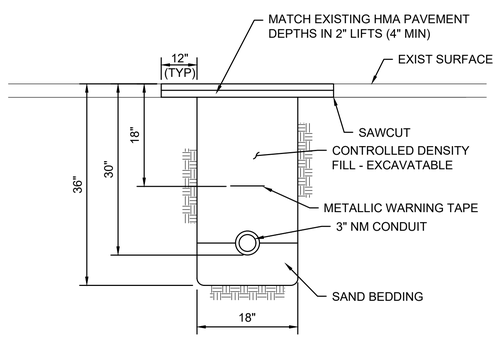
CONDUIT IN GRASS

SCALE: N.T.S.



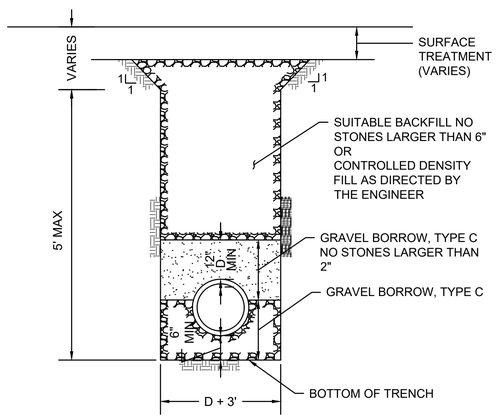
CONDUIT IN SIDEWALK

SCALE: N.T.S.



CONDUIT CROSSING ROADWAY/DRIVEWAY

SCALE: N.T.S.



TRENCH DETAIL

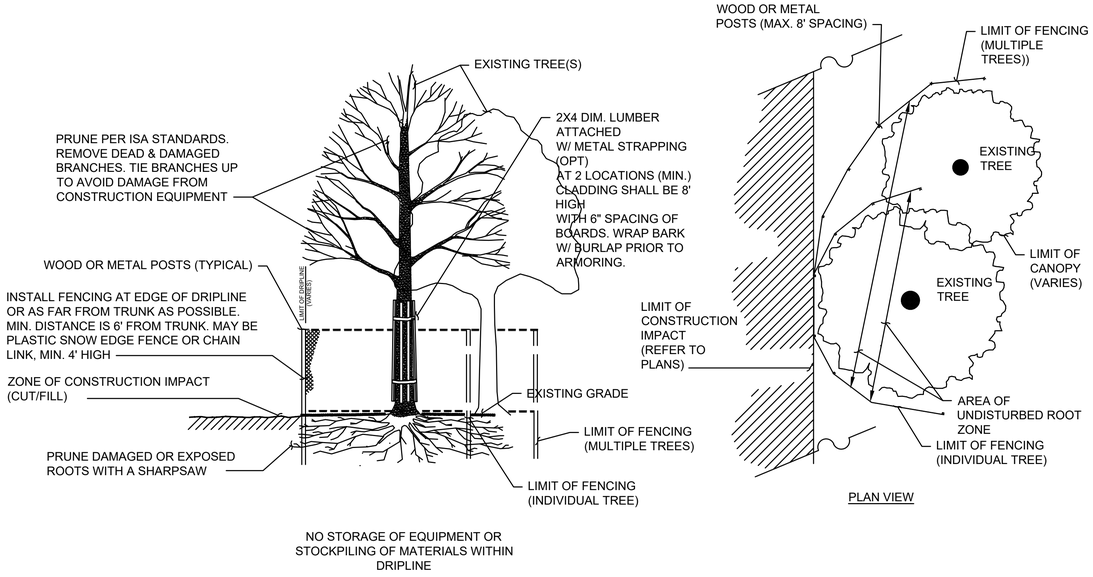
SCALE: N.T.S.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	89	166
PROJECT FILE NO.	607738		

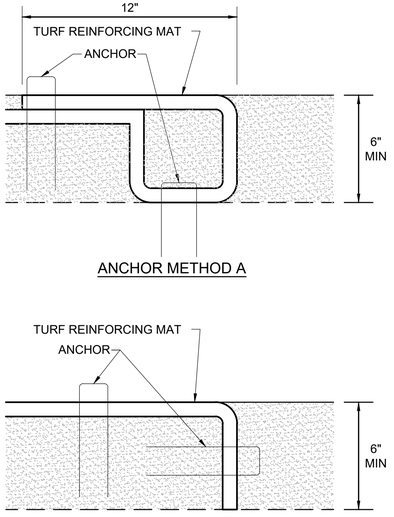
CONSTRUCTION DETAILS

607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM



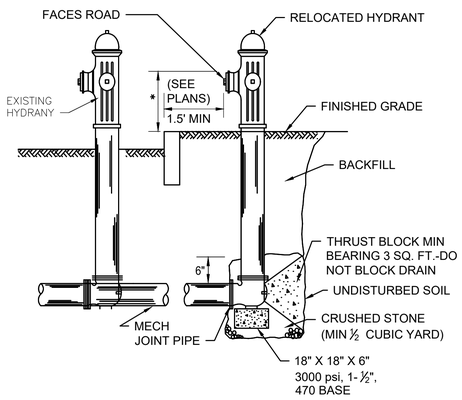
TREE PROTECTION OF EXISTING TREE(S)

SCALE: N.T.S.



TURF REINFORCING MAT ANCHOR METHODS

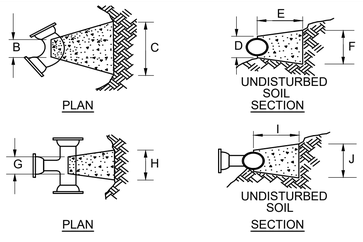
SCALE: N.T.S.



HYDRANT RELOCATION

SCALE: N.T.S.

BENDS	B	C	D	E	F	BENDS	B	C	D	E	F
6" 11-1/4°	8"	15"	12"	24"	12"	6" 45°	8"	30"	12"	24"	14"
6" 22-1/2°	"	19"	"	"	13"	8" 90°	"	30"	"	"	27"
8" 11-1/4°	"	20"	"	"	12"	8" 45°	"	30"	"	"	24"
8" 22-1/2°	"	22"	"	"	17"	8" 90°	"	38"	"	"	36"
12" 11-1/4°	"	30"	"	"	15"	12" 45°	"	40"	"	"	40"
12" 22-1/2°	"	35"	"	"	25"	12" 90°	"	60"	"	"	52"
TEES	G	H	I	J		TEES	G	H	I	J	
6"x 6"x 6"	12"	24"	24"	18"		12"x12"x6"	12"	24"	24"	12"	
8"x 8"x 6"	"	"	"	"		12"x12"x8"	"	"	"	24"	
8"x 8"x 8"	"	"	"	24"		12"x12"x12"	"	36"	"	36"	

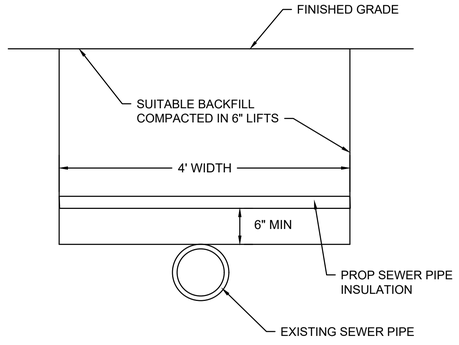


CONCRETE THRUST BLOCK

SCALE: N.T.S.

NOTES:

1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES AND VERTICAL BENDS, SAME SIZE AS REQUIRED FOR TEES.
2. PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES
3. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.



SEWER PIPE INSULATION

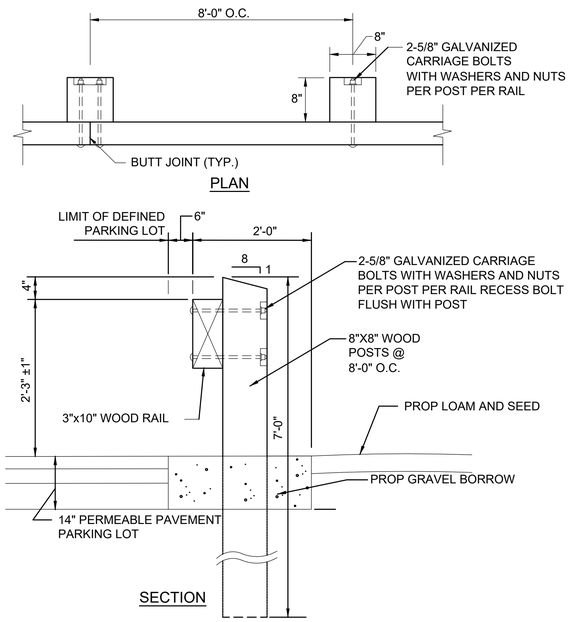
SCALE: N.T.S.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	90	166
PROJECT FILE NO.	607738		

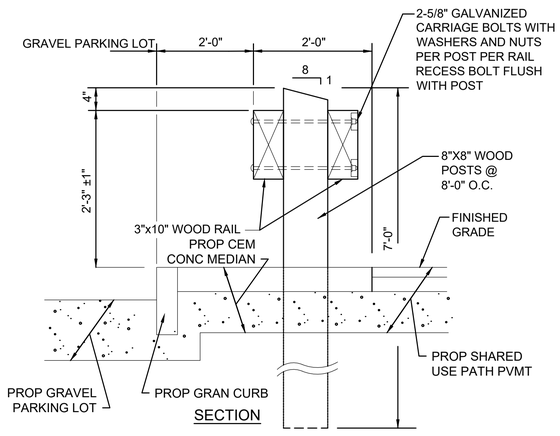
CONSTRUCTION DETAILS

607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM



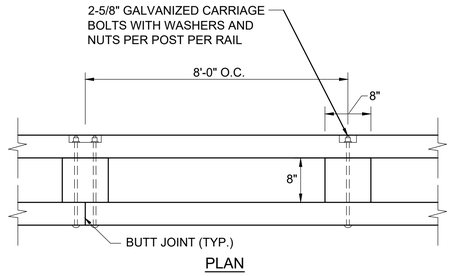
WOOD GUARDRAIL

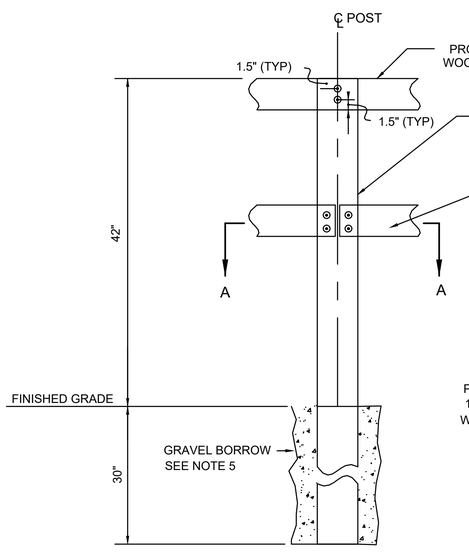
SCALE: N.T.S.

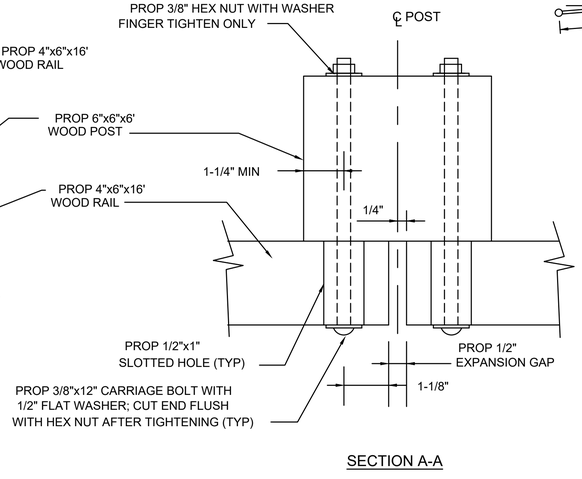


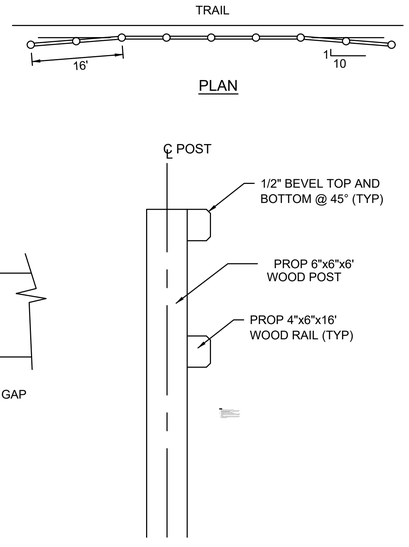
DOUBLE FACED WOOD GUARDRAIL

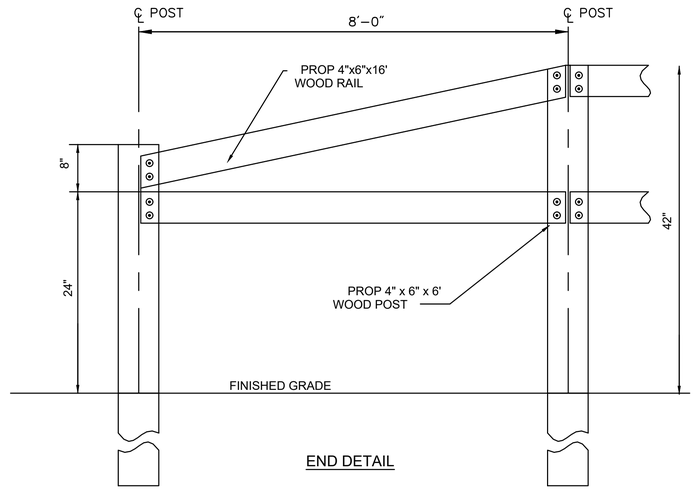
SCALE: N.T.S.











WOOD RAILING

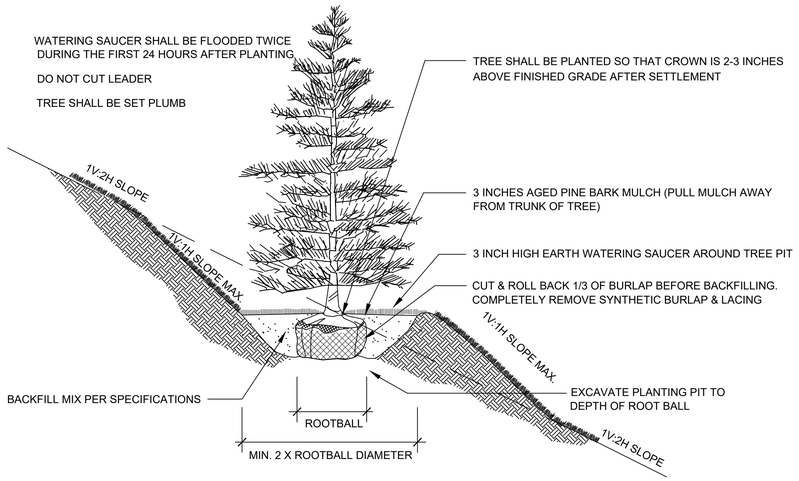
SCALE: N.T.S.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	91	166
PROJECT FILE NO.	607738		

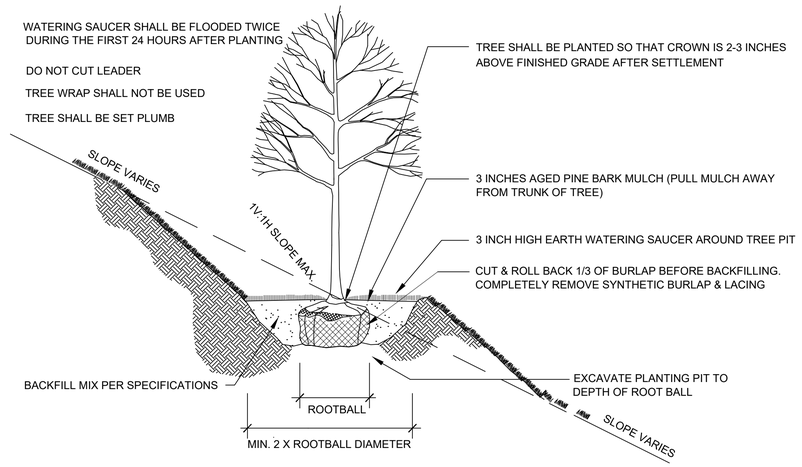
CONSTRUCTION DETAILS

607738_HD(DET).DWG Plotted on 30-Oct-2020 12:21 PM



EVERGREEN TREE PLANTING (SLOPE)

NOT TO SCALE

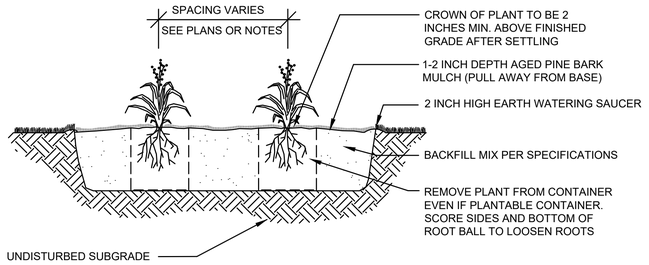


DECIDUOUS TREE PLANTING (SLOPE)

NOT TO SCALE

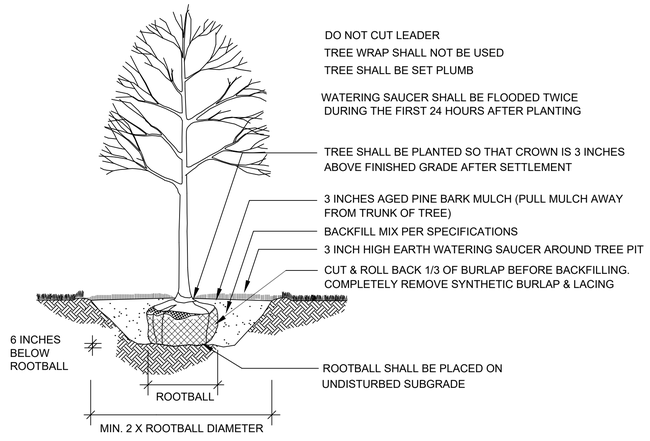
NOTES:

1. EXCAVATE TO REQUIRED DEPTH AND BACKFILL WITH PLANTING MIX.
2. RAISE AND REPLANT PLANTS THAT SETTLE MORE THAN 3 INCHES AFTER PLANTING AND WATERING IN.
3. WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING. WATER & MAINTAIN AS PER STANDARD SPECIFICATIONS.



PERENNIAL PLANTING

NOT TO SCALE



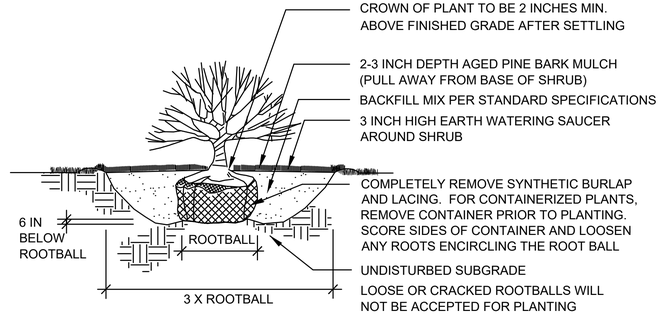
DECIDUOUS TREE PLANTING

NOT TO SCALE

EXCAVATE TO REQUIRED DEPTH AND BACKFILL WITH PLANTING MIX.

SHRUBS SHALL BE SET PLUMB

WATER BY FLOODING TWICE IN FIRST TWO HOURS AFTER PLANTING. WATER & MAINTAIN AS PER STANDARD SPECIFICATIONS



SHRUB PLANTING

NOT TO SCALE

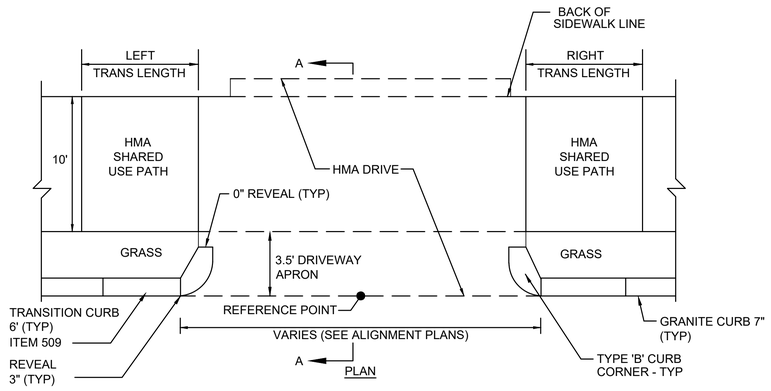
FEB 28, 2013

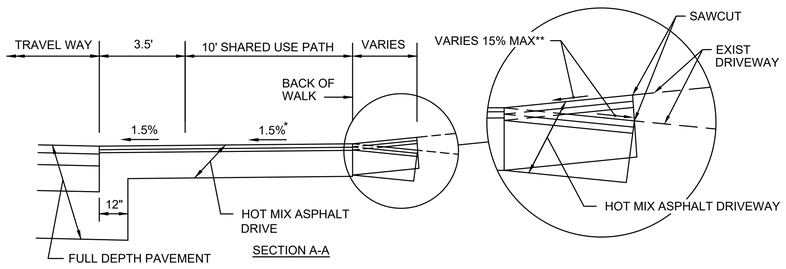
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	92	166
PROJECT FILE NO.	607738		

WHEELCHAIR RAMP DETAILS

607738_HD(WCR).DWG Plotted on 30-Oct-2020 12:24 PM





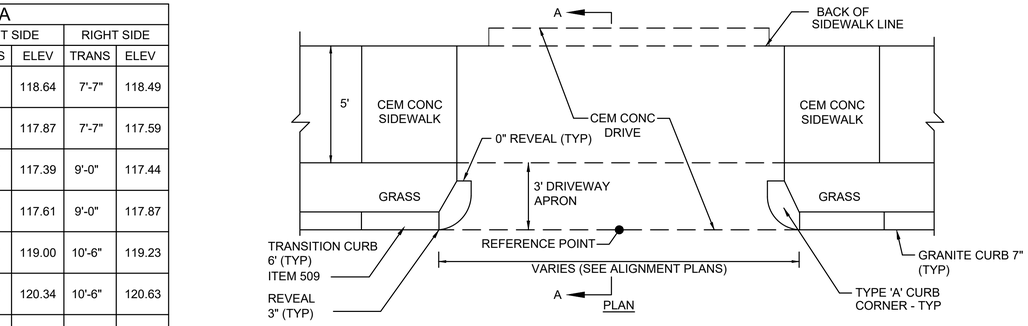
*CONSTRUCTION TOLERANCE = 0.5%

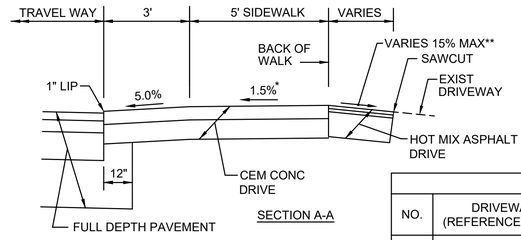
DRIVEWAY DATA						
NO.	DRIVEWAY (REFERENCE POINT)	ROADWAY GUTTER	LEFT SIDE		RIGHT SIDE	
			TRANS	ELEV	TRANS	ELEV
1	STA. 101+95.96, 11.5' LT RAILROAD AVE	-0.65%	9'-0"	118.64	7'-7"	118.49
2	STA. 103+25.13, 11.5' LT RAILROAD AVE	-0.65%	9'-0"	117.87	7'-7"	117.59
3	STA. 104+23.82, 11.5' LT RAILROAD AVE	+0.20%	7'-7"	117.39	9'-0"	117.44
4	STA. 104+73.81, 11.5' LT RAILROAD AVE	+0.86%	7'-7"	117.61	9'-0"	117.87
7	STA. 109+94.31, 11.5' LT RAILROAD AVE	+1.10%	7'-7"	119.00	10'-6"	119.23
8	STA. 111+18.86, 11.5' LT RAILROAD AVE	+1.10%	7'-7"	120.34	10'-6"	120.63
11	STA. 112+46.46, 11.5' LT RAILROAD AVE	+0.03%	7'-7"	121.30	9'-0"	121.31
13	STA. 114+47.38, 11.5' LT RAILROAD AVE	-0.94%	9'-0"	119.98	7'-7"	119.74
15	STA. 115+27.92, 11.5' LT RAILROAD AVE	-0.69%	9'-0"	119.22	7'-7"	119.07

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE

TYPICAL HMA DRIVEWAY WITH SIDEWALK, GRASS STRIP AND GRAN CURB CORNER

SCALE: N.T.S.





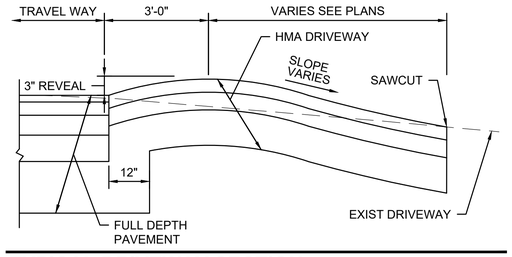
*CONSTRUCTION TOLERANCE = 0.5%

DRIVEWAY DATA						
NO.	DRIVEWAY (REFERENCE POINT)	ROADWAY GUTTER	LEFT SIDE		RIGHT SIDE	
			TRANS	ELEV	TRANS	ELEV
16	STA. 404+99.38, 17.1' RT CONCORD ROAD	+2.80%	13'-0"	137.18	7'-7"	136.52

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE

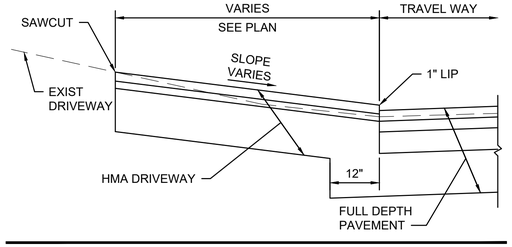
CEM CONC DRIVEWAY NO. 26 - CONCORD ROAD

SCALE: N.T.S.



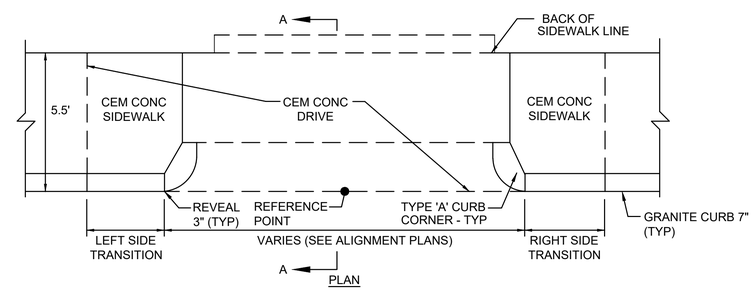
TYPICAL DRIVEWAY SECTION WITHOUT SIDEWALK TYPE 1

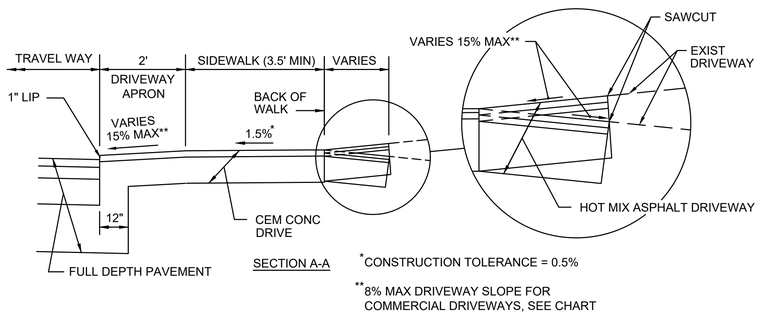
SCALE: N.T.S.



TYPICAL DRIVEWAY SECTION WITHOUT SIDEWALK TYPE II

SCALE: N.T.S.





*CONSTRUCTION TOLERANCE = 0.5%

**8% MAX DRIVEWAY SLOPE FOR COMMERCIAL DRIVEWAYS, SEE CHART

DRIVEWAY DATA						
NO.	DRIVEWAY (REFERENCE POINT)	ROADWAY GUTTER	LEFT SIDE		RIGHT SIDE	
			TRANS	ELEV	TRANS	ELEV
5	STA. 106+85.44, 11.5' RT RAILROAD AVE	+0.34%	9'-0"	116.81	7'-10"	116.71
9	STA. 111+24.92, 11.5' RT RAILROAD AVE	+1.10%	10'-8"	120.74	7'-10"	120.36
10	STA. 112+33.76, 11.5' RT RAILROAD AVE	+0.19%	9'-0"	121.31	7'-10"	121.27
12	STA. 113+24.62, 11.5' RT RAILROAD AVE	-0.77%	7'-10"	120.91	9'-0"	121.09
14	STA. 114+82.32, 11.5' RT RAILROAD AVE	-0.94%	7'-10"	119.43	9'-0"	119.62

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE

TYPICAL CEM CONC DRIVEWAY WITH SIDEWALK AND GRAN CURB CORNER

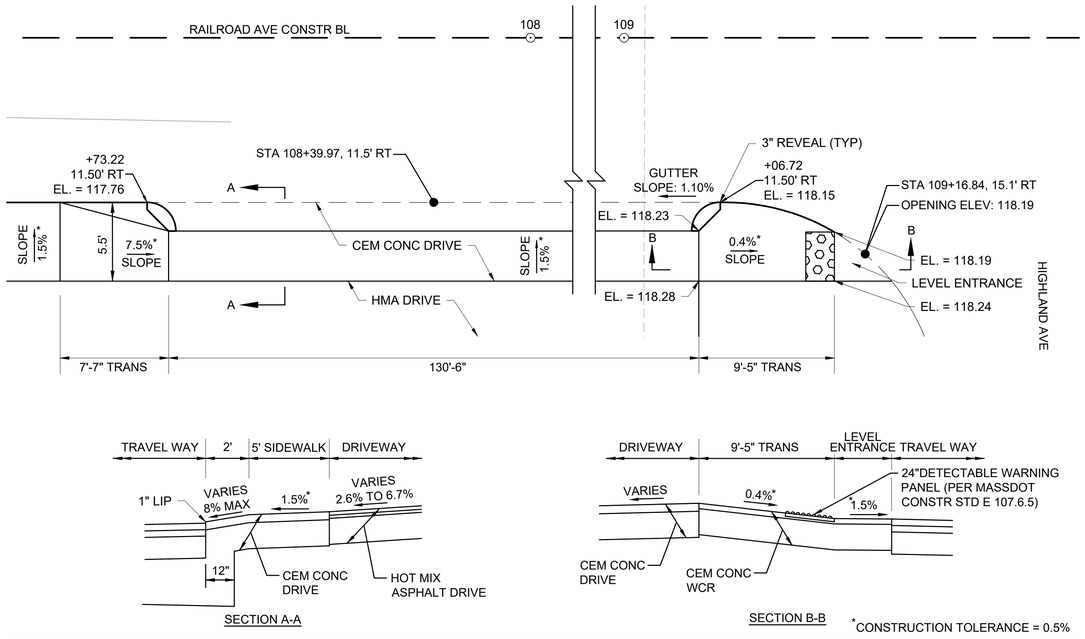
SCALE: N.T.S.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	93	166
PROJECT FILE NO.	607738		

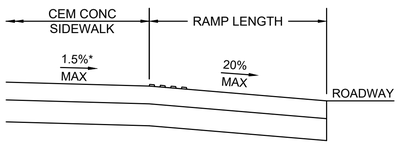
WHEELCHAIR RAMP DETAILS

607738_HD(WCR).DWG Plotted on 30-Oct-2020 12:24 PM



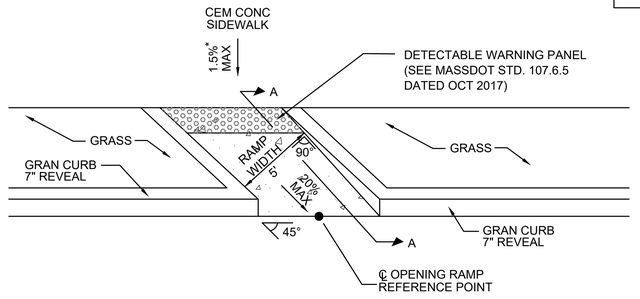
CEM CONC DRIVEWAY NO. 6 AND WHEELCHAIR RAMP NO. 17

SCALE: N.T.S.



SECTION A-A

BICYCLE RAMP DATA		
NO.	LOCATION (REF POINT)	OPENING ELEV
27	STA 406+64.8, 17.0' RT CONCORD ROAD	141.50



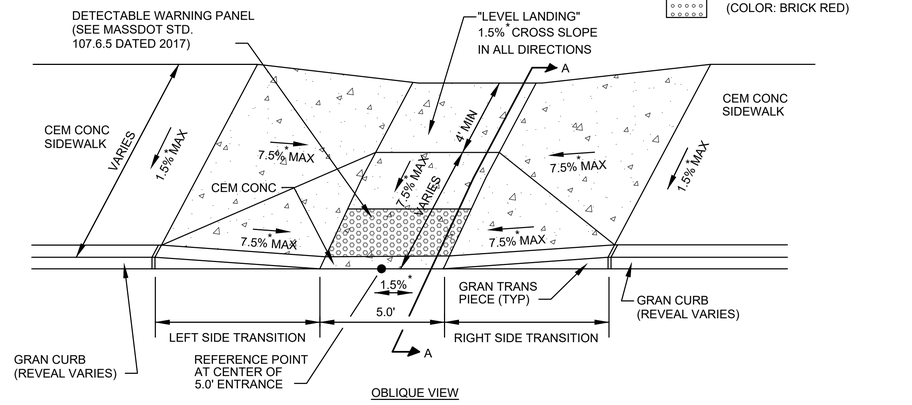
BICYCLE RAMP

SCALE: NTS

LEGEND

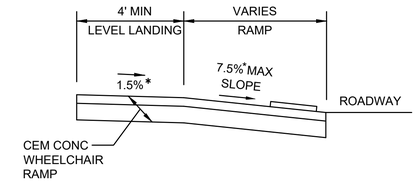
= LIMITS OF CEM CONC RAMP

= DETECTABLE WARNING PANEL (COLOR: BRICK RED)



OBLIQUE VIEW

*TOLERANCE FOR CONSTRUCTION ±0.5%



SECTION A-A

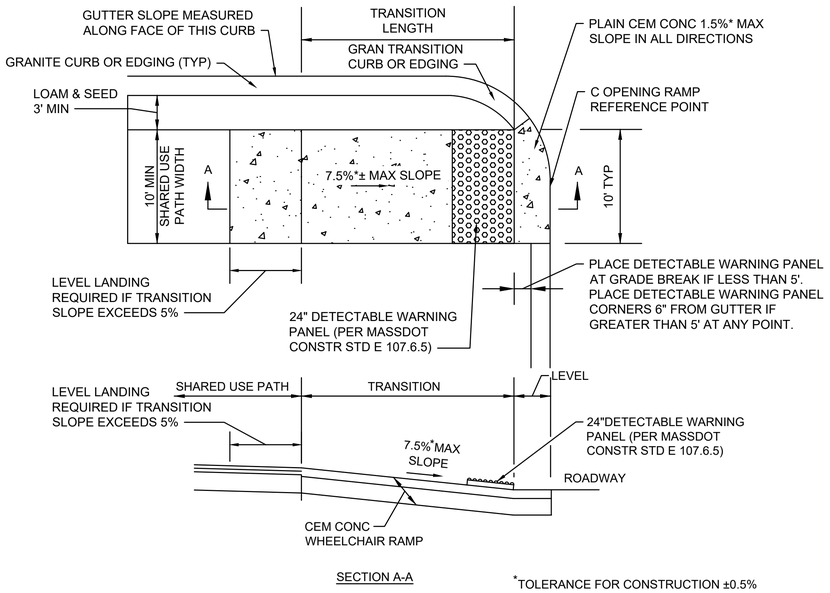
WHEELCHAIR RAMP DATA										
NO.	LOCATION	SIDEWALK WIDTH	RAMP WIDTH	LEFT SIDE			RIGHT SIDE			OPENING ELEVATION
				ROADWAY GUTTER	REVEAL	TRANS	ROADWAY GUTTER	REVEAL	TRANS	
1	STA. 601+00.6, 43.5' RT SOUTH RD	VARIES	5'-0"	0.18%	7"	9'-0"	-1.27%	3"	3'-3"	119.14
2	STA. 600+78.2, 28.3' RT SOUTH RD	VARIES	15'-0"	1.77%	3"	4'-6"	-0.92%	7"	7'-7"	118.72
3	STA. 600+77.8, 15.0' LT SOUTH RD	VARIES	11'-0"	-1.52%	7"	7'-7"	0.56%	7"	9'-0"	119.04
4	STA. 100+41.1, 12.4' LT RAILROAD AVE	VARIES	6'-5"	-1.23%	7"	7'-7"	0.41%	7"	9'-0"	119.59

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE

WHEELCHAIR RAMP 12.0' OR LESS - STRAIGHT

SCALE: N.T.S.

607738_HD(WCR).DWG Plotted on 30-Oct-2020 12:24 PM



SECTION A-A

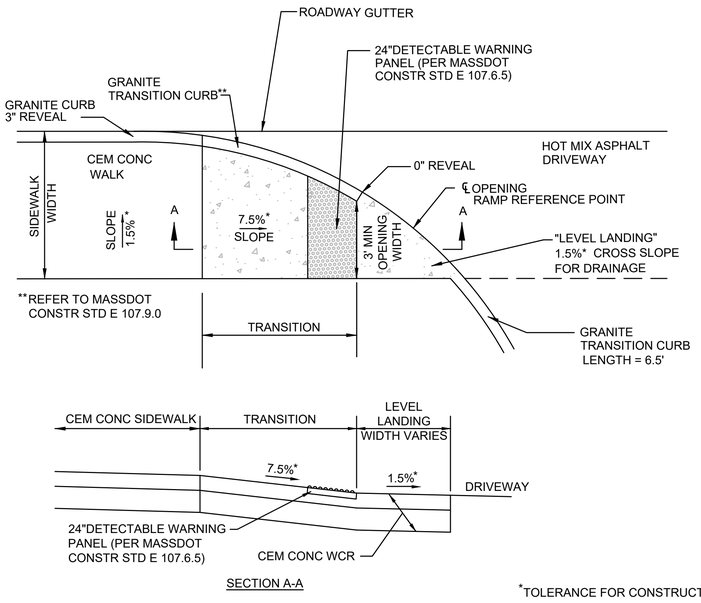
*TOLERANCE FOR CONSTRUCTION ±0.5%

WHEELCHAIR RAMP DATA							
NO.	LOCATION	SIDEWALK WIDTH	OPENING WIDTH	ROADWAY GUTTER	REVEAL	TRANS	℄ ELEV
5	102+39.37' 20.0' LT	10'-0"	10'-0"	-0.65%	7"	9'-0"	118.41
6	102+68.23' 20.0' LT	10'-0"	10'-0"	-0.65%	7"	7'-7"	118.23
13	106+51.98' 20.0' LT	10'-0"	10'-0"	-0.89%	7"	9'-0"	116.91
14	107+01.67' 20.0' LT	10'-0"	10'-0"	0.50%	7"	9'-0"	116.71
15	109+02.60' 20.0' LT	10'-0"	10'-0"	1.10%	7"	7'-7"	117.98
16	109+48.56' 20.0' LT	10'-0"	10'-0"	1.10%	7"	10'-6"	118.54

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE.

WHEELCHAIR RAMP - SINGLE DIRECTION WITH BUFFER

SCALE: N.T.S.



SECTION A-A

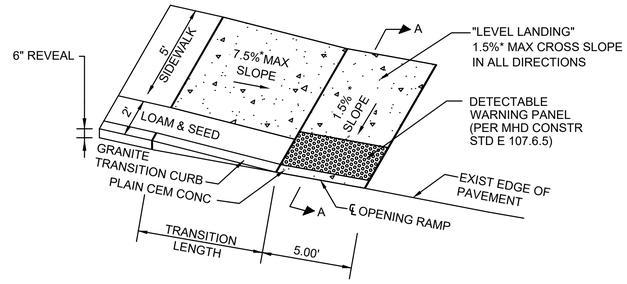
*TOLERANCE FOR CONSTRUCTION ±0.5%

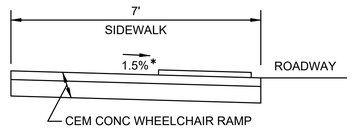
WHEELCHAIR RAMP DATA							
NO.	LOCATION	SIDEWALK WIDTH	OPENING WIDTH	ROADWAY GUTTER	REVEAL	TRANS	℄ ELEV
7	102+92.4' 15.0' RT	5'-6"	4'-0"	-0.65%	7"	9'-0"	118.07
8	103+24.7' 15.0' RT	5'-6"	4'-0"	-0.65%	7"	7'-7"	117.92
9	104+37.0' 15.0' RT	5'-6"	4'-0"	0.35%	7"	7'-7"	117.64
10	104+66.9' 15.0' RT	5'-6"	4'-0"	0.32%	7"	9'-0"	117.75
11	105+83.2' 15.0' RT	5'-6"	4'-0"	-0.82%	7"	9'-0"	117.24
12	106+04.9' 15.0' RT	5'-6"	4'-0"	-0.62%	7"	7'-7"	117.08
18	109+59.2' 15.0' RT	5'-6"	4'-0"	1.10%	7"	10'-6"	118.65

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE.

WHEELCHAIR RAMP - SINGLE DIRECTION OF PEDESTRIAN TRAVEL

SCALE: N.T.S.





SECTION A-A

WHEELCHAIR RAMP DATA				
NO.	LOCATION	OPENING ELEVATION	LEFT SIDE	
			ROADWAY GUTTER	TRANS
25	STA. 402+34.43, 33.0' RT CONCORD ROAD	130.94	-3.8%	6'-5"
26	STA. 402+72.61, 34.1' RT CONCORD ROAD	131.83	1.9%	13'-0"

NOTE: ROADWAY GUTTER SLOPE IS IN THE DIRECTION OF THE BASELINE

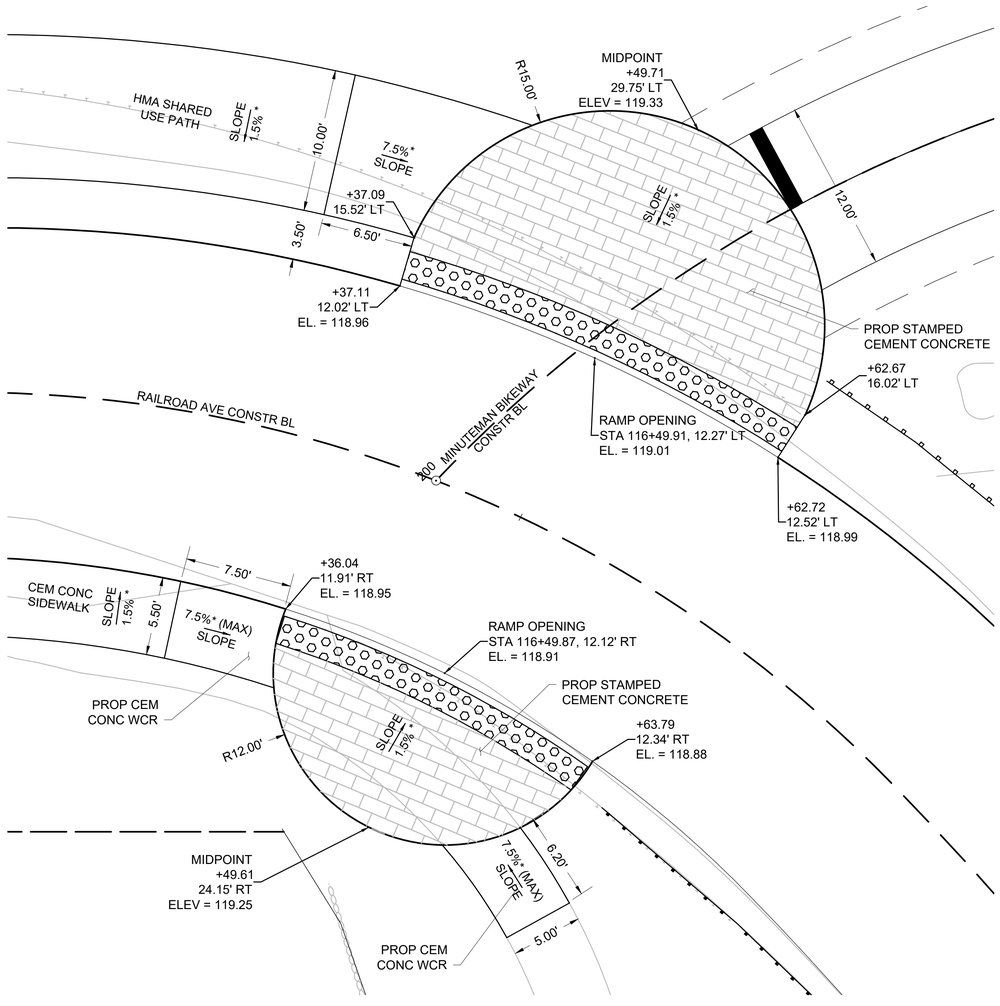
WHEELCHAIR RAMP - SINGLE DIRECTION WITH BUFFER- CONCORD ROAD & BONNIEVALE DRIVE

SCALE: N.T.S.

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	95	166
PROJECT FILE NO.	607738		

WHEELCHAIR RAMP DETAILS



*CONSTRUCTION TOLERANCE = 0.5%

STAMPED CEM CONC WHEELCHAIR RAMPS AT ENTRANCE TO BIKE PATH

SCALE: N.T.S.

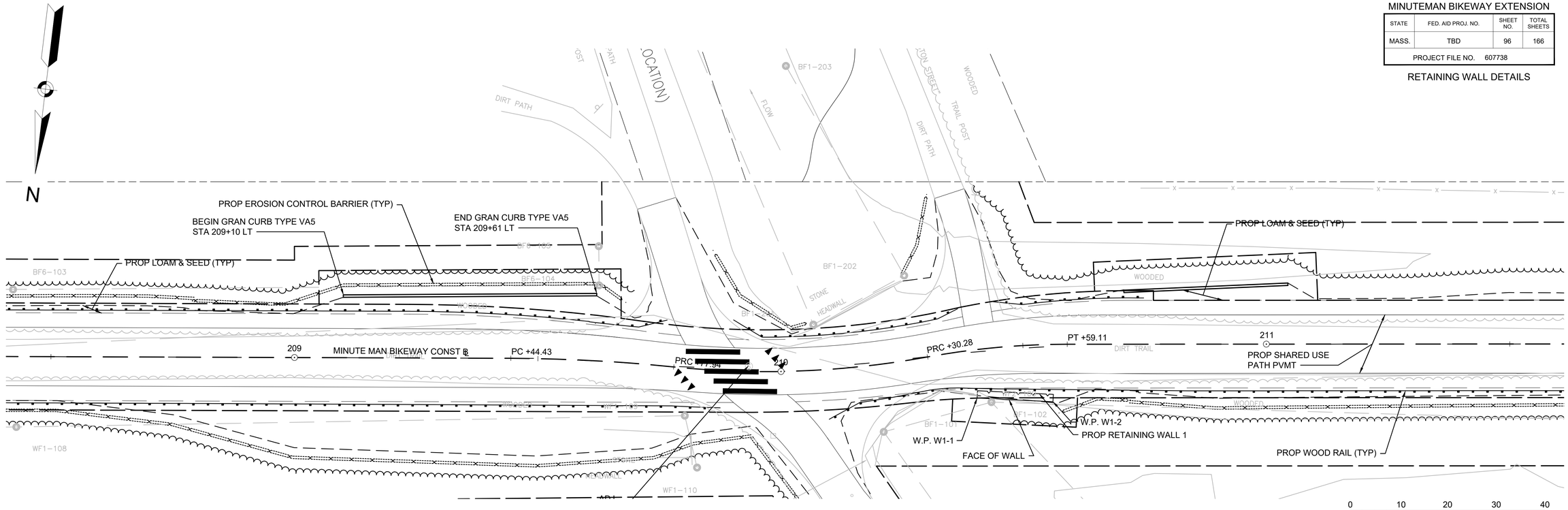
607738_HD(WCR).DWG Plotted on 30-Oct-2020 12:24 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

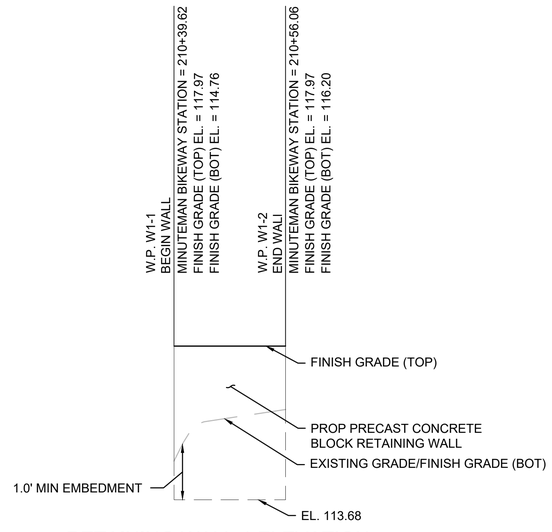
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	96	166
PROJECT FILE NO. 607738			

RETAINING WALL DETAILS

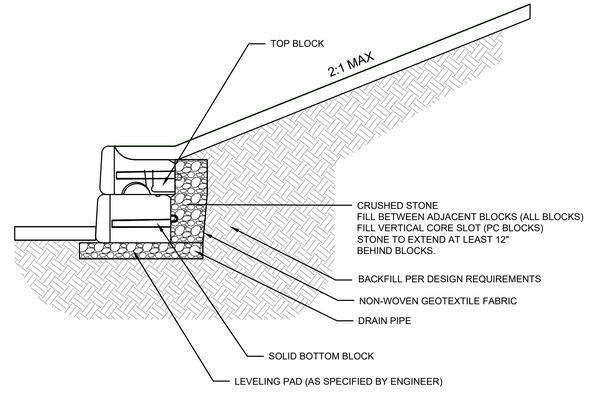
607738_HD(RW).DWG Plotted on 30-Oct-2020 12:29 PM



WORK POINT DATA		
NO.	STATION	OFFSET
W.P. W1-1	MINUTEMAN BIKEWAY STATION 210+39.62	9.9' RT
W.P. W1-2	MINUTEMAN BIKEWAY STATION 210+56.06	11.3' RT



RETAINING WALL 1 ELEVATION

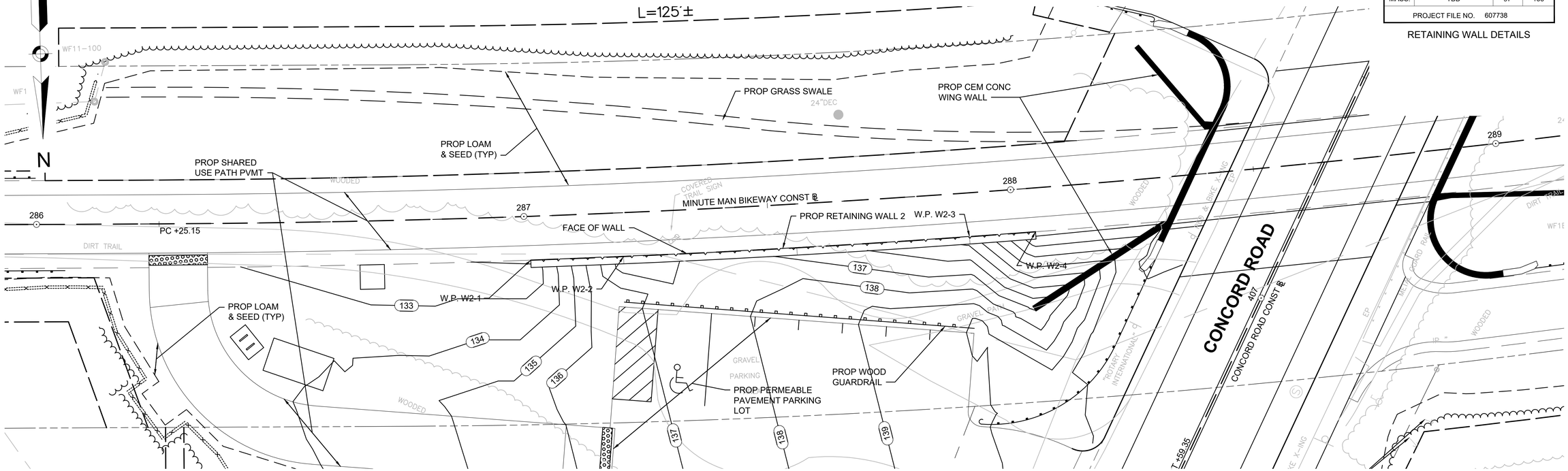


TYPICAL RETAINING WALL SECTION
NTS

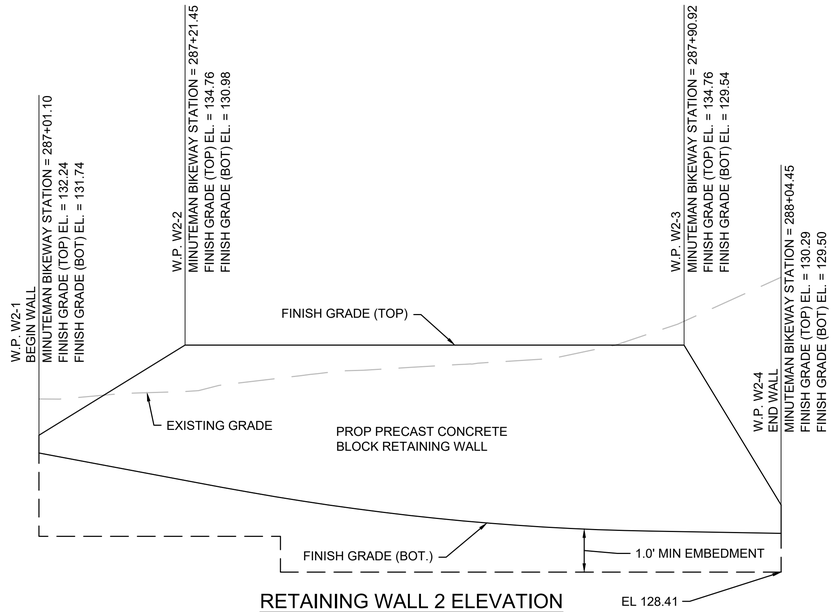
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	97	166
PROJECT FILE NO. 607738			

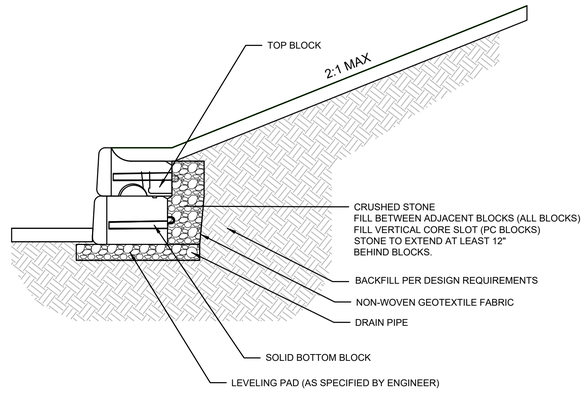
RETAINING WALL DETAILS



WORK POINT DATA		
NO.	STATION	OFFSET
W.P. W2-1	MINUTEMAN BIKEWAY STATION 287+01.30	9.0' RT
W.P. W2-2	MINUTEMAN BIKEWAY STATION 287+21.45	9.0' RT
W.P. W2-3	MINUTEMAN BIKEWAY STATION 287+90.92	9.0' RT
W.P. W2-4	MINUTEMAN BIKEWAY STATION 288+04.05	9.0' RT



RETAINING WALL 2 ELEVATION



TYPICAL RETAINING WALL SECTION
NTS

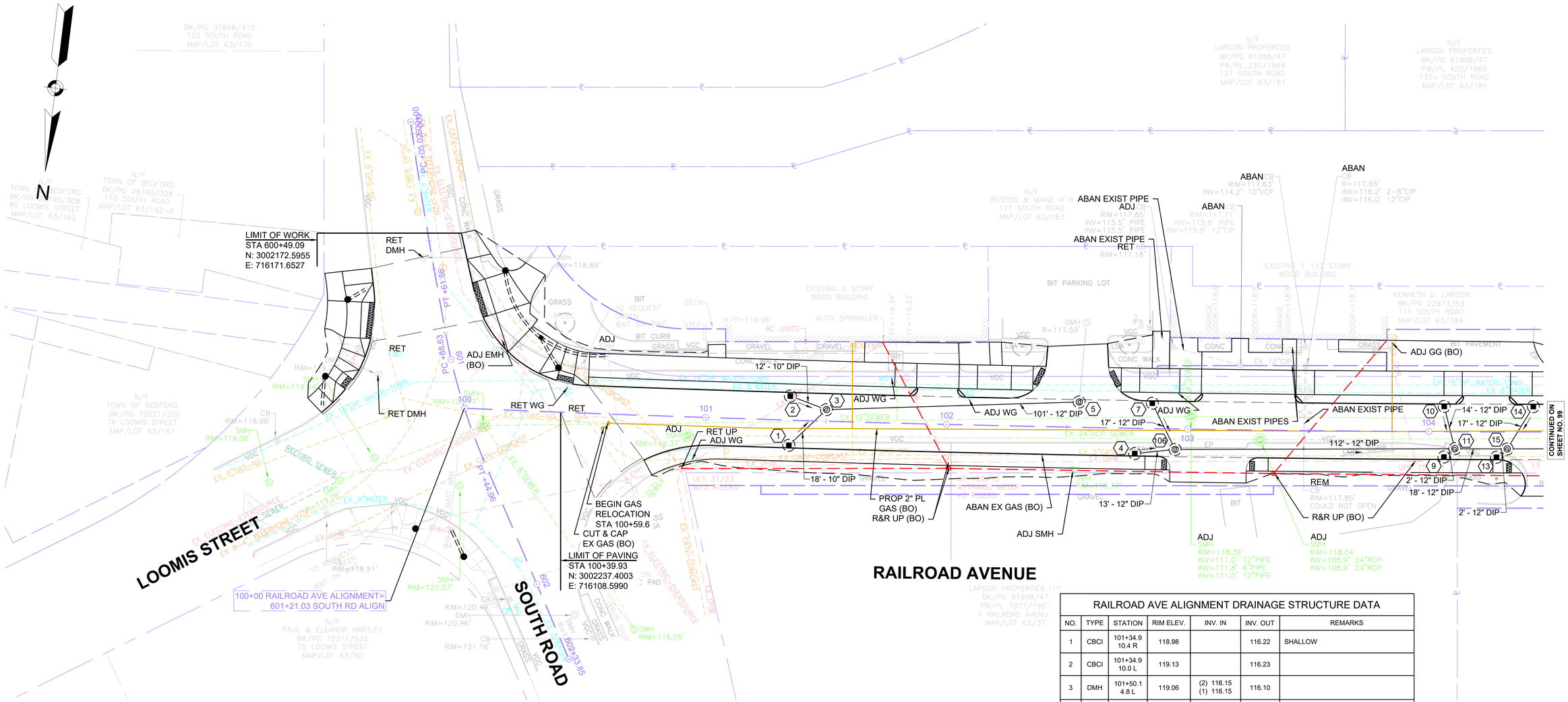
607738_HD(RW).DWG Plotted on 30-Oct-2020 12:29 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	98	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:34 PM



RAILROAD AVE ALIGNMENT DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
1	CBCI	101+34.9 10.4 R	118.98		116.22	SHALLOW
2	CBCI	101+34.9 10.0 L	119.13		116.23	
3	DMH	101+50.1 4.8 L	119.06	(2) 116.15 (1) 116.15	116.10	
4	CBCI	102+78.2 10.5 R	118.05		115.12	
5	DMH	102+54.8 10.5 L	118.29	(3) 115.85	115.80	Cylindrical Junction Structure NF
7	CBCI	102+85.2 10.5 L	118.08		115.08	
9	CBCI	104+06.3 10.5 R	117.41		114.46	
10	CBCI	104+06.3 10.5 L	117.43		114.48	
11	DMH	104+10.8 7.0 R	117.48	(9) 114.43 (10) 114.42 (106) 114.50	114.39	
13	CB	104+28.1 10.5 R	117.44		114.49	
14	CBCI	104+43.3 10.5 L	117.49		114.56	
15	DMH	104+32.5 7.1 R	117.52	(13) 114.30 (14) 114.30 (11) 114.30	114.20	
106	DMH	102+94.9 8.5 R	117.99	(7) 114.99 (4) 114.99	114.89	

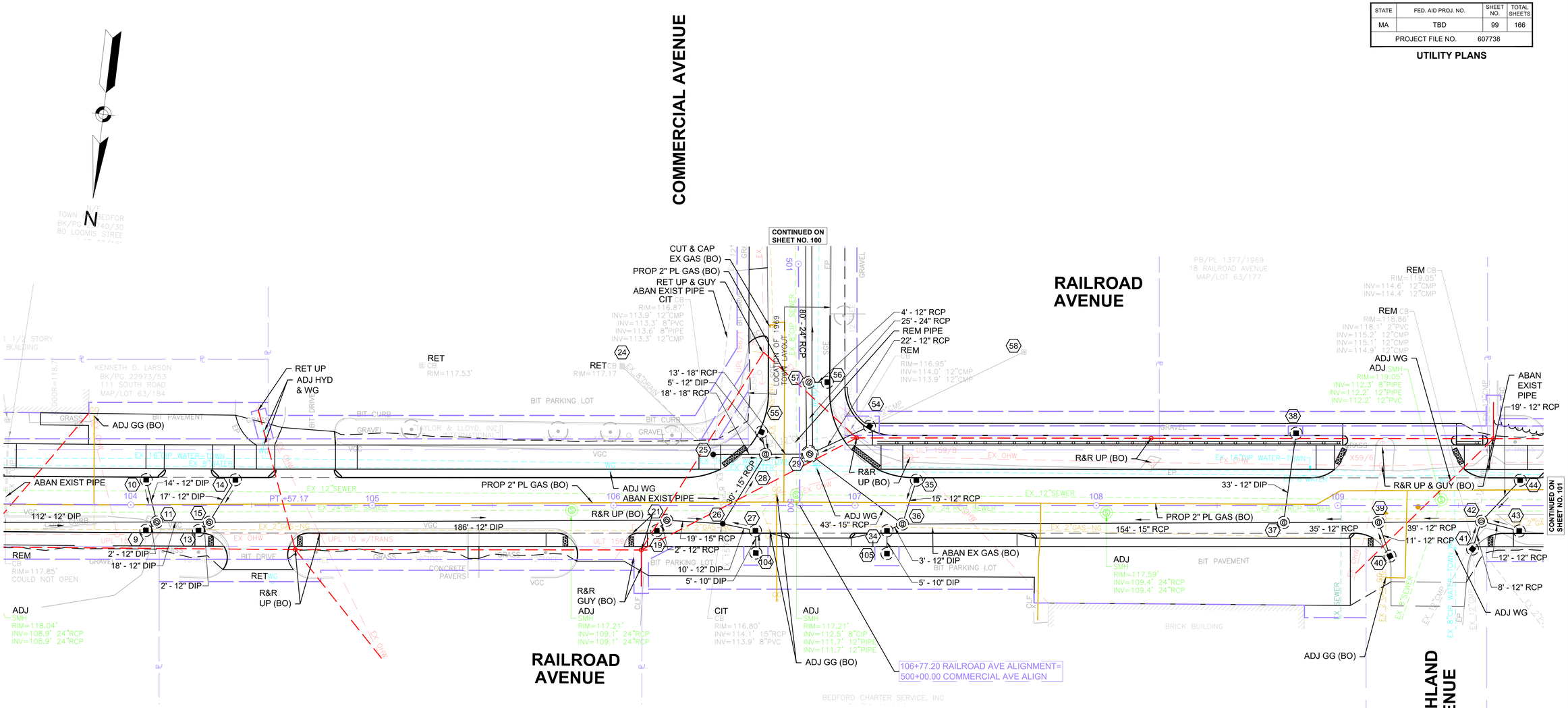
CONTINUED ON SHEET NO. 99

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	99	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:35 PM



RAILROAD AVE ALIGNMENT DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
9	CBCI	104+06.3 10.5 R	117.41		114.46	
10	CBCI	104+06.3 10.5 L	117.43		114.48	
11	DMH	104+10.8 7.0 R	117.48	(9) 114.43 (10) 114.42 (106) 114.50	114.39	
13	CB	104+28.1 10.5 R	117.44		114.49	
14	CBCI	104+43.3 10.5 L	117.49		114.56	
15	DMH	104+32.5 7.1 R	117.52	(13) 114.30 (14) 114.30 (11) 114.30	114.20	
19	CBCI	106+17.9 10.5 R	116.83		113.49	
21	DMH	106+22.1 6.1 R	116.89	(19) 113.46 (15) 113.46	113.21	
25	CIT	106+41.3 21.1 L	116.91	(24) 113.60	112.94	CONNECT TO EXISTING PIPE
26	CIT	106+45.2 7.6 R	116.79	(27) 113.56 (21) 113.11	113.01	CONNECT TO EXISTING PIPE

RAILROAD AVE ALIGNMENT DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
27	CBCI	106+58.8 10.5 R	116.72	(104) 113.80	113.63	
28	DMH	106+62.9 21.2 L	116.64	(25) 112.82 (55) 113.22 (26) 112.87	112.72	
29	DMH	106+81.3 21.3 L	116.69	(54) 113.15 (36) 112.90 (28) 112.65	112.15	DMH-6 FOOT DIAMETER
34	CBCI	107+13.3 10.5 R	116.89	(105) 113.59	113.42	
35	CBCI	107+25.5 10.5 L	116.95		113.61	
36	DMH	107+19.7 7.7 R	116.98	(37) 113.35 (34) 113.39 (35) 113.42	113.14	
37	DMH	108+77.6 7.0 R	117.94	(39) 114.60 (38) 114.60	114.35	
38	CBCI	108+82.7 30.0 L	118.11		114.99	
39	DMH	109+16.9 6.9 R	118.35	(42) 114.99 (40) 115.25	114.89	
40	CB	109+21.7 20.9 R	118.42		115.40	

RAILROAD AVE ALIGNMENT DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
41	CB	109+55.8 18.0 R	118.64		115.20	CONNECT TO EXISTING PIPES
42	DMH	109+59.5 6.5 R	118.83	(43) 115.43 (44) 115.36 (41) 115.16	115.10	
43	CBCI	109+75.2 10.5 R	118.92		115.59	
44	CBCI	109+75.6 10.5 L	118.93		115.59	
54	CBCI	500+32.6 29.1 R	117.28	(58) 114.00	113.42	CONNECT TO EXISTING PIPE
55	CBCI	500+30.5 15.7 L	116.54		113.31	
56	CBCI	500+51.0 11.7 R	116.72		113.37	
57	DMH	500+51.0 4.1 R	116.76	(56) 113.29 (29) 112.05	112.00	
104	CB	106+59.0 19.7 R	117.53		113.83	
105	CB	107+13.3 19.9 R	117.33		113.63	

0 20 50 100

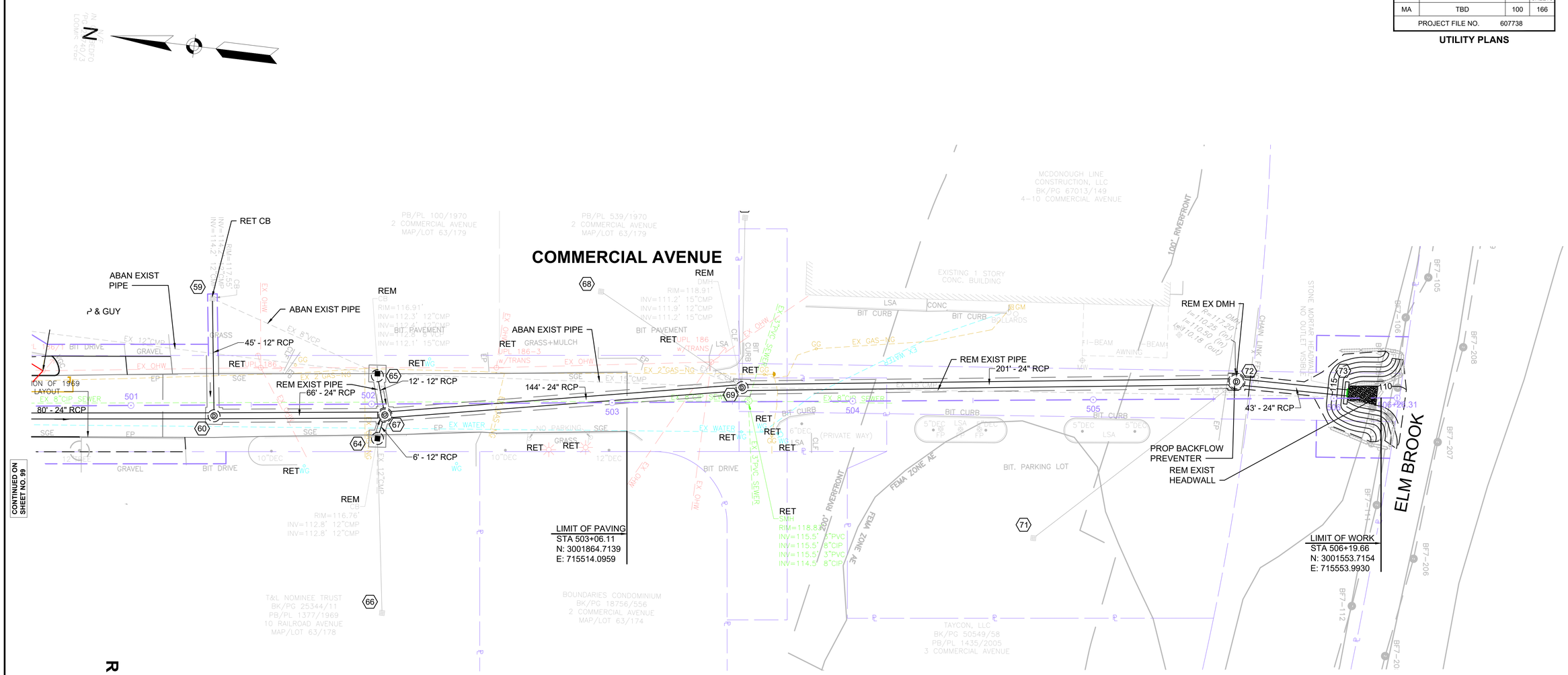
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	100	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 3:07 PM



COMMERCIAL AVE ALIGN DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
59	EX CB	501+34.1 44.2 L	117.55		114.20	
60	DMH	501+34.5 4.5 R	117.49	(57) 111.74 (59) 113.71	111.71	
64	CB	502+02.4 14.4 R	117.41	(66) 112.95	113.41	CONNECT TO EXISTING PIPE
65	CB	502+02.5 11.8 L	117.56		113.56	OFFSET TOP
66	EX CB	502+03.8 86.9 R	117.52		113.52	
67	DMH	502+05.5 4.6 R	117.17	(65) 113.39 (64) 113.31 (60) 111.49	111.44	DMH-5 FOOT DIAMETER
68	EX CB	502+95.7 46.2 L	116.61		112.61	
69	DMH	503+54.0 5.9 L	118.91	(67) 110.95 (70) 112.30 (68) 111.90	110.90	CONNECT TO EXISTING PIPES
70	EX CB	503+55.7 76.6 L	117.20		113.80	
71	EX CB	504+74.8 57.4 R	114.10		111.80	
72	DMH	505+59.6 7.1 L	117.20	(69) 110.25 (71) 110.50	110.18	DMH-6 FOOT DIAMETER
73	HEADWALL	506+05.7 2.2 L	112.75	(72) 110.00		

0 20 50 100

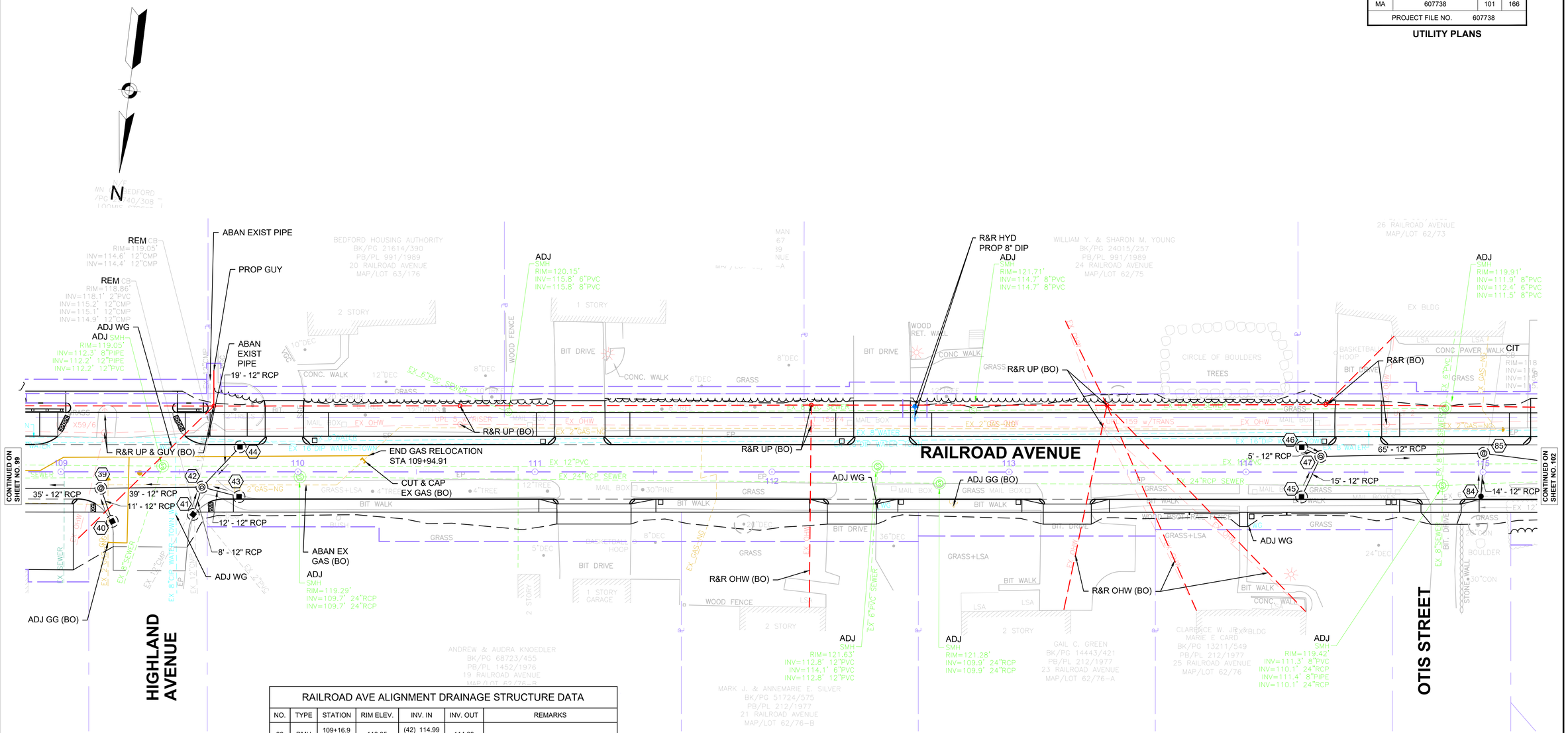
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	607738	101	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HD(UTIL).DWG Plotted on 30-Oct-2020 12:36 PM



RAILROAD AVE ALIGNMENT DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
39	DMH	109+16.9 6.9 R	118.35	(42) 114.99 (40) 115.25	114.89	
40	CB	109+21.7 20.9 R	118.42		115.40	
41	CB	109+55.8 18.0 R	118.64		115.20	CONNECT TO EXISTING PIPES
42	DMH	109+59.5 6.5 R	118.83	(43) 115.43 (44) 115.36 (41) 115.16	115.10	
43	CBCI	109+75.2 10.5 R	118.92		115.59	
44	CBCI	109+75.6 10.5 L	118.93		115.59	
45	CBCI	114+23.5 10.5 R	120.10		116.52	
46	CBCI	114+23.5 10.5 L	120.10		116.41	
47	DMH	114+31.6 6.6 L	120.11	(45) 116.42 (46) 116.36	116.22	
84	CIT	114+99.1 10.2 R	119.40		115.70	
85	DMH	115+00.3 7.9 L	119.43	(47) 115.68 (84) 115.63	115.58	

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

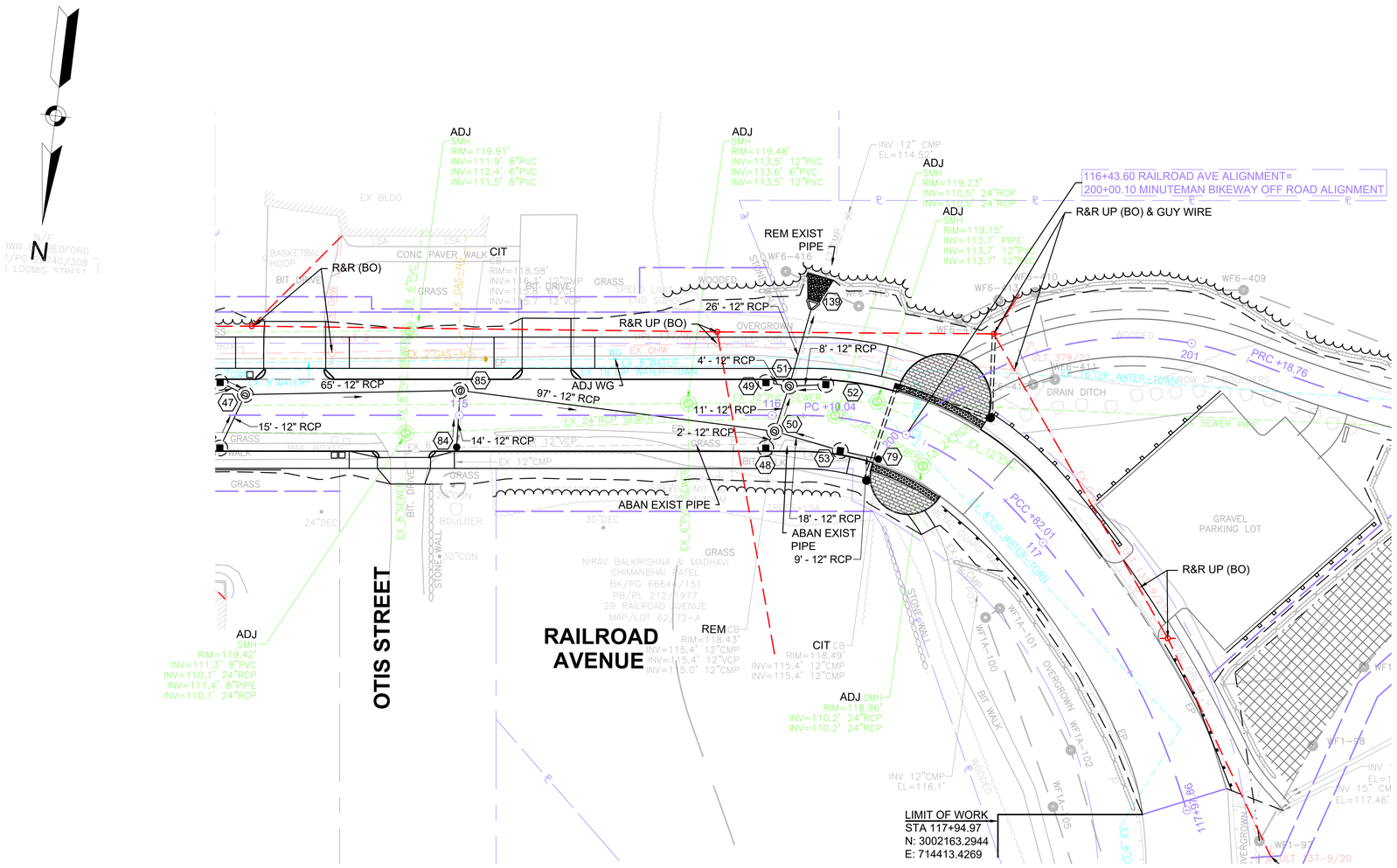
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	102	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:36 PM

CONTINUED ON SHEET NO. 101

CONTINUED ON SHEET NO. 103



RAILROAD AVE ALIGNMENT DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
45	CBCI	114+23.5 10.5 R	120.10		116.52	
46	CBCI	114+23.5 10.5 L	120.10		116.41	
47	DMH	114+31.6 6.6 L	120.11	(45) 116.42 (46) 116.36	116.22	
48	CBCI	115+98.0 10.5 R	118.94		115.58	CONNECT TO EXISTING PIPES
49	CBCI	115+98.0 10.5 L	118.94		115.58	
50	DMH	116+00.8 5.1 R	119.05	(48) 115.55 (85) 115.28 (53) 115.52	115.25	
51	DMH	116+05.5 9.4 L	118.97	(50) 115.19 (49) 115.55 (52) 115.55	115.16	
52	CBCI	116+16.5 10.1 L	118.98		115.60	
53	CBCI	116+23.4 10.4 R	118.99	(79) 114.65	115.61	
79	CIT	116+37.5 10.3 R	119.04		114.84	CONNECT TO EXISTING PIPE
84	CIT	114+99.1 10.2 R	119.40		115.70	
85	DMH	115+00.3 7.9 L	119.43	(47) 115.68 (84) 115.63	115.58	
139	FES	116+12.2 36.2 L	116.30	(51) 115.05		

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	103	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:37 PM

CONTINUED ON SHEET NO. 102

CONTINUED ON SHEET NO. 104

N

TOWN OF BEDFORD
BK/PG 740/308
LOOMIS STREET

116+43.60 RAILROAD AVE ALIGNMENT=
200+00.10 MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT

ADJ SMH
RIM=119.15'
INV=113.7' PIPE
INV=113.7' 12"RCP
INV=113.7' 12"RCP

R&R UP (BO) & GUY WIRE

CUT IN
PROP 16" SOLID SLEEVE
PROP 16" GATE VALVE &
BOX

PROP 16" DI WATER PIPE
REM EX WATER PIPE
PROP 4 FT WIDE
H10 SEWER PIPE
INSULATION

PT +24.81

PT +84.08

PC +73.91

16" 1/16
BEND

REMOD SMH
16" 1/8 BEND

PRC +18.76

PCC +82.01

WF6-411

WF6-410

WF6-409

WF6-408

WF6-407

WF6-406

WF6-405

WF6-404

WF1-103

WF1-102

WF1-101

WF1-100A

WF1-100

WF1-99

WF1-98

WF1-97

WF1A-101

WF1A-100

WF1A-102

WF1A-105

WOODED

DRAIN DITCH

SEWER PIPE

GRAVEL
PARKING LOT

COVERED
TRAIL SIGN

OVERGROWN

STONE WALL

BIT WALK

EP

CIT CB
RIM=118.49'
INV=115.4' 12"CMP
INV=115.4' 12"CMP

ADJ SMH
RIM=118.96'
INV=110.2' 24"RCP
INV=110.2' 24"RCP

INV 12"CMP
EL=116.1'

INV 15" CMP
EL=117.50'

INV 15" CMP
EL=117.34'

INV 15" CMP
EL=117.24'

INV 15" CMP
EL=117.46'

TOWN OF BEDFORD
"SCHOOL DEPARTMENT"
BK/PG 5104/16
BK/PG 6320/71
BK/PG 8146/130
BK/PG 9823/350
9 MUDGE WAY
MAP/LOT 53/45

LIMIT OF WORK
STA 117+94.97
N: 3002163.2944
E: 714413.4269

RET UP

MINUTEMAN BIKEWAY EXTENSION

0 20 50 100

SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	104	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:37 PM

MINUTEMAN BIKEWAY EXTENSION

N

ADJ SMH RIM=119.42' CNO-BURIED

PROP 16"X6" TEE
PROP 6" GATE VALVE & BOX
PROP 6" DI WATER PIPE

PROP 4 FT WIDE H10 SEWER PIPE INSULATION

CHAIN LINK FENCE

REMAINS OF WIRE FENCE W/WOOD POST

N/F
ANNA V. COLLINS
BK/PG 27002/486
PB/PL 991/1989
28 RAILROAD AVENUE
MAP/LOT 62/73-A

WF6-400
BF6-100
BF6-101
BF6-102
BF6-103
WF6-401
OVERGROWN
PT +47.62
EX 16"DIP WATER TOWN
208
207
209
210
PC +44.43
PRC +3
R&R HYD
PC +97.51
16" 1/8 BEND
16" 1/16 BEND
PROP 16" DI WATER PIPE
REM EX WATER PIPE
WF1-107
WF1-108
TOWN OF BEDFORD
BK/PG 10423/220
PB/PL 1693/1963
RAILROAD R.O.W.
INV 24" CMP
PRC +77.94
WF1-110
STONE HEADWALL
WOOD POST FENCE
MON. WELL
WF6-403
WF6-404
WF1-104
PT +24.81
WF6-405
CUT IN
PROP 16" SOLID SLEEVE
PROP 16" GATE VALVE & BOX
100' RIVERFRONT
200' RIVERFRONT
TOWN OF BEDFORD
"SCHOOL DEPARTMENT"
BK/PG 5104/16
BK/PG 6320/71
BK/PG 8146/130
BK/PG 9823/350
9 MUDGE WAY
MAP/LOT 53/45
N/F
TOWN OF BEDFORD
"ELM BROOK CONSERVATION AREA"
BK/PG 13394/650
PB/PL 168/1978
16B RAILROAD AVENUE
MAP/LOT 62/74
BF1-200
BF1-203
BF1-202
BF1-201
INV 24" CMP EL=113.22'
INV 24" CMP EL=112.4'
EX CMP
FEMA ZONE AE
WOODED TRAIL POST
FLOW
STONE HEADWALL
ADJ SMH
ADJ WG
CUT IN
PROP 16" SOLID SLEEVE
PROP 16" GATE VALVE & BOX
EX. TELEPHONE TOWN
EX. 8" WATER

CONTINUED ON SHEET NO. 103

CONTINUED ON SHEET NO. 105

0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	105	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:37 PM

MINUTEMAN BIKEWAY EXTENSION

ELM BROOK CONSERVATION CONNECTION

WASHINGTON STREET CONNECTION

MONGO BROOK

WINCHESTER DRIVE CONNECTION

N

100' RIVERFRONT

200' RIVERFRONT

N/F
HARTWELL HILL LLC
BK/PL 49522/304
PB/PL 767/1949
22A EVANS AVENUE
MAP/LOT 70/1

REMOD
SMH
RIM=120.28'

PROP 4 FT WIDE H10
SEWER PIPE INSULATION

PROP 16" DI WATER PIPE
REM EX WATER PIPE

ADJ WG
CUT IN
PROP 16" SOLID SLEEVE
PROP 16" GATE VALVE & BOX

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BF1–999
BF1–1000

WF1–110
WF2–101
WF2–103
WF2–104

PC +44.43
PRC +30.28
PT +56.13
PRC +77.94

210
211
212
213
214
215

ADJ SMH
EX 4" CMP
INV 24" CMP EL=112.4'
INV 16" PVC EL=113.50'
INV 4" PVC EL=114.59'
4" CMP 113.22'
STONE HEADWALL
WOODED TRAIL ROOT
EX TELEPHONE-TOWN
EX 16" DIP WATER-TOWN
REMAINS OF WOOD POST WIRE FENCE
CHAIN LINK FENCE
GATE WOOD FENCE
STOCKADE FENCE
FEMA ZONE AE
FEMA ZONE X

N/F
JOHN P. & KATHLEEN PIETRASIK
BK/PG 1795/565
PB/PL 769/1964
4 RICHARD ROAD
MAP/LOT 62/55

N/F
LADISLAV & LUDMILA STUCKA
BK/PG 13966/500
PB/PL 769/1964
6 RICHARD ROAD
MAP/LOT 62/54

N/F
ANTHONY J. & ANDRREA J. RUSSO
BK/PG 62091/585
PB/PL 769/1964
8 RICHARD ROAD
MAP/LOT 62/53

TOWN OF BEDFORD
BK/PG 10423/220
PB/PL 1693/1963
RAILROAD R.O.W.

20' WIDE DRAINAGE EASEMENT

CONTINUED ON SHEET NO. 104
CONTINUED ON SHEET NO. 106

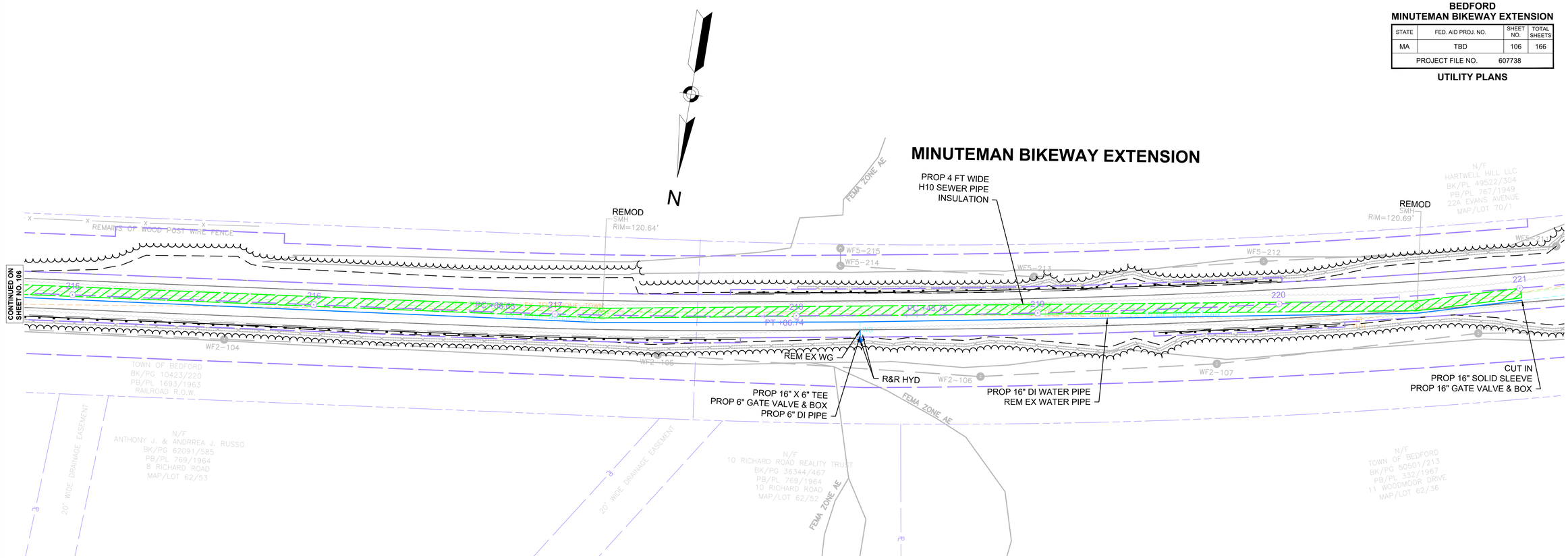
0 20 50 100
SCALE: 1" = 20'

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	106	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:38 PM



NOTE:

FOR WORK RELATED TO EXISTING AND PROPOSED UTILITIES BETWEEN STA 221+00 AND 300+00 SEE THE CONSTRUCTION PLANS

MINUTEMAN BIKEWAY OFF ROAD ALIGNMENT DRAINAGE STRUCTURE DATA

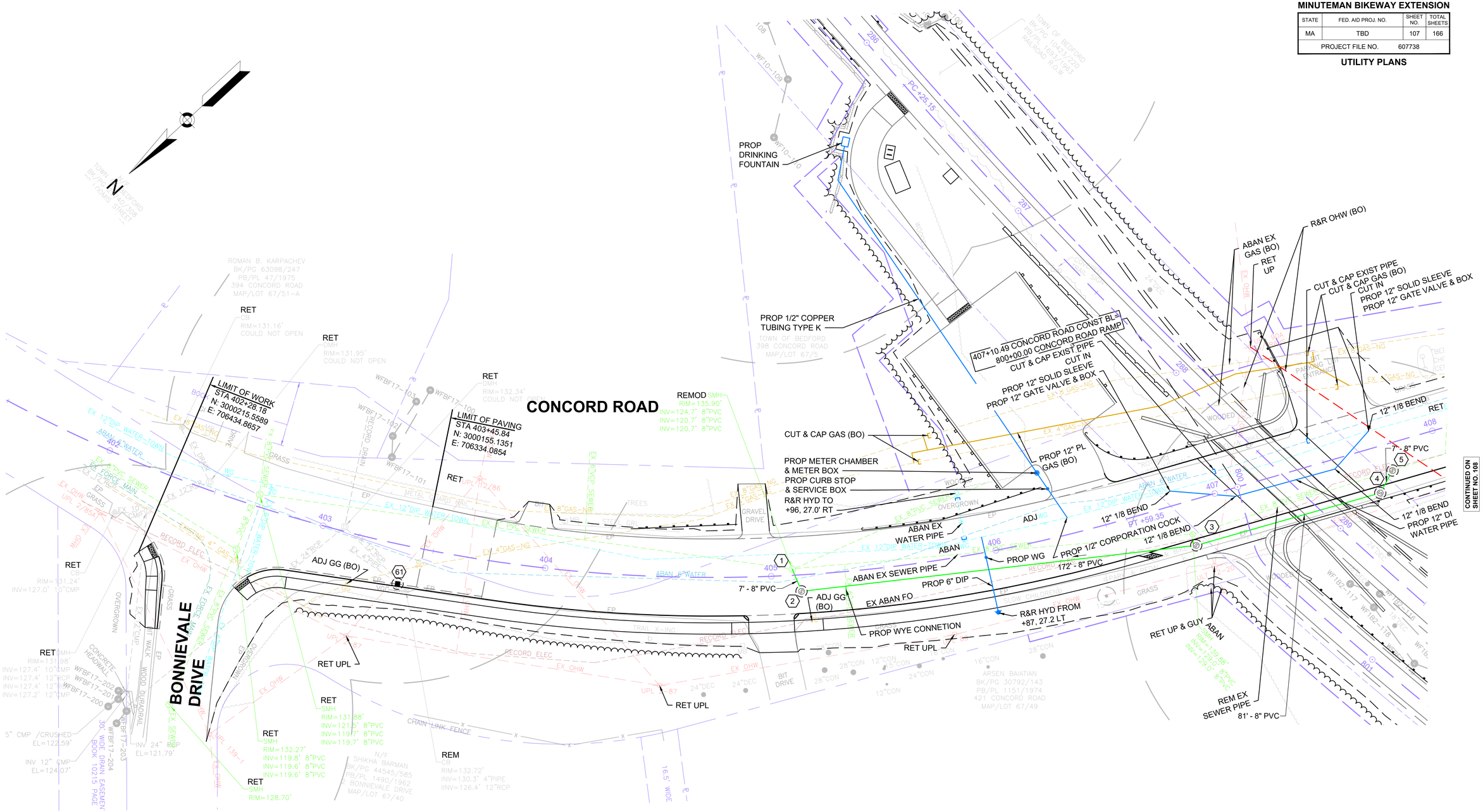
NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
135	FES	242+49.8 14.4 L	124.15	(143) 122.36		
143	FES	242+49.8 38.4 R	124.62		122.83	

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	107	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:38 PM


CONCORD ROAD
BONNIEVALE DRIVE
LIMIT OF WORK
STA 402+28.18
N: 3000215.5589
E: 706434.8657
LIMIT OF PAVING
STA 403+45.84
N: 3000155.1351
E: 706334.0854
PROP DRINKING FOUNTAIN
PROP 1/2" COPPER TUBING TYPE K
407+10.49 CONCORD ROAD CONST BL =
800+00.00 CONCORD ROAD RAMP
CUT & CAP EXIST PIPE
CUT IN
PROP 12" SOLID SLEEVE
PROP 12" GATE VALVE & BOX
CUT & CAP GAS (BO)
PROP METER CHAMBER & METER BOX
PROP CURB STOP & SERVICE BOX
R&R HYD TO +96, 27.0' RT
PROP 12" PL GAS (BO)
ABAN EX WATER PIPE
ABAN EX SEWER PIPE
PROP 6" DIP
PROP WG
PROP 1/2" CORPORATION COCK
172' - 8" PVC
7' - 8" PVC
ADJ GG (BO)
EX ABAN FO
PROP WYE CONNETION
R&R HYD FROM +87, 27.2 LT
RET UPL
ABAN EX GAS (BO)
RET UP
R&R OHW (BO)
CUT & CAP EXIST PIPE
CUT & CAP GAS (BO)
CUT IN
PROP 12" SOLID SLEEVE
PROP 12" GATE VALVE & BOX
12" 1/8 BEND
PROP 12" DI WATER PIPE
RET UP & GUY
REM EX SEWER PIPE
81' - 8" PVC
REMOD SMH
RIM=135.90'
INV=124.7" 8"PVC
INV=120.7" 8"PVC
INV=120.7" 8"PVC
REM
CB
RIM=132.72'
INV=130.3" 4"PIPE
IINV=126.4" 12"RCP
RET
SMH
RIM=131.16'
COULD NOT OPEN
RET
SMH
RIM=131.95'
COULD NOT OPEN
RET
DMH
RIM=132.34'
COULD NOT OPEN
RET
SMH
RIM=131.98'
INV=127.4" 10"CMP
INV=127.4" 12"RCP
INV=127.4" 12"CMP
INV=127.2" 12"CMP
RET
CB
RIM=131.24'
INV=127.0" 10"CMP
RET
SMH
RIM=131.88'
INV=121.6" 8"PVC
INV=119.7" 8"PVC
INV=119.7" 8"PVC
RET
SMH
RIM=132.27'
INV=119.8" 8"PVC
INV=119.6" 8"PVC
INV=119.6" 8"PVC
RET
SMH
RIM=128.70'
ROMAN B. KARPACHEV
BK/PG 63098/247
PB/PL 47/1975
394 CONCORD ROAD
MAP/LOT 67/51=A
TOWN OF BEDFORD
BK/PG 10423/220
PB/PL 1893/1963
RAILROAD R.O.W.
TOWN OF BEDFORD
398 CONCORD ROAD
MAP/LOT 67/5
ARSEN BAIATIAN
BK/PG 30792/143
PB/PL 1151/1974
421 CONCORD ROAD
MAP/LOT 67/49
N/F
SHIKHA BARMAN
BK/PG 44545/585
PB/PL 1490/1962
2 BONNIEVALE DRIVE
MAP/LOT 67/40
TOWN OF BEDFORD
BK/PG 40/318
74 THOMAS STREET
5" CMP - CRUSHED
EL=122.59'
INV 12" CMP
EL=124.07'
INV 24" RCP
EL=121.79'
30' WIDE DRAIN EASEMENT BOOK 10215 PAGE
16.5' WIDE
EX 12"DIP WATER-TOWN
EX 8"PVC SEWER FORCE MAIN
EX 8"GAS-NG
EX 4"GAS-NG
EX 6"PVC SEWER
EX 8"PVC SEWER
EX 12"PVC WATER-TOWN
EX 24"RCP
EX 12"RCP
EX 10"CMP
EX 15"RCP
EX 8"PVC WATER-TOWN
EX 6"PVC WATER-TOWN
EX 6"PVC SEWER
EX 8"PVC SEWER
EX 12"DIP WATER-TOWN
EX 8"PVC SEWER
EX 8"GAS-NG
EX 4"GAS-NG
EX 12"DIP WATER-TOWN
EX 8"PVC SEWER
EX 8"PVC SEWER
EX 12"DIP WATER-TOWN
EX 8"PVC SEWER
EX 8"GAS-NG
EX 4"GAS-NG
EX 4"GAS-NG
EX 4

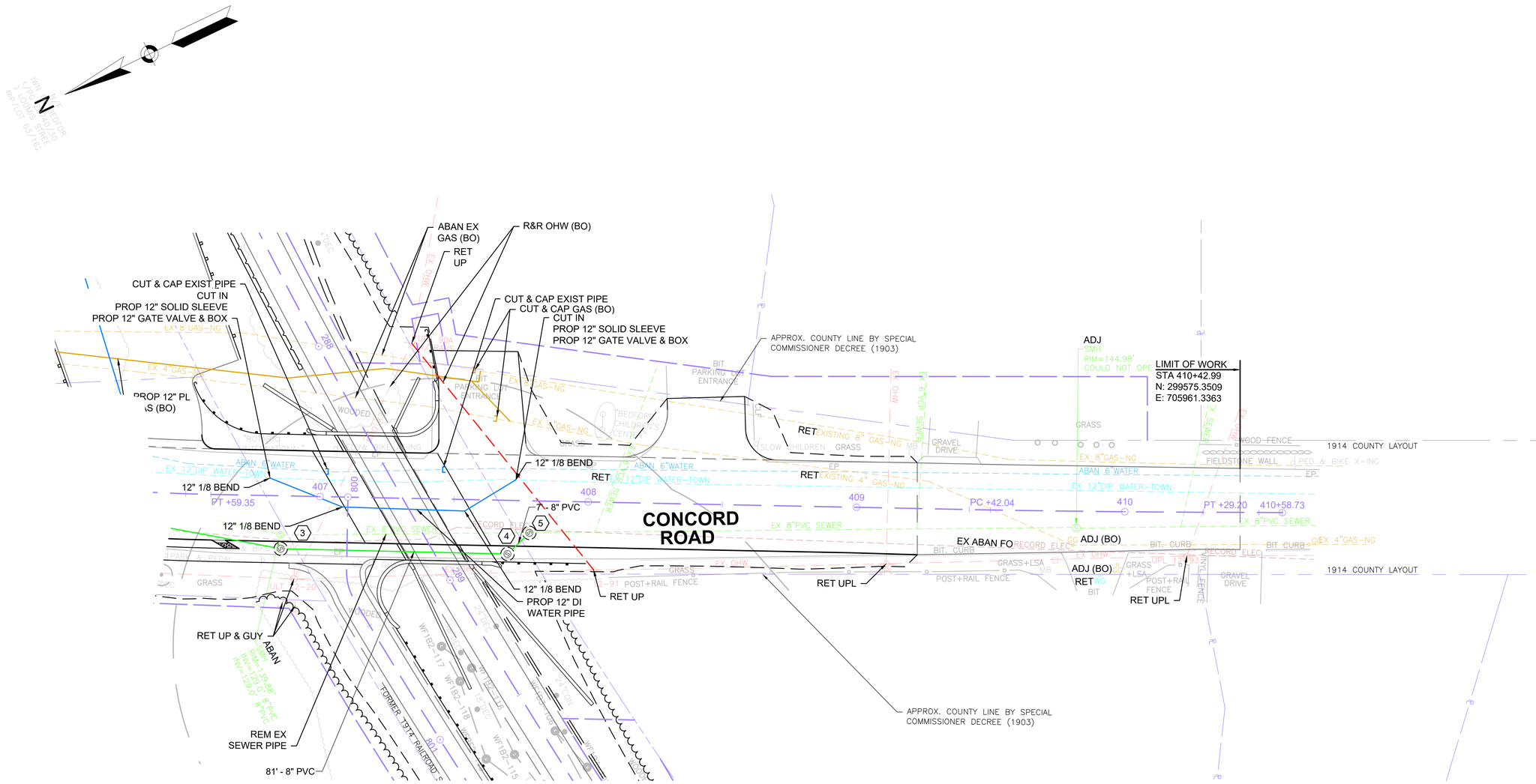
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	108	166
PROJECT FILE NO.	607738		

UTILITY PLANS

607738_HDUTIL).DWG Plotted on 30-Oct-2020 12:39 PM

CONTINUED ON SHEET NO. 107


N
ABAN EX GAS (BO)
RET UP
R&R OHW (BO)
CUT & CAP EXIST PIPE
CUT IN
PROP 12" SOLID SLEEVE
PROP 12" GATE VALVE & BOX
CUT & CAP EXIST PIPE
CUT & CAP GAS (BO)
CUT IN
PROP 12" SOLID SLEEVE
PROP 12" GATE VALVE & BOX
APPROX. COUNTY LINE BY SPECIAL COMMISSIONER DECREE (1903)
ADJ
SMH
RIM=144.98'
COULD NOT OPE
LIMIT OF WORK
STA 410+42.99
N: 299575.3509
E: 705961.3363
PROP 12" PL
S (BO)
EX 8 GAS-NG
EX 4 GAS-NG
BIT PARKING LOT ENTRANCE
BEDFORD CHILDREN'S CENTER
WOODED
GRASS
GRAVEL DRIVE
SLOW CHILDREN
RET EXISTING 8" GAS-NG MB
RET EXISTING 4" GAS-NG
EX 8"GAS-NG
ABAN 6"WATER
EX 12"DIP WATER-TOWN
EP
WOOD FENCE
FIELDSTONE WALL
PED & BIKE X-ING
1914 COUNTY LAYOUT
12" 1/8 BEND
PT +59.35
407
800
408
409
410
PC +42.04
PT +29.20
410+58.73
EX 8"PVC SEWER
7' - 8" PVC
CONCORD ROAD
EX ABAN FO
ADJ (BO)
RECORD ELEC
BIT. CURB
EX OHW
GRASS+LSA
POST+RAIL FENCE
RET
MB
RET UPL
12" 1/8 BEND
PROP 12" DI
WATER PIPE
RET UP
RET UP & GUY
ABAN
SMH
RIM=139.98'
INV=129.01
INV=120.0
8"PVC
REM EX
SEWER PIPE
81' - 8" PVC
FORMER TEXTILE RAILROAD S
WF1B2-117
WF1B2-118
WF1B2-115
WF1B2-116
WF1B2-119
WF1B2-120
WF1B2-121
WF1B2-122
WF1B2-123
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WF1B2-152
WF1B2-153
WF1B2-154
WF1B2-155
WF1B2-156
WF1B2-157
WF1B2-158

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	109	166
PROJECT FILE NO. 607738			

LIGHTING PLANS

607738_HD(PR)-LIGHTING.DWG Plotted on 30-Oct-2020 2:58 PM

N

LED LIGHTING:

A: TUNNEL NIGHTTIME FIXTURE
B: TUNNEL DAYTIME FIXTURE
C: TUNNEL NIGHTTIME FIXTURE (FOR ILLUMINATION OF TUNNEL APPROACH)

2"C (RGS)
UNDERGROUND CONDUIT

HANDHOLE

LIGHTING AND CONTROL CABINET
INSTALLED AT 2' OFF WINGWALL ON
CONCRETE FOUNDATION

4 #10 AWG + 1#10G +
3 #20 AWG - 2"C (RGS)
UNDERGROUND CONDUIT

JUNCTION BOX
(PVC COATED RGS)

4 #10 AWG + 1#10G +
3 #20 AWG - 1"C
(PVC COATED RGS)

FIXTURE C TO BE MOUNTED
APPROXIMATELY 6" INSIDE
THE TUNNEL FACE

JUNCTION BOX
(PVC COATED RGS)

PHOTOCELL

3 #20 AWG - 1"C
(PVC COATED RGS)

288 289

A B A B A

C C

408 407

PT =59.35

EX OHW
EX 8"GAS-NG
EX 4"GAS-NG
EX 12"DIP WATER-TOWN
EP
POST+RAIL FENCE
MERIT GUARD RAIL
DRAINAGE SWALE
GRAVEL PATH
GRAVEL PARKING AREA
DIRT ROW
24"DEC
24"CON
18"DEC
WF1B2-116
WF1B2-115
WF1B2-117
WF1B2-118
WF1B3-106
WFBF2-120

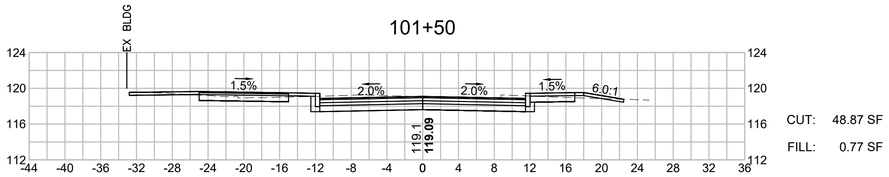
8 0 8 16
SCALE IN FEET

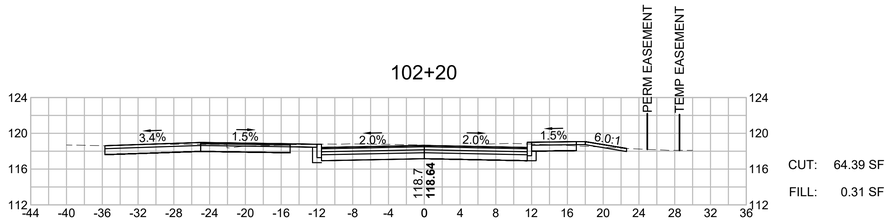
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

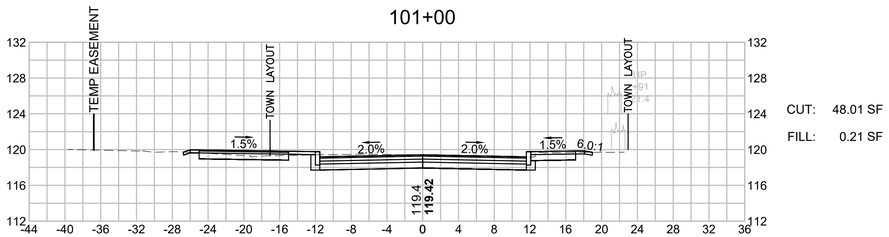
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	110	166
PROJECT FILE NO. 607738			

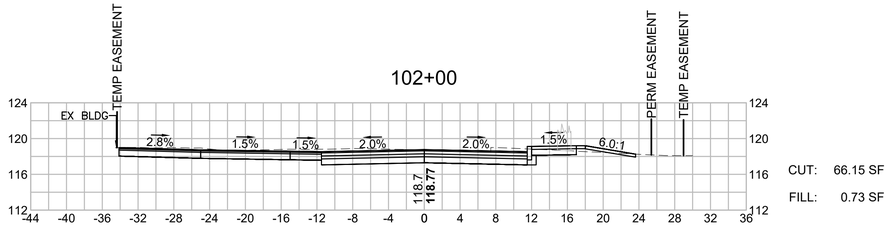
CROSS SECTIONS
RAILROAD AVENUE

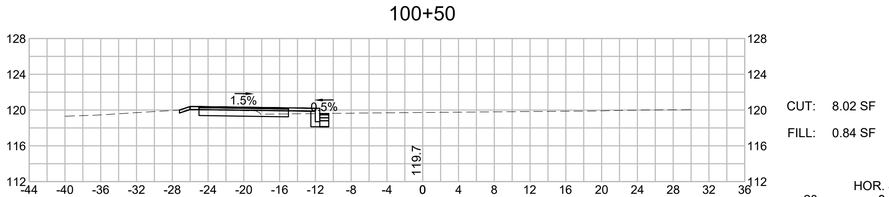
607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:00 PM

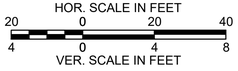


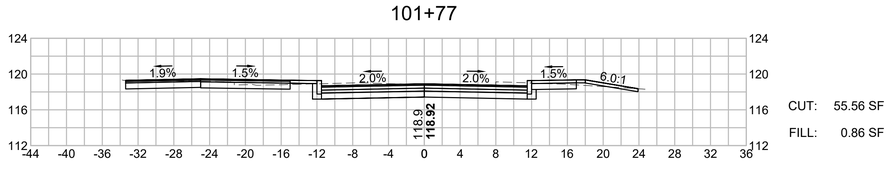












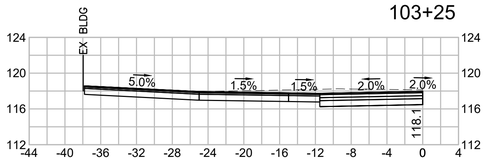
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	111	166
PROJECT FILE NO. 607738			

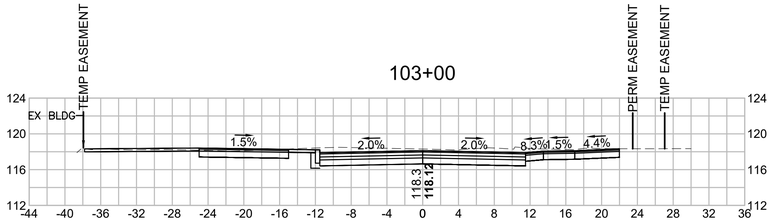
CROSS SECTIONS
RAILROAD AVENUE

607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:01 PM

103+25

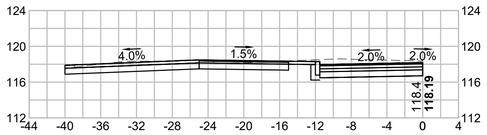


103+00



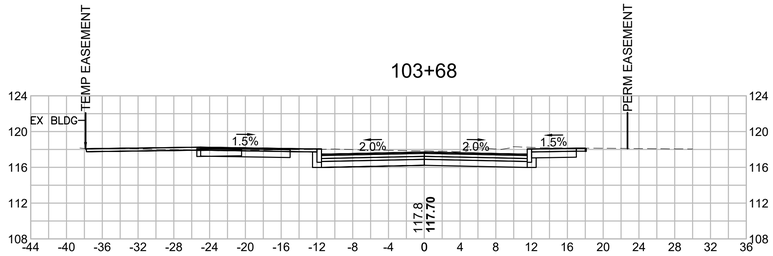
CUT: 68.66 SF
FILL: 0.00 SF

102+89



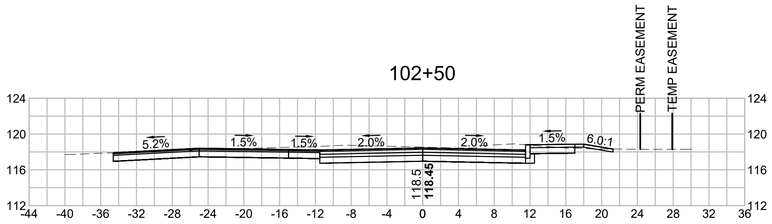
CUT: 48.36 SF
FILL: 0.00 SF

103+68



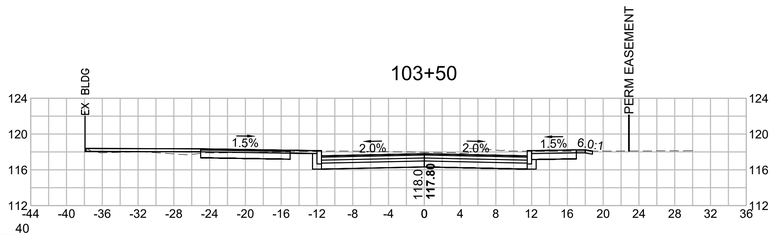
CUT: 63.14 SF
FILL: 0.00 SF

102+50



CUT: 69.35 SF
FILL: 0.23 SF

103+50



CUT: 58.56 SF
FILL: 1.68 SF

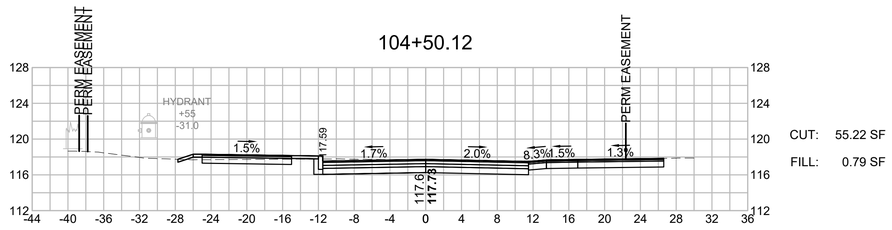
HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

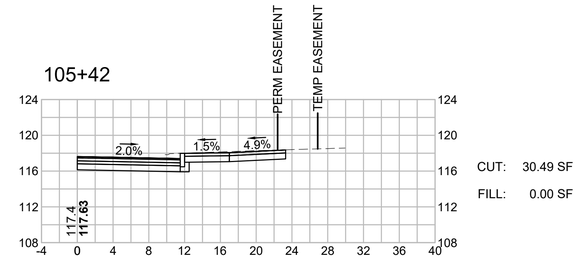
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	112	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
RAILROAD AVENUE

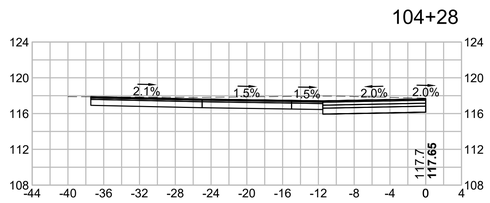
607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:01 PM



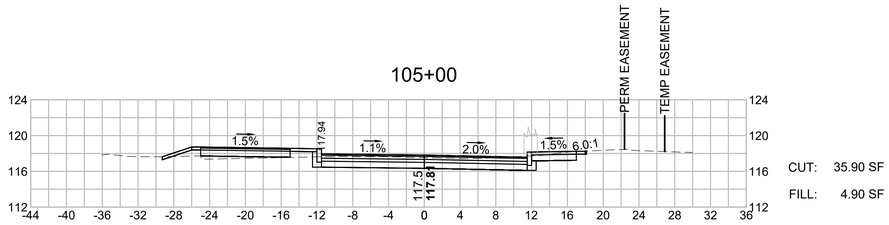
CUT: 55.22 SF
FILL: 0.79 SF



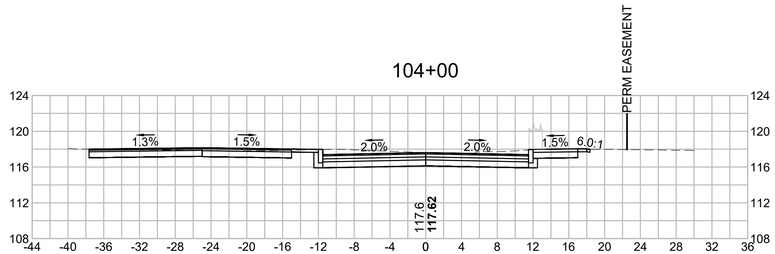
CUT: 30.49 SF
FILL: 0.00 SF



CUT: 51.86 SF
FILL: 0.00 SF

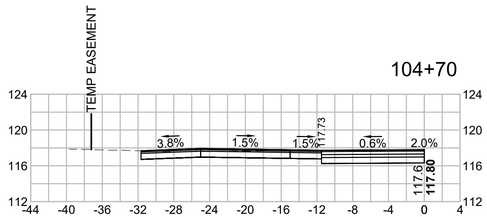


CUT: 35.90 SF
FILL: 4.90 SF



CUT: 66.82 SF
FILL: 0.00 SF

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

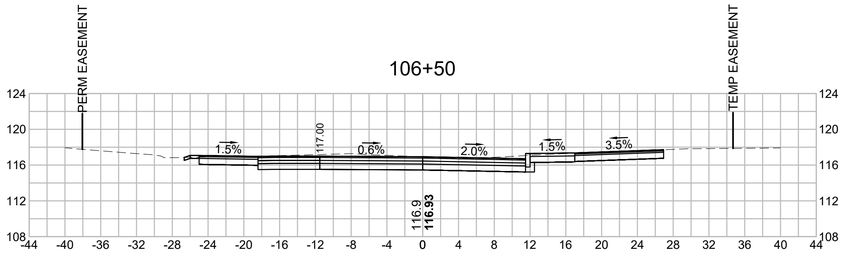


BEDFORD
MINUTEMAN BIKEWAY EXTENSION

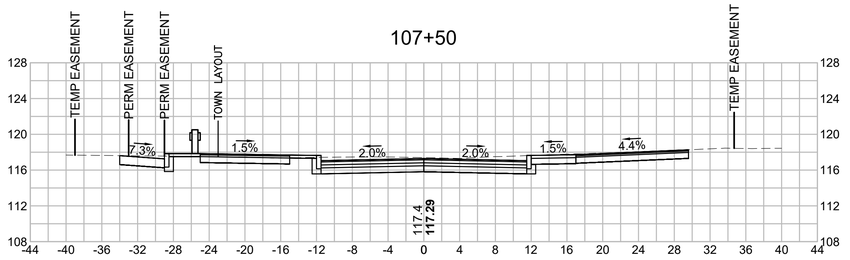
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	113	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
RAILROAD AVENUE

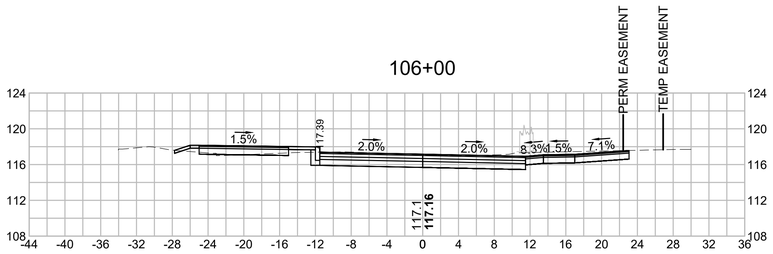
607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:01 PM



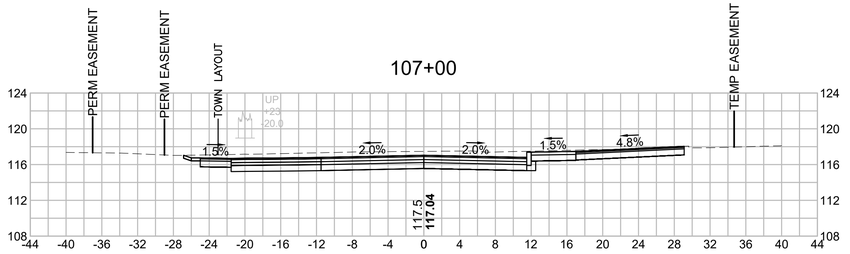
CUT: 74.41 SF
FILL: 0.00 SF



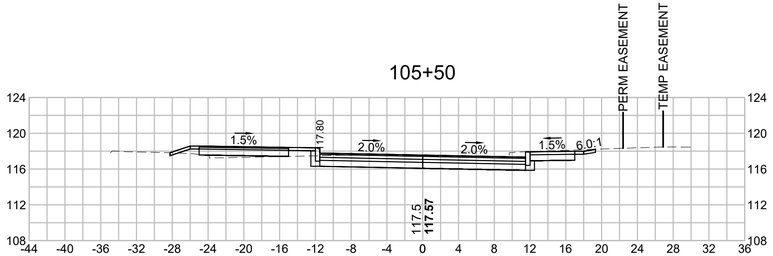
CUT: 75.70 SF
FILL: 0.00 SF



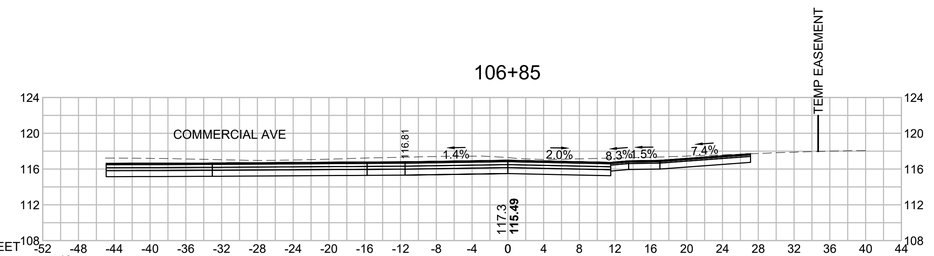
CUT: 51.06 SF
FILL: 1.71 SF

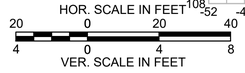


CUT: 91.61 SF
FILL: 0.00 SF



CUT: 42.02 SF
FILL: 4.09 SF



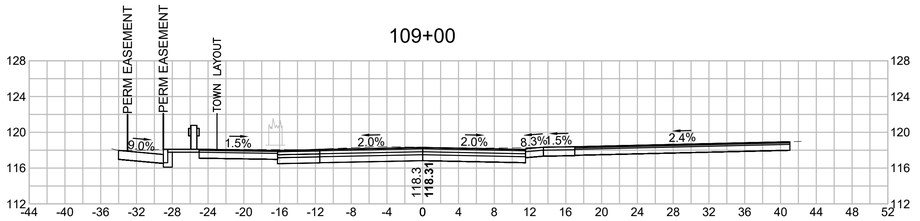


BEDFORD
MINUTEMAN BIKEWAY EXTENSION

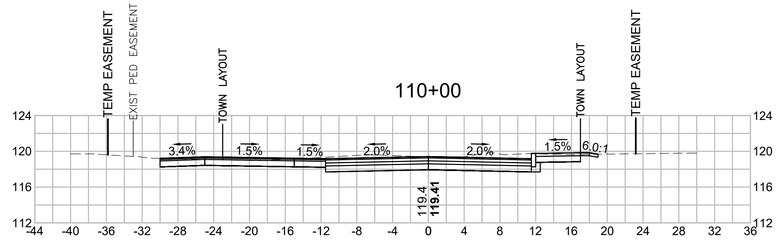
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	114	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
RAILROAD AVENUE

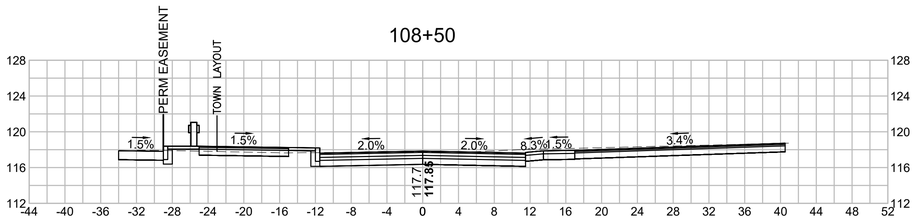
607738_HDI\XSEC-RAILROAD AVE\.DWG Plotted on 30-Oct-2020 1:02 PM



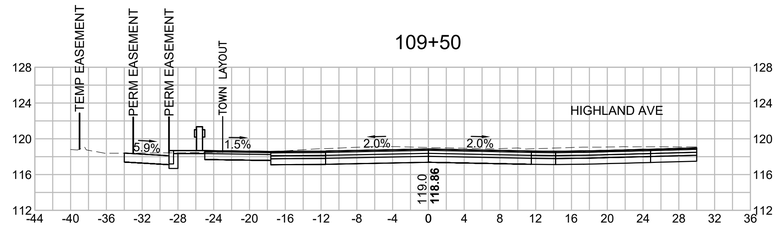
CUT: 91.64 SF
FILL: 0.00 SF



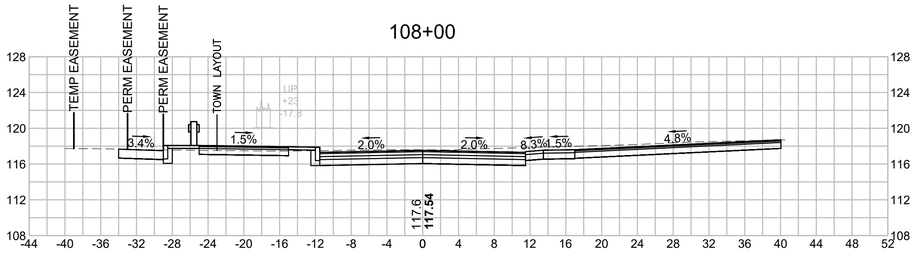
CUT: 60.03 SF
FILL: 0.00 SF



CUT: 77.78 SF
FILL: 1.18 SF

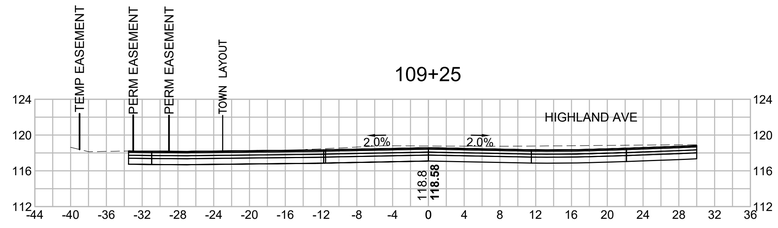


CUT: 99.46 SF
FILL: 0.00 SF



CUT: 86.39 SF
FILL: 0.87 SF

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



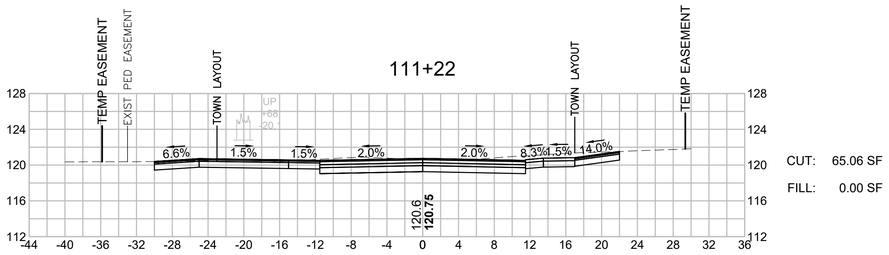
CUT: 106.74 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

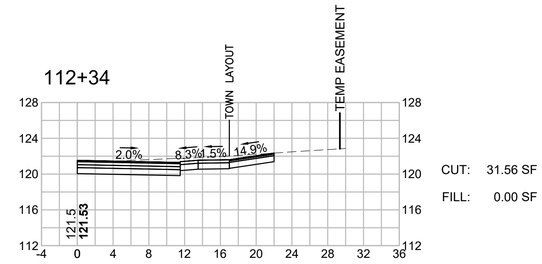
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	115	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
RAILROAD AVENUE

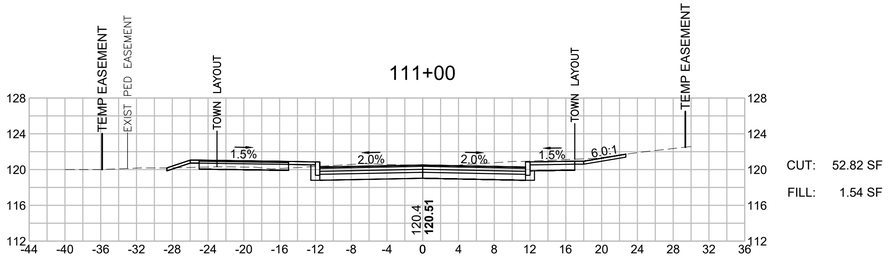
607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:02 PM



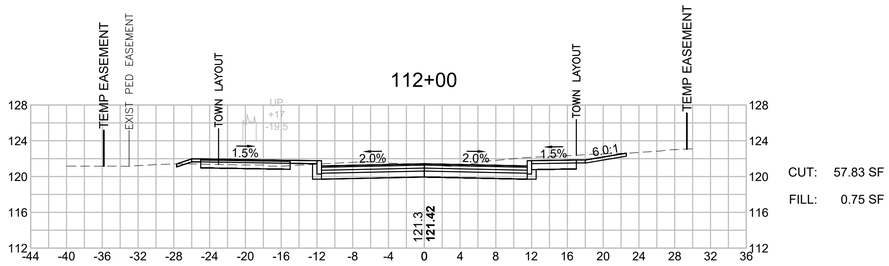
CUT: 65.06 SF
FILL: 0.00 SF



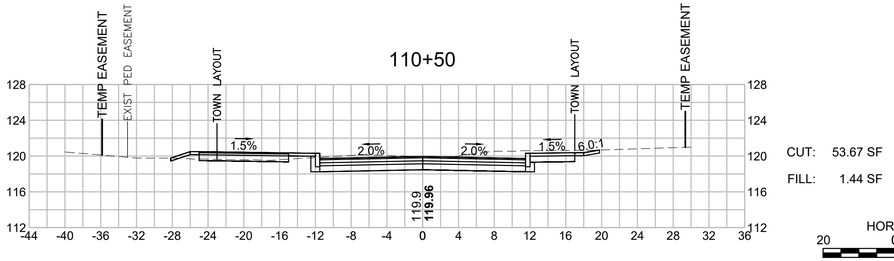
CUT: 31.56 SF
FILL: 0.00 SF



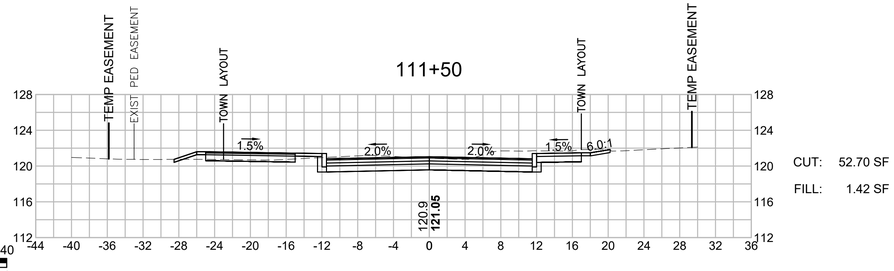
CUT: 52.82 SF
FILL: 1.54 SF



CUT: 57.83 SF
FILL: 0.75 SF



CUT: 53.67 SF
FILL: 1.44 SF



CUT: 52.70 SF
FILL: 1.42 SF

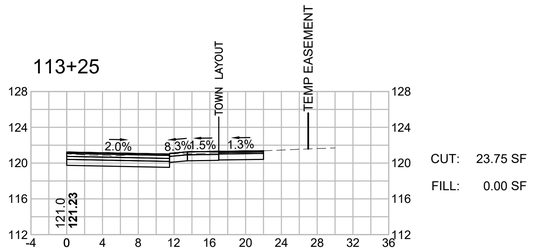
HOR. SCALE IN FEET
20 0 20 40
VER. SCALE IN FEET
4 0 4 8

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

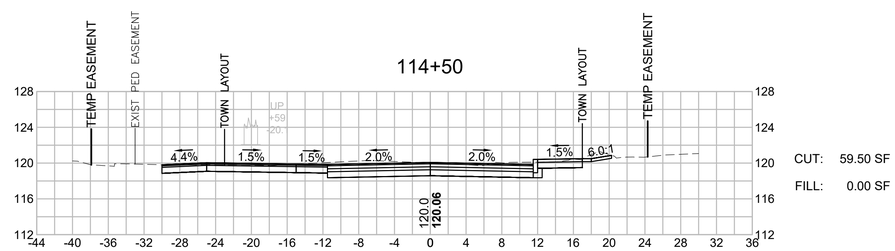
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	116	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
RAILROAD AVENUE

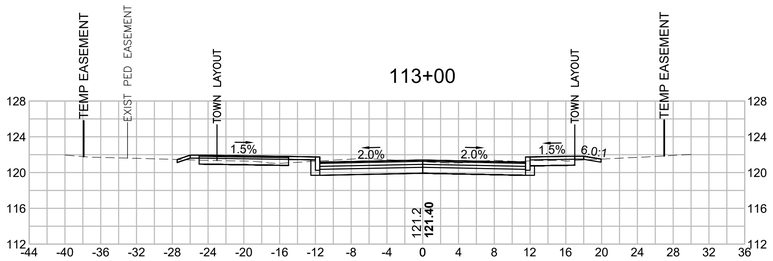
607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:02 PM



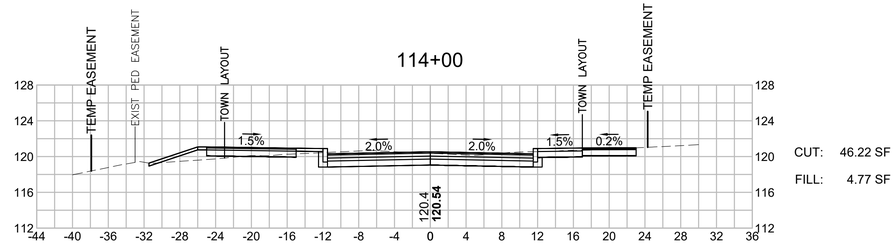
CUT: 23.75 SF
FILL: 0.00 SF



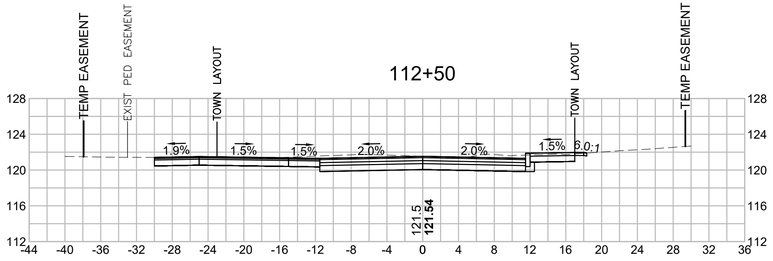
CUT: 59.50 SF
FILL: 0.00 SF



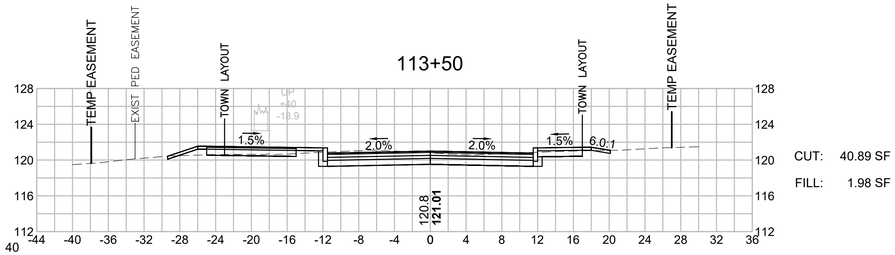
CUT: 44.48 SF
FILL: 1.08 SF



CUT: 46.22 SF
FILL: 4.77 SF



CUT: 61.80 SF
FILL: 0.00 SF



CUT: 40.89 SF
FILL: 1.98 SF

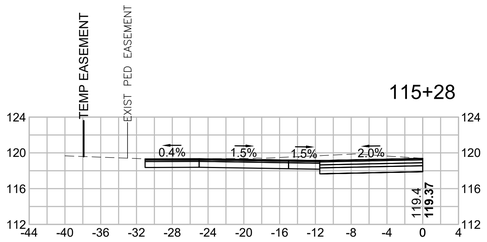
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

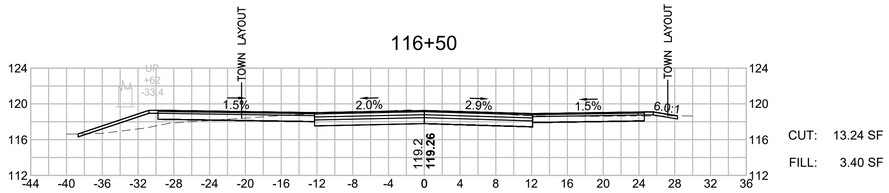
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	117	166
PROJECT FILE NO. 607738			

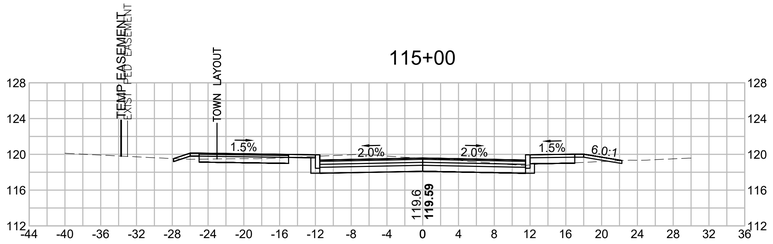
CROSS SECTIONS
RAILROAD AVENUE

607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:03 PM

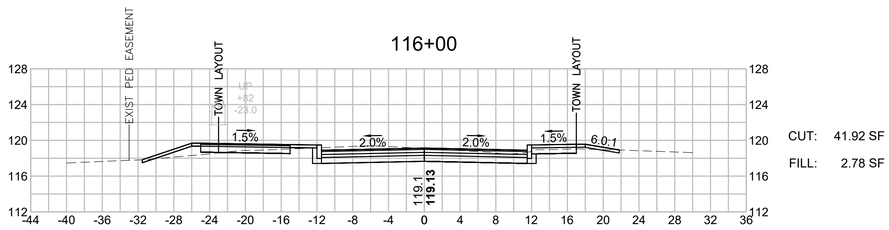




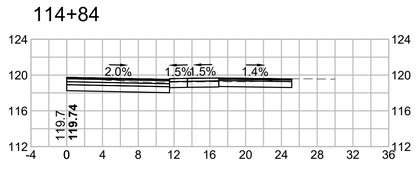
CUT: 13.24 SF
FILL: 3.40 SF



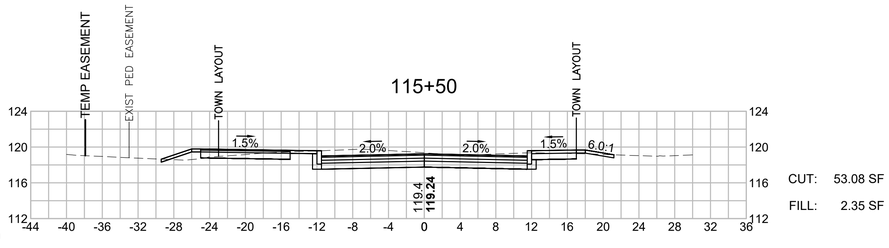
CUT: 42.46 SF
FILL: 2.15 SF



CUT: 41.92 SF
FILL: 2.78 SF







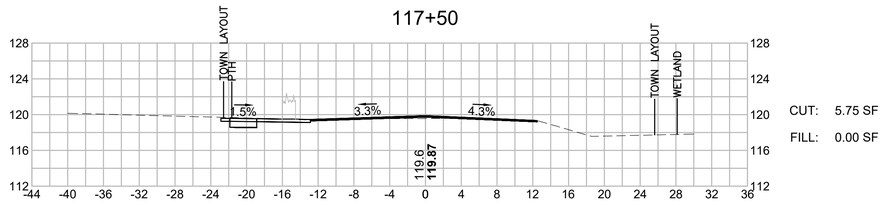
CUT: 53.08 SF
FILL: 2.35 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

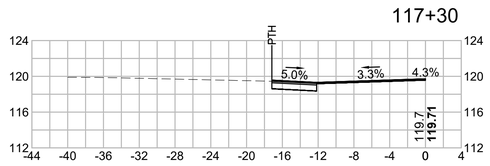
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	118	166
PROJECT FILE NO. 607738			

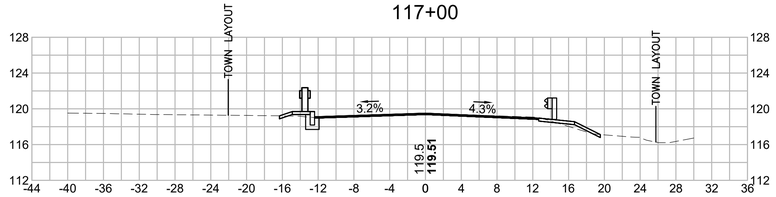
CROSS SECTIONS
RAILROAD AVENUE

607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:03 PM



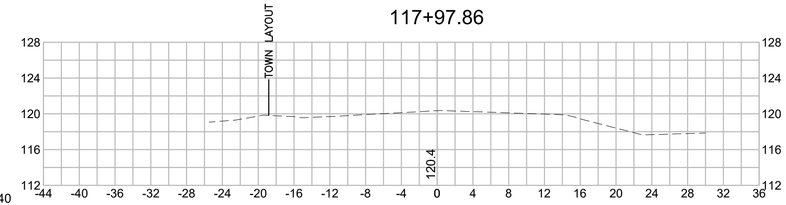
CUT: 5.75 SF
FILL: 0.00 SF





CUT: 2.17 SF
FILL: 3.27 SF

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



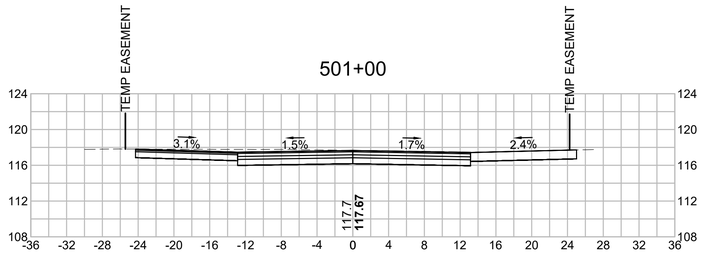
CUT: 0.00 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

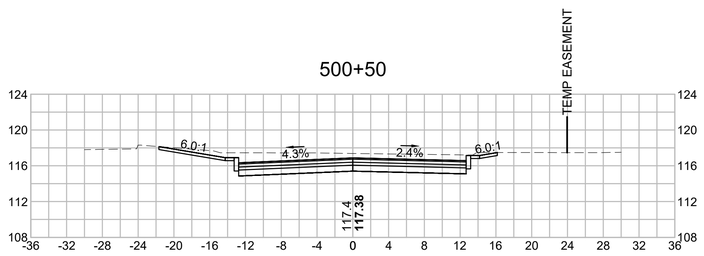
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	119	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
COMMERCIAL AVENUE

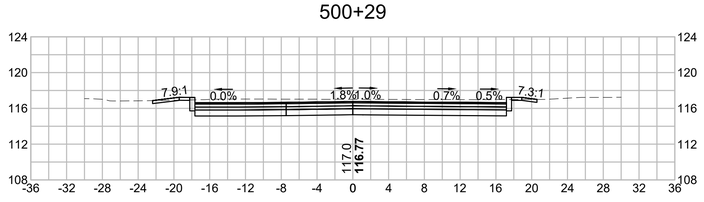
607738_HDXSEC-RAILROAD AVE).DWG Plotted on 30-Oct-2020 1:03 PM



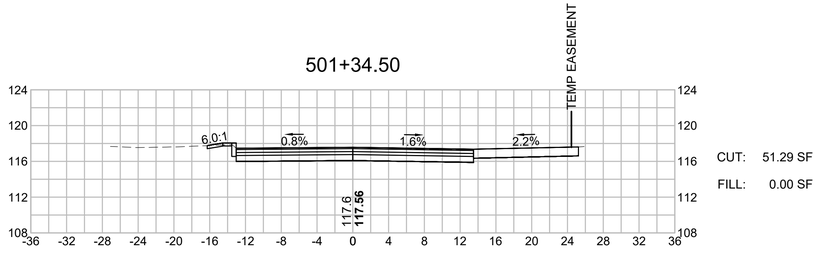
CUT: 66.20 SF
FILL: 0.00 SF



CUT: 64.49 SF
FILL: 0.00 SF



CUT: 67.55 SF
FILL: 0.00 SF



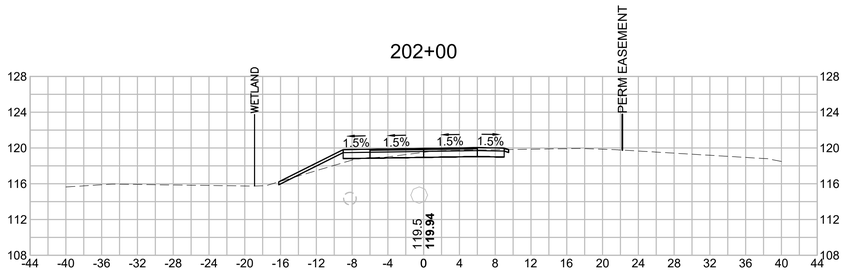
CUT: 51.29 SF
FILL: 0.00 SF

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

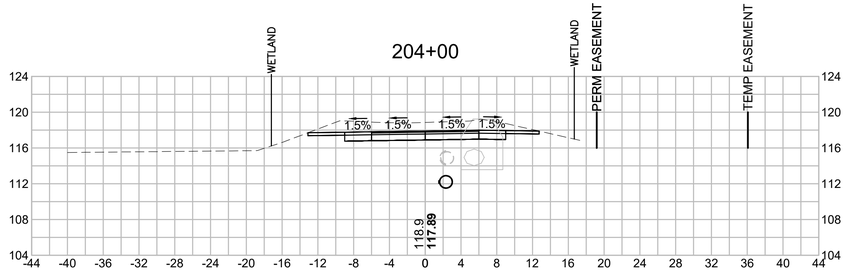
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	120	166
PROJECT FILE NO. 607738			

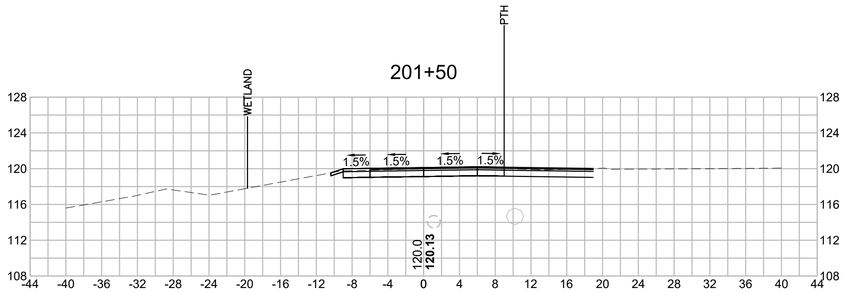
CROSS SECTIONS



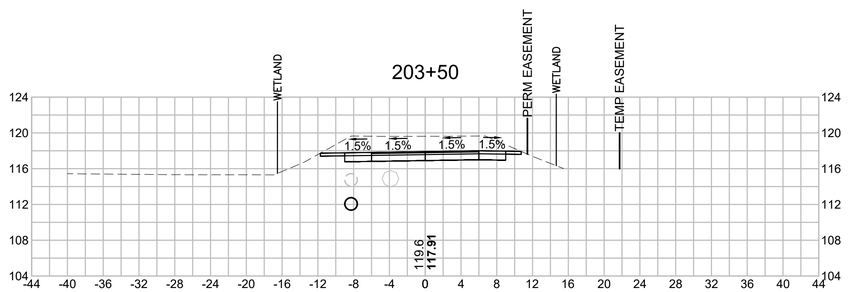
CUT: 8.60 SF
FILL: 3.52 SF



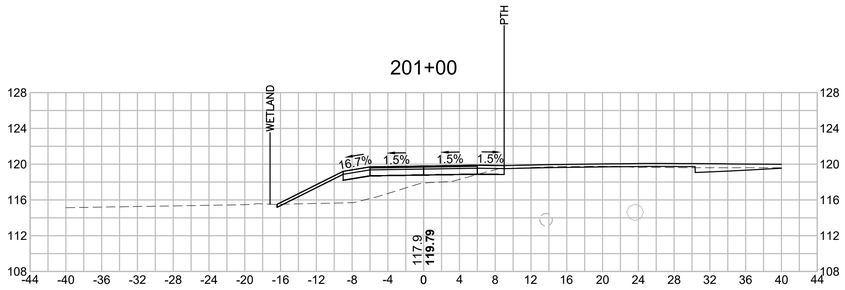
CUT: 43.73 SF
FILL: 0.06 SF



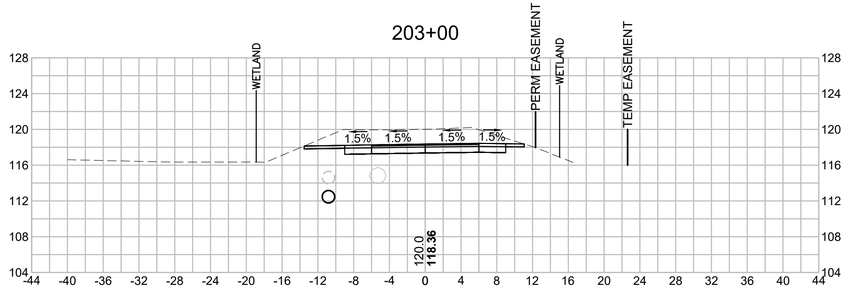
CUT: 15.41 SF
FILL: 0.00 SF



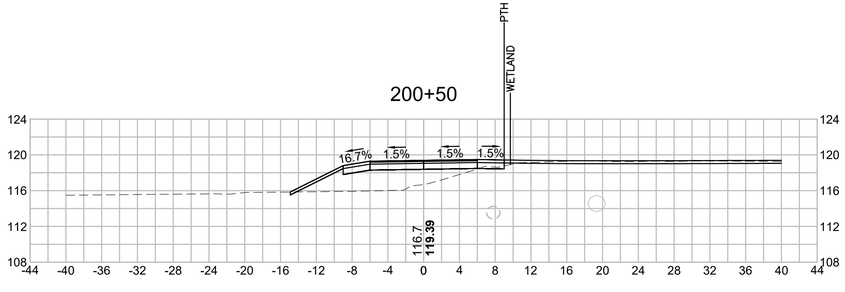
CUT: 52.07 SF
FILL: 0.00 SF



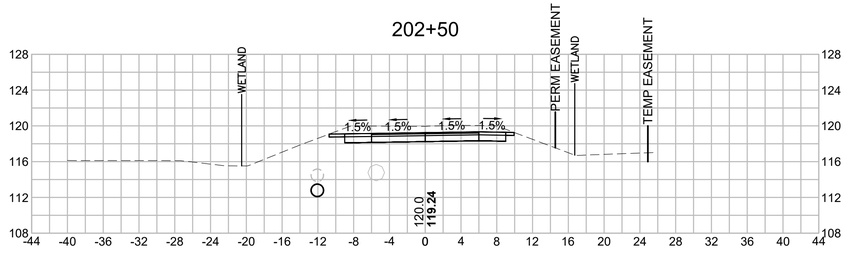
CUT: 1.25 SF
FILL: 32.58 SF



CUT: 53.56 SF
FILL: 0.00 SF



CUT: 0.69 SF
FILL: 31.47 SF



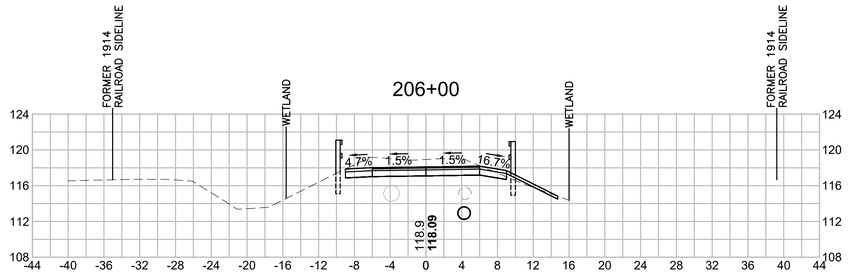
CUT: 33.08 SF
FILL: 0.00 SF

607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:03 PM

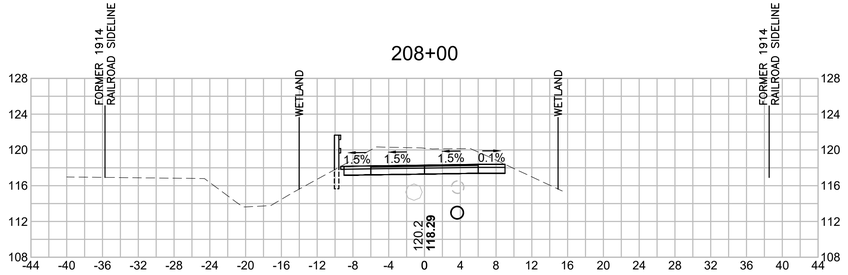
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	121	166
PROJECT FILE NO. 607738			

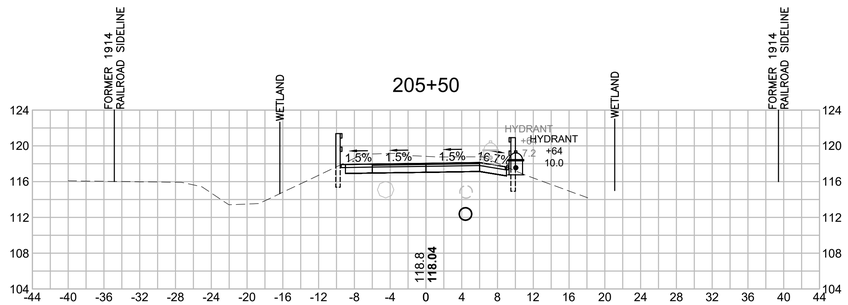
CROSS SECTIONS



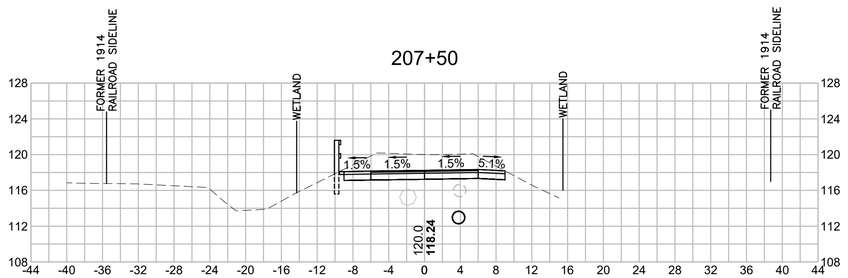
CUT: 29.42 SF
FILL: 0.66 SF



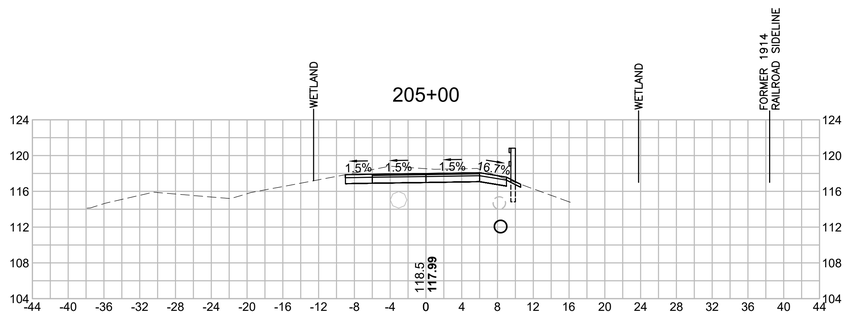
CUT: 45.86 SF
FILL: 0.00 SF



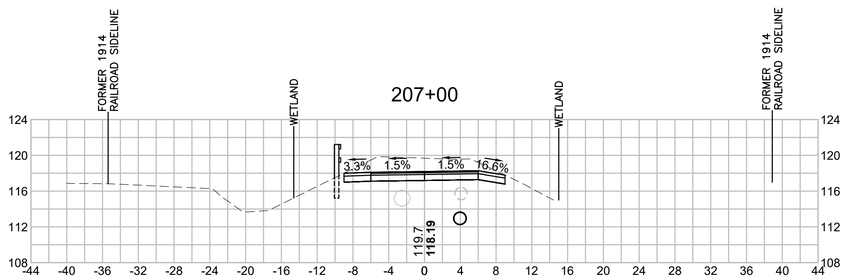
CUT: 32.14 SF
FILL: 0.00 SF



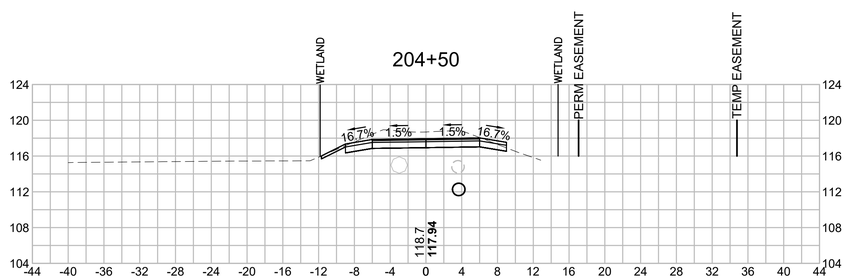
CUT: 45.02 SF
FILL: 0.00 SF



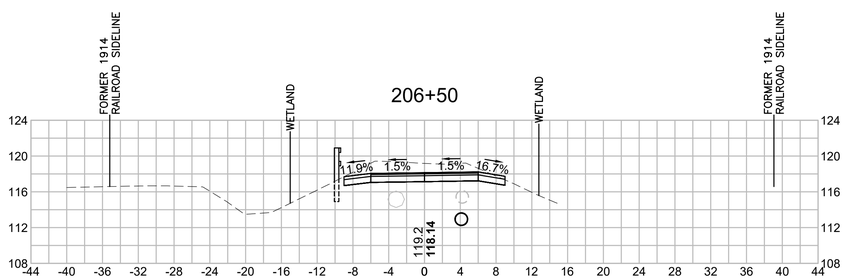
CUT: 27.06 SF
FILL: 1.76 SF



CUT: 39.10 SF
FILL: 0.00 SF



CUT: 27.59 SF
FILL: 0.00 SF



CUT: 32.54 SF
FILL: 0.00 SF

607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:04 PM

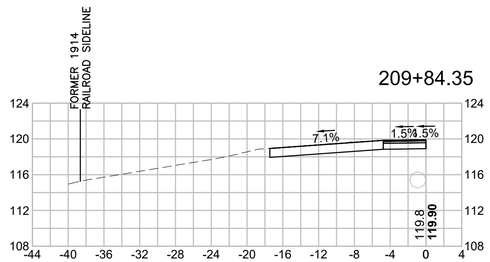
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	122	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

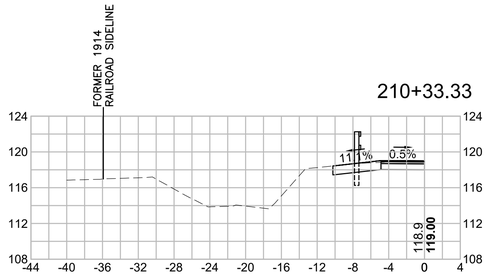
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:04 PM

209+84.35



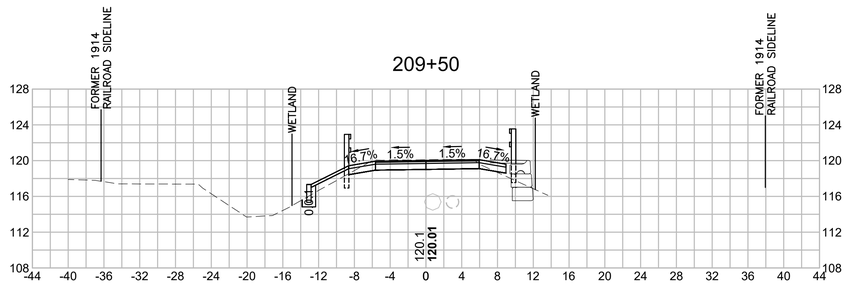
CUT: 17.72 SF
FILL: 0.00 SF

210+33.33



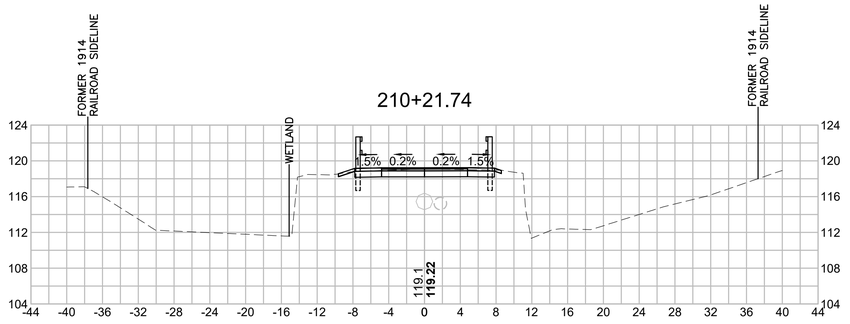
CUT: 4.51 SF
FILL: 0.00 SF

209+50



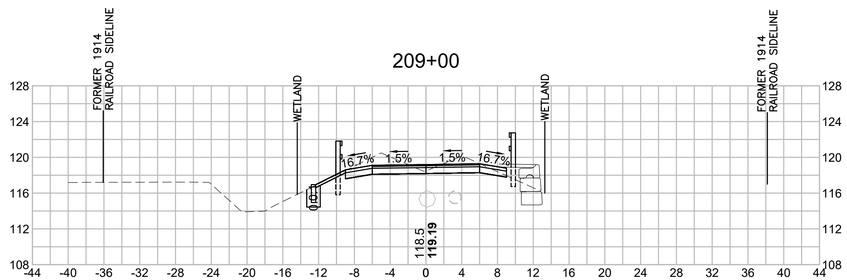
CUT: 16.67 SF
FILL: 2.69 SF

210+21.74



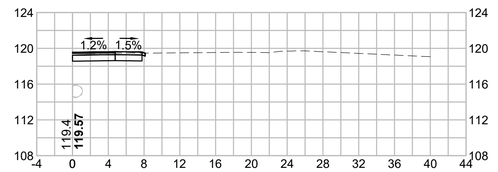
CUT: 12.80 SF
FILL: 0.00 SF

209+00



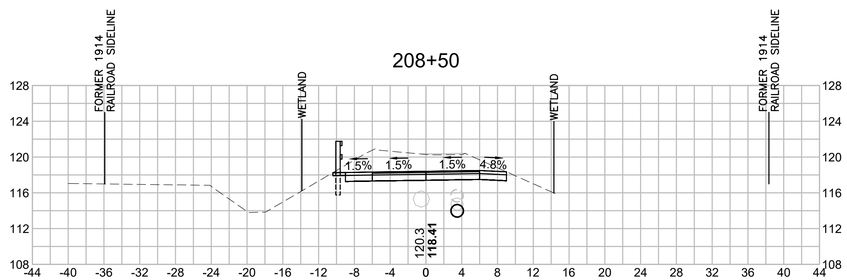
CUT: 25.91 SF
FILL: 0.00 SF

210+04.17



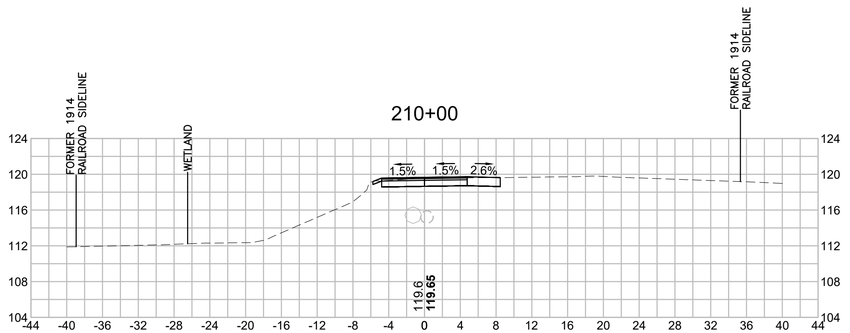
CUT: 6.68 SF
FILL: 0.00 SF

208+50



CUT: 49.54 SF
FILL: 0.00 SF

210+00



CUT: 11.89 SF
FILL: 0.00 SF

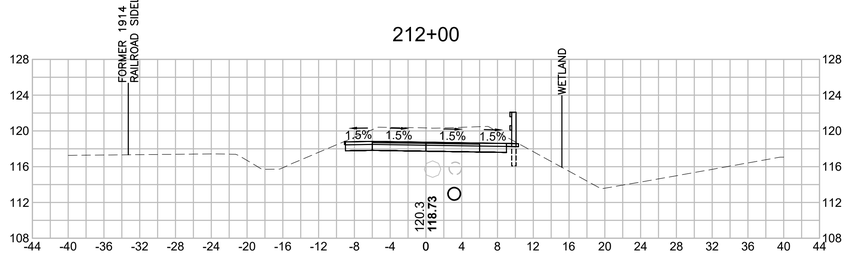
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	123	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

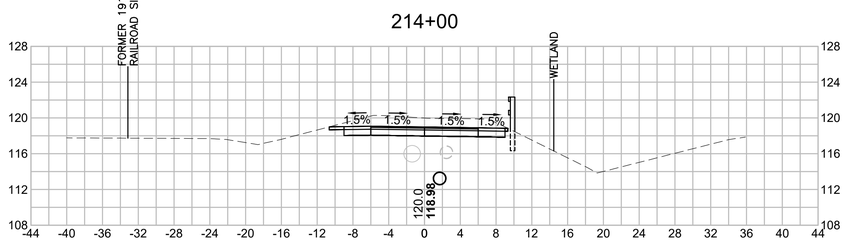
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:04 PM

212+00



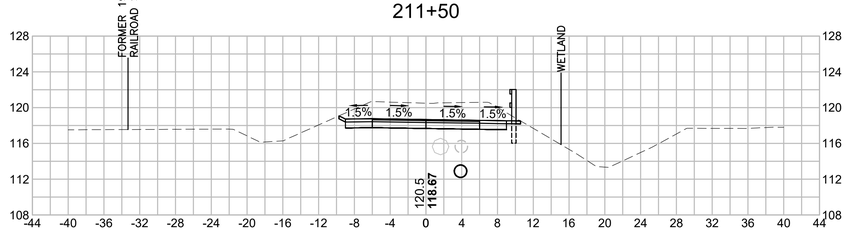
CUT: 45.16 SF
FILL: 0.00 SF

214+00



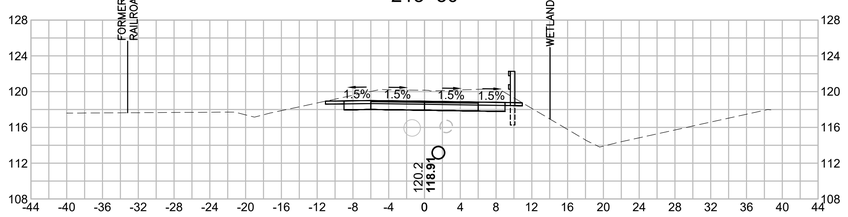
CUT: 36.31 SF
FILL: 0.00 SF

211+50



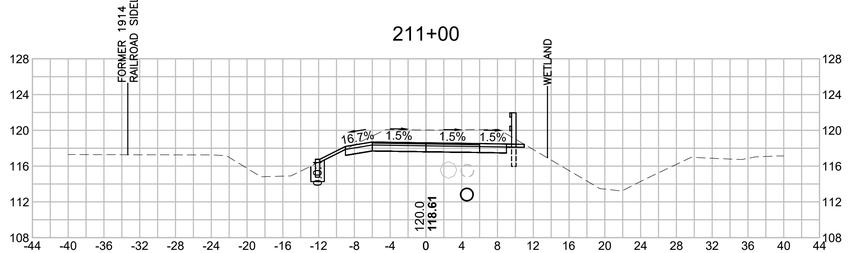
CUT: 51.40 SF
FILL: 0.00 SF

213+50



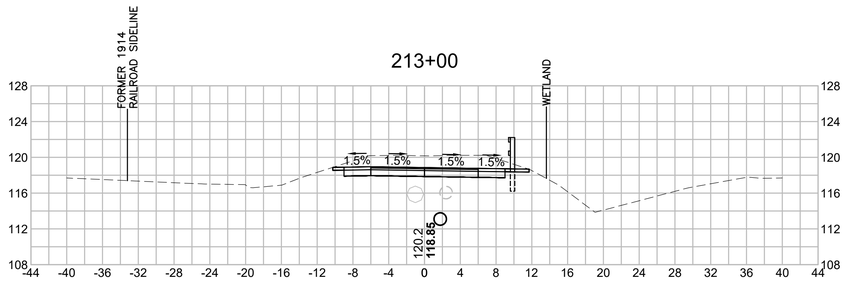
CUT: 42.35 SF
FILL: 0.00 SF

211+00



CUT: 45.08 SF
FILL: 0.00 SF

213+00



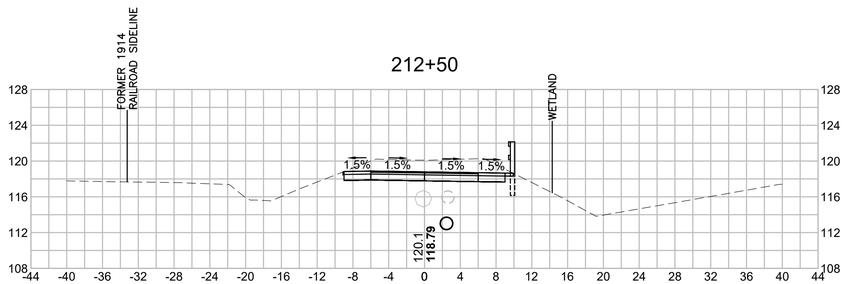
CUT: 43.20 SF
FILL: 0.00 SF

210+50



CUT: 24.48 SF
FILL: 0.00 SF

212+50



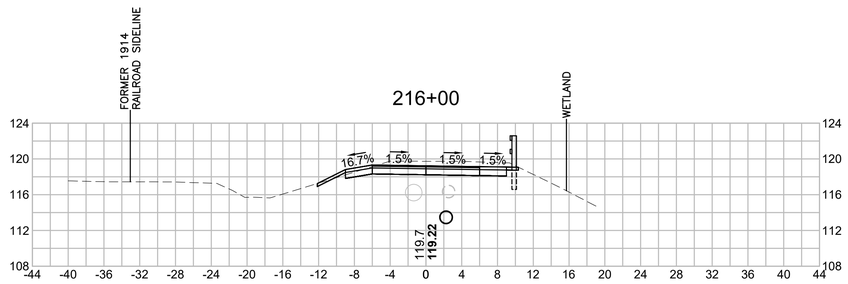
CUT: 40.04 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

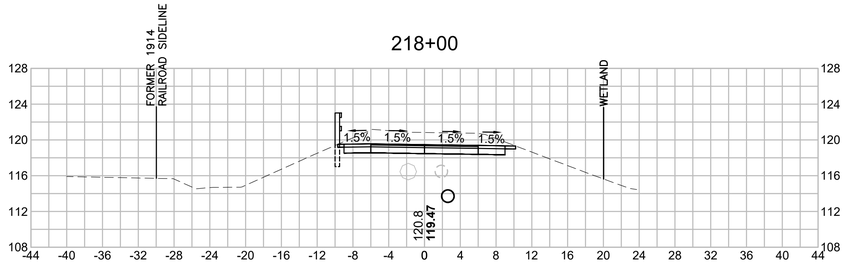
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	124	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

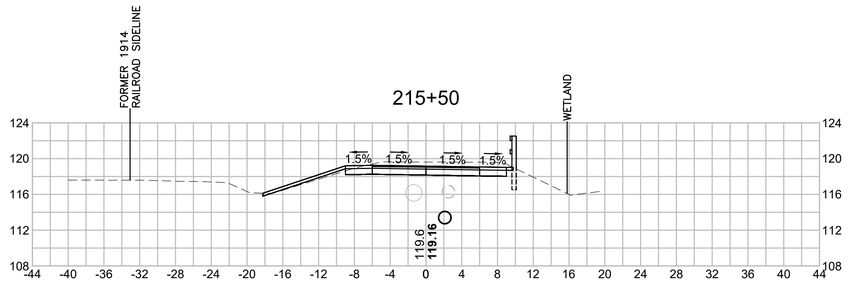
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:05 PM



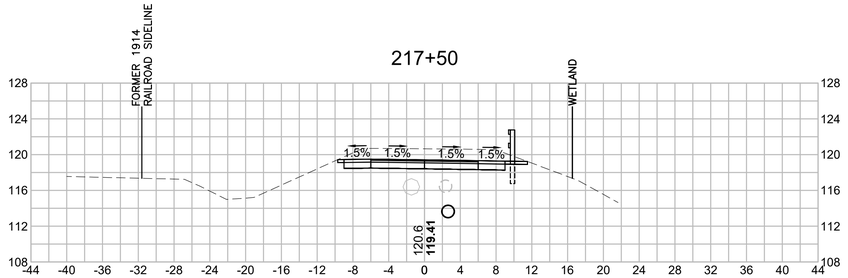
CUT: 24.89 SF
FILL: 0.19 SF



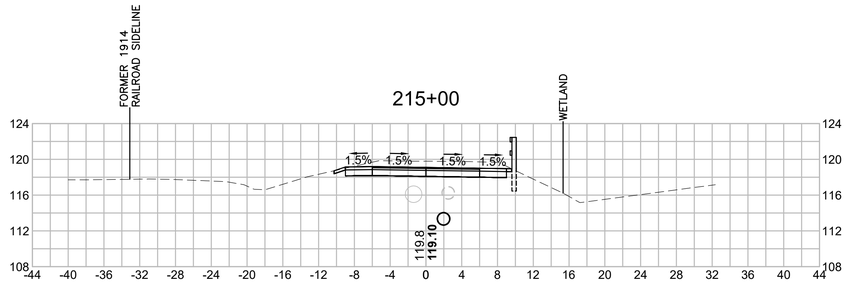
CUT: 41.49 SF
FILL: 0.00 SF



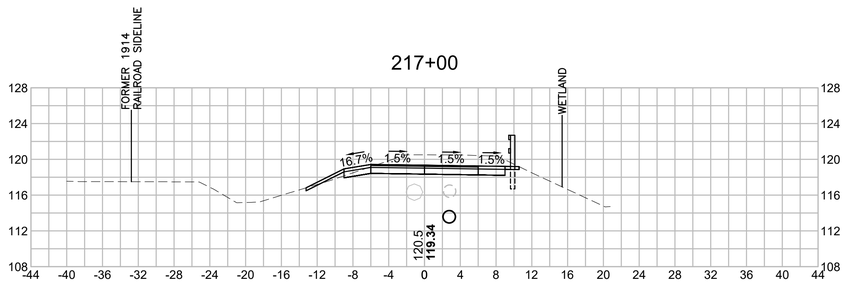
CUT: 24.86 SF
FILL: 1.23 SF



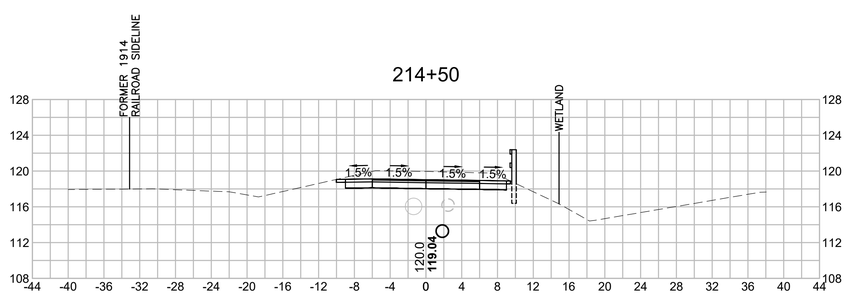
CUT: 41.48 SF
FILL: 0.00 SF



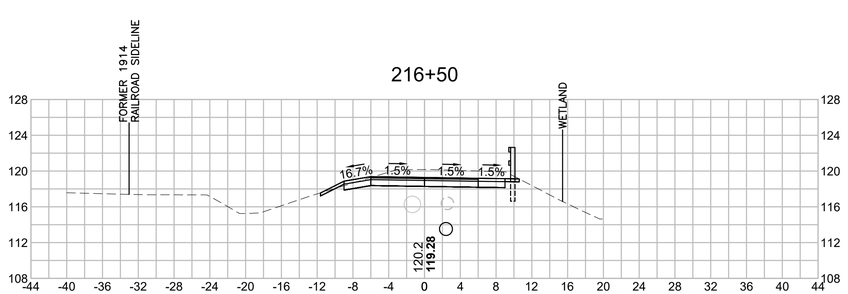
CUT: 29.26 SF
FILL: 0.00 SF



CUT: 32.23 SF
FILL: 0.60 SF



CUT: 33.21 SF
FILL: 0.00 SF



CUT: 29.76 SF
FILL: 0.08 SF

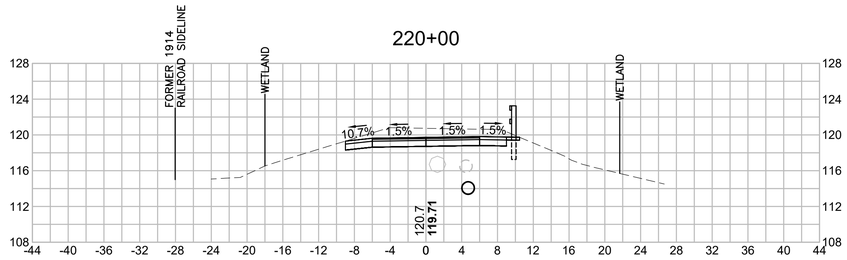
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	125	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

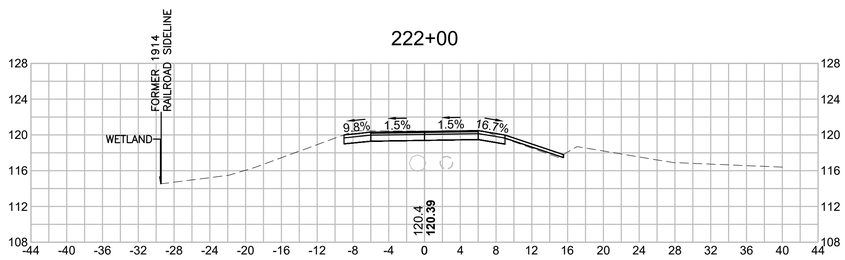
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:05 PM

220+00



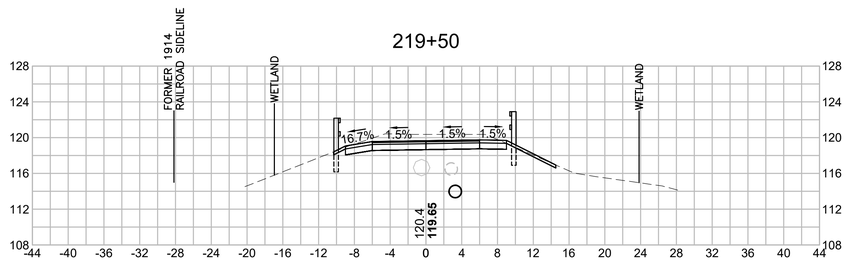
CUT: 33.96 SF
FILL: 0.00 SF

222+00



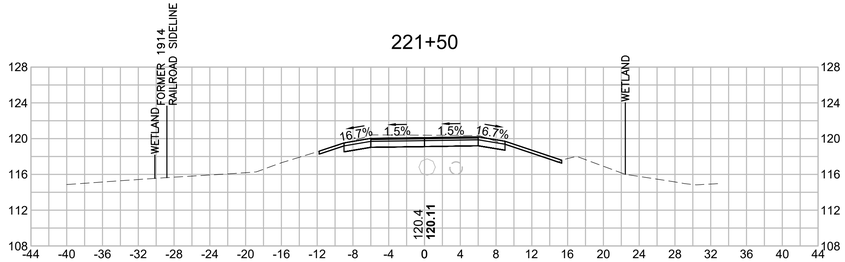
CUT: 18.97 SF
FILL: 0.77 SF

219+50



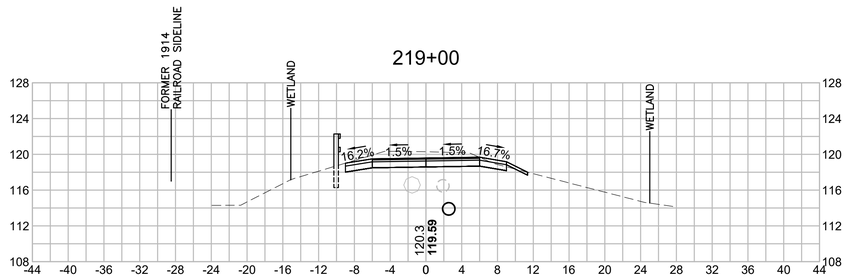
CUT: 28.76 SF
FILL: 0.00 SF

221+50



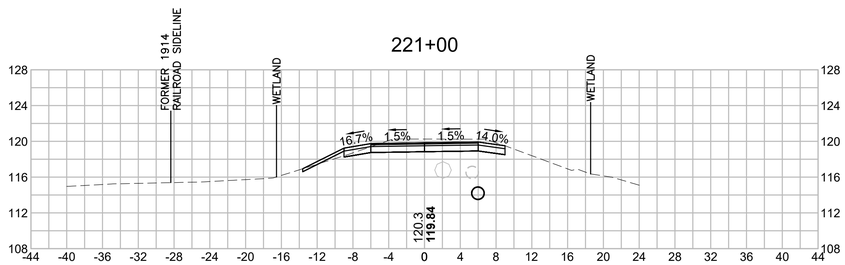
CUT: 22.27 SF
FILL: 0.13 SF

219+00



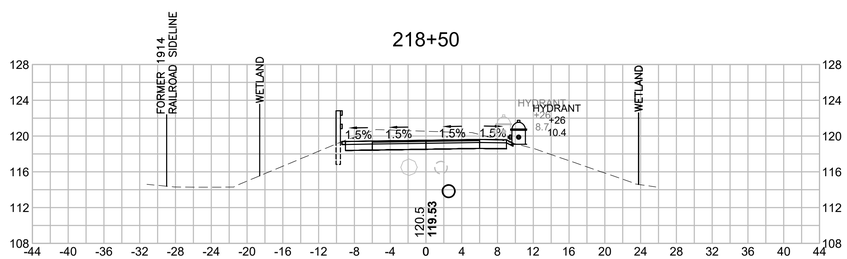
CUT: 25.40 SF
FILL: 0.12 SF

221+00



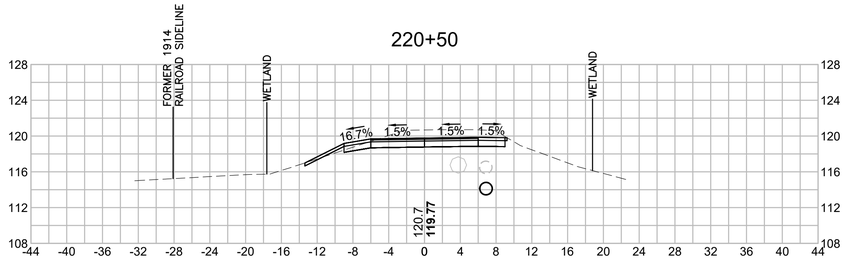
CUT: 21.16 SF
FILL: 0.75 SF

218+50



CUT: 32.89 SF
FILL: 0.00 SF

220+50



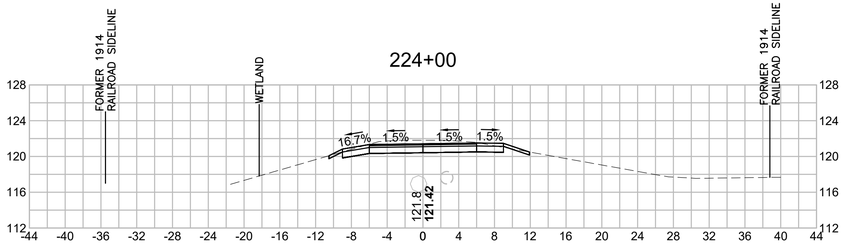
CUT: 27.45 SF
FILL: 0.52 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

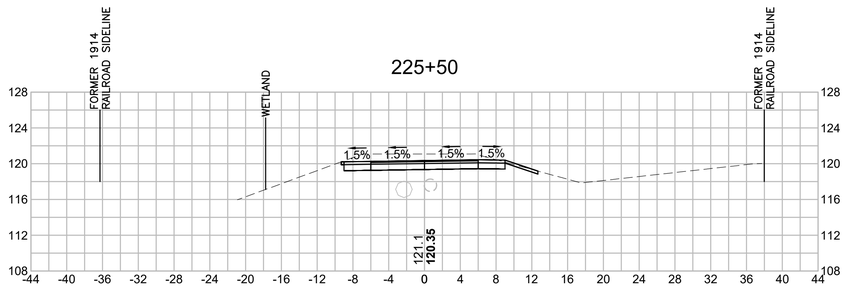
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	126	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

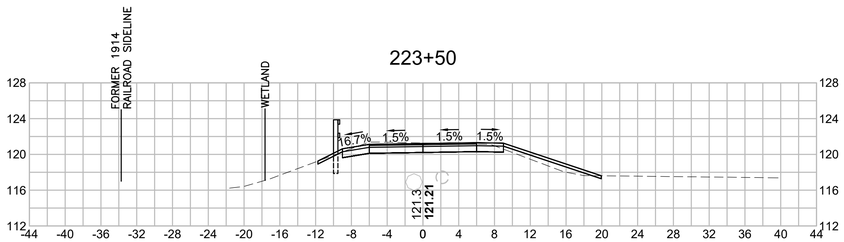
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:05 PM



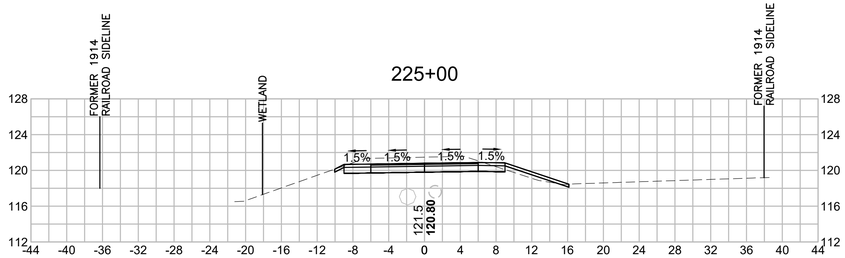
CUT: 21.40 SF
FILL: 0.04 SF



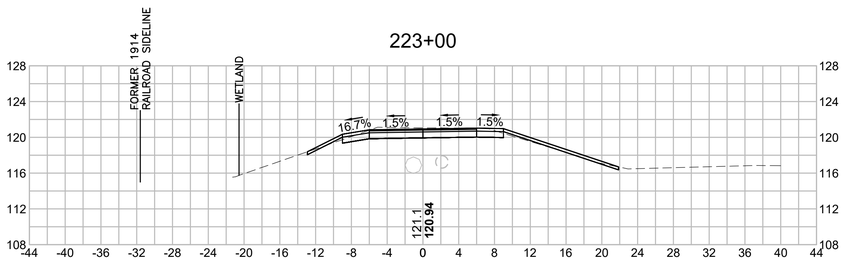
CUT: 29.91 SF
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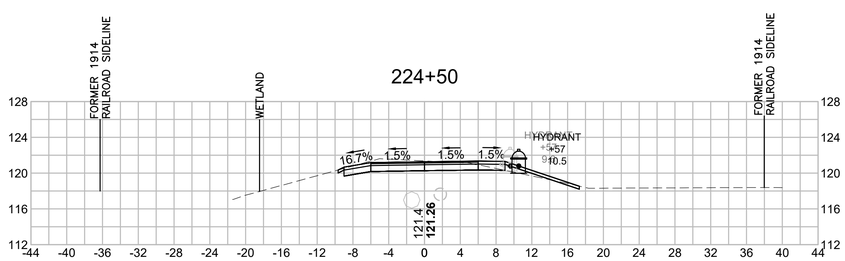
CUT: 18.35 SF
FILL: 4.39 SF



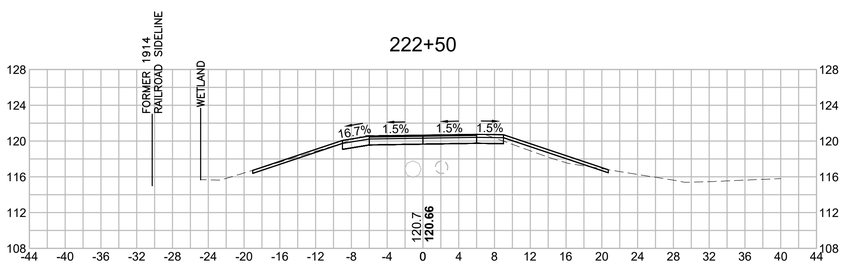
CUT: 26.28 SF
FILL: 2.33 SF



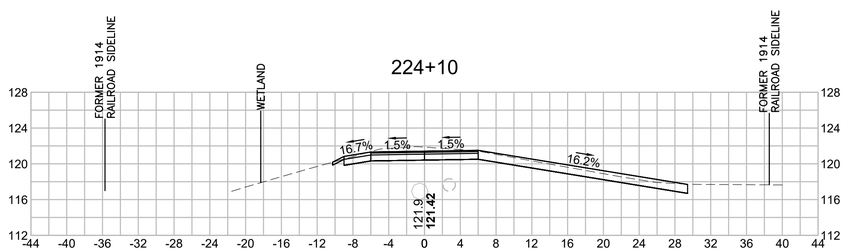
CUT: 18.81 SF
FILL: 0.95 SF



CUT: 17.54 SF
FILL: 1.80 SF



CUT: 19.67 SF
FILL: 3.88 SF



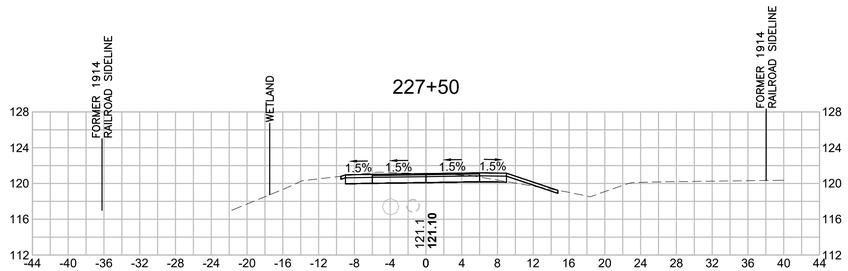
CUT: 36.14 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

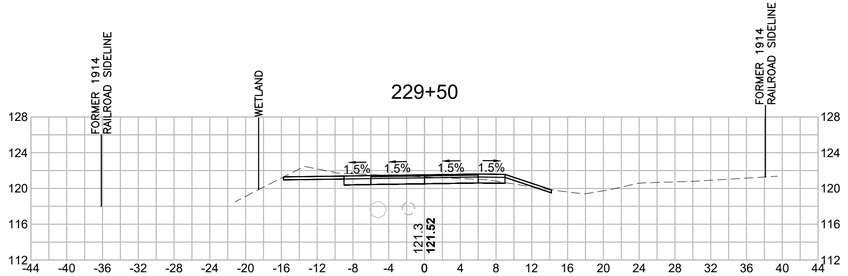
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	127	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

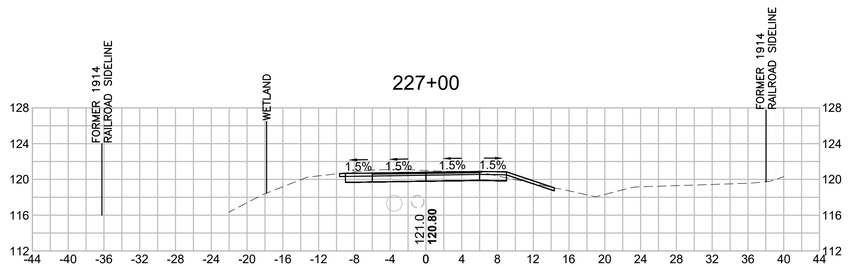
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:05 PM



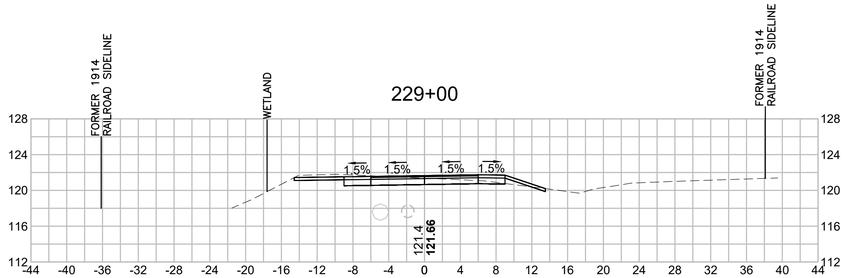
CUT: 16.18 SF
FILL: 1.11 SF



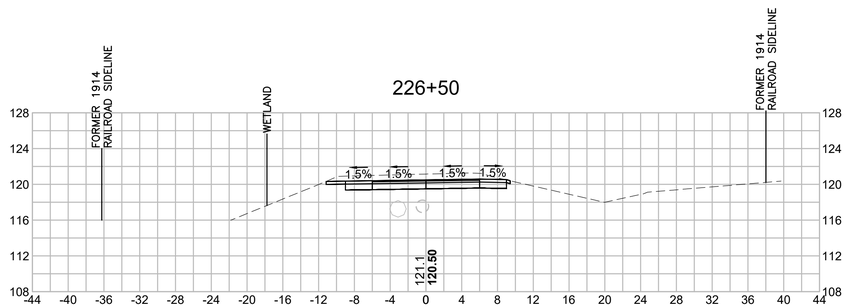
CUT: 20.52 SF
FILL: 0.98 SF



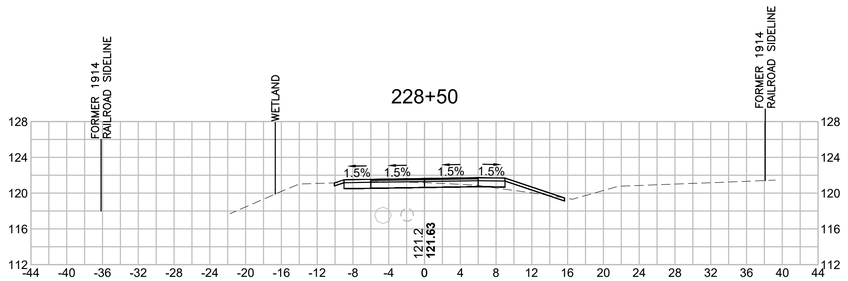
CUT: 20.29 SF
FILL: 0.47 SF



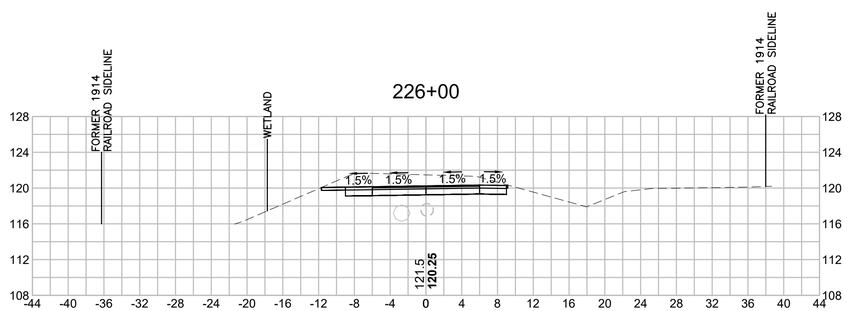
CUT: 16.18 SF
FILL: 0.87 SF



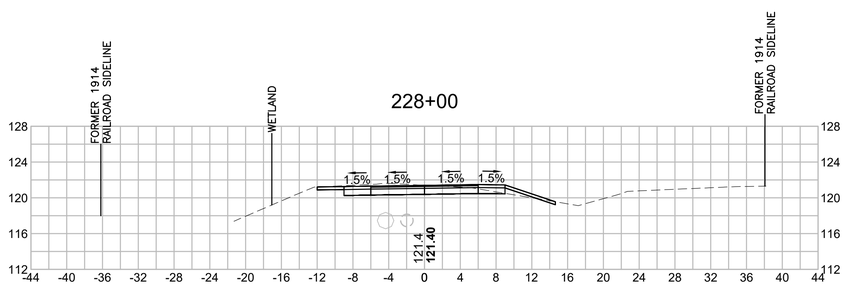
CUT: 30.07 SF
FILL: 0.25 SF



CUT: 8.70 SF
FILL: 2.33 SF



CUT: 40.92 SF
FILL: 0.37 SF

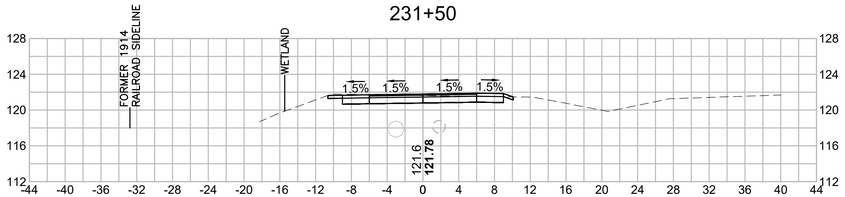


CUT: 17.71 SF
FILL: 1.09 SF

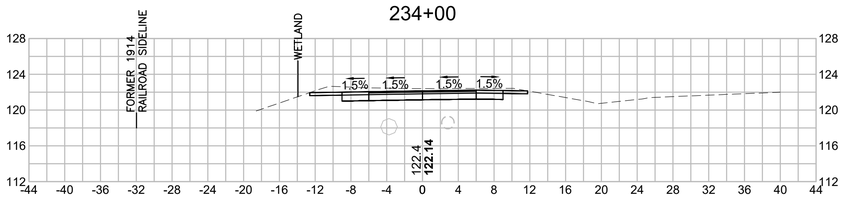
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	128	166
PROJECT FILE NO. 607738			

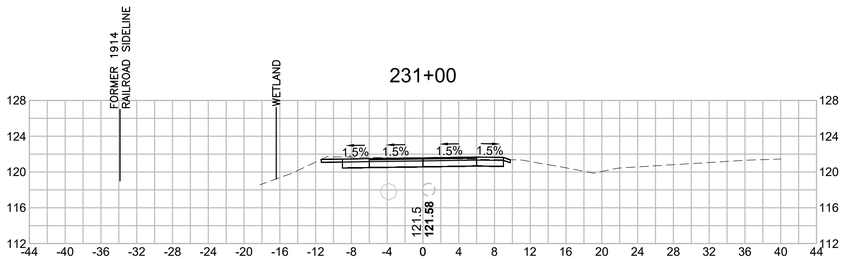
CROSS SECTIONS



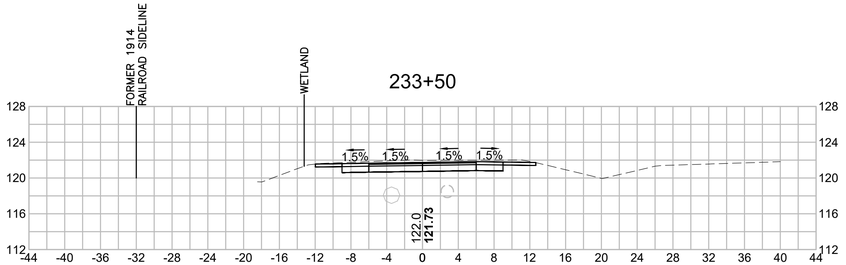
CUT: 16.08 SF
FILL: 0.00 SF



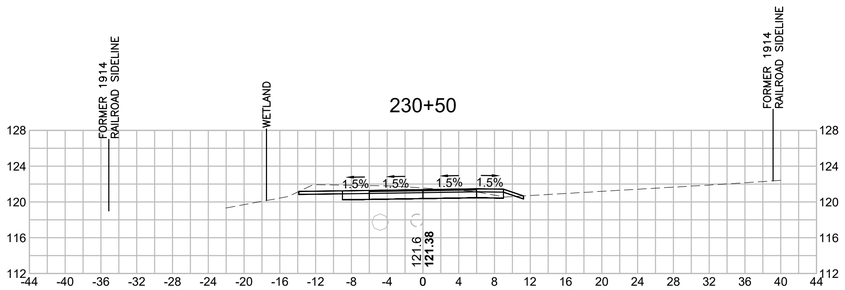
CUT: 27.75 SF
FILL: 0.00 SF



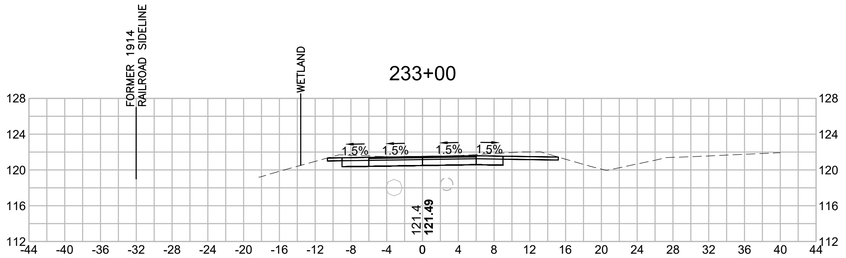
CUT: 18.73 SF
FILL: 0.00 SF



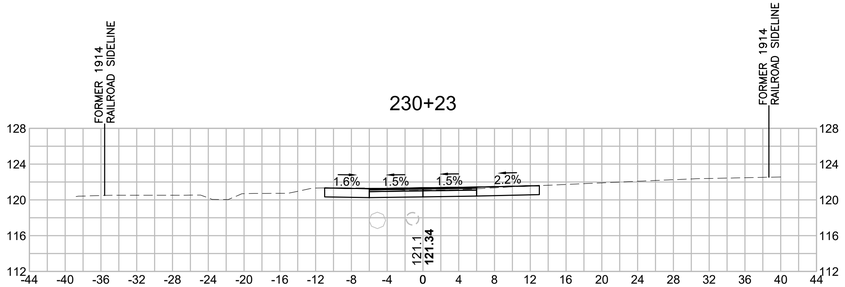
CUT: 24.79 SF
FILL: 0.00 SF



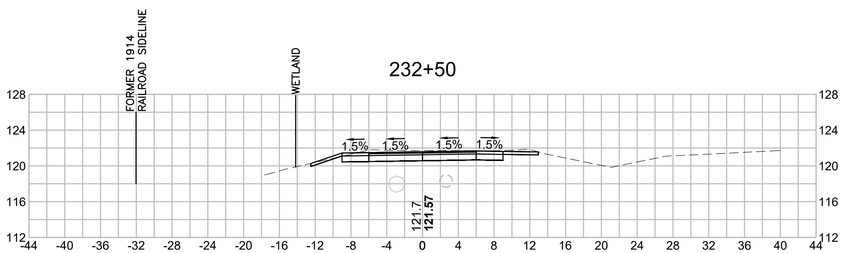
CUT: 24.65 SF
FILL: 0.38 SF



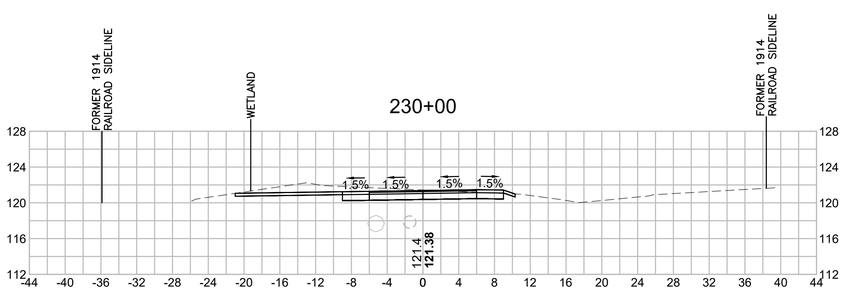
CUT: 24.90 SF
FILL: 0.00 SF



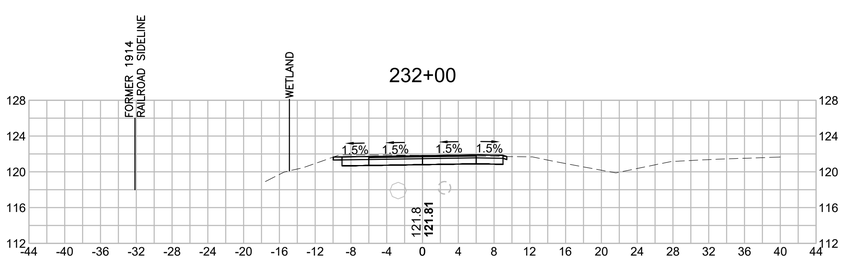
CUT: 21.05 SF
FILL: 0.00 SF



CUT: 22.44 SF
FILL: 0.00 SF



CUT: 30.64 SF
FILL: 0.00 SF



CUT: 19.14 SF
FILL: 0.00 SF

607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:06 PM

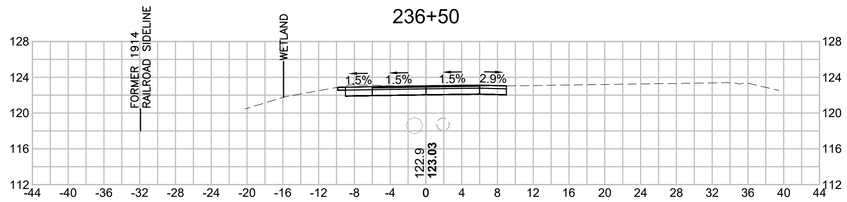
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	129	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

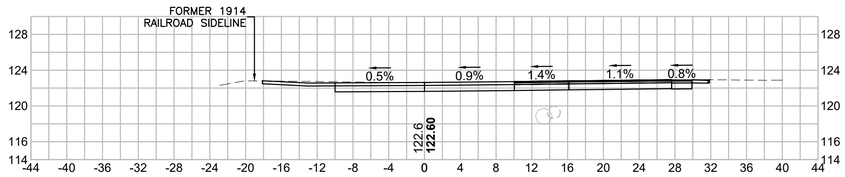
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:06 PM

236+50



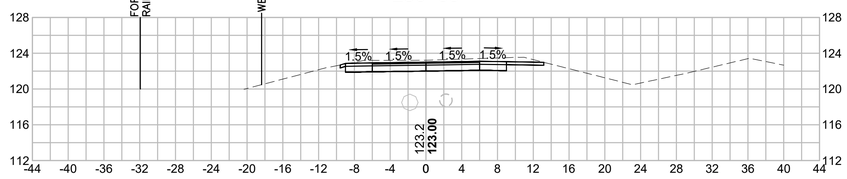
CUT: 18.17 SF
FILL: 0.00 SF

239+00



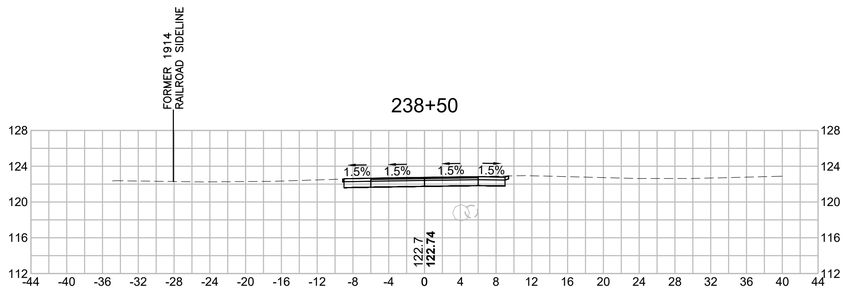
CUT: 44.85 SF
FILL: 0.00 SF

236+00



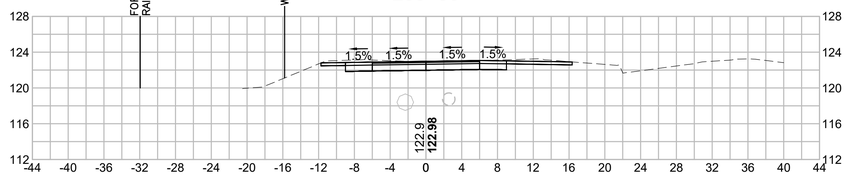
CUT: 25.72 SF
FILL: 0.00 SF

238+50



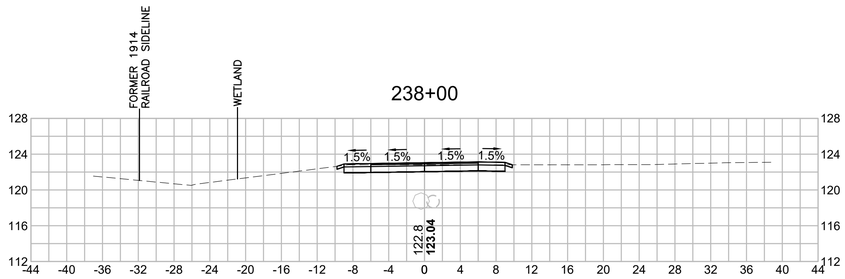
CUT: 18.63 SF
FILL: 0.00 SF

235+50



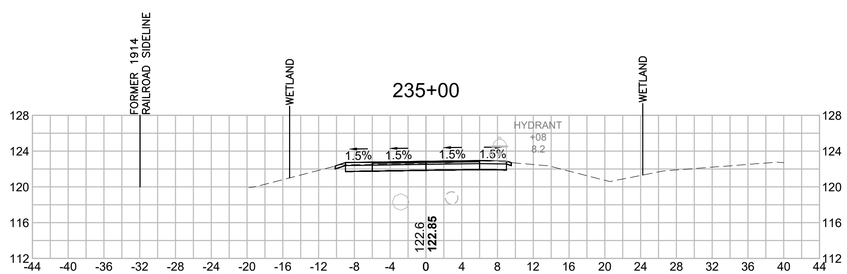
CUT: 24.18 SF
FILL: 0.00 SF

238+00



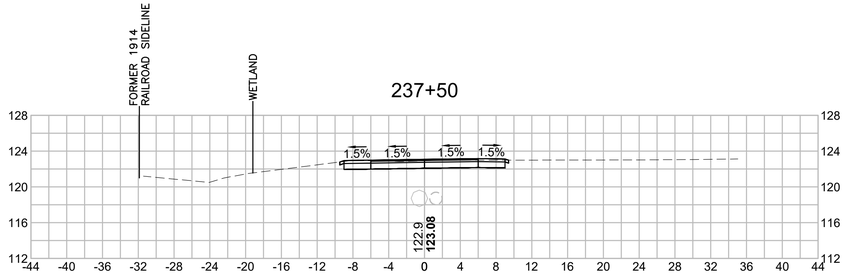
CUT: 14.45 SF
FILL: 0.00 SF

235+00



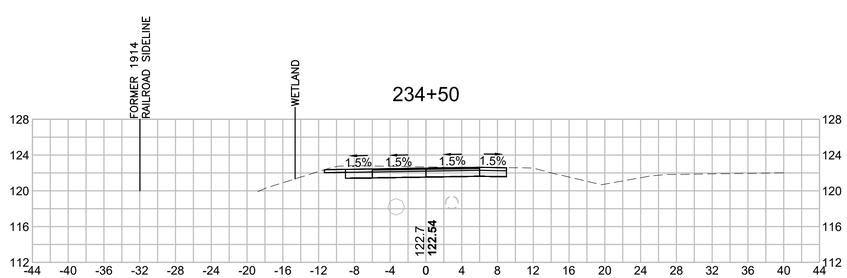
CUT: 15.25 SF
FILL: 0.05 SF

237+50



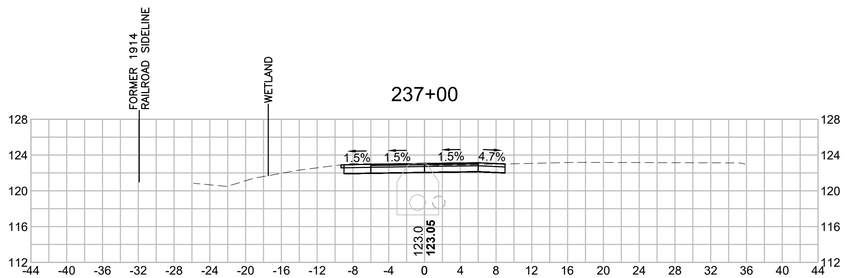
CUT: 15.87 SF
FILL: 0.00 SF

234+50



CUT: 22.28 SF
FILL: 0.00 SF

237+00



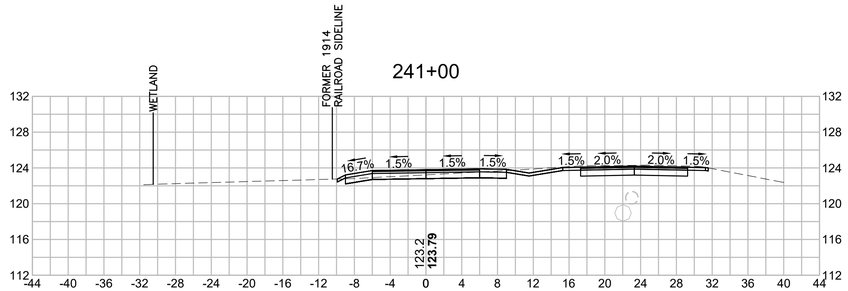
CUT: 16.95 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

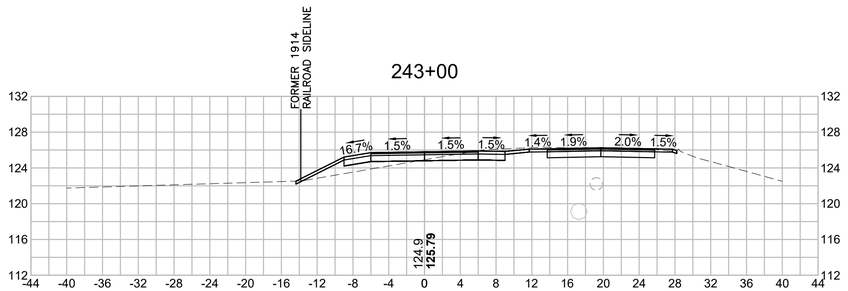
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	130	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

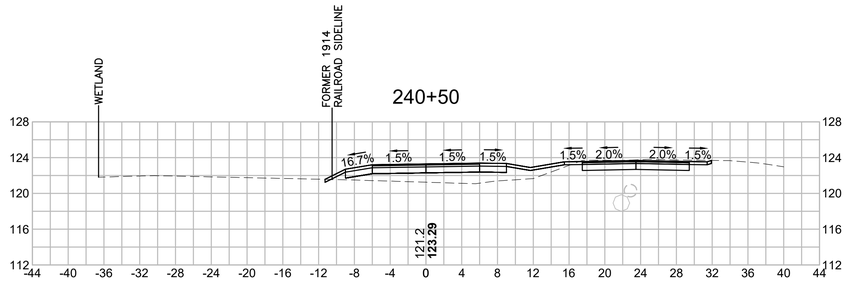
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:06 PM



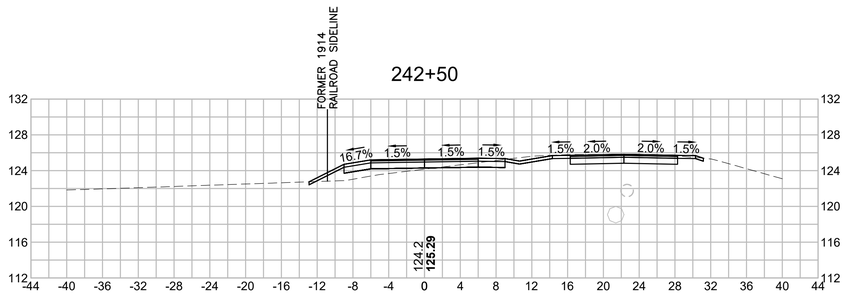
CUT: 27.35 SF
FILL: 0.01 SF



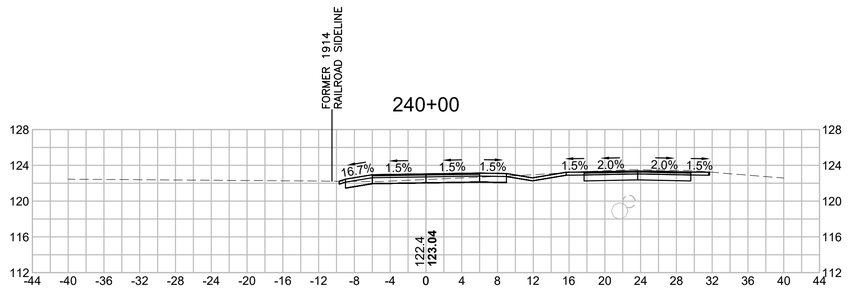
CUT: 22.63 SF
FILL: 8.22 SF



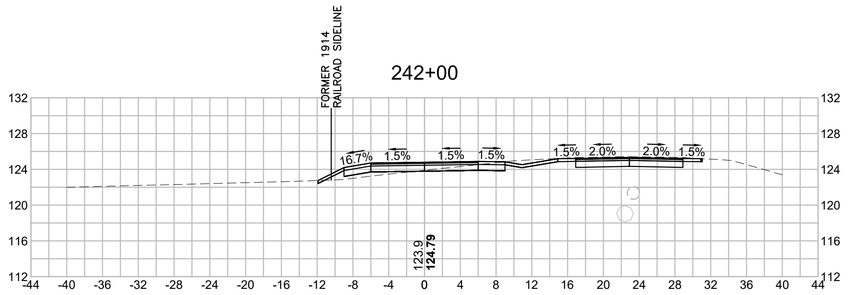
CUT: 14.94 SF
FILL: 23.58 SF



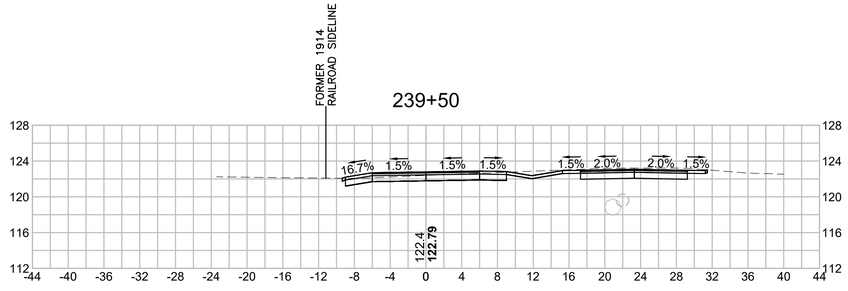
CUT: 19.79 SF
FILL: 7.65 SF



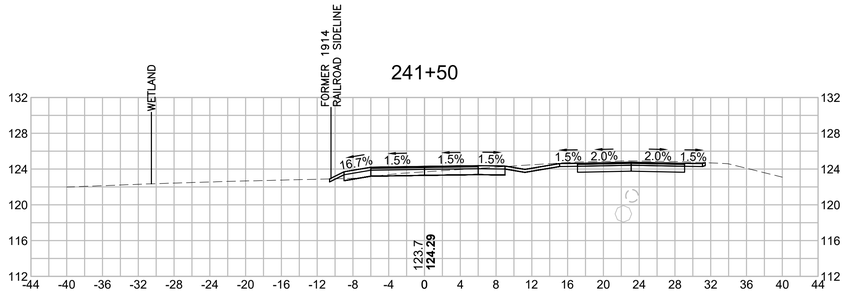
CUT: 25.91 SF
FILL: 0.00 SF



CUT: 23.09 SF
FILL: 3.43 SF



CUT: 31.37 SF
FILL: 0.00 SF



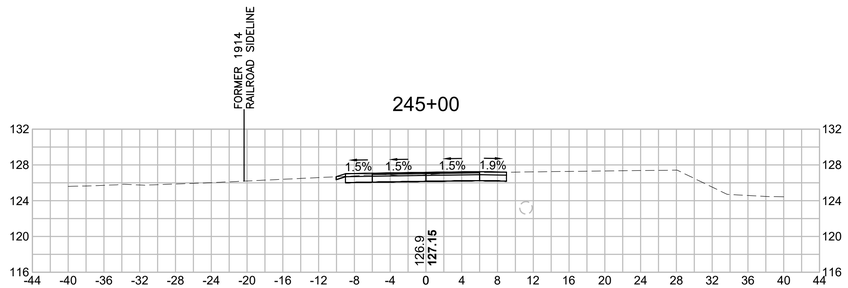
CUT: 26.72 SF
FILL: 0.21 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

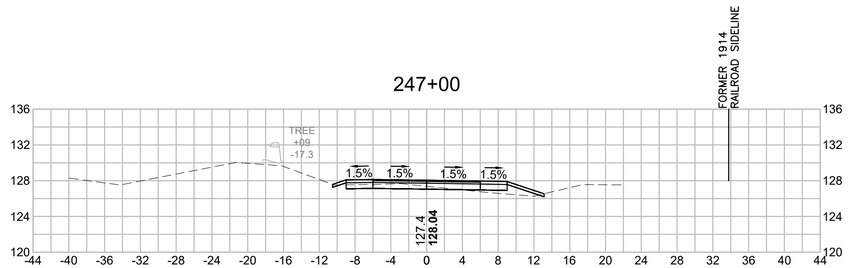
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	131	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

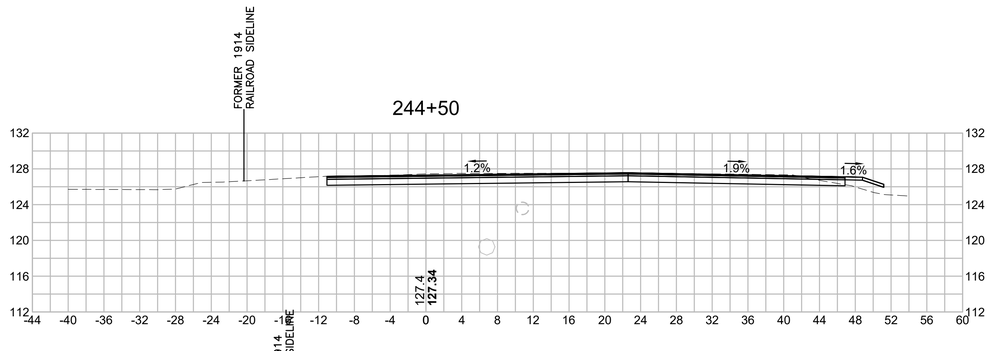
607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:07 PM



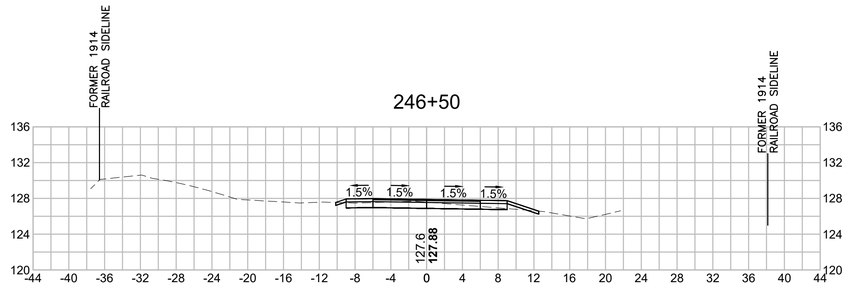
CUT: 15.17 SF
FILL: 0.00 SF



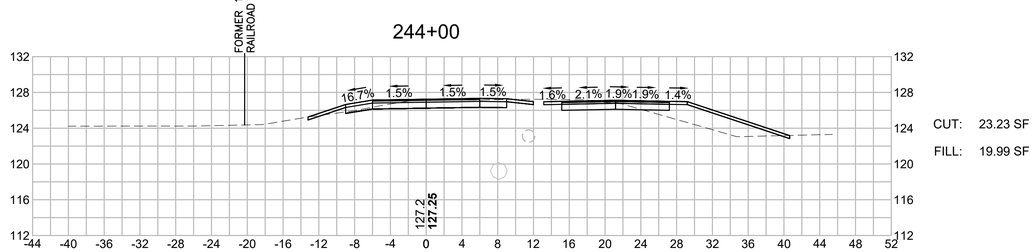
CUT: 5.07 SF
FILL: 3.37 SF



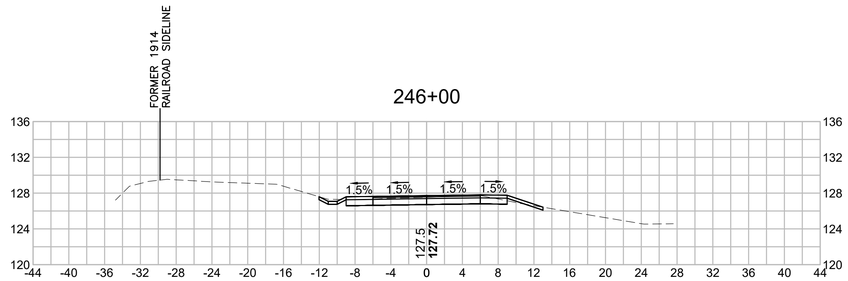
CUT: 61.76 SF
FILL: 0.65 SF



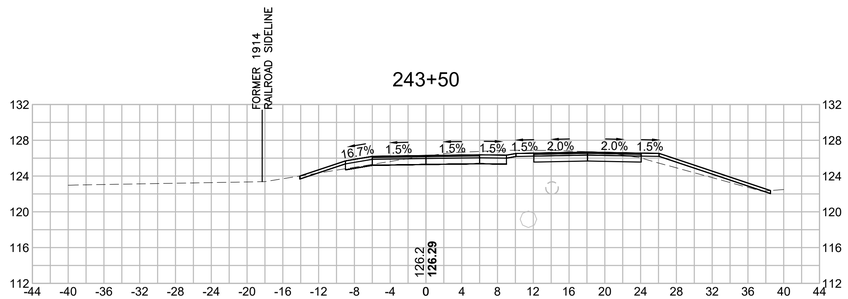
CUT: 9.75 SF
FILL: 0.63 SF



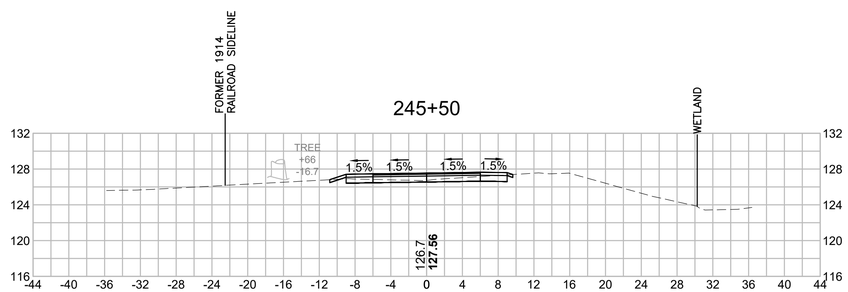
CUT: 23.23 SF
FILL: 19.99 SF



CUT: 15.38 SF
FILL: 0.29 SF



CUT: 30.28 SF
FILL: 6.52 SF

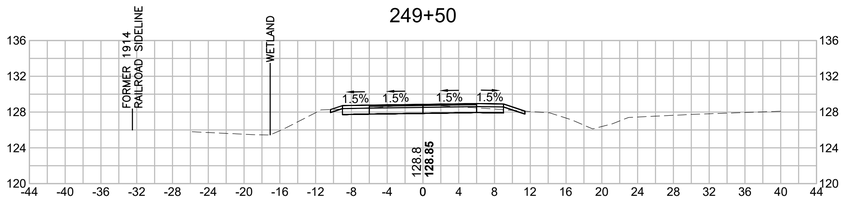


CUT: 7.31 SF
FILL: 0.06 SF

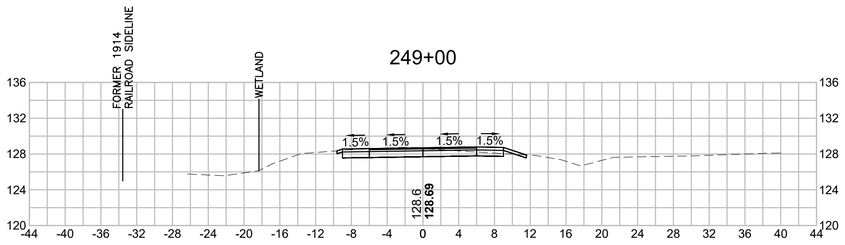
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	132	166
PROJECT FILE NO. 607738			

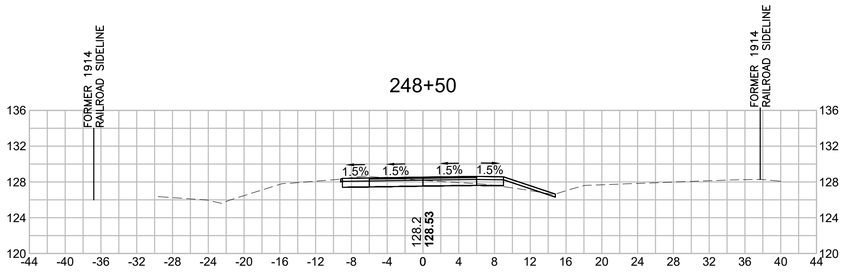
CROSS SECTIONS



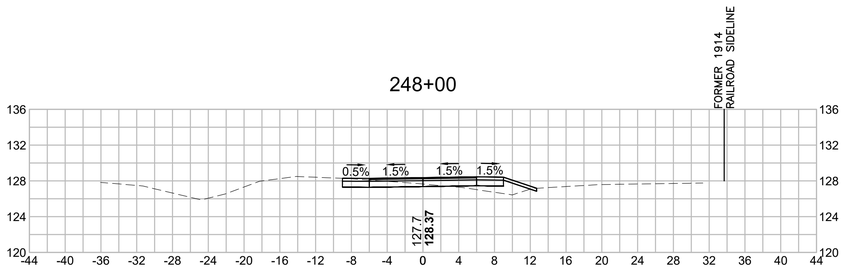
CUT: 13.36 SF
FILL: 0.18 SF



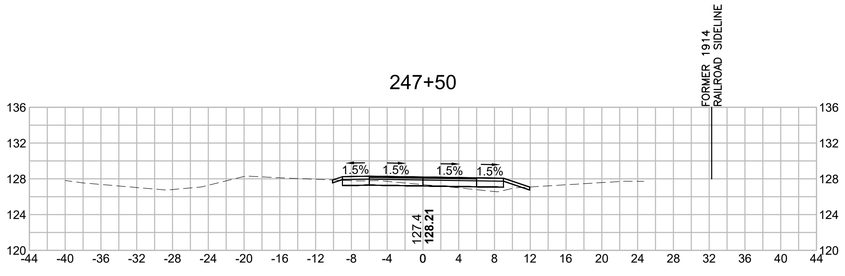
CUT: 14.43 SF
FILL: 0.24 SF



CUT: 11.75 SF
FILL: 1.62 SF



CUT: 6.62 SF
FILL: 5.25 SF



CUT: 4.22 SF
FILL: 2.93 SF

607738_HD(XSEC).DWG Plotted on 30-Oct-2020 1:07 PM

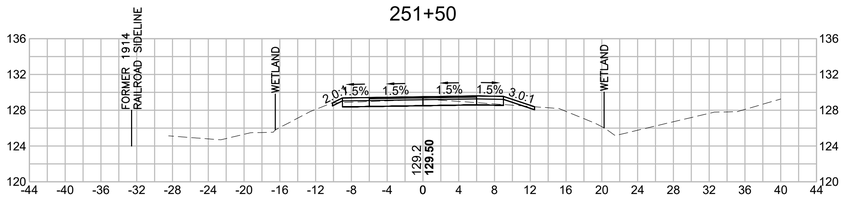
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	133	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

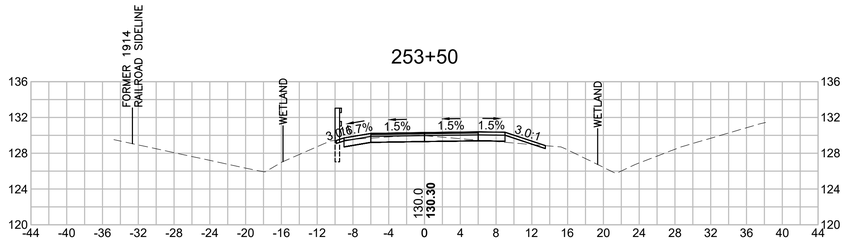
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:38 PM

251+50



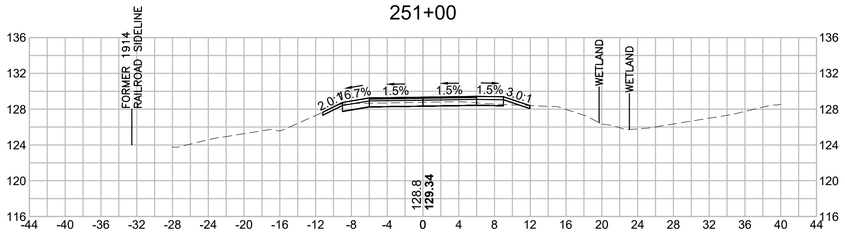
CUT: 9.01 SF
FILL: 0.64 SF

253+50



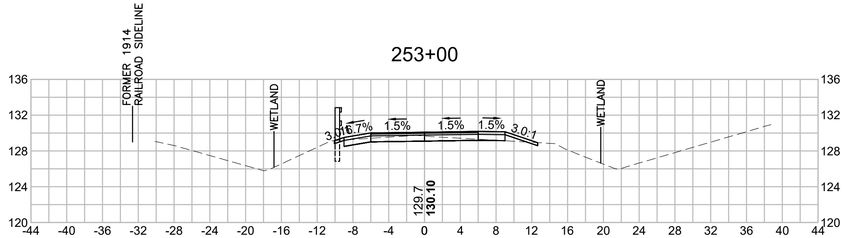
CUT: 8.54 SF
FILL: 1.39 SF

251+00



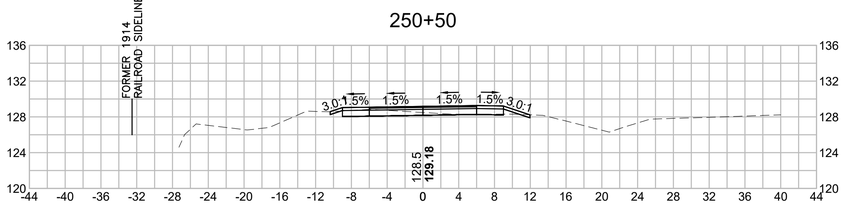
CUT: 7.67 SF
FILL: 0.48 SF

253+00



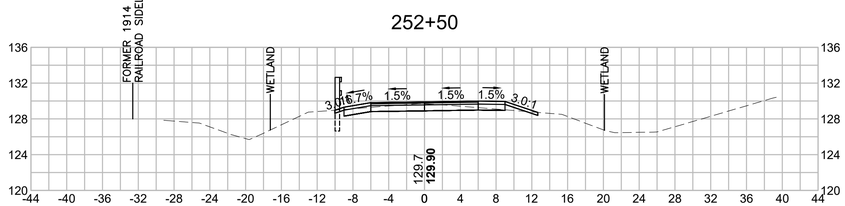
CUT: 7.77 SF
FILL: 0.83 SF

250+50



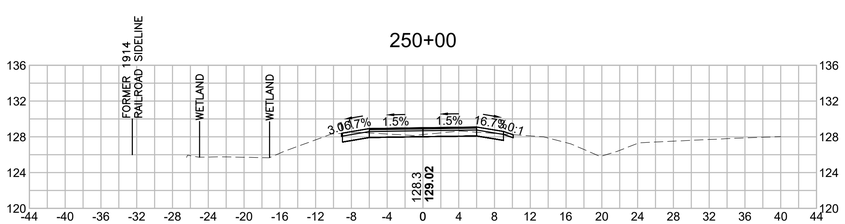
CUT: 6.52 SF
FILL: 0.52 SF

252+50



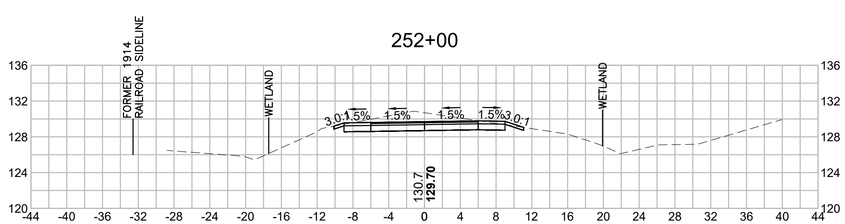
CUT: 10.01 SF
FILL: 0.70 SF

250+00



CUT: 8.69 SF
FILL: 0.00 SF

252+00



CUT: 26.27 SF
FILL: 0.01 SF

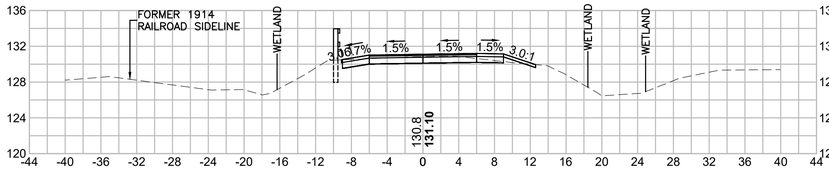
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	134	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

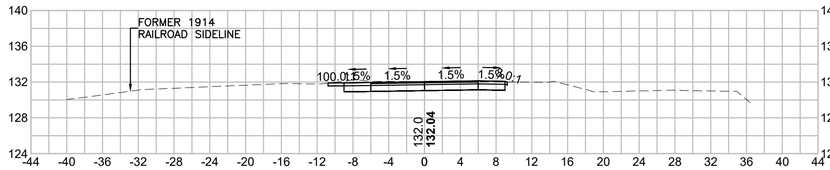
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:38 PM

255+50



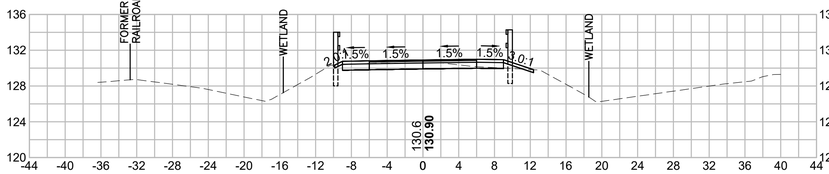
CUT: 11.69 SF
FILL: 0.61 SF

258+00



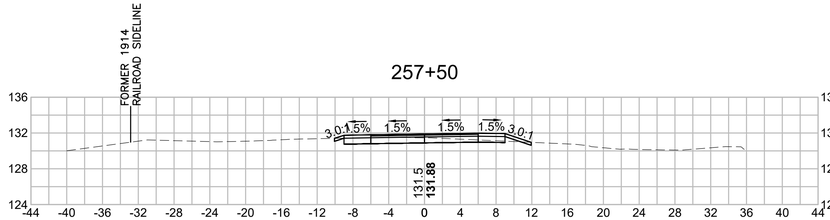
CUT: 21.01 SF
FILL: 0.00 SF

255+00



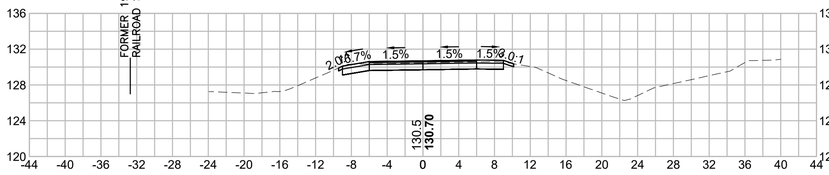
CUT: 9.67 SF
FILL: 0.66 SF

257+50



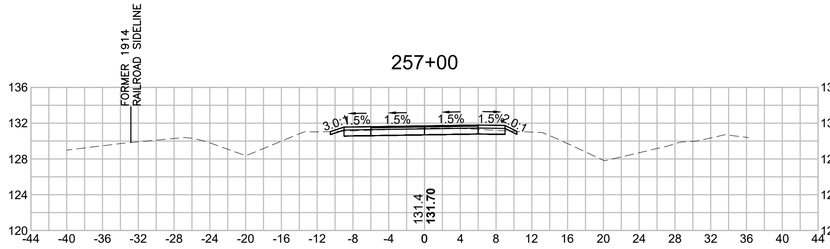
CUT: 9.56 SF
FILL: 0.45 SF

254+50



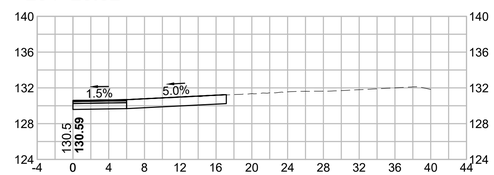
CUT: 15.02 SF
FILL: 0.00 SF

257+00

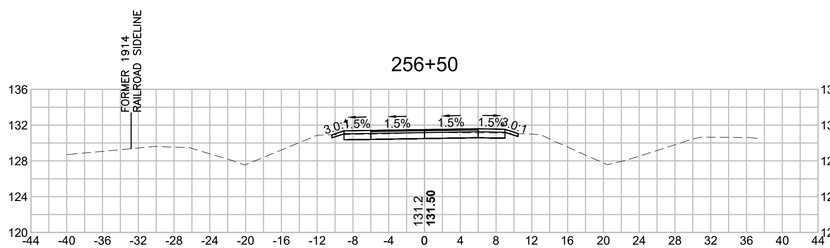


CUT: 11.27 SF
FILL: 0.07 SF

254+23.82

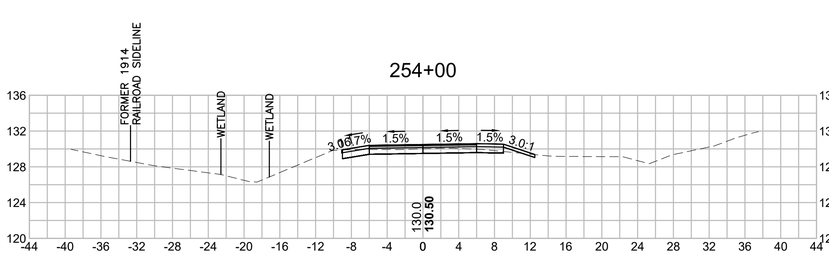


256+50



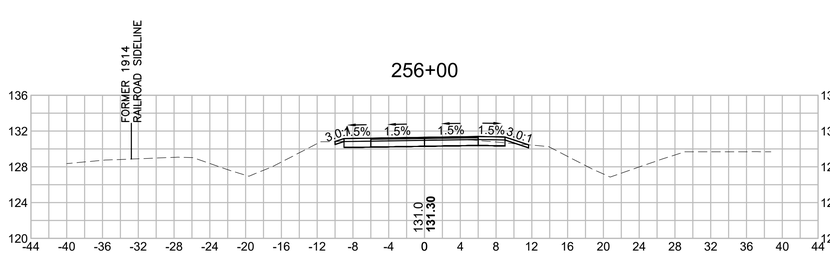
CUT: 10.92 SF
FILL: 0.02 SF

254+00



CUT: 9.51 SF
FILL: 0.52 SF

256+00



CUT: 11.97 SF
FILL: 0.21 SF

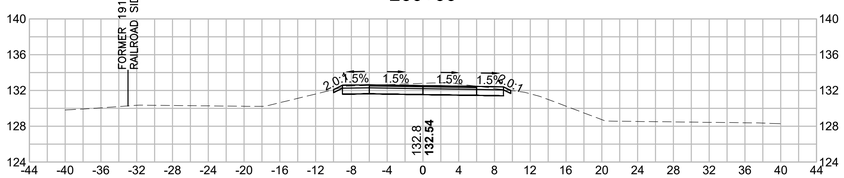
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	135	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

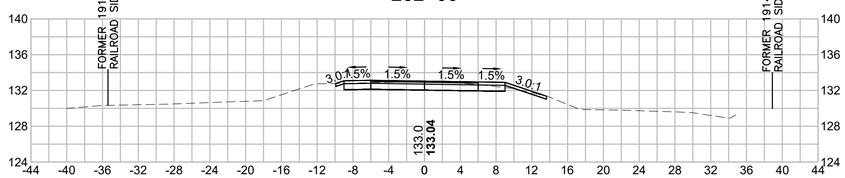
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:38 PM

260+00



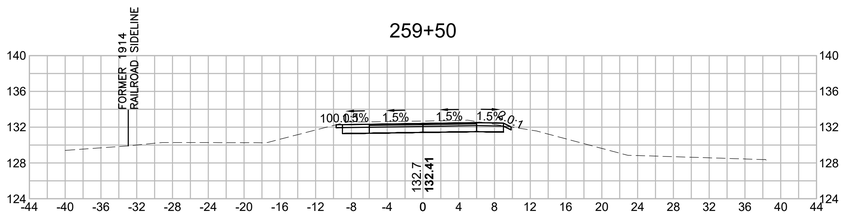
CUT: 20.39 SF
FILL: 0.00 SF

262+00



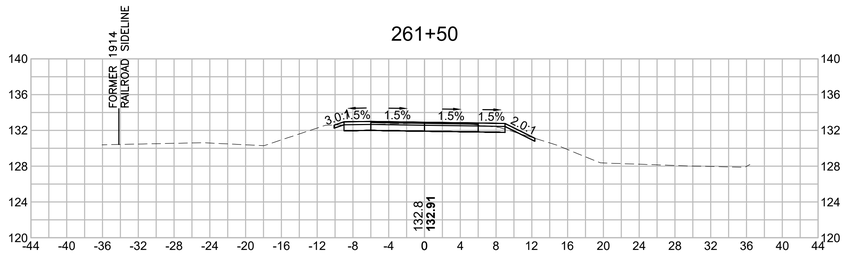
CUT: 15.02 SF
FILL: 0.15 SF

259+50



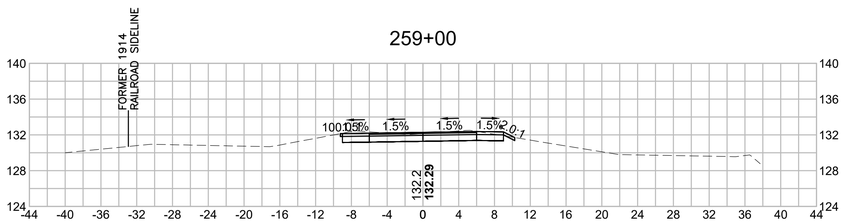
CUT: 21.94 SF
FILL: 0.00 SF

261+50



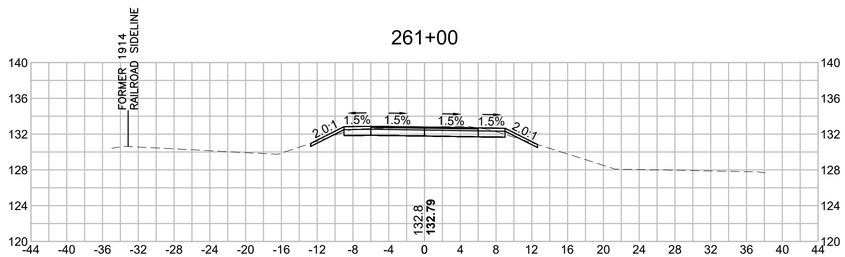
CUT: 16.64 SF
FILL: 0.24 SF

259+00



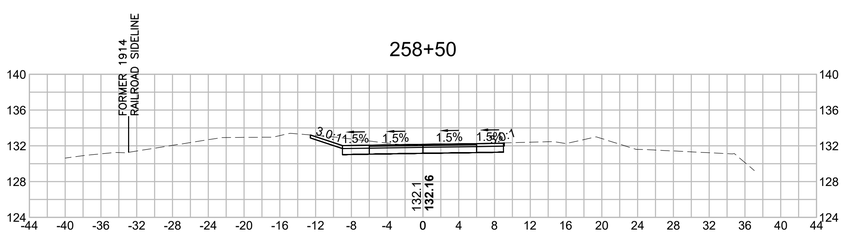
CUT: 17.81 SF
FILL: 0.01 SF

261+00



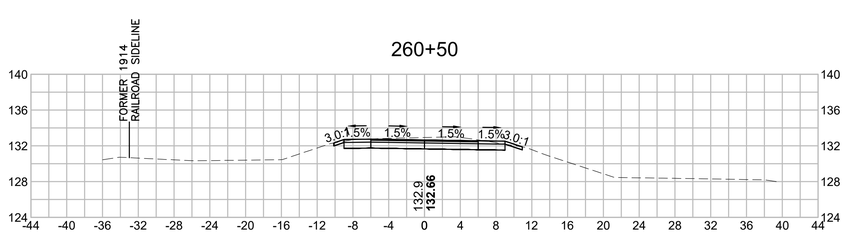
CUT: 17.11 SF
FILL: 0.32 SF

258+50



CUT: 27.55 SF
FILL: 0.00 SF

260+50



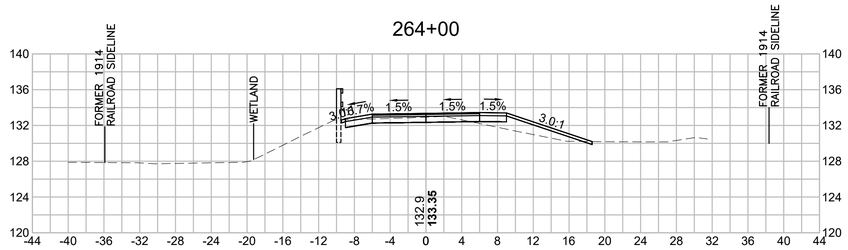
CUT: 20.64 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

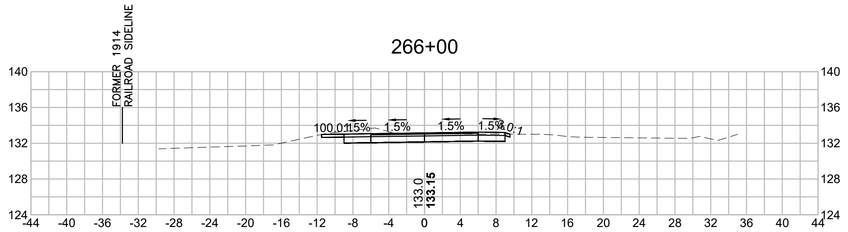
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	136	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

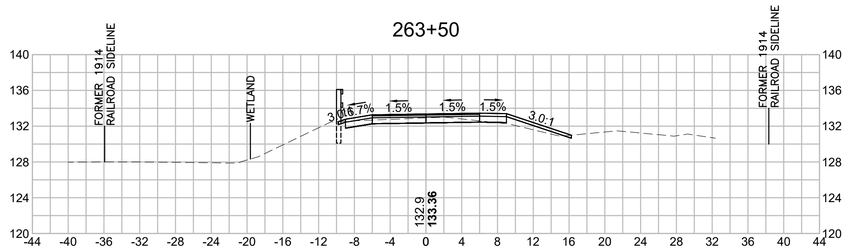
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:39 PM



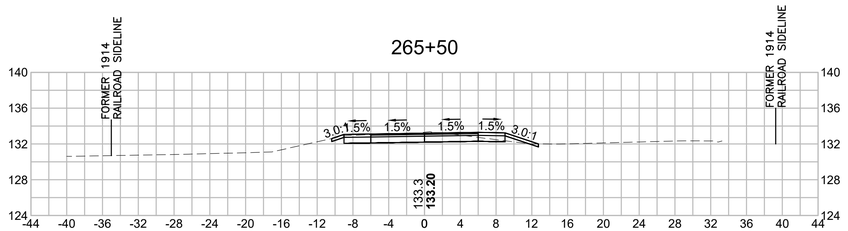
CUT: 7.79 SF
FILL: 9.15 SF



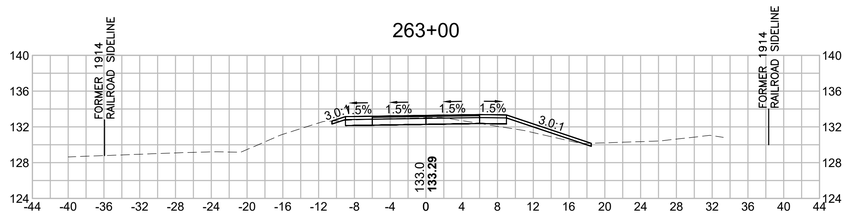
CUT: 22.91 SF
FILL: 0.02 SF



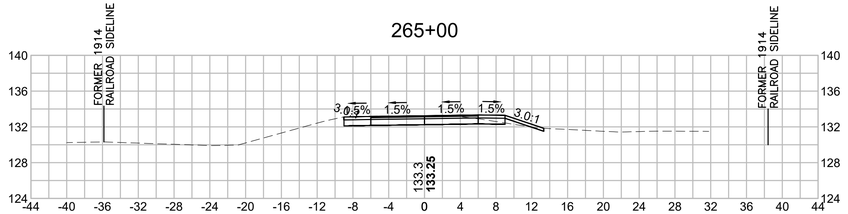
CUT: 8.28 SF
FILL: 3.01 SF



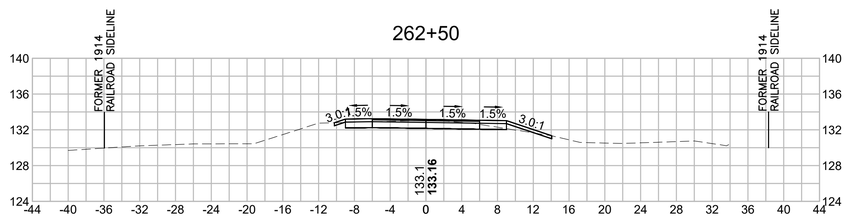
CUT: 16.02 SF
FILL: 1.92 SF



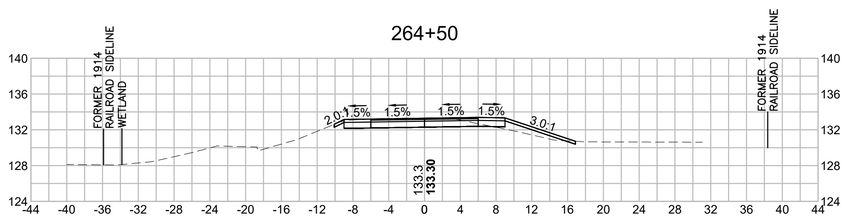
CUT: 9.17 SF
FILL: 5.03 SF



CUT: 17.79 SF
FILL: 1.74 SF



CUT: 12.66 SF
FILL: 0.88 SF



CUT: 14.96 SF
FILL: 3.70 SF

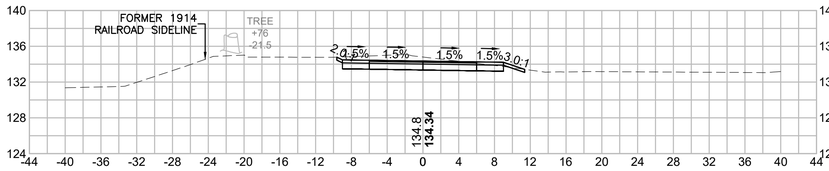
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	137	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

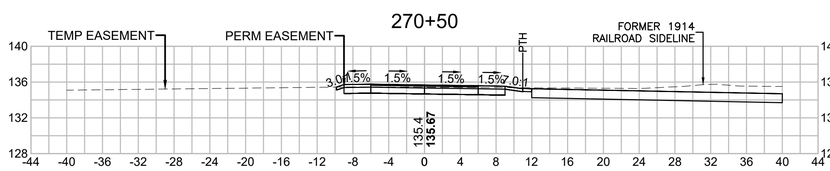
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:39 PM

268+50



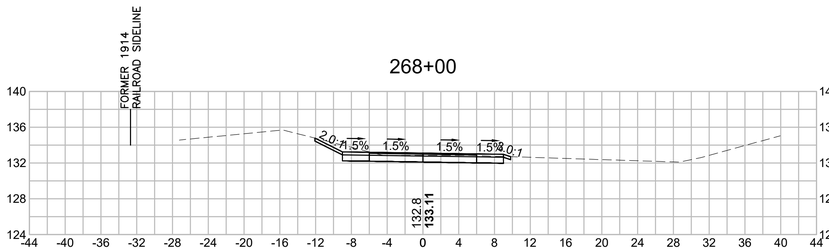
CUT: 23.78 SF
FILL: 0.05 SF

270+50



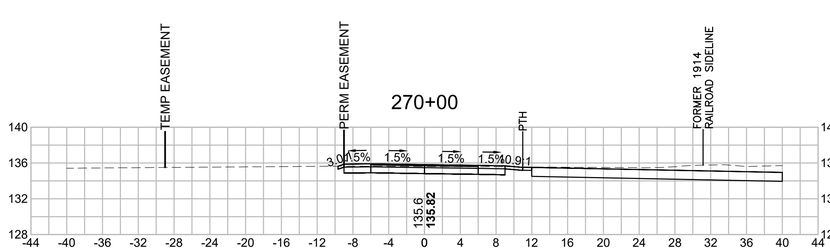
CUT: 14.44 SF
FILL: 0.00 SF

268+00



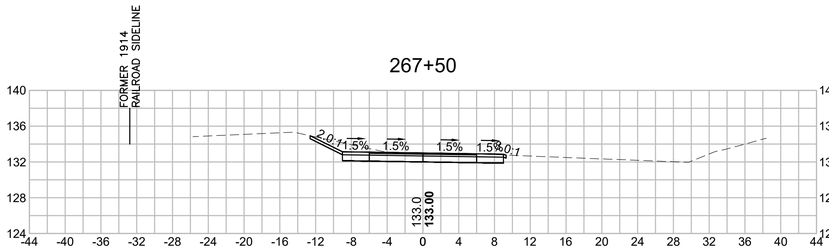
CUT: 22.43 SF
FILL: 0.00 SF

270+00



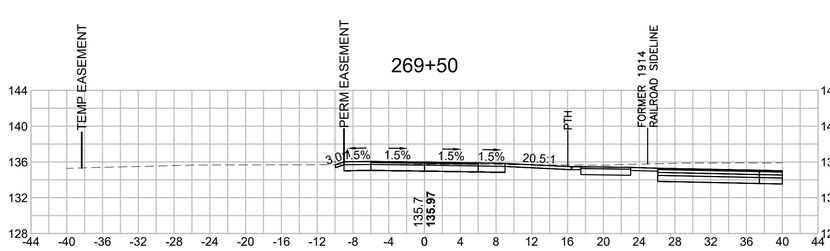
CUT: 15.58 SF
FILL: 0.00 SF

267+50



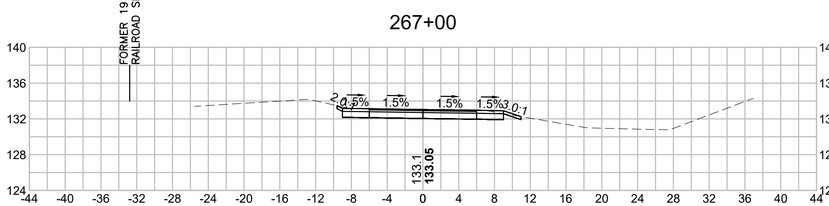
CUT: 29.00 SF
FILL: 0.00 SF

269+50



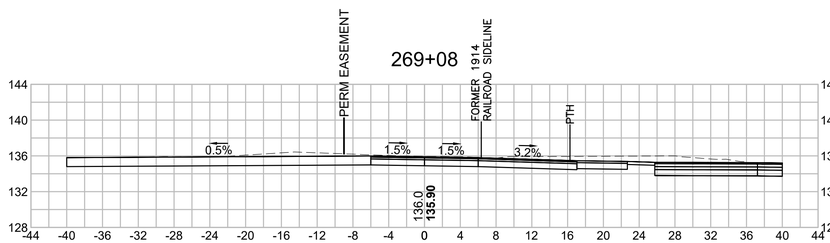
CUT: 20.57 SF
FILL: 0.00 SF

267+00

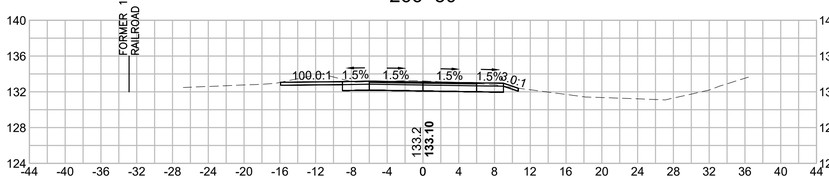


CUT: 19.34 SF
FILL: 0.00 SF

269+08

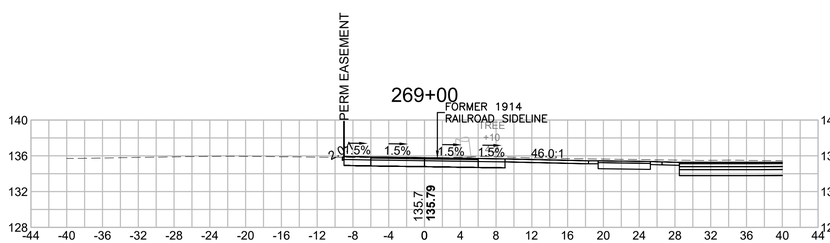


266+50



CUT: 27.44 SF
FILL: 0.00 SF

269+00



CUT: 23.62 SF
FILL: 0.00 SF

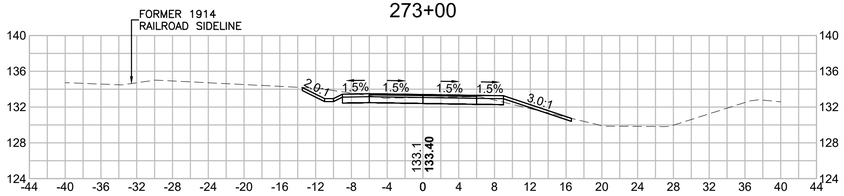
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	138	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

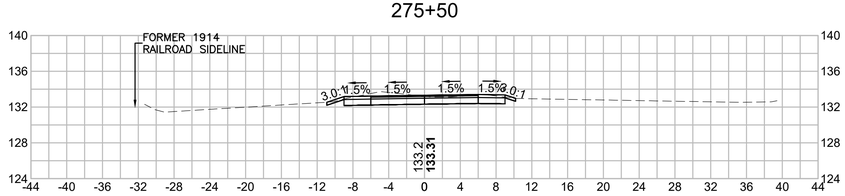
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:39 PM

273+00



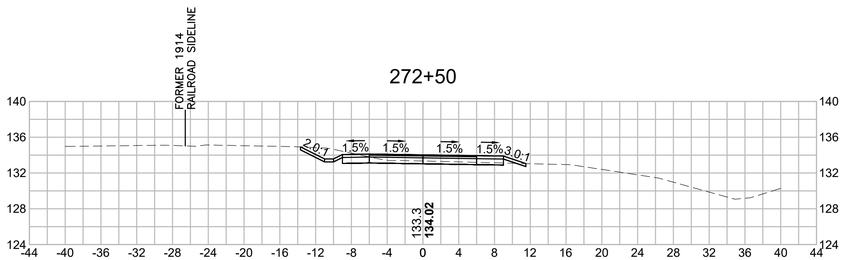
CUT: 21.82 SF
FILL: 0.80 SF

275+50



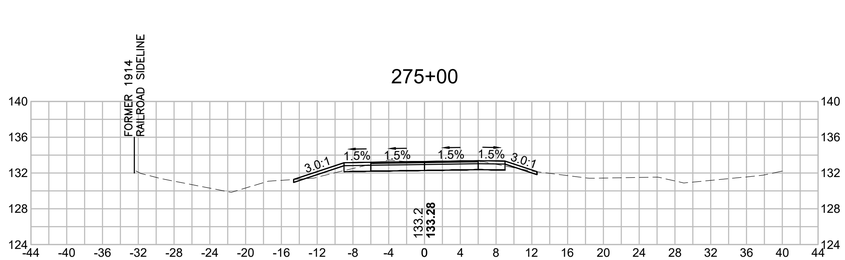
CUT: 19.04 SF
FILL: 0.95 SF

272+50



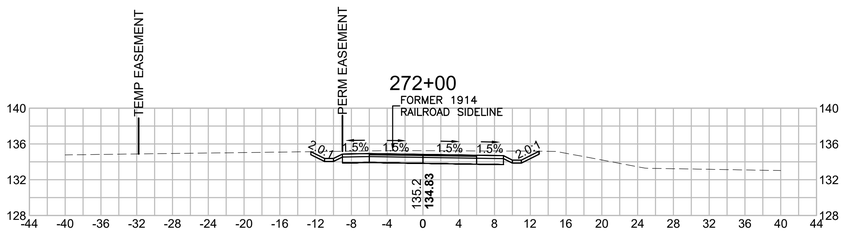
CUT: 16.93 SF
FILL: 0.32 SF

275+00



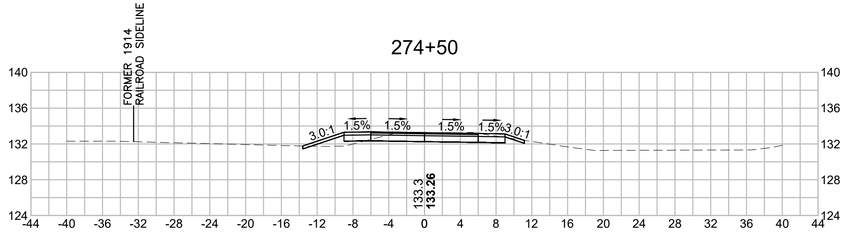
CUT: 15.27 SF
FILL: 3.64 SF

272+00



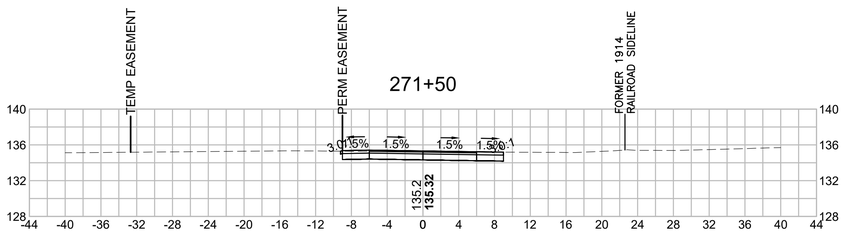
CUT: 35.92 SF
FILL: 0.00 SF

274+50



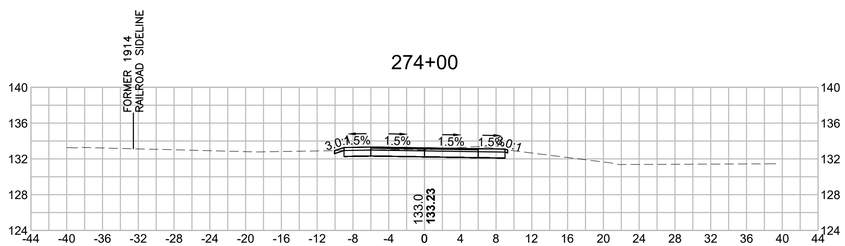
CUT: 13.76 SF
FILL: 3.46 SF

271+50



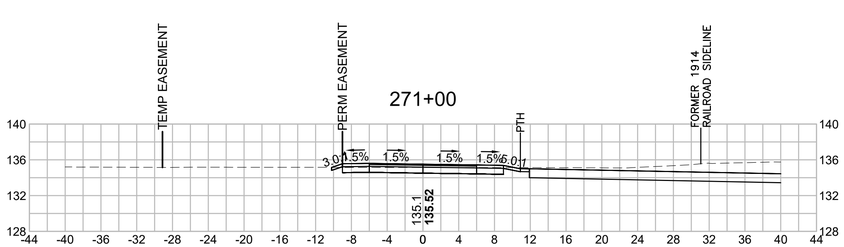
CUT: 20.89 SF
FILL: 0.00 SF

274+00



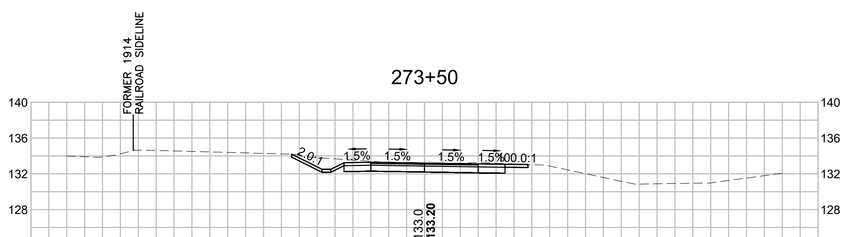
CUT: 20.61 SF
FILL: 0.00 SF

271+00



CUT: 12.01 SF
FILL: 0.00 SF

273+50



CUT: 29.04 SF
FILL: 0.00 SF

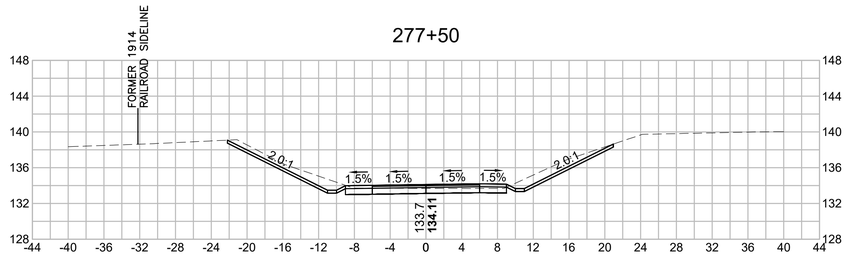
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	139	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

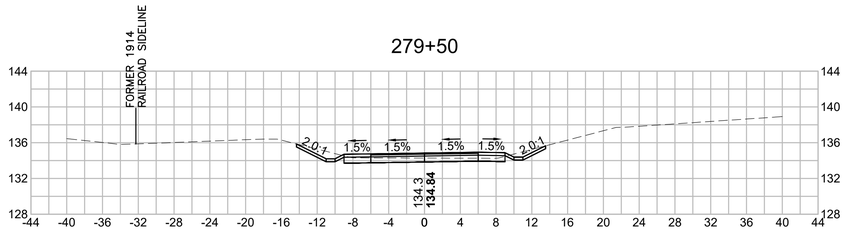
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:40 PM

277+50



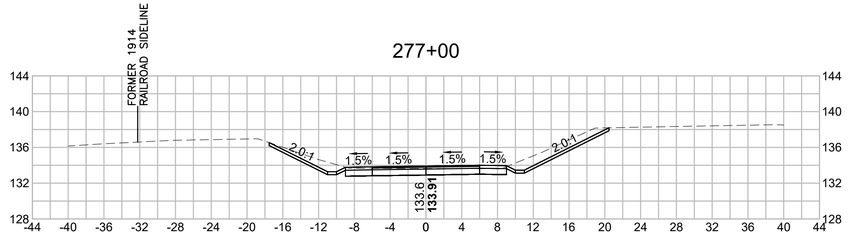
CUT: 24.46 SF
FILL: 0.00 SF

279+50



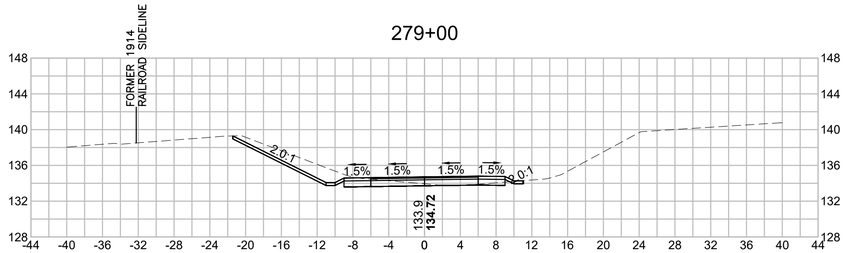
CUT: 12.59 SF
FILL: 0.00 SF

277+00



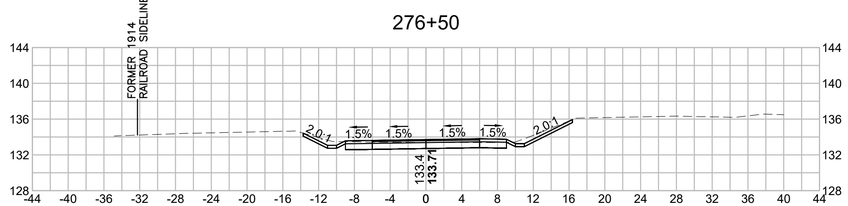
CUT: 28.38 SF
FILL: 0.00 SF

279+00



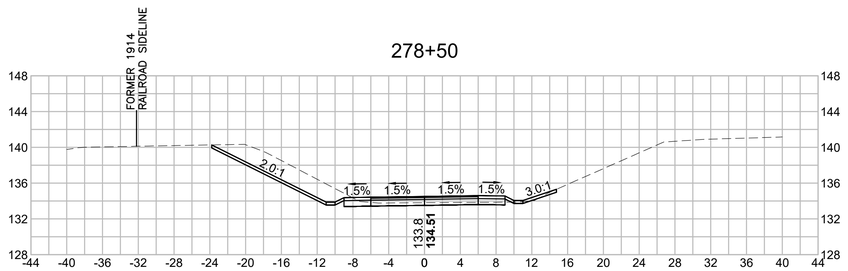
CUT: 10.66 SF
FILL: 0.12 SF

276+50



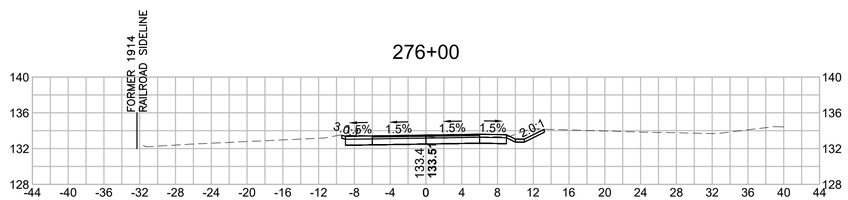
CUT: 18.17 SF
FILL: 0.00 SF

278+50



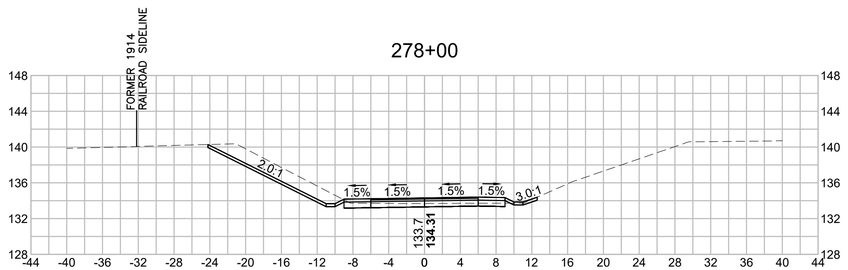
CUT: 10.89 SF
FILL: 0.18 SF

276+00



CUT: 21.67 SF
FILL: 0.00 SF

278+00



CUT: 10.26 SF
FILL: 0.09 SF

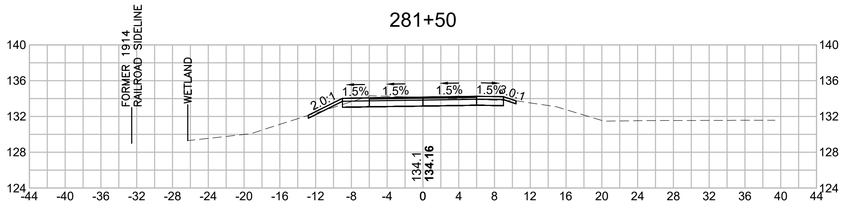
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	140	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

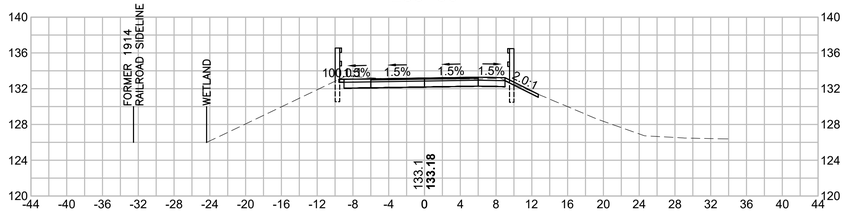
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:40 PM

281+50



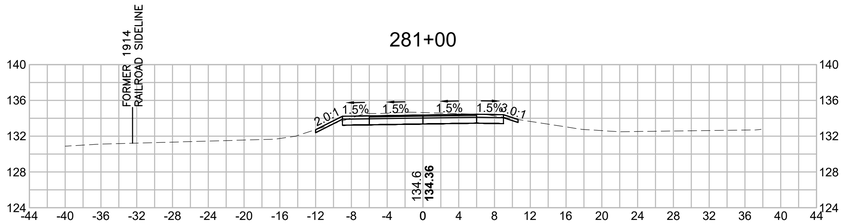
CUT: 15.73 SF
FILL: 0.01 SF

283+50



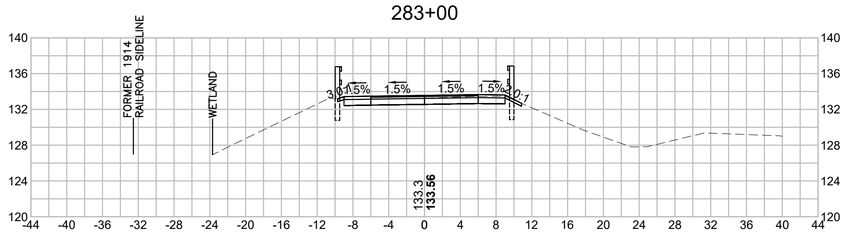
CUT: 17.75 SF
FILL: 0.00 SF

281+00



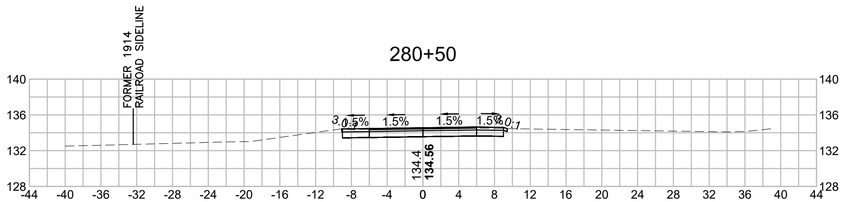
CUT: 20.41 SF
FILL: 0.00 SF

283+00



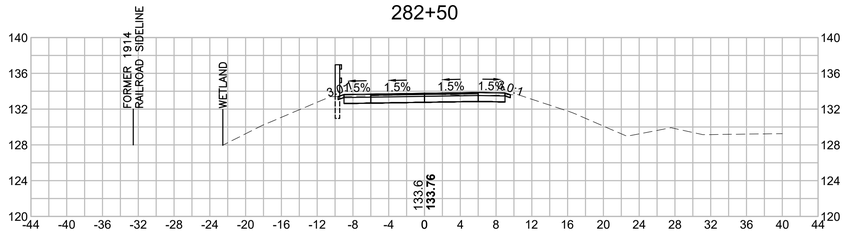
CUT: 13.46 SF
FILL: 0.00 SF

280+50



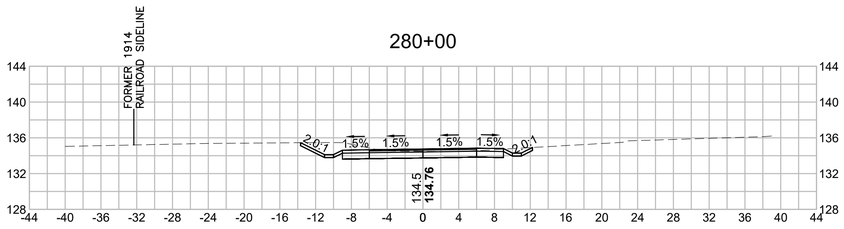
CUT: 16.81 SF
FILL: 0.00 SF

282+50



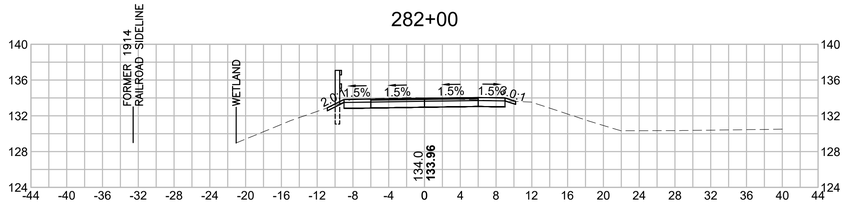
CUT: 14.44 SF
FILL: 0.00 SF

280+00



CUT: 21.65 SF
FILL: 0.00 SF

282+00



CUT: 16.99 SF
FILL: 0.00 SF

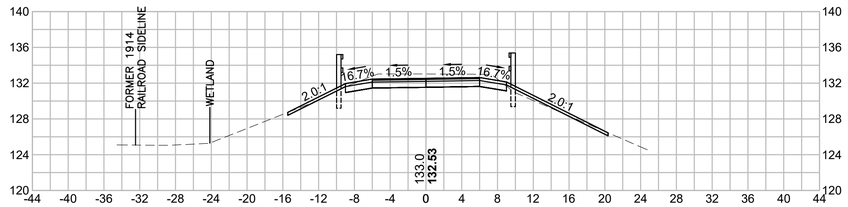
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	141	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

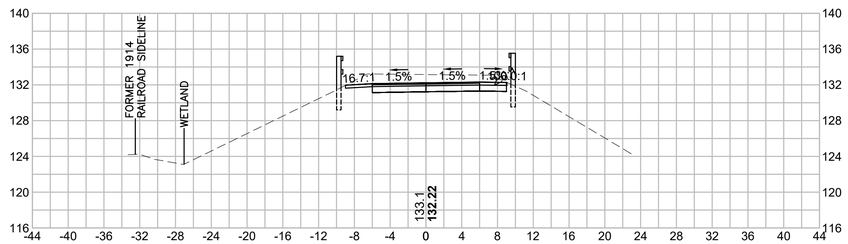
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:40 PM

285+50



CUT: 25.79 SF
FILL: 4.25 SF

285+00



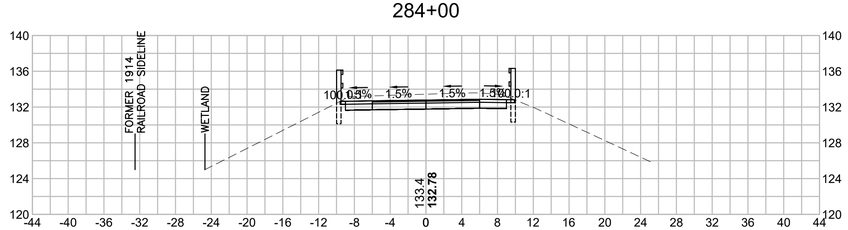
CUT: 30.83 SF
FILL: 0.00 SF

284+50



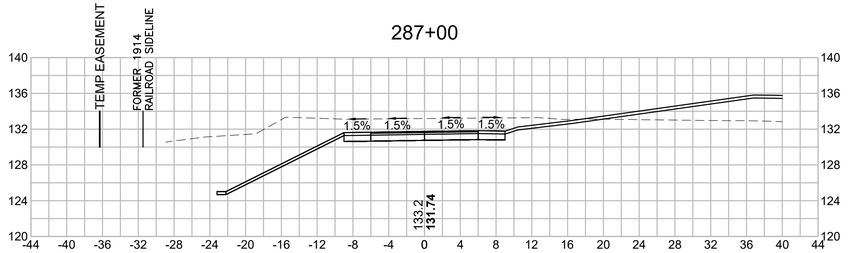
CUT: 31.07 SF
FILL: 0.00 SF

284+00



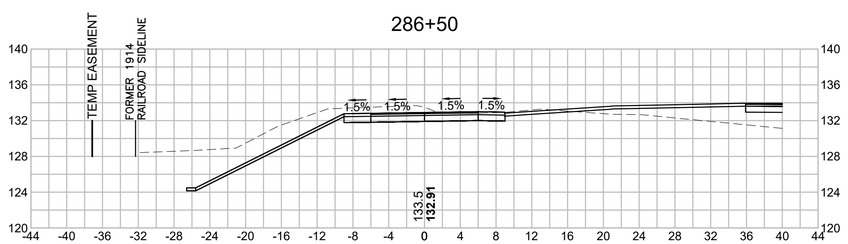
CUT: 29.68 SF
FILL: 0.00 SF

287+00



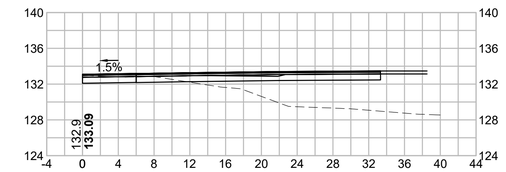
CUT: 110.98 SF
FILL: 0.00 SF

286+50

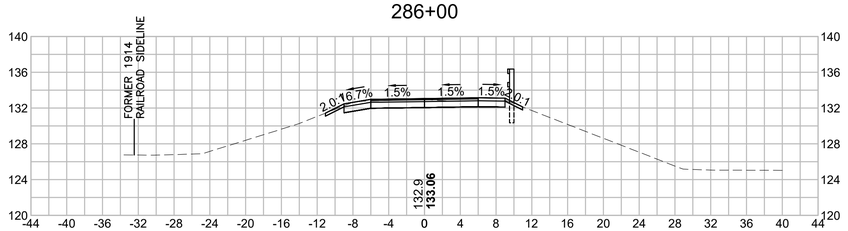


CUT: 71.22 SF
FILL: 0.00 SF

286+29



286+00



CUT: 16.42 SF
FILL: 0.00 SF

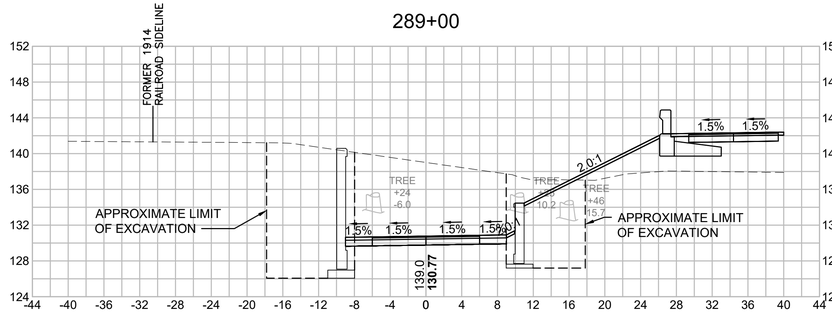
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	142	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

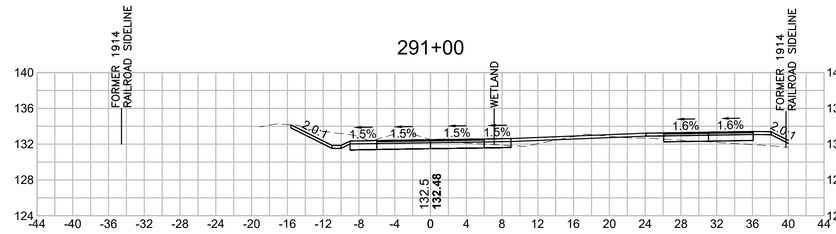
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:40 PM

289+00



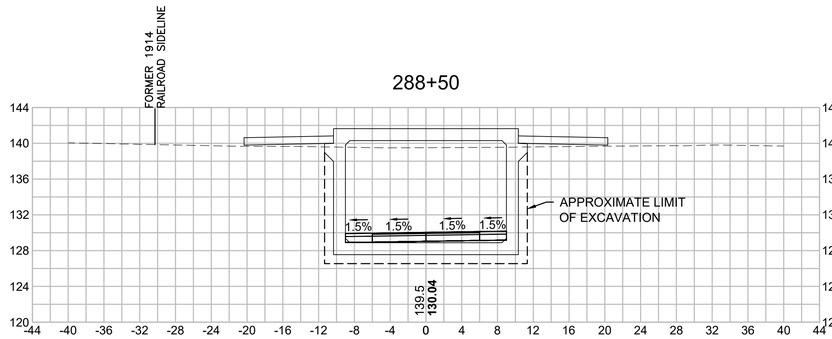
CUT: 172.38 SF
FILL: 0.00 SF

291+00



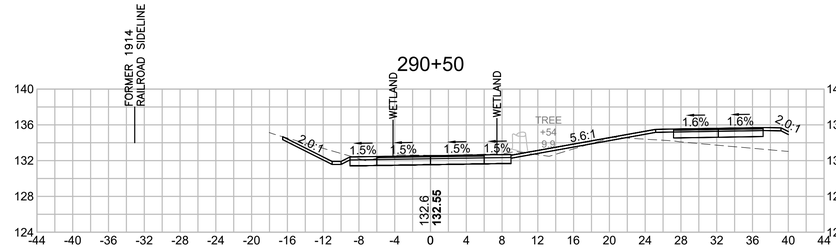
CUT: 21.17 SF
FILL: 0.00 SF

288+50



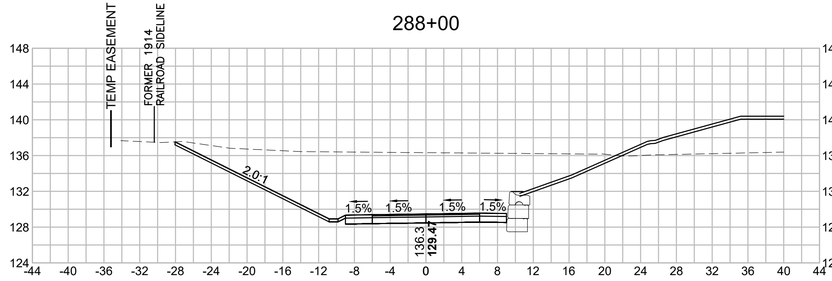
CUT: 188.65 SF
FILL: 0.00 SF

290+50



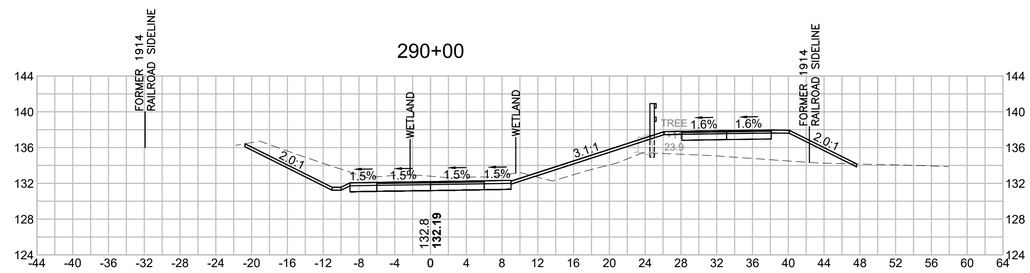
CUT: 20.25 SF
FILL: 0.00 SF

288+00



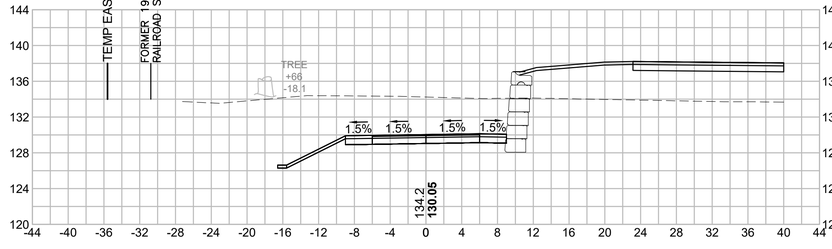
CUT: 223.10 SF
FILL: 0.00 SF

290+00



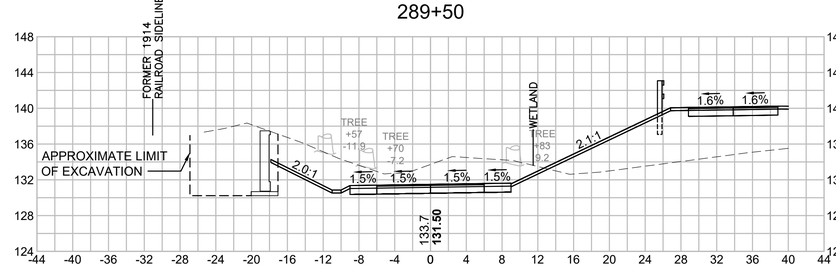
CUT: 42.69 SF
FILL: 0.00 SF

287+50



CUT: 143.46 SF
FILL: 0.00 SF

289+50



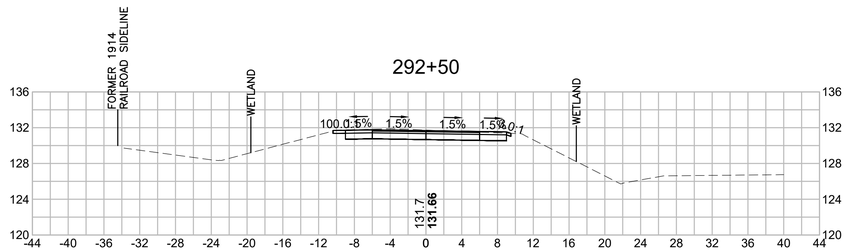
CUT: 92.02 SF
FILL: 0.00 SF

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

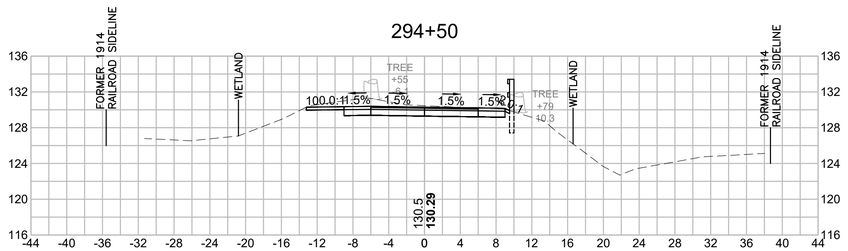
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	143	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

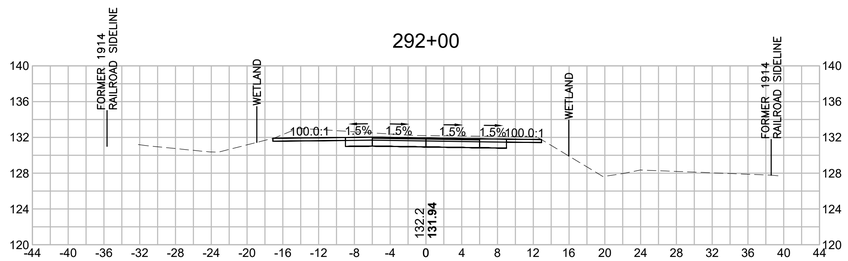
607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:41 PM



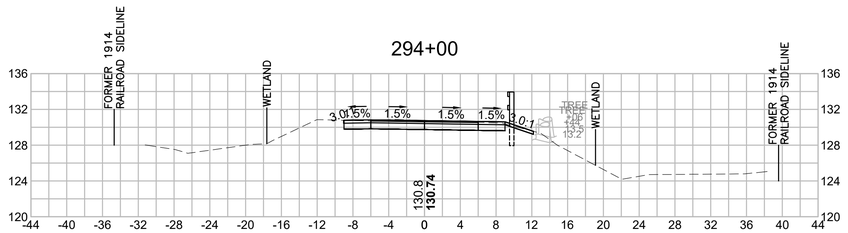
CUT: 18.61 SF
FILL: 0.00 SF



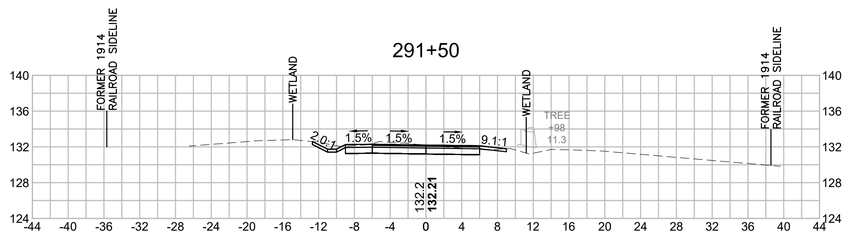
CUT: 30.44 SF
FILL: 0.00 SF



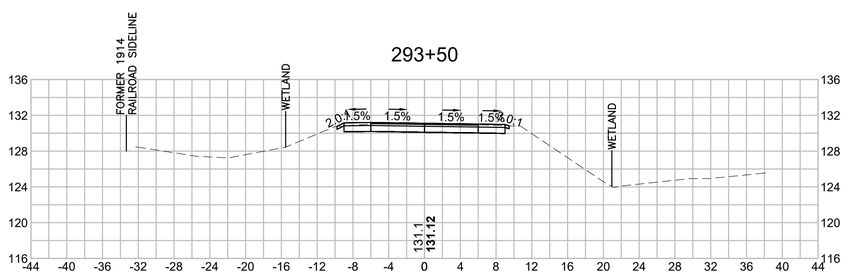
CUT: 29.09 SF
FILL: 0.00 SF



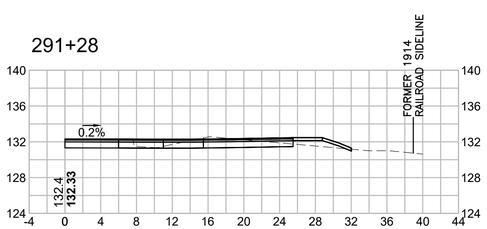
CUT: 22.42 SF
FILL: 0.07 SF

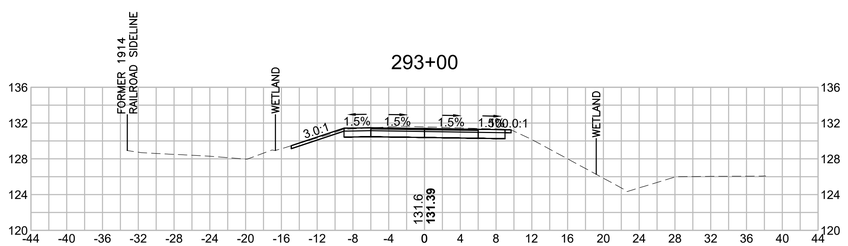


CUT: 15.88 SF
FILL: 0.05 SF



CUT: 17.90 SF
FILL: 2.23 SF





CUT: 21.18 SF
FILL: 0.00 SF

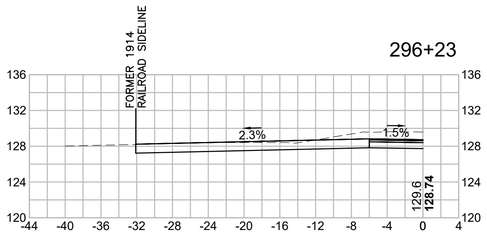
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	144	166
PROJECT FILE NO. 607738			

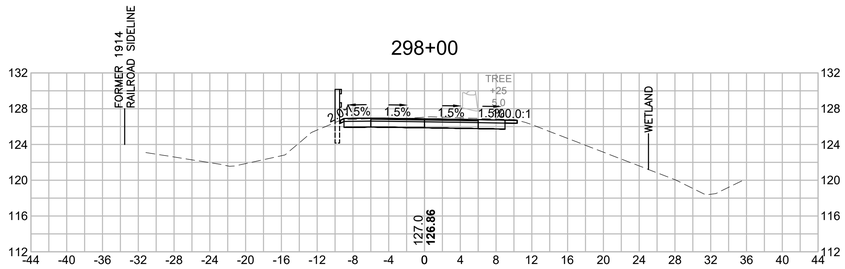
CROSS SECTIONS

607738_HDXSEC)-2.DWG Plotted on 30-Oct-2020 1:41 PM

296+23



298+00



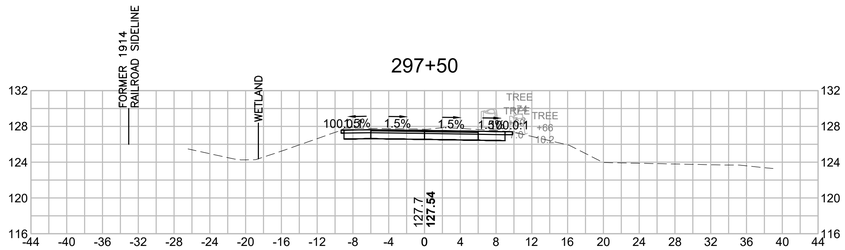
CUT: 19.89 SF
FILL: 0.00 SF

296+00



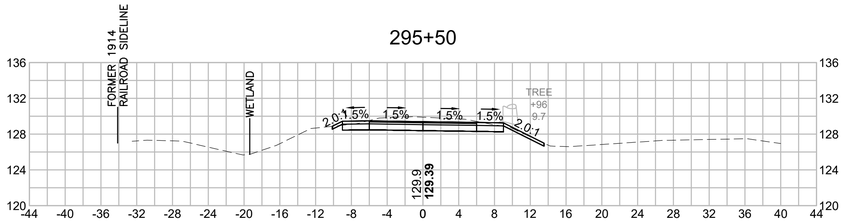
CUT: 27.42 SF
FILL: 0.00 SF

297+50



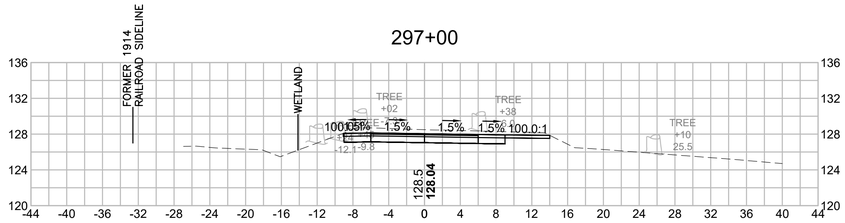
CUT: 21.78 SF
FILL: 0.00 SF

295+50



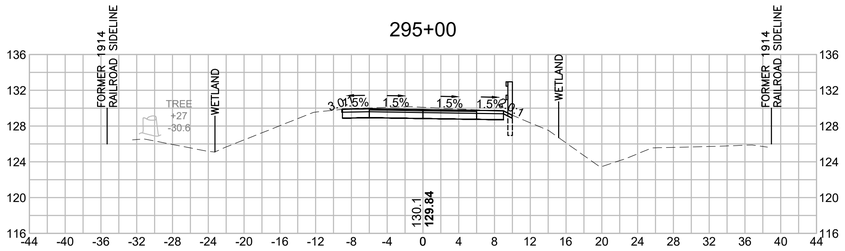
CUT: 24.14 SF
FILL: 0.85 SF

297+00



CUT: 30.91 SF
FILL: 1.59 SF

295+00



CUT: 24.19 SF
FILL: 0.16 SF

296+50



CUT: 21.85 SF
FILL: 0.64 SF

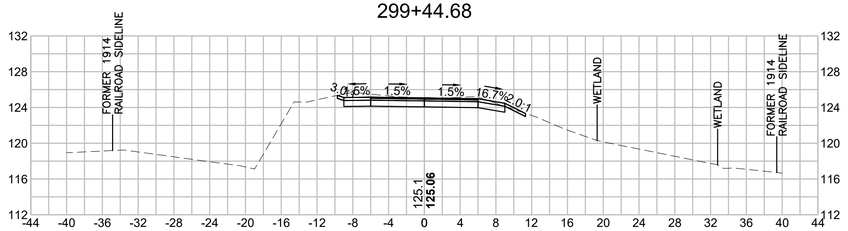
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	145	166
PROJECT FILE NO. 607738			

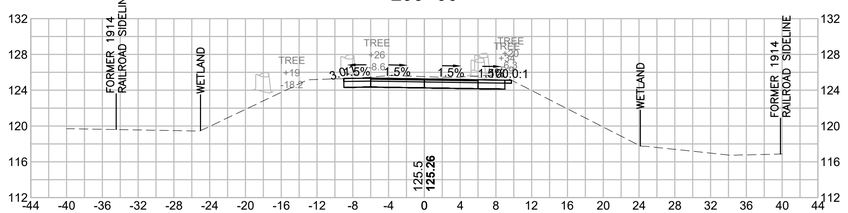
CROSS SECTIONS

607738_HDXSEC\2.DWG Plotted on 30-Oct-2020 1:41 PM

299+44.68



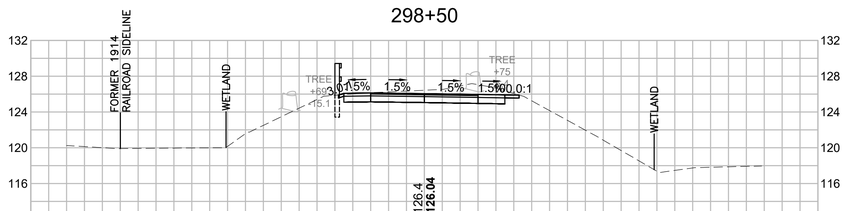
299+00



CUT: 23.26 SF

FILL: 0.00 SF

298+50



CUT: 26.83 SF

FILL: 0.00 SF

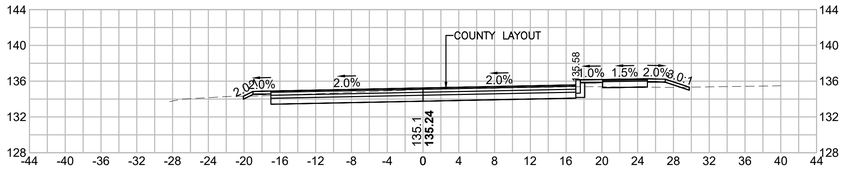
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	146	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
CONCORD ROAD

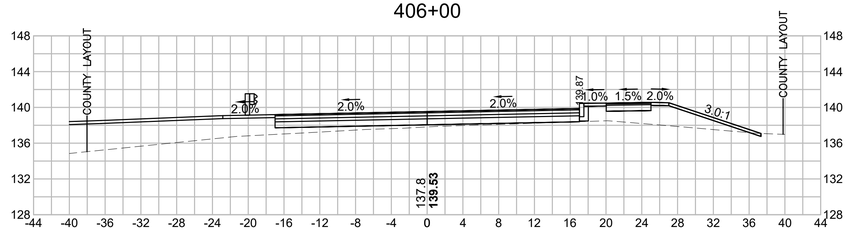
SUPERELEVATION DATA	
PC	401+07.53
R	660.00'
PT	406+59.35
RATE OF BANK	2%

404+50



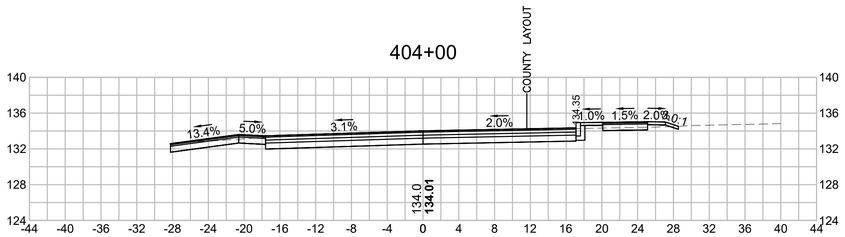
CUT: 43.20 SF
FILL: 3.01 SF

406+00



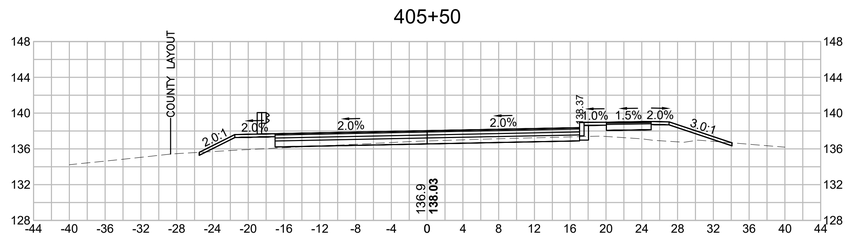
CUT: 0.20 SF
FILL: 34.19 SF

404+00



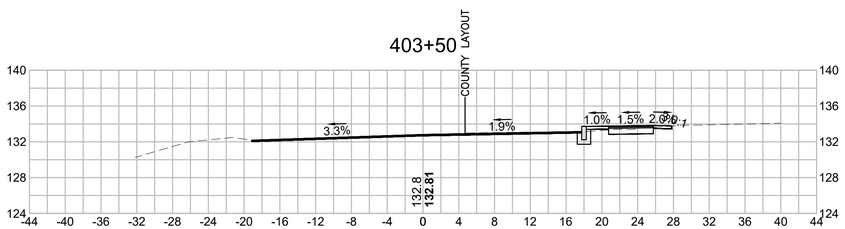
CUT: 58.63 SF
FILL: 1.17 SF

405+50



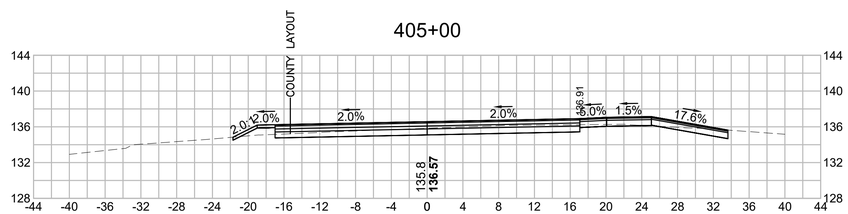
CUT: 9.96 SF
FILL: 24.23 SF

403+50



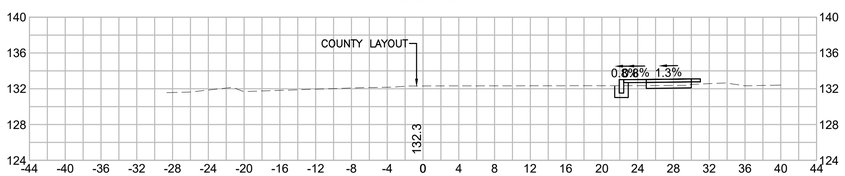
CUT: 4.74 SF
FILL: 0.30 SF

405+00



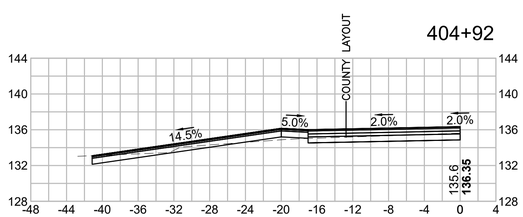
CUT: 29.56 SF
FILL: 2.31 SF

403+00



CUT: 0.00 SF
FILL: 0.00 SF

404+92



607738_HD\XSEC-CONCORD RD).DWG Plotted on 30-Oct-2020 2:49 PM

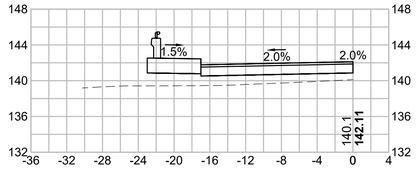
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	147	166
PROJECT FILE NO. 607738			

CROSS SECTIONS

SUPERELEVATION DATA	
PC	401+07.53
R	660.00'
PT	406+59.35
RATE OF BANK	2%

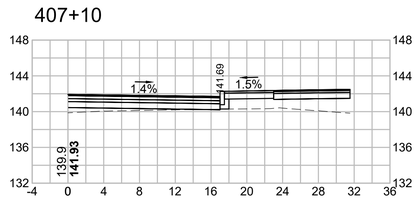
407+25



CUT: 0.00 SF

FILL: 0.00 SF

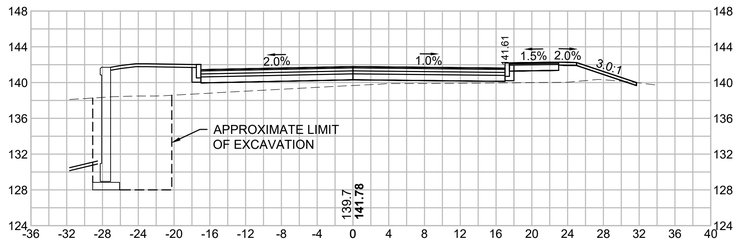
407+10



CUT: 0.10 SF

FILL: 9.21 SF

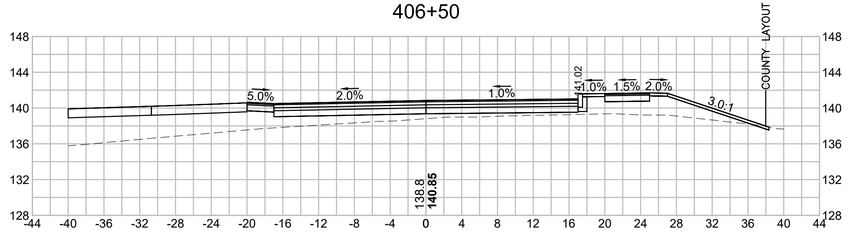
407+00



CUT: 0.24 SF

FILL: 37.13 SF

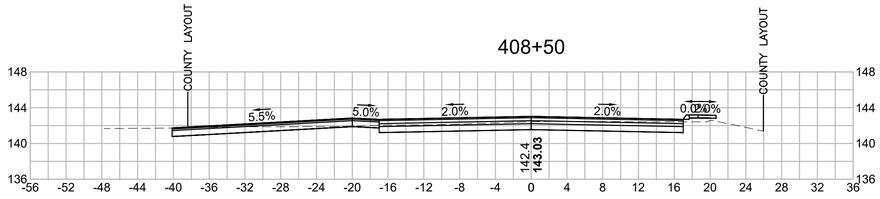
406+50



CUT: 0.37 SF

FILL: 52.76 SF

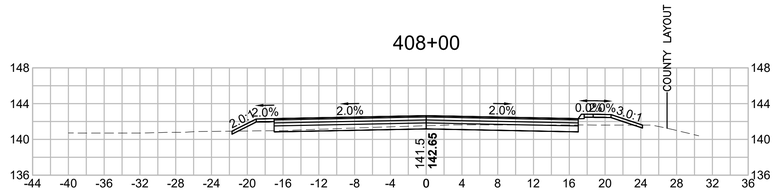
408+50



CUT: 42.96 SF

FILL: 1.22 SF

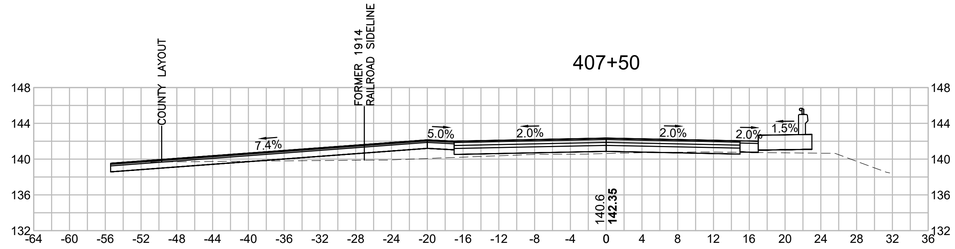
408+00



CUT: 14.85 SF

FILL: 6.79 SF

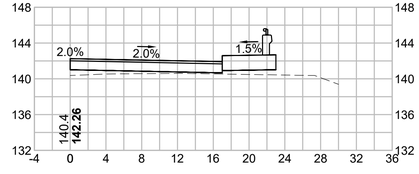
407+50



CUT: 8.72 SF

FILL: 19.61 SF

407+40



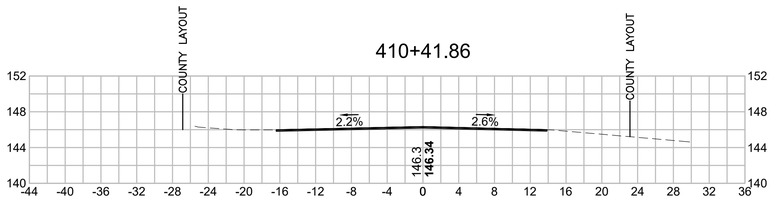
607738_HD(XSEC-CONCORD RD).DWG Plotted on 30-Oct-2020 1:42 PM

BEDFORD
MINUTEMAN BIKEWAY EXTENSION

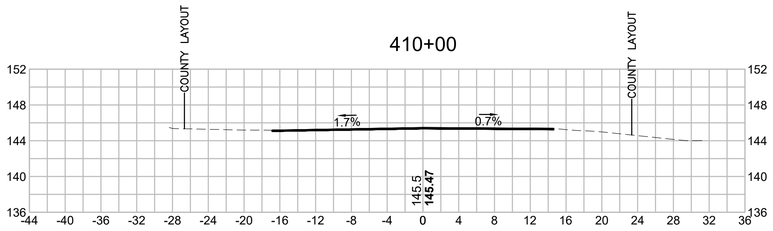
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	148	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
CONCORD ROAD

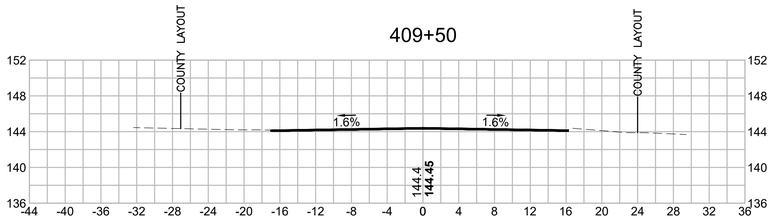
607738_HD\XSEC-CONCORD RD).DWG Plotted on 30-Oct-2020 1:42 PM



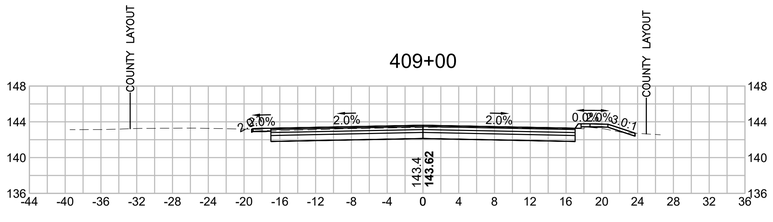
CUT: 0.00 SF
FILL: 0.00 SF



CUT: 0.00 SF
FILL: 0.00 SF



CUT: 0.00 SF
FILL: 0.00 SF



CUT: 45.03 SF
FILL: 0.70 SF

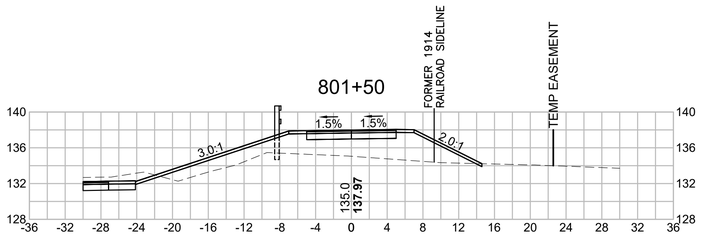
BEDFORD
MINUTEMAN BIKEWAY EXTENSION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MASS.	TBD	149	166
PROJECT FILE NO. 607738			

CROSS SECTIONS
CONCORD ROAD RAMP

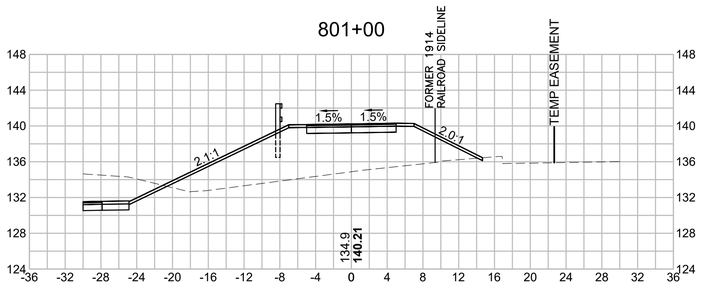
607738_HD\XSEC-CONCORD RD.DWG Plotted on 30-Oct-2020 1:42 PM

801+50



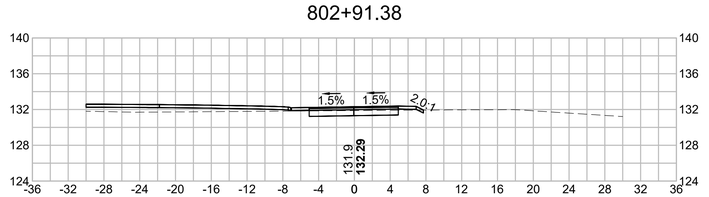
CUT: 2.22 SF
FILL: 59.88 SF

801+00



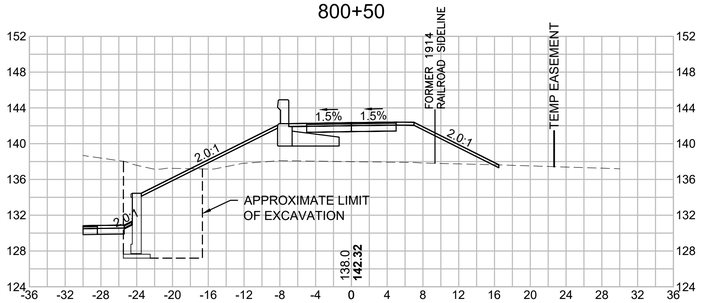
CUT: 6.71 SF
FILL: 123.73 SF

802+91.38



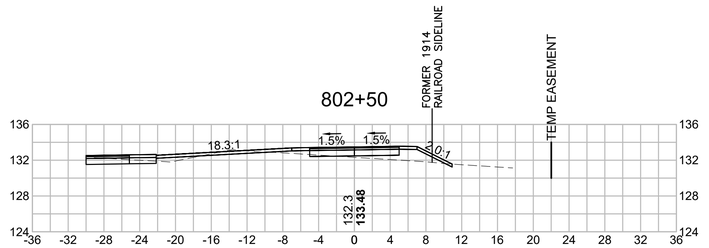
CUT: 5.95 SF
FILL: 0.27 SF

800+50



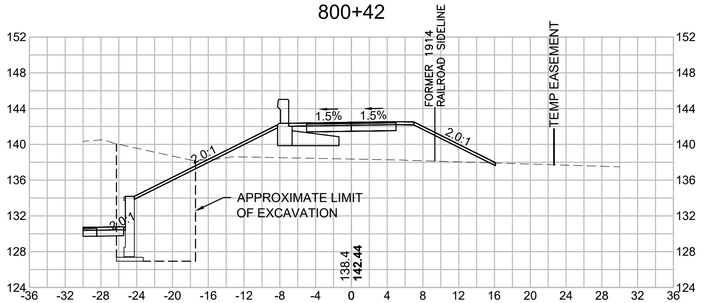
CUT: 9.90 SF
FILL: 88.64 SF

802+50



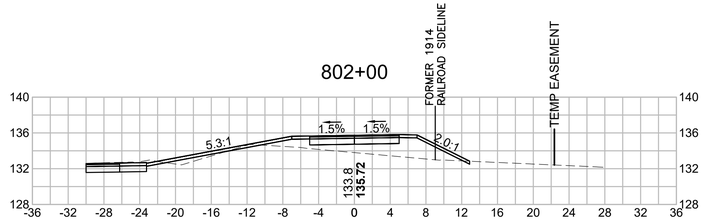
CUT: 2.24 SF
FILL: 9.06 SF

800+42



CUT: 25.16 SF
FILL: 76.82 SF

802+00



CUT: 1.52 SF
FILL: 24.95 SF