

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION

SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	1	73
PROJECT FILE NO.		613319	

TITLE SHEET & INDEX

PLAN AND PROFILE OF BRUCE FREEMAN RAIL TRAIL

PHASE 3

IN THE TOWN OF

SUDBURY & FRAMINGHAM

MIDDLESEX COUNTY

FEDERAL AID PROJECT NO. -

25% SUBMITTAL

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.

SHARED-USE PATH DESIGN DESIGNATION

BRUCE FREEMAN RAIL TRAIL

DESIGN SPEED 18 MPH

FUNCTIONAL CLASSIFICATION OFF ROAD PEDESTRIAN/BICYCLE FACILITY

* 18 MPH FOR GRADES LESS THAN 2%, 20 MPH FOR GRADES BETWEEN 2% & 4%

DESIGN DESIGNATION (BOSTON POST ROAD)

DESIGN SPEED 30 MPH

ADT (2022) 21,748

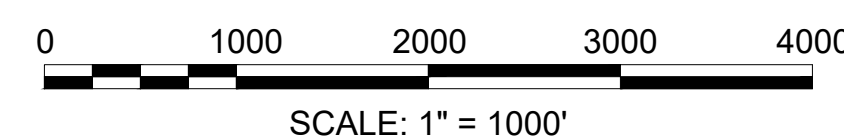
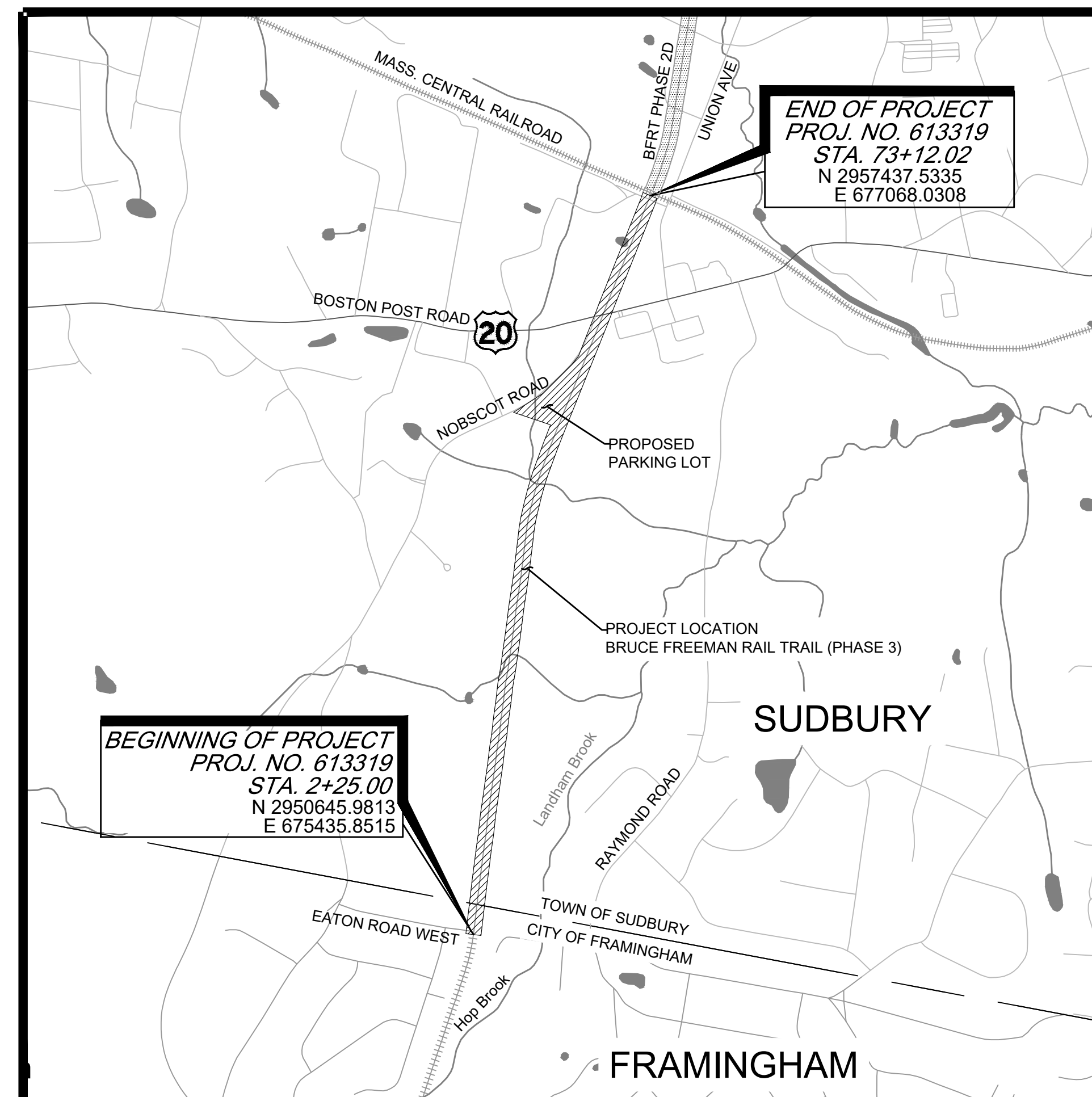
ADT (2042) 21,967

T (PEAK HOUR) 4.7%


T (AVERAGE DAY) 3.4%

FUNCTIONAL CLASSIFICATION URBAN PRINCIPAL ARTERIAL

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LENGTH OF PROJECT = 7087.02 FEET = 1.342 MILES

	6-19-2024	25% SUBMISSION	0
	2-5-2024	PRE-25% SUBMISSION	0
	DATE	DESCRIPTION	REV #
 Massachusetts Department of Transportation Highway Division			
APPROVED			
		CHIEF ENGINEER	DATE

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	2	73
PROJECT FILE NO.		613319	

GENERAL NOTES

GENERAL NOTES:

EXISTING CONDITIONS AND TOPOGRAPHICAL INFORMATION FROM AN ACTUAL FIELD SURVEY CONDUCTED BY GCG ASSOCIATES, INC. IN SEPTEMBER 2022 THROUGH APRIL 2023.

- THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- INFORMATION REGARDING THE LOCATION OF EXISTING UTILITIES HAS BEEN BASED UPON AVAILABLE INFORMATION AND MAY BE INCOMPLETE, AND WHERE SHOWN SHOULD BE CONSIDERED APPROXIMATE. NO GUARANTEE TO THE ACCURACY OF THE EXISTING UTILITIES FACILITIES SHOWN IN THIS PROJECT IS EXPRESSED OR IMPLIED UNLESS OTHERWISE NOTED. CONTRACTOR SHALL CONTACT "Mass DIG-SAFE", 1-888-344-7233. CONTRACTOR SHALL MAINTAIN MARKINGS WHERE NEEDED DURING PROJECT. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL VERIFY LOCATIONS OF UTILITIES AND SERVICE LATERALS PRIOR TO CONSTRUCTION. ANY CONFLICTS WITH LOCATIONS OF LIGHT POLES, TREES, ETC. SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO CONSTRUCTION.
- 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.
- THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH PROPOSED CONDUIT AND SIGNAL EQUIPMENT. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER.
- 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.
- THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SEWER 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.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- EXISTING UTILITY POLES WILL BE RELOCATED BY OTHERS IF REQUIRED.
- PRIOR TO ONSET OF TREE REMOVAL ACTIVITIES, THE CONTRACTOR, RESIDENT ENGINEER AND MASSDOT LANDSCAPE ARCHITECT AND TOWN REPRESENTATIVE SHALL WALK SITE TO IDENTIFY TREES TO BE REMOVED.
- 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.
- 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).
- JOINTS BETWEEN NEW ASPHALT CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.
- AFTER MILLING OPERATIONS AND PRIOR TO PAVING THE SUPERPAVE INTERMEDIATE OR SURFACES COURSES THE ENGINEER SHALL EVALUATE THE MILLED SURFACE AND SHALL APPLY THE APPROPRIATE REPAIR METHOD IF REQUIRED.
- EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- IF SUITABLE, ALL EXISTING GRANITE CURB & EDGING SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
- ALL PROPOSED HOT MIX ASPHALT CURB SHALL BE MASSDOT TYPE 3.
- ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
- ALL PROPOSED BOUNDS SHALL BE PLACED BY A LICENSED PROFESSIONAL SURVEYOR. THE CONTRACTOR SHALL EXERCISE DUE CARE WHEN WORKING AROUND ALL PROPERTY BOUNDS WHICH ARE TO REMAIN. SHOULD ANY DAMAGE TO A BOUND RESULT FROM THE ACTIONS OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE THE BOUND REPLACED AND/OR REALIGNED BY A LICENSED PROFESSIONAL SURVEYOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST.
- DISPOSAL OF ALL SURPLUS MATERIAL SHALL BE AS APPROVED BY THE ENGINEER AND OWNER.
- LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 0.01 FOOT PER FOOT (MINIMUM) UNLESS NOTED OTHERWISE ON THE PLANS.

GENERAL ABBREVIATIONS

ABAN	ABANDON
ADJ	ADJUST
APPROX	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS / CONTINUED
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DIA	DIAMETER
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EXIST (or EX)	EXISTING
EXC	EXCAVATION
FDN.	FOUNDATION
FDP	FULL DEPTH PAVEMENT
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HWY	HIGHWAY
JCT	JUNCTION
LOAM	LOAM BORROW
LSA	LANDSCAPED AREA
LT	LEFT
MAHWL	MEAN AVERAGE HIGH WATER LINE
MAX	MAXIMUM
MB	MAILBOX
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
MOD	MODIFIED
MSE	MECHANICALLY STABILIZED EARTH
NERR	NEW ENGLAND RAILROAD
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
P.G.L.	PROFILE GRADE LINE
PREV	PREVIOUS/PREVIOUSLY
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PVMT	PAVEMENT
R&D	REMOVE AND DISCARD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RD	ROAD
RDWY	ROADWAY
REB	REBUILD
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SHLO/S.H.L.O.	STATE HIGHWAY LAYOUT LINE

GENERAL ABBREVIATIONS (CONT)

ST	STREET
STA	STATION
STD	STANDARD
SW	SIDEWALK
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TRANS	TRANSITION
TRM	TURF REINFORCING MAT
TYP	TYPICAL
VAR	VARIES
VERT	VERTICAL
WCR	WHEEL CHAIR RAMP
WP	WORKING POINT
X-SECT	CROSS SECTION

UTILITY ABBREVIATIONS

CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
DI	DROP INLET
DIP	DUCTILE IRON PIPE
FES	FLARED END SECTION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HDW	HEADWALL
HYD	HYDRANT
INV	INVERT
LB	LEACH BASIN
LP	LIGHT POLE
MH	MANHOLE
MW	MONITORING WELL
OHW	OVERHEAD WIRE
PVC	POLYVINYLCHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
TSV&B	TAPPING SLEEVE VALVE & BOX
UP	UTILITY POLE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN

ALIGNMENT & GRADING ABBREVIATIONS

CC	CENTER OF CURVE
HP	HIGH POINT
I.T.	INTERSECTION OF TANGENT
LP	LOW POINT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PNT	POINT
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
∠PT	ANGLE POINT
R	RADIUS OF CURVATURE
T	TANGENT DISTANCE OF CURVE
TAN	TANGENT
25.45	SPOT ELEVATION

PROFILE ABBREVIATIONS

AD	ALGEBRAIC DIFFERENCE IN RATES OF GRADE
HSD	HORIZONTAL SIGHT DISTANCE
K	RATE OF VERTICAL CURVATURE
L	LENGTH OF CURVE
PVC	POINT OF VERTICAL CURVATURE
PVCC	POINT OF VERTICAL COMPOUND CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVRC	POINT OF VERTICAL REVERSE CURVATURE
PVT	POINT OF VERTICAL TANGENCY
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
←FR→	FLASHING RED LEFT ARROW
→FR→	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
←FY→	FLASHING YELLOW LEFT ARROW
→FY→	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
←G→	STEADY GREEN LEFT ARROW
→G→	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
↑	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
←R→	STEADY RED LEFT ARROW
→R→	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
Y	STEADY CIRCULAR YELLOW
←Y→	STEADY YELLOW LEFT ARROW
→Y→	STEADY YELLOW RIGHT ARROW

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	3	73
PROJECT FILE NO.		613319	

LEGEND & ABBREVIATIONS

GENERAL SYMBOLS

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

TRAFFIC SYMBOLS

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

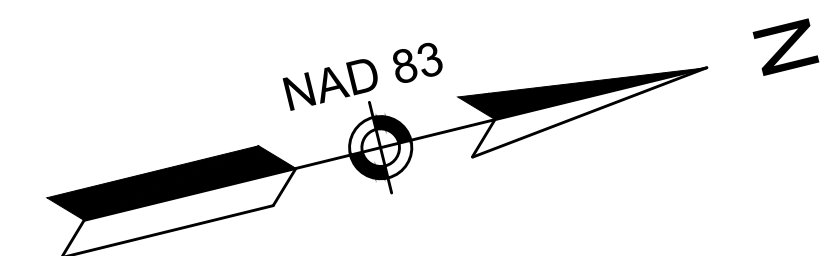
PAVEMENT MARKINGS SYMBOLS

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

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	4	73
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KEY PLAN & BORING LOCATIONS



BEGINNING OF PROJECT
PROJ. NO. 613319
STA. 2+25.00
N 2950645.9813
E 675435.8515

SUDBURY
FRAMINGHAM

EATON ROAD WEST
(PUBLIC)

BORING LOCATION CC-1

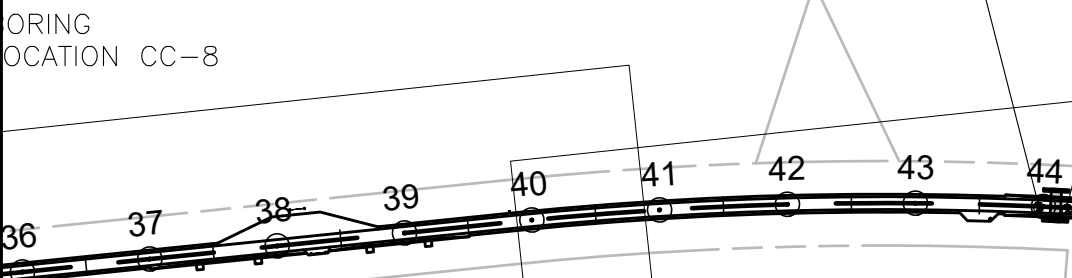
CONSTRUCTION PLAN SHEET 10
PROFILE PLAN SHEET 17
PAVEMENT MARKINGS & SIGNING PLAN SHEET 21
DRAINAGE AND UTILITY PLAN SHEET 39

CONSTRUCTION PLAN SHEET 11
PROFILE PLAN SHEET 17
PAVEMENT MARKINGS & SIGNING PLAN SHEET 22
DRAINAGE AND UTILITY PLAN SHEET 40

EATON ROAD WEST
(PUBLIC)

SUDBURY WATER DISTRICT ACCESS PATH INSET
SEE PAVEMENT MARKING AND SIGNAGE PLAN SHEET 20

BORING LOCATION CC-6



CONSTRUCTION PLAN SHEET 12
PROFILE PLAN SHEET 18
PAVEMENT MARKINGS & SIGNING PLAN SHEET 23
DRAINAGE AND UTILITY PLAN SHEET 41

CONSTRUCTION PLAN SHEET 13
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 24
DRAINAGE AND UTILITY PLAN SHEET 42



CONSTRUCTION PLAN SHEET 9
PROFILE PLAN SHEET 17
PAVEMENT MARKINGS & SIGNING PLAN SHEET 20
DRAINAGE AND UTILITY PLAN SHEET 38

CONSTRUCTION PLAN SHEET 10
PROFILE PLAN SHEET 17
PAVEMENT MARKINGS & SIGNING PLAN SHEET 21
DRAINAGE AND UTILITY PLAN SHEET 39



CONTINUED
BELOW

CONTINUED
ABOVE

BORING LOCATION CC-2

CONSTRUCTION PLAN SHEET 11
PROFILE PLAN SHEET 18
PAVEMENT MARKINGS & SIGNING PLAN SHEET 22
DRAINAGE AND UTILITY PLAN SHEET 40

BORING LOCATION CC-7

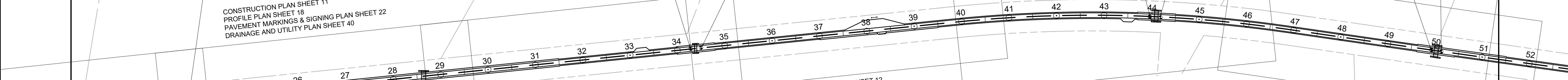
BORING LOCATION CC-8

BORING LOCATION CC-6

BORING LOCATION CC-5

BORING LOCATION CC-3

BORING LOCATION CC-4



CONSTRUCTION PLAN SHEET 12
PROFILE PLAN SHEET 18
PAVEMENT MARKINGS & SIGNING PLAN SHEET 23
DRAINAGE AND UTILITY PLAN SHEET 41

CONSTRUCTION PLAN SHEET 12
PROFILE PLAN SHEET 18
PAVEMENT MARKINGS & SIGNING PLAN SHEET 23
DRAINAGE AND UTILITY PLAN SHEET 41

CONSTRUCTION PLAN SHEET 13
PROFILE PLAN SHEET 18
PAVEMENT MARKINGS & SIGNING PLAN SHEET 24
DRAINAGE AND UTILITY PLAN SHEET 42

CONSTRUCTION PLAN SHEET 13
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 24
DRAINAGE AND UTILITY PLAN SHEET 42

BORING LOCATION CC-11

BORING LOCATION CC-9

BORING LOCATION CC-10

CONSTRUCTION PLAN SHEET 11
PROFILE PLAN SHEET 17
PAVEMENT MARKINGS & SIGNING PLAN SHEET 22
DRAINAGE AND UTILITY PLAN SHEET 40

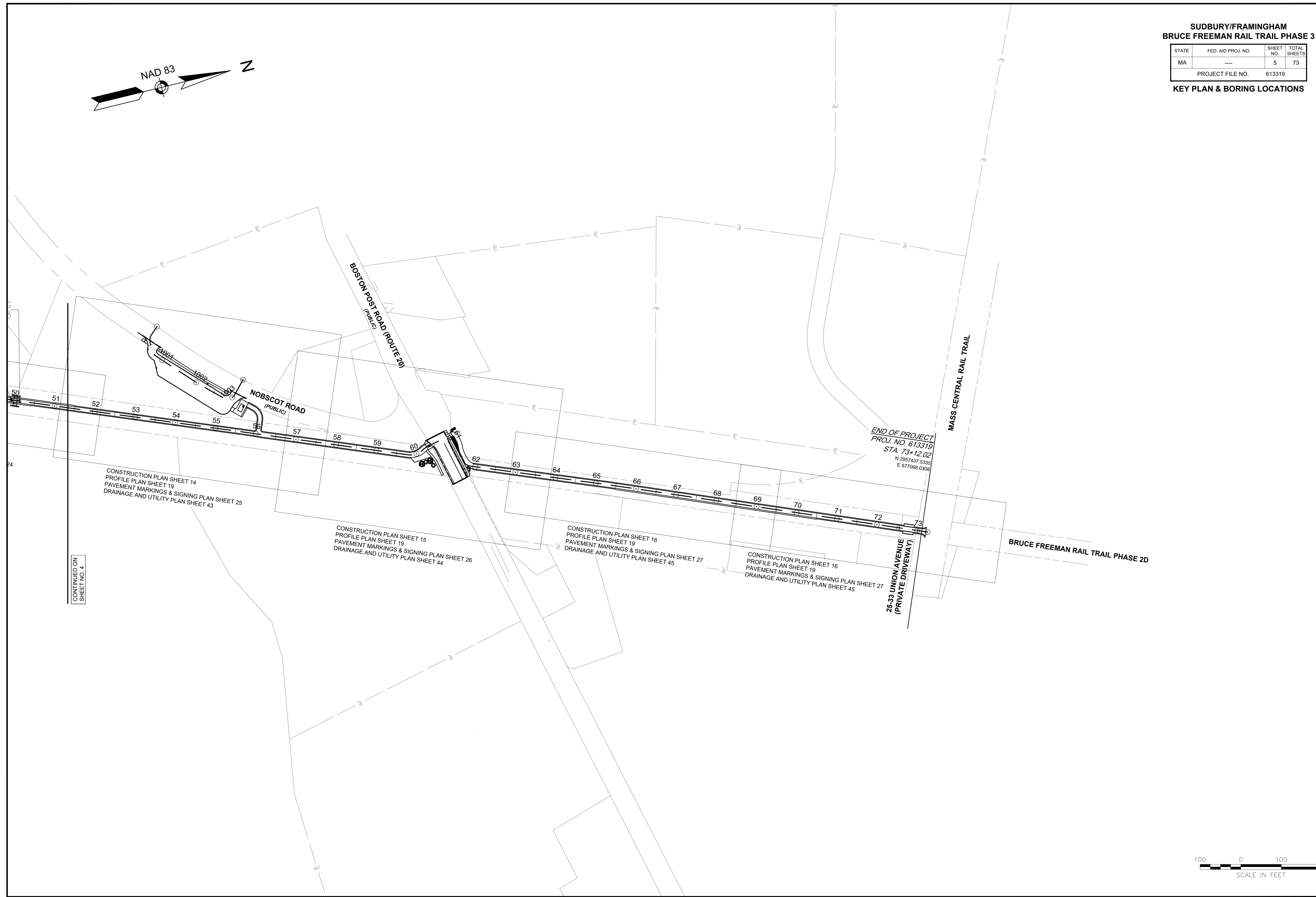
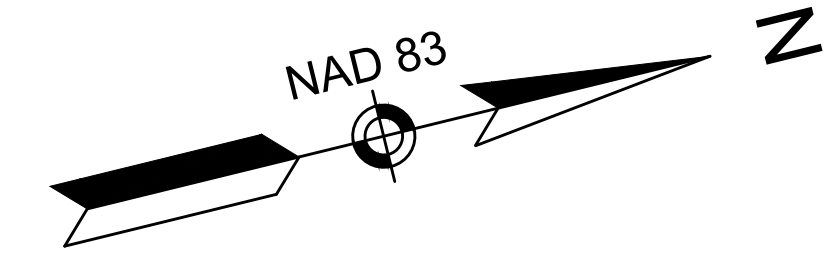
CONTINUED ON
SHEET NO. 5

CONSTRUCTION PLAN SHEET 13
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 24
DRAINAGE AND UTILITY PLAN SHEET 42

**SUDBURY/FRAMINGHAM
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KEY PLAN & BORING LOCATIONS



CONSTRUCTION PLAN SHEET 14
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 25
DRAINAGE AND UTILITY PLAN SHEET 43

CONSTRUCTION PLAN SHEET 15
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 26
DRAINAGE AND UTILITY PLAN SHEET 44

CONSTRUCTION PLAN SHEET 16
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 27
DRAINAGE AND UTILITY PLAN SHEET 45

CONSTRUCTION PLAN SHEET 16
PROFILE PLAN SHEET 19
PAVEMENT MARKINGS & SIGNING PLAN SHEET 27
DRAINAGE AND UTILITY PLAN SHEET 45

CONTINUED ON
SHEET NO. 4

END OF PROJECT
PROJ. NO. 613319
STA. 73+12.02
N 2957437.5335
E 677068.0308



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

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TYPICAL SECTIONS

† SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES & AVOID RESOURCE AREA IMPACTS
SEE CROSS SECTIONS FOR MORE INFORMATION
SEE SHARED USE PATH SLOPING DIAGRAM FOR MORE INFORMATION REGARDING CROSS SLOPE DIRECTION

PAVEMENT NOTES:

- PROPOSED SHARED-USE PATH**
SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE - 9.5 (SSC - 9.5)
INTERMEDIATE: 2-1/2" SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0)
SUBBASE: 4" to 8" GRAVEL BORROW, TYPE b (FOR LEVELING)
 OVER RESHAPED EXISTING RAILROAD BALLAST
- PROPOSED PARKING LOT FULL DEPTH PAVEMENT**
SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE - POLYMER (SSC - 12.5 - P) - OVER
BASE: 2-1/2" SUPERPAVE INTERMEDIATE COURSE (SIC - 19.0) - OVER
FOUNDATION: 8" GRAVEL BORROW, TYPE b

- PROPOSED CEMENT CONCRETE WALK, REST AREA & PEDESTRIAN CURB RAMP**
SURFACE: 4" CEMENT CONCRETE
 AIR ENTRAINED 4000 PSI, 3/4", 610
SUBBASE: 8" GRAVEL BORROW, TYPE b

- PROPOSES PAVEMENT MILLING & OVERLAY - BOSTON POST ROAD (ROUTE 20)**
 2" PAVEMENT MILLING
 2" SUPERPAVE SURFACE COURSE - POLYMER (SSC - 12.5 - P)

- PROPOSED HOT MIX ASPHALT SIDEWALK & DRIVEWAY**
SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE (SSC - 9.5) - OVER
 2-1/2" SUPERPAVE INTERMEDIATE COURSE (SIC - 12.5)
FOUNDATION: 8" GRAVEL BORROW, TYPE b

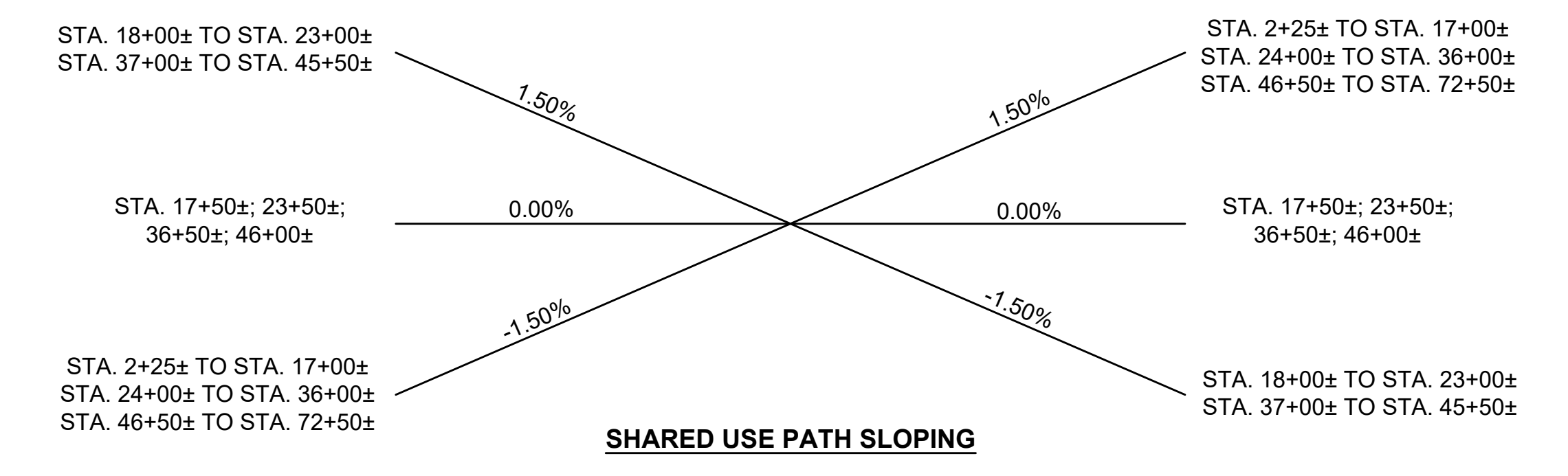
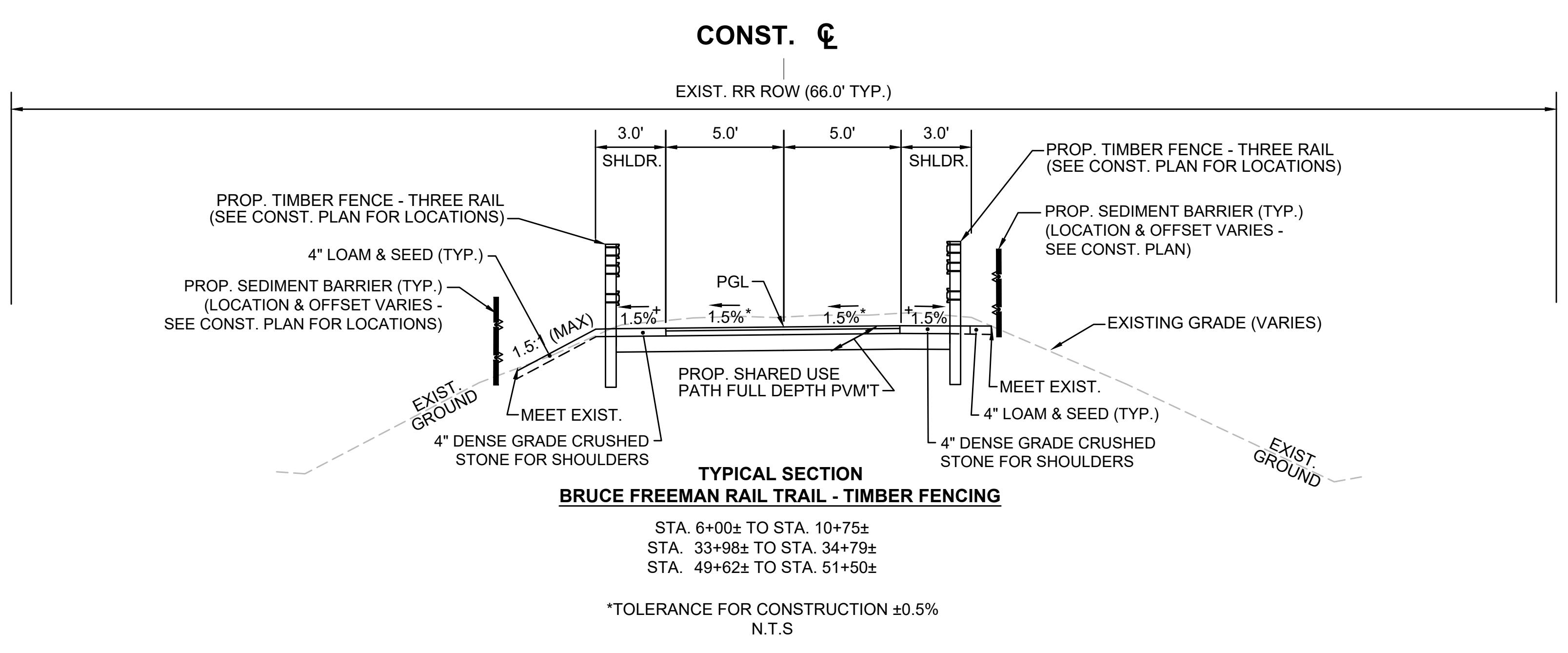
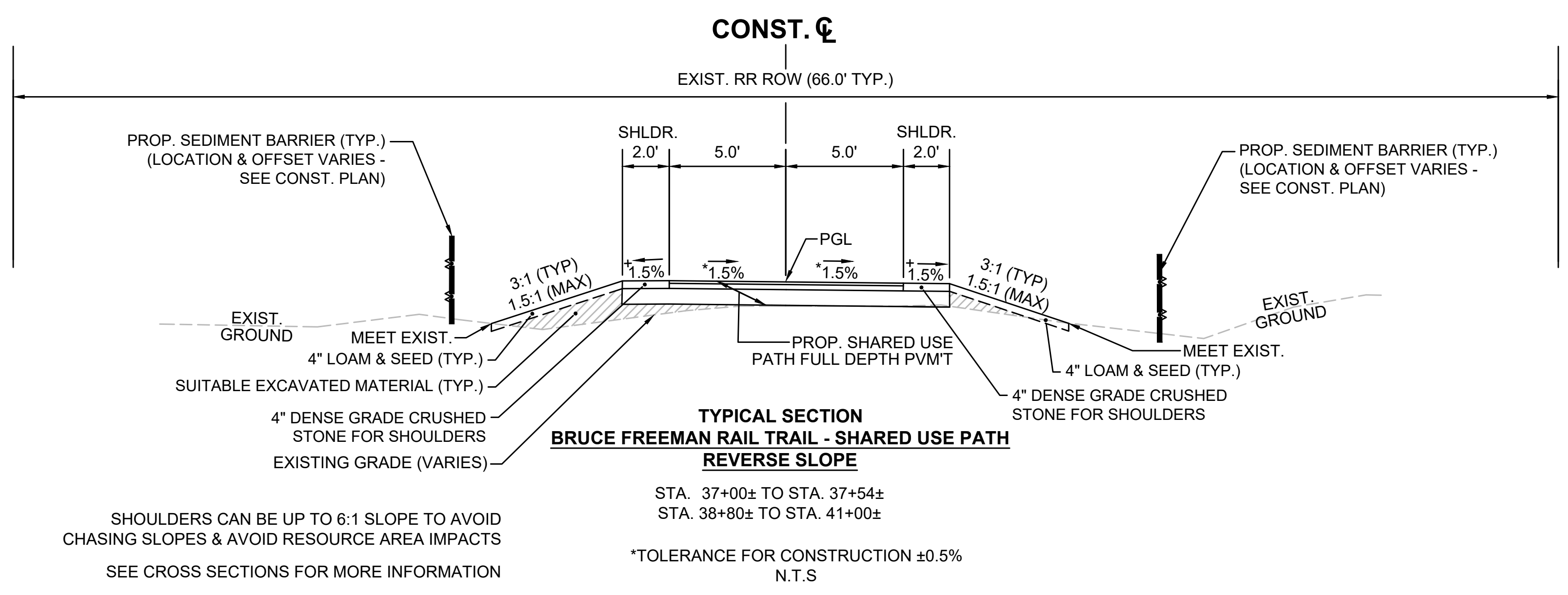
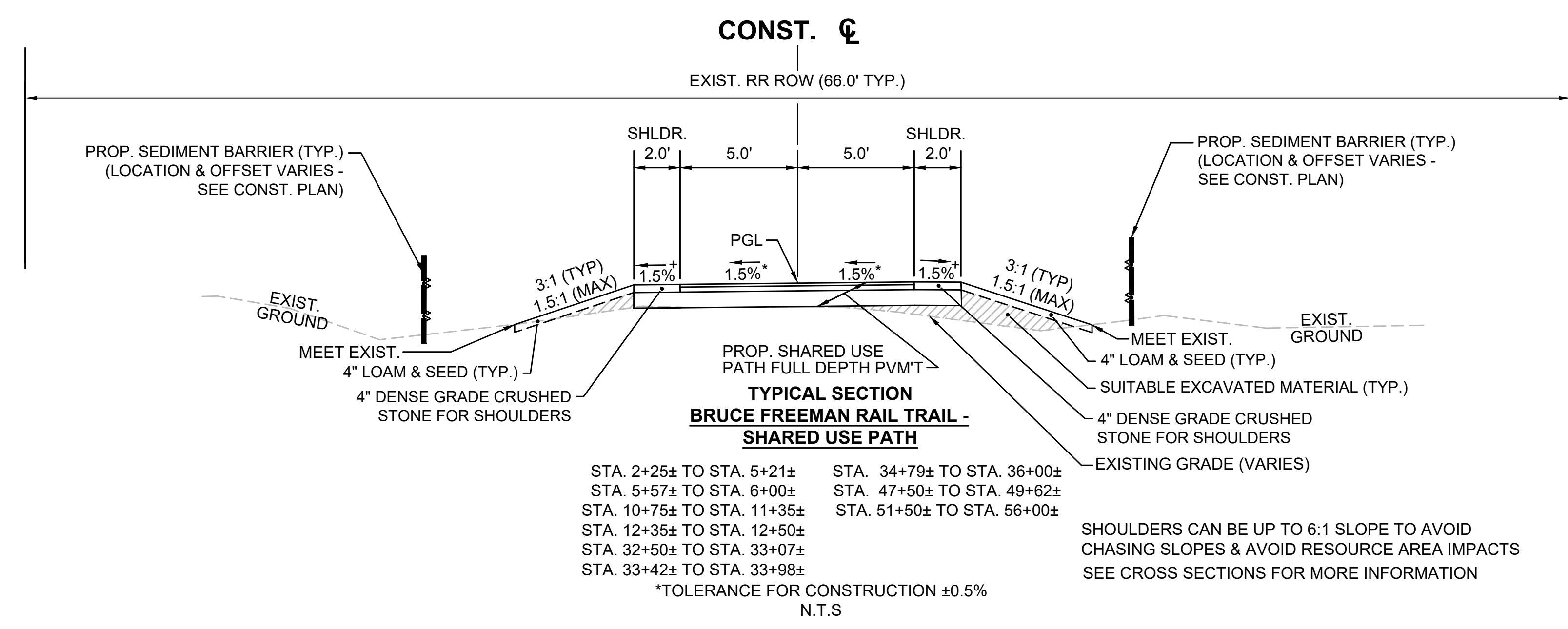
NOTES: EXIST. GRAVEL/BALLAST SUBGROUND MATERIAL DETERMINED BY THE ENGINEER TO BE SUITABLE SHALL REMAIN. THE DEPTH OF THE GRAVEL BORROW WILL BE AS REQUIRED BASED ON THE PROPOSED SUB-BASE ELEVATIONS.

AFTER REMOVAL OF STEEL RAILS AND WOOD TIMBER, ROUGH GRADE AND COMPACT SUBGROUND AREA. THEN PLACE AND COMPACT GRAVEL BORROW SUB-BASE MATERIAL IN MULTIPLE LIFTS.

ASPHALT EMULSION FOR TACK COAT AND HMA JOINT SEALANT SHALL BE APPLIED PER SECTION 450 QA OF THE SPECIAL PROVISIONS.

HMA FOR PATCHING SHALL BE USED FOR ALL PERMANENT, PARTIAL, AND FULL DEPTH PAVEMENT REPAIRS OF UNSOUND PAVEMENT PER SECTION 450 IN AREAS OUTSIDE OF PROPOSED FULL DEPTH RECLAMATION OR RECONSTRUCTION ROADWAY AREAS.

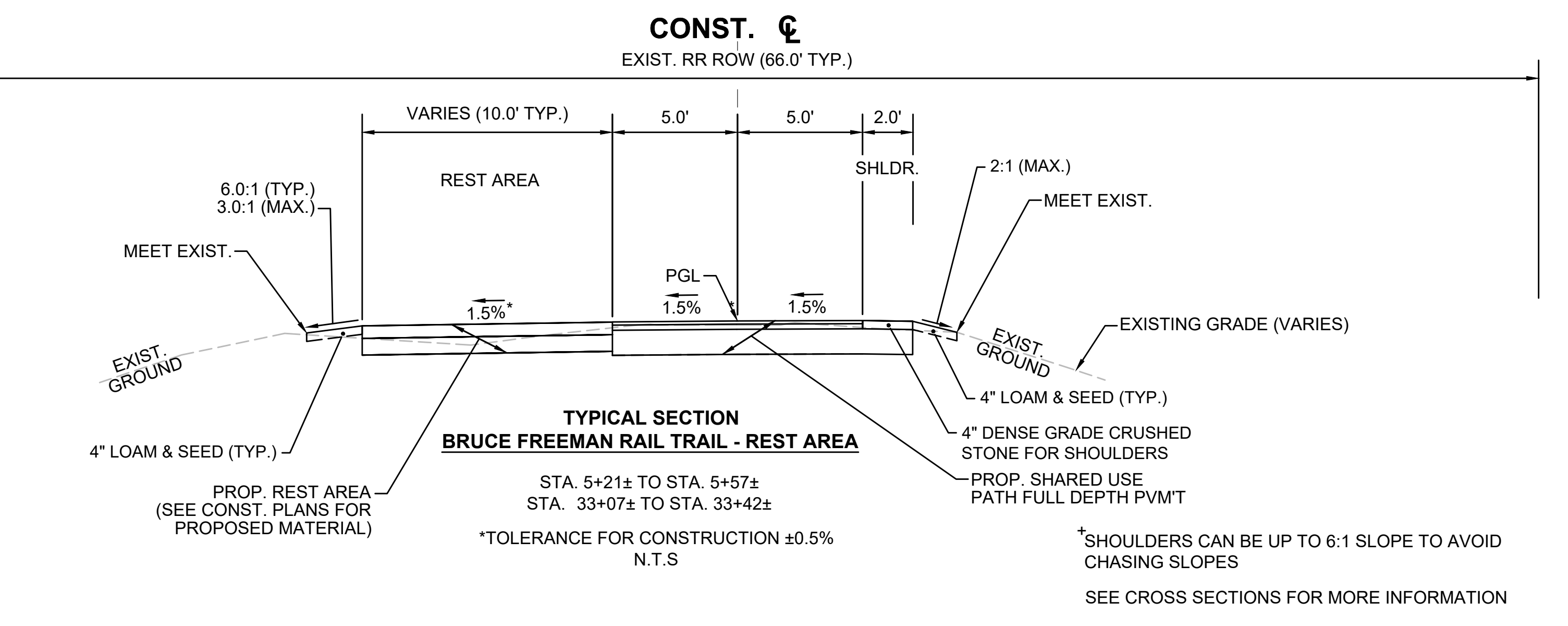
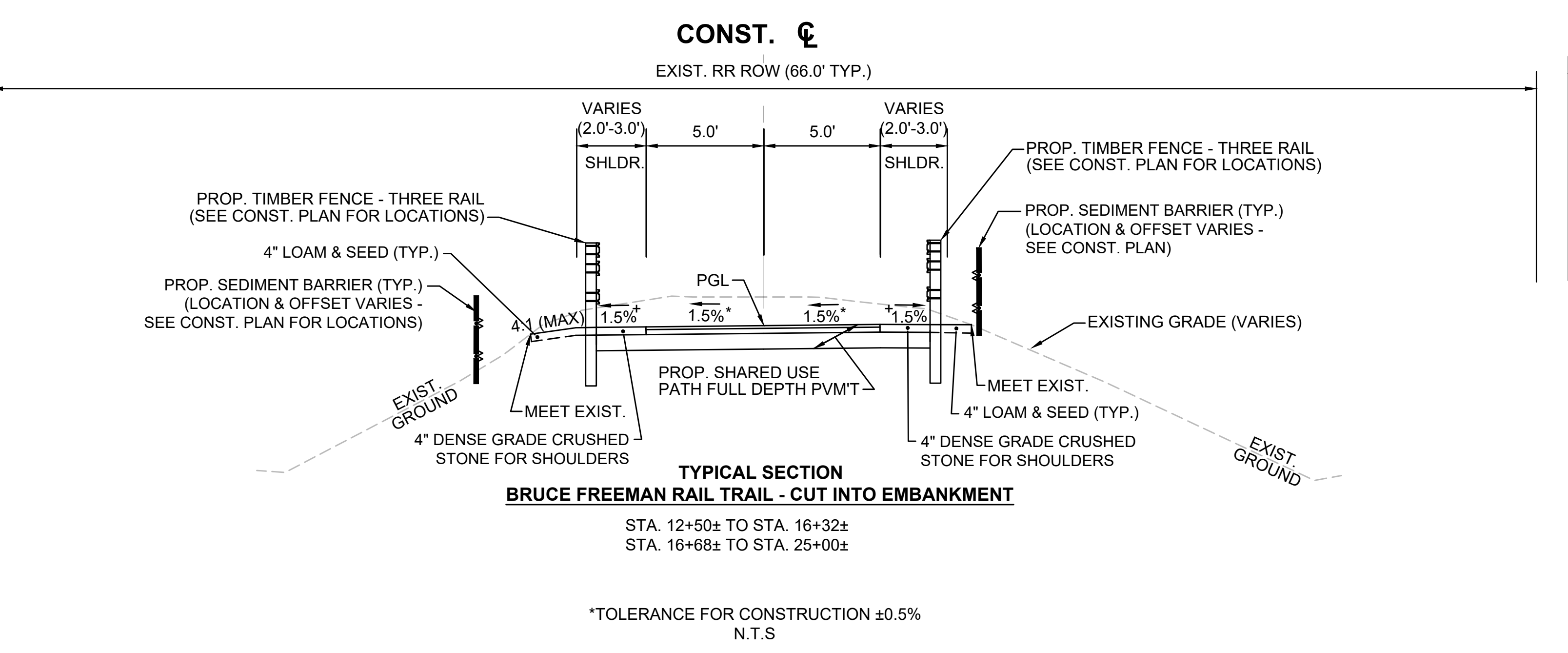
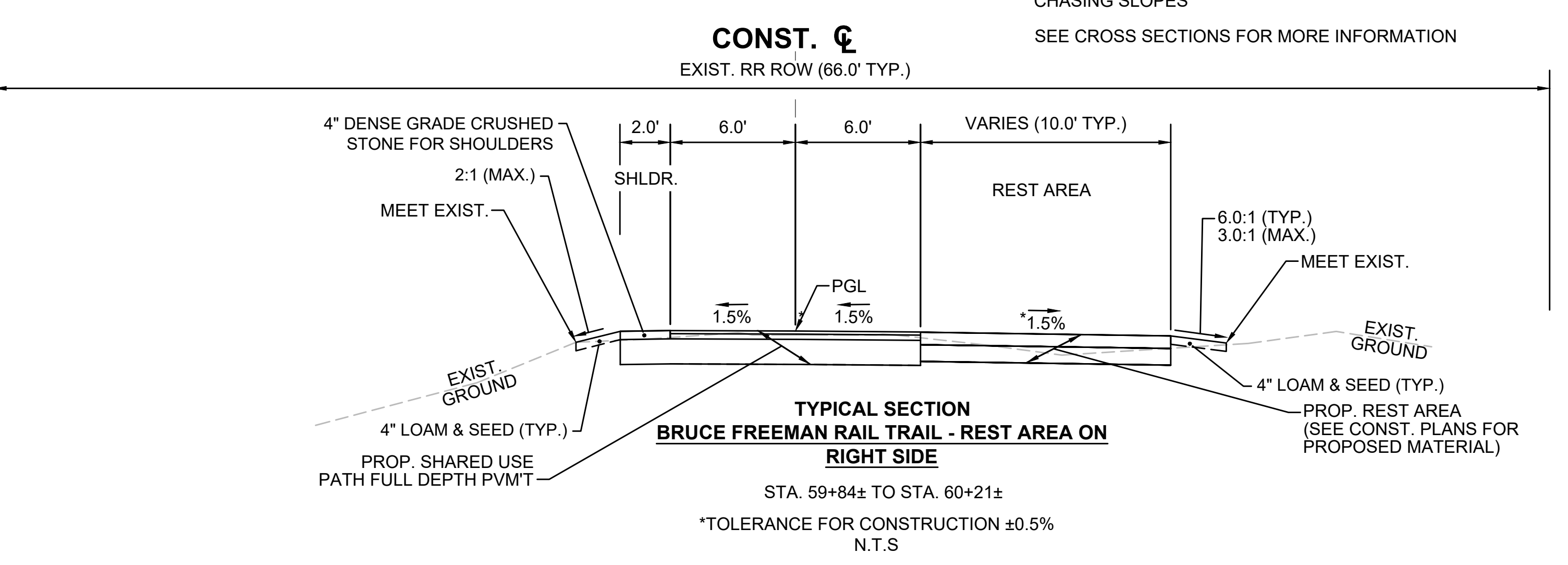
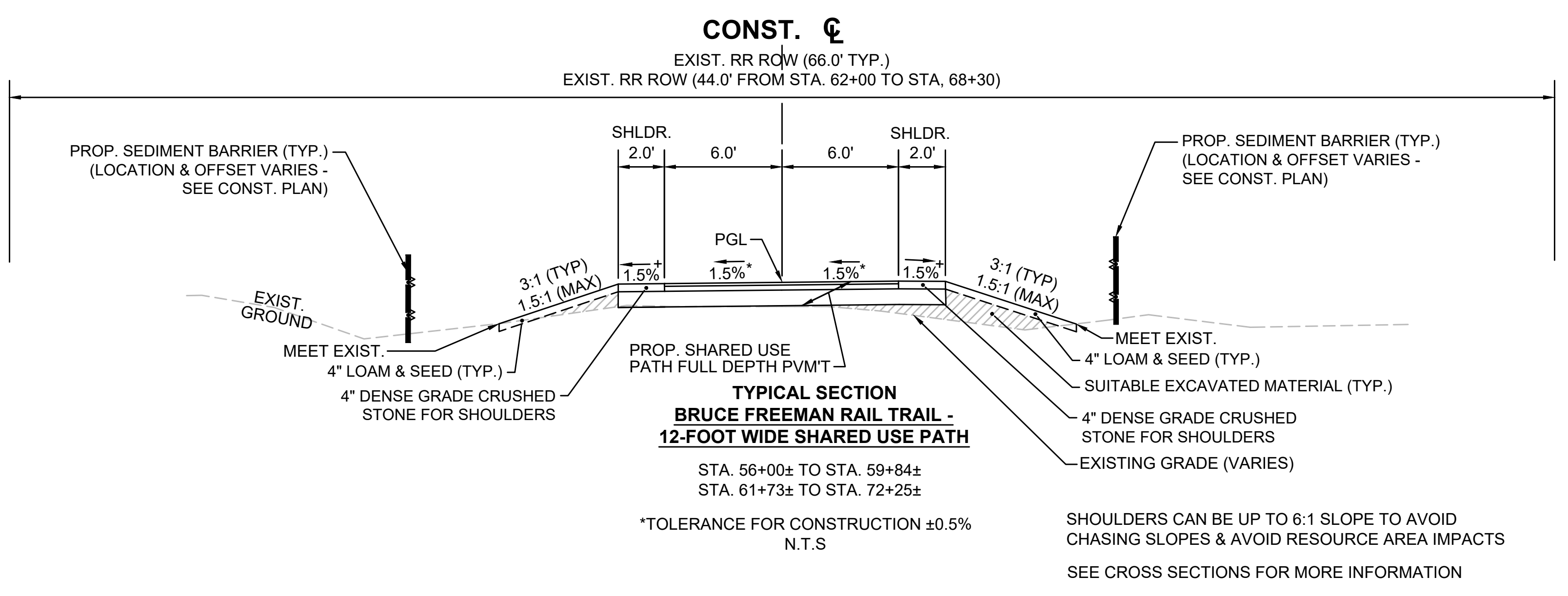
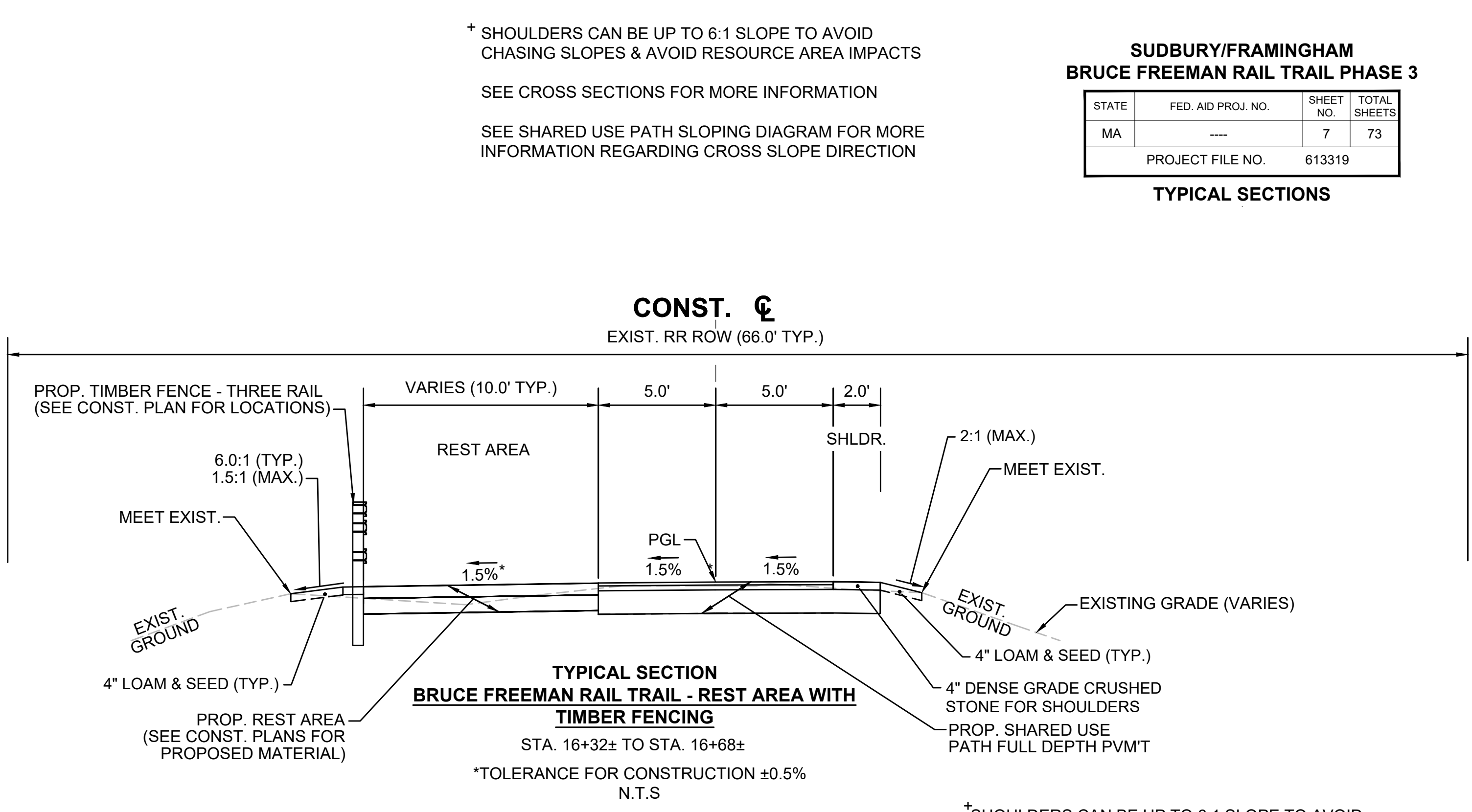
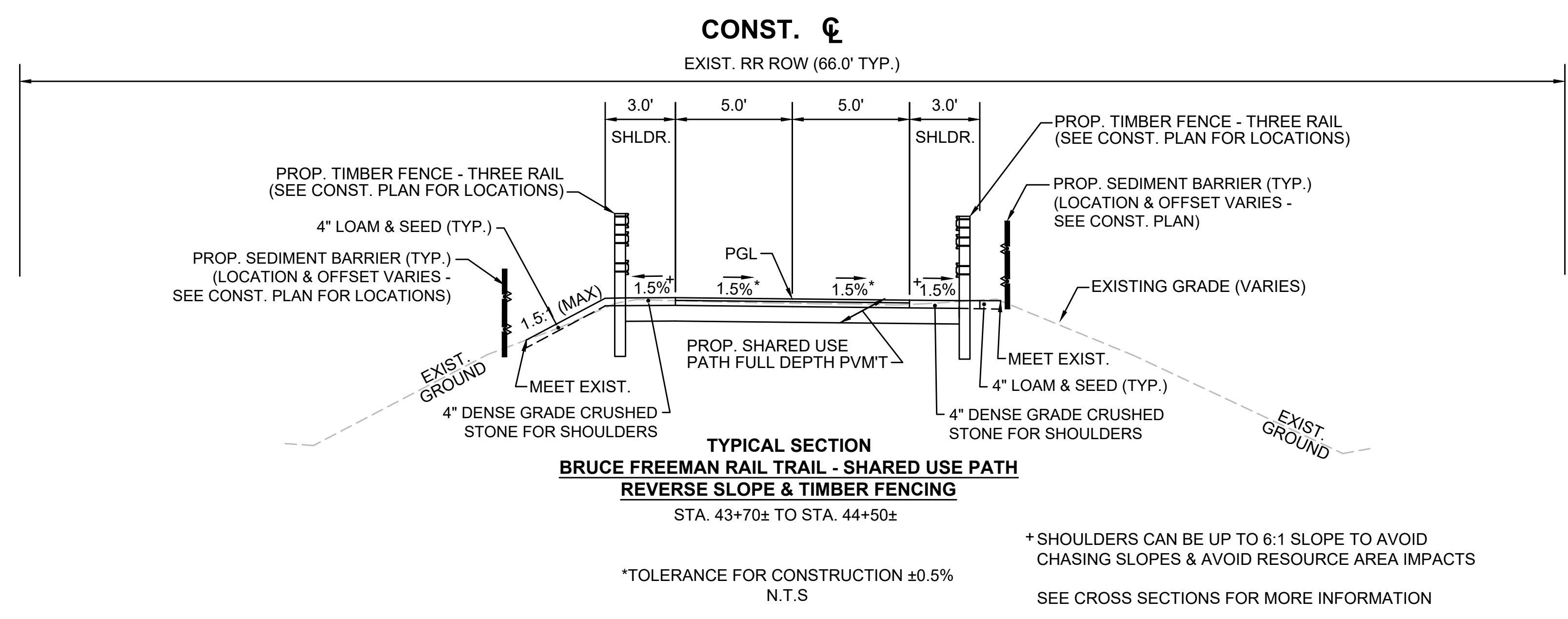
HMA FOR MISCELLANEOUS WORK SHALL BE USED FOR ALL TEMPORARY CONSTRUCTION, TAPER RAMPS, CURB CUT RAMPS, TEMPORARY TRENCH REPAIR, ETC.



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	7	73
PROJECT FILE NO.		613319	

TYPICAL SECTIONS



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

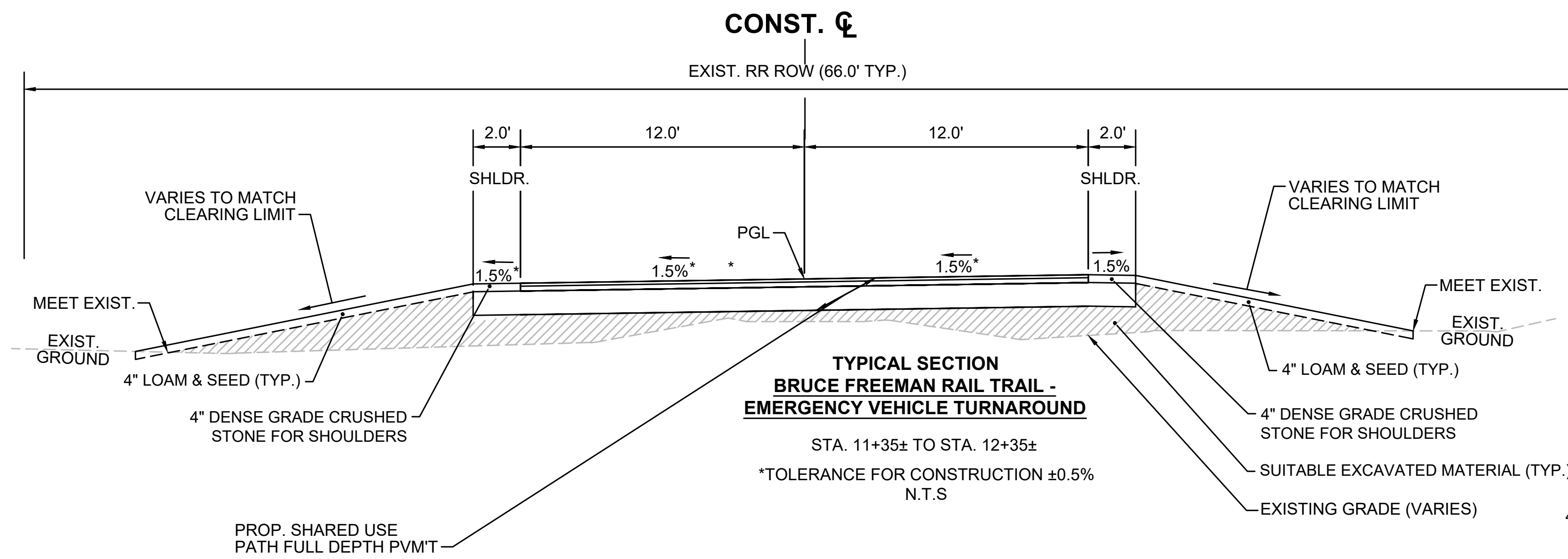
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	8	73
PROJECT FILE NO.		613319	

TYPICAL SECTIONS

* SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES & AVOID RESOURCE AREA IMPACTS

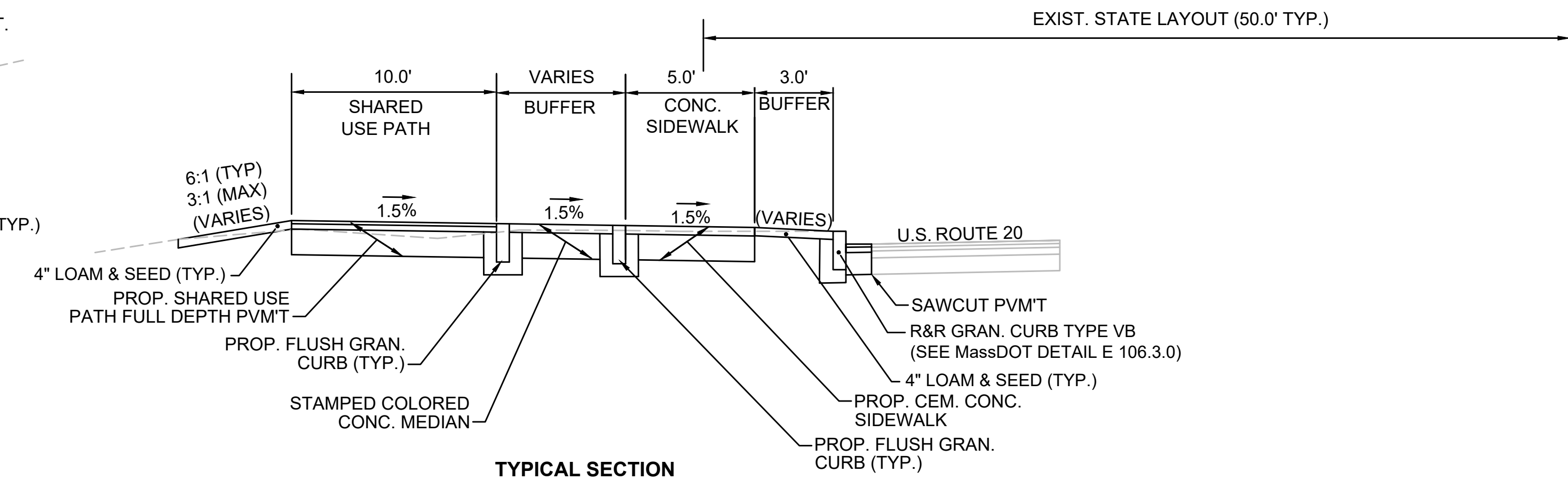
SEE CROSS SECTIONS FOR MORE INFORMATION

SEE SHARED USE PATH SLOPING DIAGRAM FOR MORE INFORMATION REGARDING CROSS SLOPE DIRECTION



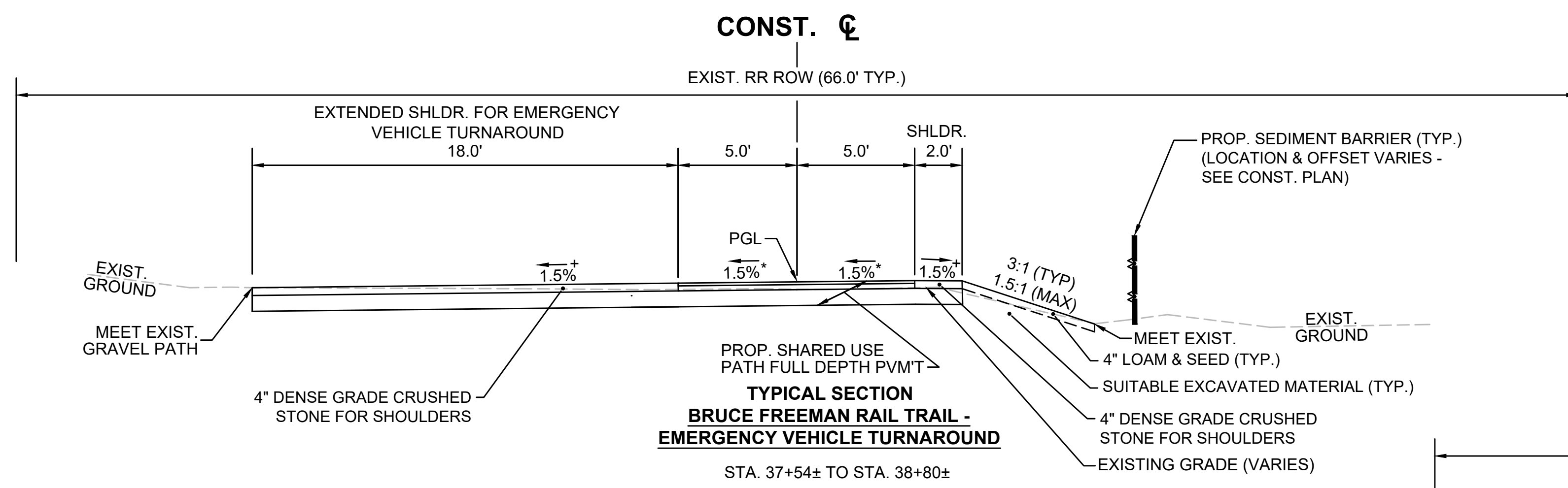
**TYPICAL SECTION
BRUCE FREEMAN RAIL TRAIL -
EMERGENCY VEHICLE TURNAROUND**

STA. 11+35± TO STA. 12+35±
*TOLERANCE FOR CONSTRUCTION ±0.5%
N.T.S



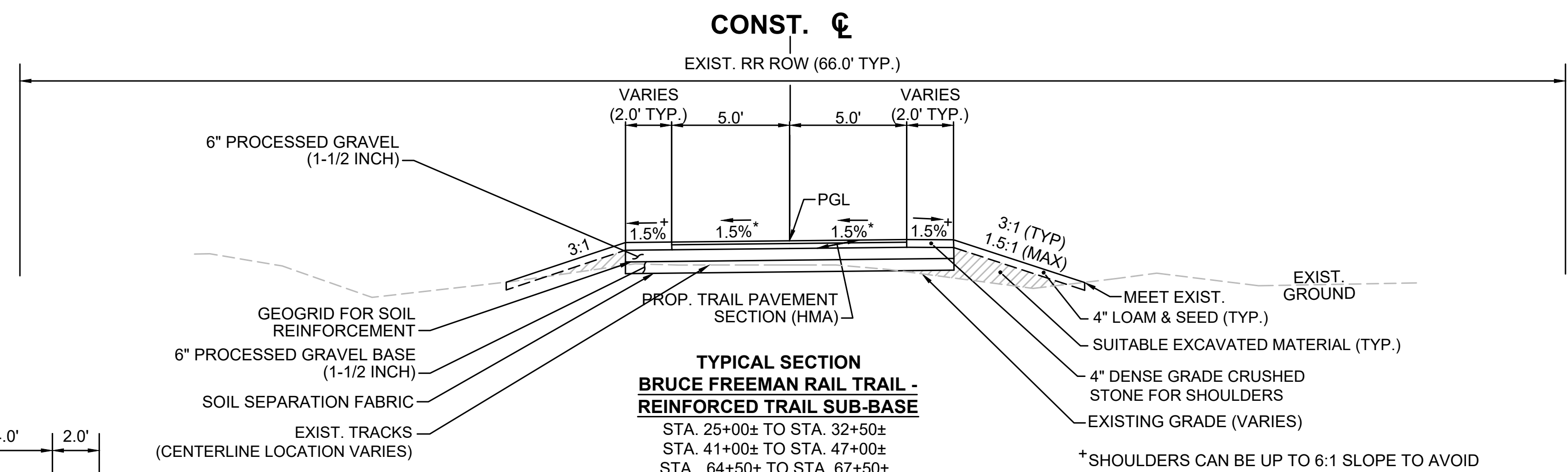
**TYPICAL SECTION
SHARED USE PATH - ADJACENT TO BOSTON POST ROAD ROAD**

STA. 61+00± TO STA. 61+73±
* TOLERANCE FOR CONSTRUCTION ±0.5%
N.T.S



**TYPICAL SECTION
BRUCE FREEMAN RAIL TRAIL -
EMERGENCY VEHICLE TURNAROUND**

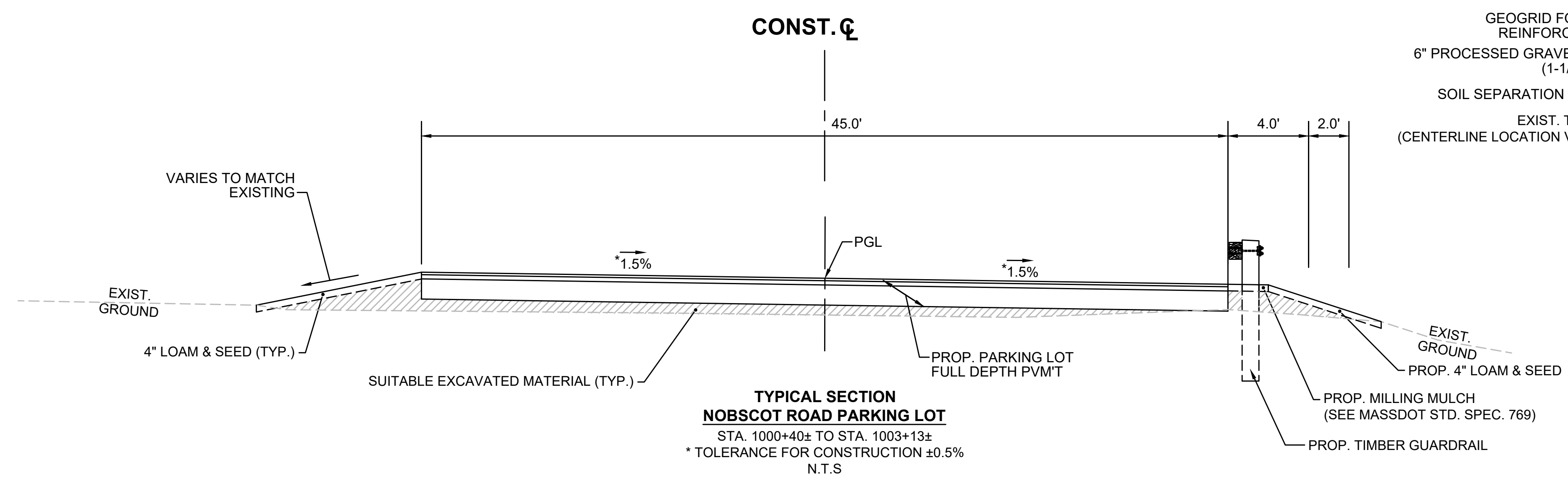
STA. 37+54± TO STA. 38+80±



**TYPICAL SECTION
BRUCE FREEMAN RAIL TRAIL -
REINFORCED TRAIL SUB-BASE**

STA. 25+00± TO STA. 32+50±
STA. 41+00± TO STA. 47+00±
STA. 64+50± TO STA. 67+50±
*TOLERANCE FOR CONSTRUCTION ±0.5%
N.T.S

* SHOULDERS CAN BE UP TO 6:1 SLOPE TO AVOID CHASING SLOPES & AVOID RESOURCE AREA IMPACTS
SEE CROSS SECTIONS FOR MORE INFORMATION



**TYPICAL SECTION
NOBSCOT ROAD PARKING LOT**

STA. 1000+40± TO STA. 1003+13±
* TOLERANCE FOR CONSTRUCTION ±0.5%
N.T.S

FENCING DETAILS

TIMBER FENCE (THREE-RAIL) STA. 6+00 TO STA. 10+75 RT
 TIMBER FENCE (THREE-RAIL) STA. 6+00 TO STA. 10+75 LT

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

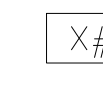
NONE

DRAINAGE DETAILS

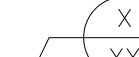
NONE

LEGEND:

PROPOSED PEDESTRIAN CURB
 RAMP DETAIL #



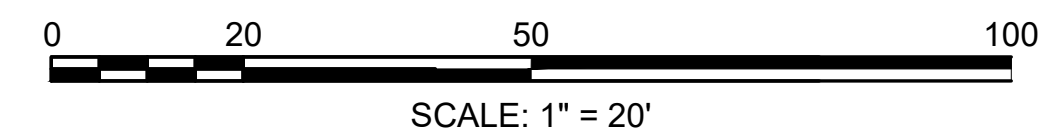
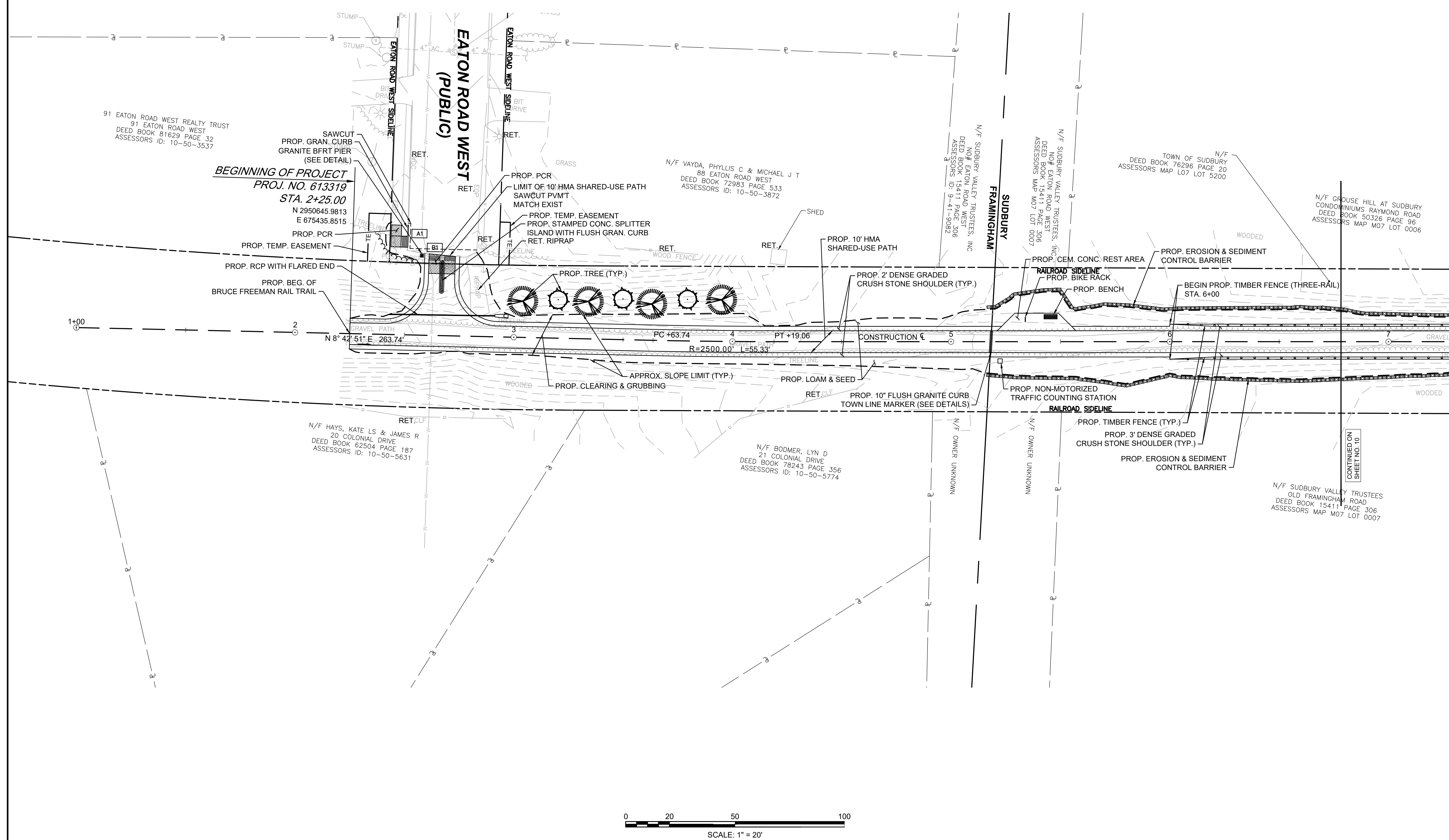
PLANT QUANTITY AND SPECIES



SUDBURY/FRAMINGHAM
 BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	9	73
PROJECT FILE NO.		613319	

CONSTRUCTION PLANS



CONTINUED ON
 SHEET NO. 10

FENCING DETAILS

TIMBER FENCE (THREE-RAIL) STA. 6+00 TO STA. 10+75 RT
 TIMBER FENCE (THREE-RAIL) STA. 6+00 TO STA. 10+75 LT
 TIMBER FENCE (THREE-RAIL) STA. 16+32 TO STA. 16+68 LT

HIGHWAY GUARD DETAILS

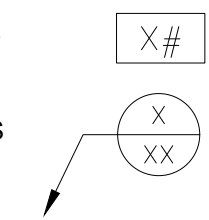
NONE
 TRAFFIC SIGNAL CONDUIT
 NONE

WATER SUPPLY ALTERATIONS

NONE
 DRAINAGE DETAILS
 NONE

LEGEND:

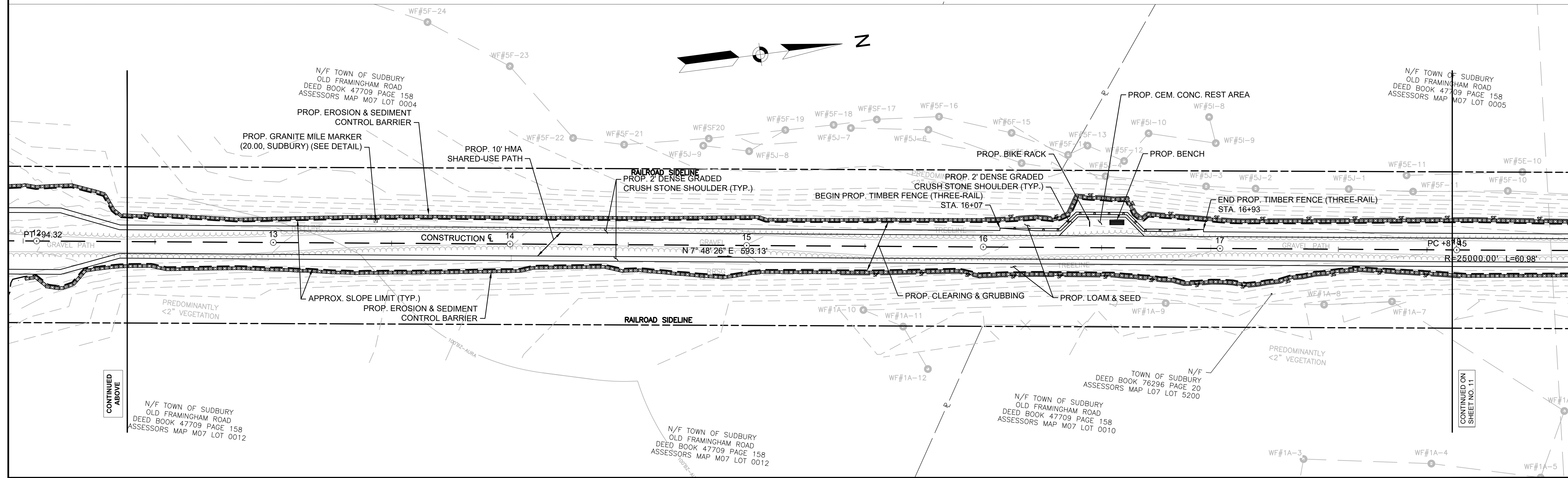
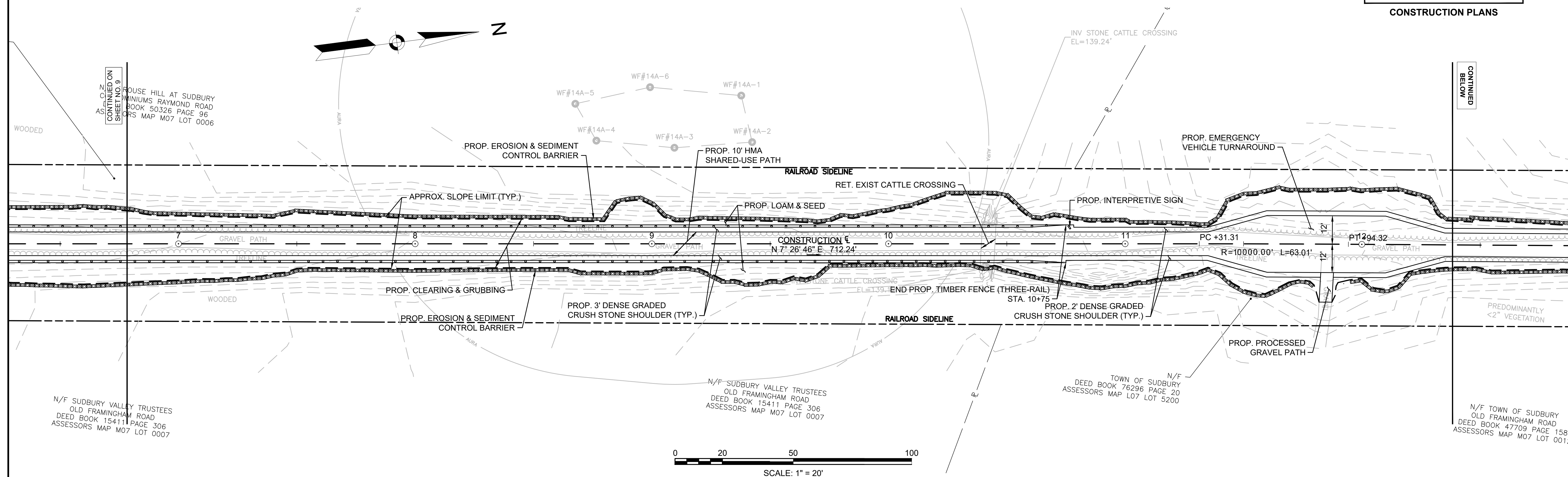
PROPOSED PEDESTRIAN CURB
 RAMP DETAIL #
 PLANT QUANTITY AND SPECIES



**SUDBURY/FRAMINGHAM
 BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	10	73

PROJECT FILE NO. 613319
CONSTRUCTION PLANS



CONTINUED ON SHEET NO. 9

CONTINUED BELOW

CONTINUED ABOVE

CONTINUED ON SHEET NO. 11

FENCING DETAILS

TIMBER FENCE (THREE-RAIL) STA. 21+00 TO STA. 31+50 RT
 TIMBER FENCE (THREE-RAIL) STA. 21+50 TO STA. 31+50 LT

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

NONE

LEGEND:

PROPOSED PEDESTRIAN CURB
 RAMP DETAIL #

X#

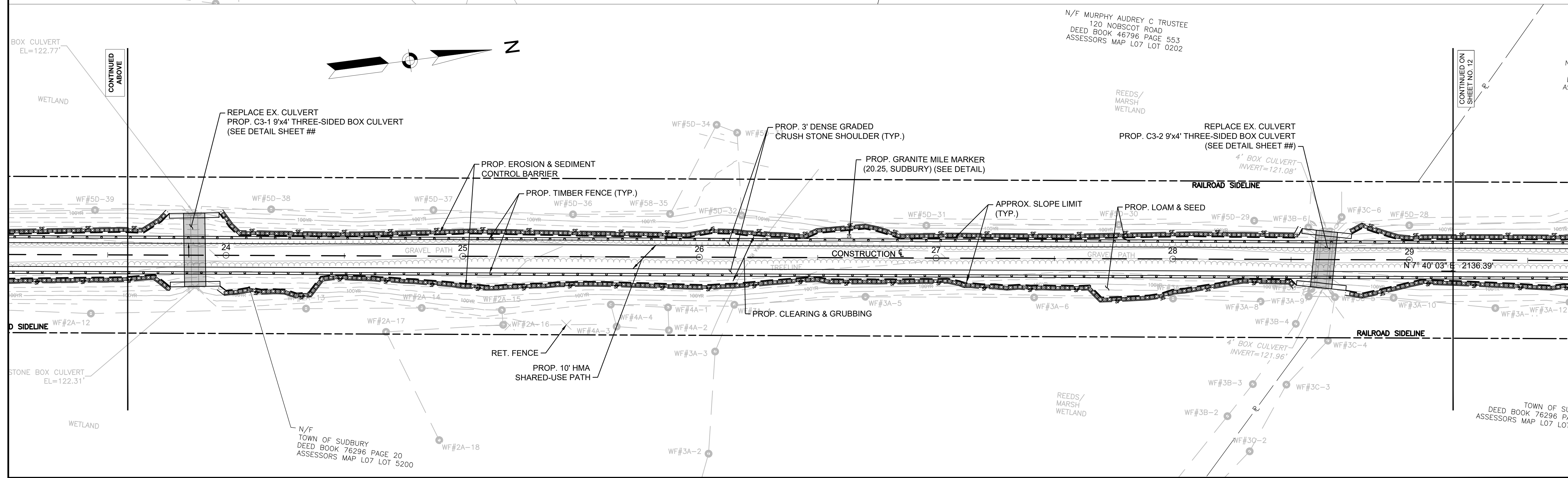
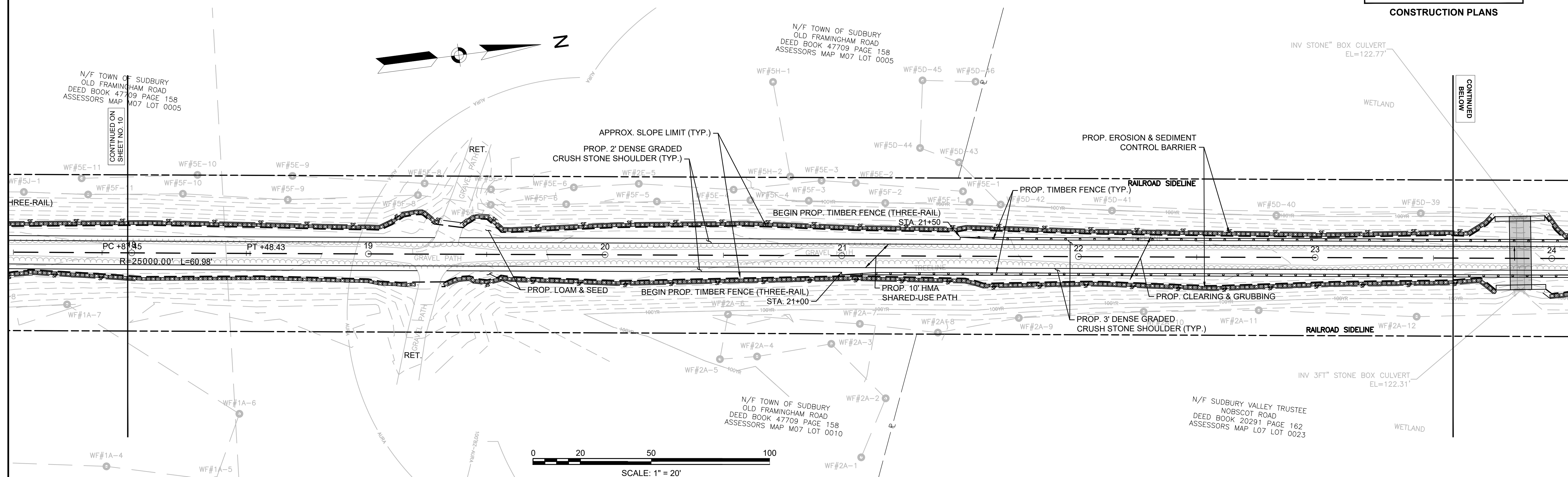
PLANT QUANTITY AND SPECIES

XX

**SUDBURY/FRAMINGHAM
 BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	11	73
PROJECT FILE NO.		613319	

CONSTRUCTION PLANS



FENCING DETAILS

TIMBER FENCE (THREE-RAIL) STA. 21+00 TO STA. 31+50 RT
 TIMBER FENCE (THREE-RAIL) STA. 21+50 TO STA. 31+50 LT
 TIMBER FENCE (THREE-RAIL) STA. 33+98 TO STA. 34+79 RT
 TIMBER FENCE (THREE-RAIL) STA. 33+98 TO STA. 34+79 LT
 TIMBER FENCE (THREE-RAIL) STA. 37+00 TO STA. 38+22 RT
 TIMBER FENCE (THREE-RAIL) STA. 38+40 TO STA. 39+50 RT

HIGHWAY GUARD DETAILS

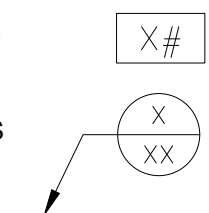
NONE
 TRAFFIC SIGNAL CONDUIT
 NONE

WATER SUPPLY ALTERATIONS

NONE
 DRAINAGE DETAILS
 NONE

LEGEND:

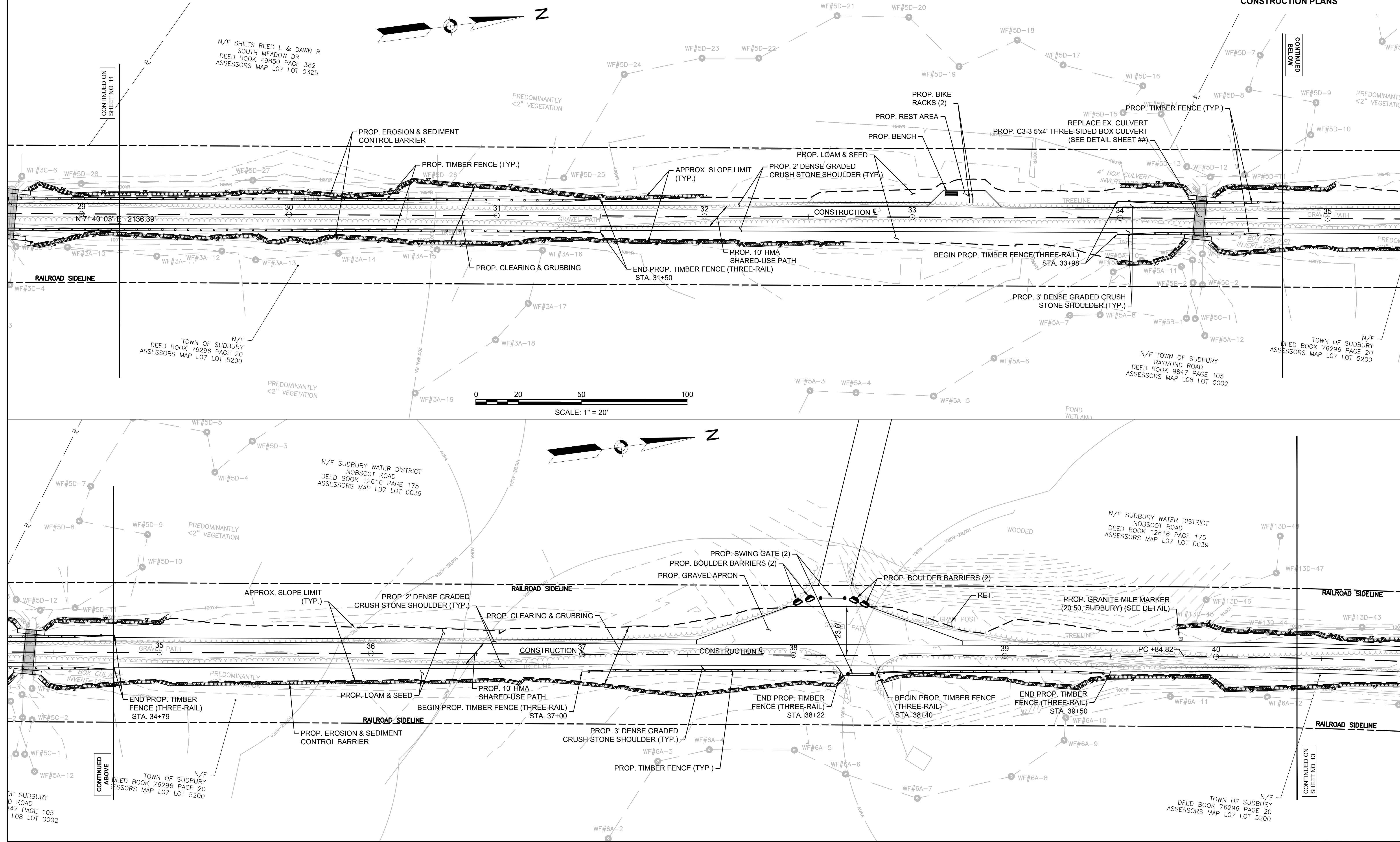
PROPOSED PEDESTRIAN CURB
 RAMP DETAIL #
 PLANT QUANTITY AND SPECIES



**SUDBURY/FRAMINGHAM
 BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	12	73
PROJECT FILE NO.		613319	

CONSTRUCTION PLANS

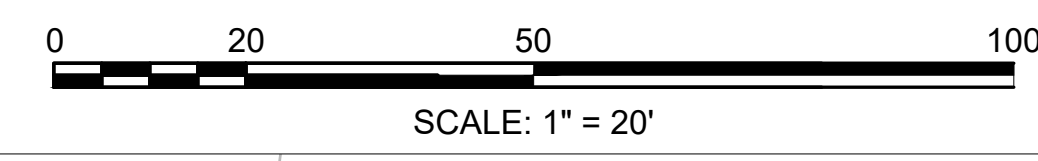
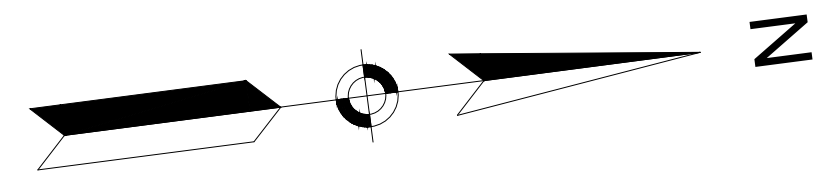
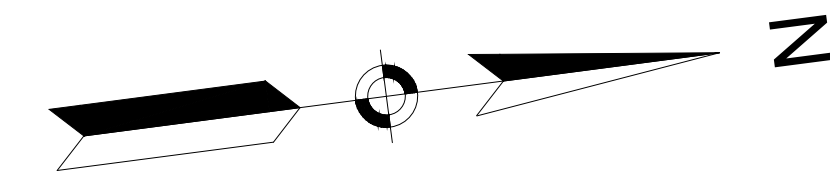


CONTINUED ON
 SHEET NO. 11

CONTINUED
 BELOW

CONTINUED
 ABOVE

CONTINUED ON
 SHEET NO. 13



N/F SHILTS REED L & DAWN R
 SOUTH MEADOW DR
 DEED BOOK 49850 PAGE 382
 ASSESSORS MAP L07 LOT 0325

N/F TOWN OF SUDBURY
 DEED BOOK 76296 PAGE 20
 ASSESSORS MAP L07 LOT 5200

N/F SUDBURY WATER DISTRICT
 NOBSCOT ROAD
 DEED BOOK 12616 PAGE 175
 ASSESSORS MAP L07 LOT 0039

N/F SUDBURY WATER DISTRICT
 NOBSCOT ROAD
 DEED BOOK 12616 PAGE 175
 ASSESSORS MAP L07 LOT 0039

N/F TOWN OF SUDBURY
 DEED BOOK 76296 PAGE 20
 ASSESSORS MAP L07 LOT 5200

N/F TOWN OF SUDBURY
 DEED BOOK 76296 PAGE 20
 ASSESSORS MAP L07 LOT 5200

FENCING DETAILS

TIMBER FENCE (THREE-RAIL) STA. 43+70 TO STA. 44+50 RT
 TIMBER FENCE (THREE-RAIL) STA. 43+70 TO STA. 44+50 LT
 TIMBER FENCE (THREE-RAIL) STA. 49+62 TO STA. 50+42 RT
 TIMBER FENCE (THREE-RAIL) STA. 49+62 TO STA. 51+50 LT

HIGHWAY GUARD DETAILS

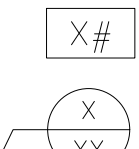
NONE
 TRAFFIC SIGNAL CONDUIT
 NONE

WATER SUPPLY ALTERATIONS

NONE
 DRAINAGE DETAILS
 NONE

LEGEND:

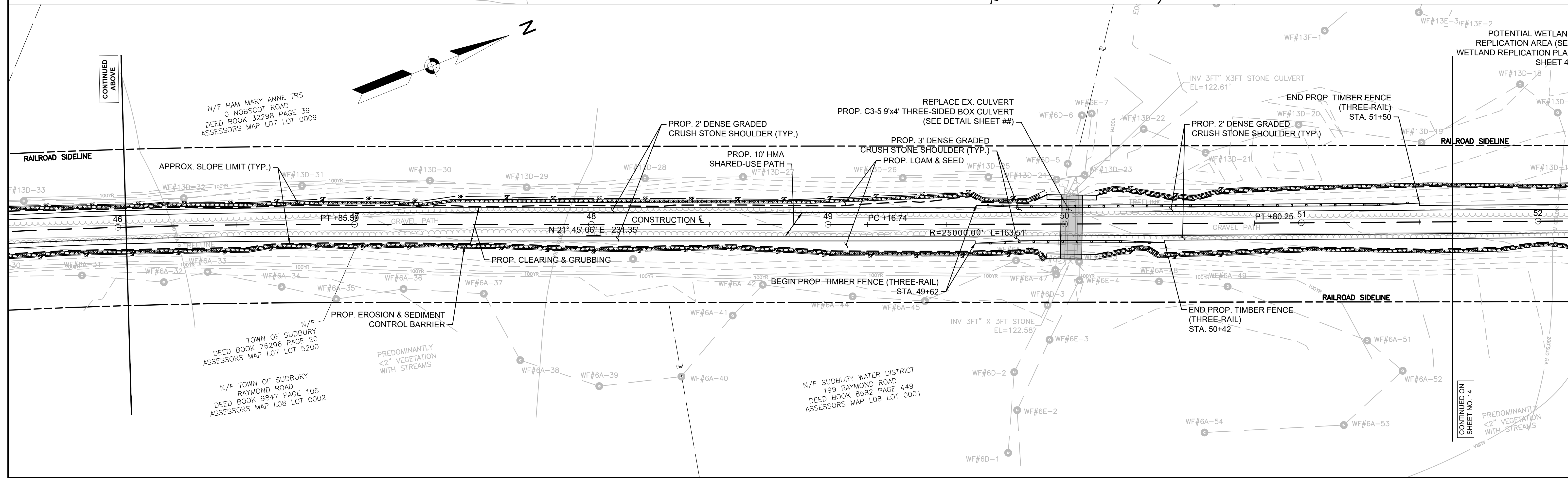
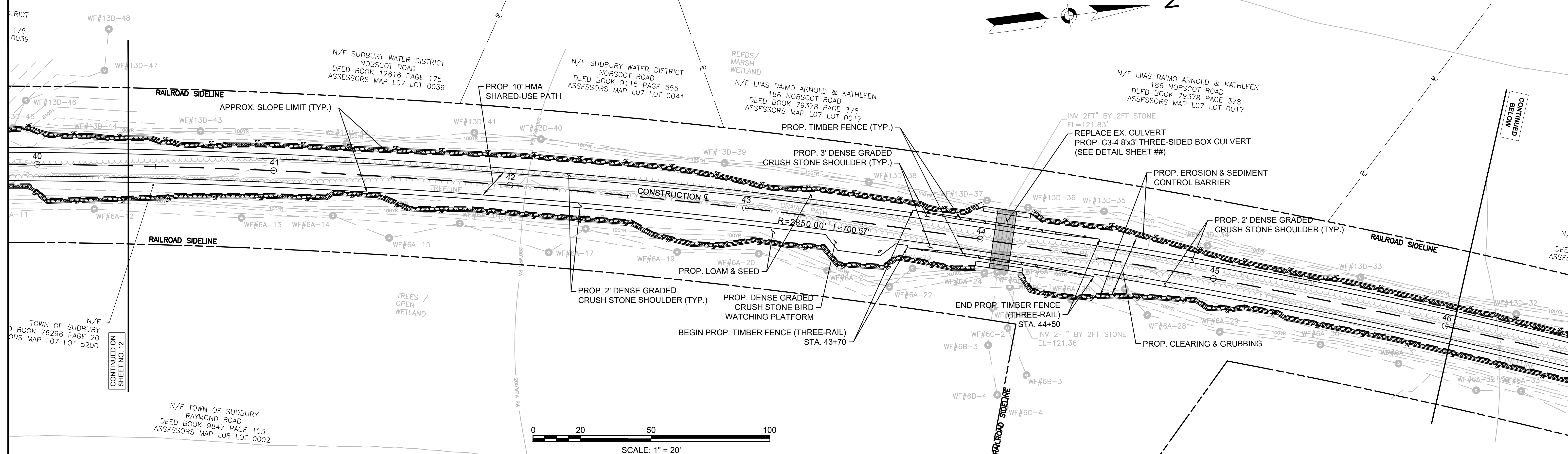
PROPOSED PEDESTRIAN CURB
 RAMP DETAIL #
 PLANT QUANTITY AND SPECIES



**SUDBURY/FRAMINGHAM
 BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	13	73

PROJECT FILE NO. 613319
CONSTRUCTION PLANS



20200785.A30_CONSTRUCTION PLANS.DWG Plotted on 19-Jun-2024 12:36 PM

FENCING DETAILS

NONE

HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

SEE SHEET 43

TRAFFIC SIGNAL CONDUIT

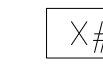
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DRAINAGE DETAILS

SEE SHEET 43

LEGEND:

PROPOSED PEDESTRIAN CURB RAMP DETAIL #



PLANT QUANTITY AND SPECIES

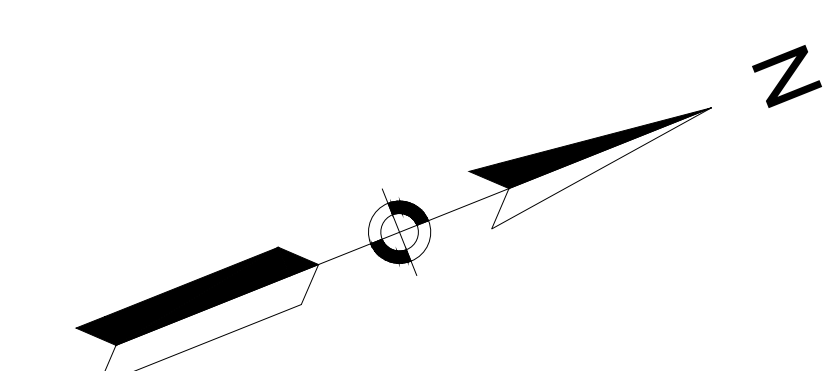
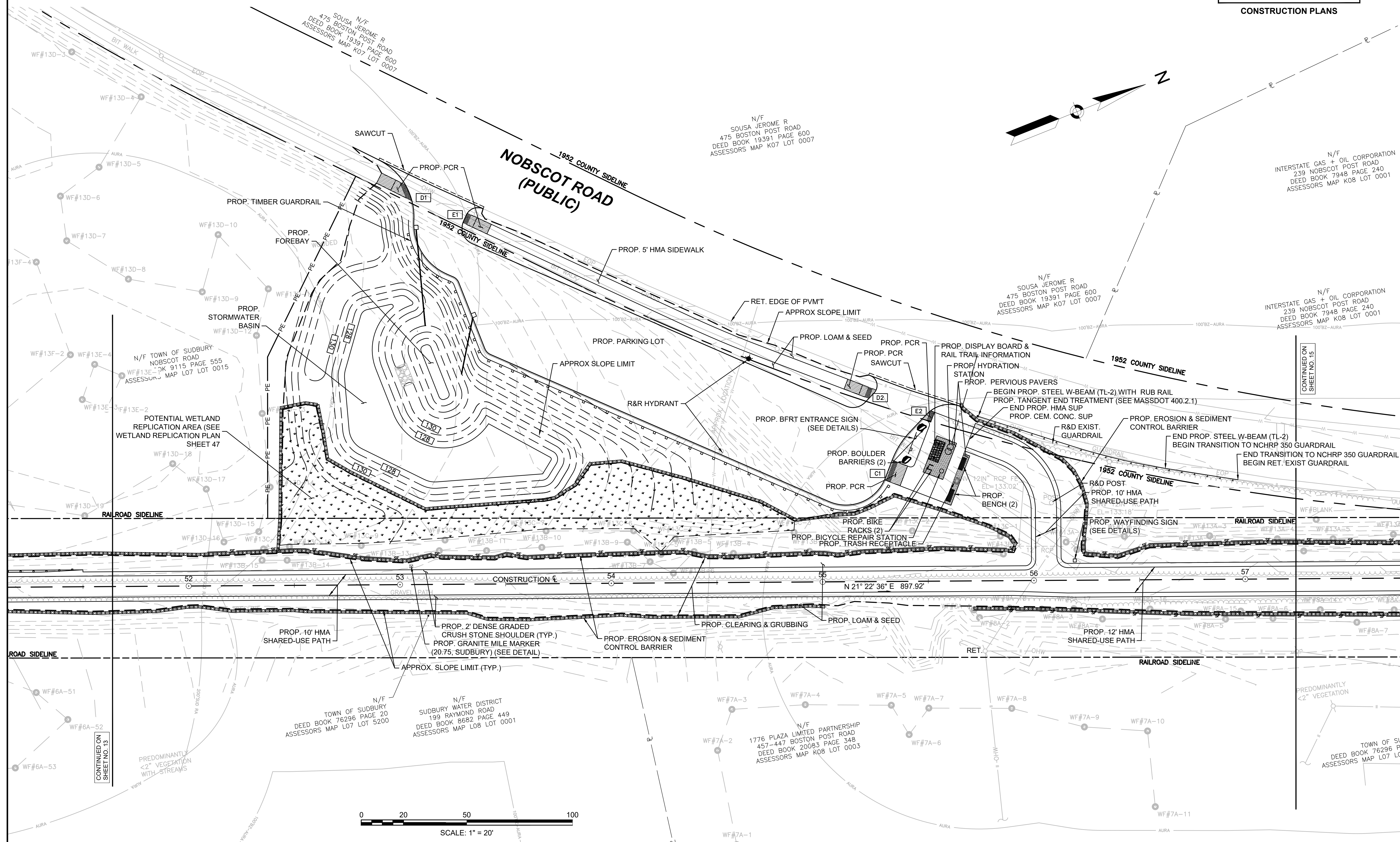


SUDBURY/FRAMINGHAM BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	14	73

PROJECT FILE NO. 613319

CONSTRUCTION PLANS



N/F TOWN OF SUDBURY
NOBSCOT ROAD
DEED BOOK 9K 9115 PAGE 555
ASSESSORS MAP L07 LOT 0015

POTENTIAL WETLAND
REPLICATION AREA (SEE
WETLAND REPLICATION PLAN
SHEET 47)

N/F TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

N/F SUDBURY WATER DISTRICT
199 RAYMOND ROAD
DEED BOOK 8682 PAGE 449
ASSESSORS MAP L08 LOT 0001

N/F 1776 PLAZA LIMITED PARTNERSHIP
457-447 BOSTON POST ROAD
DEED BOOK 20083 PAGE 348
ASSESSORS MAP K08 LOT 0003

N/F INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

CONTINUED ON SHEET NO. 15

CONTINUED ON SHEET NO. 13

FENCING DETAILS

NONE

HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

NONE

TRAFFIC SIGNAL CONDUIT

SEE SHEET 29

DRAINAGE DETAILS

NONE

LEGEND:

PROPOSED PEDESTRIAN CURB

RAMP DETAIL #

X#

PLANT QUANTITY AND SPECIES

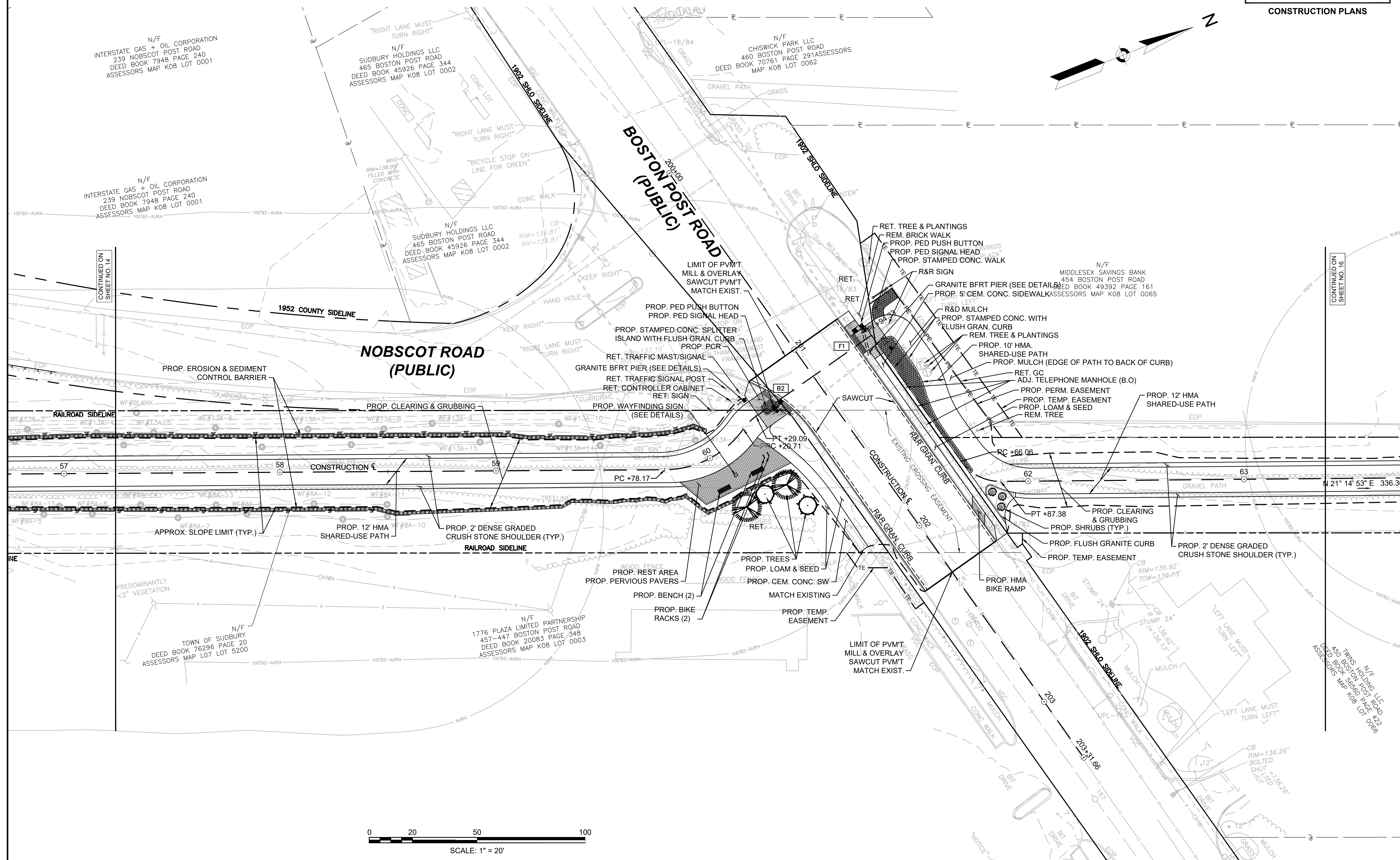
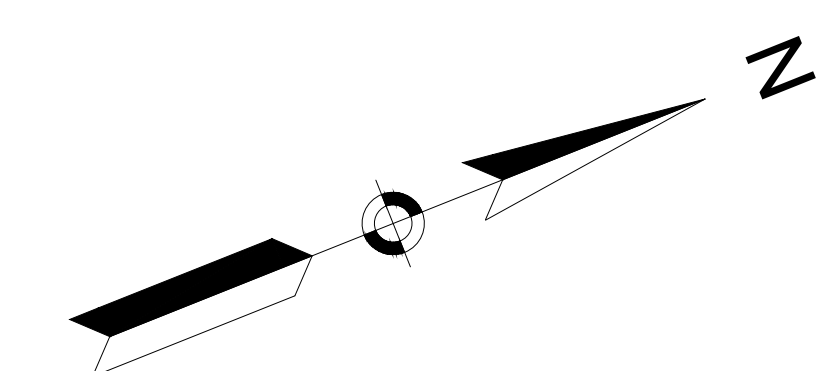
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SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	15	73

PROJECT FILE NO. 613319

CONSTRUCTION PLANS



N/F
INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002

N/F
CHISWICK PARK LLC
460 BOSTON POST ROAD
DEED BOOK 70761 PAGE 291
ASSESSORS MAP K08 LOT 0062

N/F
INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002

N/F
MIDDLESEX SAVINGS BANK
454 BOSTON POST ROAD
DEED BOOK 49392 PAGE 161
ASSESSORS MAP K08 LOT 0065

N/F
TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

N/F
1776 PLAZA LIMITED PARTNERSHIP
457-447 BOSTON POST ROAD
DEED BOOK 20083 PAGE 348
ASSESSORS MAP K08 LOT 0003

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002



CONTINUED ON
SHEET NO. 14

CONTINUED ON
SHEET NO. 16

FENCING DETAILS

TIMBER FENCE (THREE-RAIL) STA. 65+50 TO STA. 70+50 RT

HIGHWAY GUARD DETAILS

NONE

WATER SUPPLY ALTERATIONS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

DRAINAGE DETAILS

NONE

LEGEND:

PROPOSED PEDESTRIAN CURB

RAMP DETAIL #

PLANT QUANTITY AND SPECIES

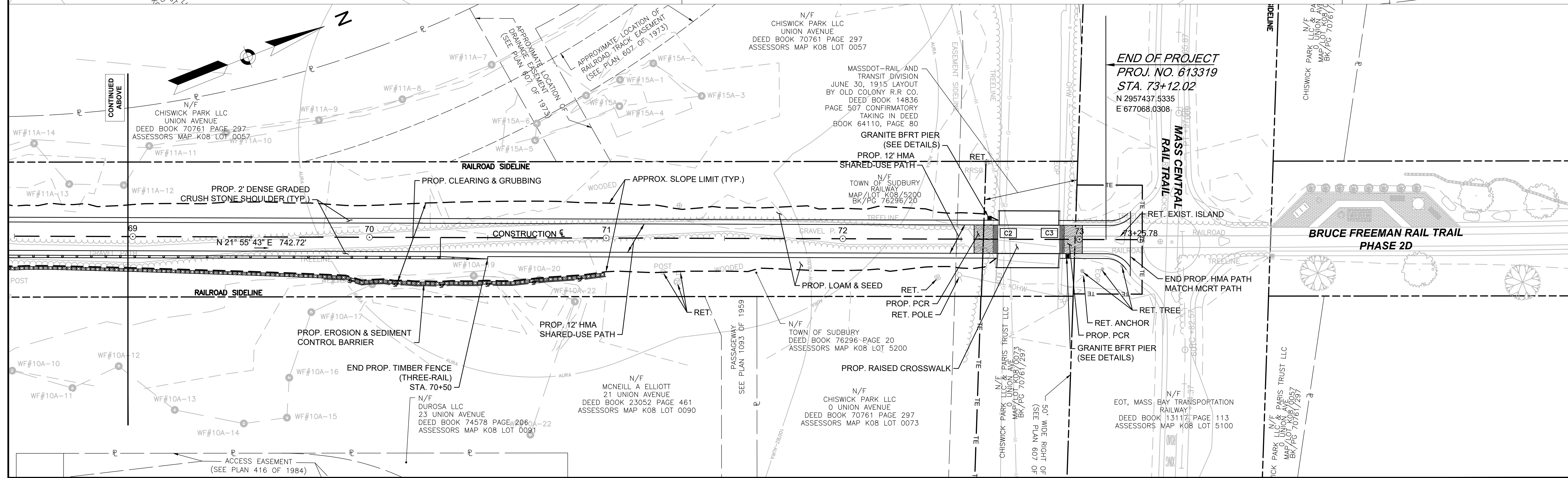
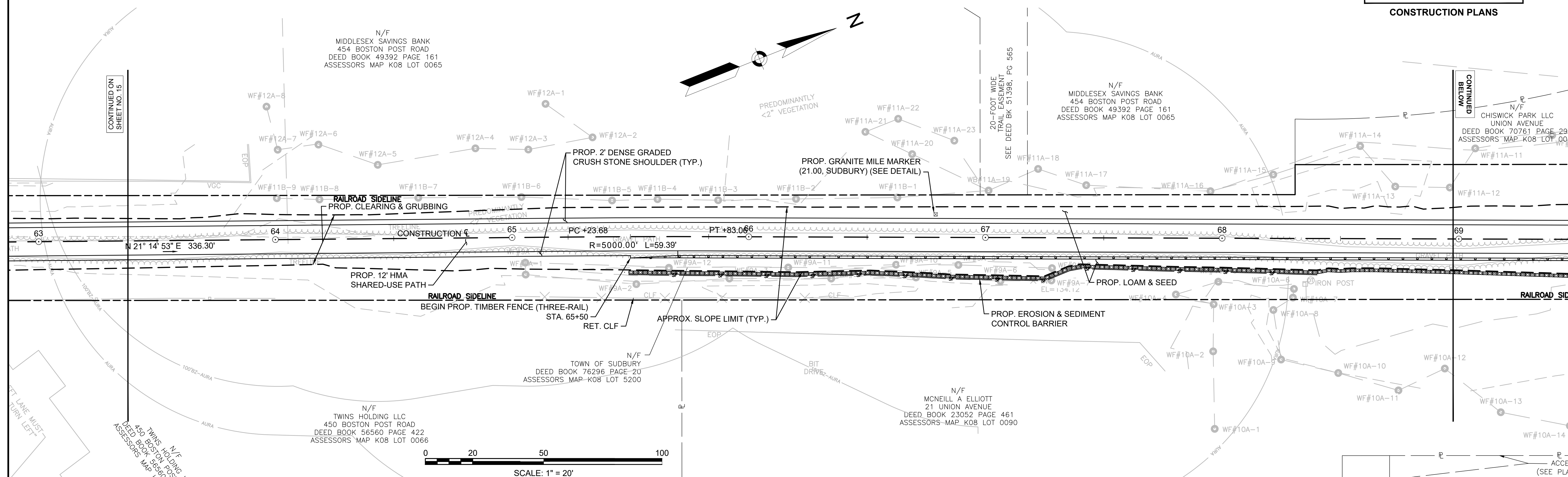
X#

XX

SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	16	73
PROJECT FILE NO.		613319	

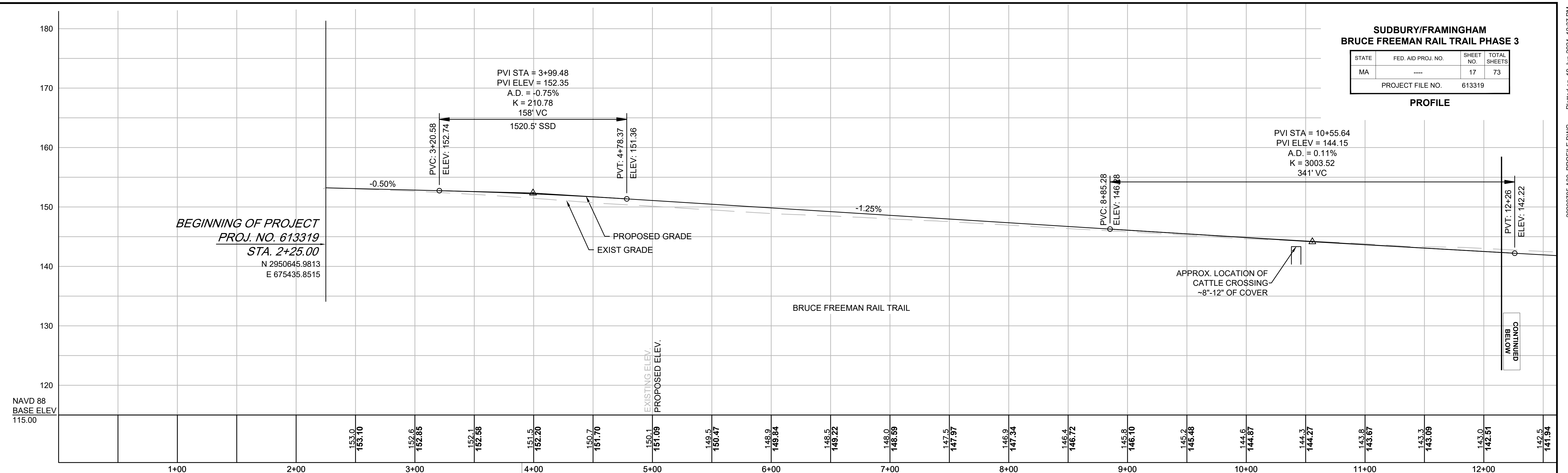
CONSTRUCTION PLANS



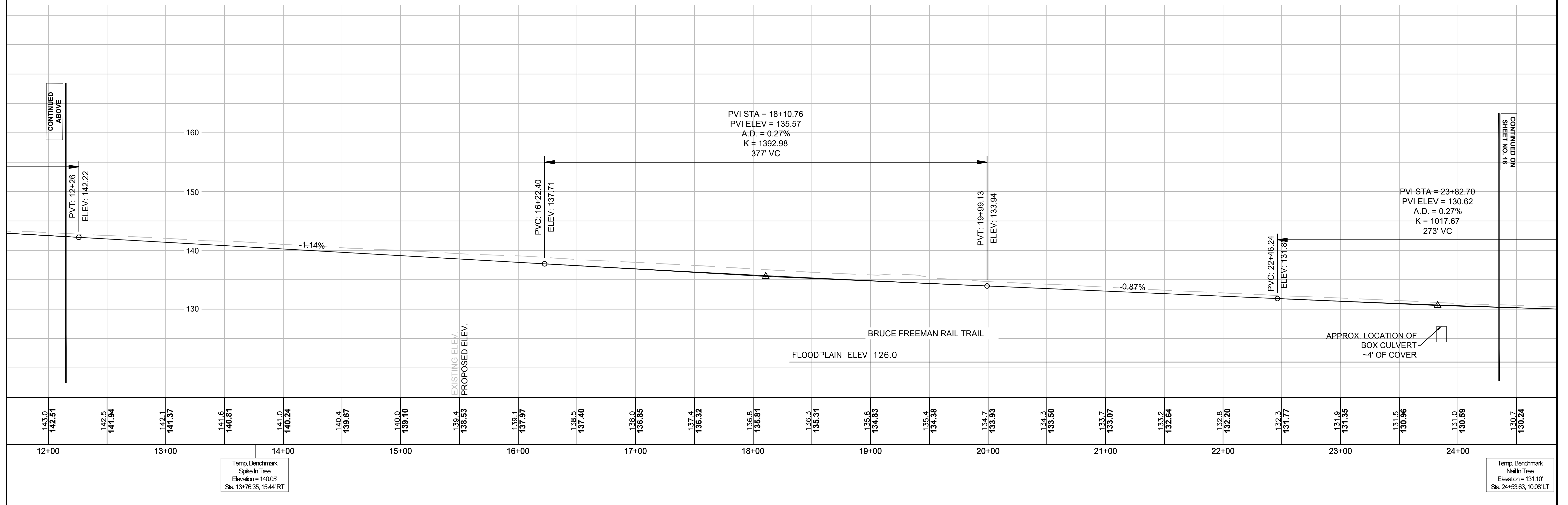
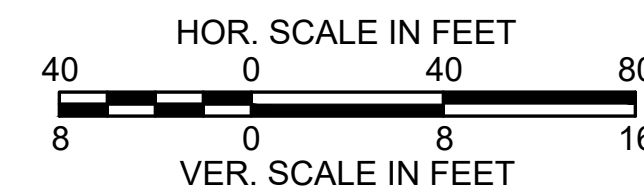
SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	17	73
PROJECT FILE NO.		613319	

PROFILE



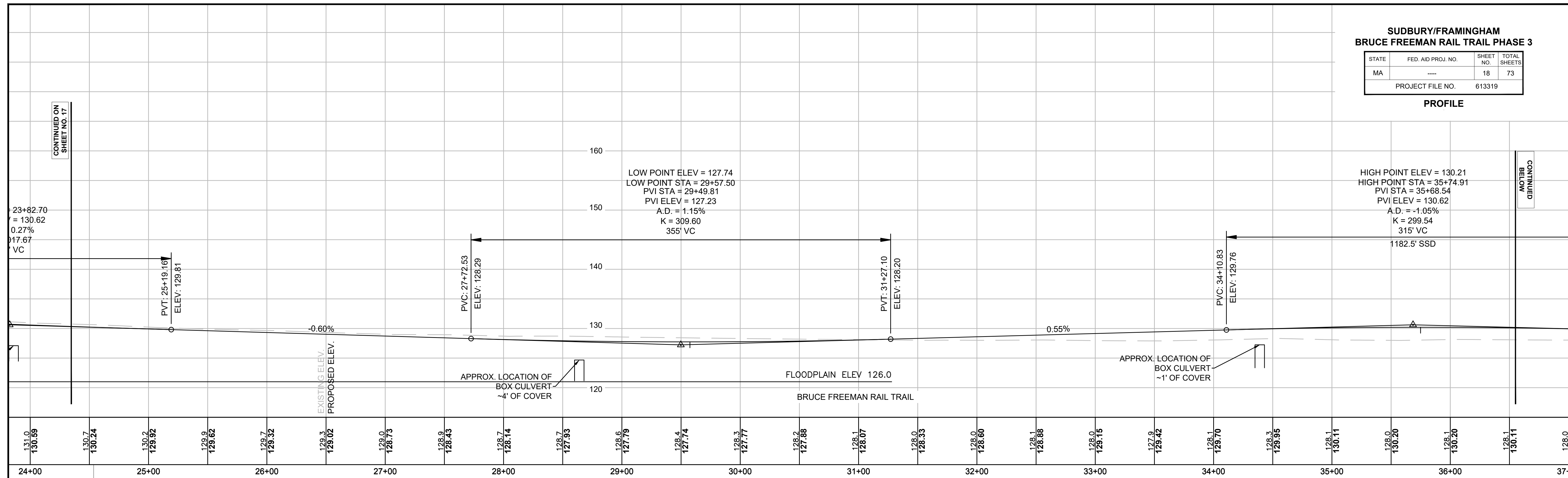
FOR CONSTRUCTION PLANS SEE SHEET NO. 9, 10 & 11



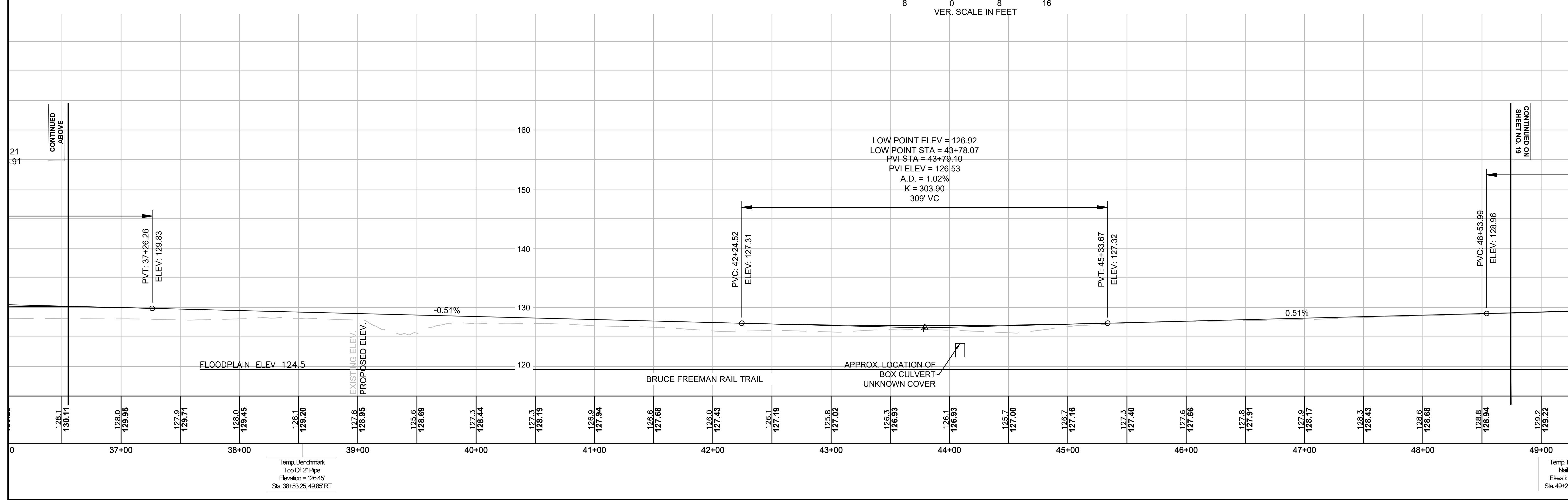
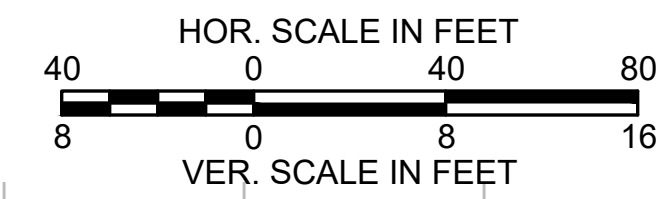
**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	18	73
PROJECT FILE NO.		613319	

PROFILE



FOR CONSTRUCTION PLANS SEE SHEET NO. 11, 12 & 13



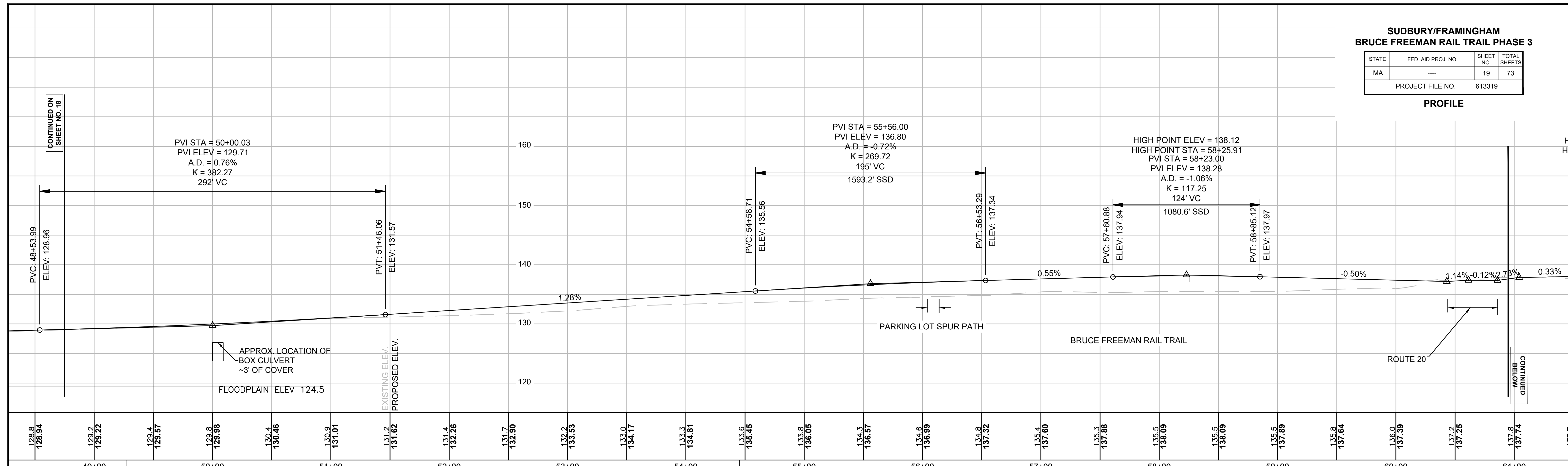
CONTINUED ON
SHEET NO. 17

CONTINUED
ON SHEET NO. 19

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	19	73
PROJECT FILE NO.		613319	

PROFILE

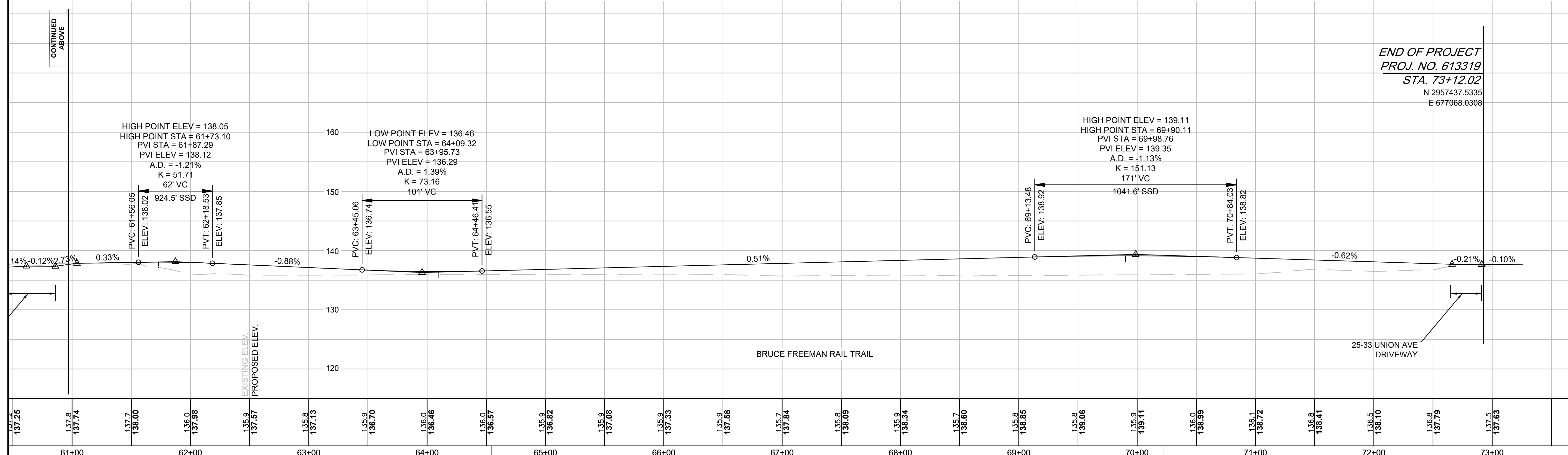


Station	Elevation
49+00	128.8
49+00	128.94
49+22	129.2
49+22	129.22
49+57	129.4
49+57	129.57
50+00	129.8
50+00	129.96
50+46	130.4
50+46	130.46
51+01	130.9
51+01	131.01
51+57	131.2
51+57	131.62
52+26	131.4
52+26	132.26
53+00	131.7
53+00	132.90
53+53	132.2
53+53	133.53
54+17	133.0
54+17	134.17
54+81	133.3
54+81	134.81
55+45	133.6
55+45	135.45
56+05	133.8
56+05	136.05
56+57	134.3
56+57	136.57
57+00	134.6
57+00	136.99
57+32	134.8
57+32	137.32
57+60	135.4
57+60	137.60
58+88	135.3
58+88	137.88
59+09	135.5
59+09	138.09
59+09	135.5
59+09	138.09
59+85	135.5
59+85	137.97
59+89	135.5
59+89	137.89
60+64	135.8
60+64	137.64
61+00	136.0
61+00	137.39
61+25	137.2
61+25	137.25
61+74	137.8
61+74	137.74

Temp. Benchmark
Nail In Tree
Elevation = 130.42
Sta. 49+27.08, 4.28' LT

Temp. Benchmark
Nail In Tree
Elevation = 133.69
Sta. 54+45.31, 16.18' LT

FOR CONSTRUCTION PLANS SEE SHEET NO. 13, 14, 15 & 16



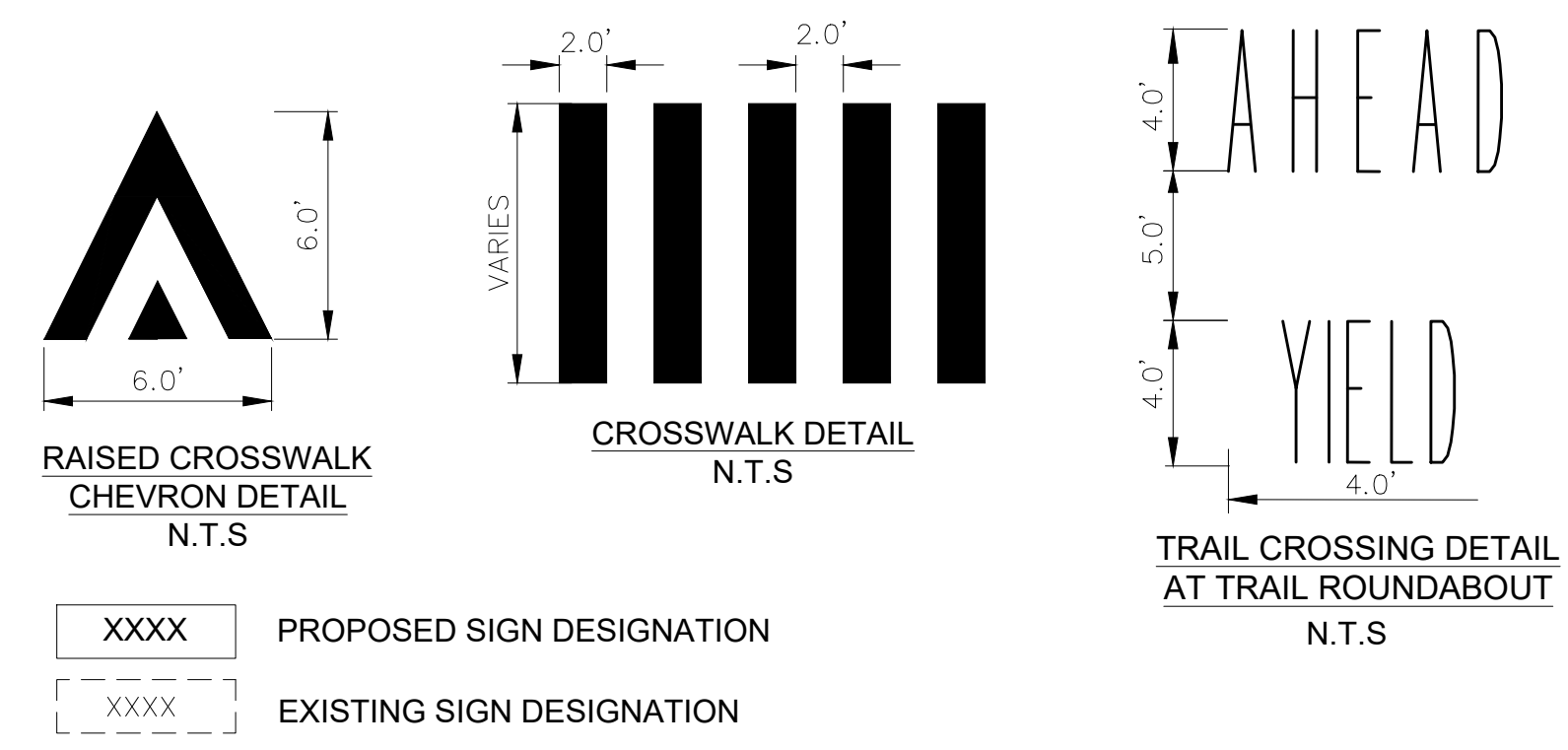
Station	Elevation
61+00	137.25
61+74	137.8
61+74	137.74
62+00	137.7
62+00	138.00
62+53	136.0
62+53	137.98
63+57	135.9
63+57	137.57
64+00	135.8
64+00	137.13
64+56	135.9
64+56	136.70
64+56	136.0
64+56	136.46
65+55	136.0
65+55	136.57
66+82	135.9
66+82	136.82
67+08	135.9
67+08	137.08
67+33	135.9
67+33	137.33
67+58	135.9
67+58	137.58
68+84	135.7
68+84	137.84
69+09	135.8
69+09	138.09
69+34	135.9
69+34	138.34
69+60	135.7
69+60	138.60
69+85	135.8
69+85	138.85
69+85	135.8
69+85	139.06
70+11	135.9
70+11	139.11
70+59	136.0
70+59	138.99
70+82	136.1
70+82	138.72
71+41	136.8
71+41	138.41
72+10	136.5
72+10	138.10
73+79	136.8
73+79	137.79
73+63	137.5
73+63	137.63

Temp. Benchmark
Nail In Tree
Elevation = 137.95
Sta. 64+54.30, 24.49' RT

Temp. Benchmark
Spike
Elevation = 137.15
Sta. 70+21.97, 13.95' RT

END OF PROJECT
PROJ. NO. 613319
STA. 73+12.02
N 2957437.5335
E 677068.0308

- ALL EXISTING SIGNS TO REMAIN UNLESS OTHERWISE NOTED ON PLANS.
- ALL PAVEMENT MARKINGS ON RAIL TRAIL AND PARKING LOT SHALL BE REFLECTORIZED PAINT.
- ALL PROPOSED PAVEMENT MARKING LINES ON ROADWAYS SHALL BE 6" WIDE, EXCEPT STOP BARS WHICH SHALL BE 12" WIDE. ALL MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
- SIGN SUPPORTS FOR SHARED-USE PATH SHALL BE 4"x4" PRESSURE TREATED WOOD POSTS AND PLACED AS SHOWN ON THE "TYPICAL SIGN PLACEMENT DETAIL" IN THE CONSTRUCTION DETAILS.
- ANY SIGN LABELED WITH AN "*" SHALL BE MOUNTED ON A STANDARD P-5 POST AT STANDARD MUTCD HEIGHT UNLESS OTHERWISE SHOWN ON PLANS.
- ALL P-5 POSTS SHALL BE FACTORY COATED GLOSS BLACK.
- EXISTING PAVEMENT MARKING REMOVAL WILL BE REQUIRED TO INSTALL THE PROPOSED PAVEMENT MARKINGS IN CONFLICTING AREAS PER PLAN.
- ALL "DS" WAYFINDING SIGNS SHALL BE MOUNTED ON TIMBER SPECIAL CANTILEVER POST. SEE CONSTRUCTION DETAILS.

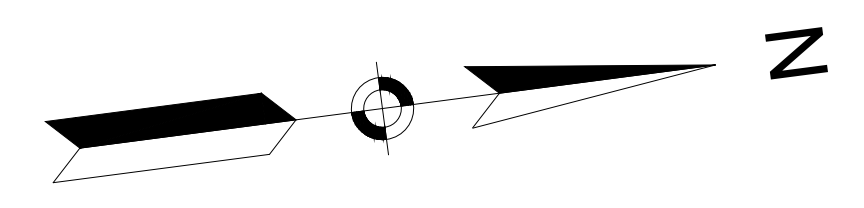
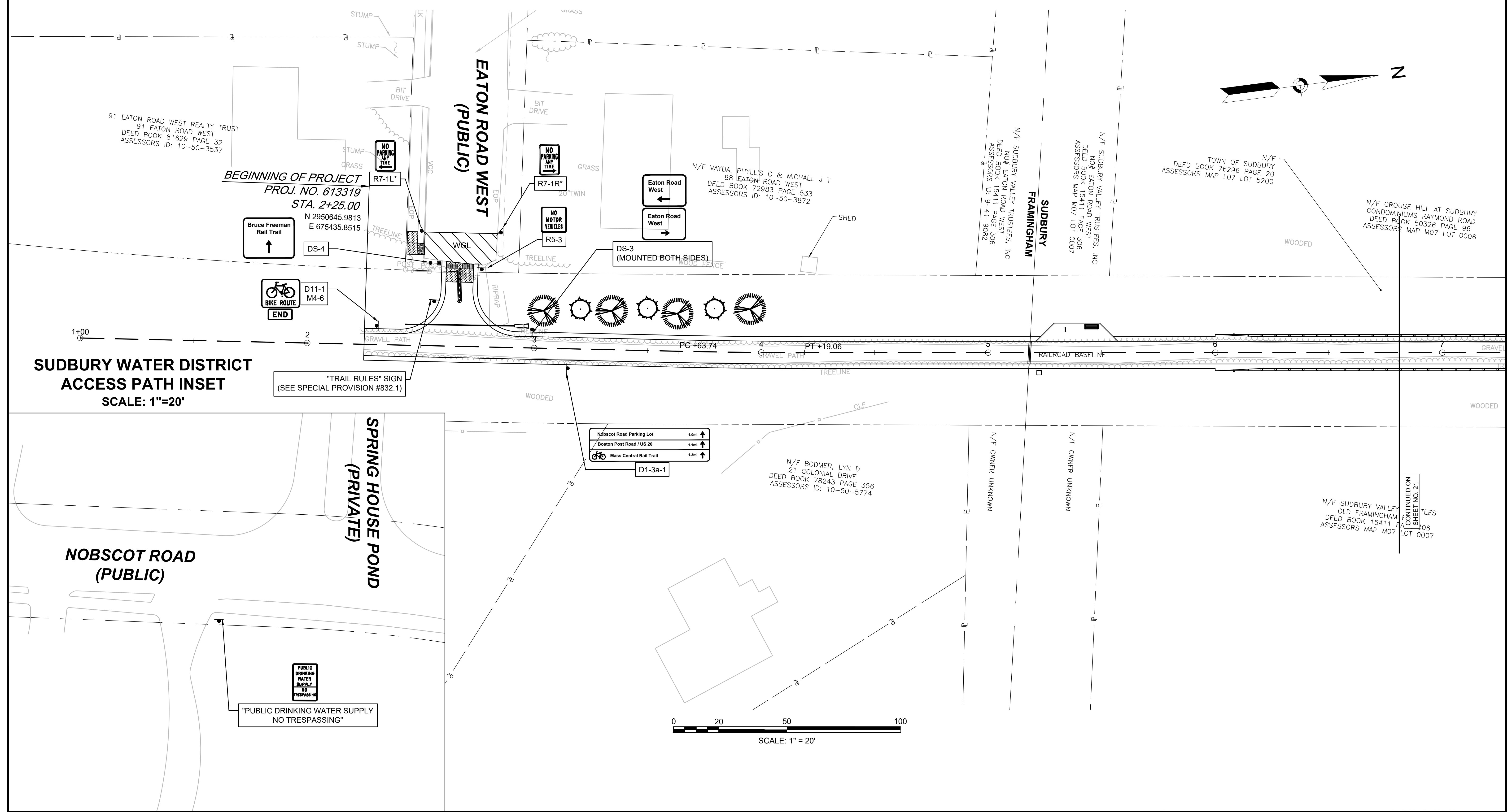


**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	20	73

PROJECT FILE NO. 613319

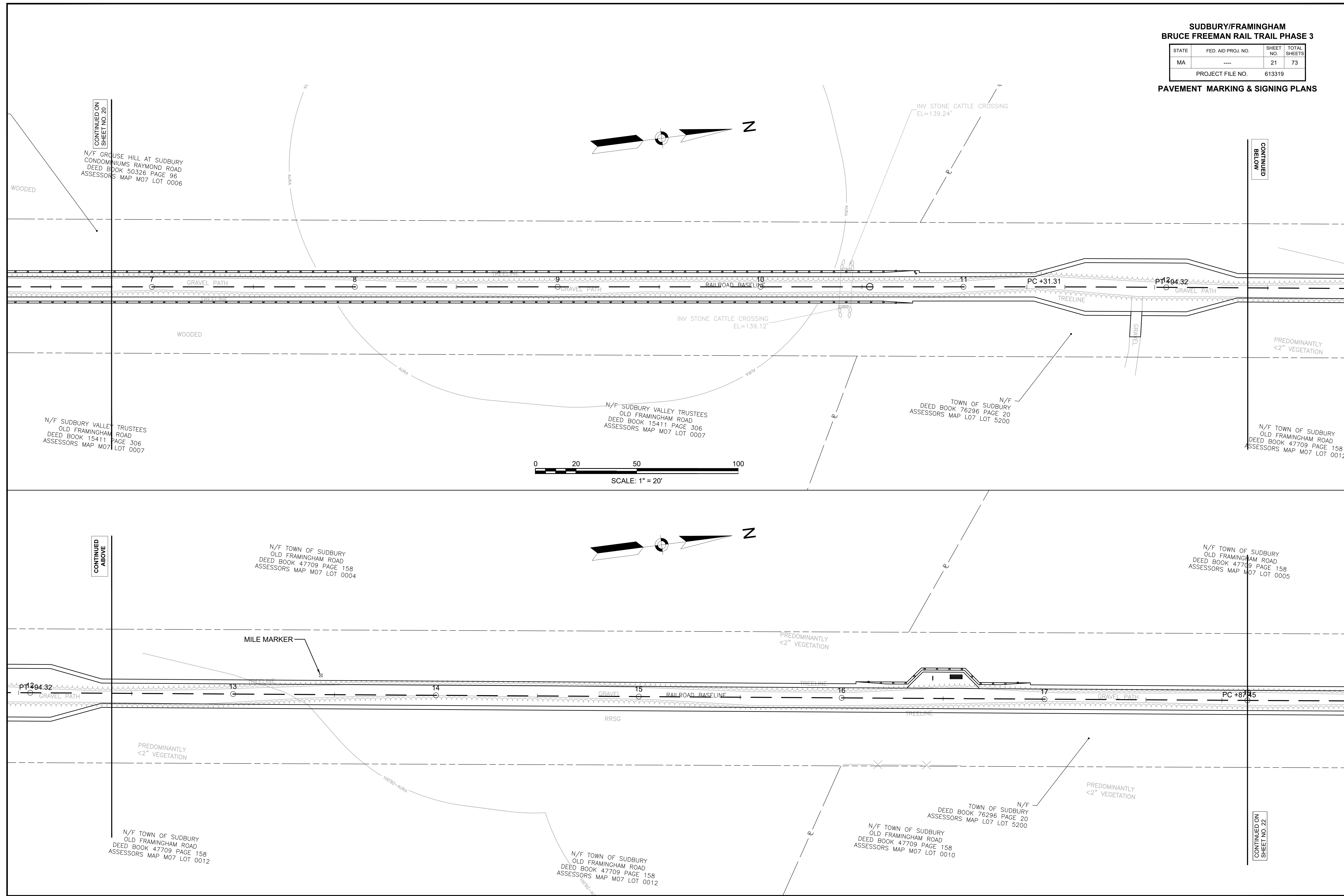
PAVEMENT MARKING & SIGNING PLANS



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

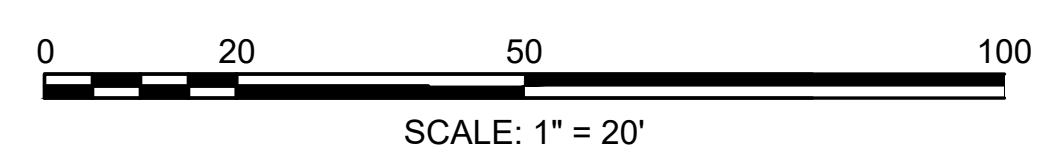
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	21	73
PROJECT FILE NO.		613319	

PAVEMENT MARKING & SIGNING PLANS



CONTINUED ON
SHEET NO. 20

CONTINUED
BELOW



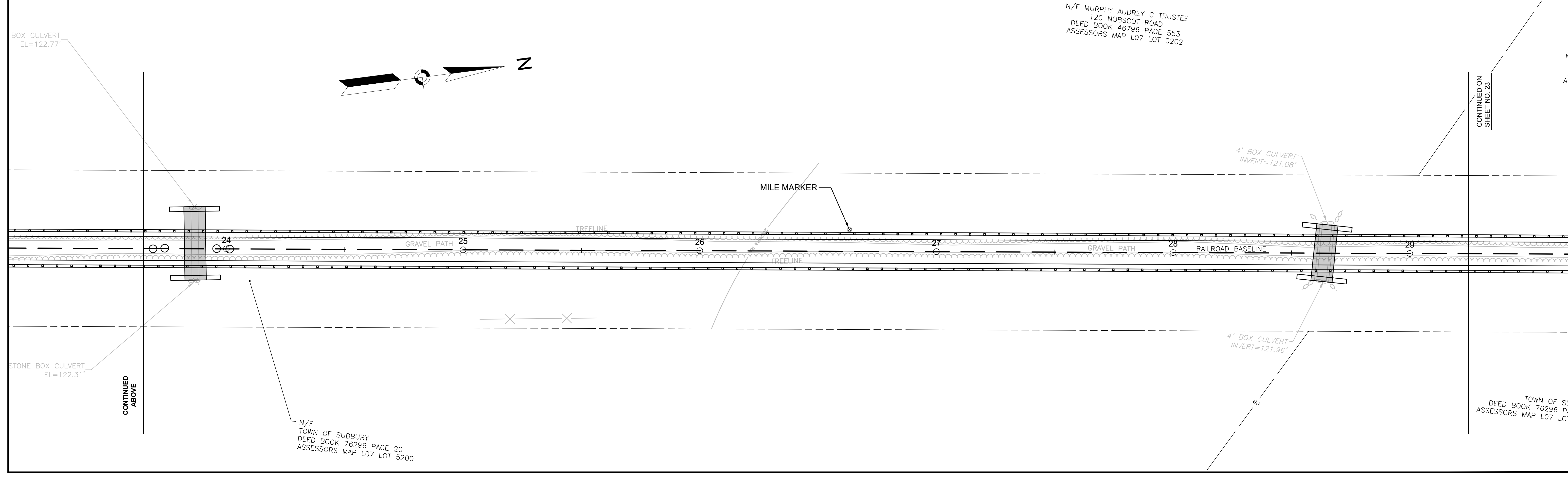
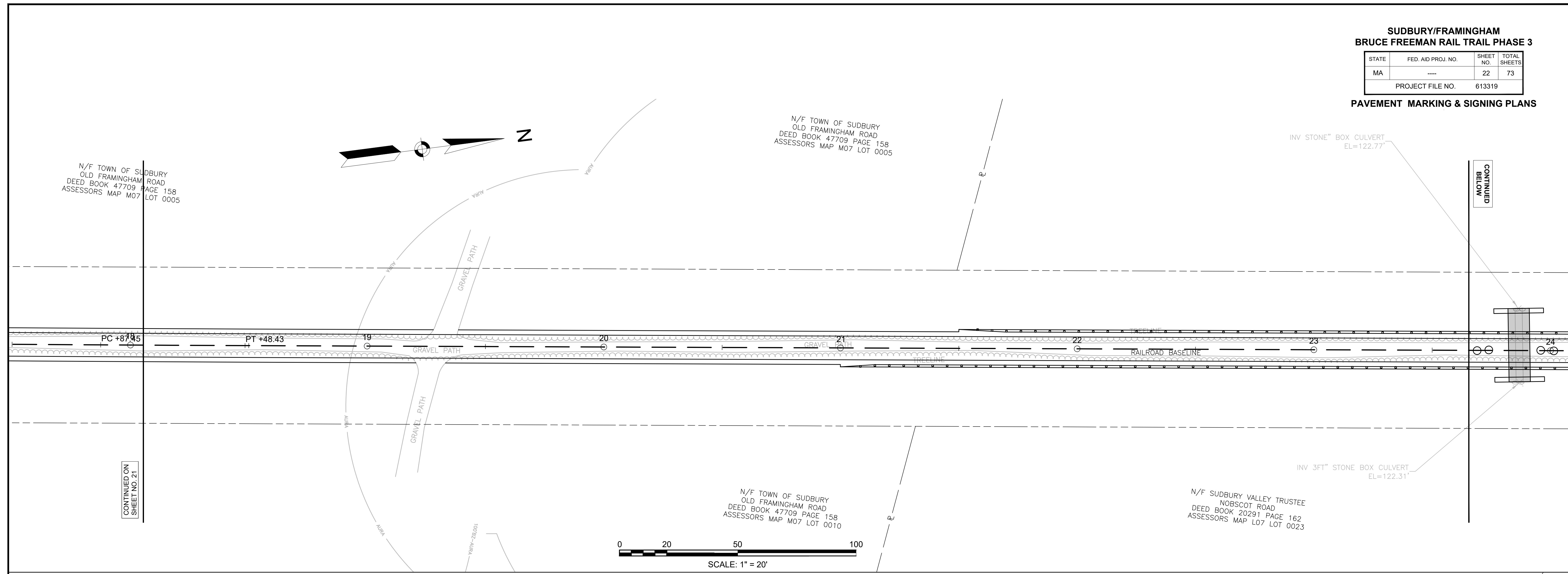
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ABOVE

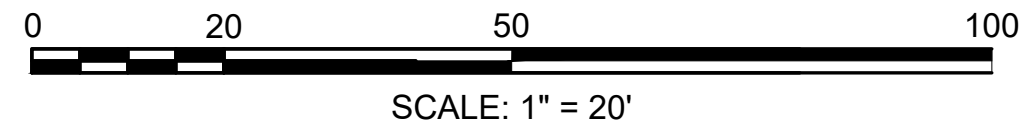
CONTINUED ON
SHEET NO. 22

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	22	73
PROJECT FILE NO.		613319	

PAVEMENT MARKING & SIGNING PLANS

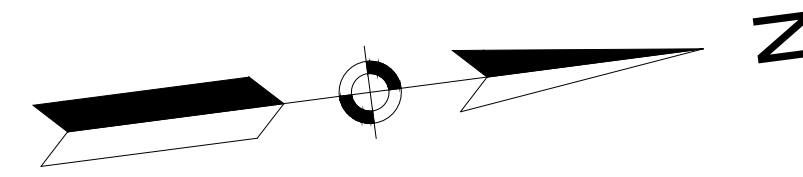




**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	23	73
PROJECT FILE NO.		613319	

PAVEMENT MARKING & SIGNING PLANS



N/F SHILTS REED L & DAWN R
SOUTH MEADOW DR
DEED BOOK 49850 PAGE 382
ASSESSORS MAP L07 LOT 0325

PREDOMINANTLY
<2" VEGETATION

Framingham
0.5 miles
↑

DS-7

4' BOX CULVERT
INVERT=122.61'

CONTINUED
BELOW

PREDOMINANTLY
<2" VEGETATION

CONTINUED ON
SHEET NO. 22

TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

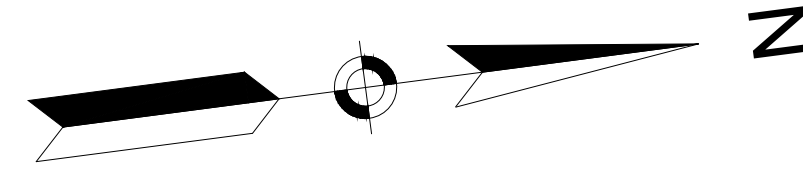
PREDOMINANTLY
<2" VEGETATION

"PUBLIC DRINKING WATER SUPPLY
STAY ON TRAIL"

PUBLIC DRINKING
WATER
SUPPLY
STAY ON
TRAIL

N/F TOWN OF SUDBURY
RAYMOND ROAD
DEED BOOK 9847 PAGE 105
ASSESSORS MAP L08 LOT 0002

TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200



N/F SUDBURY WATER DISTRICT
NOBSCOT ROAD
DEED BOOK 12616 PAGE 175
ASSESSORS MAP L07 LOT 0039

PREDOMINANTLY
<2" VEGETATION

"AUTHORIZED PERSONNEL ONLY
NO TRESPASSING"

AUTHORIZED
PERSONNEL
ONLY
NO
TRESPASSING

N/F SUDBURY WATER DISTRICT
NOBSCOT ROAD
DEED BOOK 12616 PAGE 175
ASSESSORS MAP L07 LOT 0039

CONTINUED ON
SHEET NO. 24

MILE MARKER

4' BOX CULVERT
INVERT=122.94'

PREDOMINANTLY
<2" VEGETATION

"AUTHORIZED PERSONNEL ONLY
NO TRESPASSING"

AUTHORIZED
PERSONNEL
ONLY
NO
TRESPASSING

CONTINUED ABOVE

TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

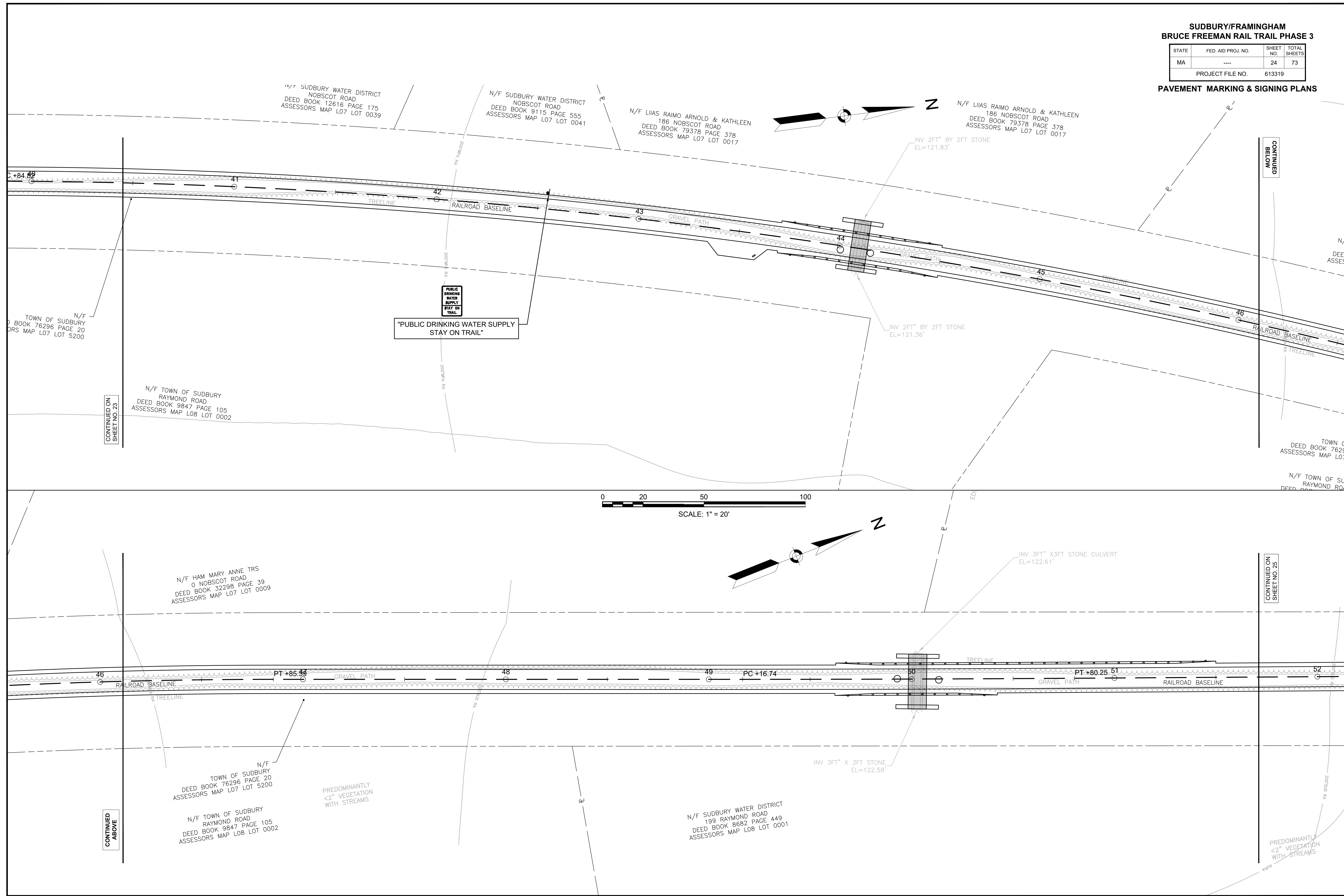
TOWN OF SUDBURY
DEED BOOK 9847 PAGE 105
ASSESSORS MAP L08 LOT 0002

TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	24	73
PROJECT FILE NO.		613319	

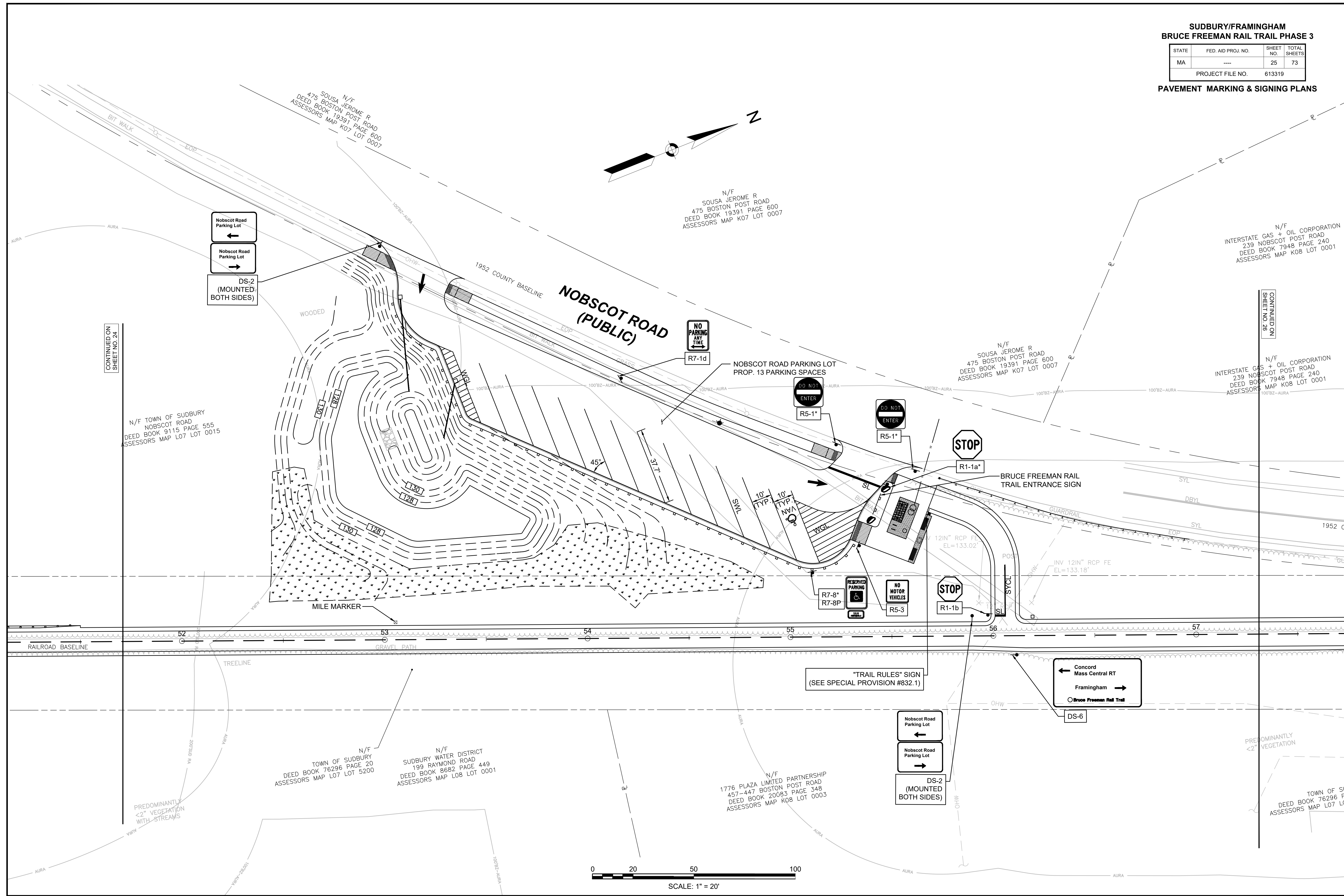
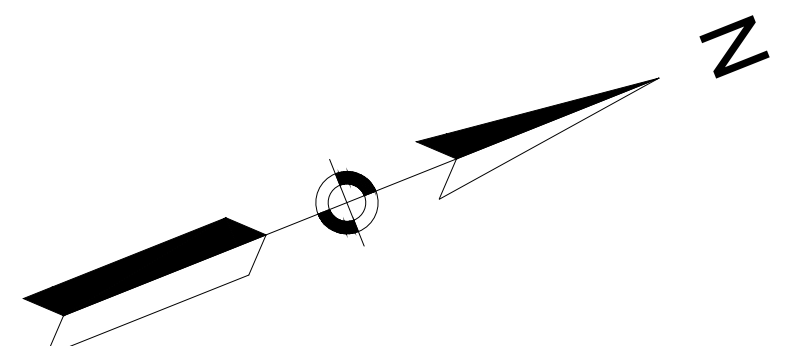
PAVEMENT MARKING & SIGNING PLANS



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	25	73
PROJECT FILE NO.		613319	

PAVEMENT MARKING & SIGNING PLANS



CONTINUED ON
SHEET NO. 24

CONTINUED ON
SHEET NO. 28

N/F TOWN OF SUDBURY
NOBSCOT ROAD
DEED BOOK 9115 PAGE 555
ASSESSORS MAP L07 LOT 0015

N/F SOUSA JEROME R
475 BOSTON POST ROAD
DEED BOOK 19391 PAGE 600
ASSESSORS MAP K07 LOT 0007

N/F SOUSA JEROME R
475 BOSTON POST ROAD
DEED BOOK 19391 PAGE 600
ASSESSORS MAP K07 LOT 0007

N/F INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

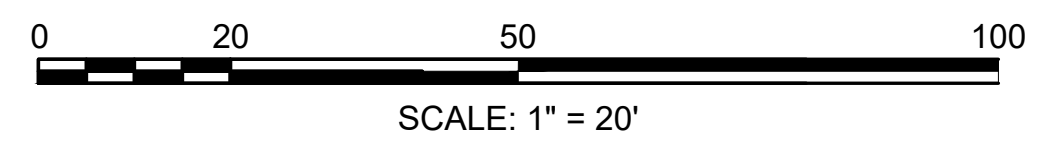
N/F INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F TOWN OF SUDBURY
199 RAYMOND ROAD
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

N/F SUDBURY WATER DISTRICT
199 RAYMOND ROAD
DEED BOOK 8682 PAGE 449
ASSESSORS MAP L08 LOT 0001

N/F 1776 PLAZA LIMITED PARTNERSHIP
457-447 BOSTON POST ROAD
DEED BOOK 20083 PAGE 348
ASSESSORS MAP K08 LOT 0003

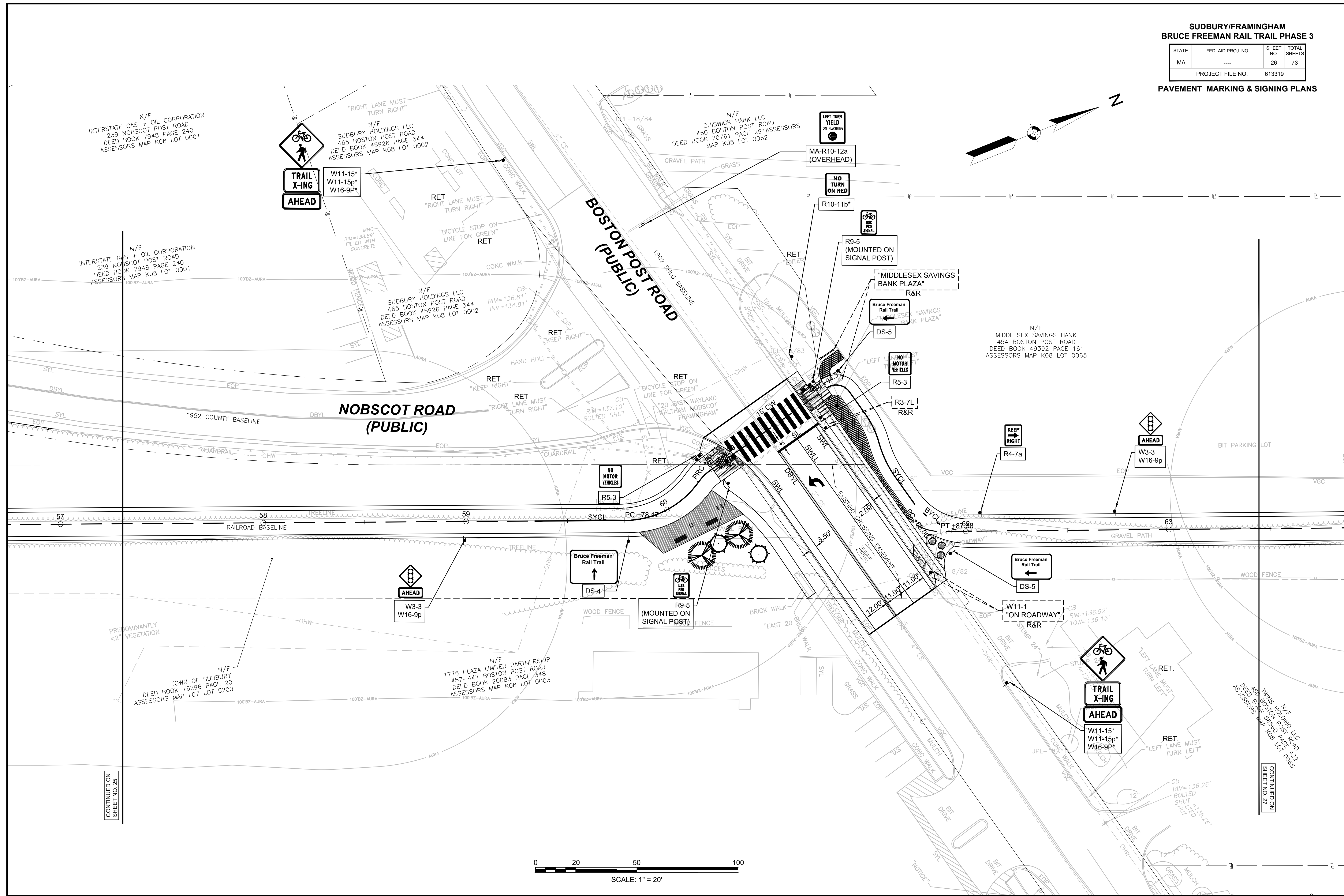
TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	26	73
PROJECT FILE NO.		613319	

PAVEMENT MARKING & SIGNING PLANS



N/F
INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F
INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002

N/F
CHISWICK PARK LLC
460 BOSTON POST ROAD
DEED BOOK 70761 PAGE 291
ASSESSORS MAP K08 LOT 0062

N/F
MIDDLESEX SAVINGS BANK
454 BOSTON POST ROAD
DEED BOOK 49392 PAGE 161
ASSESSORS MAP K08 LOT 0065

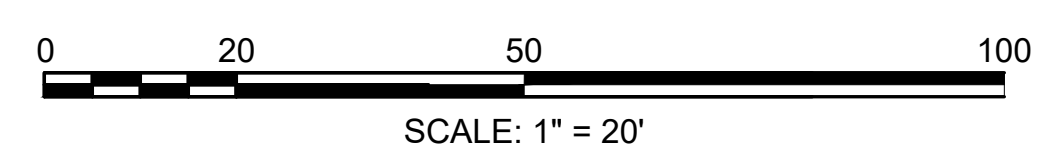
N/F
TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

N/F
1776 PLAZA LIMITED PARTNERSHIP
457-447 BOSTON POST ROAD
DEED BOOK 20083 PAGE 348
ASSESSORS MAP K08 LOT 0003

N/F
TWIN HOLDING LLC
450 BOSTON POST ROAD
DEED BOOK 54550 PAGE 222
ASSESSORS MAP K08 LOT 0066

CONTINUED ON
SHEET NO. 25

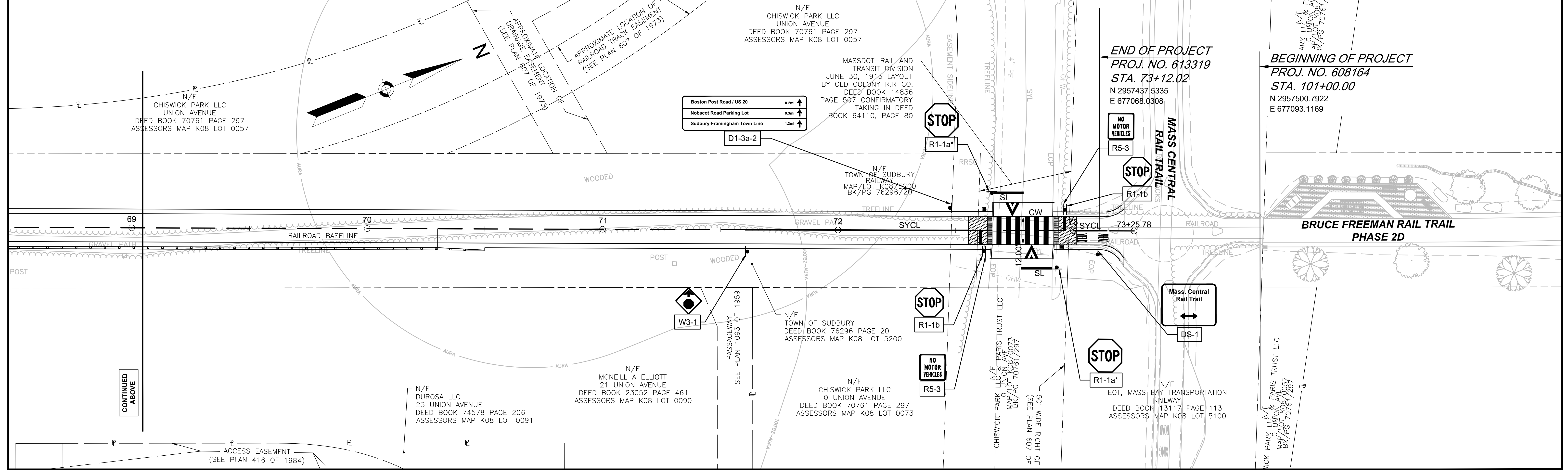
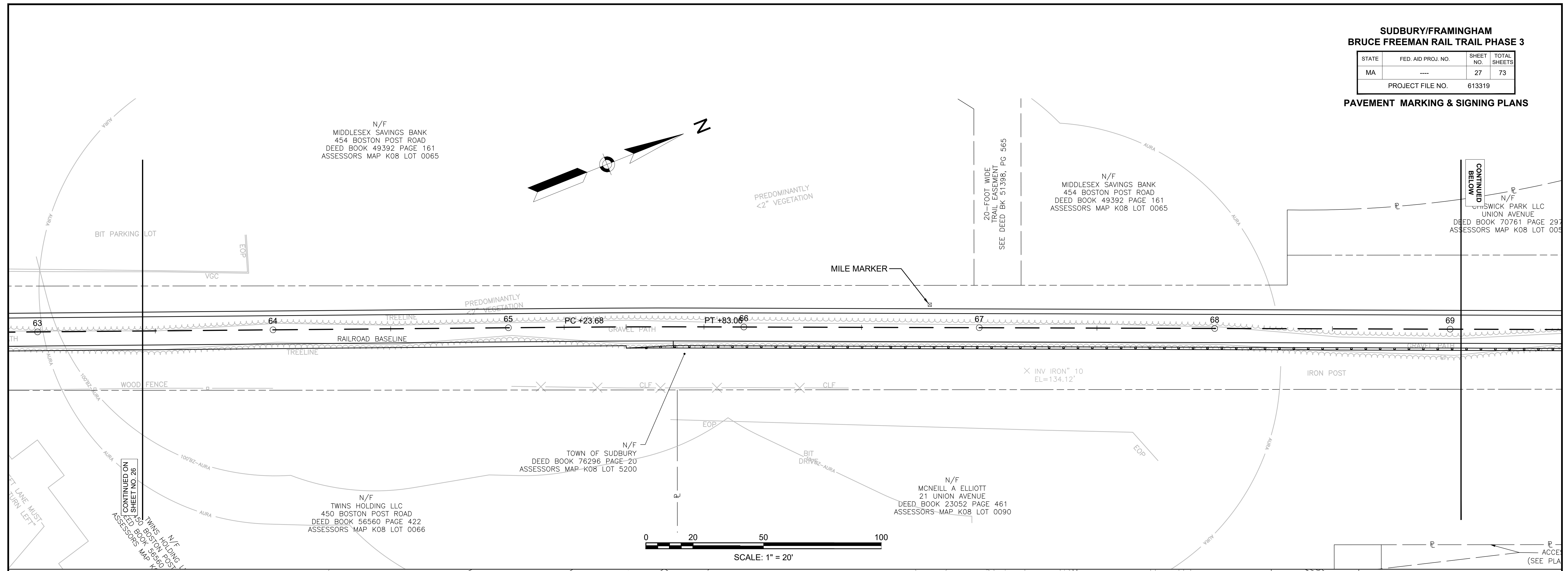
CONTINUED ON
SHEET NO. 27



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	27	73
PROJECT FILE NO.		613319	

PAVEMENT MARKING & SIGNING PLANS



NOTES:
 HIGH INTENSITY ENCAPSULATED LENS REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. THE 2009 "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE 1990 MDPW "STANDARD DRAWINGS FOR SIGNS AND SUPPORTS", AND ALL AMENDMENTS WILL GOVERN.

ALL P5 SIGN POSTS SHALL BE 2" SQUARE POSTS FACTORY COATED GLOSS BLACK UNLESS OTHERWISE NOTED (PBS) = PAINTED BOTH SIDES

ALL TIMBER SIGN POSTS SHALL BE 8' TALL PRESSURE TREATED WHITE PINE 4"x4".

**SUDBURY/FRAMINGHAM
 BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	28	73
PROJECT FILE NO.		613319	

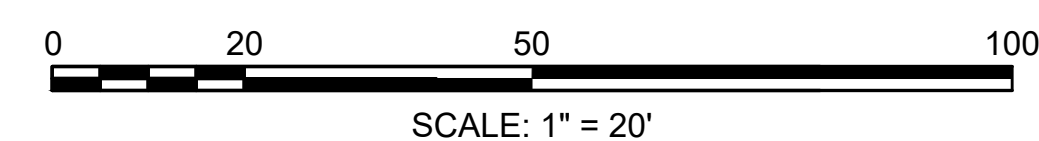
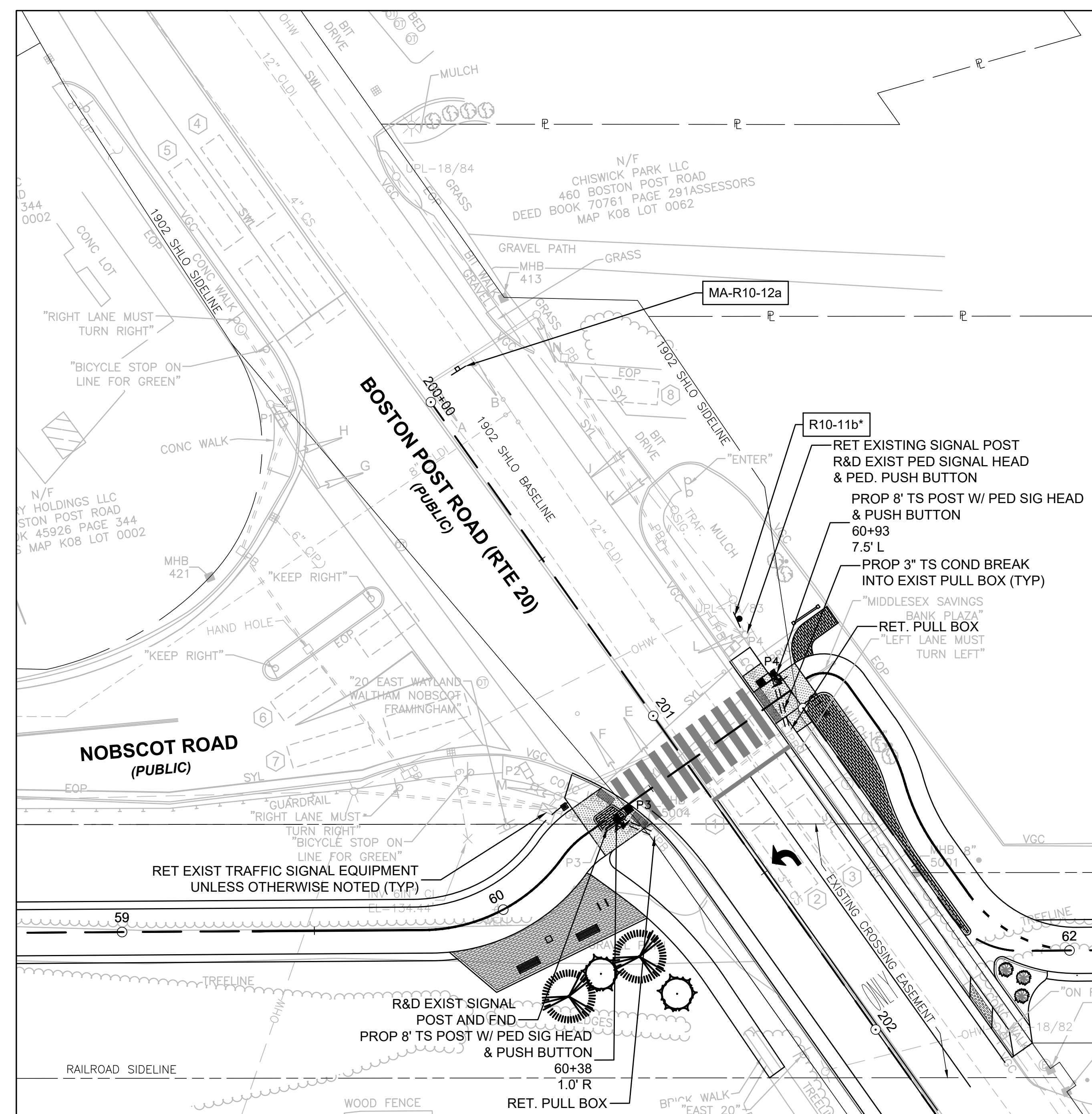
SIGN SUMMARY SHEET

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	SIGN FACE AREA (S.F.)	TOTAL AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
R1-1a	30	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			3	RED	WHITE	WHITE	WOOD POST 3 REQ'D	6.25	18.75
R1-1b	18	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			3	RED	WHITE	WHITE	WOOD POST 3 REQ'D	2.25	6.75
R4-7a	24	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	BLACK	BLACK	P-5 1 REQ'D	5.00	5.00
R5-3	24	24		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			6	WHITE	BLACK	BLACK	P-5 6 REQ'D	4.00	24.00
R7-1d	12	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	RED	RED	P-5 1 REQ'D	1.50	1.50
R7-1L	12	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	RED	RED	P-5 1 REQ'D	1.50	1.50
R7-1R	12	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	RED	RED	P-5 1 REQ'D	1.50	1.50
R7-8	12	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	GREEN	GREEN	WOOD POST 1 REQ'D	1.50	3.00
R7-8P	18	9		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	GREEN	GREEN	MOUNTED WITH R7-8 SEE PLANS	1.13	1.13
R9-5	12	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			2	WHITE	BLACK	BLACK	WOOD POST 2 REQ'D	1.50	3.00
R5-1	30	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			2	WHITE	WHITE	RED	P-5 2 REQ'D	6.25	12.50
R10-11b	24	24		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	BLACK	BLACK	P-5 1 REQ'D	4.00	4.00
W3-1	18	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	YELLOW	BLACK	BLACK	WOOD POST 1 REQ'D	2.25	2.25
W3-3	18	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			2	YELLOW	BLACK	BLACK	WOOD POST 2 REQ'D	2.25	4.50
W11-15	30	30		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			2	YELLOW	BLACK	BLACK	P-5 2 REQ'D	6.25	12.50
W11-15p	24	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			2	YELLOW	BLACK	BLACK	2 MOUNTED WITH W11-15	3.00	6.00
W16-9p	24	12		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			4	YELLOW	BLACK	BLACK	2 MOUNTED W/ W11-15 2 MOUNTED W/ W3-3	2.00	8.00
MA-R10-12a	30	36		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	WHITE	BLACK	BLACK	1 MOUNTED ON MAST ARM	7.50	7.50
D11-1	24	18		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	GREEN	WHITE	WHITE	WOOD POST 1 REQ'D	3	3
M4-6	24	12		SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (INCLUDING LATEST REVISION)			1	GREEN	WHITE	WHITE	MOUNTED WITH W11-1 SEE PLANS	2	2
DS-1	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			1	(SEE SPECIAL PROVISION)			-	EACH	
DS-2	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			2	(SEE SPECIAL PROVISION)			-	EACH	
DS-3	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			1	(SEE SPECIAL PROVISION)			-	EACH	
DS-4	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			2	(SEE SPECIAL PROVISION)			-	EACH	
DS-5	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			2	(SEE SPECIAL PROVISION)			-	EACH	
DS-6	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			1	(SEE SPECIAL PROVISION)			-	EACH	
DS-7	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			1	(SEE SPECIAL PROVISION)			-	EACH	
	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			2	(SEE SPECIAL PROVISION)			-	EACH	
	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			2	(SEE SPECIAL PROVISION)			-	EACH	
	(SEE CONST. DETAILS)			(SEE SPECIAL PROVISION)			1	(SEE SPECIAL PROVISION)			-	EACH	
D1-3a-1	36	22		4D/3D	3	4x3 @ 90°	1	GREEN	WHITE	WHITE	WOOD POST 1 REQ'D	5.50	5.50
D1-3a-2	36	22		4D/3D	3	4x3 @ 90°	1	GREEN	WHITE	WHITE	WOOD POST 1 REQ'D	5.50	5.50
SP-C4	24	18	TRAIL RULES SIGN (REF. SPEC 832.1)			2	WHITE	BLACK	BLACK	P-5 2 REQ'D 1 MOUNTED WITH R5-3	PAY UNDER ITEM B32.1		

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

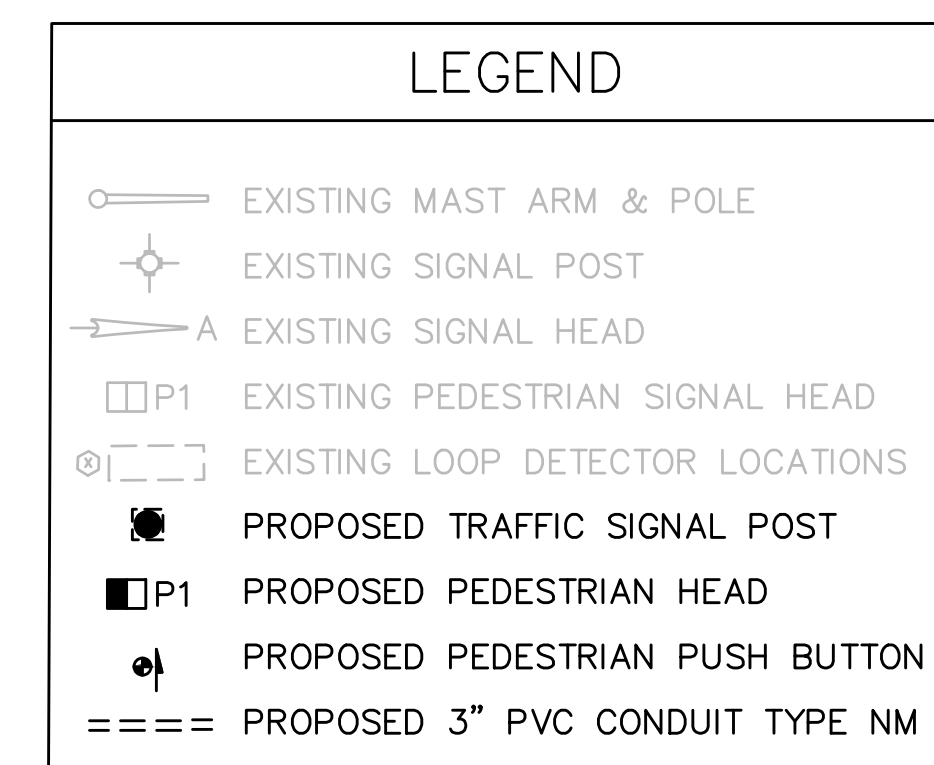
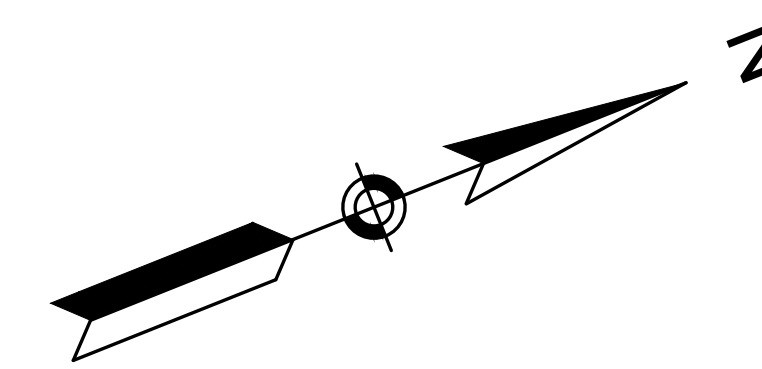
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	29	73
PROJECT FILE NO.		613319	

**TRAFFIC SIGNAL PLAN
BOSTON POST RD & NOBSCOT RD
LOCATION NO. 1**

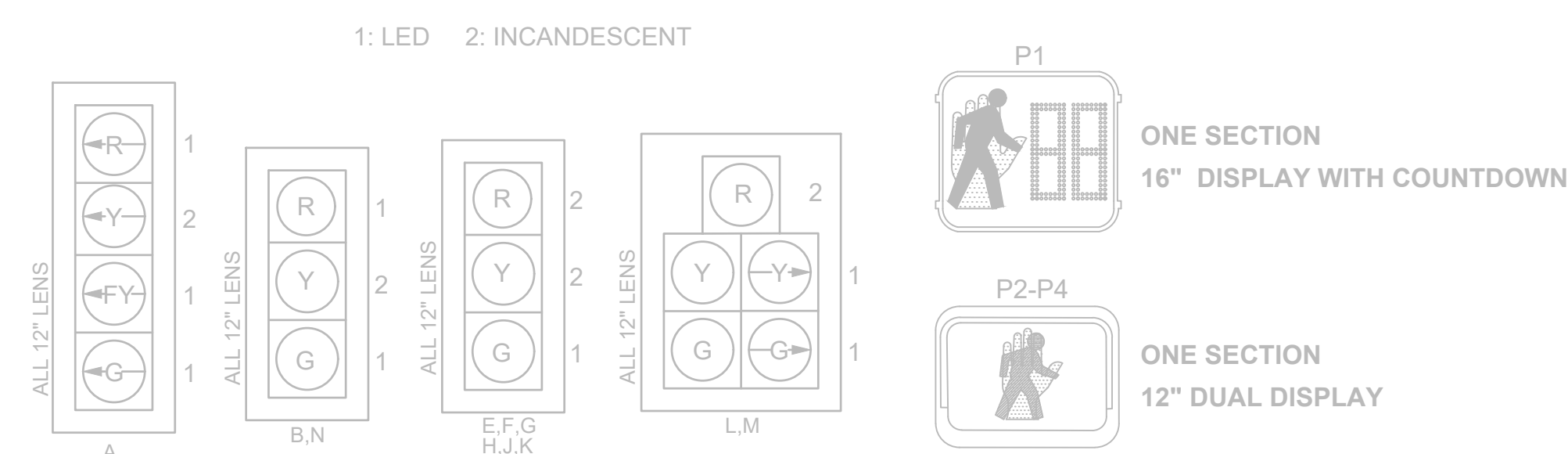


NOTES

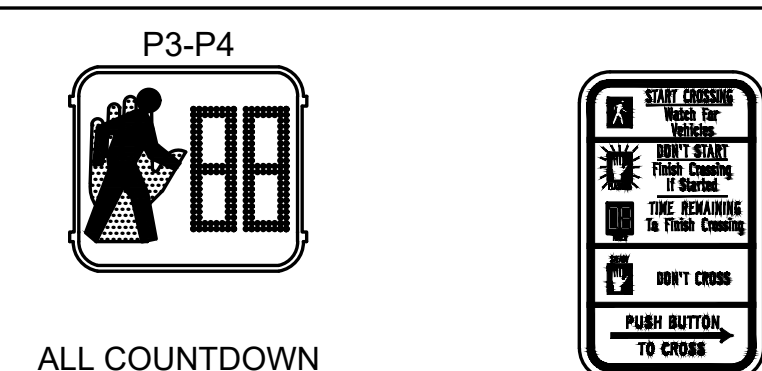
1. ALL EXISTING TRAFFIC SIGNAL EQUIPMENT SHALL BE RETAINED UNLESS OTHERWISE NOTED ON THE PLAN.
2. EXISTING LOOP DETECTION OPERATION SHALL BE RETAINED. SHOULD DETECTION BE DAMAGED AS PART OF CONSTRUCTION ACTIVITY, VEHICLE DETECTION SHOULD BE REPAIRED TO WORKING ORDER AT THE CONTRACTOR'S EXPENSE.
3. LOCATION OF EXISTING TRAFFIC SIGNAL EQUIPMENT AND LOOP DETECTORS ARE BASED ON RECORD PLANS. THE CONTRACTOR SHOULD VERIFY LOCATIONS OF ALL FEATURES PRIOR TO CONSTRUCTION.



EXISTING SIGNAL IDENTIFICATION



PROPOSED PEDESTRIAN SIGNAL EQUIPMENT



ALL COUNTDOWN PEDESTRIAN SIGNAL DISPLAYS SHALL BE EQUIPPED W/LED MODULES (16 INCH DISPLAY).

PROPOSED R10-3E

TO BE MOUNTED WITH EACH PROPOSED ACCESSIBLE PEDESTRIAN SIGNAL.

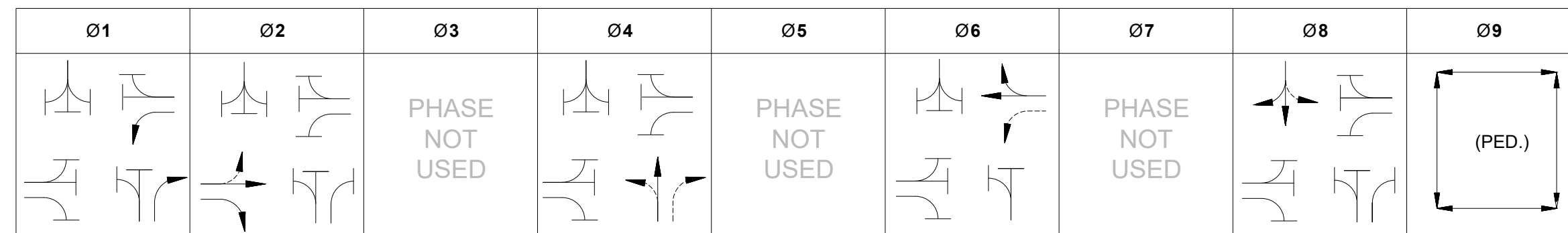
SIGNAL HEAD NOTES

1. ALL PEDESTRIAN SIGNAL HEADS SHALL DISPLAY INTERNATIONAL SYMBOLS - (HAND)/(PERSON WALKING) WITH COUNTDOWN DISPLAYS
2. ALL PEDESTRIAN HEADS SHALL HAVE 16" LED LENSES AND SUN VISORS

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	30	73
PROJECT FILE NO.		613319	

**TRAFFIC SIGNAL DATA
BOSTON POST RD & NOBSCOT RD
LOCATION NO. 1**



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)																														
STREET	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH OPER.
BOSTON POST ROAD (ROUTE 20)	WB	A	(-G)	(-Y)	(-R)	(-R)	(-R)	(-R)				(-R)	(-R)	(-R)				(-FY)	(-Y)	(-R)				(-R)	(-R)	(-R)	(-R)	(-R)	(-R)	(-FY)
BOSTON POST ROAD (ROUTE 20)	WB	B,N	R	R	R	R	R	R				R	R	R				G	Y	R				R	R	R	R	R	R	FY
BOSTON POST ROAD (ROUTE 20)	EB	E,F	R	R	R	G	Y	R				R	R	R				R	R	R				R	R	R	R	R	R	FY
NOBSCOT ROAD	NB	J,K	R	R	R	R	R	R				G	Y	R				R	R	R				R	R	R	R	R	R	FR
NOBSCOT ROAD	NB	L,M	(-G)	(-Y)	(-R)	R	R	R				G	Y	R				R	R	R				R	R	R	R	R	R	FR
MIDDLESEX SAVINGS BANK DRIVEWAY	SB	G,H	R	R	R	R	R	R				R	R	R				R	R	R				G	Y	R	R	R	R	FR
PEDESTRIAN	ALL	P1-P4	DW	DW	DW	DW	DW	DW				DW	DW	DW				DW	DW	DW				DW	DW	DW	W	FW	DW	OFF
TIMING IN SECONDS																														
MINIMUM GREEN (INITIAL)			6			10						6						10						6						
PASSAGE TIME (VEHICLE)			2			4						2						4						2						
MAXIMUM 1			6			48						6						59						6						
MAXIMUM 2			16			36						8						57						8						
YELLOW CLEARANCE				4			4						4						4						4					
RED CLEARANCE					1			1					1							1						1				
WALK (W)																											7			
PEDESTRIAN CLEARANCE																												15	3	
RECALL			NONE		MIN		NONE		MIN		NONE		MIN		NONE		NONE		NONE		NONE		NONE		NONE		NONE		NONE	
MEMORY			NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		NON-LOCK		LOCK		LOCK	
COORDINATION DATA												COORDINATION PHASE TIMING																		
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.
PLAN 1	100 SECONDS	35	11	53				11				64											11							
PLAN 2	100 SECONDS	44	21	41				13				62											13							
PLAN 3	110 SECONDS	41	19	46				20				65											20							

EMERGENCY ONLY

- SEQUENCE AND TIMING NOTES:**
- 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.
 - IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT TRAFFIC MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVALS.
 - FLASHING OPERATION IS FOR EMERGENCY OPERATION ONLY. THE SIGNAL SHALL PROVIDE STOP AND GO OPERATION 24 HOURS DAILY.
 - PEDESTRIAN INDICATIONS SHALL BE ACTIVATED BY PEDESTRIAN PUSH BUTTON ONLY.
 - PEDESTRIAN PUSH BUTTONS AND SIGNS SHALL BE LOCATED IN ACCORDANCE WITH ADA/MAAB STANDARDS WITH VIBROTACTILE ARROWS POINTED PARALLEL TO THE CROSSWALK

MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
804.3	30 FT	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL)
816.01	2	8" SIGNAL POST AND BASE STANDARD - INCL FOUNDATION
	2	16" LED PEDESTRIAN SIGNAL HEAD
	2	ACCESSIBLE PEDESTRIAN PUSH BUTTON, SIGN, AND SADDLE
Plus all necessary duct, cable, labor, miscellaneous material and equipment to complete the installation.		

- COORDINATION NOTES:**
- INTERSECTION TO BE COORDINATED WITH ROUTE 20 AT BAY DRIVE/HIGHLAND AVENUE AND ROUTE 20 AT UNION AVENUE.
 - MASTER LOCATED AT ROUTE 20 AT BAY DRIVE/HIGHLAND AVENUE.
 - OFFSET TO Ø2+Ø6 (EAST/WEST) BEGINNING OF YELLOW.
 - ALL COORDINATION SPLIT TIMES INCLUDE YELLOW AND RED CLEARANCE TIME

MASTER SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	FREE
MON-FRI	0600-0900	1500-1900		0900-1500 1900-0600
SAT-SUN			1000-1400	0000-0999 1401-2399

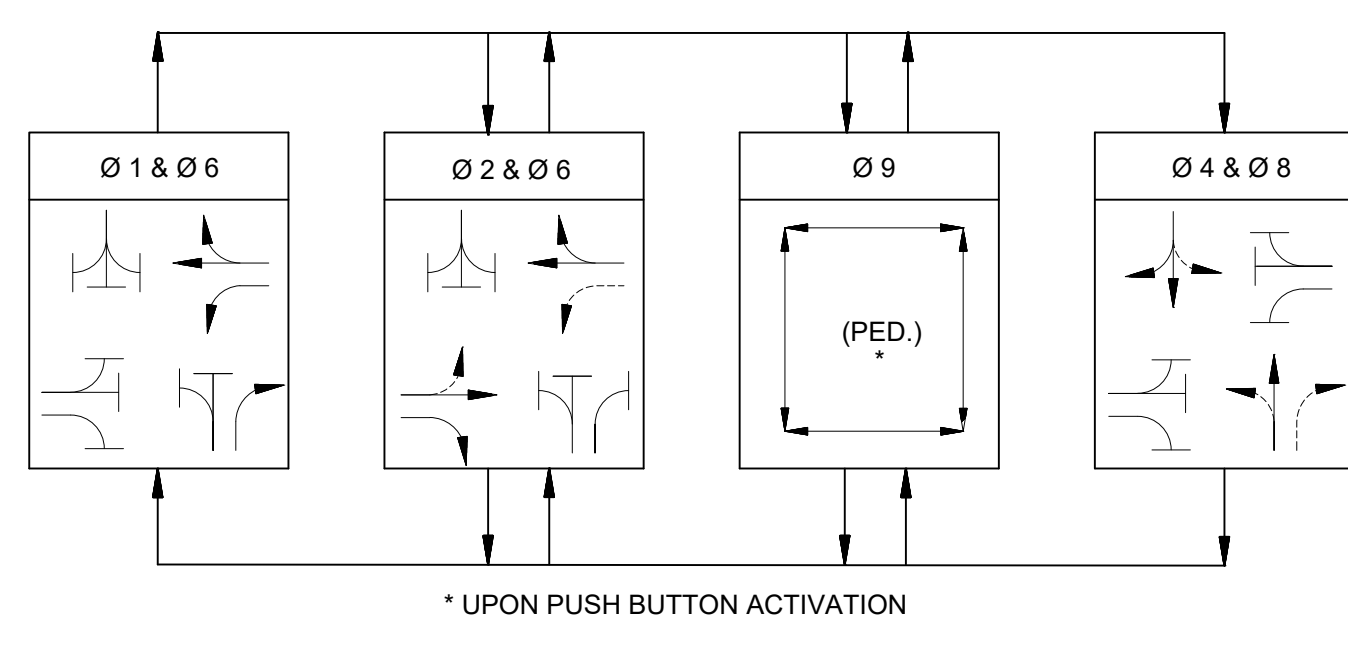
EXISTING LOOP DETECTOR DATA

SEE PLAN SHEET-LOOP DETECTOR DETAILS FOR LOOP CONSTRUCTION, SPLICING, DETAILS & NOTES. DELAY TIME EFFECTIVE ONLY DURING CALLED Ø RED. TIME IN SEC.

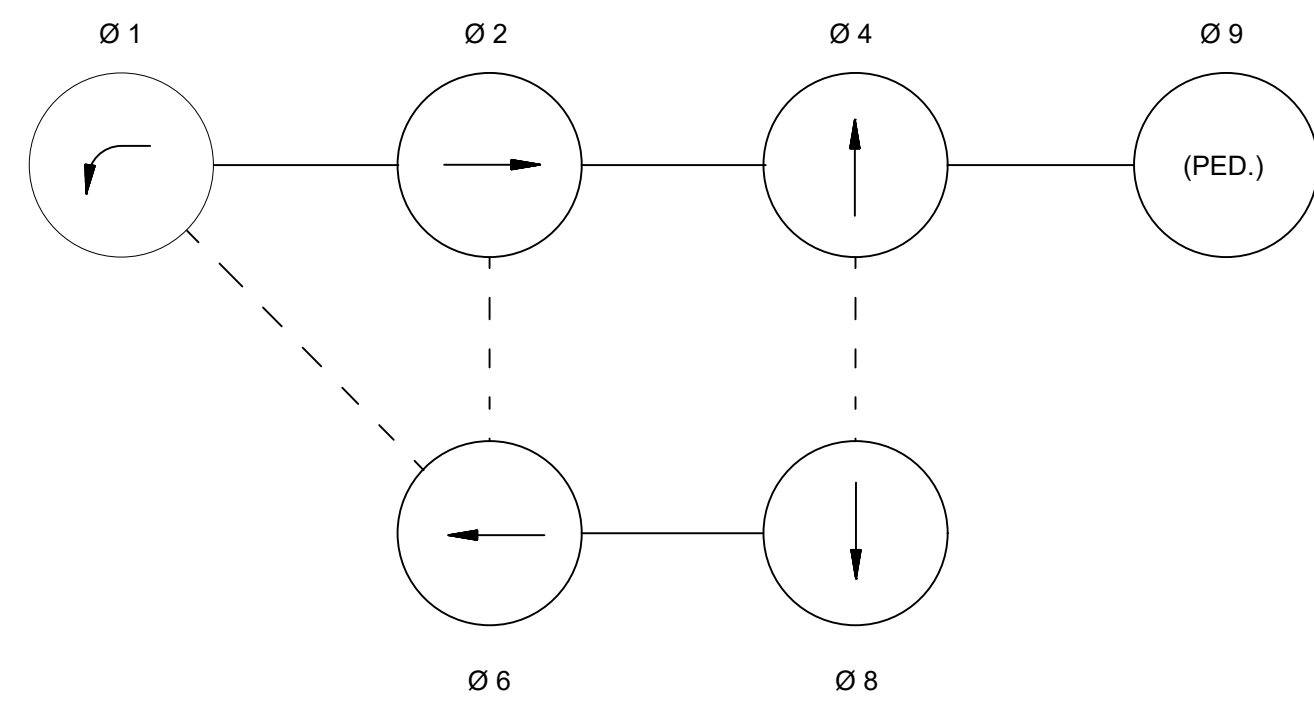
DETECTOR NUMBER	NUMBER OF SEGMENTS	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	1	QUADROPOLE 6'X20'	2-4-2	Ø 1	Ø 1	B	0	0
2	1	QUADROPOLE 6'X20'	2-4-2	Ø 6	Ø 6	B	0	0
3	2	QUADROPOLE 6'X20'	2-4-2	Ø 6	Ø 6	B	0	0
4	2	QUADROPOLE 6'X20'	2-4-2	Ø 2	Ø 2	B	0	0
5	2	QUADROPOLE 6'X20'	2-4-2	Ø 2	Ø 2	B	0	0
6	2	QUADROPOLE 6'X20'	2-4-2	Ø 4	Ø 4	B	0	0
7	2	QUADROPOLE 6'X20'	2-4-2	Ø 4	Ø 4	B	0	0
8	1	6'X15'	2	Ø 8	Ø 8	B	0	0

- LOOP DETECTOR NOTES:**
- ALL LOOP DETECTOR DATA IS FROM EXISTING CONDITIONS AND SHALL NOT BE ADJUSTED UNLESS OTHERWISE NOTED

PREFERENTIAL PHASING SEQUENCE



NEMA DUAL RING PHASING NOTES:

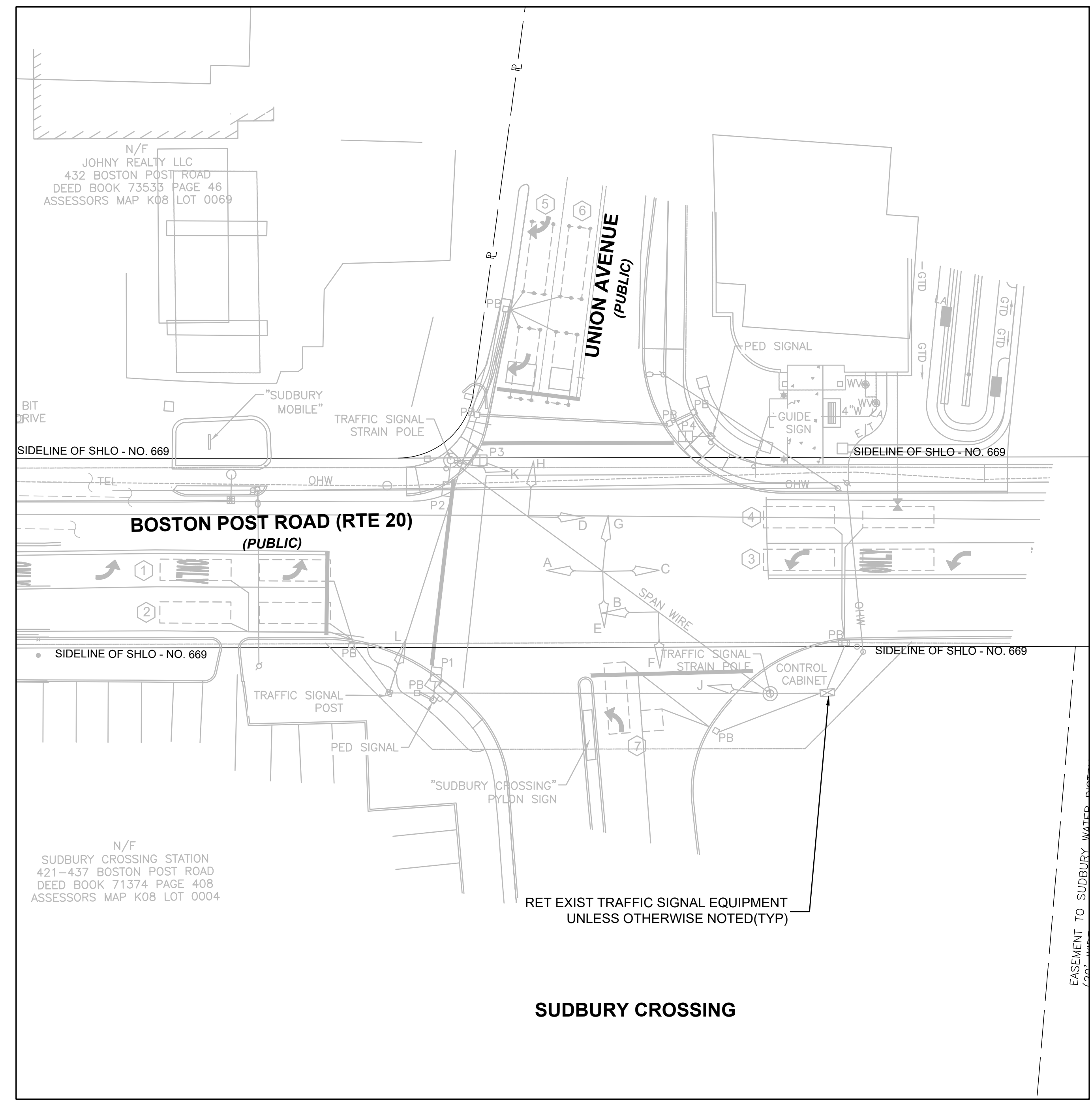


- NEMA DUAL RING PHASING NOTES:**
- PHASES ASSOCIATED BY A SOLID LINE SHALL NOT OPERATE CONCURRENTLY
 - PHASES ASSOCIATED BY A DASHED LINE MAY OPERATE CONCURRENTLY
 - THROUGH MOVEMENTS MAY INCLUDE RIGHT TURNS
 - IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT SHALL NOT CHANGE DURING THE CHANGE INTERVAL(S) UNLESS OTHERWISE NOTED

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	31	73
PROJECT FILE NO.		613319	

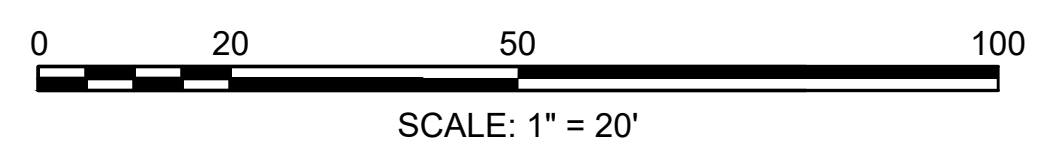
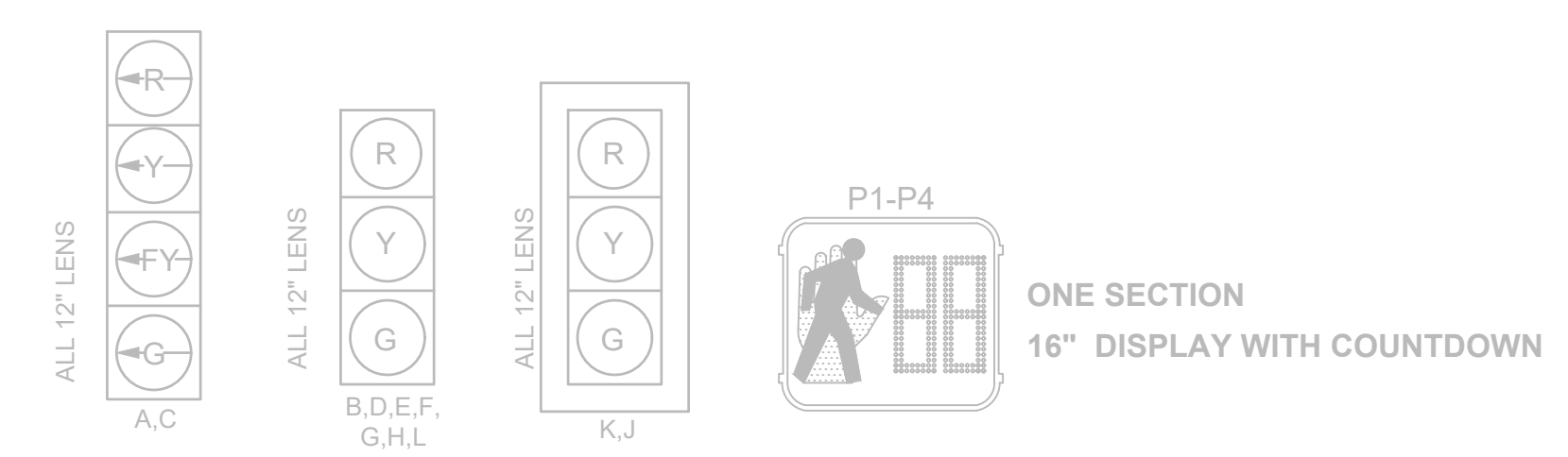
**TRAFFIC SIGNAL PLAN
BOSTON POST RD & UNION AVE
LOCATION NO. 2**



LEGEND

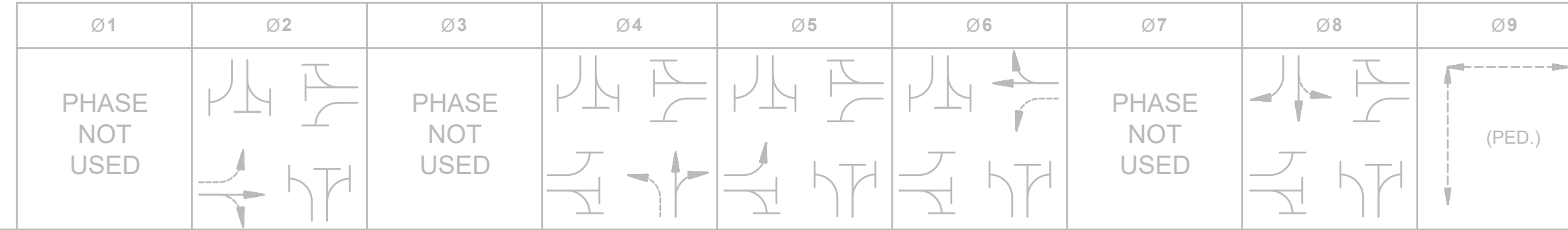
	EXISTING TRAFFIC SIGNAL STRAIN POLE
	EXISTING PEDESTRIAN SIGNAL POST
	EXISTING TRAFFIC SIGNAL POST
	EXISTING SIGNAL HEAD
	EXISTING PEDESTRIAN SIGNAL HEAD
	EXISTING LOOP DETECTOR LOCATIONS

EXISTING SIGNAL IDENTIFICATION



GENERAL NOTES:

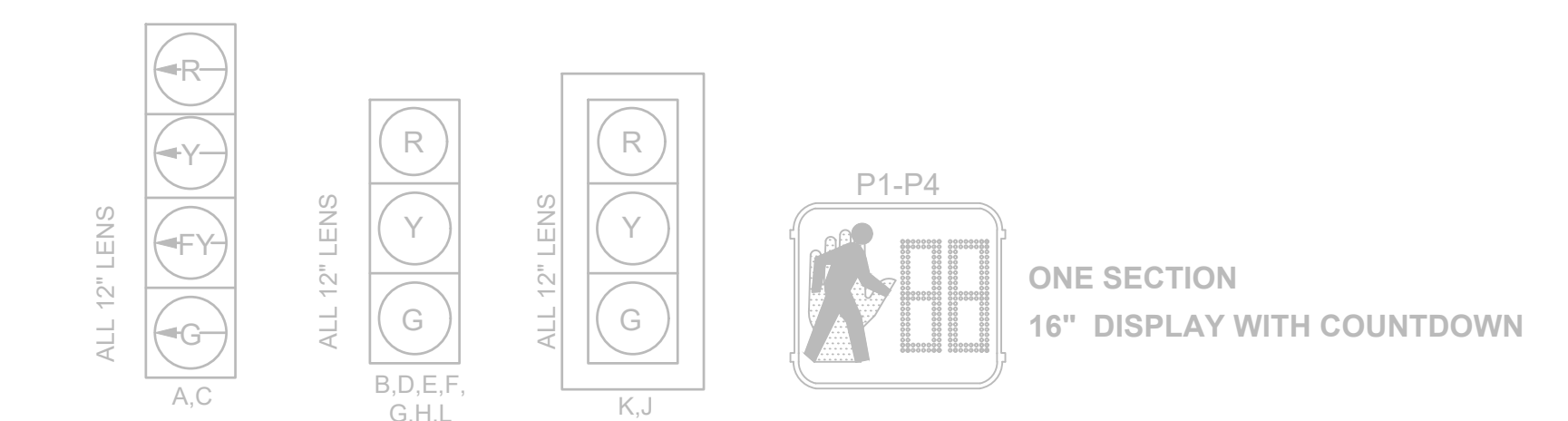
1. ALL EXISTING TRAFFIC SIGNAL EQUIPMENT SHALL BE RETAINED UNLESS OTHERWISE NOTED ON THE PLAN.
2. EXISTING LOOP DETECTION OPERATION SHALL BE RETAINED. SHOULD DETECTION BE DAMAGED AS PART OF CONSTRUCTION ACTIVITY, VEHICLE DETECTION SHOULD BE REPAIRED TO WORKING ORDER AT THE CONTRACTOR'S EXPENSE.



SEQUENCE AND TIMING FOR FULL ACTUATED CONTROL (COORDINATED)																															
	DIRECTION	HOUSINGS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	FLASH OPER.	
BOSTON POST ROAD (ROUTE 20)	EB	A				<FY	<Y	<R				<R	<R	<R	<G	<Y	<R	<R	<R	<R				<R	<R	<R	<R	<R	<R	<FY	
BOSTON POST ROAD (ROUTE 20)	EB	B,J				G	Y	R				R	R	R	R	R	R	R	R	R				R	R	R	R	R	R	FY	
BOSTON POST ROAD (ROUTE 20)	WB	C				<R	<R	<R				<R	<R	<R	<R	<R	<R	<FY	<Y	<R				<R	<R	<R	<R	<R	<R	<FY	
BOSTON POST ROAD (ROUTE 20)	WB	D,K				R	R	R				R	R	R	R	R	R	G	Y	R				R	R	R	R	R	R	FY	
PLAZA DRIVEWAY	NB	E,F				R	R	R				G	Y	R	R	R	R	R	R	R				R	R	R	R	R	R	FR	
UNION AVENUE	SB	G,H,L				R	R	R				R	R	R	R	R	R	R	R	R				G	Y	R	R	R	R	FR	
PEDESTRIAN	ALL	P1-P4				DW	DW	DW				DW	DW	DW	DW	DW	DW	DW	DW	DW				DW	DW	DW	W	FDW	DW	OFF	
TIMING IN SECONDS																															
MINIMUM GREEN (INITIAL)						10						6			6			10						5							
PASSAGE TIME (VEHICLE)						4						2			2			5						2							
MAXIMUM 1						73						17			29			39						17							
MAXIMUM 2						68						22			19			44						22							
YELLOW CLEARANCE							4					4			4			4						4							
RED CLEARANCE								1					1			1			1						1						
WALK (W)																										7	14	4			
PEDESTRIAN CLEARANCE																															
RECALL								MIN					NONE			MAX			MIN												
MEMORY								NON-LOCK					NON-LOCK			NON-LOCK			NON-LOCK												
COORDINATION DATA												COORDINATION PHASE TIMING																			
TIMING PLAN	CYCLE LENGTH	REF/OFFSET	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.	SEC.		
PLAN 1	100 SECONDS	87 SECONDS																													
PLAN 2	100 SECONDS	0 SECONDS																													
PLAN 3	110 SECONDS	43 SECONDS																													

EMERGENCY ONLY

EXISTING SIGNAL IDENTIFICATION



SIGNAL IDENTIFICATION NOTES:
1. ALL SIGNAL LENSES ARE 12" DIA.

MAJOR ITEMS REQUIRED		
PAY ITEM	QUANTITY	ITEM
816.02	1	UPDATING TRAFFIC SIGNAL TIMINGS
		Plus all necessary duct, cable, labor, miscellaneous material and equipment to complete the installation.

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	32	73
PROJECT FILE NO.		613319	

**TRAFFIC SIGNAL DATA
BOSTON POST RD & UNION AVE
LOCATION NO. 2**

COORDINATION NOTES:

- INTERSECTION TO BE COORDINATED WITH ROUTE 20 AT BAY DRIVE/HIGHLAND AVENUE AND ROUTE 20 AT UNION AVENUE.
- MATER LOCATED AT ROUTE 20 AT BAY DRIVE/HIGHLAND AVENUE
- OFFSET TO Ø2+Ø6 (EAST/WEST) BEGINNING OF YELLOW.
- ALL COORDINATION SPLIT TIMES INCLUDE YELLOW AND RED CLEARANCE TIME

MASTER SCHEDULE

	PLAN 1	PLAN 2	PLAN 3	FREE
MON-FRI	0600-0900	1500-1900		0900-1500 1900-0600
SAT-SUN			1000-1400	0000-0999 1401-2399

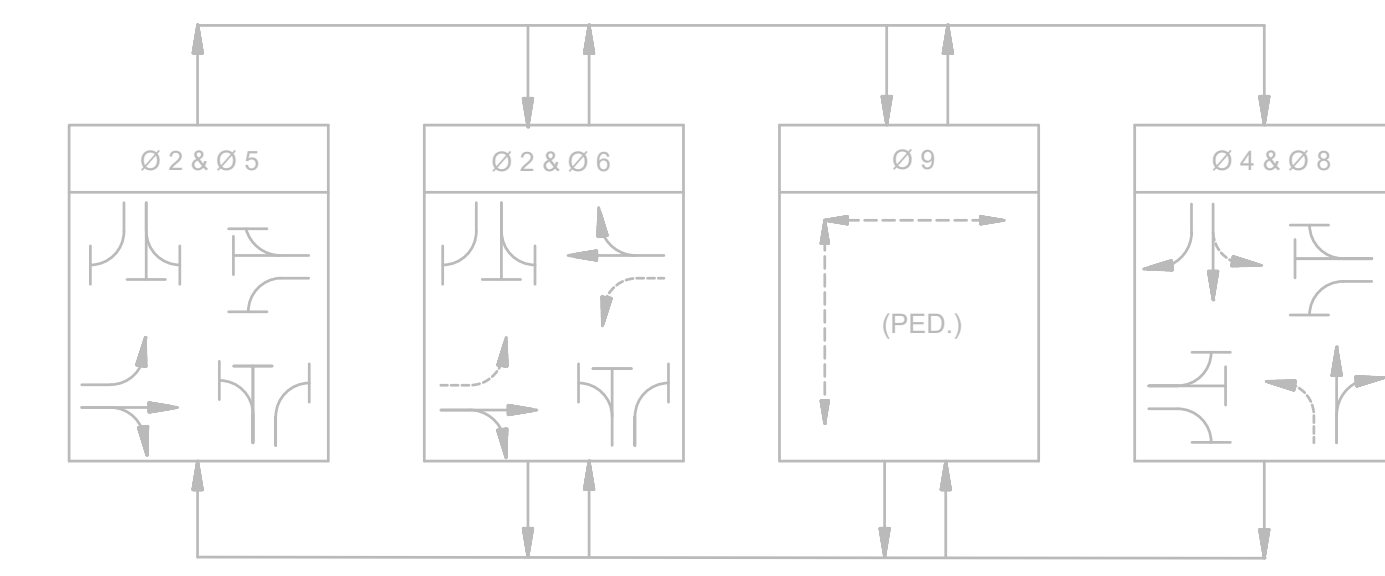
LOOP DETECTOR DATA

SEE PLAN SHEET-LOOP DETECTOR DETAILS FOR LOOP CONSTRUCTION, SPLICING, DETAILS & NOTES. DELAY TIME EFFECTIVE ONLY DURING CALLED Ø RED. TIME IN SEC.

DETECTOR NUMBER	NUMBER OF SEGMENTS	LOOP SIZE	NUM. OF TURNS	Ø CALLED	Ø EXT.	MODE A=PULSE B=PRES.	DELAY TIME	EXT. TIME
1	2	QUADROPOLE 6'X16'	2-4-2	Ø 5	Ø 5	B	0	0
2	2	QUADROPOLE 6'X20'	2-4-2	Ø 2	Ø 2	B	0	0
3	2	QUADROPOLE 6'X20'	2-4-2	Ø 6	Ø 6	B	0	0
4	2	QUADROPOLE 6'X20'	2-4-2	Ø 6	Ø 6	B	0	0
5	2	QUADROPOLE 6'X20'	2-4-2	Ø 8	Ø 8	B	0	0
6	2	QUADROPOLE 6'X20'	2-4-2	Ø 8	Ø 8	B	0	0
7	1	6'X20'	2	Ø 4	Ø 4	B	0	0
	1	8'X6'	2					

NOTE: ALL LOOP DETECTOR DATA IS FROM EXISTING CONDITIONS AND SHALL NOT BE CHANGED

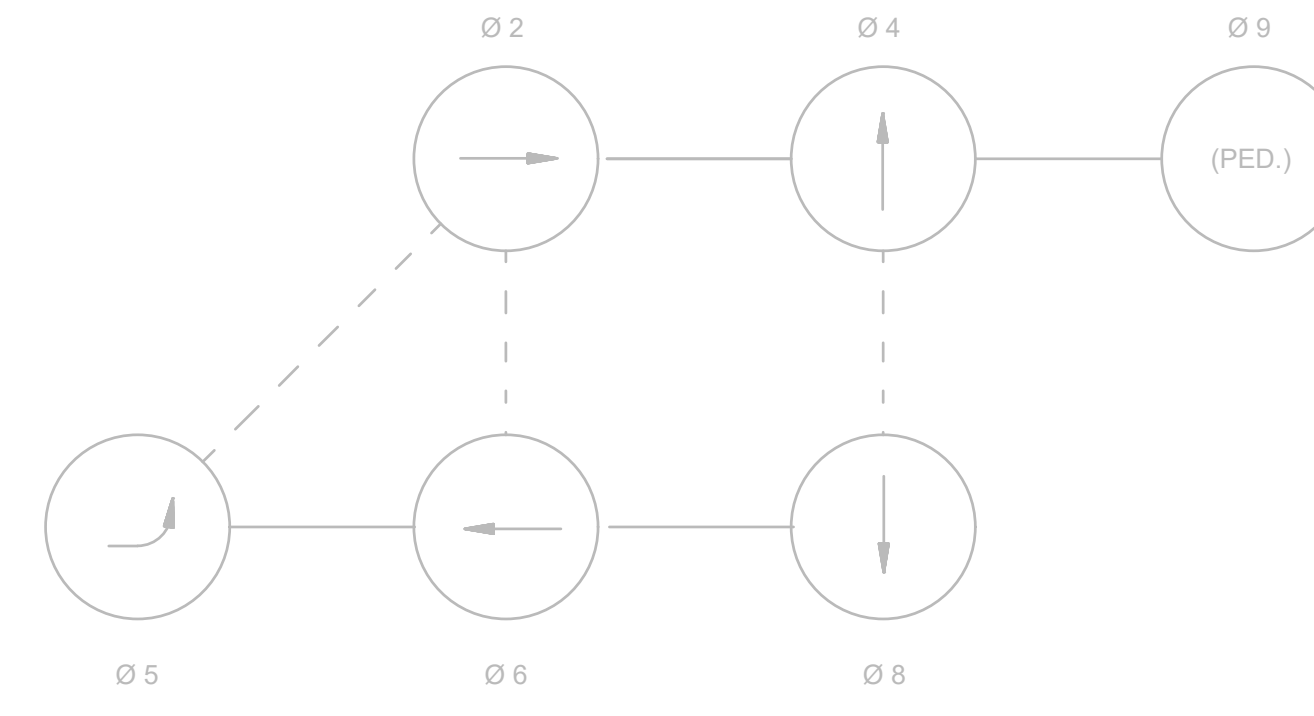
PREFERENTIAL PHASING SEQUENCE



SEQUENCE AND TIMING NOTES

- EXCLUSIVE PEDESTRIAN PHASE TO BE ACTIVATED ONLY BY PEDESTRIAN ACTUATED PUSH BUTTON.
- PHASES Ø1, Ø3, AND Ø7 ARE NOT USED

NEMA DUAL RING PHASING NOTES:



NEMA DUAL RING PHASING NOTES:

- PHASES ASSOCIATED BY A SOLID LINE SHALL NOT OPERATE CONCURRENTLY.
- PHASES ASSOCIATED BY A DASHED LINE MAY OPERATE CONCURRENTLY.
- THROUGH MOVEMENTS MAY INCLUDE RIGHT TURNS.
- IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT SHALL NOT CHANGE DURING THE CHANGE INTERVAL(S) UNLESS OTHERWISE NOTED.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	33	73
PROJECT FILE NO.		613319	

**TRAFFIC MANAGEMENT PLANS
GENERAL NOTES & LEGEND**

BOSTON POST RD	
ROADWAY TYPE	URBAN COLLECTOR
ADT	21,748 vpd
DISTANCE "A"	500'
DISTANCE "B"	500'
DISTANCE "C"	500'
ANTICIPATED SPEED	30 MPH
NOBSCOT RD	
ROADWAY TYPE	URBAN PRINCIPAL ARTERIAL
ADT	7,337 vpd
DISTANCE "A"	500'
DISTANCE "B"	500'
DISTANCE "C"	500'
ANTICIPATED SPEED	35 MPH

THE DIMENSIONS FOR A* & B* MAY REQUIRE FIELD ADJUSTMENTS DUE TO THE URBAN NATURE OF THE PROJECT AREA.

GENERAL NOTES:

- IF ANY STAGE REQUIRES MODIFICATION OF THE TRAFFIC SIGNAL OPERATION, THE CONTRACTOR SHALL SUBMIT A REVISED SIGNAL TIMING AND PHASING PLAN TO THE TOWN OF SUDBURY FOR APPROVAL BEFORE MODIFYING THE TRAFFIC SIGNAL.
- CONTRACTOR SHALL CONSTRUCT SIDEWALK IN SMALL SECTION IN ORDER TO MAINTAIN ACCESS TO BUILDINGS. THE CONTRACTOR SHALL COORDINATE WITH BUSINESS AND PROPERTY OWNERS ON ALL WORK IN FRONT OF THEIR BUILDINGS.
- ALL TRAFFIC MANAGEMENT CONFIGURATIONS SHALL CONFORM TO THE STANDARD MASSDOT DETAILS ON THE FOLLOWING SHEETS AND APPLY TO ALL LOCATIONS INCLUDED IN THE CONTRACT.
- TYPICAL WORK HOURS ON THE RAIL TRAIL WITHIN THE MASSDOT LAYOUT, SHALL BE 7AM TO 3PM MONDAY THRU FRIDAY UNLESS OTHERWISE APPROVED BY MASSDOT AND THE TOWN. NO WORK SHALL OCCUR WITHIN PUBLIC ROADWAYS DURING PEAK PERIODS (MONDAY THRU FRIDAY, 7AM-9AM AND 4PM-6PM) UNLESS OTHERWISE APPROVED IN WRITING BY THE TOWN OF SUDBURY. NO WORK SHALL BE PERMITTED ON SATURDAY OR SUNDAY WITHOUT PRIOR WRITTEN APPROVAL FROM THE TOWN OF SUDBURY.
- ALL TRENCHES IN THE ROADWAY SHALL BE BACKFILLED AND PATCHED WITH HOT MIX ASPHALT OR COVERED WITH BEVELLED EDGES STEEL PLATES BEFORE REOPENING THE ROADWAY TO TRAFFIC.
- FOR DROP-OFFS 4" 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 4" BUT NO MORE THAN 12", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:4H (MIN) TO 1V:6H (DESIRED) WEDGE OR TO SHIELD IT. FOR DROP-OFFS GREATER THAN 12" BUT NO MORE THAN 24", DETERMINE WHETHER IT IS MORE COST EFFECTIVE TO MAINTAIN AN ADDITIONAL 5' OF SHOULDER WIDTH AND INSTALL BOTH TEMPORARY CHANNELIZATION DEVICES AND A 1V:6H (DESIRE) WEDGE OR TO SHIELD IT. FOR DROP-OFFS 24" OR GREATER USE BARRIER IN ACCORDANCE WITH MASSDOT WORK ZONE POSITIVE PROTECTION GUIDELINES.
- CONTRACTOR SHALL STAGE WORK SUCH THAT A DROP-OFF OF NO MORE THAN 12" AT THE END OF EACH WORK DAY EXISTS WITHIN THE CLEAR ZONE AT ANY TIME AND ENSURE DROP-OFF IS MITIGATED WITHOUT BARRIER PER NOTE 11.
- 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
- COVER ALL EXISTING SIGNAGE THAT CONFLICTS WITH THE TRAFFIC MANAGEMENT SETUP IN PLACE.
- PORTABLE CHANGEABLE MESSAGE BOARDS (PCMB) SHALL BE USED ON SOUTH STREET; THESE SIGNS SHALL ADVISE MOTORISTS TO EXPECT DELAYS, AND ADVISE TRAILER TRUCKS OF RESTRICTED LANE WIDTHS (AND POSSIBLE DETOUR ROUTES) ON SPECIFIC APPROACHES DURING CERTAIN STAGES OF CONSTRUCTION.
- THE CONTRACTOR SHALL PLACE TWO PORTABLE CHANGEABLE MESSAGE BOARDS (PCMB) ON THE PROJECT SITE, FOR SEVEN DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN NCHRP 350 AND/OR MASH CRASH TESTED SIGN SUPPORTS AND INSTALLED IN ACCORDANCE WITH THE MUTCD.
- ALL ADVANCED SIGNAGE SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT.
- IF FLAGGERS ARE USED FOR TRAFFIC CONTROL, THE FLAGGER SIGN (W20-7a) SHALL BE SUBSTITUTED FOR THE POLICE OFFICER AHEAD (MA-W20-7b) SIGN.
- FOR EXISTING OR TEMPORARY CROSSWALKS IN A PEDESTRIAN BYPASS AREA (E.G. FIGURE PED-3 STANDARD DETAILS) THERE SHALL BE A PEDESTRIAN WARNING SIGN WITH PLACARD (W11-2 AND W16-7P) ON EACH APPROACH (TRAVEL DIRECTION) AT THE CROSSWALK.

NOTES:

- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED BY THESE PLANS.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- TEMPORARY CONSTRUCTION SIGNING, BARRICADES, AND ALL OTHER NECESSARY WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
- SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, CHANNELIZING DEVICES, BARRIERS, AND CRASH ATTENUATORS MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES" AND/OR "MANUAL FOR ASSESSING SAFETY HARDWARE" (MASH).
- CONTRACTORS SHALL NOTIFY EACH ADJUTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT, AND SIMILAR OPERATIONS.
- THE FIRST TEN PLASTIC DRUMS OF A TAPER SHALL BE MOUNTED WITH SEQUENTIAL LIGHTS.
- THE ADVISORY SPEED LIMIT, IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- MINIMUM LANE WIDTH IS TO BE 11 FEET (3.3m) UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
- ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

LEGEND:

● REFLECTORIZED PLASTIC DRUM OR 36" CONE	▨ WORK ZONE	▭ WORK VEHICLE
P/F POLICE/FLAGGER DETAIL	→ DIRECTION OF TRAFFIC	▭ TRUCK MOUNTED ATTENUATOR
▭ TYPE III BARRICADE	▭ IMPACT ATTENUATOR	→ TRAFFIC OR PEDESTRIAN SIGNAL
▭ CHANGEABLE MESSAGE SIGN	▭ MEDIAN BARRIER	● SIGN
▭ ARROW BOARD	▭ MEDIAN BARRIER WITH WARNING LIGHTS	

THE IDEAL CAPACITY OF A MAJOR HIGHWAY IS GENERALLY CONSIDERED TO BE 1900 PASSENGER CARS PER HOUR PER LANE (PCPHPL). IN WORK ZONES ON A MULTI-LANE DIVIDED HIGHWAY, THE FOLLOWING VOLUME GUIDELINES HAVE BEEN SUGGESTED:

MEASURED AVERAGE WORK ZONE CAPACITIES

NUMBER OF LANES (EXISTING)	NUMBER OF OPEN (TO TRAFFIC)	NUMBER OF STUDIES	AVERAGE CAPACITY	
			VPH	VPHPL
3	1	7	1,170	1,170
2	1	8	1,340	1,340
5	2	8	2,740	1,570
4	2	4	2,980	1,480
3	2	8	2,880	1,490
4	3	4	4,560	1,520

Source: Dudek, C., Notes on Work Zone Capacity and Level of Service, Texas Transportation Institute, Texas A&M University, College Station, Texas (1984)

BY OBTAINING HOURLY TRAFFIC COUNTS FOR A PARTICULAR ROADWAY (WITH A MINIMUM OF A 48-HOUR AUTOMATIC TRAFFIC RECORDER (ATR) COUNT), THIS WILL HELP TO DETERMINE AT WHAT TIMES OF THE DAY OR NIGHT A CERTAIN NUMBER OF LANES MAY BE CLOSED.

	Standard Details and Drawings for the Development of Temporary Traffic Control Plans	FIGURE Gen-1 GENERAL GUIDELINES
--	--	------------------------------------

SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS **		
	A	B	C
LOCAL OR LOW VOLUME ROADWAYS*	350 (100)	350 (100)	350 (100)
MOST OTHER ROADWAYS*	500 (150)	500 (150)	500 (150)
FREEWAYS AND EXPRESSWAYS*	1,000 (300)	1,500 (450)	2,640 (800)

* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.

** DISTANCES ARE SHOWN IN FEET (METERS). THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (I.E. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (I.E. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

MA-R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

MA-R2-10a, MA-R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

Based on: Table 6C-1 MUTCD LATEST EDITION

STOPPING SIGHT DISTANCE AS A FUNCTION OF SPEED

SPEED* (mph)	DISTANCE (ft)
20	113
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

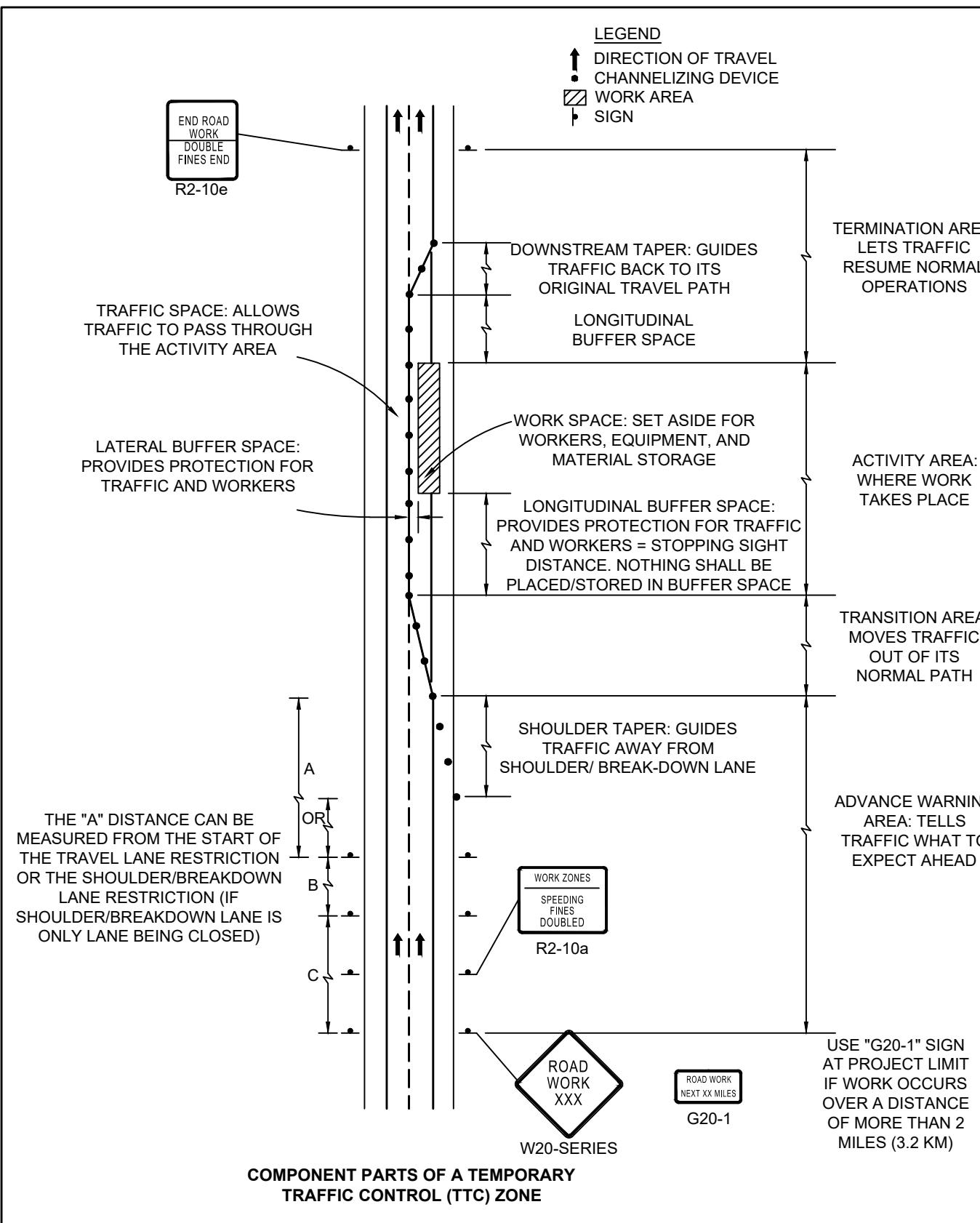
*POSTED SPEED, OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

THESE VALUES MAY BE USED TO DETERMINE THE LENGTH OF LONGITUDINAL BUFFER SPACES.

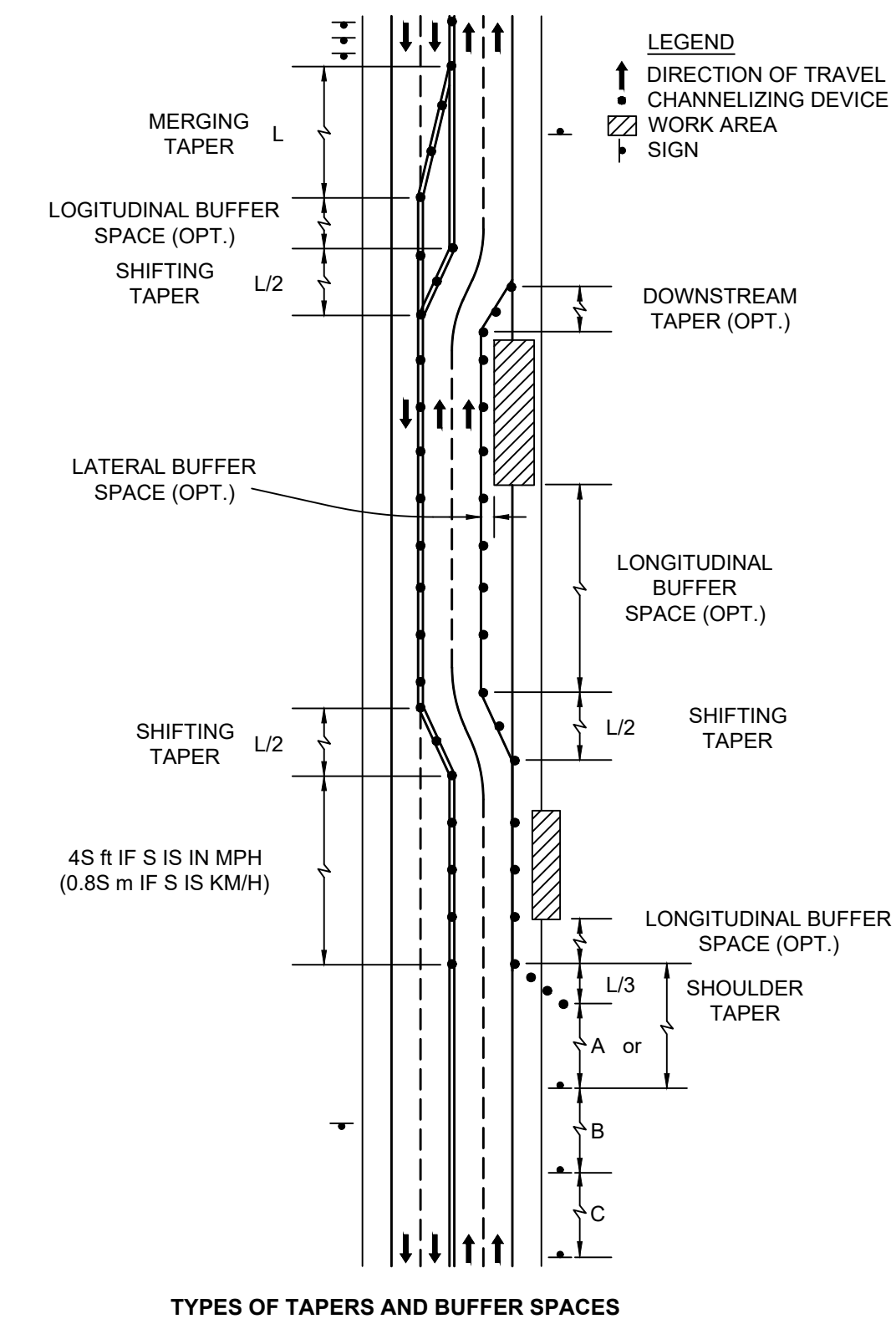
THE DISTANCES IN THE ABOVE CHART REPRESENT THE MINIMAL VALUES FOR BUFFER SPACING.

Source: Table 6C-2 MUTCD LATEST EDITION

	Notes for Temporary Traffic Control Plans	FIGURE Gen-2 NOTES ON WORK ZONE DISTANCES
--	---	--



	Standard Details and Drawings for the Development of Temporary Traffic Control Plans	FIGURE Gen-4 COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE NOT TO SCALE
--	--	---



	Standard Details and Drawings for the Development of Temporary Traffic Control Plans	FIGURE Gen-5 TYPES OF TAPERS AND BUFFER SPACES NOT TO SCALE
--	--	---

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	34	73
PROJECT FILE NO.		613319	

TRAFFIC MANAGEMENT PLANS
TYPICAL DETAILS

CONVENTIONAL ROADWAY— A STREET OR HIGHWAY OTHER THAN A LOW-VOLUME ROAD, EXPRESSWAY, OR FREEWAY.
EXPRESSWAY— A DIVIDED HIGHWAY WITH PARTIAL CONTROL OF ACCESS.
FREEWAY— A DIVIDED HIGHWAY WITH FULL CONTROL OF ACCESS.
LOW-VOLUME ROAD— A FACILITY LYING OUTSIDE OF BUILT-UP AREAS OF CITIES, TOWNS, AND COMMUNITIES, AND IT SHALL HAVE A TRAFFIC VOLUME OF LESS THAN 400 ADIT. IT SHALL NOT BE A FREEWAY, EXPRESSWAY, INTERCHANGE RAMP, FREEWAY SERVICE ROAD OR A ROAD ON A DESIGNATED STATE HIGHWAY SYSTEM.

Source: MUTCD LATEST EDITION

TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) MAX.
DOWNSTREAM TAPER	50 FT MIN.(15 m) 100 FT MAX.(30 m) PER LANE

Source: Table 6C-3 MUTCD LATEST EDITION

FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET	SPEED LIMIT (S)	TAPER LENGTH (L) Meters
40 MPH OR LESS	$L = \frac{WS^2}{60}$	60 KM/H OR LESS	$L = \frac{WS^2}{155}$
45 MPH OR MORE	$L = WS$	70 KM/H OR MORE	$L = \frac{WS}{1.6}$

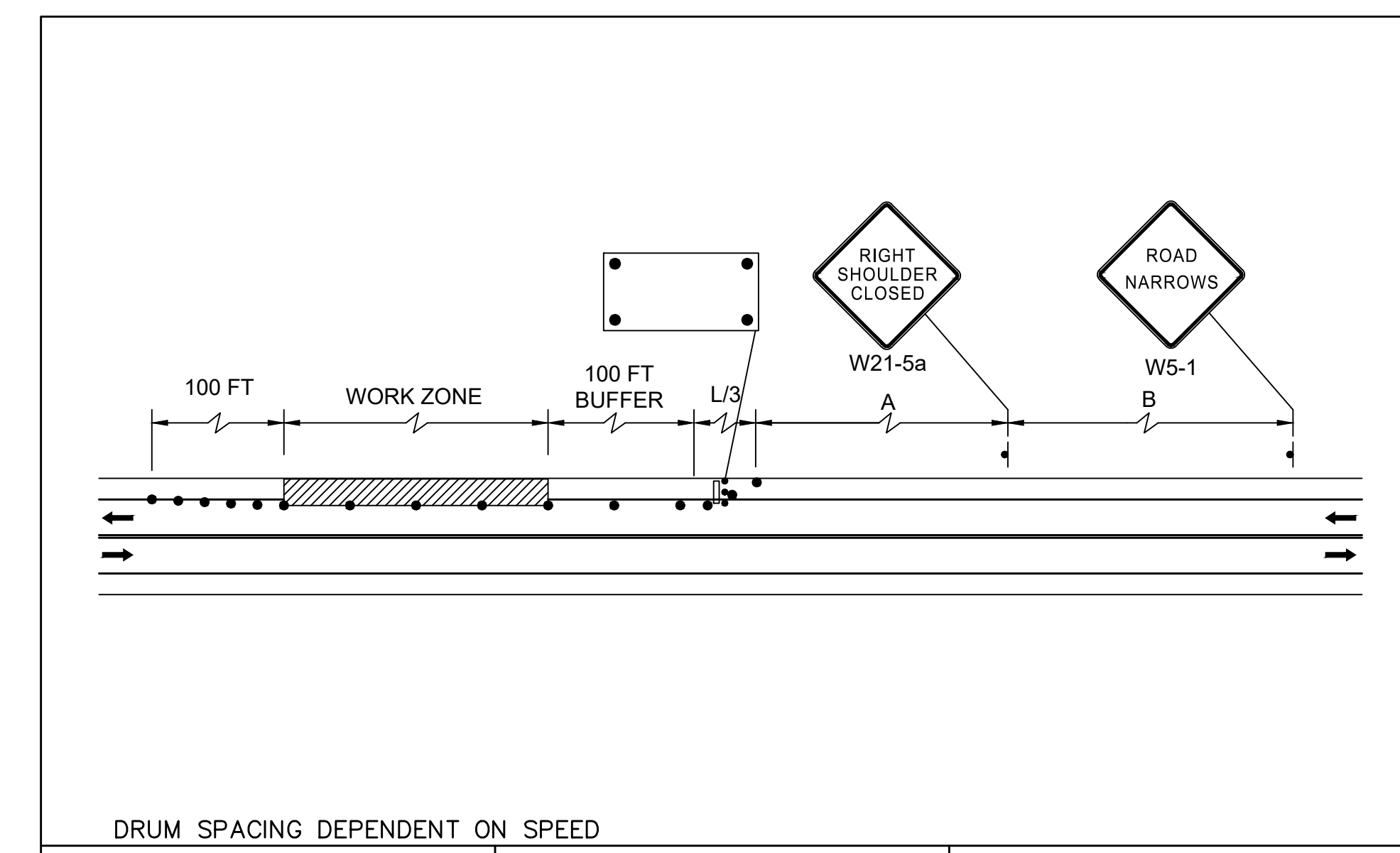
WHERE: L = TAPER LENGTH IN FEET (METERS)
 W = WIDTH OF OFFSET IN FEET (METERS)
 S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH (KM/H)

Source: Table 6C-4 MUTCD LATEST EDITION



Notes for Temporary Traffic Control Plans

FIGURE Gen-3
NOTES ON WORK ZONE DISTANCES

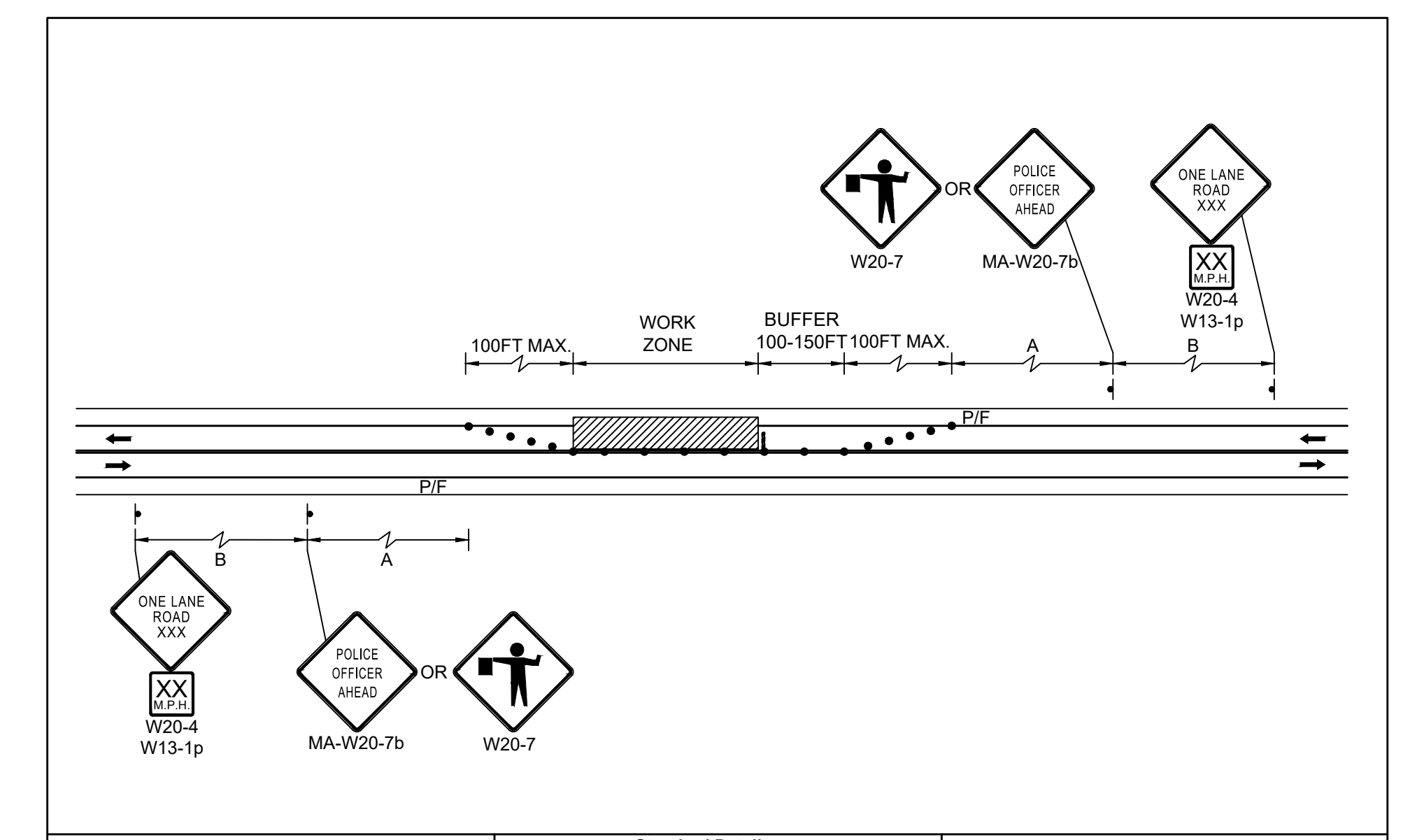


DRUM SPACING DEPENDENT ON SPEED



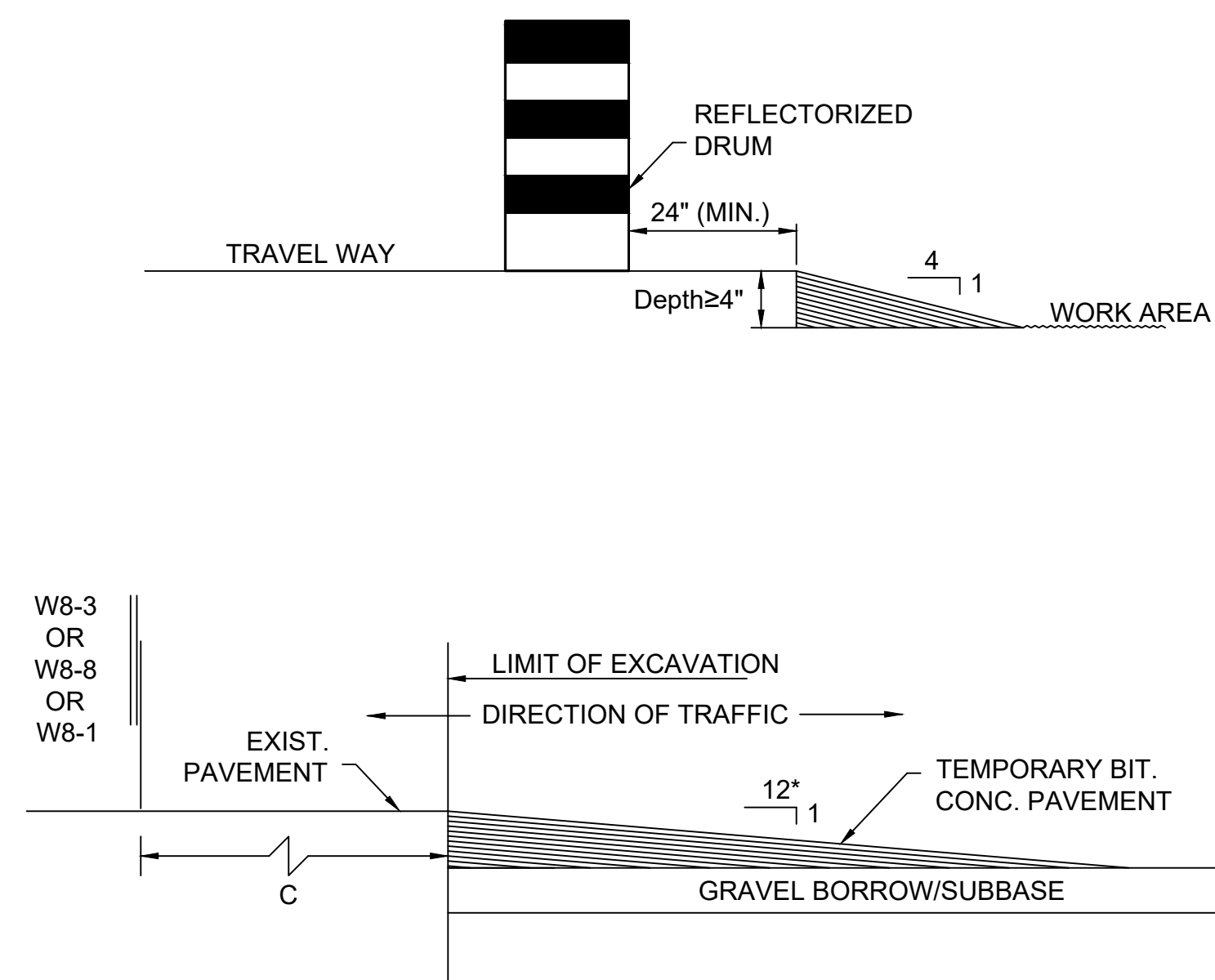
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE TLR-1
TWO LANE ROAD SHOULDER CLOSED
NOT TO SCALE



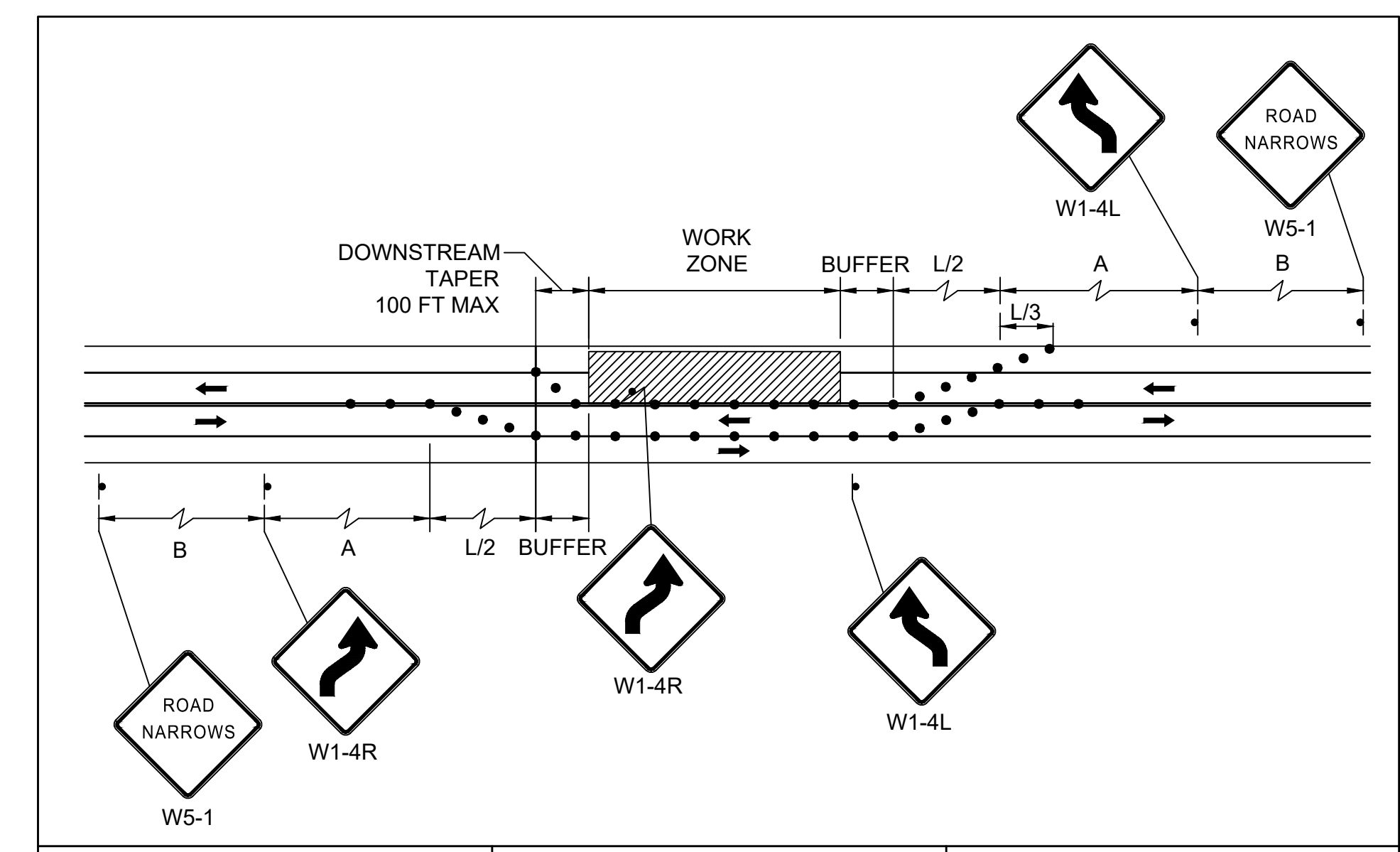
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE TLR-5
TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC WITH POLICE DETAIL
NOT TO SCALE



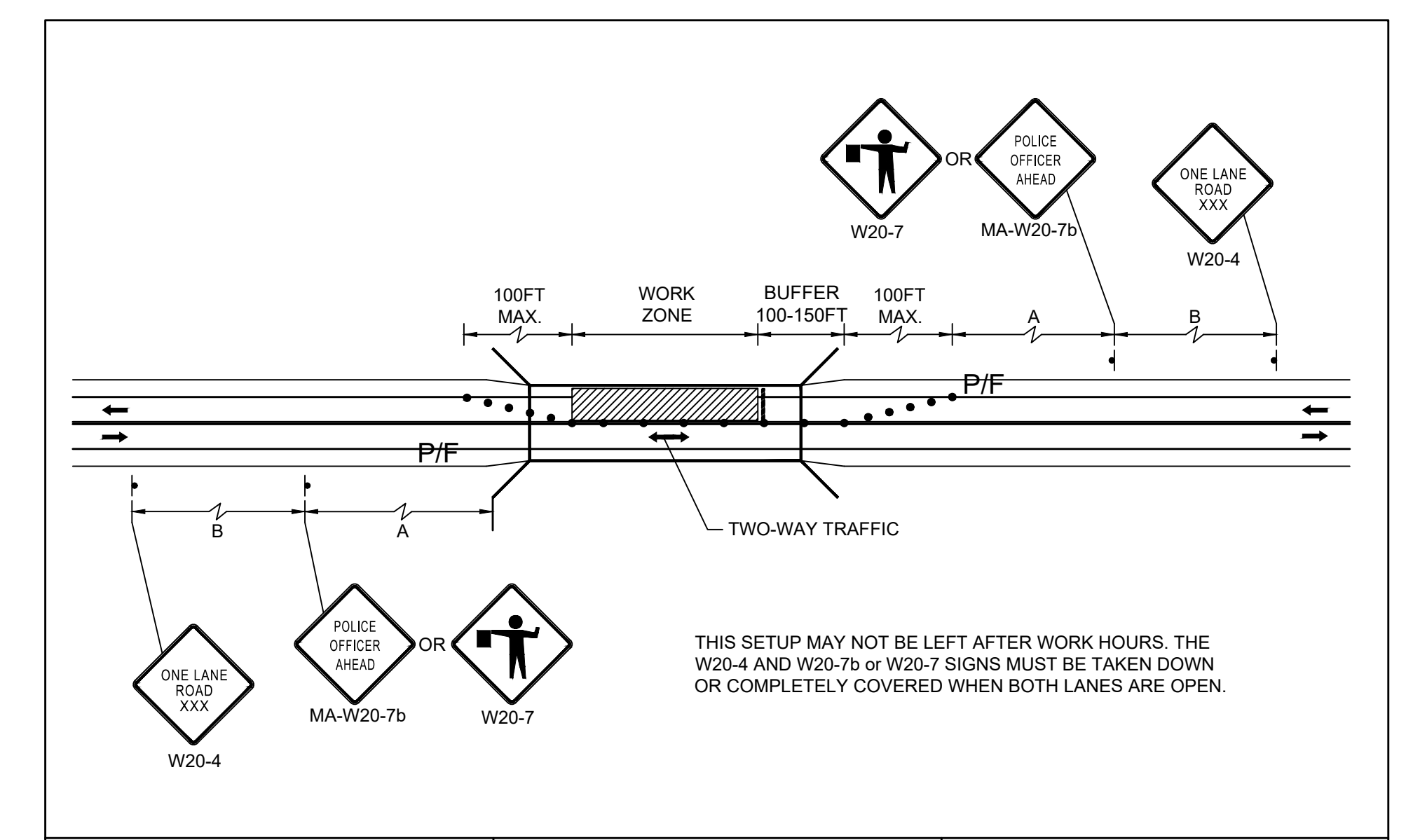
* - INCREASE SLOPE RATIO FOR HIGHER SPEEDS

W8-3 OR W8-8 OR W8-1



Standard Details and Drawings for the Development of Temporary Traffic Control Plans

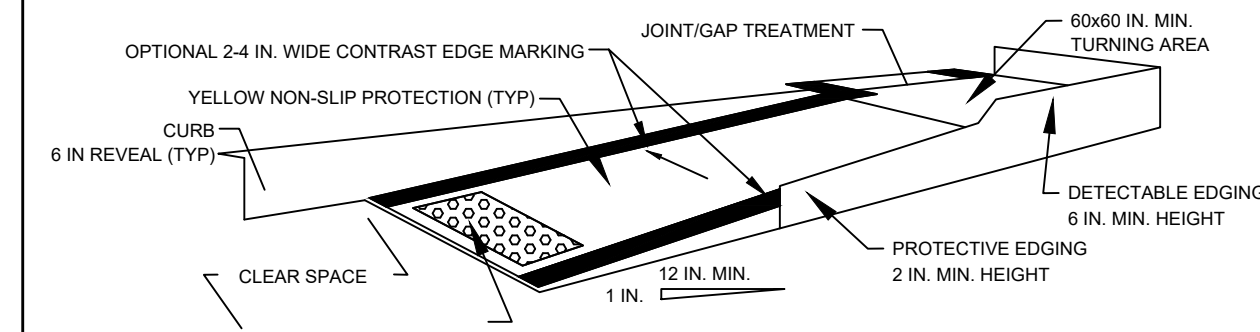
FIGURE TLR-2
TWO LANE ROAD SHOULDER AND TRAVEL LANE CLOSED
NOT TO SCALE



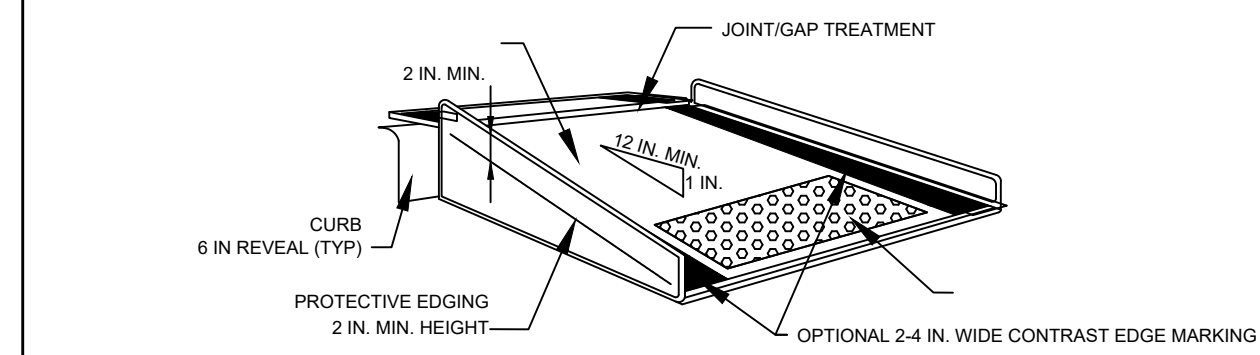
Standard Details and Drawings for the Development of Temporary Traffic Control Plans

FIGURE BRG-1
ONE LANE ALTERNATING TRAFFIC
NOT TO SCALE

FIGURE 4
TYPICAL PEDESTRIAN DEVICES
(1 OF 2)
NOT TO SCALE



TEMPORARY CURB RAMP-PARALLEL TO CURB



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB

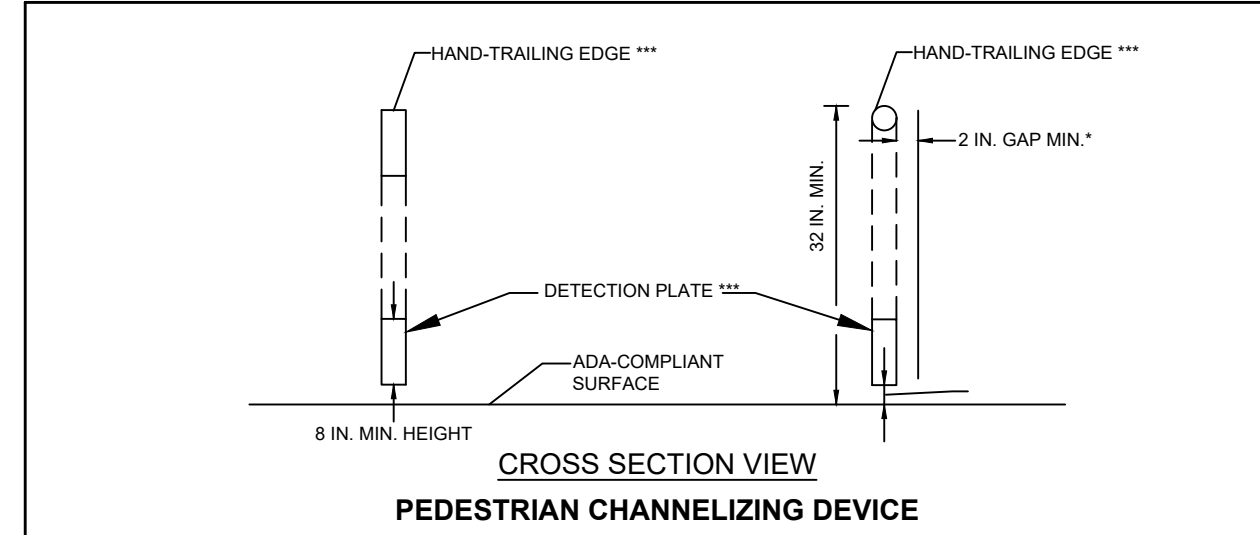
NOTES:

- CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE, AND NON-SLIP SURFACE.
- PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 8 IN. OR GREATER OR HAS A SIDE APRON SLOP STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
- PROTECTABLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
- THE CURB RAMP WALKWAY AND LANDING AREA SURFACE SHALL BE OF A SOLID CONTINUOUS CONTRASTING COLOR ABUTTING UP TO THE EXISTING SIDEWALK.
- CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS-SLOPE.
- CLEAR SPACE OF 48x48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
- WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
- LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
- CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HEIGHT.
- 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.

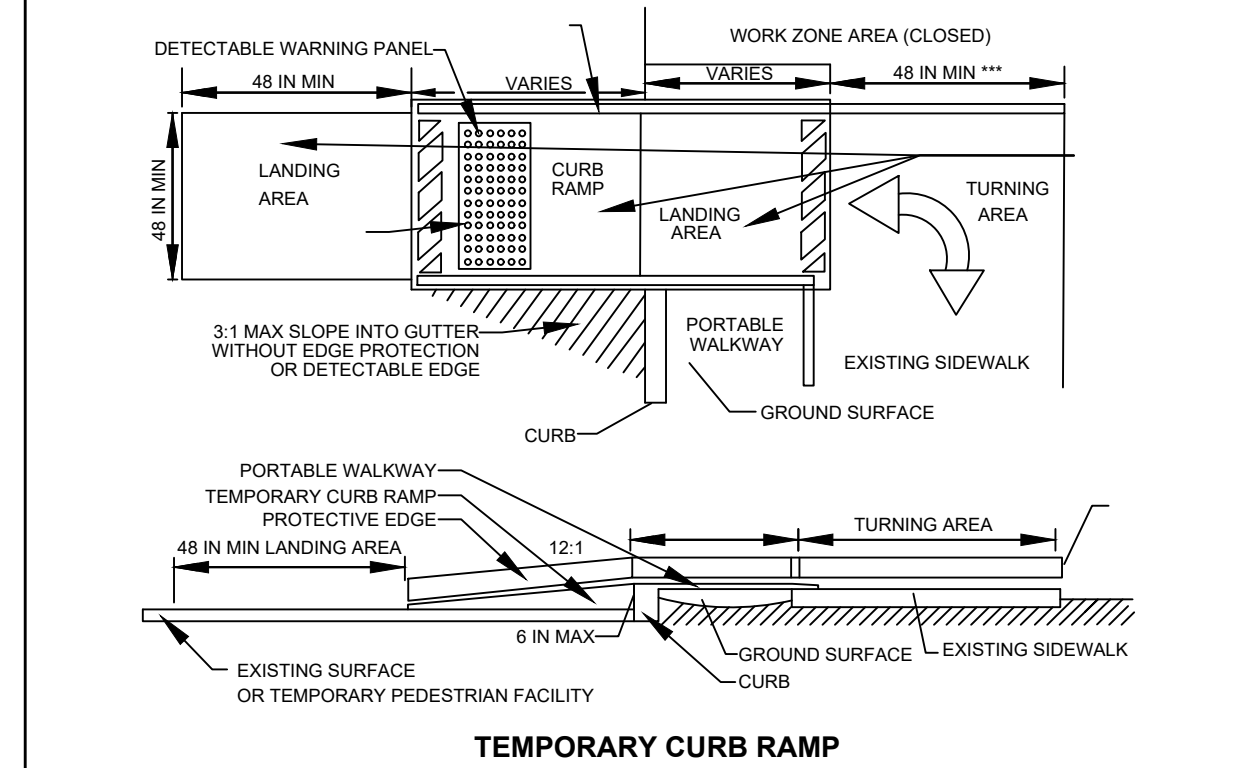
FIGURE 46
TEMPORARY SIDEWALK CLOSURE

NOTES:

- CLOSURE OF A SIDEWALK FACILITY SHALL CONSTITUTE THE PROVISION FOR MANAGING PEDESTRIAN TRAFFIC AND ACCOMMODATING ALL USERS. IF THE EXISTING PEDESTRIAN ACCESS ROUTE(S) CAN BE TEMPORARILY RELOCATED ALONG THE EXISTING SIDEWALK, AND SAID FACILITY PROVIDES A MINIMUM WIDTH OF 48-INCHES OF SOLID, SMOOTH UNOBSTRUCTED SURFACE, THEN NO DETOURING OF THE ROUTE SHALL BE REQUIRED. DELINEATION OF THE WORK AREA IS STILL REQUIRED.
- IF IT IS NECESSARY TO DIVERT PEDESTRIAN TRAFFIC TO AN ALTERNATE ROUTE ACROSS THE ROADWAY FROM THE EXISTING FACILITY, THE FIGURE ABOVE SHALL BE FOLLOWED TO PROVIDE ADEQUATE DIRECTION TO PEDESTRIANS. ALTERNATE ROUTE SHALL PROVIDE THE SAME LEVEL OF ACCOMMODATION AS THE FACILITY THAT IS BEING DETOURED AND RETAIN ADA COMPLIANCE IN ITS ENTIRETY.
- FOR EMERGENCY OR SHORT-DURATION SIDEWALK CLOSURES OF 4-HOURS OR LESS, IT IS OPTIONAL TO HAVE ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL AVAILABLE AT ALL TIMES DURING THE CLOSURE TO ASSIST THOSE MOBILITY CHALLENGED PERSONS WHO REQUIRE ADDITIONAL ASSISTANCE TO SAFELY NAVIGATE AROUND THE WORK AREA IN LIEU OF A FULL DETOUR.



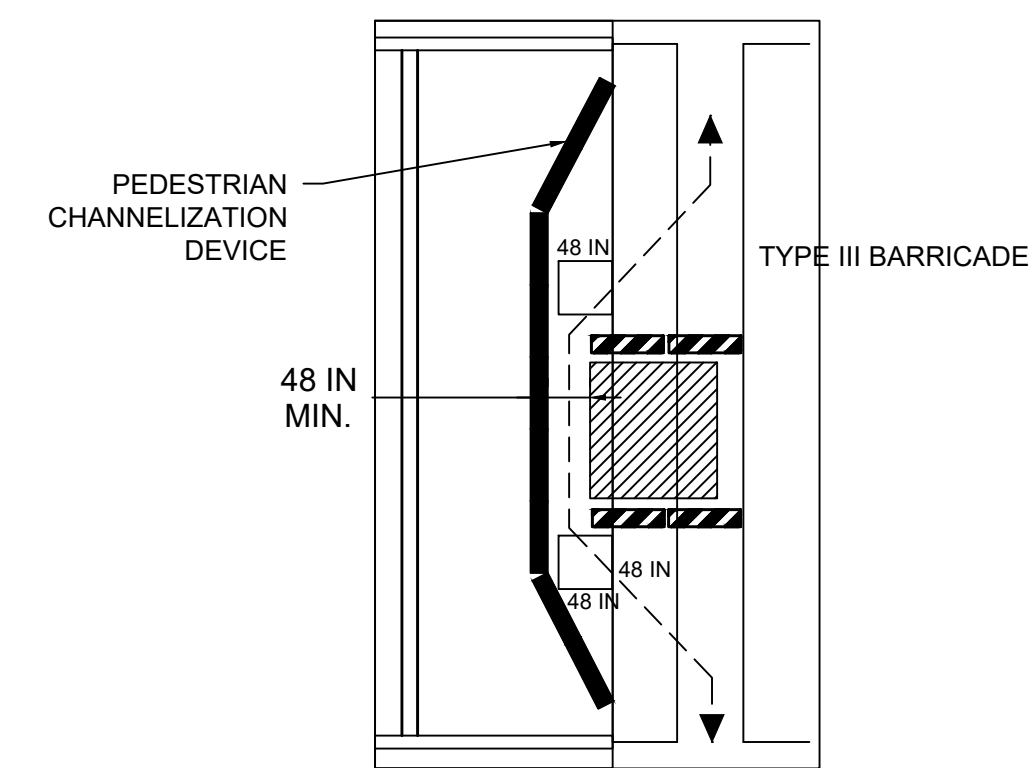
CROSS SECTION VIEW
PEDESTRIAN CHANNELIZING DEVICE



TEMPORARY CURB RAMP

FIGURE 5
TYPICAL PEDESTRIAN DEVICES
(2 OF 2)
NOT TO SCALE

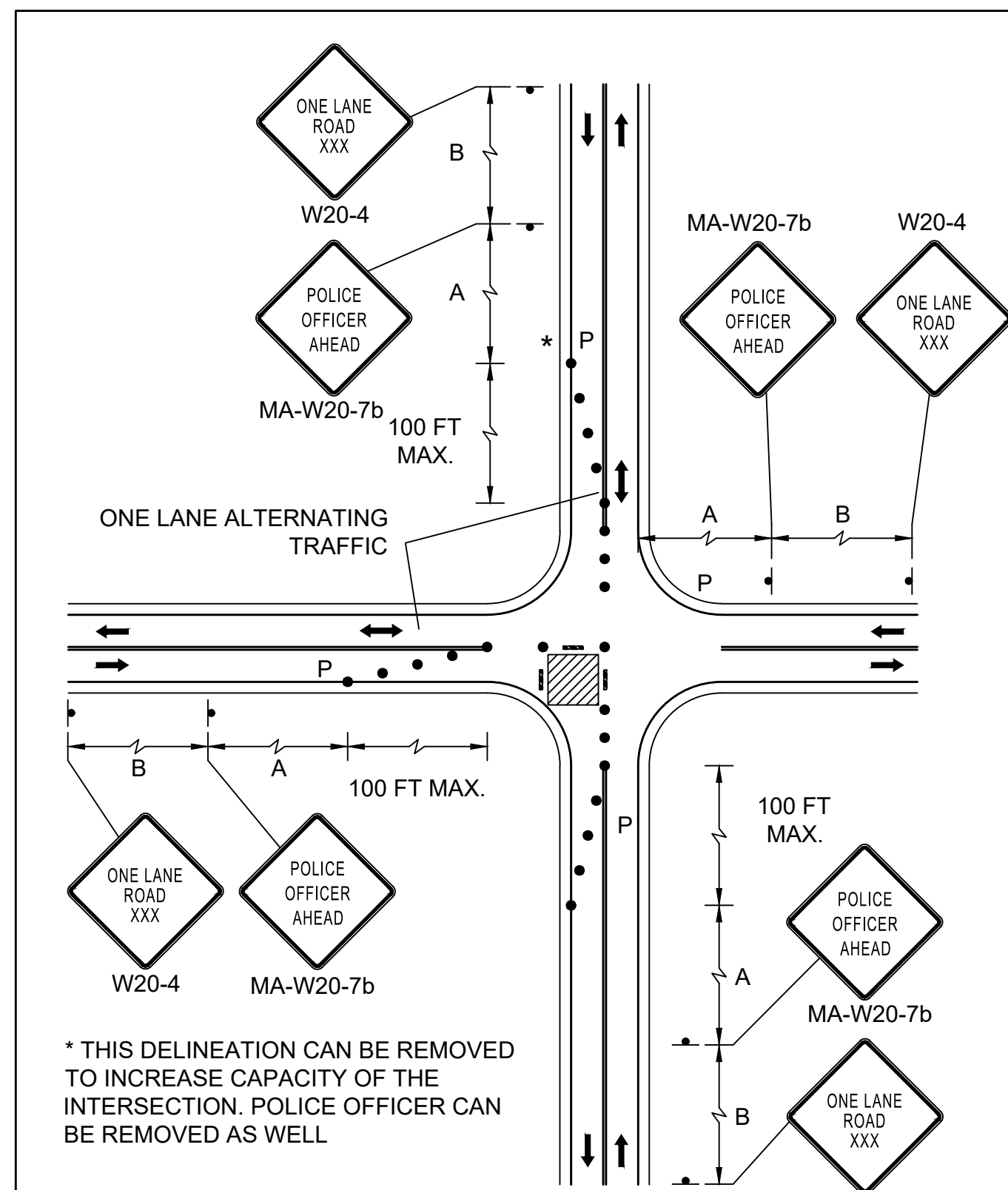
FIGURE 45
PEDESTRIAN BYPASS



NOTES:

- WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
- A PEDESTRIAN CHANNELIZING DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ALONG THE FULL LENGTH OF THE TEMPORARY PEDESTRIAN ROUTE.
- WHEN USED, TEMPORARY RAMPS SHALL COMPLY WITH AMERICANS WITH DISABILITIES ACT.
- THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
- THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THE SIDEWALK EXCEEDS 200 FEET THEN A 5 FOOT BY 5 FOOT PASSING ZONE SHALL BE PROVIDED NEAR THE MID-POINT OF THE CLOSURE.
- THE PROTECTIVE REQUIREMENTS OF A TTC WORK ZONE MAY HAVE AN IMPACT IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN PROVIDING PEDESTRIAN DELINEATION SHOULD BE BASED ON ENGINEERING JUDGMENT.
- ON-DEMAND PEDESTRIAN ASSISTANCE PERSONNEL TO ASSIST WITH NAVIGATION AROUND THE CLOSURE/WORK AREA MAY BE CONSIDERED AS AN OPTION IN PLACE OF PROVIDING ADA/AAB DEVICES FOR WORK FOR CLOSURES LASTING 4 HOURS OR LESS.
- CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN; VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE. THESE DETAILS ARE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DETERMINED BY THE ENGINEER.

FIGURE Int-2
SINGLE LANE APPROACH
ONE QUADRANT CLOSURE
NOT TO SCALE



* THIS DELINEATION CAN BE REMOVED TO INCREASE CAPACITY OF THE INTERSECTION. POLICE OFFICER CAN BE REMOVED AS WELL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	35	73

PROJECT FILE NO. 613319

TRAFFIC MANAGEMENT PLANS
TYPICAL DETAILS

SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	36	73
PROJECT FILE NO.		613319	

TRAFFIC MANAGEMENT PLANS
SIGN SUMMARY



W20-1 WITH MA-D3-1 DETAIL

N.T.S.

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (in)			COLOR			SIGN FACE AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER	
R3-7L	30	30		SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION)			WHITE	BLACK	BLACK	6.25
R3-7R	30	30					WHITE	BLACK	BLACK	6.25
R9-8	36	18					WHITE	BLACK	BLACK	4.5
R9-9	24	12					WHITE	BLACK	BLACK	2
R9-10	24	12					WHITE	BLACK	BLACK	2
R9-11L	24	18					WHITE	BLACK	BLACK	3
R9-11R	24	18					WHITE	BLACK	BLACK	3
R9-11aL	24	18					WHITE	BLACK	BLACK	3
R9-11aR	24	18					WHITE	BLACK	BLACK	3
W1-4L	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
W1-4R	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
W4-2L	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
MA-W4-7L	36	36		SEE MASSDOT 2016 STANDARD SIGNS BOOK			FLRSCNT. ORANGE	BLACK	BLACK	9
W5-1	36	36		SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION)			FLRSCNT. ORANGE	BLACK	BLACK	9
W8-3	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
W11-2	30	30					FLRSCNT. YELLOW /GREEN	BLACK	BLACK	6.25
W13-1	24	24					FLRSCNT. ORANGE	BLACK	BLACK	4

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (in)			COLOR			SIGN FACE AREA (S.F.)
	WIDTH (IN)	HEIGHT (IN)		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER	
W16-7PL	24	12		SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION)			FLRSCNT. YELLOW /GREEN	BLACK	BLACK	2
W16-9P	24	12					FLRSCNT. YELLOW /GREEN	BLACK	BLACK	2
W20-4	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
W20-5L	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
W20-5R	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
W20-7a	36	36					FLRSCNT. ORANGE	BLACK	BLACK	9
MA-W20-7b	36	36		SEE MASSDOT 2016 STANDARD SIGNS BOOK			FLRSCNT. ORANGE	BLACK	BLACK	9
W21-5aR	36	36		SEE FHWA 2004 STANDARD HIGHWAY SIGNS MANUAL & 2012 SUPPLEMENT (ENGLISH VERSION)			FLRSCNT. ORANGE	BLACK	BLACK	9

FIXED CONSTRUCTION WARNING SIGN PLAN

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	QUANTITY	TEXT DIMENSIONS (in)			COLOR			POST SIZE AND NUMBER REQUIRED	SIGN FACE AREA (S.F.)	TOTAL AREA NEEDED (S.F.)
	WIDTH (IN)	HEIGHT (IN)			LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	BACK-GROUND	LEGEND	BORDER			
MA-D3-1	40	18		3	5C	3	N/A	FLRSCNT. ORANGE	BLACK	BLACK	MOUNTED W/ W20-1	5	70
MA-R2-10a	48	36		3	SEE MASSDOT 2016 STANDARD SIGNS BOOK			FLRSCNT. ORANGE / WHITE	BLACK	BLACK	U-CHAN. 15 REQ'D	12	180
MA-R2-10e	36	48		3	SEE MASSDOT 2016 STANDARD SIGNS BOOK			FLRSCNT. ORANGE / WHITE	BLACK	BLACK	U-CHAN. 28 REQ'D	12	168
W20-1c	36	36		3	5C	3	N/A	FLRSCNT. ORANGE	BLACK	BLACK	U-CHAN. 14 REQ'D	9	126

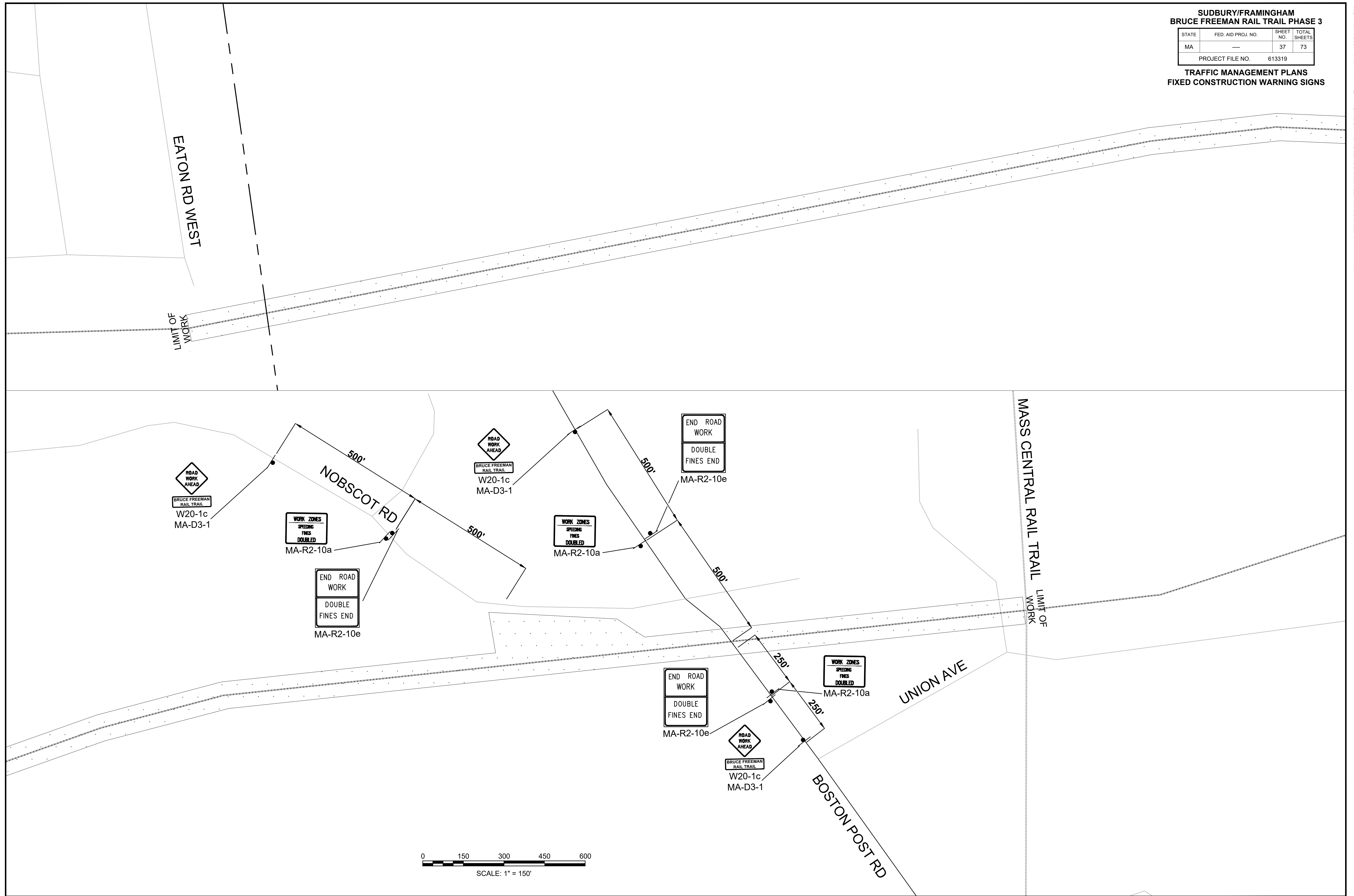
TYPICAL CONSTRUCTION SIGNING

N.T.S.

SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	37	73
PROJECT FILE NO.		613319	

TRAFFIC MANAGEMENT PLANS
FIXED CONSTRUCTION WARNING SIGNS



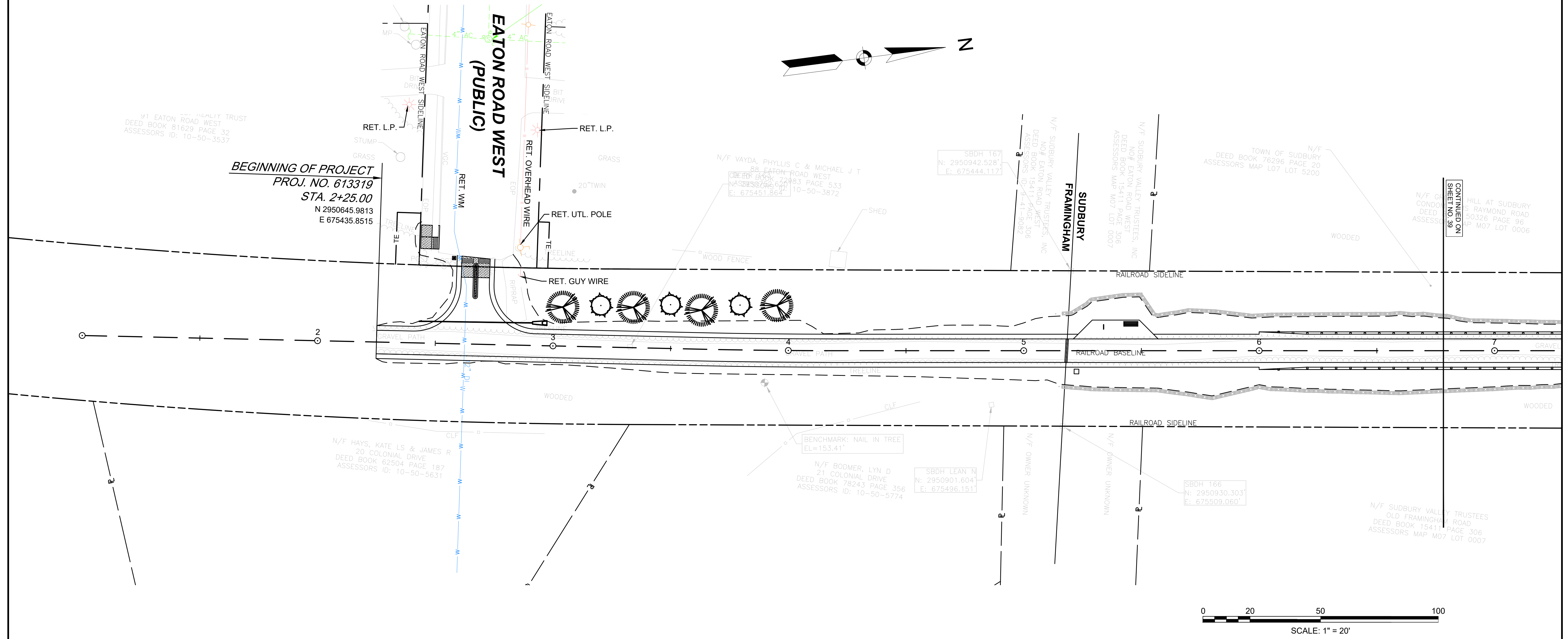
NOTES:

1. PLANS ARE INTENDED TO SHOW EXISTING UTILITIES FOR PRE-25%. DETAILS/LABELS FOR PROPOSED DRAINAGE AND UTILITY FEATURES WILL BE PROVIDED WITH 25% DESIGN SUBMISSION.

SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	38	73
PROJECT FILE NO.		613319	

DRAINAGE & UTILITY PLANS

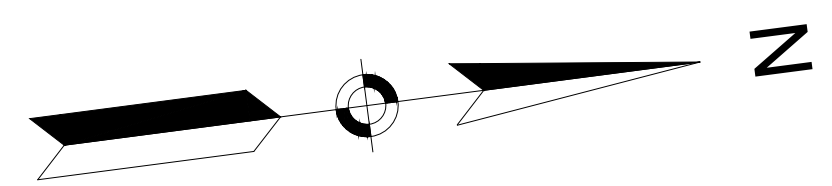


CONTINUED ON
SHEET NO. 39

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

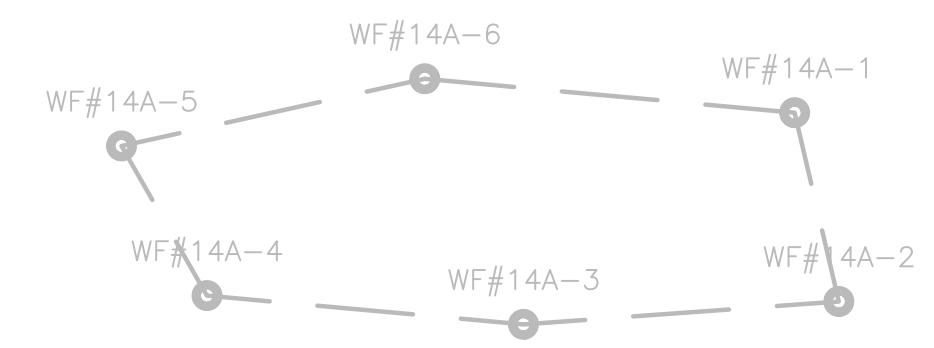
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	39	73
PROJECT FILE NO.		613319	

DRAINAGE & UTILITY PLANS



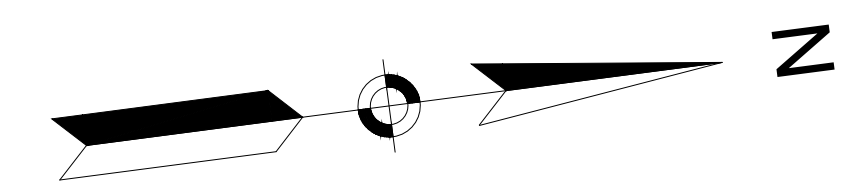
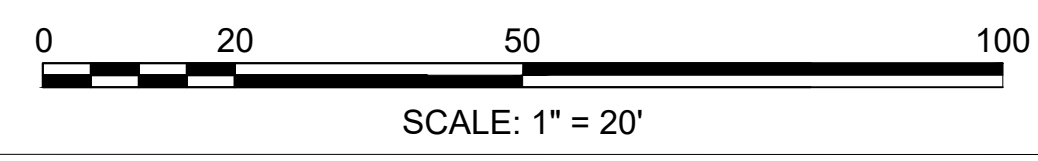
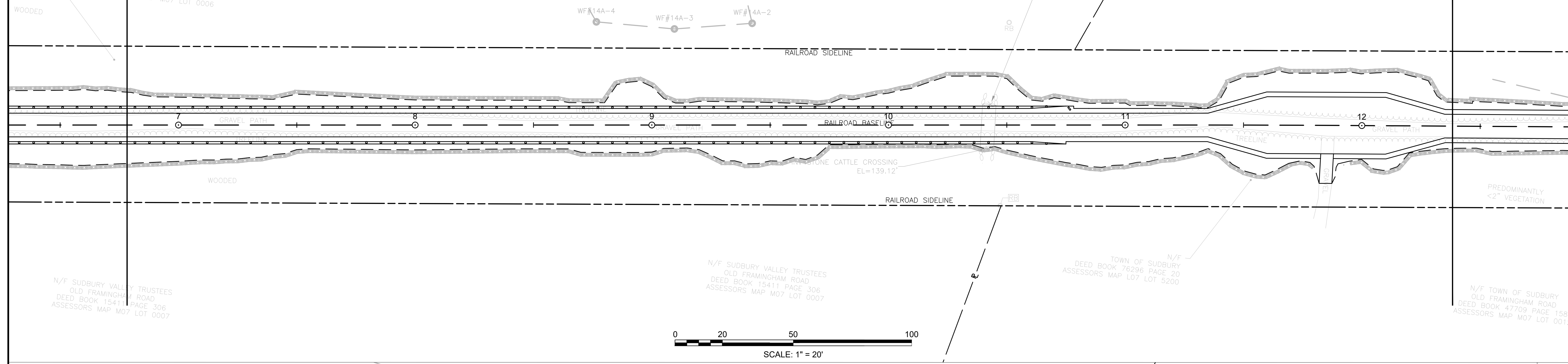
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SHEET NO. 38

HOUSE HILL AT SUDBURY
MINIUMS RAYMOND ROAD
BOOK 50326 PAGE 96
ASSASSORS MAP M07 LOT 0006



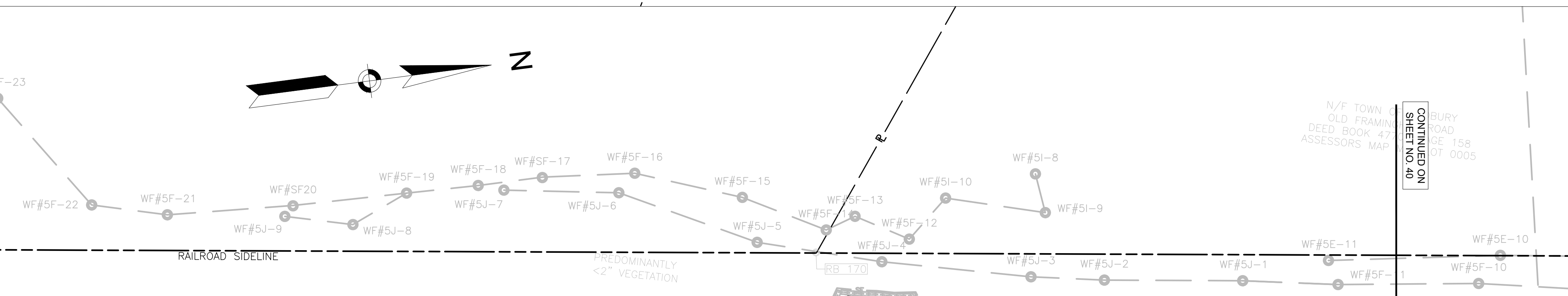
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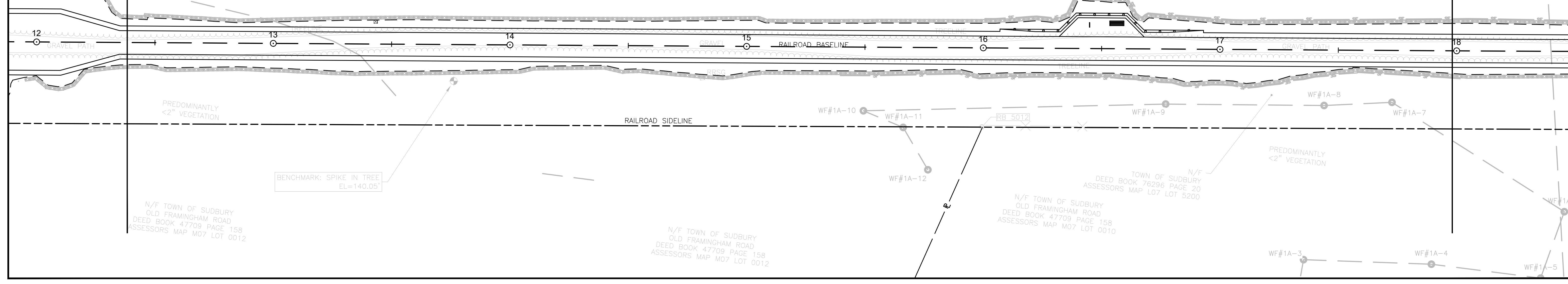


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ABOVE

N/F TOWN OF SUDBURY
OLD FRAMINGHAM ROAD
DEED BOOK 47709 PAGE 158
ASSESSORS MAP M07 LOT 0004



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ON
SHEET NO. 40



N/F TOWN OF SUDBURY
OLD FRAMINGHAM ROAD
DEED BOOK 47709 PAGE 158
ASSESSORS MAP M07 LOT 0012

N/F TOWN OF SUDBURY
OLD FRAMINGHAM ROAD
DEED BOOK 47709 PAGE 158
ASSESSORS MAP M07 LOT 0012

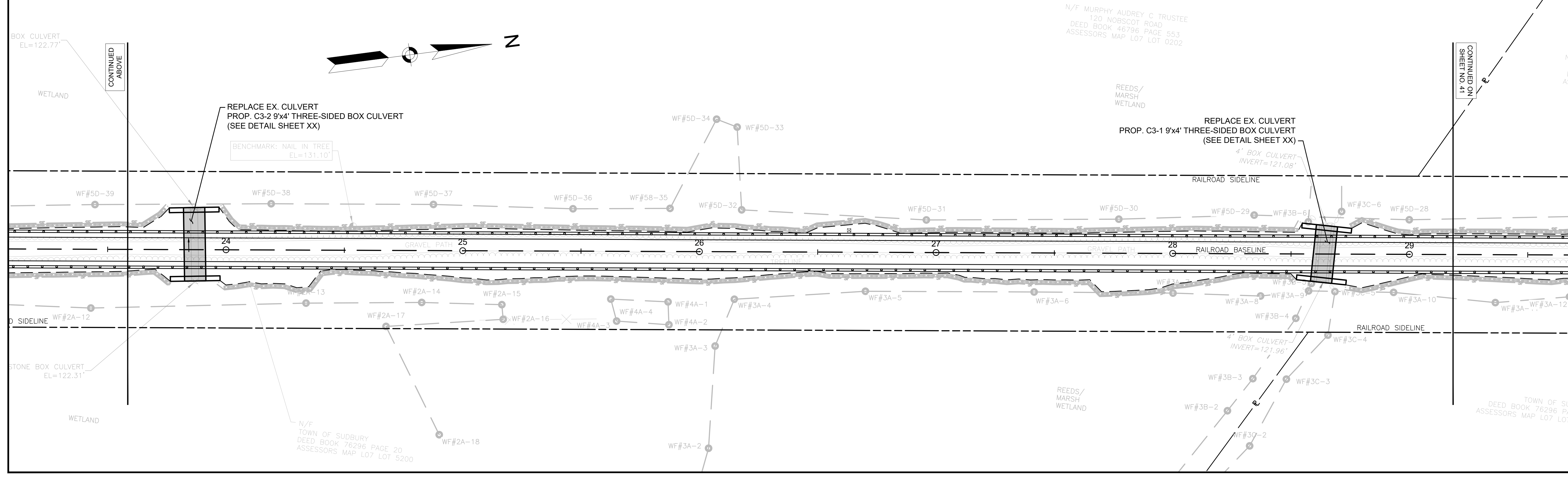
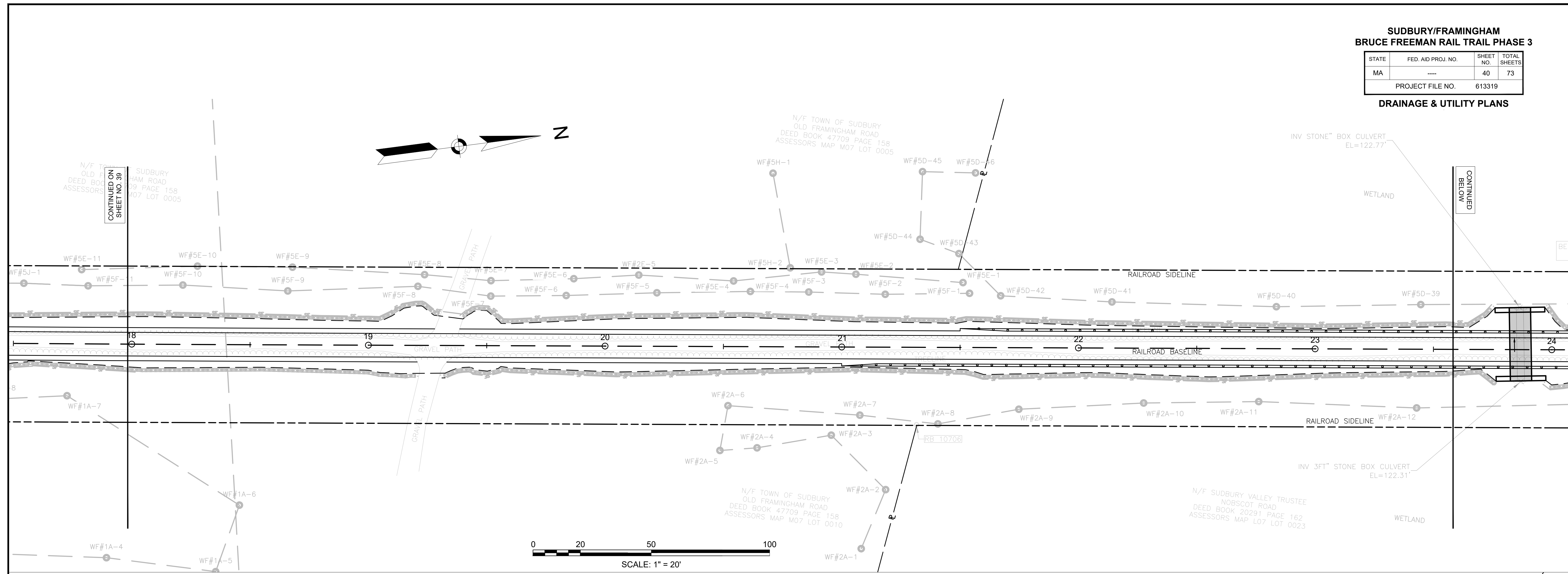
N/F TOWN OF SUDBURY
OLD FRAMINGHAM ROAD
DEED BOOK 47709 PAGE 158
ASSESSORS MAP M07 LOT 0010

N/F TOWN OF SUDBURY
OLD FRAMINGHAM ROAD
DEED BOOK 47709 PAGE 158
ASSESSORS MAP M07 LOT 0010

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	40	73
PROJECT FILE NO.		613319	

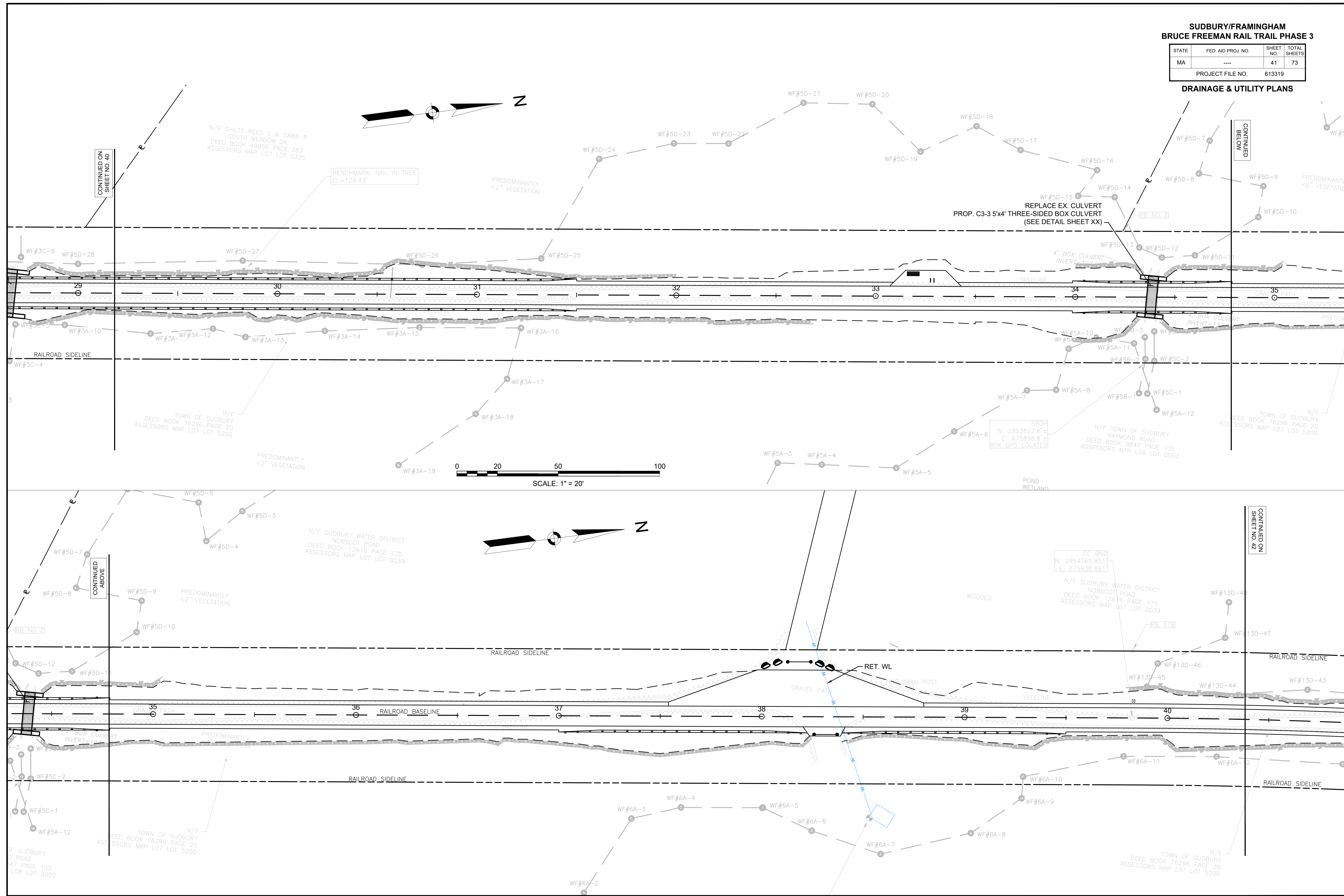
DRAINAGE & UTILITY PLANS



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	41	73
PROJECT FILE NO.		613319	

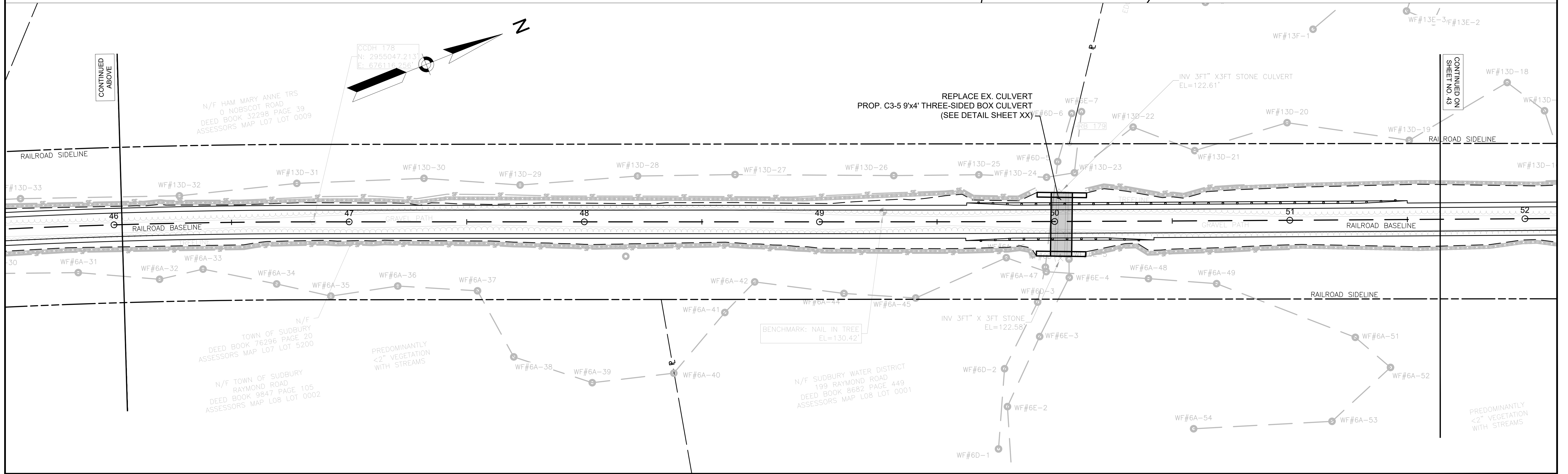
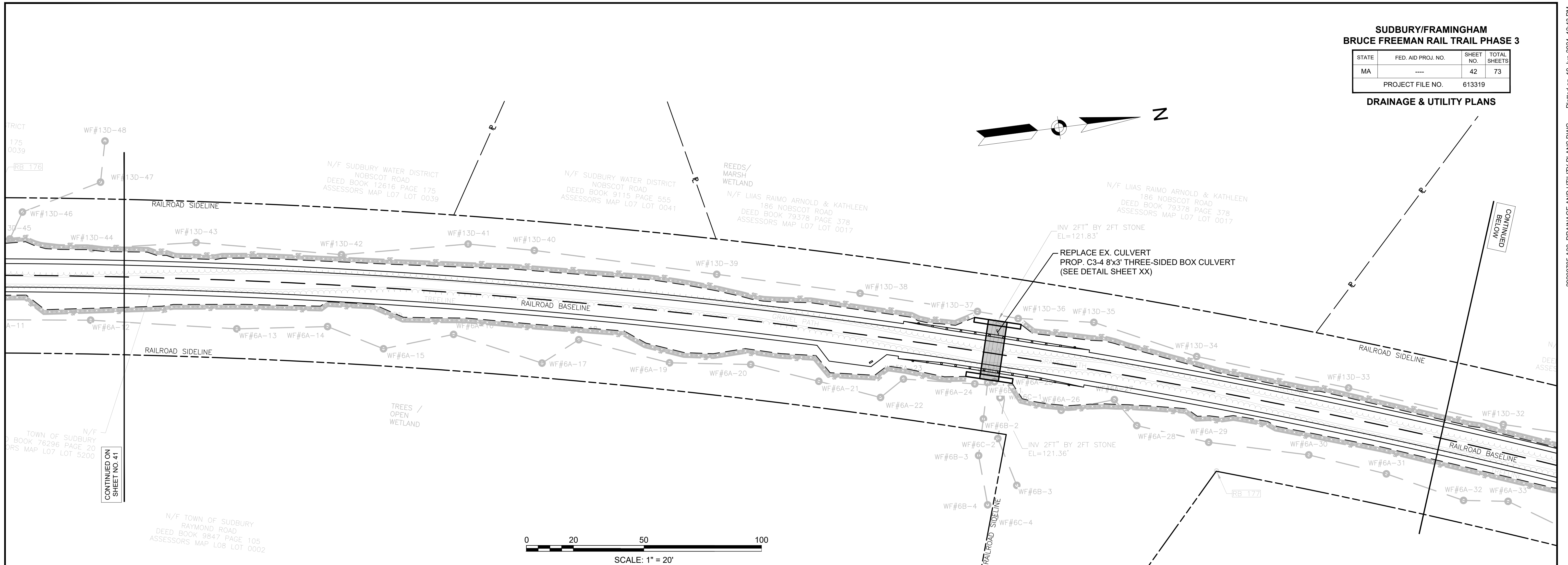
DRAINAGE & UTILITY PLANS



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	42	73
PROJECT FILE NO.		613319	

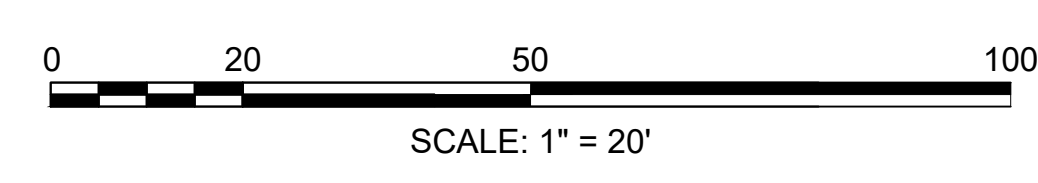
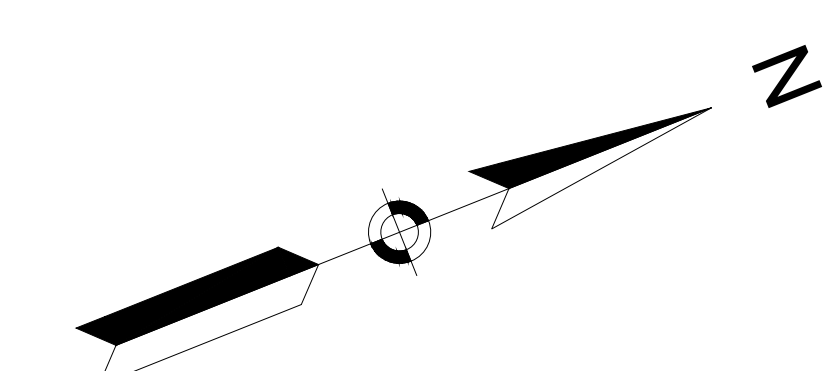
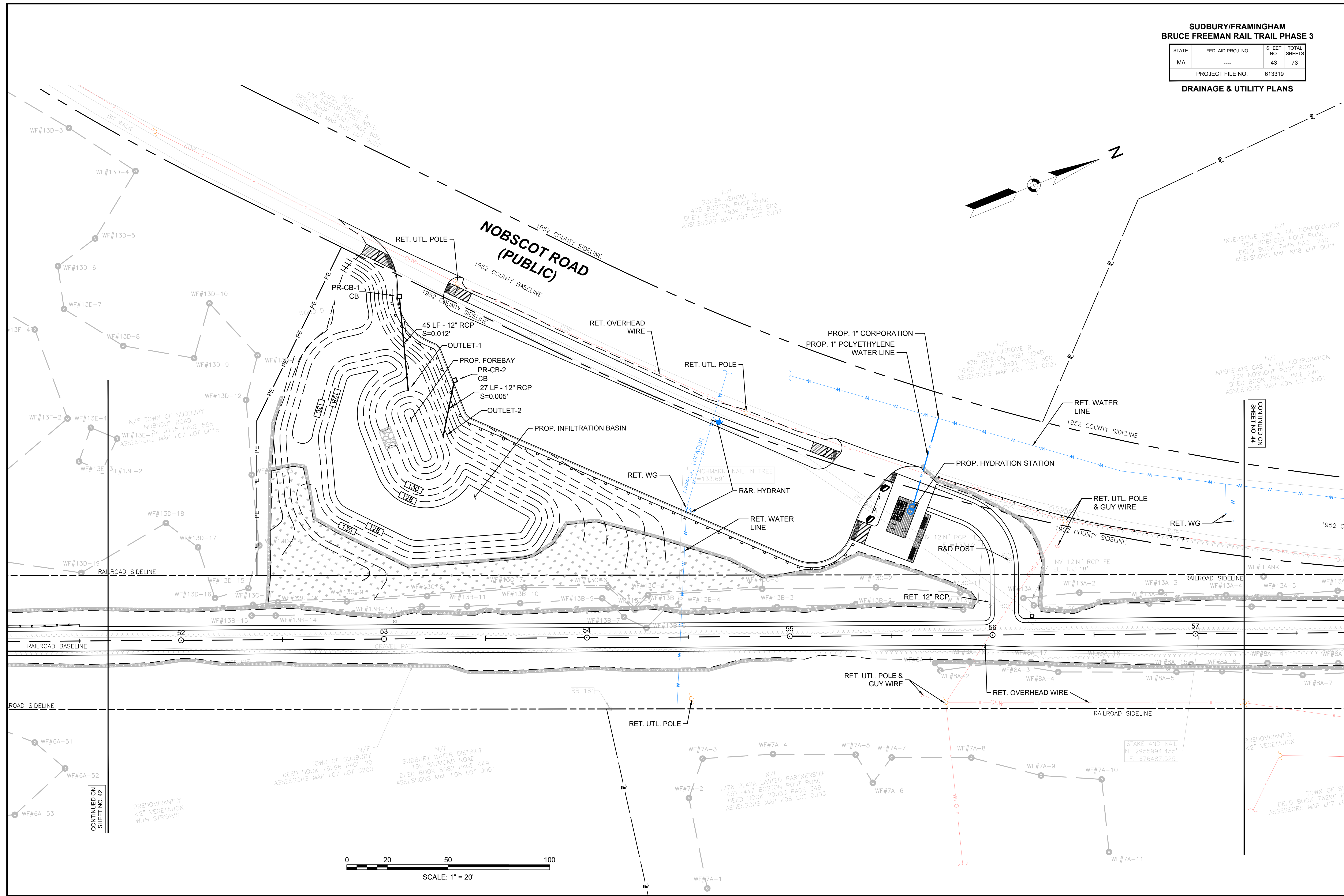
DRAINAGE & UTILITY PLANS



**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	43	73
PROJECT FILE NO.		613319	

DRAINAGE & UTILITY PLANS



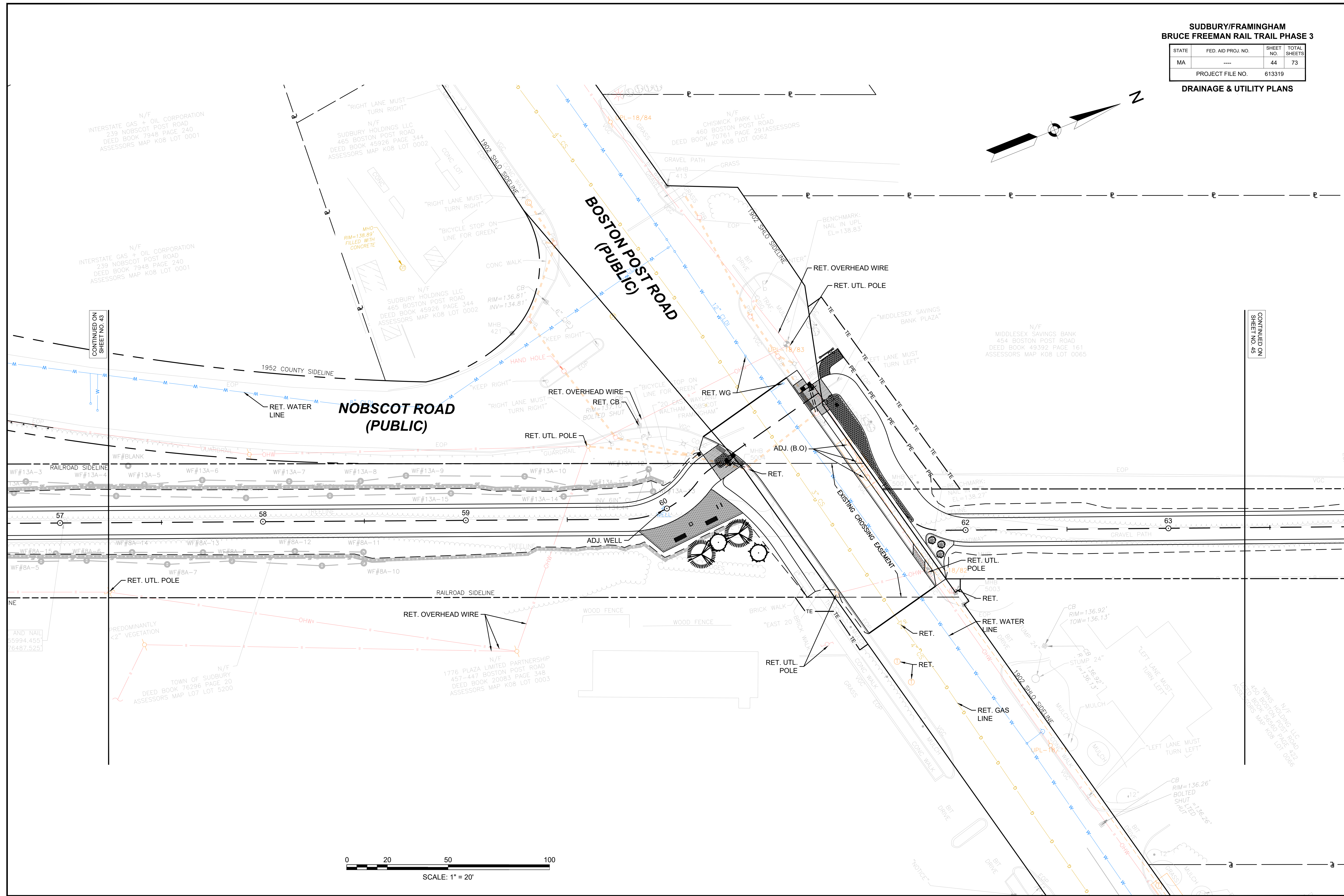
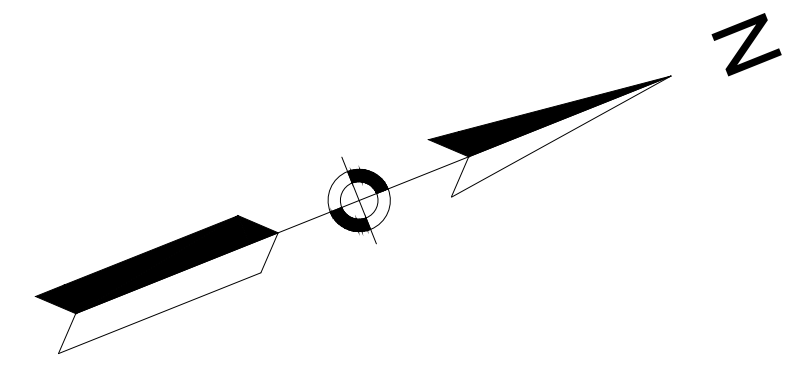
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SHEET NO. 42

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SHEET NO. 44

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	44	73
PROJECT FILE NO.		613319	

DRAINAGE & UTILITY PLANS



N/F
INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002

N/F
CHISWICK PARK LLC
460 BOSTON POST ROAD
DEED BOOK 70761 PAGE 291 ASSESSORS
MAP K08 LOT 0062

N/F
INTERSTATE GAS + OIL CORPORATION
239 NOBSCOT POST ROAD
DEED BOOK 7948 PAGE 240
ASSESSORS MAP K08 LOT 0001

N/F
SUDBURY HOLDINGS LLC
465 BOSTON POST ROAD
DEED BOOK 45926 PAGE 344
ASSESSORS MAP K08 LOT 0002

N/F
MIDDLESEX SAVINGS BANK
454 BOSTON POST ROAD
DEED BOOK 49392 PAGE 161
ASSESSORS MAP K08 LOT 0065

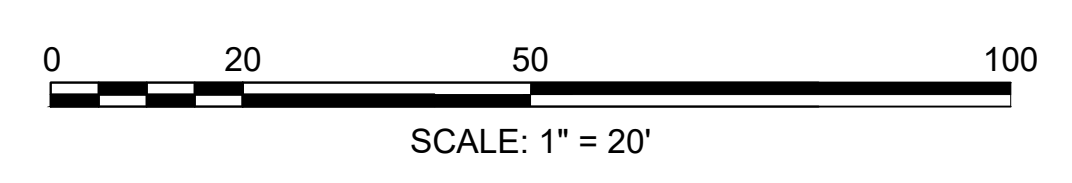
N/F
TOWN OF SUDBURY
DEED BOOK 76296 PAGE 20
ASSESSORS MAP L07 LOT 5200

N/F
1776 PLAZA LIMITED PARTNERSHIP
457-447 BOSTON POST ROAD
DEED BOOK 20083 PAGE 348
ASSESSORS MAP K08 LOT 0003

N/F
THINS HOLDING LLC
450 BOSTON POST ROAD
DEED BOOK 464369 PAGE 222
ASSESSORS MAP K08 LOT 0086

CONTINUED ON
SHEET NO. 43

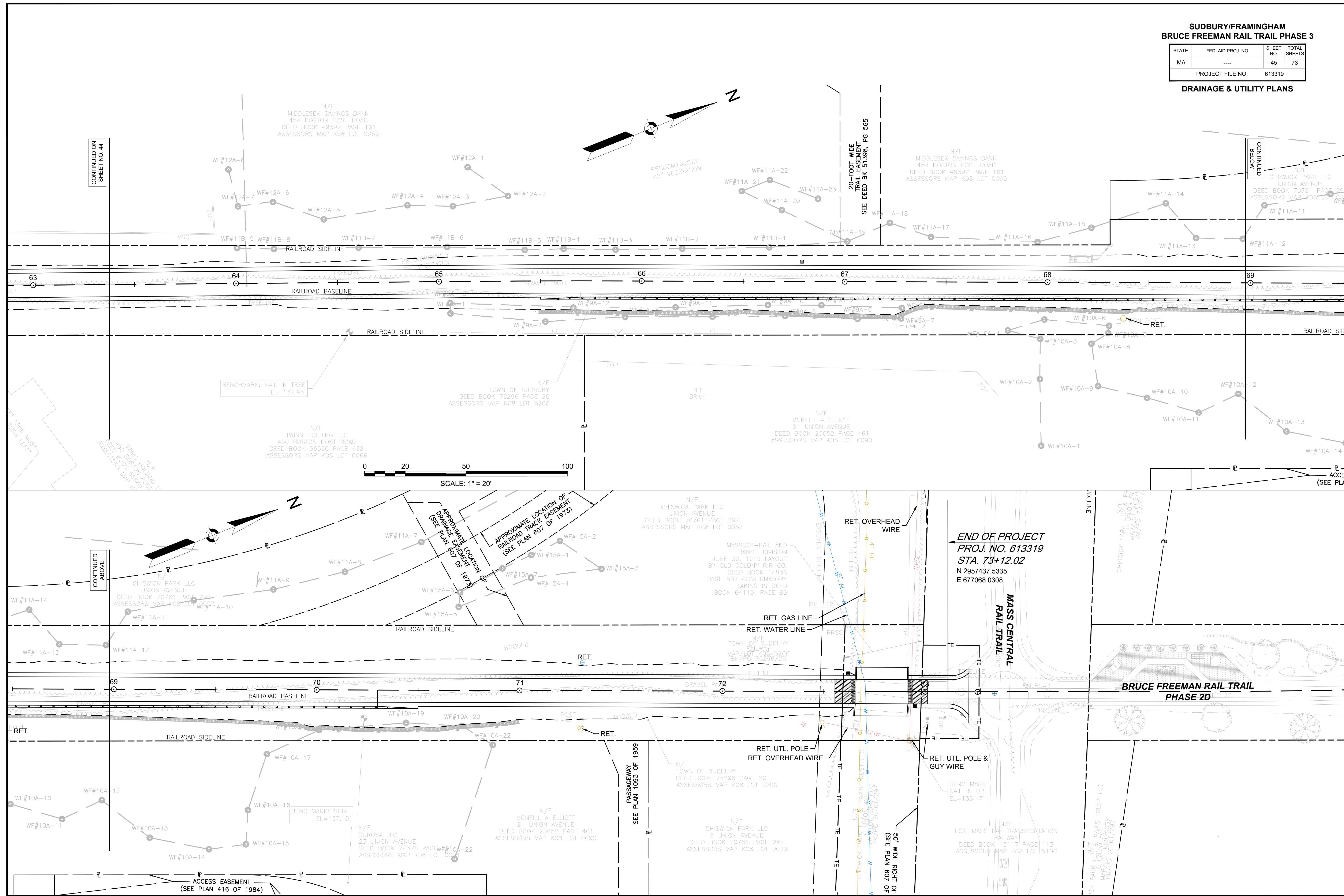
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**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	45	73
PROJECT FILE NO.		613319	

DRAINAGE & UTILITY PLANS



**END OF PROJECT
PROJ. NO. 613319
STA. 73+12.02
N 2957437.5335
E 677068.0308**

CONTINUED ON
SHEET NO. 44

CONTINUED
BELOW

CONTINUED
ABOVE

ACCESSEMENT
(SEE PLAN 416 OF 1984)

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	46	73
PROJECT FILE NO.		613319	

WETLAND REPLICATION PLANS

WETLAND REPLICATION PLAN NOTES

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ALSO PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE ENGINEER AND ARCHITECT AS REQUIRED.
2. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY AND ALL CONSTRUCTION MEANS AND METHODS.
3. LIMIT OF WORK SHALL BE EROSION CONTROL BARRIERS, LIMIT OF GRADING AND SITE PROPERTY LINES AND/OR AS INDICATED ON DRAWINGS.
4. ANY ALTERATION TO THESE DRAWINGS MADE IN THE FIELD DURING CONSTRUCTION SHALL BE RECORDED BY THE CONTRACTOR ON RECORD DOCUMENTS.
5. ANY AREA OUTSIDE THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO OWNER.
6. EXISTING TREES AND SHRUBS OUTSIDE THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON PRIOR APPROVAL OF THE OWNER.
7. FOR DRAWING LEGIBILITY, ALL EXISTING TOPOGRAPHIC FEATURES, EXISTING UTILITIES, PROPERTY BOUNDARIES, EASEMENTS, ETC. MAY NOT BE SHOWN ON ALL DRAWINGS. REFER TO ALL REFERENCED DRAWINGS AND OTHER DRAWINGS IN THIS SET FOR ADDITIONAL INFORMATION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL PERMIT CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING, SECURING AND COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) CONSTRUCTION GENERAL PERMIT, AS ADMINISTERED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY.

EROSION CONTROL AND SEDIMENTATION NOTES

1. CONTRACTOR SHALL MAINTAIN ANY EROSION CONTROL MEASURES DURING THE ENTIRE CONSTRUCTION PERIOD.
2. ANY SEDIMENT TRACKED ONTO THE PUBLIC RIGHT-OF-WAYS SHALL BE SWEEPED AT THE END OF EACH WORKING DAY.
3. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF SITE.
4. SITE ELEMENTS TO REMAIN MUST BE PROTECTED FOR DURATION OF PROJECT.
5. ADDITIONAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE (E.G., PROFESSIONAL ENGINEER, WETLAND SCIENTIST, CERTIFIED ECOLOGICAL RESTORATION PRACTITIONER).
6. THE WETLAND REPLICATION SITE WILL BE ACCESSED FROM THE BRUCE FREEMAN RAIL TRAIL. ALL POINTS OF CONSTRUCTION EGRESS OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADS.
7. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING WETLAND LOCATED OUTSIDE THE LIMIT OF WORK AND OFF PROPERTY.
8. ADDITIONAL EROSION CONTROLS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE.

LAYOUT AND MATERIALS NOTES

1. ALL LINES AND DIMENSIONS ARE PARALLEL OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
2. CONTRACTOR SHALL REPORT SIGNIFICANT CONFLICTS TO THE OWNER AND THE ENGINEER FOR RESOLUTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN SITE PLAN DIMENSIONS AND BUILDING PLANS BEFORE PROCEEDING WITH ANY PORTION OF SITE WORK WHICH MAY BE AFFECTED SO THAT PROPER ADJUSTMENTS TO THE SITE LAYOUT CAN BE MADE IF NECESSARY.
4. PROTECT EXISTING PROPERTY MONUMENTS AND ABUTTING PROPERTIES DURING CONSTRUCTION ACTIVITIES.

GRADING, DRAINAGE AND UTILITY NOTES

1. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES, ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA, CONTACT "DIG SAFE" AT 1-888-344-7233 AND THE OWNER TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE DONE UNTIL UTILITY COMPANIES AND THE OWNER ARE PROPERLY NOTIFIED IN ADVANCE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
3. ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL CONFORM WITH THE LINES, GRADES AND OTHER SPECIFIC REQUIREMENTS OR SPECIFICATIONS FOR THE PROJECT AS SHOWN ON THE PLANS.
4. THE CONTRACTOR SHALL VERIFY EXISTING GRADES IN THE FIELD AND REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ENGINEER OR CERTIFIED ECOLOGICAL RESTORATION PRACTITIONER. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED. 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 OWNER AND ENGINEER FOR RESOLUTION.
5. THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL BARRIERS AFTER REVEGETATION OF DISTURBED AREAS AND AFTER APPROVAL OF THE CONSERVATION COMMISSION AND WETLAND SPECIALIST OR CERTIFIED ECOLOGICAL RESTORATION PRACTITIONER.
6. PITCH EVENLY BETWEEN SPOT GRADES.

WETLAND CONSTRUCTION NOTES

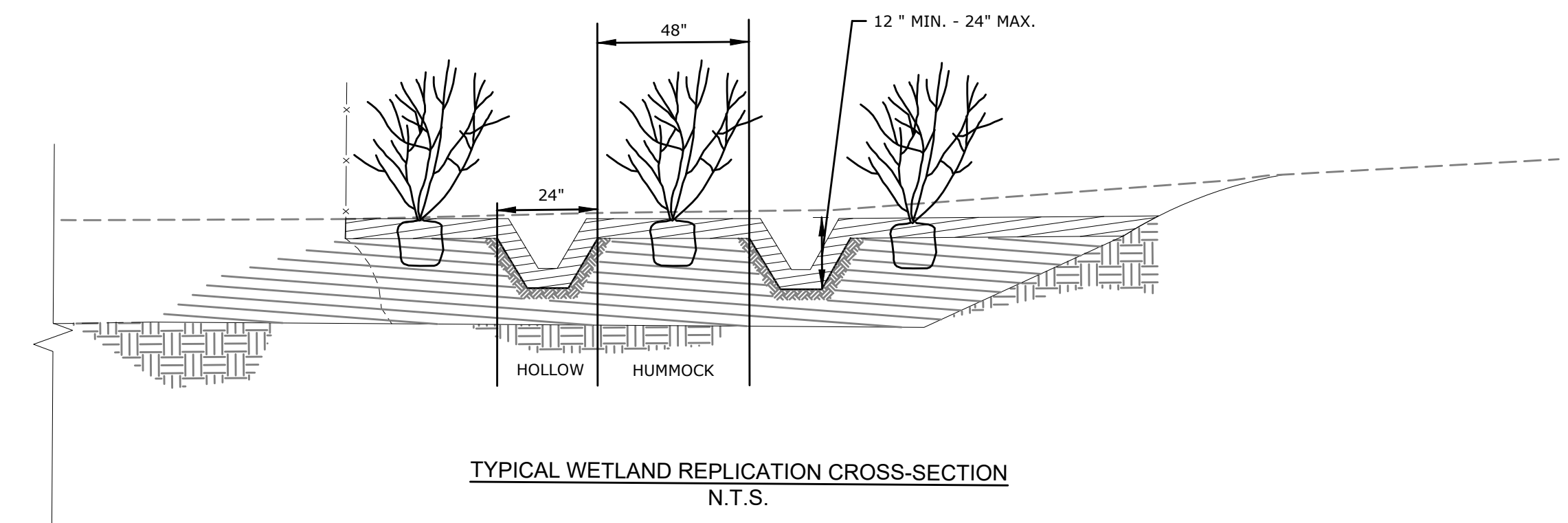
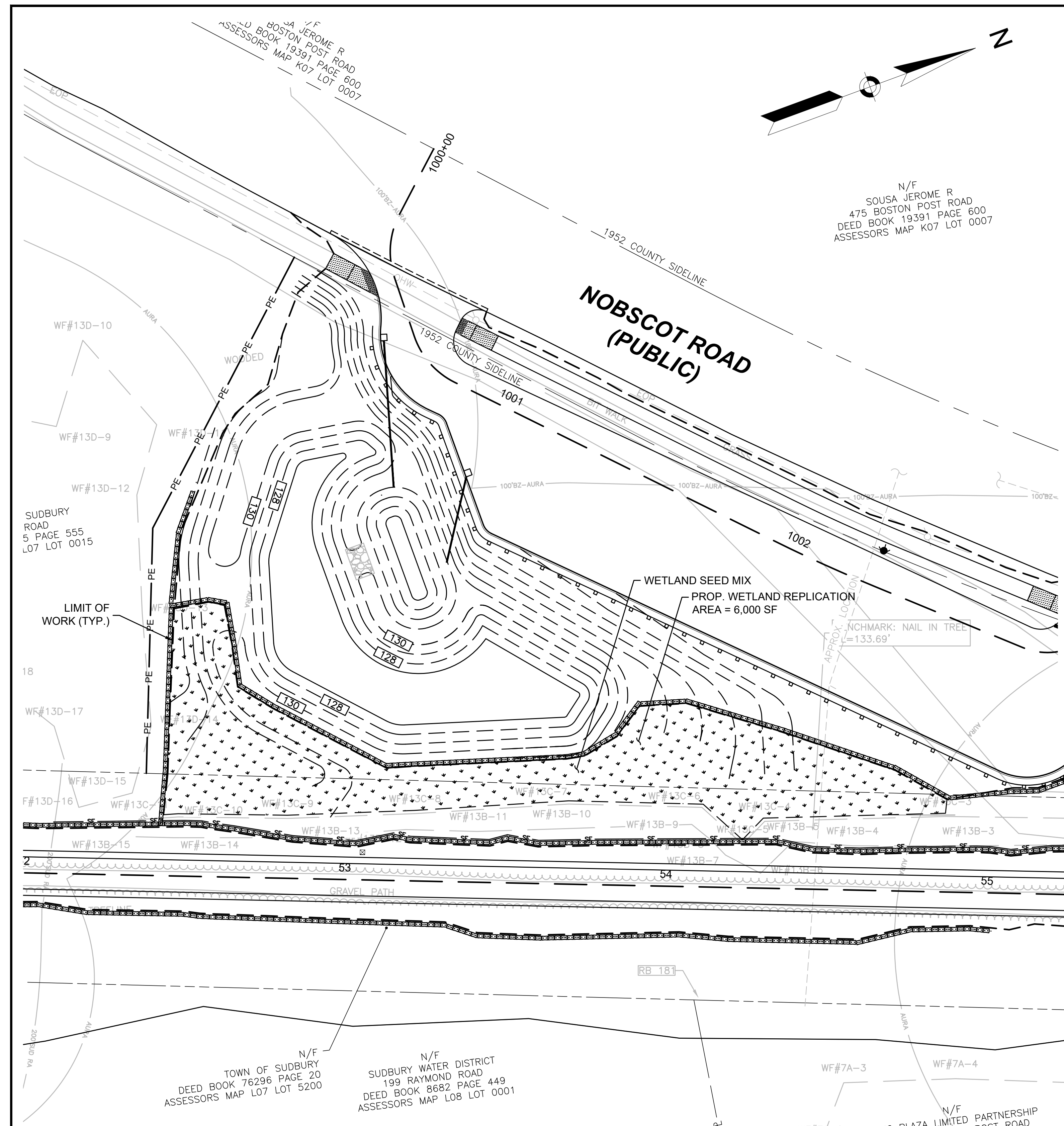
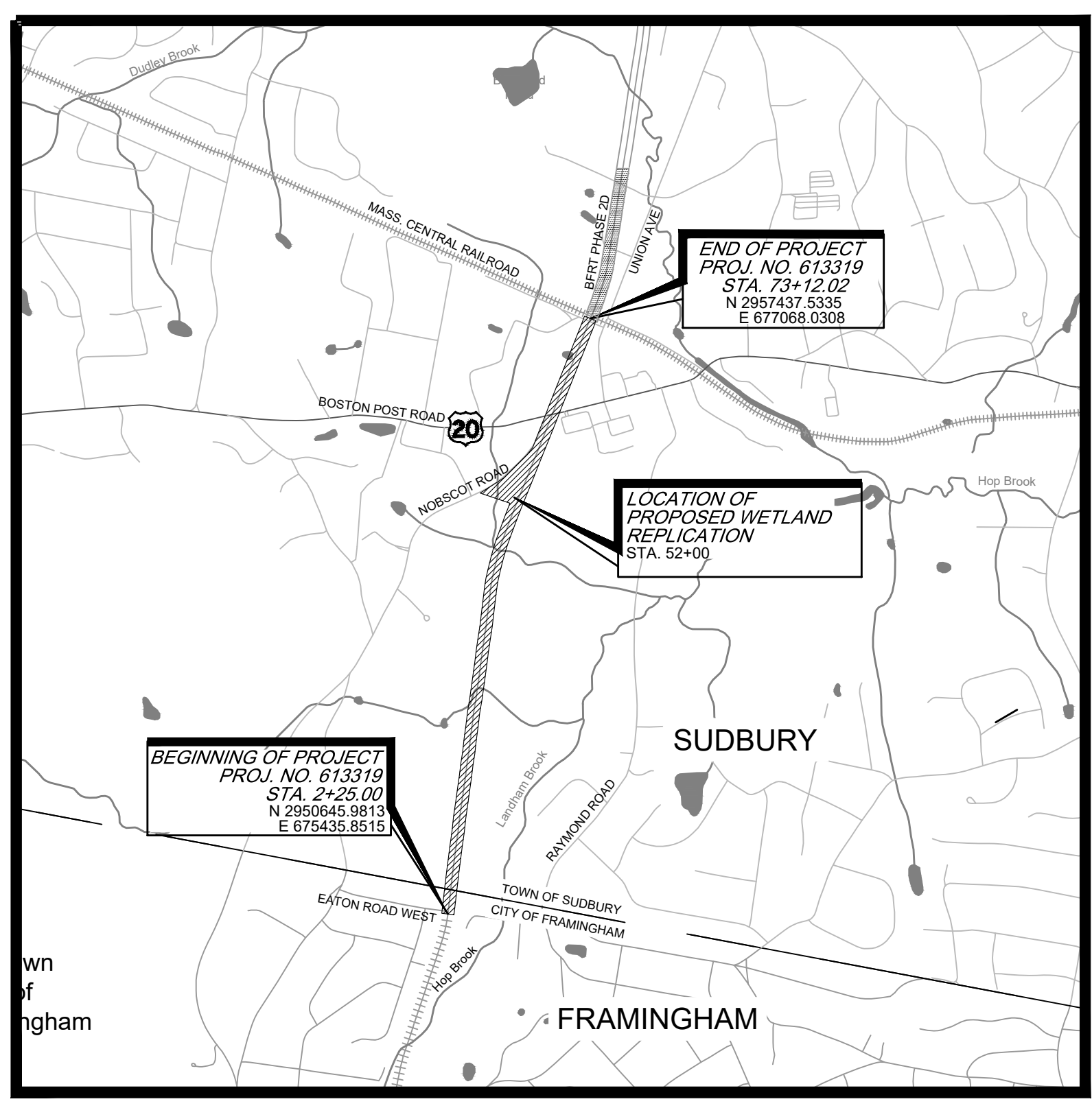
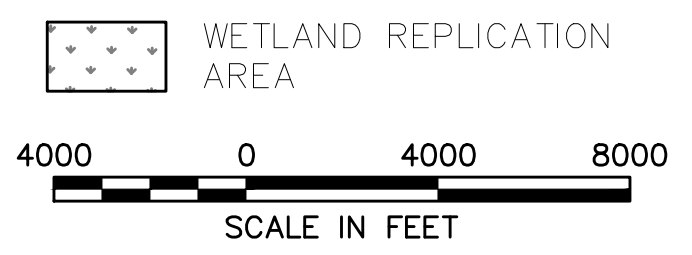
1. A PRECONSTRUCTION MEETING SHALL BE HELD BEFORE INITIATING CONSTRUCTION. THE PRECONSTRUCTION MEETING SHALL BE ATTENDED BY THE DESIGNATED PROFESSIONAL WETLAND SCIENTIST, SITE ENGINEER, CONSTRUCTION GENERAL MANAGER, SITE CONTRACTOR, LANDSCAPE CONTRACTOR, AND ANY OTHER CONTRACTOR INVOLVED IN THE REPLICATION ACTIVITY.
2. WETLAND REPLICATION SHALL BE CONDUCTED IN ACCORDANCE WITH THESE DRAWINGS, SPECIAL PROVISIONS AND REQUIREMENTS OUTLINED IN THE ORDER OF CONDITIONS AS ISSUED BY THE TOWN OF SUDBURY CONSERVATION COMMISSION.
3. ALL EXISTING WETLAND DELINEATION WITHIN 100 FEET OF THE WORK AREA WILL BE RE-FLAGGED EVERY 25 FEET.
4. EROSION CONTROLS SHALL BE INSTALLED PER EROSION CONTROL PLAN, REPAIRED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD OF WETLAND MITIGATION AND UNTIL THE SITE IS FULLY STABILIZED BY VEGETATION (SEED MIX). EROSION CONTROLS SHALL THEN BE REMOVED FROM THE SITE.
5. A WETLAND SCIENTIST SHALL BE ON SITE TO MONITOR PLANTING AND GRADING OF THE WETLAND REPLICATION AREA TO ENSURE COMPLIANCE WITH APPROVED PLANS.
6. INVASIVE NON-NATIVE PLANT SPECIES IN OR IMMEDIATELY ADJACENT TO REPLICATION AREA SHALL BE IDENTIFIED AND TAGGED FOR ERADICATION OR REMOVAL. REMOVED INVASIVE PLANT MATERIAL SHALL BE DISPOSED OF AT AN APPROVED OFF-SITE LOCATION.
7. IF USED, HERBICIDE SELECTION AND TIMING FOR INVASIVE SPECIES CONTROL SHALL BE APPROVED BY A PROFESSIONAL WETLAND SCIENTIST OR OTHER QUALIFIED PROFESSIONAL.
8. IF USED, HERBICIDE APPLICATION FOR INVASIVE SPECIES CONTROL SHALL BE PERFORMED BY A PROFESSIONAL CERTIFIED BY THE STATE OF MASSACHUSETTS. DOCUMENTATION OF CERTIFICATION SHALL BE SUBMITTED TO THE SITE CONSTRUCTION GENERAL MANAGER.
9. GRADING AND PLANTINGS WILL NOT BE CONDUCTED DURING PERIODS OF HIGH WATER. CONSTRUCTION OF THE REPLICATION AREA WILL CONTINUE UNINTERRUPTED TO AVOID EROSION AND THE SILTATION OF WETLANDS.
10. COMPACTION OF SOILS IN THE WETLAND REPLICATION AREA SHALL BE MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE BY THE USE OF LOW-GROUND PRESSURE MACHINERY.
11. SHOULD COMPACTION OCCUR, SOILS SHALL BE TILLED OR DISKED IN TWO DIRECTIONS TO RE-FRACTURE A MINIMUM OF TWELVE (12) INCHES BELOW FINISHED GRADE.
12. BURIED ORGANIC WETLAND SOILS ENCOUNTERED DURING EXCAVATION MAY BE LEFT IN PLACE. IF TEMPORARY STOCKPILING OF WETLAND SOIL IS NECESSARY, MATERIAL MUST BE COVERED TO PREVENT LEACHING, MOISTURE LOSS AND SEDIMENT TRANSPORT.
13. GRADING LINES DEPICTED ON THE PLAN ARE DRAWN SMOOTHLY. ACTUAL SURFACE GRADES ACROSS WETLAND 'FLOOR' SHALL REFLECT HUMMOCK AND HOLLOW TOPOGRAPHY OF NATURAL WETLANDS.
14. THE SUBGRADE OF WETLAND REPLACEMENT AREAS WILL BE GRADED A MINIMUM OF ONE FOOT BELOW THE ADJACENT WETLANDS. NO GRADING WILL BE PERMITTED WITHIN THE EXISTING WETLAND AREAS EXCEPT TO CUT OPENINGS IN BERMS TO ESTABLISH HYDRAULIC CONDUCTIVITY BETWEEN THE REPLACEMENT WETLAND AND THE WETLAND REPLICATION.
15. FINAL SUB-GRADES SHALL BE REVIEWED AND APPROVED BY A PROFESSIONAL WETLAND SCIENTIST AFTER REVIEW OF SEASONAL, LOCAL HIGH GROUNDWATER MONITORING DATA AND FIELD CONDITIONS. MODIFICATIONS OF FINAL GRADES MAY BE MADE IN THE FIELD AS DIRECTED BY A PROFESSIONAL WETLAND SCIENTIST OR CERTIFIED ECOLOGICAL RESTORATION PRACTITIONER.
16. A TWELVE-INCH LAYER OF NATURAL ORGANIC SOIL OR MIXTURE OF GOOD QUALITY TOPSOIL AND CLEAN LEAF COMPOST PER THE SOIL SPECIFICATIONS OF ITEM 755.35 WILL BE PLACED IN THE BOTTOM OF THE REPLACEMENT AREA. SOIL AND COMPOST SHOULD BE CERTIFIED FREE OF INVASIVE PLANT SEEDS OR OTHER ARTIFICIAL MATERIAL.
17. SIDE SLOPES OF NON-WETLAND (UPLAND) AREAS SHALL BE GRADED WITH A MINIMUM OF FOUR INCHES OF THE SOIL MIXTURE AS DESCRIBED ABOVE.
18. NO SOIL AMENDMENT OR FERTILIZER SHALL BE APPLIED OR ADDED UNLESS DIRECTED BY A PROFESSIONAL WETLAND SCIENTIST.
19. WHERE CALLED FOR, REPLICATION AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING PLACEMENT AND FINAL GRADING INCLUDING MICROTOPOGRAPHY. SPRING SEEDING SHOULD OCCUR AFTER THE GROUND THAWS AND BEFORE JUNE 30. FALL SEEDING SHOULD OCCUR AFTER OCTOBER 15 AND BEFORE THE SOIL FREEZES.
20. ALL WETLAND AREAS SHALL BE SEEDED USING THE SEED MIX SPECIFIED IN ITEM 765.554 WETLAND MIX/BASIN MIX AND SHALL BE APPLIED AT A RATE ACCORDING TO THE ITEM SPECIFICATION.
21. UPLAND AREAS SHALL BE SEEDED USING THE SEED MIX SPECIFIED IN ITEM 765.416. UPLAND SHADE MIX AND SHALL BE APPLIED AT A RATE ACCORDING TO THE ITEM SPECIFICATION.
22. SEED SHALL BE FRESH, RECLEANED SEED OF THE LATEST CROP. SEED SHALL BE DELIVERED TO THE SITE IN THE ORIGINAL CONTAINERS WHICH SHALL BEAR THE VENDOR'S GUARANTEE OF ANALYSIS.
23. DEVIATIONS FROM THE PLANTING SCHEDULE AND/OR APPROVED PLANTING LIST MUST BE APPROVED IN ADVANCE BY A PROFESSIONAL WETLAND SCIENTIST OR CERTIFIED ECOLOGICAL RESTORATION PRACTITIONER.
24. THE LANDSCAPE CONTRACTOR SHALL CLEAN UP AND REMOVE ANY DEBRIS FROM THE SITE CAUSED BY THE LANDSCAPE CONTRACTOR.
25. PLANT LISTS MAY BE ALTERED BASED ON FIELD CONDITIONS AS DIRECTED BY A PROFESSIONAL WETLAND SCIENTIST.
26. ALL PLANT MATERIALS SHALL CARRY A FULL GUARANTEE FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE TO INCLUDE PROMPT TREATMENT OR REMOVAL AND REPLACEMENT OF ANY PLANTS FOUND TO BE IN AN UNHEALTHY CONDITION BY THE WETLAND SPECIALIST OR LANDSCAPE ARCHITECT. ALL REPLACEMENTS SHALL BE OF THE SAME KINDS AND SIZE OF PLANTS SPECIFIED IN THE PLANT LIST.
27. WETLAND REPLICATION AREAS WILL BE INSPECTED IN ACCORDANCE WITH THE SPECIFICATIONS OF ITEM 755.35 INLAND WETLAND REPLICATION AND ITEM 755.76 WETLAND MONITORING REPORTS TO IDENTIFY INVASIVE SPECIES AND A REPORT DETAILING TO RELATIVE SUCCESS OF THE MITIGATION PLAN IN TERMS OF BOTH THE HEALTH AND SURVIVAL OF WETLAND PLANTINGS SHALL BE PREPARED.
28. DURING AND AFTER THE FIRST AND SECOND GROWING SEASON, THE SUCCESS OF THE VEGETATIVE GROWTH WILL BE REVIEWED AND EVALUATED. ADDITIONAL VEGETATION WILL BE PLANTED AS NECESSARY TO REPLACE STRESSED OR MISSING VEGETATION AND TO ACHIEVE THE 75% SURVIVAL RATE SPECIFIED IN THE SPECIAL PROVISIONS.

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	47	73
PROJECT FILE NO.		613319	

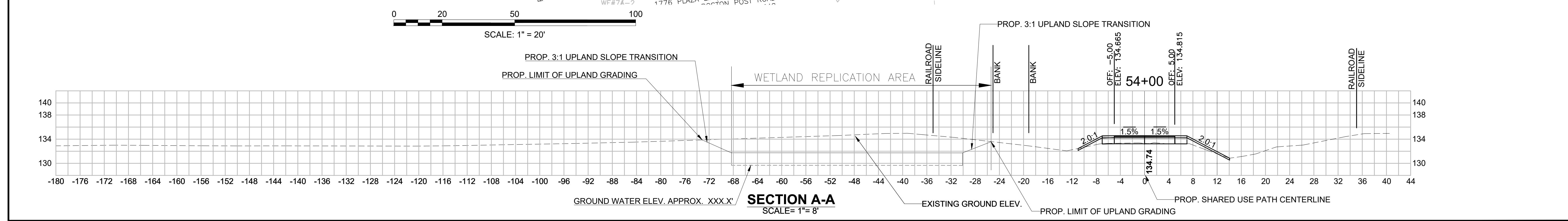
WETLAND REPLICATION PLANS

LEGEND

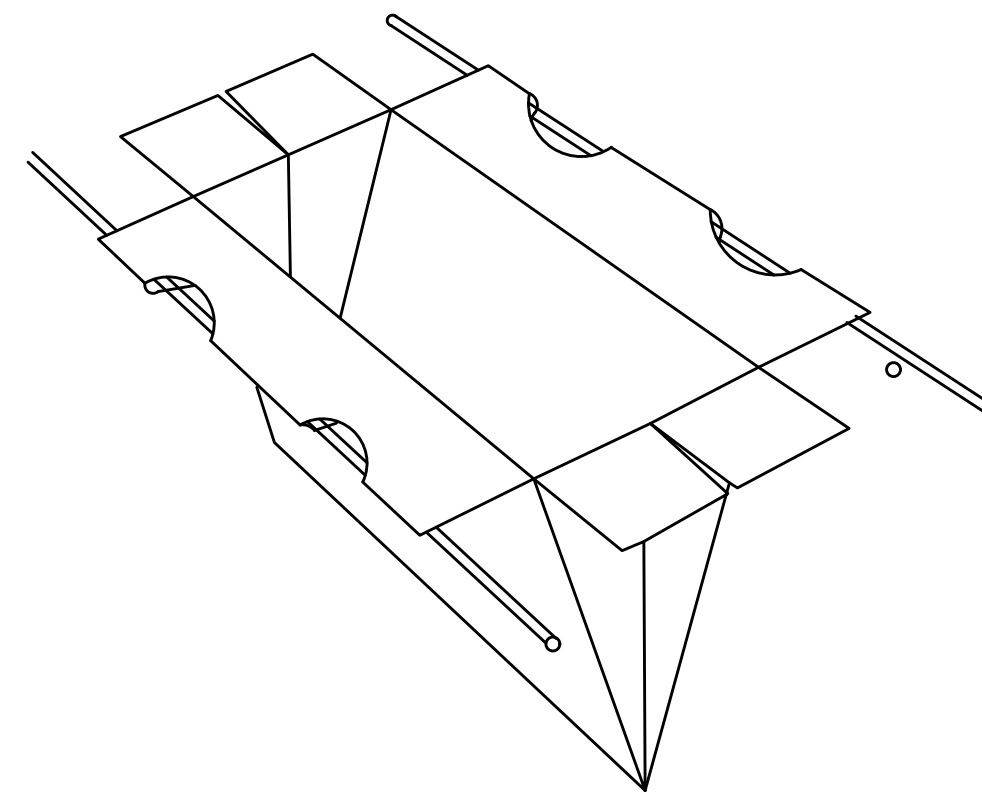


WETLAND REPLICATION AREA PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
TREES					
AR	XX	ACER RUBRUM	RED MAPLE	4'-6' HT.	10' O.C.
BA	XX	BETULA ALLEGHANIENSIS	YELLOW BIRCH	4'-6' HT.	10' O.C.
FP	XX	FRAXINUS PENNSYLVANICA	GREEN ASH	4'-6' HT.	10' O.C.
UA	XX	ULMUS RUBRA	SLIPPERY ELM	4'-6' HT.	10' O.C.
SHRUBS					
CR	XX	CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	2'-3' HT.	10' O.C. GROUPS OF 3
IV	XX	ILEX VERTICILLATA	WINTERBERRY HOLLY	2'-3' HT.	10' O.C. GROUPS OF 3
LB	XX	LINDERA BENZOIN	SPICEBUSH	2'-3' HT.	10' O.C. GROUPS OF 3
VC	XX	VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	2'-3' HT.	10' O.C. GROUPS OF 3
VD	XX	VIBURNUM DENTATUM	NORTHERN ARROWWOOD	2'-3' HT.	10' O.C. GROUPS OF 3
VL	XX	VIBURNUM LENTAGO	NANNYBERRY	2'-3' HT.	10' O.C. GROUPS OF 3



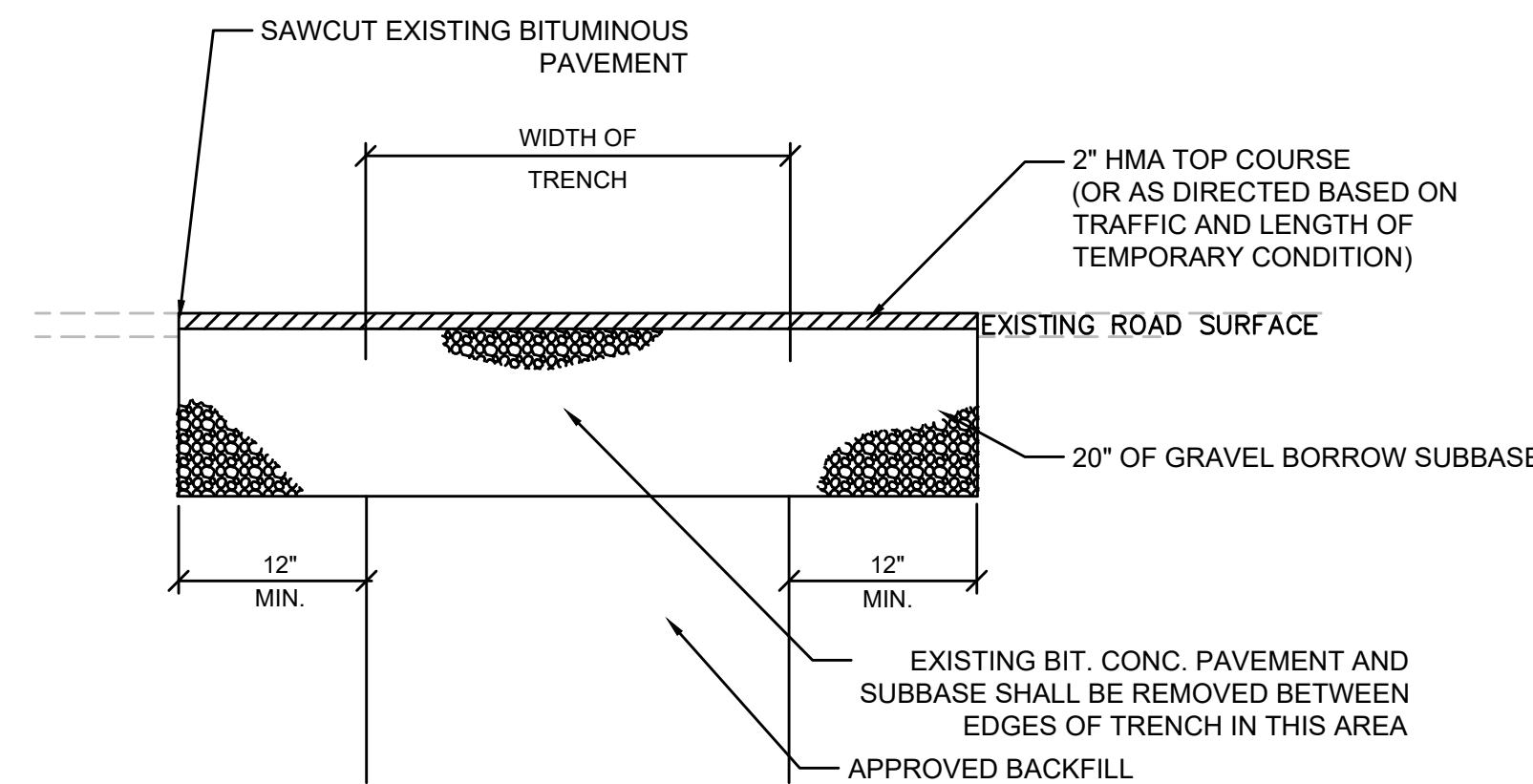
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	48	73
PROJECT FILE NO.		613319	



NOTES:

1. SIZED TO FIT ANY SIZE OR SHAPE CATCH BASIN.
2. ALL SEAMS DOUBLE STITCHED.
3. PERMEABILITY - REGULAR FLOW SILTSACK - 40 gal./min./sq. ft.
HI - FLOW SILTSACK - 200 gal./min./sq. ft.

1 CATCH BASIN SILT SACK
SCALE: N.T.S.

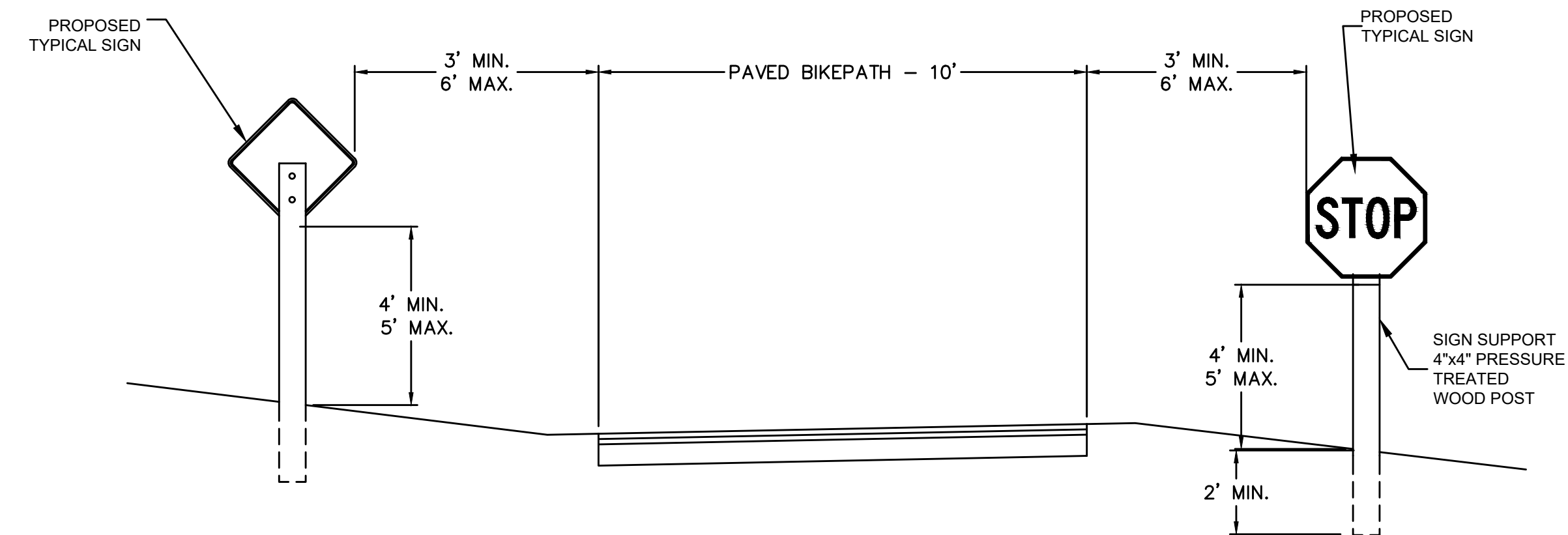


NOTES:

THE TEMPORARY PAVEMENT TRENCH REPAIR SHALL BE USED DURING THE TIME BETWEEN COMPLETION OF THE UTILITY CONSTRUCTION AND CONSTRUCTION OF THE PROPOSED ROADWAY PAVEMENT STRUCTURE OR PERMANENT PAVEMENT TRENCH REPAIR.

TEMPORARY ASPHALT SHALL BE PAID FOR UNDER ITEM #472

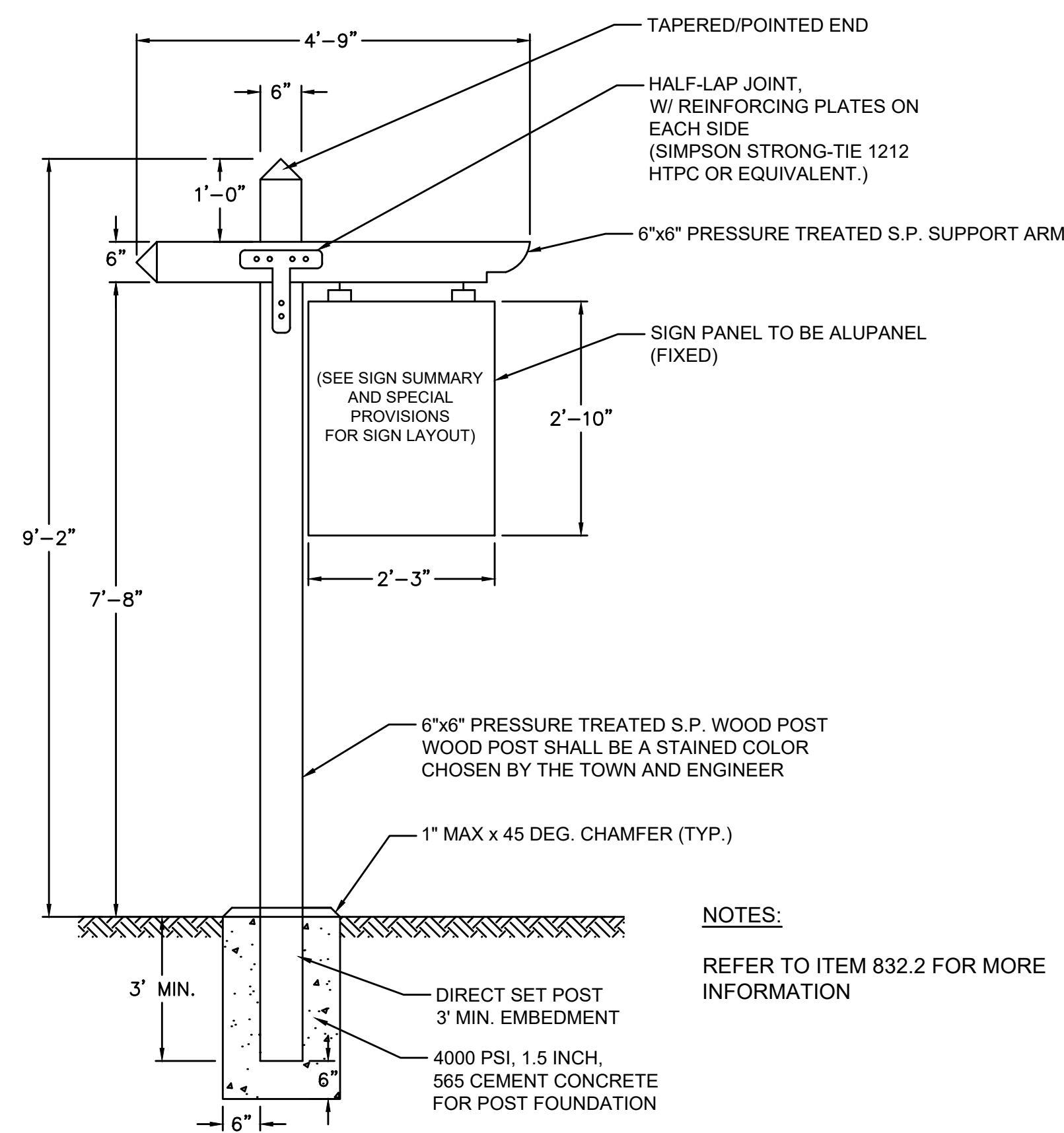
2 TEMPORARY PAVEMENT TRENCH REPAIR
SCALE: N.T.S.



3 SHARED-USE PATH TYPICAL SIGN PLACEMENT
SCALE: N.T.S.

NOTES:

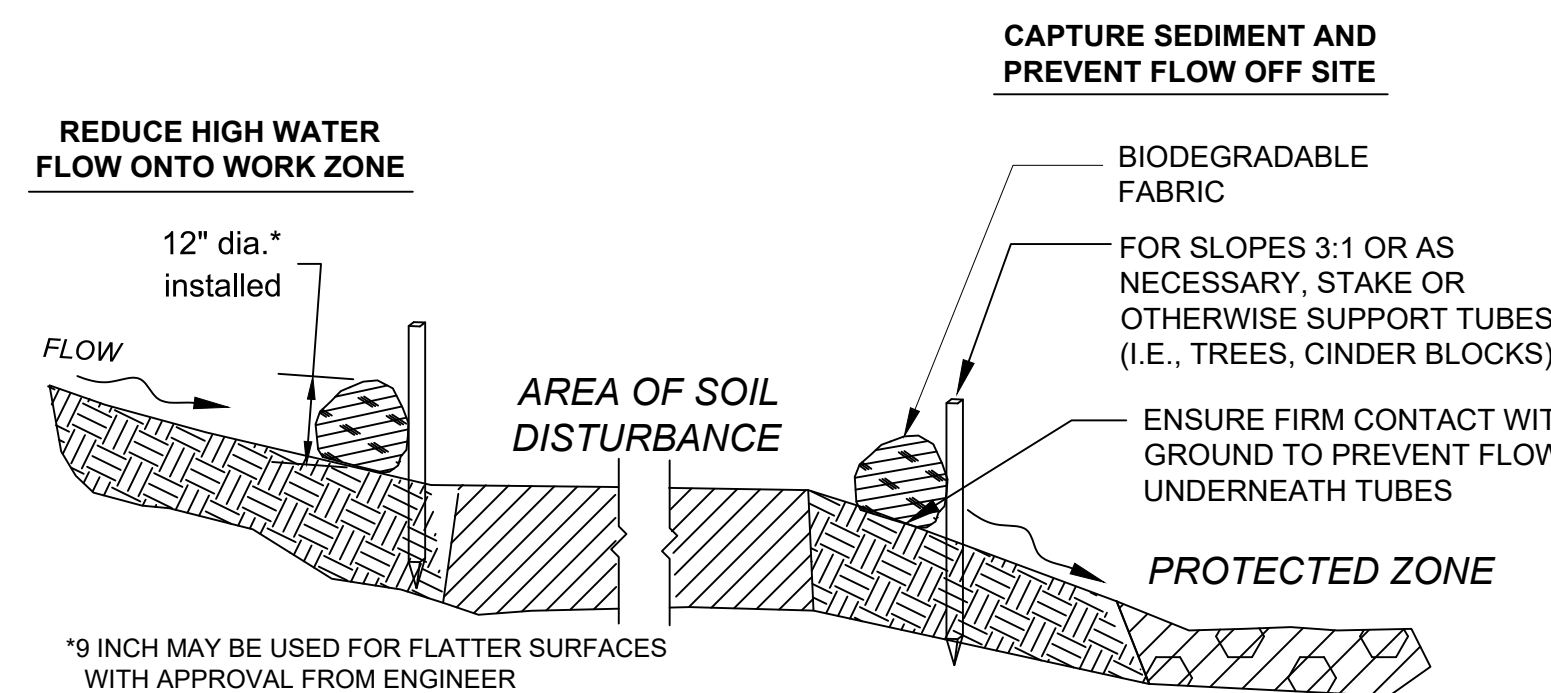
1. ALL HARDWARE SHALL BE GALVANIZED.
2. WOOD POSTS SHALL BE PAID FOR UNDER ITEM 847.11*.



NOTES:

REFER TO ITEM 832.2 FOR MORE INFORMATION

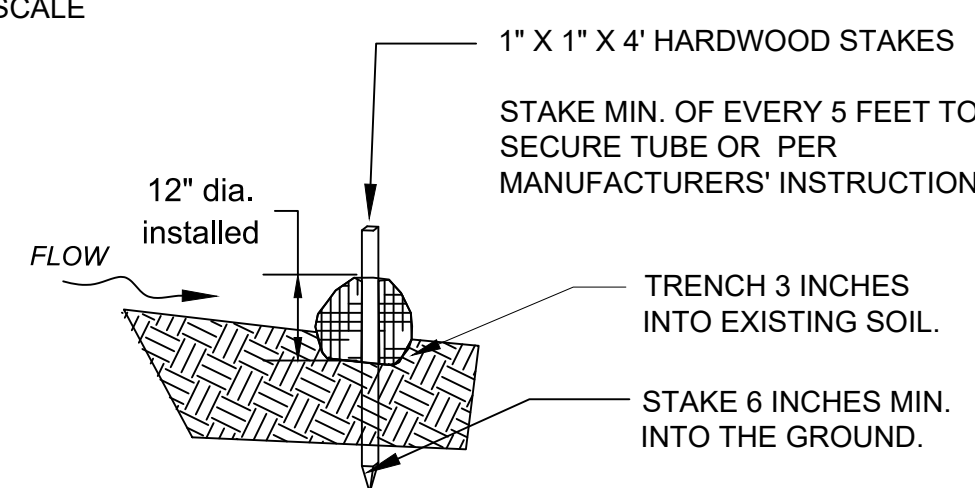
4 WAYFINDING SIGNS TYPE DS
SCALE: N.T.S.



SECTION

SEDIMENT BARRIER - COMPOST FILTER TUBES

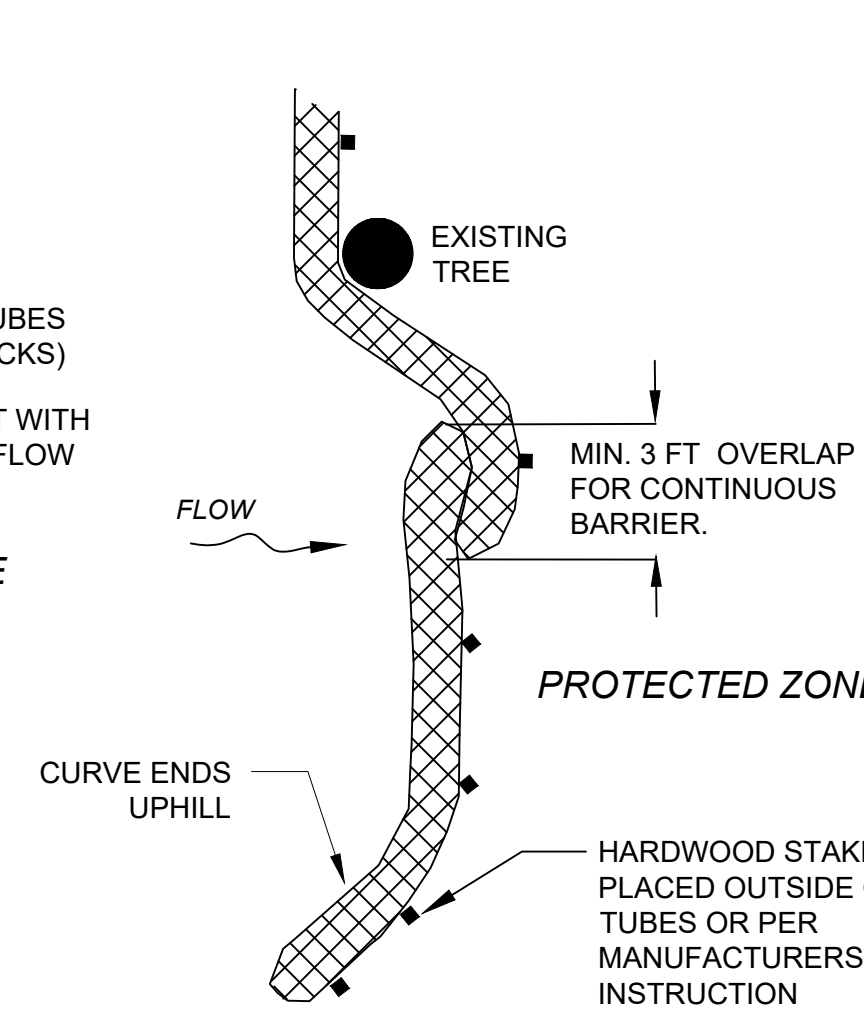
NOT TO SCALE



SECTION

12 INCH STRAW WATTLE

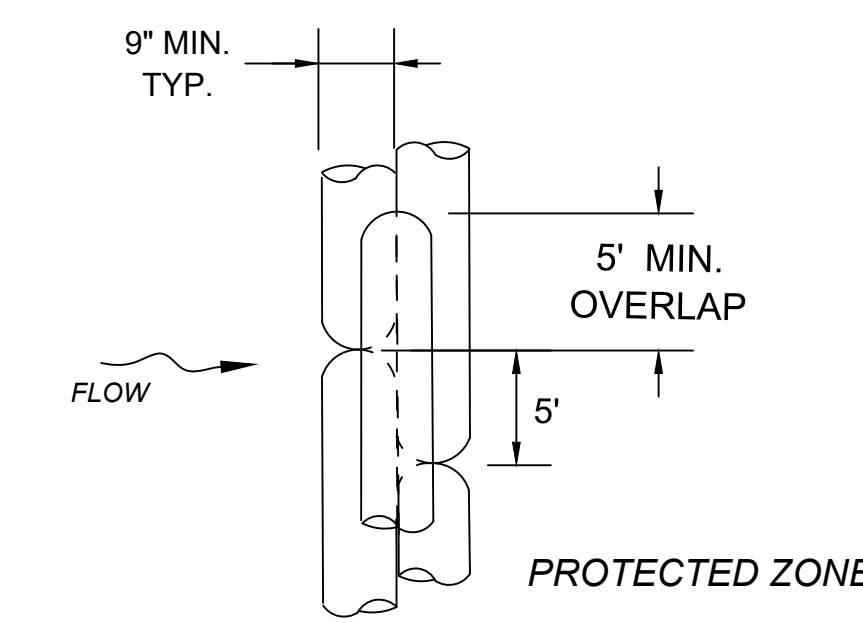
NOT TO SCALE



PLAN VIEW

COMPOST FILTER TUBE

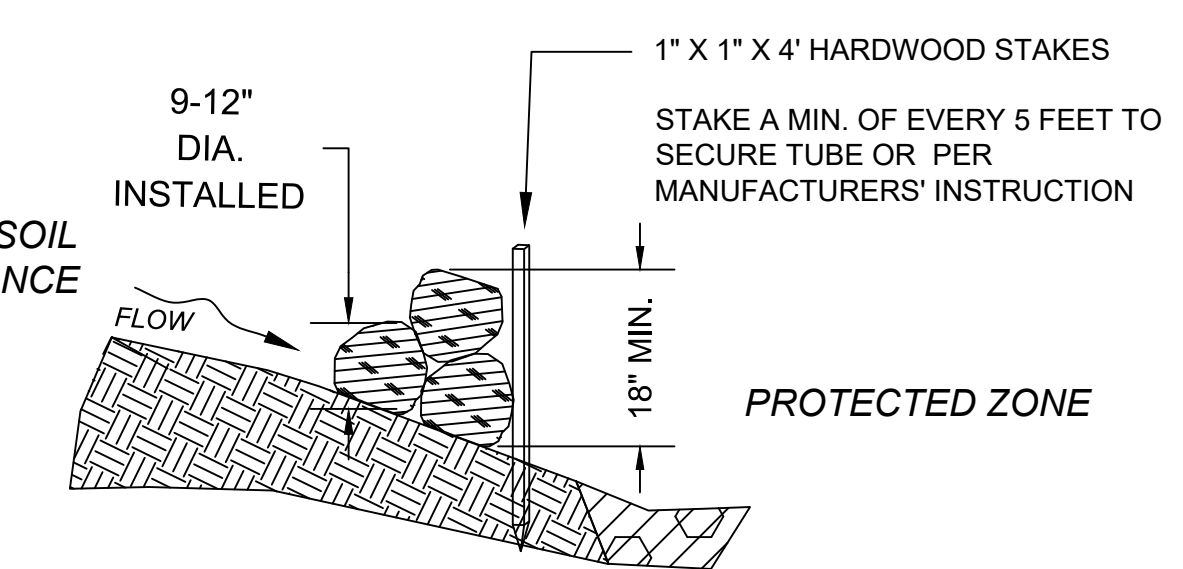
NOT TO SCALE



PLAN VIEW

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

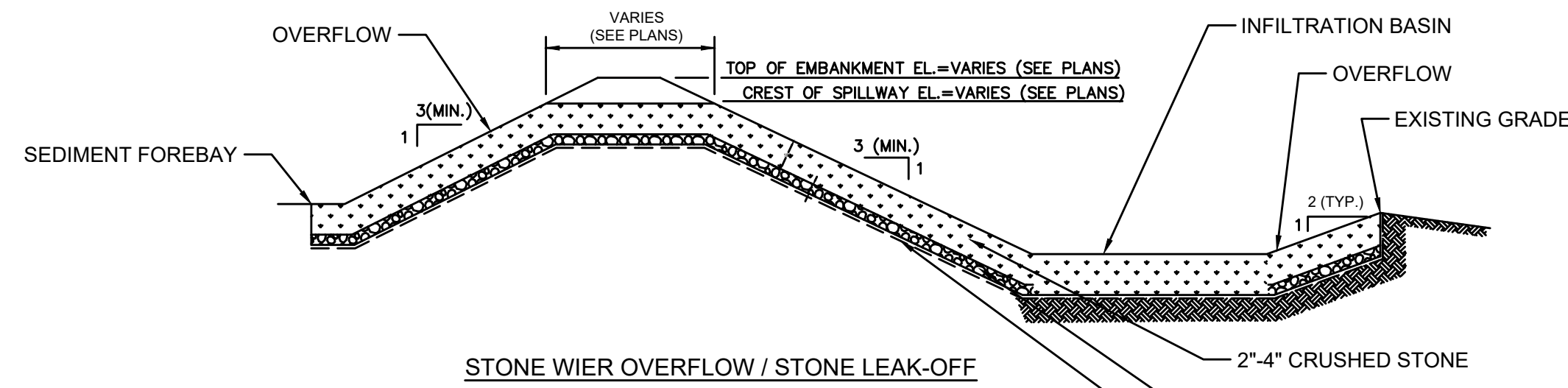
NOT TO SCALE



SECTION

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	49	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS

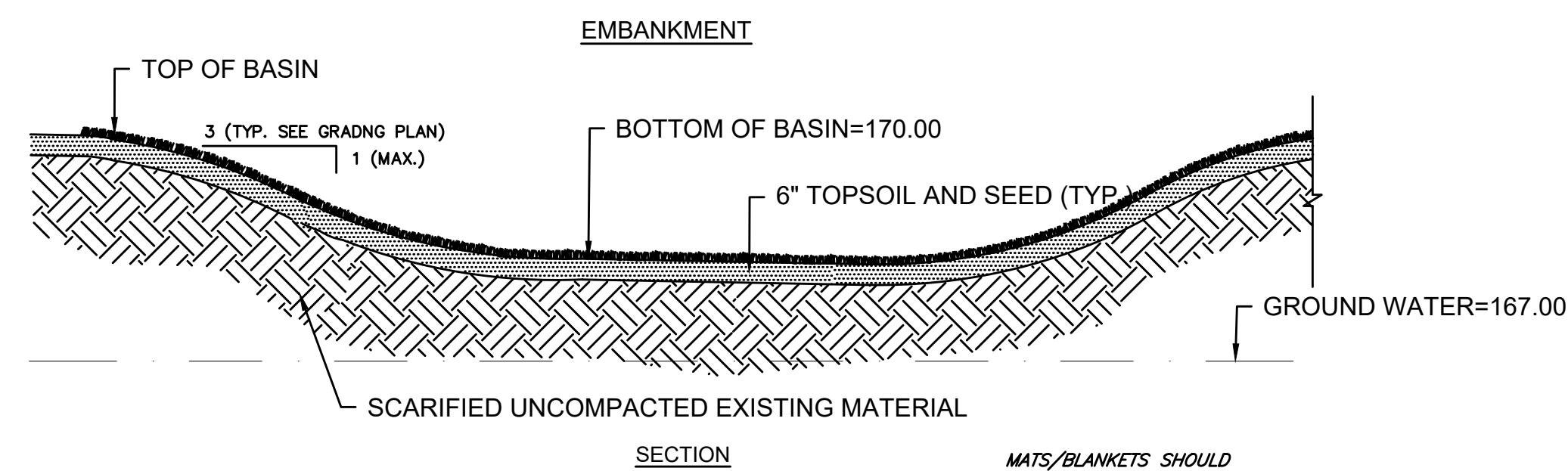


NOTES:

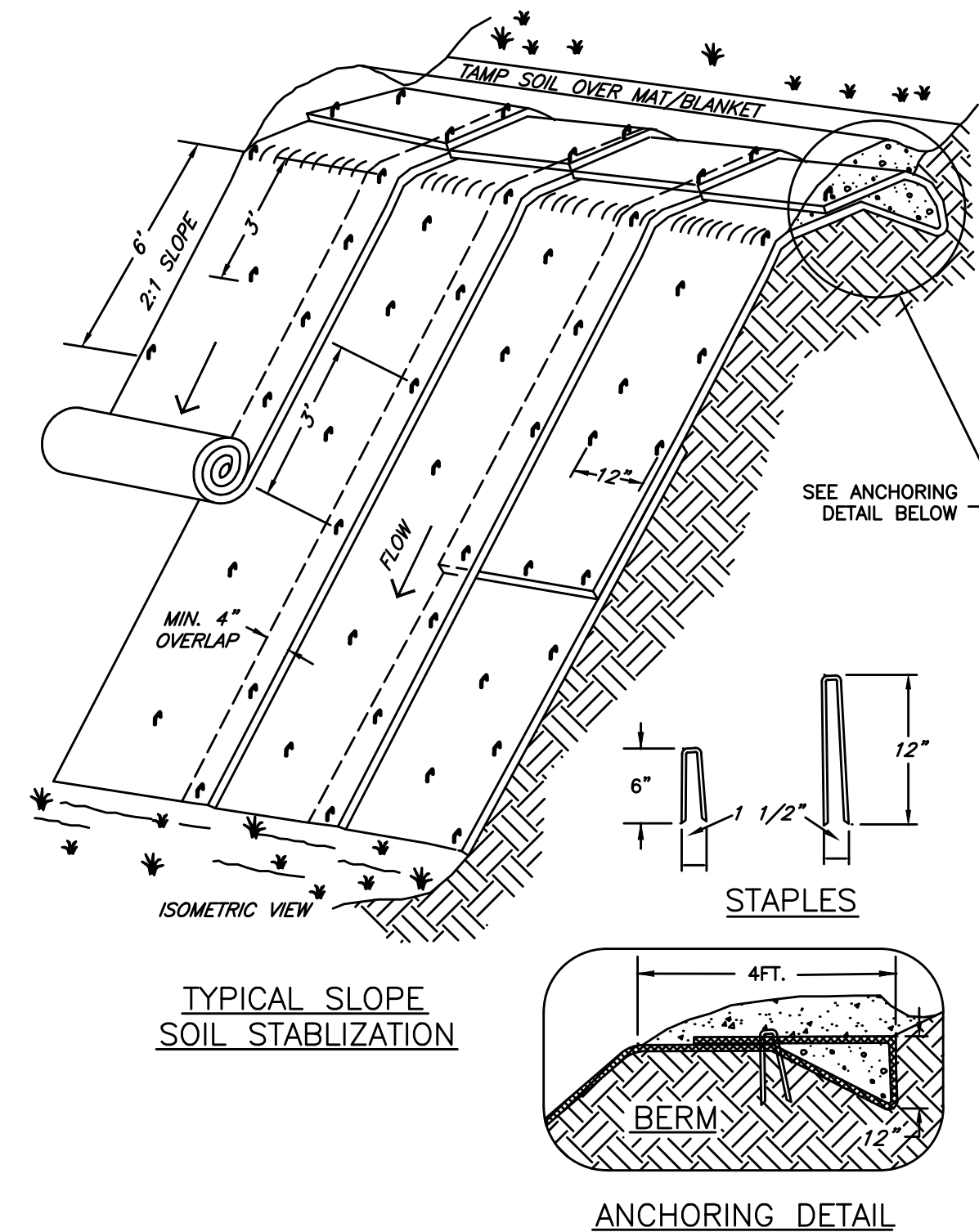
1. IMPERVIOUS MATERIAL FOR USE IN BASIN EMBANKMENT AREAS AND WHERE SHOWN ON THE PLANS SHALL BE COMPOSED OF CLAYS, SILTY CLAYS, OR CLAYEY SILTS. THE SOIL SHALL BE FREE OF RUBBISH, ICE, VEGETATIVE MATTER, LOAM, OR OTHER DEBRIS AND HAVE THE FOLLOWING GRADATION AS DEFINED BY A STANDARD SIEVE TEST (ASTM D422):

MIN. PERCENT PASSING (BY WT.)	SEIVE SIZE
100	3.5"
80-100	3/4"
40-90	No. 4
30-85	No. 40
25-75	No. 200

2. PERVIOUS BACKFILL MATERIAL FOR USE IN FILL AREAS ASSOCIATED WITH BASIN EMBANKMENTS SHALL BE COMPOSED OF ORDINARY BORROW MATERIAL (ITEM 150.) OR EXCAVATED MATERIAL FROM THE SITE DEEMED RE-USEABLE BY THE ENGINEER. SATISFACTORY ON-SITE MATERIAL SHALL HAVE SOIL CLASSIFICATION GROUPS OF GW, GP, GM, SW, SP, AND SM ACCORDING TO ASTM D 2487, OR A COMBINATION OF THESE GROUPS AND SHALL BE FREE OF ROCK OR GRAVEL LARGER THAN 3 INCHES (75 MM) IN ANY DIMENSION, DEBRIS, WASTE, FROZEN MATERIALS, VEGETATION, AND OTHER DELETERIOUS MATTER.



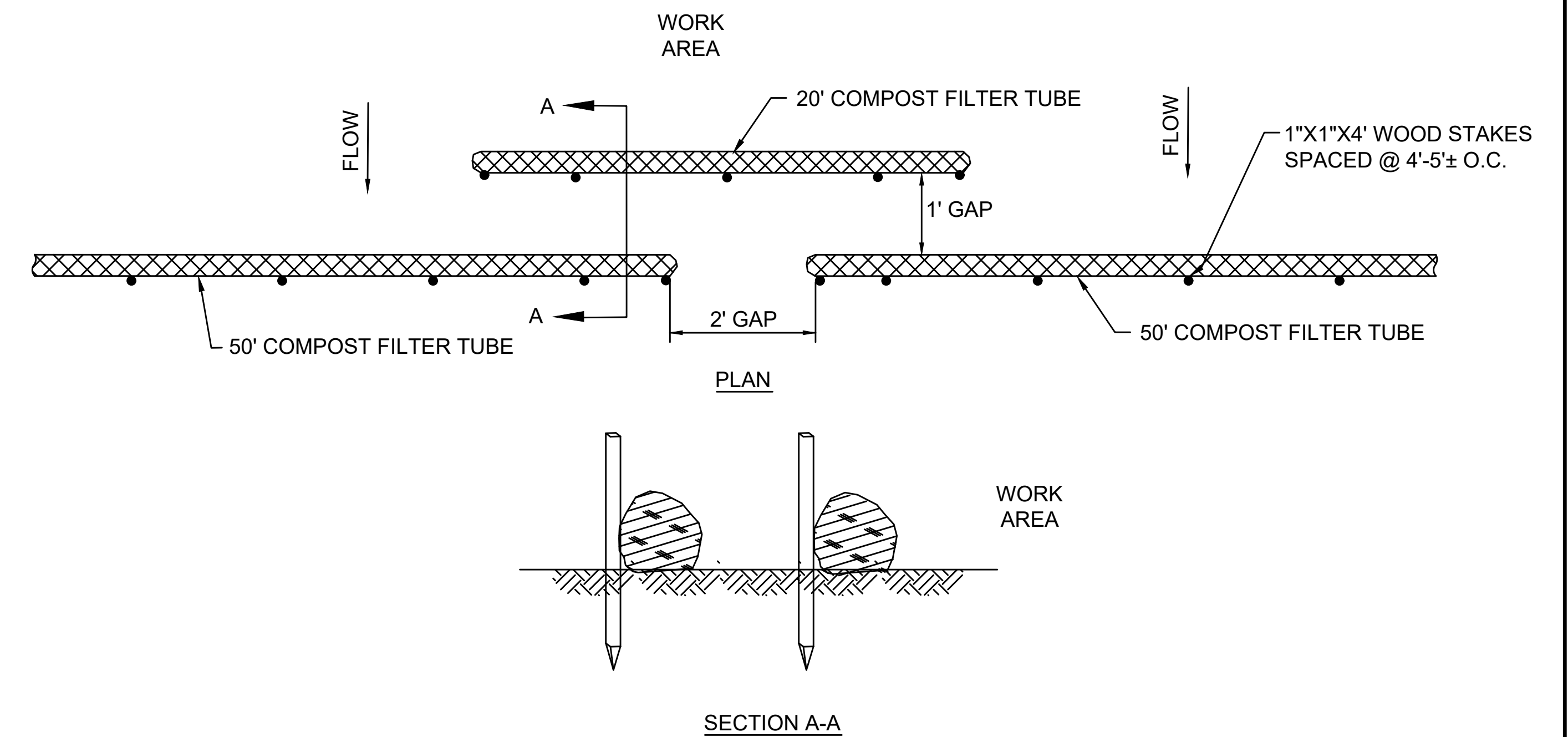
6 INFILTRATION BASIN
SCALE: N.T.S.



NOTES:

- MATting FOR EROSION CONTROL MUST BE MADE FROM 100% BIODEGRADABLE MATERIAL.
- STAPLES OR STAKES MAY BE USED TO SECURE THE MATting. THE STAPLES OR STAKES MUST BE MADE FROM A 100% BIODEGRADABLE MATERIAL.

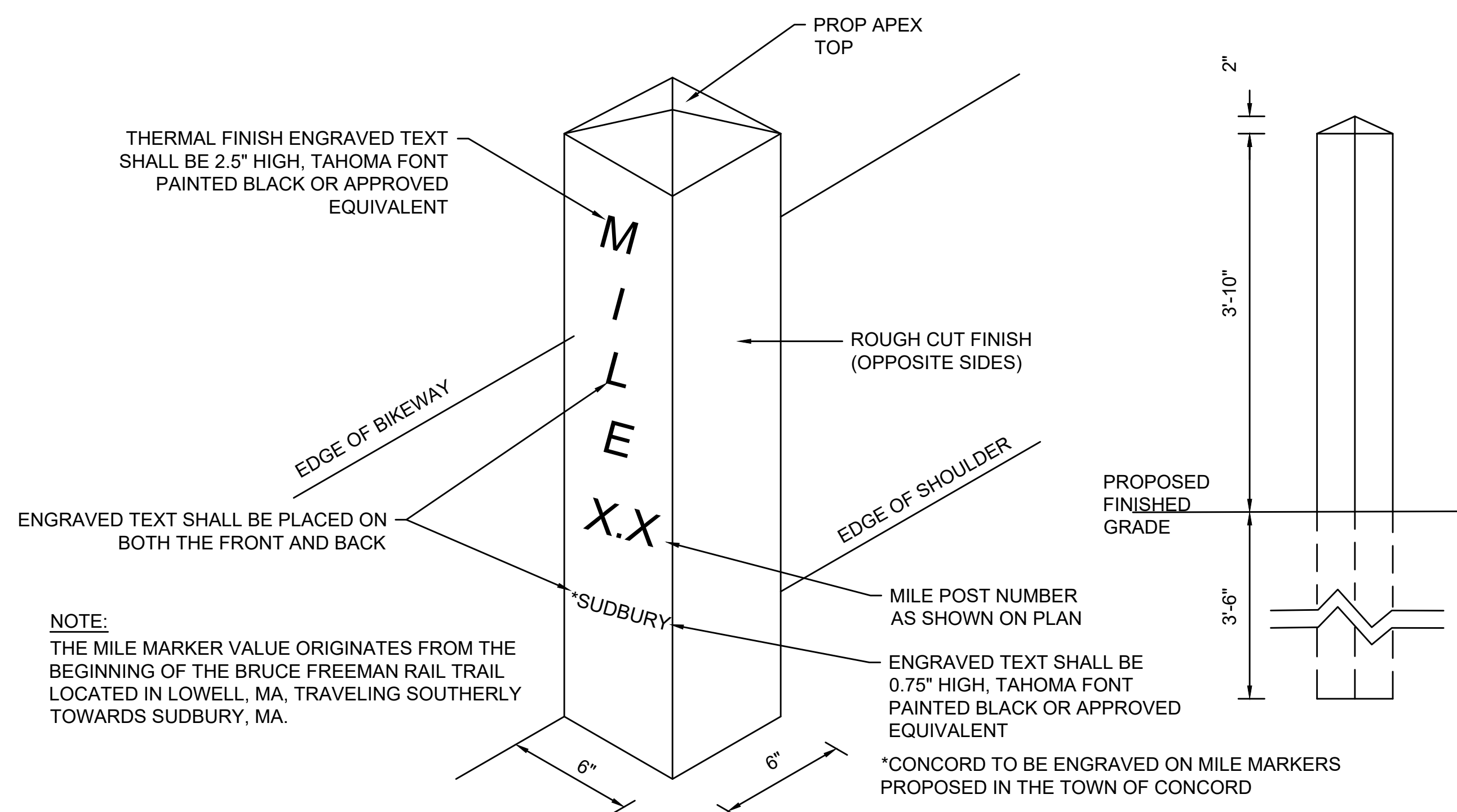
7 MATting FOR EROSION CONTROL
SCALE: N.T.S.



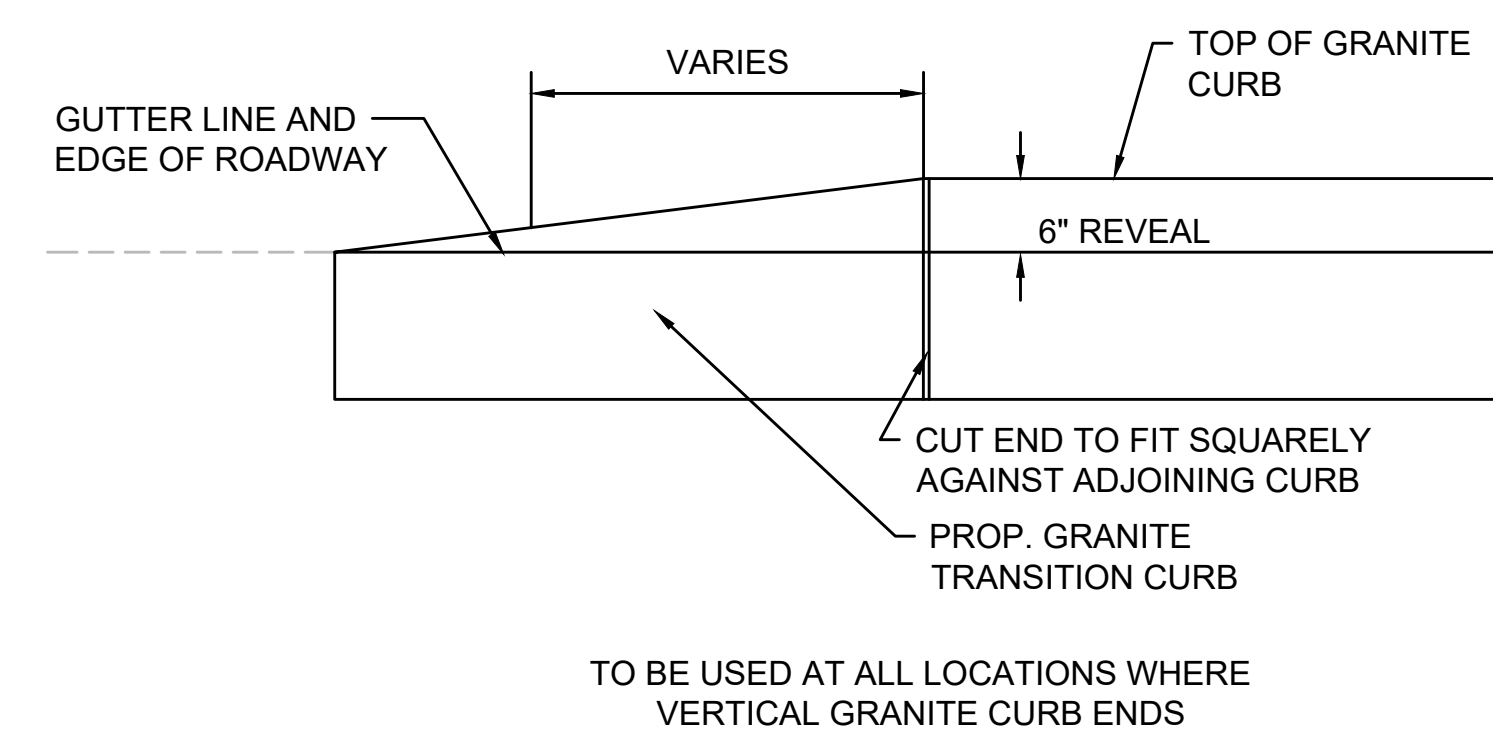
NOTES:

- SYNCOPATED COMPOST FILTER TUBES SHALL BE USED WHEN BORDERING VERNAL POOLS AS SHOWN ON THE PLANS.

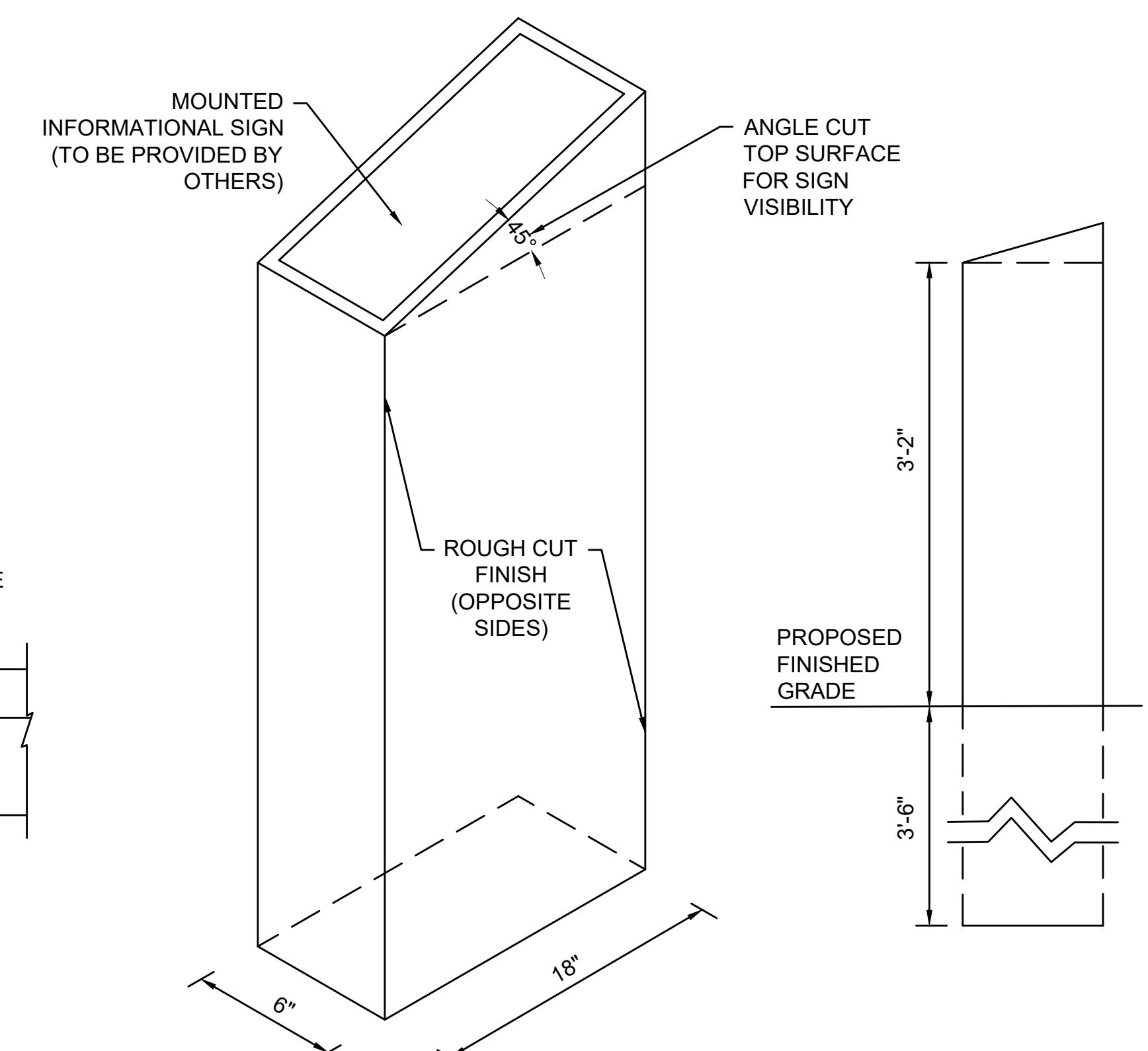
8 SYNCOPATED SEDIMENT CONTROL BARRIER
SCALE: N.T.S.



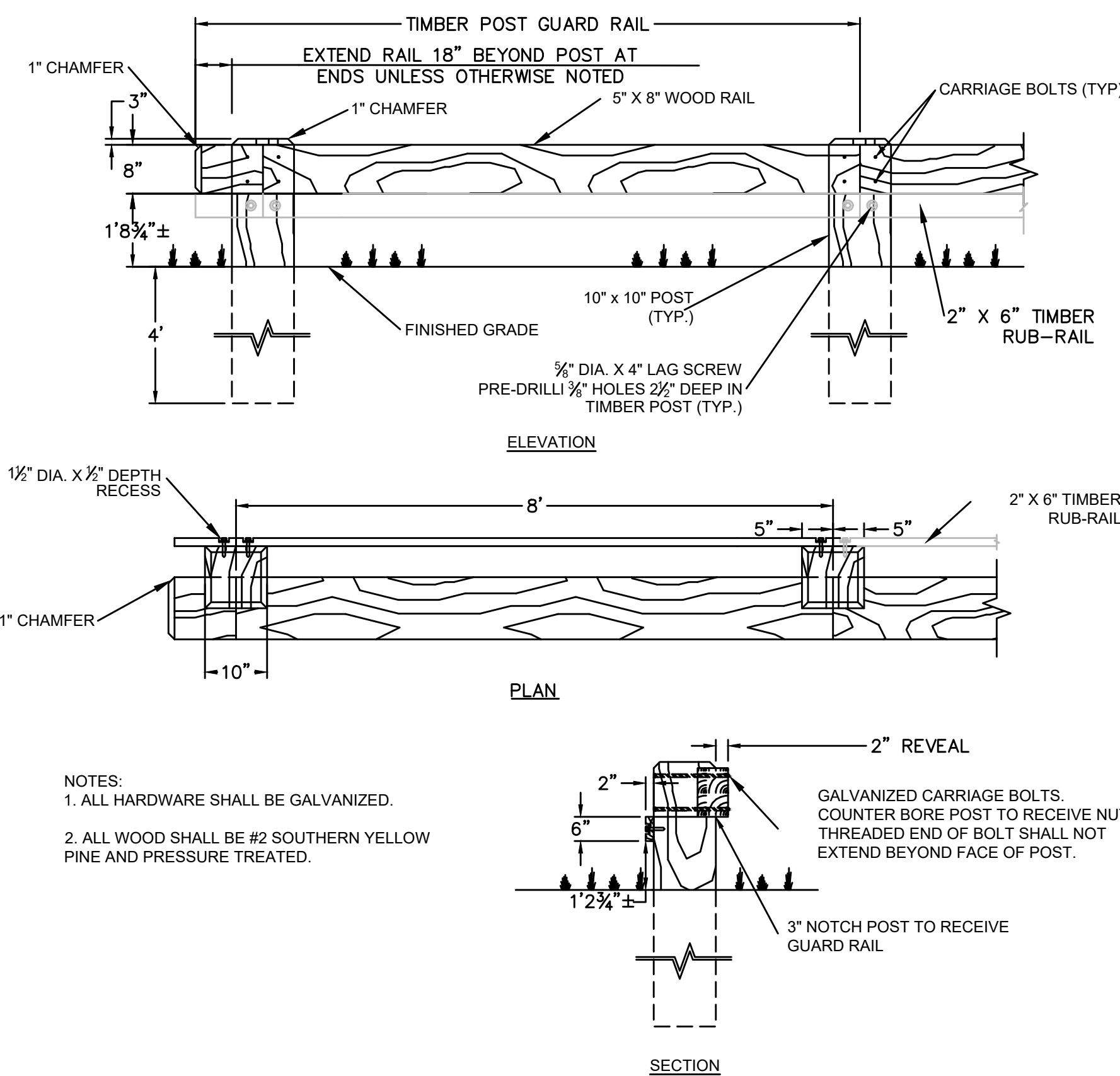
9 GRANITE MILE MARKER
SCALE: N.T.S.



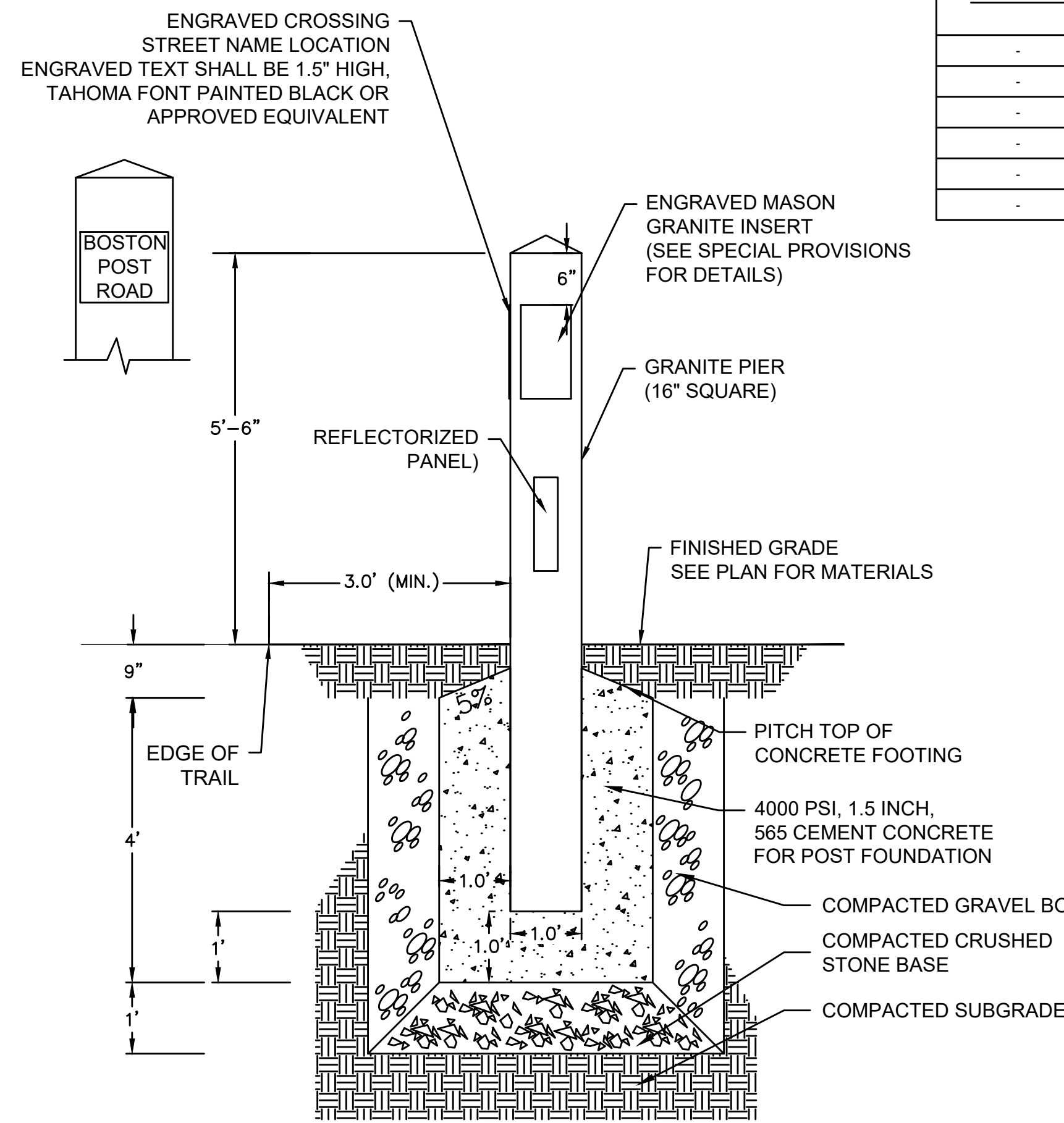
10 TRANSITION CURB DETAIL
SCALE: N.T.S.



11 GRANITE POST INTERPRETIVE SIGN
SCALE: N.T.S.

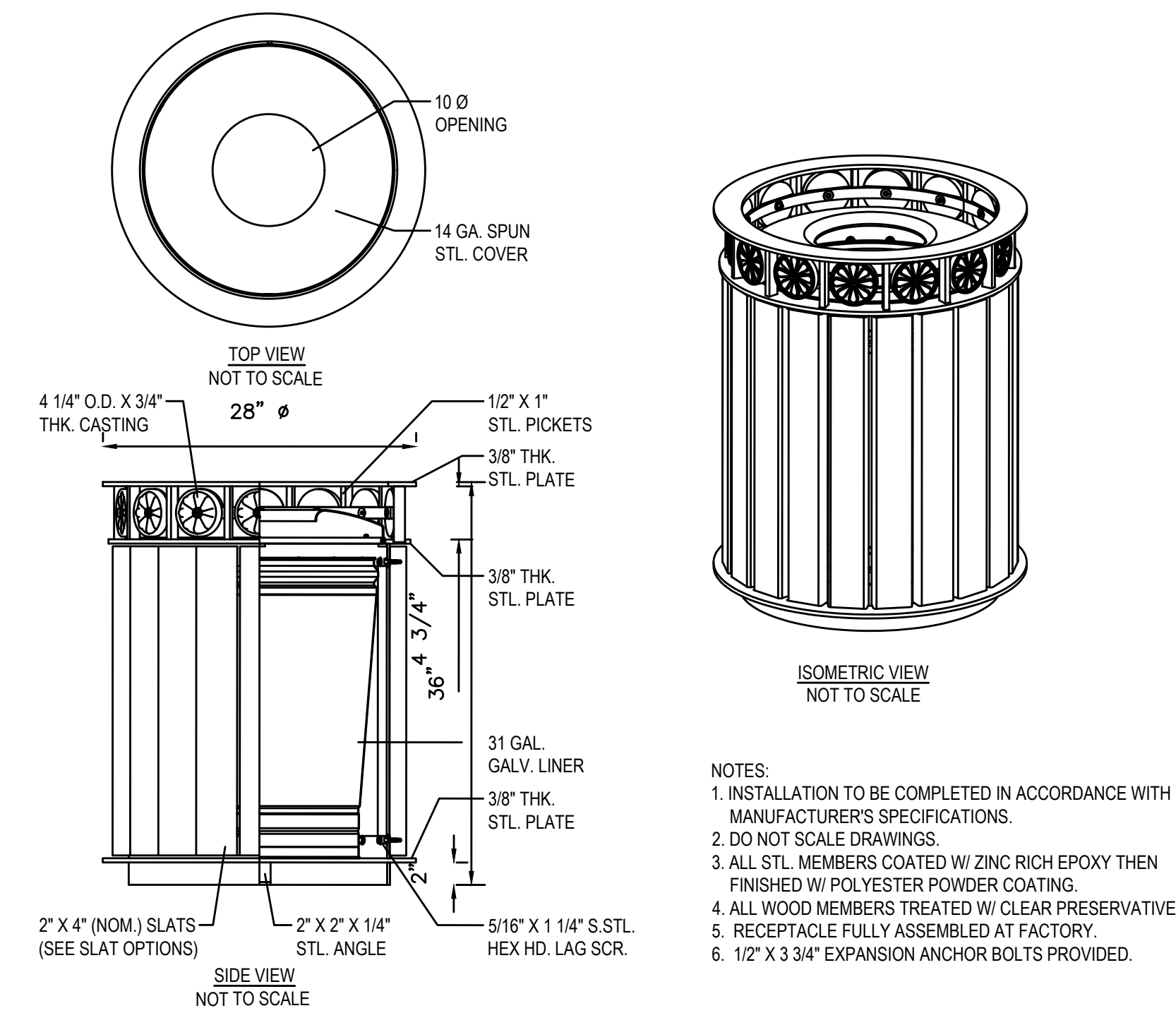


12 **TIMBER POST GUARDRAIL**
SCALE: N.T.S.

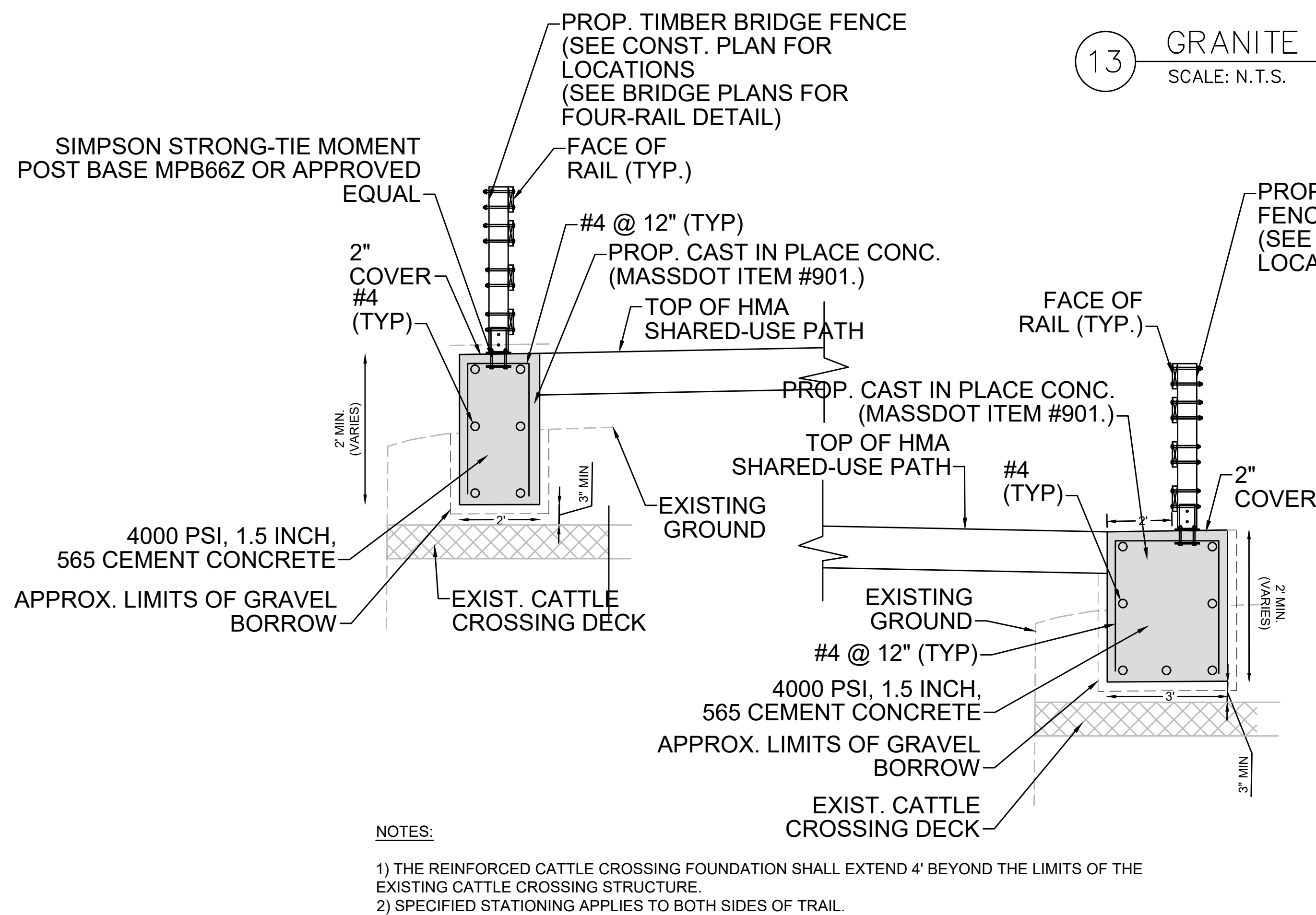


13 **GRANITE BRUCE FREEMAN RAIL TRAIL PIER**
SCALE: N.T.S.

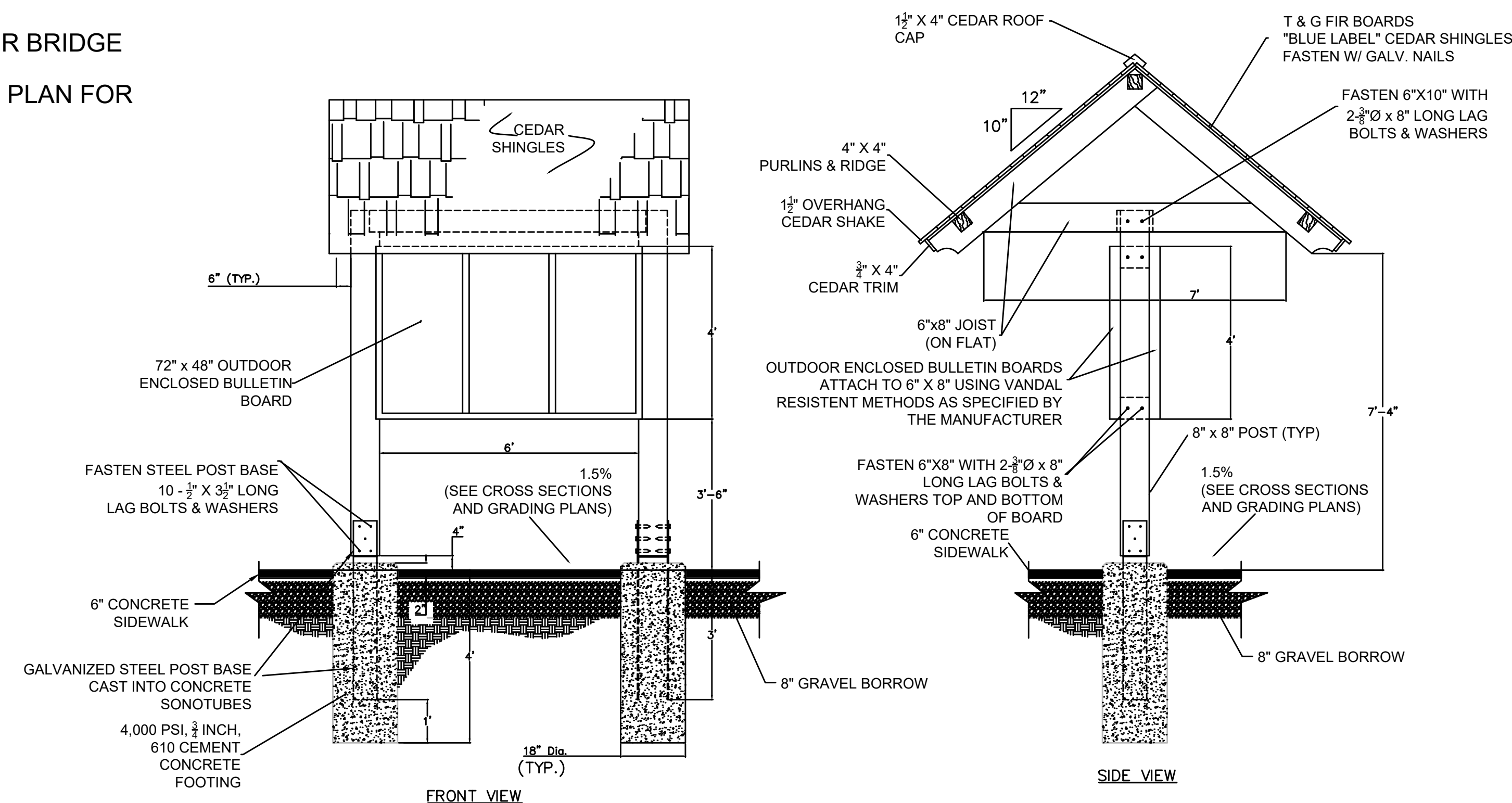
GRANITE PIER LOCATIONS			
STREET NAME	STATION	OFFSET	SIDE
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-



14 **TRASH RECEPTACLE**
SCALE: N.T.S.



15 **REINFORCED TIMBER CONNECTION AT CATTLE CROSSING**
SCALE: N.T.S.



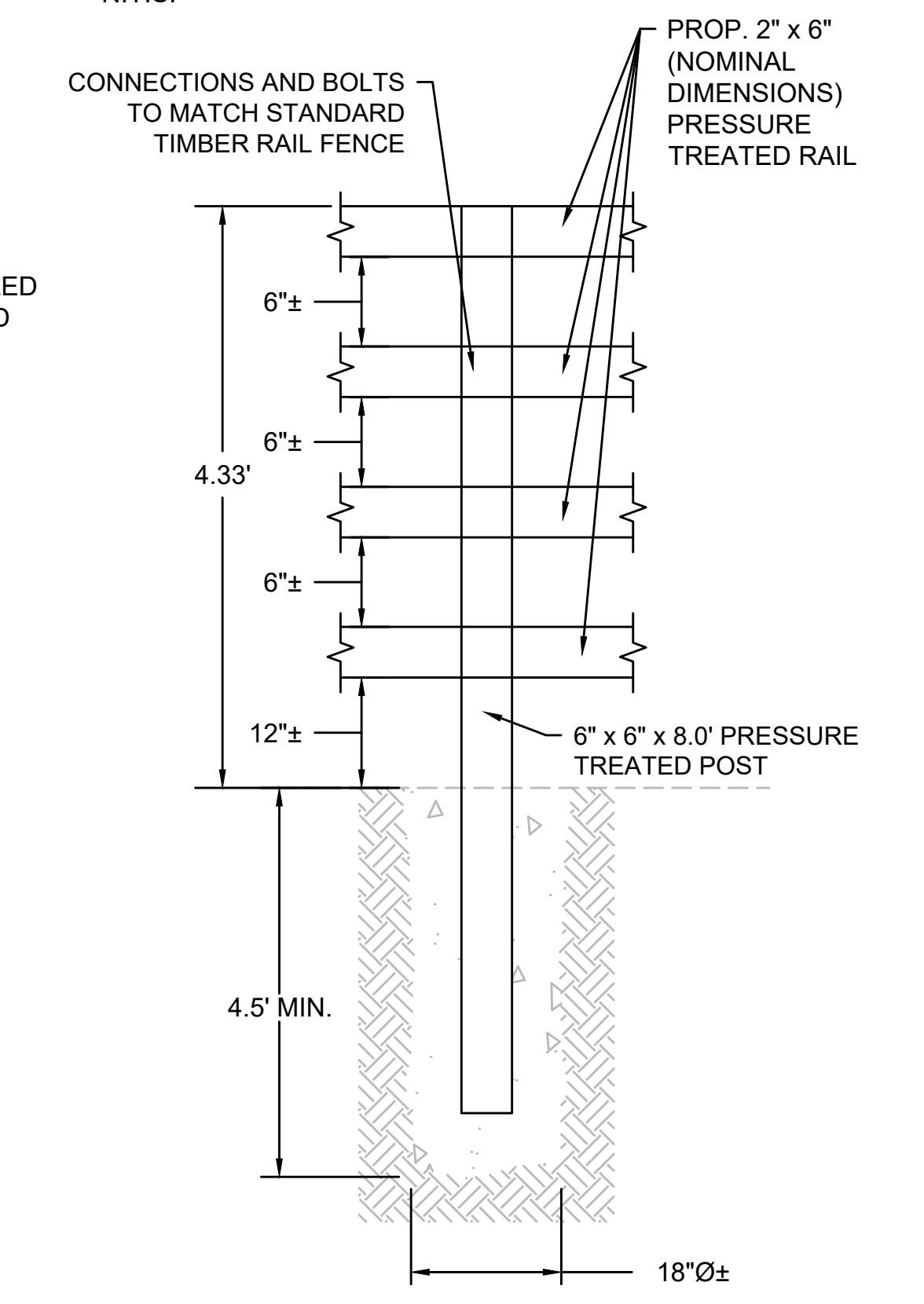
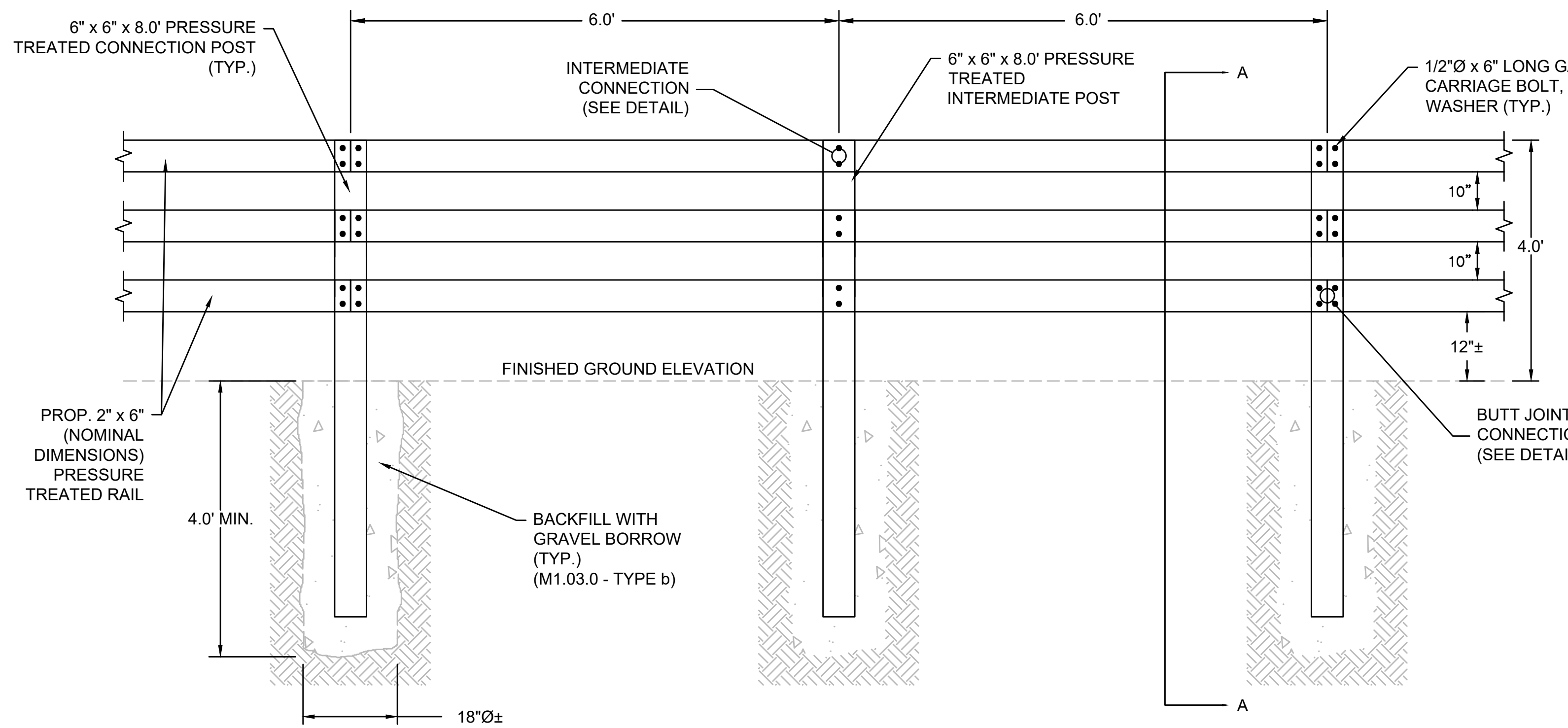
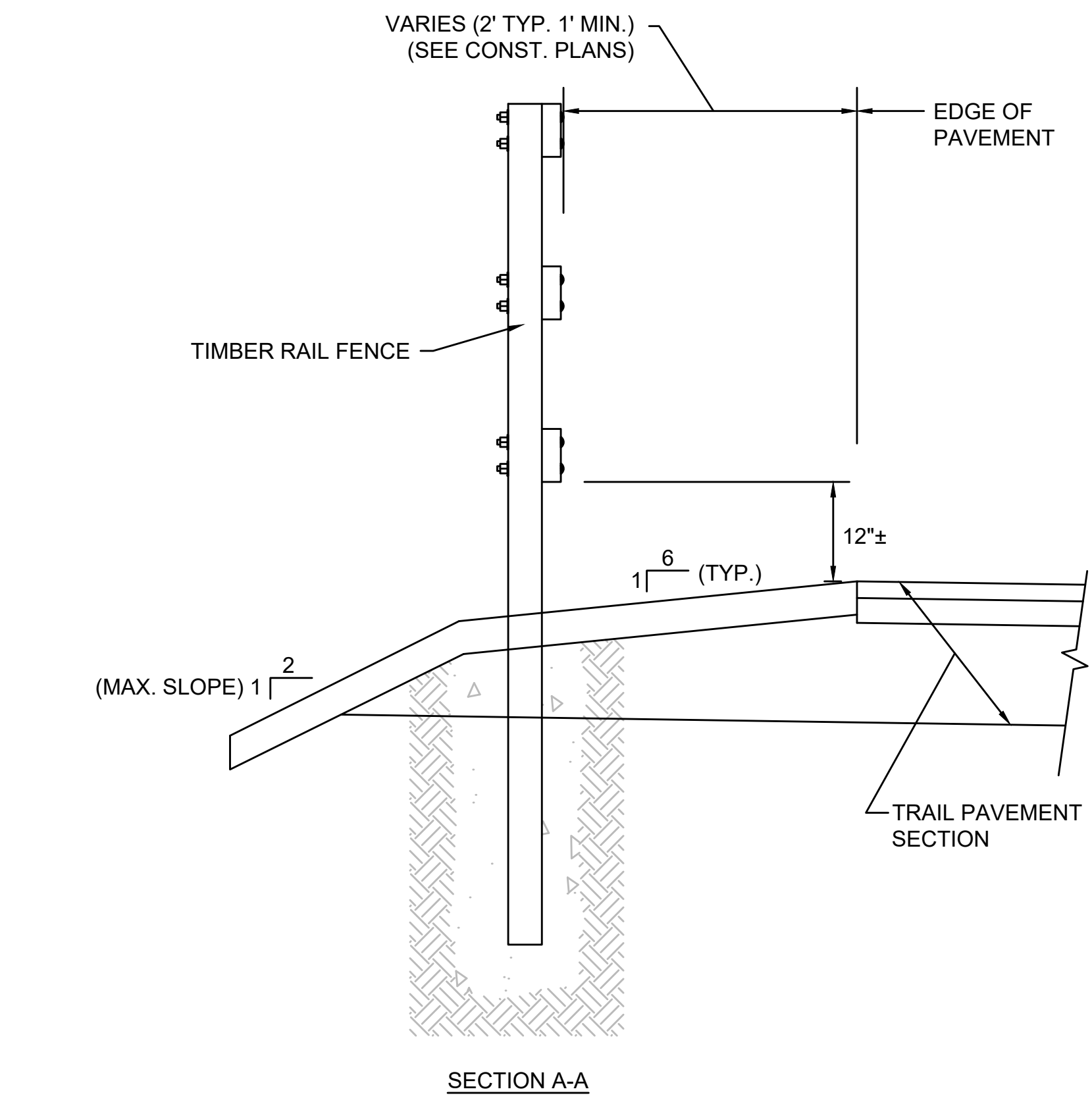
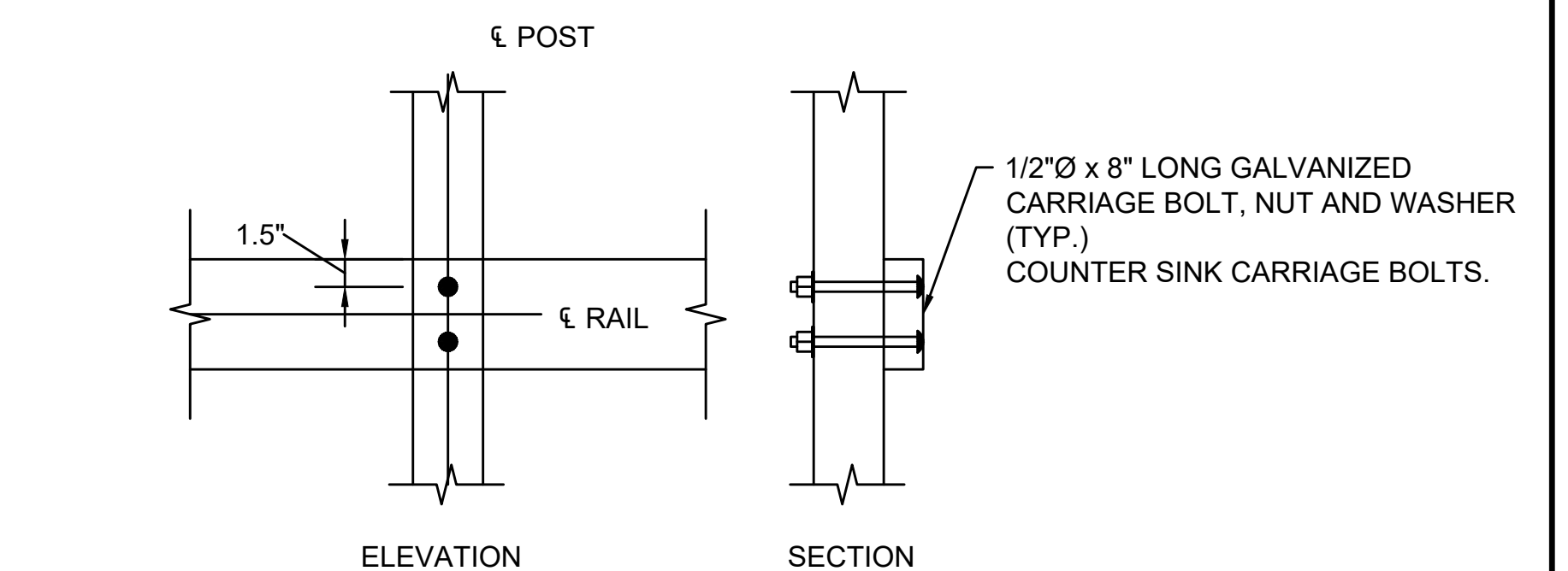
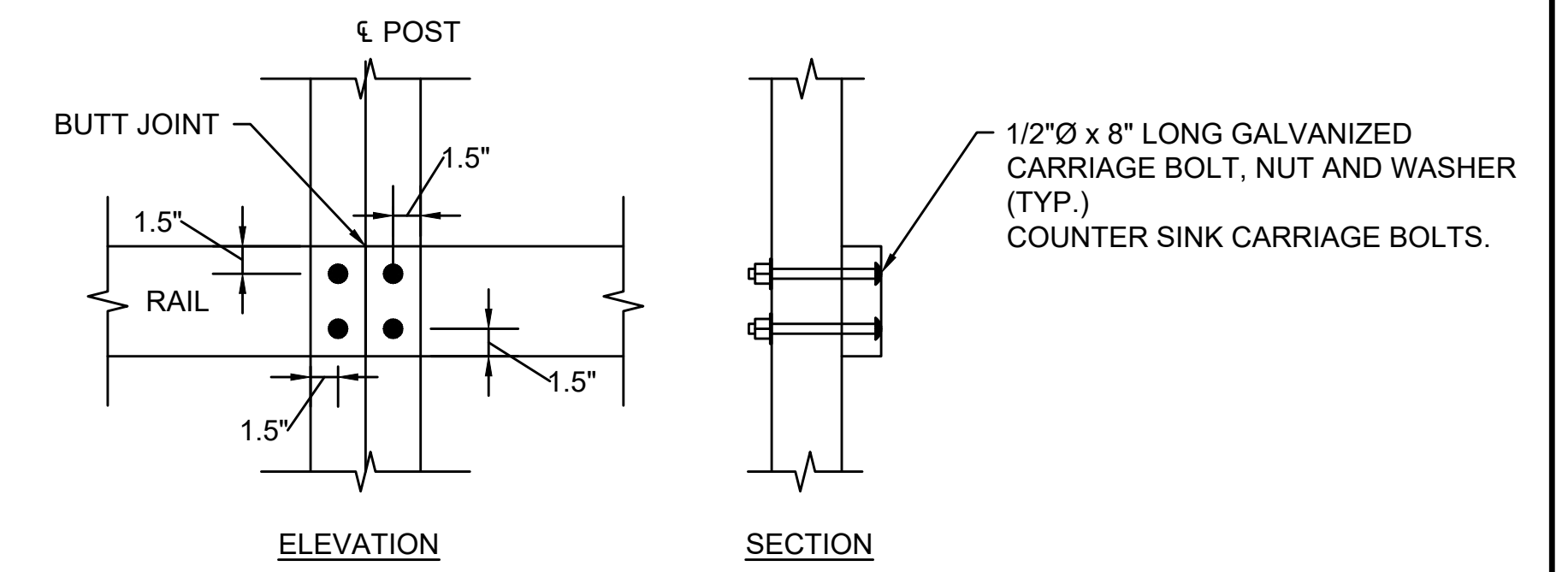
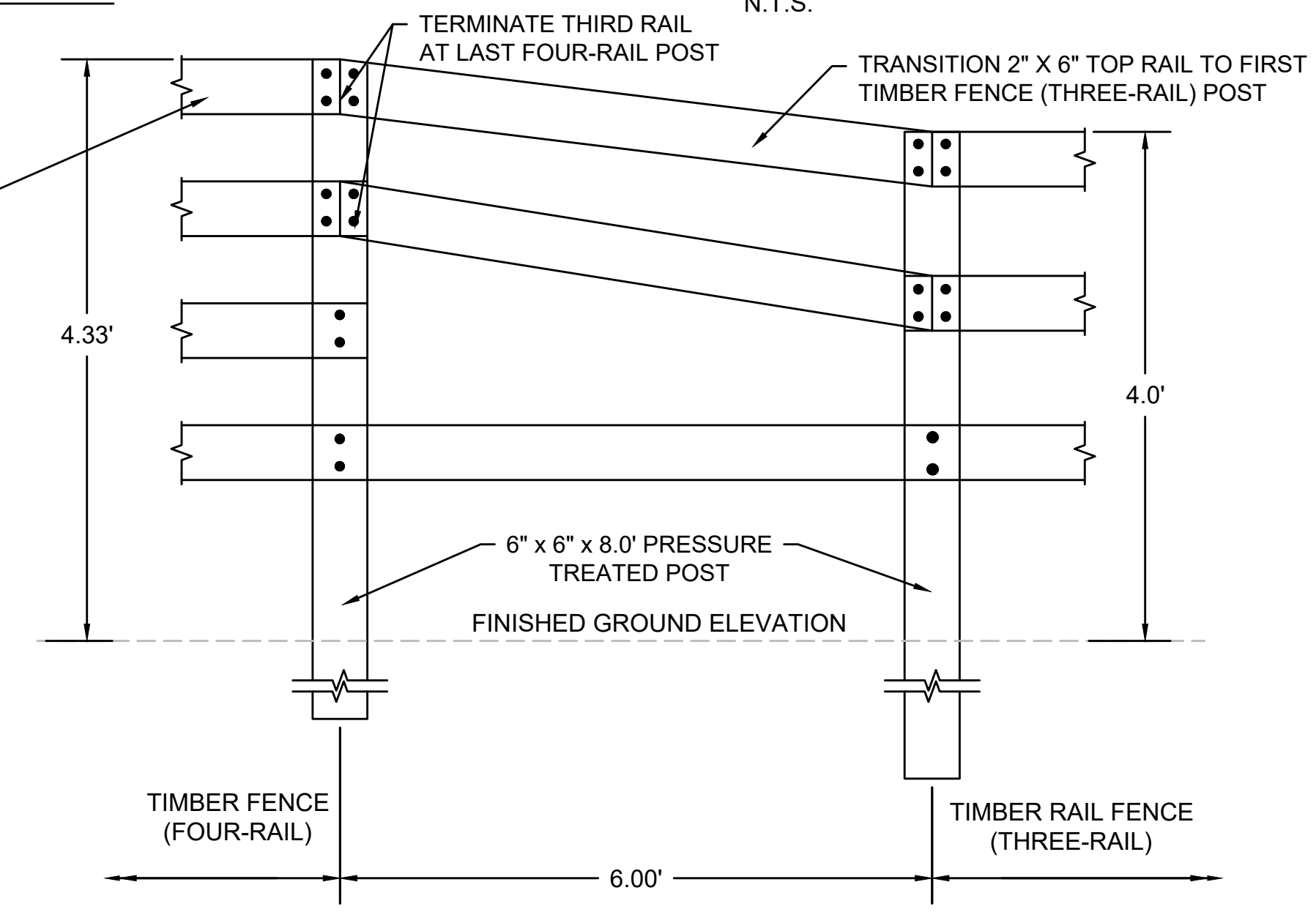
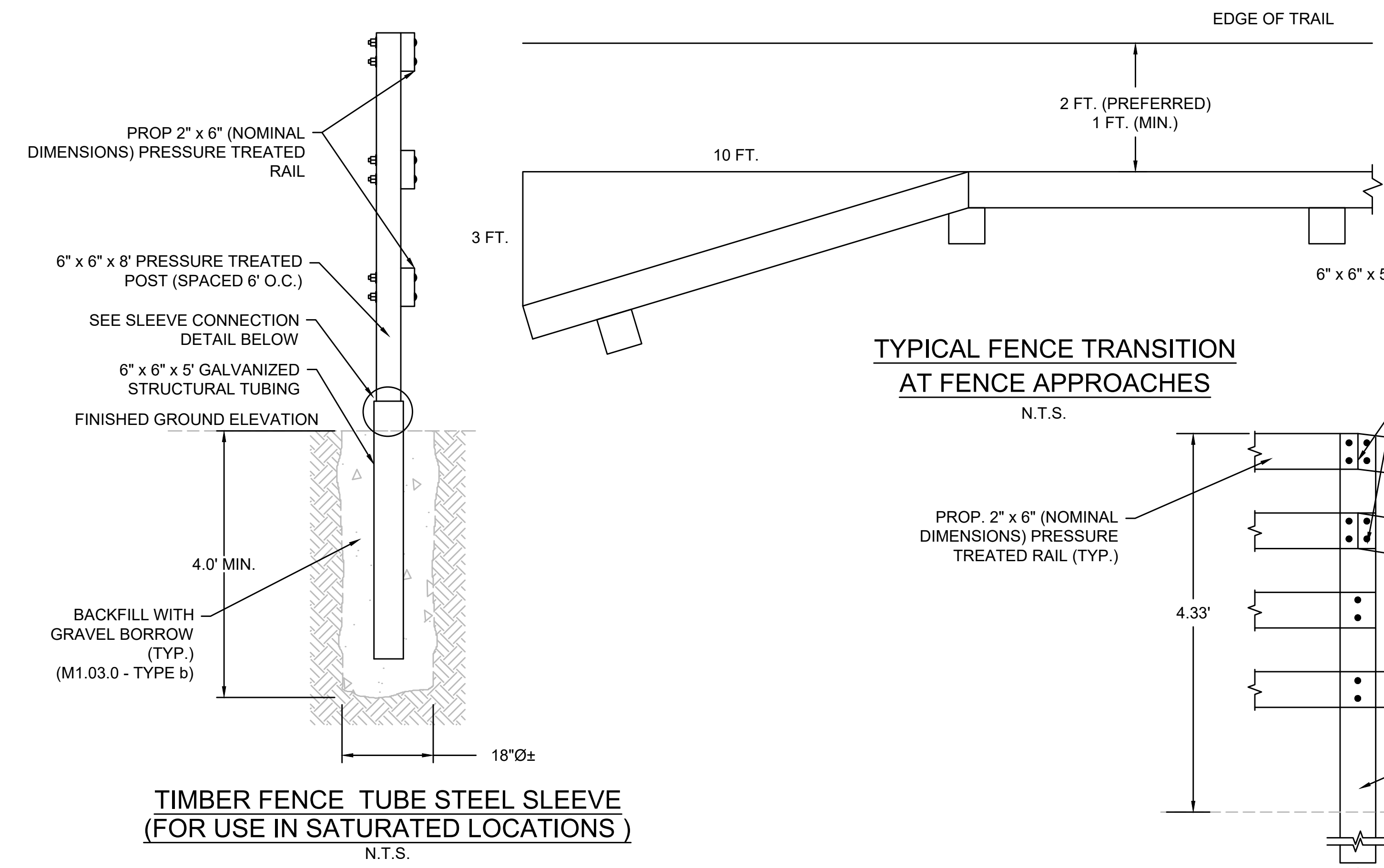
16 **DISPLAY BOARD**
SCALE: N.T.S.

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	51	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS

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



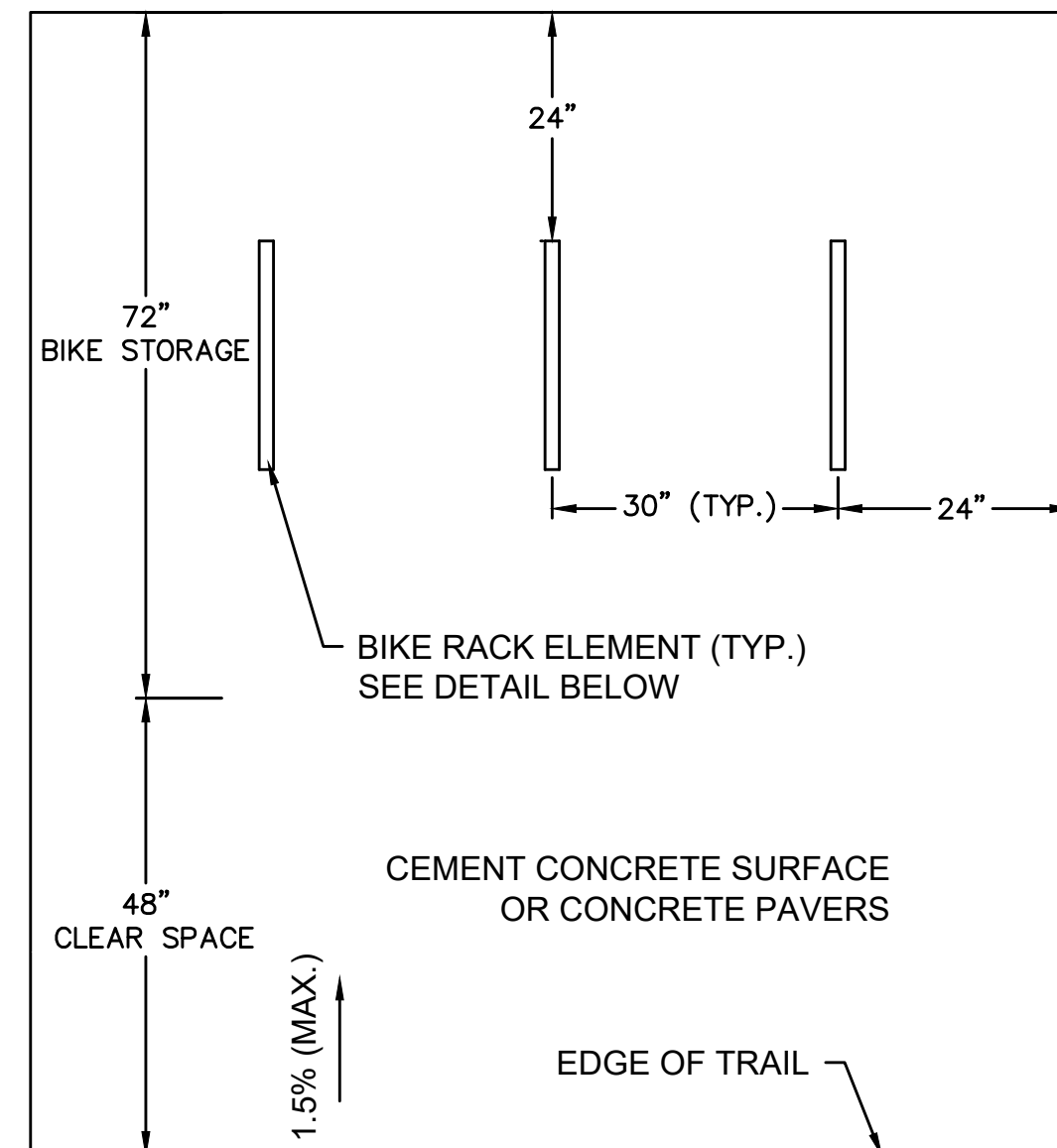
SUGGESTED TIMBER RAIL FENCE CONSTRUCTION SEQUENCE

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

- NOTES:**
- FOR RADII LESS THAN 165'. USE CONNECTION POSTS SET AT 6.0' O.C. AND SHORTEN RAILS ACCORDINGLY.

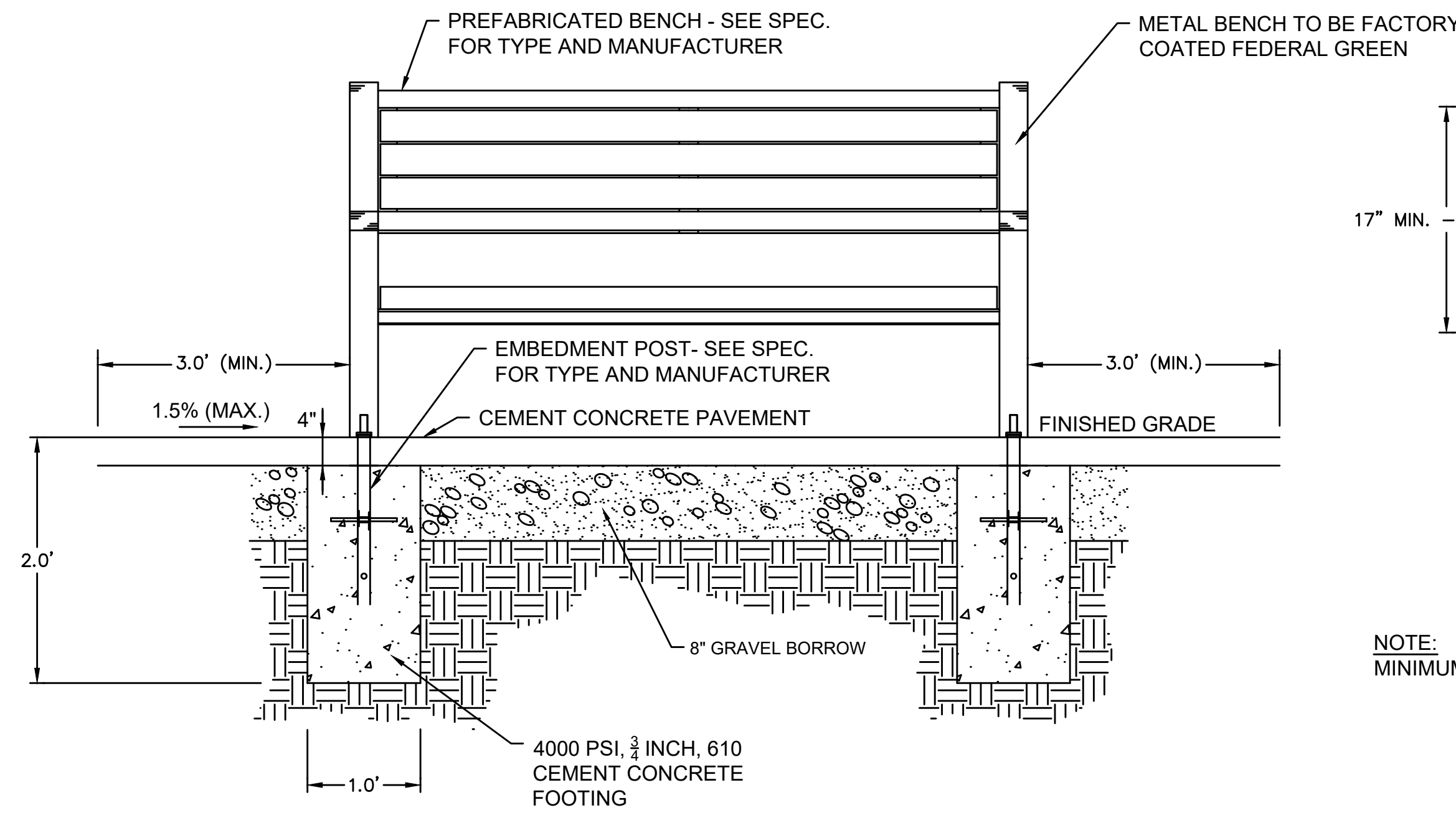
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	52	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS

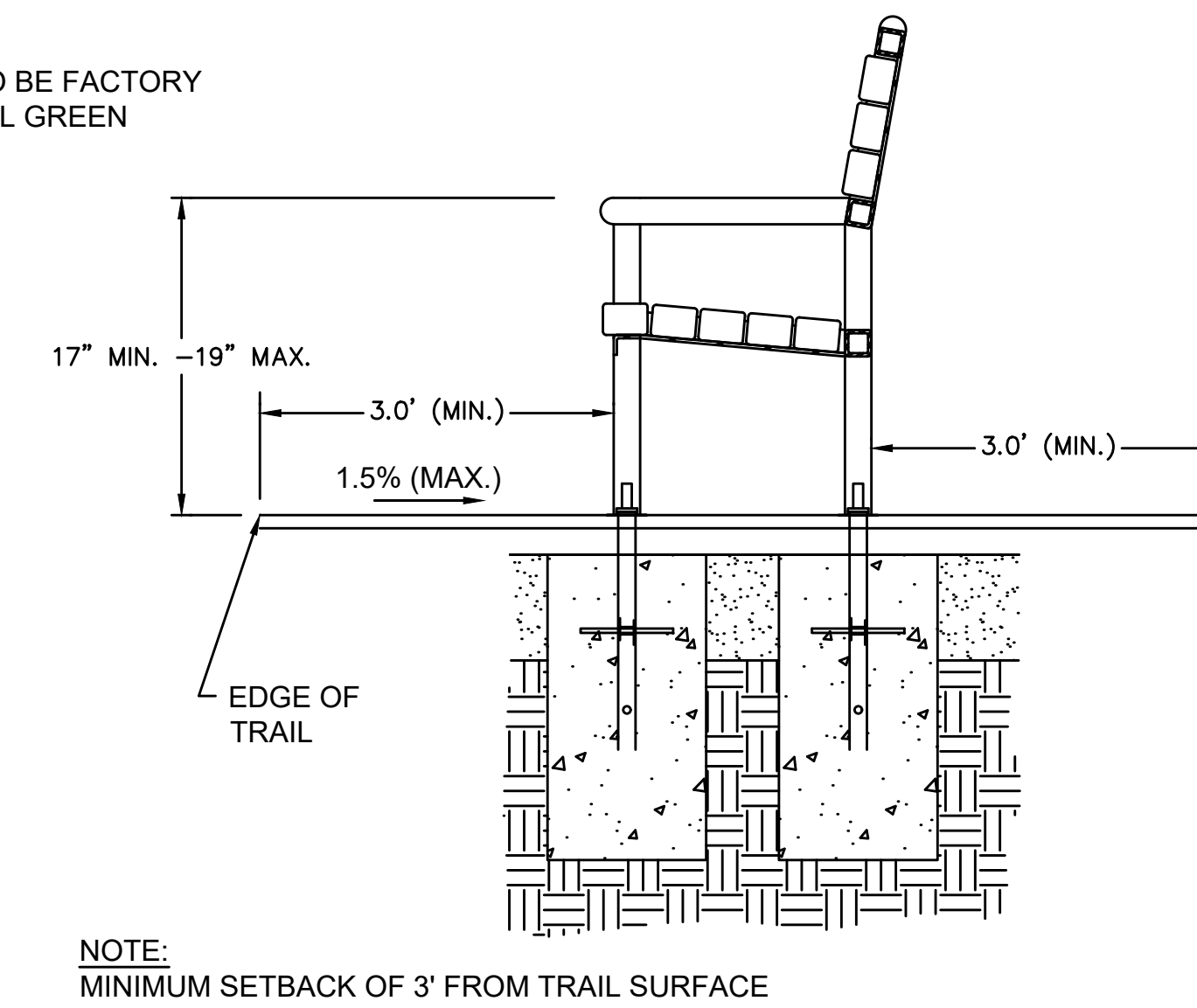


NOTES:
• SEE PLANS FOR QUANTITY OF BIKE RACK ELEMENTS

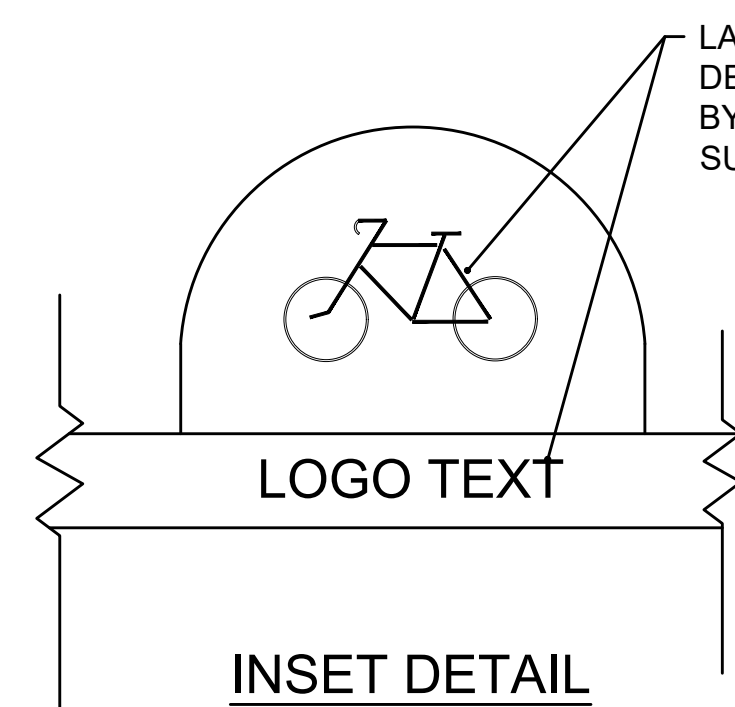
BICYCLE RACK PLACEMENT



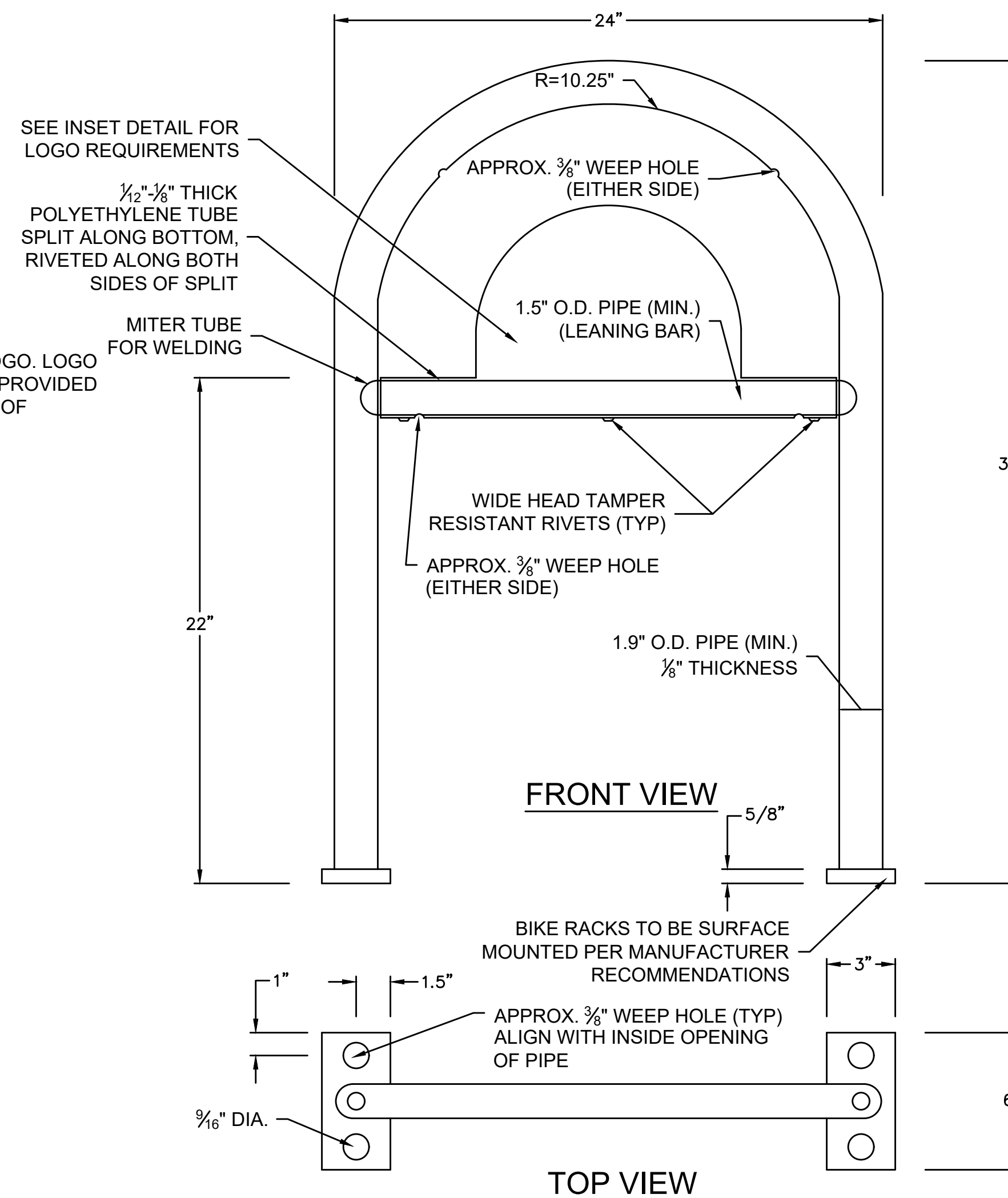
18 BENCH
SCALE: N.T.S.



NOTE:
MINIMUM SETBACK OF 3' FROM TRAIL SURFACE

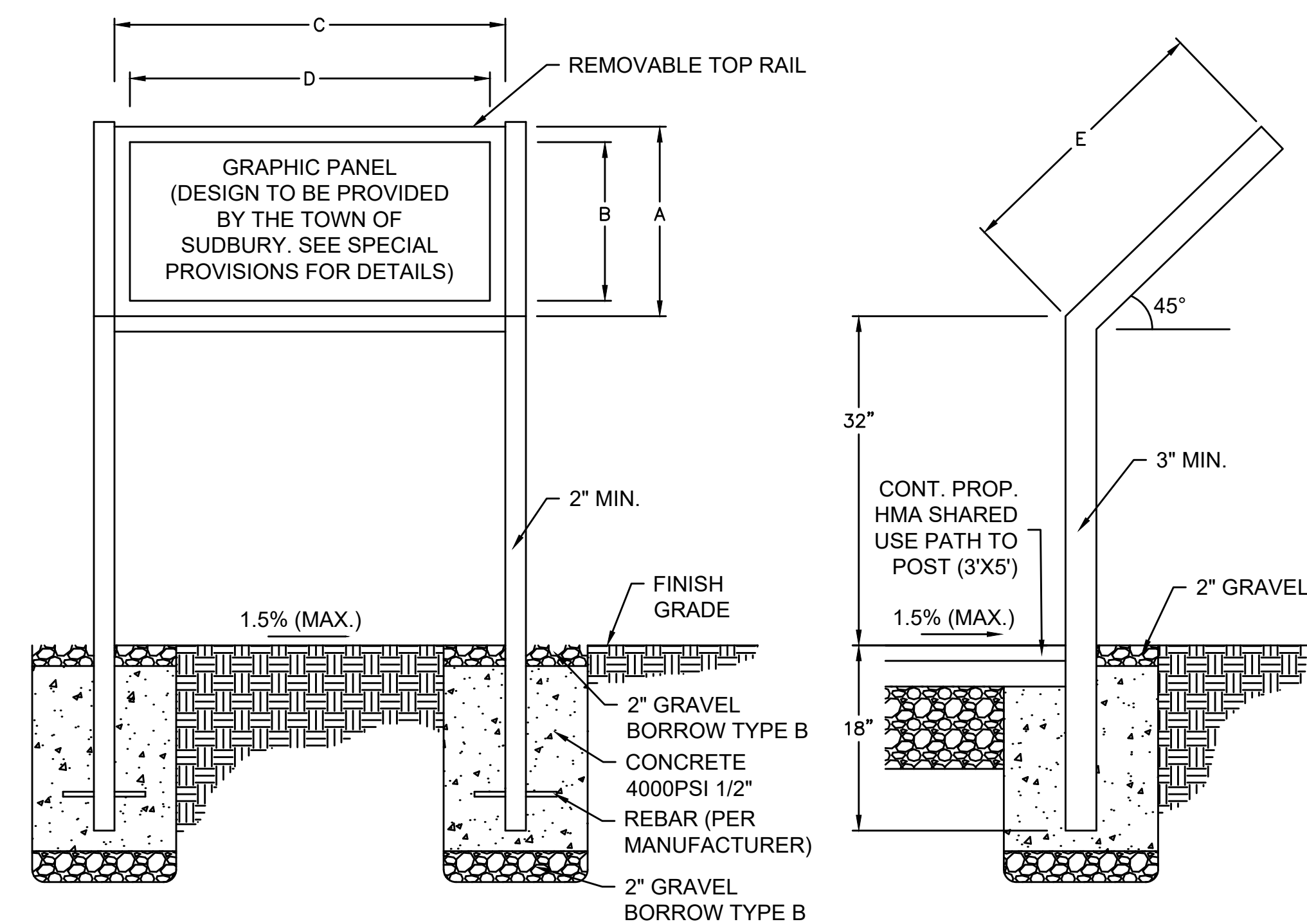


- NOTES:
1. EACH BIKE RACK SHALL INCLUDE A LASER-CUT LOGO. LOGO DETAIL TO BE PROVIDED BY THE TOWN OF SUDBURY.
 2. DIMENSIONS ARE APPROXIMATE AND WILL BE DETERMINED IN COORDINATION WITH THE MANUFACTURER. BIKE RACK ELEMENTS TO BE OF THE INVERTED "U".
 3. EACH BIKE RACK SHALL ACCOMMODATE TWO BICYCLES.
 4. ALL POSTS AND HARDWARE SHALL BE FACTORY COATED FEDERAL GREEN (SEE SPECIAL PROVISIONS)



19 BICYCLE RACK
SCALE: N.T.S.

NOTE:
INTERPRETATIVE PANEL SHALL BE SQUARE METAL POSTS AND IS INTENDED TO MATCH THE MASSACHUSETTS DCR STANDARDS.

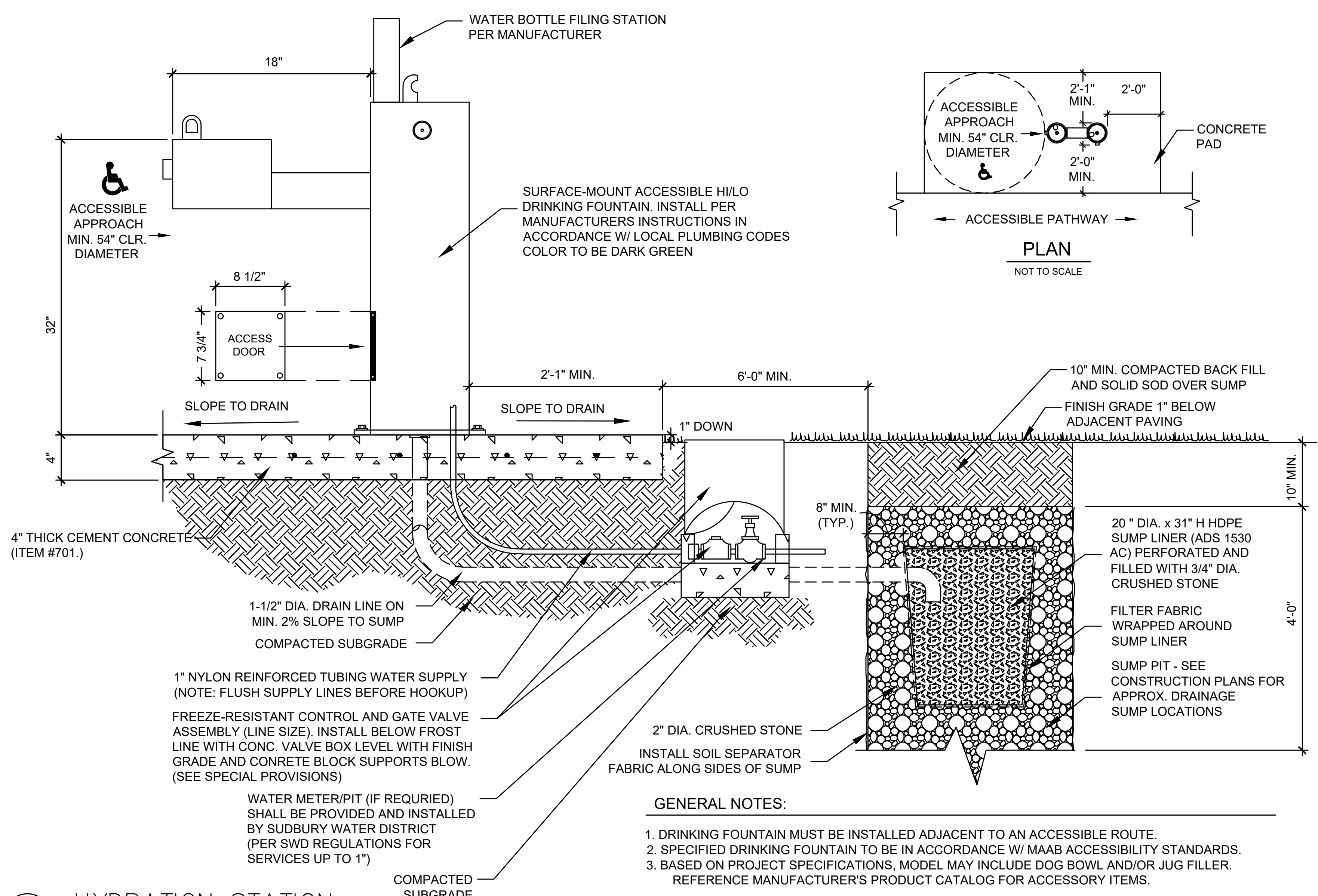


SIGN TYPE	DIMENSION TABLE				
	HEIGHT	WIDTH		DEPTH	
	A	B	C	D	E
26" x 38"	26"	23"	38"	35"	26.5"

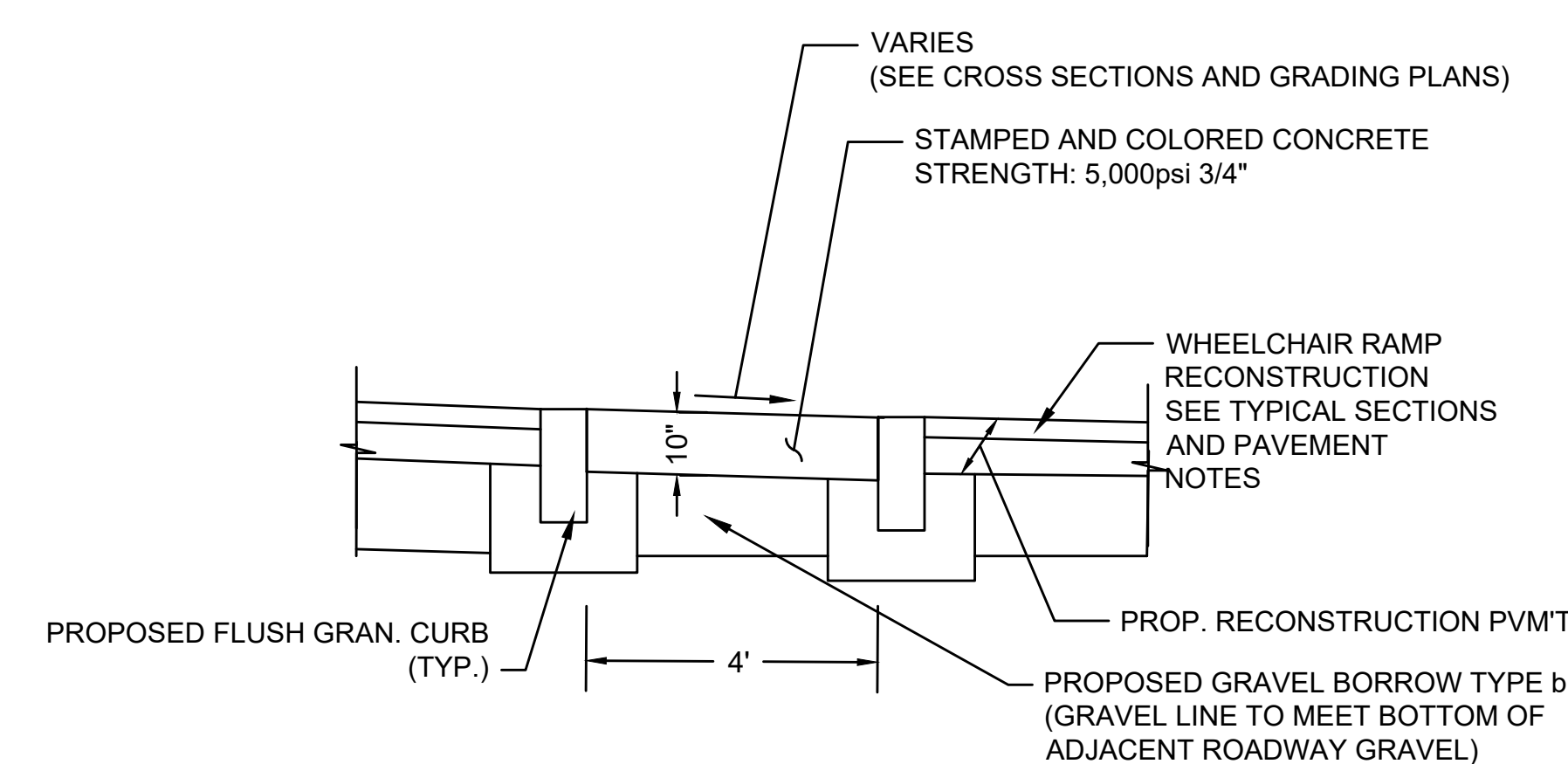
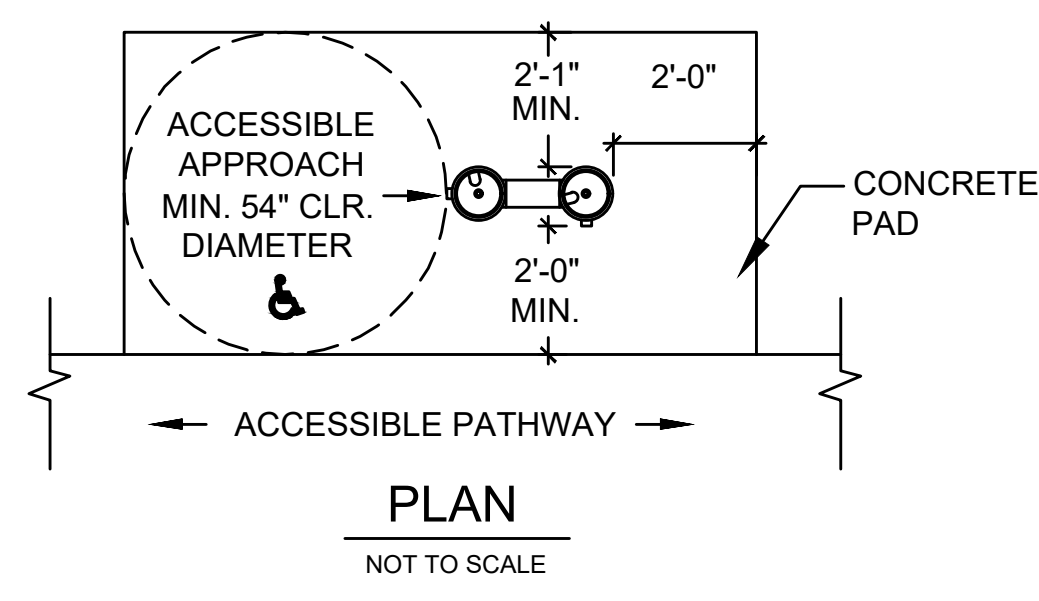
20 INTERPRETIVE SIGN
SCALE: N.T.S.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	53	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS



21 HYDRATION STATION
SCALE: N.T.S.

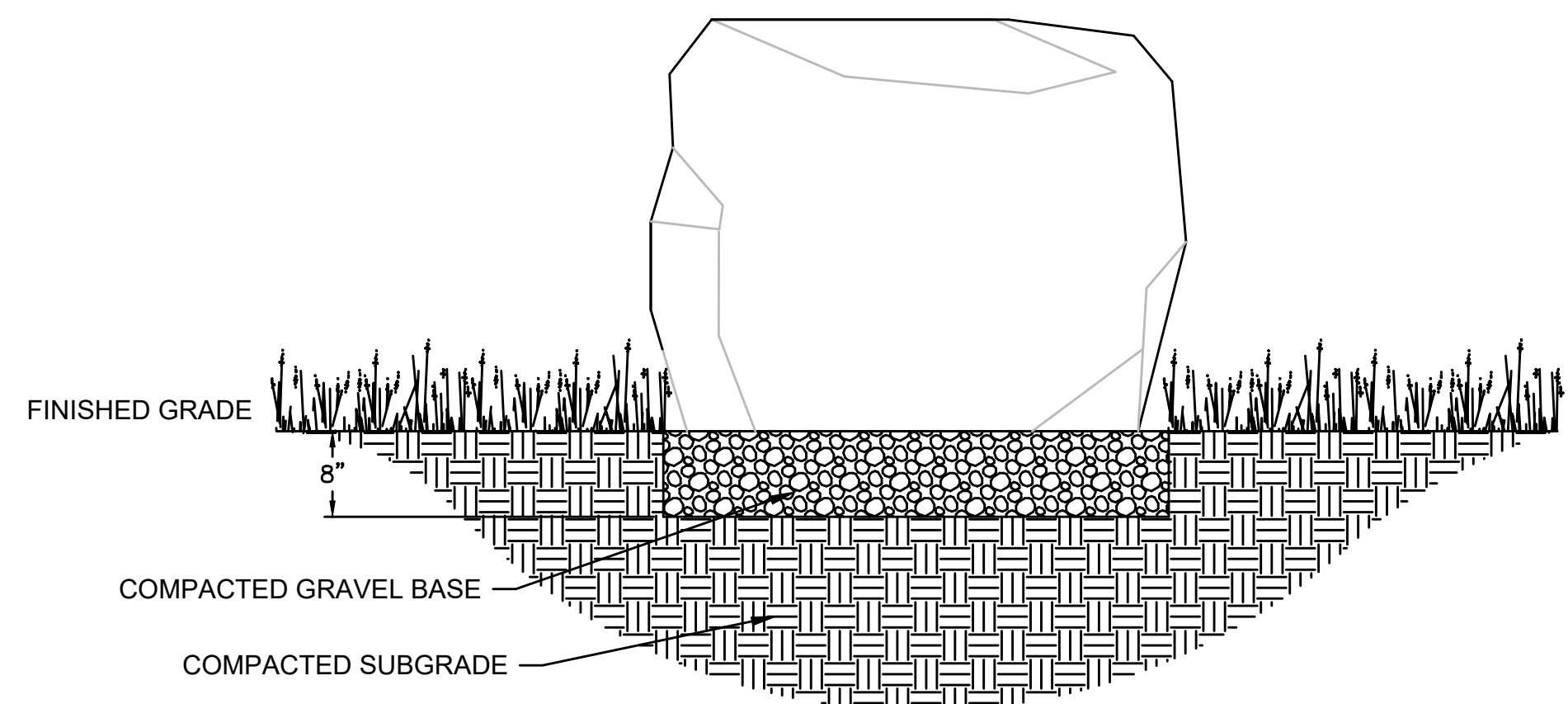


- NOTES:
- 1) THIS ITEM IS INTENDED TO BE USED AT WHEEL CHAIR RAMPS DESIGNATED AS "STAMPED CONCRETE SPLITTER ISLAND" ON THE CONSTRUCTION PLANS.
 - 2) MEDIANS SHALL BE INSTALLED IN A SINGLE CONCRETE POUR WITH NO CONSTRUCTION (COLD) JOINTS IN THE CONCRETE.
 - 3) SAWN CONTRACTION JOINTS SHALL BE INSTALLED EVERY 20' (MAXIMUM). SEE SPECIAL PROVISIONS FOR MATERIALS AND METHOD OF JOINT INSTALLATION.
 - 4) A 2" TOOLED EDGE SHALL BE INSTALLED TO MAKE A SMOOTH TRANSITION TO THE ADJACENT PAVEMENT

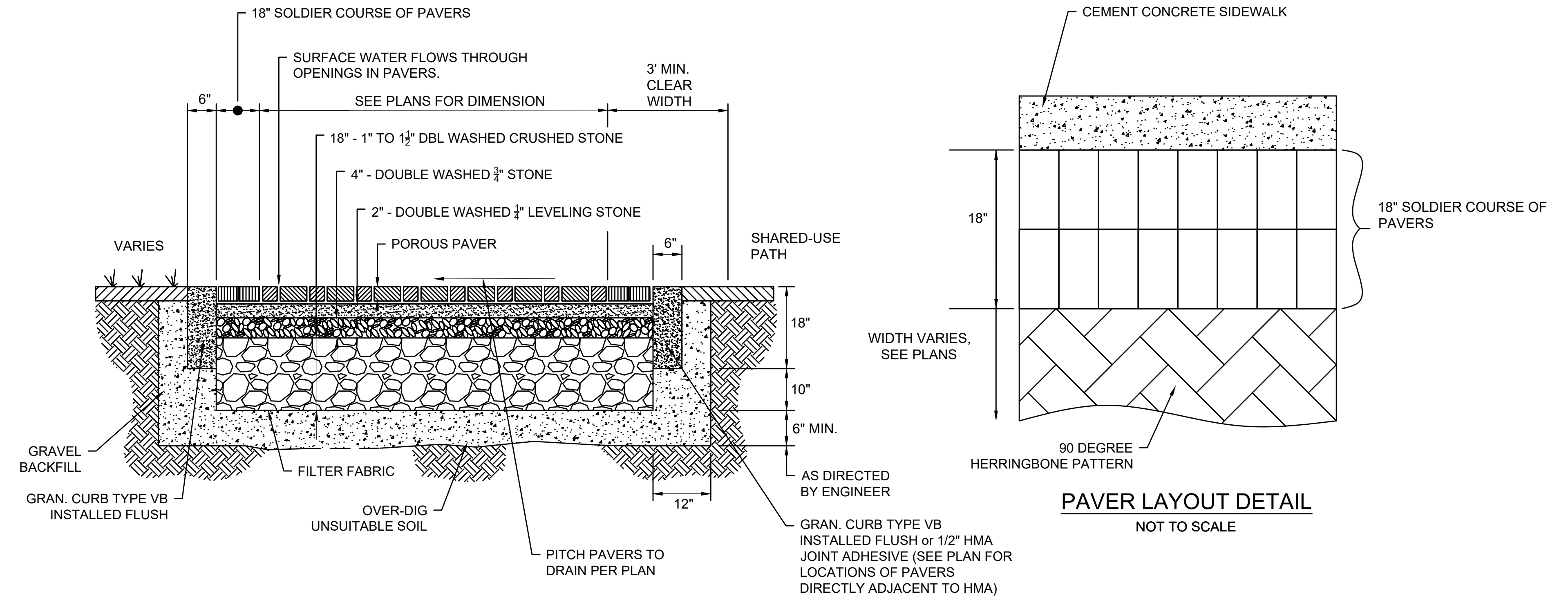
22 STAMPED & COLORED CONCRETE MEDIAN
- COLONIAL RED (SPLITTER ISLAND)

SCALE: N.T.S.

- GENERAL NOTES:
1. DRINKING FOUNTAIN MUST BE INSTALLED ADJACENT TO AN ACCESSIBLE ROUTE.
 2. SPECIFIED DRINKING FOUNTAIN TO BE IN ACCORDANCE W/ MAAB ACCESSIBILITY STANDARDS.
 3. BASED ON PROJECT SPECIFICATIONS, MODEL MAY INCLUDE DOG BOWL AND/OR JUG FILLER. REFERENCE MANUFACTURER'S PRODUCT CATALOG FOR ACCESSORY ITEMS.



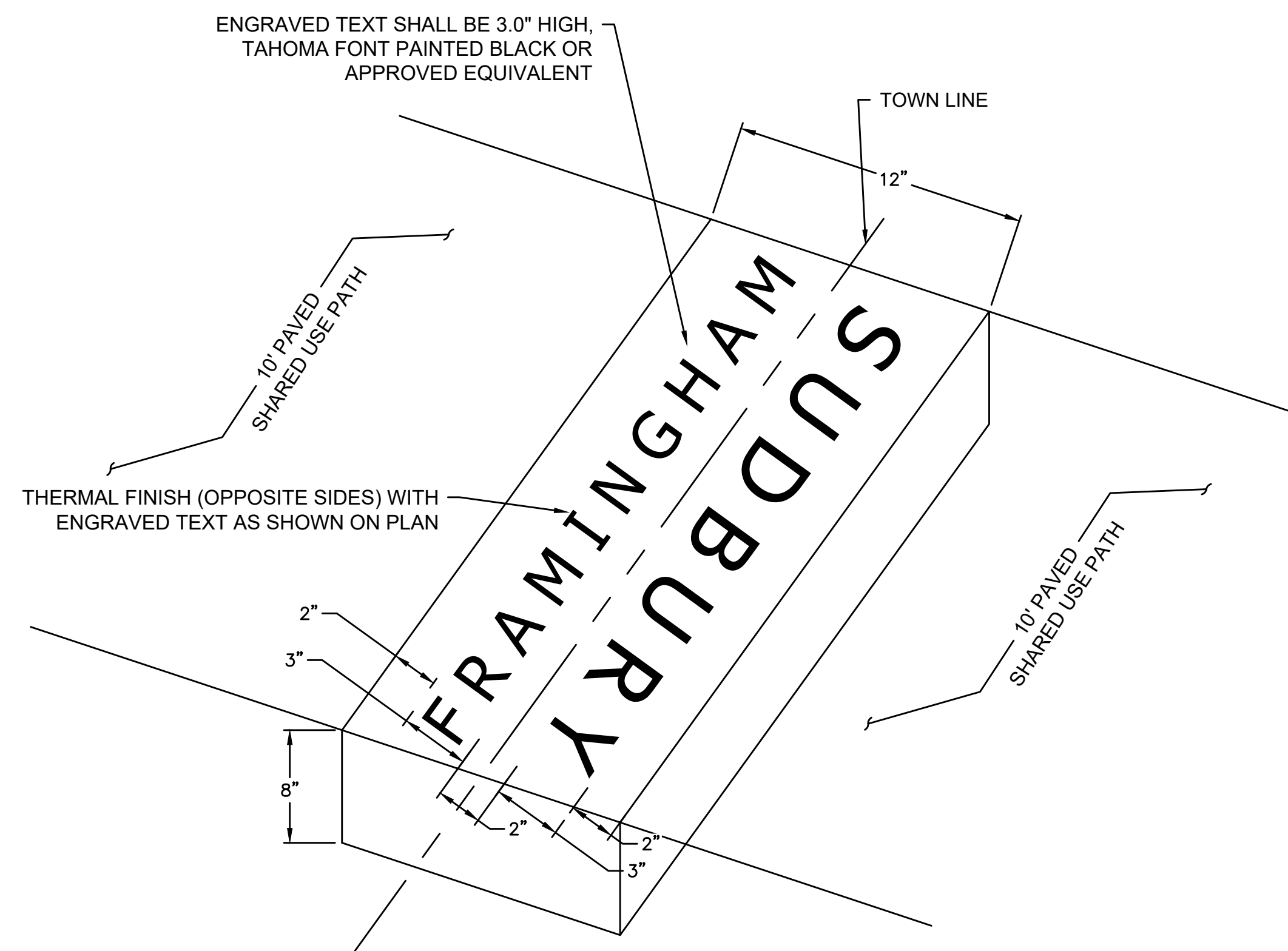
23 BOULDER BARRIERS
SCALE: N.T.S.



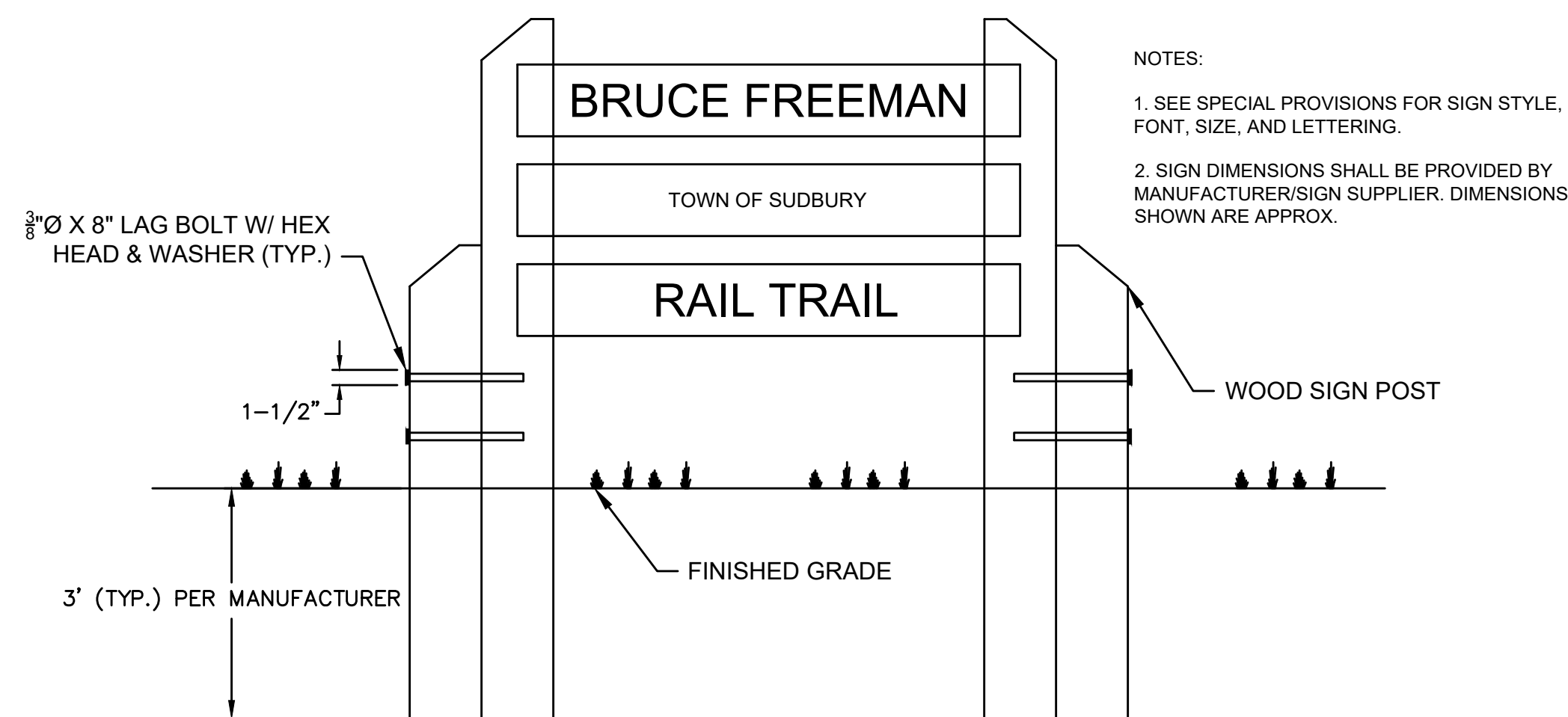
24 PERVIOUS PAVER TYPICAL SECTION
SCALE: N.T.S.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	54	73
PROJECT FILE NO.		613319	

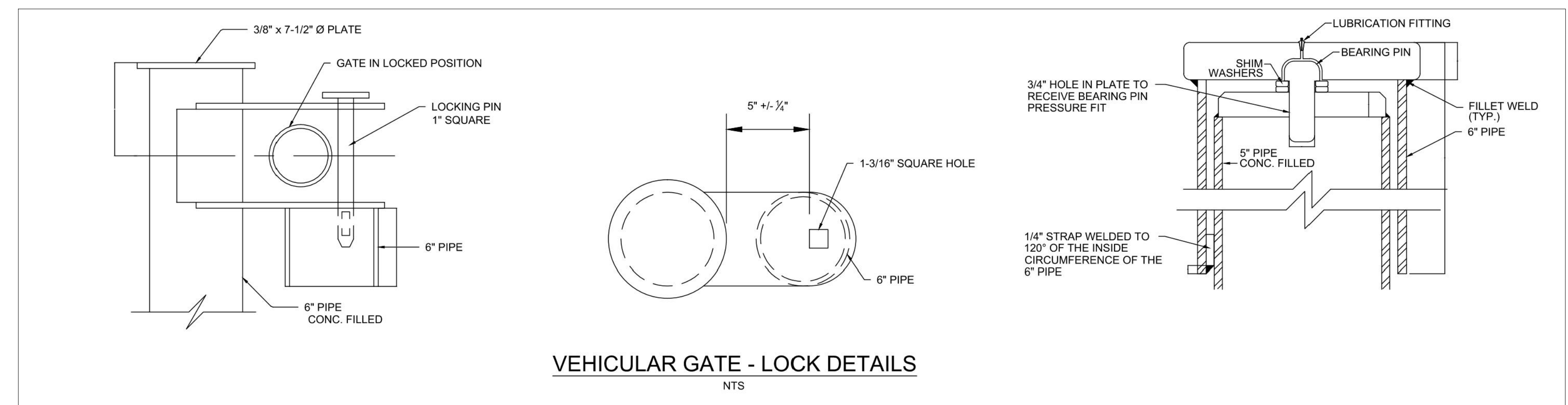
CONSTRUCTION DETAILS



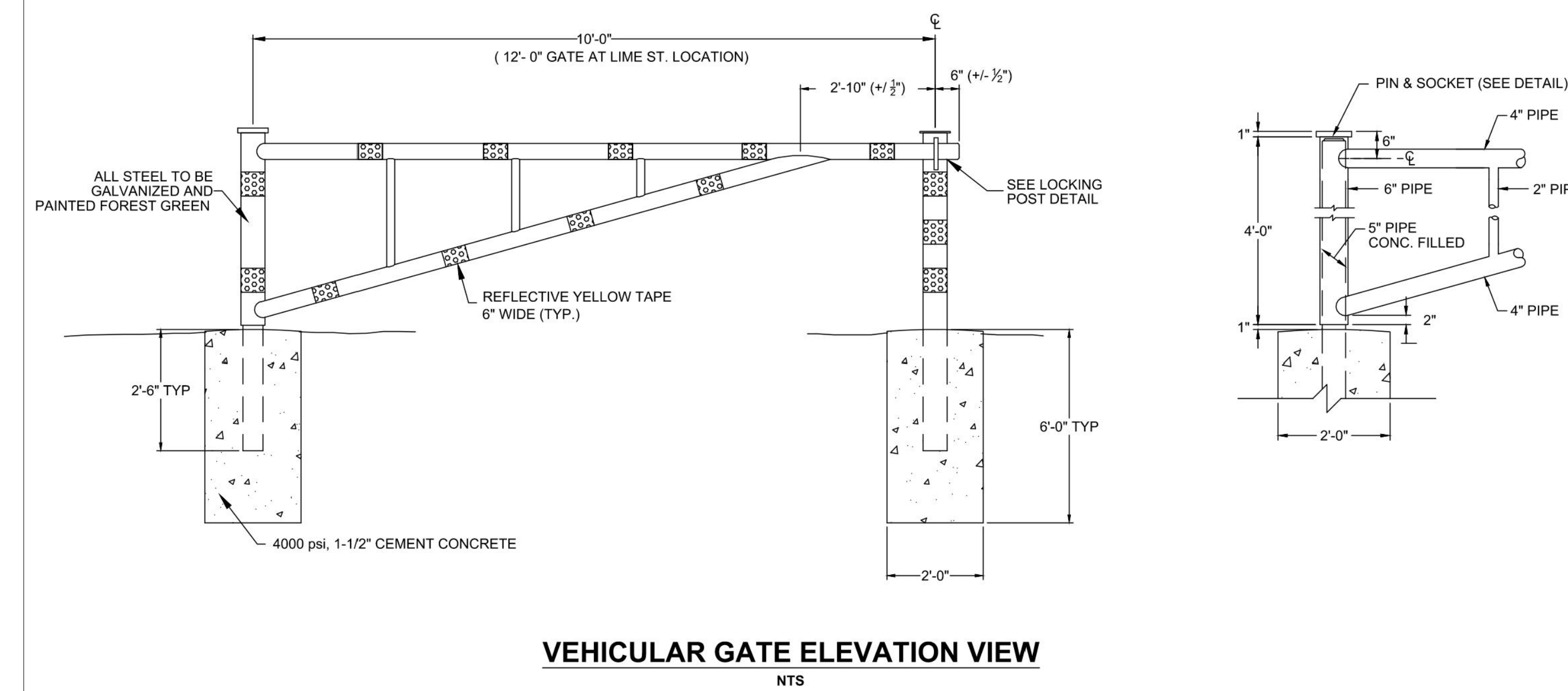
25 GRANITE TOWN LINE MARKER
SCALE: N.T.S.



26 BRUCE FREEMAN RAIL TRAIL ENTRANCE SIGN
SCALE: N.T.S.



VEHICULAR GATE - LOCK DETAILS
NTS

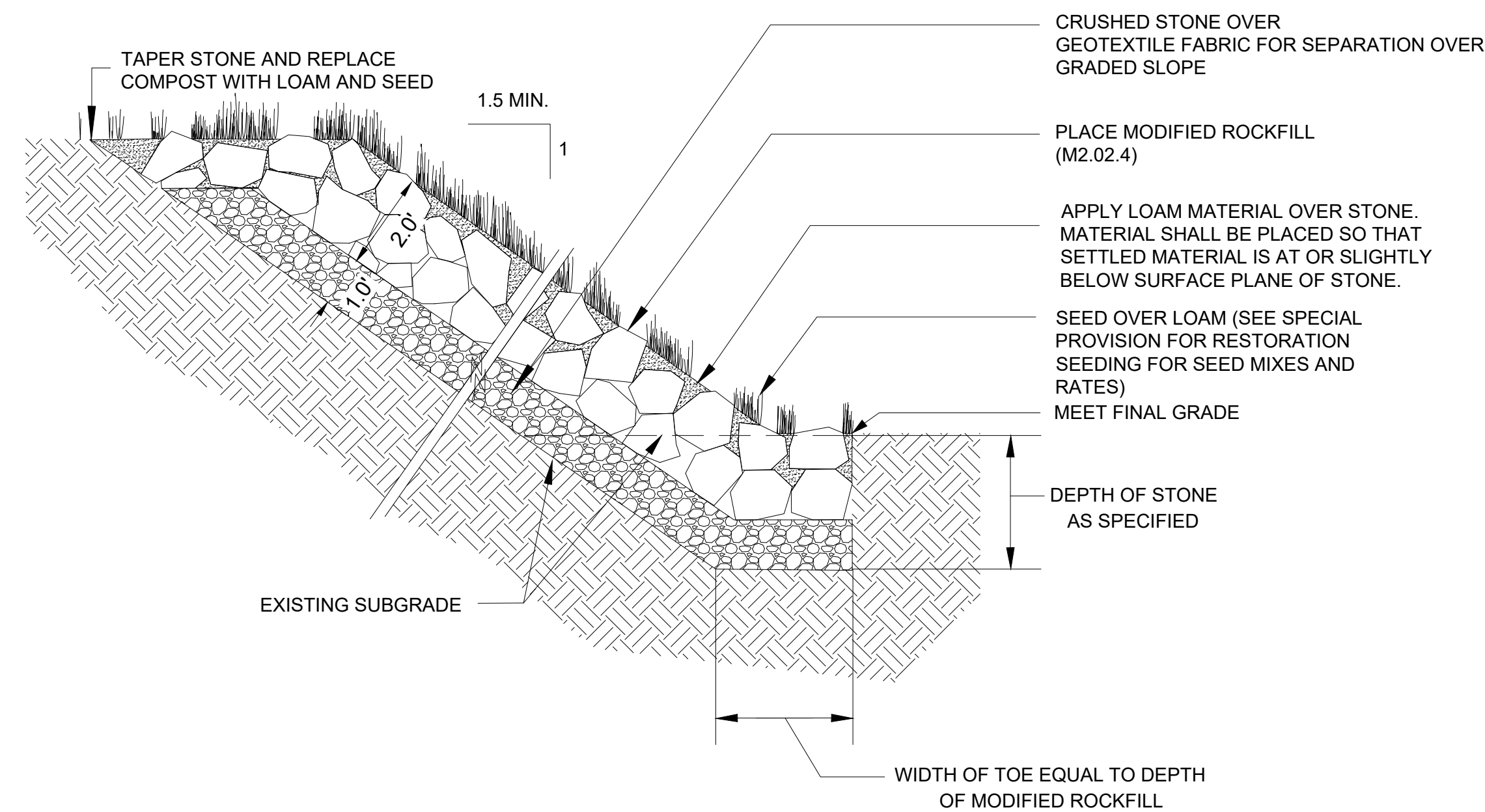


VEHICULAR GATE ELEVATION VIEW
NTS

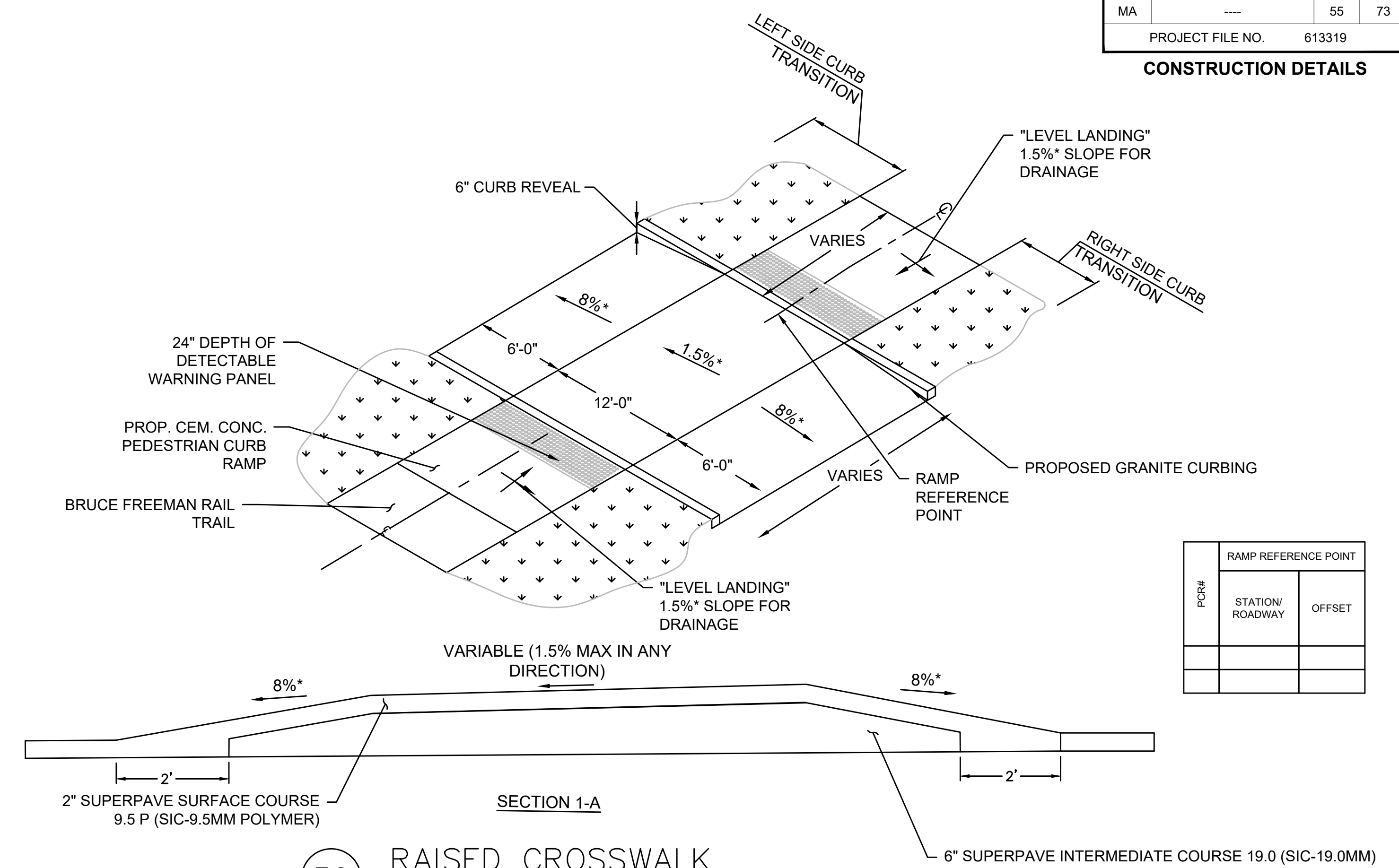
27 VEHICULAR SWING GATE
SCALE: N.T.S.

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	55	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS

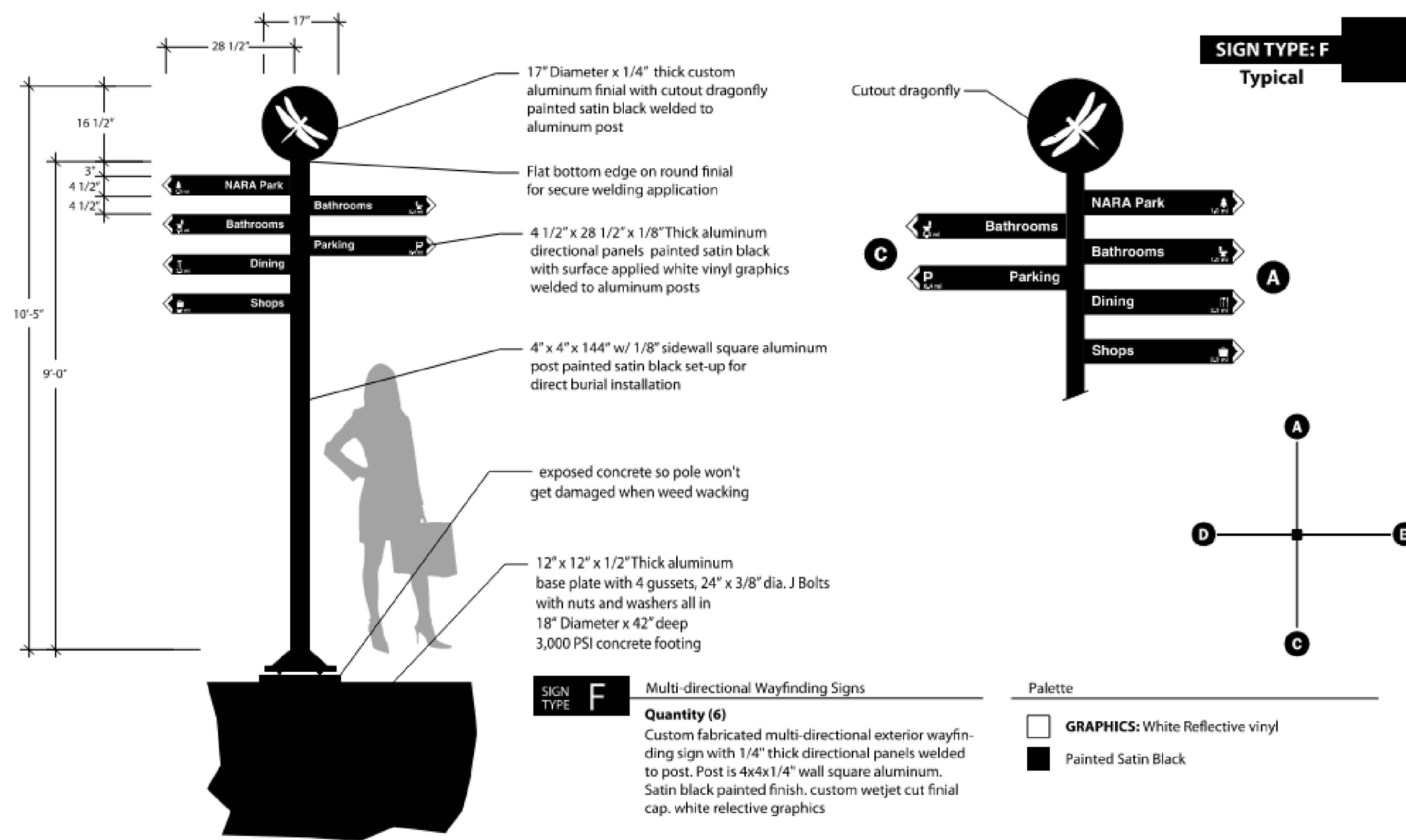


28 LOAM AND SEED OVER MODIFIED ROCKFILL
SCALE: N.T.S.

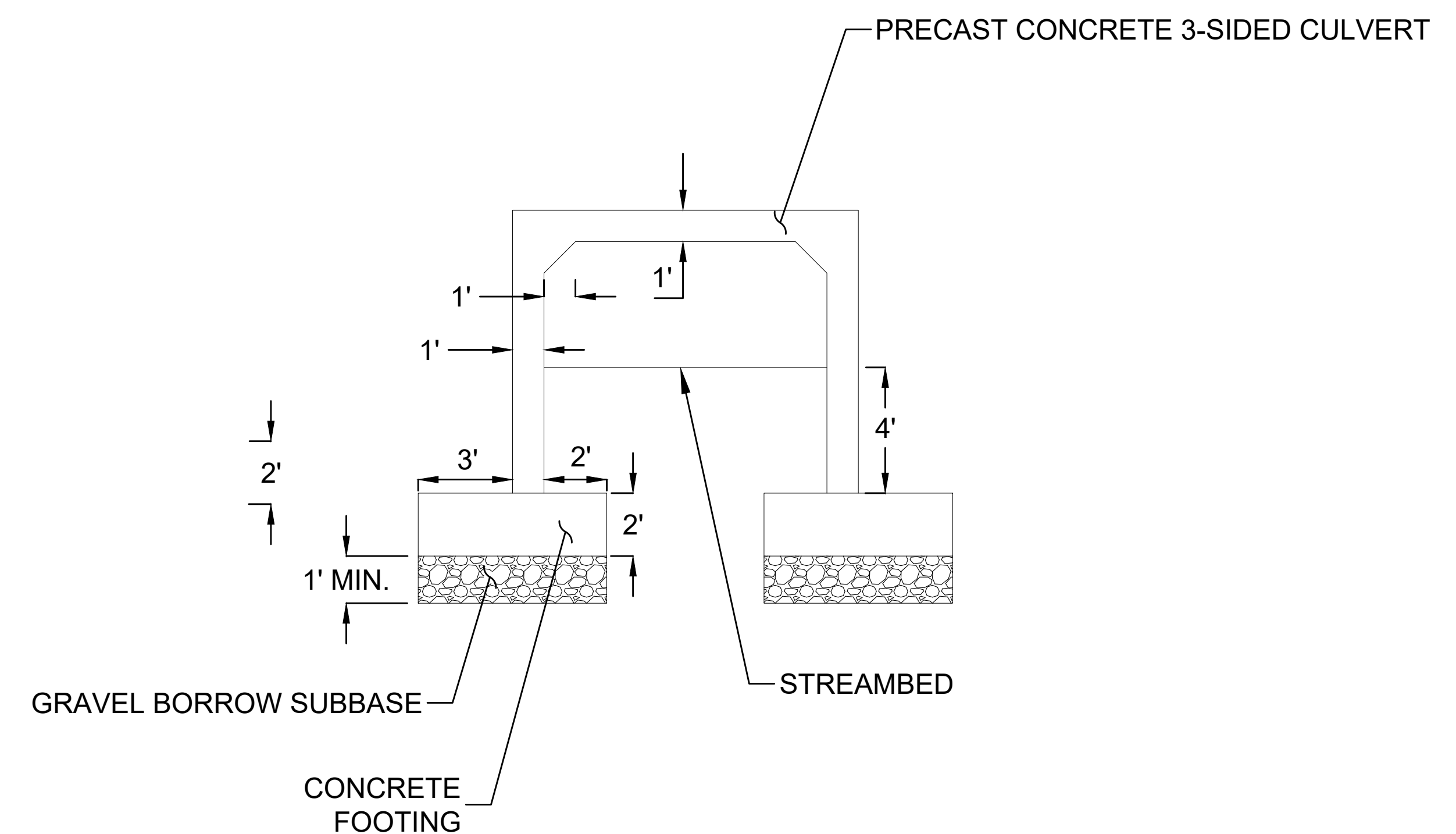


30 RAISED CROSSWALK
SCALE: N.T.S.

PCR#	RAMP REFERENCE POINT	
	STATION/ROADWAY	OFFSET



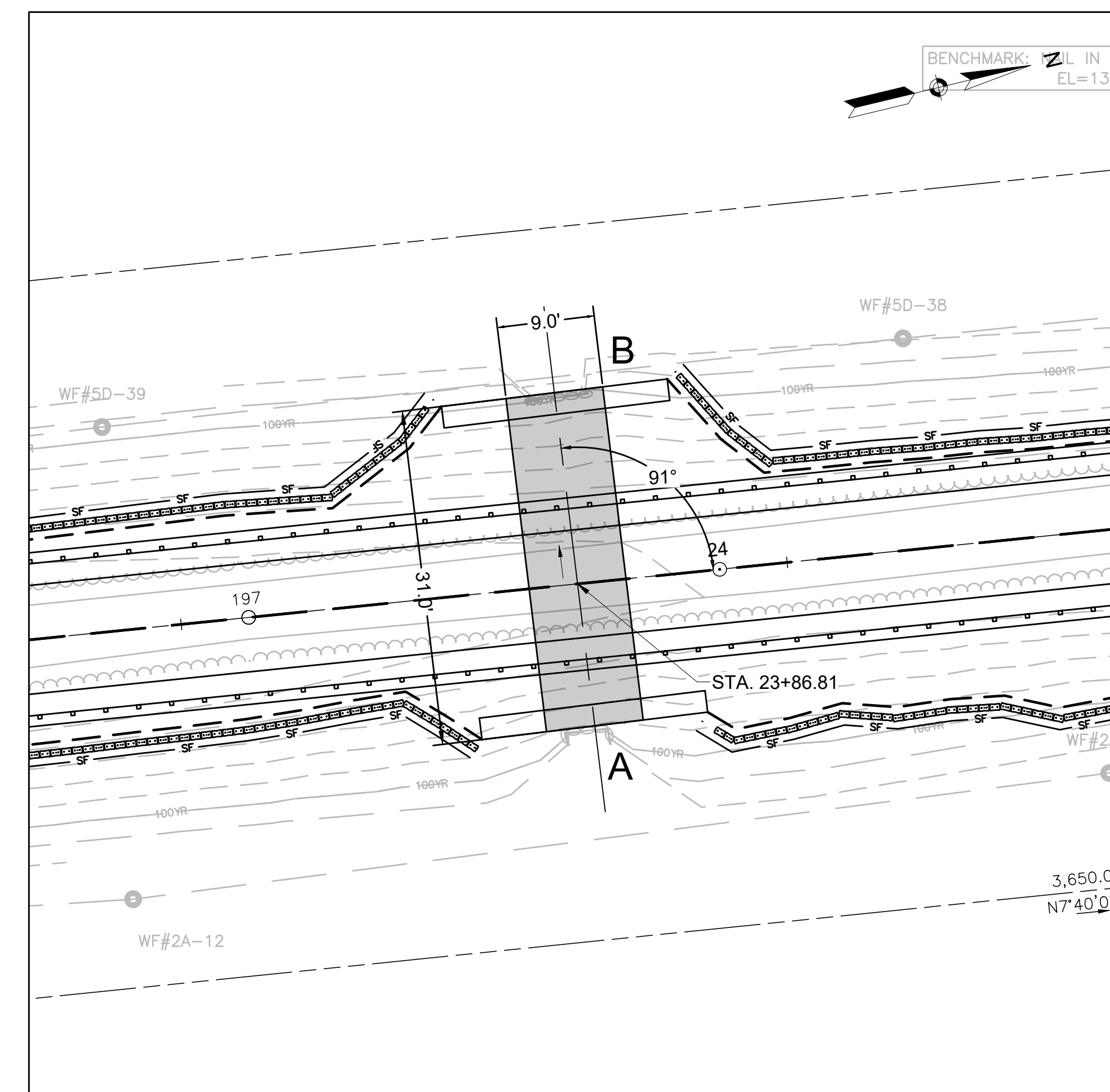
29 RAIL TRAIL WAYFINDING SIGN
SCALE: N.T.S.



31 TYPICAL CULVERT DIMENSIONING DETAIL
SCALE: N.T.S.

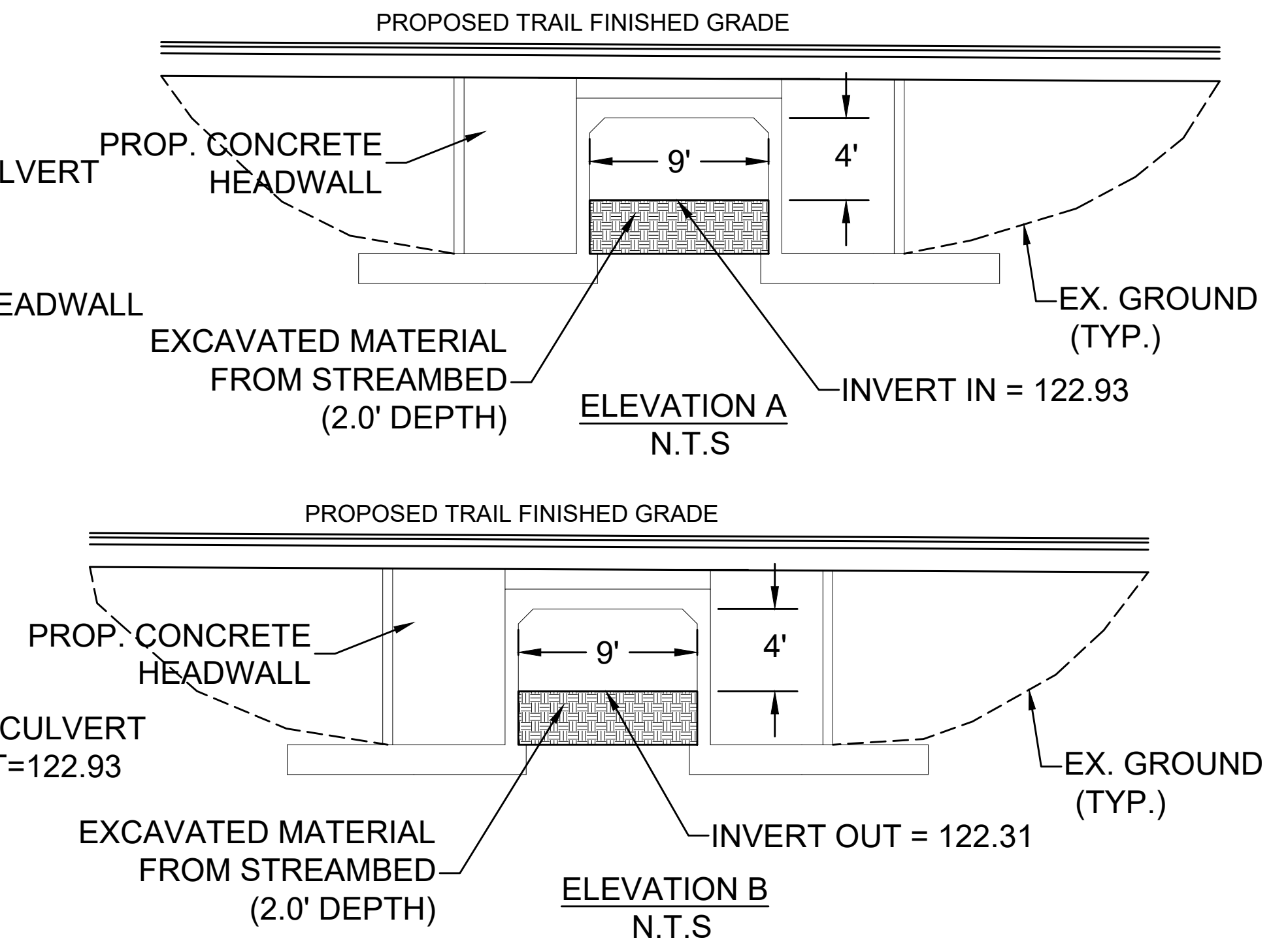
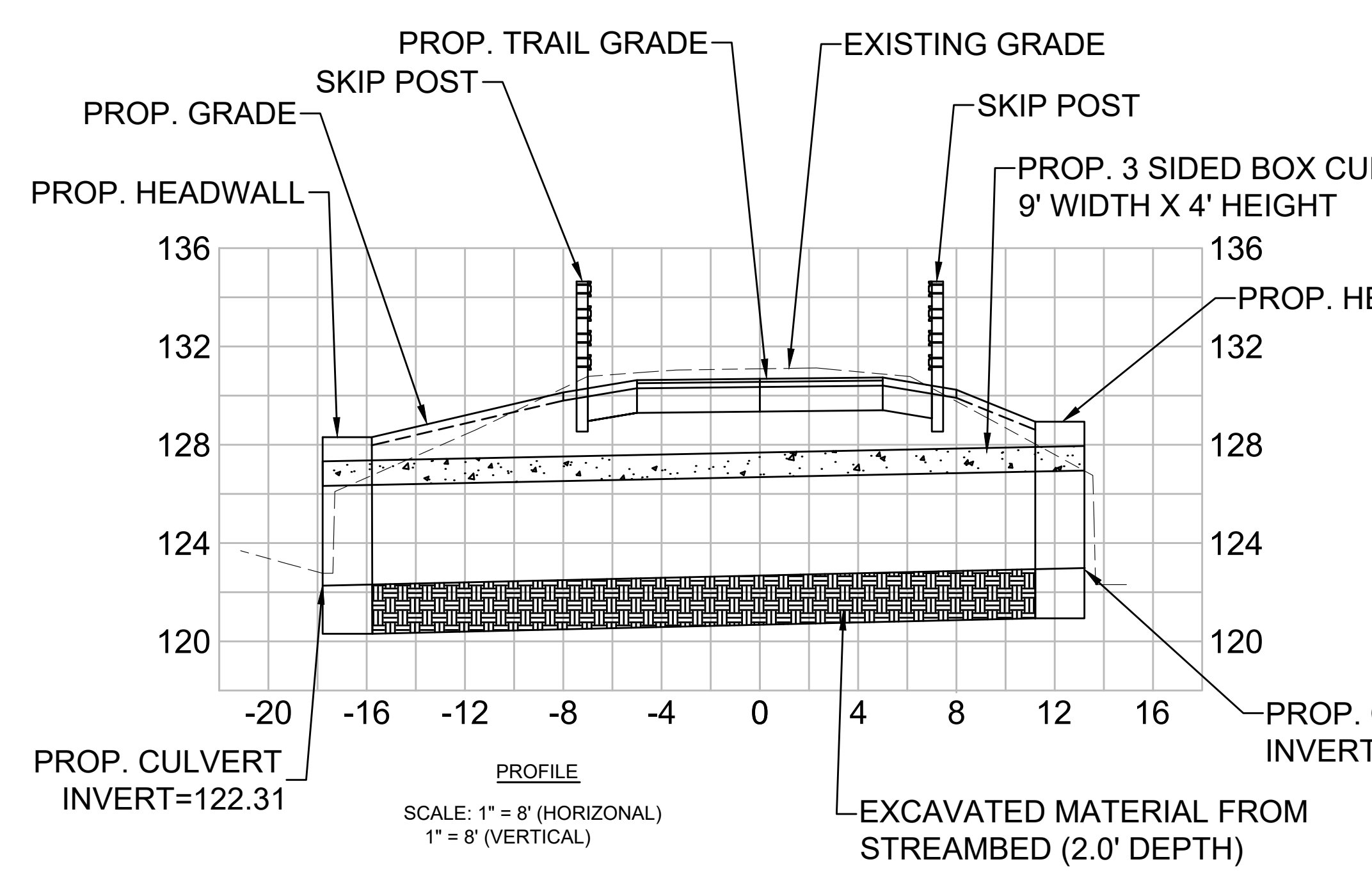
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	56	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS

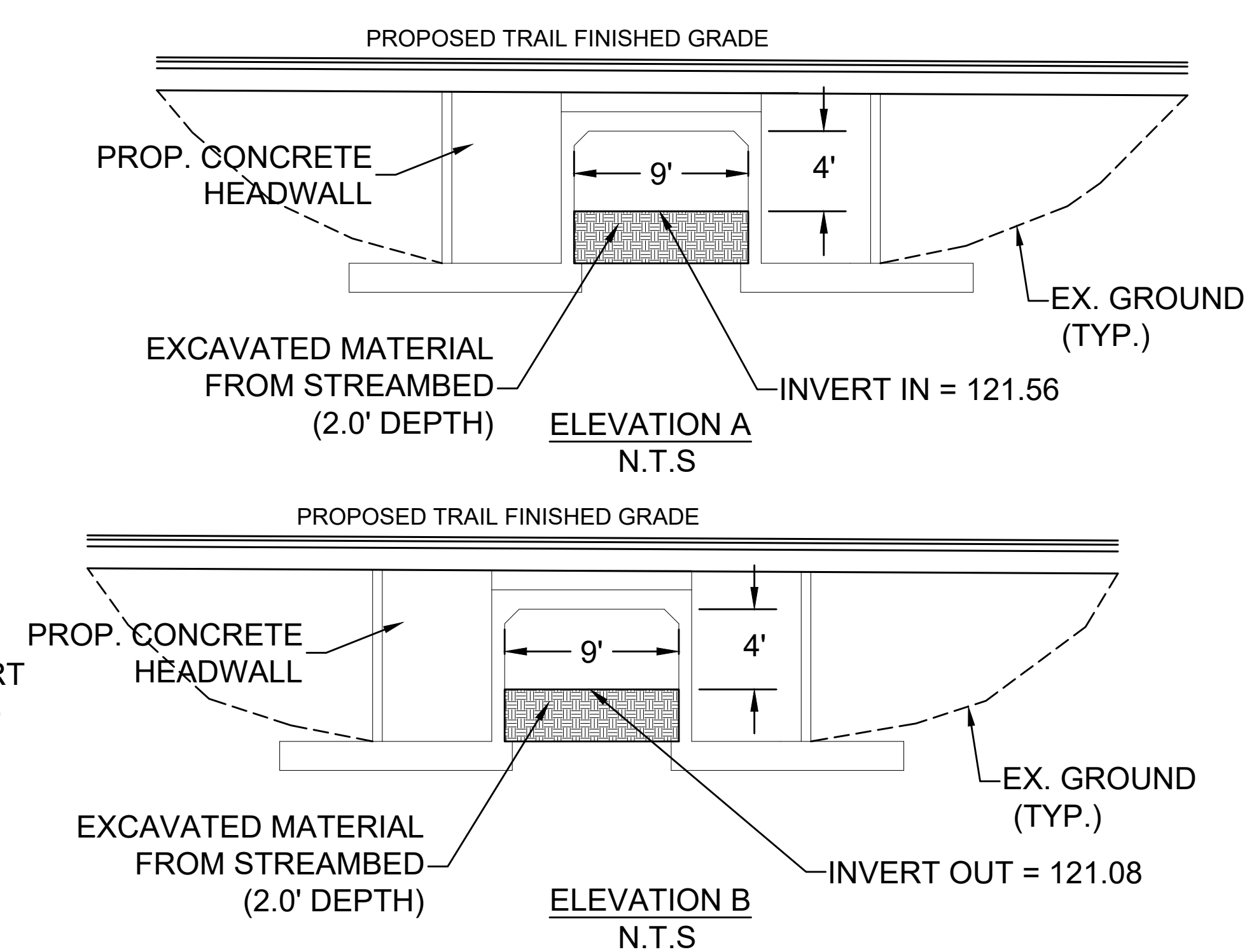
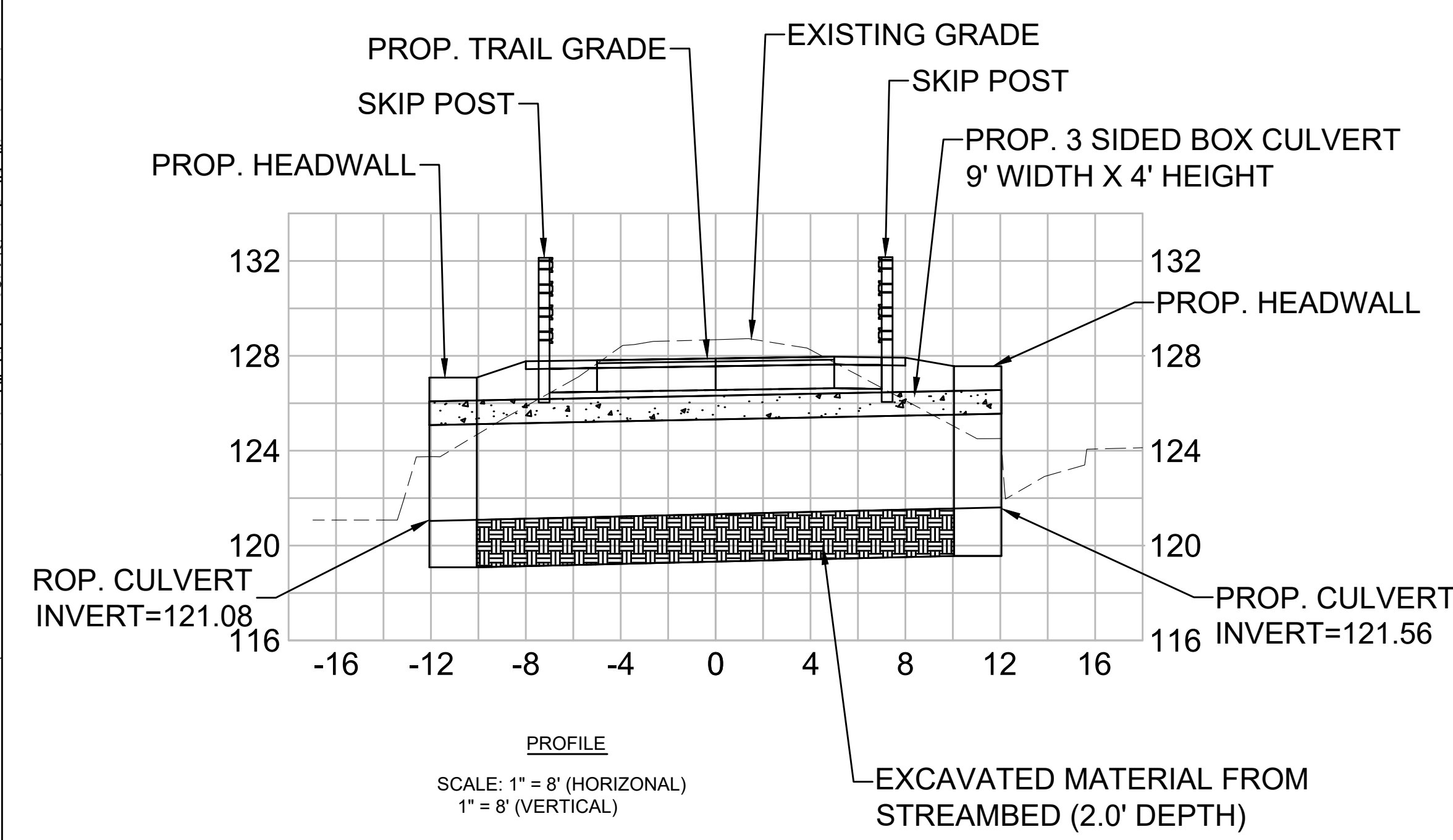
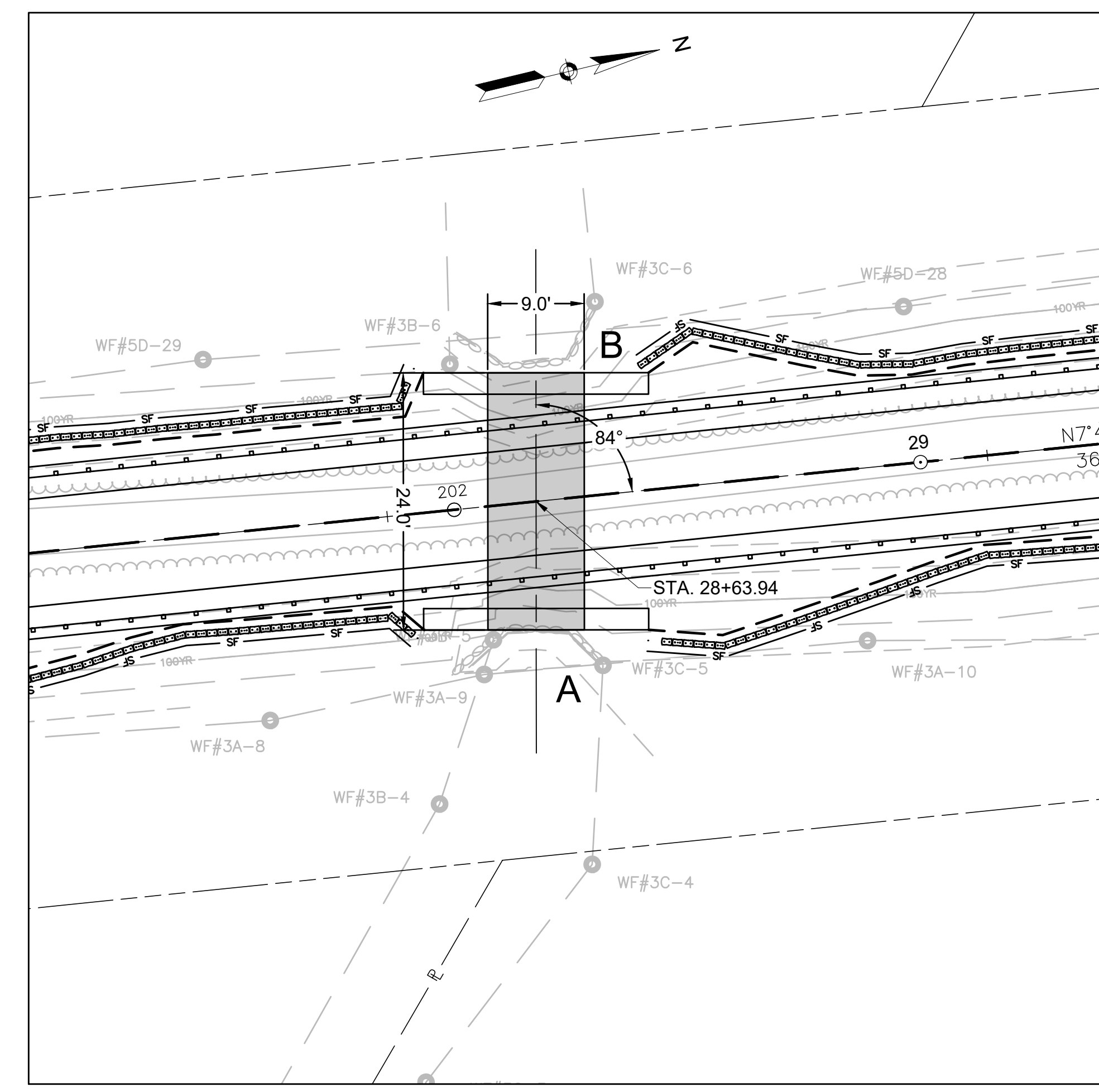


SCALE: 1" = 10'

ADDITIONAL CULVERT LAYOUT AND DIMENSIONING DETAILS, INCLUDING GRADES AND CRITICAL CULVERT STRUCTURAL ELEMENTS SHALL BE PROVIDED AT 75% DESIGN SUBMISSION FOR EACH CULVERT LOCATION



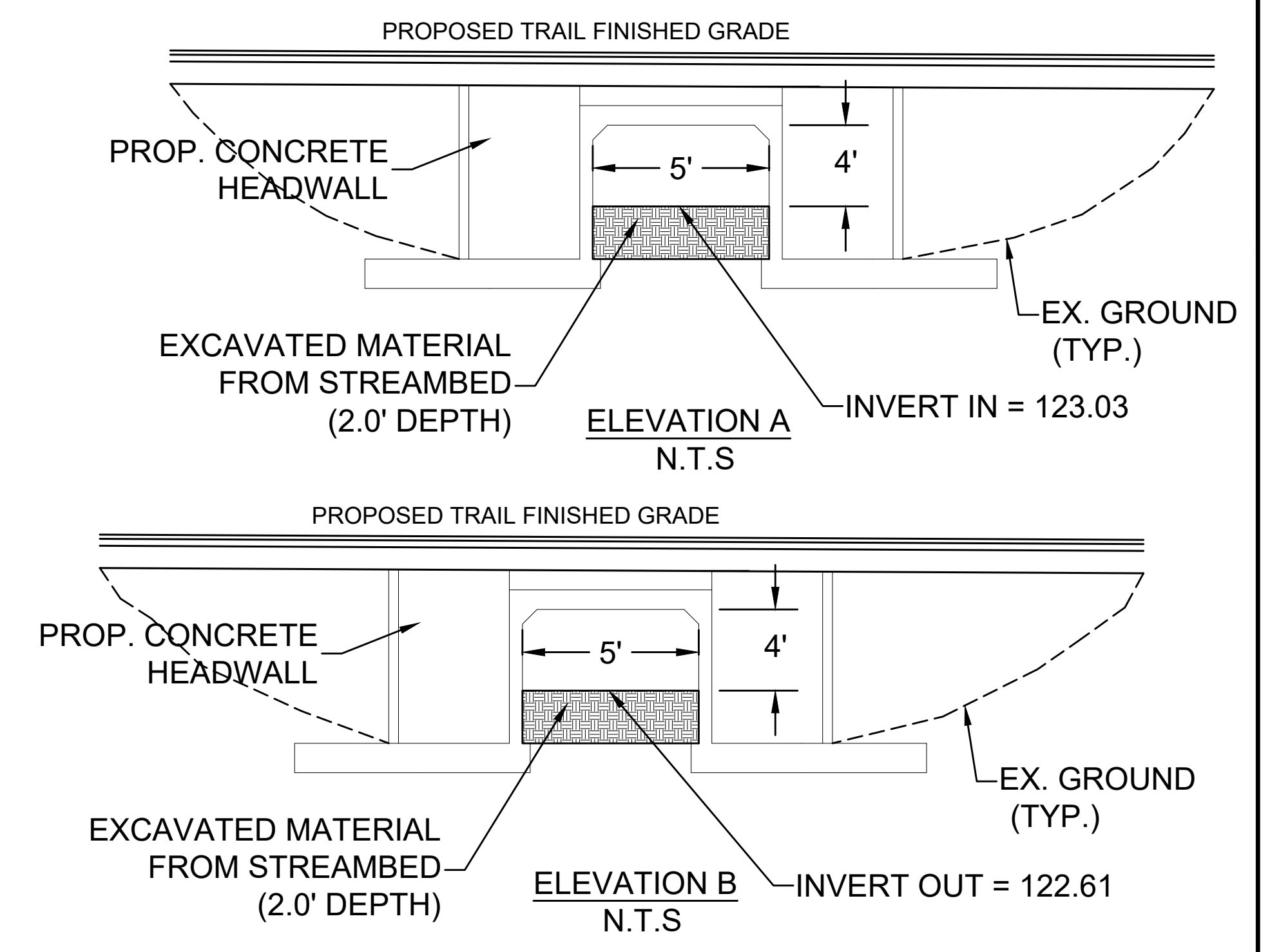
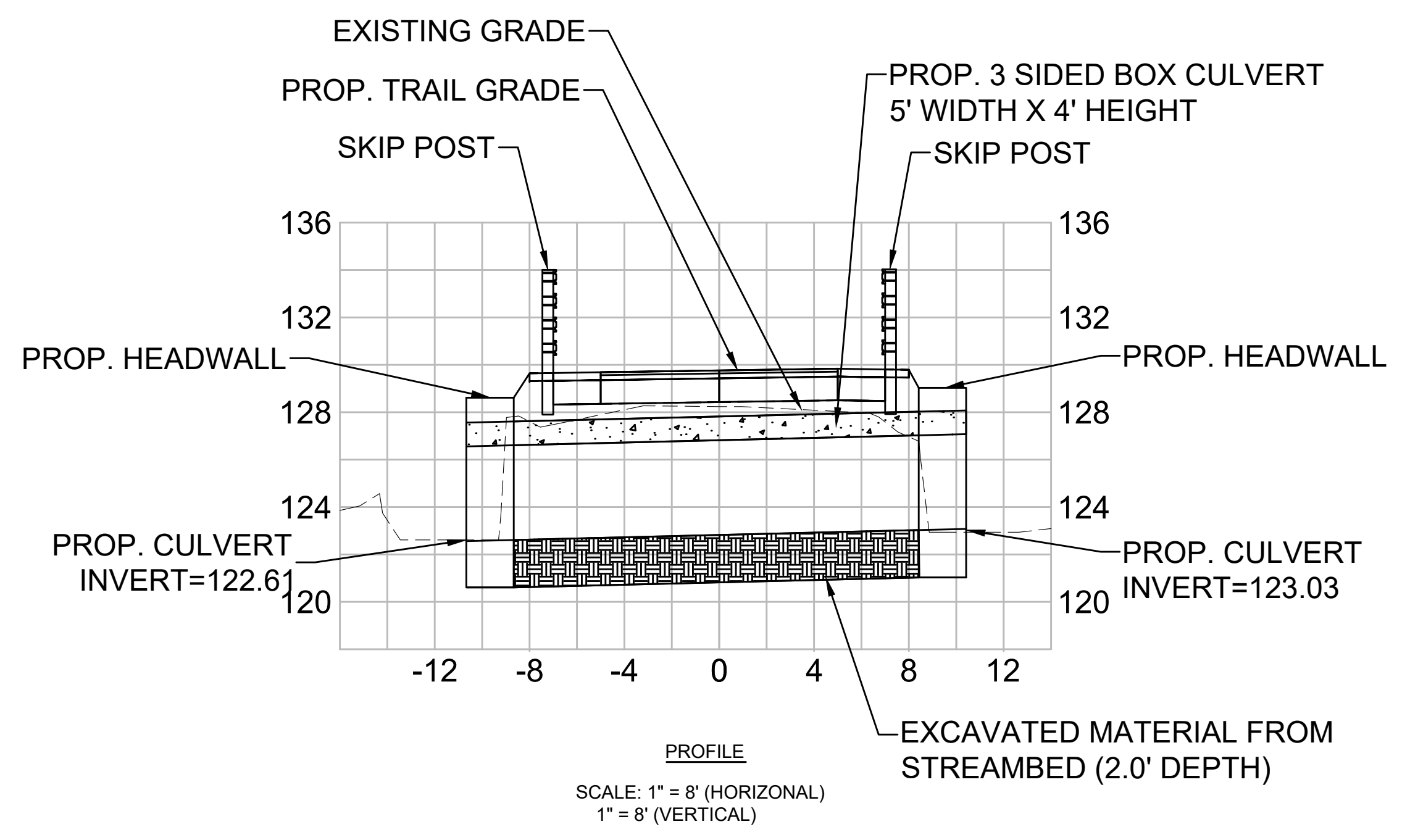
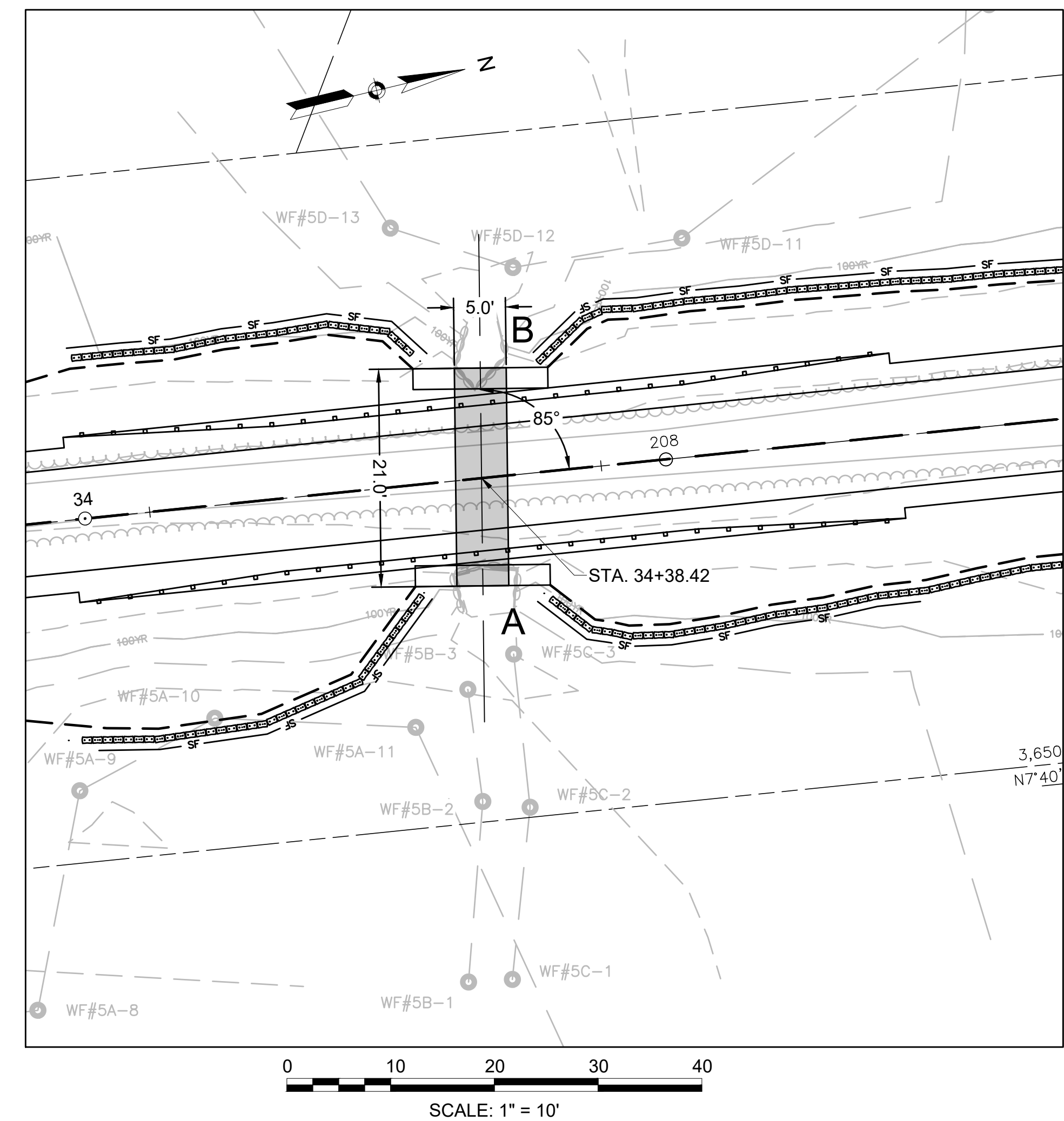
32 CULVERT REPLACEMENT - C3-1
SCALE: AS NOTED



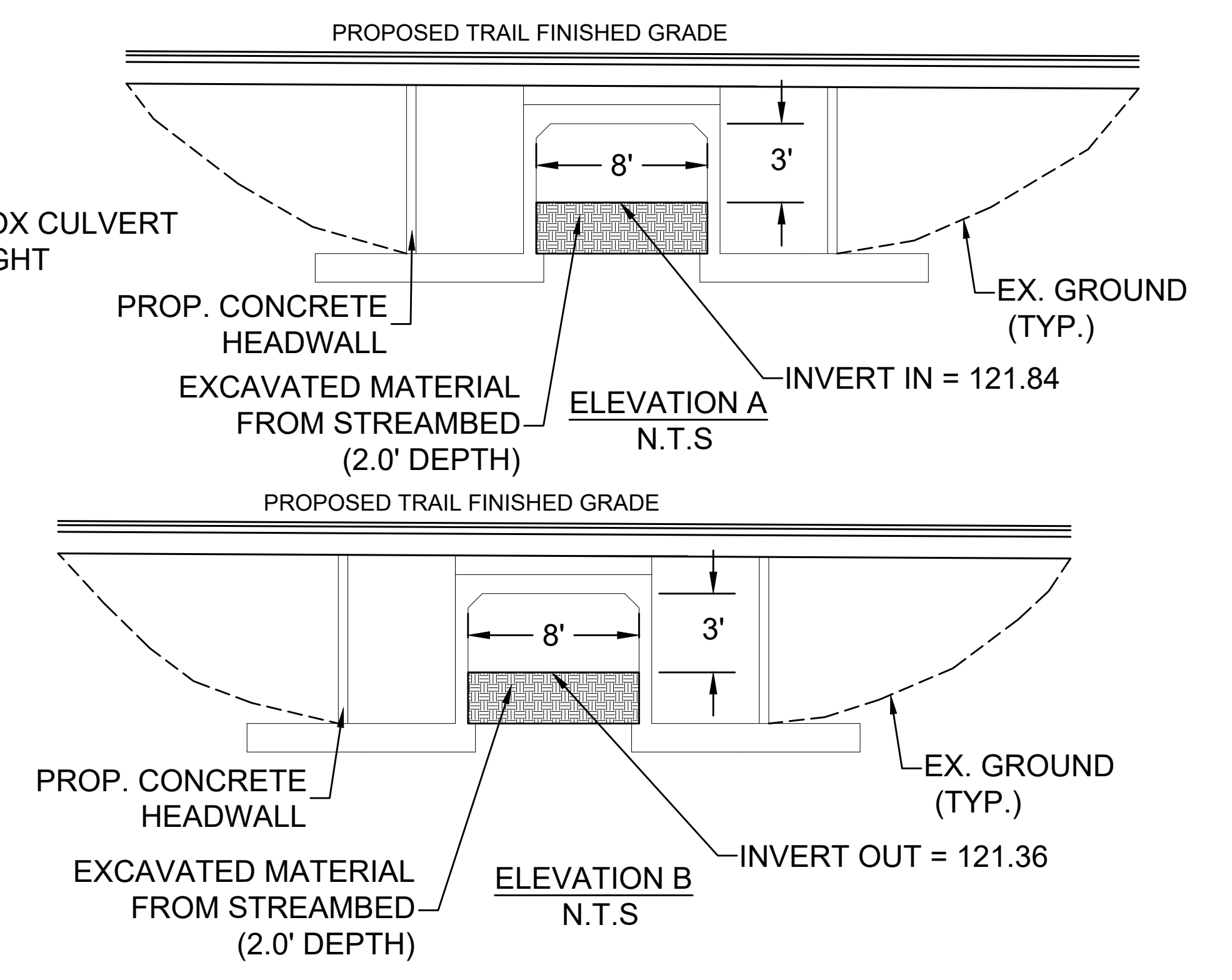
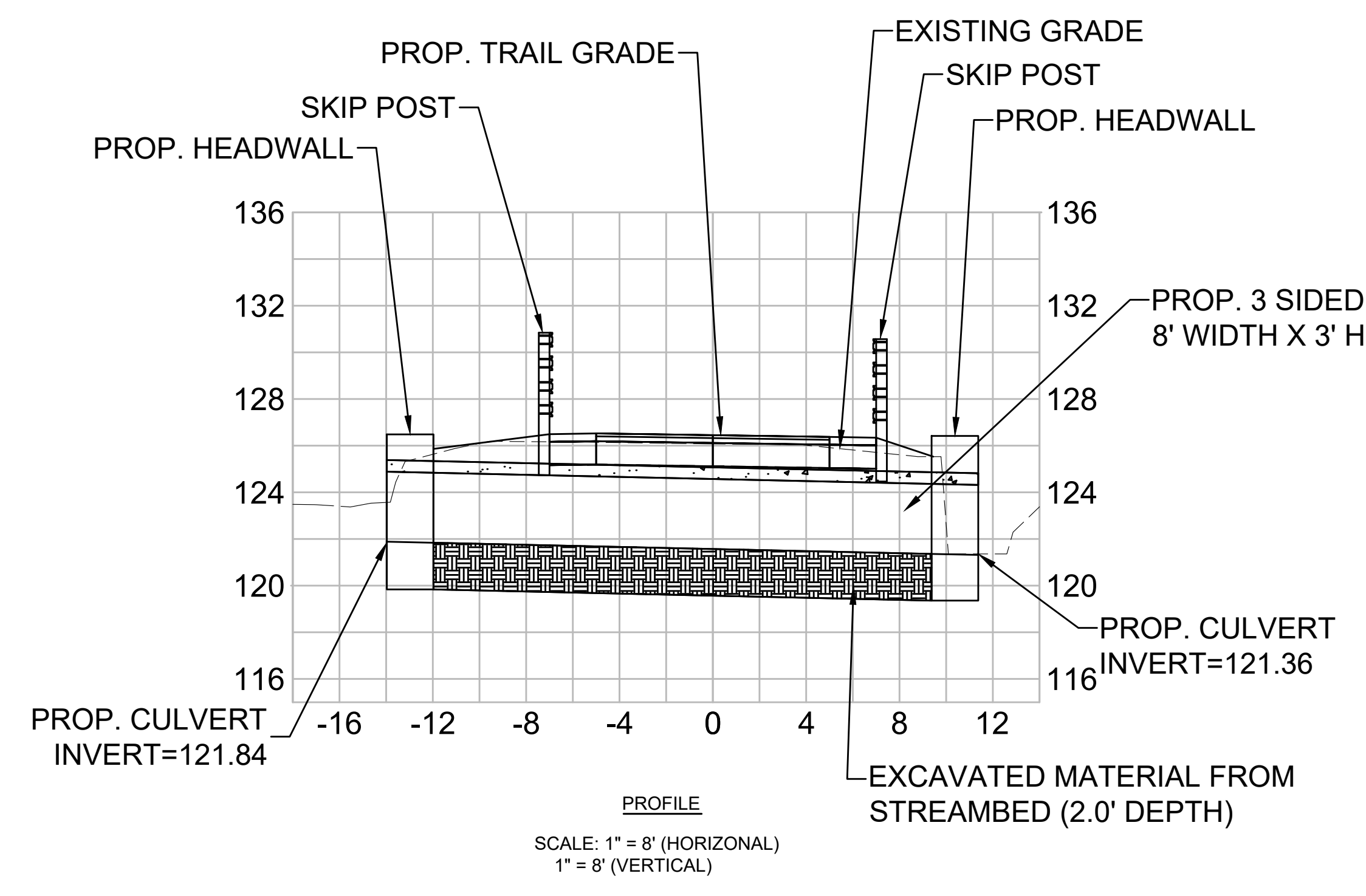
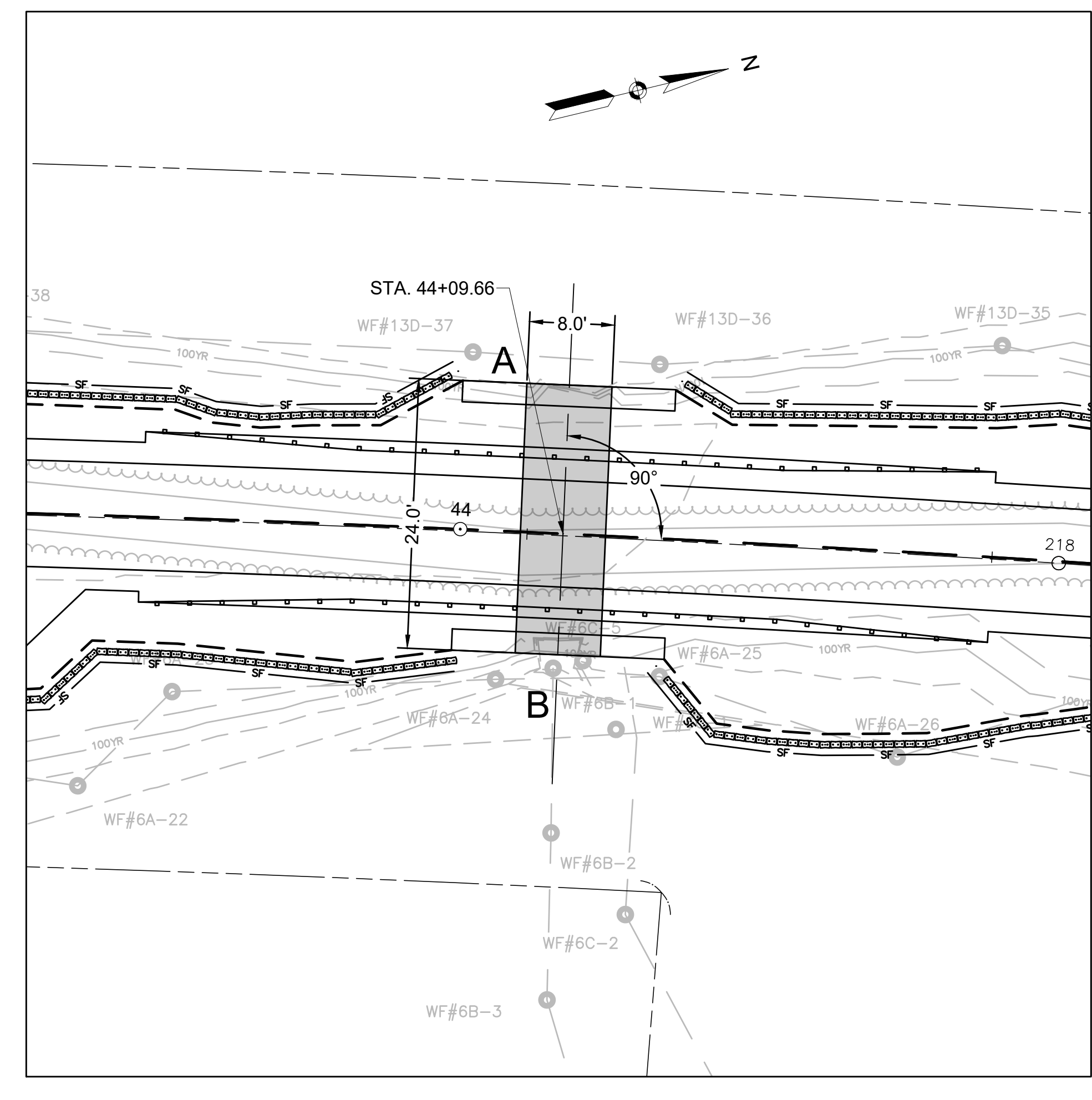
33 CULVERT REPLACEMENT - C3-2
SCALE: AS NOTED

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	57	73
PROJECT FILE NO. 613319			

CONSTRUCTION DETAILS



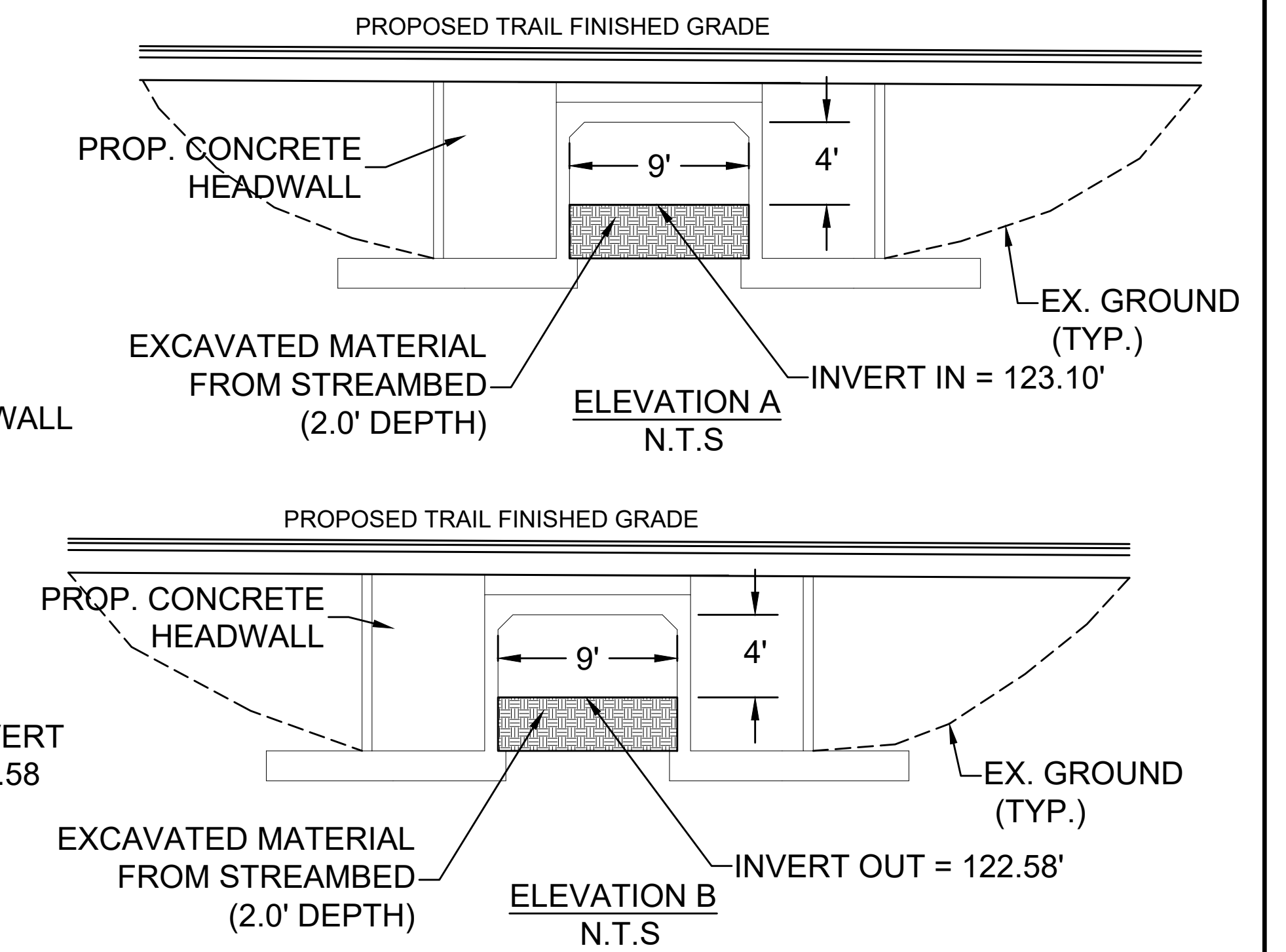
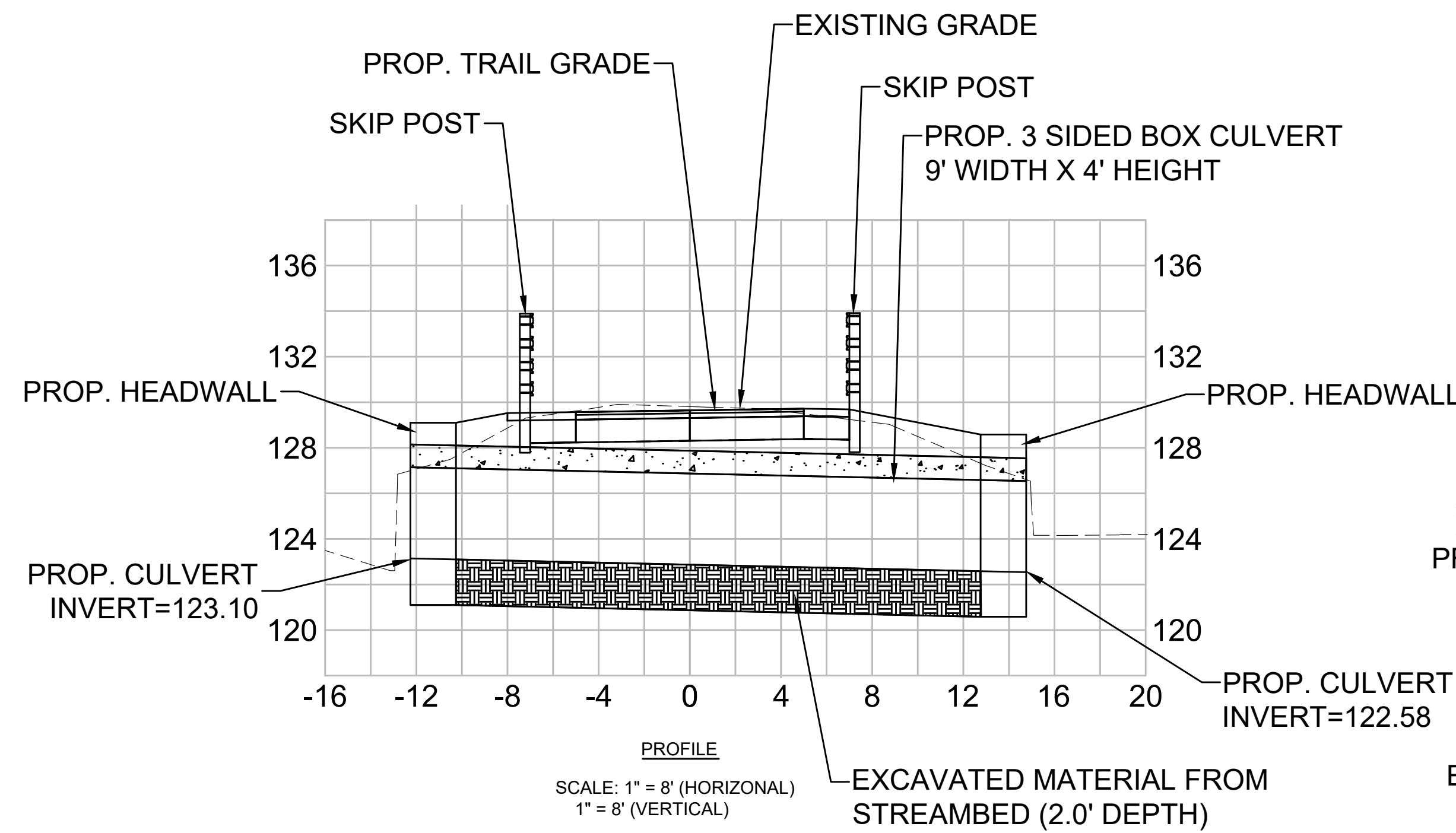
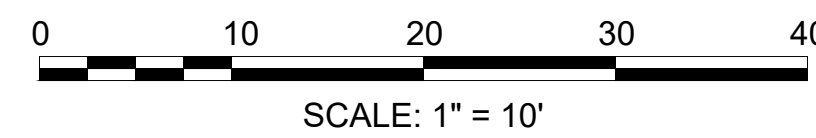
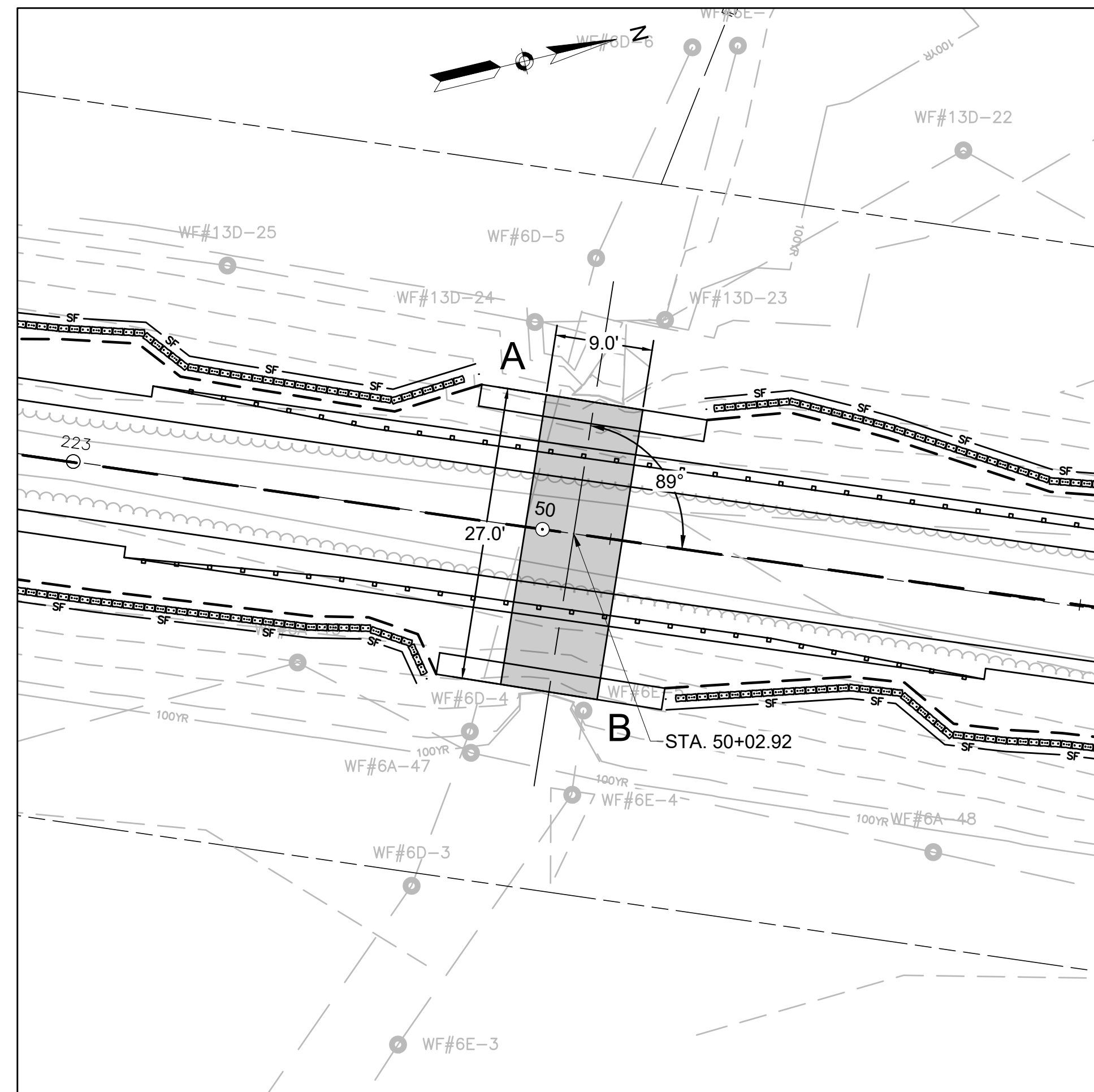
34 CULVERT REPLACEMENT - C3-3
SCALE: AS NOTED



35 CULVERT REPLACEMENT - C3-4
SCALE: AS NOTED

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	58	73
PROJECT FILE NO.		613319	

CONSTRUCTION DETAILS



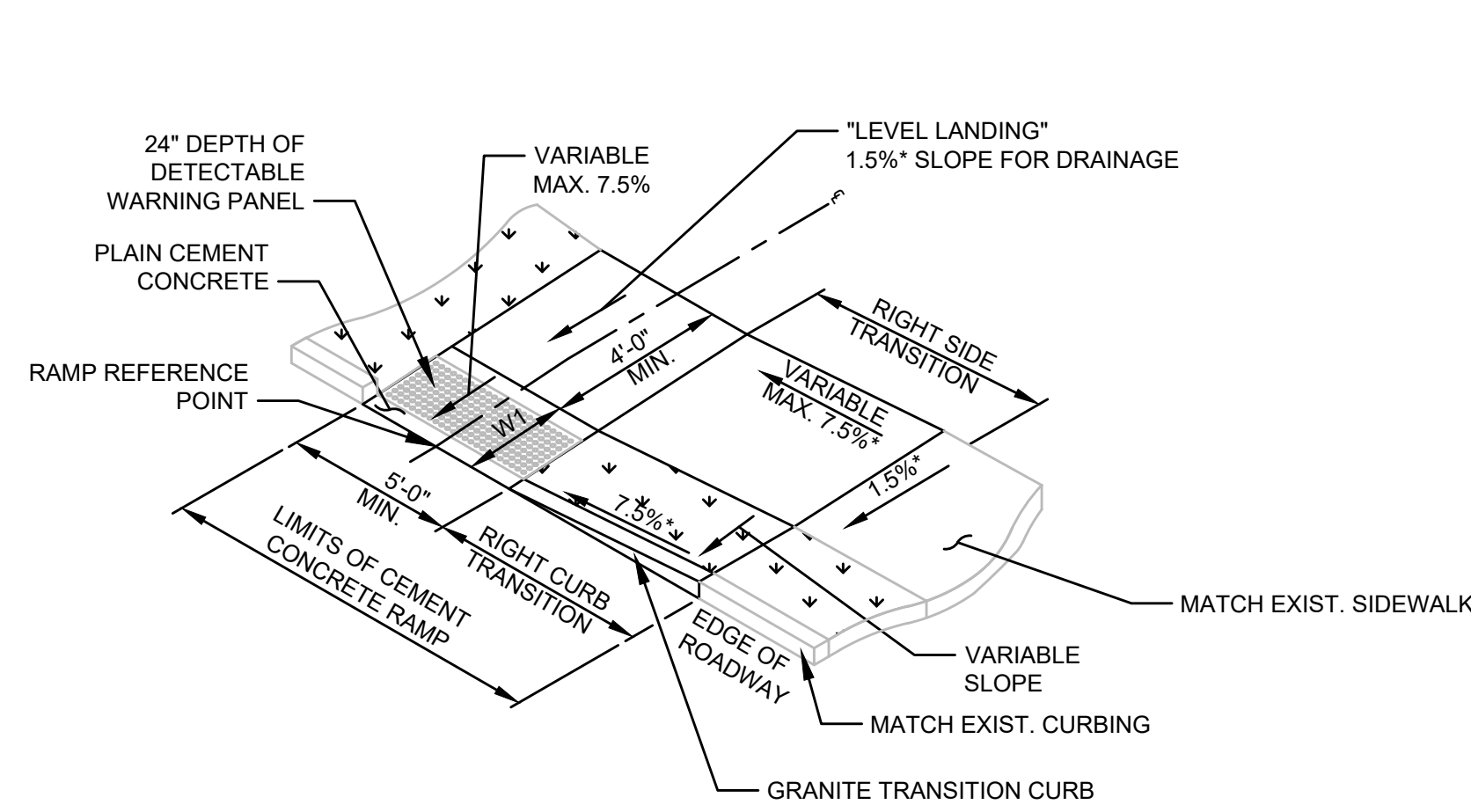
36 CULVERT REPLACEMENT - C3-5
SCALE: AS NOTED

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	----	59	73
PROJECT FILE NO.		613319	

PEDESTRIAN CURB RAMP DETAILS

- NOTES:
- ALL RAMP ARE TO BE CONSTRUCTED WITH 4" THICKNESS OF CEMENT CONCRETE.
 - DETECTABLE WARNING PANELS SHALL BE PLASTIC - COLORED BRICK RED.
 - SEE CONSTRUCTION STANDARD E 107.2.0 AND E 107.6.5

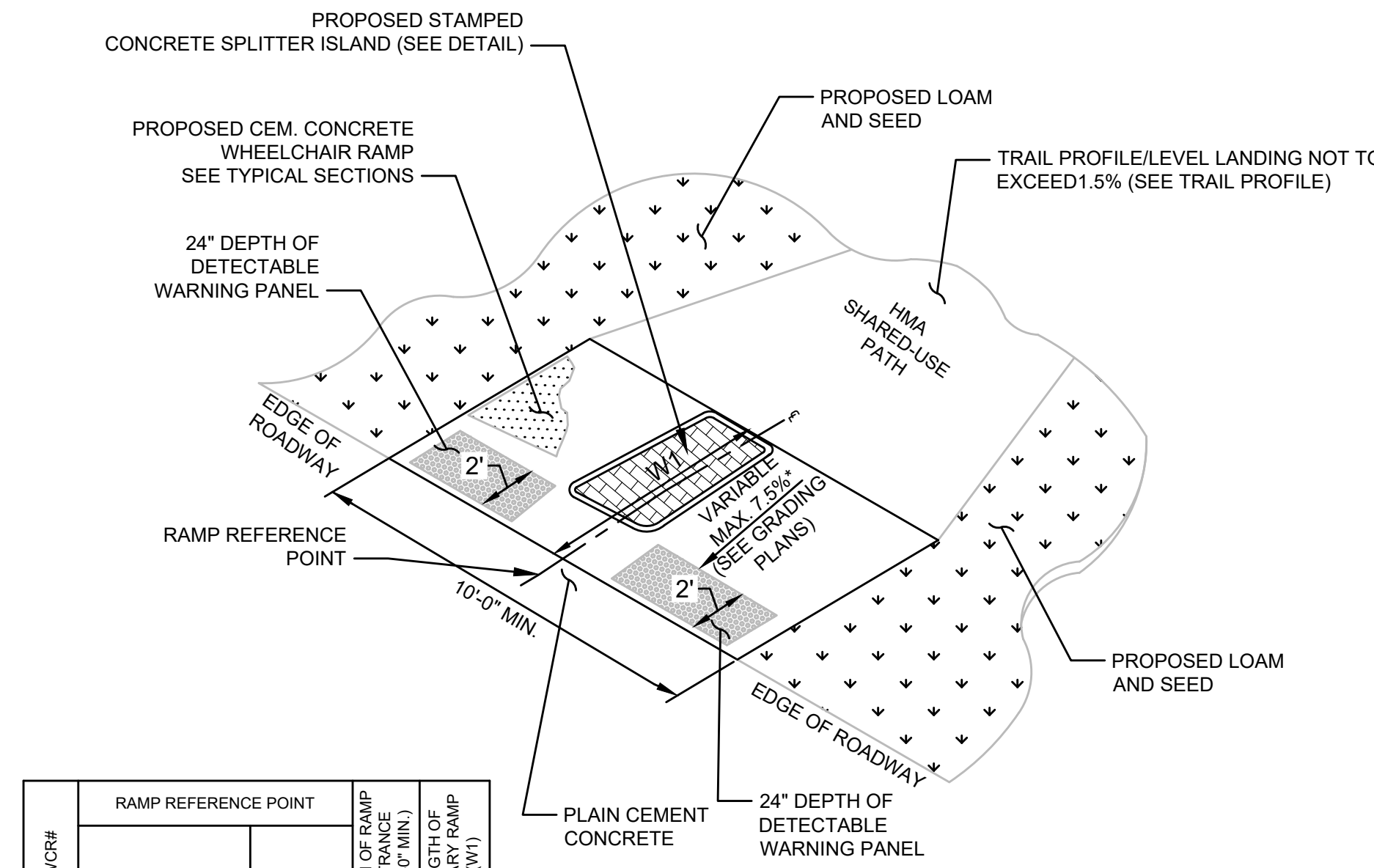
* CONSTRUCTION TOLERANCE ± 0.5%



WCR#	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	WIDTH OF RAMP ENTRANCE (5'-0" MIN.)	LENGTH OF PRIMARY RAMP (R)	RIGHT SIDE TRANSITION					
	STATION/ROADWAY	OFFSET				CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE	CURB REVEAL	RAMP LENGTH
A1		XX,XX XX	X'-X"	X'-X"	X'-X"	X'-X"			X.X%	6"	X'-X"

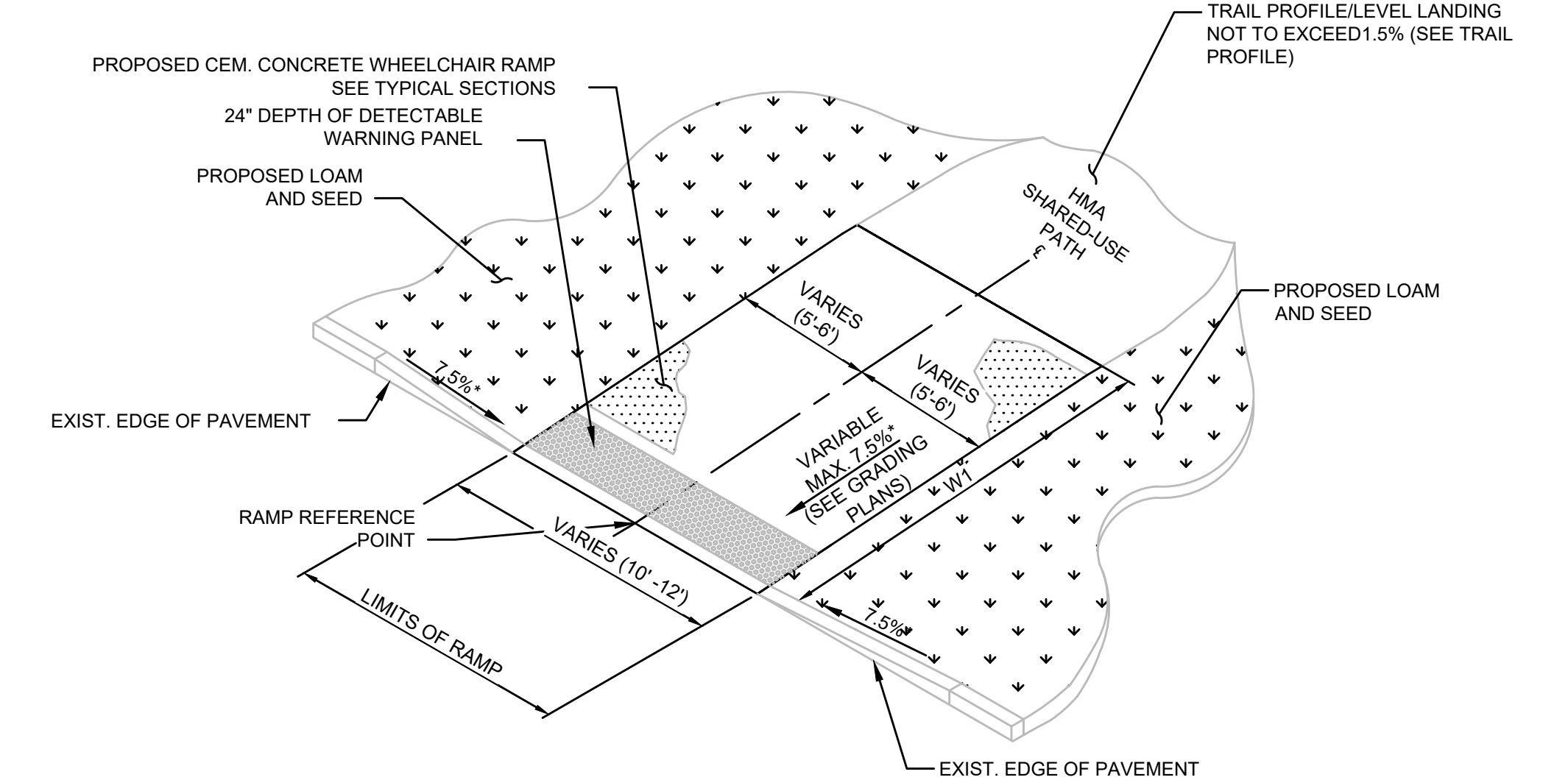
(-) REPRESENTS THE LOW SIDE TRANSITION

TYPE A PEDESTRIAN CURB RAMP WITH BUFFER STRIP
N.T.S.



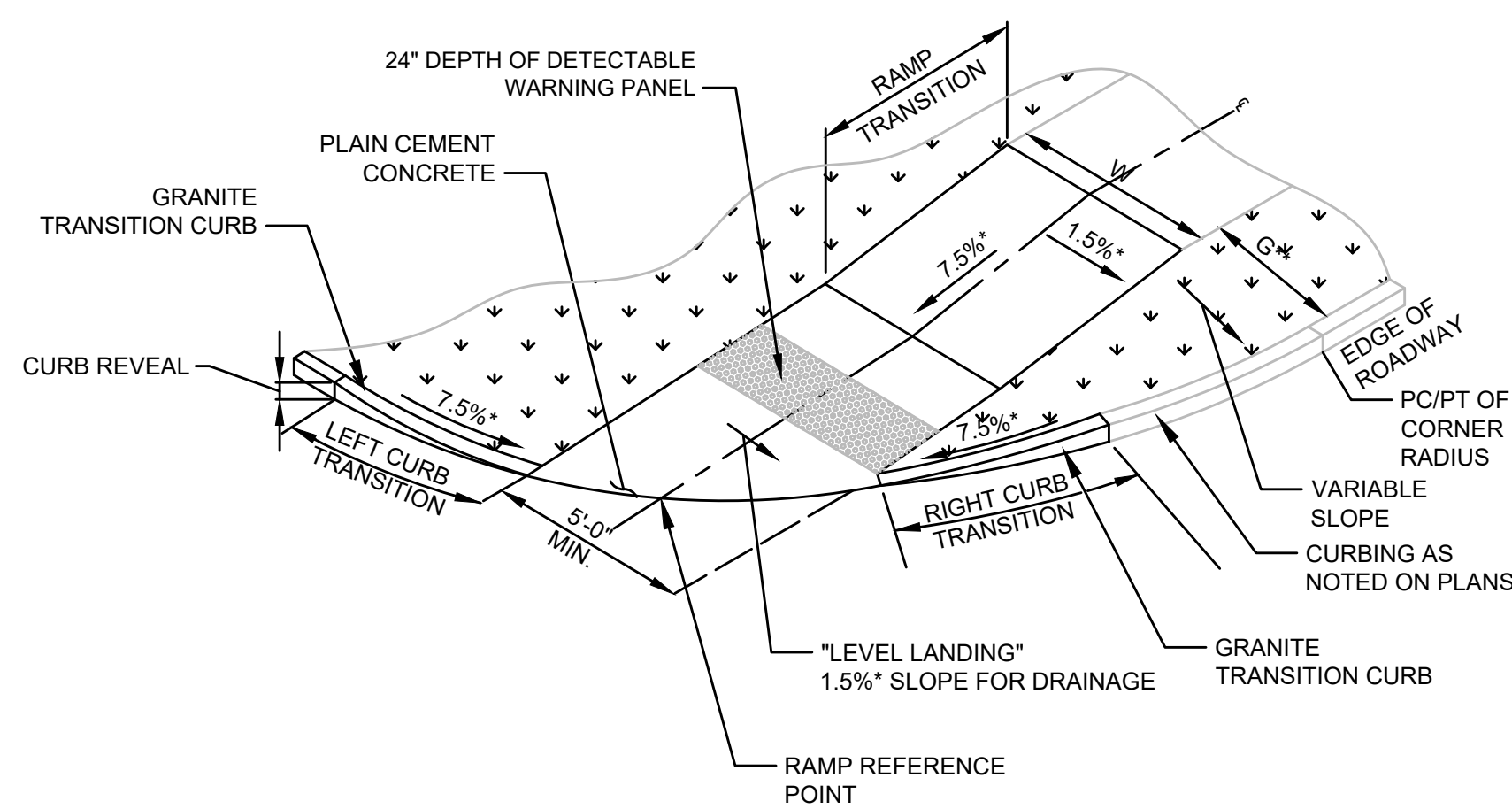
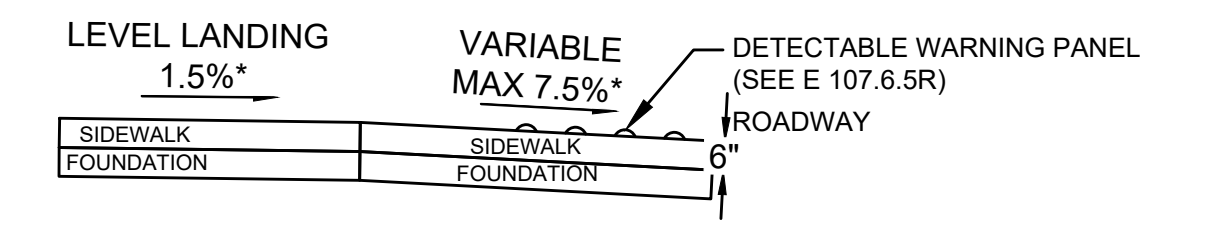
WCR#	RAMP REFERENCE POINT		WIDTH OF RAMP ENTRANCE (10'-0" MIN.)	LENGTH OF PRIMARY RAMP (R)
	STATION/ROADWAY	OFFSET		
B1		XX	10'-0"	X'-X"
B2		XX	10'-0"	X'-X"
B3		XX	10'-0"	X'-X"

TYPE B SHARED USE PATH ENTRANCE/EXIT RAMP
N.T.S.



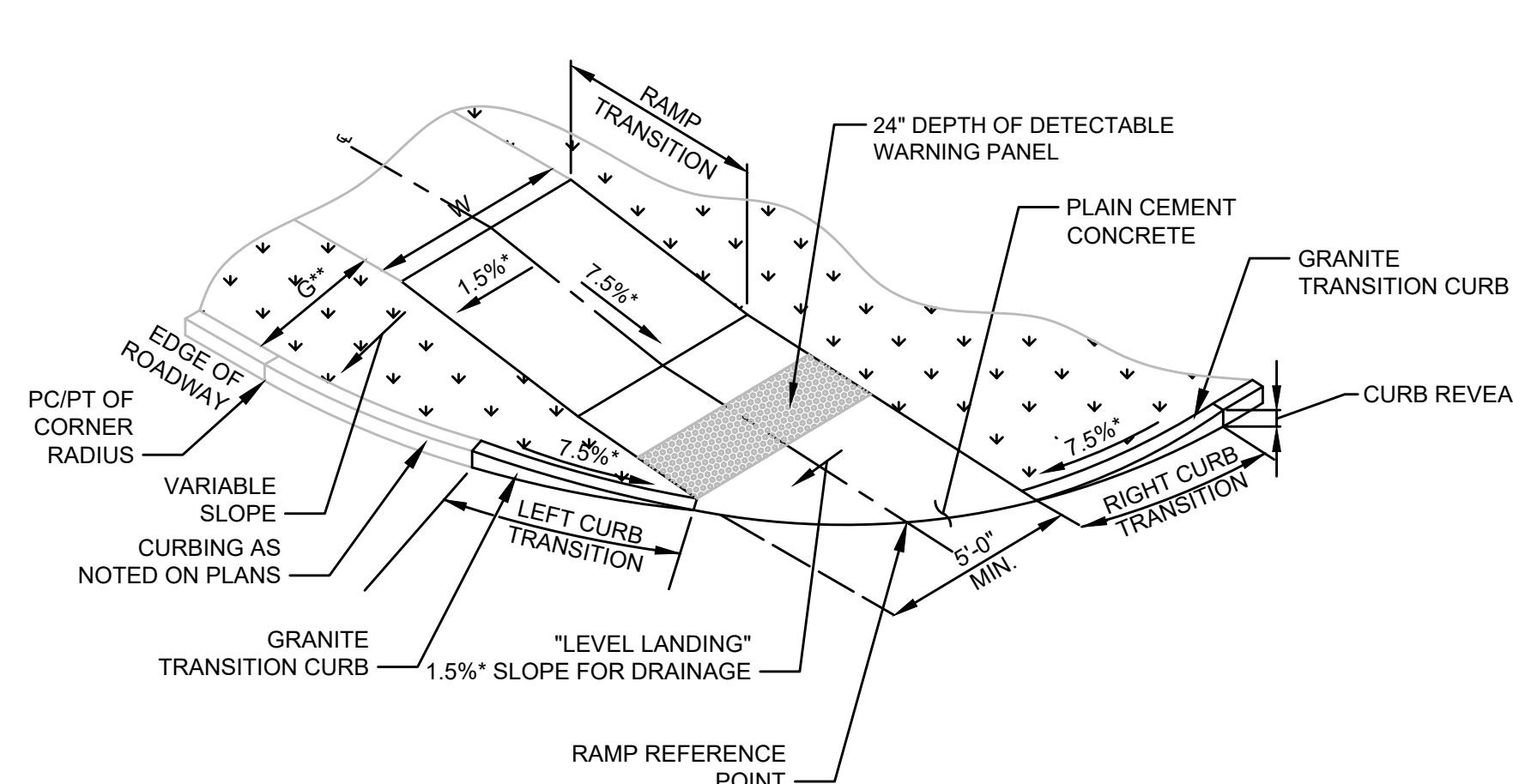
WCR#	RAMP REFERENCE POINT		WIDTH OF RAMP ENTRANCE (10'-0" MIN.)	LENGTH OF PRIMARY RAMP (R)
	STATION/ROADWAY	OFFSET		
C1		XX	10'-0"	X'-X"
C2		XX	10'-0"	X'-X"
C3		XX	10'-0"	X'-X"

TYPE C WHEELCHAIR RAMP SHARED-USE PATH ENTRANCE/EXIT
N.T.S.



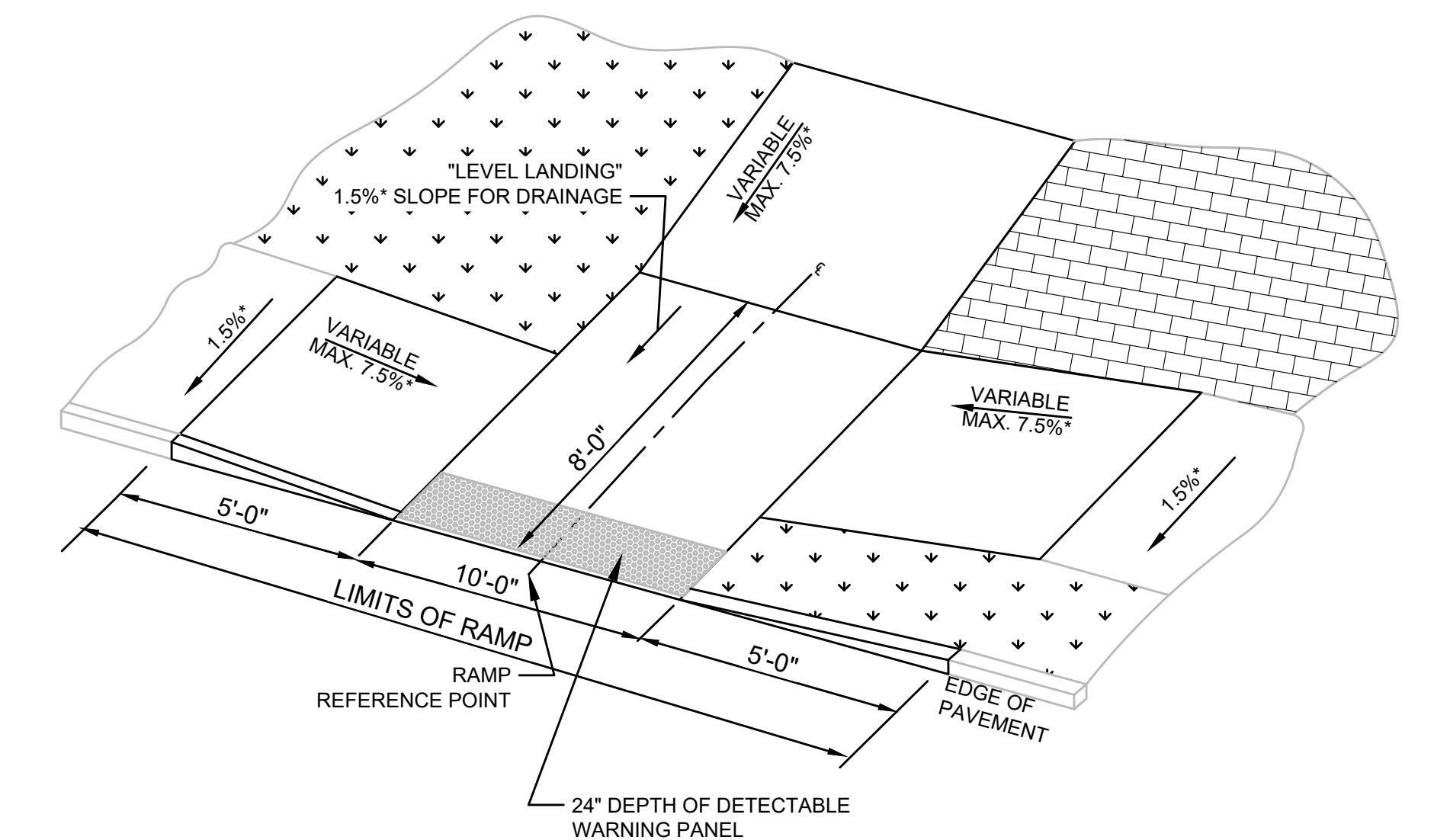
TYPE D WHEELCHAIR RAMP CONTINUOUS DIRECTION TRAVEL WITH BUFFER STRIP
N.T.S.

WCR#	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	WIDTH OF RAMP ENTRANCE (5'-0" MIN.)	CORNER RADIUS	RAMP TRANSITION	LEFT SIDE CURB TRANSITION				RIGHT SIDE CURB TRANSITION					
	STATION/ROADWAY	OFFSET					CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE	CURB REVEAL	CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE	CURB REVEAL
D1		XXX,XX RT	X'-X"	X'-X"	XX'	X'-X"	X'-X"	X'-X"	X'	X.X%	X'	X'-X"	X'-X"	X'	X.X%	X'
D2																



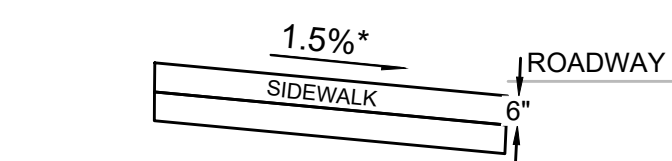
TYPE E WHEELCHAIR RAMP CONTINUOUS DIRECTION TRAVEL WITH BUFFER STRIP
N.T.S.

WCR#	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	WIDTH OF RAMP ENTRANCE (5'-0" MIN.)	CORNER RADIUS	RAMP TRANSITION	LEFT SIDE CURB TRANSITION				RIGHT SIDE CURB TRANSITION				
	STATION/ROADWAY	OFFSET					CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE	CURB REVEAL	CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE
E1		XXX,XX RT	X'-X"	X'-X"	XX'	X'-X"	X'-X"	X'	X.X%	X'	X'-X"	X'-X"	X'	X.X%	X'
E2															



TYPE F WHEELCHAIR RAMP SHARED-USE PATH ENTRANCE NORTH OF ROUTE 20
N.T.S.

WCR#	RAMP REFERENCE POINT		WIDTH OF SIDEWALK (W)	WIDTH OF RAMP ENTRANCE (5'-0" MIN.)	CORNER RADIUS	RAMP TRANSITION	LEFT SIDE CURB TRANSITION				RIGHT SIDE CURB TRANSITION				
	STATION/ROADWAY	OFFSET					CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE	CURB REVEAL	CURVE LENGTH	STRAIGHT LENGTH	PC/PPT REVEAL	ROADWAY GUTTER GRADE
F1		XXX,XX RT	X'-X"	X'-X"	XX'	X'-X"	X'-X"	X'	X.X%	X'	X'-X"	X'-X"	X'	X.X%	X'

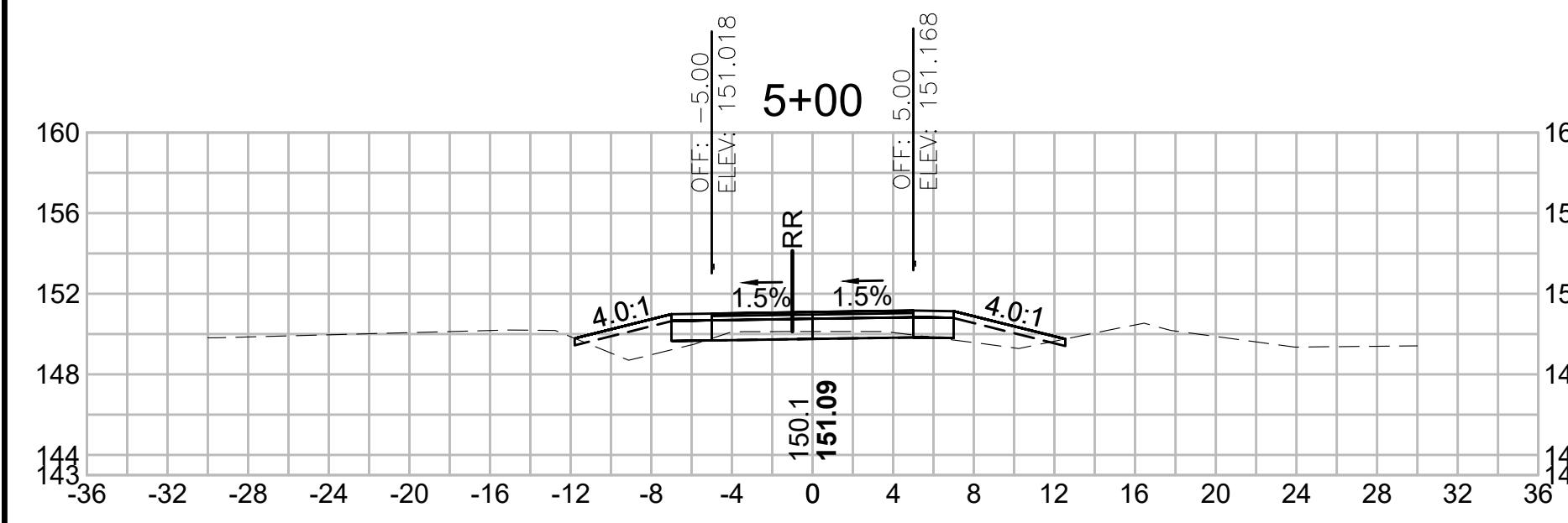


SECTION
N.T.S.

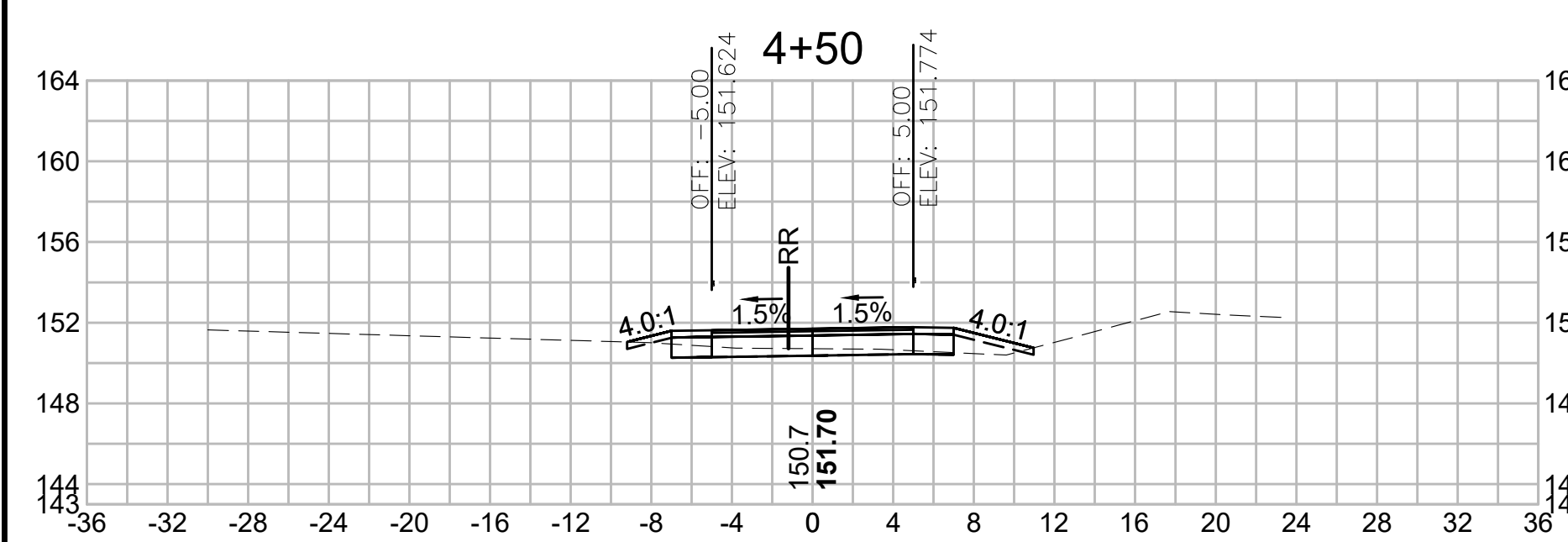
**SUBURBY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	60	73
PROJECT FILE NO. 613319			

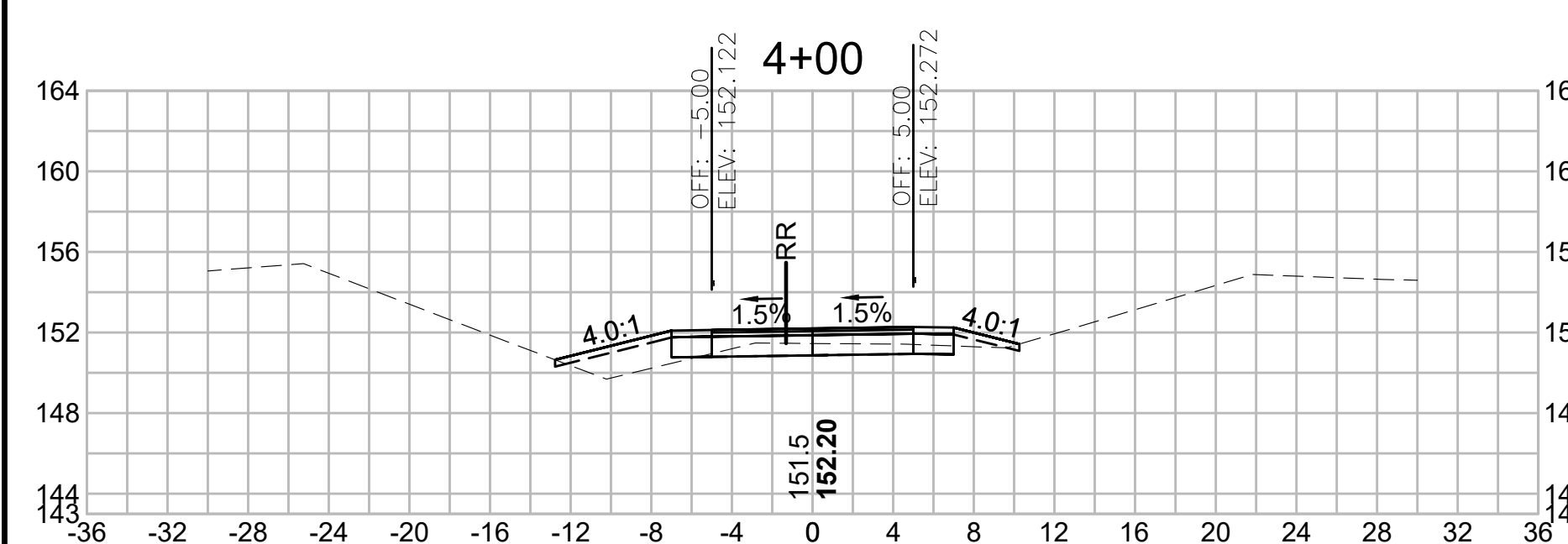
CROSS SECTIONS



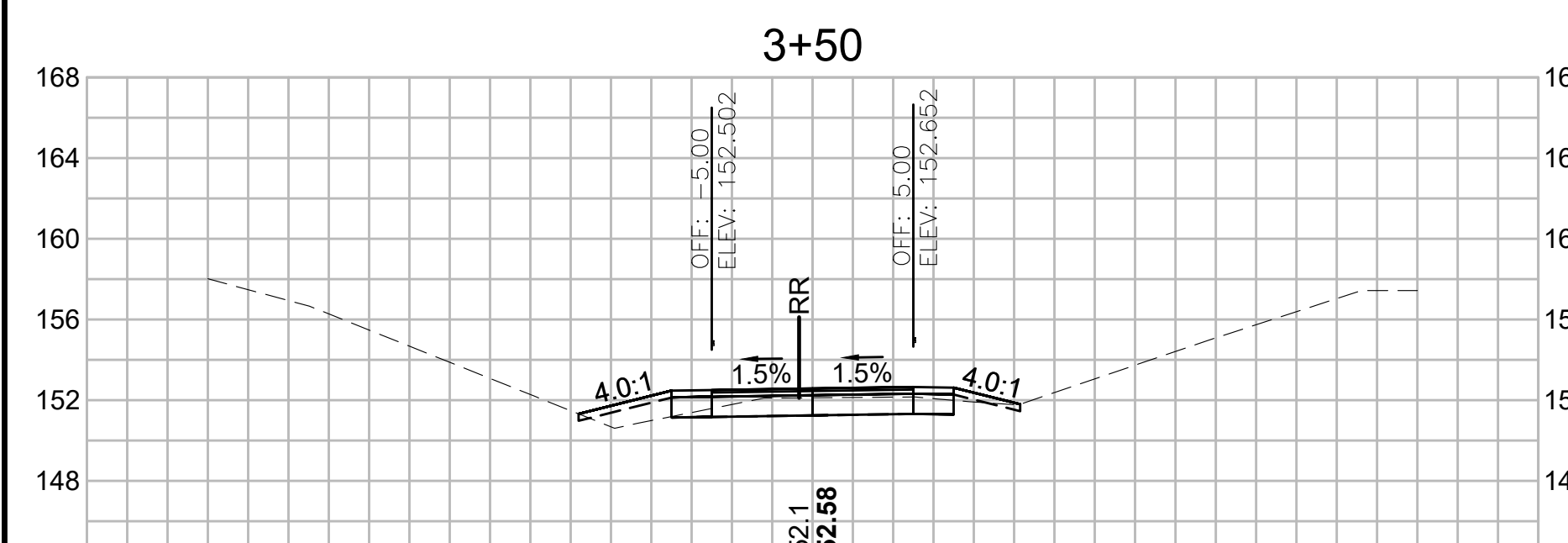
Total Volume at Station 5+00.00	
Cut Area	3.658
Fill Area	8.399
Cut Vol	8.223
Fill Vol	9.5
Cum Cut Vol	59.001
Cum Fill Vol	28.9
Net Vol	30.1



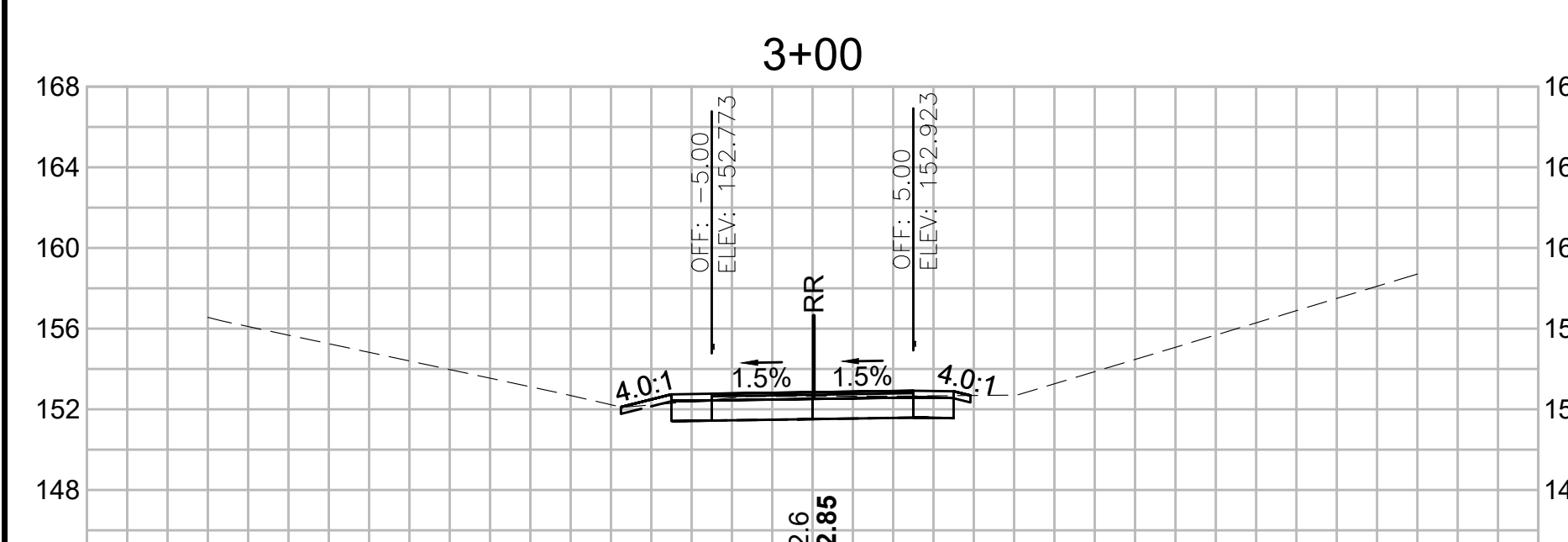
Total Volume at Station 4+50.00	
Cut Area	5.223
Fill Area	1.887
Cut Vol	10.824
Fill Vol	7.6
Cum Cut Vol	50.778
Cum Fill Vol	19.4
Net Vol	31.4



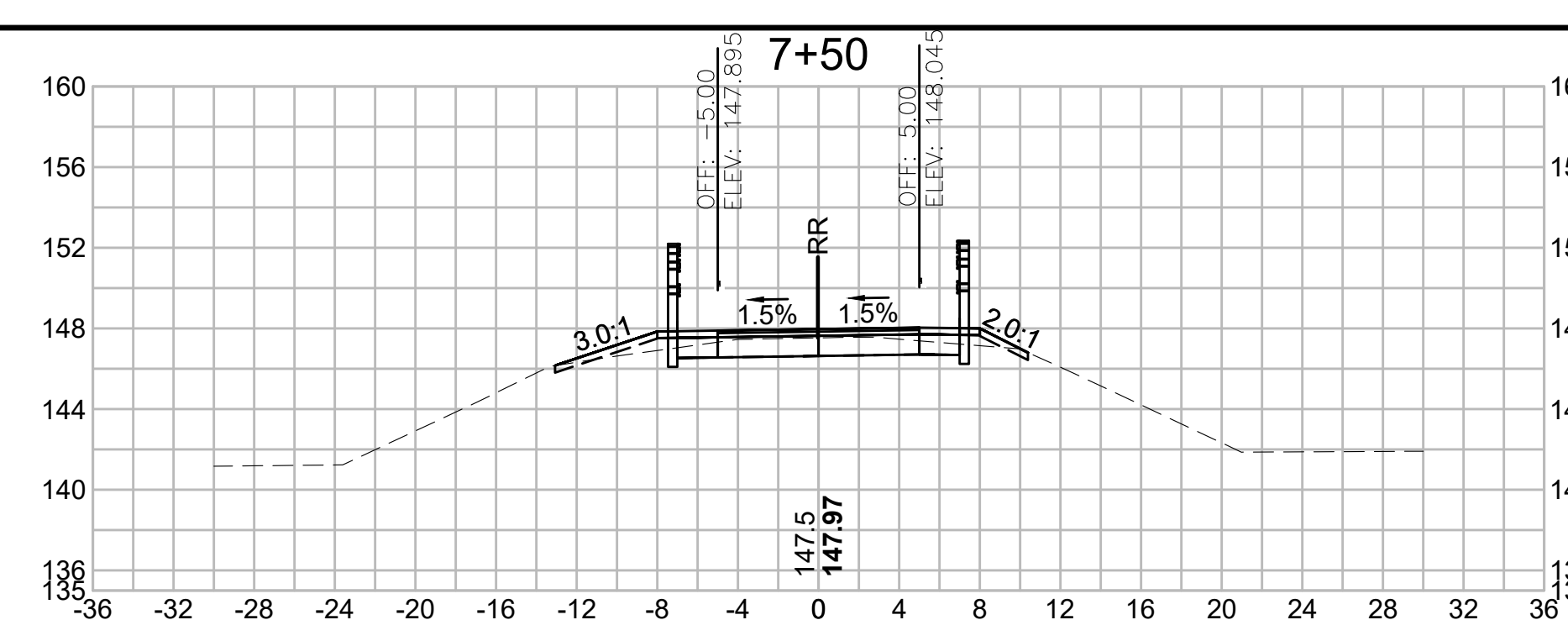
Total Volume at Station 4+00.00	
Cut Area	6.467
Fill Area	6.300
Cut Vol	15.680
Fill Vol	8.8
Cum Cut Vol	39.955
Cum Fill Vol	11.8
Net Vol	28.1



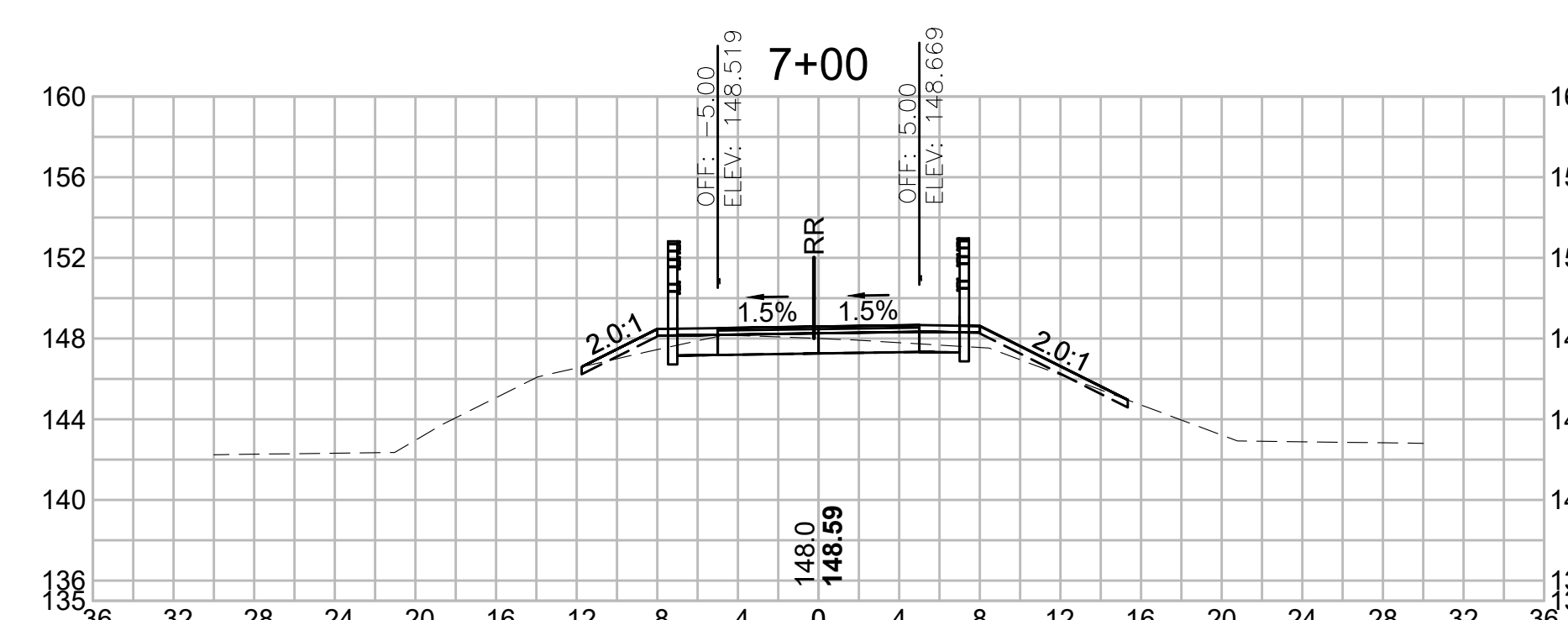
Total Volume at Station 3+50.00	
Cut Area	10.468
Fill Area	3.213
Cut Vol	24.275
Fill Vol	3.0
Cum Cut Vol	24.275
Cum Fill Vol	3.0
Net Vol	21.3



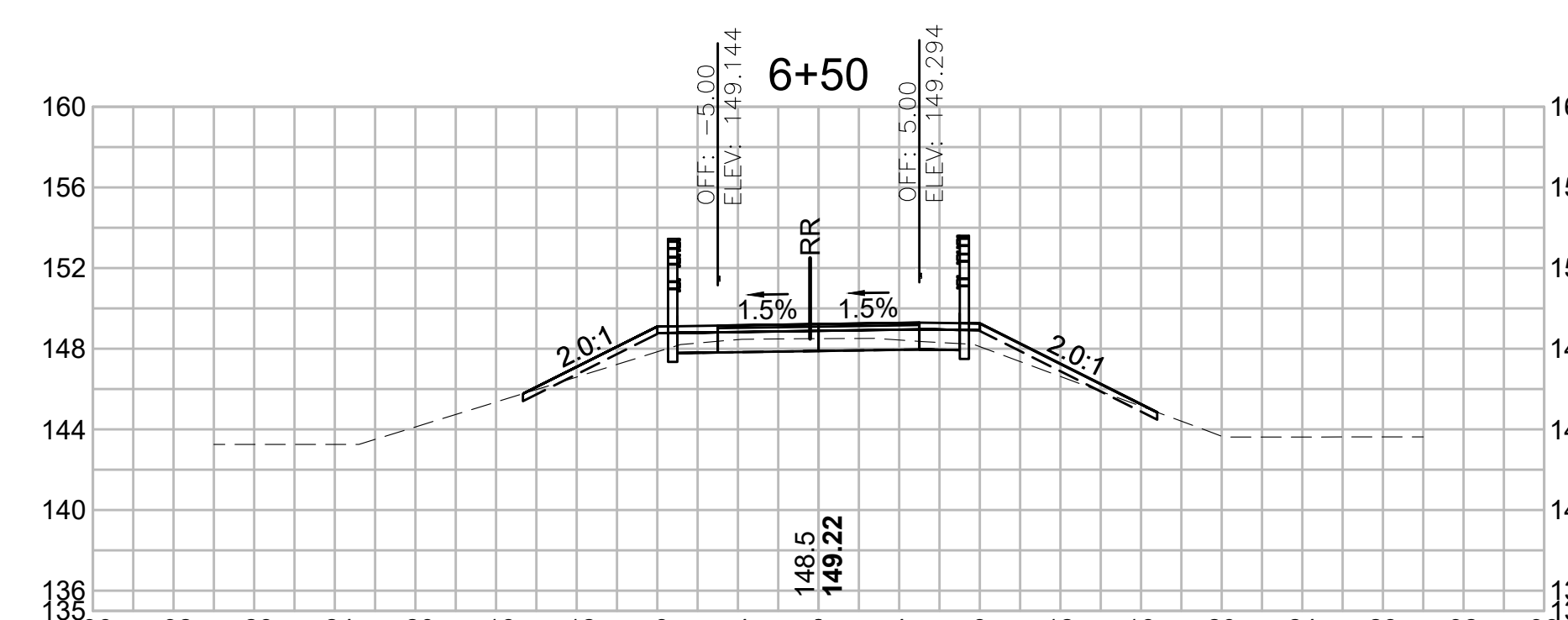
Total Volume at Station 3+00.00	
Cut Area	15.749
Fill Area	0.029
Cut Vol	0.000
Fill Vol	0.0
Cum Cut Vol	0.000
Cum Fill Vol	0.0
Net Vol	0.0



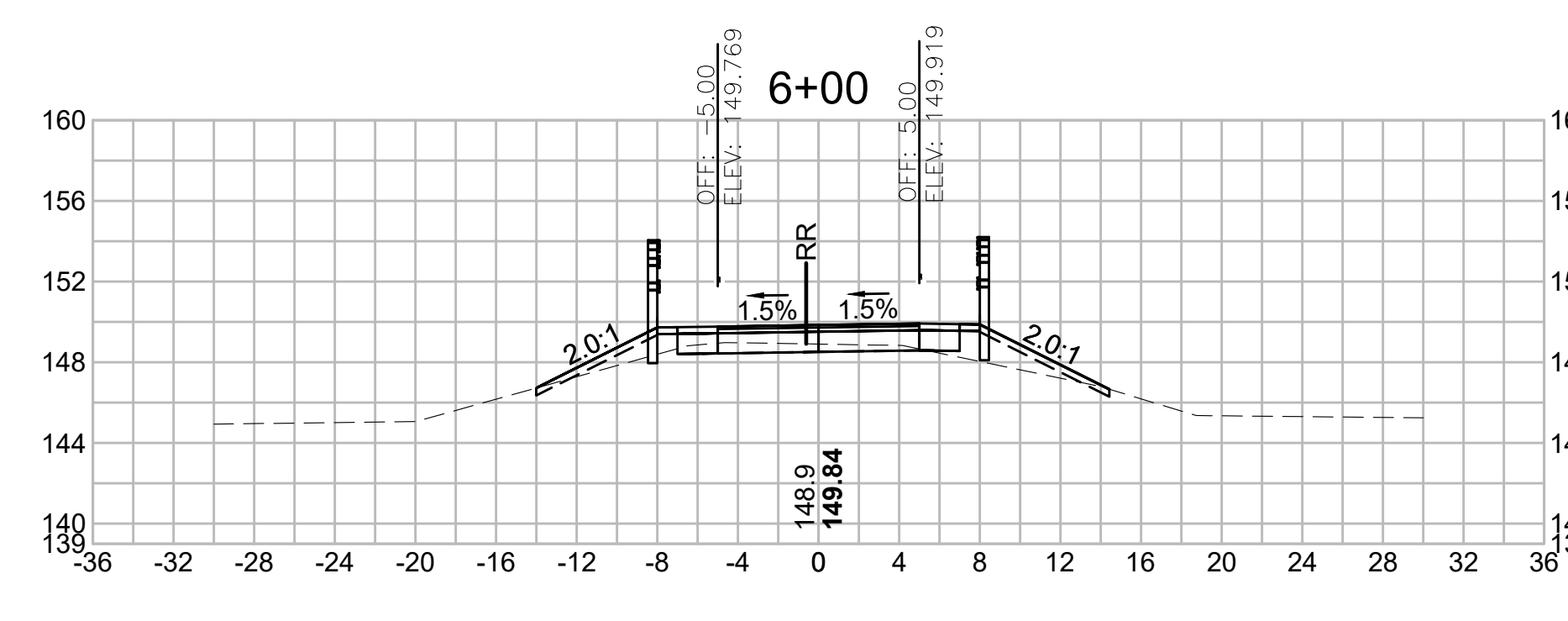
Total Volume at Station 7+50.00	
Cut Area	11.716
Fill Area	2.234
Cut Vol	20.293
Fill Vol	5.2
Cum Cut Vol	126.495
Cum Fill Vol	96.2
Net Vol	30.3



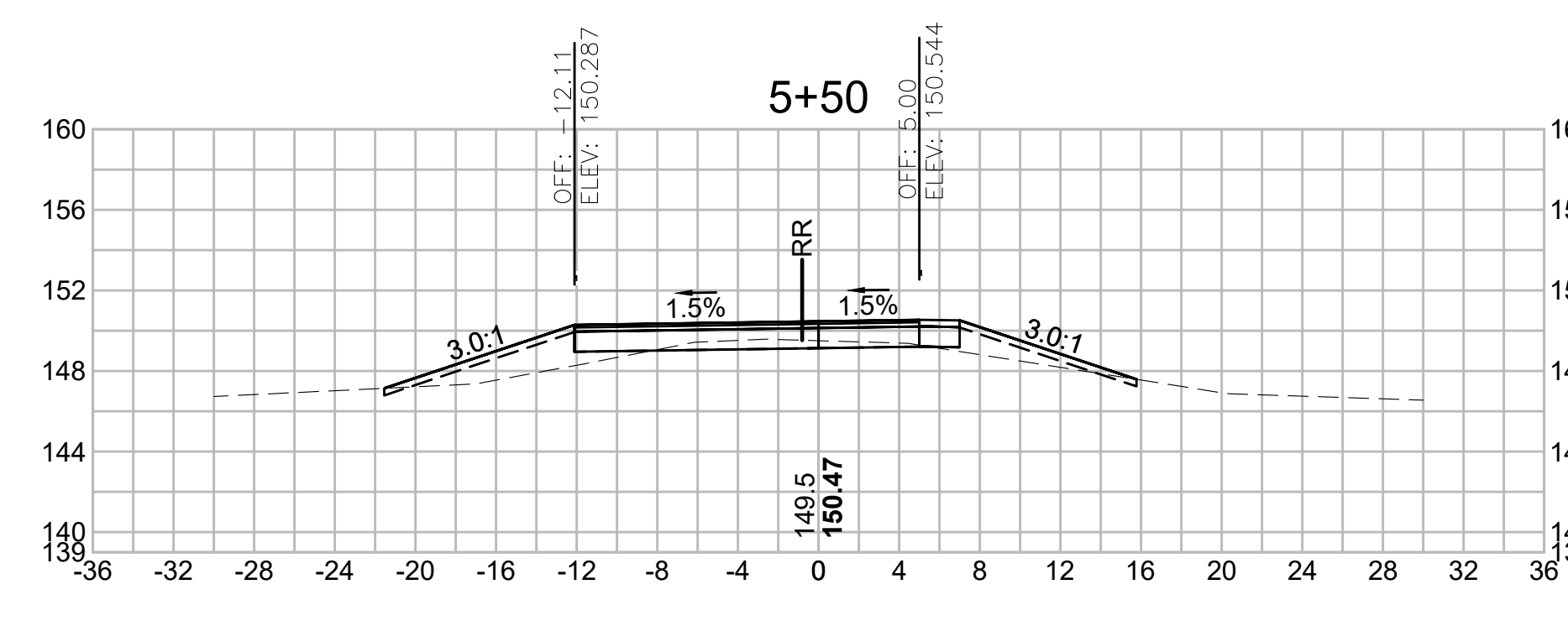
Total Volume at Station 7+00.00	
Cut Area	10.199
Fill Area	3.341
Cut Vol	17.216
Fill Vol	8.6
Cum Cut Vol	106.203
Cum Fill Vol	91.1
Net Vol	15.1



Total Volume at Station 6+50.00	
Cut Area	8.393
Fill Area	5.910
Cut Vol	12.654
Fill Vol	13.2
Cum Cut Vol	88.988
Cum Fill Vol	82.5
Net Vol	6.5



Total Volume at Station 6+00.00	
Cut Area	5.273
Fill Area	8.292
Cut Vol	9.415
Fill Vol	20.2
Cum Cut Vol	76.334
Cum Fill Vol	69.4
Net Vol	7.0

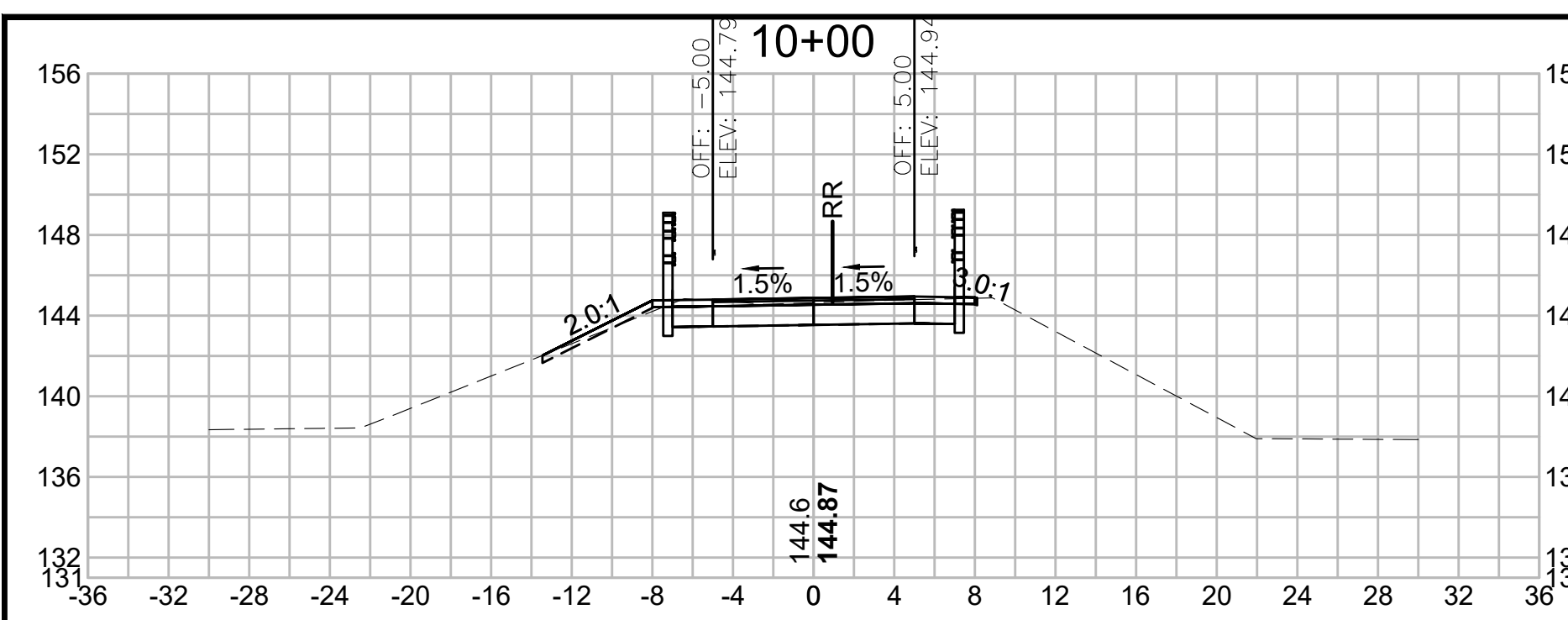


Total Volume at Station 5+50.00	
Cut Area	4.895
Fill Area	13.491
Cut Vol	7.919
Fill Vol	20.3
Cum Cut Vol	66.920
Cum Fill Vol	49.2
Net Vol	17.7

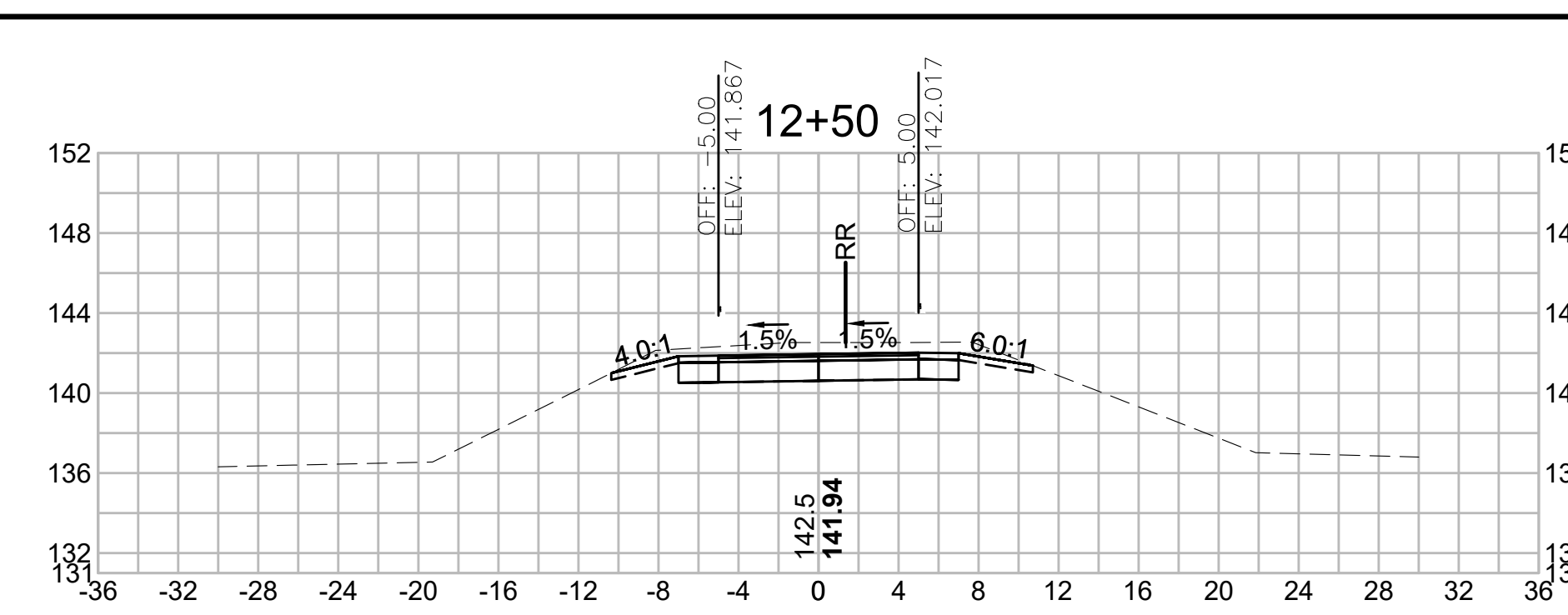
**SUBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	61	73
PROJECT FILE NO.		613319	

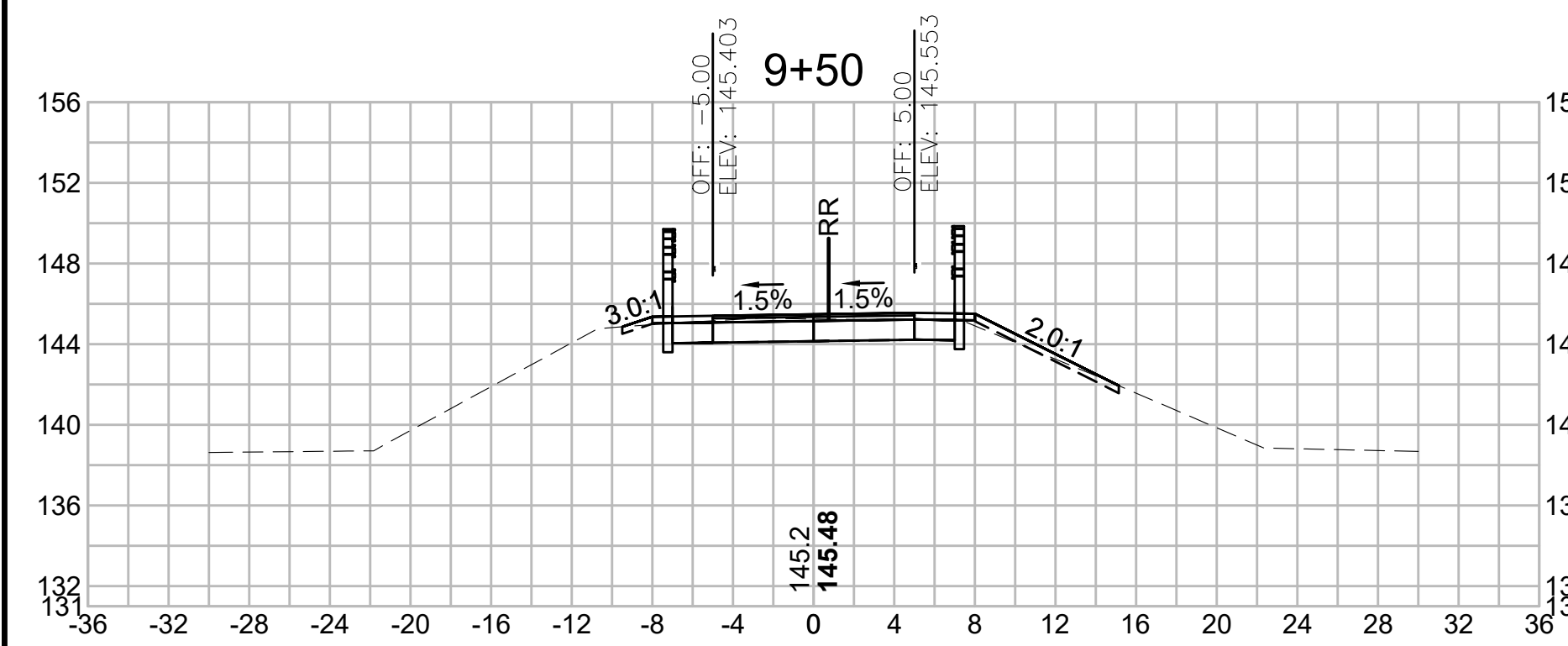
CROSS SECTIONS



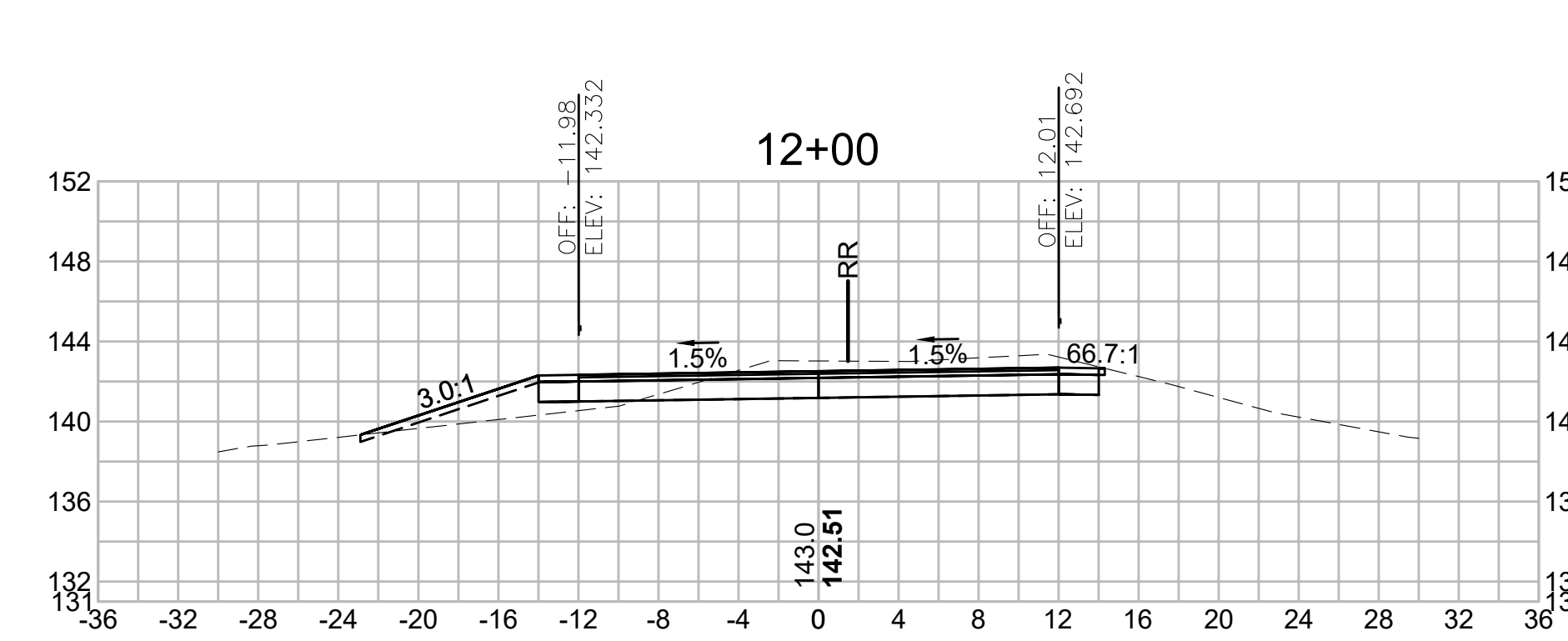
Total Volume at Station 10+00.00	
Cut Area	17.477
Fill Area	0.211
Cut Vol	31.151
Fill Vol	0.6
Cum Cut Vol	258.338
Cum Fill Vol	106.2
Net Vol	152.1



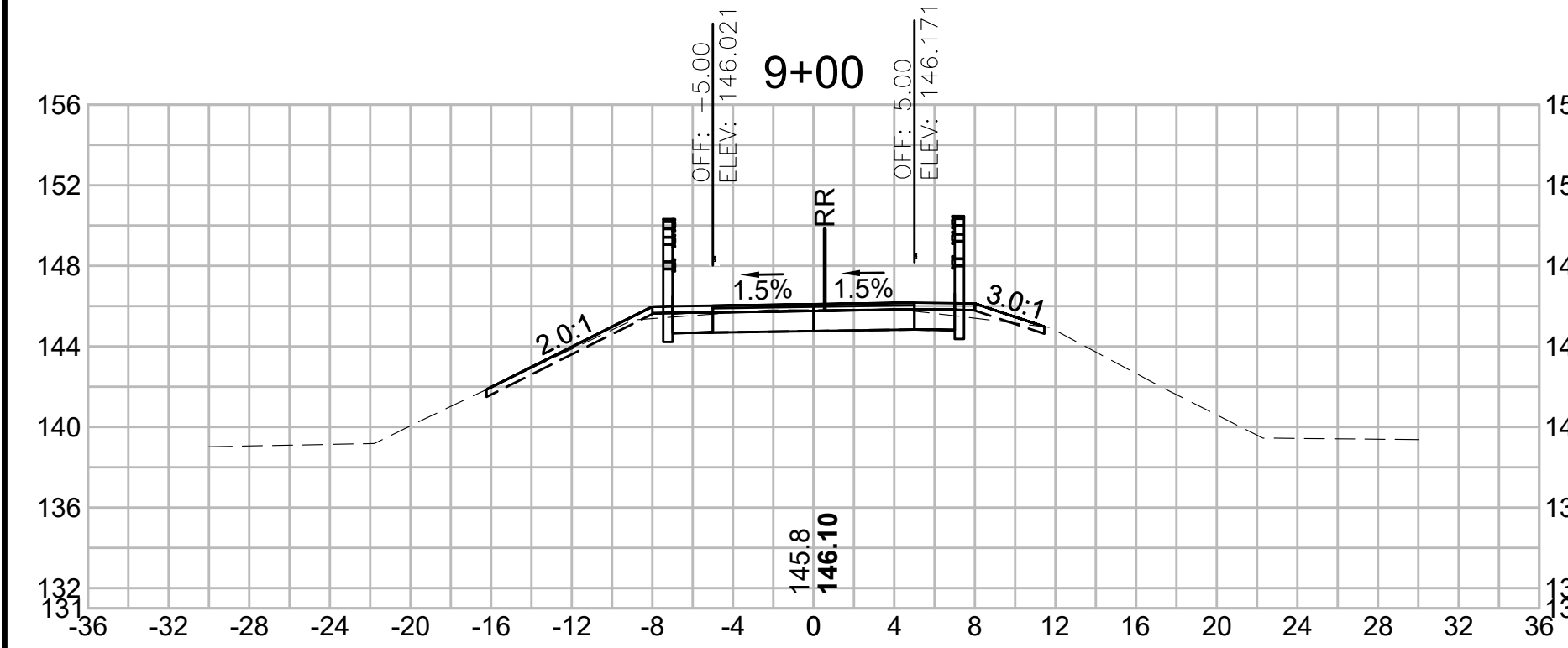
Total Volume at Station 12+50.00	
Cut Area	31.020
Fill Area	0.000
Cut Vol	62.706
Fill Vol	7.3
Cum Cut Vol	575.822
Cum Fill Vol	130.9
Net Vol	444.9



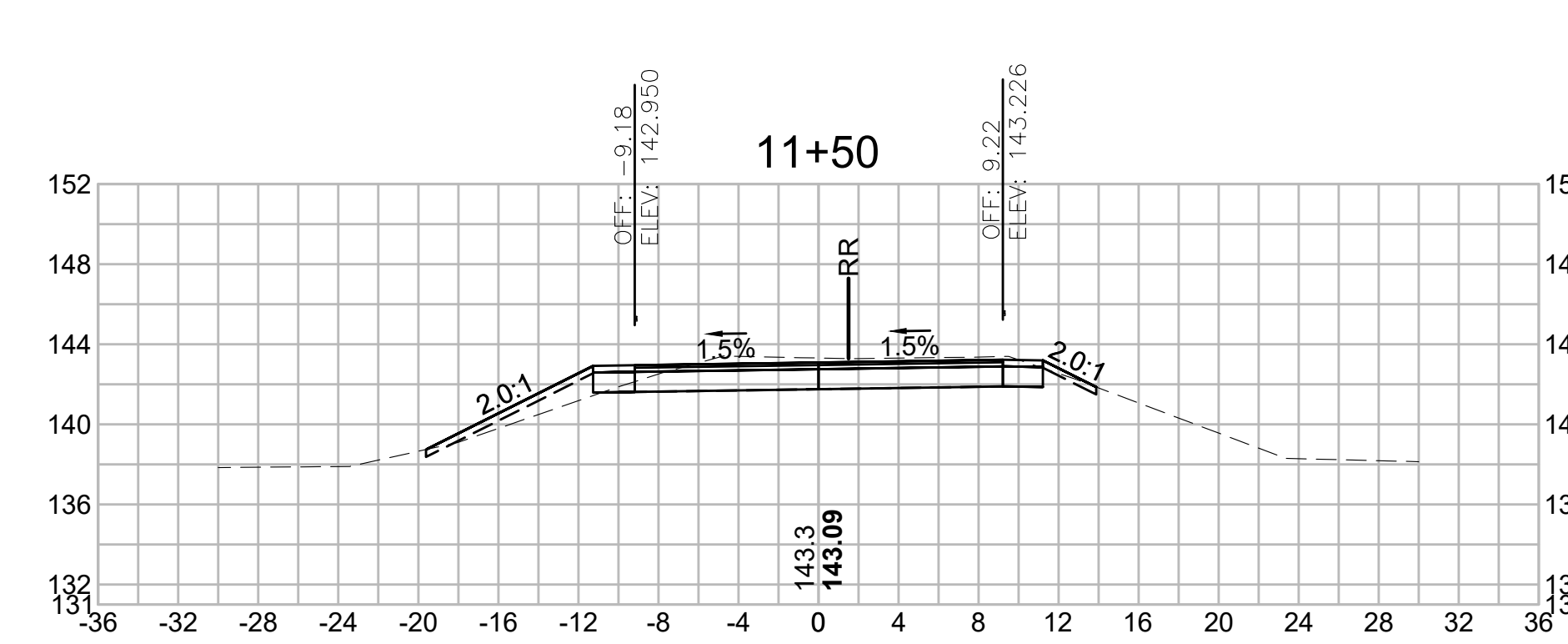
Total Volume at Station 9+50.00	
Cut Area	16.165
Fill Area	0.438
Cut Vol	29.738
Fill Vol	1.3
Cum Cut Vol	227.188
Cum Fill Vol	105.6
Net Vol	121.5



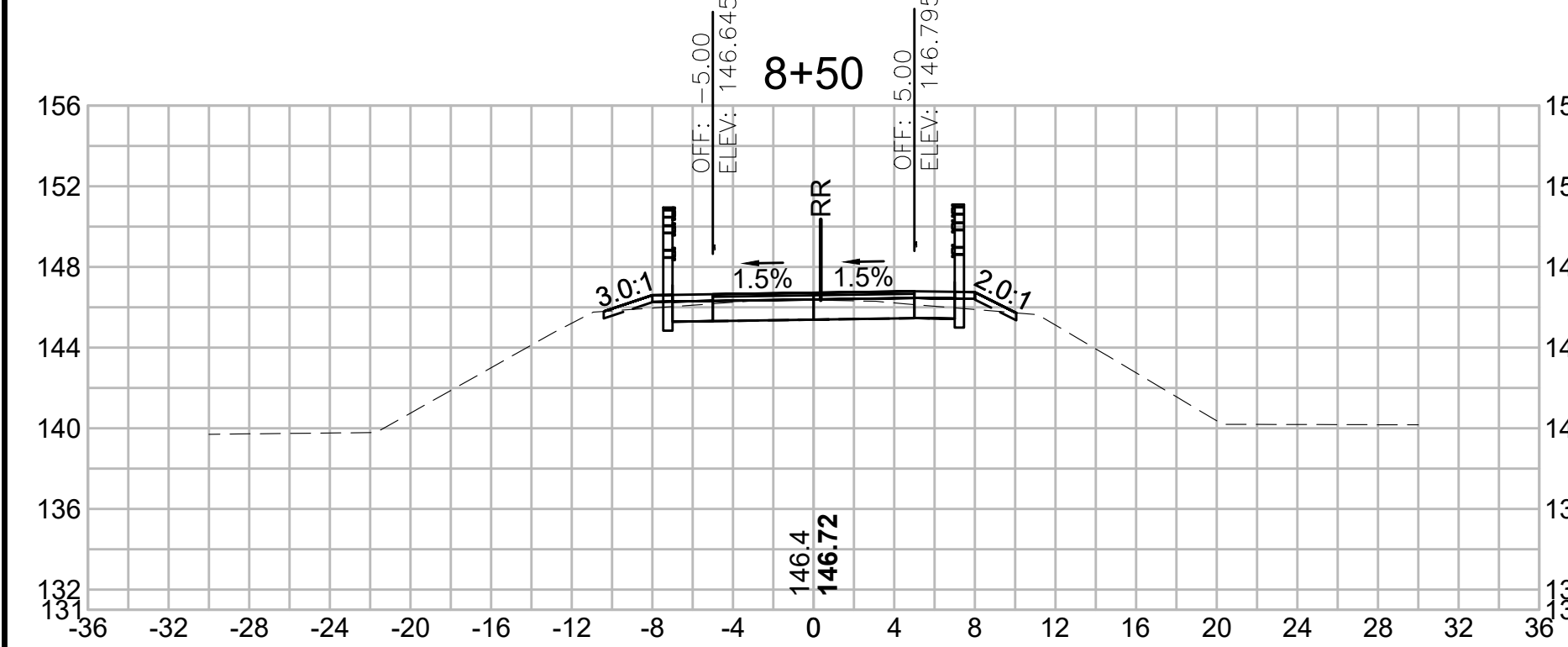
Total Volume at Station 12+00.00	
Cut Area	36.702
Fill Area	7.934
Cut Vol	62.109
Fill Vol	11.1
Cum Cut Vol	513.116
Cum Fill Vol	123.6
Net Vol	389.5



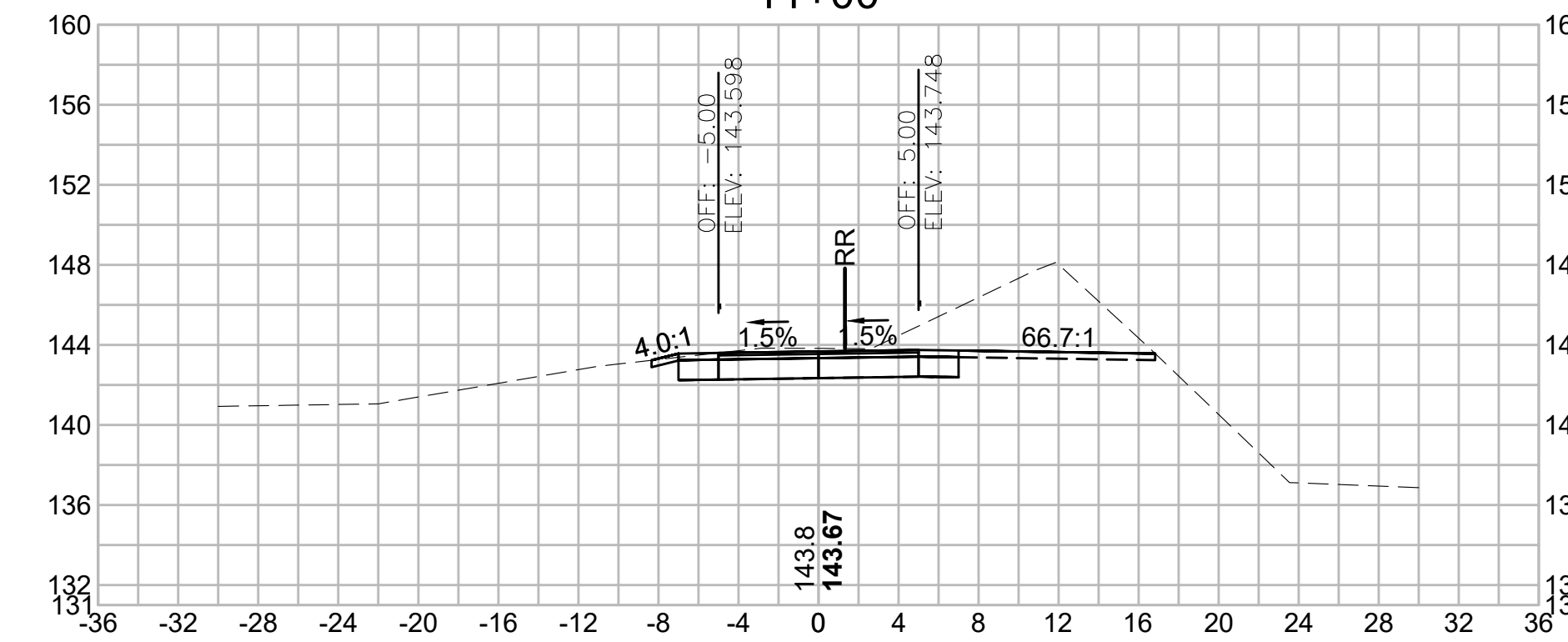
Total Volume at Station 9+00.00	
Cut Area	15.951
Fill Area	0.973
Cut Vol	26.228
Fill Vol	2.0
Cum Cut Vol	197.451
Cum Fill Vol	104.3
Net Vol	93.1



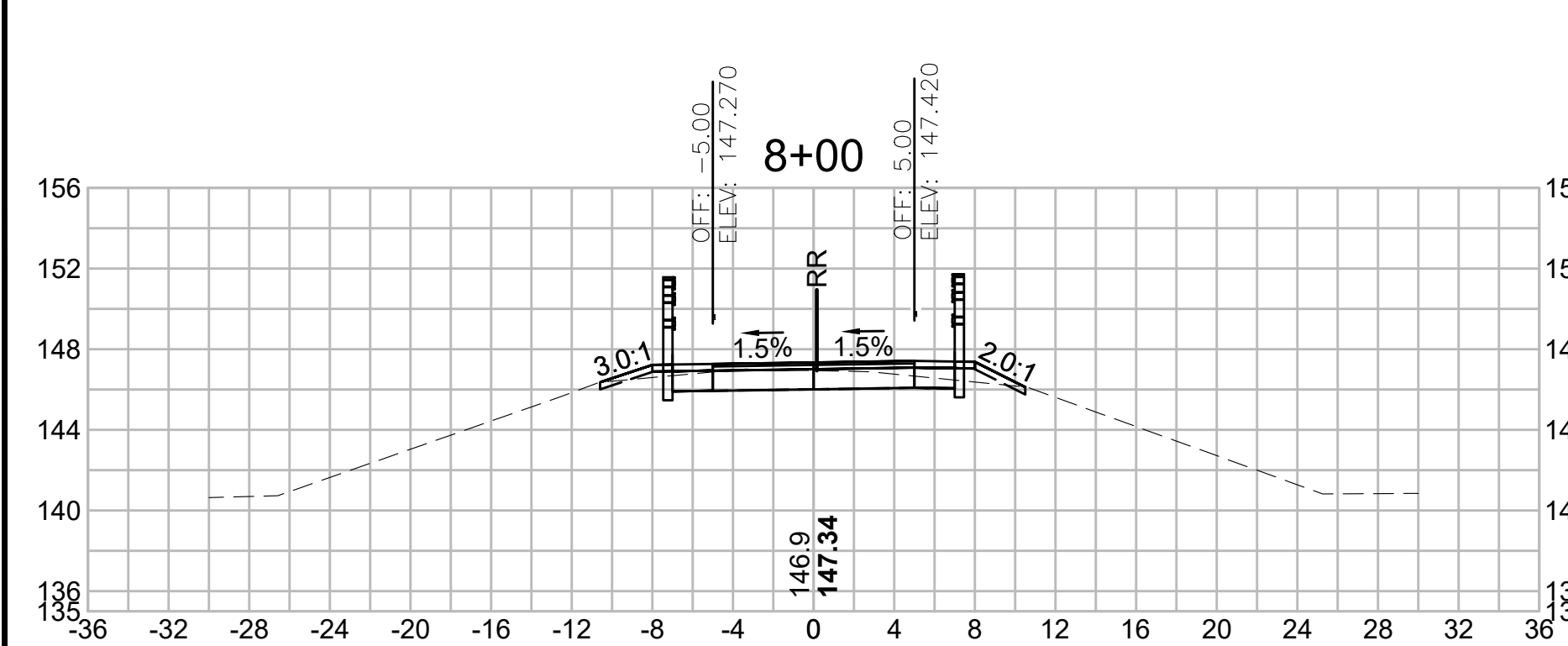
Total Volume at Station 11+50.00	
Cut Area	30.374
Fill Area	4.055
Cut Vol	79.618
Fill Vol	3.8
Cum Cut Vol	451.008
Cum Fill Vol	112.5
Net Vol	338.5



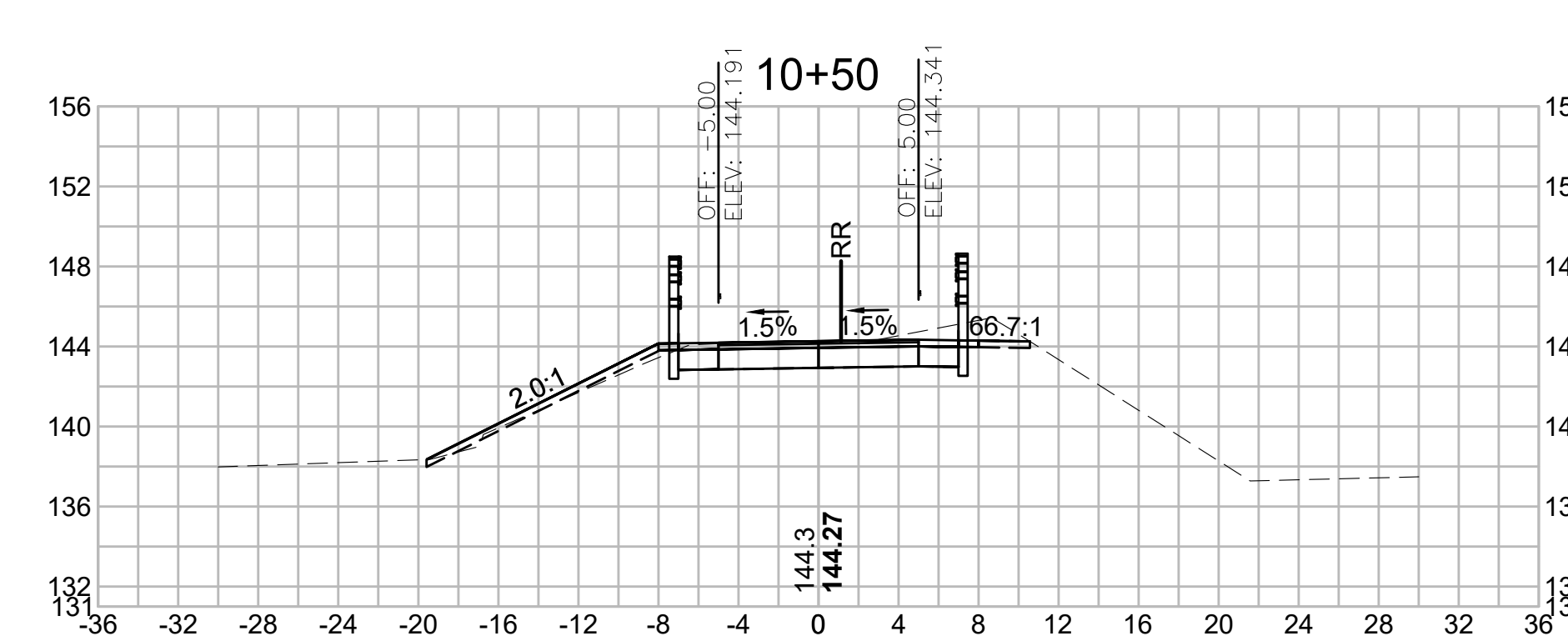
Total Volume at Station 8+50.00	
Cut Area	12.373
Fill Area	1.221
Cut Vol	22.669
Fill Vol	2.6
Cum Cut Vol	171.225
Cum Fill Vol	102.3
Net Vol	68.9



Total Volume at Station 11+00.00	
Cut Area	55.612
Fill Area	0.000
Cut Vol	74.182
Fill Vol	1.1
Cum Cut Vol	371.391
Cum Fill Vol	108.7
Net Vol	262.7



Total Volume at Station 8+00.00	
Cut Area	12.110
Fill Area	1.554
Cut Vol	22.062
Fill Vol	3.5
Cum Cut Vol	148.556
Cum Fill Vol	99.7
Net Vol	48.8

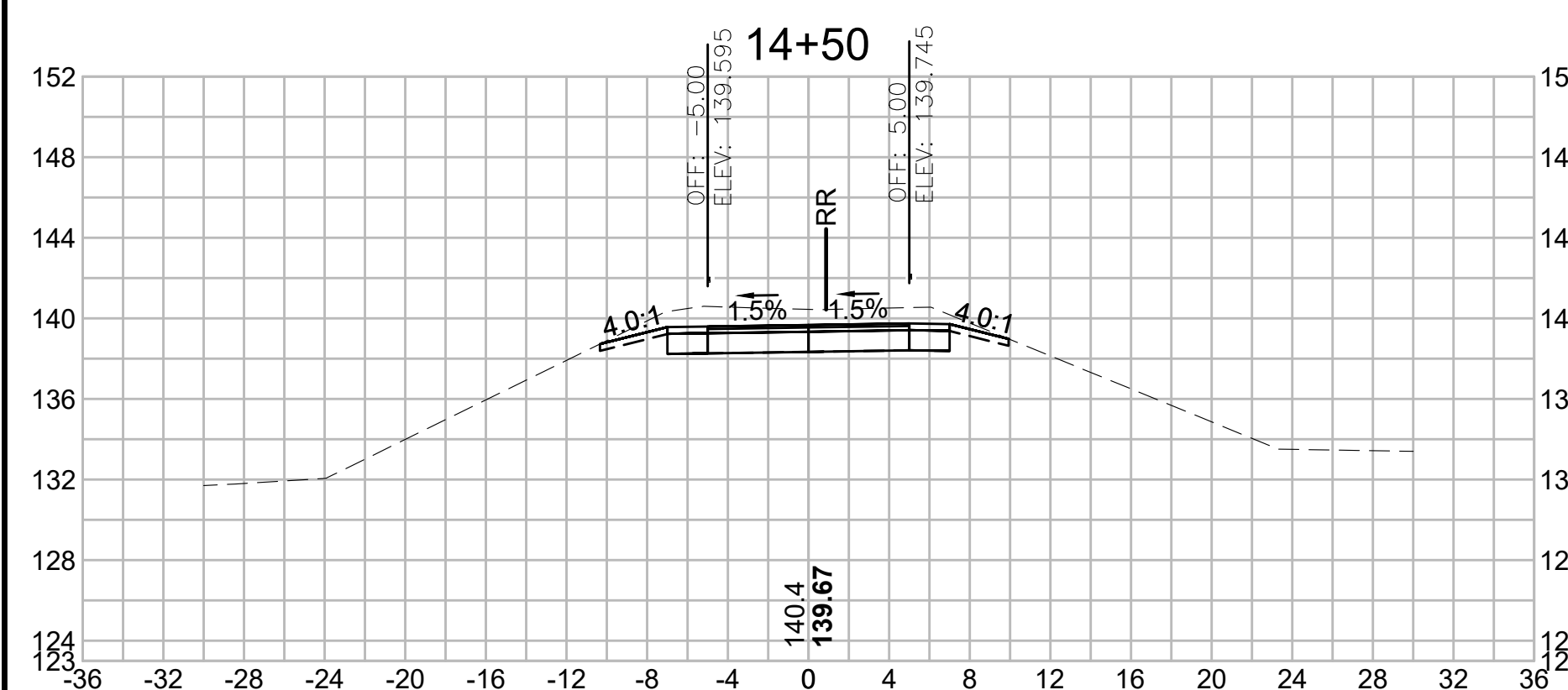


Total Volume at Station 10+50.00	
Cut Area	24.504
Fill Area	1.229
Cut Vol	38.872
Fill Vol	1.3
Cum Cut Vol	297.210
Cum Fill Vol	107.6
Net Vol	189.6

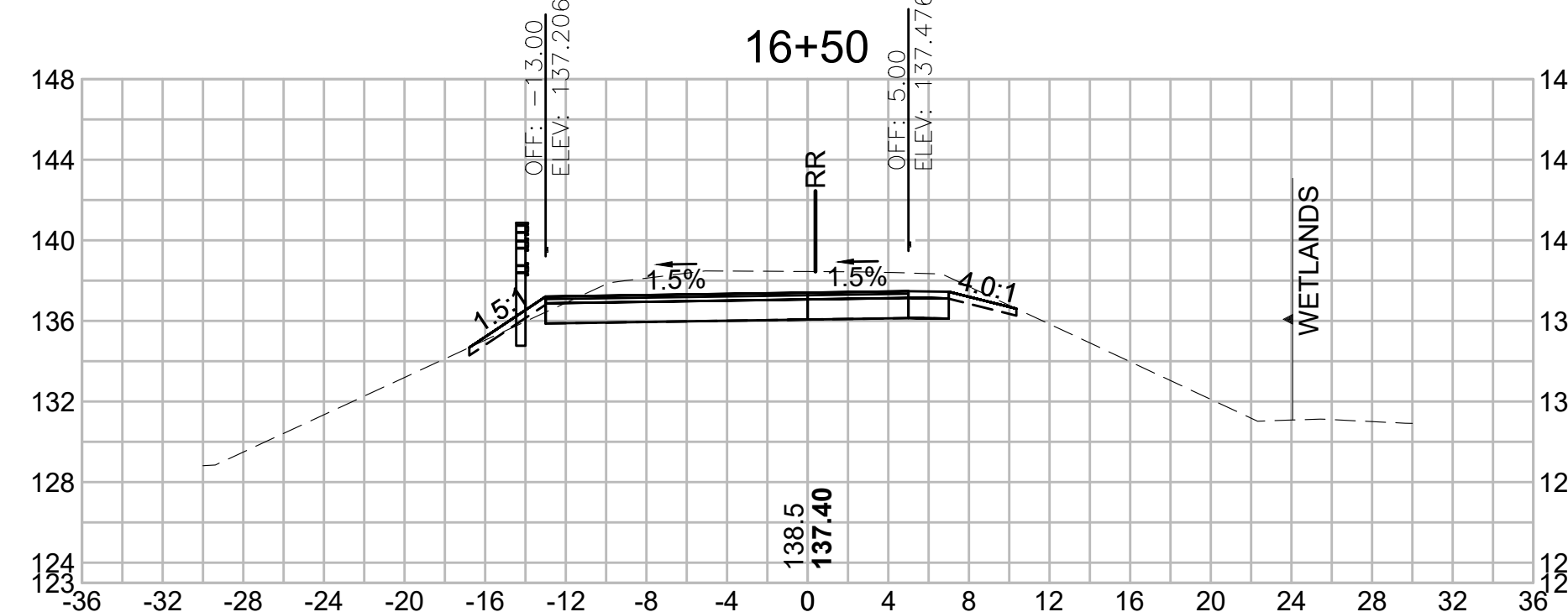
SUBURBY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	62	73
PROJECT FILE NO.		613319	

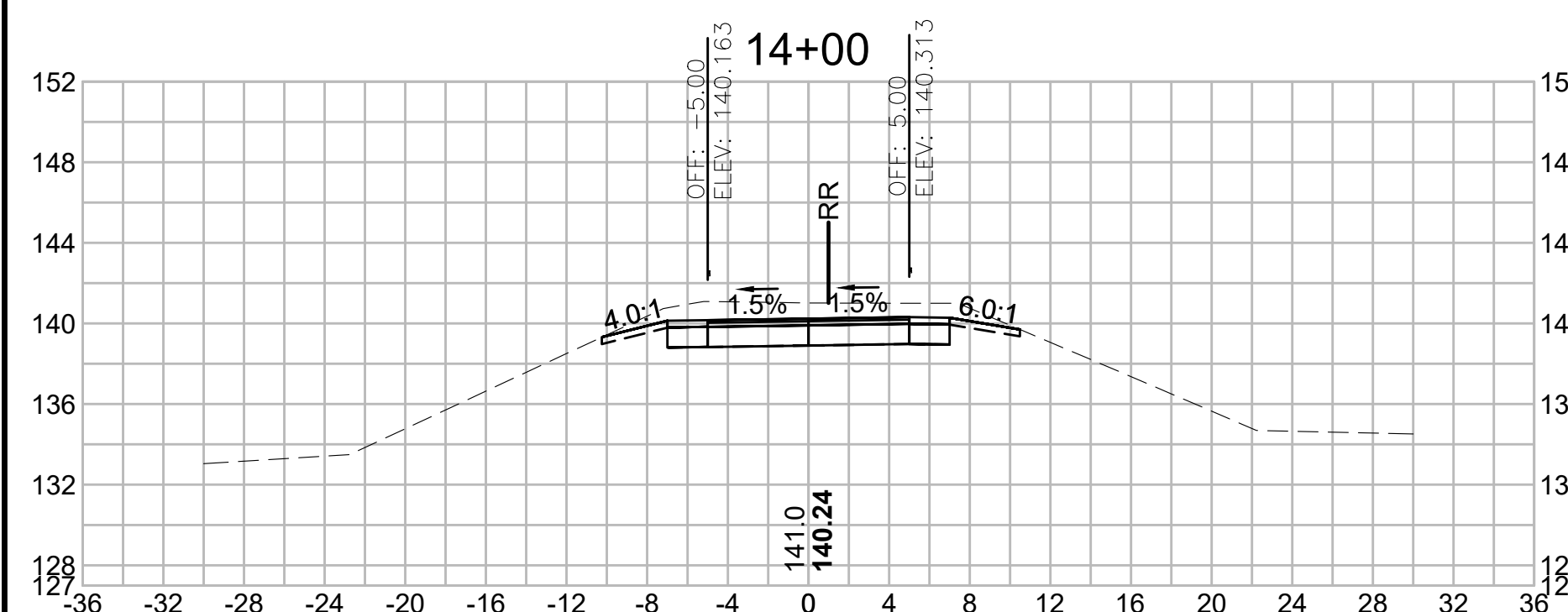
CROSS SECTIONS



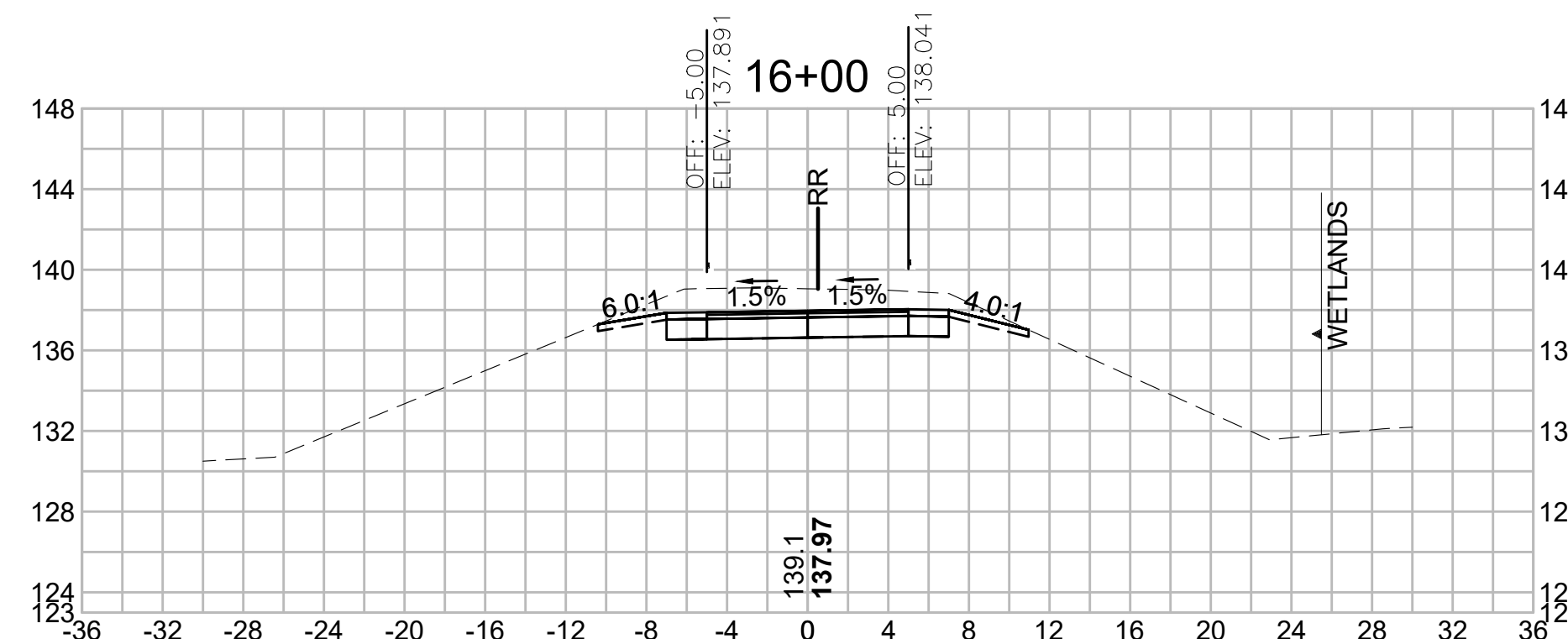
Total Volume at Station 14+50.00	
Cut Area	34.390
Fill Area	0.000
Cut Vol	63.853
Fill Vol	0.0
Cum Cut Vol	824.523
Cum Fill Vol	130.9
Net Vol	693.6



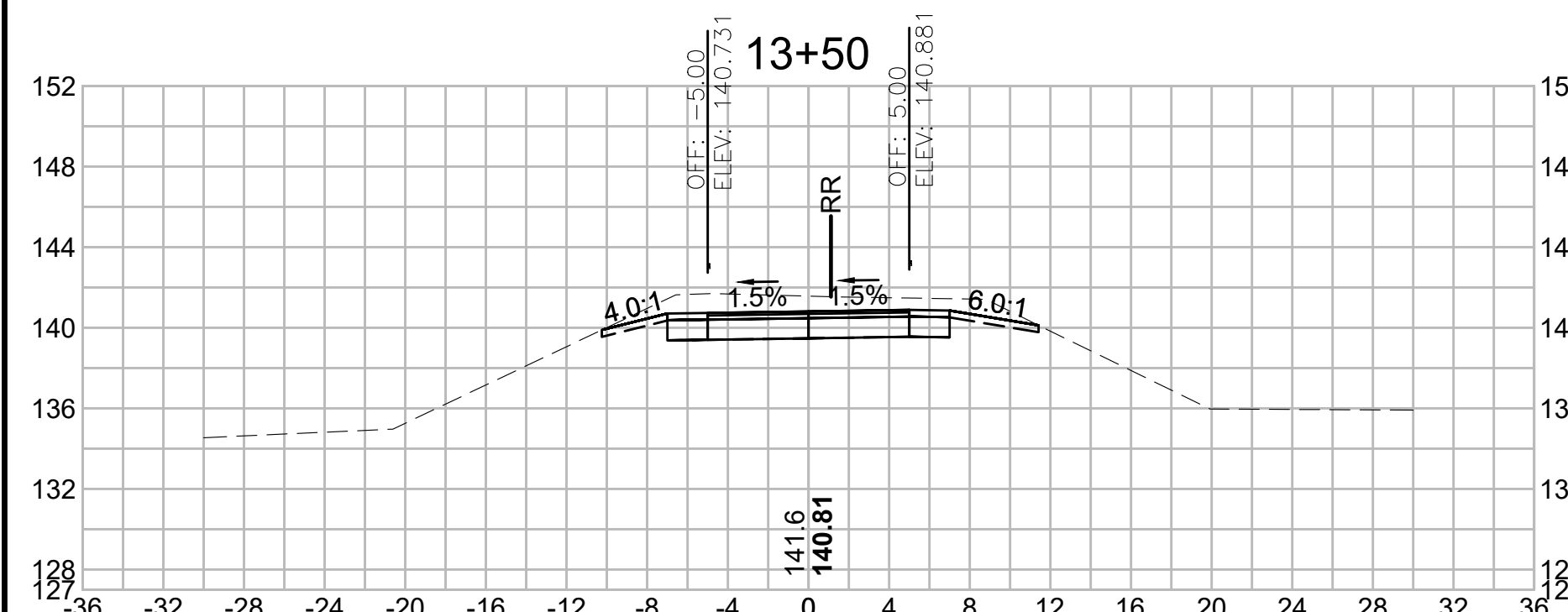
Total Volume at Station 16+50.00	
Cut Area	45.811
Fill Area	0.344
Cut Vol	78.457
Fill Vol	0.3
Cum Cut Vol	1113.097
Cum Fill Vol	131.2
Net Vol	981.9



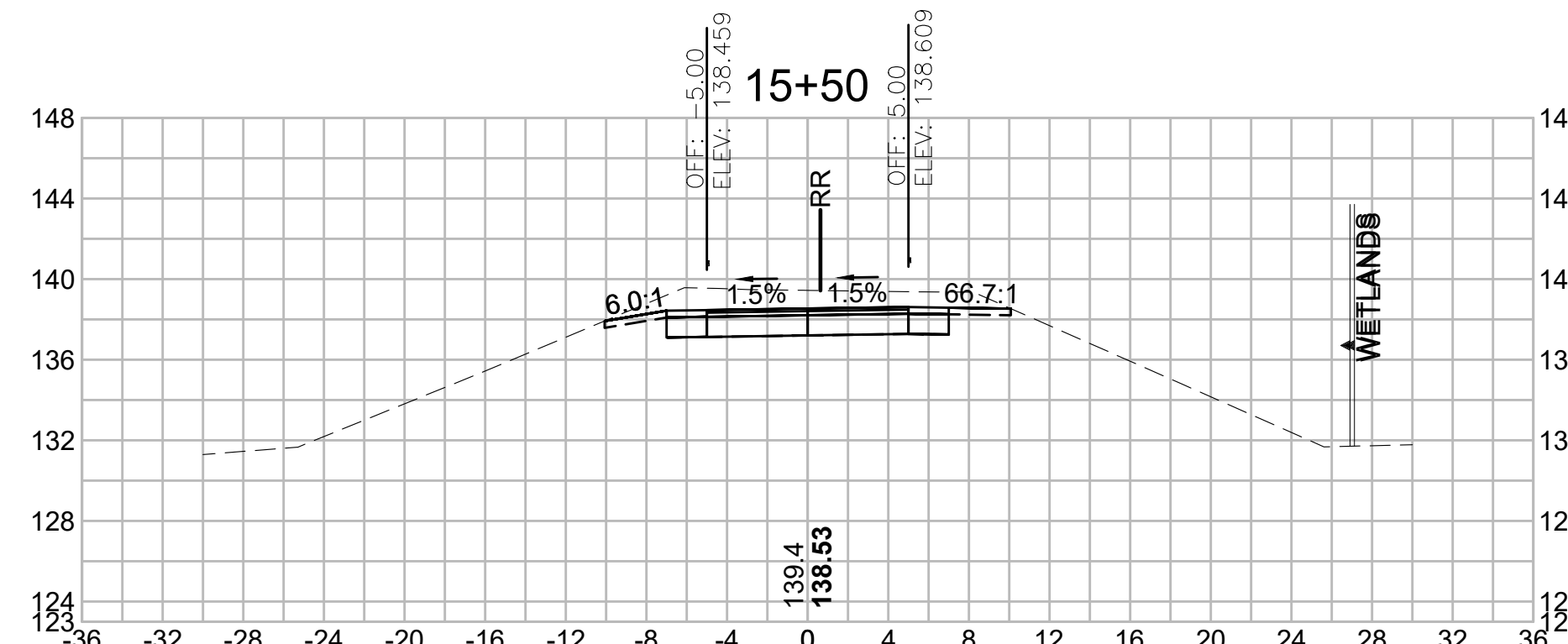
Total Volume at Station 14+00.00	
Cut Area	34.571
Fill Area	0.000
Cut Vol	64.937
Fill Vol	0.0
Cum Cut Vol	760.670
Cum Fill Vol	130.9
Net Vol	629.7



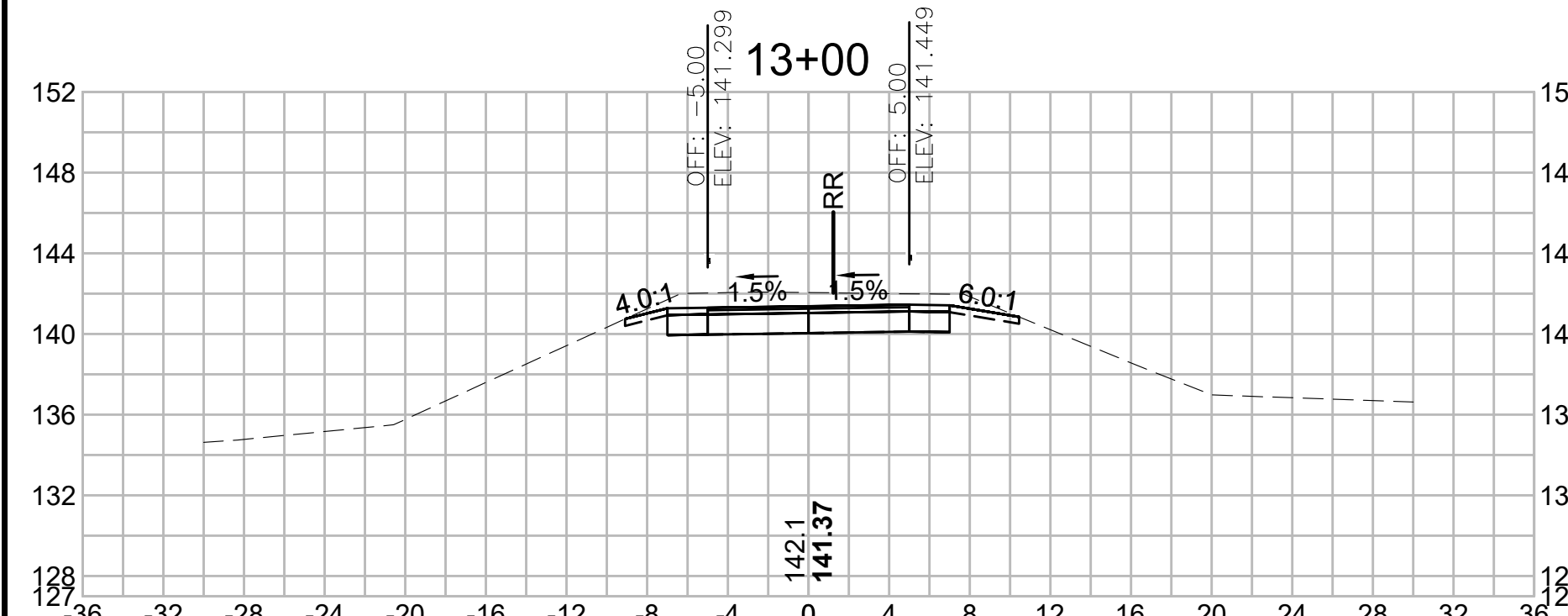
Total Volume at Station 16+00.00	
Cut Area	38.922
Fill Area	0.000
Cut Vol	69.642
Fill Vol	0.0
Cum Cut Vol	1034.640
Cum Fill Vol	130.9
Net Vol	903.7



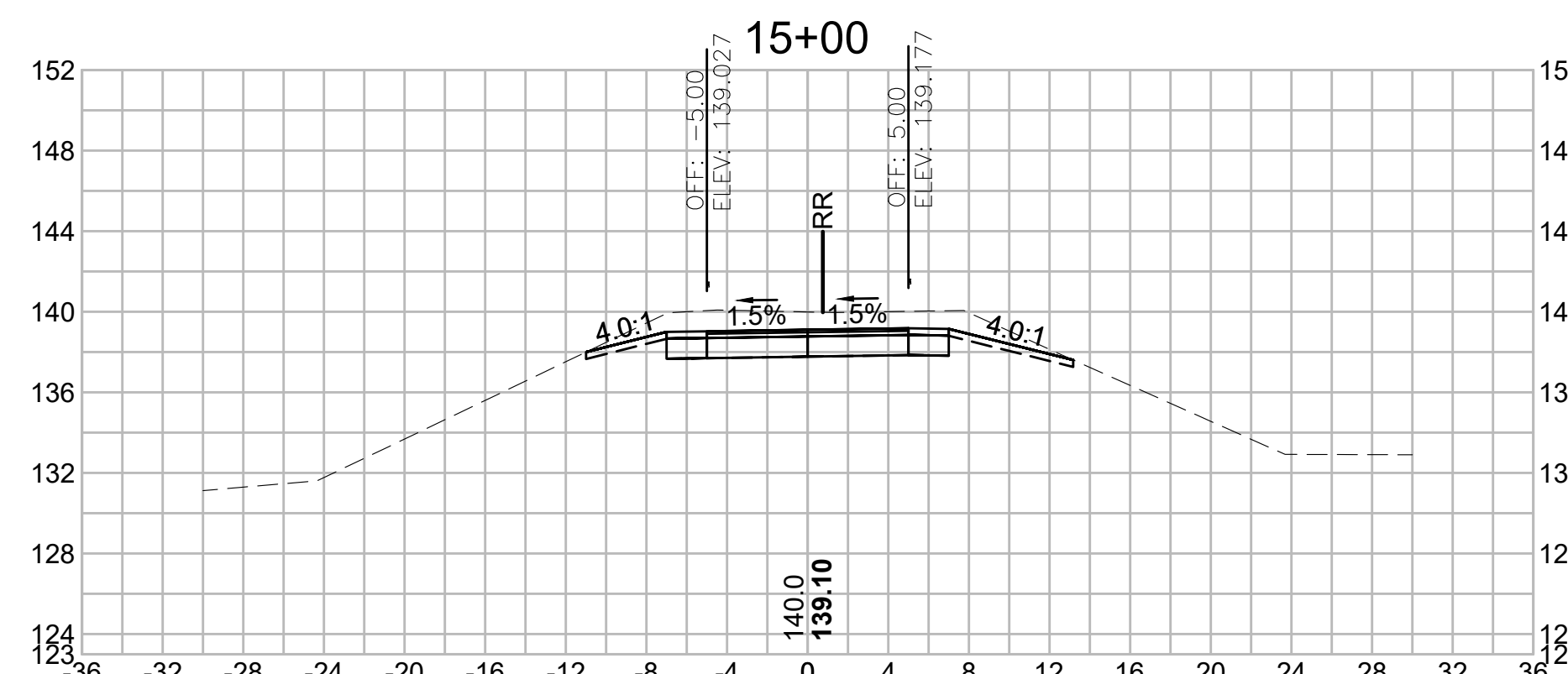
Total Volume at Station 13+50.00	
Cut Area	35.560
Fill Area	0.000
Cut Vol	62.058
Fill Vol	0.0
Cum Cut Vol	695.734
Cum Fill Vol	130.9
Net Vol	564.8



Total Volume at Station 15+50.00	
Cut Area	36.291
Fill Area	0.000
Cut Vol	71.119
Fill Vol	0.0
Cum Cut Vol	964.999
Cum Fill Vol	130.9
Net Vol	834.1



Total Volume at Station 13+00.00	
Cut Area	31.462
Fill Area	0.000
Cut Vol	57.854
Fill Vol	0.0
Cum Cut Vol	633.676
Cum Fill Vol	130.9
Net Vol	502.8

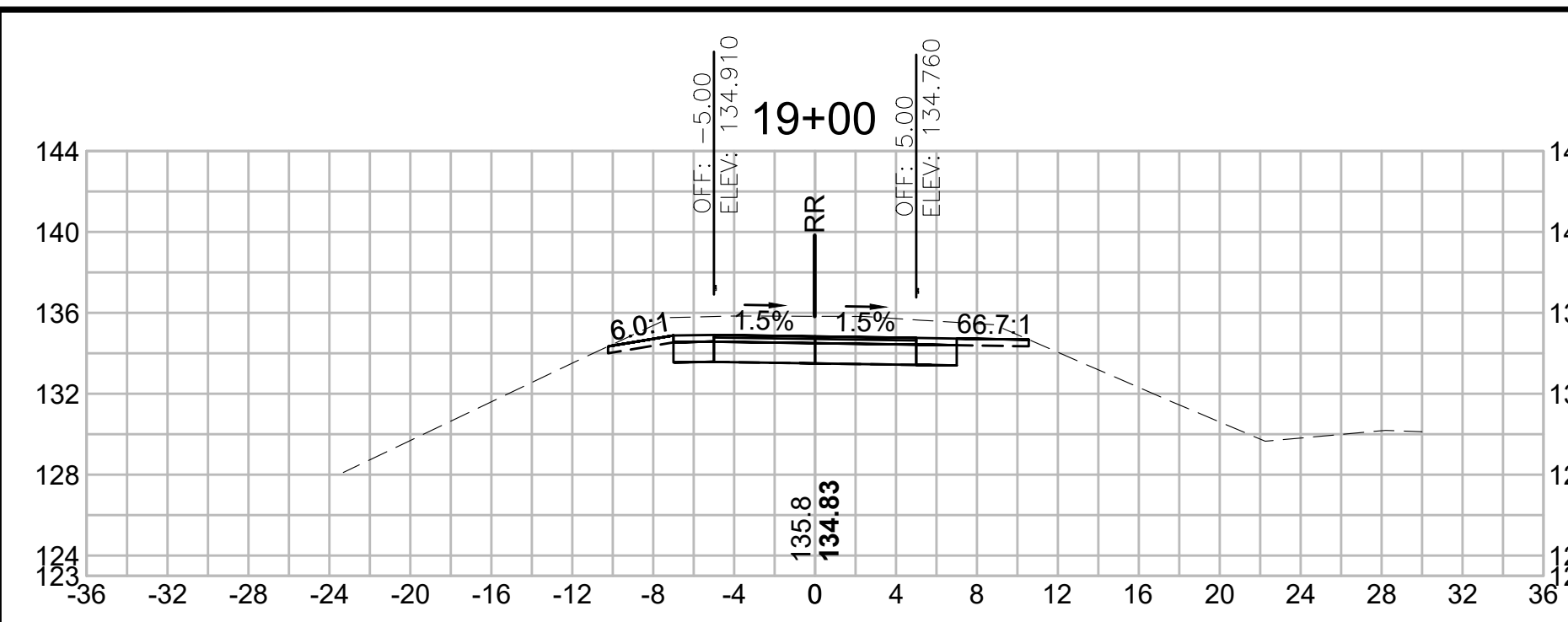


Total Volume at Station 15+00.00	
Cut Area	40.517
Fill Area	0.000
Cut Vol	69.358
Fill Vol	0.0
Cum Cut Vol	893.880
Cum Fill Vol	130.9
Net Vol	763.0

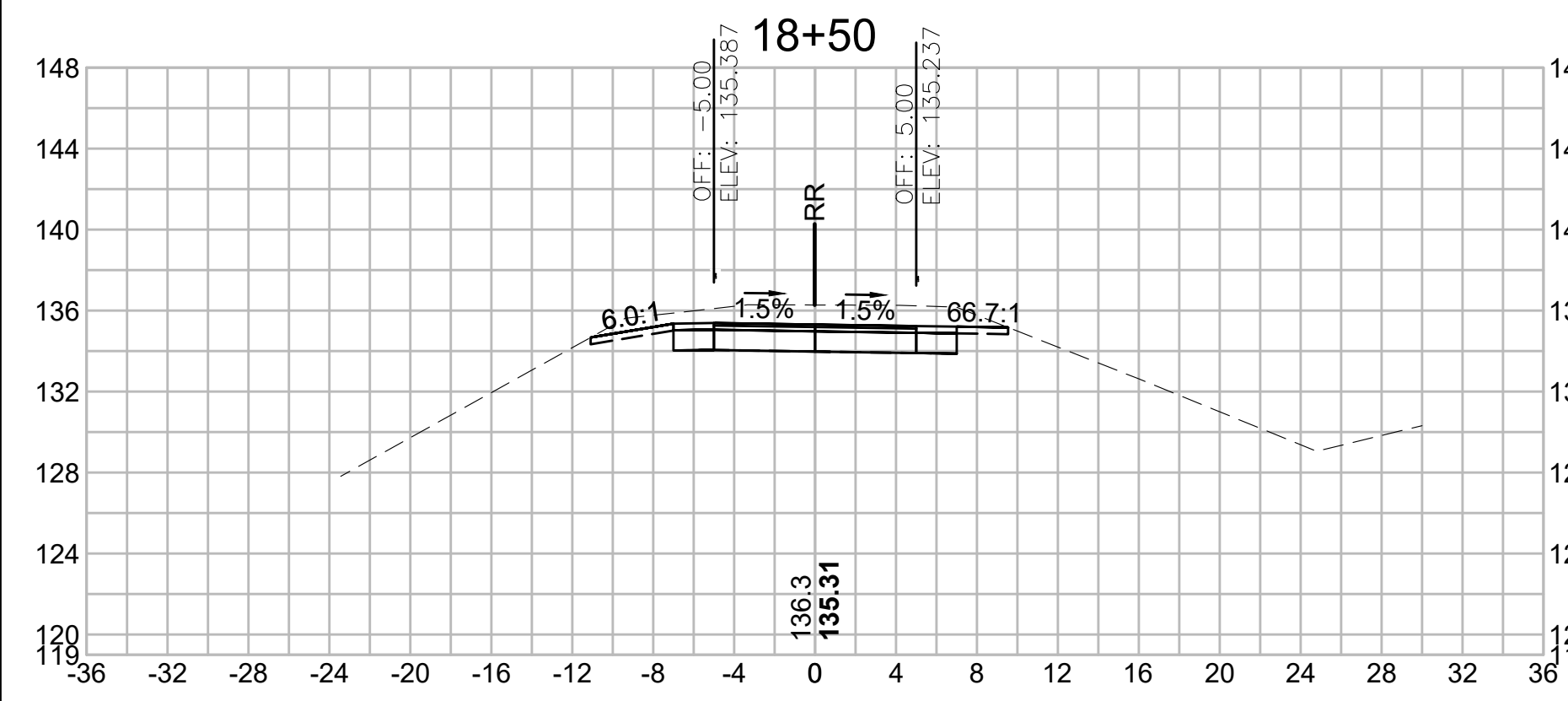
**SUBURBY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	63	73
PROJECT FILE NO. 613319			

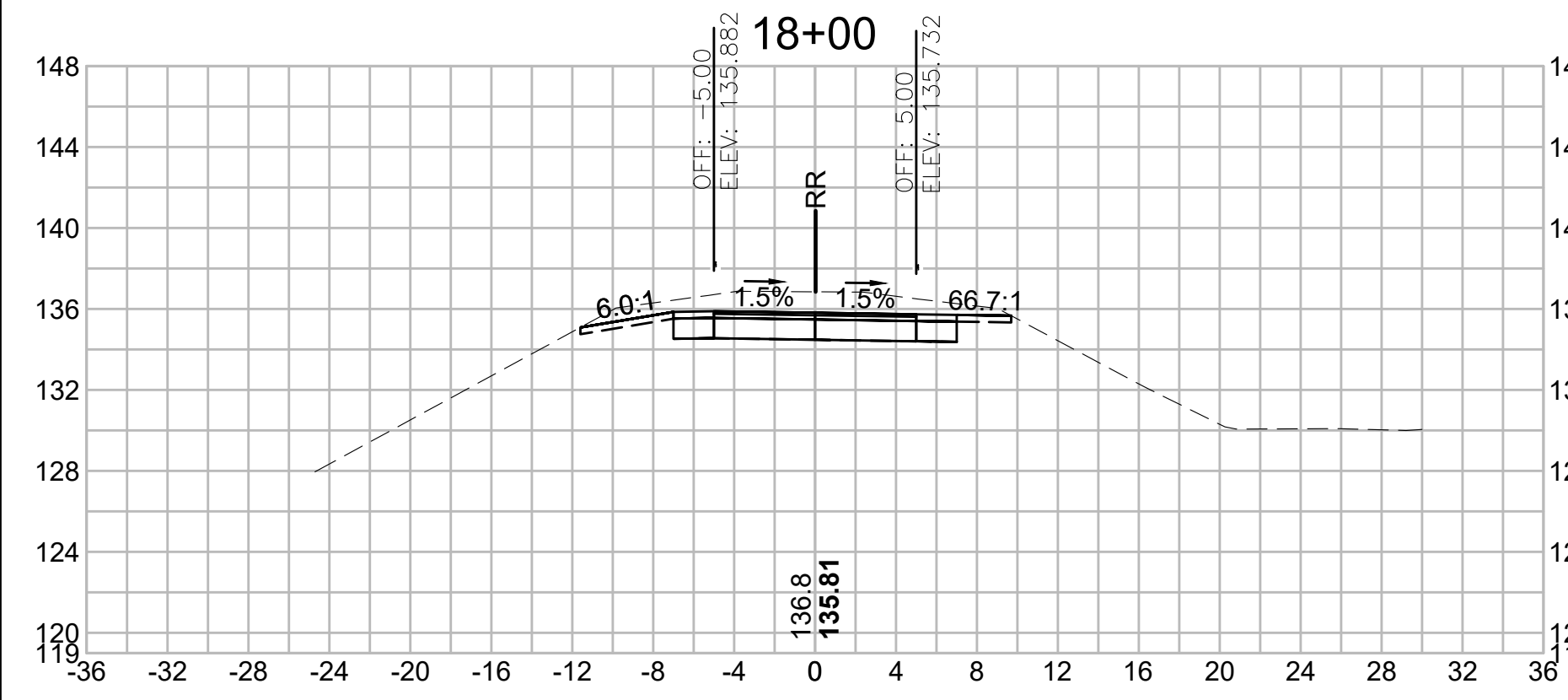
CROSS SECTIONS



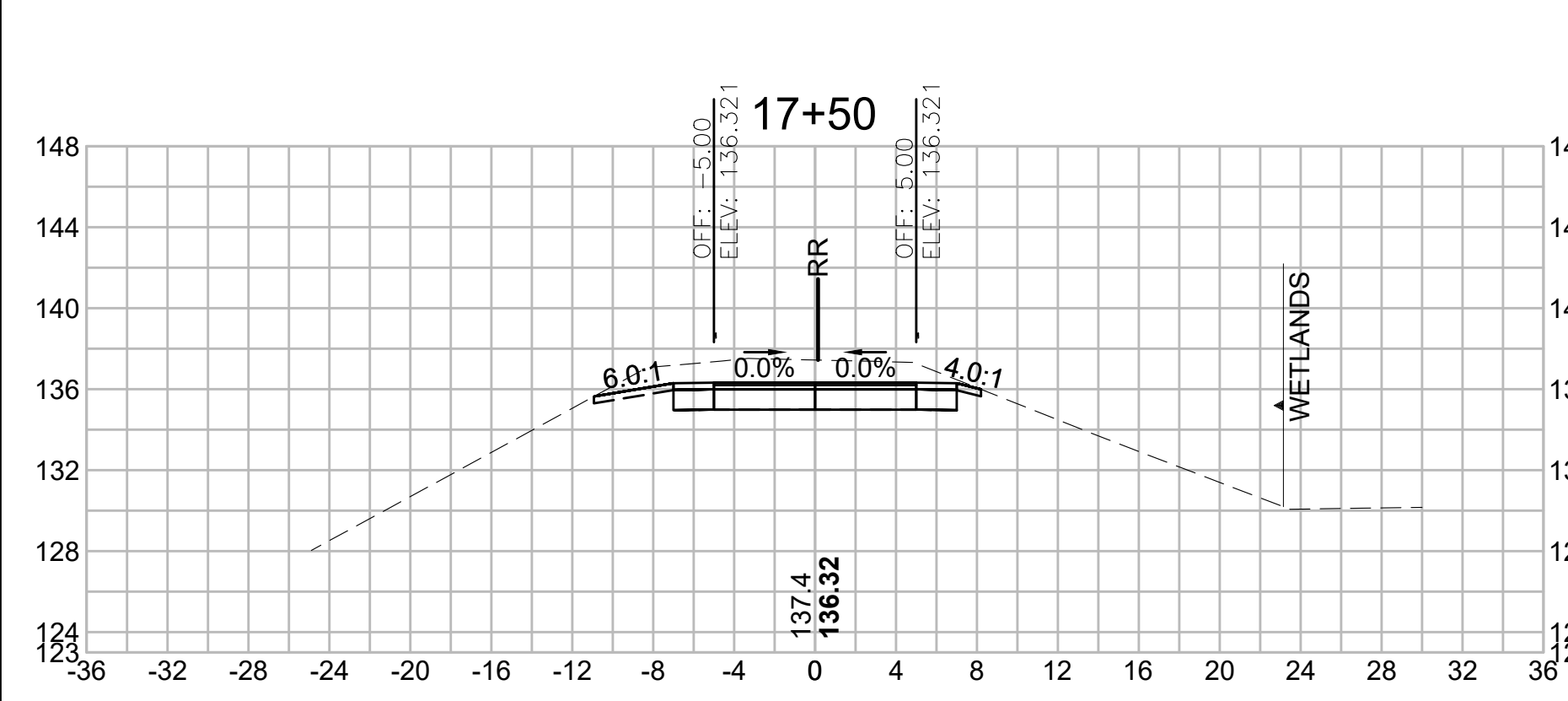
Total Volume at Station 19+00.00	
Cut Area	37.690
Fill Area	0.000
Cut Vol	68.944
Fill Vol	0.0
Cum Cut Vol	1476.501
Cum Fill Vol	131.6
Net Vol	1344.9



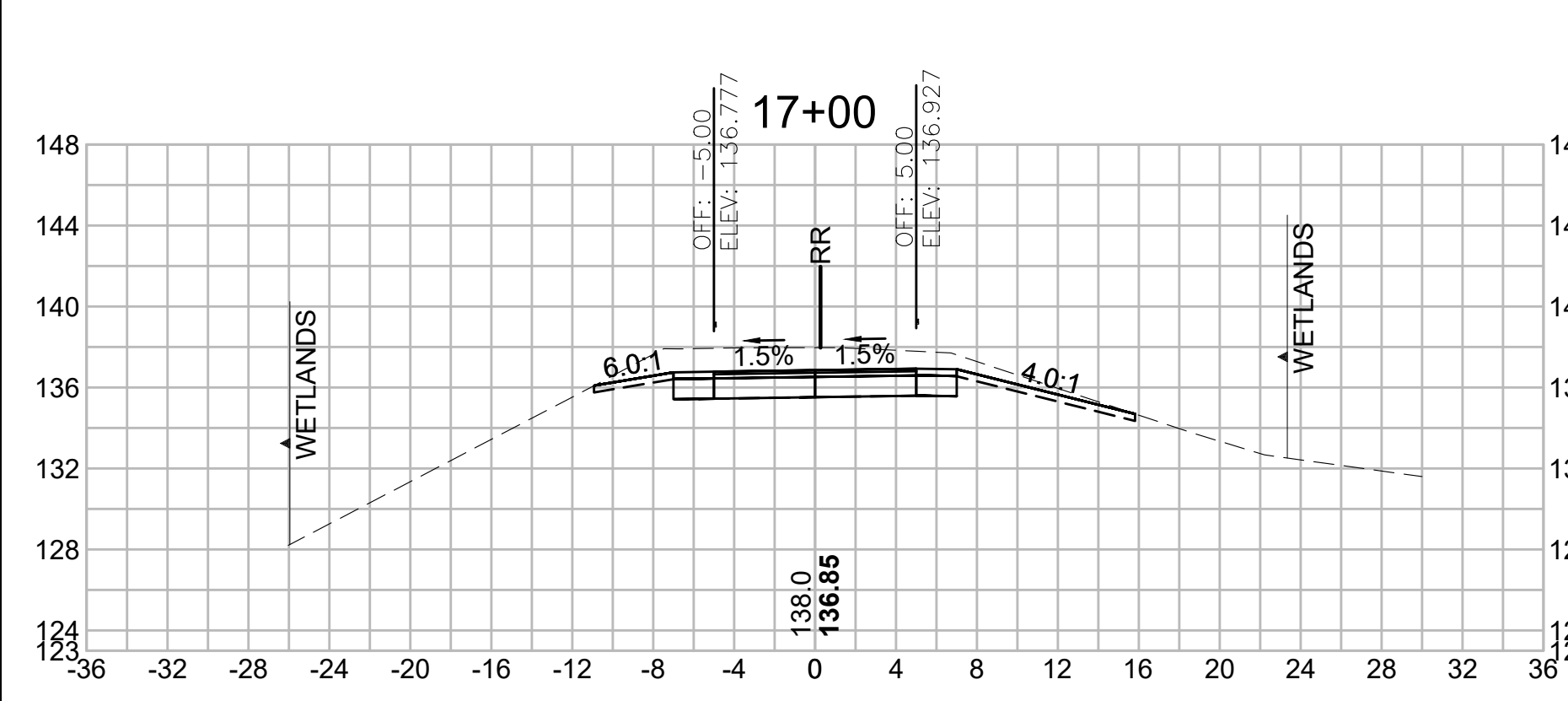
Total Volume at Station 18+50.00	
Cut Area	36.768
Fill Area	0.000
Cut Vol	68.357
Fill Vol	0.0
Cum Cut Vol	1407.558
Cum Fill Vol	131.6
Net Vol	1276.0



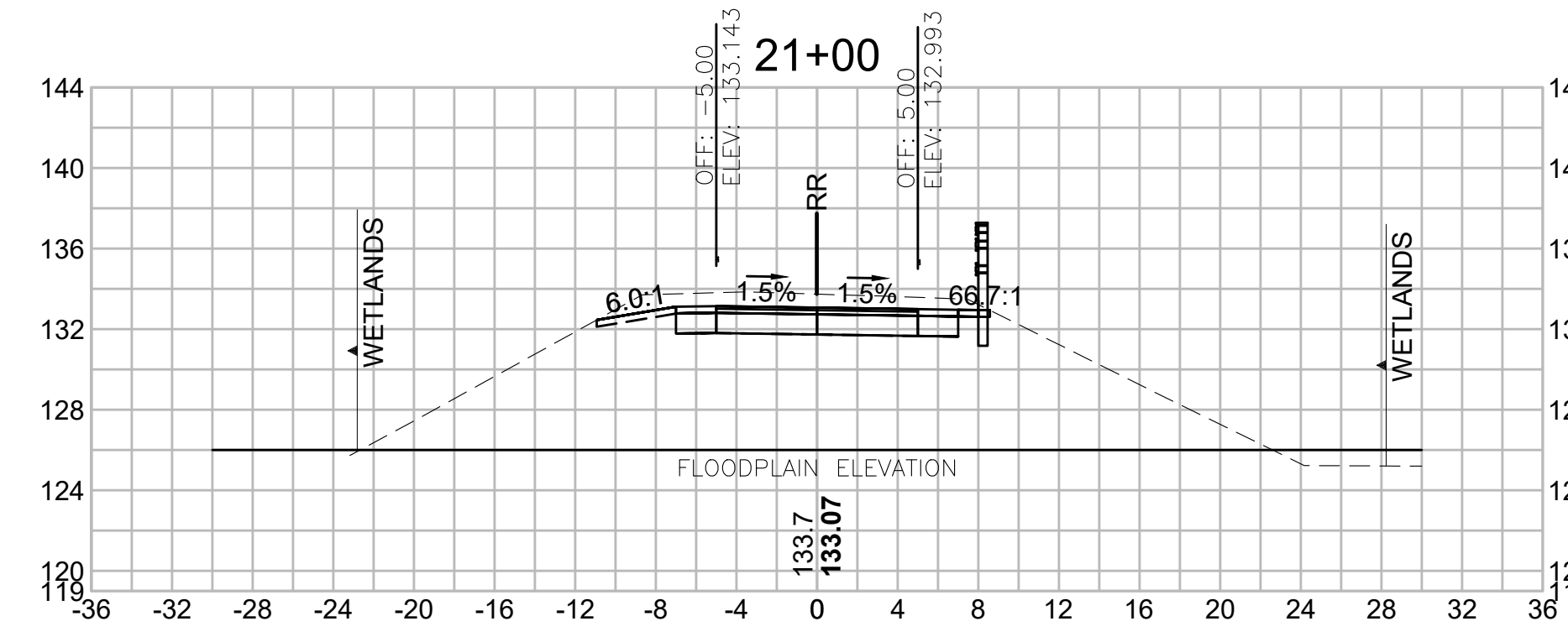
Total Volume at Station 18+00.00	
Cut Area	37.057
Fill Area	0.000
Cut Vol	68.628
Fill Vol	0.0
Cum Cut Vol	1339.201
Cum Fill Vol	131.6
Net Vol	1207.6



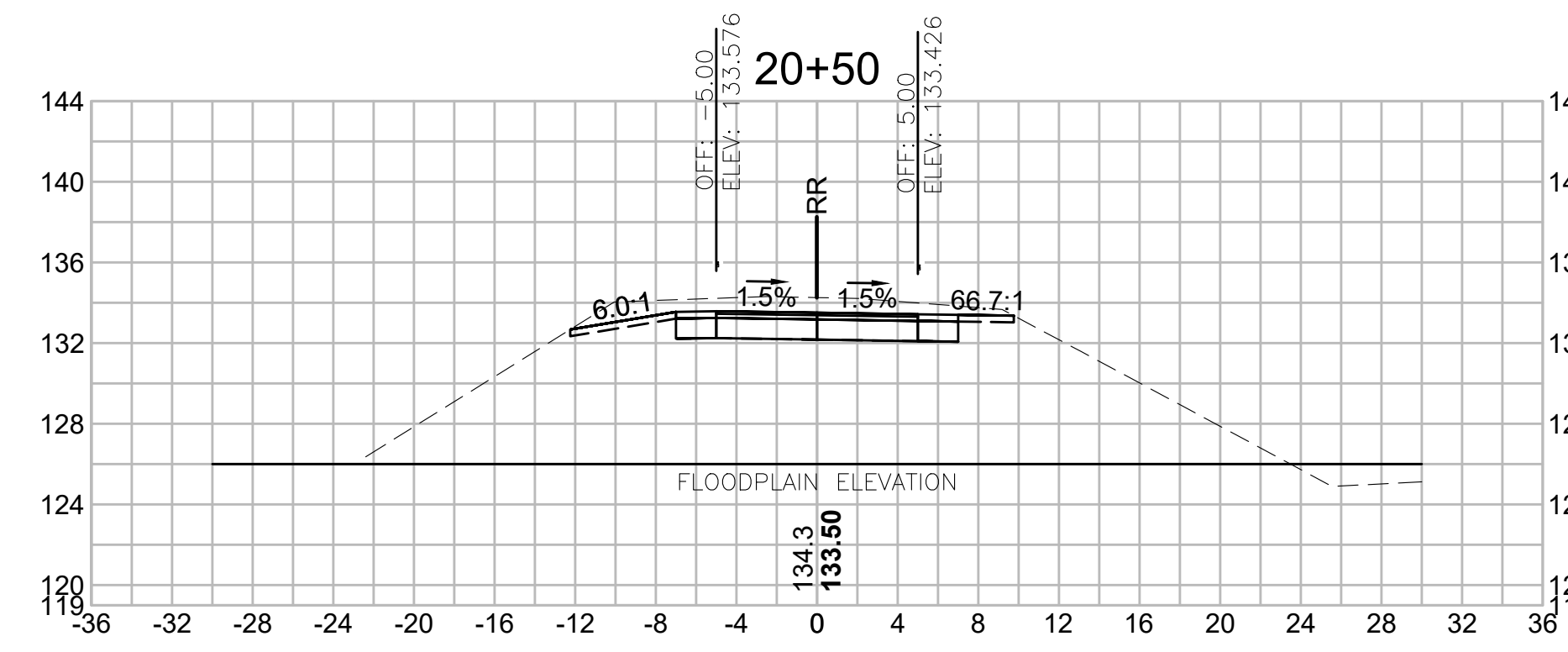
Total Volume at Station 17+50.00	
Cut Area	37.061
Fill Area	0.000
Cut Vol	74.687
Fill Vol	0.0
Cum Cut Vol	1270.573
Cum Fill Vol	131.6
Net Vol	1139.0



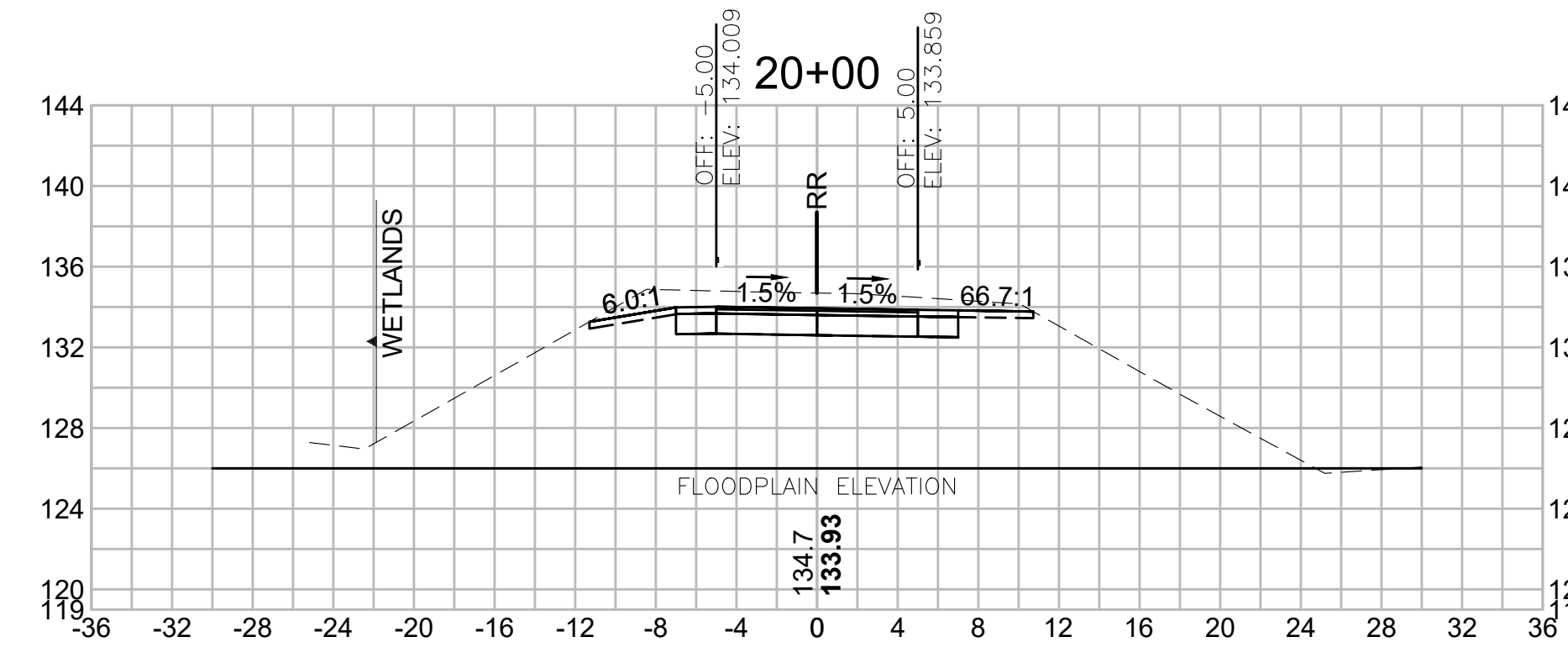
Total Volume at Station 17+00.00	
Cut Area	43.601
Fill Area	0.000
Cut Vol	82.790
Fill Vol	0.3
Cum Cut Vol	1195.886
Cum Fill Vol	131.6
Net Vol	1064.3



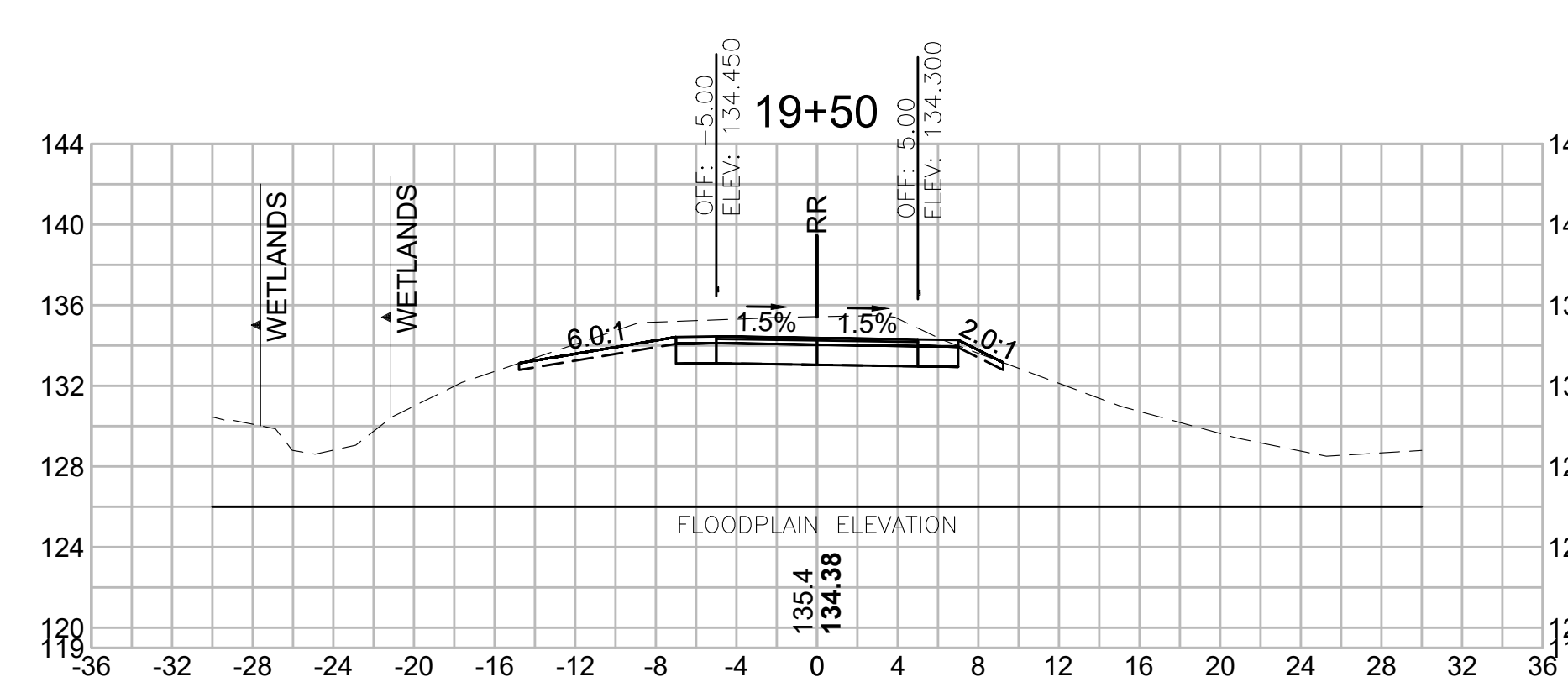
Total Volume at Station 21+00.00	
Cut Area	32.400
Fill Area	0.000
Cut Vol	62.517
Fill Vol	0.0
Cum Cut Vol	1744.018
Cum Fill Vol	131.6
Net Vol	1612.5



Total Volume at Station 20+50.00	
Cut Area	35.118
Fill Area	0.000
Cut Vol	65.901
Fill Vol	0.0
Cum Cut Vol	1681.501
Cum Fill Vol	131.6
Net Vol	1549.9



Total Volume at Station 20+00.00	
Cut Area	36.055
Fill Area	0.000
Cut Vol	68.793
Fill Vol	0.0
Cum Cut Vol	1615.601
Cum Fill Vol	131.6
Net Vol	1484.0



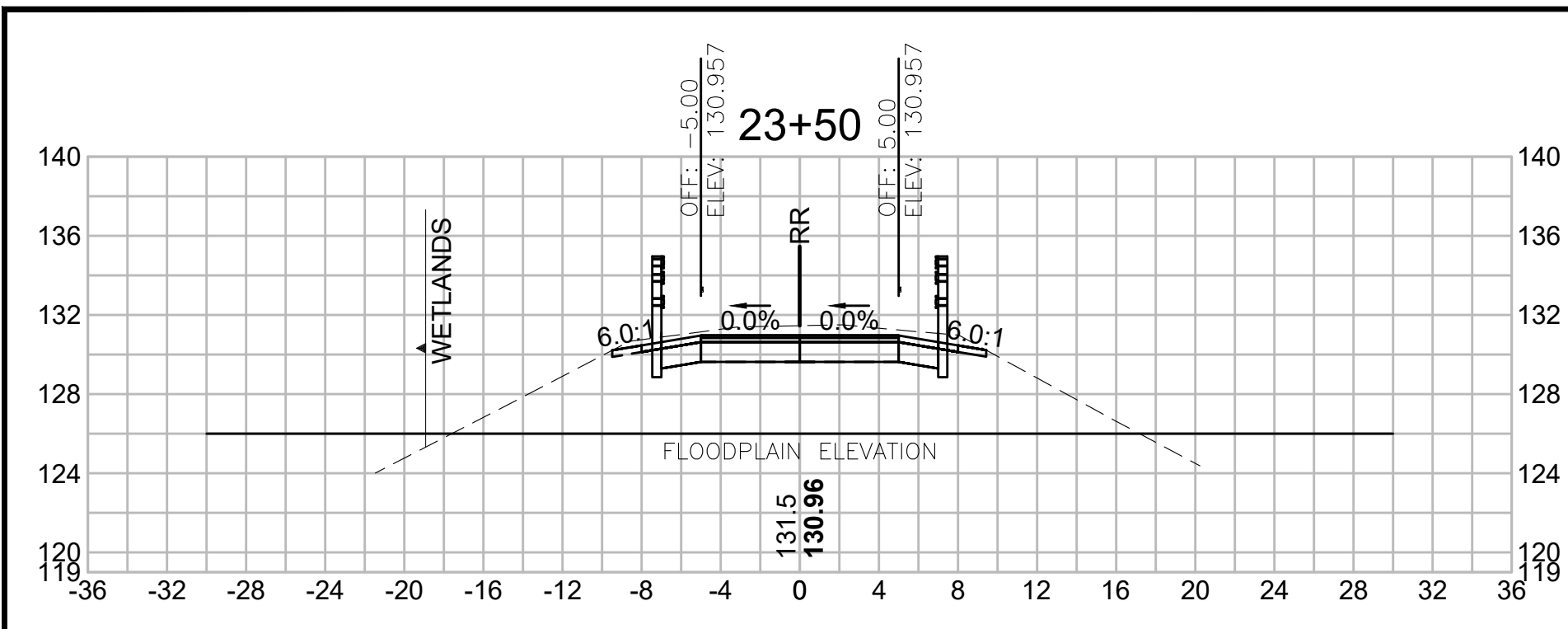
Total Volume at Station 19+50.00	
Cut Area	38.242
Fill Area	0.000
Cut Vol	70.308
Fill Vol	0.0
Cum Cut Vol	1546.808
Cum Fill Vol	131.6
Net Vol	1415.3

**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

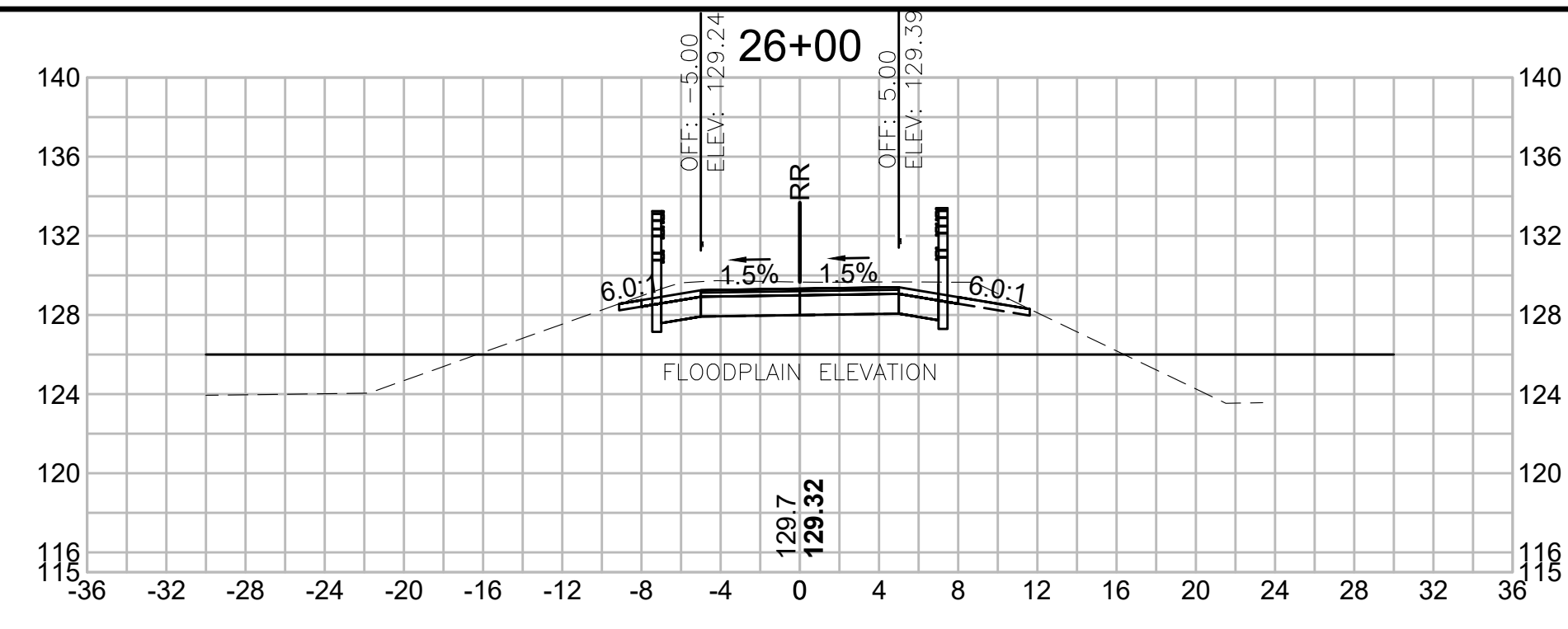
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	64	73

PROJECT FILE NO. 613319

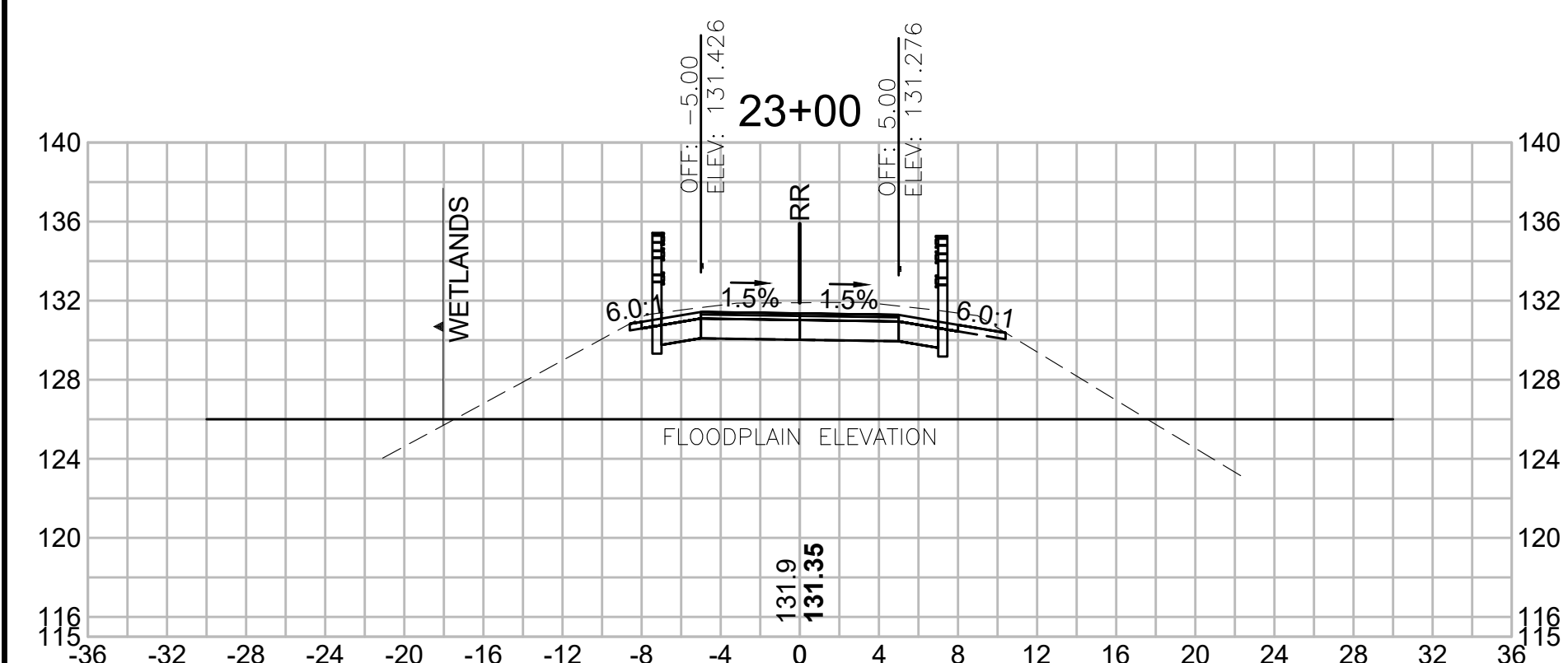
CROSS SECTIONS



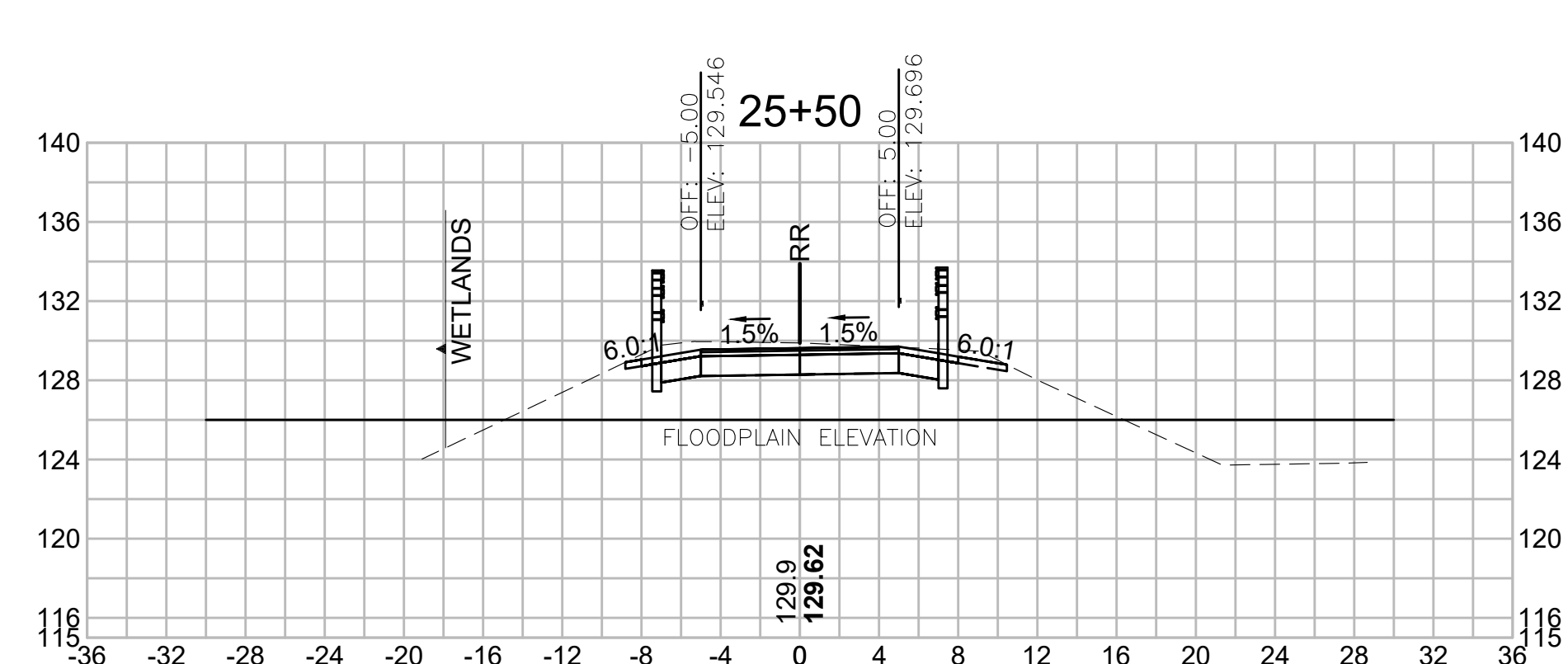
Total Volume at Station 23+50.00	
Cut Area	27.223
Fill Area	0.000
Cut Vol	51.972
Fill Vol	0.0
Cum Cut Vol	2029.881
Cum Fill Vol	131.6
Net Vol	1898.3



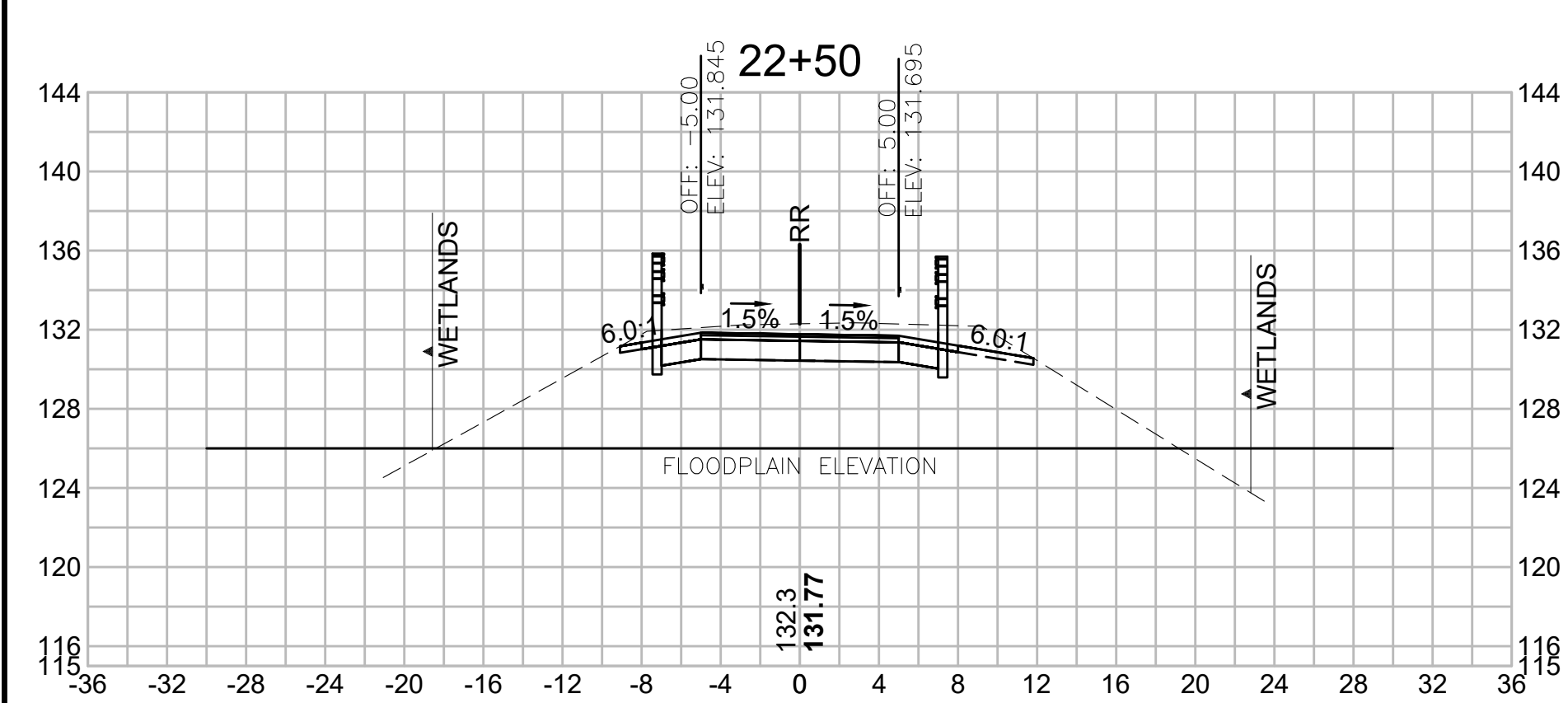
Total Volume at Station 26+00.00	
Cut Area	29.263
Fill Area	0.000
Cut Vol	50.629
Fill Vol	0.0
Cum Cut Vol	2278.210
Cum Fill Vol	132.2
Net Vol	2146.0



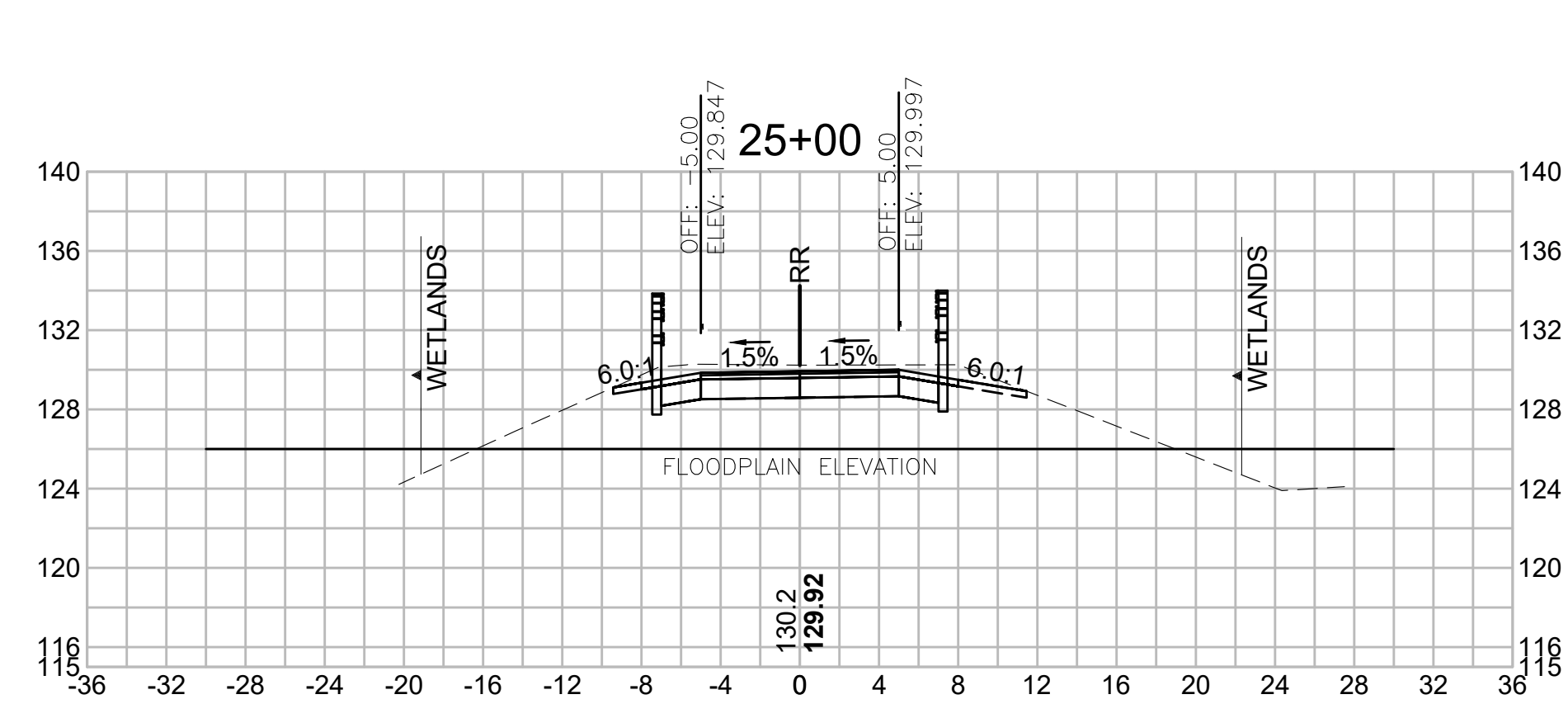
Total Volume at Station 23+00.00	
Cut Area	28.906
Fill Area	0.000
Cut Vol	57.040
Fill Vol	0.0
Cum Cut Vol	1977.910
Cum Fill Vol	131.6
Net Vol	1846.4



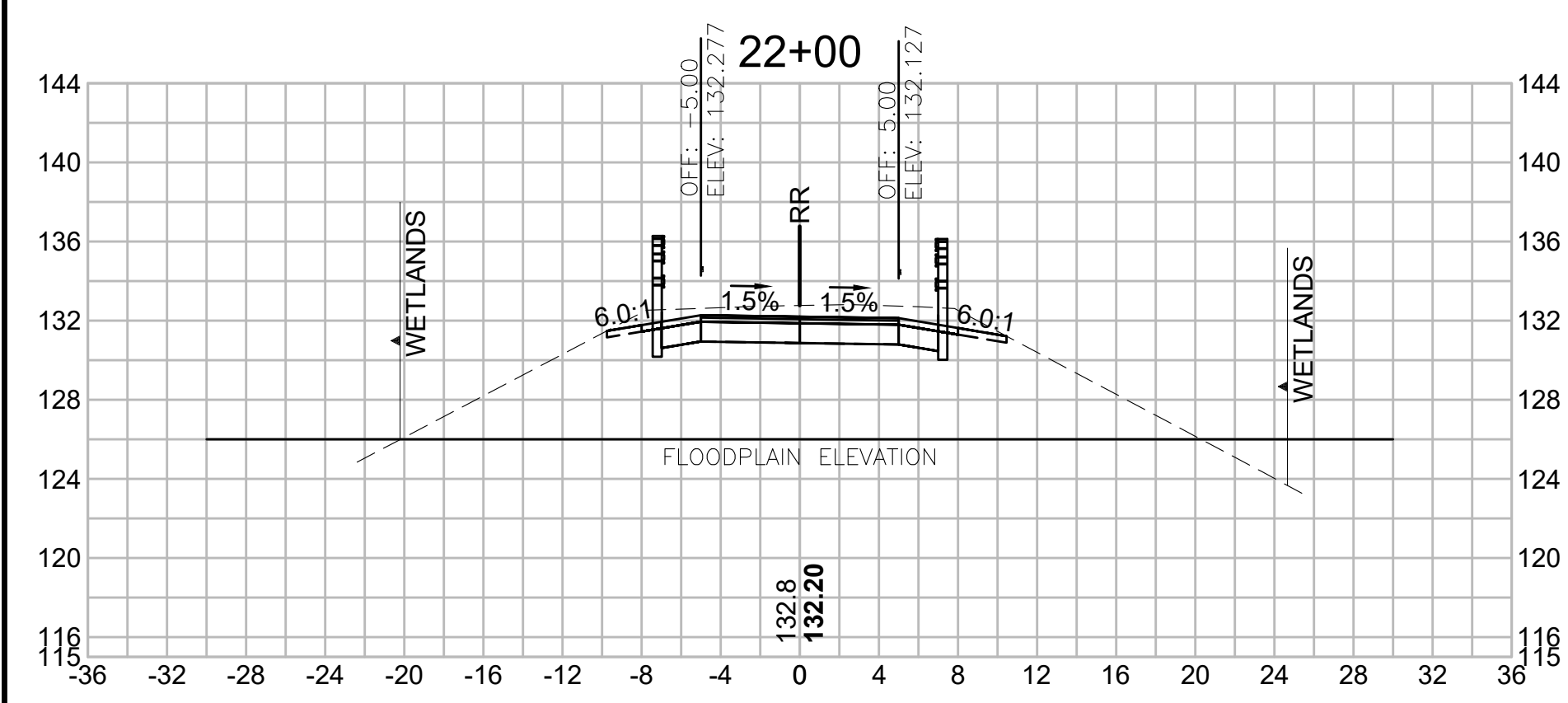
Total Volume at Station 25+50.00	
Cut Area	25.416
Fill Area	0.000
Cut Vol	50.309
Fill Vol	0.0
Cum Cut Vol	2227.581
Cum Fill Vol	132.2
Net Vol	2095.3



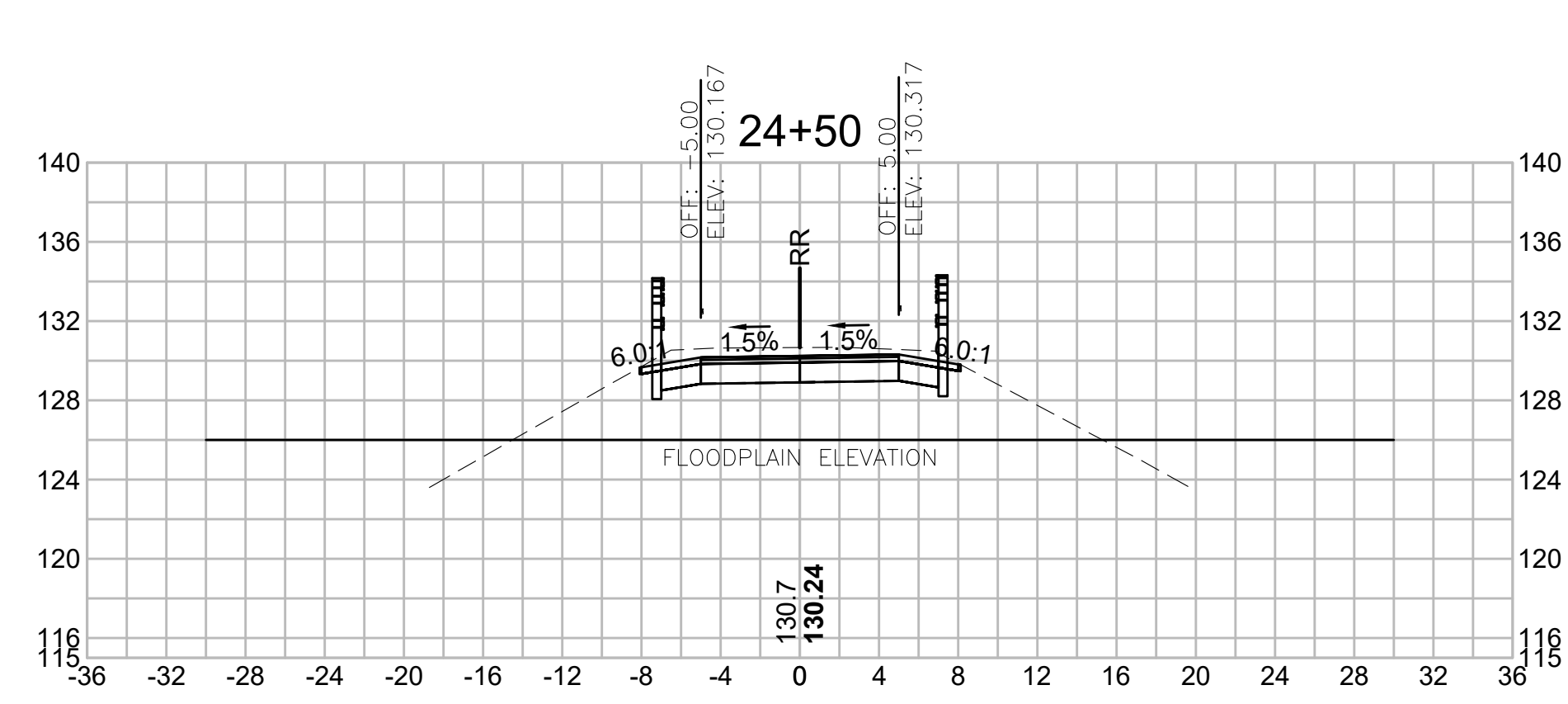
Total Volume at Station 22+50.00	
Cut Area	32.697
Fill Area	0.000
Cut Vol	59.676
Fill Vol	0.0
Cum Cut Vol	1920.870
Cum Fill Vol	131.6
Net Vol	1789.3



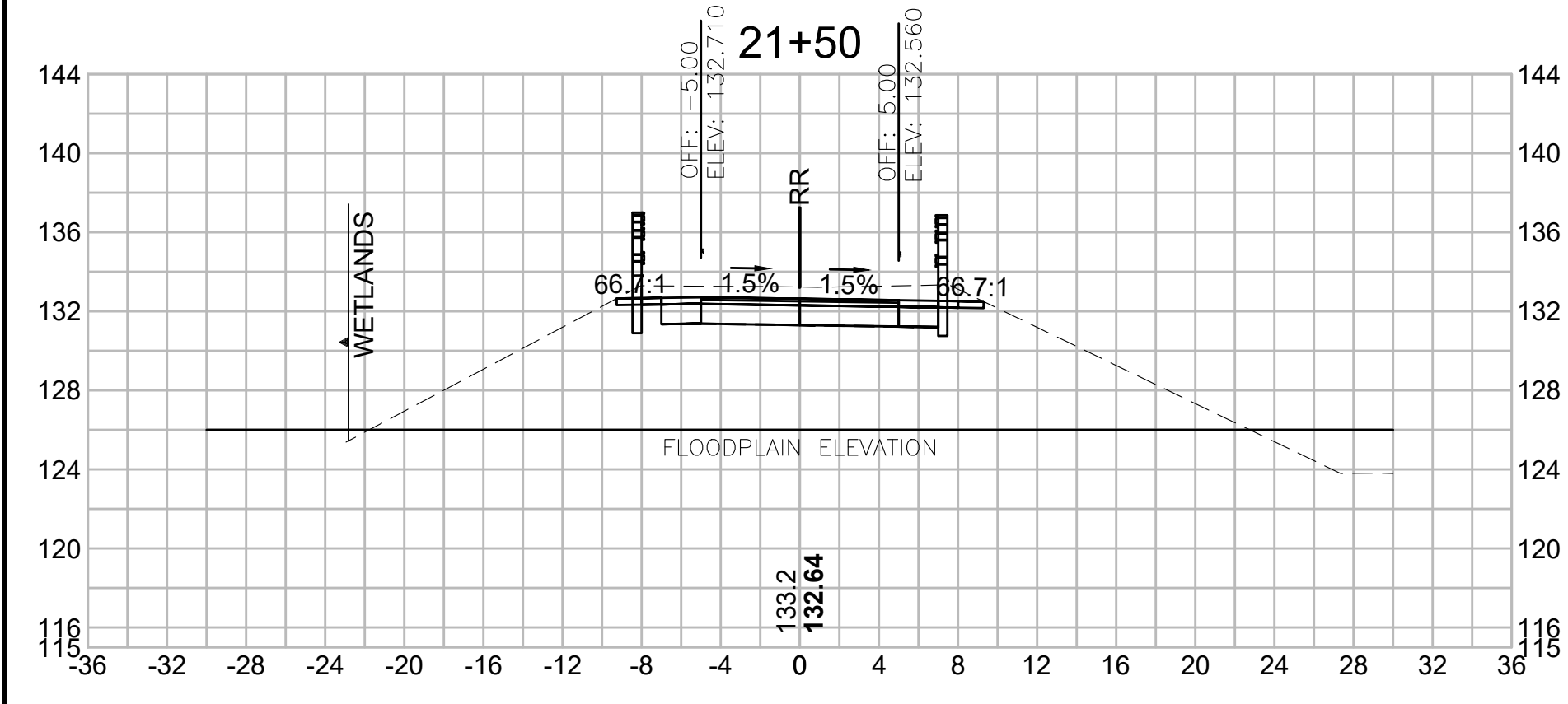
Total Volume at Station 25+00.00	
Cut Area	28.917
Fill Area	0.000
Cut Vol	50.534
Fill Vol	0.0
Cum Cut Vol	2177.273
Cum Fill Vol	132.2
Net Vol	2045.0



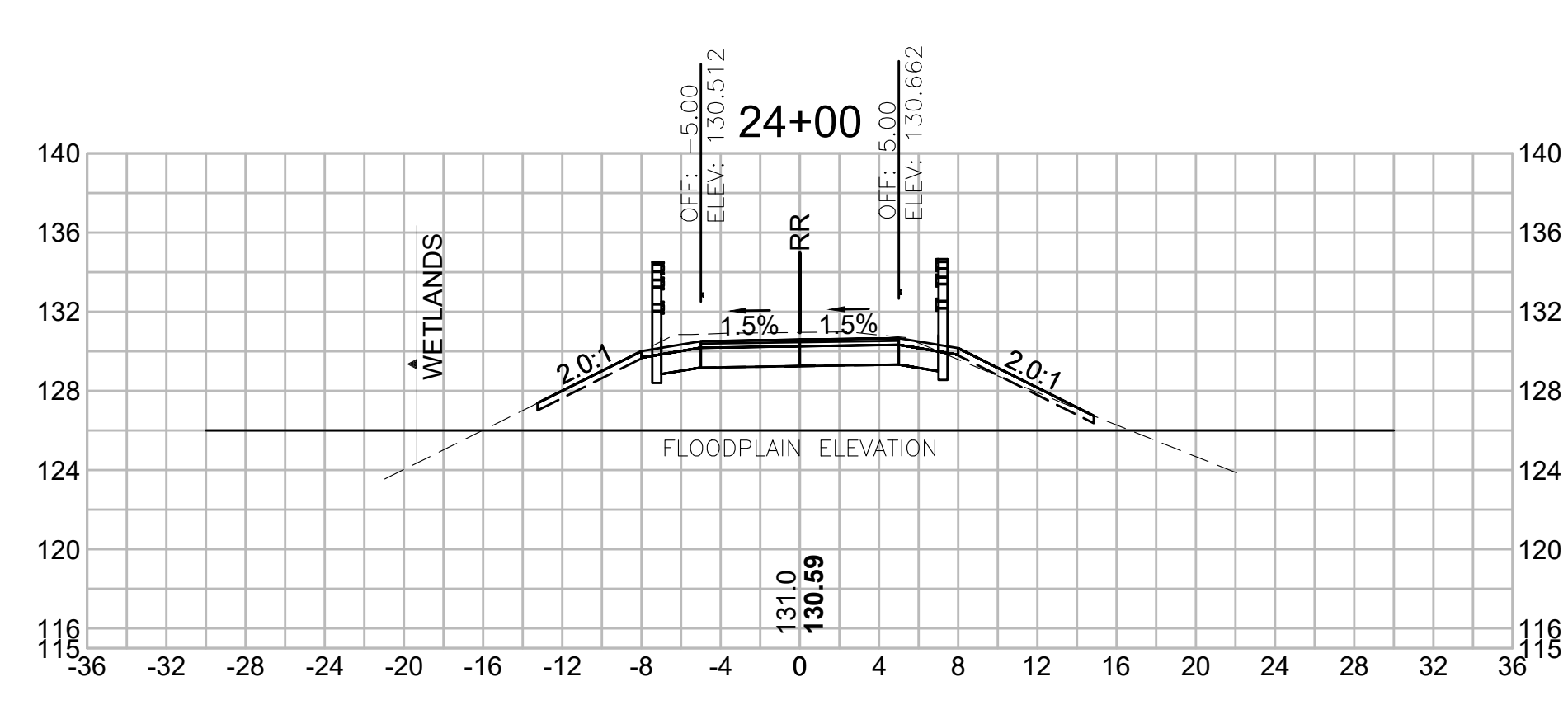
Total Volume at Station 22+00.00	
Cut Area	31.753
Fill Area	0.000
Cut Vol	58.289
Fill Vol	0.0
Cum Cut Vol	1861.194
Cum Fill Vol	131.6
Net Vol	1729.6



Total Volume at Station 24+50.00	
Cut Area	25.659
Fill Area	0.000
Cut Vol	47.706
Fill Vol	0.3
Cum Cut Vol	2126.740
Cum Fill Vol	132.2
Net Vol	1994.5



Total Volume at Station 21+50.00	
Cut Area	31.199
Fill Area	0.000
Cut Vol	58.888
Fill Vol	0.0
Cum Cut Vol	1802.905
Cum Fill Vol	131.6
Net Vol	1671.3

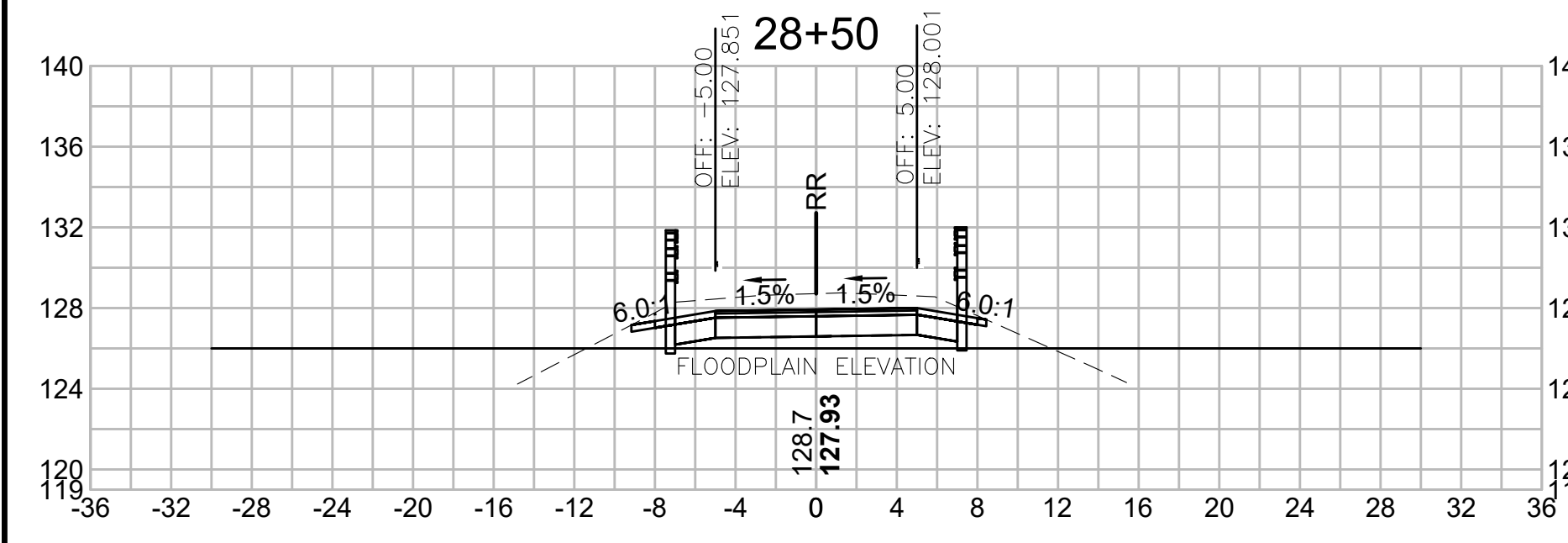


Total Volume at Station 24+00.00	
Cut Area	25.863
Fill Area	0.368
Cut Vol	49.154
Fill Vol	0.3
Cum Cut Vol	2079.035
Cum Fill Vol	131.9
Net Vol	1947.1

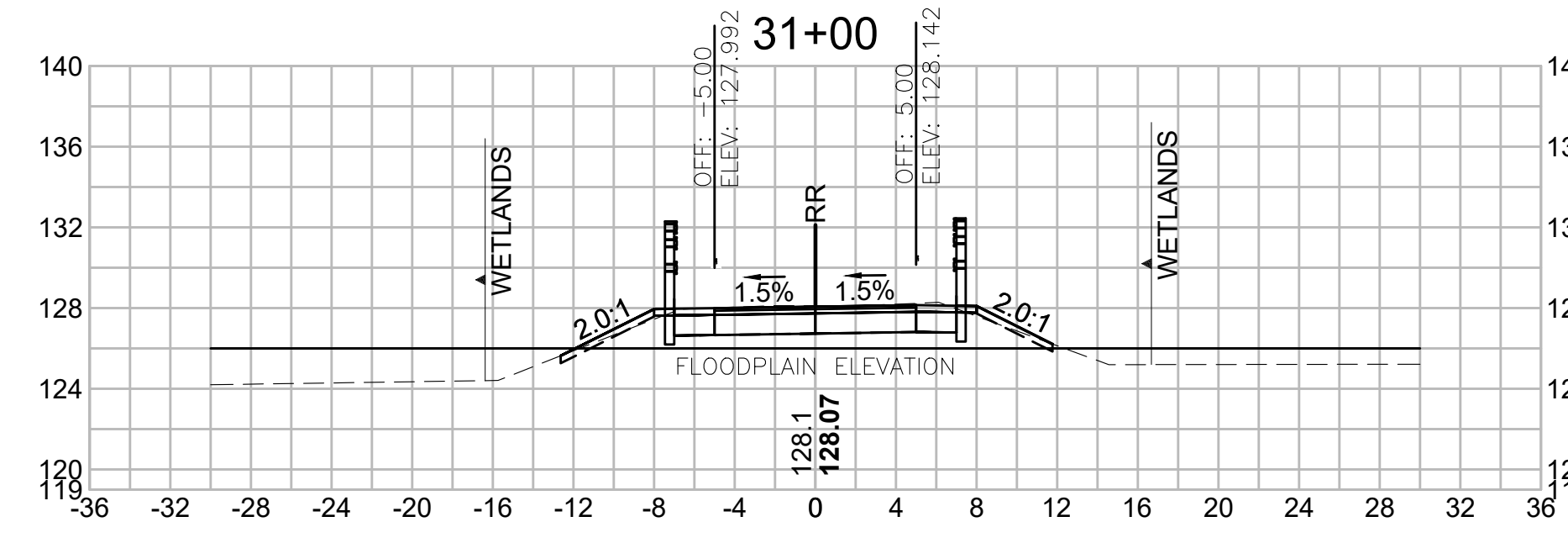
**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	65	73
PROJECT FILE NO. 613319			

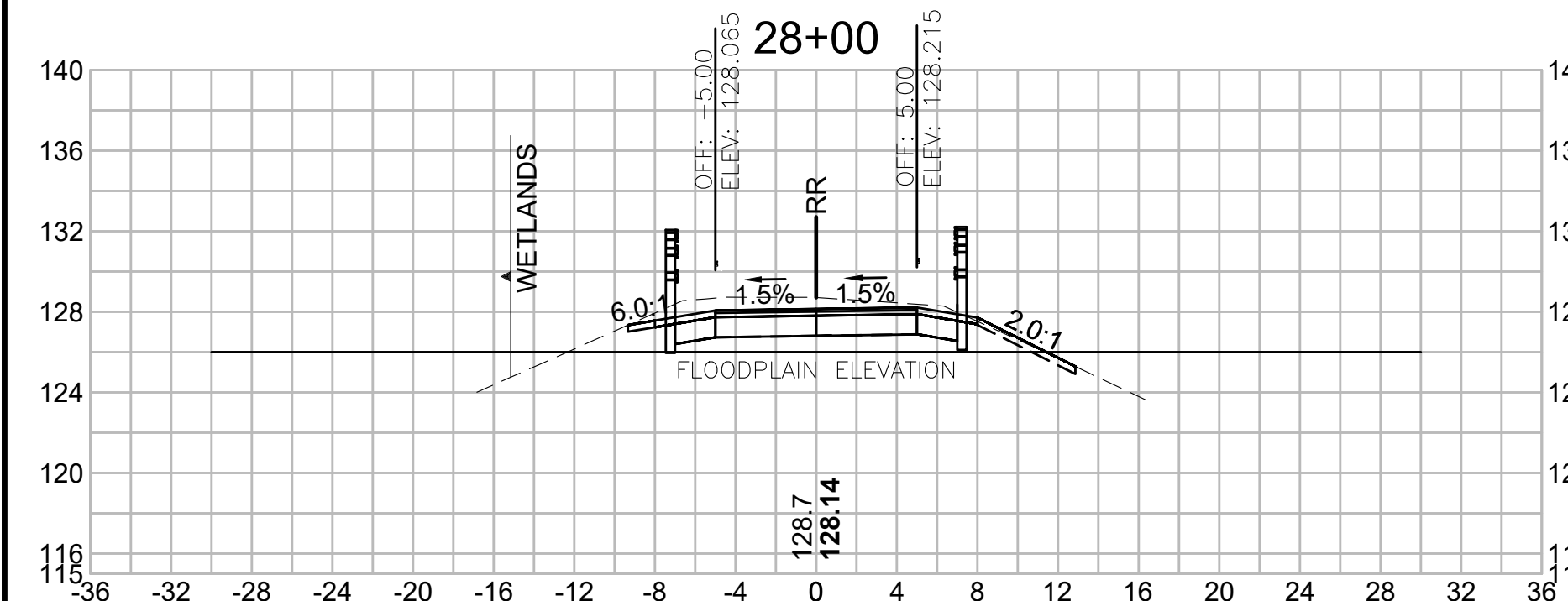
CROSS SECTIONS



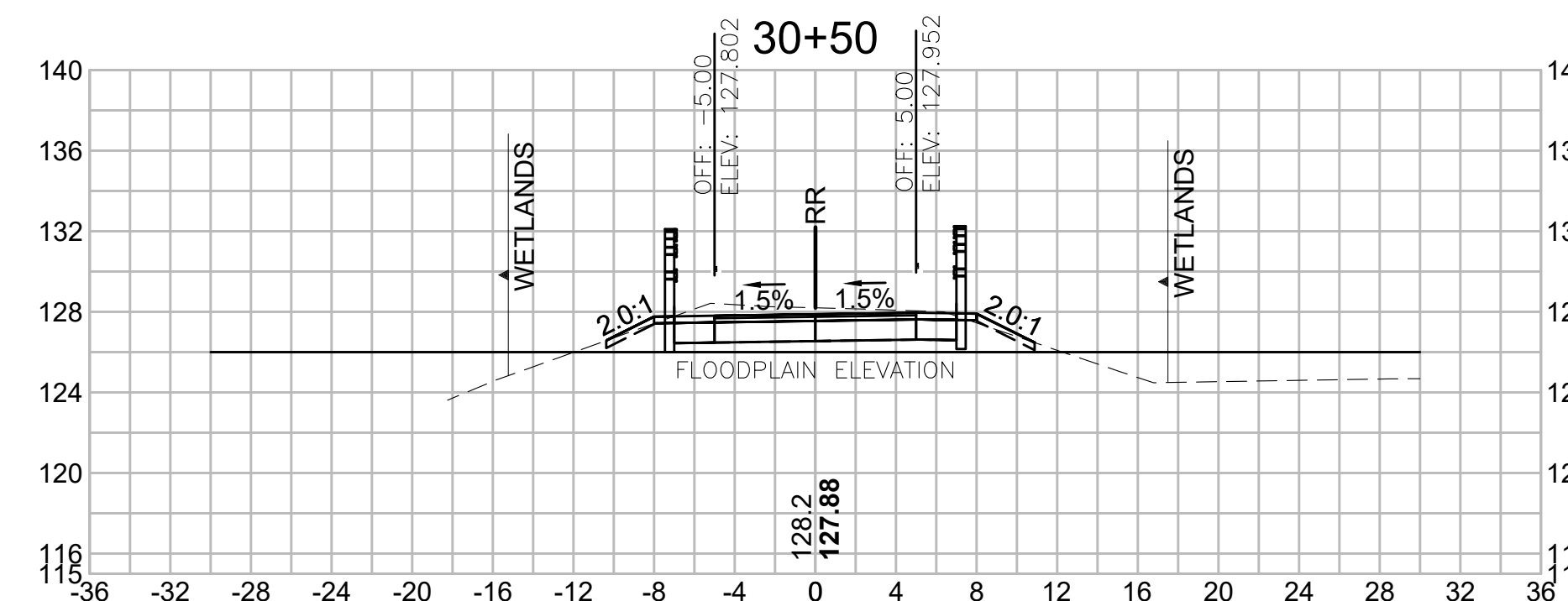
Total Volume at Station 28+50.00	
Cut Area	30.757
Fill Area	0.000
Cut Vol	54.954
Fill Vol	0.0
Cum Cut Vol	2518.845
Cum Fill Vol	133.7
Net Vol	2385.1



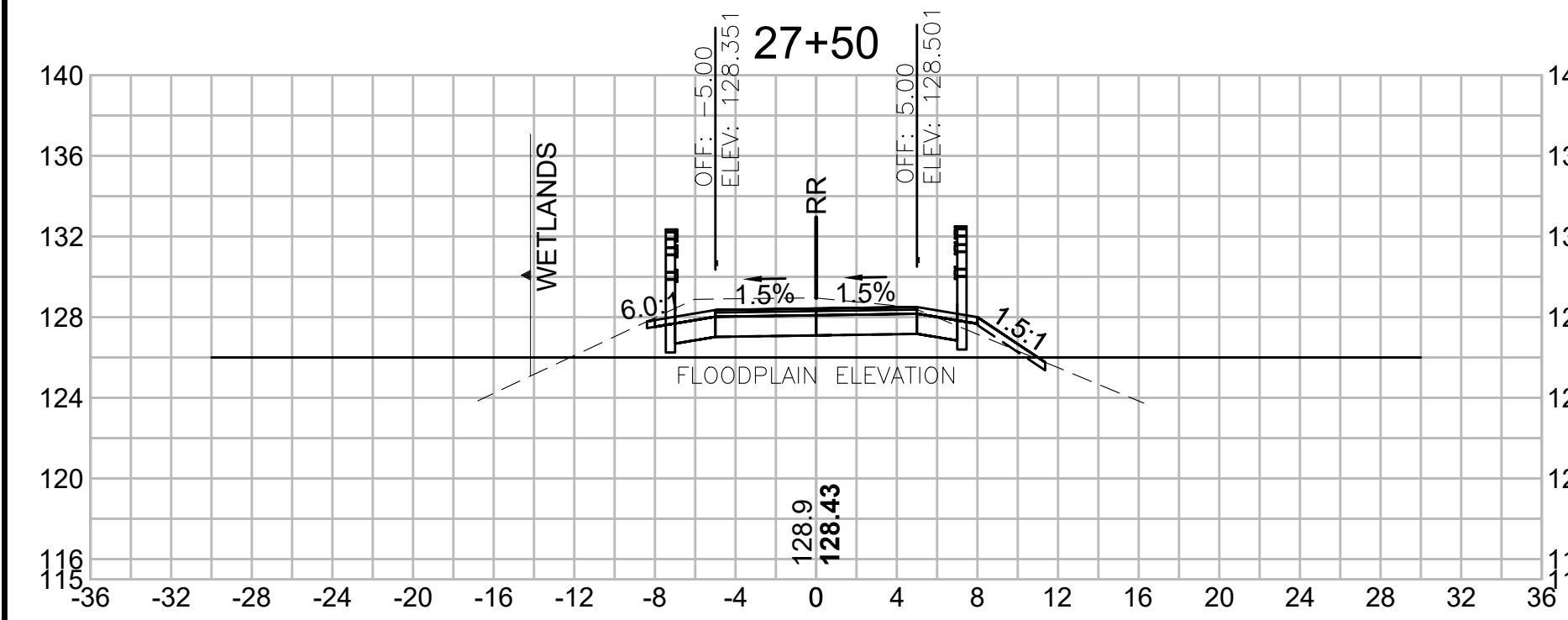
Total Volume at Station 31+00.00	
Cut Area	20.485
Fill Area	0.232
Cut Vol	41.041
Fill Vol	0.3
Cum Cut Vol	2774.459
Cum Fill Vol	134.0
Net Vol	2640.4



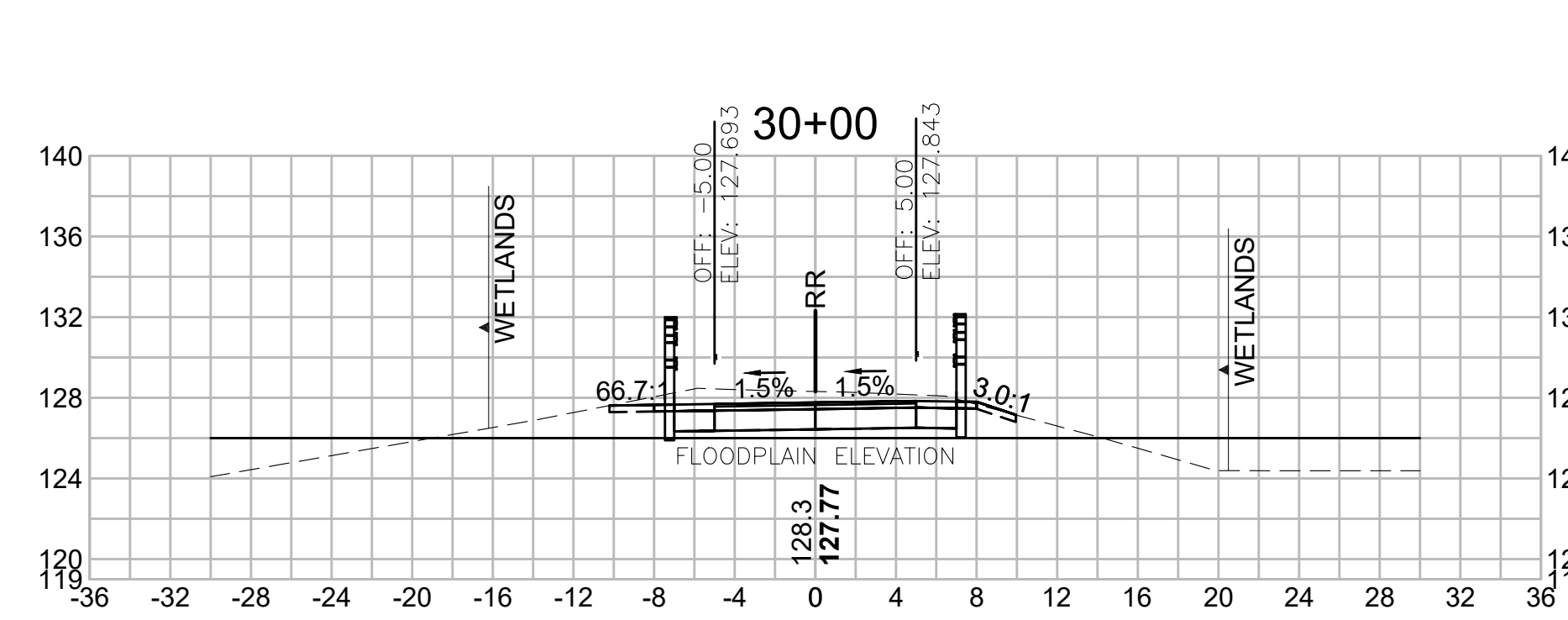
Total Volume at Station 28+00.00	
Cut Area	28.593
Fill Area	0.000
Cut Vol	48.781
Fill Vol	0.7
Cum Cut Vol	2463.891
Cum Fill Vol	133.7
Net Vol	2330.2



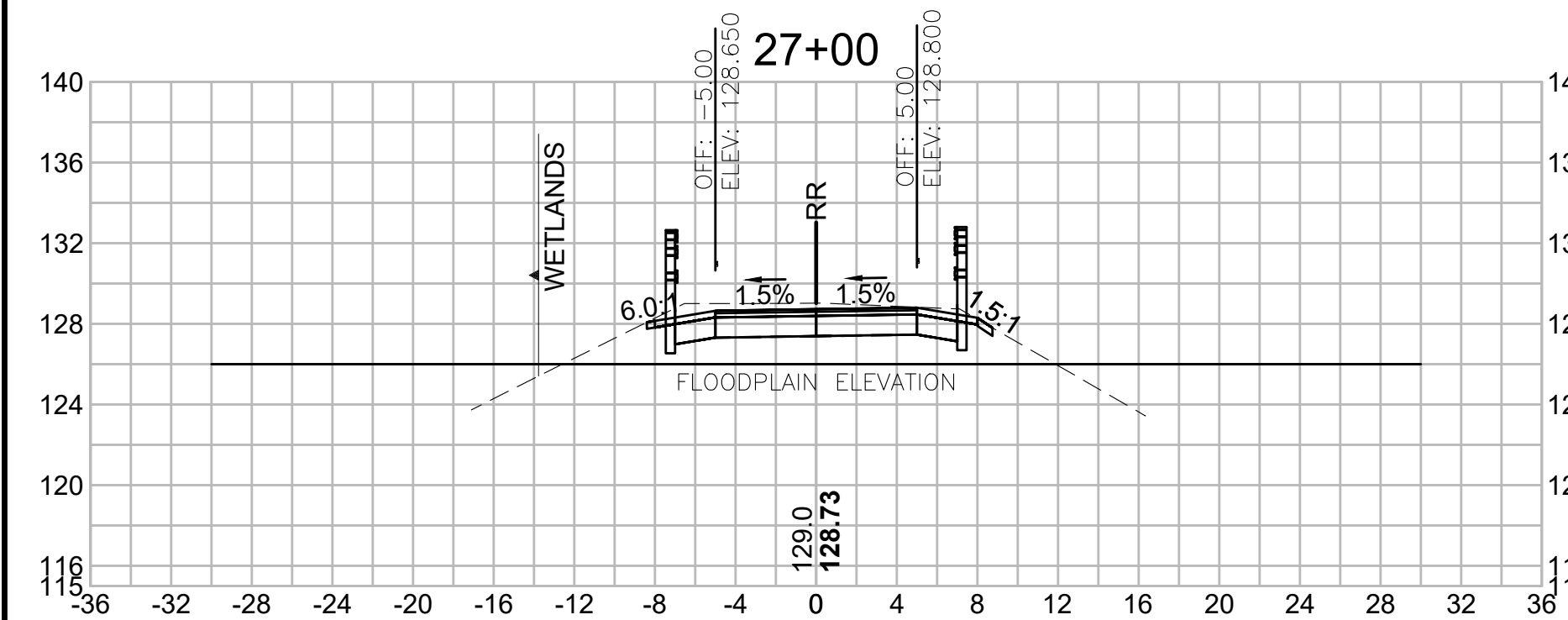
Total Volume at Station 30+50.00	
Cut Area	23.839
Fill Area	0.052
Cut Vol	48.770
Fill Vol	0.0
Cum Cut Vol	2733.418
Cum Fill Vol	133.8
Net Vol	2599.7



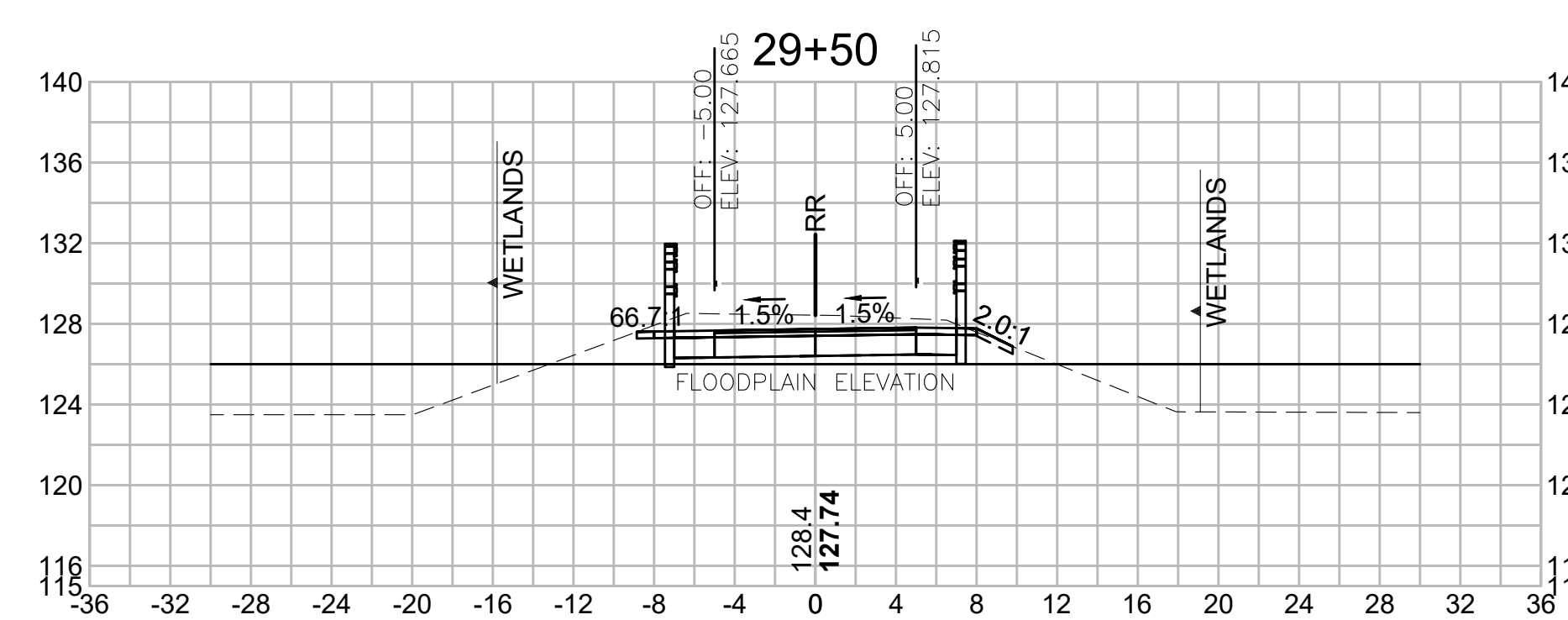
Total Volume at Station 27+50.00	
Cut Area	24.091
Fill Area	0.799
Cut Vol	44.484
Fill Vol	0.7
Cum Cut Vol	2415.110
Cum Fill Vol	133.0
Net Vol	2282.1



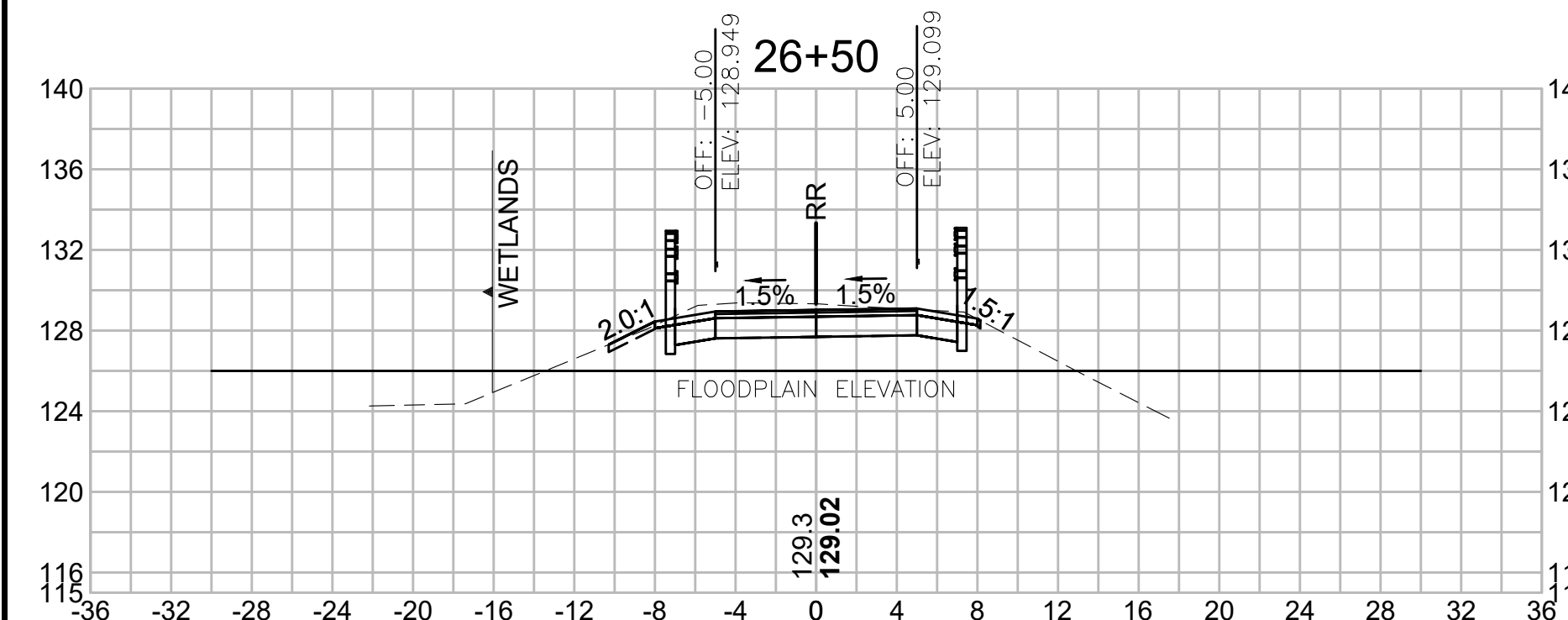
Total Volume at Station 30+00.00	
Cut Area	28.831
Fill Area	0.000
Cut Vol	54.314
Fill Vol	0.0
Cum Cut Vol	2684.648
Cum Fill Vol	133.7
Net Vol	2550.9



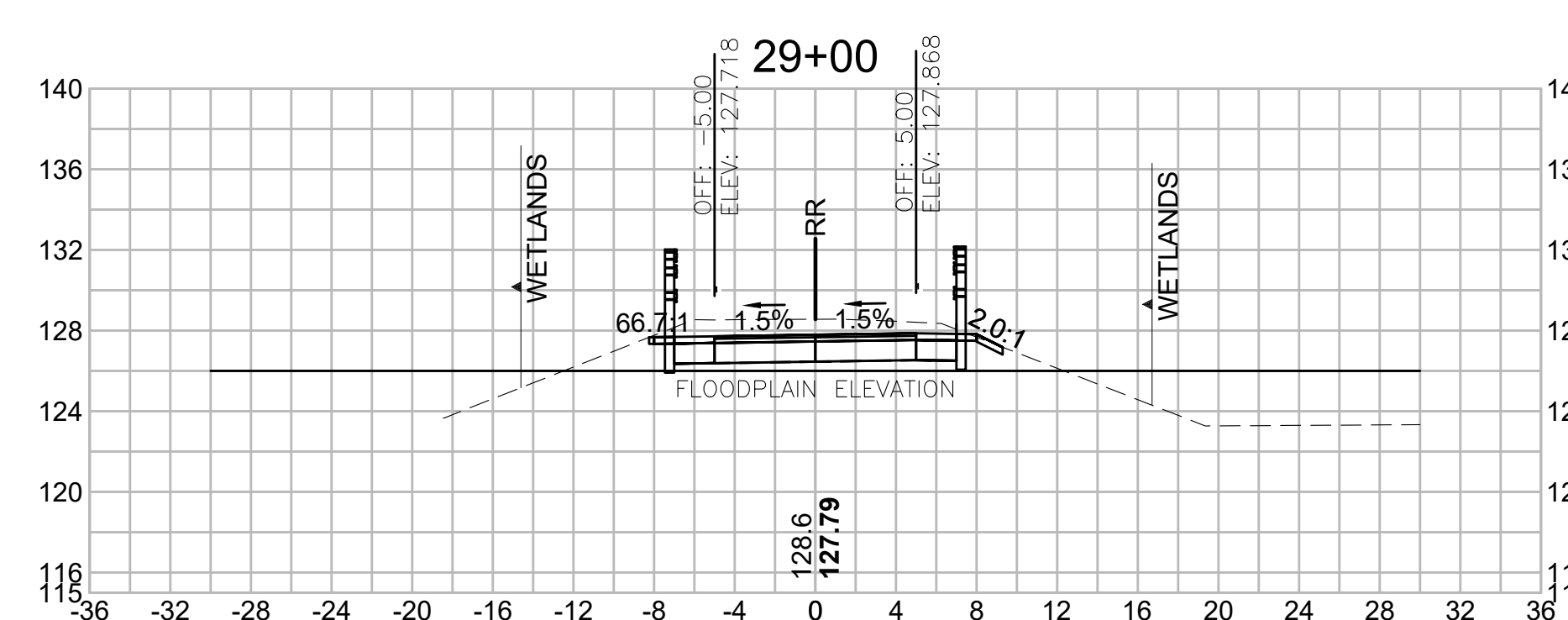
Total Volume at Station 27+00.00	
Cut Area	23.952
Fill Area	0.000
Cut Vol	43.750
Fill Vol	0.0
Cum Cut Vol	2370.626
Cum Fill Vol	132.2
Net Vol	2238.4



Total Volume at Station 29+50.00	
Cut Area	29.827
Fill Area	0.000
Cut Vol	55.315
Fill Vol	0.0
Cum Cut Vol	2630.335
Cum Fill Vol	133.7
Net Vol	2496.6



Total Volume at Station 26+50.00	
Cut Area	23.298
Fill Area	0.000
Cut Vol	48.667
Fill Vol	0.0
Cum Cut Vol	2326.877
Cum Fill Vol	132.2
Net Vol	2194.6



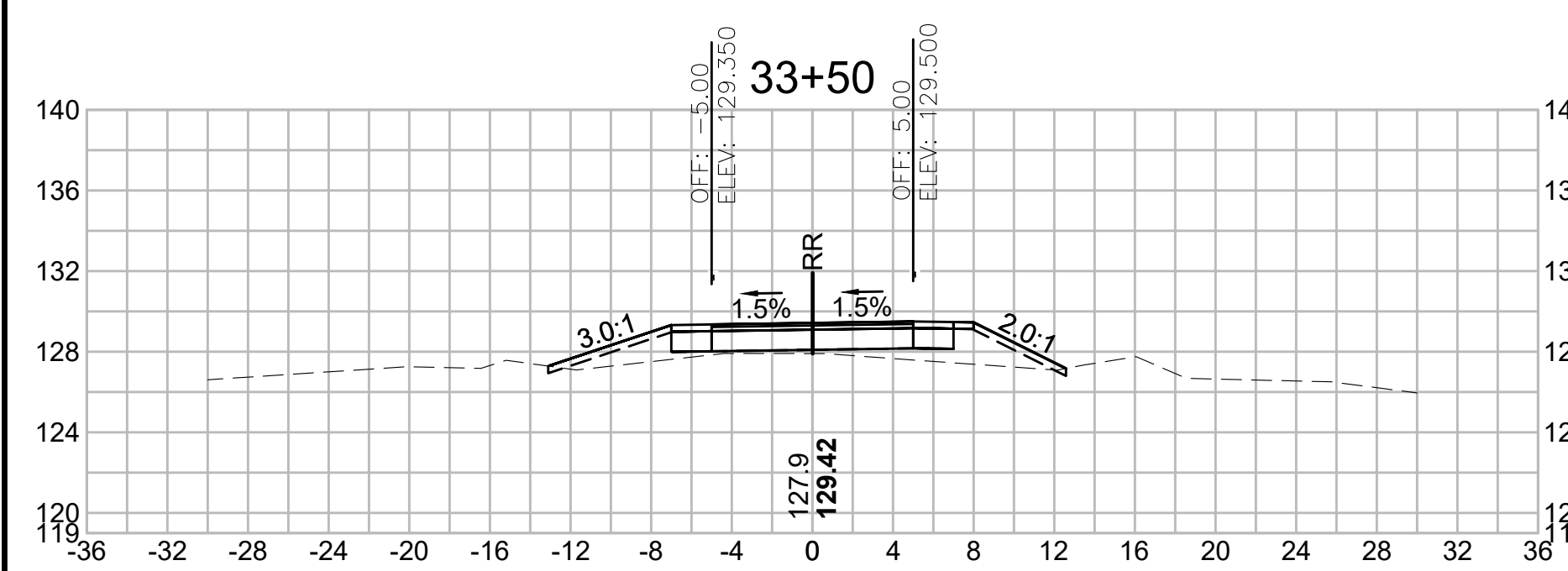
Total Volume at Station 29+00.00	
Cut Area	29.912
Fill Area	0.000
Cut Vol	56.176
Fill Vol	0.0
Cum Cut Vol	2575.021
Cum Fill Vol	133.7
Net Vol	2441.3

SUBBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

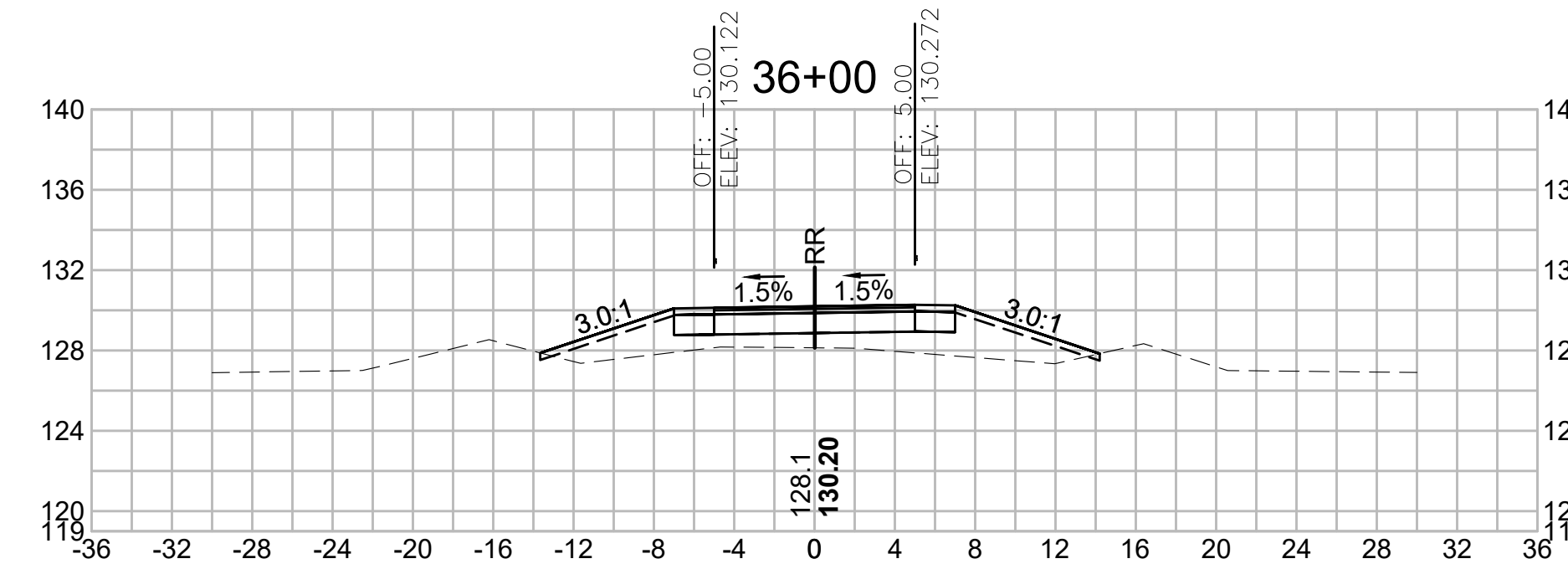
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	66	73

PROJECT FILE NO. 613319

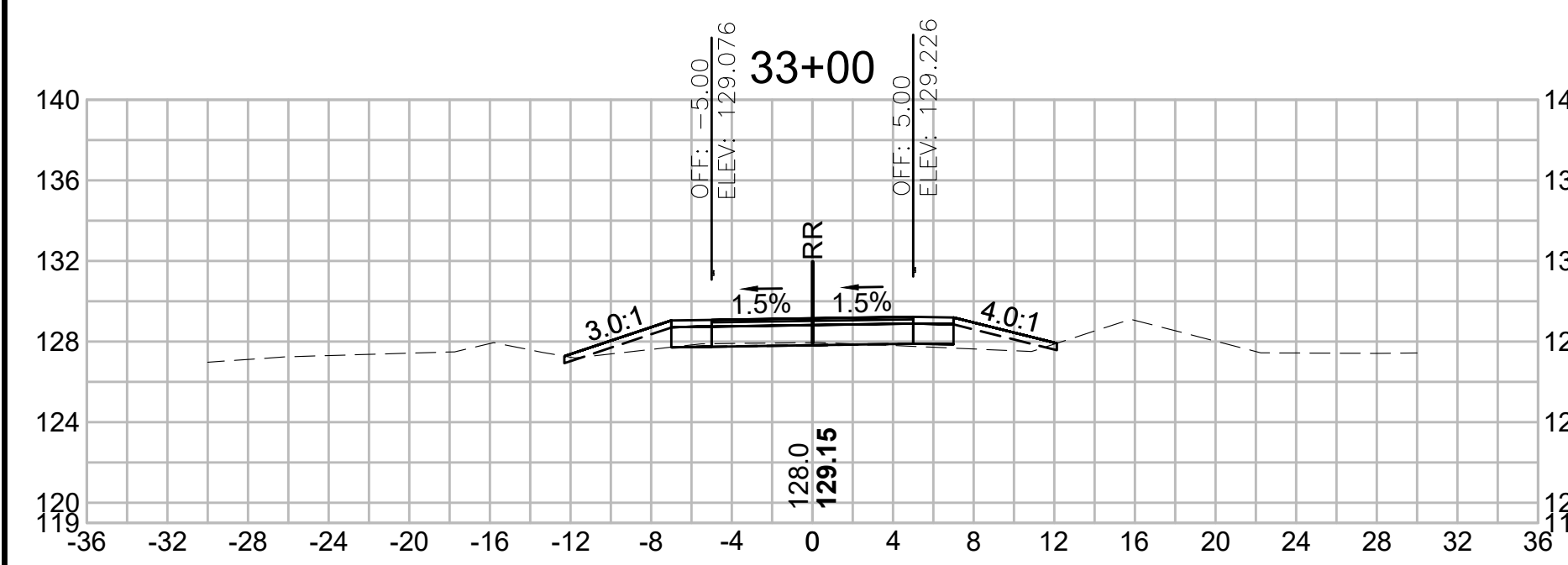
CROSS SECTIONS



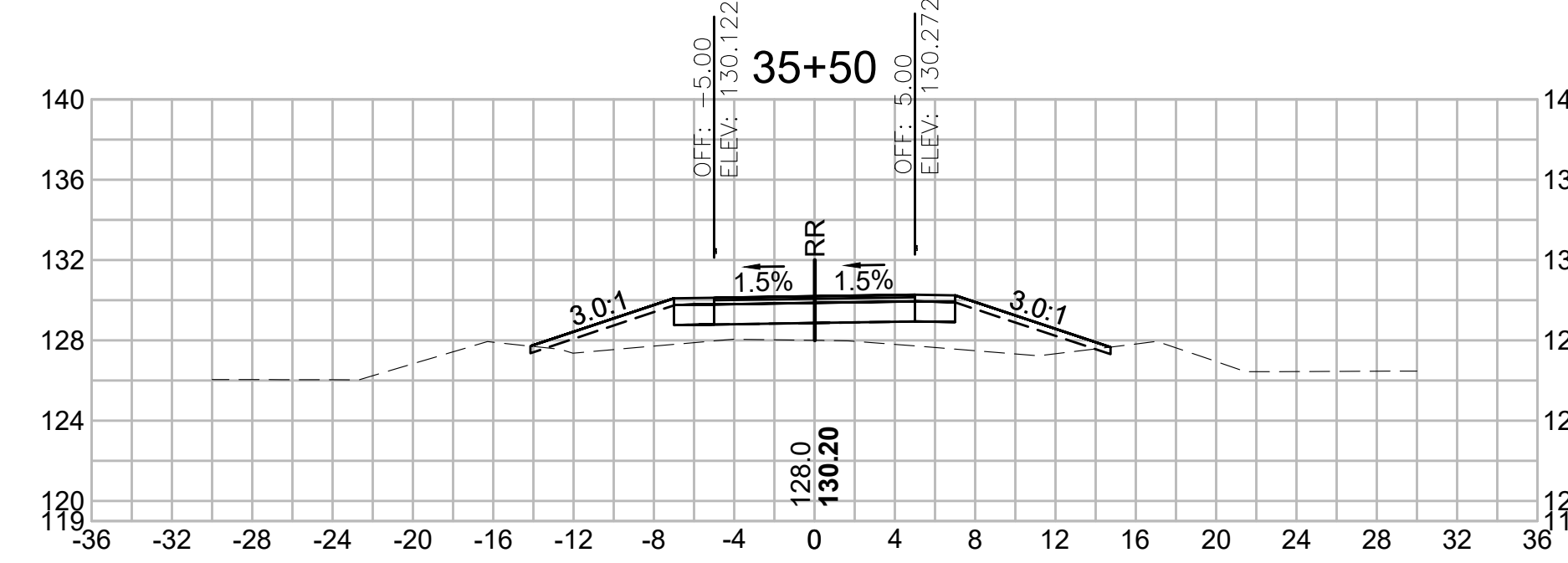
Total Volume at Station 33+50.00	
Cut Area	0.232
Fill Area	13.504
Cut Vol	1.439
Fill Vol	17.8
Cum Cut Vol	2857.382
Cum Fill Vol	163.6
Net Vol	2693.8



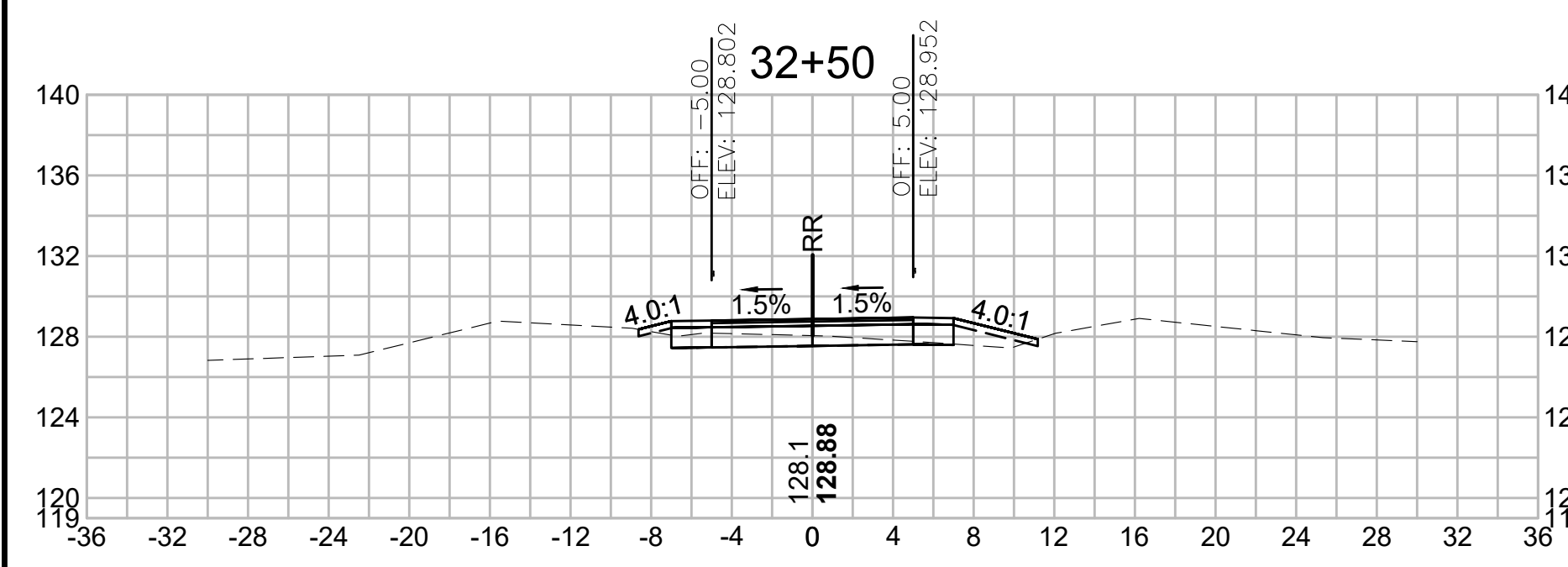
Total Volume at Station 36+00.00	
Cut Area	0.214
Fill Area	26.520
Cut Vol	0.455
Fill Vol	52.1
Cum Cut Vol	2860.870
Cum Fill Vol	388.0
Net Vol	2472.9



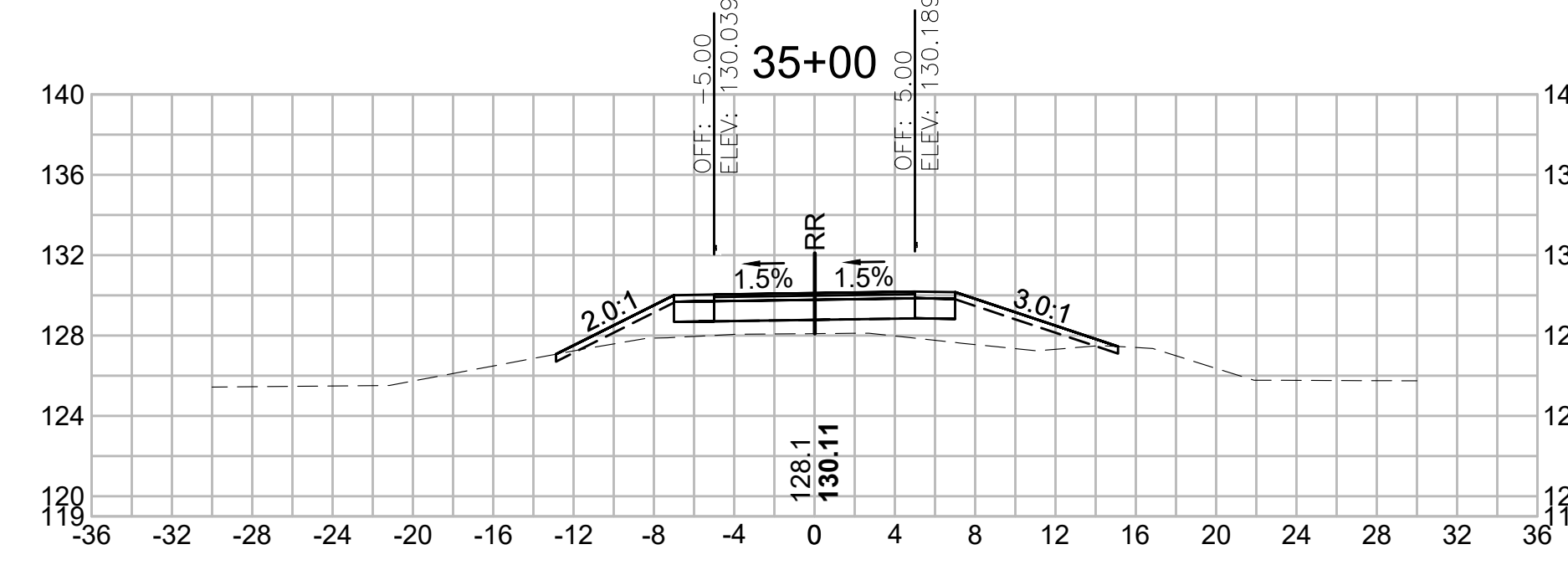
Total Volume at Station 33+00.00	
Cut Area	1.322
Fill Area	5.749
Cut Vol	7.245
Fill Vol	7.4
Cum Cut Vol	2855.944
Cum Fill Vol	145.8
Net Vol	2710.2



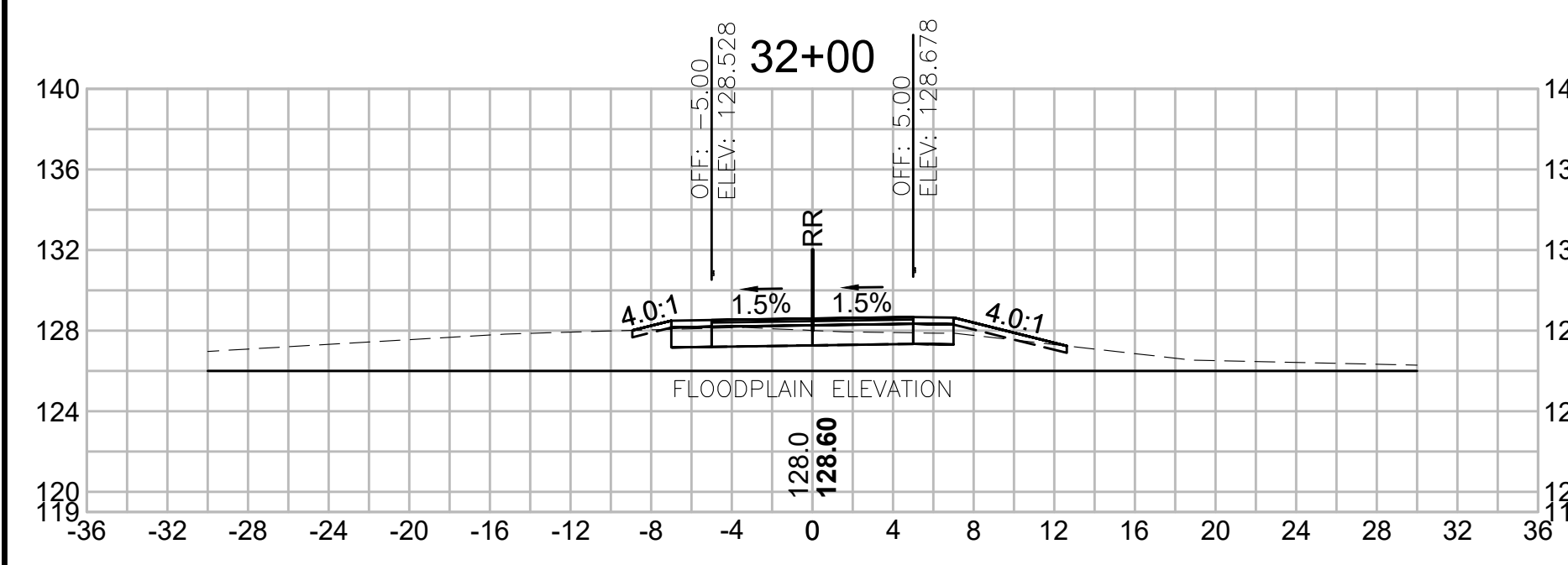
Total Volume at Station 35+50.00	
Cut Area	0.276
Fill Area	29.736
Cut Vol	0.658
Fill Vol	49.0
Cum Cut Vol	2860.416
Cum Fill Vol	335.9
Net Vol	2524.5



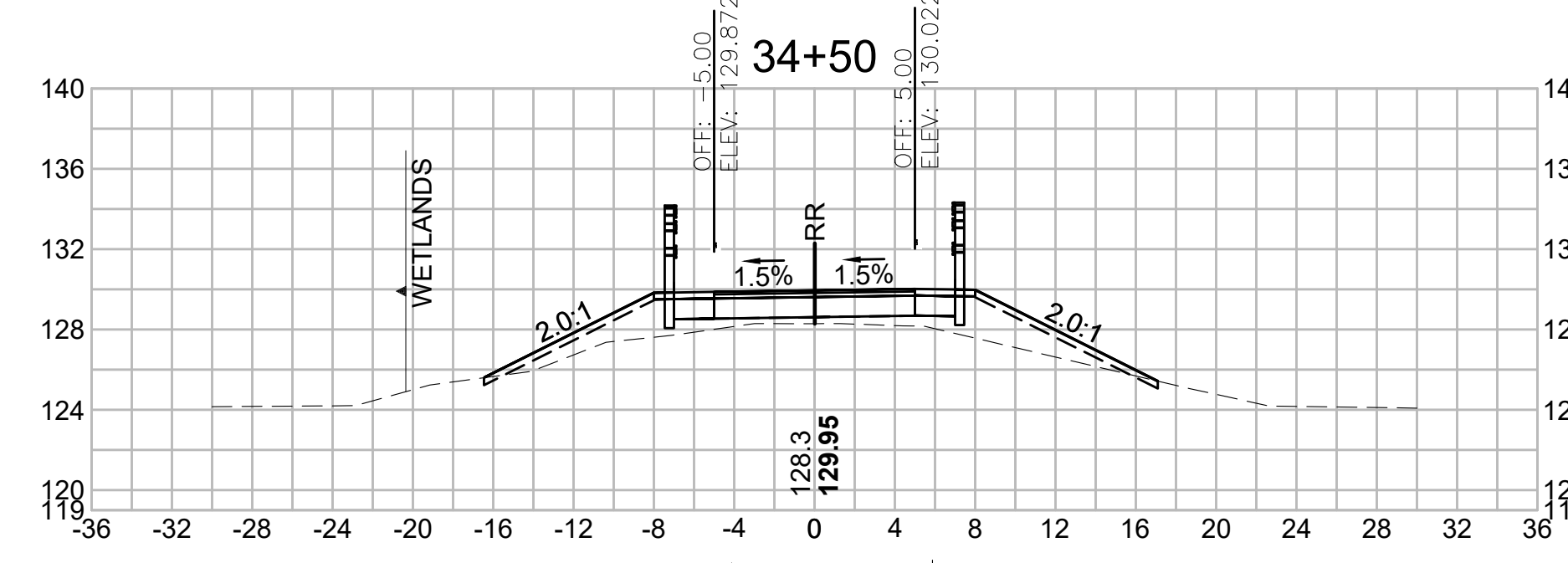
Total Volume at Station 32+50.00	
Cut Area	6.502
Fill Area	2.246
Cut Vol	16.303
Fill Vol	2.7
Cum Cut Vol	2848.700
Cum Fill Vol	138.4
Net Vol	2710.3



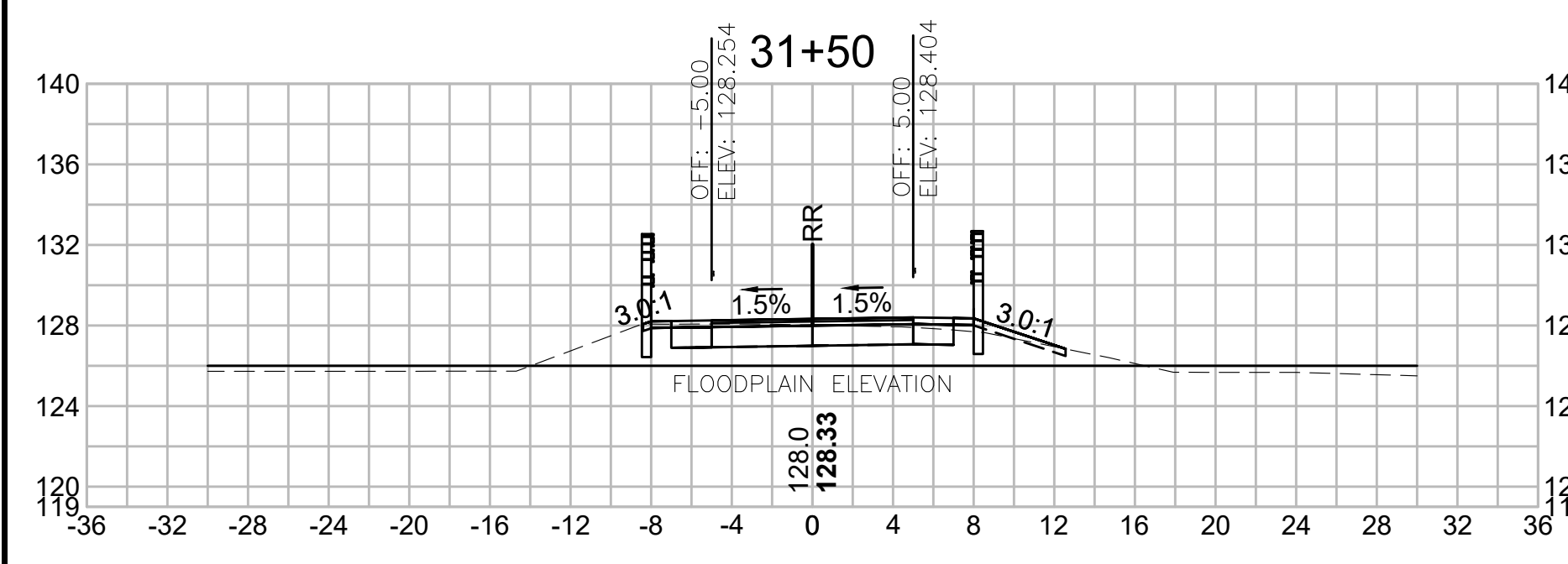
Total Volume at Station 35+00.00	
Cut Area	0.434
Fill Area	23.203
Cut Vol	0.813
Fill Vol	43.9
Cum Cut Vol	2859.758
Cum Fill Vol	286.9
Net Vol	2572.9



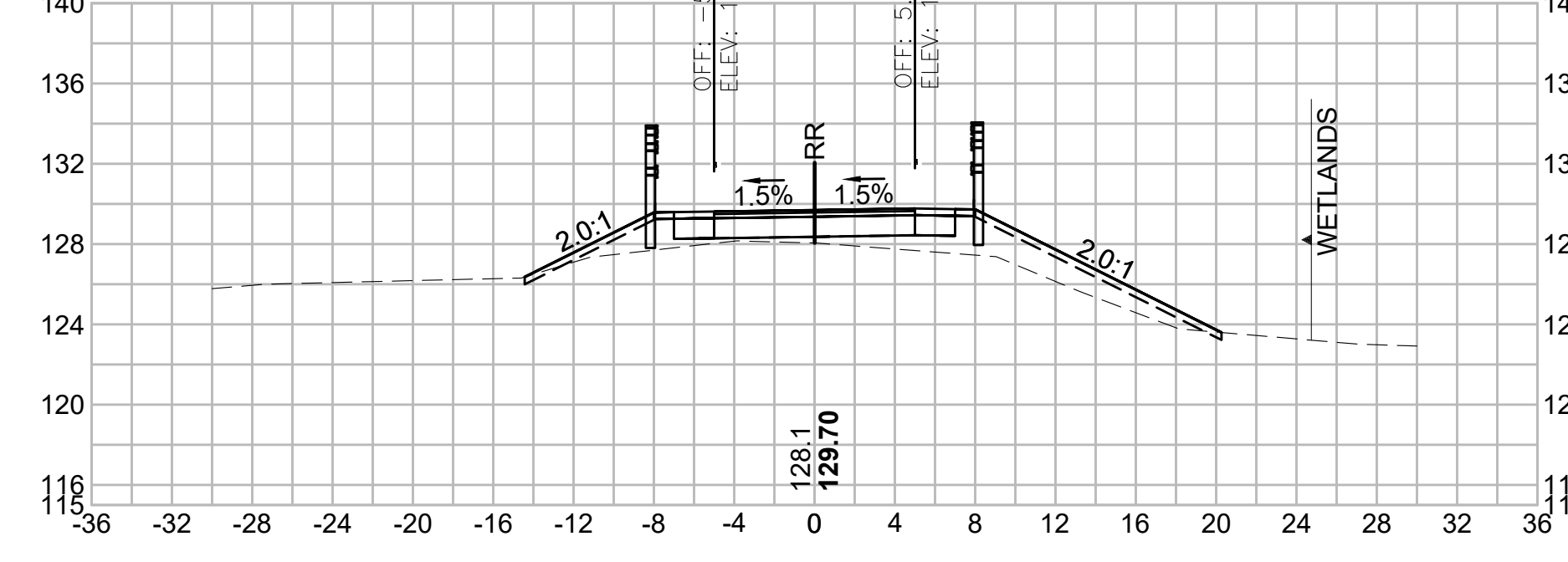
Total Volume at Station 32+00.00	
Cut Area	11.105
Fill Area	0.678
Cut Vol	24.627
Fill Vol	1.0
Cum Cut Vol	2832.397
Cum Fill Vol	135.7
Net Vol	2696.7



Total Volume at Station 34+50.00	
Cut Area	0.443
Fill Area	24.196
Cut Vol	0.880
Fill Vol	44.6
Cum Cut Vol	2858.946
Cum Fill Vol	243.0
Net Vol	2616.0



Total Volume at Station 31+50.00	
Cut Area	15.492
Fill Area	0.431
Cut Vol	33.312
Fill Vol	0.6
Cum Cut Vol	2807.770
Cum Fill Vol	134.6
Net Vol	2673.1



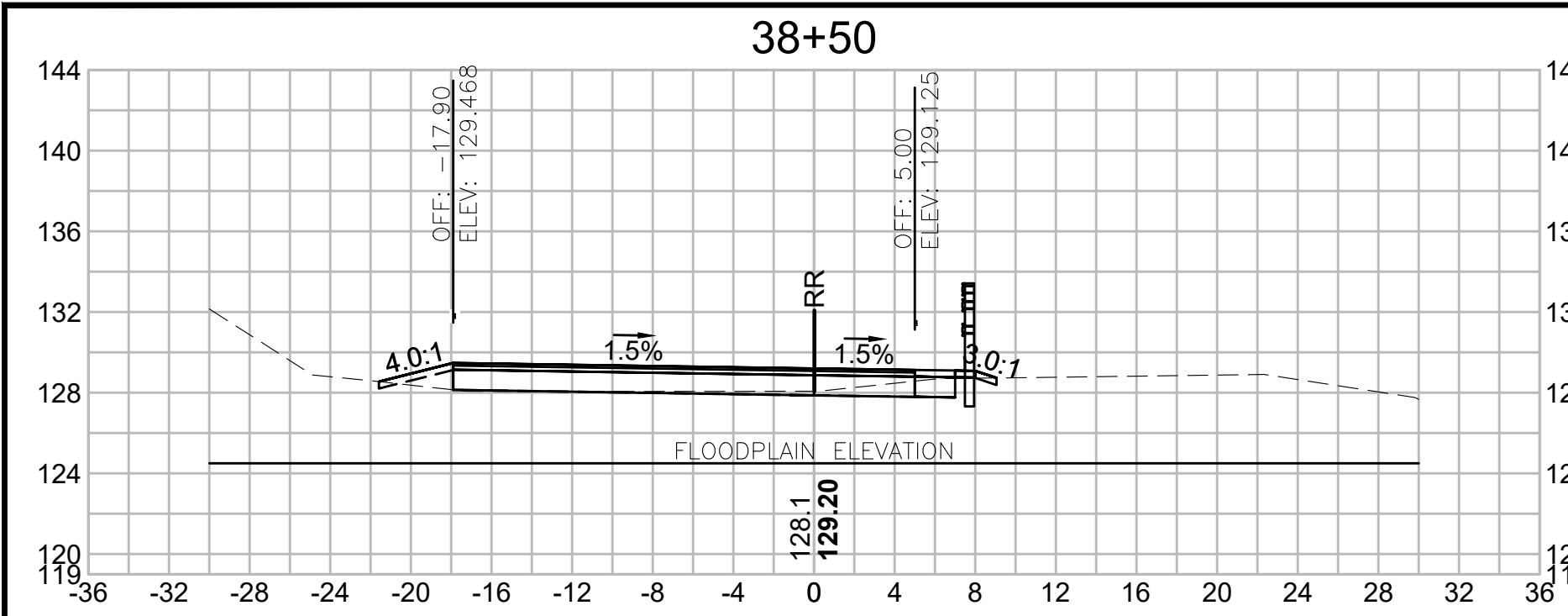
Total Volume at Station 34+00.00	
Cut Area	0.507
Fill Area	24.002
Cut Vol	0.684
Fill Vol	34.7
Cum Cut Vol	2858.066
Cum Fill Vol	198.3
Net Vol	2659.7

**SUBURBY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

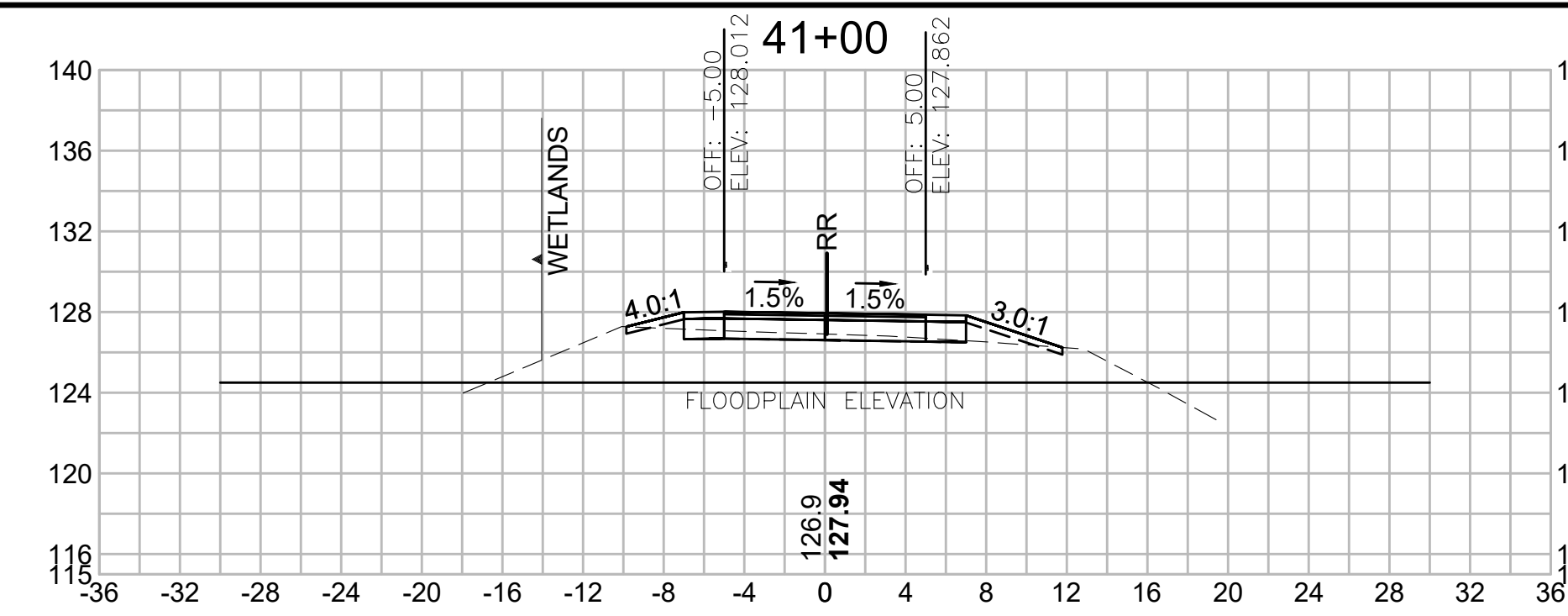
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	67	73

PROJECT FILE NO. 613319

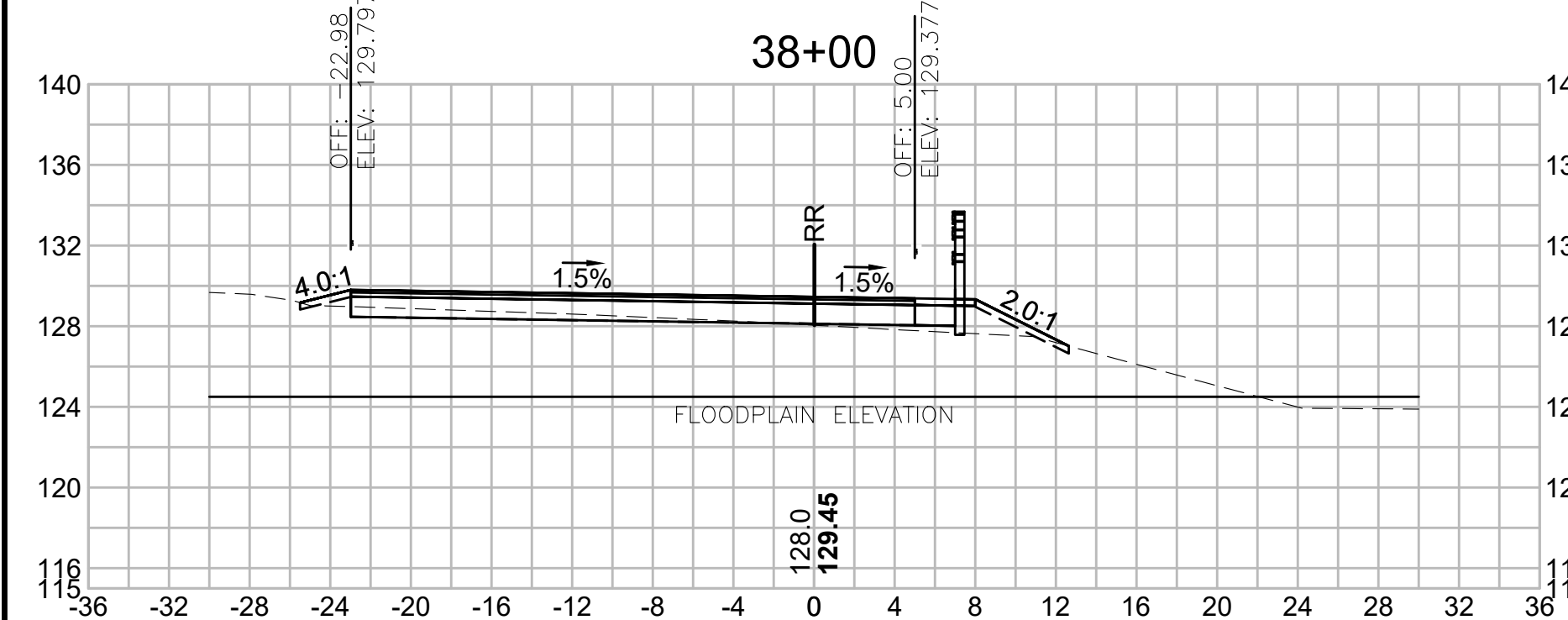
CROSS SECTIONS



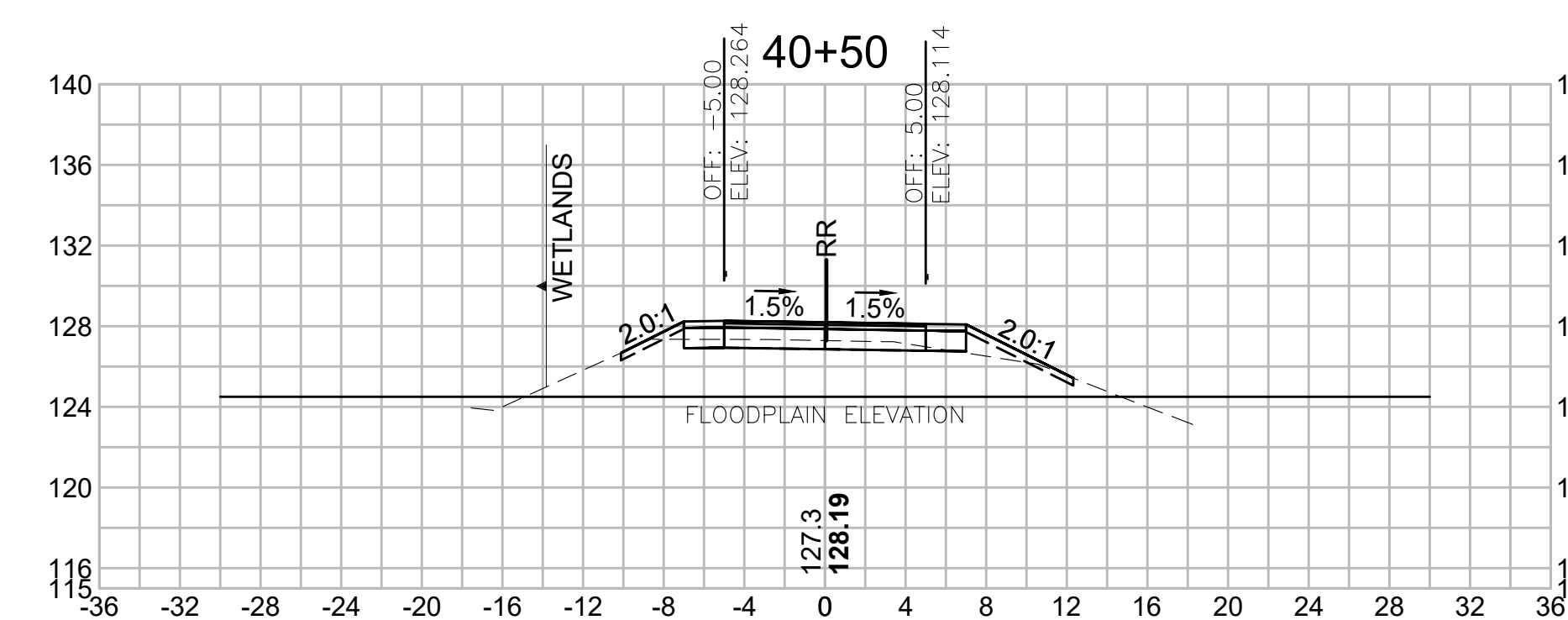
Total Volume at Station 38+50.00	
Cut Area	5.769
Fill Area	1.544
Cut Vol	11.312
Fill Vol	6.3
Cum Cut Vol	2880.271
Cum Fill Vol	539.4
Net Vol	2340.9



Total Volume at Station 41+00.00	
Cut Area	4.539
Fill Area	1.951
Cut Vol	9.952
Fill Vol	3.5
Cum Cut Vol	2914.460
Cum Fill Vol	630.8
Net Vol	2283.7



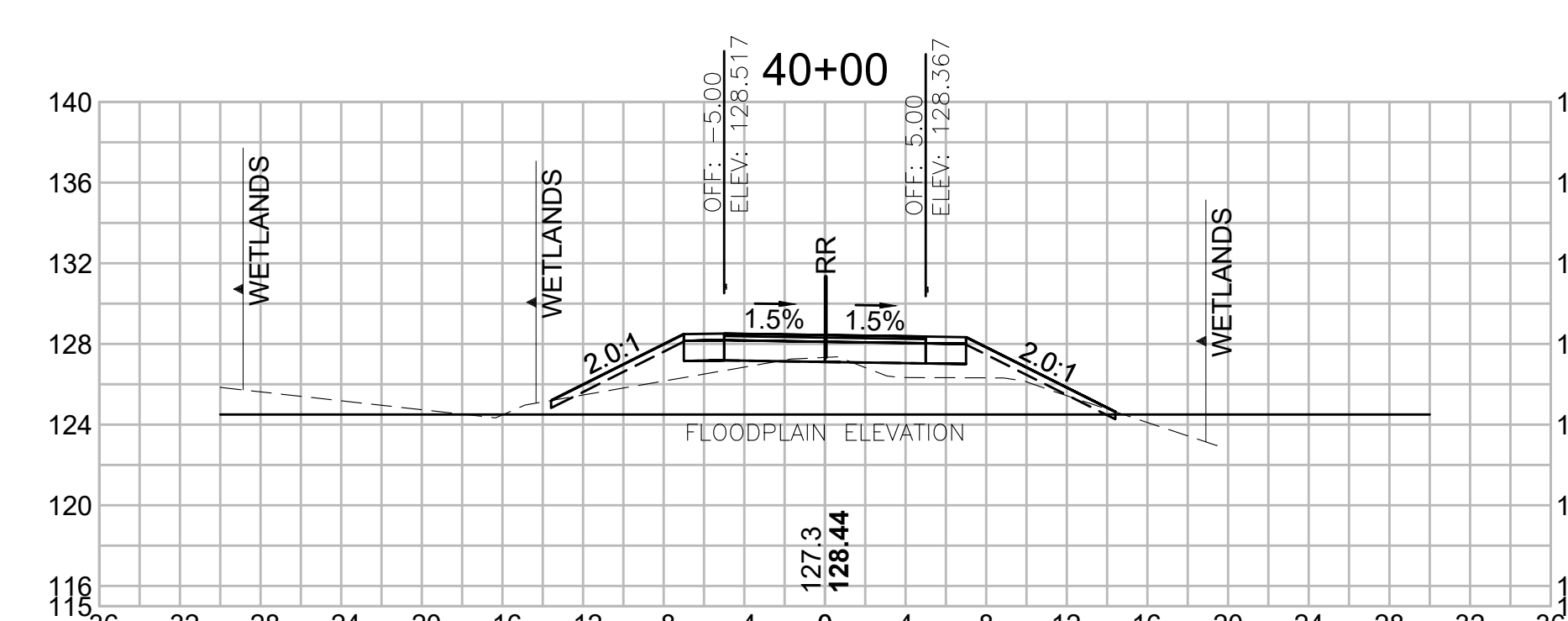
Total Volume at Station 38+00.00	
Cut Area	6.447
Fill Area	5.265
Cut Vol	6.412
Fill Vol	24.8
Cum Cut Vol	2868.960
Cum Fill Vol	533.1
Net Vol	2335.9



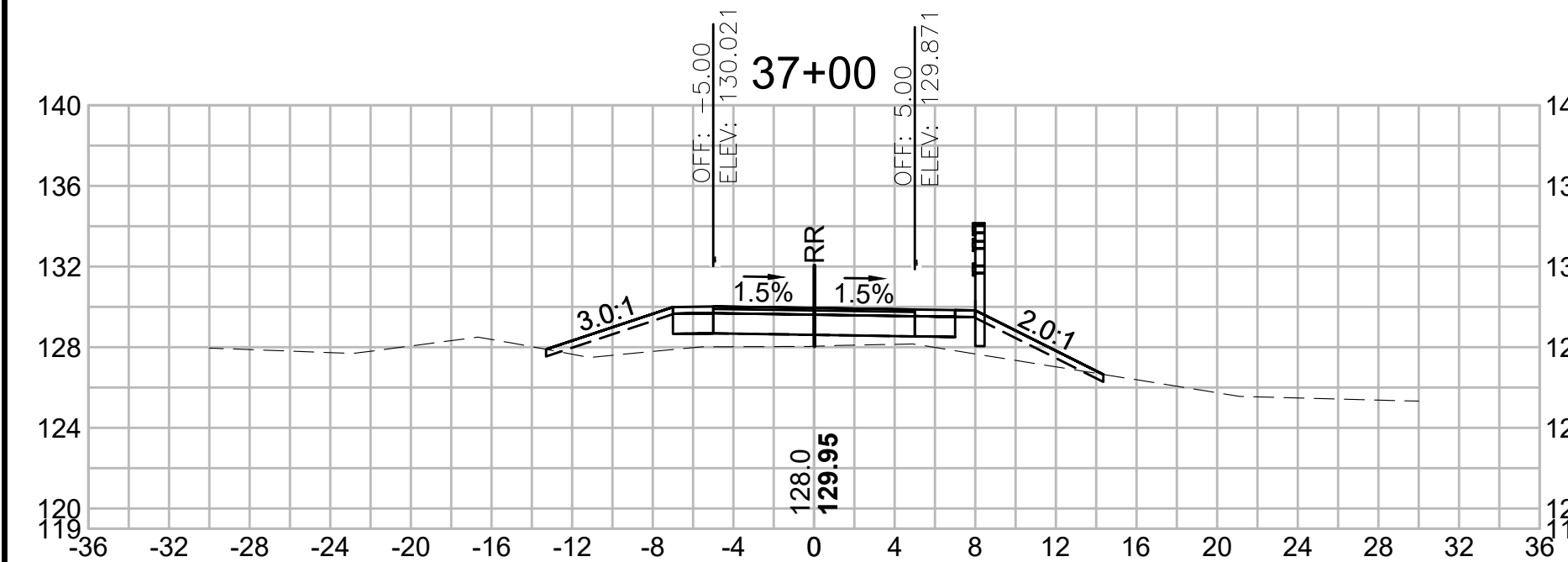
Total Volume at Station 40+50.00	
Cut Area	6.209
Fill Area	1.882
Cut Vol	6.840
Fill Vol	14.1
Cum Cut Vol	2904.508
Cum Fill Vol	627.3
Net Vol	2277.3



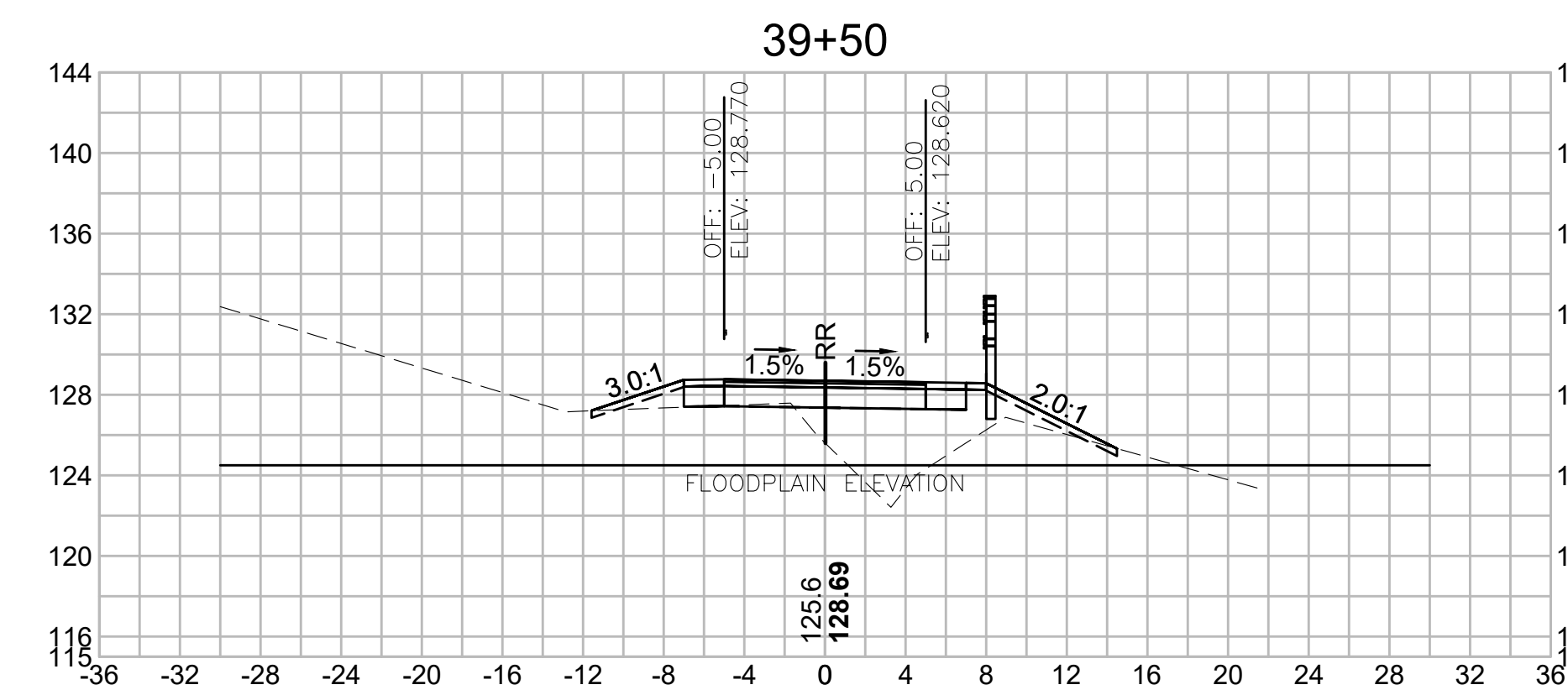
Total Volume at Station 37+50.00	
Cut Area	0.477
Fill Area	21.499
Cut Vol	0.738
Fill Vol	38.6
Cum Cut Vol	2862.549
Cum Fill Vol	508.3
Net Vol	2354.3



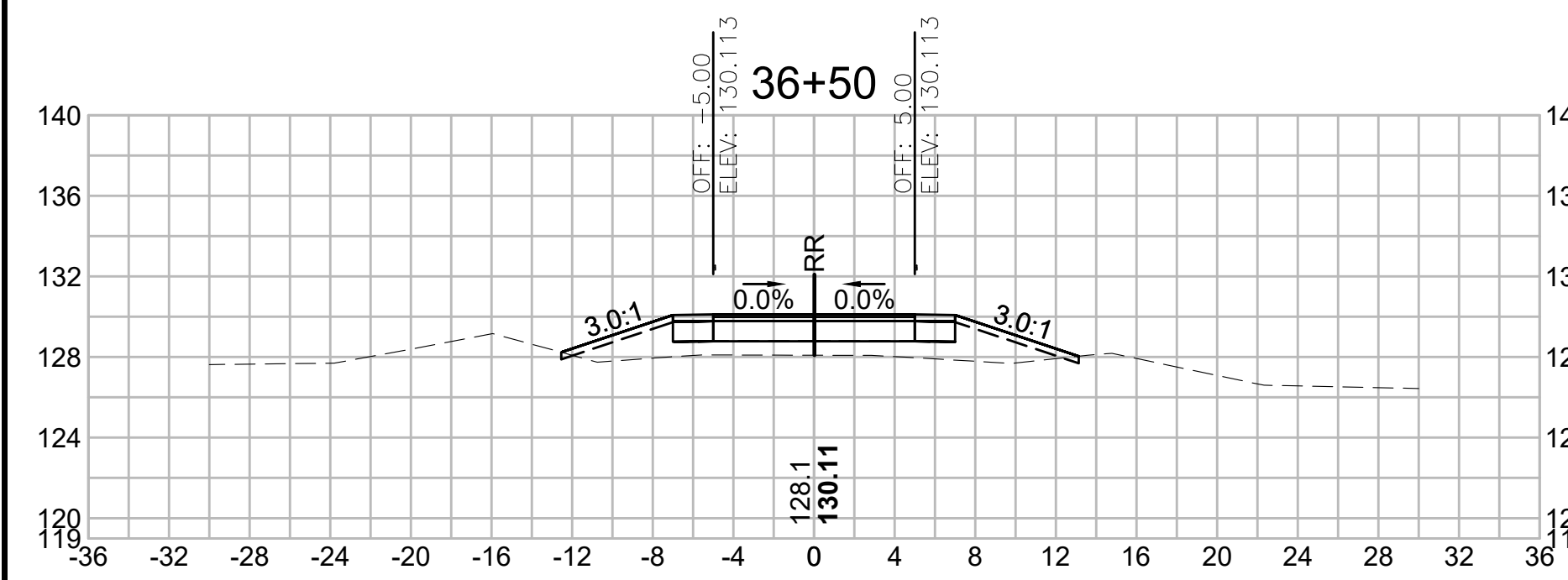
Total Volume at Station 40+00.00	
Cut Area	1.178
Fill Area	13.394
Cut Vol	1.943
Fill Vol	40.6
Cum Cut Vol	2897.668
Cum Fill Vol	613.1
Net Vol	2284.6



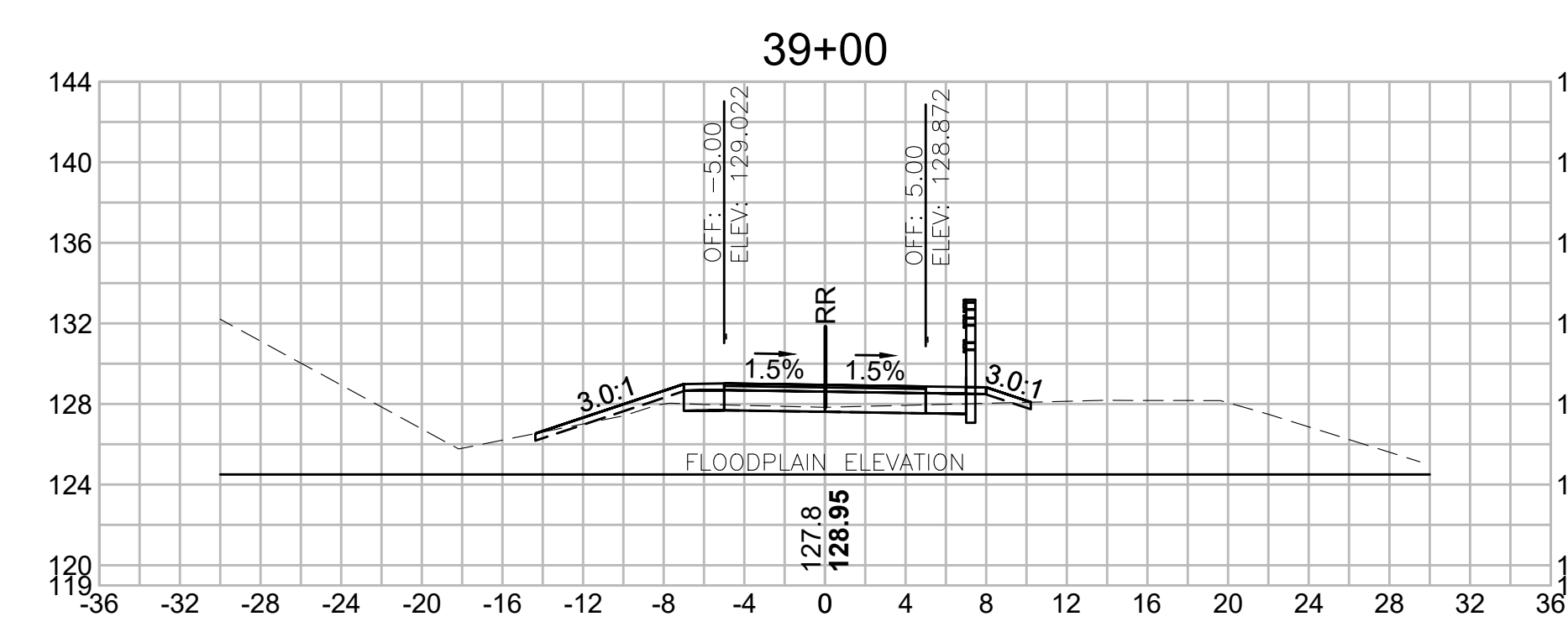
Total Volume at Station 37+00.00	
Cut Area	0.319
Fill Area	20.170
Cut Vol	0.520
Fill Vol	37.9
Cum Cut Vol	2861.812
Cum Fill Vol	469.7
Net Vol	2392.1



Total Volume at Station 39+50.00	
Cut Area	0.920
Fill Area	30.477
Cut Vol	5.483
Fill Vol	30.0
Cum Cut Vol	2895.725
Cum Fill Vol	572.5
Net Vol	2323.2



Total Volume at Station 36+50.00	
Cut Area	0.242
Fill Area	20.789
Cut Vol	0.423
Fill Vol	43.8
Cum Cut Vol	2861.292
Cum Fill Vol	431.8
Net Vol	2429.5

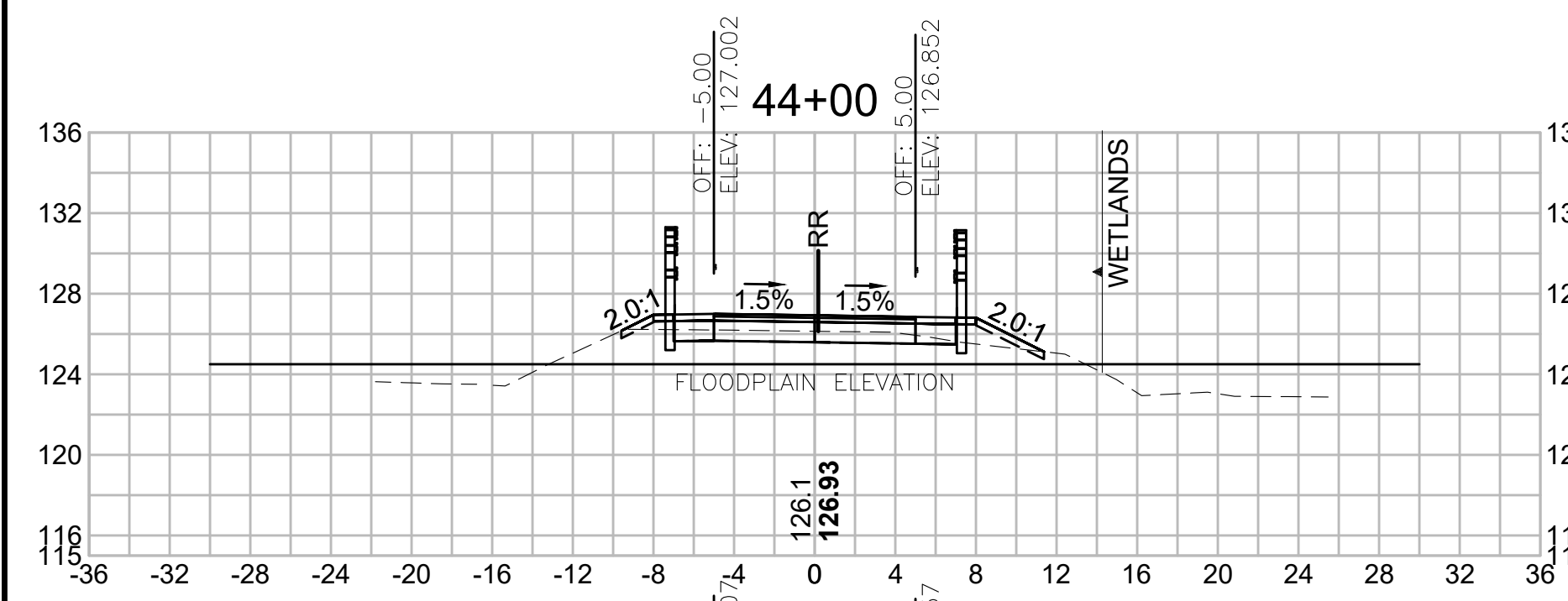


Total Volume at Station 39+00.00	
Cut Area	5.001
Fill Area	1.882
Cut Vol	9.972
Fill Vol	3.2
Cum Cut Vol	2890.243
Cum Fill Vol	542.5
Net Vol	2347.7

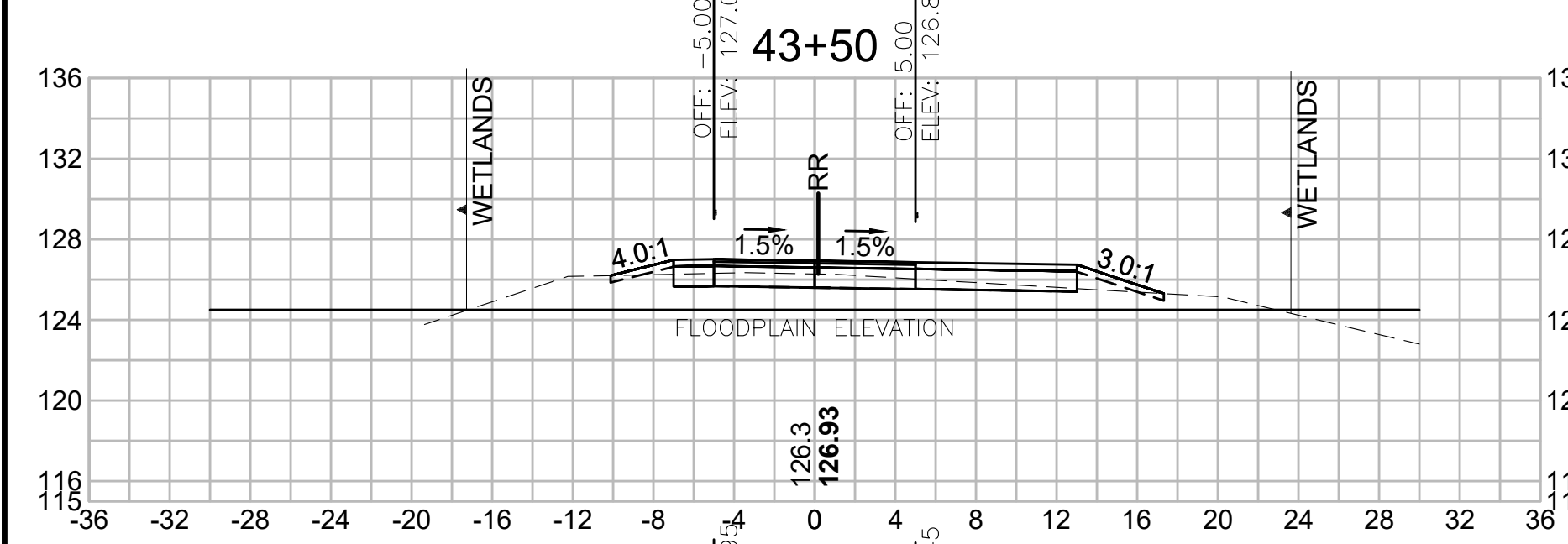
SUBURBY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	68	73
PROJECT FILE NO. 613319			

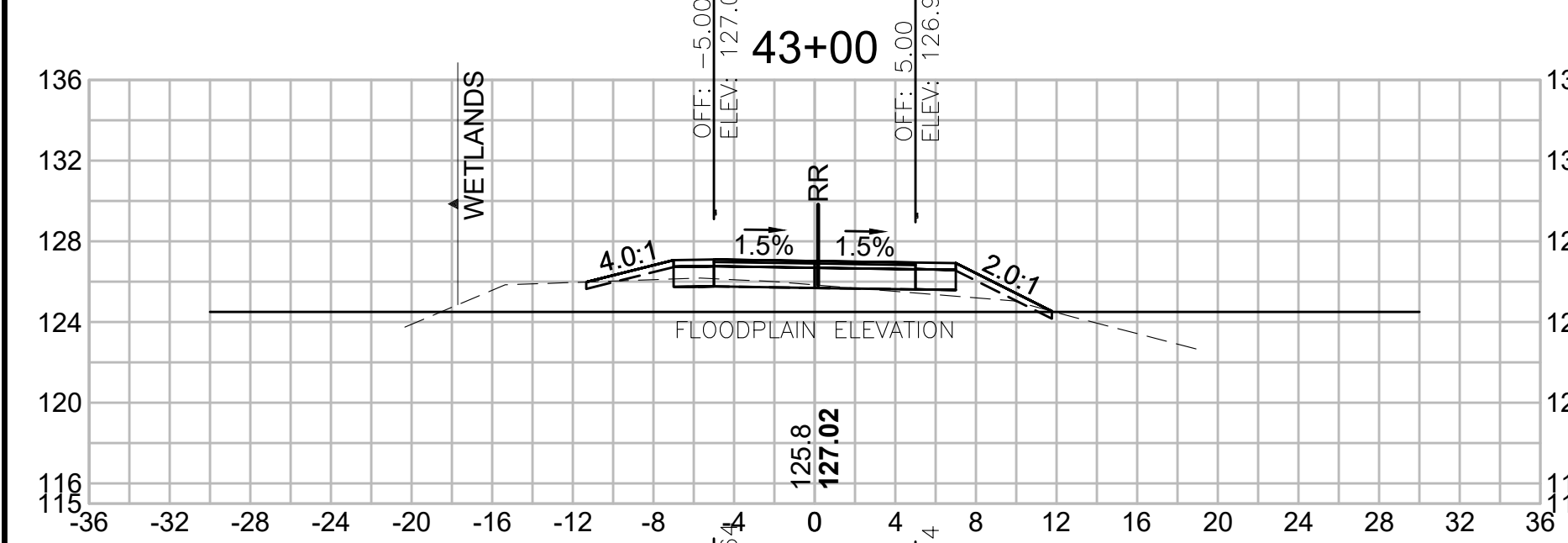
CROSS SECTIONS



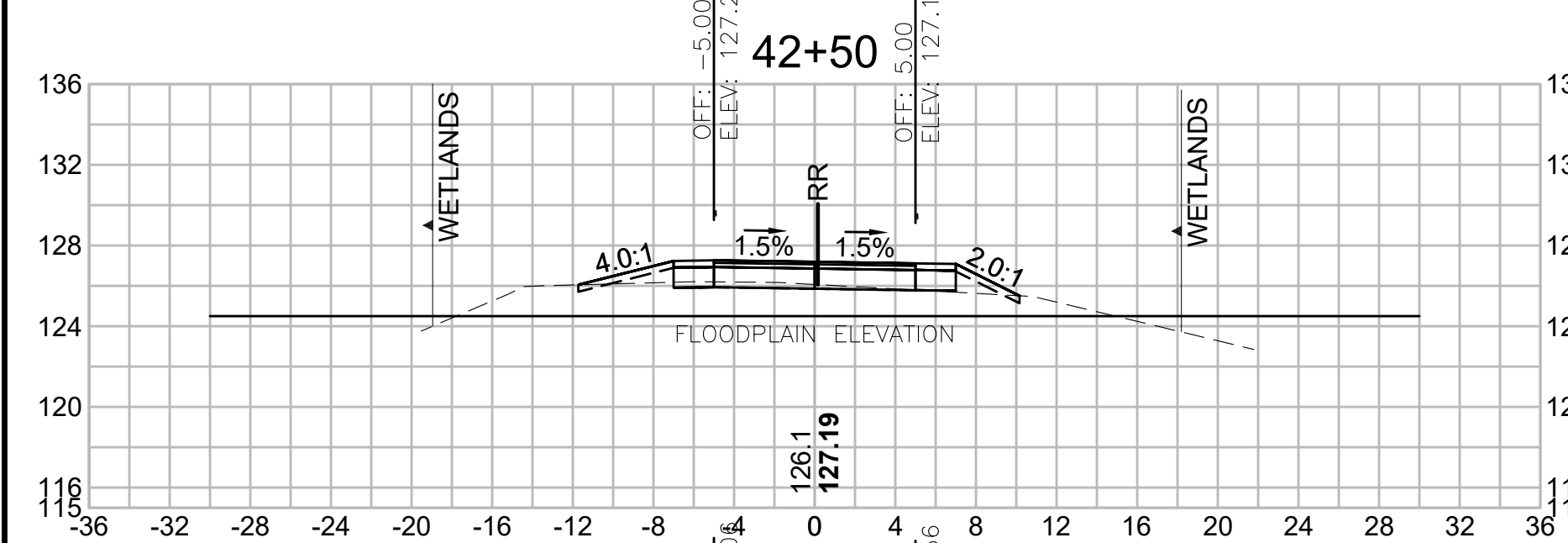
Total Volume at Station 44+00.00	
Cut Area	7.431
Fill Area	2.589
Cut Vol	16.832
Fill Vol	3.8
Cum Cut Vol	2964.862
Cum Fill Vol	661.6
Net Vol	2303.2



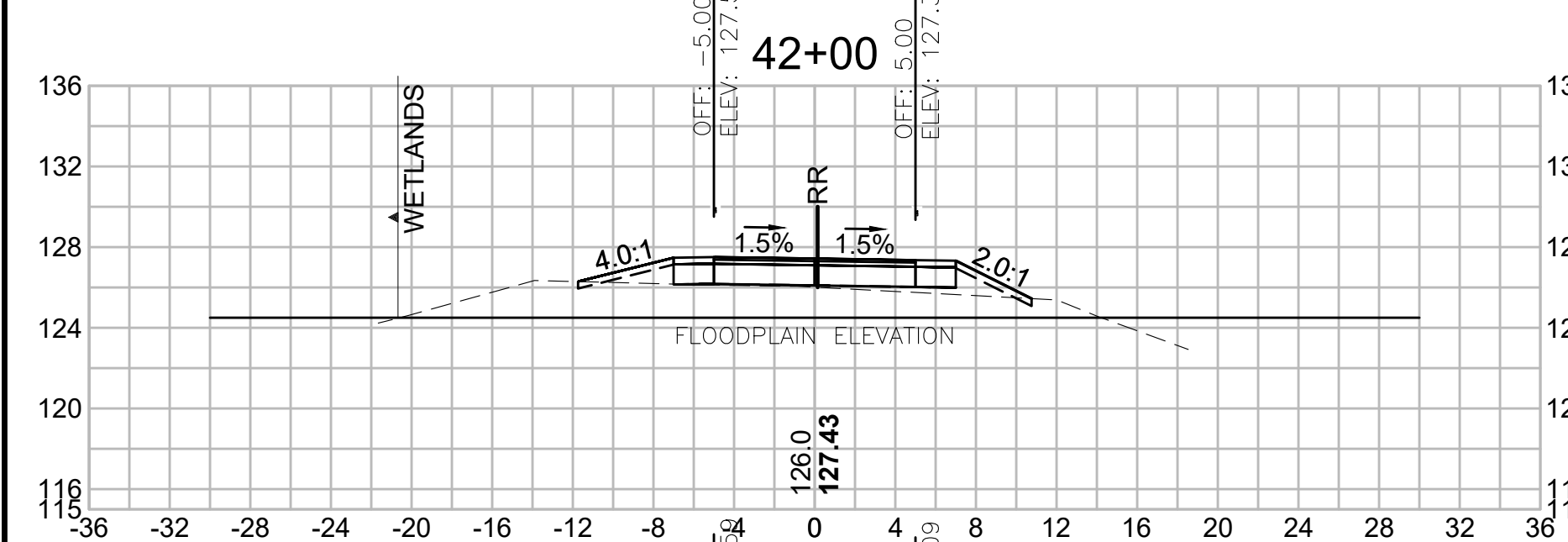
Total Volume at Station 43+50.00	
Cut Area	10.747
Fill Area	1.568
Cut Vol	12.712
Fill Vol	4.7
Cum Cut Vol	2948.031
Cum Fill Vol	657.8
Net Vol	2290.3



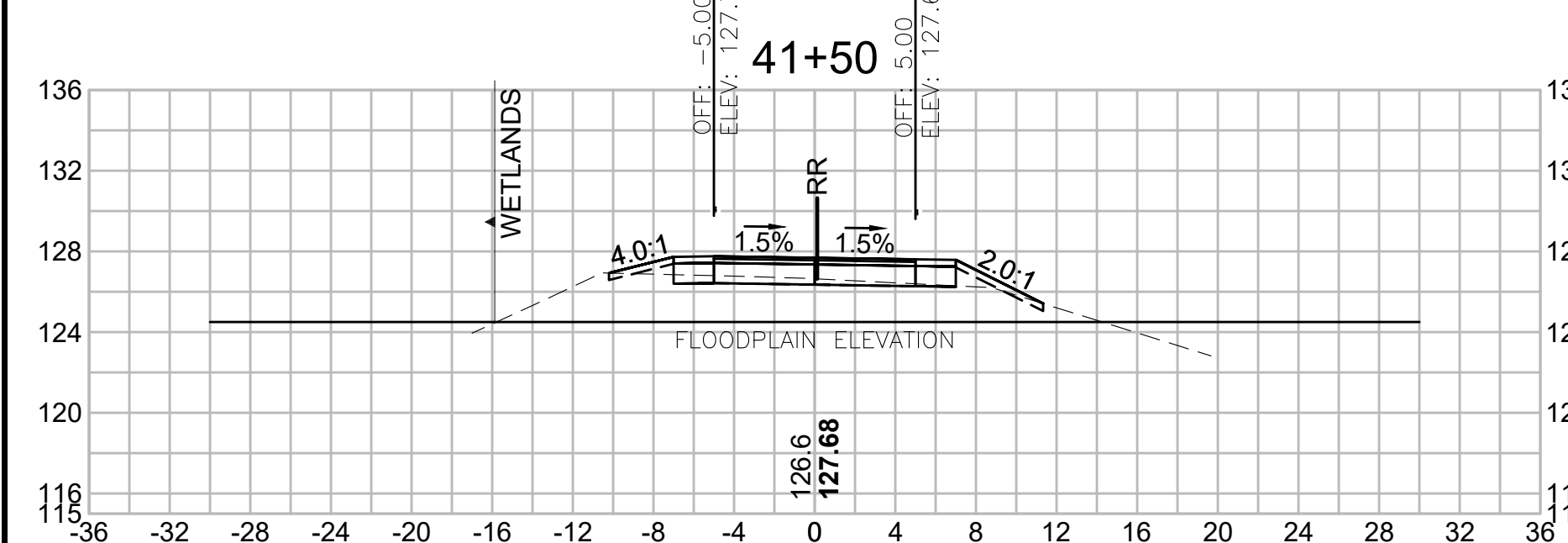
Total Volume at Station 43+00.00	
Cut Area	2.981
Fill Area	3.461
Cut Vol	5.397
Fill Vol	5.4
Cum Cut Vol	2935.319
Cum Fill Vol	653.1
Net Vol	2282.2



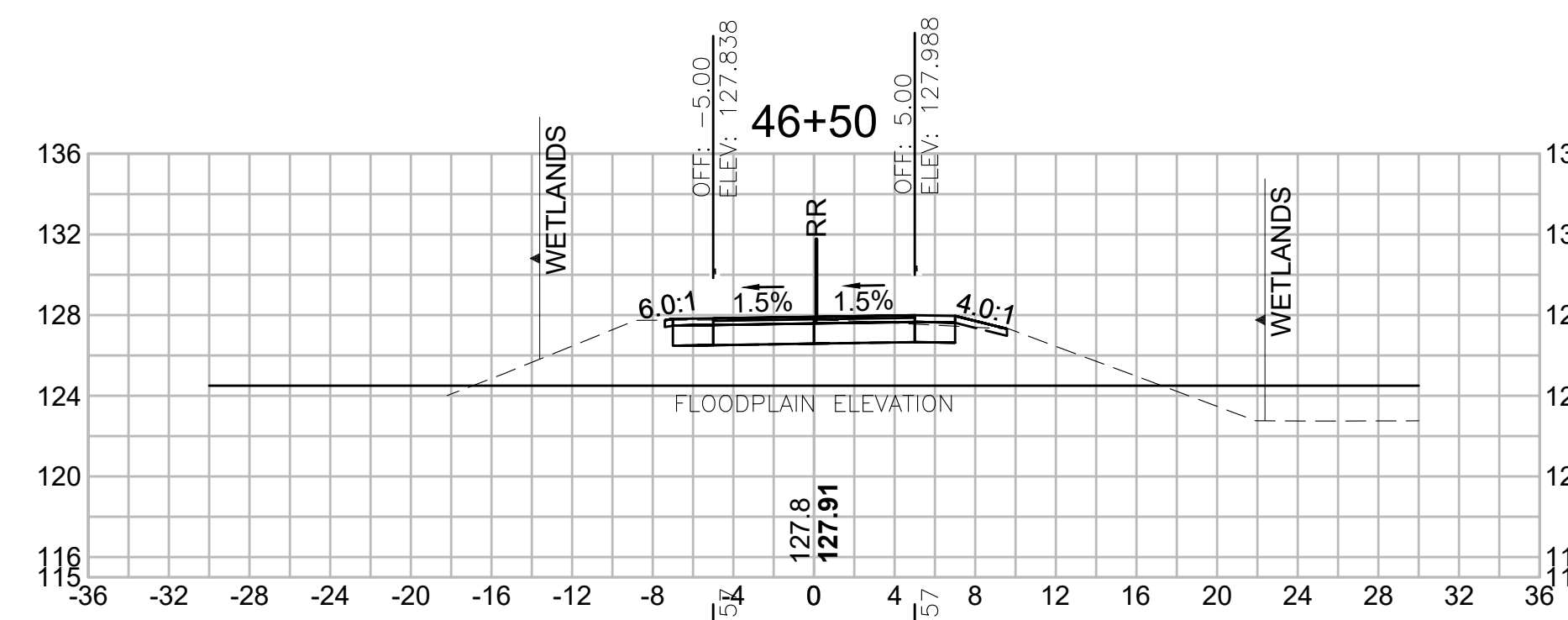
Total Volume at Station 42+50.00	
Cut Area	2.847
Fill Area	2.410
Cut Vol	2.982
Fill Vol	7.3
Cum Cut Vol	2929.923
Cum Fill Vol	647.7
Net Vol	2282.2



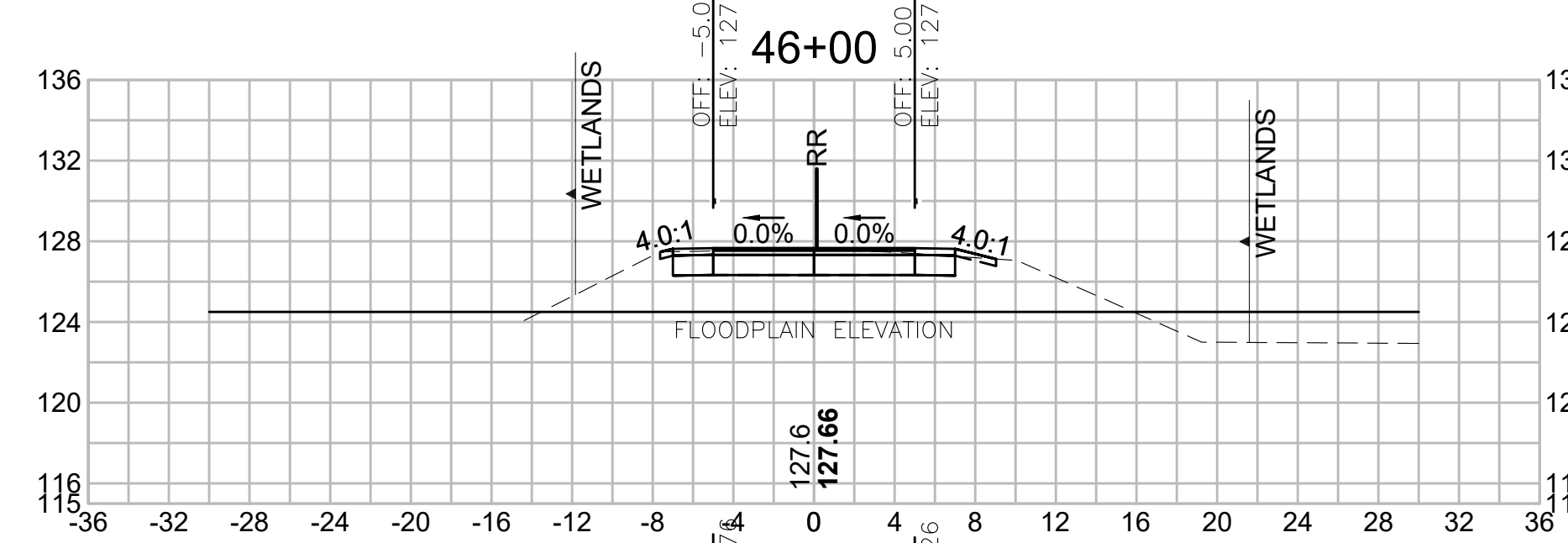
Total Volume at Station 42+00.00	
Cut Area	0.373
Fill Area	5.458
Cut Vol	4.313
Fill Vol	6.4
Cum Cut Vol	2926.941
Cum Fill Vol	640.4
Net Vol	2286.5



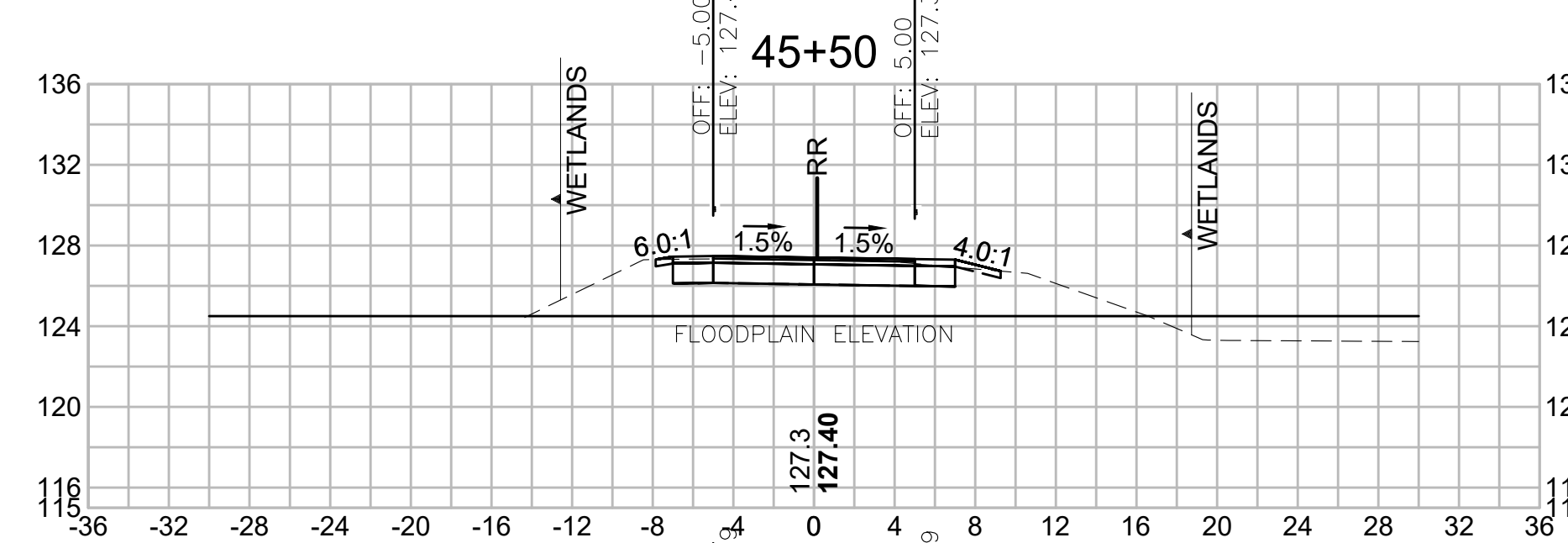
Total Volume at Station 41+50.00	
Cut Area	4.284
Fill Area	1.478
Cut Vol	8.170
Fill Vol	3.2
Cum Cut Vol	2922.629
Cum Fill Vol	634.0
Net Vol	2288.6



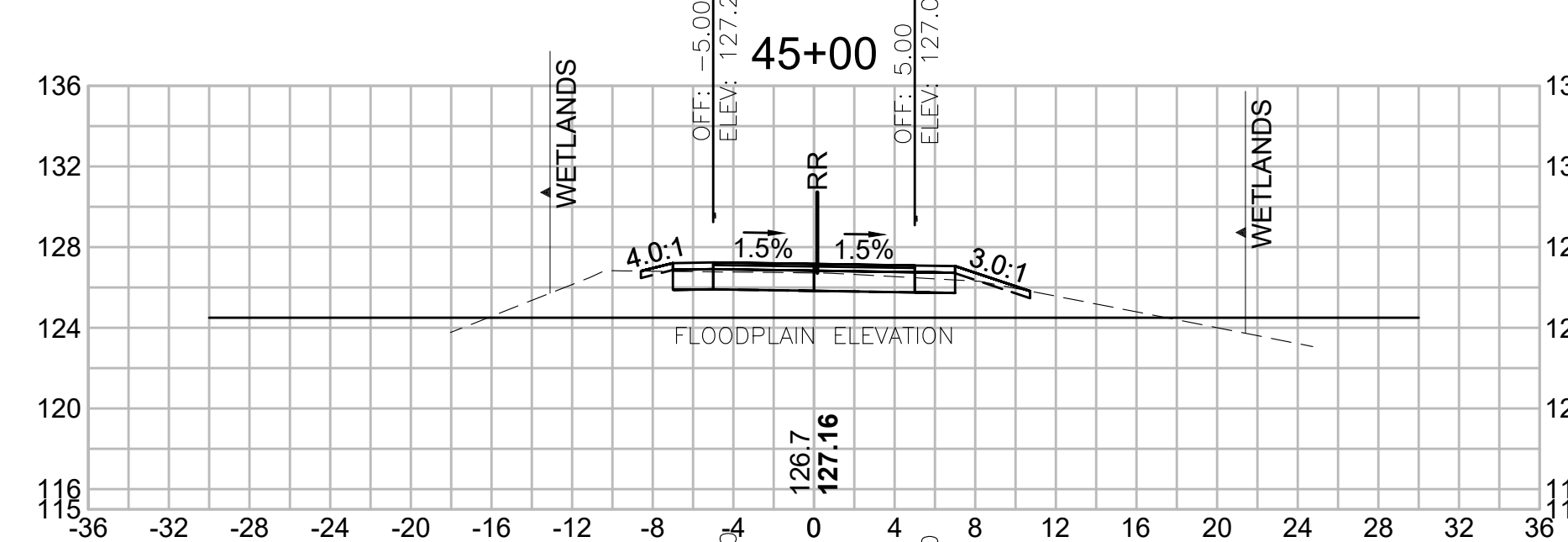
Total Volume at Station 46+50.00	
Cut Area	16.051
Fill Area	0.072
Cut Vol	30.612
Fill Vol	0.1
Cum Cut Vol	3074.960
Cum Fill Vol	681.4
Net Vol	2393.5



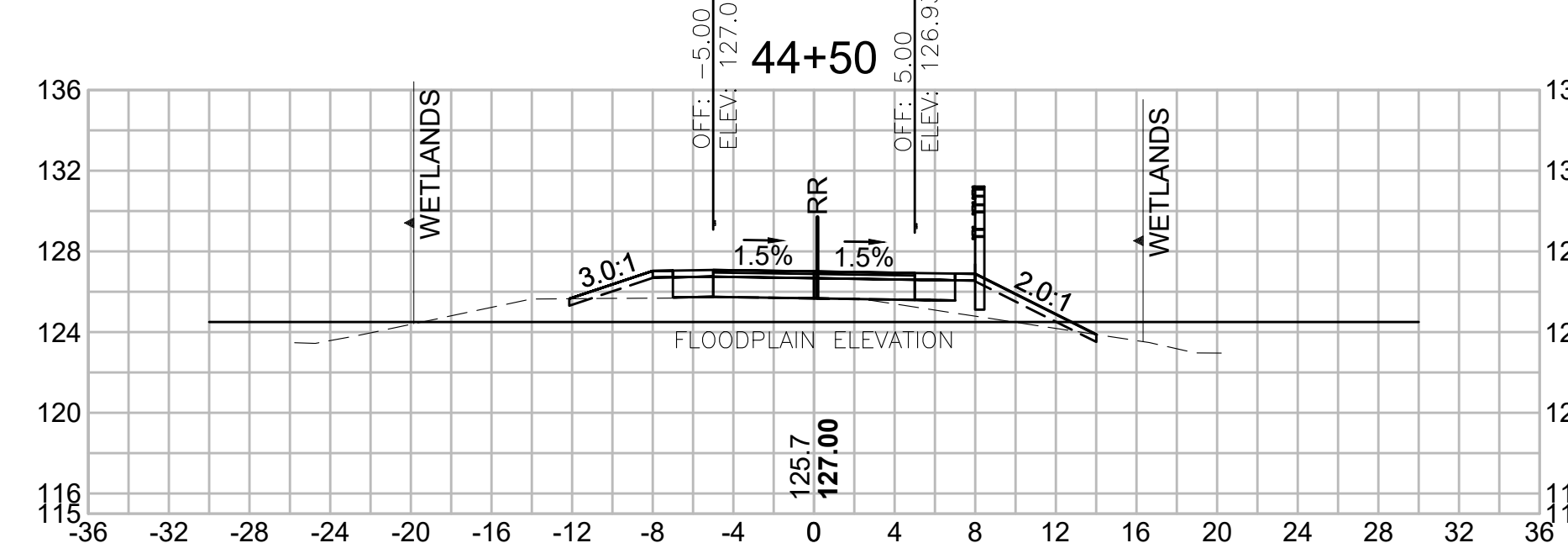
Total Volume at Station 46+00.00	
Cut Area	17.010
Fill Area	0.002
Cut Vol	31.938
Fill Vol	0.0
Cum Cut Vol	3044.349
Cum Fill Vol	681.3
Net Vol	2363.0



Total Volume at Station 45+50.00	
Cut Area	17.483
Fill Area	0.002
Cut Vol	27.594
Fill Vol	0.2
Cum Cut Vol	3012.411
Cum Fill Vol	681.3
Net Vol	2331.1



Total Volume at Station 45+00.00	
Cut Area	12.319
Fill Area	0.211
Cut Vol	12.241
Fill Vol	8.7
Cum Cut Vol	2984.817
Cum Fill Vol	681.1
Net Vol	2303.7

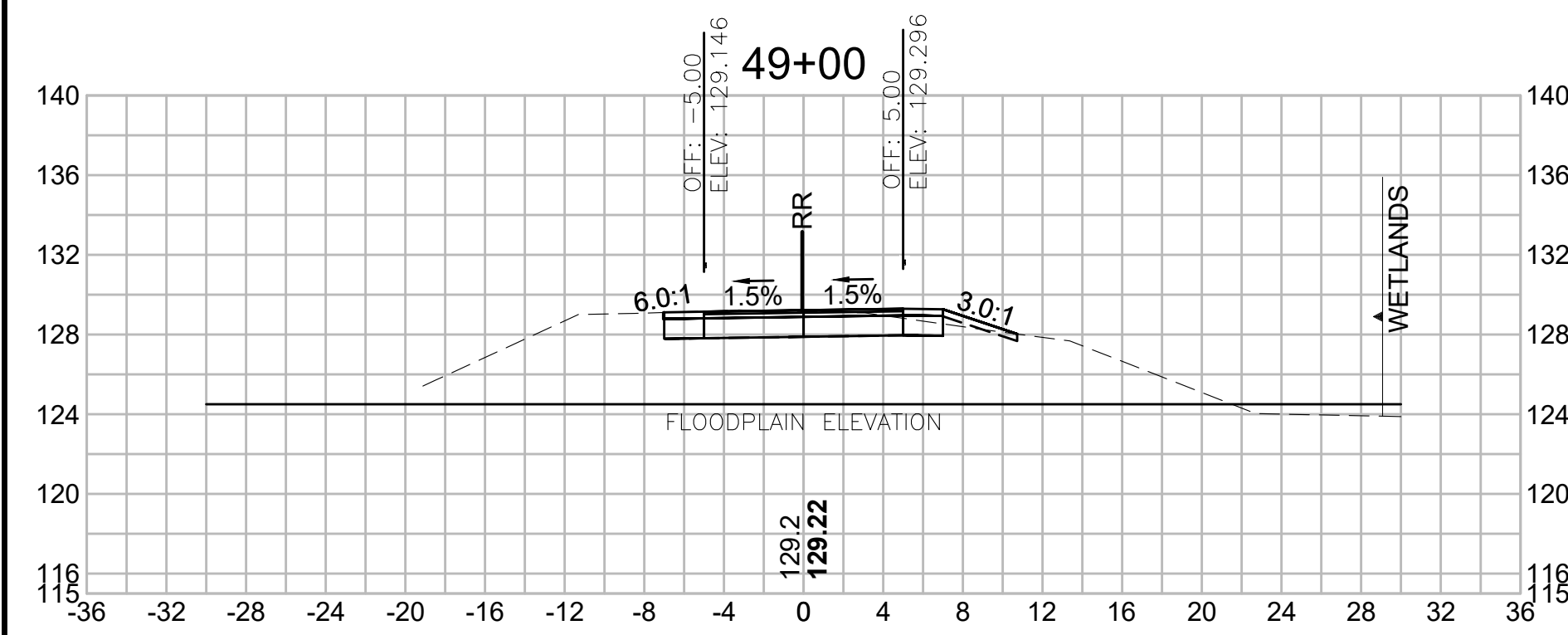


Total Volume at Station 44+50.00	
Cut Area	0.901
Fill Area	9.138
Cut Vol	7.715
Fill Vol	10.9
Cum Cut Vol	2972.577
Cum Fill Vol	672.5
Net Vol	2300.1

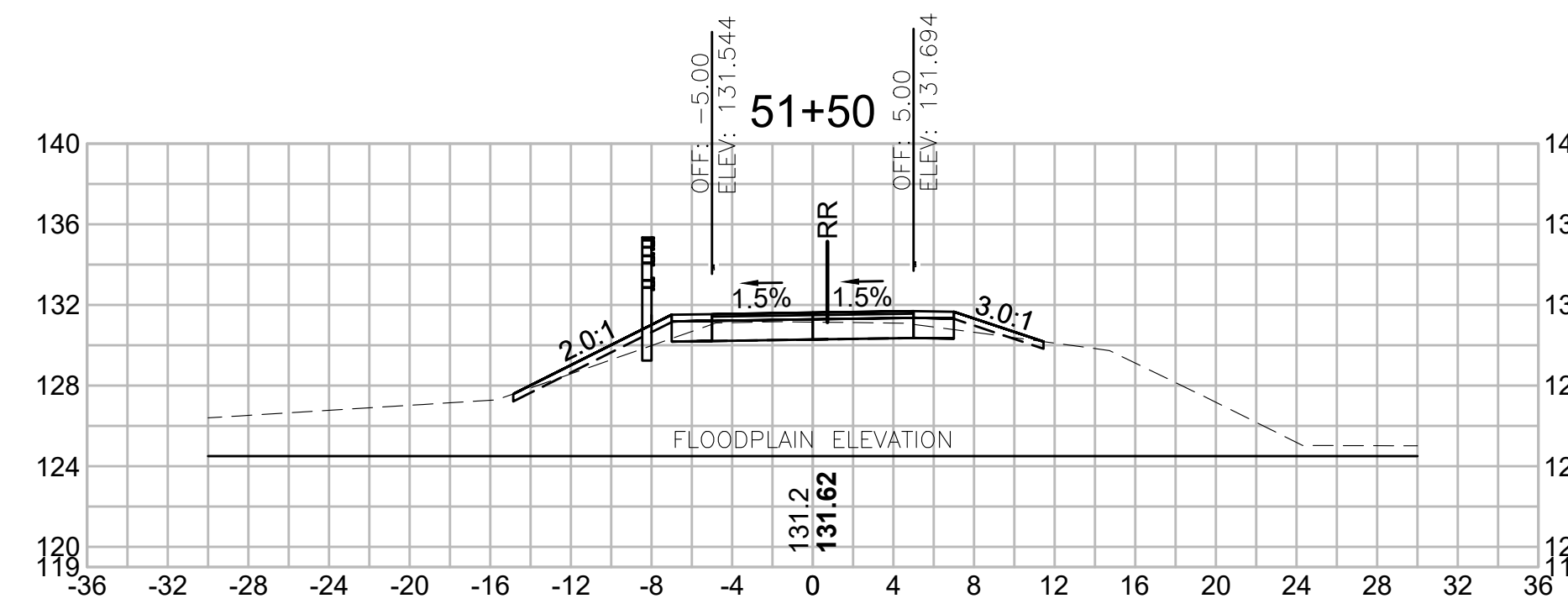
**SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	69	73
PROJECT FILE NO.		613319	

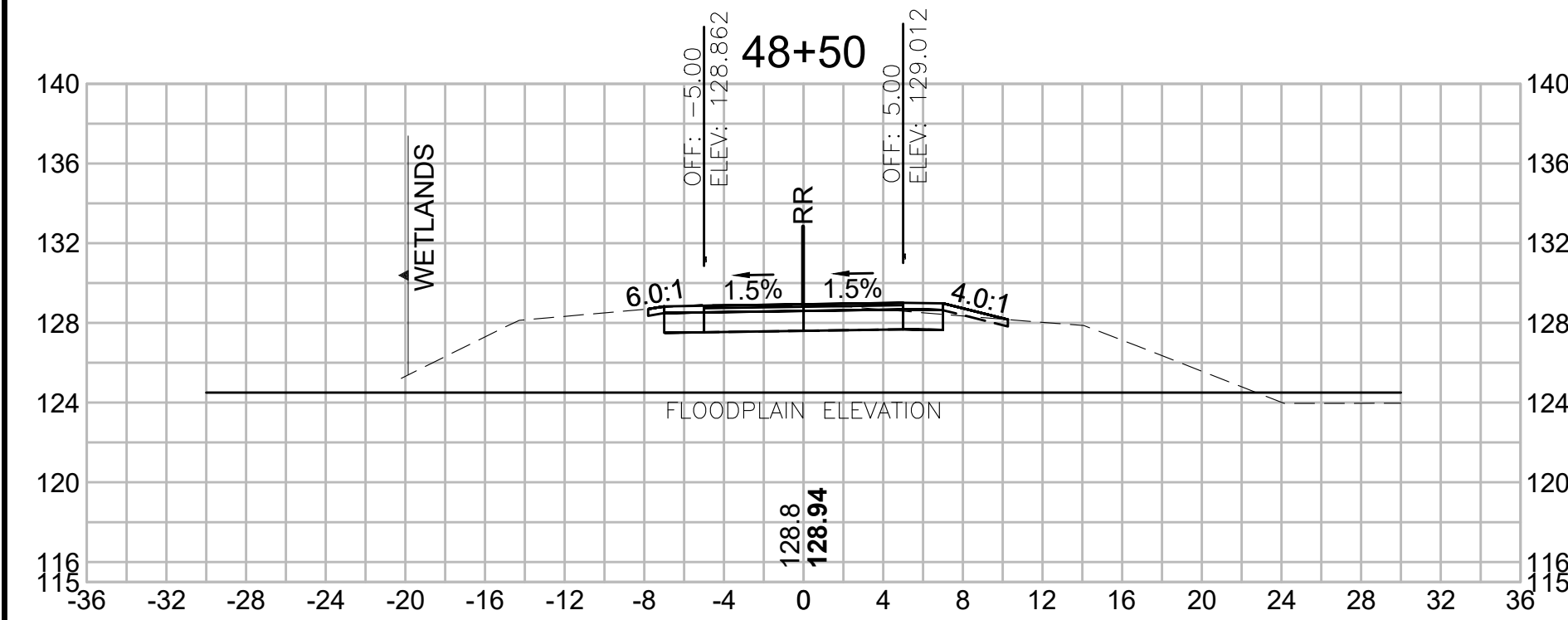
CROSS SECTIONS



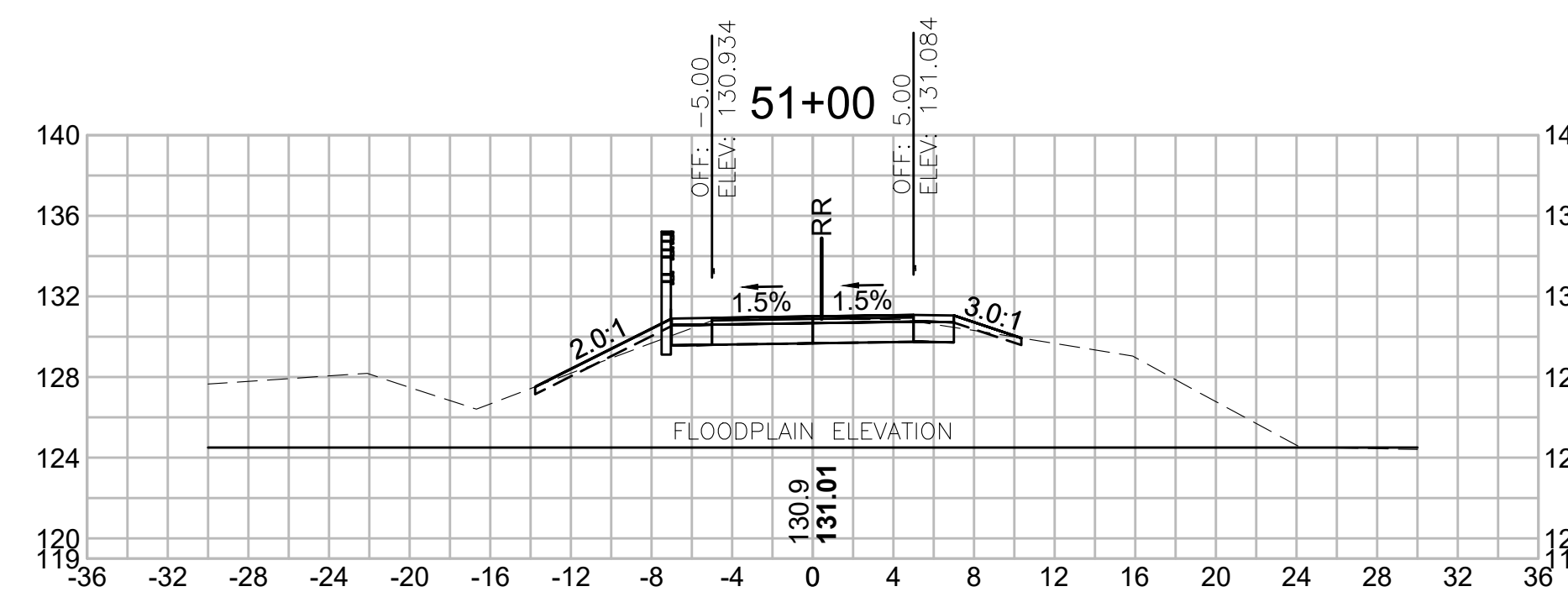
Total Volume at Station 49+00.00	
Cut Area	16.831
Fill Area	0.379
Cut Vol	31.431
Fill Vol	0.5
Cum Cut Vol	3227.544
Cum Fill Vol	682.7
Net Vol	2544.8



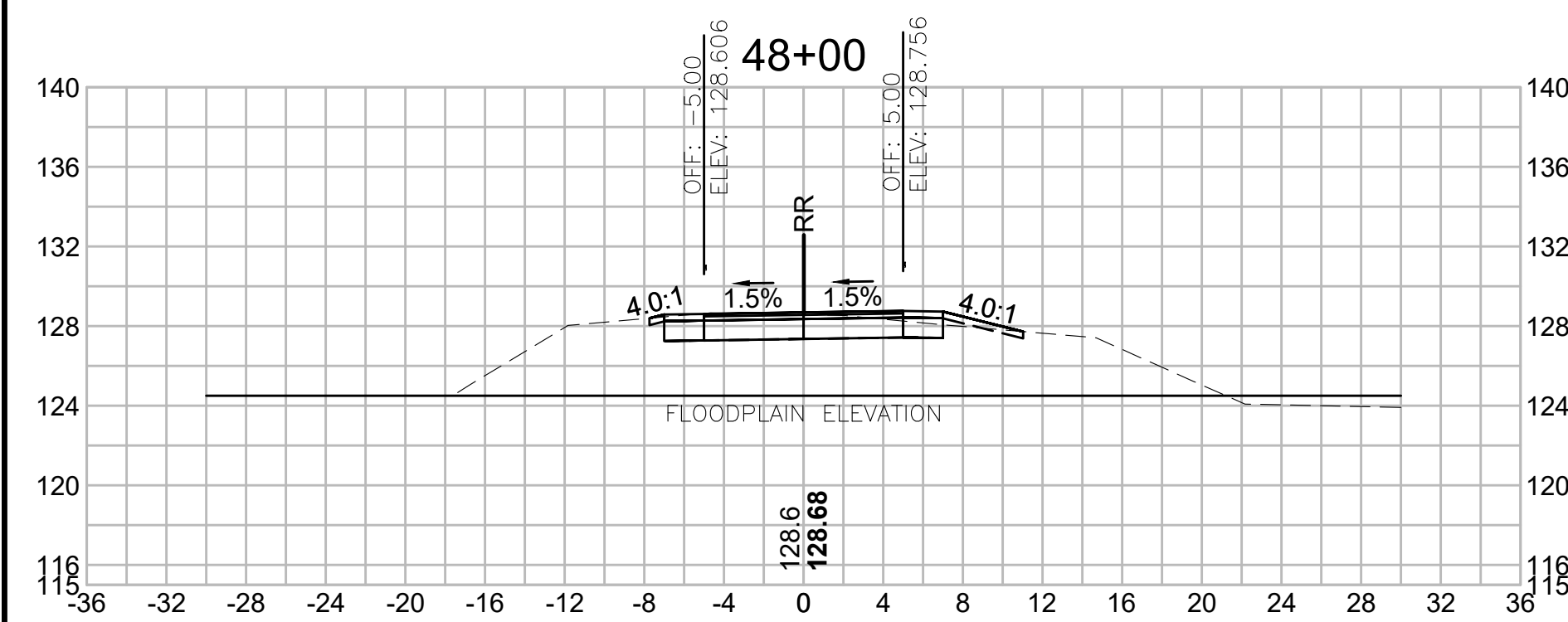
Total Volume at Station 51+50.00	
Cut Area	11.283
Fill Area	2.913
Cut Vol	25.535
Fill Vol	3.7
Cum Cut Vol	3369.764
Cum Fill Vol	706.7
Net Vol	2663.1



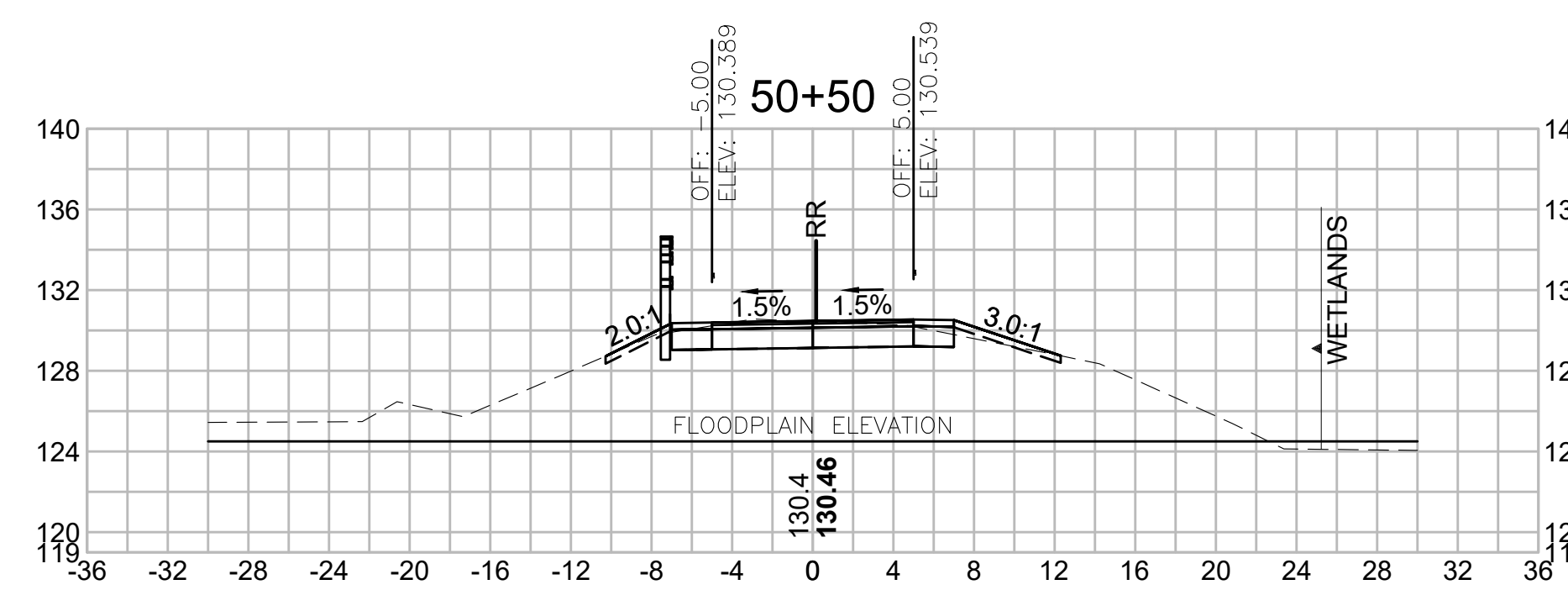
Total Volume at Station 48+50.00	
Cut Area	17.114
Fill Area	0.129
Cut Vol	31.125
Fill Vol	0.4
Cum Cut Vol	3196.113
Cum Fill Vol	682.3
Net Vol	2513.9



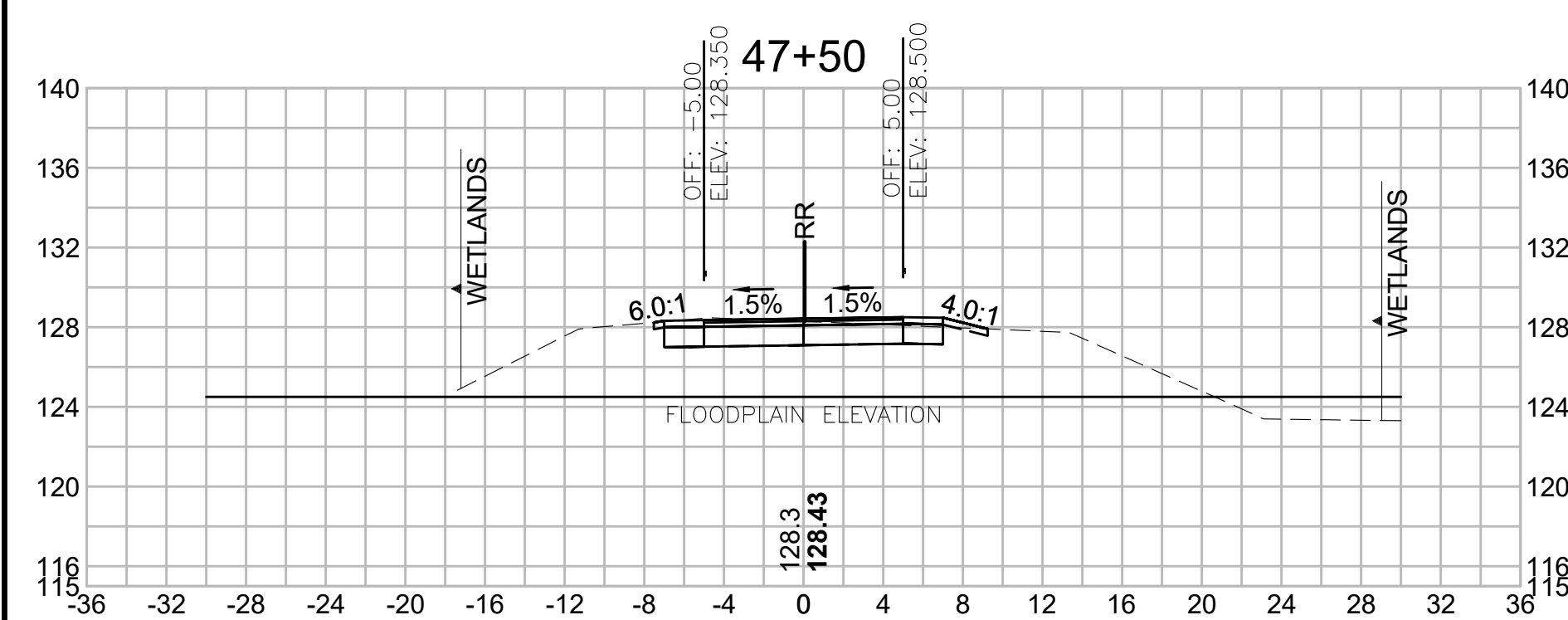
Total Volume at Station 51+00.00	
Cut Area	16.294
Fill Area	1.053
Cut Vol	31.319
Fill Vol	1.4
Cum Cut Vol	3344.229
Cum Fill Vol	703.0
Net Vol	2641.2



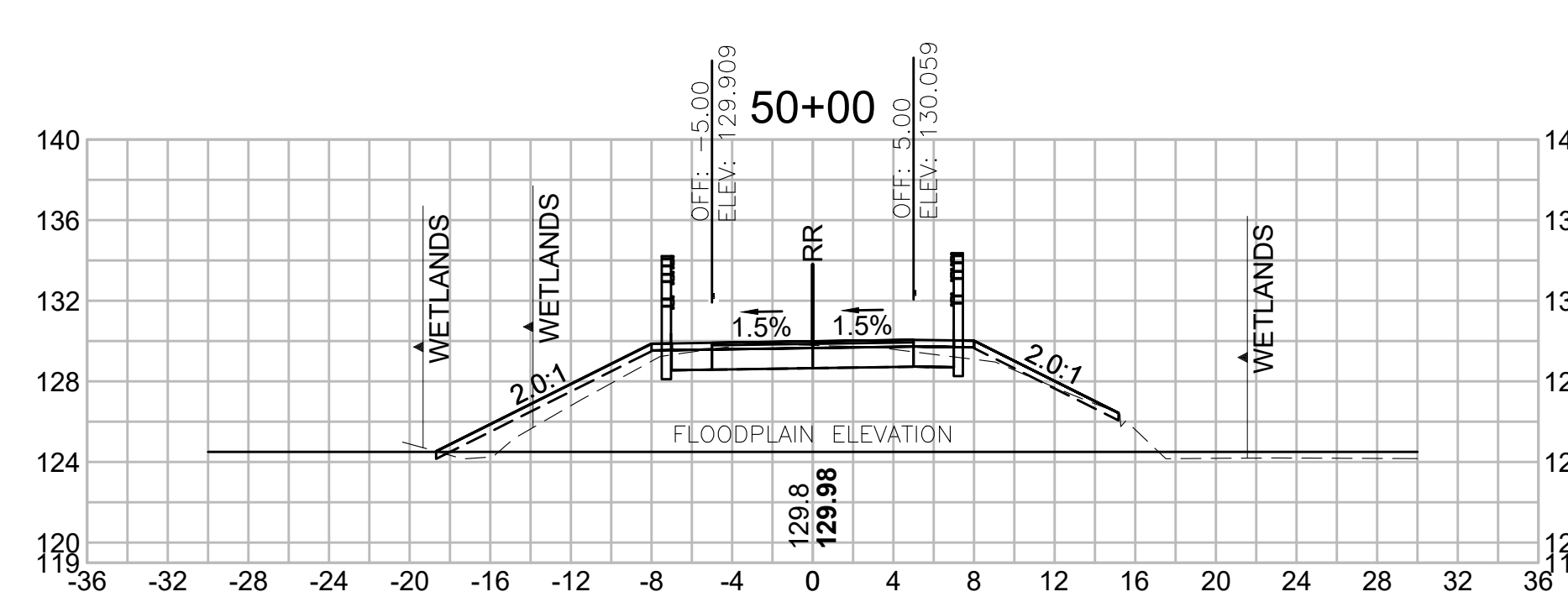
Total Volume at Station 48+00.00	
Cut Area	16.500
Fill Area	0.312
Cut Vol	30.878
Fill Vol	0.3
Cum Cut Vol	3164.989
Cum Fill Vol	681.8
Net Vol	2483.1



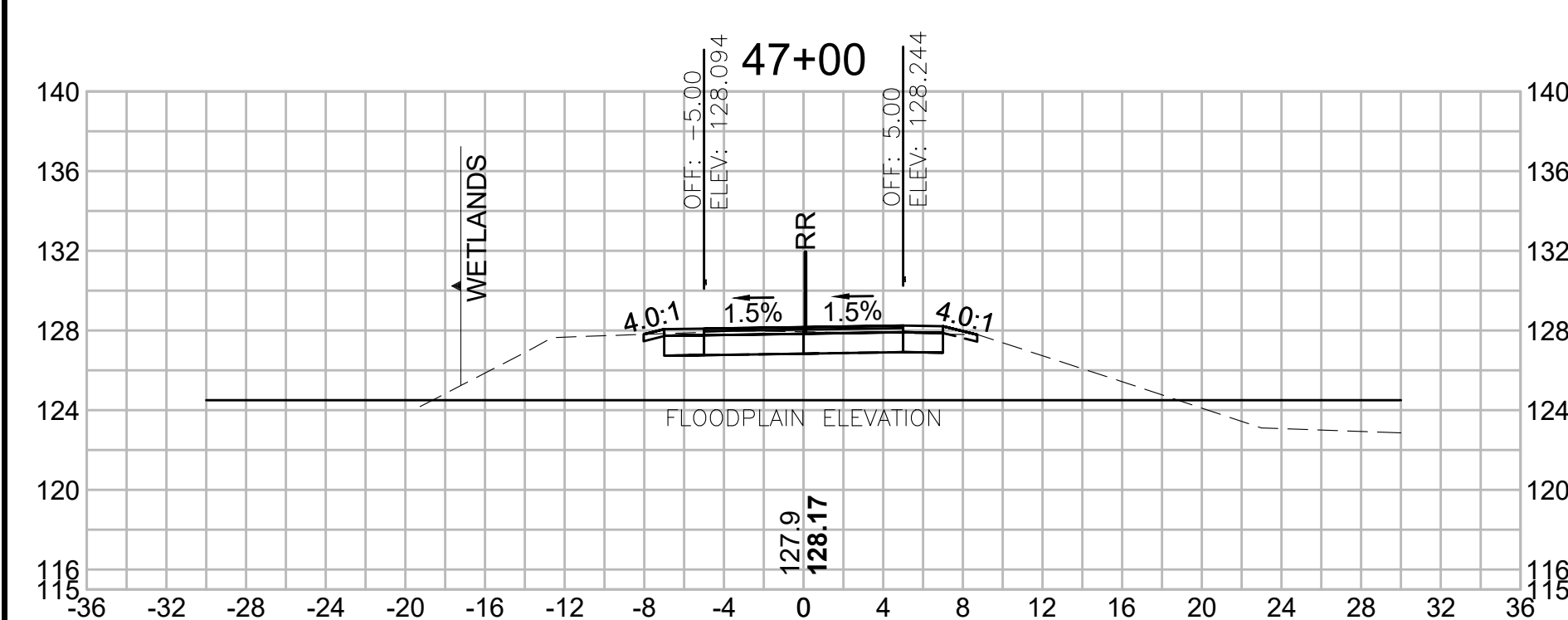
Total Volume at Station 50+50.00	
Cut Area	17.530
Fill Area	0.506
Cut Vol	29.767
Fill Vol	8.8
Cum Cut Vol	3312.911
Cum Fill Vol	701.6
Net Vol	2611.4



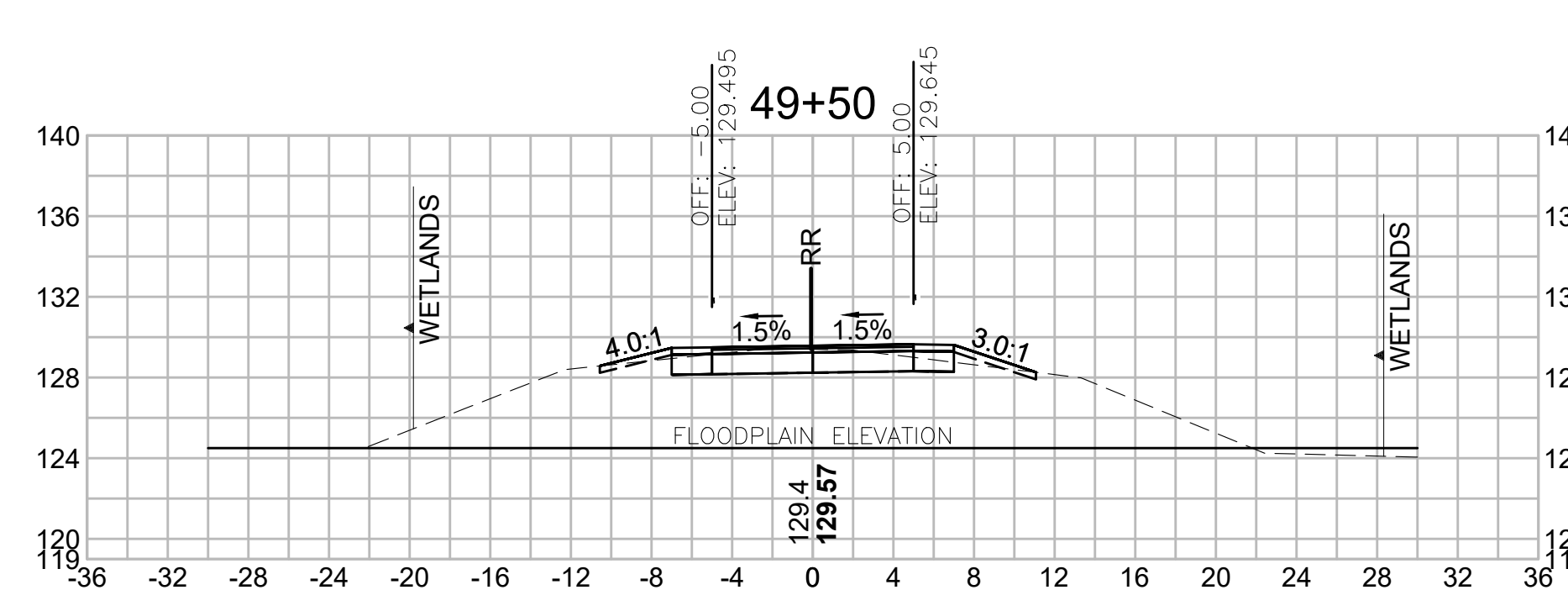
Total Volume at Station 47+50.00	
Cut Area	16.847
Fill Area	0.037
Cut Vol	29.945
Fill Vol	0.0
Cum Cut Vol	3134.112
Cum Fill Vol	681.5
Net Vol	2452.6



Total Volume at Station 50+00.00	
Cut Area	14.618
Fill Area	9.004
Cut Vol	26.776
Fill Vol	9.0
Cum Cut Vol	3283.144
Cum Fill Vol	692.8
Net Vol	2590.4



Total Volume at Station 47+00.00	
Cut Area	15.493
Fill Area	0.006
Cut Vol	29.207
Fill Vol	0.1
Cum Cut Vol	3104.167
Cum Fill Vol	681.5
Net Vol	2422.7



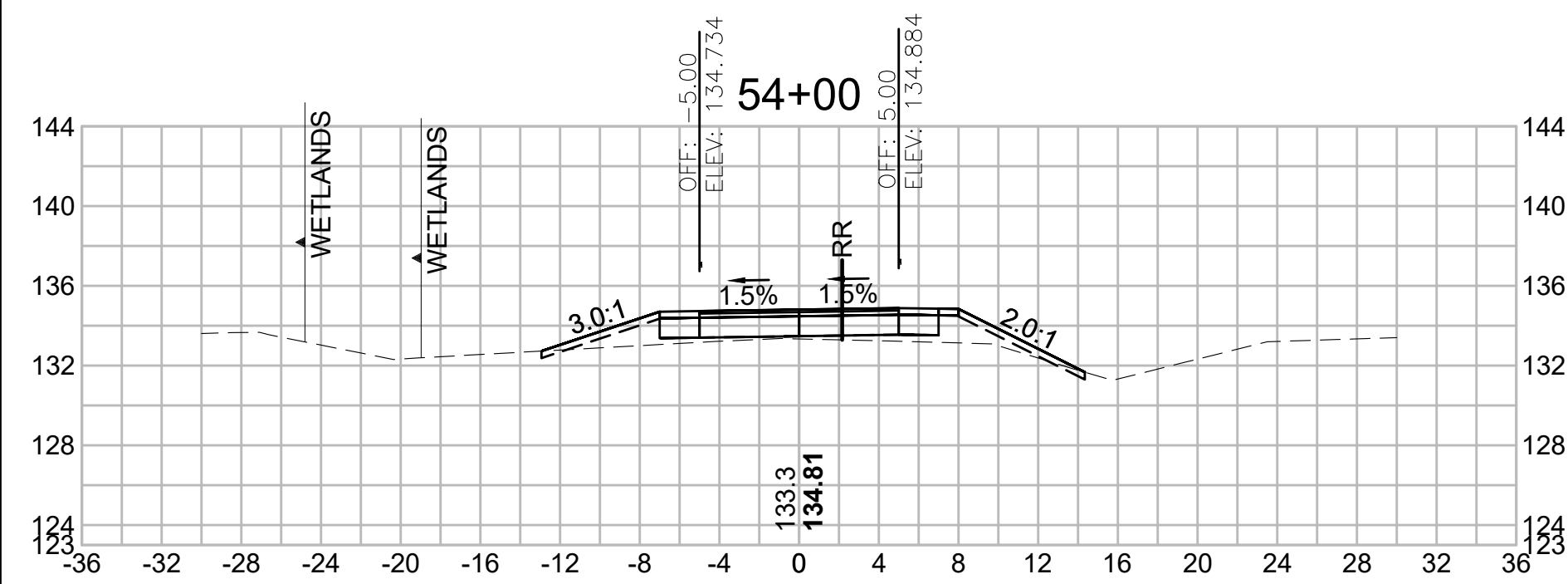
Total Volume at Station 49+50.00	
Cut Area	14.300
Fill Area	0.724
Cut Vol	28.825
Fill Vol	1.0
Cum Cut Vol	3256.368
Cum Fill Vol	683.7
Net Vol	2572.6

**SUBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

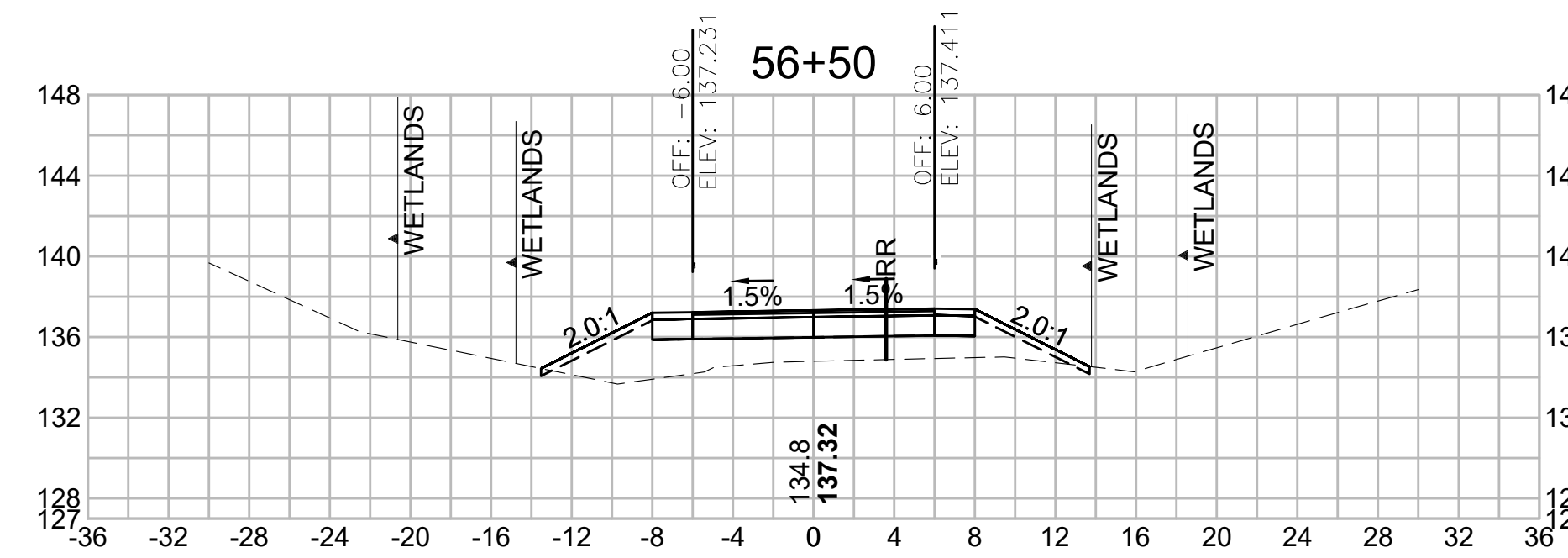
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	70	73

PROJECT FILE NO. 613319

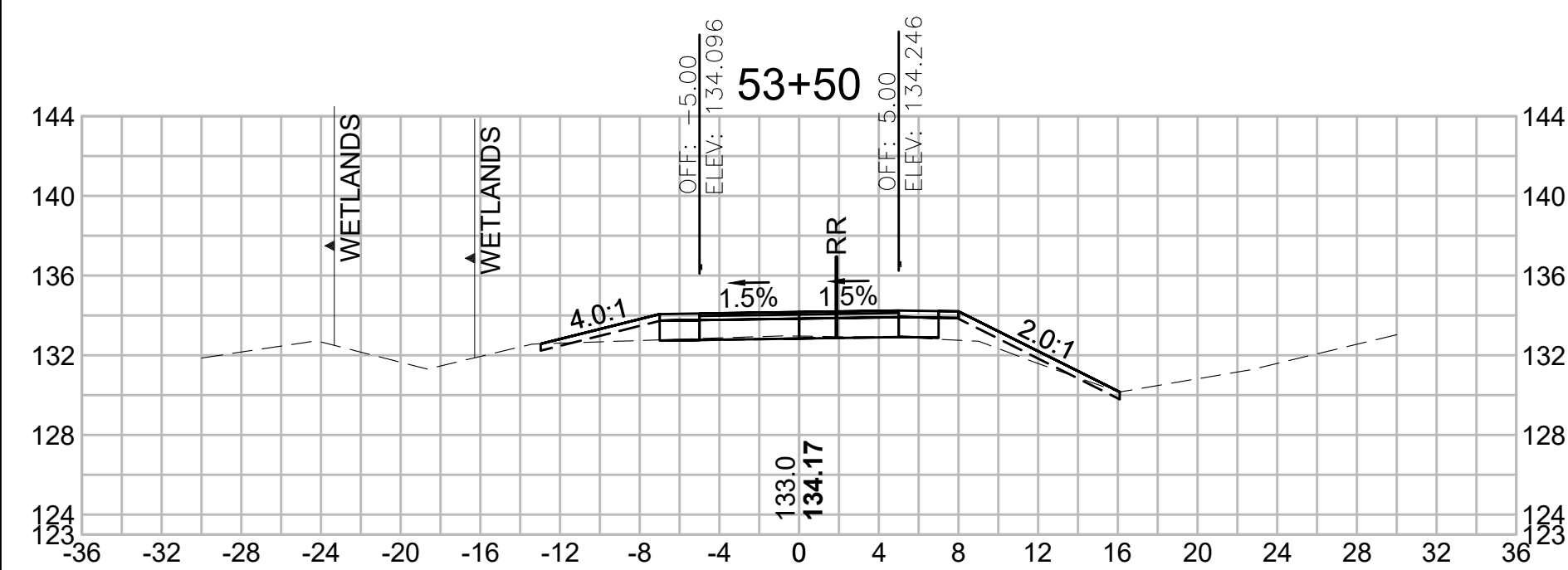
CROSS SECTIONS



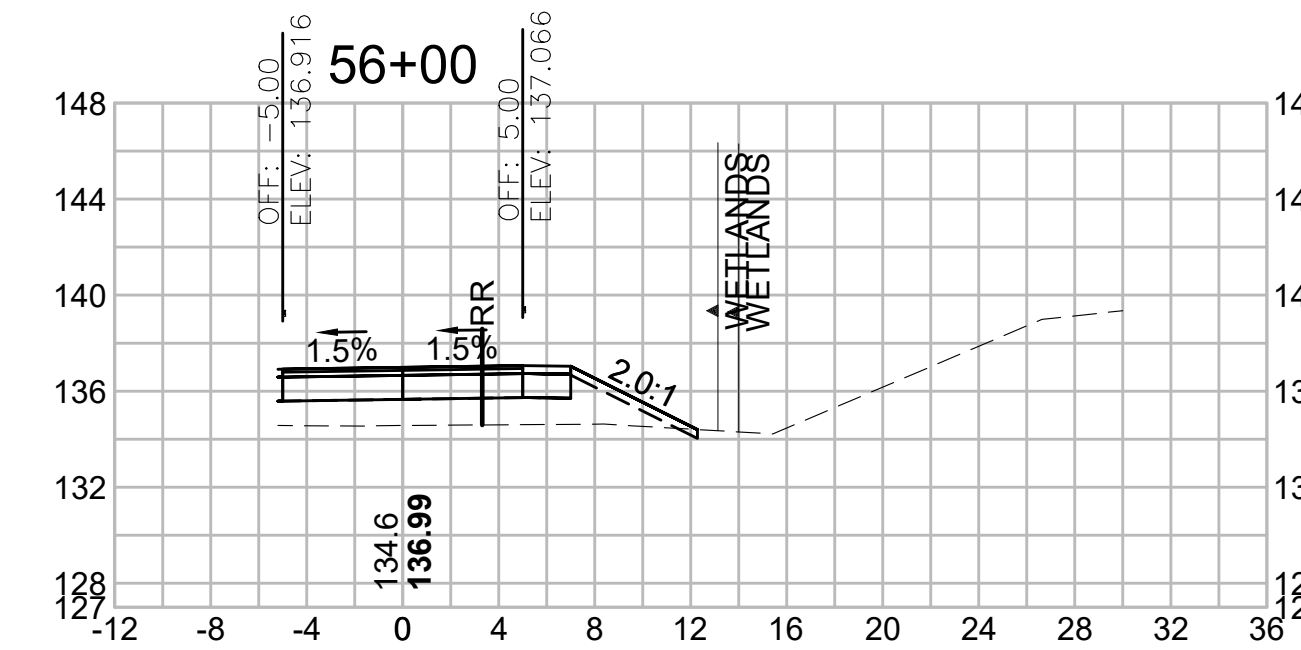
Total Volume at Station 54+00.00	
Cut Area	0.560
Fill Area	9.918
Cut Vol	1.999
Fill Vol	14.5
Cum Cut Vol	3401.781
Cum Fill Vol	751.1
Net Vol	2650.7



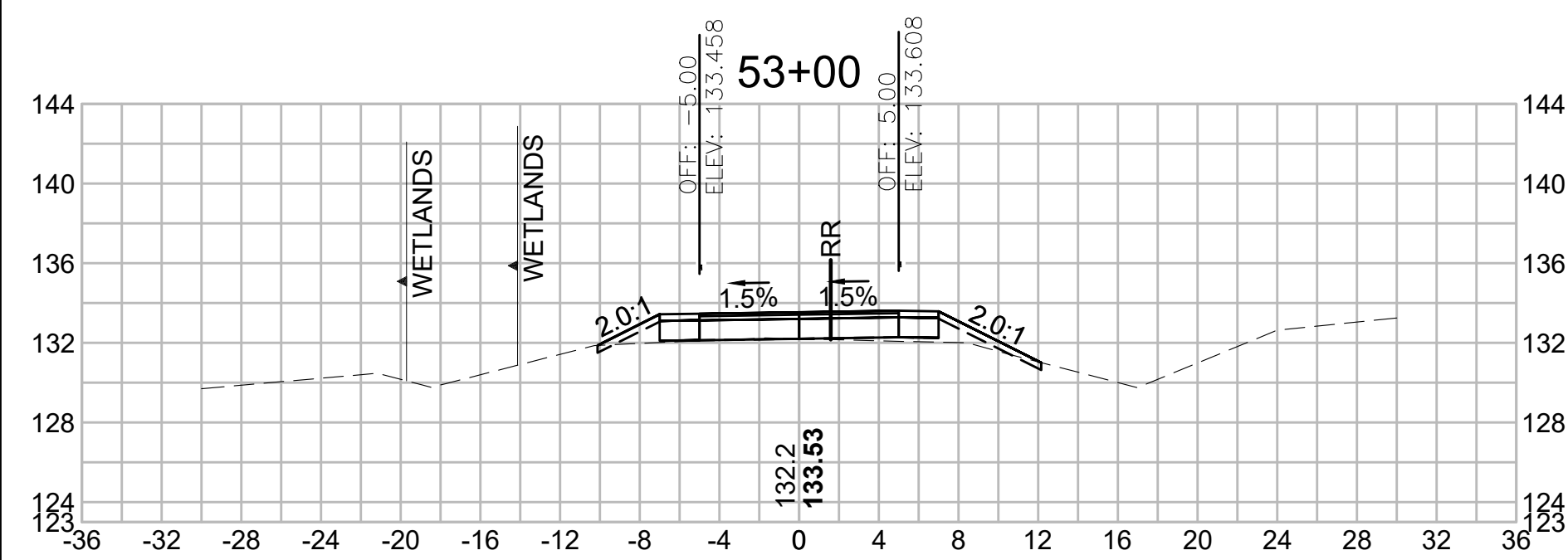
Total Volume at Station 56+50.00	
Cut Area	0.273
Fill Area	33.576
Cut Vol	0.396
Fill Vol	47.5
Cum Cut Vol	3404.253
Cum Fill Vol	943.4
Net Vol	2460.9



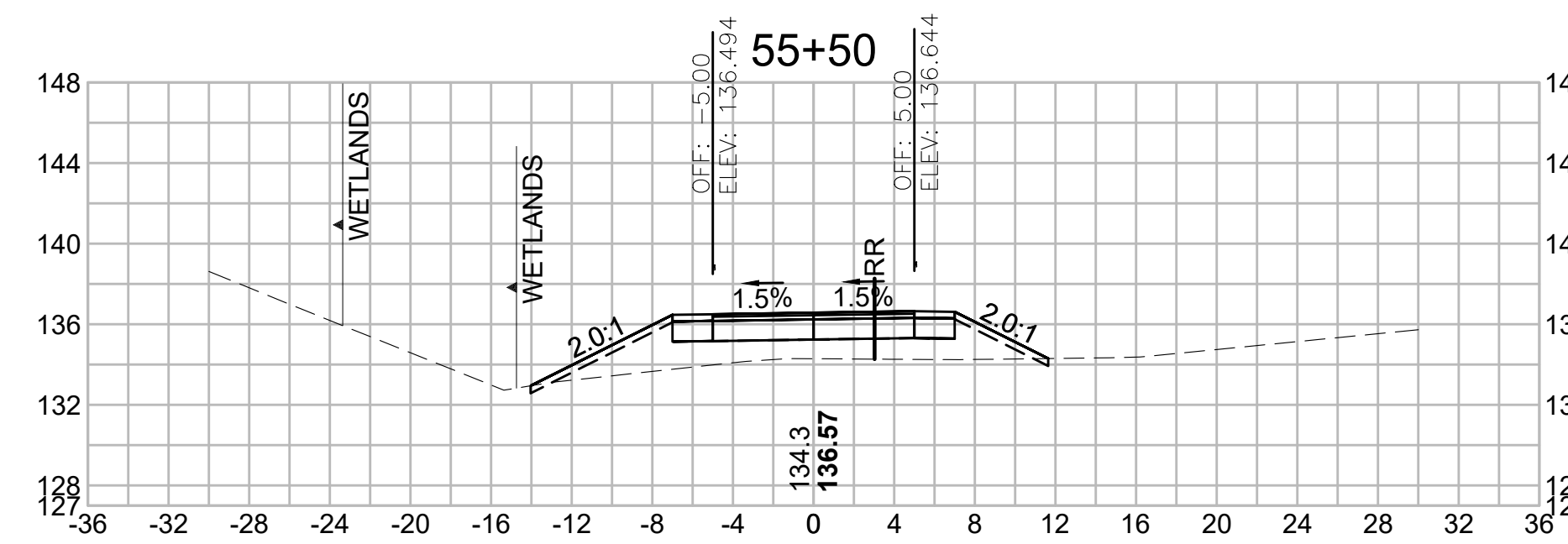
Total Volume at Station 53+50.00	
Cut Area	1.598
Fill Area	5.702
Cut Vol	2.007
Fill Vol	9.0
Cum Cut Vol	3399.783
Cum Fill Vol	736.6
Net Vol	2663.2



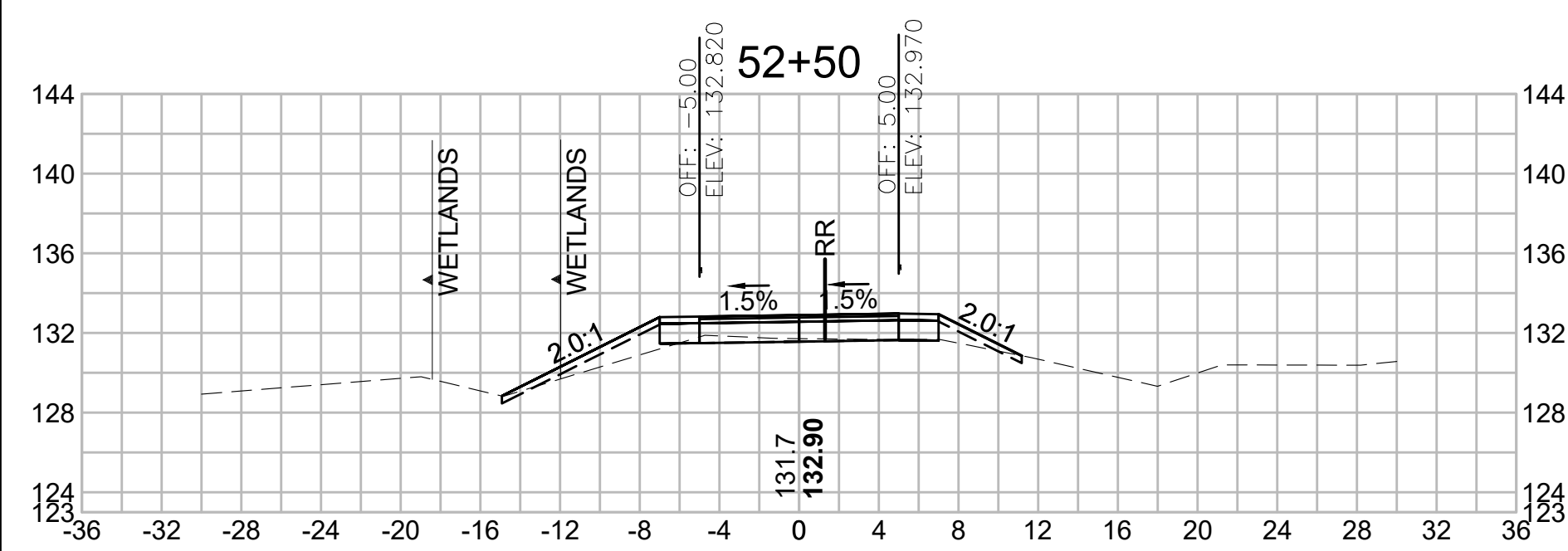
Total Volume at Station 56+00.00	
Cut Area	0.154
Fill Area	17.724
Cut Vol	0.454
Fill Vol	40.1
Cum Cut Vol	3403.858
Cum Fill Vol	895.9
Net Vol	2508.0



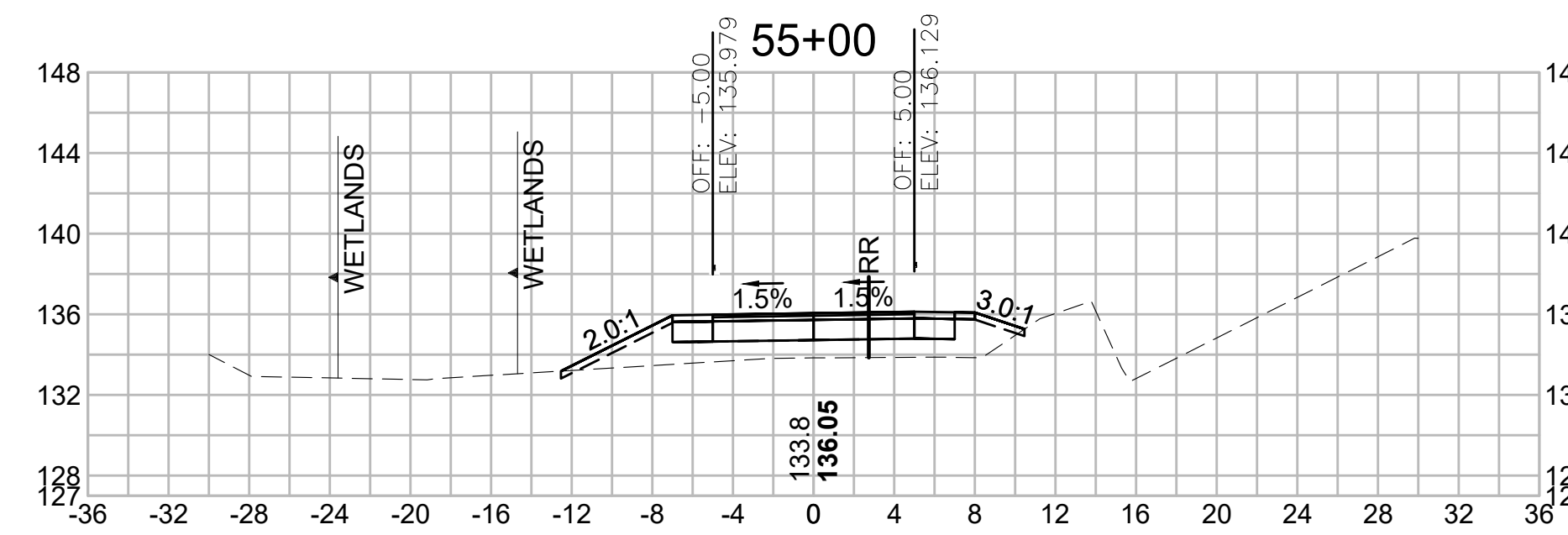
Total Volume at Station 53+00.00	
Cut Area	0.569
Fill Area	4.004
Cut Vol	2.872
Fill Vol	8.6
Cum Cut Vol	3397.776
Cum Fill Vol	727.6
Net Vol	2670.2



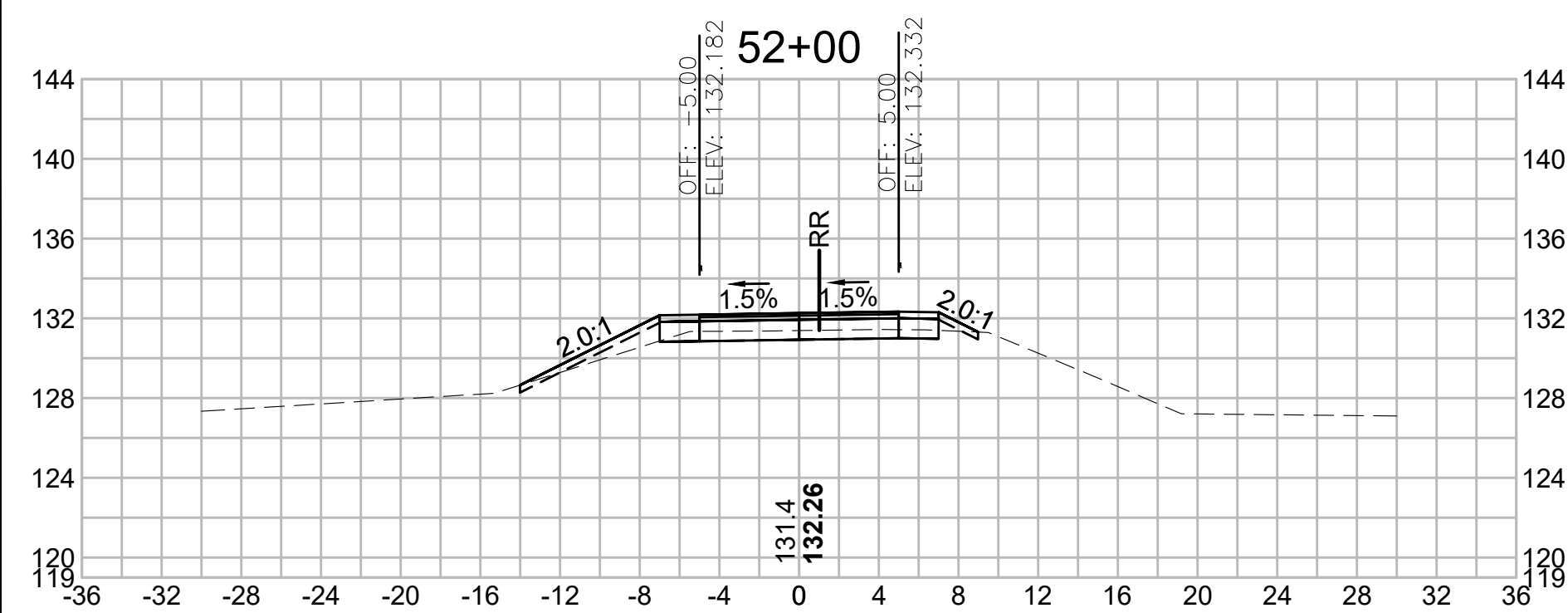
Total Volume at Station 55+50.00	
Cut Area	0.336
Fill Area	25.602
Cut Vol	0.510
Fill Vol	44.1
Cum Cut Vol	3403.405
Cum Fill Vol	855.7
Net Vol	2547.7



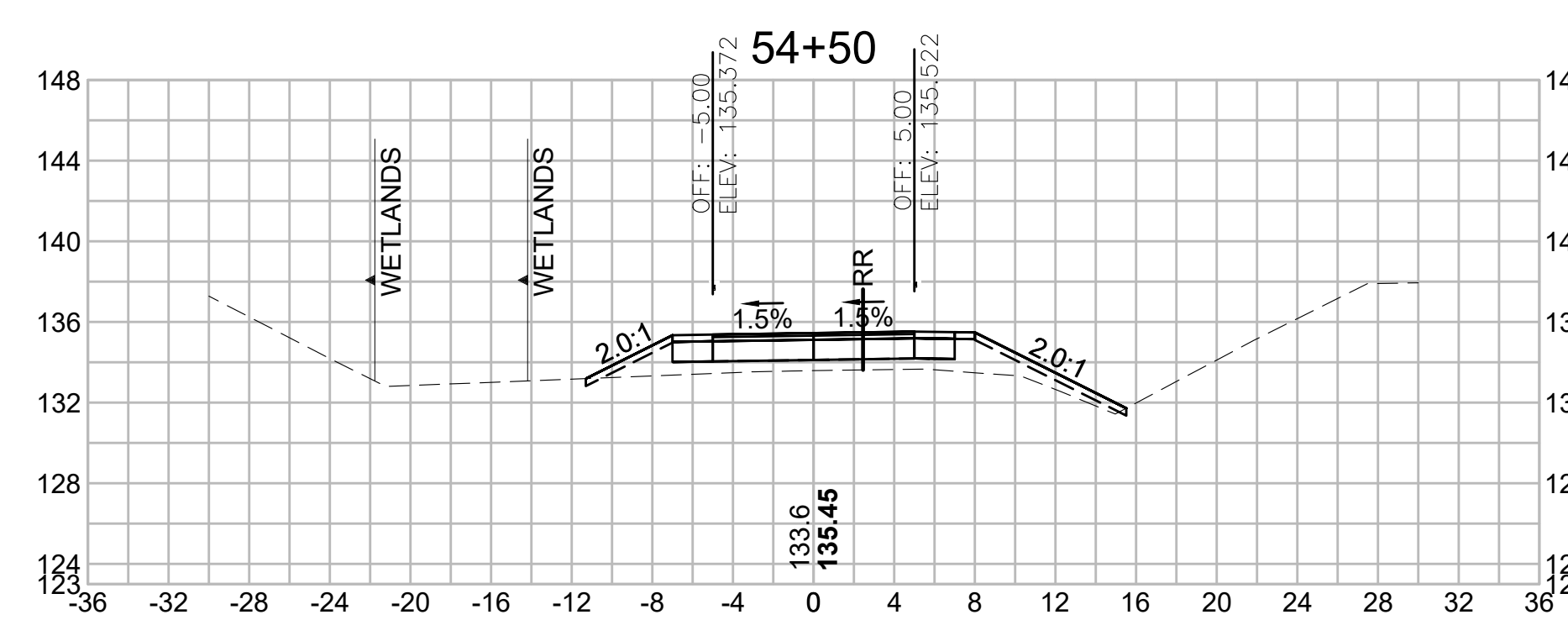
Total Volume at Station 52+50.00	
Cut Area	2.533
Fill Area	5.230
Cut Vol	8.520
Fill Vol	7.3
Cum Cut Vol	3394.905
Cum Fill Vol	719.1
Net Vol	2675.8



Total Volume at Station 55+00.00	
Cut Area	0.215
Fill Area	22.032
Cut Vol	0.398
Fill Vol	35.9
Cum Cut Vol	3402.895
Cum Fill Vol	811.6
Net Vol	2591.3



Total Volume at Station 52+00.00	
Cut Area	6.668
Fill Area	2.614
Cut Vol	16.622
Fill Vol	5.1
Cum Cut Vol	3386.386
Cum Fill Vol	711.8
Net Vol	2674.6



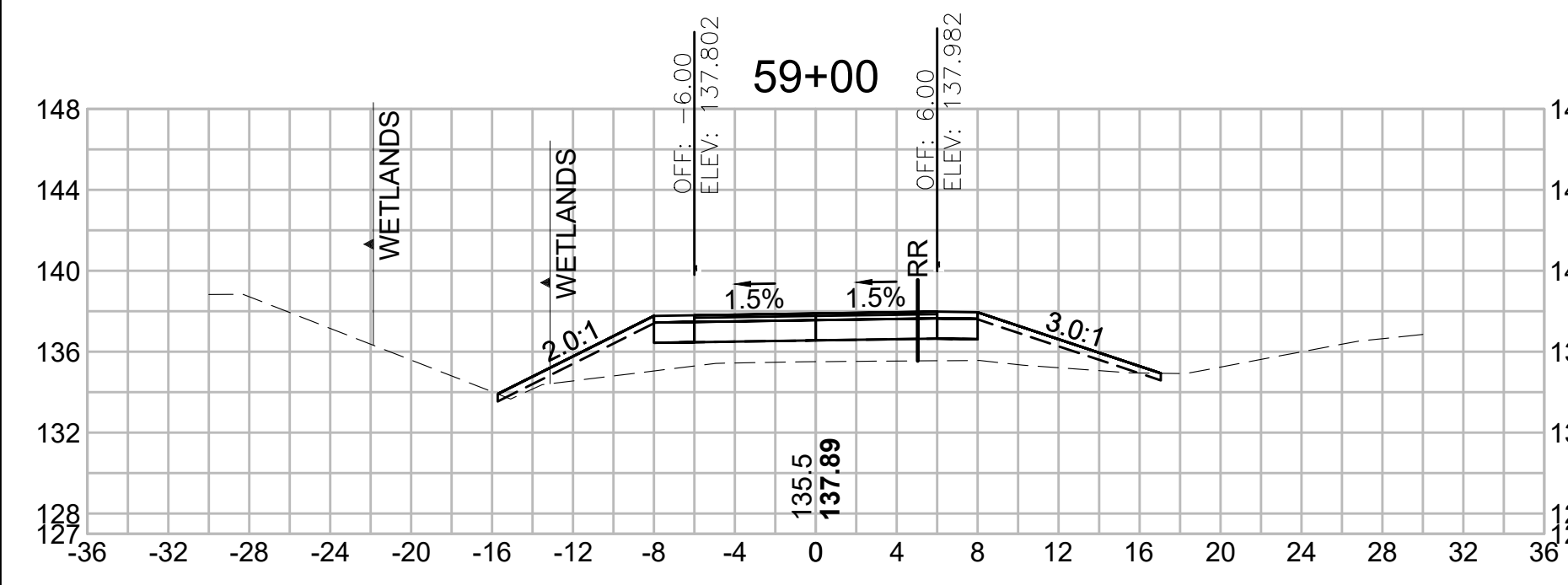
Total Volume at Station 54+50.00	
Cut Area	0.214
Fill Area	16.741
Cut Vol	0.717
Fill Vol	24.7
Cum Cut Vol	3402.498
Cum Fill Vol	775.7
Net Vol	2626.8

SUDBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

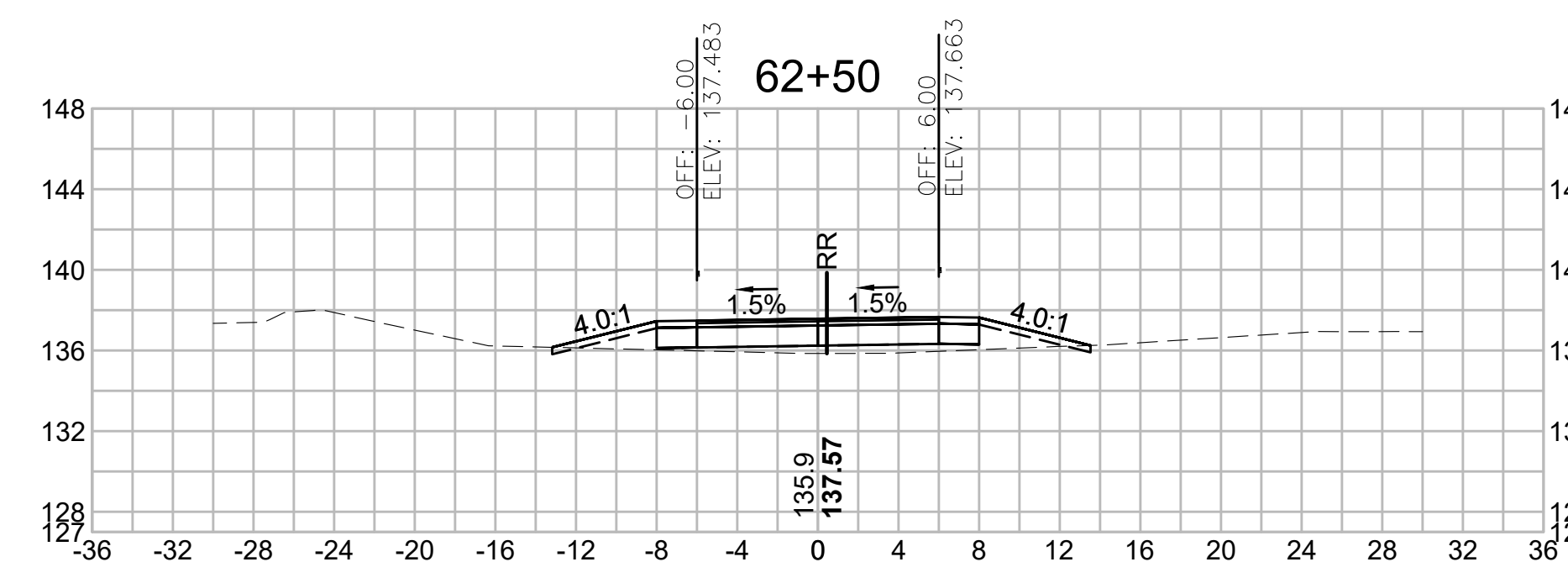
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	71	73

PROJECT FILE NO. 613319

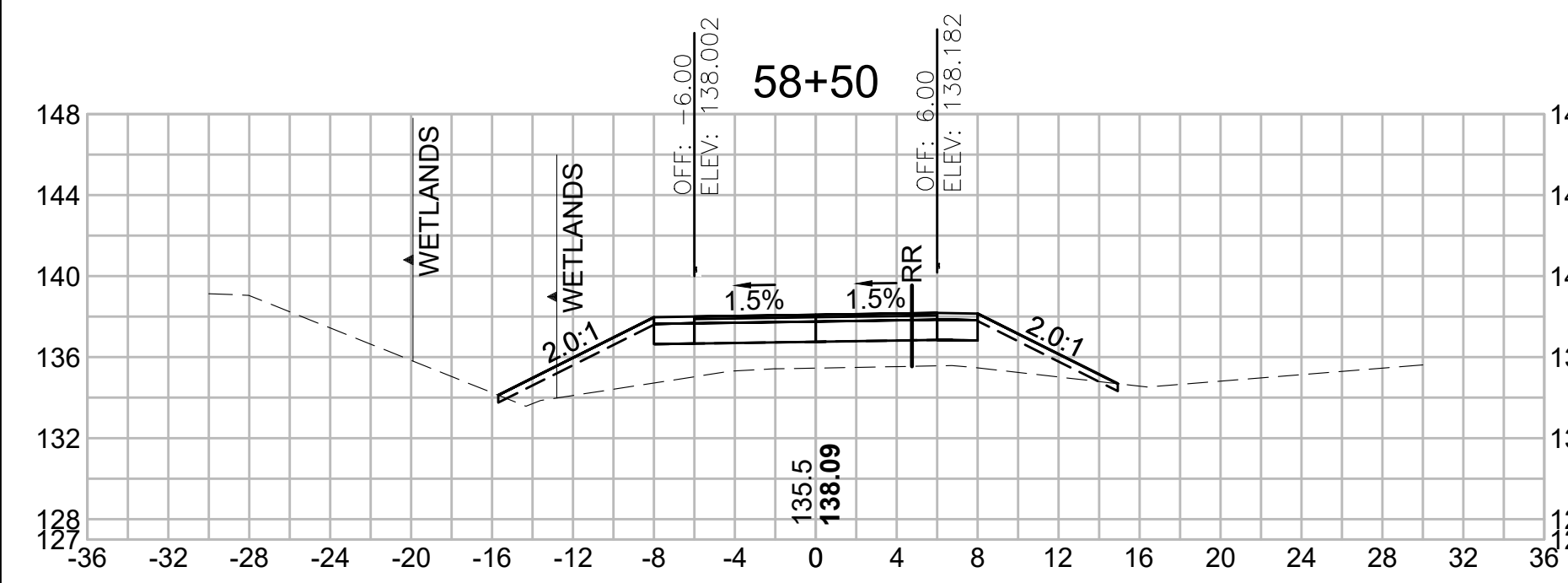
CROSS SECTIONS



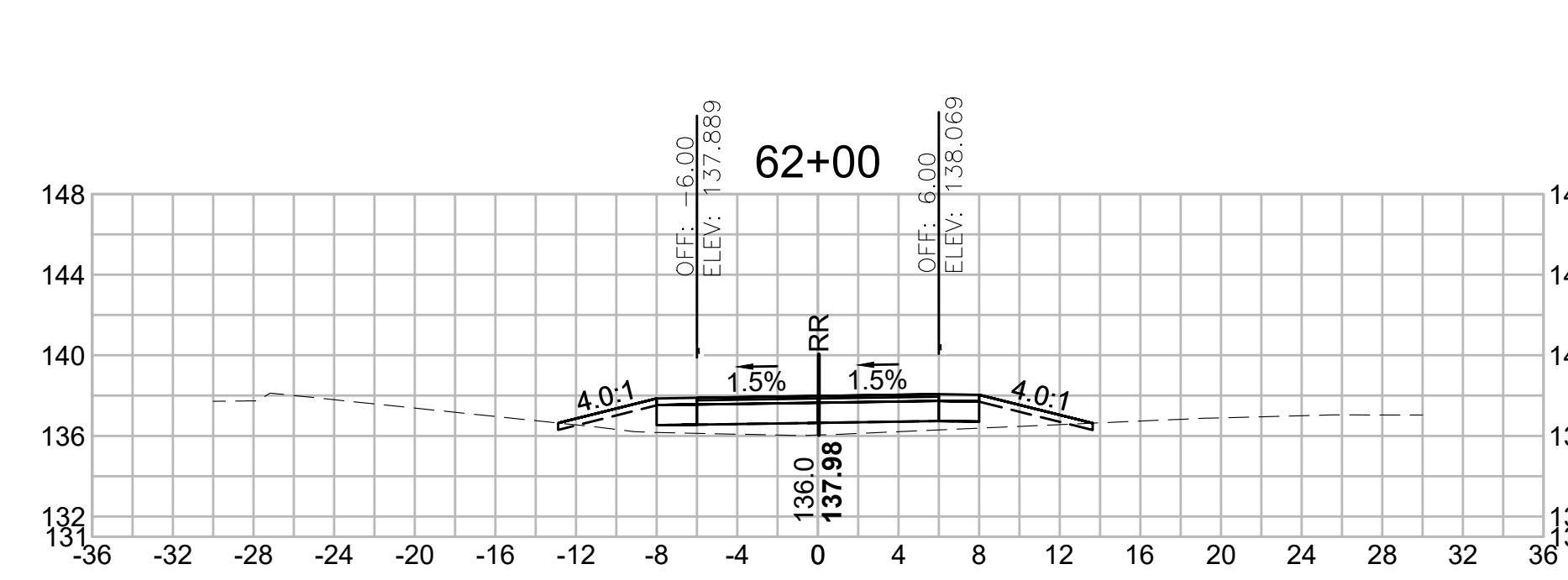
Total Volume at Station 59+00.00	
Cut Area	0.270
Fill Area	33.547
Cut Vol	0.483
Fill Vol	68.9
Cum Cut Vol	3406.645
Cum Fill Vol	1300.1
Net Vol	2106.5



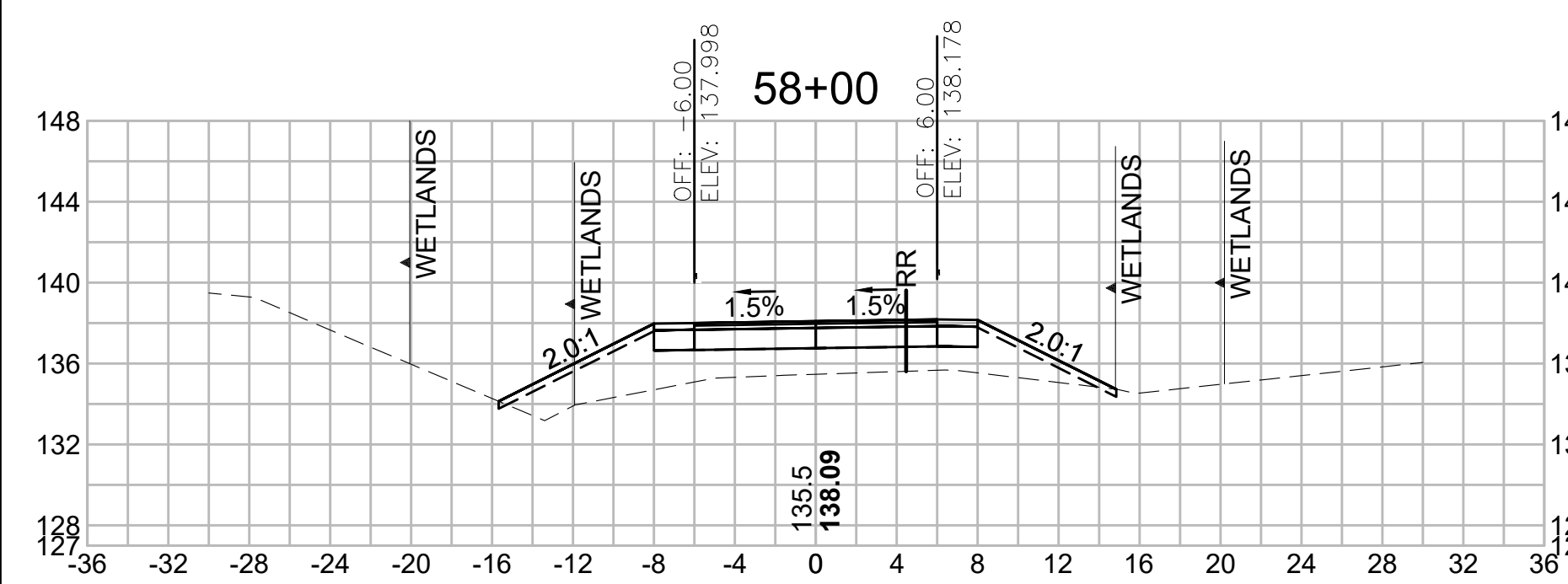
Total Volume at Station 62+50.00	
Cut Area	0.423
Fill Area	9.822
Cut Vol	0.733
Fill Vol	21.7
Cum Cut Vol	3479.695
Cum Fill Vol	1442.3
Net Vol	2037.4



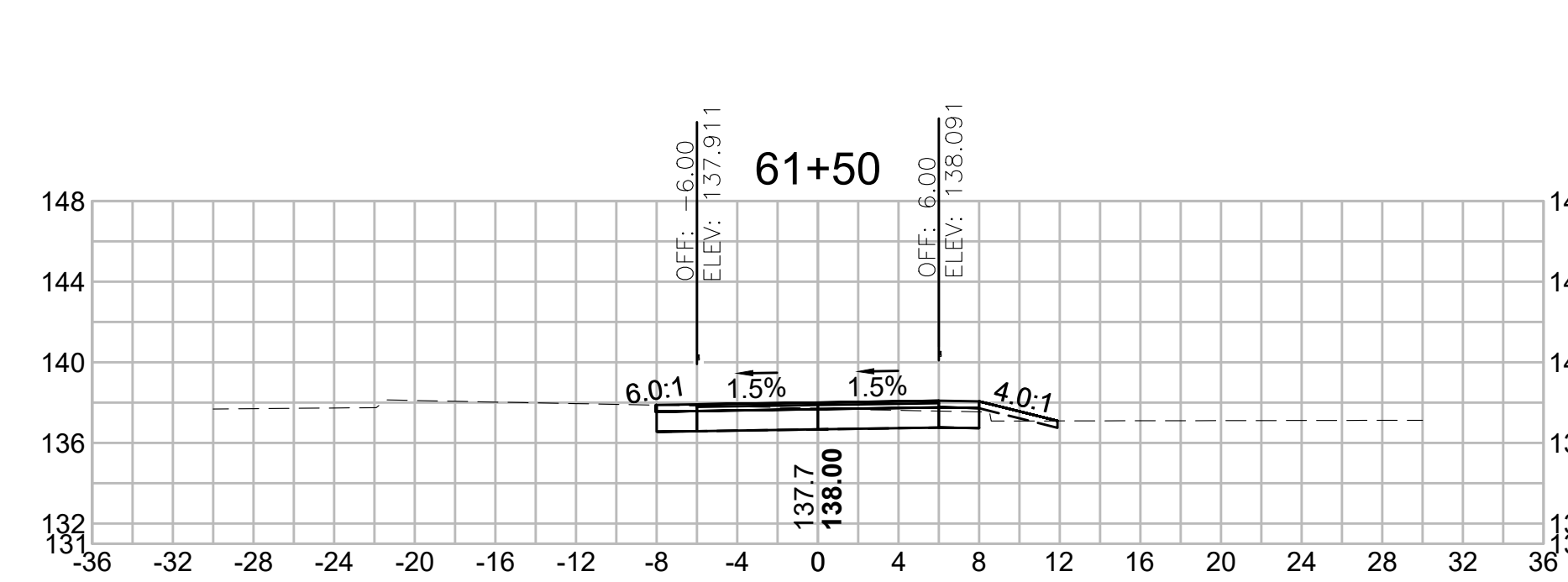
Total Volume at Station 58+50.00	
Cut Area	0.251
Fill Area	40.876
Cut Vol	0.467
Fill Vol	76.1
Cum Cut Vol	3406.162
Cum Fill Vol	1231.2
Net Vol	2175.0



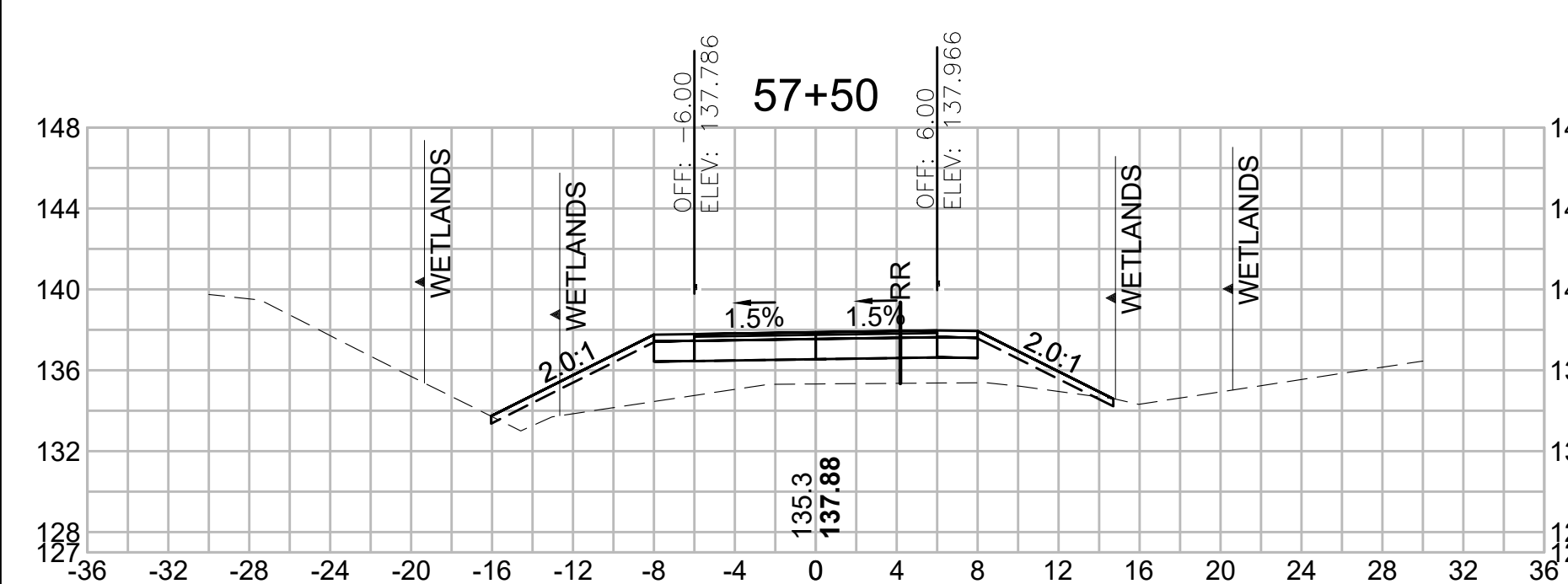
Total Volume at Station 62+00.00	
Cut Area	0.368
Fill Area	13.612
Cut Vol	16.038
Fill Vol	13.1
Cum Cut Vol	3478.963
Cum Fill Vol	1420.6
Net Vol	2058.4



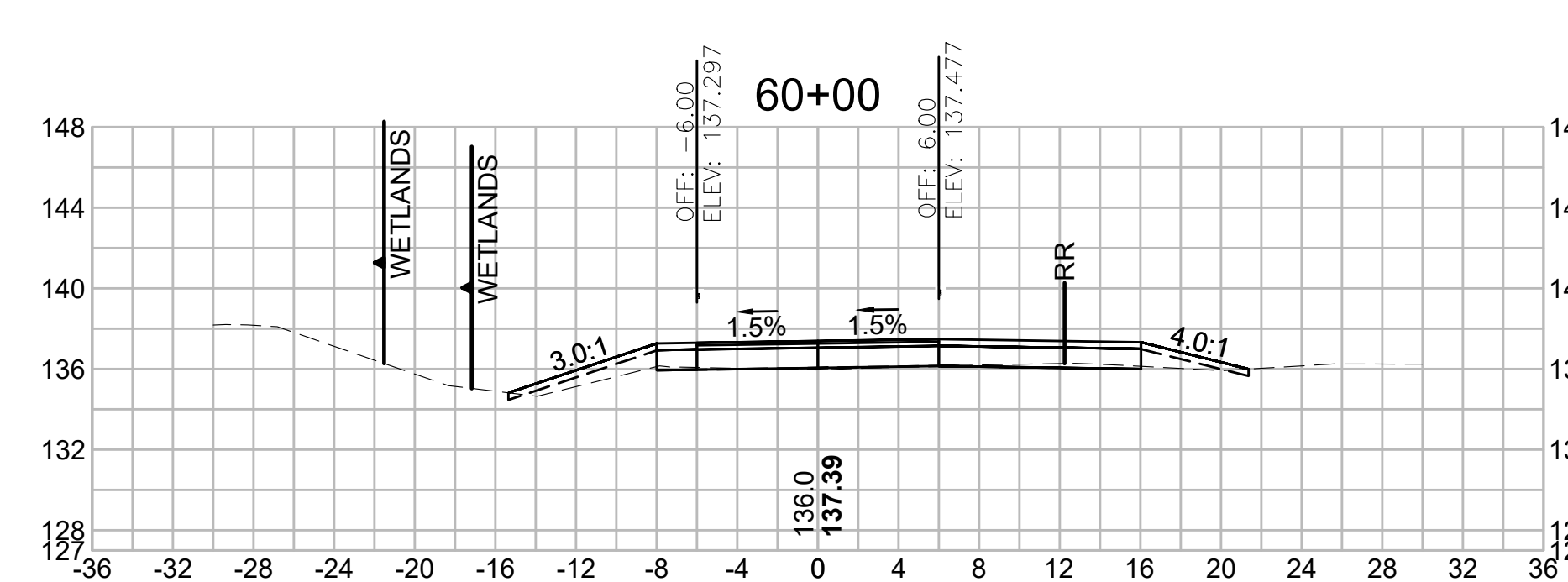
Total Volume at Station 58+00.00	
Cut Area	0.252
Fill Area	41.291
Cut Vol	0.470
Fill Vol	75.7
Cum Cut Vol	3405.696
Cum Fill Vol	1155.1
Net Vol	2250.6



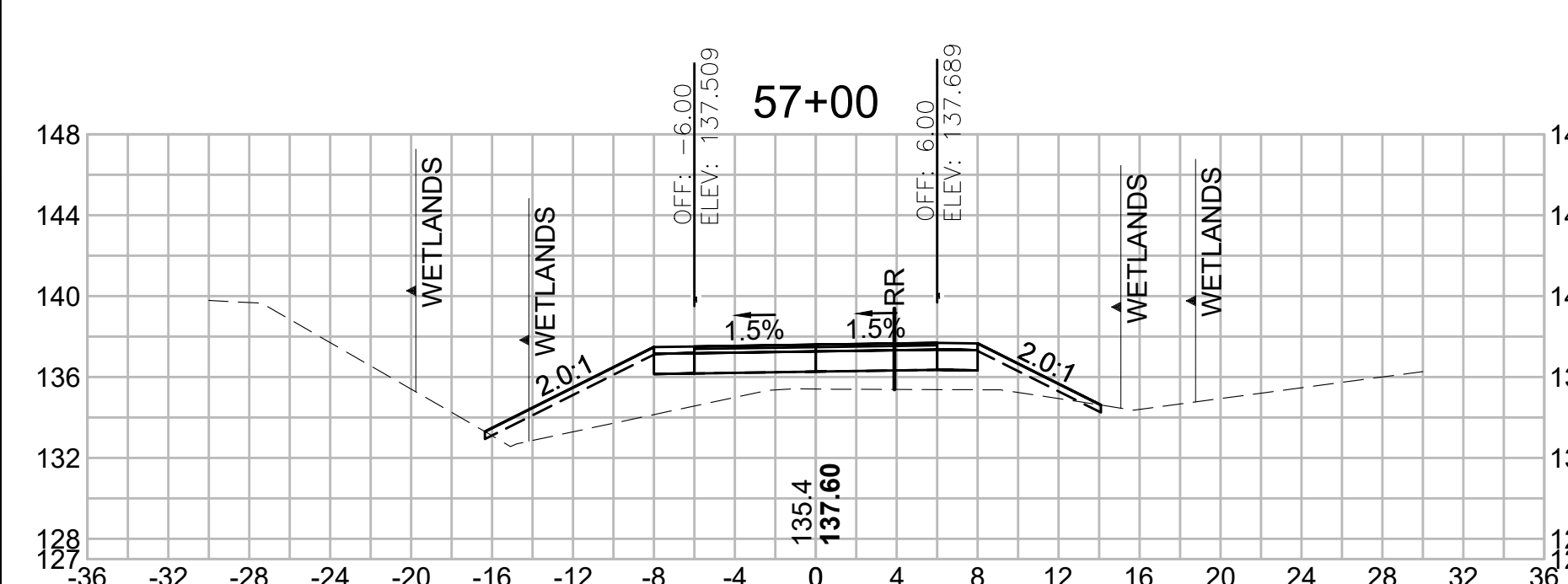
Total Volume at Station 61+50.00	
Cut Area	16.953
Fill Area	0.549
Cut Vol	53.415
Fill Vol	17.0
Cum Cut Vol	3462.925
Cum Fill Vol	1407.5
Net Vol	2055.4



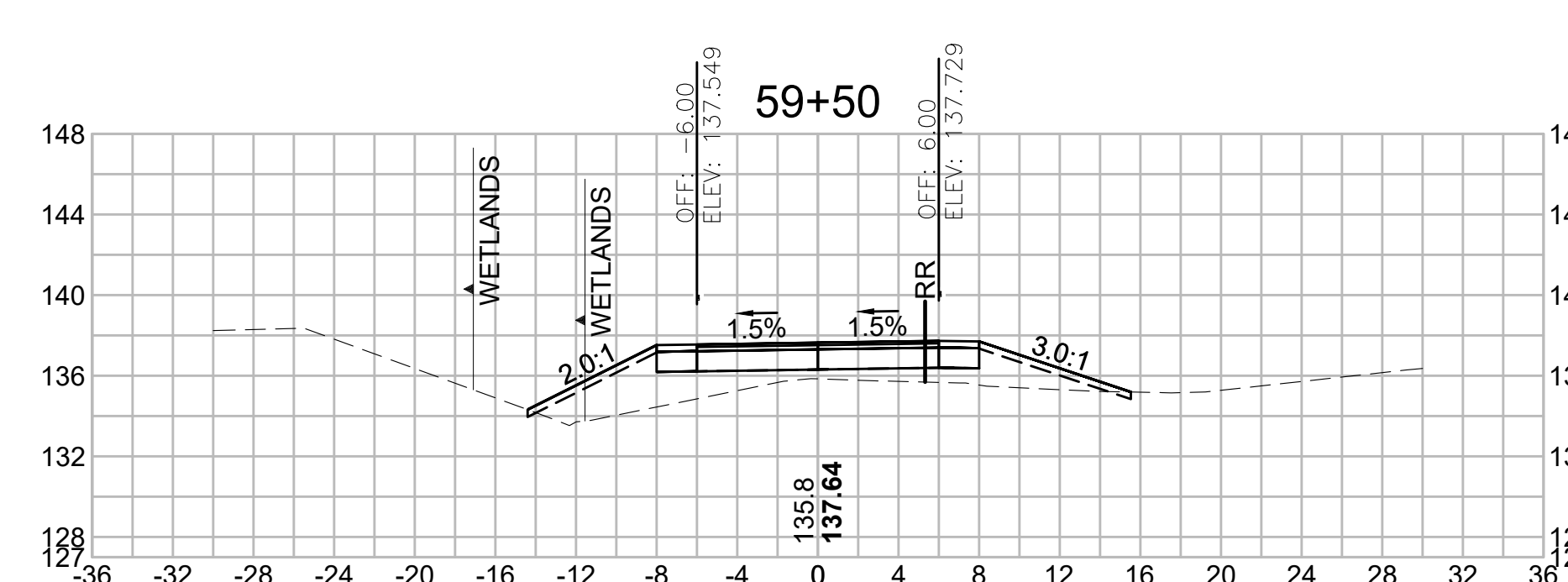
Total Volume at Station 57+50.00	
Cut Area	0.255
Fill Area	40.461
Cut Vol	0.479
Fill Vol	71.2
Cum Cut Vol	3405.226
Cum Fill Vol	1079.4
Net Vol	2325.8



Total Volume at Station 60+00.00	
Cut Area	2.276
Fill Area	5.554
Cut Vol	2.362
Fill Vol	32.3
Cum Cut Vol	3409.510
Cum Fill Vol	1390.5
Net Vol	2019.0



Total Volume at Station 57+00.00	
Cut Area	0.261
Fill Area	36.454
Cut Vol	0.495
Fill Vol	64.8
Cum Cut Vol	3404.748
Cum Fill Vol	1008.2
Net Vol	2396.5

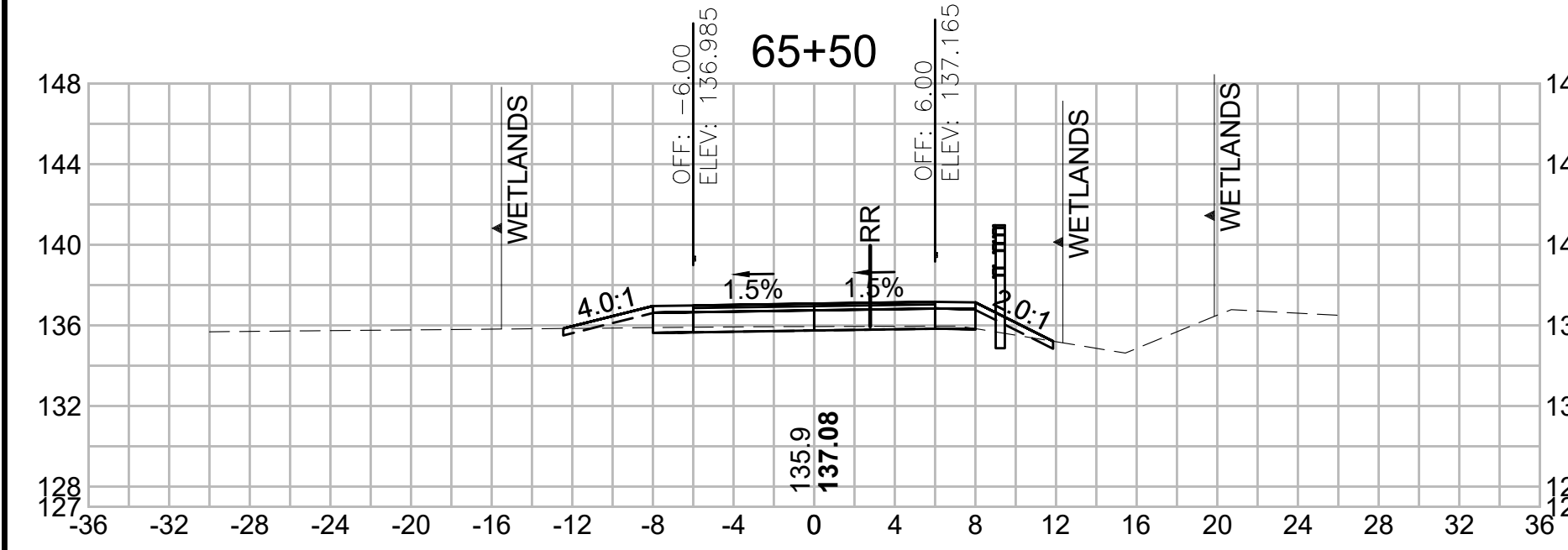


Total Volume at Station 59+50.00	
Cut Area	0.274
Fill Area	29.277
Cut Vol	0.504
Fill Vol	58.2
Cum Cut Vol	3407.149
Cum Fill Vol	1358.3
Net Vol	2048.9

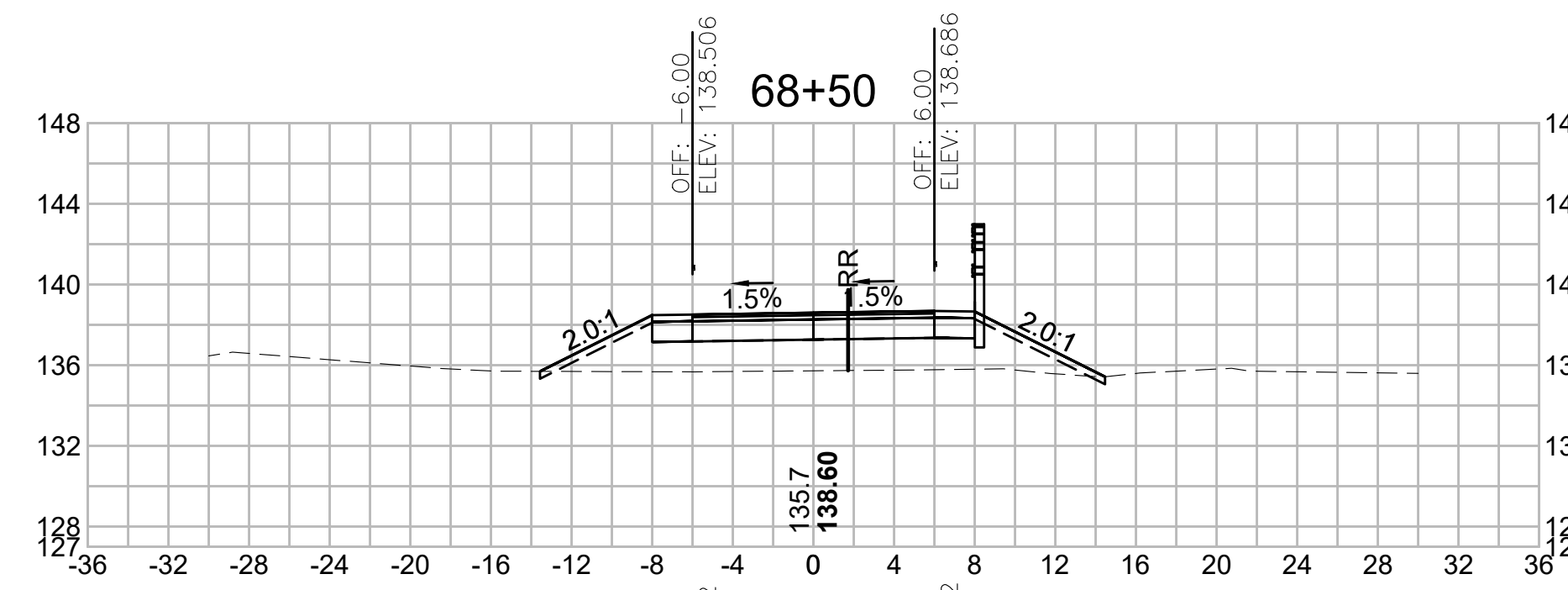
**SUBURBY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	72	73
PROJECT FILE NO. 613319			

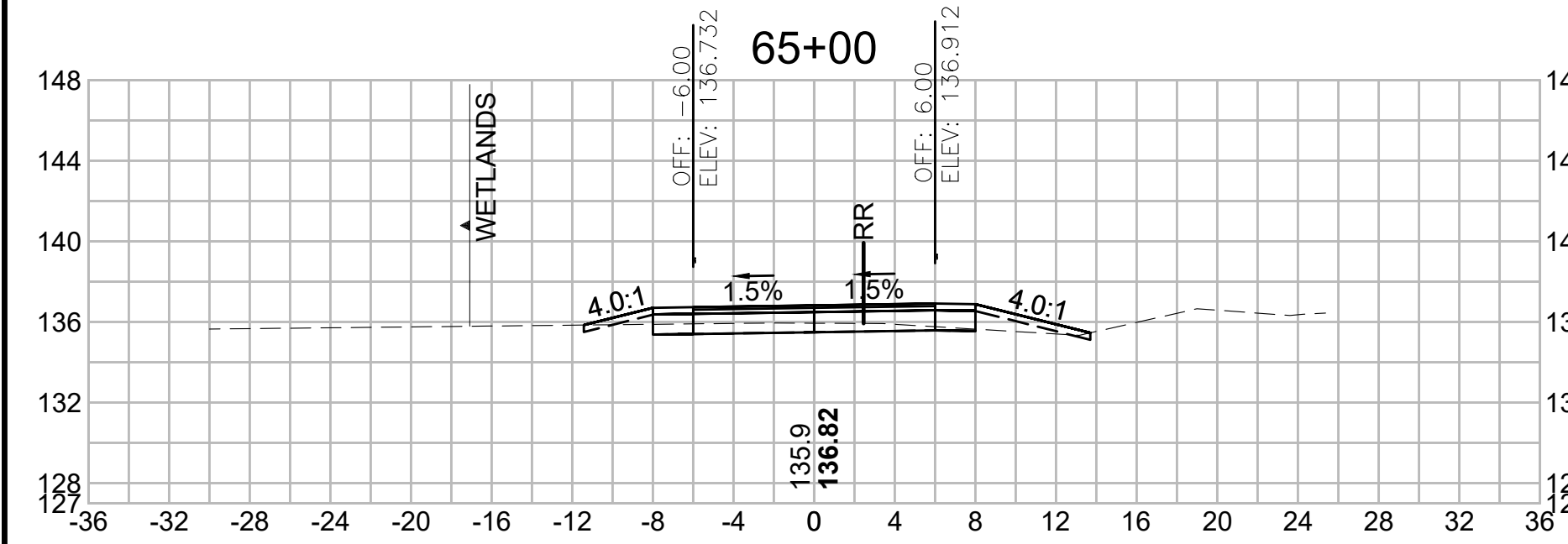
CROSS SECTIONS



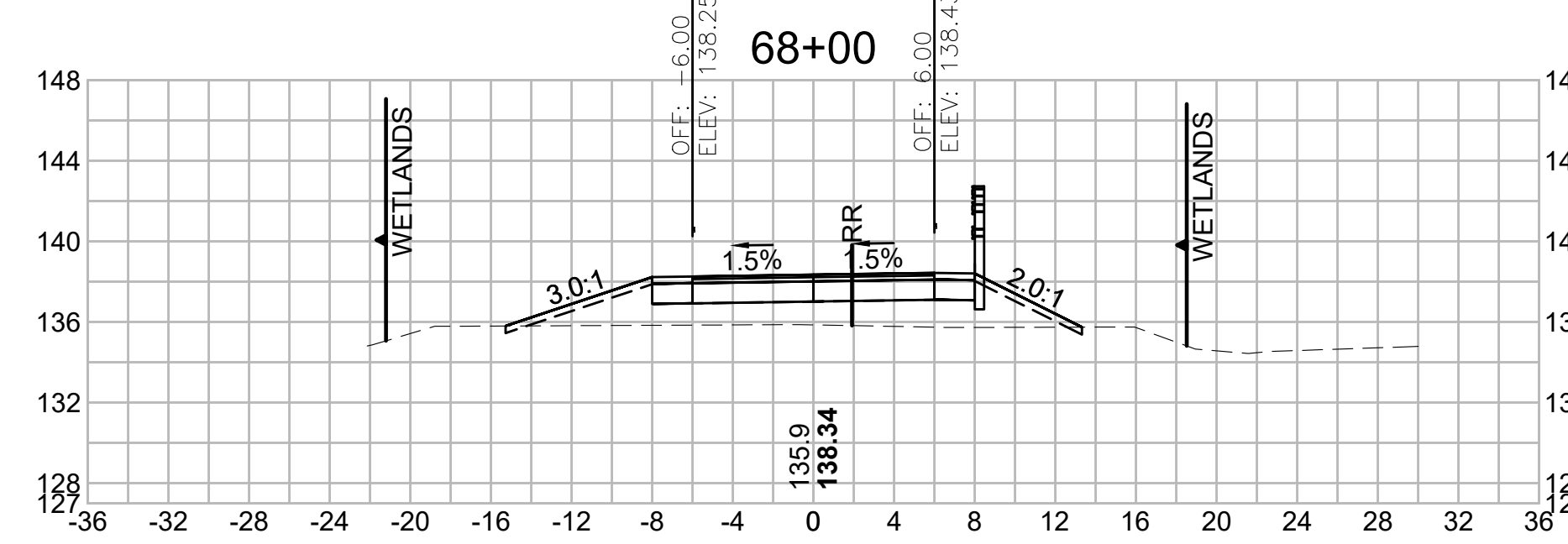
Total Volume at Station 65+50.00	
Cut Area	3.520
Fill Area	2.376
Cut Vol	9.477
Fill Vol	4.6
Cum Cut Vol	3570.917
Cum Fill Vol	1464.2
Net Vol	2106.7



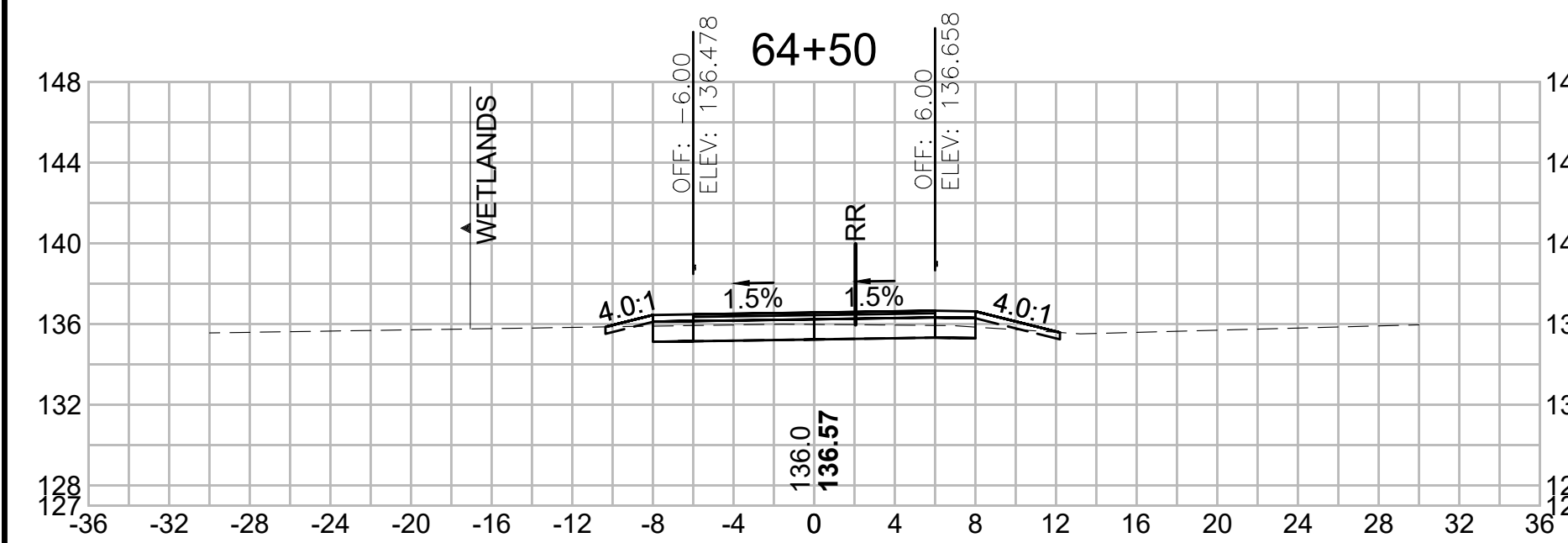
Total Volume at Station 68+50.00	
Cut Area	0.275
Fill Area	37.346
Cut Vol	0.554
Fill Vol	63.0
Cum Cut Vol	3577.773
Cum Fill Vol	1691.3
Net Vol	1886.5



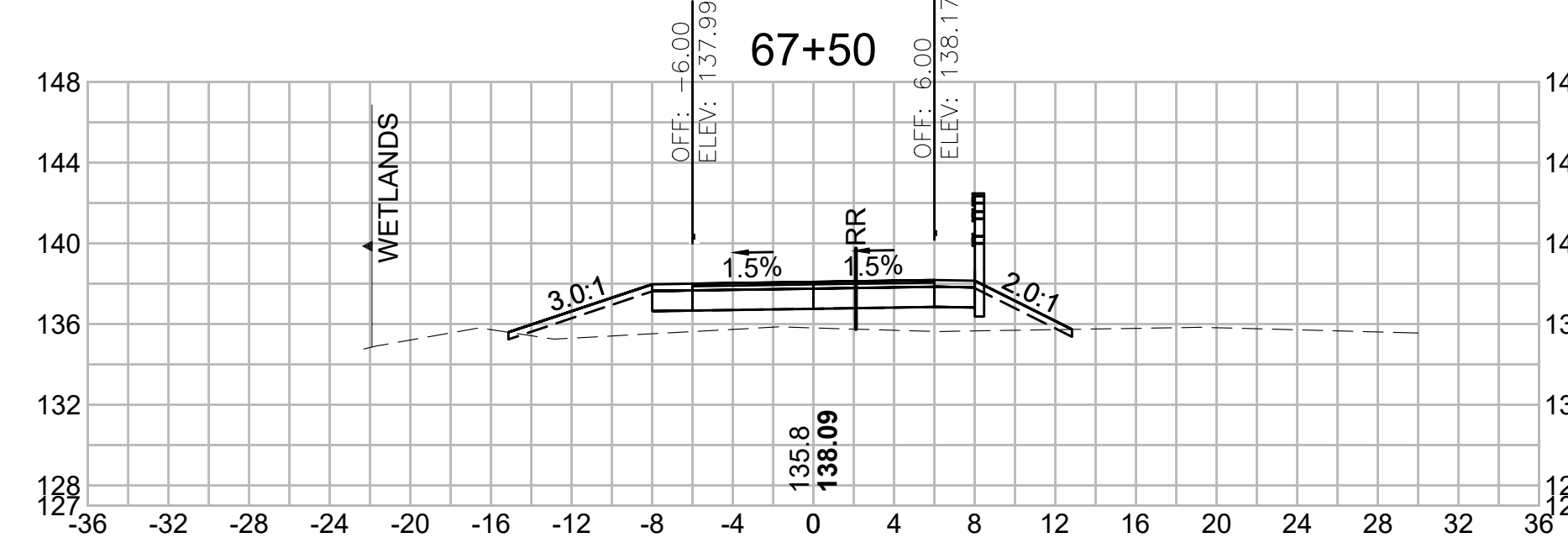
Total Volume at Station 65+00.00	
Cut Area	6.714
Fill Area	2.582
Cut Vol	17.345
Fill Vol	3.0
Cum Cut Vol	3561.441
Cum Fill Vol	1459.6
Net Vol	2101.9



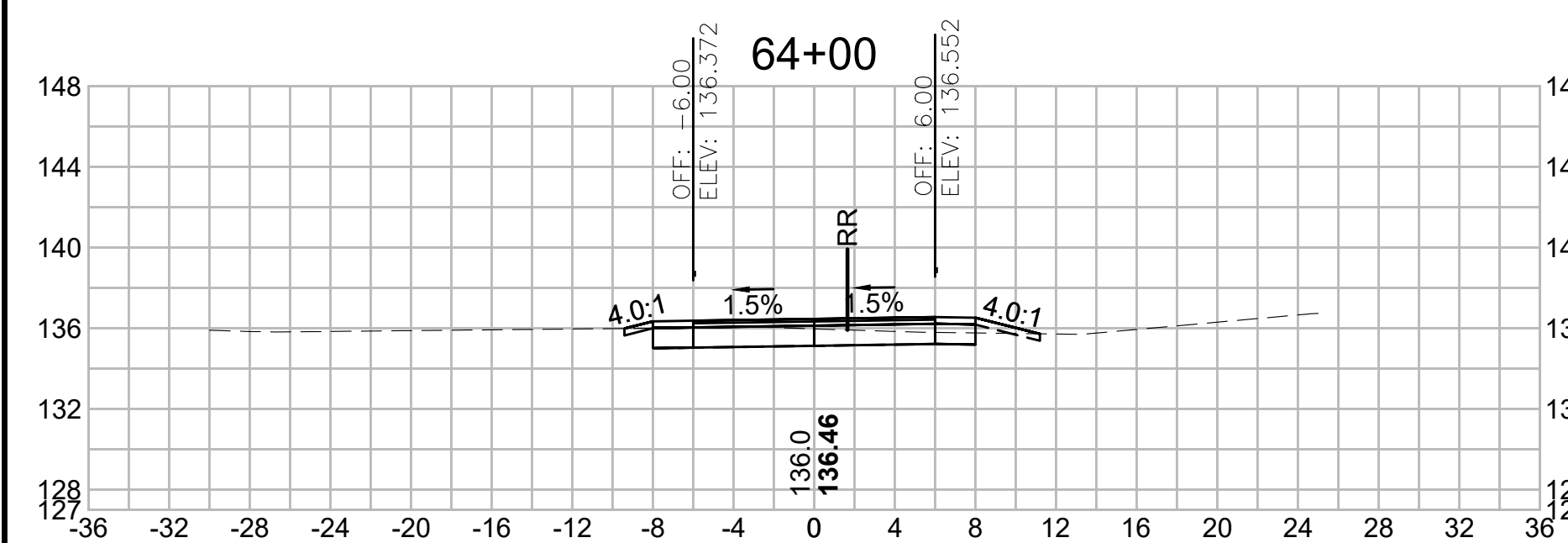
Total Volume at Station 68+00.00	
Cut Area	0.323
Fill Area	30.687
Cut Vol	0.540
Fill Vol	54.9
Cum Cut Vol	3577.219
Cum Fill Vol	1628.3
Net Vol	1948.9



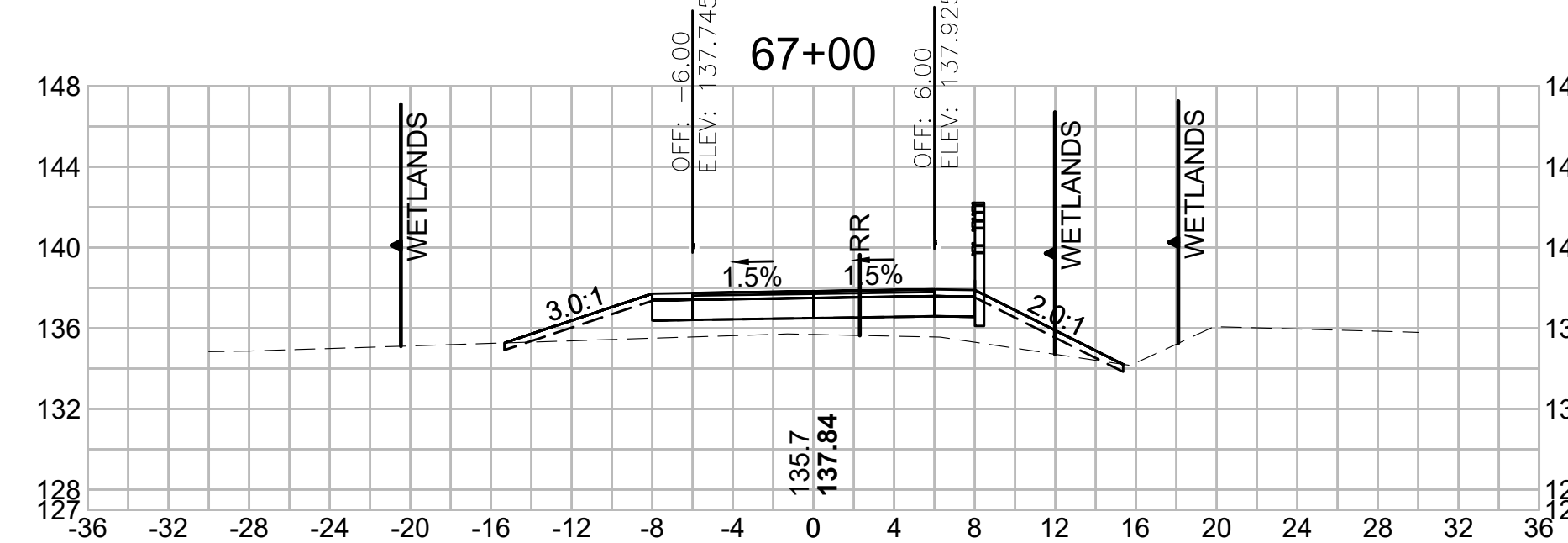
Total Volume at Station 64+50.00	
Cut Area	12.017
Fill Area	0.605
Cut Vol	23.616
Fill Vol	0.9
Cum Cut Vol	3544.097
Cum Fill Vol	1456.6
Net Vol	2087.5



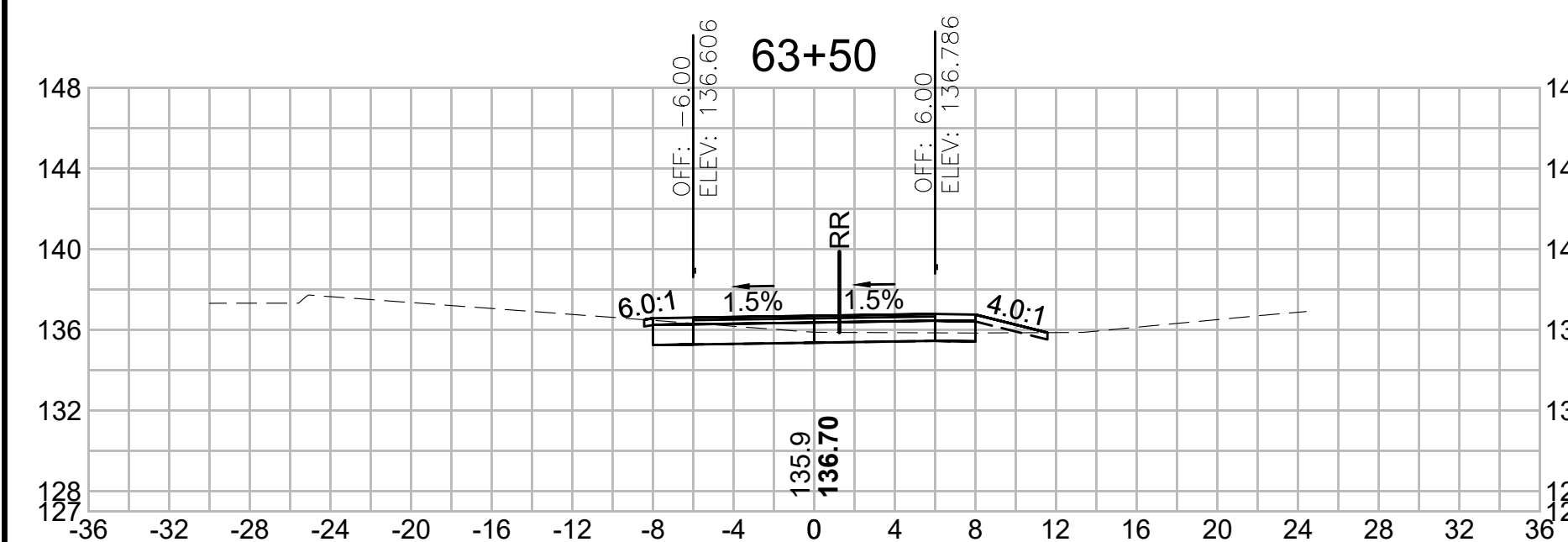
Total Volume at Station 67+50.00	
Cut Area	0.259
Fill Area	28.562
Cut Vol	0.609
Fill Vol	51.5
Cum Cut Vol	3576.680
Cum Fill Vol	1573.4
Net Vol	2003.2



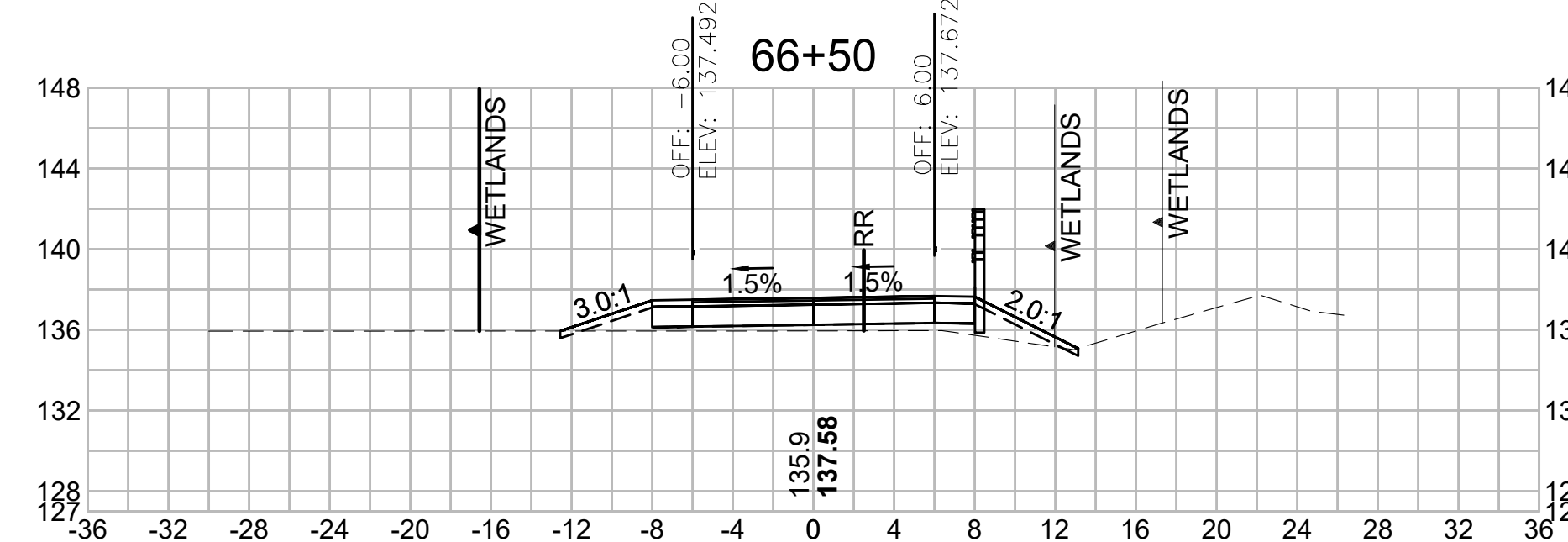
Total Volume at Station 64+00.00	
Cut Area	13.488
Fill Area	0.357
Cut Vol	22.587
Fill Vol	0.9
Cum Cut Vol	3520.481
Cum Fill Vol	1455.8
Net Vol	2064.7



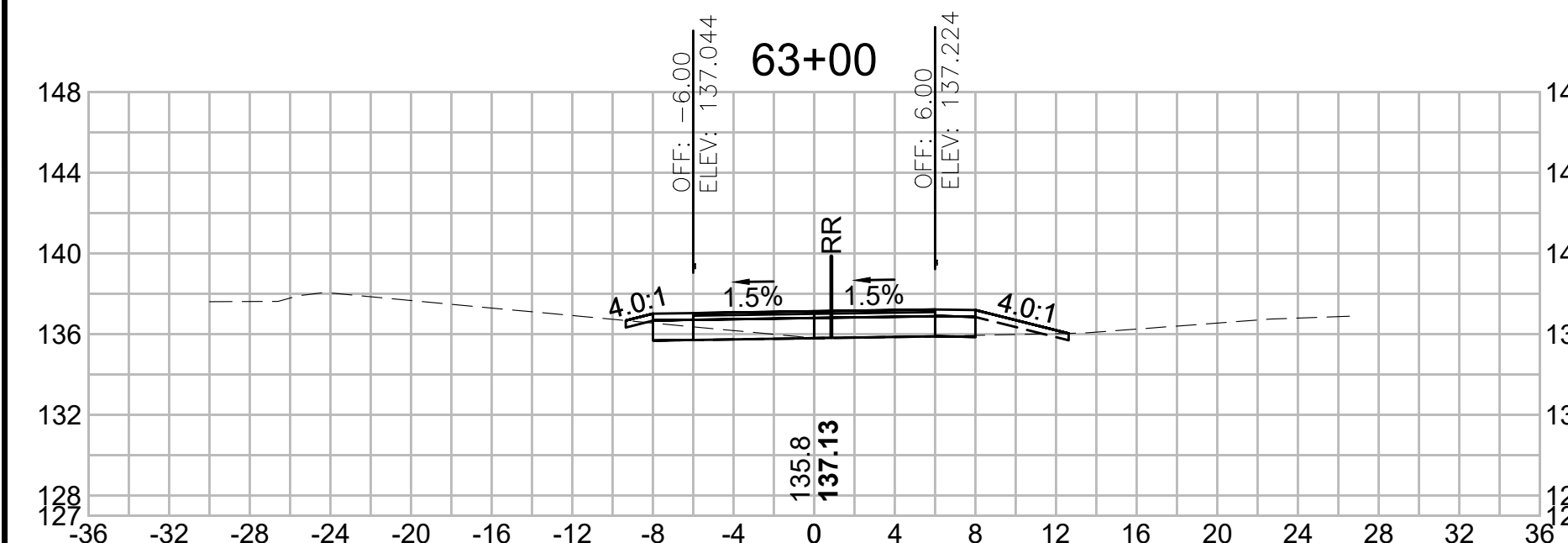
Total Volume at Station 67+00.00	
Cut Area	0.399
Fill Area	27.037
Cut Vol	0.651
Fill Vol	34.6
Cum Cut Vol	3576.071
Cum Fill Vol	1522.0
Net Vol	2054.1



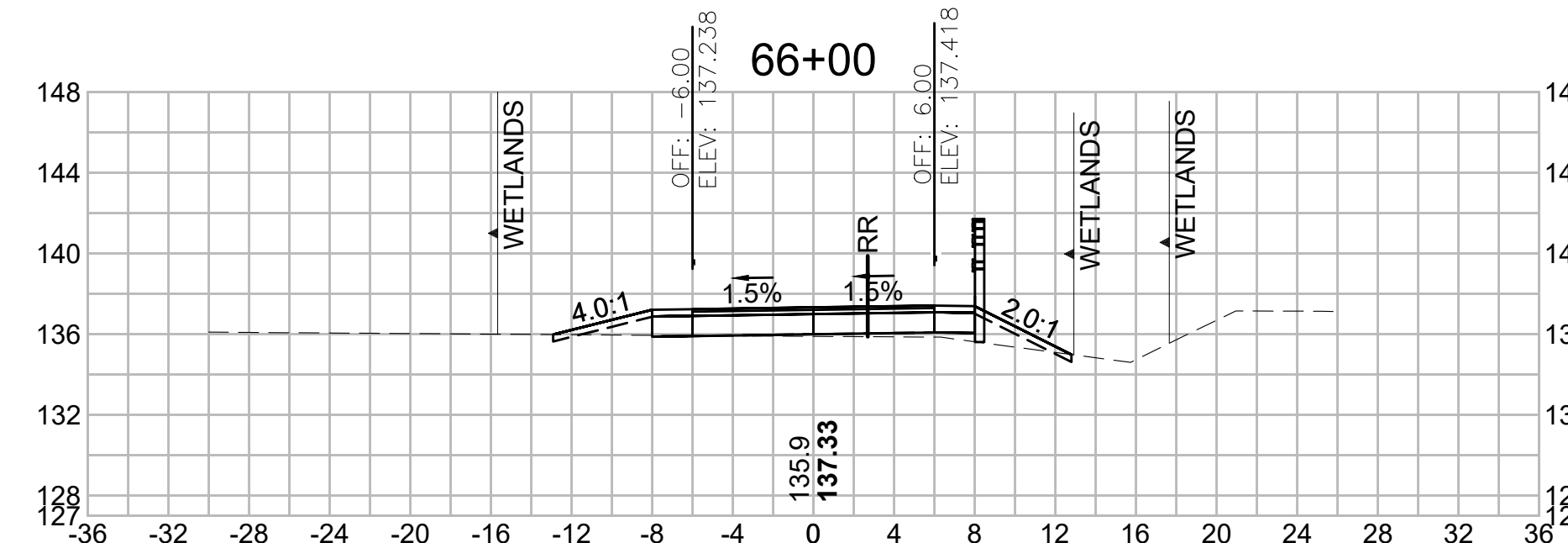
Total Volume at Station 63+50.00	
Cut Area	10.906
Fill Area	0.635
Cut Vol	13.953
Fill Vol	2.0
Cum Cut Vol	3497.895
Cum Fill Vol	1454.8
Net Vol	2043.1



Total Volume at Station 66+50.00	
Cut Area	0.304
Fill Area	10.308
Cut Vol	0.763
Fill Vol	15.3
Cum Cut Vol	3575.421
Cum Fill Vol	1487.4
Net Vol	2088.0



Total Volume at Station 63+00.00	
Cut Area	4.163
Fill Area	1.543
Cut Vol	4.247
Fill Vol	10.5
Cum Cut Vol	3483.942
Cum Fill Vol	1452.8
Net Vol	2031.1

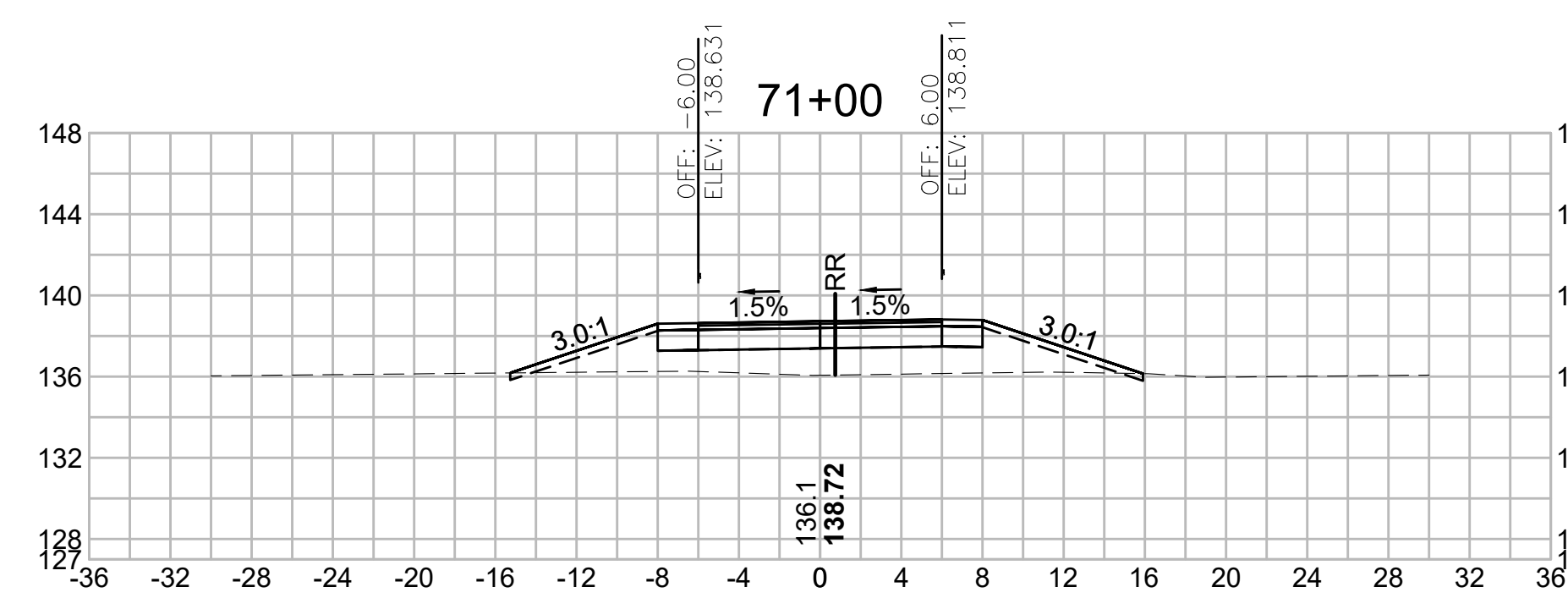


Total Volume at Station 66+00.00	
Cut Area	0.520
Fill Area	6.181
Cut Vol	3.741
Fill Vol	7.9
Cum Cut Vol	3574.658
Cum Fill Vol	1472.1
Net Vol	2102.6

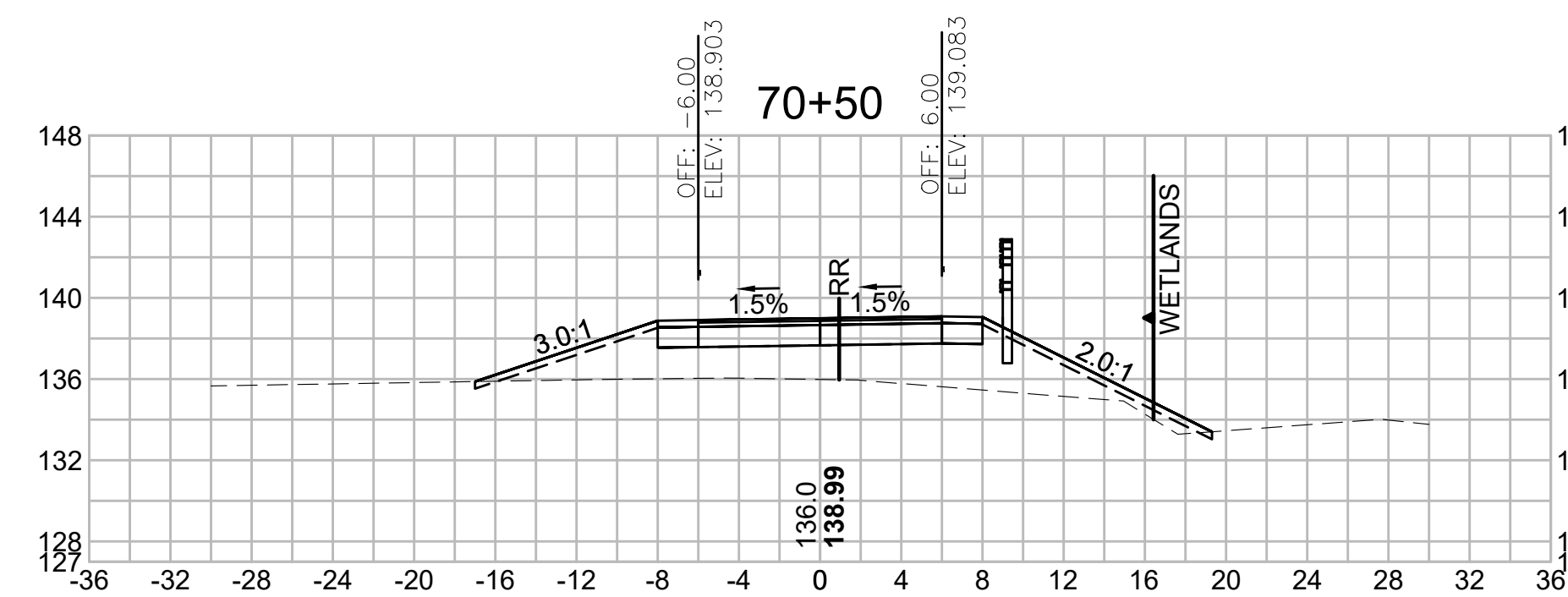
SUBBURY/FRAMINGHAM
BRUCE FREEMAN RAIL TRAIL PHASE 3

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	73	73
PROJECT FILE NO.		613319	

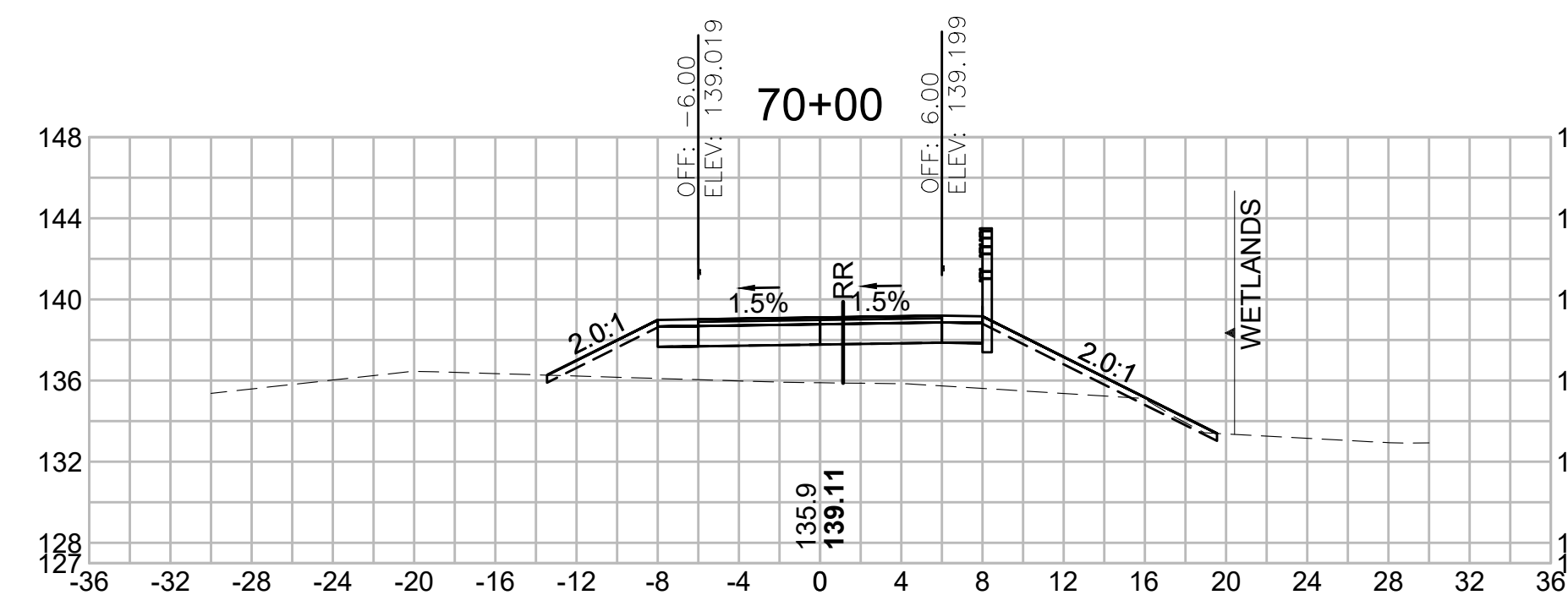
CROSS SECTIONS



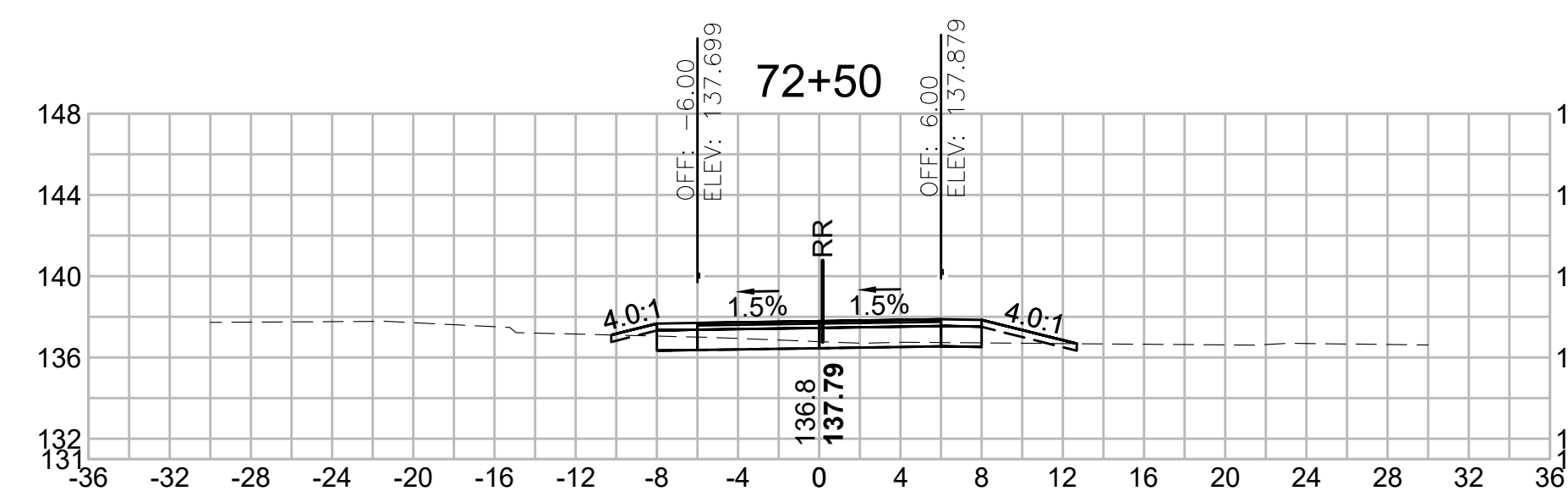
Total Volume at Station 71+00.00	
Cut Area	0.386
Fill Area	33.445
Cut Vol	0.648
Fill Vol	79.0
Cum Cut Vol	3581.643
Cum Fill Vol	2112.5
Net Vol	1469.1



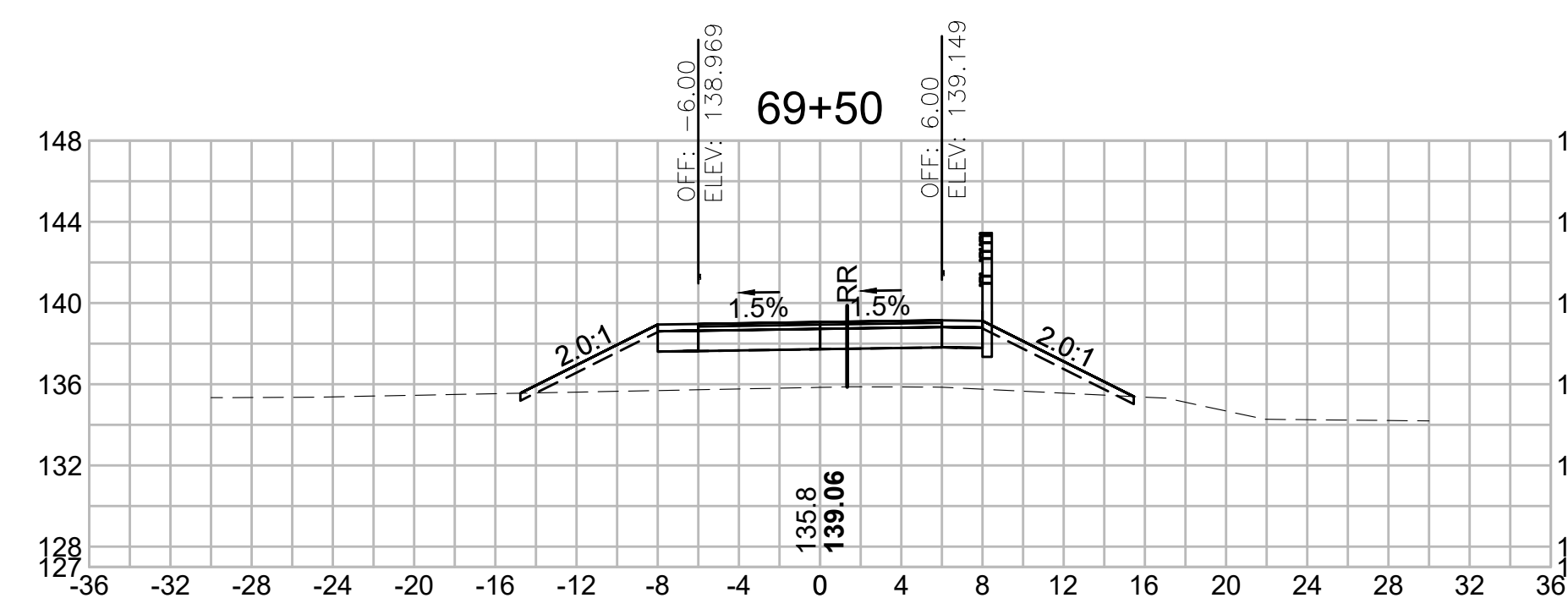
Total Volume at Station 70+50.00	
Cut Area	0.313
Fill Area	51.880
Cut Vol	1.093
Fill Vol	92.2
Cum Cut Vol	3580.995
Cum Fill Vol	2033.5
Net Vol	1547.5



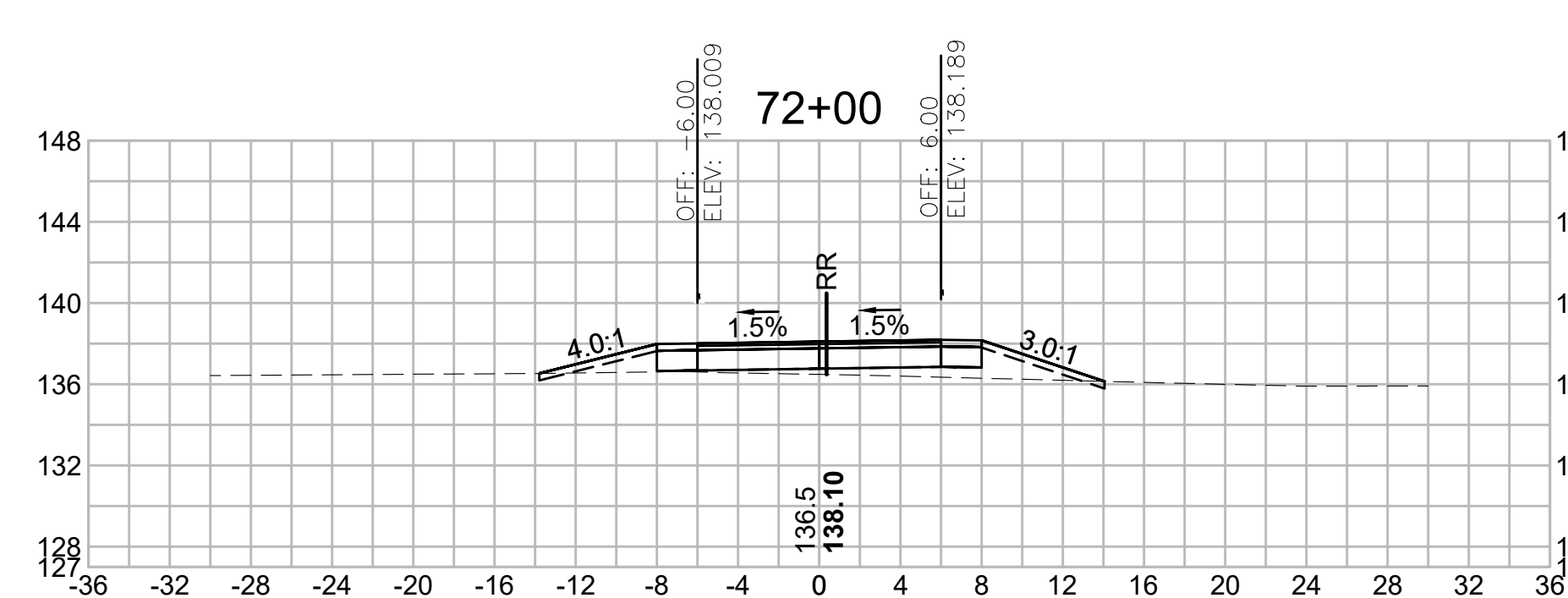
Total Volume at Station 70+00.00	
Cut Area	0.866
Fill Area	47.673
Cut Vol	1.073
Fill Vol	89.7
Cum Cut Vol	3579.903
Cum Fill Vol	1941.3
Net Vol	1638.6



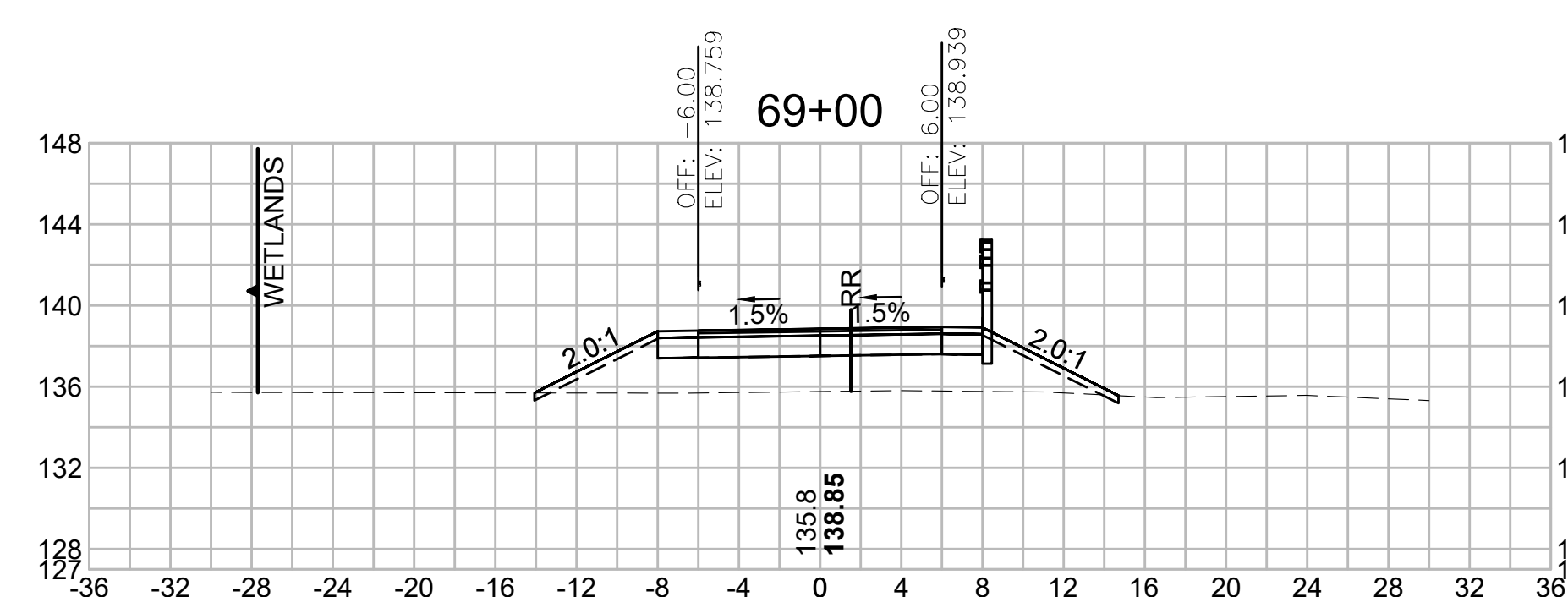
Total Volume at Station 72+50.00	
Cut Area	6.487
Fill Area	1.423
Cut Vol	6.419
Fill Vol	11.0
Cum Cut Vol	3591.067
Cum Fill Vol	2177.2
Net Vol	1413.9



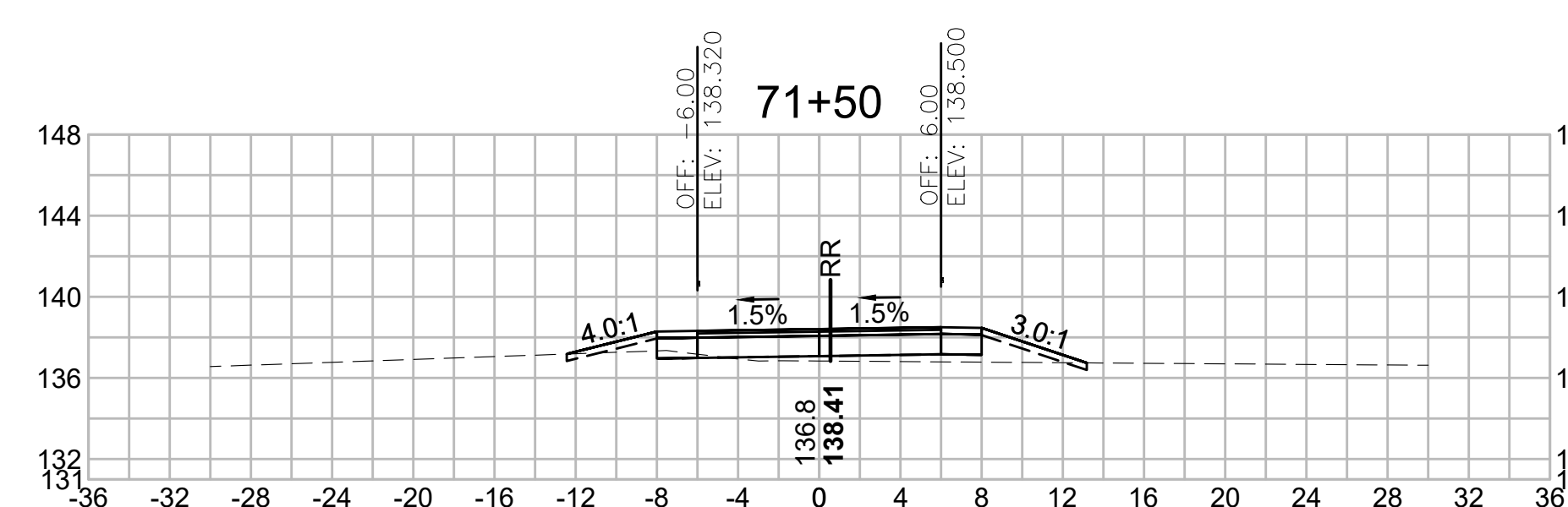
Total Volume at Station 69+50.00	
Cut Area	0.293
Fill Area	49.192
Cut Vol	0.537
Fill Vol	85.7
Cum Cut Vol	3578.830
Cum Fill Vol	1851.6
Net Vol	1727.2



Total Volume at Station 72+00.00	
Cut Area	0.446
Fill Area	10.510
Cut Vol	1.531
Fill Vol	16.2
Cum Cut Vol	3584.648
Cum Fill Vol	2166.1
Net Vol	1418.5



Total Volume at Station 69+00.00	
Cut Area	0.287
Fill Area	43.325
Cut Vol	0.521
Fill Vol	74.7
Cum Cut Vol	3578.293
Cum Fill Vol	1766.0
Net Vol	1812.3



Total Volume at Station 71+50.00	
Cut Area	1.207
Fill Area	6.978
Cut Vol	1.476
Fill Vol	37.4
Cum Cut Vol	3583.118
Cum Fill Vol	2149.9
Net Vol	1433.2