MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

CANAL STREET RAIL TRAIL PHASE 2

IN THE CITY OF

SALEM

ESSEX COUNTY

FEDERAL AID PROJECT NO.

100% SUBMITTAL

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	77
PROJECT FILE NO.	608352		

TITLE SHEET & INDEX

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

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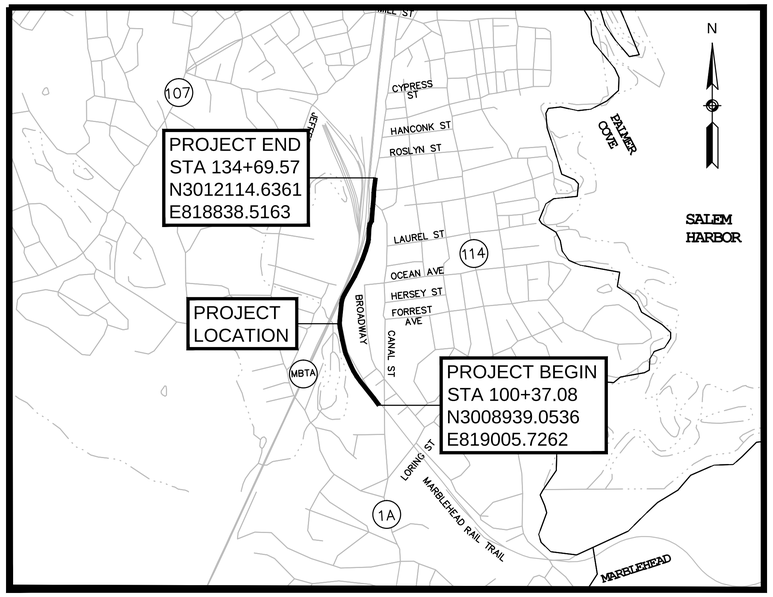


0 1000 2000 3000 4000

SCALE: 1" = 1000'

LENGTH OF PROJECT = 3,432.49 FEET = 0.650 MILES

DESIGN DESIGNATION (MARBLEHEAD RAIL TRAIL EXTENSION)

DESIGN SPEED	20 MPH
MINIMUM HORIZONTAL CURVE RADIUS	100'
MINIMUM LENGTH OF CREST VERTICAL CURVE	BASED ON SSD/GRADE
MAXIMUM GRADE FOR LEVEL TERRAIN	5.0%

DATE	DESCRIPTION	REV #
5/17/18	100% DESIGN SUBMISSION	3
9/22/17	75% DESIGN RESUBMISSION	2
3/28/17	75% DESIGN SUBMISSION	1
3/02/16	25% DESIGN SUBMISSION	0

TRANSPORTATION

AECOM

AECOM TECHNICAL SERVICES, Inc.
250 Apollo Drive
Chelmsford, Massachusetts 01824
T 978.905.2100 F 978.905.2101 www.aecom.com

massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER **DATE**

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR **DATE**

APPROVED

HIGHWAY ADMINISTRATOR **DATE**

93692-PH2_HDA(TITLE SHEET)2.DWG Plotted on 17-May-2018 2:11 PM

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
		CHAIN LINK OR METAL FENCE
		WOOD FENCE
		HAY BALES/SILT FENCE
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING 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)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

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

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		2	77
PROJECT FILE NO.	608352		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

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

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

93692-PH2_HD2\LEGEND&ABBREVIATIONS\2.DWG Plotted on 17-May-2018 2:11 PM

GENERAL NOTES

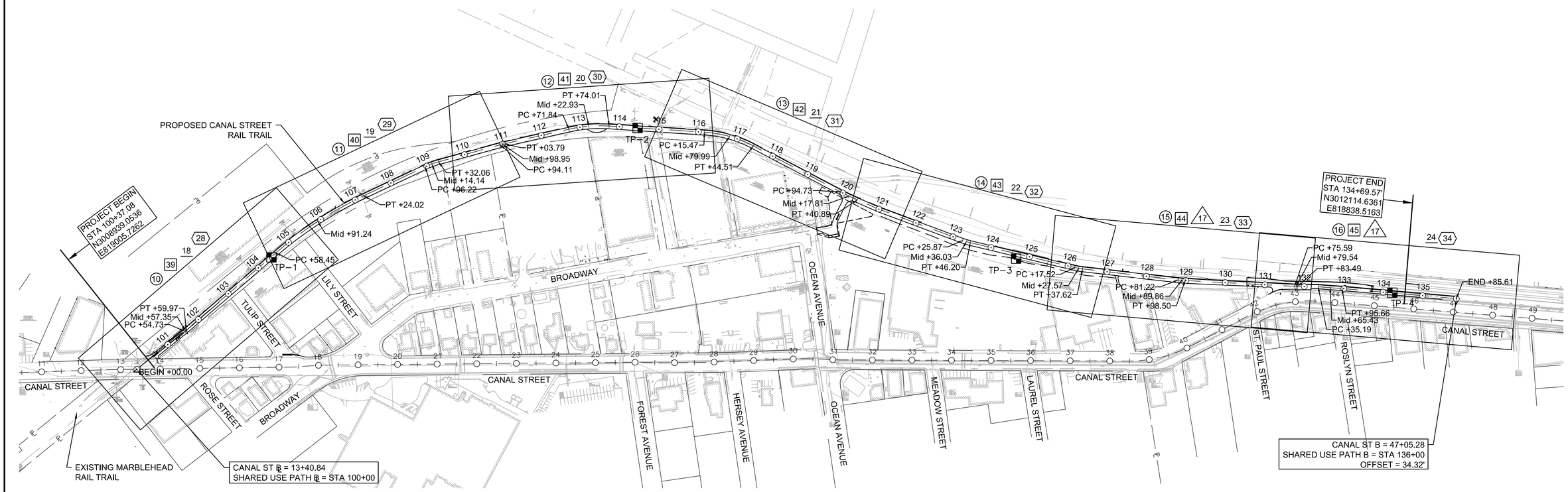
1. LOCATION OF UTILITIES AND SUBSURFACE STRUCTURES ARE FROM SURVEY AND RECORDS OF THE TOWN OR PRIVATE UTILITY COMPANIES AND ARE CONSIDERED APPROXIMATE BOTH AS TO SIZE AND LOCATION, AND ARE INDICATED ON THESE DRAWINGS TO GIVE BIDDERS A GENERAL IDEA OF EXISTING CONDITIONS. IT IS UNDERSTOOD AND AGREED THAT EACH BIDDER WILL NOT RELY UPON THESE DRAWINGS FOR SUCH INFORMATION, BUT THAT EACH BIDDER SHALL MAKE EXAMINATIONS IN THE FIELD BY VARIOUS AVAILABLE RECORDS, UTILITY CORPORATIONS AND INDIVIDUALS AS TO THE LOCATION OF ALL SUBSURFACE STRUCTURES. THE CONTRACTOR SHALL MEET ONSITE WITH REPRESENTATIVES OF UTILITY COMPANIES AND THE RESIDENT ENGINEER BEFORE CONSTRUCTION COMMENCES TO CONFIRM ALL UTILITY IMPACTS AND TO DISCUSS SCHEDULING FOR NECESSARY UTILITY WORK.
2. ELEVATIONS BASED ON N.A.V.D. OF 1988.
3. COORDINATES, IN U.S. SURVEY FEET, ARE IN THE MASSACHUSETTS COORDINATE SYSTEM, MAINLAND ZONE, REFERENCED TO THE NORTH AMERICAN DATUM OF 1983, 1996 ADJUSTMENT (NAD 83/96).
4. PEDESTRIAN AND VEHICLE ACCESS TO ABUTTING PREMISES MUST BE MAINTAINED IN A SAFE CONDITION AT ALL TIMES.
5. EXISTING PAVEMENTS AND/OR SIDEWALKS SHALL BE SAW CUT WHERE THEY MEET PROPOSED SURFACE TREATMENTS. SAW CUTS SHALL BE SMOOTH AND STRAIGHT. WHERE NEW HOT MIX ASPHALT MEETS EXISTING HOT MIX ASPHALT SURFACES OR CEMENT CONCRETE SURFACES, SAW CUT EDGES ARE TO BE SEALED WITH HMA JOINT SEALANT AND BACKSANDED.
6. AREAS OUTSIDE THE LIMITS OF WORK DISTURBED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE EXPENSE OF THE CONTRACTOR.
7. MUNICIPALLY OWNED UTILITY STRUCTURES INCLUDING MANHOLES, CATCH BASINS, AND GATE BOXES SHALL BE ADJUSTED OR REMODELED TO FINISHED GRADE BY THE CONTRACTOR. ALL PRIVATELY OWNED UTILITY STRUCTURES SHALL BE ADJUSTED OR REMODELED BY THE OWNER.
8. FOR BIDDING PURPOSES, LIMITS OF WORK HAVE BEEN SET ON THE PLANS, HOWEVER, THESE MAY BE EXTENDED OR REDUCED AT THE DISCRETION OF THE ENGINEER TO MEET WITH FIELD CONDITIONS.
9. AT POSTS AND POLES, PROPOSED CEMENT CONCRETE SIDEWALK SHALL BE BOXED AND PROVIDED WITH EXPANSION JOINT FILLER. ALSO, EXPANSION JOINT FILLER SHALL BE USED AT ALL BACK OF SIDEWALK LOCATIONS WHERE LOCATIONS MEET EXISTING BUILDINGS, WALLS OR OTHER STRUCTURES AND AS OTHERWISE REQUIRED BY THE ENGINEER.
10. THE CONTRACTOR SHALL FIELD CHECK DIMENSIONS, AND ELEVATIONS BEFORE PROCEEDING WITH NEW WORK. THE CONTRACTOR SHALL EXCAVATE TEST PITS TO VERIFY PERTINENT DRAINAGE INVERTS AND POTENTIAL UTILITY CONFLICTS. ANY DISCREPANCIES OR CONFLICTS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
11. EXISTING SURFACES, i.e. CEMENT CONCRETE, HOT MIX ASPHALT PAVEMENT, BRICK, ETC., SHALL BE COMPLETELY REMOVED FROM AREAS OF PROPOSED WORK INCLUDING PROPOSED PLANTING AREAS.
12. THE CONTRACTOR SHALL COORDINATE AND BE RESPONSIBLE FOR ALL SAFETY SIGNING, BARRIERS AND TEMPORARY PAVEMENT MARKINGS NECESSARY TO PROVIDE A SMOOTH AND PROPER TRANSITION FOR TRAFFIC FLOW.
13. ANY OVERHEAD WIRES NOT SHOWN TO BE RELOCATED ON THE PLANS THAT THE CONTRACTOR REQUIRES TO BE RELOCATED FOR HIS CONVENIENCE SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.
14. CURB TIES WHICH ARE NOTED BY A STATION ARE FROM THE CONSTRUCTION BASELINE.
15. ENGINEER WILL COMMUNICATE WITH MASSDOT LANDSCAPE ARCHITECT TO RESOLVE QUESTIONS ABOUT TREE PLANTING.
16. CEMENT CONCRETE SUBBASE SURFACES SHALL BE TREATED WITH AN ASPHALT EMULSION FOR TACK COAT PRIOR TO THE APPLICATION OF A HOT MIX ASPHALT MATERIAL.
17. CATCH BASINS, AND DRAIN MANHOLES ARE PRECAST CONCRETE IN ACCORDANCE WITH MASSDOT STANDARD DETAILS UNLESS OTHERWISE NOTED.
18. CONCRETE PIPE SHALL BE CLASS V UNLESS OTHERWISE NOTED.
19. PROPOSED CATCH BASIN STATIONING REFERS TO THE CENTER REAR OF THE GRATE.
20. SURVEY WAS PERFORMED BY WSP-SELLS, SURVEY AND MAPPING CONSULTANTS. THIS PLAN WAS PREPARED FROM A COMBINATION OF AERIAL AND ON THE GROUND SURVEYING. PHOTOGRAPHY WAS FLOWN IN MAY 2008. THE GROUND SURVEY WAS CONDUCTED BETWEEN OCTOBER 2 AND NOVEMBER 4 2008.
21. NO LANE CLOSURES, INCLUDING THE SETTING UP AND TAKING DOWN OF WORK ZONE TRAFFIC CONTROL DEVICES SHALL BE DONE ON EXISTING ROADWAYS AREAS BETWEEN THE HOURS OF 7:00-9:00 AM AND 4:00-6:00 PM. WORK SHALL BE PERMITTED IN AREAS OUTSIDE AND OFF THE ROADWAY DURING THESE PERIODS WITH THE APPROVAL OF THE ENGINEER.
22. DIGSAFE MUST BE CONTACTED AT 888-DIG-SAFE 72 HOURS PRIOR TO ANY EXCAVATION WORK.

93692-PH2_HD2A(GENERAL NOTES)2.DWG Plotted on 17-May-2018 2:11 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	77
PROJECT FILE NO.	608352		

KEY PLAN & BORING LOCATIONS



KEY PLAN

PLAN TYPE

- (00) CONSTRUCTION PLAN
- [00] LANDSCAPING PLAN
- △00 CURB TIE AND GRADING PLAN
- 00 TRAFFIC PLAN
- ⟨00⟩ DRAINAGE AND UTILITY PLAN

SYMBOLS/NOTES

- TP # TEST PIT

0 120 300 600

SCALE: 1" = 120'

93692-PH2_H03(KEY PLAN & BORING) 2.DWG Plotted on 17-May-2018 2:11 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		5	77
PROJECT FILE NO.	608352		

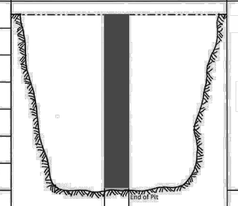
BORING LOGS

GEOCOMP CORPORATION
125 NAGOG PARK, ACTON, MA 01720
TEL 978.635.0012

TEST PIT REPORT — **TP-1** SHEET 1 / 1

PROJECT NAME: Salem Bike Path | **Project Number:** 220580 | **Start:** 5/19/15 8:30 | **Driller:** New England Boring
CLIENT: Woodard and Curran | **Project Location:** Salem, Ma | **Finish:** 5/19/15 10:15 | **Geocomp Rep:** Justin Robichaud

DEPTH (ft) | SKETCH | MATERIAL DESCRIPTION



Dark brown, moist, SILTY SAND with gravel

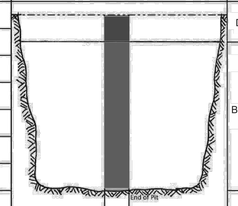
Note: Groundwater not encountered.

GEOCOMP CORPORATION
125 NAGOG PARK, ACTON, MA 01720
TEL 978.635.0012

TEST PIT REPORT — **TP-2** SHEET 1 / 1

PROJECT NAME: Salem Bike Path | **Project Number:** 220580 | **Start:** 5/19/15 10:30 | **Driller:** New England Boring
CLIENT: Woodard and Curran | **Project Location:** Salem, Ma | **Finish:** 5/19/15 12:00 | **Geocomp Rep:** Justin Robichaud

DEPTH (ft) | SKETCH | MATERIAL DESCRIPTION



Dark brown, moist, well-graded, SILTY SAND

Brown, moist, well-graded, SAND with silt and gravel

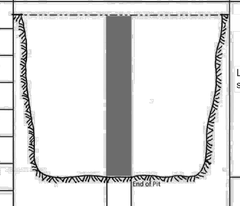
Note: Groundwater not encountered.

GEOCOMP CORPORATION
125 NAGOG PARK, ACTON, MA 01720
TEL 978.635.0012

TEST PIT REPORT — **TP-3** SHEET 1 / 1

PROJECT NAME: Salem Bike Path | **Project Number:** 220580 | **Start:** 5/19/15 12:30 | **Driller:** New England Boring
CLIENT: Woodard and Curran | **Project Location:** Salem, Ma | **Finish:** 5/19/15 1:30 | **Geocomp Rep:** Justin Robichaud

DEPTH (ft) | SKETCH | MATERIAL DESCRIPTION



Light brown, dry, well graded GRAVEL with silt and sand

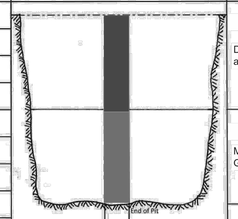
Note: Groundwater not encountered.

GEOCOMP CORPORATION
125 NAGOG PARK, ACTON, MA 01720
TEL 978.635.0012

TEST PIT REPORT — **TP-4** SHEET 1 / 1

PROJECT NAME: Salem Bike Path | **Project Number:** 220580 | **Start:** 5/18/15 8:30 | **Driller:** New England Boring
CLIENT: Woodard and Curran | **Project Location:** Salem, Ma | **Finish:** 5/18/15 10:30 | **Geocomp Rep:** Justin Robichaud

DEPTH (ft) | SKETCH | MATERIAL DESCRIPTION



Dark brown, moist, well-graded, GRAVEL with silt and sand

Mottled brown and yellow, moist, well-graded, GRAVEL with silt and sand

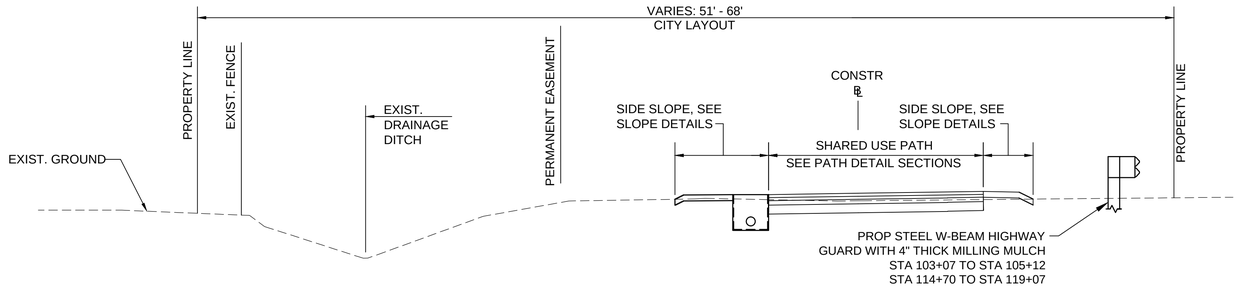
Note: Groundwater not encountered.

93692-PH2_HD4\BORING LOGS\2.DWG Plotted on 17-May-2018 2:12 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

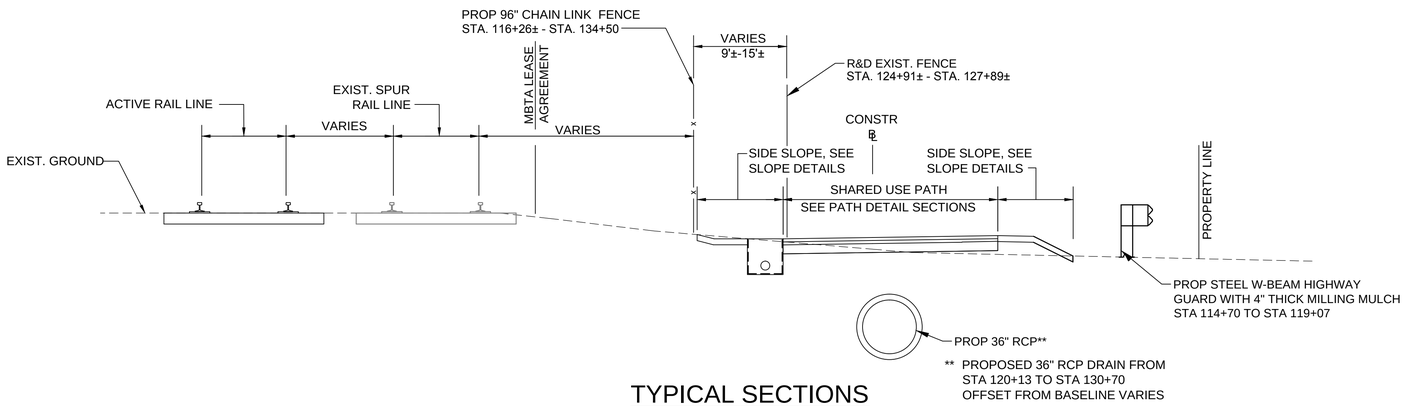
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		6	77
PROJECT FILE NO.	608352		

TYPICAL SECTIONS



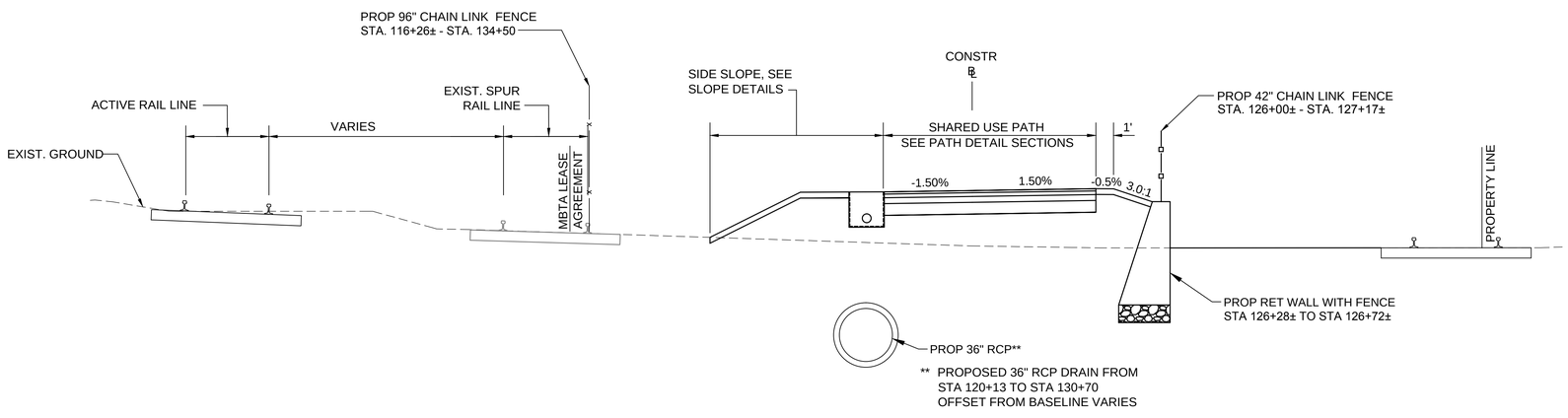
TYPICAL SECTIONS
STA. 100+50± - STA. 116+25±

NTS



TYPICAL SECTIONS
STA. 116+25± - STA. 126+00±

NTS



TYPICAL SECTIONS
STA. 126+00± - STA. 127+25±

NTS

PAVEMENT NOTES

SHARED USE PATH:

SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5)
2-1/2" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASE
8" GRAVEL BORROW, TYPE b

NOTES:

1. ALL SUPERPAVE MIXTURES SHALL BE PRODUCED USING ITEM 456. WARM MIX ASPHALT. A WARM MIX ASPHALT (WMA) TECHNOLOGY THAT IS ON THE NEAUPG QUALIFIED PRODUCTS LIST AND THAT COMPLIES WITH MASSDOT WMA SPECIAL PROVISIONS.
2. TACK COAT: ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT THE RATE OF 0.05 GALLONS PER SQUARE YARD OVER SMOOTH PAVEMENTS, 0.07 GALLONS PER SQUARE YARD OVER MILLED SURFACES PRIOR TO PAVING AND 0.1 GALLONS PER SQUARE YARD OVER CEMENT CONCRETE SURFACES. HMA JOINT SEALANT SHALL BE APPLIED TO ALL JOINTS IN THE SURFACE COURSE PRIOR TO PAVING. HMA FOR PATCHING SHALL BE USED TO REPAIR THE UNDERLYING SURFACE FOR HMW OVERLAY.
3. EXIST. SUBBASE MATERIAL BELOW PROPOSED DENSE GRADED CRUSHED STONE DETERMINED SUITABLE FOR REUSE SHALL NOT BE REMOVED AND REMAIN IN PLACE AS DIRECTED BY THE ENGINEER.

SECTION NOTES:

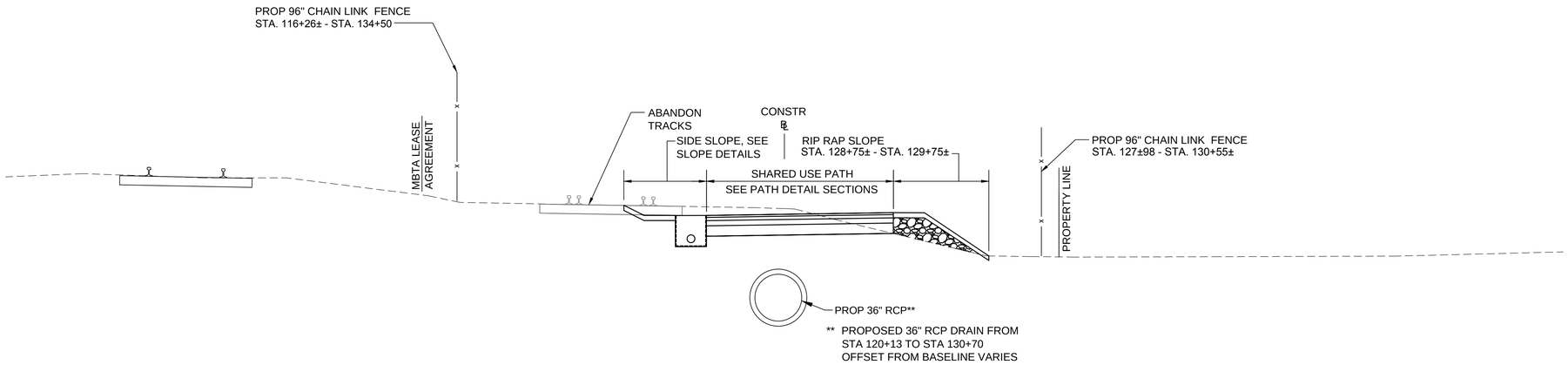
1. SEE SHEET 8 FOR SHARED USE PATH DETAILS.
2. SEE SHEET 9 FOR SIDE SLOPE DETAILS.

93692-PH2_HDS(TYPICAL SECTIONS)2.DWG Plotted on 17-May-2018 2:34 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

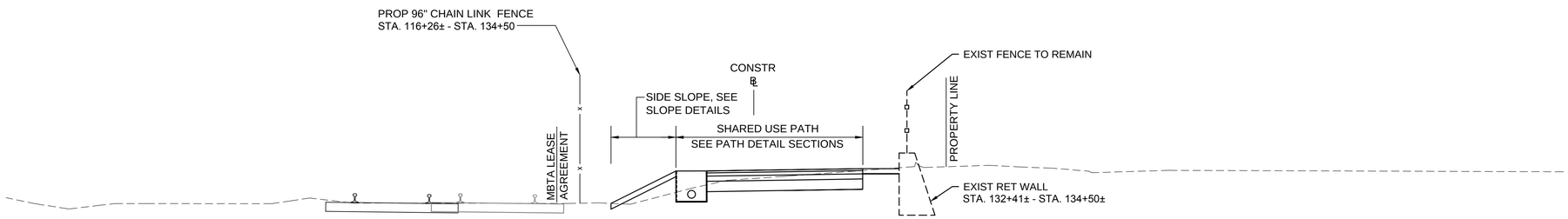
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		7	77
PROJECT FILE NO.	608352		

TYPICAL SECTIONS -2



TYPICAL SECTIONS
STA. 127+25± - STA. 132+25±

NTS



TYPICAL SECTIONS
STA. 132+25± - STA. 134+50±

NTS

SECTION NOTES:

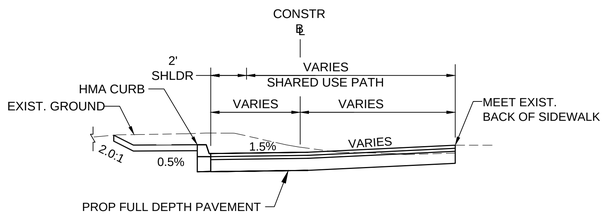
1. SEE SHEET 8 FOR SHARED USE PATH DETAILS.
2. SEE SHEET 9 FOR SIDE SLOPE DETAILS.

93692-PH2_HDS(TYPICAL SECTIONS)2.DWG Plotted on 17-May-2018 2:12 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

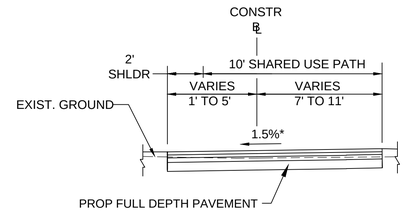
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		8	77
PROJECT FILE NO.	608352		

TYPICAL SECTIONS -3



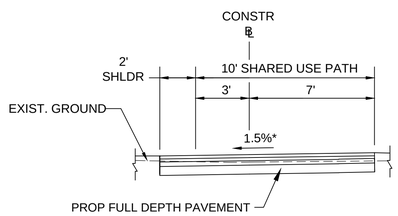
STA. 100+50± - STA. 100+62

*TOLERANCE +/-0.5%



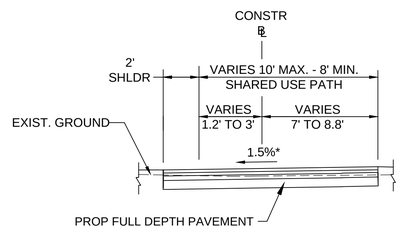
STA. 100+62 - STA. 105+00

*TOLERANCE +/-0.5%



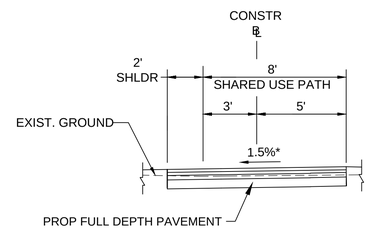
STA. 105+00 - STA.129+00

*TOLERANCE +/-0.5%



STA.129+00 - STA. 132+35.07

*TOLERANCE +/-0.5%



STA. 132+35.07 - STA. 134+50

*TOLERANCE +/-0.5%

PATH DETAIL SECTIONS

NTS

DETAIL NOTES:

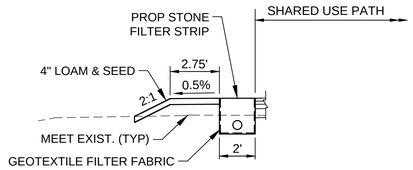
1. SEE SHEET 8 FOR SHARED USE PATH DETAILS.
2. SEE SHEET 9 FOR SIDE SLOPE DETAILS.

93692-PH2_HDS(TYPICAL SECTIONS)2.DWG Plotted on 17-May-2018 2:12 PM

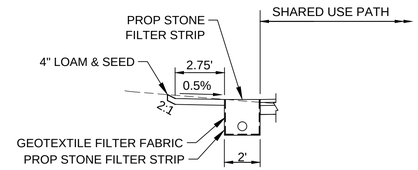
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		9	77
PROJECT FILE NO.	608352		

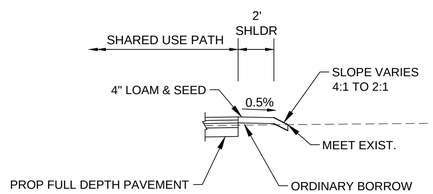
TYPICAL SECTIONS -4



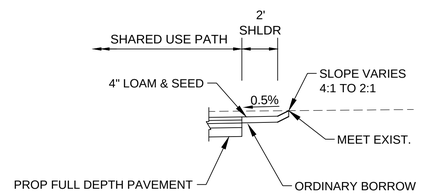
TYPICAL STONE FILTER STRIP - FILL SECTION



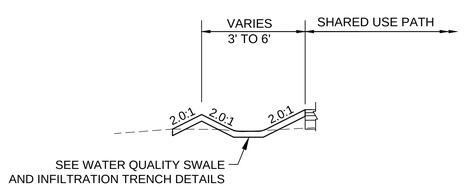
TYPICAL STONE FILTER STRIP - CUT SECTION



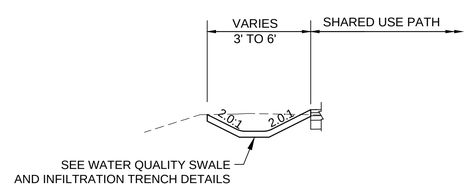
TYPICAL SIDE SLOPE - FILL SECTION



TYPICAL SIDE SLOPE - CUT SECTION



TYPICAL WATER QUALITY SWALE - FILL SECTION



TYPICAL WATER QUALITY SWALE - CUT SECTION

SIDE SLOPE TREATMENT DETAILS

NTS

93692-PH2_HDS(TYPICAL SECTIONS)2.DWG Plotted on 17-May-2018 2:12 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		10	77
PROJECT FILE NO.	608352		

CONSTRUCTION PLANS & PROFILES

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

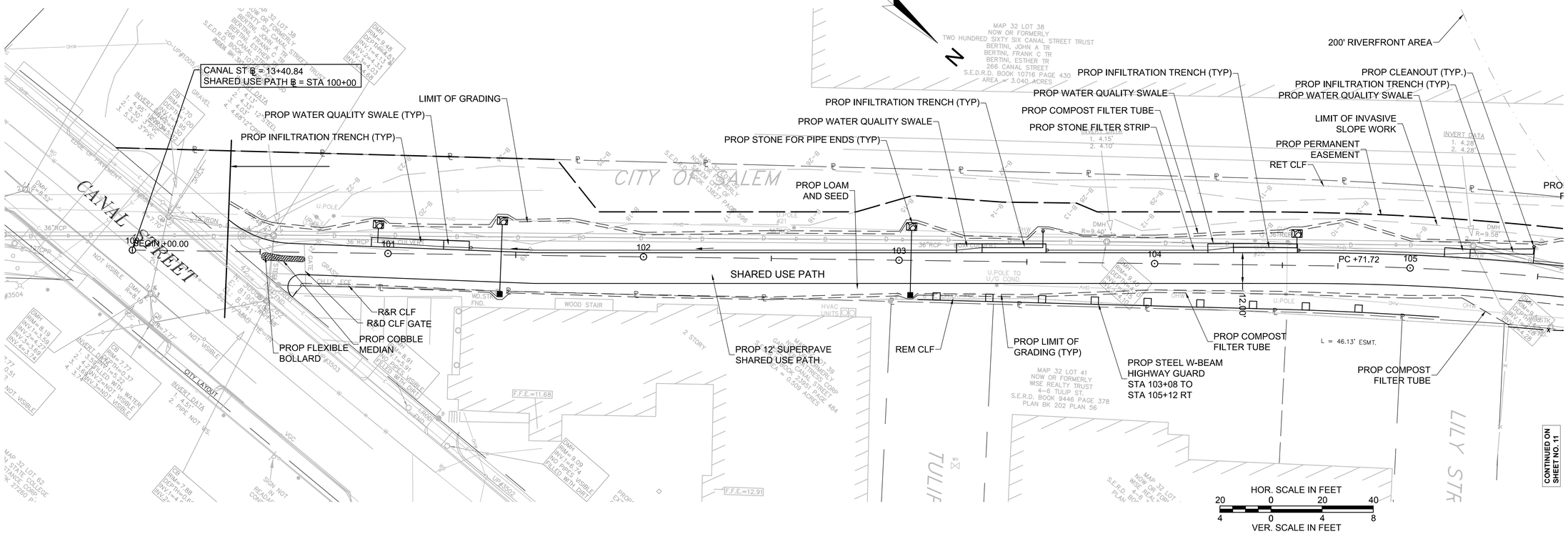
NONE

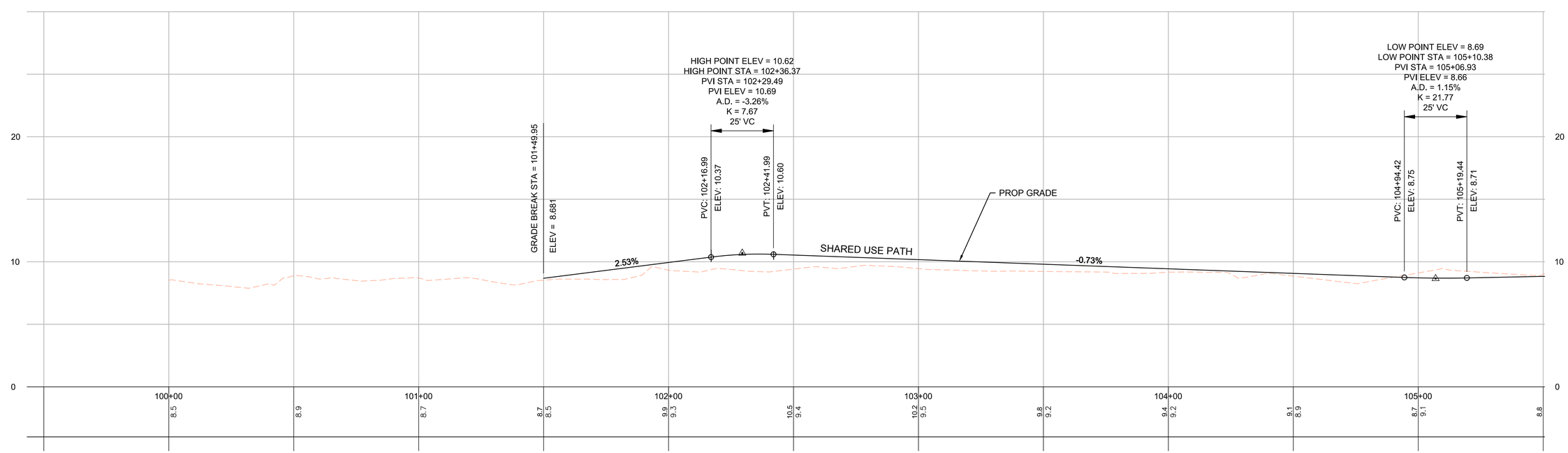
WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET NO.28





Plotted on 4-Jun-2018 9:56 AM

93692-PH2_HD8\CONSTRUCTION & PROFILES\2.DWG

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		11	77
PROJECT FILE NO.	608352		

CONSTRUCTION PLANS & PROFILES-2

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

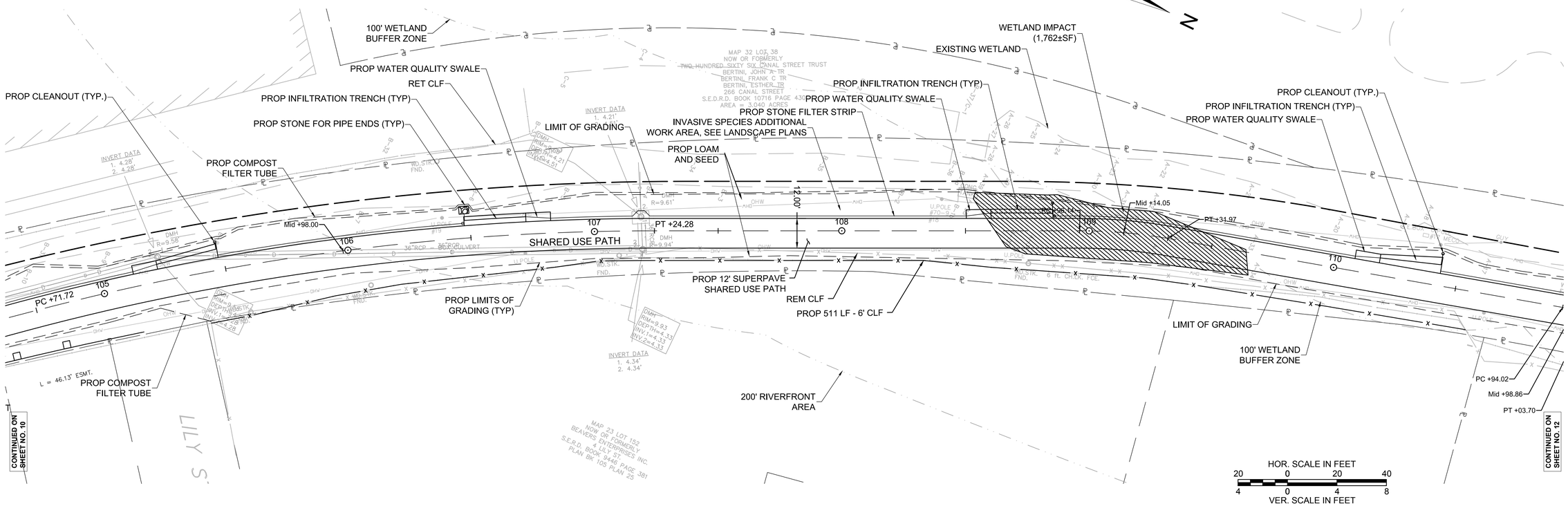
NONE

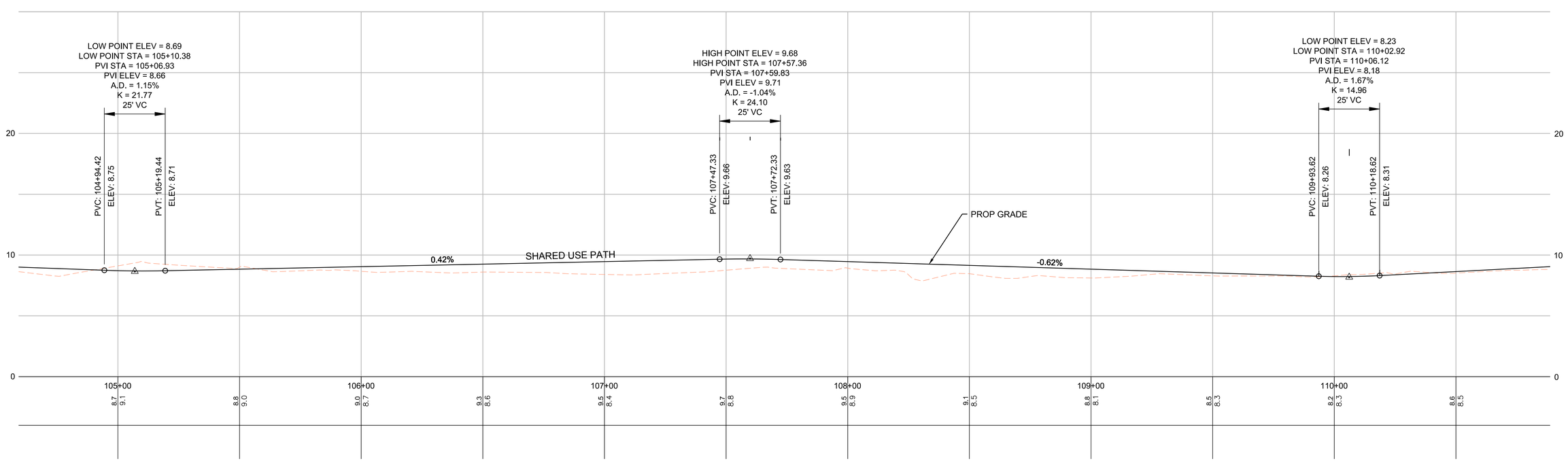
WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET NO.29





93692-PH2_HD8\CONSTRUCTION & PROFILES\2.DWG Plotted on 4-Jun-2018 9:56 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		12	77
PROJECT FILE NO.	608352		

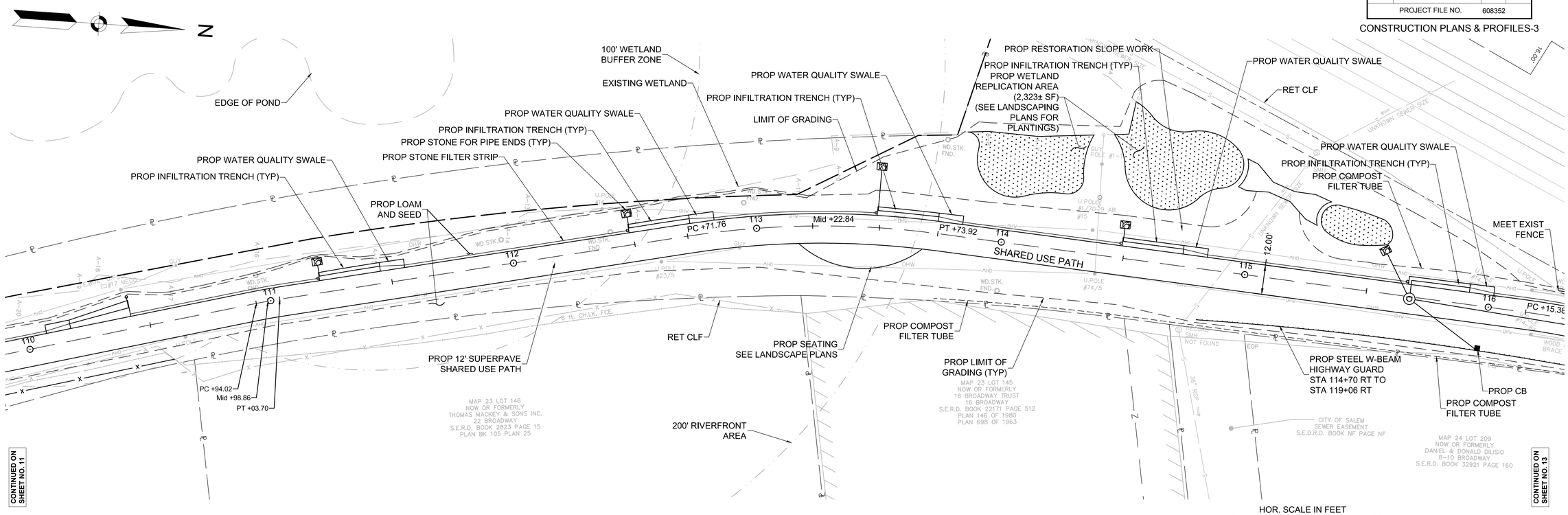
CONSTRUCTION PLANS & PROFILES-3

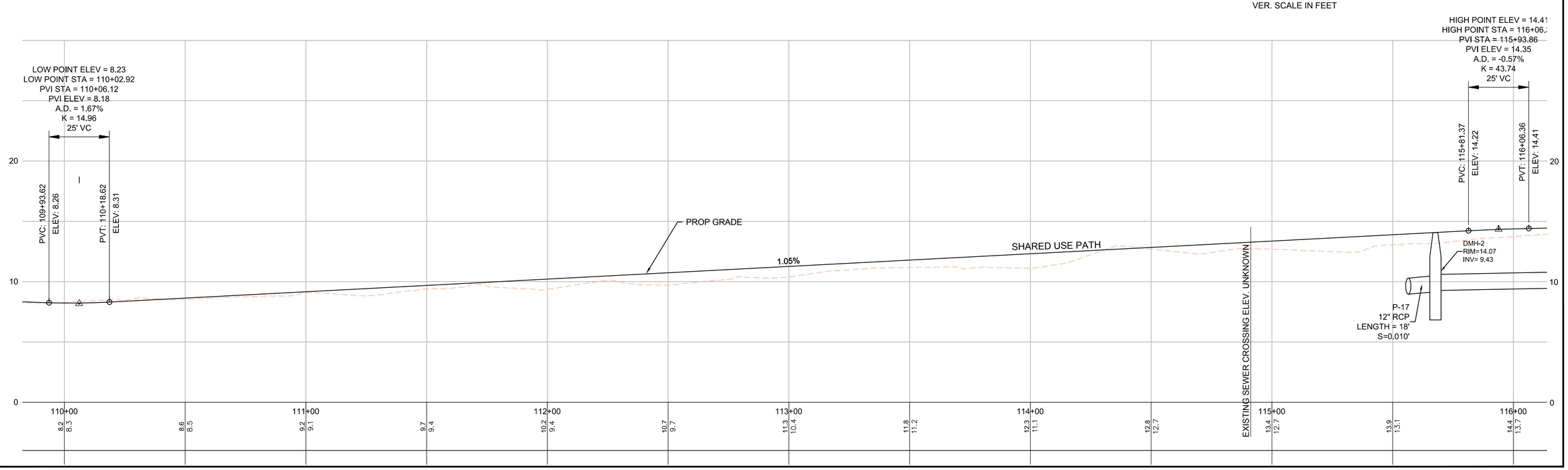
HIGHWAY GUARD DETAILS
SEE BELOW

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET NO. 30





93692-PH2_HD8\CONSTRUCTION & PROFILES\2.DWG Plotted on 4-Jun-2018 10:08 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		13	77
PROJECT FILE NO.	608352		

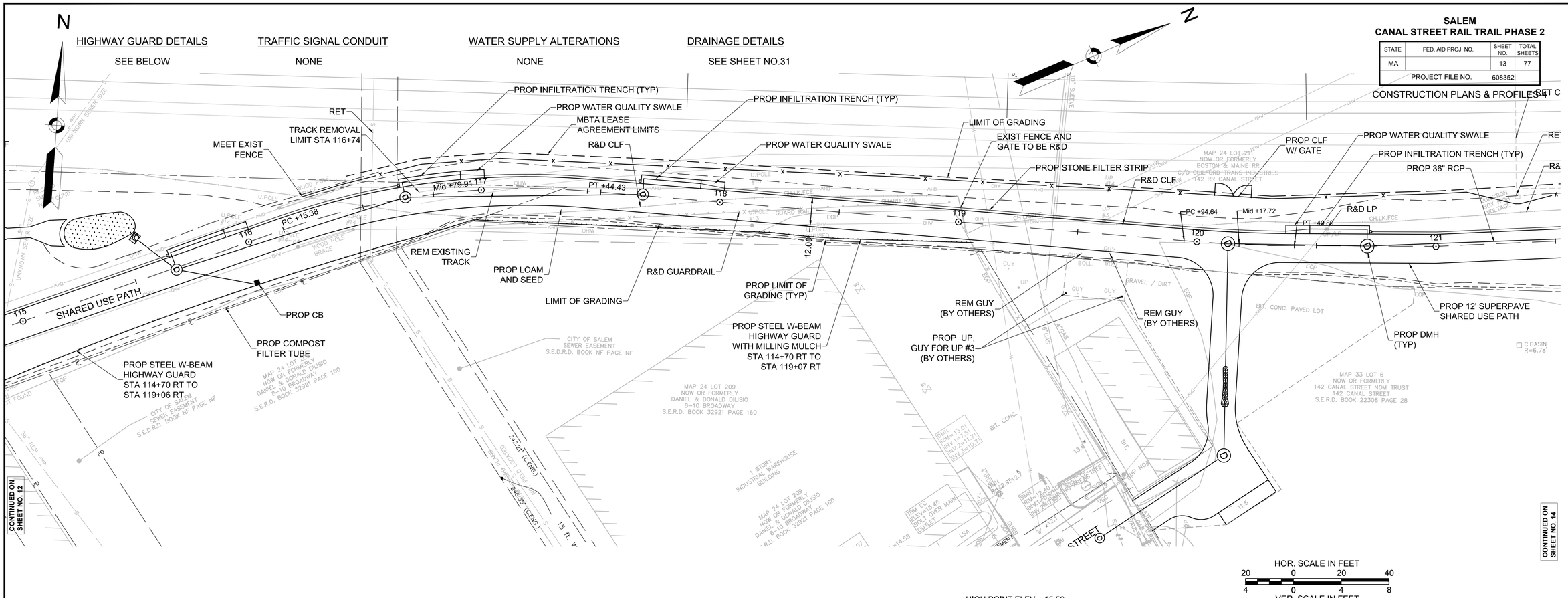
CONSTRUCTION PLANS & PROFILES

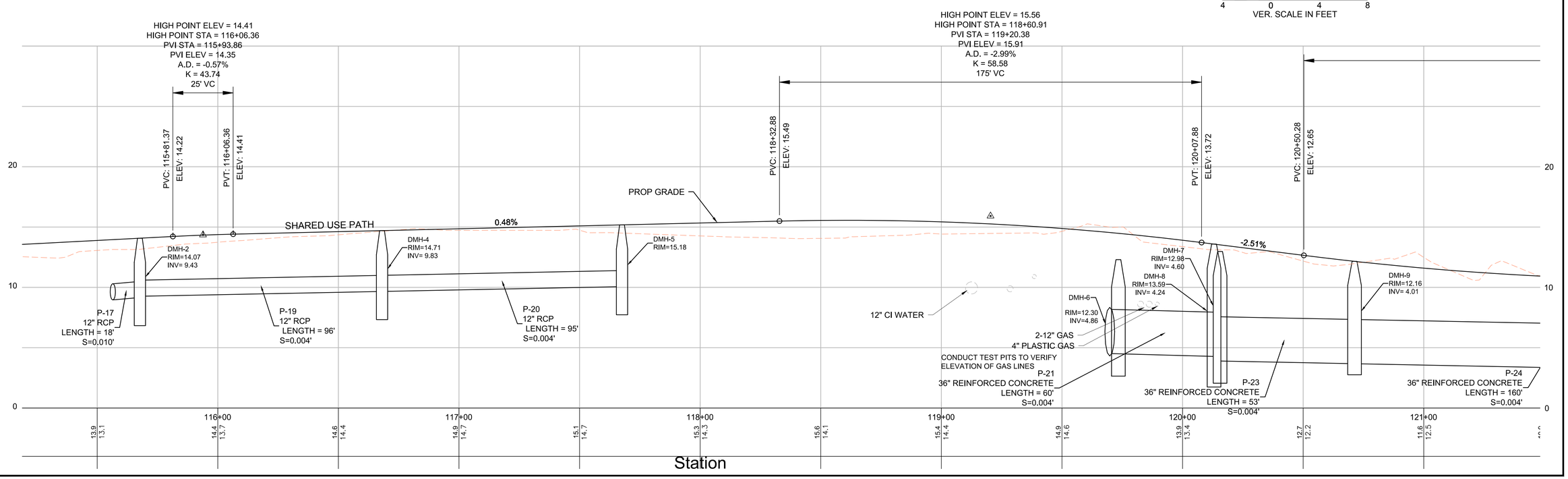
HIGHWAY GUARD DETAILS
SEE BELOW

TRAFFIC SIGNAL CONDUIT
NONE

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET NO.31





93692-PH2_HD8\CONSTRUCTION & PROFILES\2.DWG Plotted on 31-May-2016 2:07 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		14	77
PROJECT FILE NO.	608352		

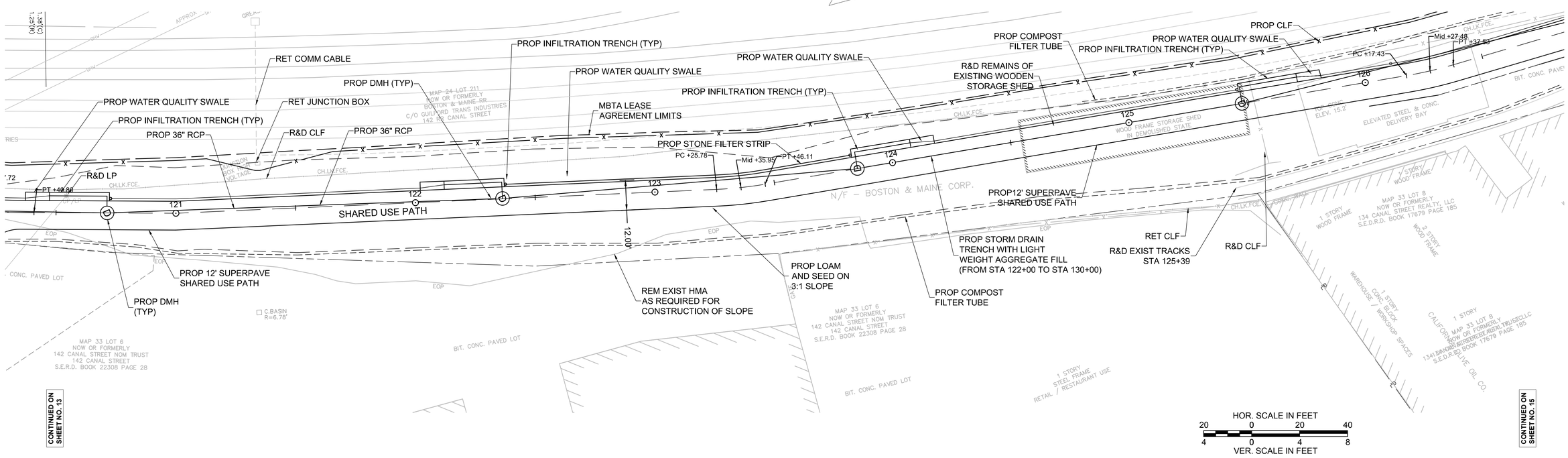
CONSTRUCTION PLANS & PROFILES-5

HIGHWAY GUARD DETAILS
SEE BELOW

TRAFFIC SIGNAL CONDUIT
NONE

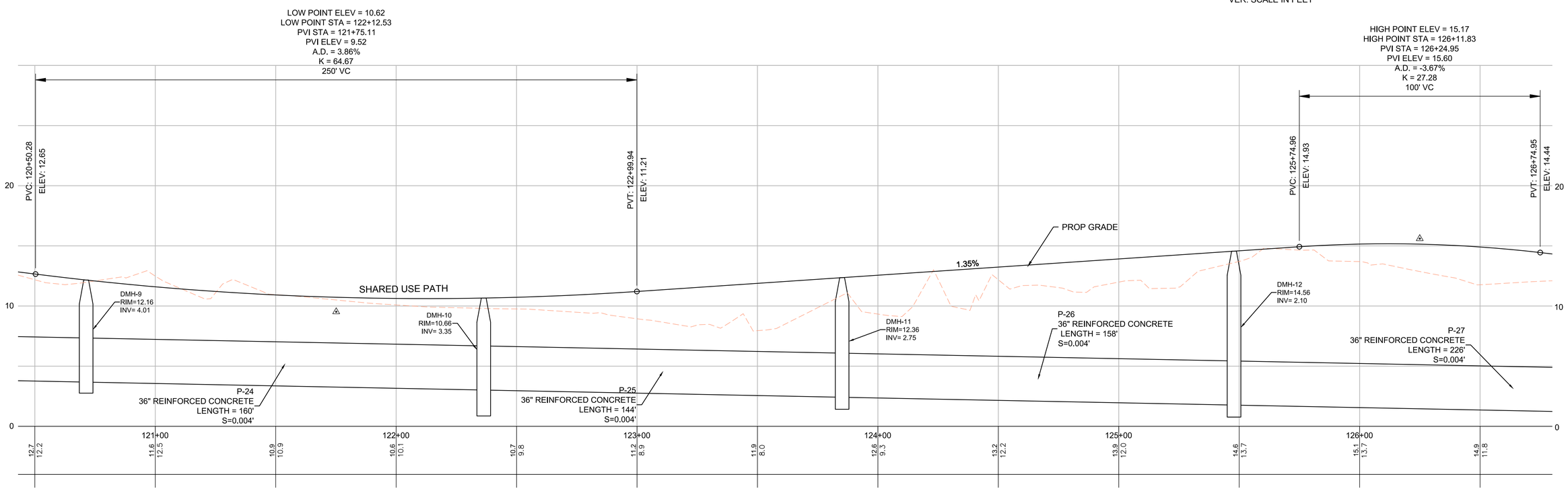
WATER SUPPLY ALTERATIONS
NONE

DRAINAGE DETAILS
SEE SHEET NO.32



CONTINUED ON SHEET NO. 13

CONTINUED ON SHEET NO. 15



93692-PH2_HD6\CONSTRUCTION & PROFILES\2.DWG Plotted on 31-May-2016 2:08 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		15	77
PROJECT FILE NO.	608352		

CONSTRUCTION PLANS & PROFILES-6

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

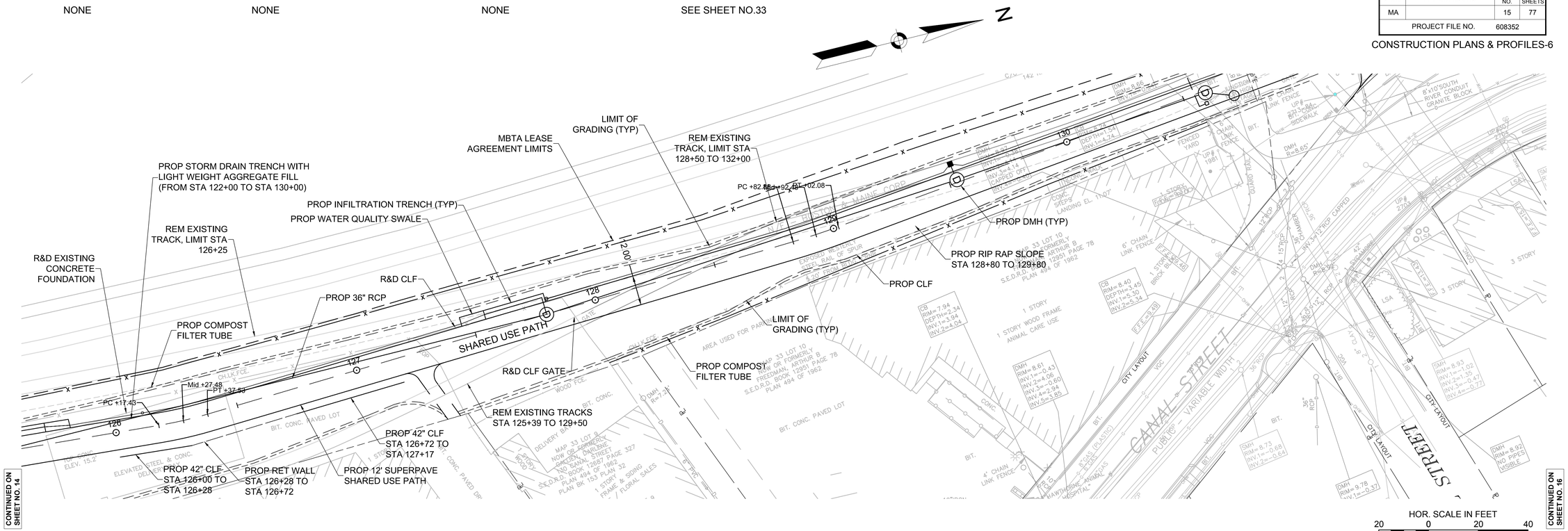
NONE

WATER SUPPLY ALTERATIONS

NONE

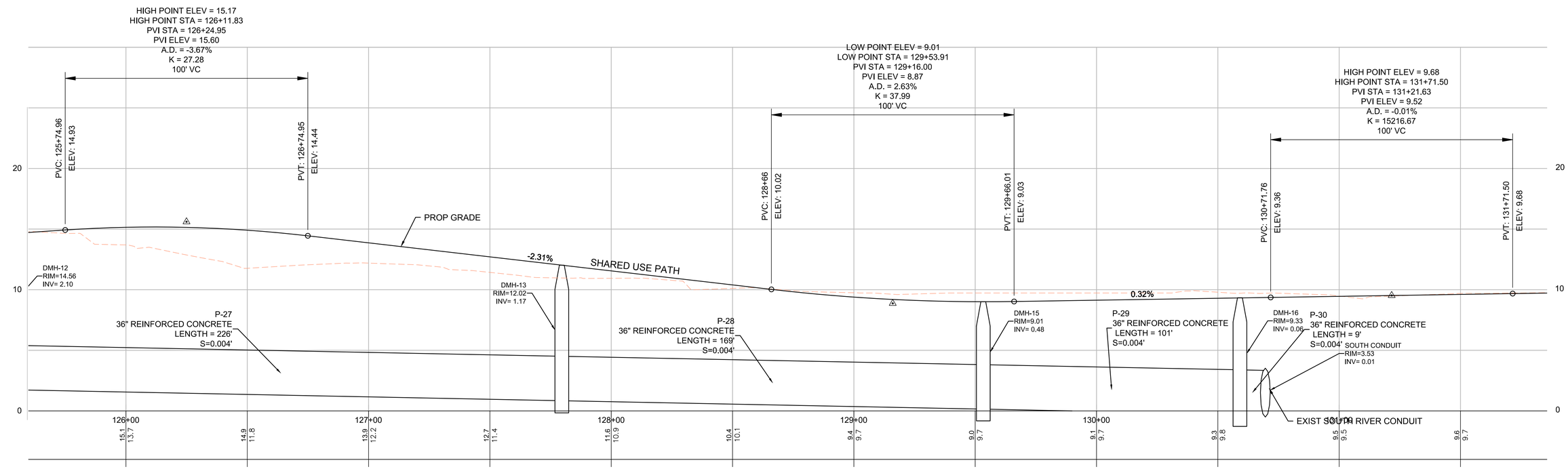
DRAINAGE DETAILS

SEE SHEET NO.33



CONTINUED ON SHEET NO. 14

CONTINUED ON SHEET NO. 16



93692-PH2_HD8\CONSTRUCTION & PROFILES\2.DWG Plotted on 4-Jun-2018 10:11 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		16	77
PROJECT FILE NO.	608352		

CONSTRUCTION PLANS & PROFILES-7

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

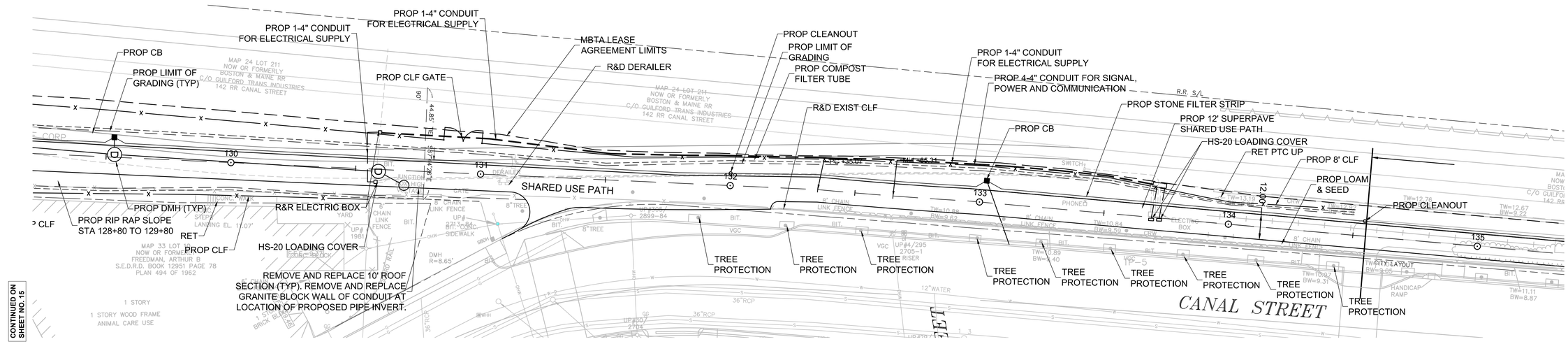
WATER SUPPLY ALTERATIONS

NONE

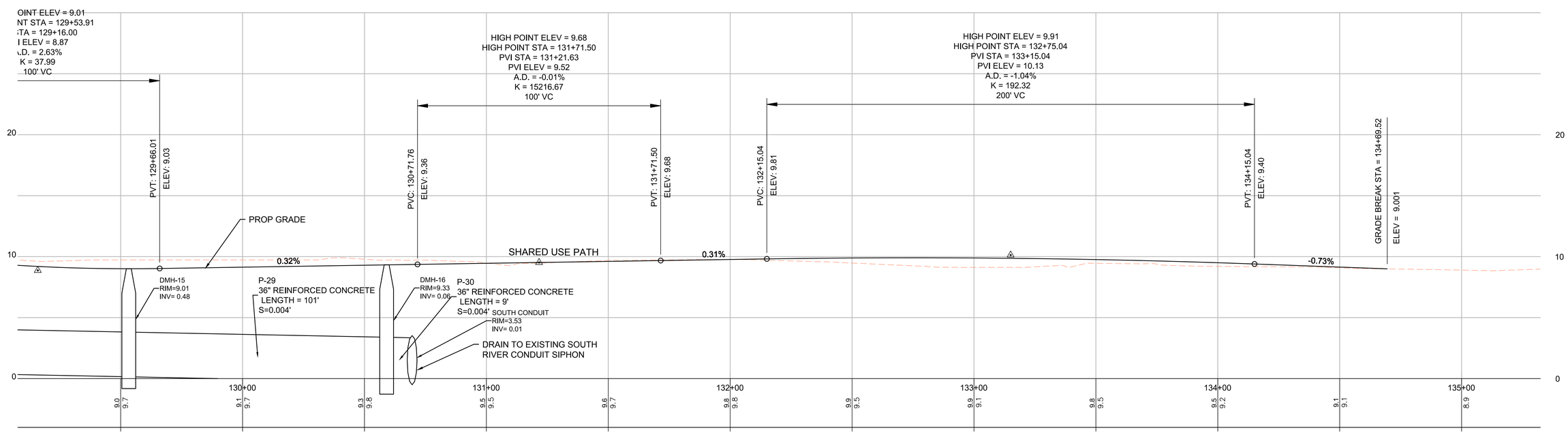
DRAINAGE DETAILS

SEE SHEET NO.34

N



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



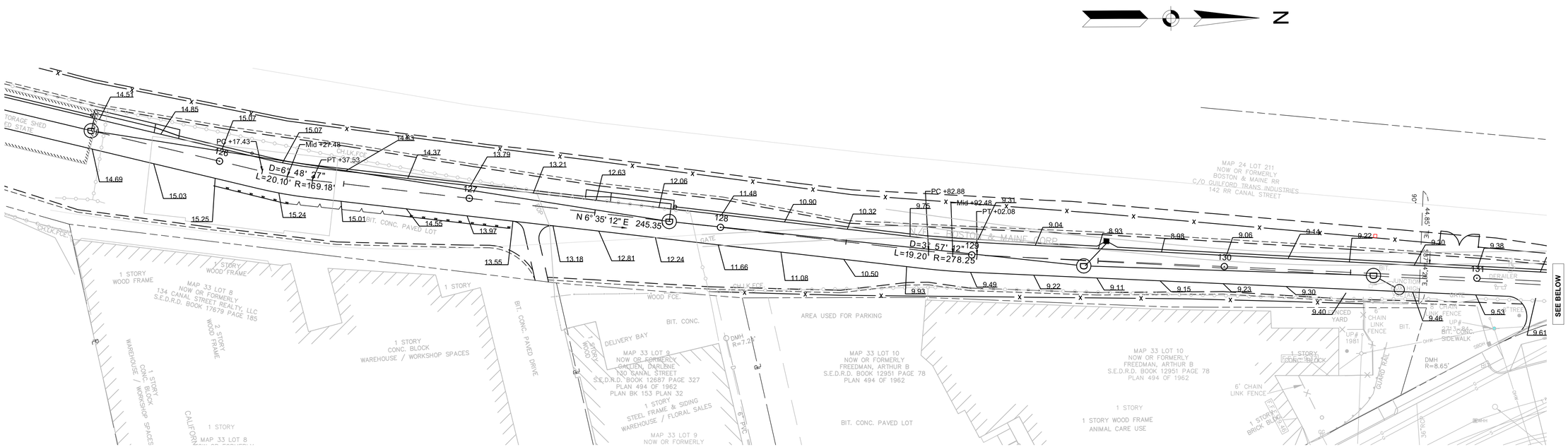
93692-PH2_HD8\CONSTRUCTION & PROFILES\2.DWG Plotted on 4-Jun-2018 10:11 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

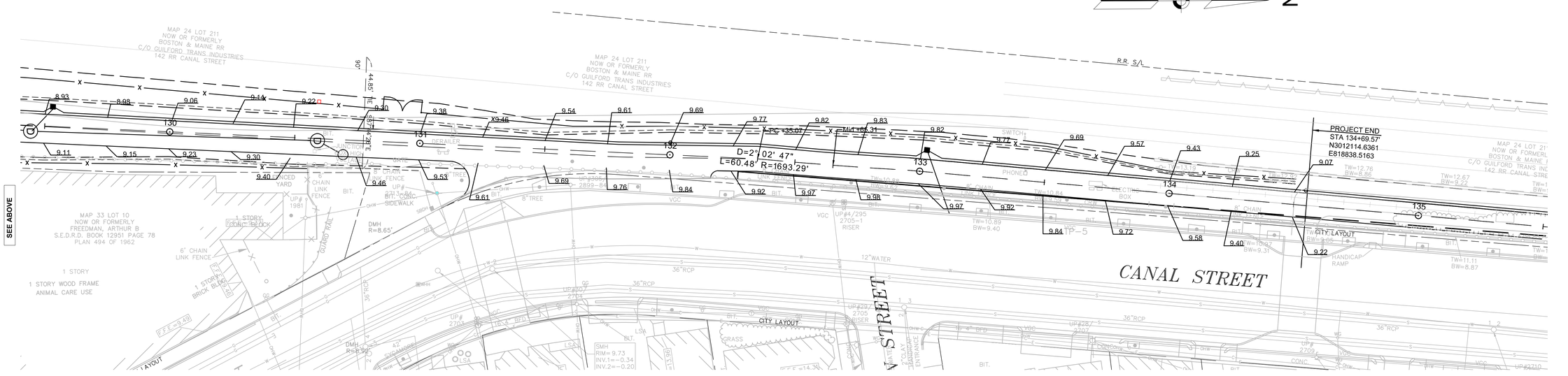
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		17	77
PROJECT FILE NO.	608352		

CURB TIE & GRADING PLAN

NOTE: ALL OTHER GRADING TO MATCH TYPICAL SECTIONS.



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



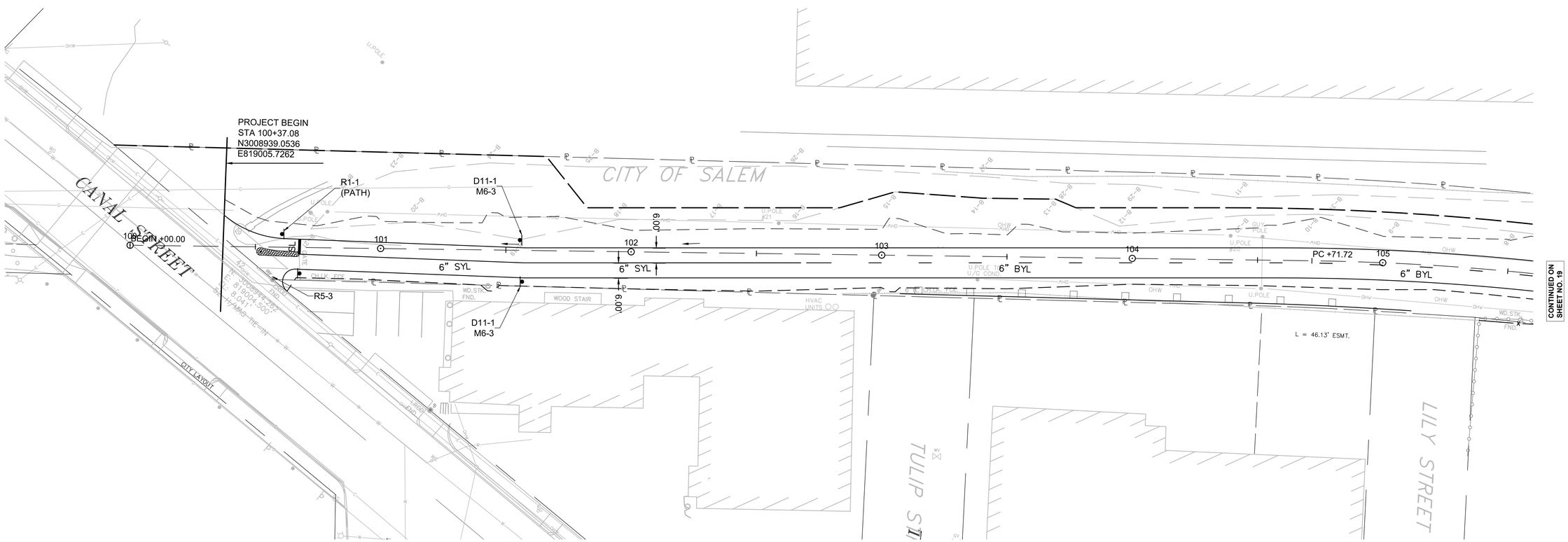
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692.PH2_HD(CURB TIE & GRADING PLAN)2.DWG Plotted on 17-May-2018 2:59 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		18	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

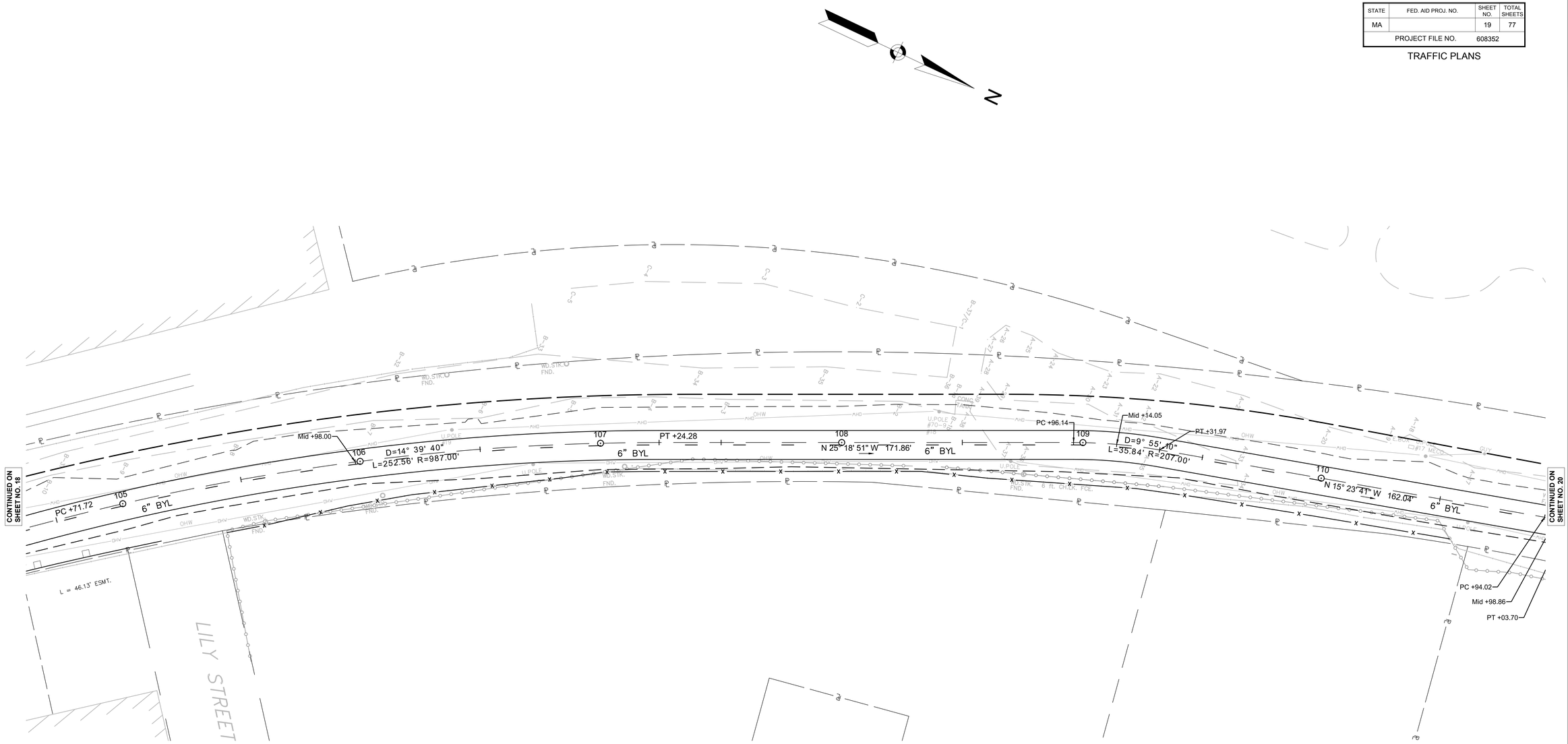
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:47 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		19	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

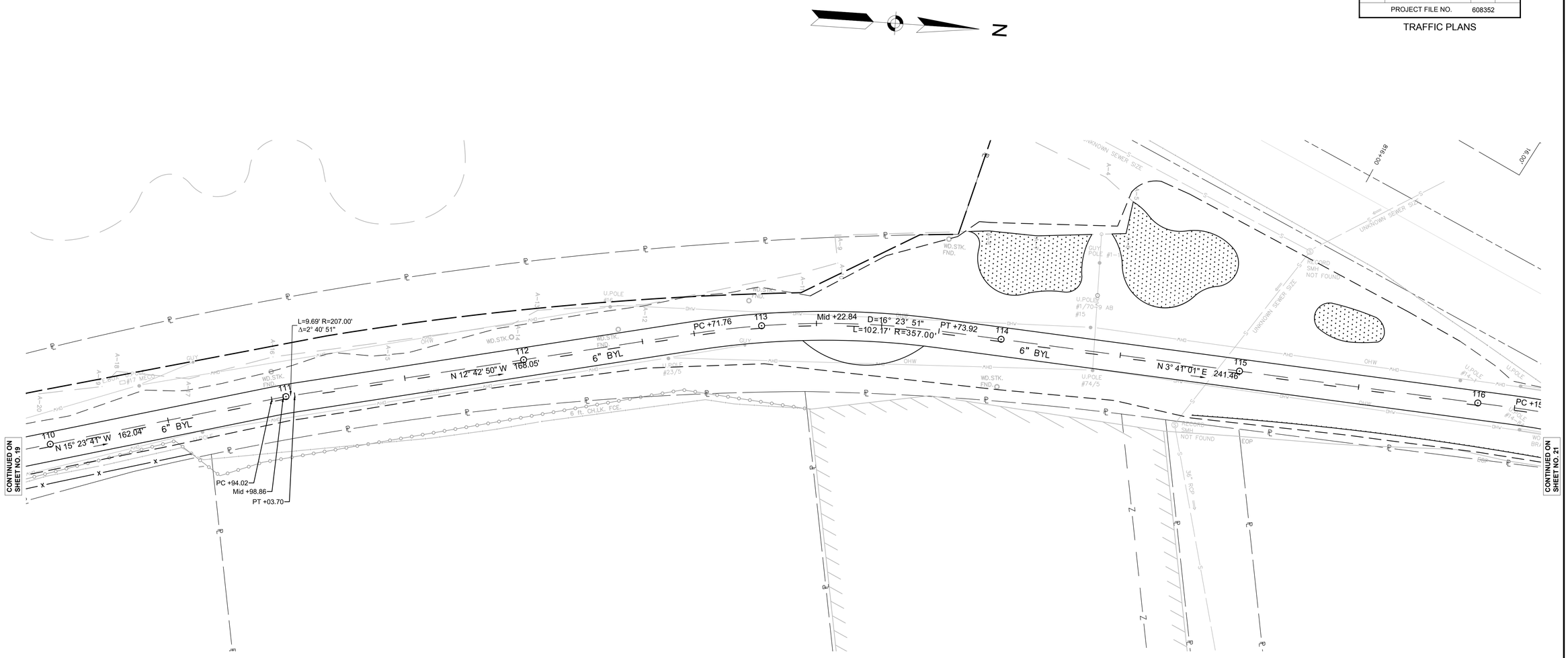
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:47 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		20	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

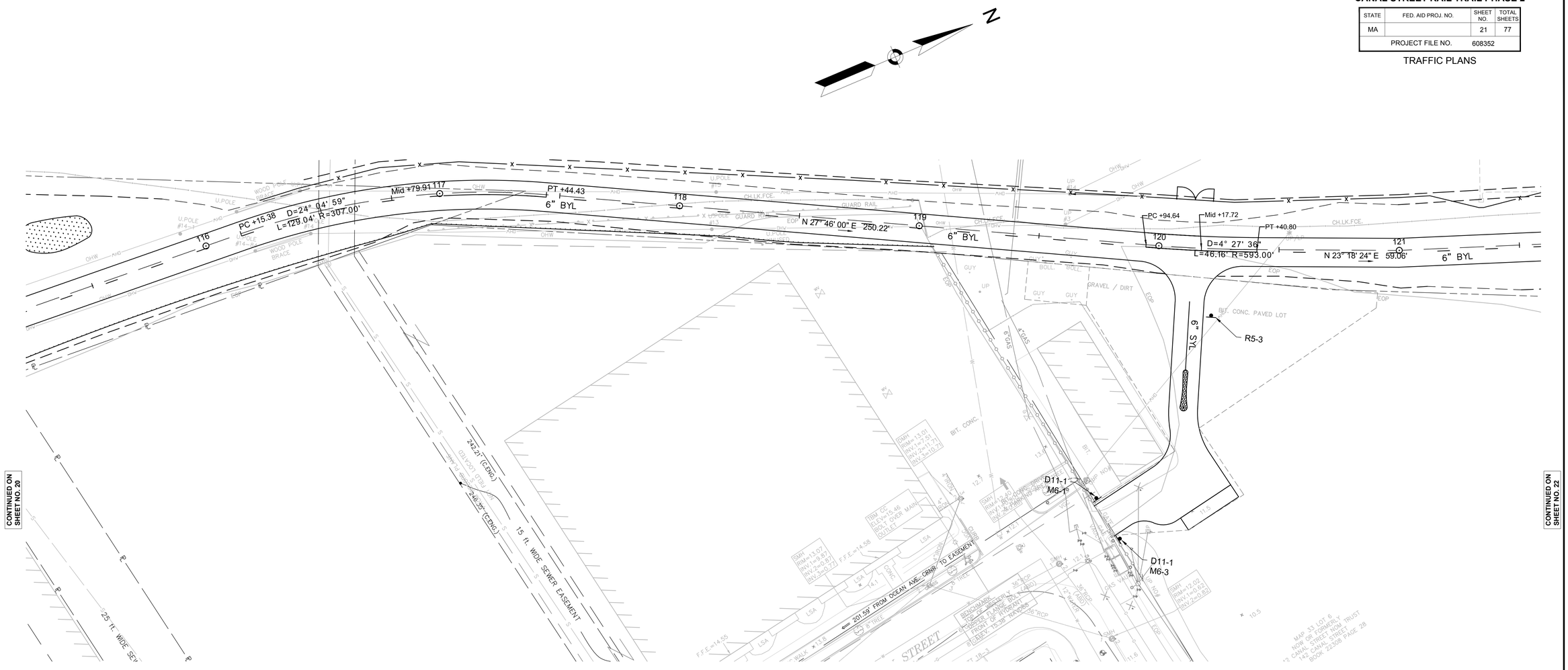
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:47 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		21	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

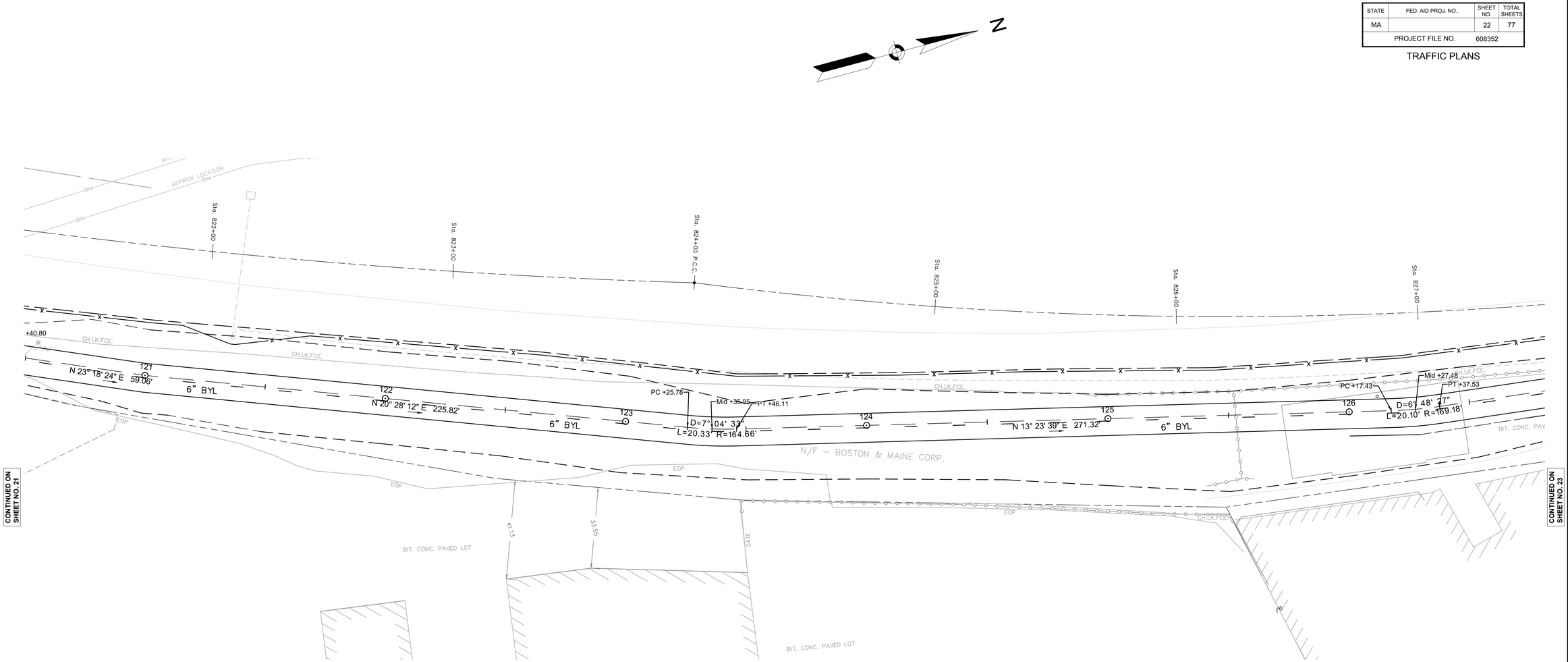
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:47 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		22	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

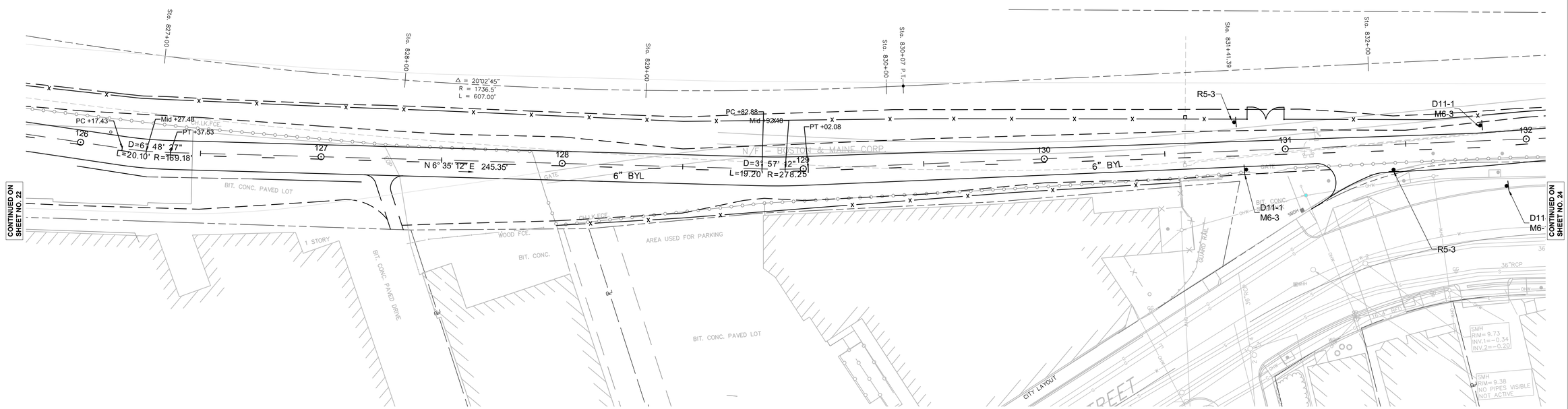
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:47 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		23	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

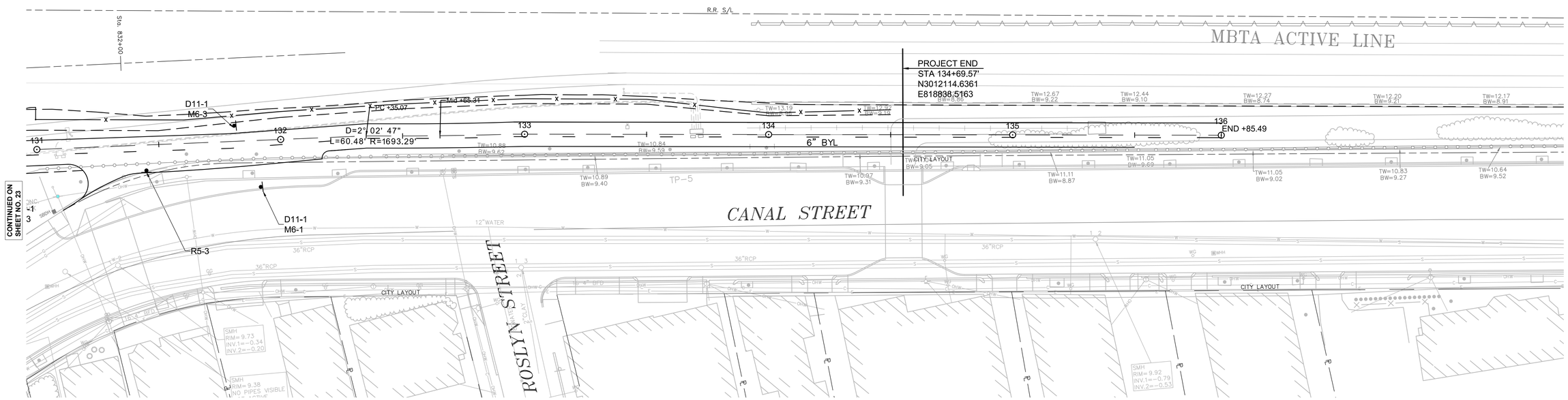
HOR. SCALE IN FEET
20 0 20 40
4 0 4 8
VER. SCALE IN FEET

93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:47 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		24	77
PROJECT FILE NO.	608352		

TRAFFIC PLANS



NOTE: BROKEN YELLOW CENTERLINE SHALL BE THERMOPLASTIC APPLIED, 6" WIDE, 3 FEET SOLID WITH 9 FEET SPACING.

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

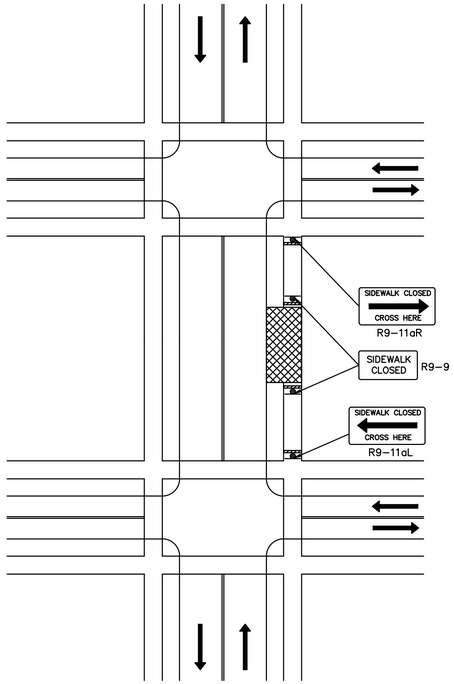
93692-PH2_TR(TRAFFIC PLANS)2.DWG Plotted on 6-Jun-2018 7:48 AM

93692-PH2_HDT(TRAFFIC SIGN SUMMARY SHEET)2.DWG Plotted on 5-Jun-2018 11:01 AM

TRAFFIC SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)			NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED	UNIT AREA (S.F.)	AREA IN SQUARE FEET
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACK-GROUND	LEGEND	BORDER			
D11-1	24"	18"		SEE STANDARDS (1)			7	GREEN	WHITE	WHITE	P-5 5	3.00	21.00
M6-1	21"	15"					2	GREEN	WHITE	WHITE	MOUNT WITH D11-1	0.88	1.76
M6-3	12"	9"					5	GREEN	WHITE	WHITE	MOUNT WITH D11-1	0.75	3.75
R1-1 (PATH)	18"	18"					1	RED	WHITE	WHITE	P-5 4	2.25	2.25
R5-3	24"	24"					4	WHITE	BLACK	BLACK	P-5 2	4.00	16.00

1. PER THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE 2012 MASSDOT AMENDMENTS TO THE MUTCD, AND THE 1998 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.
2. THE MINIMUM MOUNTING HEIGHT OF POST MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF THE GROUND, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED ON THE PLANS.
3. ALL STOP SIGNS AND YIELD SIGNS PROPOSED IN THIS CONTRACT ARE SUBJECT TO FIELD INVESTIGATION BY THE DISTRICT OFFICE OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION TO JUSTIFY WARRANTS BEFORE INSTALLATION, NUMERICAL LIMITS AND JUSTIFICATION FOR THE SPEED AND ADVISORY EXIT SPEED SIGNS SHALL BE OBTAINED FROM THE SPEED ZONING UNIT OF THE TRAFFIC ENGINEERING SECTION, MASSACHUSETTS DEPARTMENT OF TRANSPORTATION, BEFORE FABRICATION AND/OR ERECTION.



TYPICAL SIDEWALK CLOSURE
AND PEDESTRIAN DETOUR PLAN

NOT TO SCALE

NOTES FOR PEDESTRIAN TRAFFIC:

1. PEDESTRIAN ACCESS WILL BE PROVIDED TO ABUTTING LAND USERS AT ALL TIMES, AS APPROVED BY MASSDOT AND IN ACCORDANCE WITH MUTCD, ADA AND AAB REQUIREMENTS.
2. UNOBSTRUCTED WALKWAYS OF 4 FEET MINIMUM WIDTH, UNLESS OTHERWISE APPROVED BY MASSDOT, SHALL BE PROVIDED AT ALL TIMES.
3. TEMPORARY PEDESTRIAN WALKWAYS SHALL BE SEPARATED FROM ROADWAY AND CONSTRUCTION AREAS BY BARRICADES AS APPROVED BY MASSDOT.

TABLE 1
ADVANCED WARNING SIGN PLACEMENT

ROAD TYPE	DISTANCE BETWEEN SIGNS (ft)*		
	A	B	C
URBAN (LOW SPEED)	100	100	100
URBAN (HIGH SPEED)	350	350	350
RURAL	500	500	500

* SEE MASSDOT STANDARDS FOR MORE INFORMATION REGARDING DISTANCES BETWEEN SIGNS AND SIGN LOCATIONS. 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 SIGN AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. THE "THIRD" SIGN IS THE FIRST SIGN TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL ZONE.

TABLE 2
BUFFER LENGTHS

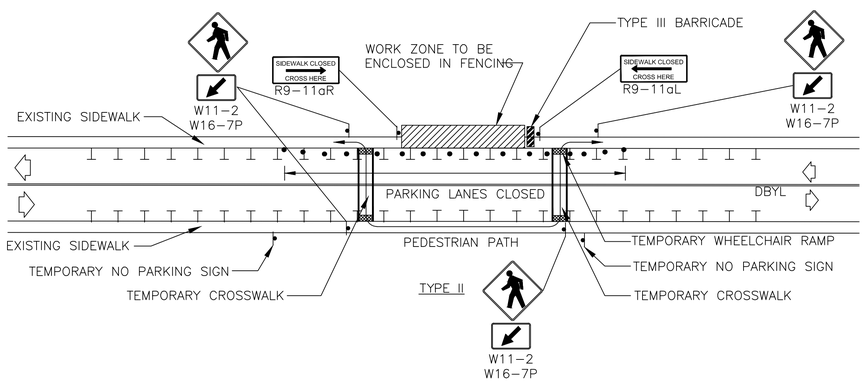
SPEED* (mph)	LENGTH (ft)
25	155
30	200
35	250
40	305
45	360

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

FORMULAS FOR L **

SPEED	FORMULA
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR GREATER	$L = W \times S$

* SPEED CATEGORY TO BE DETERMINED BY STATE HIGHWAY AGENCY IN COOPERATION WITH LOCAL JURISDICTIONS.
** L = TAPER LENGTH IN FEET.
W = WIDTH OF OFFSET IN FEET.
S = POSTED SPEED, THE OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH.



PEDESTRIAN BYPASS

NOT TO SCALE

NOTES FOR PEDESTRIAN BYPASS:

1. ADDITIONAL ADVANCE WARNING MAY BE REQUIRED BY MASSDOT.
2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS DETAILED ELSEWHERE.
3. BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
4. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT, TEMPORARY CROSSWALKS WITH APPROPRIATE SIGNS SHOULD BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AS SHOWN IN PEDESTRIAN BYPASS TYPE II, AND AS DIRECTED BY THE ENGINEER.
5. STREET LIGHTING SHALL BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
6. EXISTING WHEELCHAIR RAMPS SHALL BE CONSIDERED WHEN LOCATING TEMPORARY PAINTED CROSSWALKS.
7. TEMPORARY WHEELCHAIR RAMPS SHALL BE BITUMINOUS CONCRETE, WITH WIDTH AND LENGTH PER ADA REQUIREMENTS, BUT SHALL NOT INTRUDE INTO THE TRAVEL WAY.

KEY

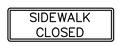
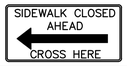
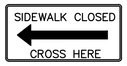
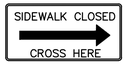
- CHANNELIZING DEVICES
- TYPE III BARRICADES W/ORANGE FLAGS OR WARNING LIGHTS
- WORK ZONE
- POLICE OFFICER/FLAGGER
- SIGN
- ADA COMPLIANT TEMPORARY WHEELCHAIR RAMP
- TRUCK MOUNTED ATTENUATOR

NOTES:

1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM WITH THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
2. ALL SIGN LEGENDS, BORDERS AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD, INCLUDING ALL REVISIONS.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
4. 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.
5. SIGNS AND SIGN SUPPORTS LOCATED ON OR NEAR THE TRAVELED WAY, AND REFLECTORIZED PLASTIC DRUMS WITH LIGHTING DEVICES MOUNTED ON THEM, MUST PASS THE CRITERIA SET FORTH IN NCHRP REPORT 350, "RECOMMENDED PROCEDURES FOR THE SAFETY PERFORMANCE EVALUATION OF HIGHWAY FEATURES."
6. CONTRACTORS SHALL NOTIFY EACH ABUTTER AT LEAST 48 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.
7. THE FIRST TEN PLASTIC REFLECTORIZED DRUMS OF A TAPER SHALL BE MOUNTED WITH TYPE A LIGHTS.
8. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
10. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF DRUMS OR MEDIAN BARRIER.
11. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.
12. REFERENCE TABLES 1 & 2 ABOVE FOR RECOMMENDED BUFFER LENGTHS AND DISTANCES BETWEEN WARNING SIGNS.
13. THE MAXIMUM SPACING BETWEEN CHANNELING DEVICES IN A TAPER SHOULD BE APPROXIMATELY EQUAL IN FEET TO 1.0 TIMES THE SPEED LIMIT (MPH).
14. THE MAXIMUM SPACING BETWEEN CHANNELING DEVICES ON THE TANGENT SHOULD BE APPROXIMATELY EQUAL IN FEET TO 2.0 TIMES THE SPEED LIMIT (MPH).
15. POLICE DETAILS OR ROADWAY FLAGGERS SHALL BE USED TO DIRECT TRAFFIC AROUND A WORK AREA IF TRAFFIC MUST BE TEMPORARILY STOPPED OR REROUTED TO ALLOW FOR MOVEMENT OF WORK VEHICLES OR OTHER EQUIPMENT.
16. ONLY POLICE OFFICERS MAY BE UTILIZED FOR TRAFFIC CONTROL AT AN INTERSECTION.
17. IF ENTIRE WORK AREA IS VISIBLE FROM ONE STATION, A SINGLE POLICE OFFICER MAY BE USED. A SINGLE OFFICER SHALL BE STATIONED ON THE SHOULDER OPPOSITE THE OBSTRUCTION OR WORK PLACE OR IN A POSITION WHERE GOOD VISIBILITY AND TRAFFIC CONTROL CAN BE MAINTAINED AT ALL TIMES.
18. WHERE 2 OR MORE POLICE OFFICERS ARE REQUIRED ALL POLICE OFFICERS MUST BE IN COMMUNICATION WITH EACH OTHER AND SHALL BE CLEARLY VISIBLE TO THE TRAFFIC WHICH IS BEING CONTROLLED.
19. FLOOD LIGHTS SHALL BE PROVIDED TO MARK POLICE DETAIL STATIONS AT NIGHT AS NEEDED.
20. WARNING LIGHTS SHALL BE USED TO MARK CHANNELING DEVICES AT NIGHT ONLY IF APPROVED BY THE ENGINEER.
21. CHANNELING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
22. NO SIGNS SHALL BE ATTACHED TO DRUMS OR CONES. ALL SIGNS SHALL BE ATTACHED TO INDEPENDENT SUPPORTS.
23. THE CONTRACTOR SHALL NOT REDUCE THROUGH TRAVEL LANES AND AFFECT TRAFFIC AS DETERMINED BY THE ENGINEER DURING PEAK HOURLY VOLUMES, WHICH OCCUR BETWEEN 7:00AM–9:00AM AND 4:00PM–6:00PM ON WEEKDAYS.
24. THE CONTRACTOR SHALL SUBMIT A DETOUR PLAN FOR APPROVAL BY THE RESIDENT ENGINEER AND CITY IF A DETOUR IS REQUIRED.
25. AT THE END OF EACH CONSTRUCTION DAY, THE CONTRACTOR SHALL ENSURE THAT NECESSARY TRAFFIC CONTROL DEVICES ARE EFFECTIVELY PLACED TO PROVIDE SAFE PASSAGE OF VEHICLES AND PEDESTRIANS BETWEEN THE ZONES AND THE ADJOINING ROADWAYS. THE CONTRACTOR SHALL ENSURE THAT SAFE ACCESS/EGRESS OF SIDE STREETS AND ALL DRIVEWAY ENTRANCES AND EXITS ABUTTING WORK ZONES ARE MAINTAINED DURING NIGHT TIME AND ON WEEKENDS.
26. REFER TO THE LATEST MUTCD AND THE MASSDOT STANDARD DRAWINGS FOR TTCP FOR ADDITIONAL TRAFFIC CONTROL SET UPS, AS REQUIRED.
27. SPECIAL ATTENTION TO STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY TRAFFIC CONTROL PLANS, FIGURES PED–1 TO PED–6.

93692-PH2_TR(TEMPORARY TRAFFIC CONTROL PLANS)2.DWG Plotted on 5-Jun-2018 2:08 PM

CONSTRUCTION SIGN SUMMARY

IDENTIFI-CATION NUMBER	SIZE OF SIGN		TEXT	TEXT DIMENSIONS (INCHES)						NUMBER OF SIGNS REQUIRED	COLOR			POST SIZE AND NUMBER REQUIRED (1)	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
	WIDTH (IN.)	HEIGHT (IN.)		LETTER HEIGHT		VERTICAL SPACING		ARROW RTE MKR			BACK-GROUND	LEGEND	BORDER			
R8-3	24	24		SEE STANDARDS (2)						2	WHITE	BLACK/ RED	BLACK	2	4.00	8.00
R9-9	30	18								4	WHITE	BLACK	BLACK	4	3.75	15.00
R9-11L	48	24								2	WHITE	BLACK	BLACK	2	8.00	16.00
R9-11R	48	24								2	WHITE	BLACK	BLACK	2	8.00	16.00
R9-11aL	48	24								2	WHITE	BLACK	BLACK	2	8.00	16.00
R9-11aR	48	24								2	WHITE	BLACK	BLACK	2	8.00	16.00
W11-2	30	30								4	FLOURESCENT YELLOW GREEN	BLACK	BLACK	4	6.25	25.00
W16-7p	24	12								4	FLOURESCENT YELLOW GREEN	BLACK	BLACK	0 4 MTD W/ W11-2	2.00	8.00

NOTES:

(1) UNLESS OTHERWISE NOTED, ALL SIGN SUPPORTS SHALL BE WOODEN BREAKAWAY POSTS PER MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARDS.

(2) PER THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), AND THE 1996 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.

* PER MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DETAILS AND DRAWINGS FOR THE DEVELOPMENT OF TEMPORARY CONTROL PLANS.

93692-PH2_TR(CONSTRUCTION SIGN SUMMARY)2.DWG Plotted on 17-May-2018 2:17 PM

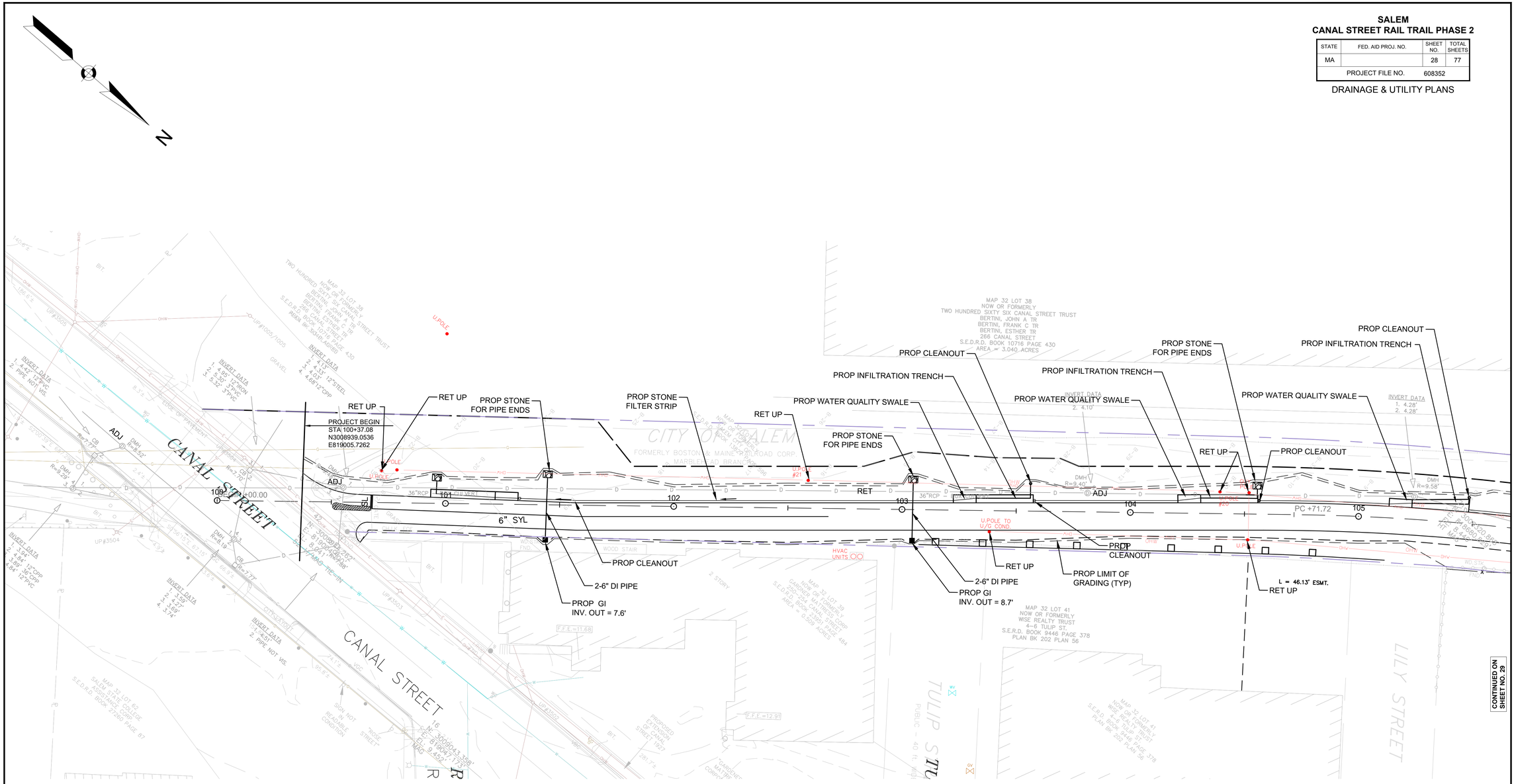
P:\work\93692\CAD\Phase 2 Bikepath\DWG\HD\93692-Ph2_TR(Construction Sign Summary)2.dwg [SHEET 30 - CSS]

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		28	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS

93892_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:30 PM



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

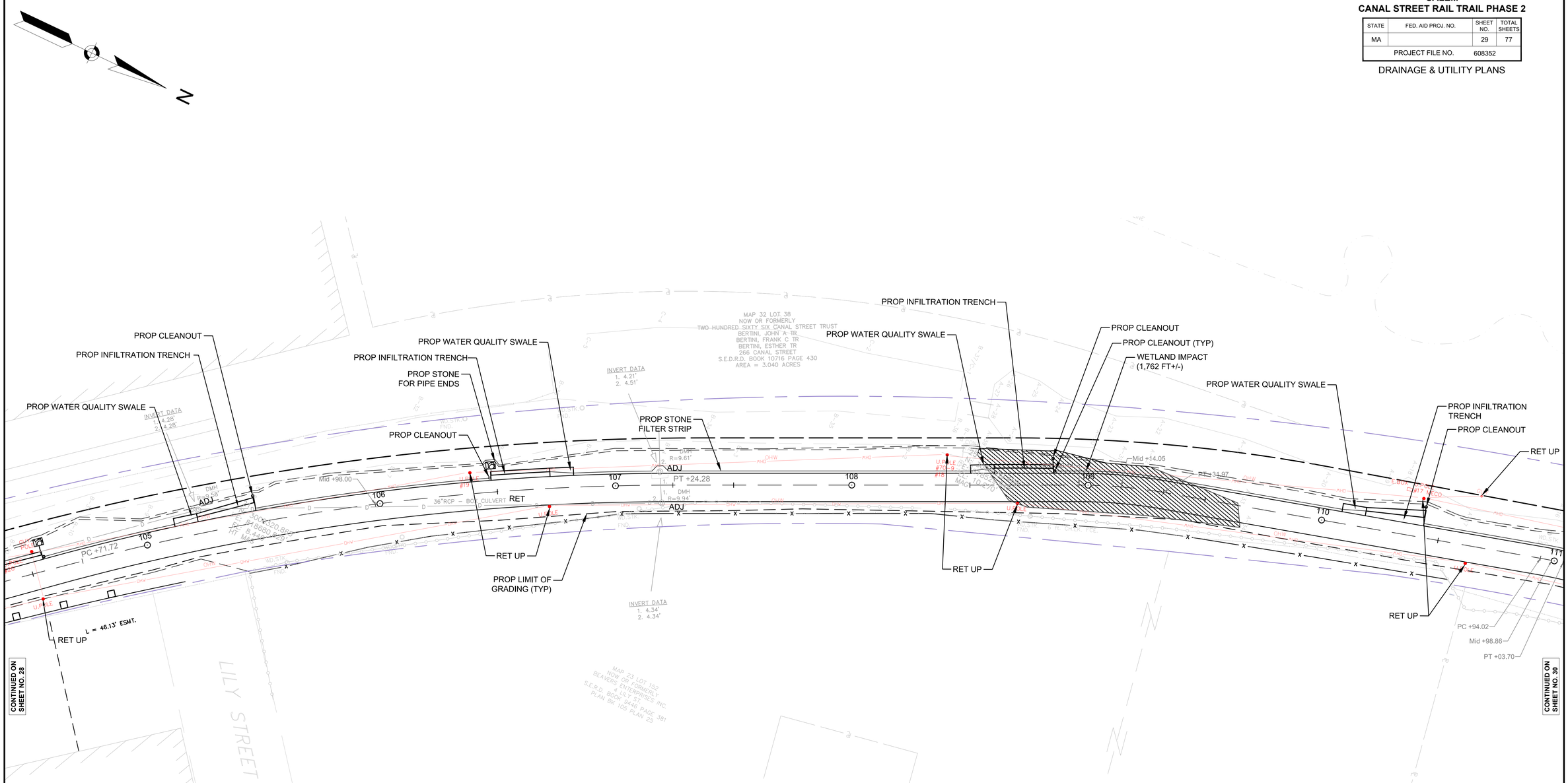
HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 10

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		29	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

HOR. SCALE IN FEET
0 20 50 100

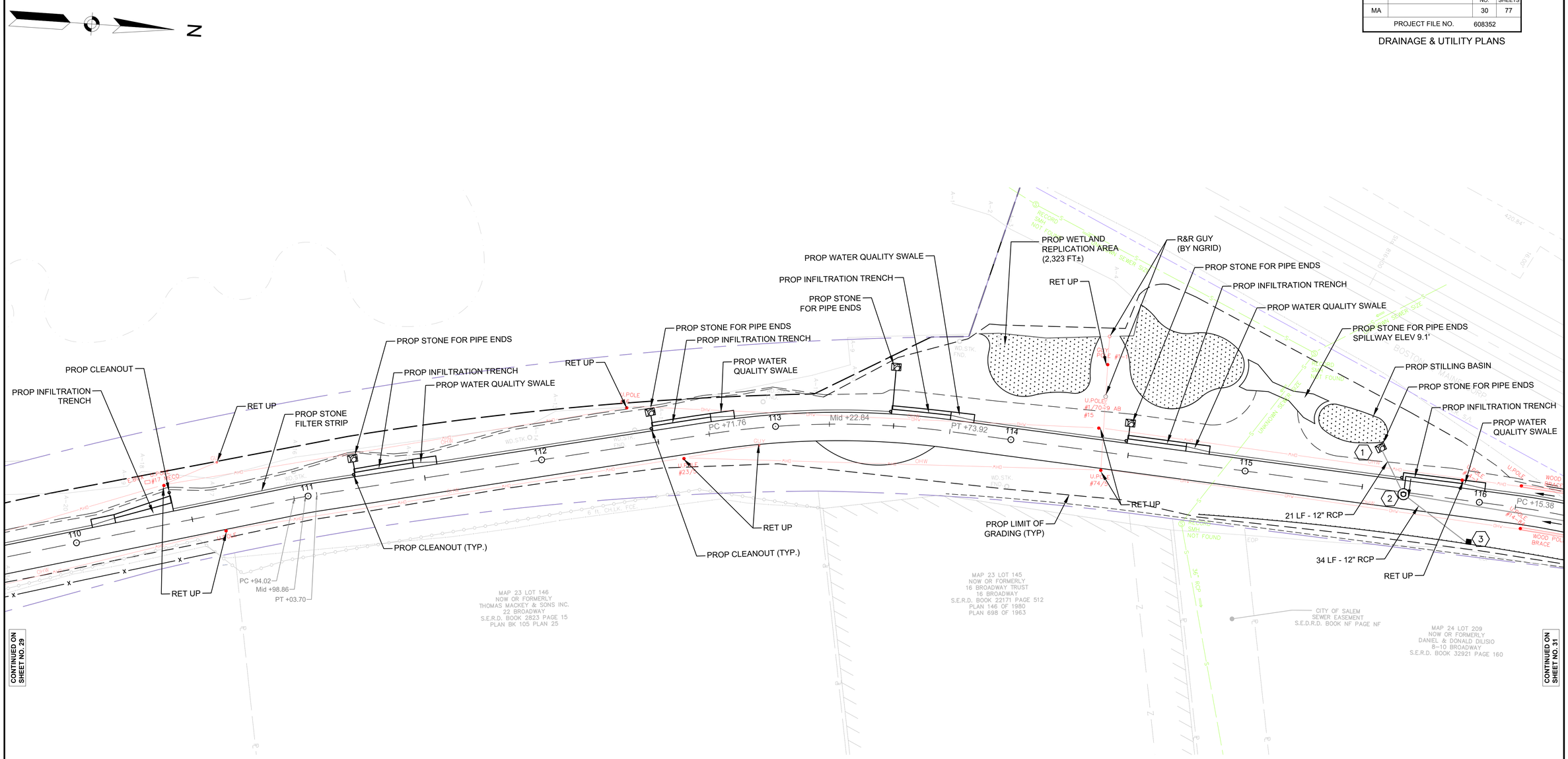
FOR PROFILE: SEE SHEET NO. 11

93692_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:31 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		30	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
1	FES	114+89 LT	-	-	9.13	12" FES
2	DMH	115+65	14.07	9.50	9.33	
3	CB	115+98	±13.20	-	9.70	FLAT TOP

HOR. SCALE IN FEET
0 20 50 100

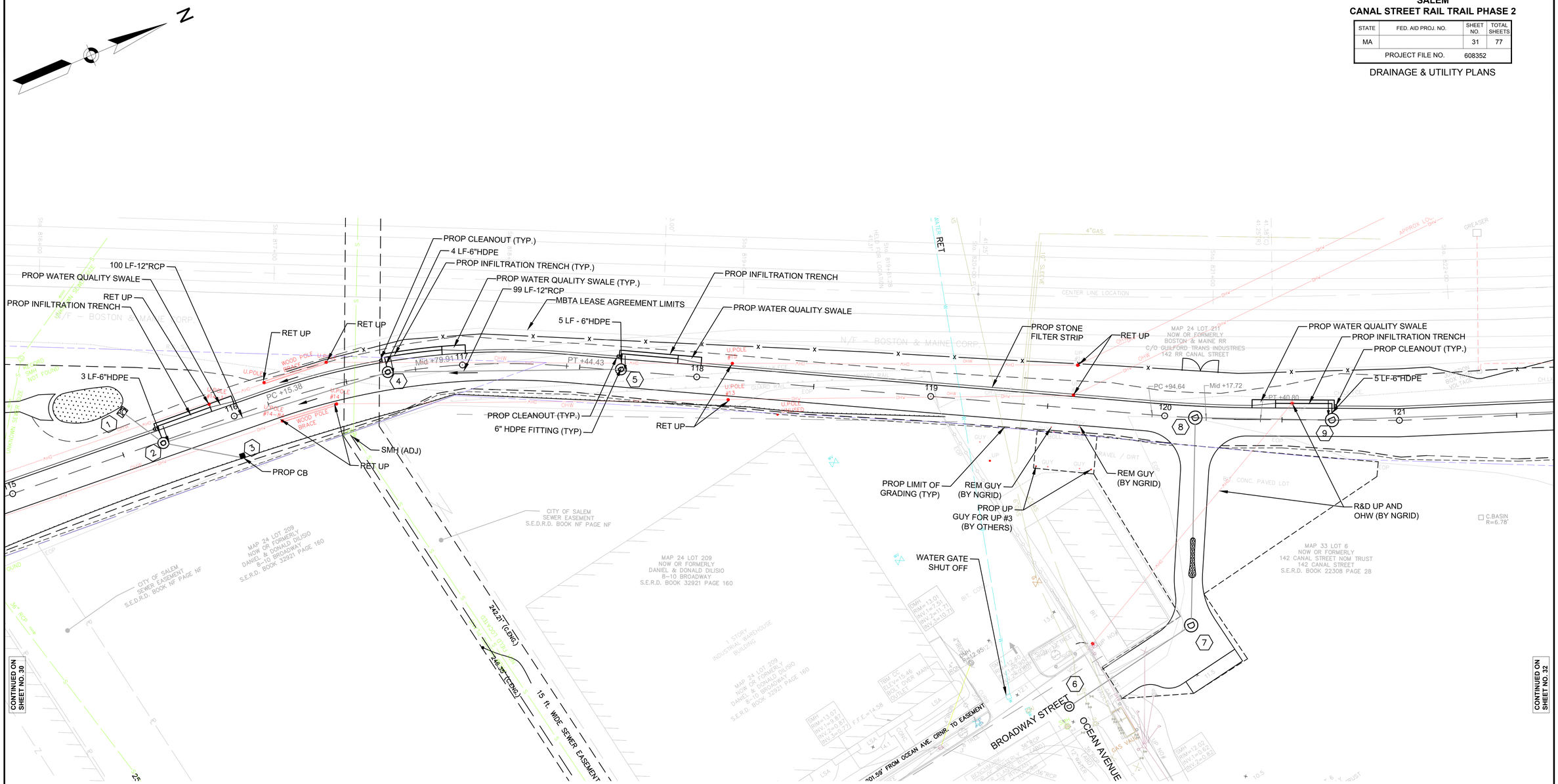
FOR PROFILE: SEE SHEET NO. 12

93692_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:31 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		31	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
4	DMH	116+68	14.71	9.83	9.83	CONC. CYL. STR
5	DMH	117+68	15.18	10.23	10.23	CONC. CYL. STR
6	DMH	119+74	±12.30	-	4.86	CONC. CYL. STR
7	DMH	120+16	12.98	4.60	4.60	CONC. CYL. STR
8	DMH	120+13	13.59	4.24	4.24	CONC. CYL. STR
9	DMH	120+72	12.16	4.01	4.01	CONC. CYL. STR

HOR. SCALE IN FEET
0 20 50 100

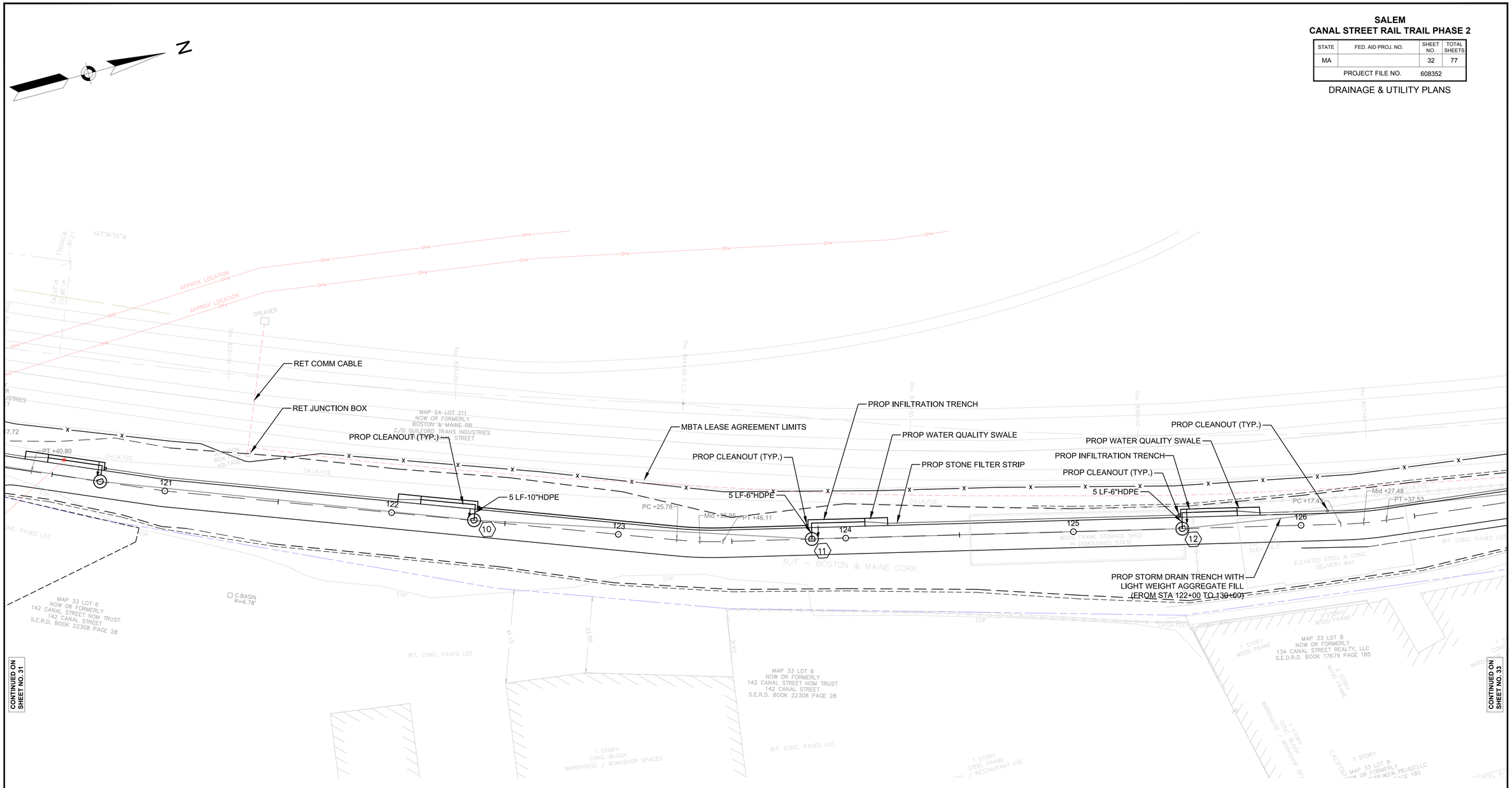
FOR PROFILE: SEE SHEET NO. 13

93692_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:31 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		32	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
10	DMH	122+36	10.66	3.35	3.35	CONC. CYL. STR
11	DMH	123+85	12.36	2.75	2.75	CONC. CYL. STR
12	DMH	125+48	14.56	2.10	2.10	CONC. CYL. STR

FOR PROFILE: SEE SHEET NO. 14

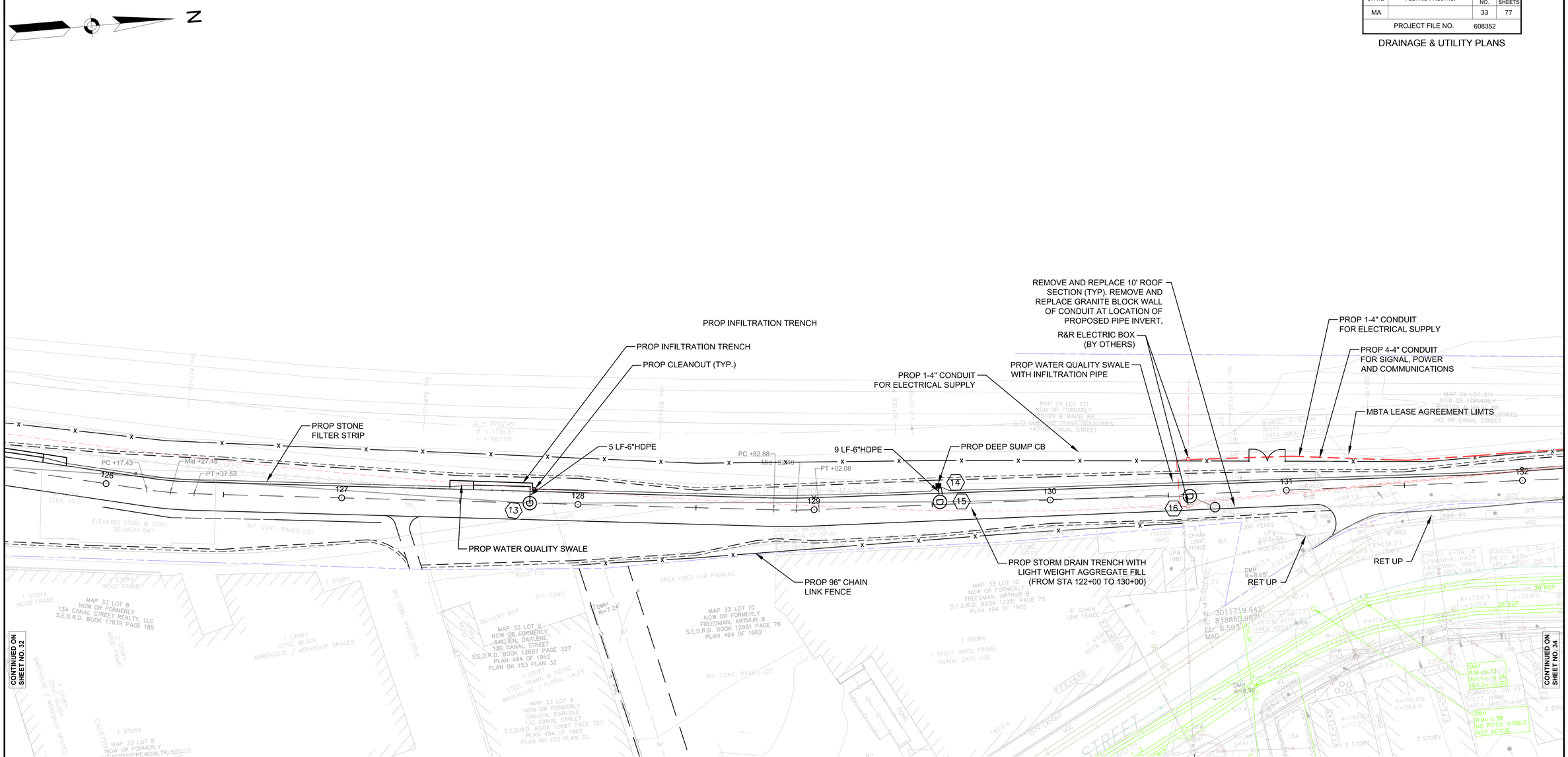
HOR. SCALE IN FEET
0 20 50 100

93692_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:31 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		33	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
13	DMH	128+46	12.02	1.17	1.17	CONC. CYL. STR
14	CB	129+44	8.94	-	5.94	DEEP SUMP
15	DMH	129+53	9.01	5.66 0.48	0.48	CONC. CYL. STR
16	DMH	130+59	9.32	0.05	0.05	CONC. CYL. STR

FOR PROFILE: SEE SHEET NO. 15

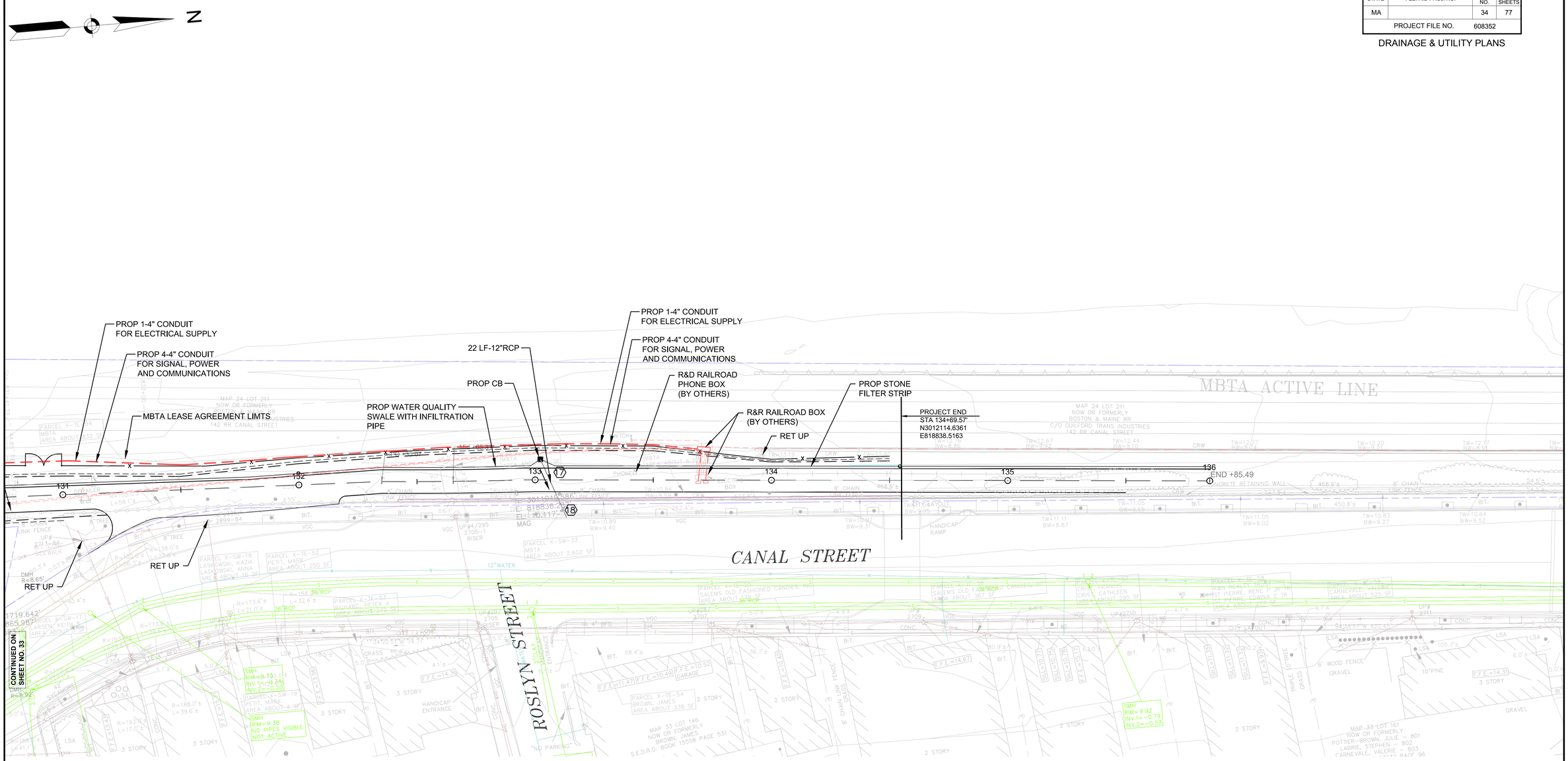
HOR. SCALE IN FEET
0 20 50 100

93692_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:32 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		34	77
PROJECT FILE NO.	608352		

DRAINAGE & UTILITY PLANS



NOTE :
1. ALL DRAIN LINES SHALL BE CLASS V RCP UNLESS INDICATED OTHERWISE ON PLANS.

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
17	CB	133+10	9.81	-	6.81	DEEP SUMP
18	EX-CB	133+21	9.33	6.28	6.06	CORE HOLE INTO EXISTING . STR

HOR. SCALE IN FEET
0 20 50 100

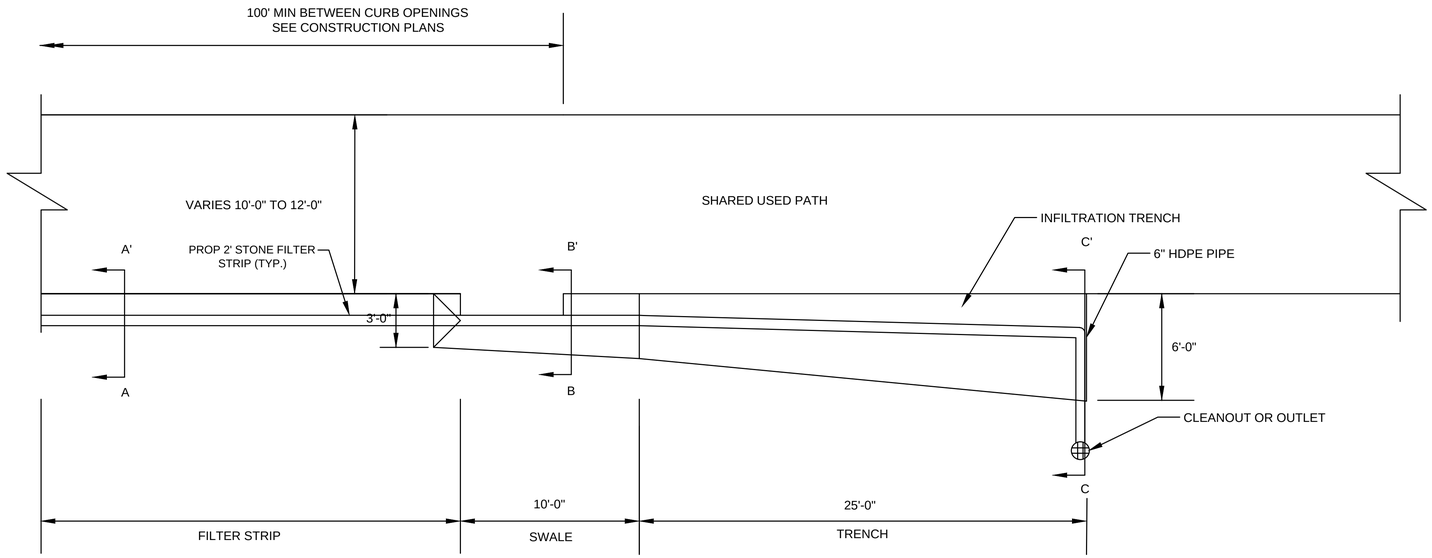
FOR PROFILE: SEE SHEET NO. 16

93692_PH2_HD\DRAIN & UTIL\2.DWG Plotted on 31-May-2018 1:32 PM

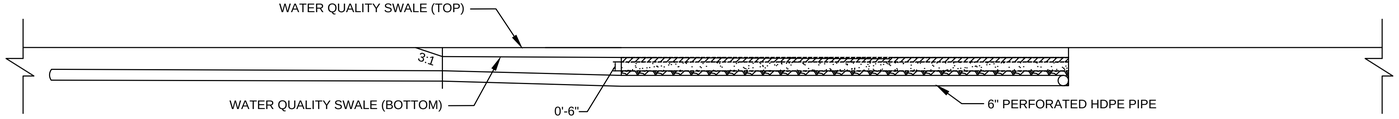
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	35	77
PROJECT FILE NO.	608352		

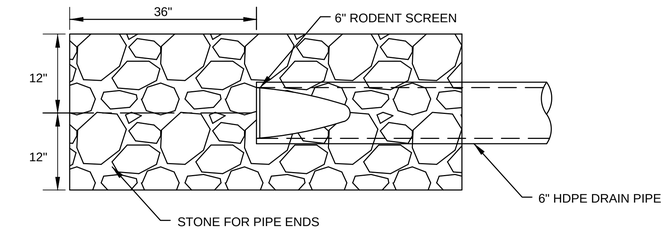
DRAINAGE AND UTILITY DETAILS



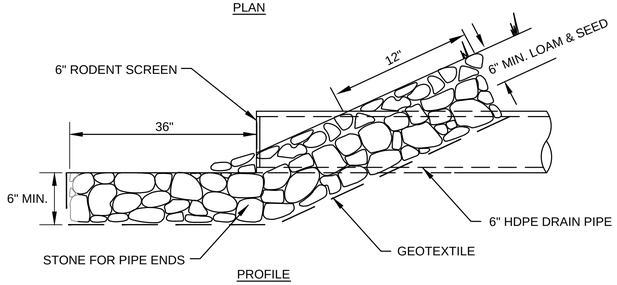
WATER QUALITY SWALE AND INFILTRATION TRENCH DETAIL
PLAN VIEW



WATER QUALITY SWALE AND INFILTRATION TRENCH DETAIL
PROFILE VIEW



PLAN



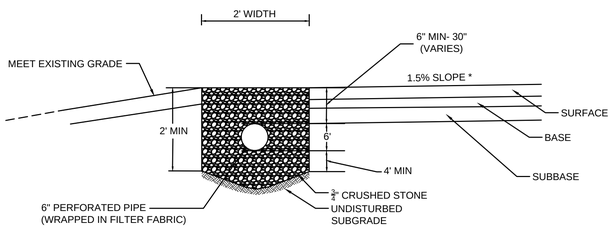
PROFILE

STONE SPECIFICATIONS

1. STONE SHALL BE FREE FROM OVERBURDEN, SPOIL, SHALE, ORGANIC MATERIAL AND MEET THE FOLLOWING GRADATION REQUIREMENTS

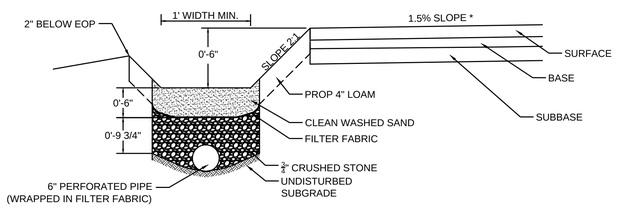
STONE SIZE	% OF TOTAL WEIGHT SMALLER THAN GIVEN SIZE
8 IN	95%-100%
4 IN	0%-25%
2.5 IN	0%-5%

STONE FOR PIPE ENDS



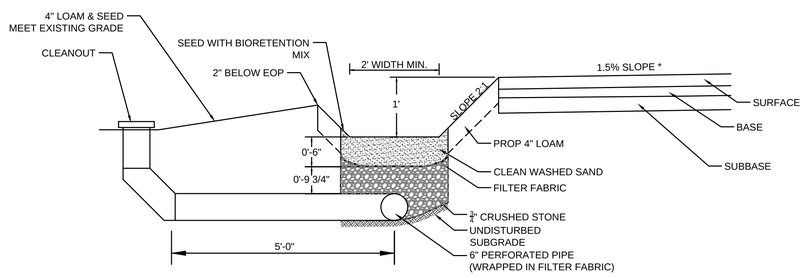
STONE FILTER STRIP DETAIL SECTION VIEW A-A'
NTS

* TOLERANCE ± 0.5%



WATER QUALITY SWALE AND INFILTRATOR DETAIL
SECTION VIEW B-B'
NTS

* TOLERANCE ± 0.5%



WATER QUALITY SWALE AND INFILTRATOR
CLEANOUT DETAIL C-C'
NTS

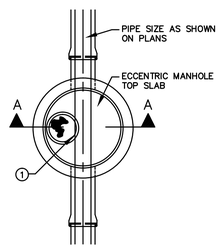
* TOLERANCE ± 0.5%

93692-PH2_HD(DRAINAGE & UTILITY DETAIL)2.DWG Plotted on 17-May-2018 2:20 PM

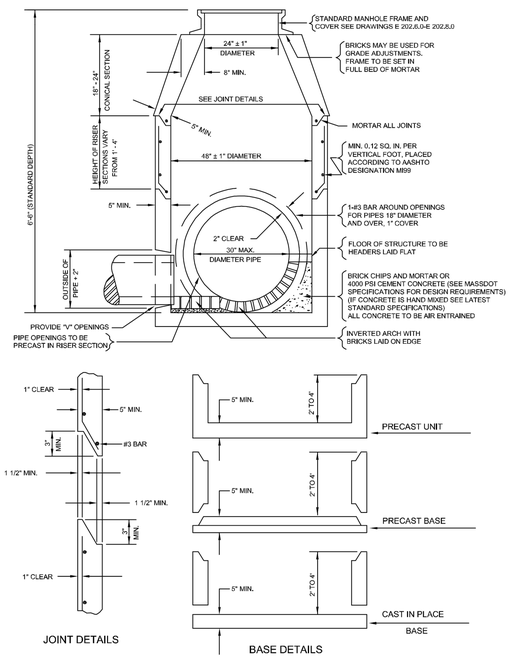
93692-PH2_HD(DRAINAGE & UTILITY DETAIL)2.DWG Plotted on 17-May-2018 2:20 PM

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

1. ALL CONCRETE SHALL BE CLASS "A" AND HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 PSI AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35. ALL PARTS OF CASTINGS, EXCEPT FINISHED SURFACE, SHALL RECEIVE A COAT OF COAL TAR PITCH VARNISH OR ASPHALTUM PAINT WHICH SHALL BE SMOOTH AND TOUGH BUT NOT BRITTLE.
3. MANHOLES SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE.
4. PRECAST REINFORCED BARREL MANUFACTURED PER ASTM SPEC. C–478–67
5. CONTRACTOR SHALL SUBMIT ANTI–FLOATATION CALCULATIONS FOR ALL MANHOLE, CATCH BASIN, AND T–BASE STRUCTURES.
6. ALL PRECAST MANHOLES AND CATCH BASINS SHALL BE IDENTIFIED BY STATION, OFFSET, AND STRUCTURE ID PAINTED ON THE SIDE OF THE STRUCTURE BY THE MANUFACTURER.
7. STORM MANHOLES SHALL HAVE SOLID COVERS WITH ONE DRILLED PICK HOLE.
8. WHEN THE FLOW CHANGES DIRECTION IN A MANHOLE, THE CHANNEL ALIGNMENT SHALL FOLLOW A SMOOTH RADIUS. CHANNELS SHALL BE FORMED TO ACCEPT ALL INLET PIPES.
9. ON STORM DRAIN MANHOLES, THE SHELF AND CHANNEL SHALL BE FORMED BY BRICK SET IN CEMENT MORTAR OR BY FACTORY PRE–CAST CONCRETE. SUCH PRE–CAST CONCRETE SHALL BE EPOXY COATED AND THE SHELF SHALL HAVE A PERMANENT NON–SKID SURFACE.
10. DRAINAGE DESIGNED BY OTHERS



PLAN

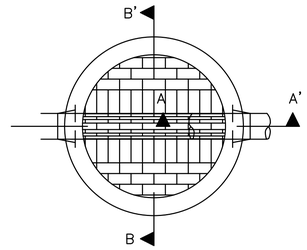


NOTE:
1. FOR DESCRIPTIONS, MATERIALS AND CONSTRUCTION METHODS, SEE LATEST STANDARD SPECIFICATIONS.

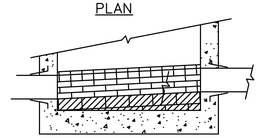
PRECAST CONCRETE MANHOLE IN SHARED USE PATH

NOT TO SCALE

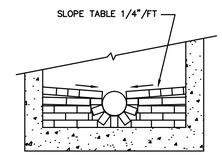
EXCAVATION PAY LIMITS	
MANHOLE SIZE (FEET)	MAXIMUM
4'	8' X 8'
5'	9' X 9'
6'	10' X 10'
7'	11' X 11'
8'	12' X 12'



PLAN



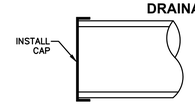
SECTION A–A'



SECTION B–B'

BRICK INVERT

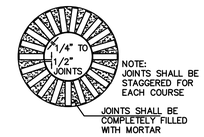
NOTES:
1. TOOL ALL JOINTS IN CHANNEL AND ON TABLES.
2. FILL UNDER TABLE WITH MORTAR–BEDDED BRICK.
3. SLOPE CHANNEL DOWN FROM INLET TO OUTLET.
4. MAKE CHANGES IN FLOW DIRECTION BY CIRCULAR CHANNEL CONSTRUCTION WITH MAXIMUM RADIUS POSSIBLE.
5. FOR DEAD–END MANHOLES, BUILD CHANNEL AS DIRECTED BY ENGINEER.
6. OMIT BRICK INVERT AT STRUCTURES WHERE PVC PLUG IS SPECIFIED.



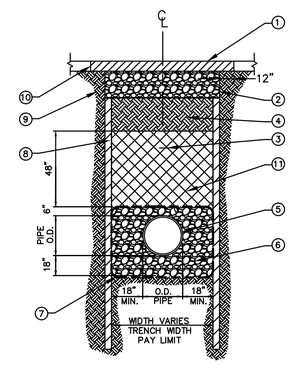
NOTE:
1. INSTALL CAP ON 36" STUB DENOTED ON PLANS, FOR FUTURE CONNECTION.
2. PIPE CAP MATERIAL SHALL MATCH THAT OF THE PIPE.

PIPE CAP DETAIL

N.T.S.



BRICK JOINT DETAIL



1. SEE PAVEMENT DETAIL
2. EXCAVATION PAY LIMIT
3. WARNING TAPE CENTERED ON PIPE 18"–24" ABOVE PIPE
4. COMPACTED PIPE AND STRUCTURE BACKFILL MATERIAL
5. PIPE SIZES AS SHOWN ON PLANS
6. 3/4" COMPACTED CRUSHED STONE
7. STABILIZATION FABRIC (SEE NOTE 1)
8. SUPPORT OF EXCAVATION (CONTRACTOR DESIGNED)
9. EXISTING UNDISTURBED MATERIAL
10. SAWCUT AND TACK COAT (TYP.)
11. LIGHT WEIGHT AGGREGATE FILL

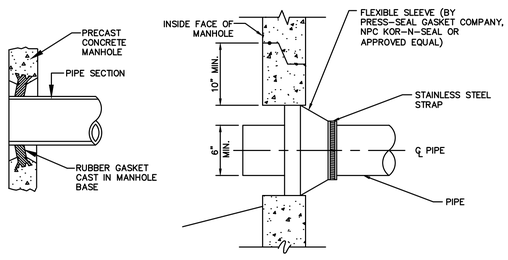
NOTES:
1. WRAP BEDDING IN STABILIZATION FABRIC. STABILIZATION FABRIC MAY BE OMITTED, AS DIRECTED BY ENGINEER, IN INSTANCE WHERE EXISTING SOILS AT THE TRENCH BOTTOM AND SIDEWALLS ARE SUITABLE GRANULAR MATERIAL.
2. MAINTAIN UNIFORM TRENCH WIDTH TO 6" ABOVE TOP OF PIPE.
3. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE O.S.H.A. SAFETY REGULATIONS. TRENCH BRACING/SHEETING WILL ALSO CONFORM TO MBTA STANDARDS WHERE APPLICABLE. ALL SUCH TRENCH PROTECTION TO BE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF TRENCH SUPPORT SYSTEMS ENDORSED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS.

TRENCH WIDTHS (a)	
PIPE SIZE (INCHES)	MAX. (ONE PIPE) (b)
6"	4.0'
8"	4.0'
10"	4.0'
12"	4.0'
15"	4.0'
18"	5.0'
24"	5.5'
30"	6.0'
36"	7.0'
48"	8.0'
60"	10.0'

a. REPRESENTS TRENCH WIDTH PAY LIMIT
b. FOR ROCK EXCAVATION SUBTRACT 1'–0"

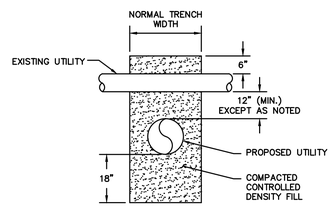
STORM DRAIN TRENCH WITH LIGHT WEIGHT AGGREGATE FILL (FROM STA 122+00 TO 130+00)

NOT TO SCALE



MANHOLE SEALS

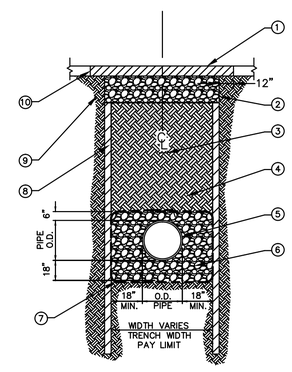
NOT TO SCALE



NOTE:
THIS DETAIL TYP. FOR ALL PIPE

UTILITY CROSSING DETAIL

NOT TO SCALE



1. SEE PAVEMENT DETAIL
2. EXCAVATION PAY LIMIT
3. WARNING TAPE CENTERED ON PIPE 18"–24" ABOVE PIPE
4. COMPACTED PIPE AND STRUCTURE BACKFILL MATERIAL
5. PIPE SIZES AS SHOWN ON PLANS
6. 3/4" COMPACTED CRUSHED STONE
7. STABILIZATION FABRIC (SEE NOTE 1)
8. SUPPORT OF EXCAVATION (CONTRACTOR DESIGNED)
9. EXISTING UNDISTURBED MATERIAL
10. SAWCUT AND TACK COAT (TYP.)

TRENCH WIDTHS (a)	
PIPE SIZE (INCHES)	MAX. (ONE PIPE) (b)
6"	4.0'
8"	4.0'
10"	4.0'
12"	4.0'
15"	4.0'
18"	5.0'
24"	5.5'
30"	6.0'
36"	7.0'
48"	8.0'
60"	10.0'

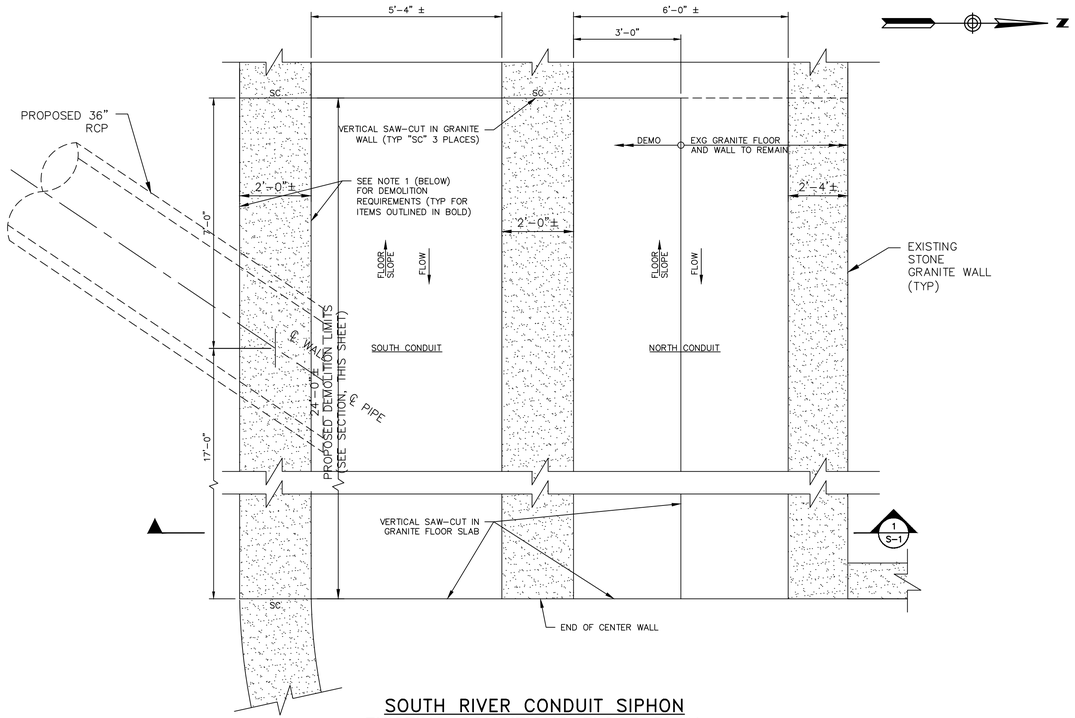
a. REPRESENTS TRENCH WIDTH PAY LIMIT
b. FOR ROCK EXCAVATION SUBTRACT 1'–0"

NOTES:
1. WRAP BEDDING IN STABILIZATION FABRIC. STABILIZATION FABRIC MAY BE OMITTED, AS DIRECTED BY ENGINEER, IN INSTANCE WHERE EXISTING SOILS AT THE TRENCH BOTTOM AND SIDEWALLS ARE SUITABLE GRANULAR MATERIAL.
2. MAINTAIN UNIFORM TRENCH WIDTH TO 6" ABOVE TOP OF PIPE.
3. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE O.S.H.A. SAFETY REGULATIONS. TRENCH BRACING/SHEETING WILL ALSO CONFORM TO MBTA STANDARDS WHERE APPLICABLE. ALL SUCH TRENCH PROTECTION TO BE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR TO PROVIDE SHOP DRAWINGS OF TRENCH SUPPORT SYSTEMS ENDORSED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS.

SEWER AND STORM DRAIN TRENCH DETAIL IN SHARED USE PATH

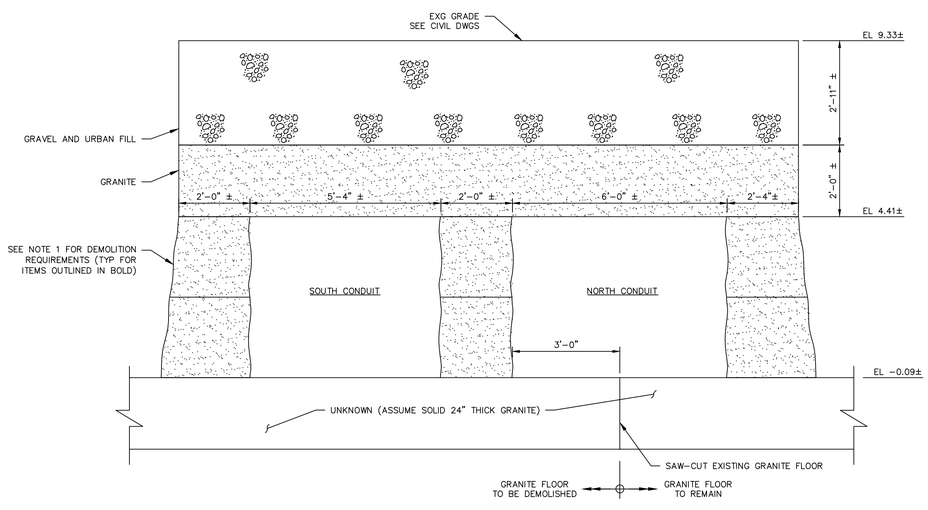
NOT TO SCALE

93692-PH2_HD(DRAINAGE & UTILITY DETAIL-WANDOJ).DWG Plotted on 17-May-2018 2:21 PM



SOUTH RIVER CONDUIT SIPHON
EXISTING CONDITIONS FLOOR PLAN

SCALE: 1/2"=1'-0"



SOUTH RIVER CONDUIT SIPHON
EXISTING CONDITIONS SECTION

1
S-1

SCALE: 1/2" = 1'-0"
(LOOKING WEST)

NOTES:

1. ITEMS OUTLINED IN BOLD (ENTIRE GRANITE ROOF SLAB AND FILL ABOVE, ENTIRE SOUTH GRANITE WALL/FOOTING, ENTIRE CENTER GRANITE WALL/FOOTING, PORTION OF GRANITE FLOOR SLAB, ETC) SHALL BE DEMOLISHED FOR A MINIMUM WIDTH OF 24 FEET.
2. FIELD VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, AND ELEVATIONS.

GENERAL NOTES

A. GENERAL:

1. THE CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS, INCLUDING DIMENSIONS, AND SHALL NOTIFY THE ENGINEER OF ANY AND ALL DISCREPANCIES BEFORE PROCEEDING ON THE AFFECTED PORTION OF THE WORK.
2. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL DISCIPLINES.
3. ANY STATIONING INDICATED IS APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EACH REPAIR AREA WITH THE ENGINEER PRIOR TO COMMENCING WORK IN EACH AREA.
4. SEE SHEET CIVIL PLANS & PROFILES FOR LOCATIONS AND CORRESPONDING APPROXIMATE DIMENSIONS OF WORK.
5. DRAINAGE DESIGNED BY OTHERS

B. EXISTING CONDITIONS

10. EXISTING STONE WALLS PREDATE 1889 AND ARE SHOWN SCHEMATICALLY ONLY. ACTUAL THICKNESS IS UNKNOWN, AND SHALL BE FIELD DETERMINED BY CONTRACTOR.
11. CONDUIT WIDTHS AND ELEVATIONS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.
12. EXISTING ROOF SLAB IS ANTICIPATED TO BE DOWELED INTO THE TOP OF THE EXISTING STONE WALL. AT LOCATIONS WHERE THE EXISTING WALL IS DAMAGED OR WHERE STONES ARE REMOVED DURING REMOVAL OF THE EXISTING SLAB. THE CONTRACTOR SHALL PROVIDE REPAIRS, WHICH MAY INCLUDE FILLING VOIDS WITH CONCRETE.

C. CONCRETE:

1. DESIGN IS IN ACCORDANCE WITH ACI 318-08, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE".
2. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI.
3. REINFORCING STEEL SHALL COMPLY WITH ASTM A615, GRADE 60.
4. ALL REINFORCING BAR ACCESSORIES SHALL BE PLASTIC TIPPED.
5. CLEAR COVER TO REINFORCEMENT SHALL BE 3" AT THE INTERIOR FACE OF NEW WALLS AND AT BOTTOMS OF NEW FOOTINGS, AND 2" ELSEWHERE, WITH TOLERANCES AS SPECIFIED.
6. ALL NEW CONCRETE COVER SLABS SHALL RECEIVE MEMBRANE WATERPROOFING IN ACCORDANCE WITH MASSDOT 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES – SECTION 965.20, SYSTEM 1: COAL TAR EMULSION REINFORCED WITH TWO PLIES OF COATED GLASS FABRIC. COAL TAR EMULSION AND COATED GLASS FABRIC SHALL MEET MASSDOT DIV. III MATERIALS SPECIFICATIONS M3.03.3 AND M3.06.1, RESPECTIVELY. THE SLAB SURFACE SHALL BE PREPARED IN ACCORDANCE WITH MASSDOT 965.60 AND THE SYSTEM APPLIED IN ACCORDANCE WITH MASSDOT 965.61. THE MEMBRANE SHALL BE BACKFILLED AFTER IT HAS COMPLETELY CURED. DAMAGE DURING BACKFILLING SHALL BE PREVENTED.

D. CONSTRUCTION SEQUENCING:

1. REFER TO CIVIL DRAWINGS AND NOTICE TO BIDDERS FOR CONSTRUCTION SEQUENCING AND FLOW BYPASSING REQUIREMENTS.
2. CONTRACTOR SHALL BYPASS FLOW AS NECESSARY AND DEWATER WORK AREA AS REQUIRED TO PERFORM THE WORK.
3. WALLS SHALL NOT BE BACKFILLED UNTIL CONCRETE HAS ACHIEVED 75% OF THE CONCRETE DESIGN COMPRESSIVE STRENGTH. WALLS ARE DESIGNED AS CANTILEVER (RETAINING WALLS).
4. EXISTING SPUR LINE MUST BE RELOCATED OR DECOMMISSIONED PRIOR TO COMMENCING EXCAVATION OR SHORING WORK.

E. EXCAVATION AND SHORING:

1. EXCAVATIONS AND/OR SHORING SYSTEMS LOCATED CLOSER THAN 12-FT FROM CENTERLINE OF ANY RAILROAD TRACK, MAIN LINES OR SPUR LINES, IS STRICTLY PROHIBITED. EXISTING SPUR LINE MUST BE RELOCATED OR DECOMMISSIONED PRIOR TO COMMENCING EXCAVATION OR SHORING WORK.
2. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN OF THE SHORING SYSTEM. CONTRACTOR SHALL SUBMIT SHORING/EXCAVATION PLANS AND DESIGN CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE. SHORING SYSTEM MUST BE DESIGNED FOR ADJACENT RAILROAD TRACKS PER AREMA MANUAL FOR RAILWAY ENGINEERING, MASSACHUSETTS BAY TRANSPORTATION AUTHORITY DESIGN STANDARDS, OSHA STANDARD LOADS, AND ALL LOCAL AND STATE REQUIREMENTS.

F. DESIGN LOADS:

1. THE NEW CONCRETE CONDUIT SIPHON ROOF, WALLS, AND SLAB HAVE BEEN DESIGNED FOR THE FOLLOWING:

1.1. AASHTO HS20 VEHICLE LOADS
1.2. COOPER E-80 RAILROAD LOADING FOR (3) TRACKS TO THE WEST OF THE REPAIR
1.3. DESIGN GROUNDWATER ELEVATION AT GRADE
1.4. BACKFILL UNIT WEIGHT = 120 PCF

MINIMUM REINFORCING BAR SPLICE LENGTHS (IN)		
BAR SIZE	TOP BARS	OTHER BARS
4	20	16
5	23	17
6	27	21
7	40	31
8	45	35
9	51	39
10	58	44
11	64	49

TABLE NOTES:
1. THIS TABLE IS BASED ON CLEAR SPACING NOT LESS THAN FOUR BAR DIAMETERS, AND CLEAR COVER NOT LESS THAN TWO BAR DIAMETERS.
2. WHERE SPACING BETWEEN BARS IS LESS THAN FOUR BAR DIAMETERS, OR CLEAR COVER IS LESS THAN TWO BAR DIAMETERS, INCREASE SPLICE LENGTHS SHOWN BY 67%.
3. TOP BARS = HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS. (NOT APPLICABLE TO HORIZONTAL WALL REINFORCING.)

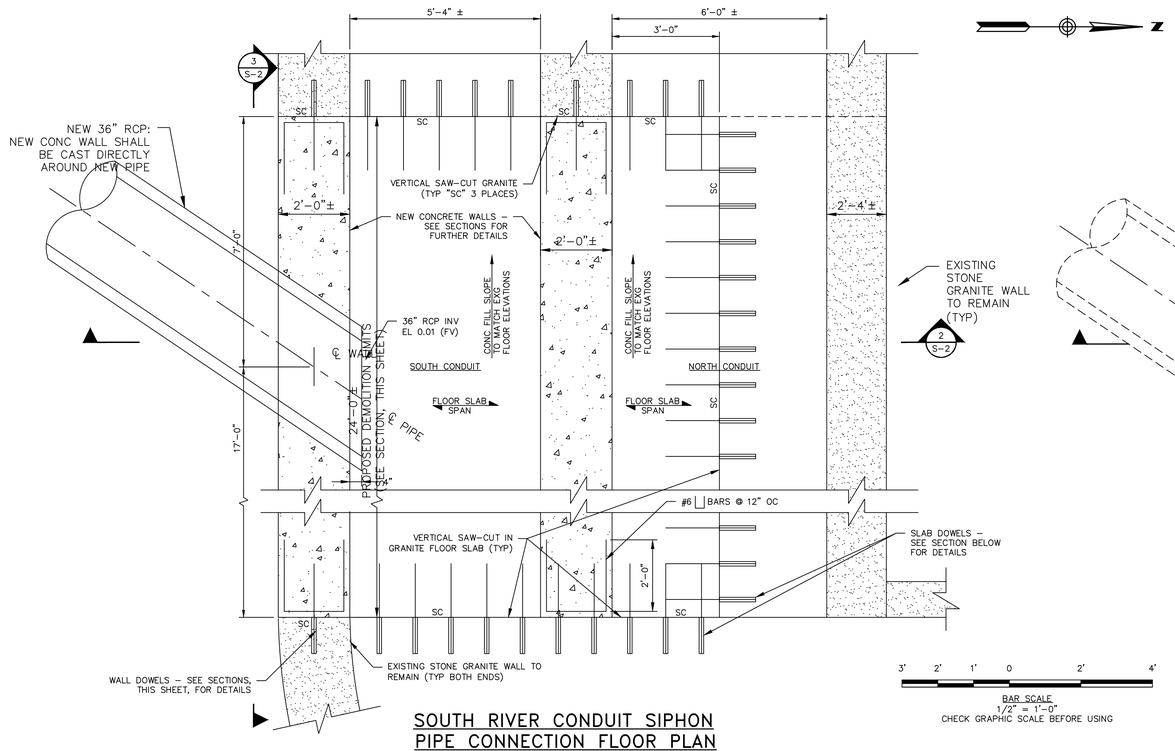
3' 2' 1' 0 2' 4'

BAR SCALE
1/2" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	38	77
PROJECT FILE NO.	608352		

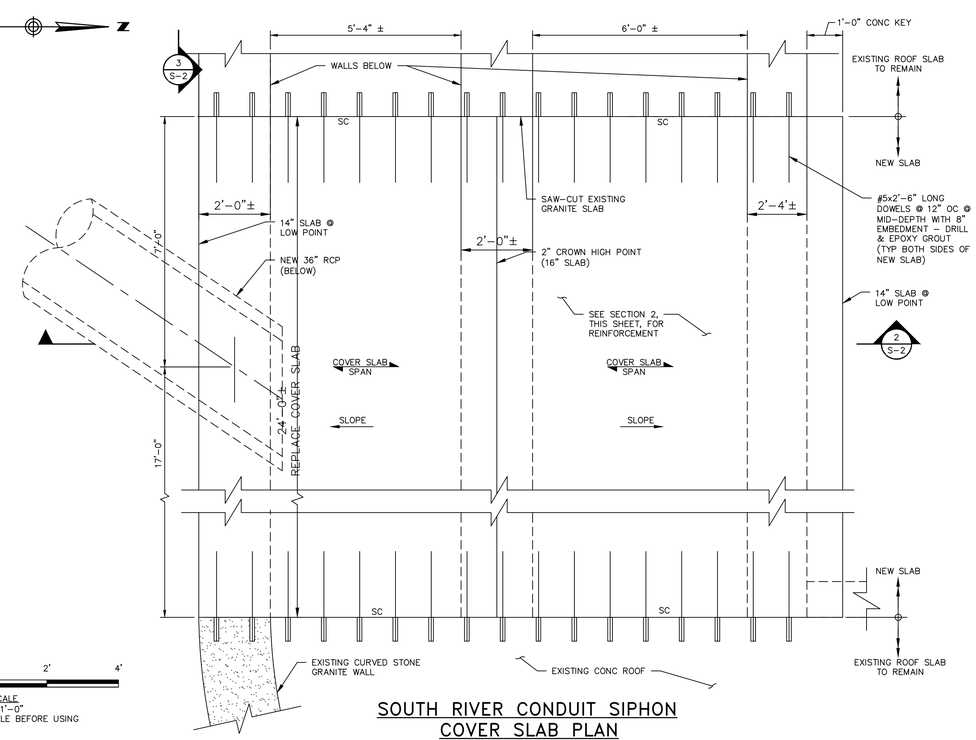
DRAINAGE & UTILITY DETAILS



SOUTH RIVER CONDUIT SIPHON PIPE CONNECTION FLOOR PLAN

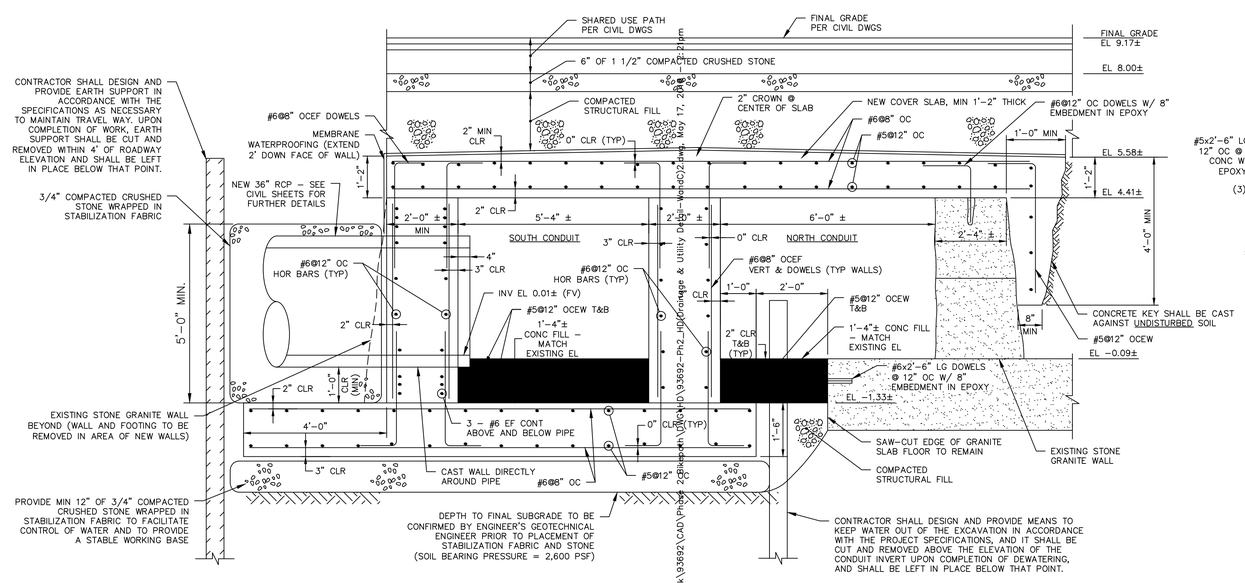
SCALE: 1/2"=1'-0"

BAR SCALE
1/2" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING



SOUTH RIVER CONDUIT SIPHON COVER SLAB PLAN

SCALE: 1/2"=1'-0"

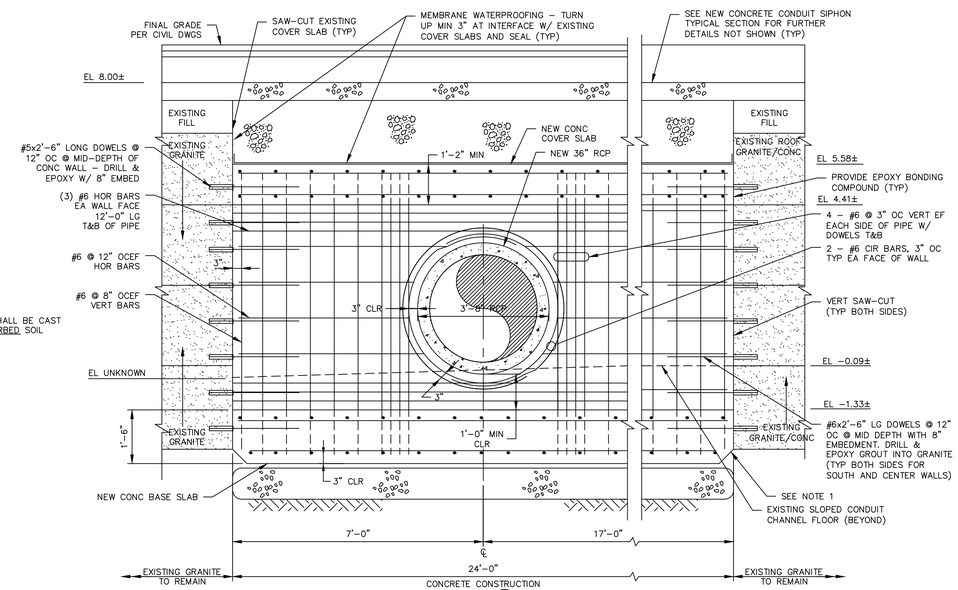


NEW CONCRETE CONDUIT SIPHON TYPICAL SECTION

2 S-2

SCALE: 1/2" = 1'-0"
(LOOKING WEST)

NOTE: ALL ELEVATIONS AND DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.



SECTION

3 S-2

SCALE: 1/2" = 1'-0"
(LOOKING NORTH)

NOTES:

1. CONTRACTOR OPTION: BASE SLAB IS SHOWN 12" BELOW PIPE AND KEPT AT SAME ELEVATION FOR EASE OF CONSTRUCTION. IF FIELD CONDITIONS REVEAL THAT PROPOSED BASE SLAB IS TOO DEEP AT INTERFACE WITH EXISTING GRANITE FOOTINGS, THE BASE SLAB CAN BE "STEPPED UP" AWAY FROM PIPE TO RAISE BASE SLAB TO MATCH CONDUIT FLOOR ELEVATION – NOTIFY ENGINEER IF THIS OPTION IS PREFERRED.

93692-PH2_HD(DRAINAGE & UTILITY DETAIL-WANDC)2.DWG Plotted on 17-May-2018 2:21 PM

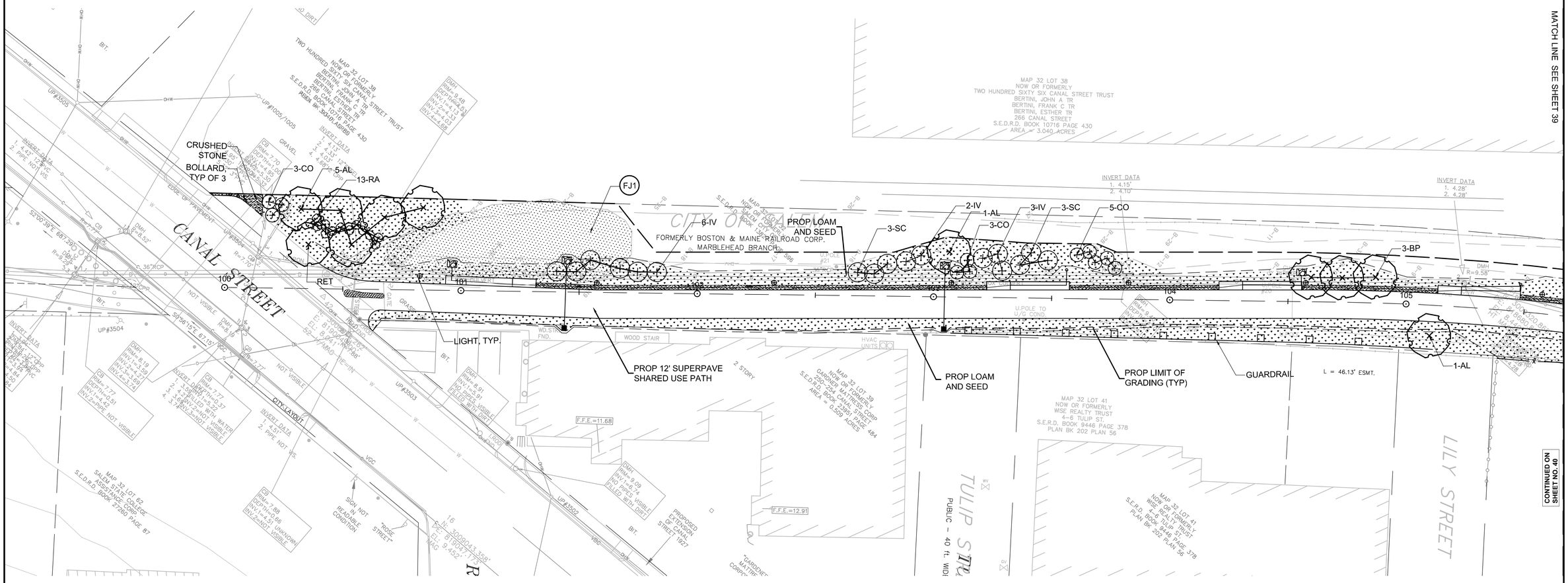
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		39	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS

PLANT SCHEDULE

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
ORNAMENTAL TREES					
7	AL	AMELANCHIER LAEVIS 'ALLEGHENY'	ALLEGHENY SERVICEBERRY	8-10 FT., B&B	MULTISTEM
3	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP/40'
SHRUBS, GRASSES & PERENNIALS					
NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
11	CO	CORNUS SERICEA "ISANTII"	RED TWIG DOGWOOD	#3 POT	5-6 FT.
11	IV	ILEX VERTICILLATA	WINTERBERRY (FEMALE)	24-30 INCH, POT	6-8 FT.
13	RA	RHUS AROMATICA	FRAGRANT SUMAC	15-18 INCH, POT	5-6 FT.
6	SC	SAMBUCUS CANADENSIS	ELDERBERRY	2-3 FT.	8-10 FT.



MATCH LINE SEE SHEET 39

LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- PROPOSED SHRUBS
- PROPOSED TREES
- FALLOPIA JAPONICA

0 20 50 100

SCALE: 1" = 20'

93692-PH2_HD9(LANDSCAPING PLANS & DETAILS)2 (4).DWG Plotted on 4-Jun-2018 10:20 AM

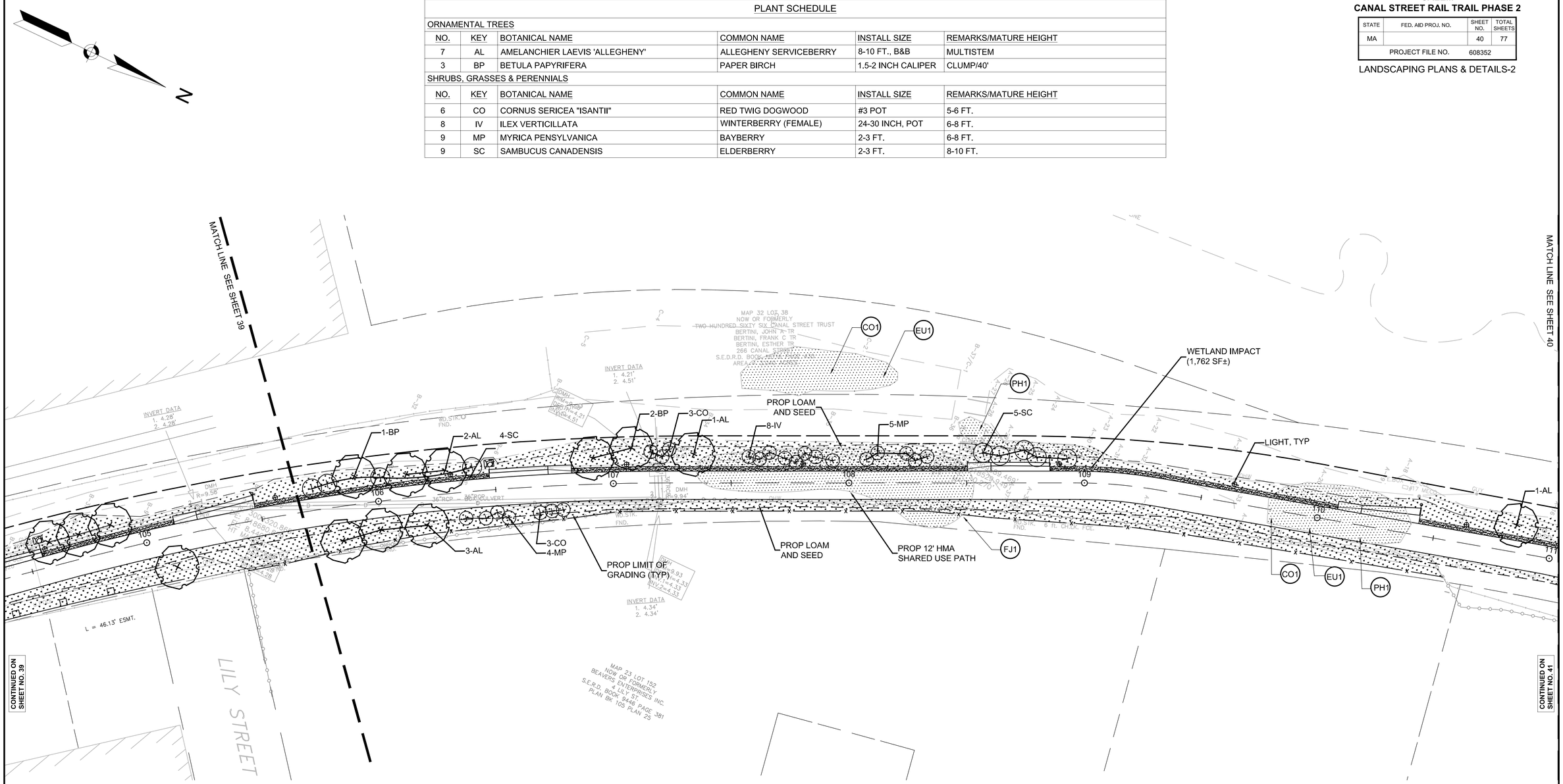
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		40	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-2

PLANT SCHEDULE

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
ORNAMENTAL TREES					
7	AL	AMELANCHIER LAEVIS 'ALLEGHENY'	ALLEGHENY SERVICEBERRY	8-10 FT., B&B	MULTISTEM
3	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP/40'
SHRUBS, GRASSES & PERENNIALS					
NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
6	CO	CORNUS SERICEA "ISANTII"	RED TWIG DOGWOOD	#3 POT	5-6 FT.
8	IV	ILEX VERTICILLATA	WINTERBERRY (FEMALE)	24-30 INCH, POT	6-8 FT.
9	MP	MYRICA PENSYLVANICA	BAYBERRY	2-3 FT.	6-8 FT.
9	SC	SAMBUCUS CANADENSIS	ELDERBERRY	2-3 FT.	8-10 FT.



LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- CO1 CELASTRUS ORBICULATUS
- EU1 ELAEAGNUS UMBELLATA
- FJ1 FALLOPIA JAPONICA
- PH1 PHRAGMITES
- PROPOSED SHRUBS
- PROPOSED TREES

0 20 50 100
SCALE: 1" = 20'

93692-PH2_HDR(LANDSCAPING PLANS & DETAILS)2 (4).DWG Plotted on 4-Jun-2018 10:20 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		41	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-3

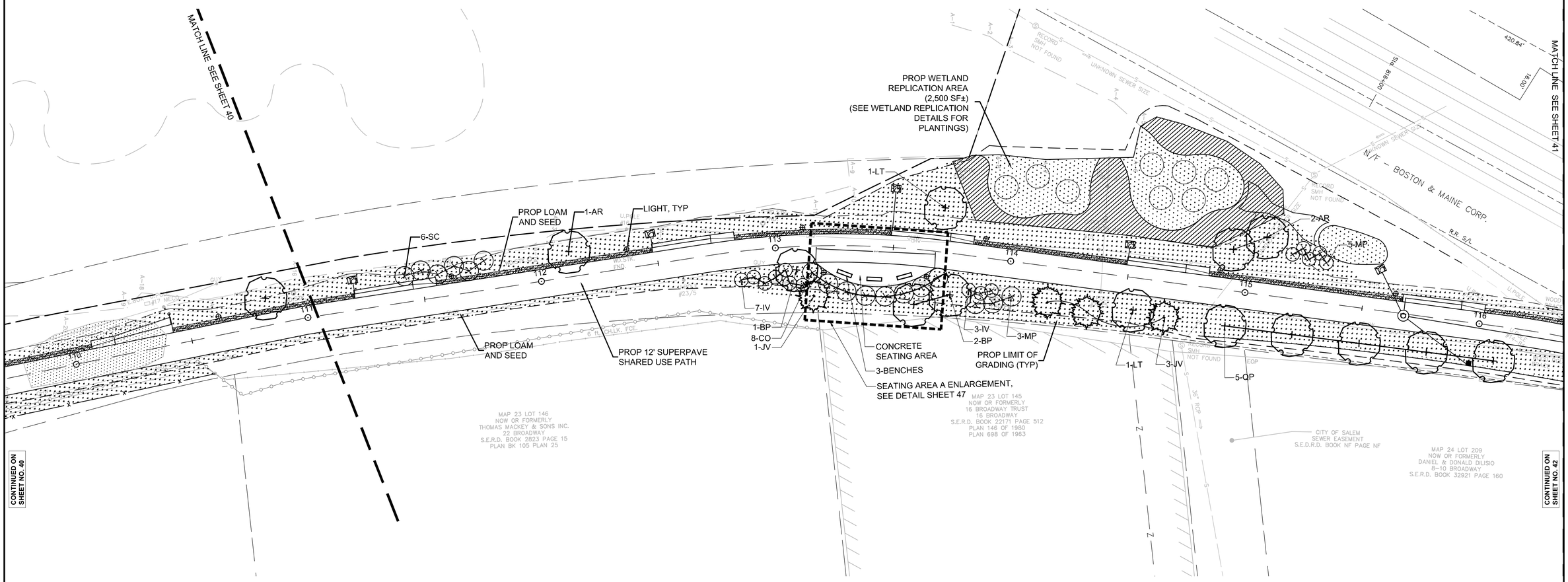
PLANT SCHEDULE

ORNAMENTAL TREES

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
3	AR	ACER RUBRUM 'OCTOBER GLORY'	RED MAPLE	2-2.5 INCH CALIPER	40-50 FT.
3	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP / 40 FT.
2	LT	LIRIODENDRON TULIPIFERA	TULIPTREE	2.5-3 INCH CALIPER	60 FT.
5	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 INCH CALIPER	60 FT.
4	JV	JUNIPERUS CHINENSIS 'KETELEERI'	JUNIPER	5-6 FT., B&B	15 FT.

SHRUBS, GRASSES & PERENNIALS

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
8	CO	CORNUS SERICEA "ISANTII"	RED TWIG DOGWOOD	#3 POT	5-6 FT.
10	IV	ILEX VERTICILLATA	WINTERBERRY (FEMALE)	24-30 INCH, POT	6-8 FT.
8	MP	MYRICA PENSYLVANICA	BAYBERRY	2-3 FT.	6-8 FT.
6	SC	SAMBUCUS CANADENSIS	ELDERBERRY	2-3 FT.	8-10 FT.



LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- PROPOSED SHRUBS
- PROPOSED TREES

0 20 50 100

SCALE: 1" = 20'

93692-PH2_HDR(LANDSCAPING PLANS & DETAILS)2 (4).DWG Plotted on 4-Jun-2018 10:21 AM

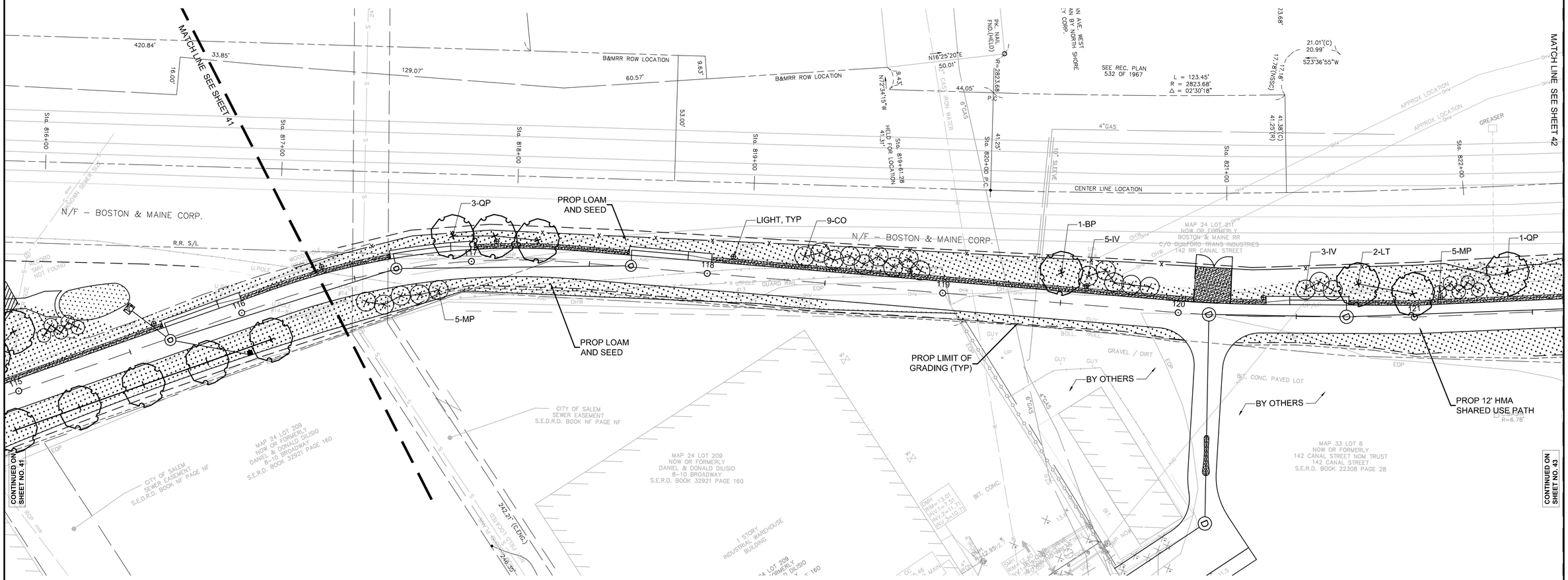
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		42	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-4

PLANT SCHEDULE

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
ORNAMENTAL TREES					
1	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP / 40 FT.
2	LT	LIRIODENDRON TULIPIFERA	TULIPTREE	2.5-3 INCH CALIPER	60 FT.
4	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 INCH CALIPER	60 FT.
SHRUBS, GRASSES & PERENNIALS					
NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
9	CO	CORNUS SERICEA "ISANTII"	RED TWIG DOGWOOD	#3 POT	5-6 FT.
8	IV	ILEX VERTICILLATA	WINTERBERRY (FEMALE)	24-30 INCH, POT	6-8 FT.
10	MP	MYRICA PENSYLVANICA	BAYBERRY	2-3 FT.	6-8 FT.



LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- PROPOSED SHRUBS
- PROPOSED TREES

0 20 50 100
SCALE: 1" = 20'

Plotted on 4-Jun-2018 10:21 AM
93692936_PH2_HDR\LANDSCAPING PLANS & DETAILS\2 (4).DWG

SALEM
CANAL STREET RAIL TRAIL PHASE 2

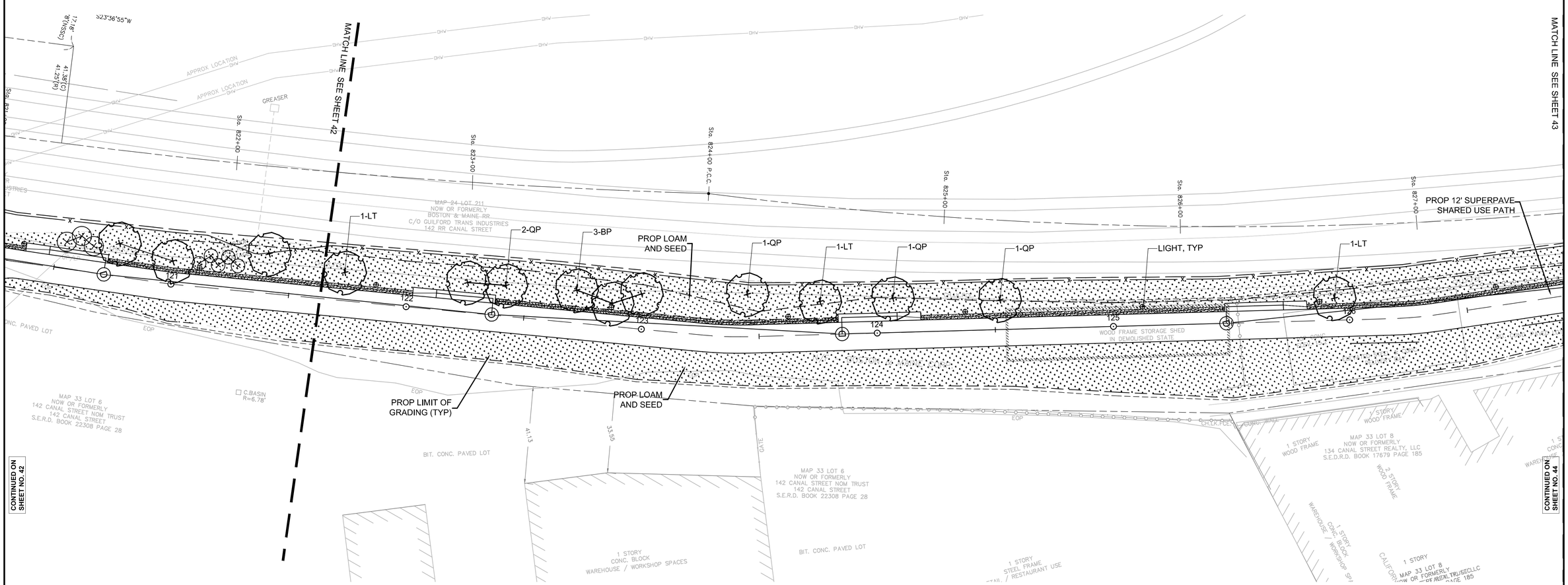
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		43	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-5

PLANT SCHEDULE

ORNAMENTAL TREES

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
3	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP / 40 FT.
3	LT	LIRIODENDRON TULIPIFERA	TULIPTREE	2.5-3 INCH CALIPER	60 FT.
5	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 INCH CALIPER	60 FT.



LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- PROPOSED SHRUBS
- PROPOSED TREES

0 20 50 100

SCALE: 1" = 20'

93692-PH2_HDR(LANDSCAPING PLANS & DETAILS)2 (4).DWG Plotted on 4-Jun-2018 10:21 AM

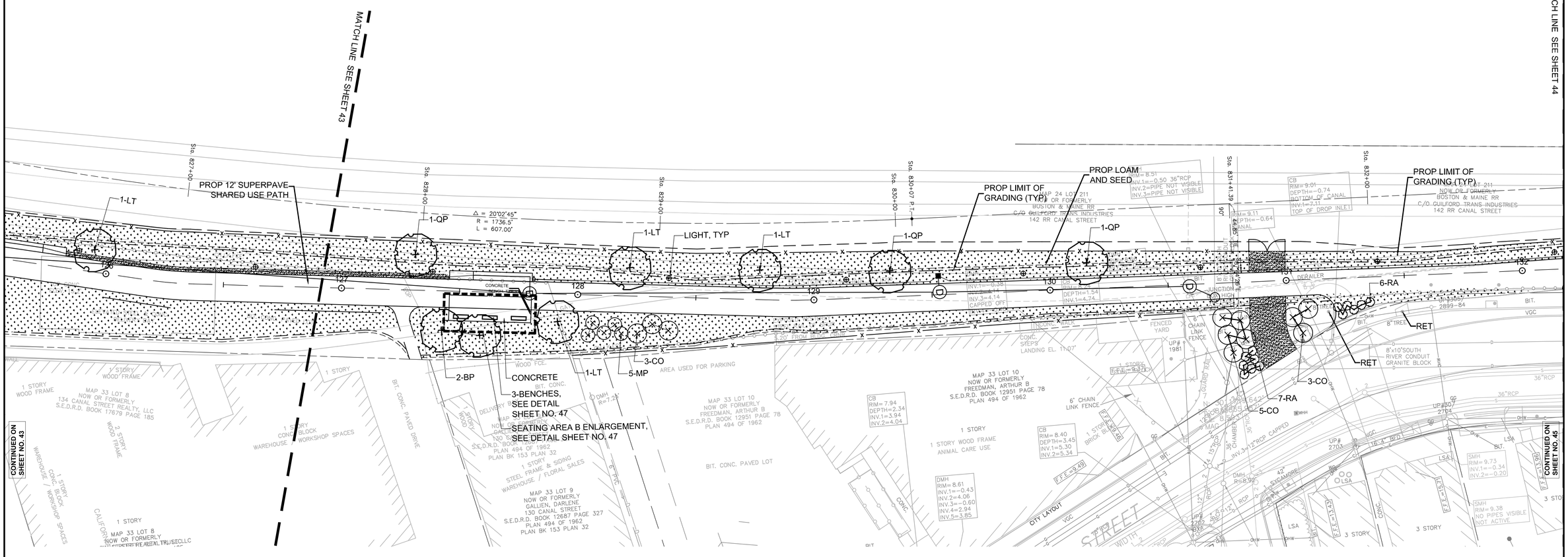
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		44	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-6

PLANT SCHEDULE

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
ORNAMENTAL TREES					
2	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP / 40 FT.
3	LT	LIRIODENDRON TULIPIFERA	TULIPTREE	2.5-3 INCH CALIPER	60 FT.
3	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 INCH CALIPER	60 FT.
SHRUBS, GRASSES & PERENNIALS					
NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
11	CO	CORNUS SERICEA "ISANTII"	RED TWIG DOGWOOD	#3 POT	5-6 FT.
13	RA	RHUS AROMATICA	FRAGRANT SUMAC	15-18 INCH, POT	5-6 FT.
5	MP	MYRICA PENSYLVANICA	BAYBERRY	2-3 FT.	6-8 FT.



LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- PROPOSED SHRUBS
- PROPOSED TREES
- RET — RETAIN TREE/SHRUB

0 20 50 100

SCALE: 1" = 20'

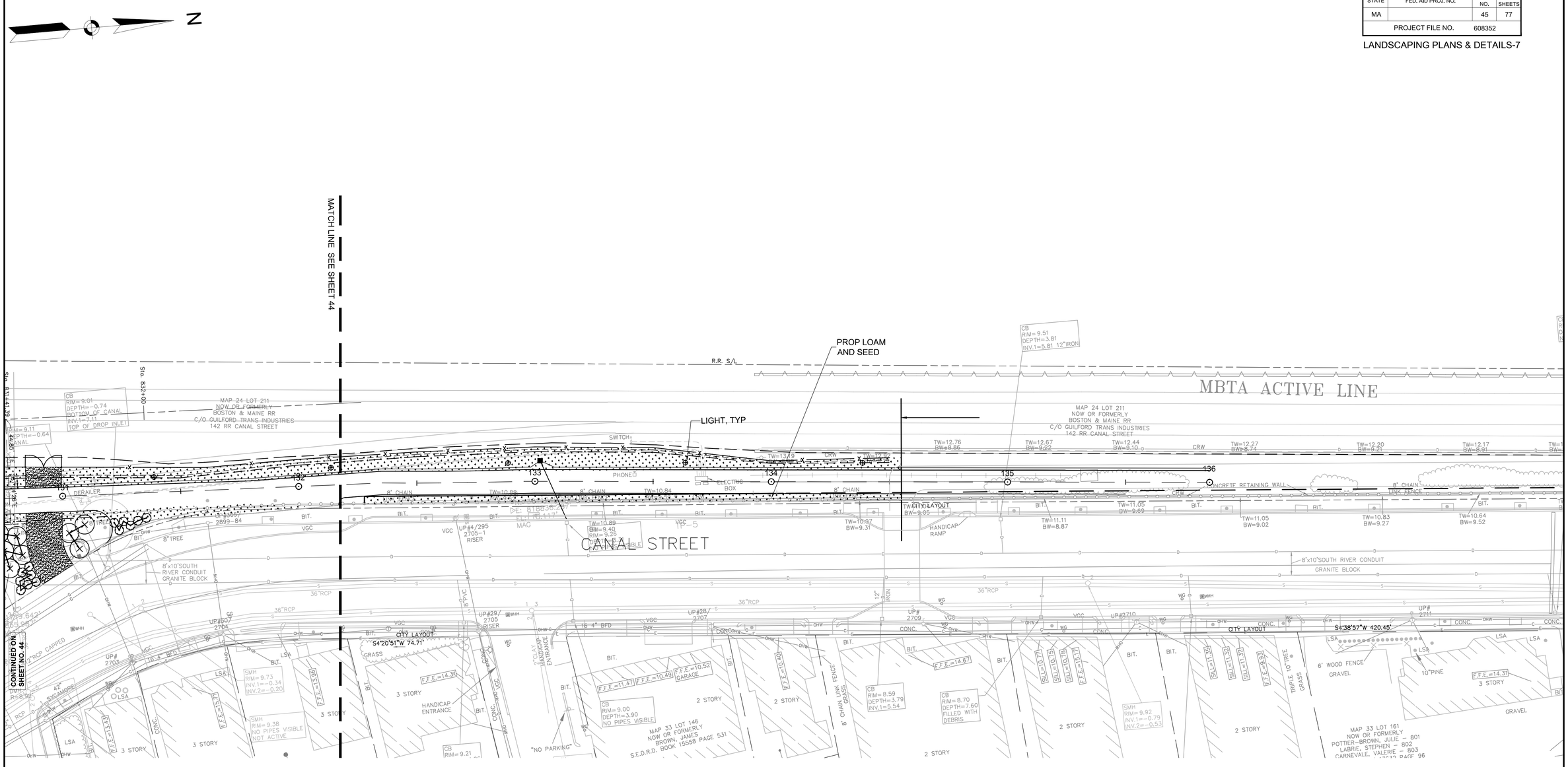
Plotted on 4-Jun-2018 10:22 AM

93692962-PH2-H09(LANDSCAPING PLANS & DETAILS)2 (4).DWG

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		45	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-7



LEGEND

- LOAM & SEED
- AREA OF INVASIVE SPECIES
- GRAVEL
- PROPOSED SHRUBS
- PROPOSED TREES

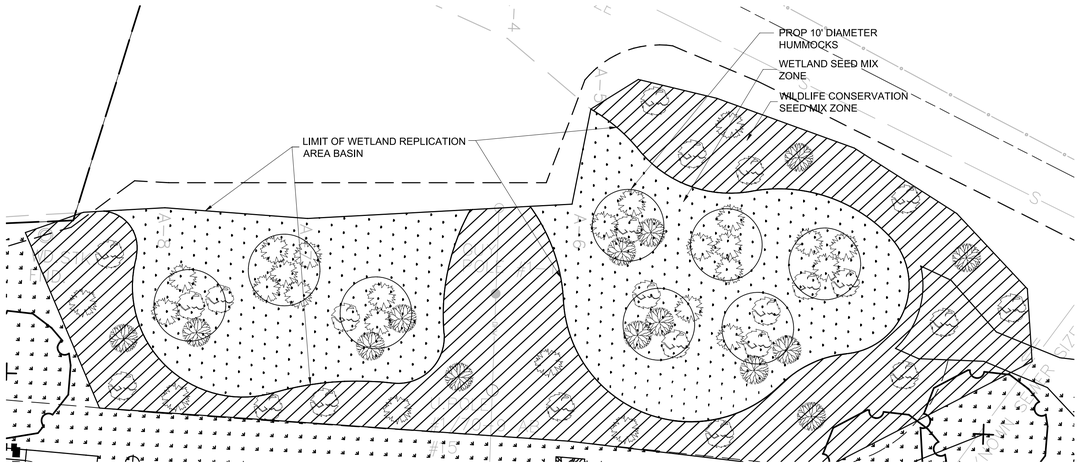
0 20 50 100

SCALE: 1" = 20'

Plotted on 4-Jun-2018 10:22 AM

93892-PH2_HD9(LANDSCAPING PLANS & DETAILS)2 (4).DWG

93692-PH2_HD9(LANDSCAPING PLANS & DETAILS)2 (4).DWG Plotted on 4-Jun-2018 10:22 AM



WETLAND REPLICATION DETAIL
SCALE 1"=10'

LEGEND

- Bebb Willow - *Salix bebbiana*
- Red Osier Dogwood - *Cornus sericea*
- Silky Dogwood - *Cornus amomum*
- Wetland Seed Mix Zone
- Wildlife Conservation Seed Mix Zone
- Proposed 10' Diameter Hummock (8" max height)

NOTES:

PROP WETLAND REPLICATION AREA BASIN (2,323 FT ±)
(SEE LANDSCAPING PLANS FOR PLANTINGS)

HOR. SCALE IN FEET
0 10 25 50

NOTES:

1. THE CONTRACTOR SHALL LOCATE AND VERIFY ALL UTILITIES PRIOR TO STARTING WORK. CONTRACTOR TO VERIFY THAT ADEQUATE DRAINAGE EXISTS PRIOR TO PLANTING.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTING SHOWN ON ALL DRAWINGS. PLANT COUNTS ARE FOR CONVENIENCE ONLY. CONTRACTOR SHALL USE SUFFICIENT PLANT MATERIALS TO FULFILL DESIGN INTENT, BUT IN NO CASE SHALL CONTRACTOR USE FEWER PLANTS THAN LISTED.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT MATERIALS ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT AT THE NURSERY AND AT THE SITE. ALL TREES SHALL HAVE A SINGLE LEADER UNLESS SPECIFIED OTHERWISE. *NO UN-APPROVED SUBSTITUTIONS WILL BE ACCEPTED.* PLANT SPECIES AND CULTIVAR, SIZE AND QUANTITY SHALL NOT CHANGE WITHOUT APPROVAL OF LANDSCAPE ARCHITECT.
5. LOCATION OF ALL TREES AND SHRUBS SHALL BE MARKED FOR THE APPROVAL OF THE PROJECT LANDSCAPE ARCHITECT. MARKING SHALL BE COMPLETED PRIOR TO COMMENCEMENT OF PLANTING.
6. ALL PLANTS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS ORIGINAL GRADE BEFORE DIGGING. PLANT TO BE TRANSPLANTED SHALL BE DUG CAREFULLY, WITH ADEQUATE ROOT-BALLS AND PRUNED ACCORDING TO ANA STANDARD PRACTICE. TREES WITH ROOT FLARE COVERED BY MORE THAN 1.5" OF SOIL WILL BE REJECTED PRIOR TO INSTALLATION. SET PLANTS PLUM.
7. CONTRACTOR SHALL PLACE 2" TO 3" OF FINE SHREDDED, AGED 2 YEARS, DARK BROWN PINE BARK MULCH THROUGHOUT THE BED AREAS. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. *SUBMIT SAMPLE OF MULCH FOR APPROVAL.*
8. FLOOD PLANTS THOROUGHLY ONCE IMMEDIATELY AFTER PLANTING AND TWICE DURING THE FIRST TWENTY-FOUR HOUR PERIOD AFTER PLANTING.
9. DO NOT WRAP TRUNK OF TREE.
10. STAKING OF TREES IS NOT RECOMMENDED EXCEPT ON WINDY SITES OR FOR LARGE EVERGREEN TREES.

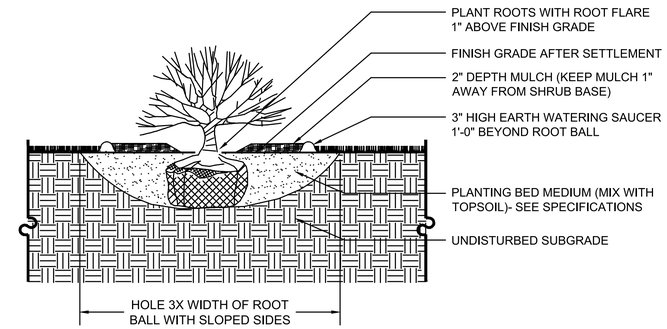
WETLAND REPLICATION PLANT LIST

SHRUB PLANTING SCHEDULE
RESTORATION AREA PLANTING UNIT

KEY	BOTANICAL NAME	COMMON NAME	QUANTITY	INSTALL SIZE	SPACING
AM	AMELANCHIER CANADENSIS	SERVICEBERRY	6	6-7 FT TALL B&B, MULTISTEM	APPROX 5 TO 6 FT O.C.
CA	CORNUS AMOMUM	SILKY DOGWOOD	25	3-4 FT TALL B&B OR CONT	APPROX 3 TO 4 FT O.C.
CE	CEANOTHUS AMERICANUS	NEW JERSEY TREE	19	2 GALLON	APPROX 2 TO 3 FT O.C.
CS	CORNUS SERICEA	RED OSIER DOGWOOD	15	3-4 FT TALL B&B OR CONT	APPROX 3 TO 4 FT O.C.
MP	MYRICA PENSYLVANICA	BAYBERRY	4	2-3 FT TALL B&B OR CONT	APPROX 2 TO 3 FT O.C.
SB	SALIX DISCOLOR	PUSSY WILLOW	26	2-3 FT TALL B&B OR CONT	APPROX 2 TO 3 FT O.C.

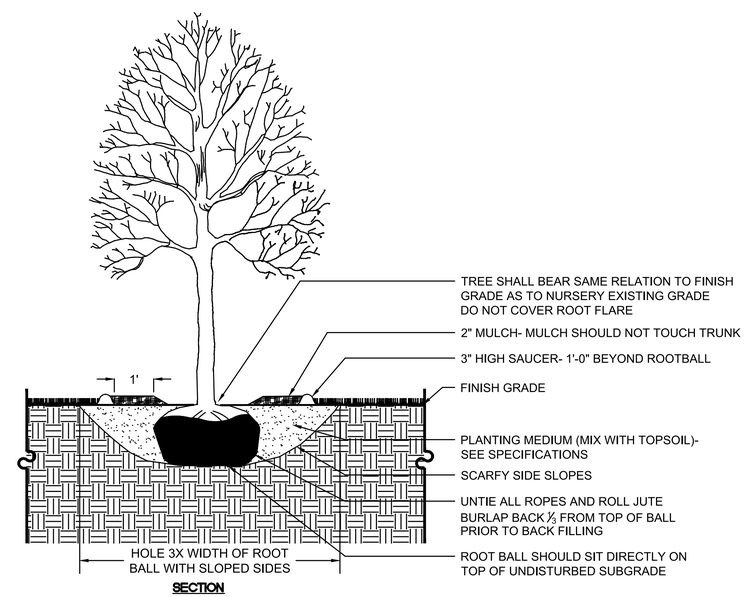
SEED MIX PLANTING SCHEDULE
RESTORATION AREA PLANTING UNIT

SEED MIX AREAS	APPROX AREA (SF)	SEED MIX TYPE	SEEDING RATE	QTY (NO LESS THAN)
WETLAND REPLICATION AREA BASIN AND LOWER SIDE SLOPES	4,310	NE WETMIX (WETLAND SEED MIX)	18 LB/AC (2500 SF/LB)	1.8 LB
WETLAND REPLICATION AREA UPPER SIDE SLOPES & ADJACENT UPLAND AREA	3,020	CONSERVATION/WILDLIFE MIX	25 LB/AC (1750 SF/LB)	1.8 LB



SHRUB PLANTING
NTS

NOTES:
1. SCARIFY SOILS CONTINUOUSLY TO A DEPTH OF 4" AT INTERFACE BETWEEN SOIL TYPES AND LIFTS TO PROMOTE BLENDING OF SOILS
2. SEE PLANT LIST AND PLANS FOR SPACING



DECIDUOUS TREE PLANTING
NTS

NOTE:
PLANT MATERIAL SHALL NOT BE BROUGHT TO THE SITE IN WIRE BASKETS OR IN POLY-BURLAP

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		47	77
PROJECT FILE NO.	608352		

LANDSCAPING PLANS & DETAILS-9

PROJECT SUMMARY PLANT LIST

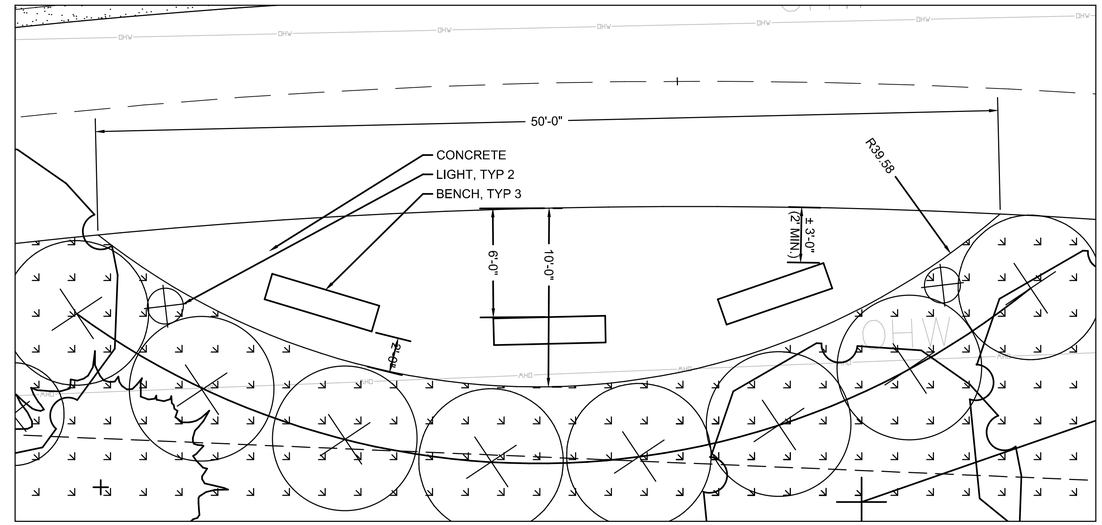
PLANT SCHEDULE

ORNAMENTAL TREES

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
3	AR	ACER RUBRUM 'OCTOBER GLORY'	RED MAPLE	2-2.5 INCH CALIPER	40-50 FT.
14	AL	AMELANCHIER LAEVIS 'ALLEGHENY'	ALLEGHENY SERVICEBERRY	8-10 FT., B&B	MULTISTEM
15	BP	BETULA PAPYRIFERA	PAPER BIRCH	1.5-2 INCH CALIPER	CLUMP/40'
4	JV	JUNIPERUS CHINENSIS 'KETELEERI'	JUNIPER	5-6 FT., B&B	15 FT.
10	LT	LIRIODENDRON TULIPIFERA	TULIPTREE	2.5-3 INCH CALIPER	60 FT.
17	QP	QUERCUS PALUSTRIS	PIN OAK	2-2.5 INCH CALIPER	60 FT.

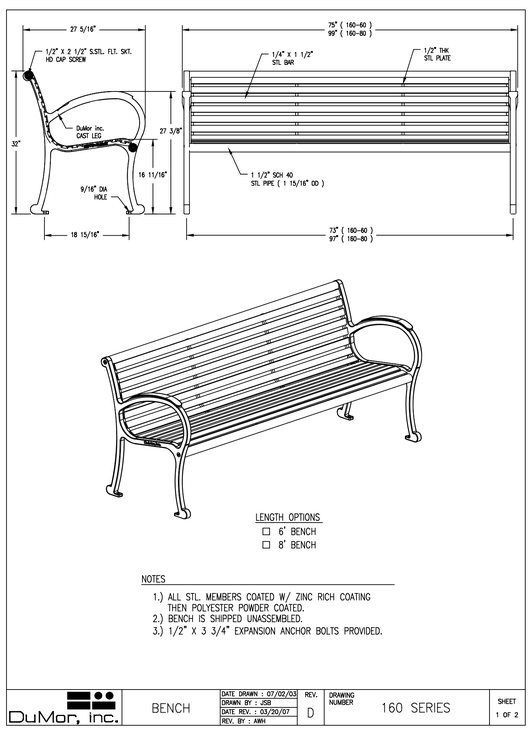
SHRUBS, GRASSES & PERENNIALS

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
45	CO	CORNUS SERICEA "ISANTII"	RED TWIG DOGWOOD	#3 POT	5-6 FT.
37	IV	ILEX VERTICILLATA	WINTERBERRY (FEMALE)	24-30 INCH, POT	6-8 FT.
32	MP	MYRICA PENSYLVANICA	BAYBERRY	2-3 FT.	6-8 FT.
26	RA	RHUS AROMATICA	FRAGRANT SUMAC	15-18 INCH, POT	5-6 FT.
21	SC	SAMBUCUS CANADENSIS	ELDERBERRY	2-3 FT.	8-10 FT.



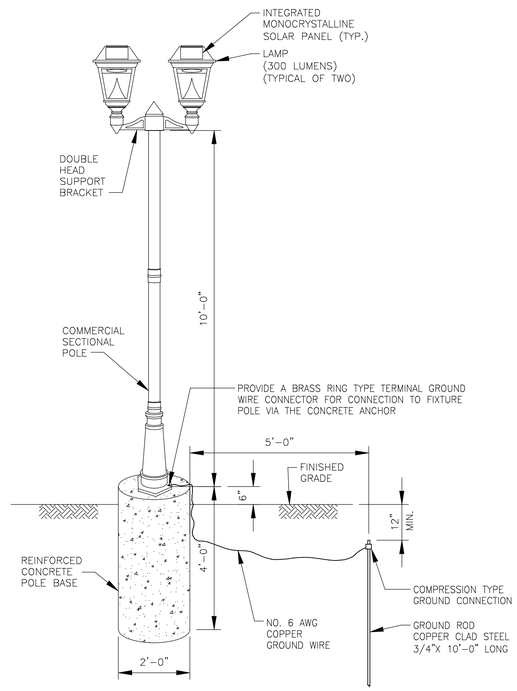
SEATING AREA A ENLARGEMENT

NTS



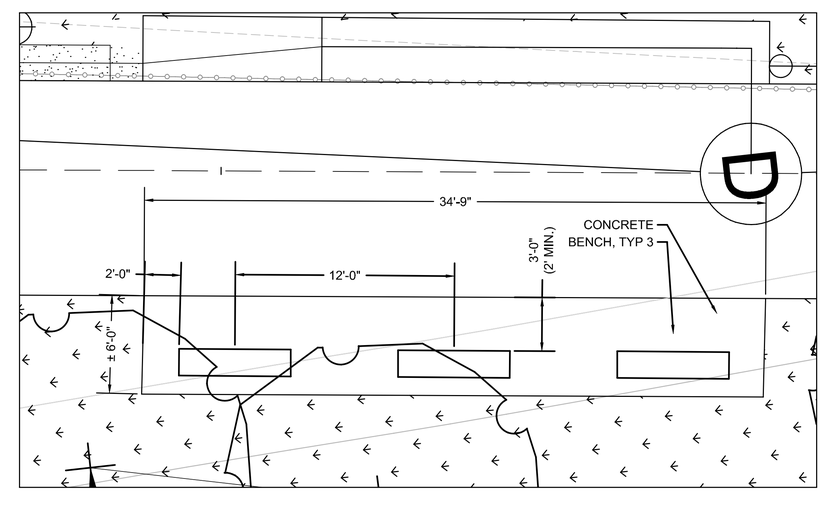
BENCH

NTS



SOLAR POWERED DOUBLE LAMP AND POST ASSEMBLY

SCALE: NONE



SEATING AREA B ENLARGEMENT

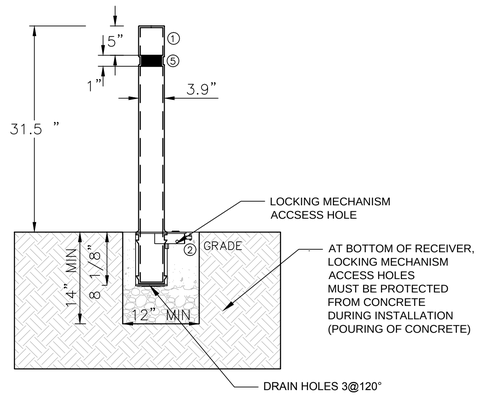
NTS

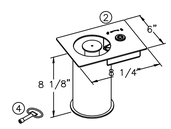
93692-PH2_HD9(LANDSCAPING PLANS & DETAILS)2 (4).DWG Plotted on 4-Jun-2018 10:23 AM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		48	77
PROJECT FILE NO.	608352		

CONSTRUCTION DETAILS



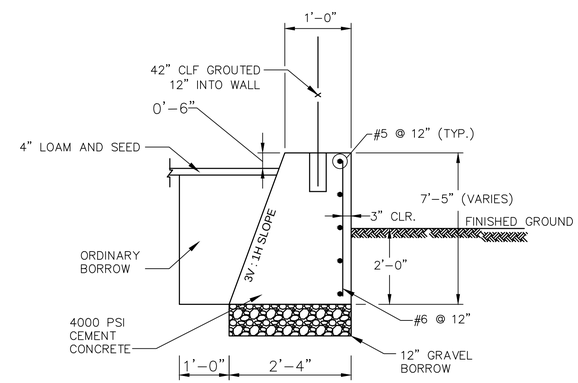


LIGHT DUTY REMOVABLE MOUNT

Flexible Bollard			
Item	Description	Material	Weight
1	Flexible Bollard, Embedded/ Removable Mount	Polyurethane	8 lbs.
2	Flexible Bollard, Surface Mount	Polyurethane	8 lbs.

Mount Options & Accessories			
Item	Description	Material	
2	Removable Mount, Light Duty	Steel	6.0 lbs
3	Removable Mount, Heavy Duty	Steel	6.6 lbs
4	Removable Mount Key (1 Key included Per Mount, Optional Additional Keys Avaiable)	Steel	
5	Reflective Tape – White, Yellow Or Blue (Optional)	Plastic	

FLEXIBLE BOLLARD
NTS



NOTES:
1. 4000 PSI, 1.5 IN., 565 CEMENT CONCRETE TO BE USED.

NTS

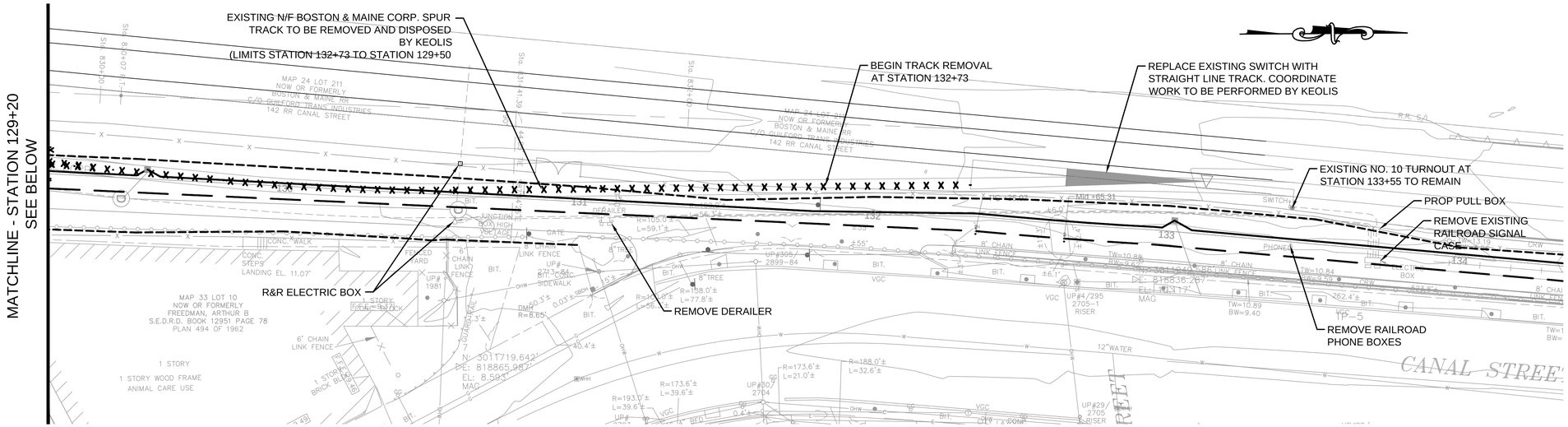
LOW RETAINING WALL STA 126+28 TO STA 126+72

93692-PH2_HD11(DETAILS)2.DWG Plotted on 17-May-2018 2:21 PM

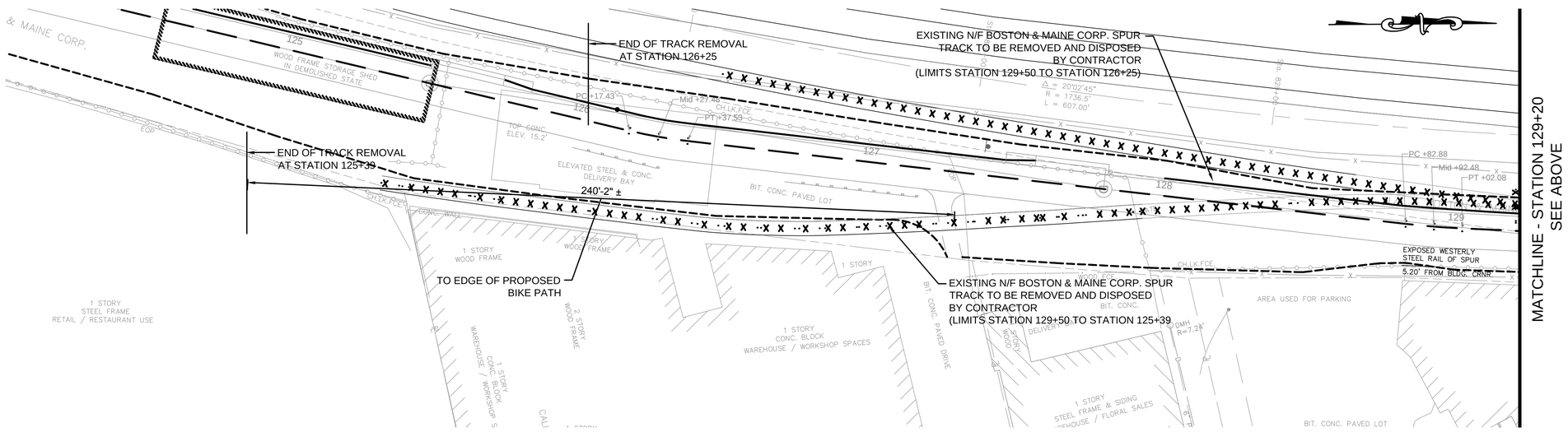
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		49	77
PROJECT FILE NO.	608352		

SPUR TRACK PLANS
TRACK REMOVAL



EXISTING TRACK REMOVAL PLAN
STATION 125+39.00 - 132+73.00



EXISTING TRACK REMOVAL PLAN
STATION 125+39.00 - 132+73.00

NOTES:

1. CONTRACTOR SHALL PROTECT THE EXISTING NO. 10 TURNOUT THROUGHOUT THE REMOVAL OF EXISTING TRACK AND DURING CONSTRUCTION OF PROPOSED SPUR TRACK
2. RETENTION OF THE EXISTING NO. 10 TURNOUT NEAR STATION 133+55.00.
3. REMOVAL AND REPLACEMENT OF THE RAILROAD PHONE BOXES.
4. REMOVAL AND DISPOSAL OF EXISTING TRACK DERAILS.
5. REMOVAL AND DISPOSAL OF EXISTING SPUR TRACK (INCLUDING RUNNING RAILS, TIES AND OTHER TRACK MATERIALS) FROM STATION 126+50.00 TO 132+49.00.
6. REMOVAL AND DISPOSAL OF EXISTING SPUR TRACK (INCLUDING RUNNING RAILS, TIES AND OTHER TRACK MATERIALS) FROM STATION FROM STATION 116+74.00 TO 117+80.00. SEE SHEET NO. 6.

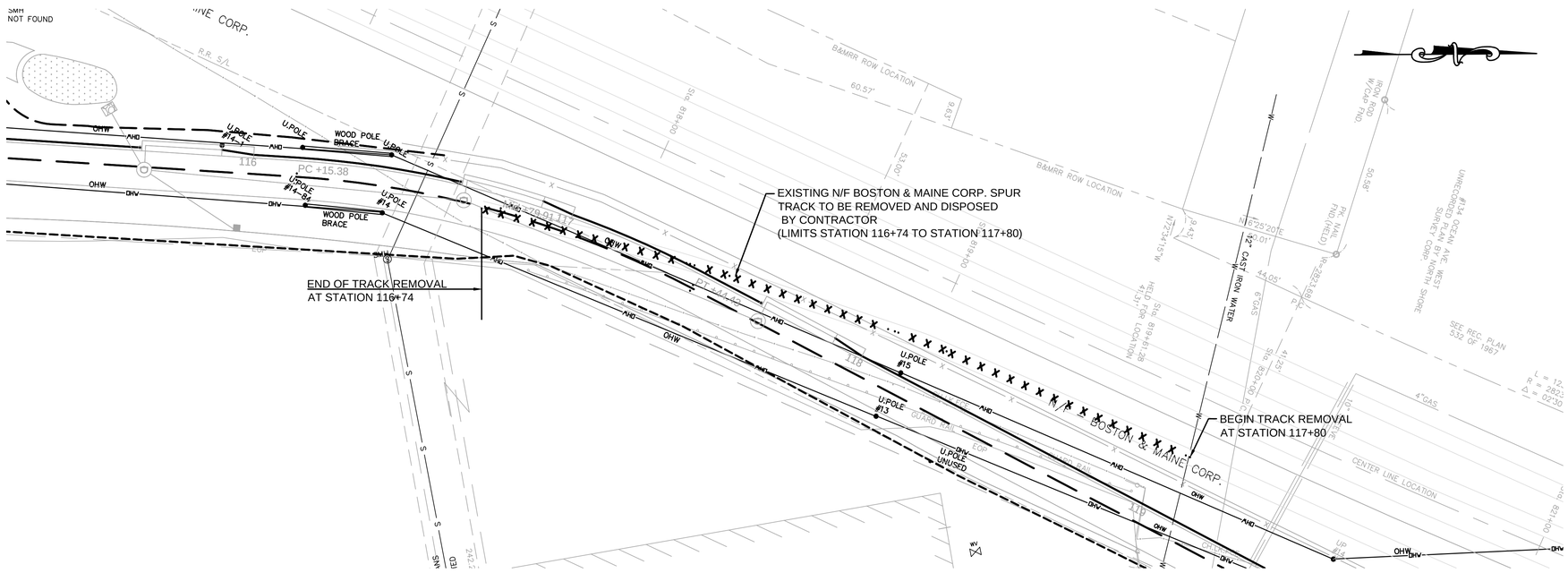
20' 10' 0 20' 40'
SCALE IN FEET

93692-MARBLEHEAD_TRACK REMOVAL2.DWG Plotted on 17-May-2018 3:19 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		50	77
PROJECT FILE NO.	608352		

SPUR TRACK PLANS
TRACK REMOVAL



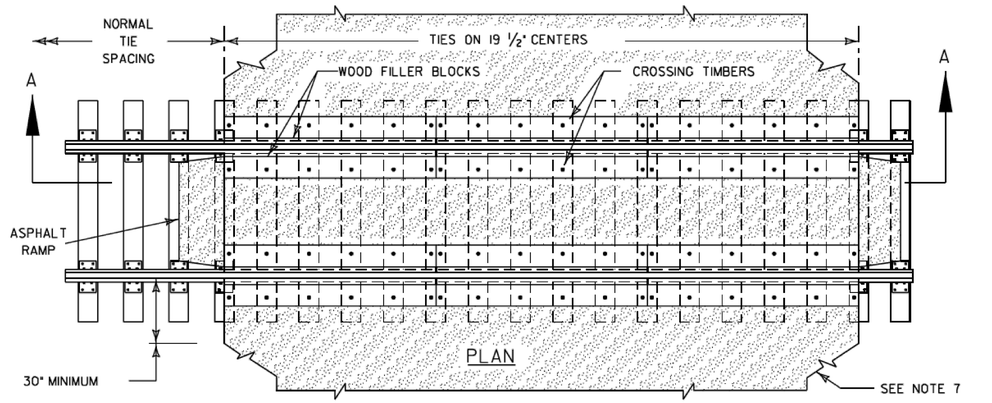
EXISTING SPUR TRACK REMOVAL PLAN
STATION 116+74.00 - 117+80.00

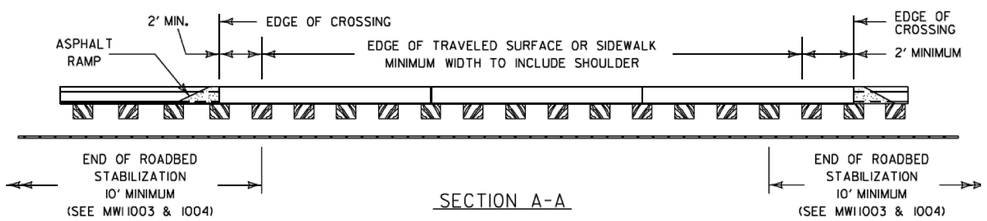
NOTES:

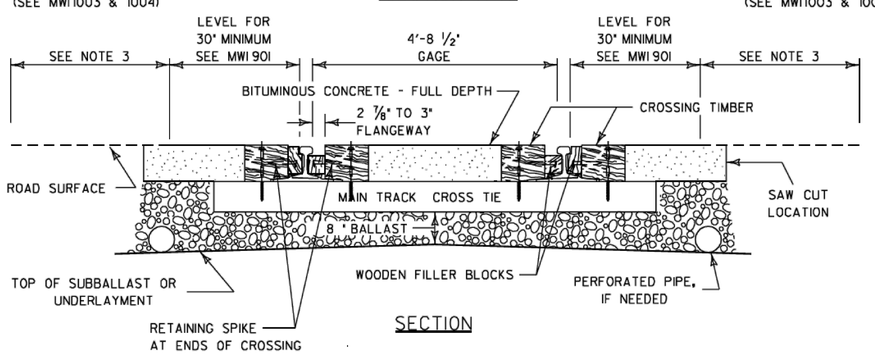
1. CONTRACTOR SHALL PROTECT THE EXISTING NO. 10 TURNOUT THROUGHOUT THE REMOVAL OF EXISTING TRACK AND DURING CONSTRUCTION OF PROPOSED SPUR TRACK
2. RETENTION OF THE EXISTING NO. 10 TURNOUT NEAR STATION 133+55.00.
3. REMOVAL AND REPLACEMENT OF THE RAILROAD PHONE BOXES.
4. REMOVAL AND DISPOSAL OF EXISTING TRACK DERAILS.
5. REMOVAL AND DISPOSAL OF EXISTING SPUR TRACK (INCLUDING RUNNING RAILS, TIES AND OTHER TRACK MATERIALS) FROM STATION 126+50.00 TO 132+49.00. SEE SHEET NO. 5
6. REMOVAL AND DISPOSAL OF EXISTING SPUR TRACK (INCLUDING RUNNING RAILS, TIES AND OTHER TRACK MATERIALS) FROM STATION FROM STATION 116+74.00 TO 117+80.00.

20' 10' 0 20' 40'
SCALE IN FEET

93692-MARBLEHEAD_TRACK REMOVAL2.DWG Plotted on 17-May-2018 2:22 PM







NOTES

2536
SHEET 1

1. MW1901 (LASTEST REVISION) IS TO BE USED IN CONJUNCTION WITH THIS DRAWING.
2. FOR NEW CONSTRUCTION, HIGHWAY SHOULD INTERSECT RAILROAD AT OR NEARLY RIGHT ANGLES.
3. FOR NEW CONSTRUCTION, HIGHWAY SURFACE SHOULD NOT BE MORE THAN 3" HIGHER OR LOWER THAN TOP OF THE NEAR RAIL 30' FROM THE RAIL ALONG THE ROAD CENTERLINE, UNLESS TRACK SUPERELEVATION DICTATES OTHERWISE.
4. USE STATE D.O.T. SPECIFICATIONS FOR BITUMINOUS CONCRETE AND ASPHALT SPRAY TACK COAT FOR THE STATE IN WHICH THE CROSSING IS LOCATED.
5. CROSSINGS SHOULD BE CONTINUOUS BETWEEN ROADWAY OR SIDEWALK EDGES. IF NOT PRACTICABLE, ADEQUATE DRAINAGE MUST BE PROVIDED BETWEEN CROSSING AREAS TO ELIMINATE WATER POCKETS.
6. SLOPE PAVING TO RETURN TO ORIGINAL PAVEMENT SURFACE. LENGTH OF TRANSITION WILL DEPEND ON LOCAL CONDITIONS. USE A RUNOFF OF 1IN. PER 10 FT. WHERE PRACTICABLE.
7. IF ROADBED STABILIZATION IS REQUIRED, EXTEND IT 10 FT. BEYOND EDGE OF CROSSING UNDER TRACK.
8. DRILL CROSSING TIMBERS OVER EACH TIE FOR TIMBER SCREW 11/16" DIA. WITH 2 1/2" DIA. x 1" COUNTERSINK.
9. PERFORATED PIPE TO BE SIZED AND LOCATED FOR SITE CONDITIONS. USE 6" MIN. DIA. PIPE AND LOCATE AT LEAST 12" BEYOND END OF TIE.

ORDERING INFORMATION		
ITEM NO.	RAIL WGT.	DESCRIPTION
042 3060115	115	CROSSING TIMBER / WOOD FILLER. ORDER BY "TRACK FEET" IN APPROXIMATE 8 FT. INCREMENTS. EACH "TRACK FOOT" INCLUDES 4 TIMBER SECTIONS AND 4 FILLER BLOCK PIECES. DELIVERED IN 8'- 1 1/2" LONG SECTIONS.
042 3060122	122	
042 1320132	132	
042 1360136	136	
042 1360140	140	
042 1360141	141	
013 8230080	ALL	SCREW, TIMBER 5/8"x 12" WITH TORX SQUARE WASHER HEAD.

CSX TRANSPORTATION

NORMAL DUTY ROAD CROSSING
TIMBER AND ASPHALT ON WOOD TIES

J. Kappzyoli
APPROVED - CHIEF ENGINEER MAINTENANCE OF WAY

James D. Bayley
APPROVED - VICE PRESIDENT ENGINEERING

PREPARED BY: J. E. BEYERL

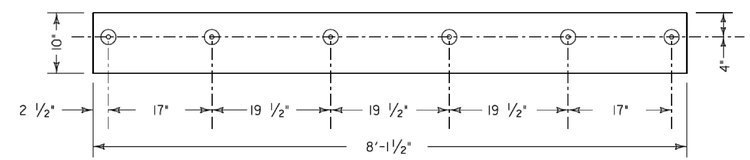
ISSUED: MARCH 22, 2005
REVISED: NOVEMBER 14, 2005

SALEM
CANAL STREET RAIL TRAIL PHASE 2

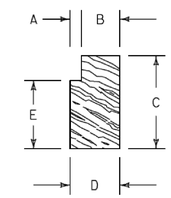
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		51	77
PROJECT FILE NO.	608352		

SPUR TRACK PLANS
APPENDIX B
STANDARD DRAWINGS

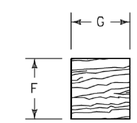
2536
SHEET 2



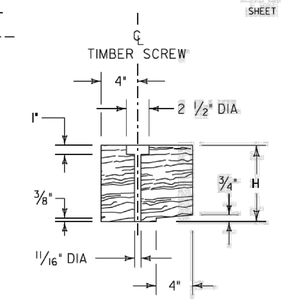
CROSSING TIMBER PLAN VIEW



FIELD SIDE FILLER BLOCK DETAIL



GAGE SIDE FILLER BLOCK DETAIL



CROSSING TIMBER SECTION AT SCREW LOCATION

NOTES

1. TIMBERS ARE NOT PREDRILLED UNLESS SPECIFIED IN THE REQUISITION.
2. GAGE AND FIELD TIMBERS ARE IDENTICAL.
3. TOLERANCES:
   A, E, AND G : 1/16" +/-
   ALL OTHERS : 1/8" +/-
4. CROSSING TIMBER TO BE OAK OR GUM. TREATMENT PER MW SPEC 99001 LIKE CROSSTIES
5. FILLER BLOCKS TO BE SOUTHERN YELLOW PINE GRADE 2 WITH 10 LB / CU FT TREATMENT
6. TIMBERS & FILLERS TO BE MARKED FOR RAIL SIZE

RAIL WGT	A	B	C	D	E	F	G	H
115 RE	3/4	2 3/4	5 3/8	3 1/2	3 7/8	3 3/8	4	7 1/2
122 CB	3/4	2 3/4	5 5/8	3 1/2	4	3 5/8	4	7 1/2
132 RE	5/8	2 7/8	6	3 1/2	4 1/2	3 7/8	3 7/8	8
136 RE	5/8	2 7/8	6 1/4	3 1/2	4 1/2	3 7/8	3 7/8	8 3/8
140 RE	3/4	2 3/4	6 1/16	3 1/2	4 5/16	3 7/8	4	8 3/8
141 RE	11/16	2 13/16	6 3/8	3 1/2	4 1/2	3 7/8	3 7/8	8 3/8

ALL DIMENSIONS ARE IN INCHES.

CSX TRANSPORTATION

TIMBER AND ASPHALT CROSSING
CROSSING TIMBER AND FILLER BLOCK DETAILS

J. Kappzyoli
APPROVED - CHIEF ENGINEER MAINTENANCE OF WAY

James D. Bayley
APPROVED - VICE PRESIDENT ENGINEERING

PREPARED BY: J. E. BEYERL

ISSUED: MARCH 22, 2005
REVISED: NOVEMBER 14, 2005

:RS

CSX TRANSPORTATION

TIMBER AND ASPHALT CROSSING
CROSSING TIMBER AND FILLER BLOCK DETAILS

J. Kappzyoli
APPROVED - CHIEF ENGINEER MAINTENANCE OF WAY

James D. Bayley
APPROVED - VICE PRESIDENT ENGINEERING

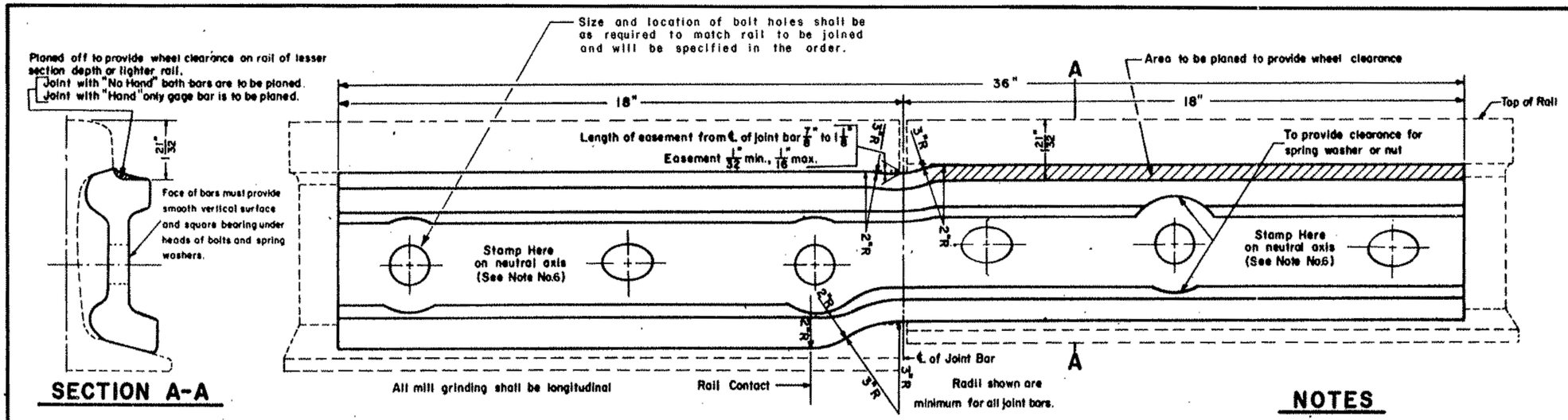
93692-MARBLEHEAD_APPENDIX B2.DWG Plotted on 17-May-2018 2:22 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

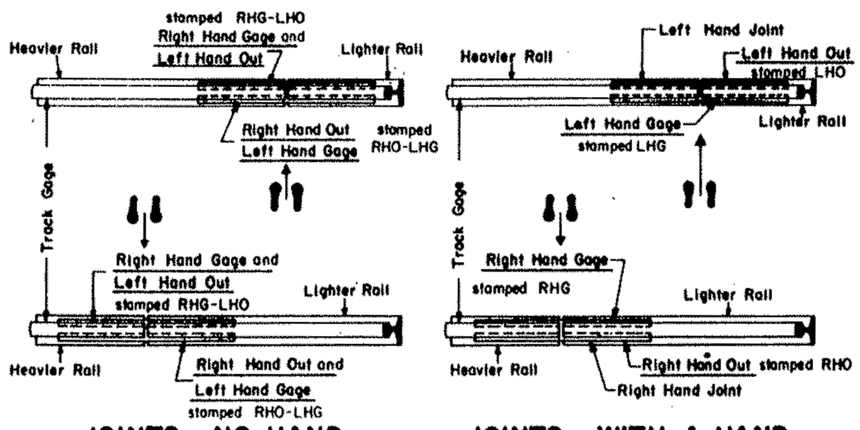
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		52	77
PROJECT FILE NO.		608352	

SPUR TRACK PLANS
APPENDIX B
STANDARD DRAWINGS

93692-MARBLEHEAD_APPENDIX B2.DWG Plotted on 17-May-2018 2:22 PM



SECTION A-A



JOINTS – NO HAND

JOINTS – WITH A HAND

Proper designations for joint bars are shown underlined

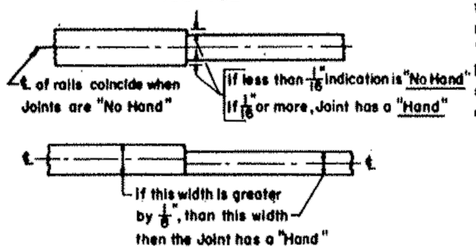
TO DETERMINE HAND OF JOINT BAR

Stand between the rails (gage) of a track and face rails to be connected, *ORDER* —

LEFT HAND JOINT – when the heavier rail is on your left.
RIGHT HAND JOINT – when the heavier rail is on your right.

ALLOWABLE COMPROMISES

100 - 85
107 - 85
107 - 100
112 - 100
112 - 107
115 - 100
115 - 107
115 - 112
132 - 115
136 - 115
136 - 132



Even though the width of the rail heads are equal or within the limits specified above, the indication is a "Hand" if one rail is vertical and one rail is canted.

NOTES

1. All joint bars shall conform to current AREA specifications for Quenched Carbon Steel Joint Bars.

2. One joint shall consist of two bars. The joint bars shall be furnished without any provisions for any wear in the rail.

3. Joint bars shall be ordered 36" long without exception unless specifically directed otherwise by the Chief Engineering Officer.

4. Joint bars shall be forged, heat treated and shaped to the configuration of standard joint bars of the respective rail sections to be joined.

5. All bars must be furnished so that the distance between other faces of the bars will be the same as for standard joint bar for the respective rail sections so joint bolts of standard lengths can be used.

6. All bars shall be stamped with depressed characters not less than ½" in height to show the manufacturer's name or trademark, year manufactured, and connecting rail sections at each end. Bars for joints that have "No Hand" shall be stamped "RHO-LHG" or "RHG-LHO" to indicate interchangeability. Bars for joints "With a Hand" shall be stamped "LHG", "RHG", "LHO", or "RHO", whichever applies, see sketch at left. All stamping shall be placed so as to not be covered by the bolt heads or the nuts.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	RAILROAD OPERATIONS	DWG. NO. 1328
		Oct. 28, 1992 (ISSUE DATE) (2) (ISSUE NO.)

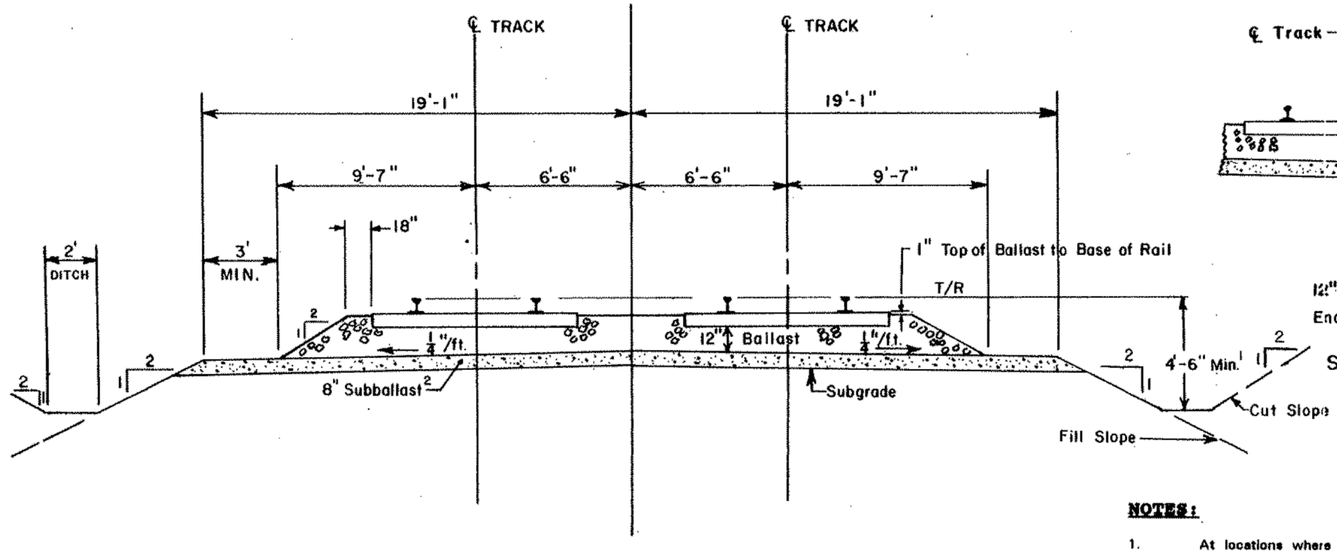
COMPROMISE JOINT BARS FOR TEE RAIL

John D. Kay — ENGINEERING OFFICER
W A Wolff — CHIEF ENGINEERING OFFICER

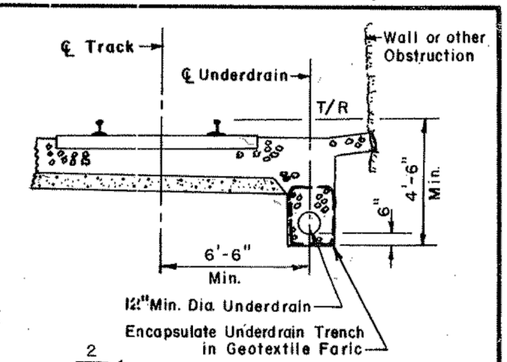
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		53	77
PROJECT FILE NO.	608352		

SPUR TRACK PLANS
APPENDIX B
STANDARD DRAWINGS



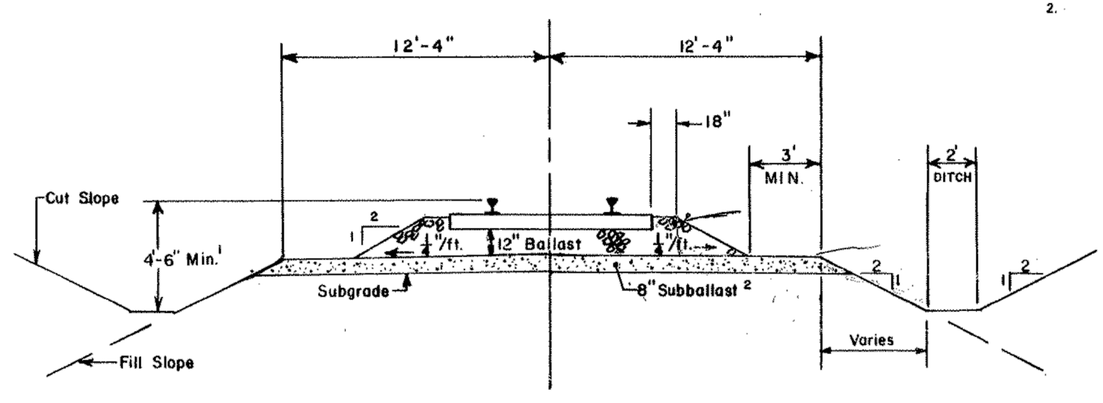
STANDARD SECTION FOR DOUBLE TRACK ON TANGENT



SECTION WHEN SIDE DITCH IS NOT POSSIBLE

NOTES:

1. At locations where sufficient side ditch is not possible, use perforated pipe underdrain (12" min. dia.).
2. In new construction, when subgrade conditions warrant the use of geotextile fabric, place fabric beneath the subballast.



STANDARD SECTION FOR SINGLE TRACK ON TANGENT

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

RAILROAD OPERATIONS

DWG. NO. 1000

Oct. 28, 1992 (2)
ISSUE DATE ISSUE NO.

TYPICAL ROADBED SECTION
DOUBLE & SINGLE TRACK ON TANGENT

ENGINEERING OFFICER

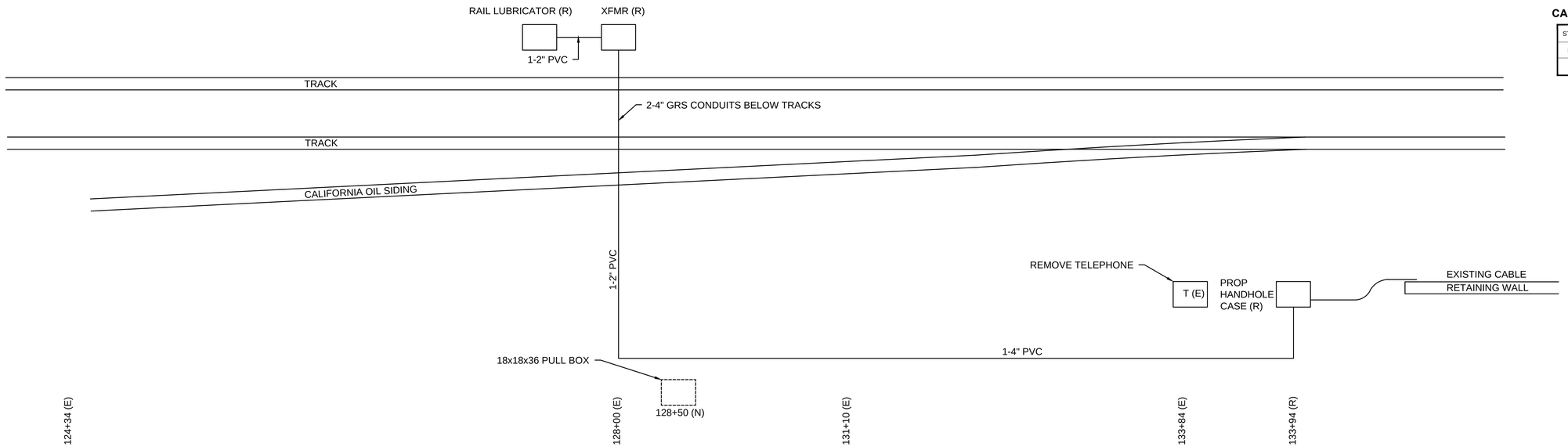
CHIEF ENGINEERING OFFICER

93692-MARBLEHEAD_APPENDIX B2.DWG Plotted on 17-May-2018 2:22 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		54	77
PROJECT FILE NO.	608352		

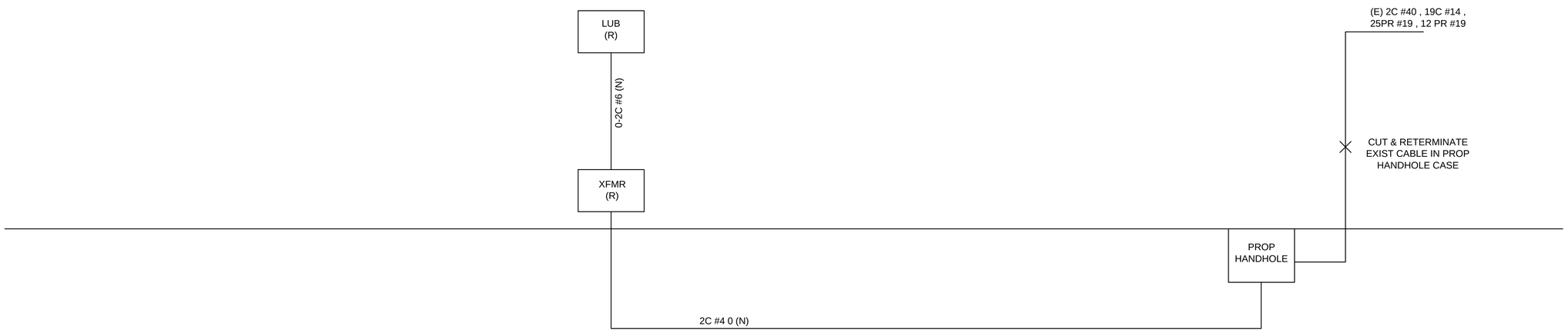
RR CABLE RELOCATION



CONDUIT DIAGRAM

NOTES:
1. ALL CABLES SHALL BE UG SOLID.
2. PROVIDE 12" SEPARATION BETWEEN POWER CABLE AND LOW VOLTAGE CABLES IN SAME TRENCH.
3. FURNISH AND INSTALL NEW FOUNDATIONS FOR RELOCATED EQUIPMENT.
4. GROUND ALL EQUIPMENT WITH 8' COPPER CLAD RODS.
5. IDENTIFY AND RELOCATE FIBER OPTIC CABLES FOR FUTURE P.T.C. SYSTEM.
6. REFER TO SYSTEM AS-BUILT DRAWINGS FOR CABLE AND WIRE TERMINATION DETAILS.
7. SUPPORT FIELD TESTING AND IN SERVICE REQUIREMENTS WITH MBTA FORCES.

LEGEND:
(E) = EXISTING
(N) = NEW
(R) = RELOCATED



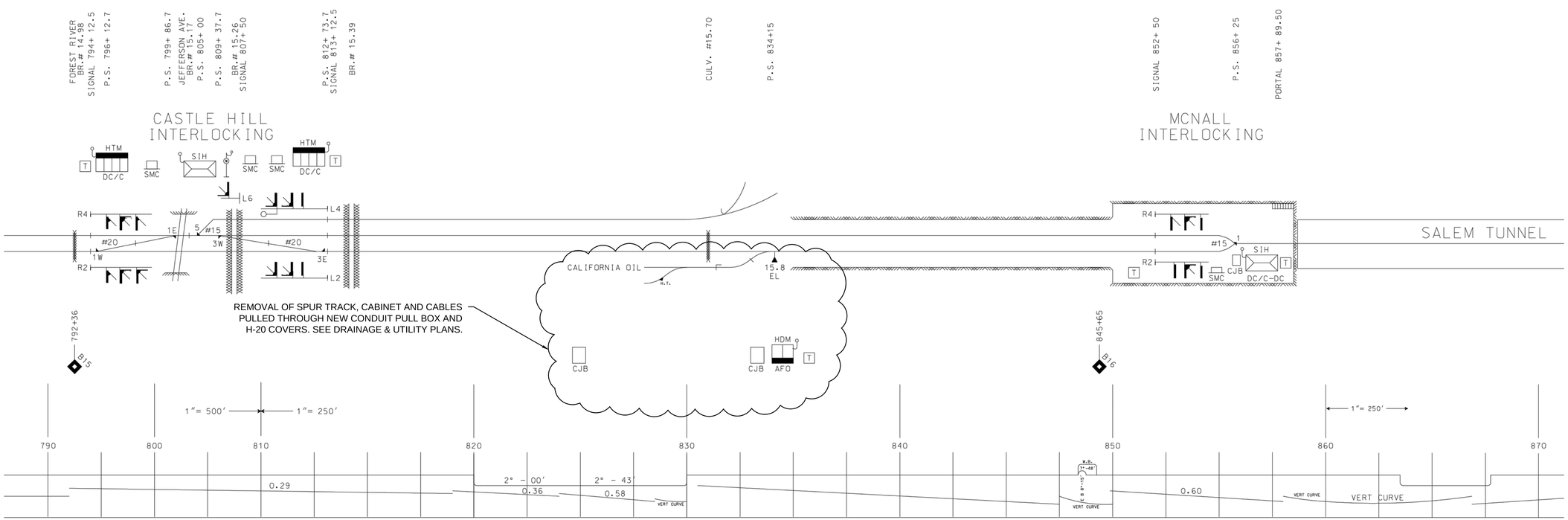
CABLE DIAGRAM

93692-PH2_HD(RR CABLE RELOC)2.DWG Plotted on 17-May-2018 2:22 PM

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		55	77
PROJECT FILE NO.	608352		

RR SINGLE LINE DIAGRAM

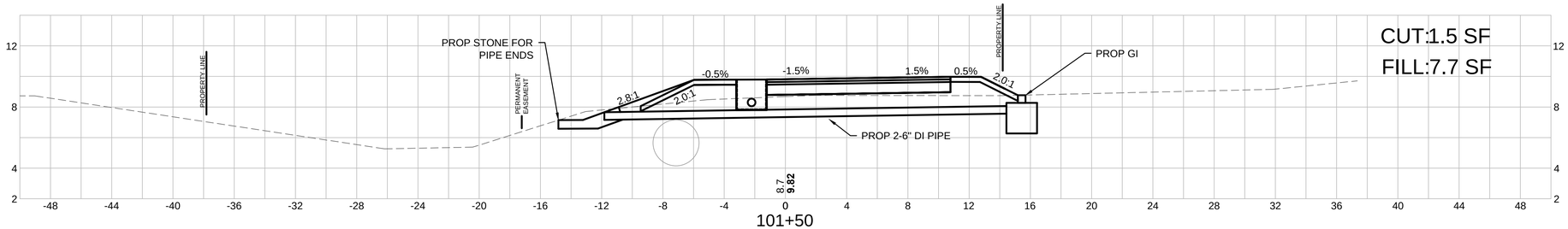


93692-PH2_HD(RR SINGLE LINE DIAGRAM)2.DWG Plotted on 17-May-2018 2:22 PM

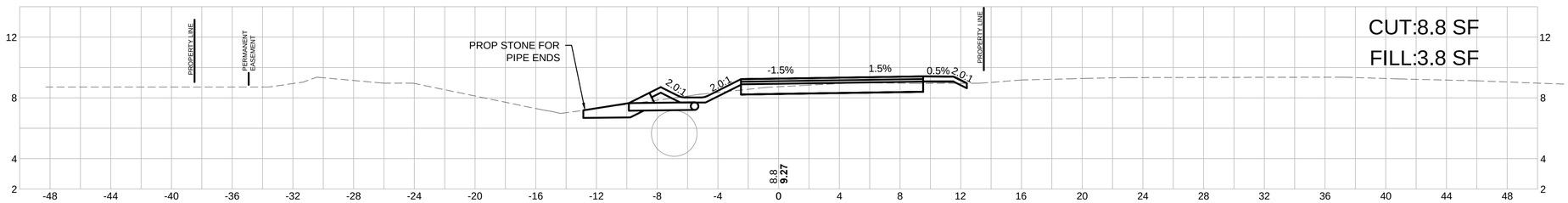
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		56	77
PROJECT FILE NO.	608352		

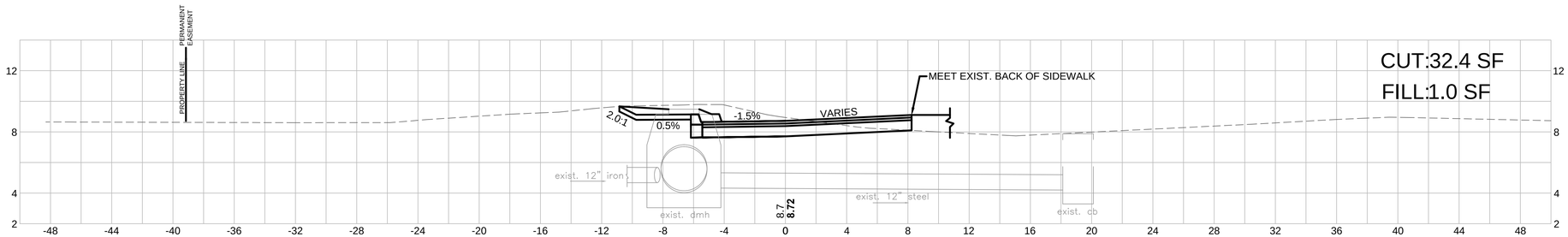
SHARED USE PATH CROSS SECTIONS



101+50



101+00



100+50

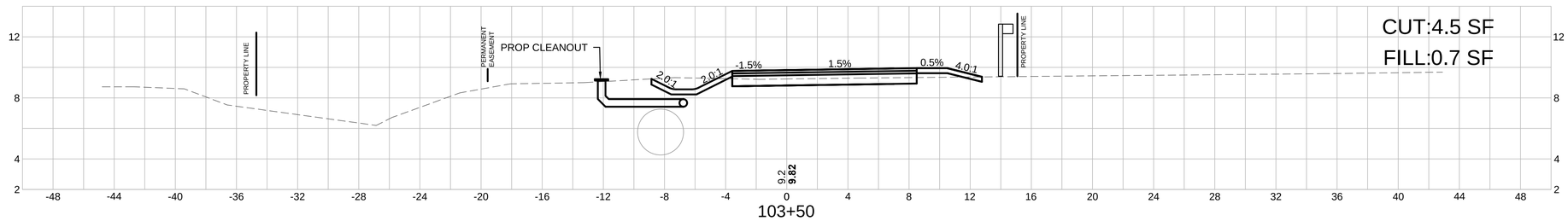
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

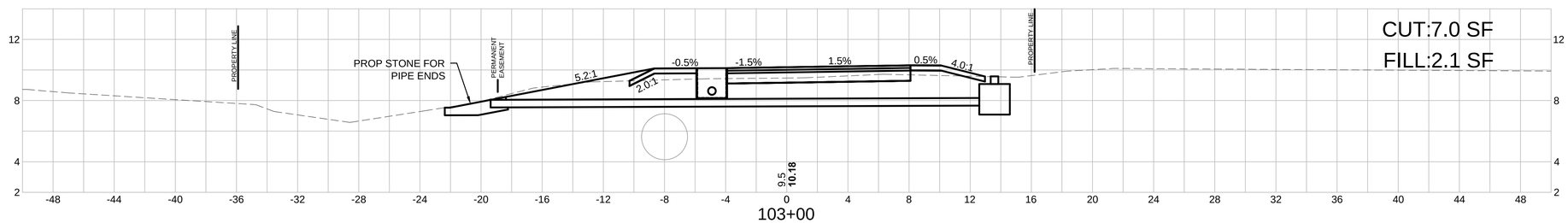
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

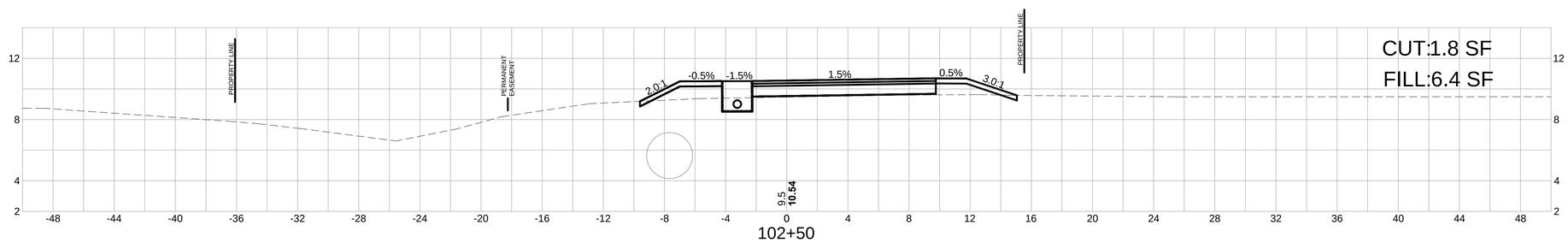
SALEM
CANAL STREET RAIL TRAIL PHASE 2

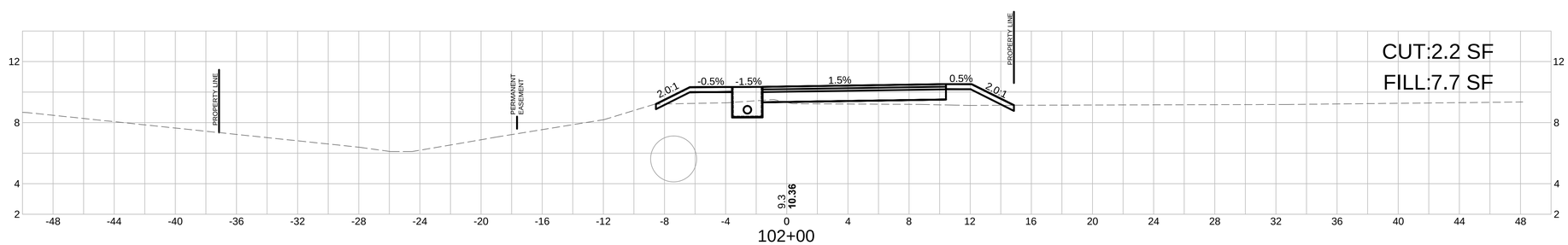
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		57	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS









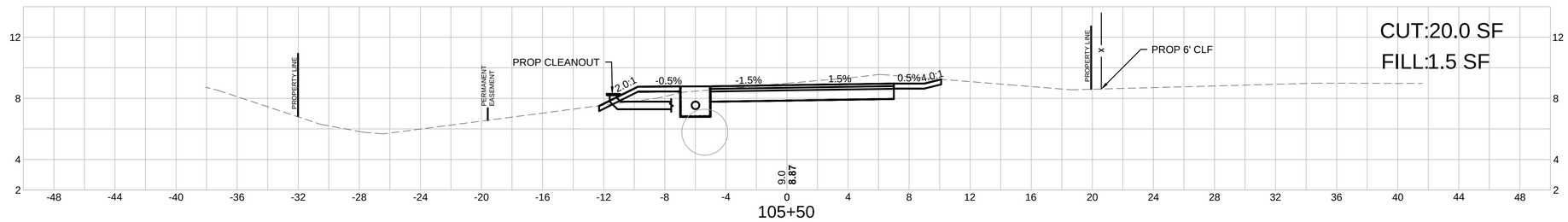
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

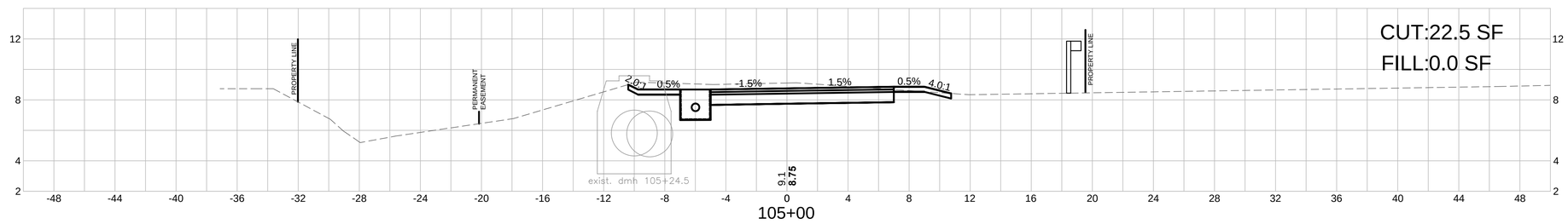
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

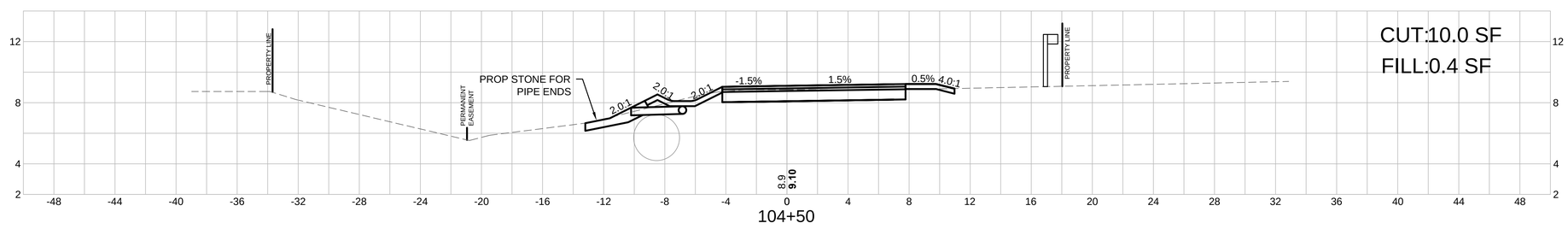
SALEM
CANAL STREET RAIL TRAIL PHASE 2

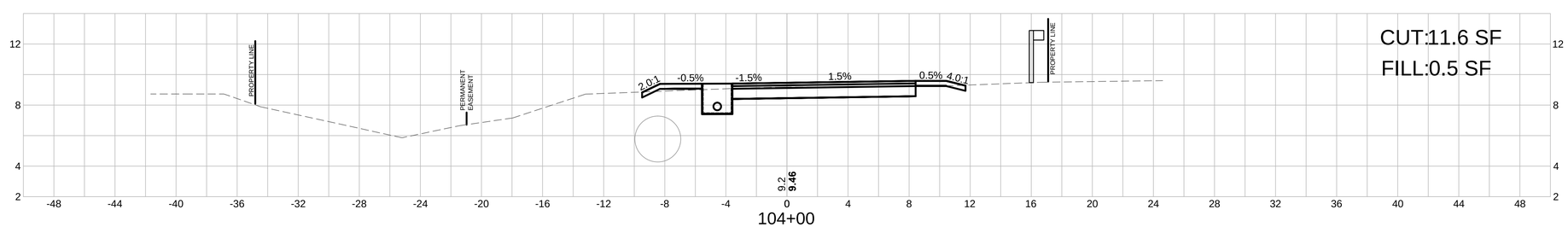
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		58	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS









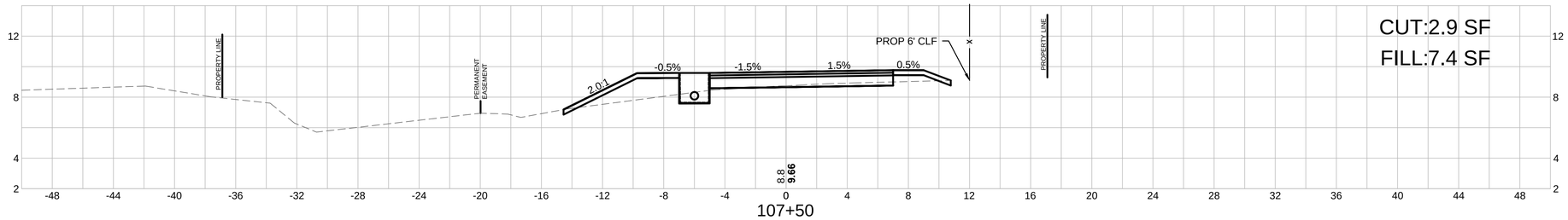
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

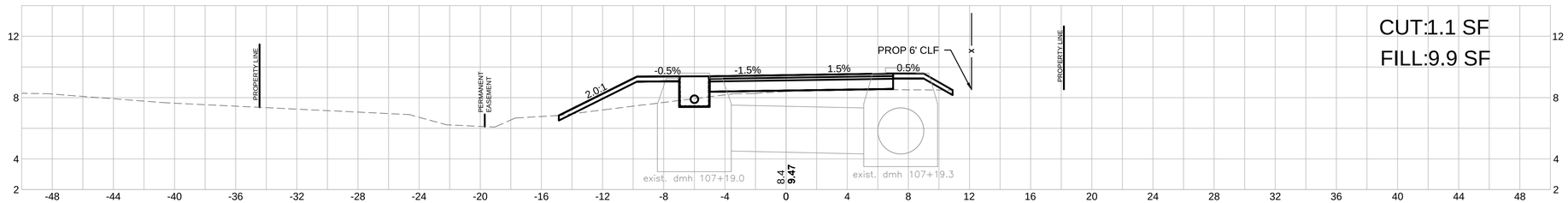
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		59	77
PROJECT FILE NO.	608352		

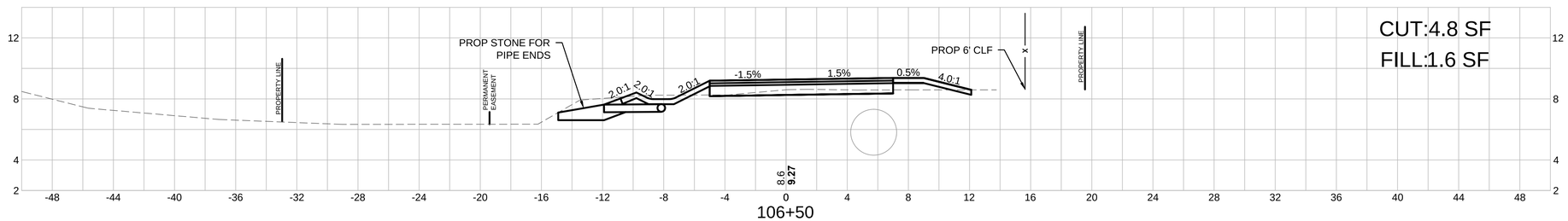
SHARED USE PATH CROSS SECTIONS



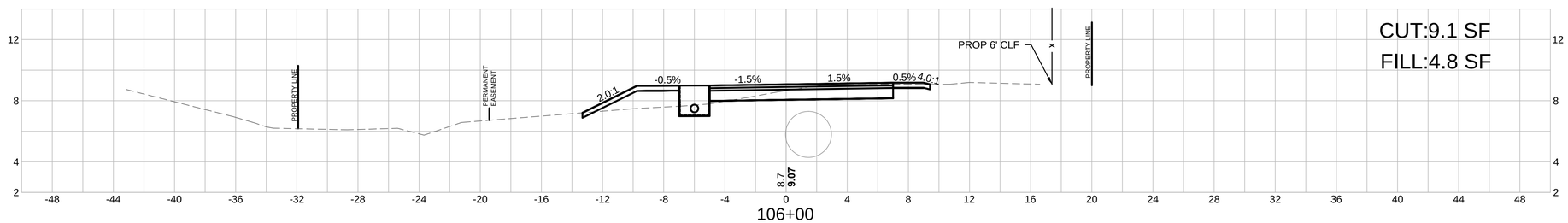
107+50



107+00



106+50



106+00

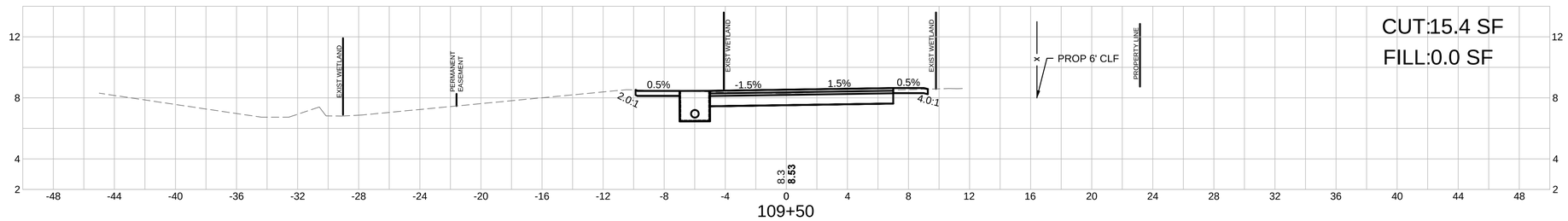
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

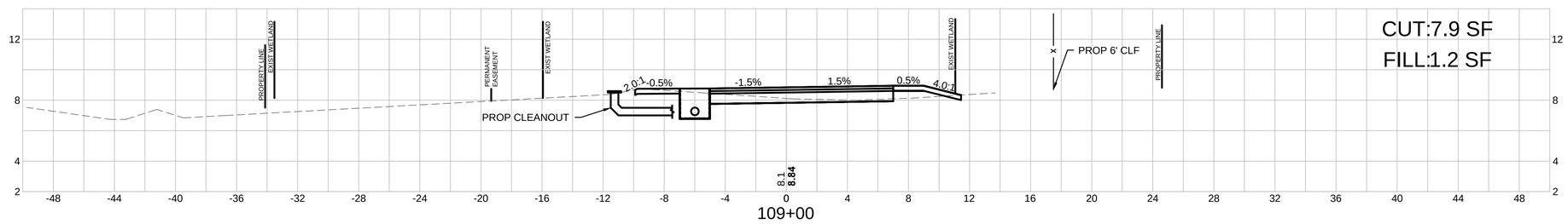
93692-PH2_HD\BIKE CROSS SECTIONS\START-120+50.DWG 23-Apr-2018

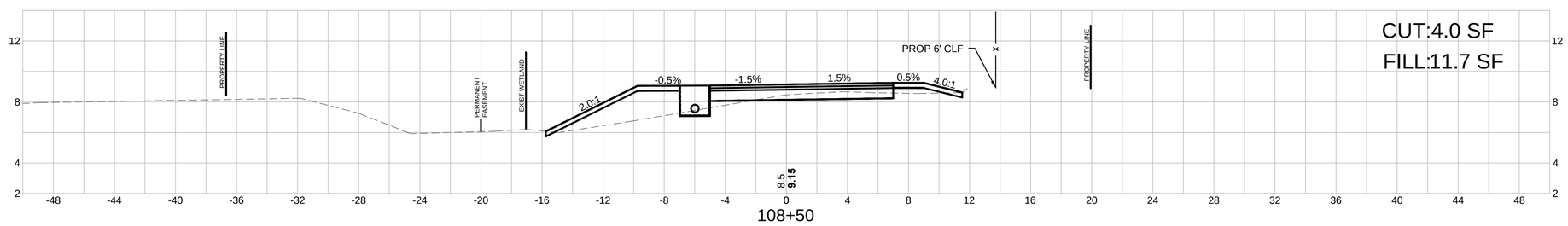
SALEM
CANAL STREET RAIL TRAIL PHASE 2

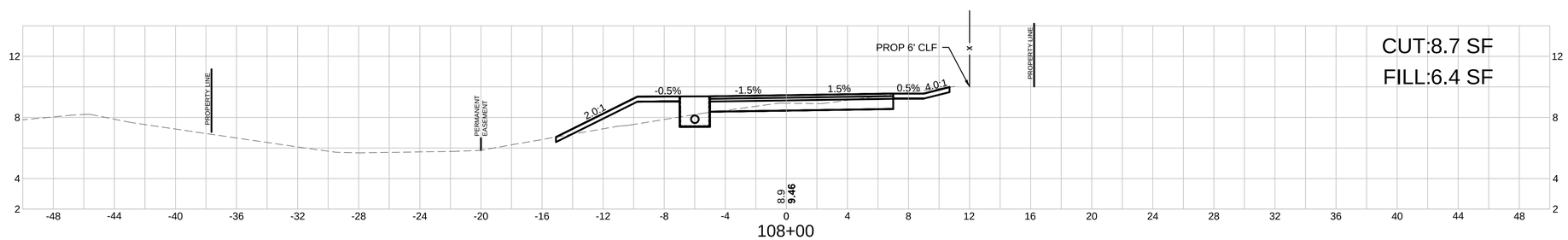
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		60	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS









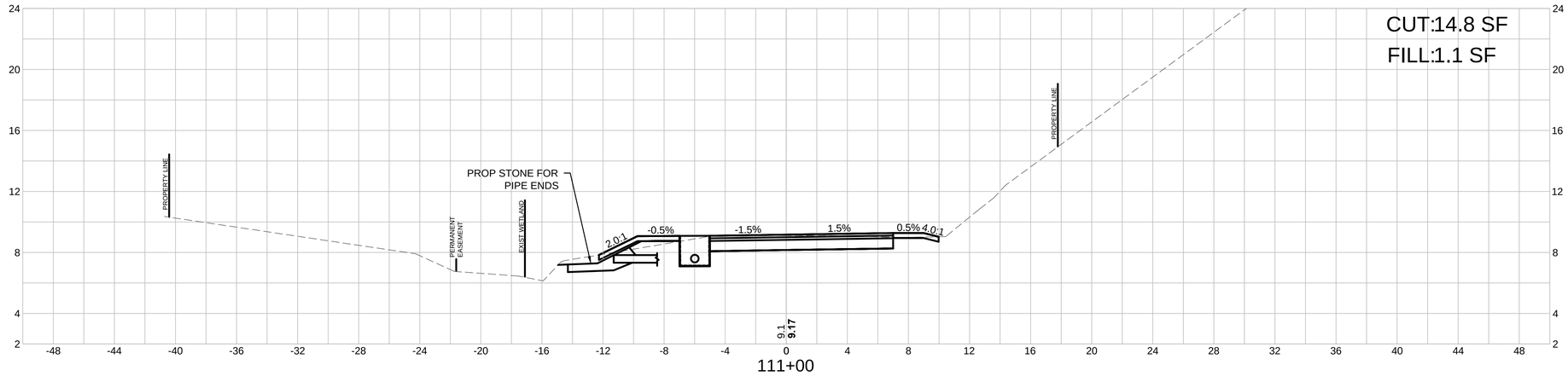
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

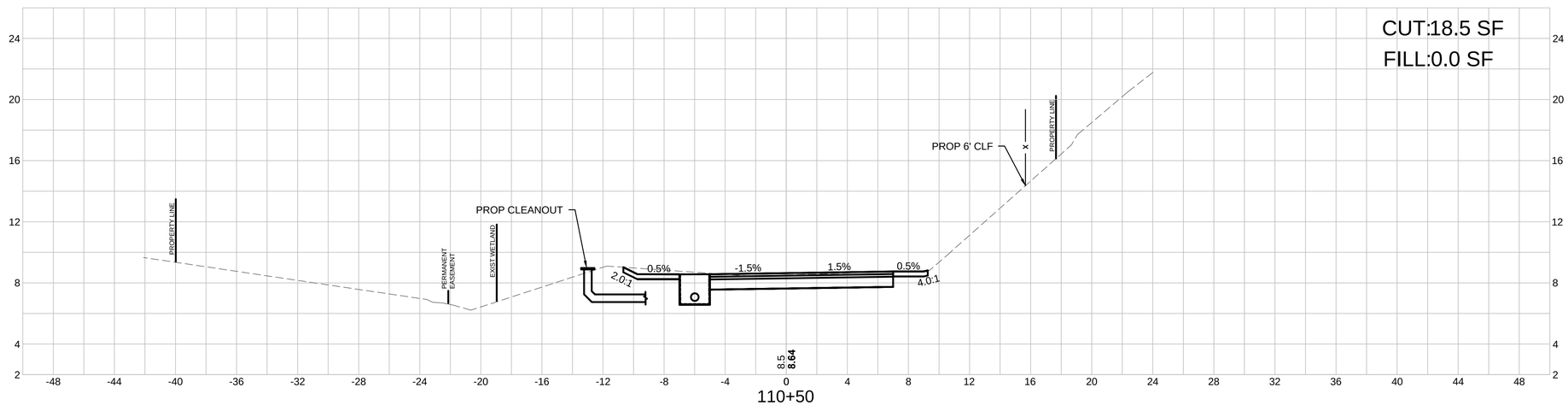
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

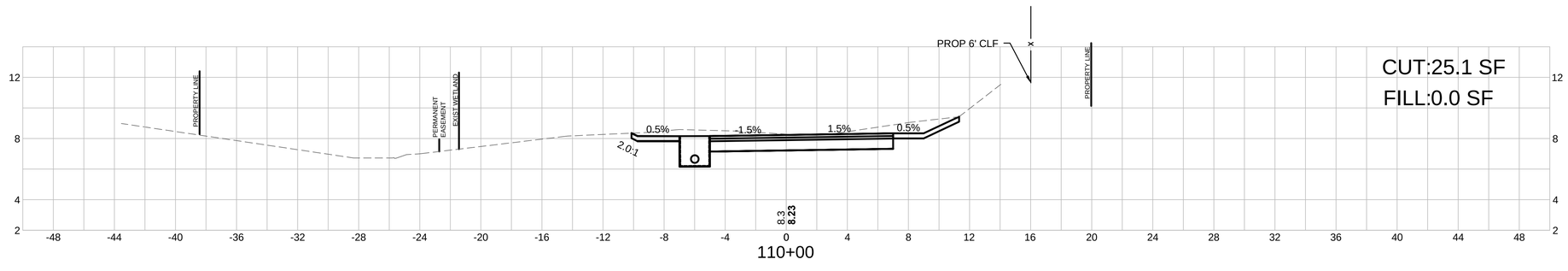
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		61	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







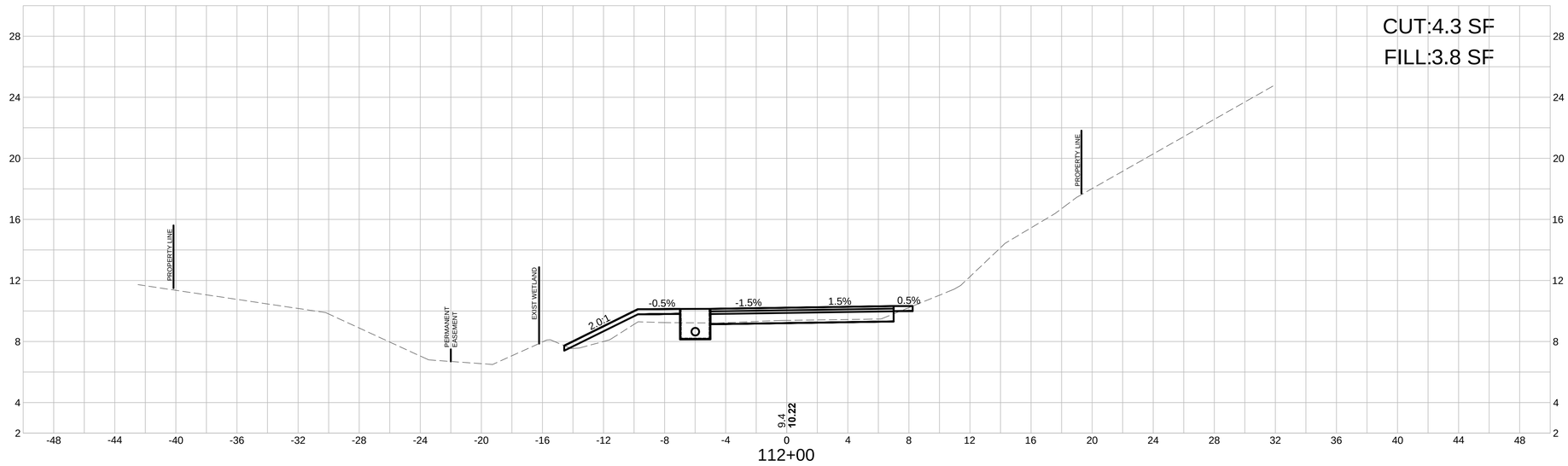
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

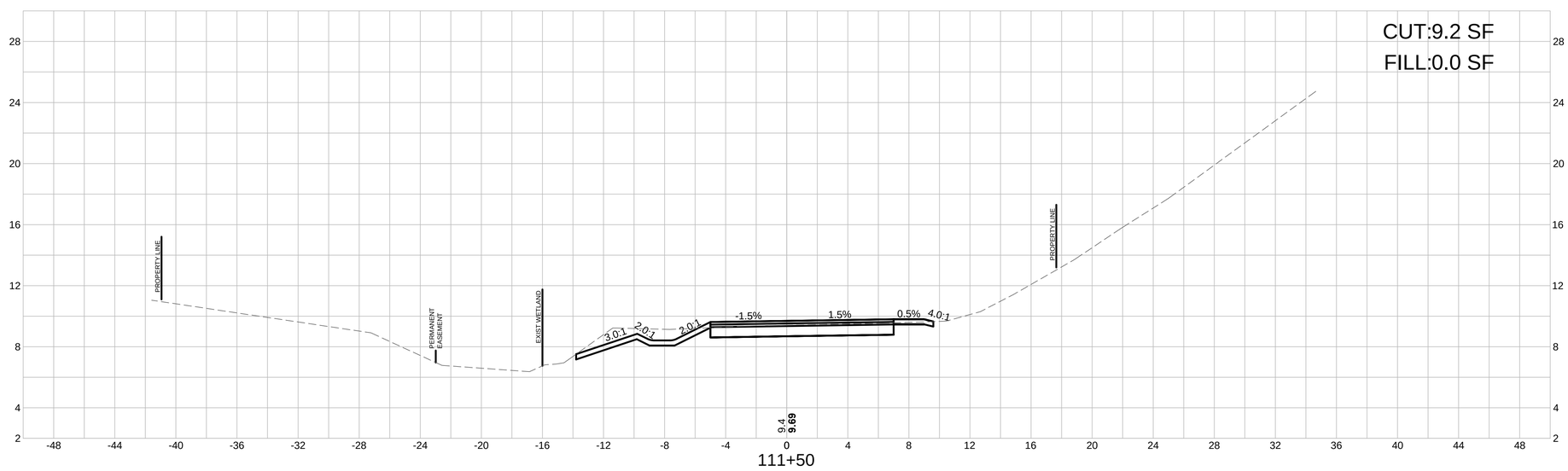
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		62	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS





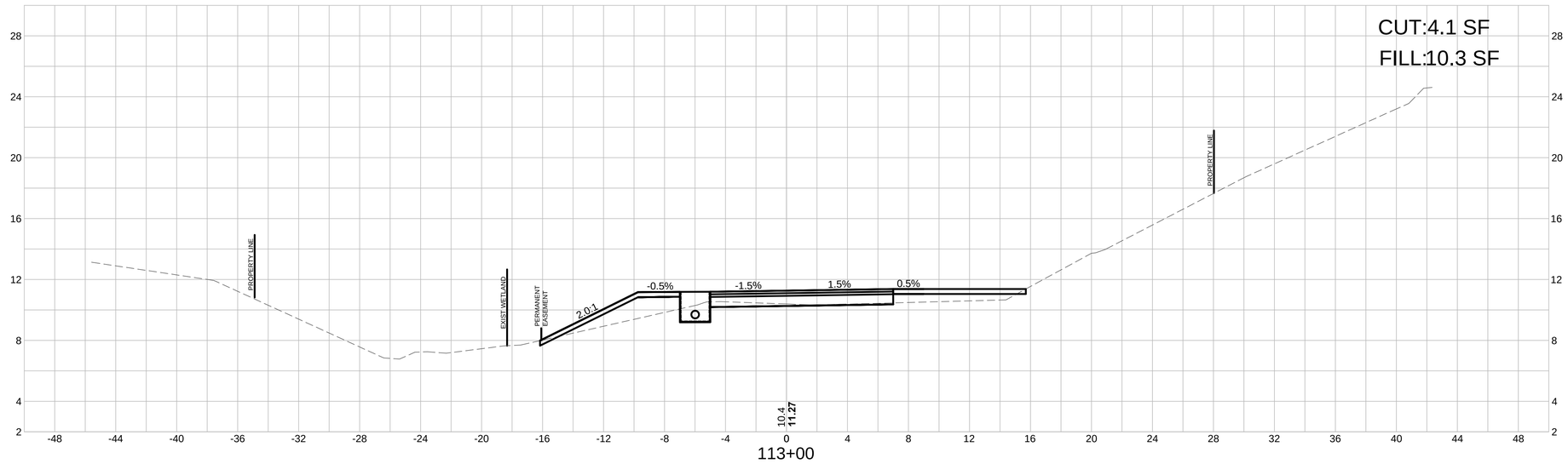
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

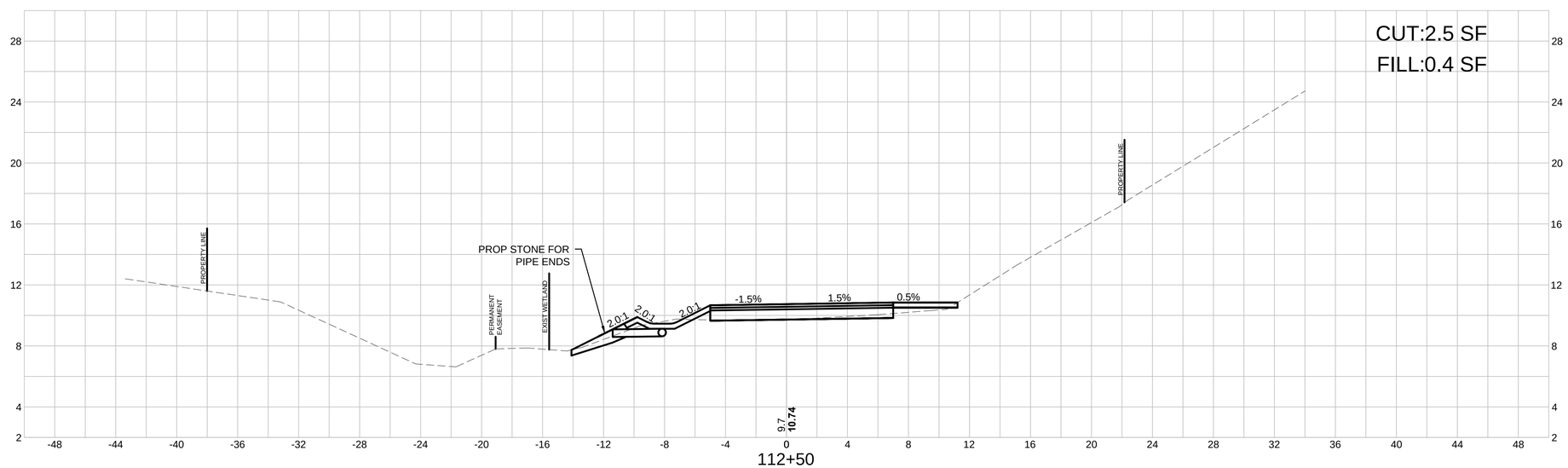
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		63	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS





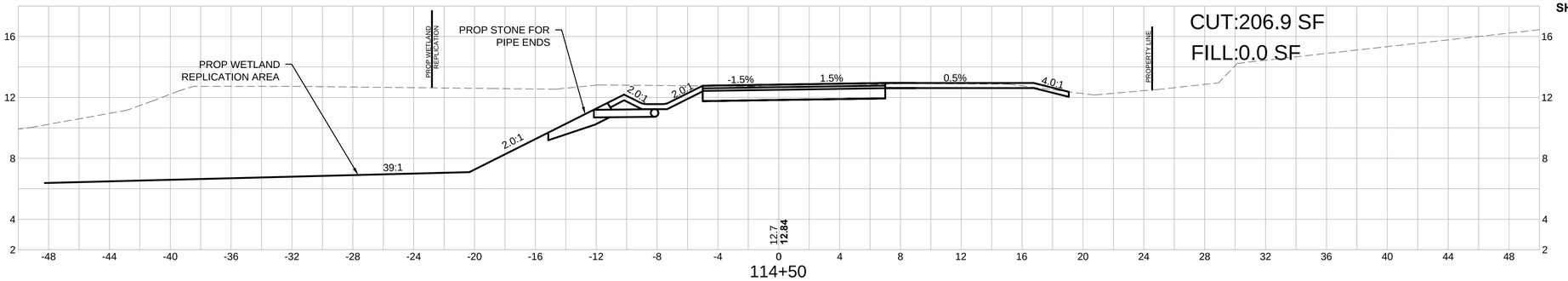
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

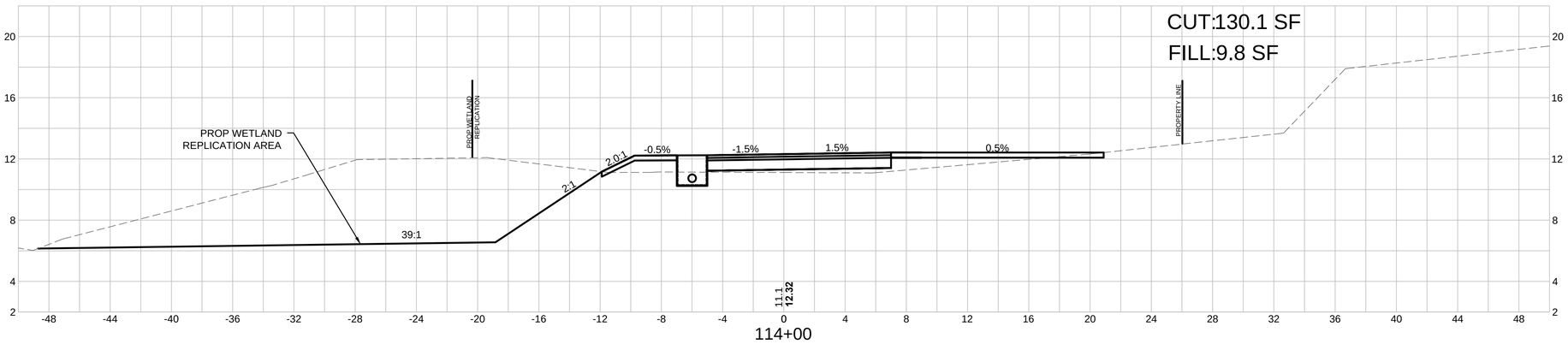
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

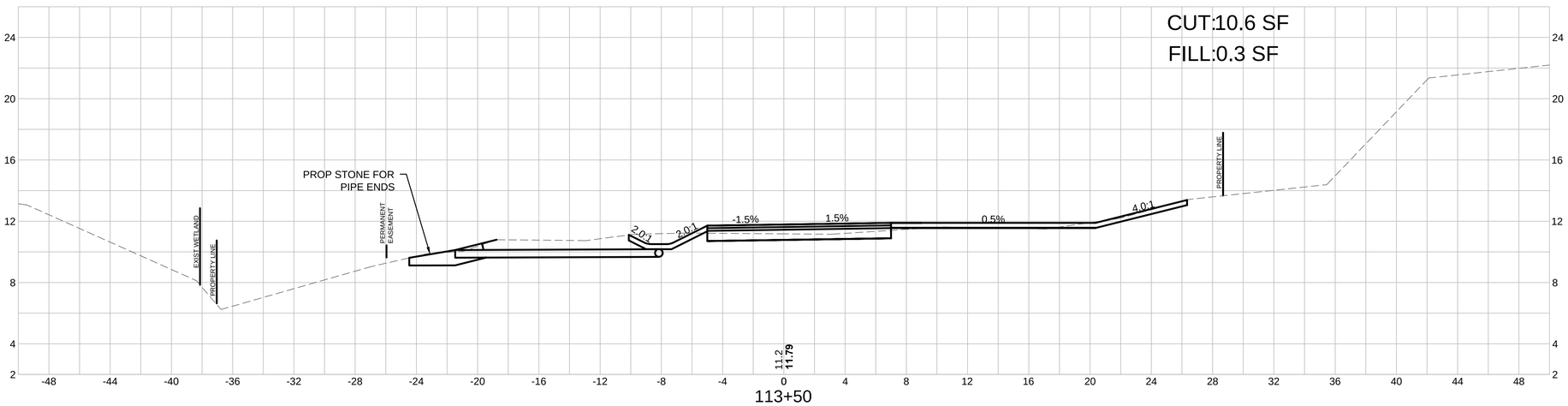
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		64	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







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

93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

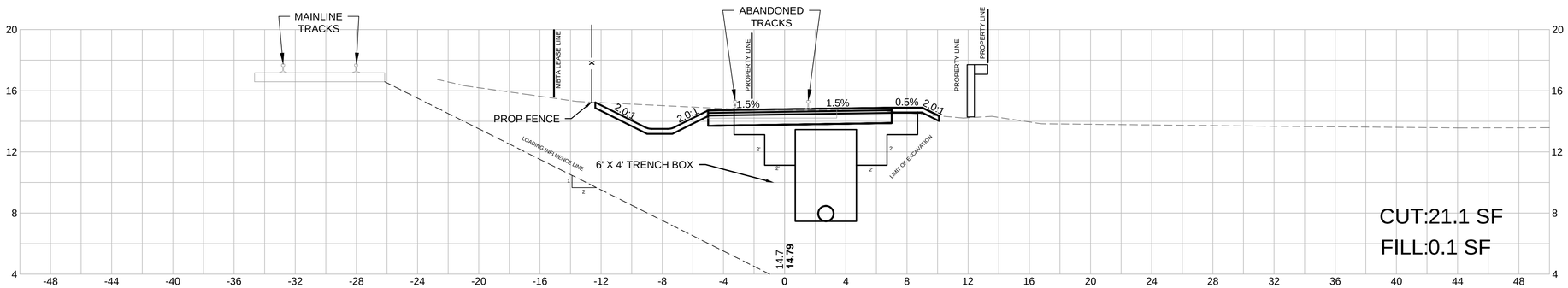
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		65	77
PROJECT FILE NO.	608352		

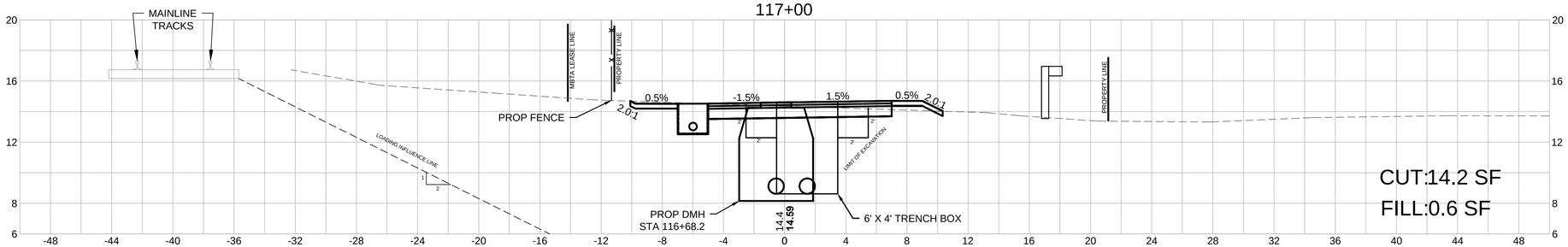
SHARED USE PATH CROSS SECTIONS

22-Apr-2018

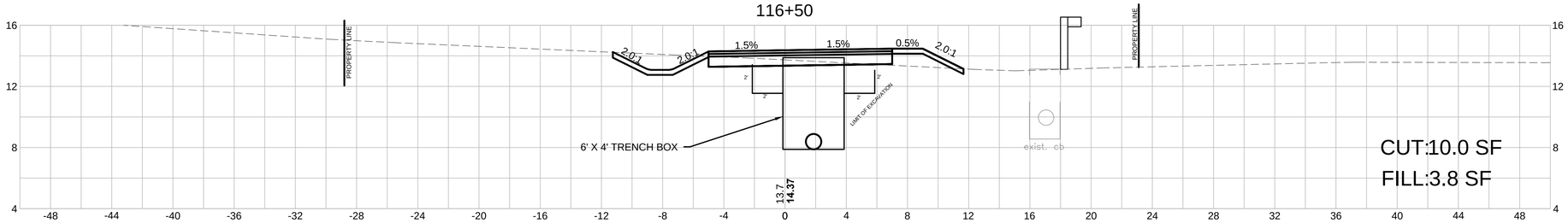
93692-PH2_HD\BIKE CROSS SECTIONS\START-120+50.DWG



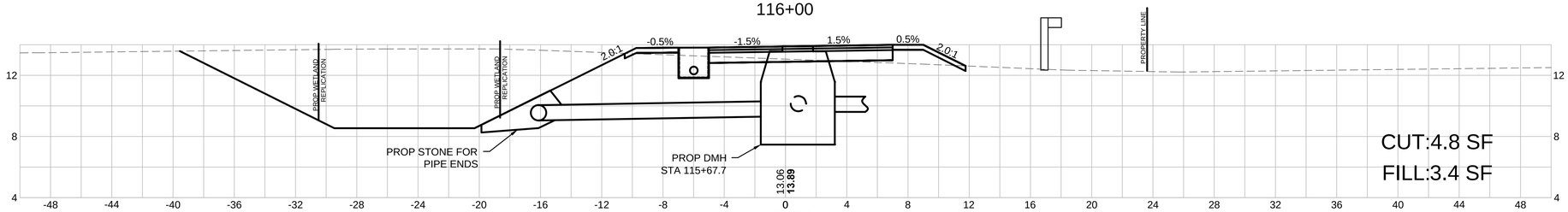
117+00



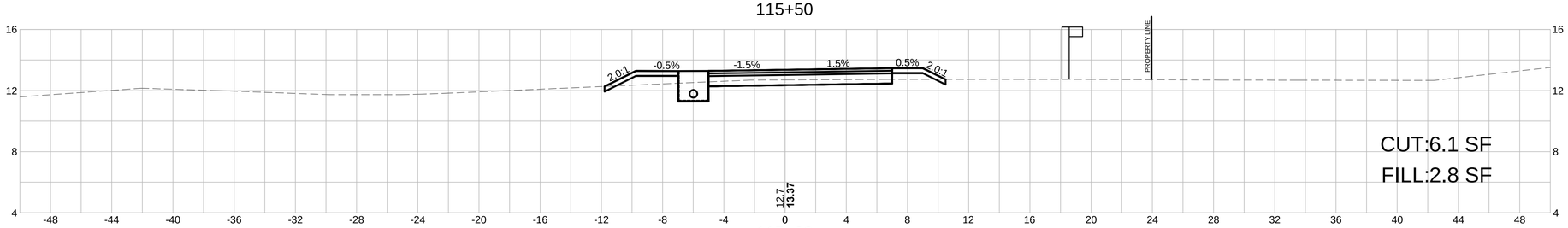
116+50



116+00



115+50



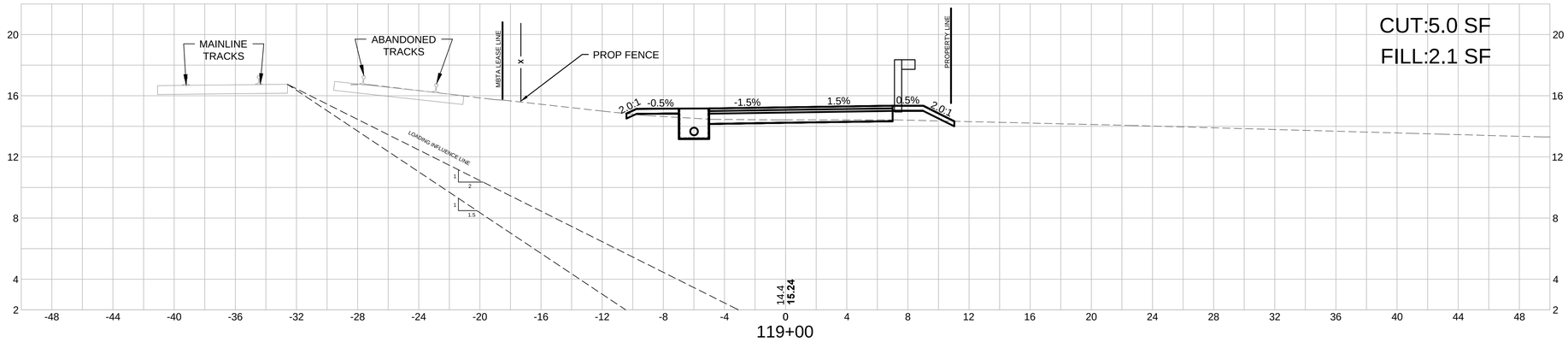
115+00

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

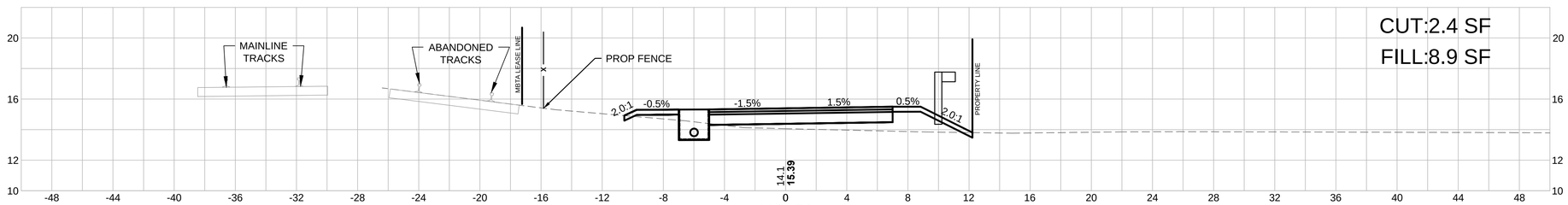
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		66	77
PROJECT FILE NO.	608352		

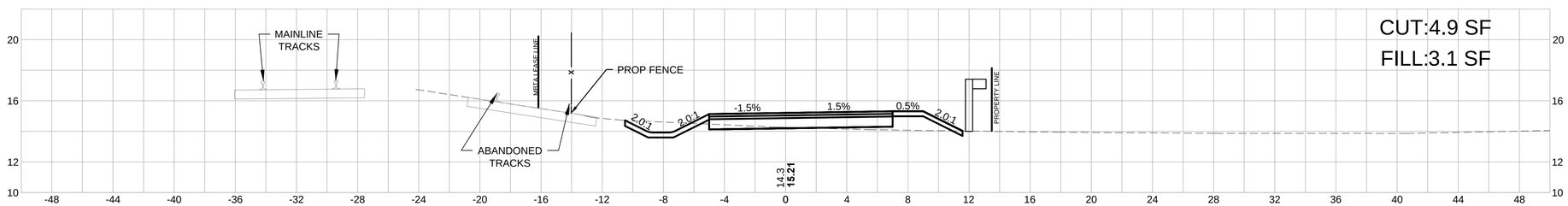
SHARED USE PATH CROSS SECTIONS



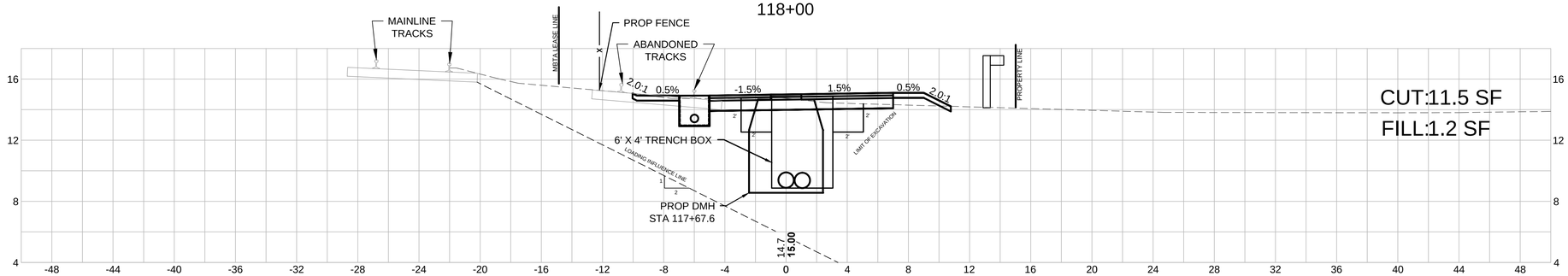
119+00



118+50



118+00



117+50

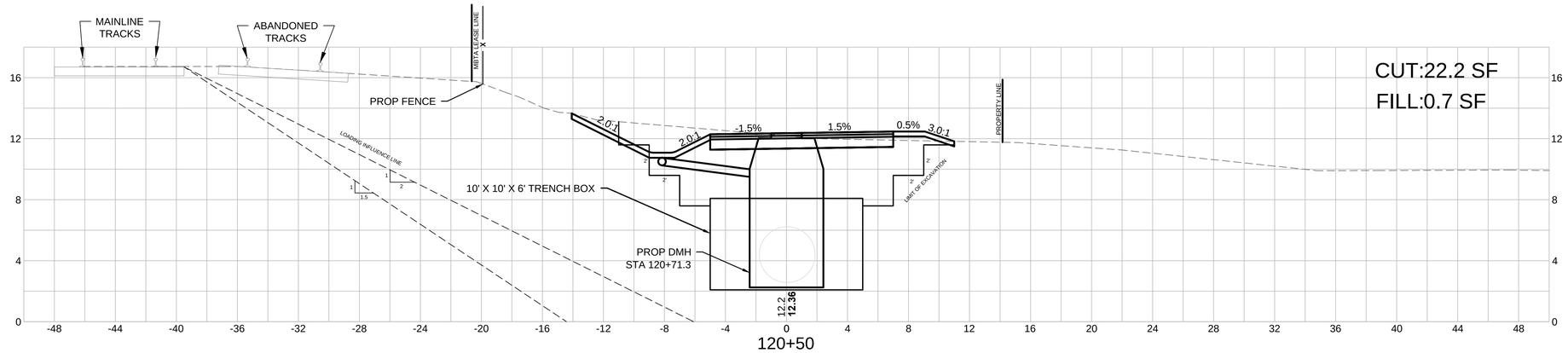
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

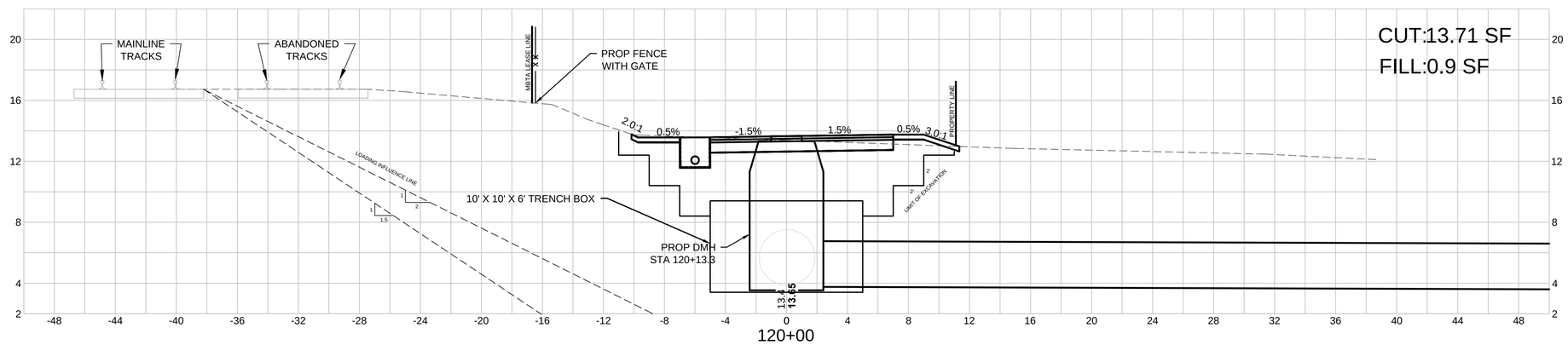
93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

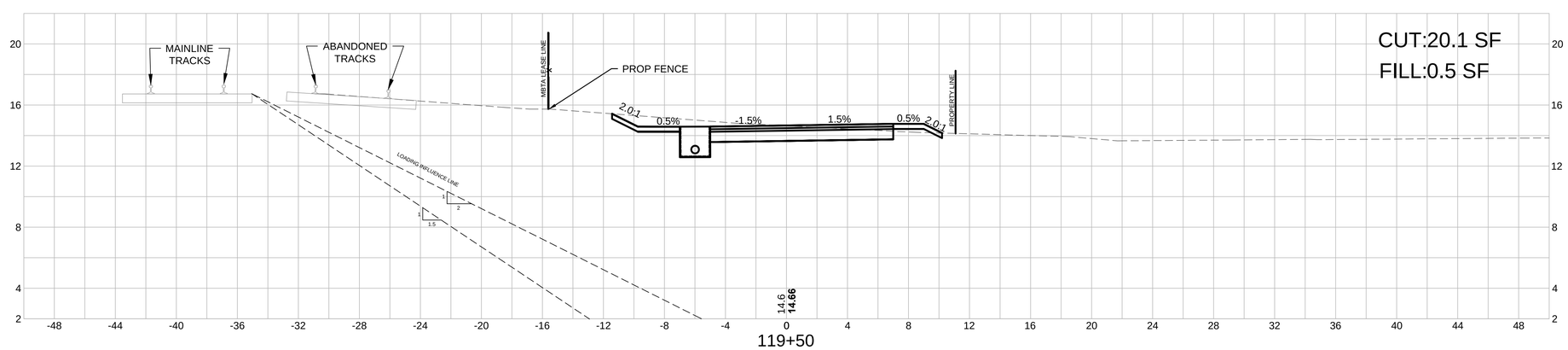
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		67	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







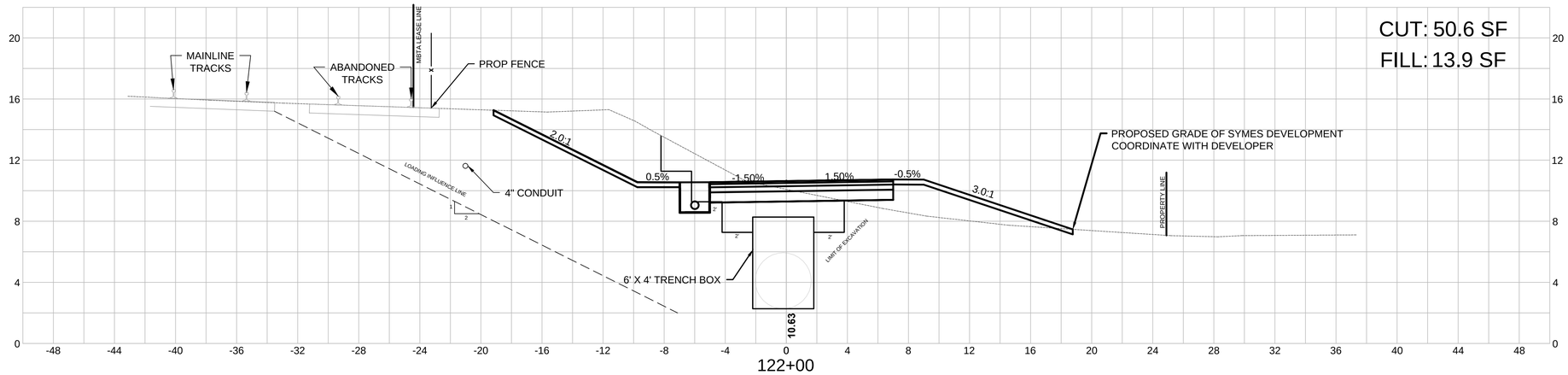
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

93692-PH2_HD(BIKE CROSS SECTIONS)START-120+50.DWG 23-Apr-2018

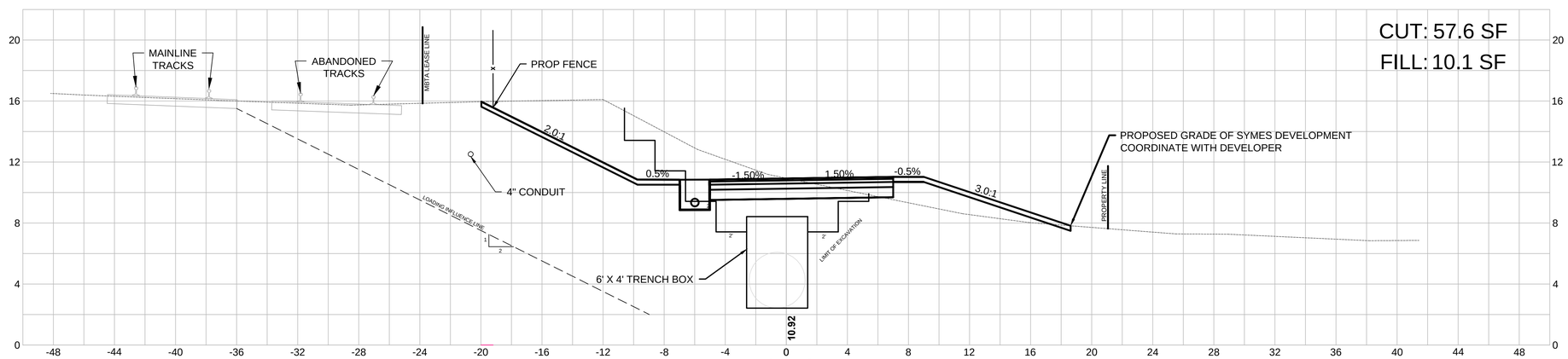
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		68	77
PROJECT FILE NO.	608352		

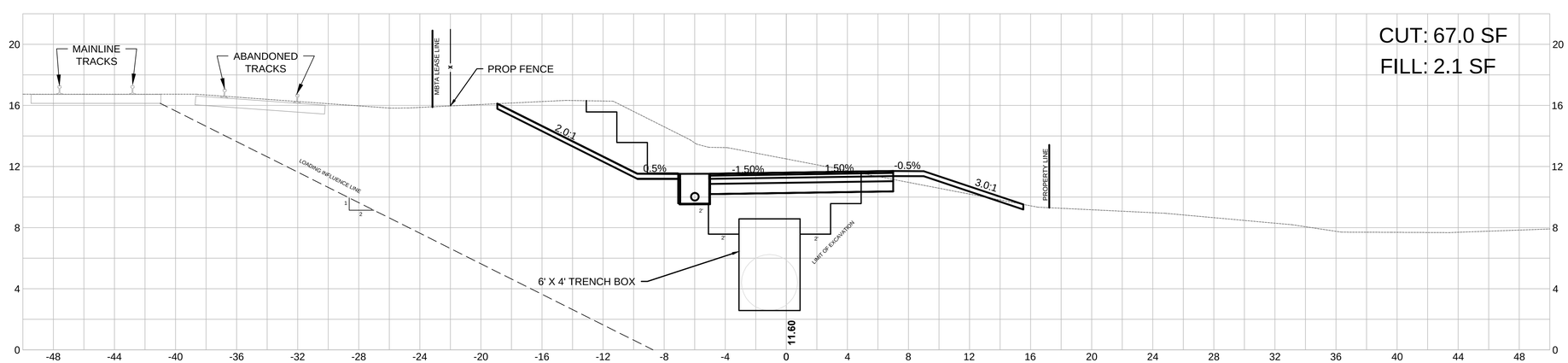
SHARED USE PATH CROSS SECTIONS



122+00



121+50



121+00

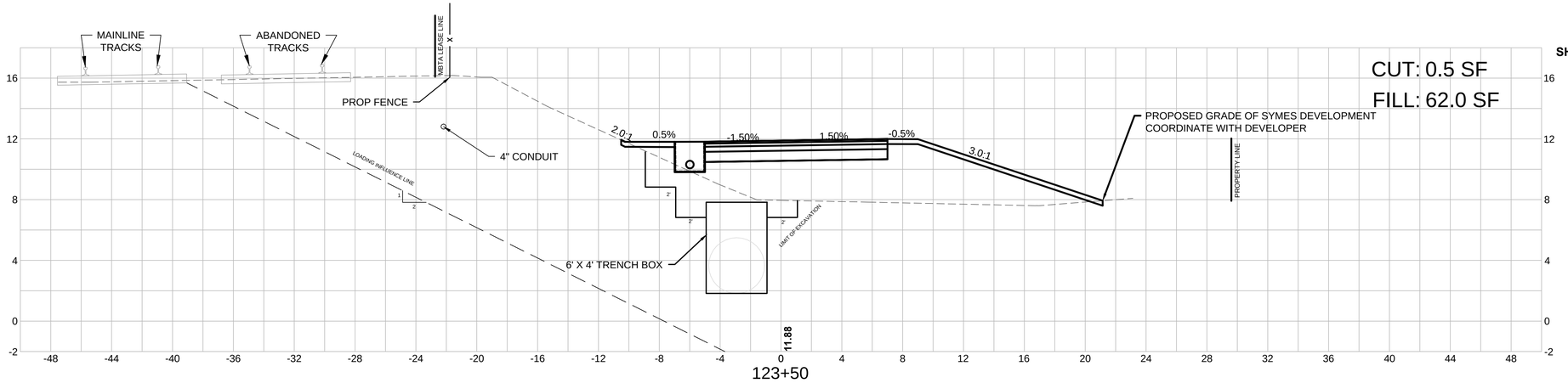
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

SALEM
CANAL STREET RAIL TRAIL PHASE 2

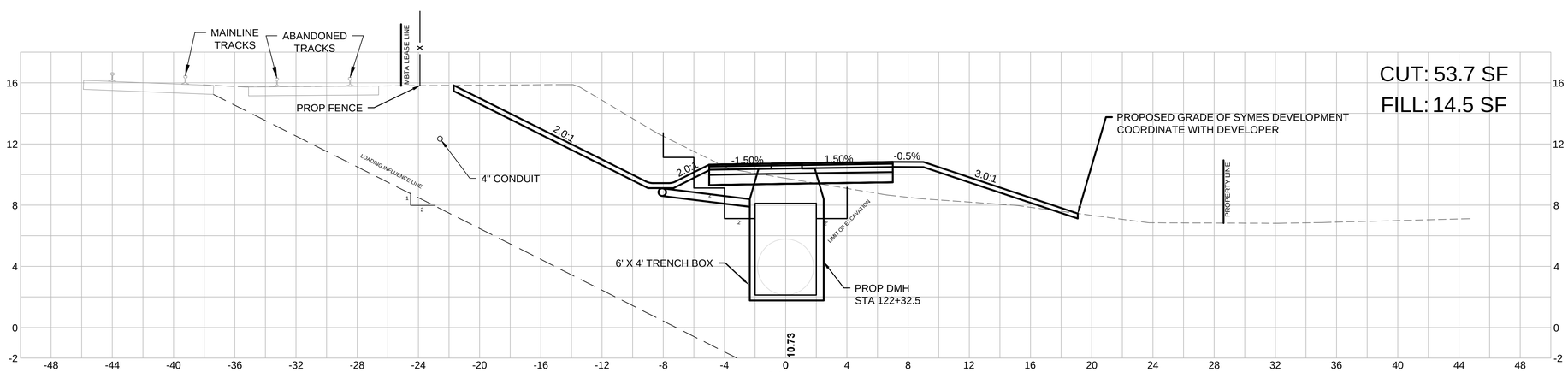
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		69	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS



123+50

123+00



122+50

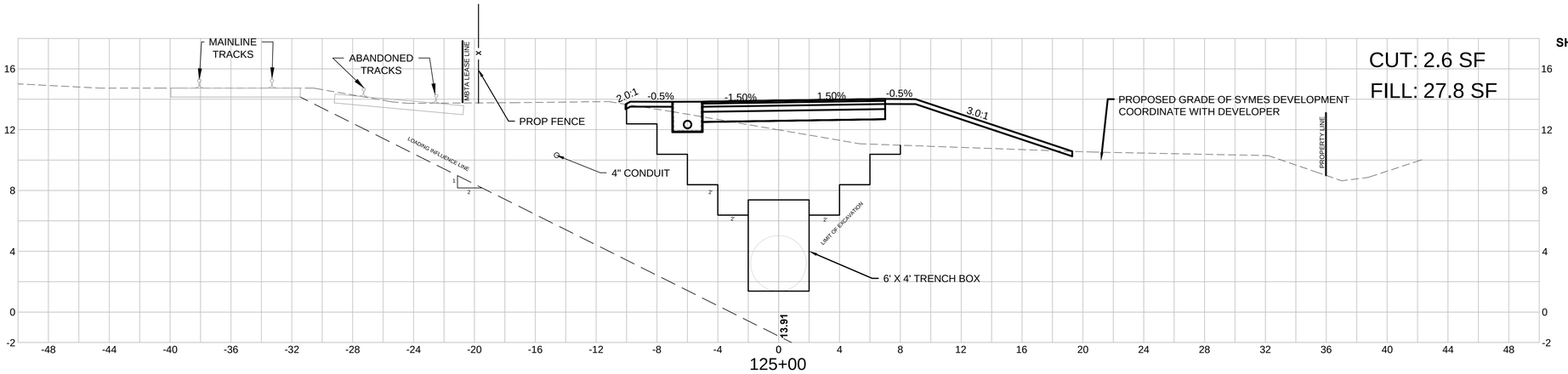
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

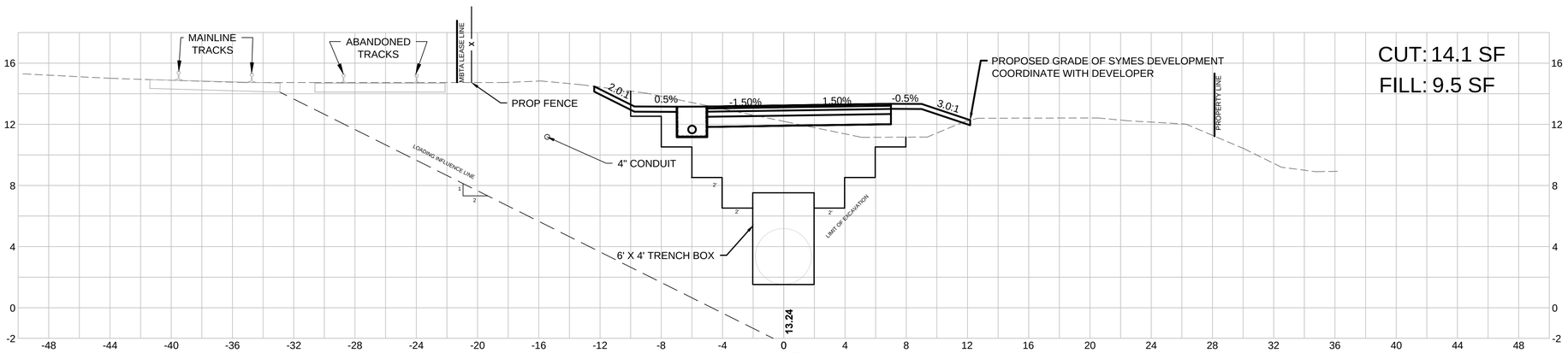
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		70	77
PROJECT FILE NO.	608352		

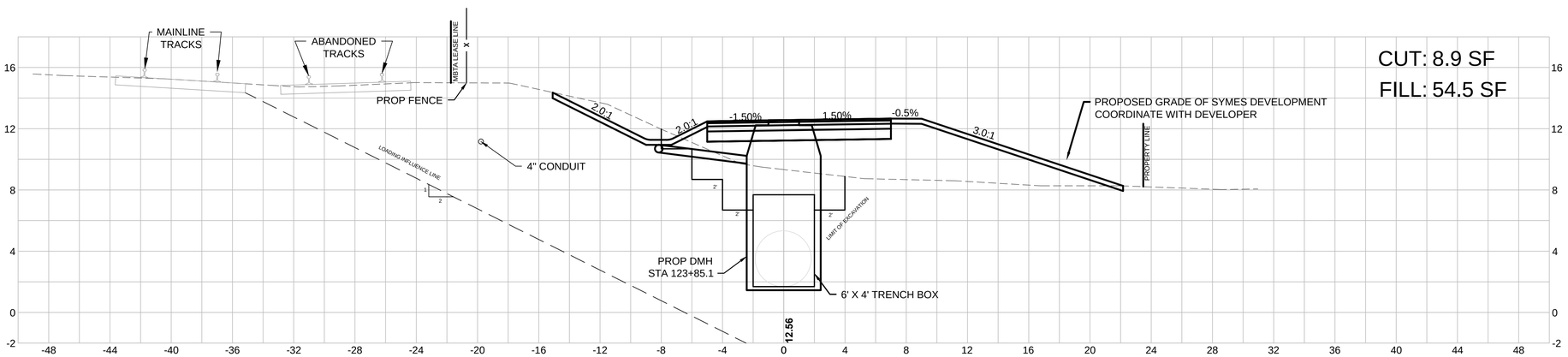
SHARED USE PATH CROSS SECTIONS



125+00



124+50



124+00

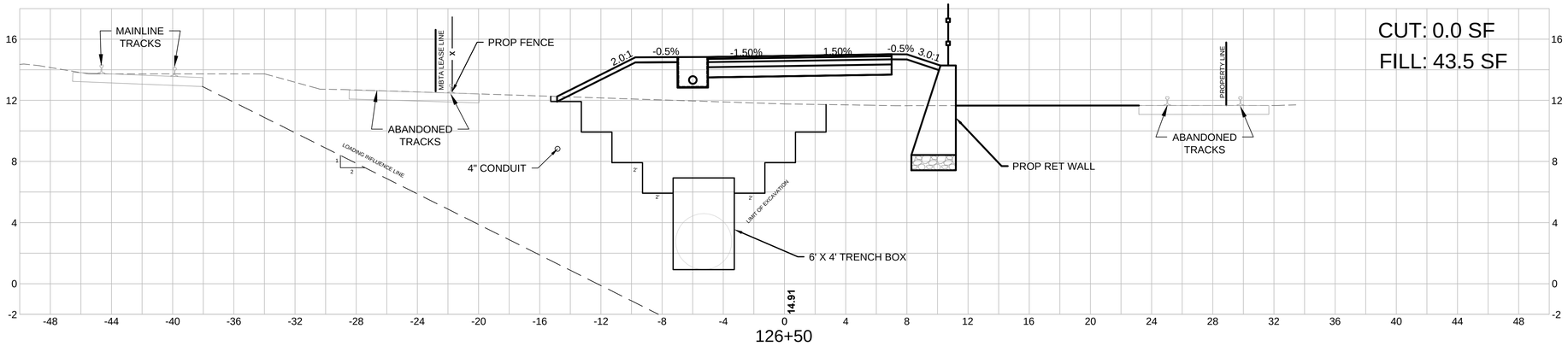
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

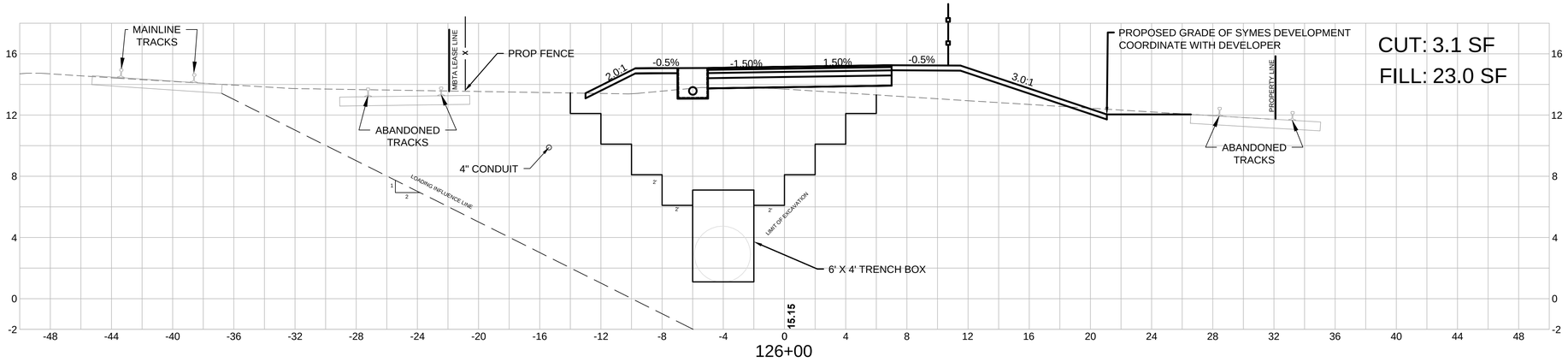
93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

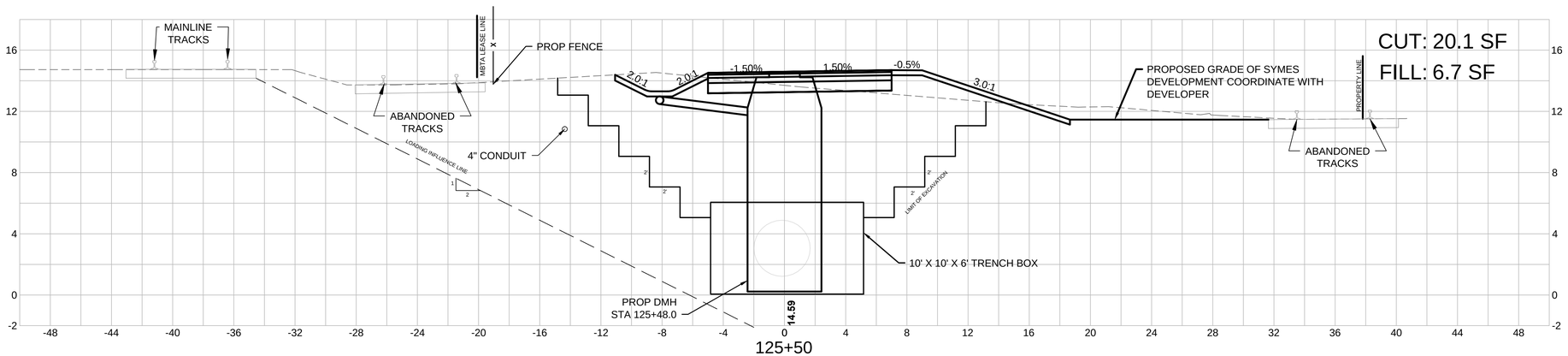
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		71	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







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

93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

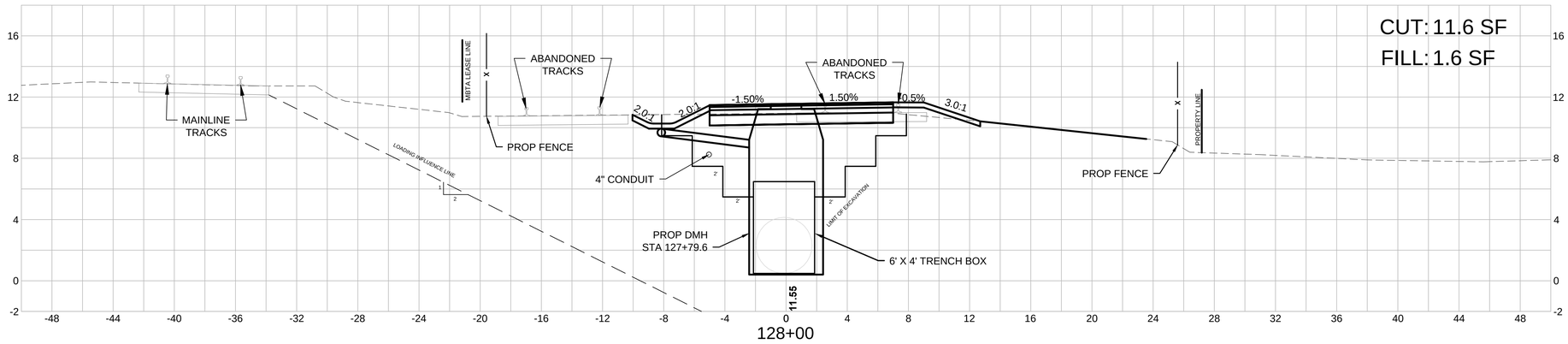
SALEM
CANAL STREET RAIL TRAIL PHASE 2

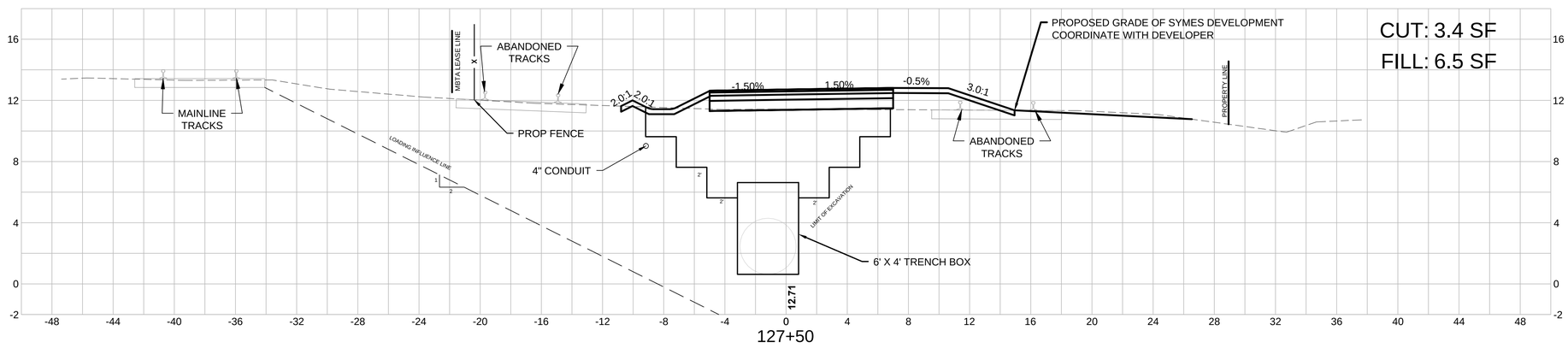
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		72	77
PROJECT FILE NO.	608352		

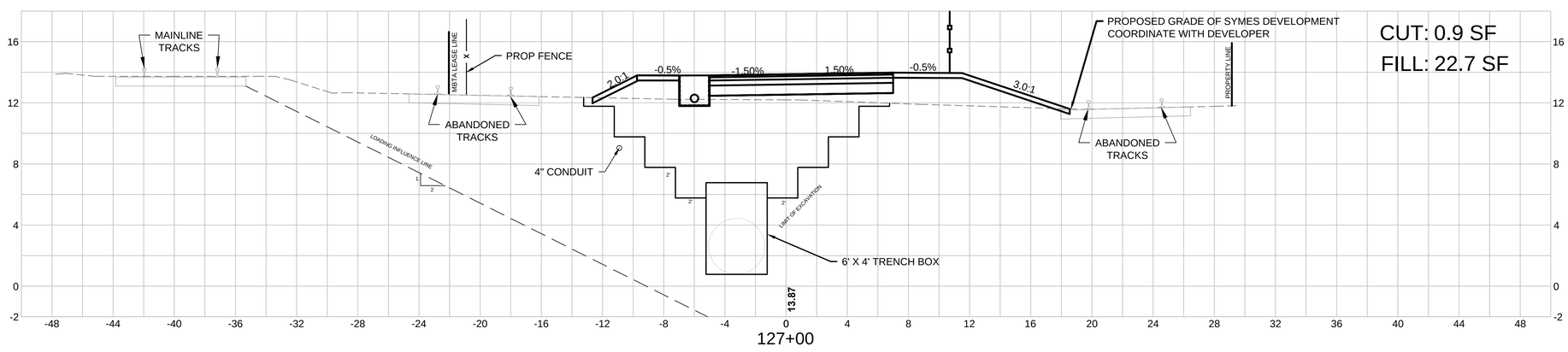
SHARED USE PATH CROSS SECTIONS

18-May-2018

93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG





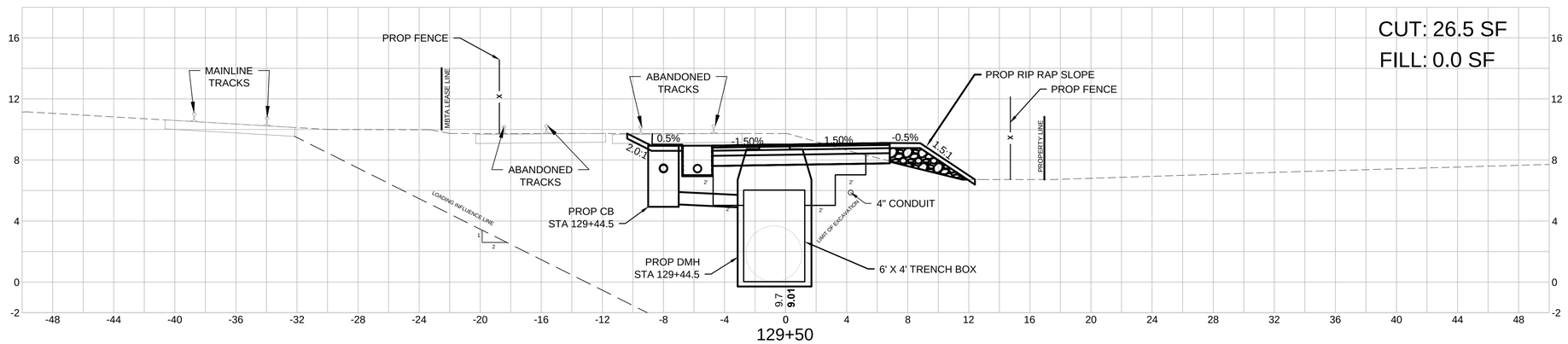


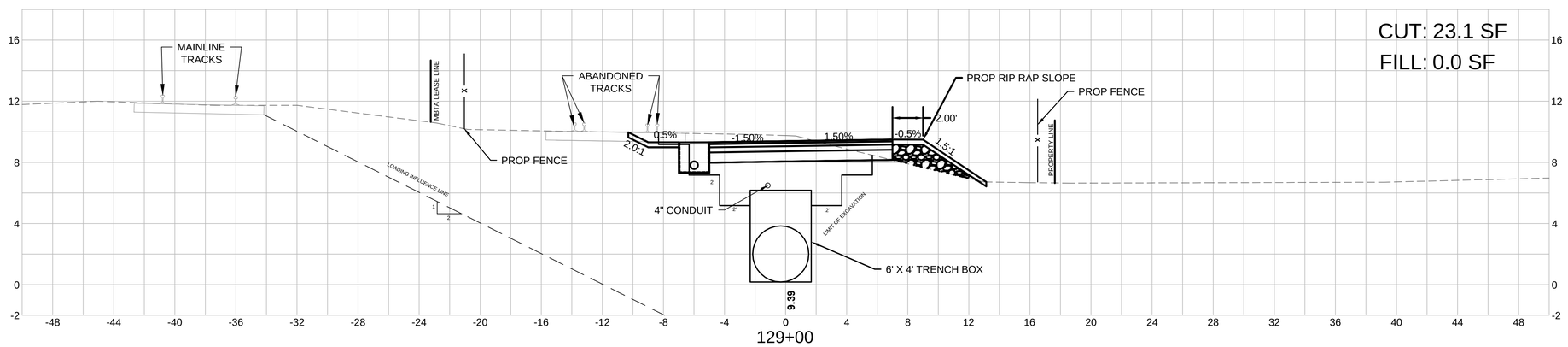
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

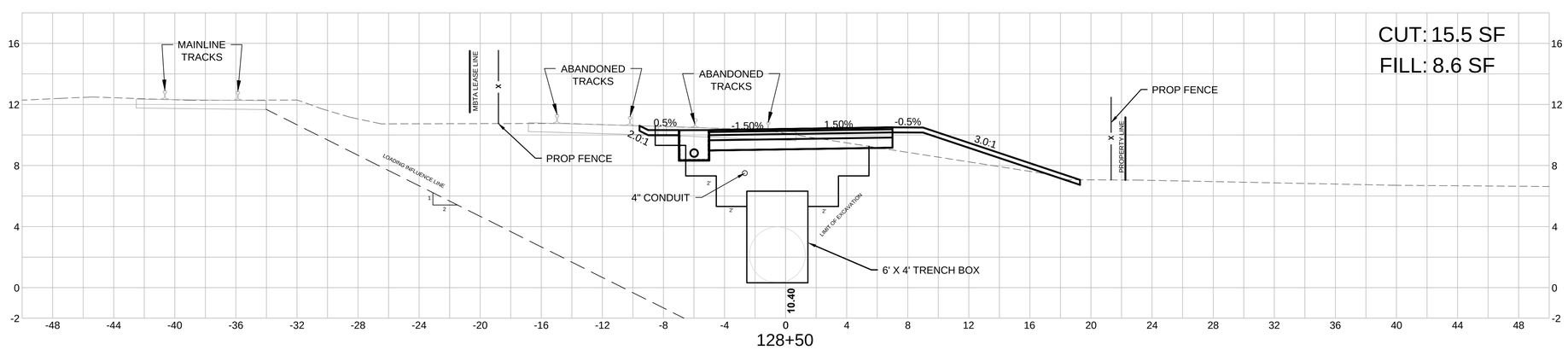
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		73	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







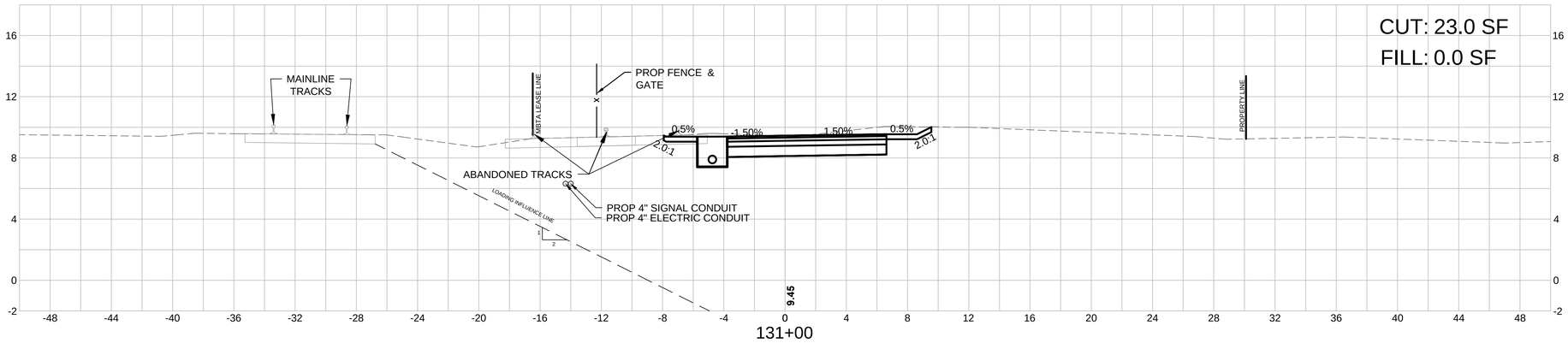
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

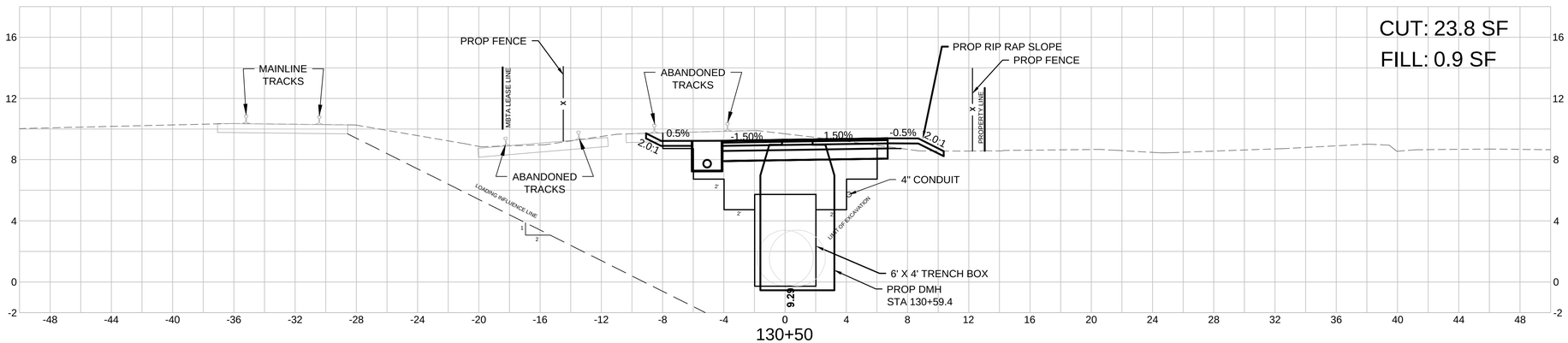
93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

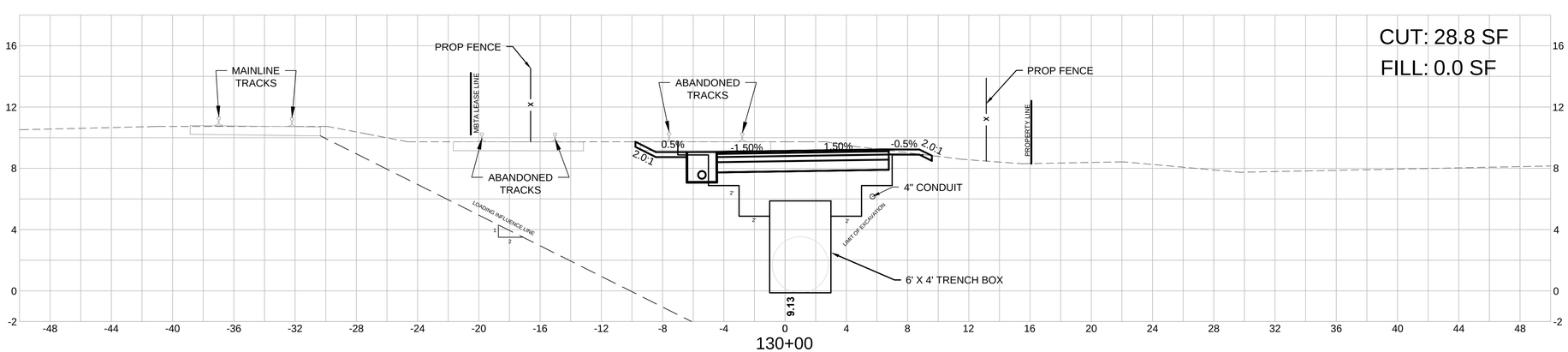
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		74	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







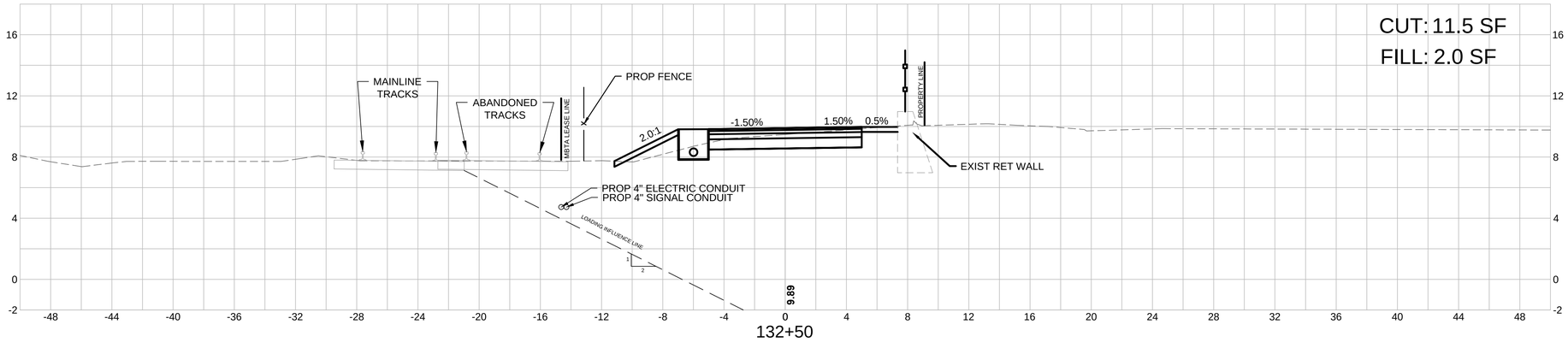
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

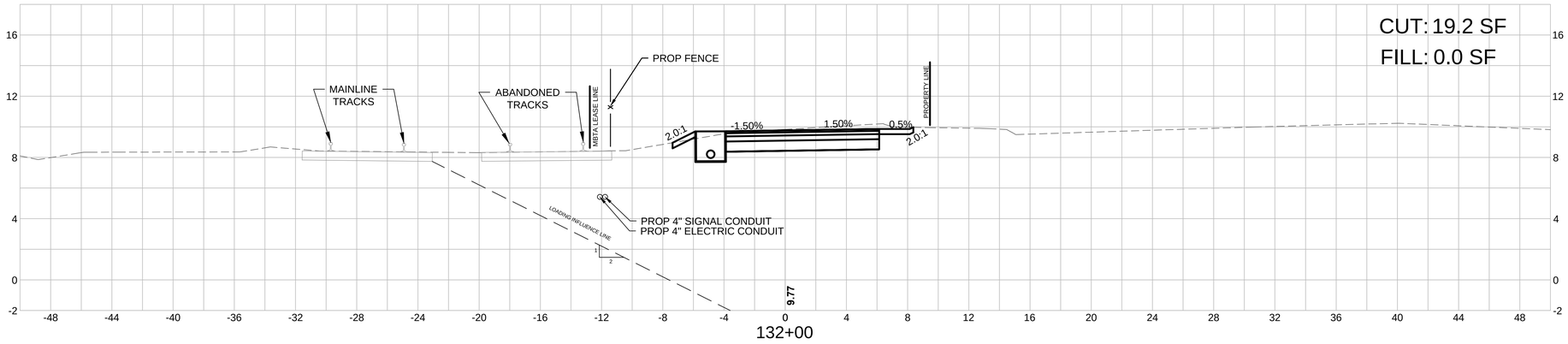
93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

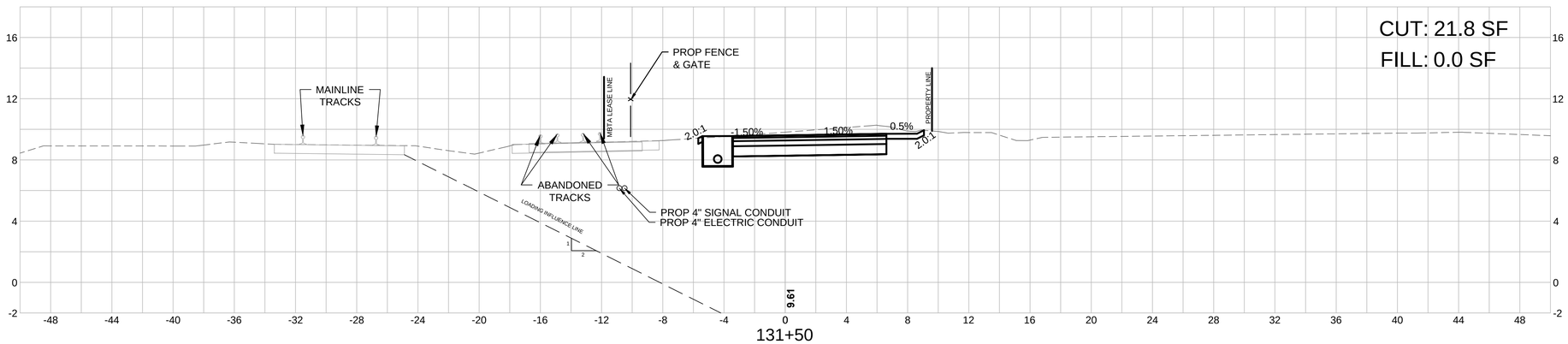
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		75	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







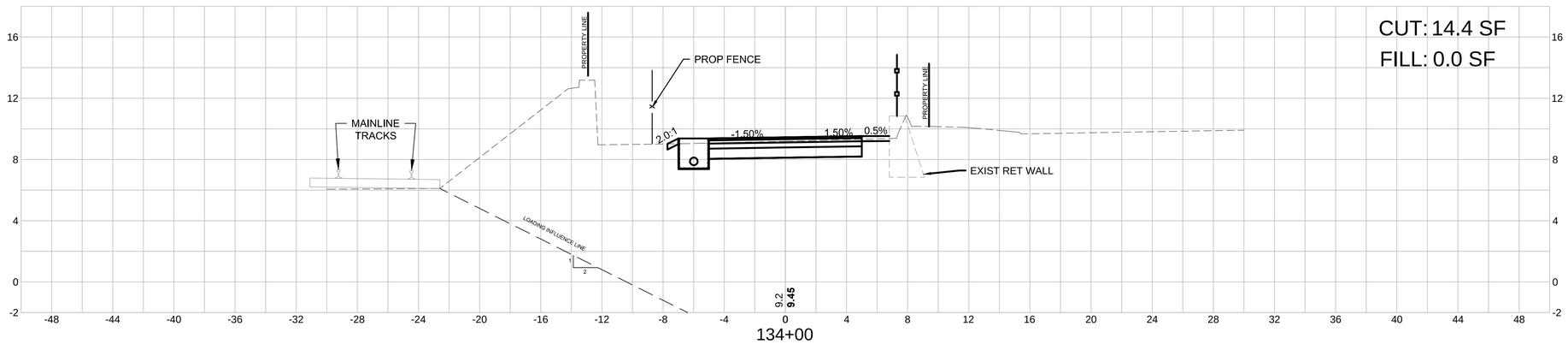
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

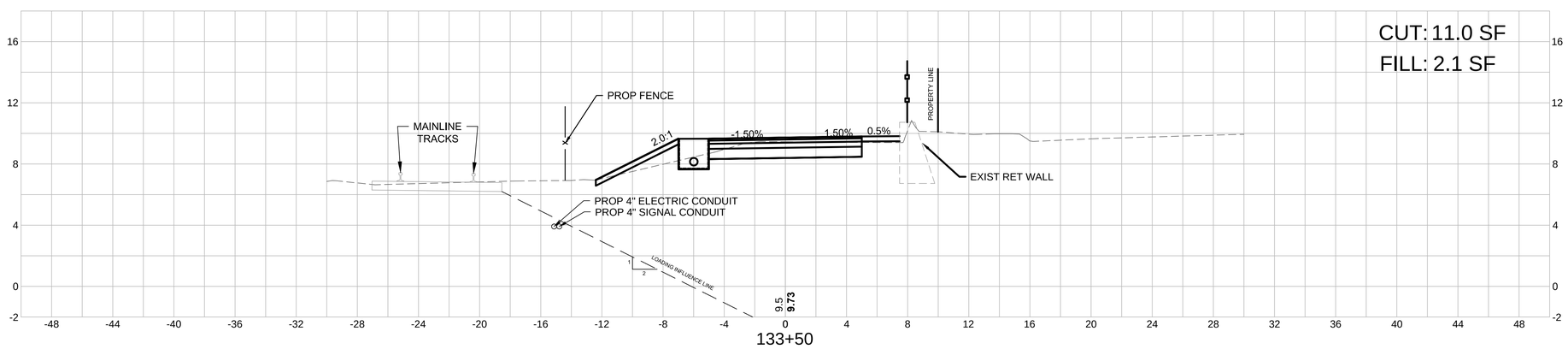
93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

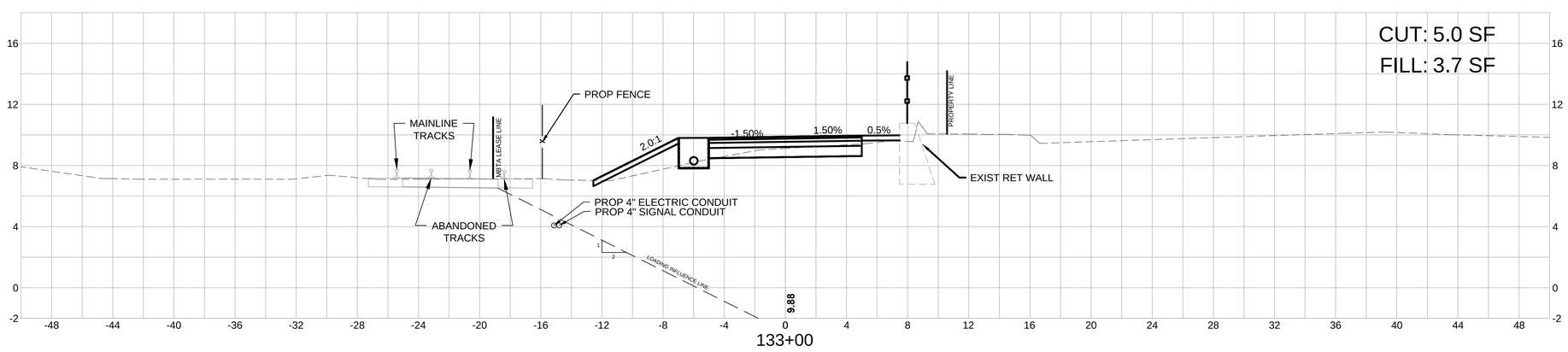
SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		76	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS







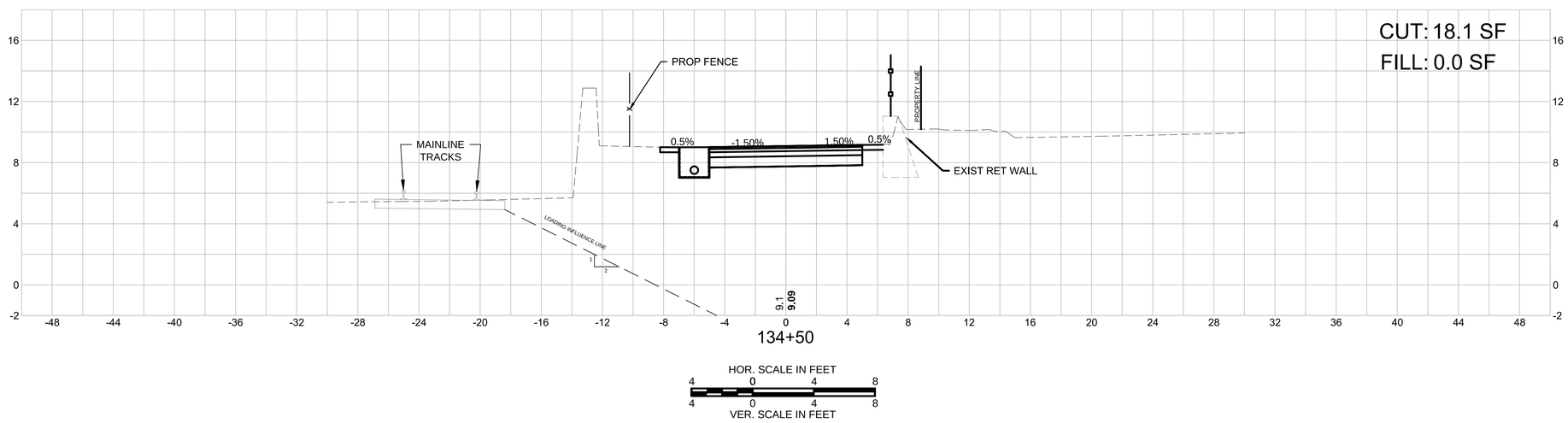
HOR. SCALE IN FEET
4 0 4 8
4 0 4 8
VER. SCALE IN FEET

93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018

SALEM
CANAL STREET RAIL TRAIL PHASE 2

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		77	77
PROJECT FILE NO.	608352		

SHARED USE PATH CROSS SECTIONS



93692-PH2_HD(BIKE CROSS SECTIONS)121+00 - END.DWG 18-May-2018