MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

CANAL STREET

IN THE CITY OF

SALEM

ESSEX COUNTY

FEDERAL AID PROJECT NO. CM/HSI/STP-002S(826)X

PS&E SUBMITTAL

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	1	209
PROJECT FILE NO.	605146		

TITLE SHEET & INDEX

93692 PS&E-2 COVER.DWG 18-Dec-2015

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JULY 1, 2015, THE 2014 CONSTRUCTION STANDARD DETAILS, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS, (AS RELATED TO TRAFFIC STANDARD DETAILS ONLY), THE 2009 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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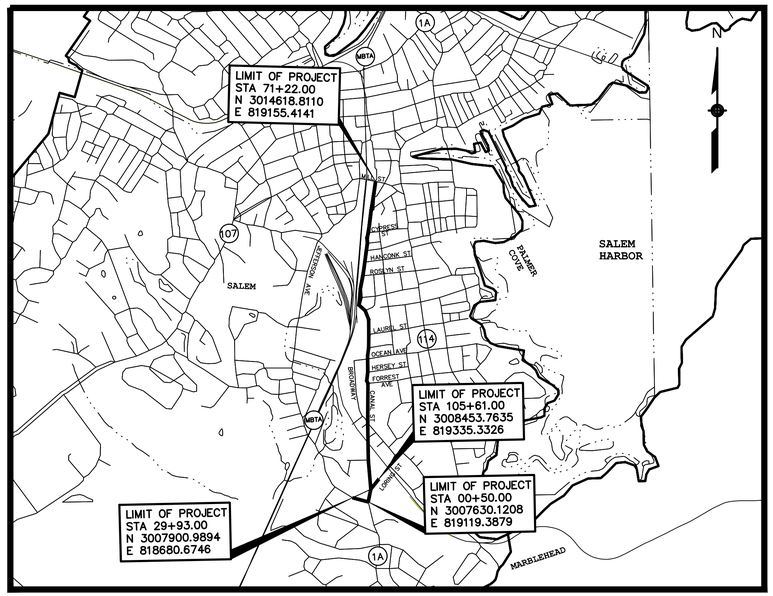


0 1500 3000 4500 6000

SCALE: 1" = 1500'

LENGTH OF PROJECT = 7,072 FEET = 1.339 MILES

DESIGN DESIGNATION (CANAL STREET)

DESIGN SPEED	35 MPH
ADT	19,776 vpd
ADT (2029)	22,962 vpd
K	7.7%
D	53%
T (PEAK HOUR)	2.0%
T (AVERAGE DAY)	4.0%
DHV	1,682 vph
DDHV	891 vph
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

DESIGN DESIGNATION (SHARED USE PATH)

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 #
12/18/15	PS&E RE-SUBMITTAL	3
9/4/15	PS&E SUBMITTAL	2
5/27/15	100% SUBMITTAL	1
11/15/13	75% SUBMITTAL	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 PS&E 2 LEGEND.DWG 15-Oct-2015
C:\Users\jpeets\Transportation Board work\93692 Salem Canal Street\PS&E 2\93692 PS&E 2 Legend.dwg Oct 15, 2015 - 3:24pm

GENERAL LEGEND

EXISTING	PROPOSED	
CB	CB	CATCH BASIN
CBCI	CBCI	CATCH BASIN WITH CURB INLET
GI	GI	GUTTER INLET
DI	DI	DROP INLET/DUCTILE IRON
		CURB (OR BERM)
		EDGE OF PAVEMENT
EHH	EHH	ELECTRIC HANDHOLE
EMH	EMH	ELECTRIC MANHOLE
TMH	TMH	TELEPHONE MANHOLE
SMH	SMH	SEWER MANHOLE
DMH	DMH	DRAINAGE MANHOLE
GG	GG	GAS GATE
WG	WG	WATER GATE
WS	WS	WATER SERVICE
HYD	HYD	HYDRANT
FA	FA	FIRE ALARM BOX
PM	PM	PARKING METER
		STREET LIGHT
		UTILITY POLE (W/ R IN CENTER=RISER)
		UTILITY POLE WITH LIGHT
		GUY POLE
MB	MB	MAILBOX
		BOUND
		HIGHWAY GUARD
		WOOD/WIRE FENCE
		CHAIN LINK FENCE
		RIGHT OF WAY LINE (APPROX.)
		WHEELCHAIR RAMP
		TREE
D		DRAIN PIPE
S		SEWER MAIN
G		GAS MAIN
W		WATER MAIN
E		ELECTRIC DUCT
T		TELEPHONE DUCT
OHW		OVERHEAD WIRE
(25.00)	25.00	ELEVATION
(25.15)	24.15	TOP OF CURB
(24.50)	24.50	BOTTOM OF CURB
		BORING
		TEST PIT
		MONITORING WELL
		SIGN POST
		CEMENT CONCRETE STEP
		TREE GRATE
	GD RL	GUARD RAIL
	FE	FLARED END
	CONST	CONSTRUCT(ION)
	PGL	PROFILE GRADE LINE
	ROE	RIGHT OF ENTRY
		STAMPED COLORED HMA OVER CONC

EXISTING	PROPOSED	
		LIMITS OF GRADING
		CLEARING AND GRUBBING LIMIT
113.70 X	+ 114.50	SPOT ELEVATION
		RETAINING WALL
		STONE BALANCE WALL
		TREE LINE
		GRADE TO DRAIN (0.5 % MIN. GRADE)
	2%	CROSS SLOPE (%)
	RET	RETAIN
	REM	REMOVE
	REMOD	REMODEL
	ABAN	ABANDON
	ADJ	ADJUST
	EXIST	EXISTING
	R&R	REMOVE AND RESET
	R&S	REMOVE AND STACK
	R&D	REMOVE AND DISCARD OR DISPOSE
	N.I.C.	NOT IN CONTRACT
	RCP	REINFORCED CONCRETE PIPE
	CIT	CHANGE IN TYPE
	WCR	WHEELCHAIR RAMP
	CC	CURB CORNER
	PVC	POLYVINYL CHLORIDE PIPE
	STN	STONE
	BAL	BALANCE
	WL	WALL
	HDWL	HEADWALL
	LB	LOAM BORROW
	L&S	LOAM BORROW & SEED
	WW	WATER WAY
	WK	WALK
	CEM	CEMENT
	CONC	CONCRETE
	BIT	BITUMINOUS
	BSW	BACK OF SIDEWALK
	LP	LOW POINT
	SW	SIDEWALK
	DR	DRIVEWAY
	SP	SPECIAL
	BE	BURIED END
	TE	TERMINAL END
	TRANS	TRANSITION
	PROP	PROPOSED
	PAV'T	PAVEMENT
	HMA	HOT MIX ASPHALT
	MOD	MODIFIED
	BND	BOUND
	VERT	VERTICAL
	GRAN	VERTICAL GRANITE CURB, TYPE VB
	SWTD	SIDEWALK THROUGH DRIVEWAY
	SHLDR	SHOULDER

TRAFFIC LEGEND

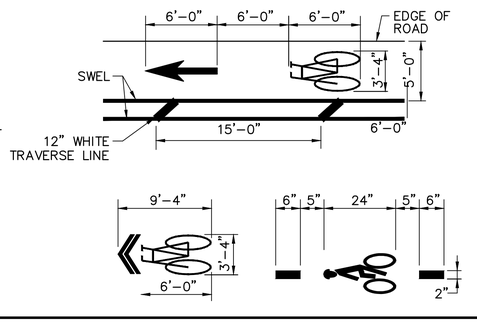
EXISTING	PROPOSED	
		DIRECTION OF FLOW
		TRAFFIC SIGN AND POST
		PAVEMENT ARROW AND LEGEND
	CW	CROSSWALK, 2–12 IN WHITE
	SL	STOP LINE, 12 IN WHITE
	BWLL	BROKEN WHITE LANE LINE – 6 IN
	SWLL	SOLID WHITE LANE LINE – 6 IN
	SYCHL	SOLID YELLOW CHANNELIZING LINE – 8 IN
	SWCHL	SOLID WHITE CHANNELIZING LINE – 8 IN
	BYCL	BROKEN YELLOW CENTERLINE – 6 IN
	DYCL	DOUBLE YELLOW CENTERLINE – 6 IN
	SYBL	SOLID YELLOW BARRIER LINE – 6 IN
	SWBL	SOLID WHITE BARRIER LINE – 6 IN
	SYEL	SOLID YELLOW EDGE LINE – 6 IN
	SWEL	SOLID WHITE EDGE LINE – 6 IN
	SYL	SOLID YELLOW LINE – 6 IN
	DYLEx	DOTTED YELLOW LINE EXTENSION
	DWLEx	DOTTED WHITE LINE EXTENSION
		NO PARKING ANYTIME
		PARKING RESTRICTIONS

EXISTING	PROPOSED	
		CONTROL CABINET GROUND MOUNTED
		CONTROL CABINET POLE MOUNTED
		SIGNAL POST & BASE
	25' MA	MAST ARM, SHAFT & BASE
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD – OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD
		LIMIT OF VISIBILITY – OPTICALLY PROGRAMMED SIGNAL
		PULL BOX
		DETECTOR
		PEDESTRIAN PUSH BUTTON
		CONDUIT
x	x	"X" DUCT (CONC. ENCASED)

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. GRANITE CURB TO BE REMOVED AND RESET SHALL BE DETERMINED BY ENGINEER IN FIELD. NEW GRANITE CURBING TO BE PROVIDED IS TO MEET WITH THE PROPOSED DESIGN.
6. GRANITE CURBING IS TO BE SET WITH A 6" REVEAL AFTER FINAL PAVING, UNLESS OTHERWISE INDICATED ON PLANS. IN SOME LOCATIONS CONTROL GRADES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE REQUIRED TO MEET WITH THESE GRADES WHILE PROVIDING A SMOOTH VERTICAL TRANSITION BETWEEN CONTROL ELEVATIONS.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. PROPOSED GRANITE CURB SHALL BE TYPE VB OR EXISTING CURB, REMOVED AND RESET, UNLESS OTHERWISE NOTED.
17. CURB TIES WHICH ARE NOTED BY A STATION ARE FROM THE CONSTRUCTION BASELINE.
18. LOCATIONS OF PROPOSED SIGNS AND TREES ARE APPROXIMATE ONLY; THE EXACT LOCATION SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
19. CEMENT CONCRETE SUBBASE SURFACES SHALL BE TREATED WITH AN ASPHALT EMULSION FOR TACK COAT PRIOR TO THE APPLICATION OF A HOT MIX ASPHALT MATERIAL.
20. CATCH BASINS, DROP INLETS, AND DRAIN MANHOLES ARE PRECAST CONCRETE IN ACCORDANCE WITH MASSDOT STANDARD DETAILS UNLESS OTHERWISE NOTED.
21. CONCRETE PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.
22. PROPOSED CATCH BASIN STATIONING REFERS TO THE CENTER REAR OF THE GRATE.
23. 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.
24. 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.
25. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978–490–9236 (CELL).
26. THE CONTRACTOR SHALL VERIFY IF AN IRRIGATION SYSTEM IS PRESENT IN A RAISED ISLAND OR OTHER AREA AND NOTIFY THE CITY OF SALEM BEFORE EXCAVATION SO THAT THE CITY CAN TURN OFF THE WATER SERVICE PRIOR TO THE WORK.

BIKE LANE MARKINGS



ALIGNMENT/GRADING

PI	POINT OF INTERSECTION
PC	POINT OF CURVE
PT	POINT OF TANGENT
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PVC	POINT OF VERTICAL CURVE
PVT	POINT OF VERTICAL TANGENT
PVRC	POINT OF VERTICAL REVERSE CURVE
PVCC	POINT OF VERTICAL COMPOUND CURVE
PVI	POINT OF VERTICAL INTERSECTION
ELEV	ELEVATION
CC	CENTER OF CURVE
PNT	POINT
PGL	PROFILE GRADE LINE
SSD	STOPPING SIGHT DISTANCE
PSD	PASSING SIGHT DISTANCE

UTILITIES

CIT	CHANGE IN TYPE
F&G	FRAME AND GRATE
F&C	FRAME AND COVER
RCP	REINFORCED CONCRETE PIPE
VCP	VITRIFIED CLAY PIPE
PVC	POLYVINYL CHLORIDE PIPE
ACCMP	ASPHALT COATED CORRUGATED METAL PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
HYD	HYDRANT
CAP	CORRUGATED ALUMINUM PIPE
INV	INVERT ELEVATION
PWW	PAVED WATER WAY
UP	UTILITY POLE
LP	LIGHT POLE
TSV & B	TAPPING SLEEVE, VALVE AND BOX
COND	CONDUIT

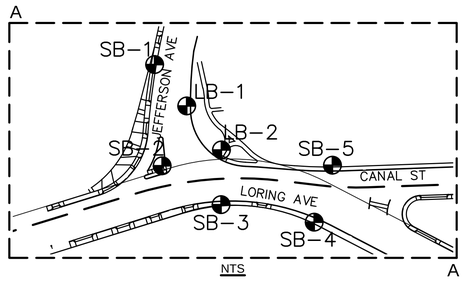
SALEM
CANAL STREET

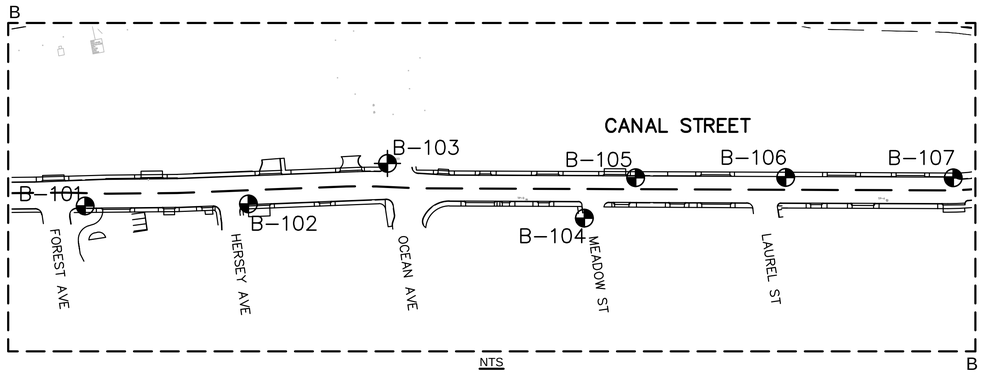
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	3	209
PROJECT FILE NO.	605146		

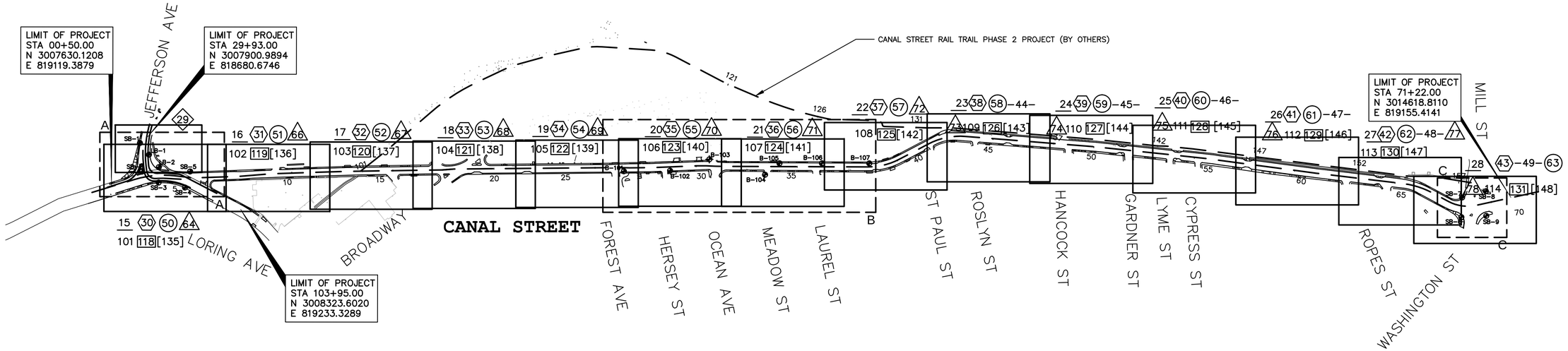
KEY PLAN & BORING LOCATIONS

13-Oct-2015

93692 PS&E-2 KEY.DWG







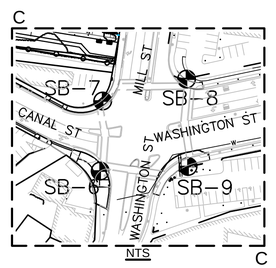
KEY PLAN

PLAN TYPE

00	CONSTRUCTION PLAN
–00–	SHARED USE PATH PROFILE
◇00	JEFFERSON AVENUE PROFILE
⬡00	CANAL STREET PROFILE
(00)	CURB TIE & GRADING PLANS
△00	TRAFFIC PLANS
00	DRAINAGE & UTILITY PLANS
[00]	LIGHTING PLANS
[00]	LANDSCAPING PLANS

SYMBOLS/NOTES

◓	BORING
⊕	BORING & MONITORING WELL
B–XX	HIGHWAY BORING
SB–XX	SIGNAL FOUNDATION BORING
LB–XX	LEDGE BORING



HOR. SCALE IN FEET
0 250 625 1250

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\\GSONAS1\Public\Data\Projects\Transportation\Data\Work\93692 CAD\Water Advertised (PSE)\93692 PSE-2 Boring Logs.dwg Oct 14, 2015 - 8:41am

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	4	209
PROJECT FILE NO.	605146		

BORING LOGS

93692 PSE-2 BORING LOGS.DWG 14-Oct-2015

BORING NUMBER B-101
PAGE 1 OF 2

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NAME Replacement of South River Conduit Wall
PROJECT NUMBER 20371
PROJECT LOCATION Canal Street, Salem, MA
DATE STARTED 12/5/12 **COMPLETED** 12/5/12
GROUND ELEVATION 7 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Soil Explorations Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger and Mud Rotary
AT TIME OF DRILLING 7.00 ft / Elev 0.00 ft
LOGGED BY Adam Belanger/Ryan Lo **CHECKED BY** Scott Bamford
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
0	SS 1	0	93		0.5 ASPHALT 6.5
					SAND, brown gray, well graded, fine to coarse grained, moist, with silt, some discoloration observed, headspace PID = 11.2 ppm
	SS 2	50	17-8-4-3 (12)		▽
10					10.0 -3.0
	SS 3	33	4-2-3-2 (5)		SILTY CLAY, brown black, well graded, fine to coarse grained, wet, with silt, PID = 0.0 ppm
					15.0 -8.0
	SS 4	100	1-1-2-1 (3)		SILTY CLAY, gray, wet, trace wood, PID = 5.6 ppm
20	SS 5	50	0-0-1-1 (1)		PID = 3.5 ppm
	ST 6	100			
	SS 7	100	1-1-1-1 (2)		PID = 5.3 ppm
30					30.0 -23.0
	SS 8	100	1-1-2-3 (3)		CLAYEY SILT, brown, wet, with roots, and peat, PID = 2.8 ppm
					35.0 -28.0

Asphalt; USCS Well-graded Sand; USCS Low Plasticity Silty Clay; USCS Elastic Silt; USCS Silt; USCS Well-graded Gravelly Sand; USCS Well-graded Gravel; USCS Well-graded Sandy Gravel; Split Spoon; Shelby Tube

140# Wt x 30" fall om 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

(Continued Next Page)

BORING NUMBER B-101
PAGE 2 OF 2

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NAME Replacement of South River Conduit Wall
PROJECT NUMBER 20371
PROJECT LOCATION Canal Street, Salem, MA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
	SS 9	100	0-0-2-3 (2)		SILT, brown, wet, trace gravel, with peat, PID = 0.0 ppm
40	SS 10	100	0-3-3-3 (6)		PID = 0.0 ppm
	SS 11	25	6-10-11-10 (21)		45.0 GRAVELLY SAND, gray, well graded, fine to coarse grained, wet, with silt, PID = 0.0 ppm -38.0
50	SS 12	31	12-11-11-12 (22)		50.0 GRAVEL, gray, well graded, fine to coarse grained, wet, trace silt, PID = 0.0 ppm -43.0
	SS 13	50	10-8-7-6 (15)		55.0 SANDY GRAVEL, gray, well graded, fine to coarse grained, wet, PID = 0.0 ppm -48.0
60	SS 14	79	11-9-15-15 (24)		
	SS 15	92	13-17-19-16 (36)		67.0 PID = 0.0 ppm -60.0
					Bottom of borehole at 67.0 feet.

Asphalt; USCS Well-graded Sand; USCS Low Plasticity Silty Clay; USCS Elastic Silt; USCS Silt; USCS Well-graded Gravelly Sand; USCS Well-graded Gravel; USCS Well-graded Sandy Gravel; Split Spoon; Shelby Tube

140# Wt x 30" fall om 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

BORING NUMBER B-102
PAGE 1 OF 3

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NAME Replacement of South River Conduit Wall
PROJECT NUMBER 20371
PROJECT LOCATION Canal Street, Salem, MA
DATE STARTED 12/4/12 **COMPLETED** 12/4/12
GROUND ELEVATION 4 ft **HOLE SIZE** 4 inches
DRILLING CONTRACTOR Soil Explorations Group
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger and Mud Rotary
AT TIME OF DRILLING 5.00 ft / Elev -1.00 ft
LOGGED BY Adam Belanger/Dan Dw **CHECKED BY** Scott Bamford
AT END OF DRILLING ---
NOTES Ambient PID = 0.0 ppm
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
0	SS 1	42	65-8-42-20 (50)		0.7 ASPHALT 3.3
					SAND, gray, well graded, fine to coarse grained, dry, with gravel, trace asphalt
	SS 2	67	8-5-4-2 (9)		5.0 ▽ -1.0
10					SAND, gray, well graded, fine to coarse grained, wet, with gravel, with silt, organic odor, headspace PID = 0.0 ppm
	SS 3	100	2-1-3-2 (4)		10.0 -6.0
					SILTY CLAY, gray, wet, trace shells, trace wood, PID = 0.0 ppm
	SS 4	75	0-0-0-2 (0)		PID = 0.0 ppm
	ST 4	100			PID = 0.0 ppm
20	SS 5	100	2-1-2-2 (3)		Artesian effect observed in casing PID = 0.0 ppm
	SS 6	48	0-2-1-2 (3)		PID = 0.2 ppm
30	SS 7	100	0-0-0-2 (0)		35.0 -31.0

Asphalt; USCS Well-graded Sand; USCS Low Plasticity Silty Clay; USCS Low Plasticity Clay; USCS High Plasticity Organic silt or clay; USCS Silty Sand; USCS Poorly-graded Sandy Gravel; Split Spoon; Shelby Tube

140# Wt x 30" fall om 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

(Continued Next Page)

BORING NUMBER B-102
PAGE 2 OF 3

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NAME Replacement of South River Conduit Wall
PROJECT NUMBER 20371
PROJECT LOCATION Canal Street, Salem, MA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
	SS 8	100	0-0-3-2 (3)		CLAY, gray, wet, with silt, with shells, with wood, PID = 0.9 ppm
40					40.0 -36.0
	SS 9	63	0-0-2-2 (2)		CLAY, gray, wet, with silt, with wood, with peat, PID = 1.9 ppm
					45.0 -41.0
	SS 10	100	2-3-4-4 (7)		CLAY, gray, wet, with peat, PID = 1.4 ppm
50					50.0 -46.0
	SS 11	100	3-3-4-5 (7)		SILT, brown, moist, PID = 0.6 ppm
					55.0 -51.0
	SS 12	100	0-2-2-3 (4)		SILT, brown black, moist, with clay, PID = 0.0 ppm
60					60.0 -56.0
	SS 13	75	0-0-0-0 (0)		CLAY, gray, wet, with fine sand, PID = 0.5 ppm
					65.0 -61.0
	SS 14	42	23-15-16-13 (31)		SILTY SAND, gray, well graded, fine to coarse grained, wet, with gravel, PID = 0.0 ppm
70					70.0 -66.0

Asphalt; USCS Well-graded Sand; USCS Low Plasticity Silty Clay; USCS Low Plasticity Clay; USCS High Plasticity Organic silt or clay; USCS Silty Sand; USCS Poorly-graded Sandy Gravel; Split Spoon; Shelby Tube

140# Wt x 30" fall om 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

BORING NUMBER B-102
PAGE 3 OF 3

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NAME Replacement of South River Conduit Wall
PROJECT NUMBER 20371
PROJECT LOCATION Canal Street, Salem, MA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
70	SS 15	21	7-10-15-19 (25)		72.0 SANDY GRAVEL, gray, poorly graded, medium to coarse grained, wet, PID = 0.0 ppm -68.0
					Bottom of borehole at 72.0 feet.

Asphalt; USCS Well-graded Sand; USCS Low Plasticity Silty Clay; USCS Low Plasticity Clay; USCS High Plasticity Organic silt or clay; USCS Silty Sand; USCS Poorly-graded Sandy Gravel; Split Spoon; Shelby Tube

140# Wt x 30" fall om 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	5	209
PROJECT FILE NO.	605146		

BORING LOGS

14-Oct-2015

93692 PS&E-2 BORING LOGS.DWG

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

BORING NUMBER B-103
PAGE 1 OF 2

CLIENT Woodard & Curran
PROJECT NUMBER 20371
DATE STARTED 12/12/12 **COMPLETED** 12/12/12
DRILLING CONTRACTOR Soil Explorations Group
DRILLING METHOD Hollow Stem Auger and Mud Rotary
LOGGED BY Mike Dagher **CHECKED BY** Scott Bamford
NOTES Ambient PID = 0.0 ppm

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA
GROUND ELEVATION 5 ft **HOLE SIZE** 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING 6.00 ft / Elev -1.00 ft
AT END OF DRILLING 3.90 ft / Elev 1.10 ft
AFTER DRILLING 3.54 ft / Elev 1.46 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
0					
	SS 1	67	11-11-7-4 (18)		SAND, yellowish brown, well graded, fine to coarse grained, moist, with silt, trace gravel, (Fill) PID = 0.0 ppm — 1.0 / 4.0
	SS 2	38	7-5-4-3 (9)		SILTY SAND, dark gray, well graded, fine to coarse grained, moist, trace gravel, Headspace Reading = 0.1 ppm — 5.0 / 0.0
10	SS 3	0	2-2-3-5 (5)		PEAT, brown, moist, organic odor, PID = 103 ppm — 12.0 / -7.0
	SS 4	63	3-1-2-3 (3)		
	SS 5	67	2-1-2-3 (3)		PID = 1146 ppm Headspace PID = 556 ppm
20	SS 6	21	11-12-12-14 (24)		SAND, gray, poorly graded, medium to coarse grained, wet, with gravel, PID = 6.0 ppm — 20.0 / -15.0
	SS 7	42	7-6-12-8 (18)		SANDY GRAVEL, yellowish brown, wet, PID = 0.2 ppm — 25.0 / -20.0
30	SS 8	21	10-10-10-13 (20)		GRAVEL, gray, wet, PID = 1.7 ppm — 30.0 / -25.0

Asphalt; USCS Well-graded Sand; USCS Silty Sand; USCS Peat; USCS Poorly-graded Sand; USCS Poorly-graded Sandy Gravel; USCS Poorly-graded Gravel; Split Spoon

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

(Continued Next Page)

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

BORING NUMBER B-103
PAGE 2 OF 2

CLIENT Woodard & Curran
PROJECT NUMBER 20371

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
40	SS 9	17	13-8-9-5 (17)		GRAVEL, gray, wet, PID = 1.7 ppm *(continued)* PID = 0.5 ppm — 40.0 / -35.0
	SS 10	50	10-8-6-3 (14)		SILTY SAND, yellowish brown, poorly graded, fine grained, moist, trace gravel, PID = 0 ppm — 42.0 / -37.0

Bottom of borehole at 42.0 feet.

Asphalt; USCS Well-graded Sand; USCS Silty Sand; USCS Peat; USCS Poorly-graded Sand; USCS Poorly-graded Sandy Gravel; USCS Poorly-graded Gravel; Split Spoon

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

BORING NUMBER B-104
PAGE 1 OF 2

CLIENT Woodard & Curran
PROJECT NUMBER 20371
DATE STARTED 12/7/12 **COMPLETED** 12/7/12
DRILLING CONTRACTOR Soil Explorations Group
DRILLING METHOD Hollow Stem Auger and Mud Rotary
LOGGED BY Stefanie Travers **CHECKED BY** Scott Bamford
NOTES Ambient PID = 3.0 ppm

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA
GROUND ELEVATION 6 ft **HOLE SIZE** 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING 6.00 ft / Elev 0.00 ft
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
0					
	SS 1	67	6-5-6-4 (11)		CONCRETE SIDEWALK — 0.7 / 5.3
					SILTY SAND, dark yellowish brown, well graded, fine to coarse grained, moist — 1.0 / 5.0
	SS 2	25	4-5-2-1 (7)		SILTY SAND, dark brown, well graded, fine to coarse grained, moist, PID = 3.0 ppm
10	SS 3	33	1-2-2-5 (4)		SILTY SAND, dark brown, well graded, fine to coarse grained, wet, trace gravel, PID = 3.0 ppm — 5.0 / 1.0
					SANDY SILT, dark grayish brown, wet, trace gravel — 10.0 / -4.0
					— 15.0 / -9.0
	SS 4	75	2-3-1-3 (4)		CLAY, gray, wet, trace sand, trace shells, trace gravel, trace silt, PID = 1.7 ppm — 16.0 / -10.0
20					PEAT, brown, moist, PID = 1.2 ppm — 20.0 / -14.0
	SS 5	21	2-3-4-4 (7)		CLAYEY SAND, gray, moist, trace sand, trace shells, trace gravel, organic odor — 22.0 / -16.0
	SS 6	75	5-3-2-3 (5)		CLAYEY SAND, gray, well graded, fine to coarse grained, moist — 23.3 / -17.3
					SANDY SILT, gray, moist, with clay, PID = 1.4 ppm — 25.0 / -19.0
	SS 7	92	3-1-1-2 (2)		CLAYEY SAND, gray, well graded, fine to coarse grained, moist, PID = 1.1 ppm — 25.8 / -19.8
30					SILTY CLAY, gray, moist, trace organics, trace fine to medium sand — 30.0 / -24.0
	SS 8	75	11-11-6-6 (17)		SILTY SAND, dark gray, poorly graded, fine to medium grained, moist — 31.5 / -25.5
					SILTY CLAY, gray, moist — 35.0 / -29.0

Concrete; USCS Silty Sand; USCS Sandy Silt; USCS Low Plasticity Clay; USCS Peat; USCS Clayey Sand; USCS Low Plasticity Silty Clay; USCS Well-graded Sand; Split Spoon

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

(Continued Next Page)

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

BORING NUMBER B-105
PAGE 1 OF 2

CLIENT Woodard & Curran
PROJECT NUMBER 20371
DATE STARTED 12/6/12 **COMPLETED** 12/6/12
DRILLING CONTRACTOR Soil Explorations Group
DRILLING METHOD Hollow Stem Auger and Mud Rotary
LOGGED BY Mike Dagher **CHECKED BY** Scott Bamford
NOTES Ambient PID = 0.0 ppm

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA
GROUND ELEVATION 6 ft **HOLE SIZE** 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
0					
	SS 1	50	7-8-6-7 (14)		ASPHALT — 1.0 / 5.0
					SILTY SAND, yellowish brown, poorly graded, fine to medium grained, moist, with gravel, PID = 0.0 ppm
	SS 2	38	9-8-9-7 (17)		SILTY SAND, yellowish brown, poorly graded, fine to medium grained, wet, with gravel, PID = 0.0 ppm — 5.0 / 1.0
10	SS 3	79	3-2-2-2 (4)		CLAYEY SILT, dark brownish gray, moist, with sand, with shells, PID = 0.0 ppm — 10.0 / -4.0
					PEAT, dark brown, moist, PID = 0.0 ppm — 11.4 / -5.4
	SS 4	38	5-8-11-6 (19)		CLAYEY SAND, gray, moist, trace gravel, PID = 0.0 ppm — 15.0 / -9.0
20	SS 5	42	6-10-9-6 (19)		SANDY GRAVEL, gray, moist, trace clay, PID = 0.0 ppm — 20.0 / -14.0
	SS 6	42	20-16-15-14 (31)		SILTY SAND, yellowish brown, poorly graded, medium to coarse grained, moist, trace gravel, PID = 0.0 ppm — 25.0 / -19.0
30	SS 7		12-12-9-8 (21)		— 32.0 / -26.0
	SS 8	50	6-8-9-8 (17)		SAND, yellowish brown, poorly graded, medium to coarse grained, moist, trace gravel — 35.0 / -29.0

Asphalt; USCS Silty Sand; USCS Elastic Silt; USCS Peat; USCS Clayey Sand; USCS Poorly-graded Sandy Gravel; USCS Poorly-graded Sand; Split Spoon

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

(Continued Next Page)

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

BORING NUMBER B-105
PAGE 2 OF 2

CLIENT Woodard & Curran
PROJECT NUMBER 20371

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION
40	SS 9	54	9-8-11-16 (19)		SILTY SAND, yellowish brown, poorly graded, fine to medium grained, moist, trace gravel, PID = 0.0 ppm — 40.0 / -34.0
	SS 10	63	15-15-17-20 (32)		SILTY SAND, yellowish brown, poorly graded, fine grained, moist, PID = 0.0 ppm — 42.0 / -36.0

Bottom of borehole at 42.0 feet.

Asphalt; USCS Silty Sand; USCS Elastic Silt; USCS Peat; USCS Clayey Sand; USCS Poorly-graded Sandy Gravel; USCS Poorly-graded Sand; Split Spoon

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	6	209
PROJECT FILE NO.	605146		

BORING LOGS

BORING NUMBER B-106
PAGE 1 OF 1

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NUMBER 20371
DATE STARTED 12/3/12 **COMPLETED** 12/3/12
DRILLING CONTRACTOR Soil Explorations Group
DRILLING METHOD Hollow Stem Auger and Mud Rotary
LOGGED BY Adam Belanger **CHECKED BY** Scott Bamford
NOTES Ambient PID = 0.0 ppm

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA
GROUND ELEVATION 7 ft **HOLE SIZE** 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION	
0						
	SS 1	50	8-11-7-7 (18)		ASPHALT	1.0 / 6.0
					SAND, brown, poorly graded, fine to medium grained, moist, PID Headspace = 0.0 ppm	5.0 / 2.0
	SS 2	67	15-15-12-8 (27)		SILTY SAND, brown, well graded, fine to coarse grained, wet, with gravel, PID = 0.0 ppm	
10	SS 3	100	2-2-2-3 (4)		CLAY, gray, moist, with roots, trace shells, PID = 0.0 ppm	10.0 / -3.0
	ST 4	100			MTV - 4, 4.5, 5	14.0 / -7.0
	SS 5	83	1-1-2-1 (3)		CLAY, gray, moist, trace organics, PID = 3.3 ppm	
20	ST 6	50			Gravel noted at bottom of shelby tube	22.0 / -15.0
	SS 7	42	4-3-3-7 (6)		SANDY CLAY, gray, wet, with gravel, PID = 0.0 ppm	23.5 / -16.5
					SANDY CLAY, gray, wet, with organics, PID = 0.0 ppm	25.0 / -18.0
	SS 8	25	8-12-20-13* (32)		GRAVEL, gray, poorly graded, medium to coarse grained, wet, with medium to coarse sand	
30	SS 9	63	10-11-34-16 (45)			32.0 / -25.0
					Bottom of borehole at 32.0 feet.	

Asphalt; USCS Poorly-graded Sand; USCS Silty Sand; USCS Low Plasticity Organic silt or clay; USCS Low Plasticity Sandy Clay; USCS Poorly-graded Gravel; Split Spoon; Shelby Tube

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

BORING NUMBER B-107
PAGE 1 OF 1

Geocomp Corporation
125 Nagog Park
Acton, MA 01720
Telephone: 978-635-0012

CLIENT Woodard & Curran
PROJECT NUMBER 20371
DATE STARTED 12/3/12 **COMPLETED** 12/3/12
DRILLING CONTRACTOR Soil Explorations Group
DRILLING METHOD Hollow Stem Auger and Mud Rotary
LOGGED BY Adam Belanger **CHECKED BY** Scott Bamford
NOTES Ambient PID = 0.0 ppm

PROJECT NAME Replacement of South River Conduit Wall
PROJECT LOCATION Canal Street, Salem, MA
GROUND ELEVATION 8 ft **HOLE SIZE** 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)	GRAPHIC LOG	MATERIAL DESCRIPTION	
0						
	SS 1	100	7-16-12-10 (28)		ASPHALT	0.7 / 7.3
					SAND, brown, poorly graded, fine to medium grained, moist, with coarse sand, and gravel, Headspace sample PID = 0.0 ppm	
	SS 2	54	5-6-8-12 (14)		PID = 0.0 ppm	
10	SS 3	63	7-7-7-6 (14)		SAND, brown, well graded, fine to coarse grained, wet, with gravel, PID = 0.0 ppm	10.0 / -2.0
						15.0 / -7.0
	SS 4	33	9-7-6-6 (13)		SAND, brown, poorly graded, medium to coarse grained, wet, with gravel, PID = 0.0 ppm	
20	SS 5	29	7-9-4-6 (13)		PID = 0.0 ppm	
						25.0 / -17.0
	SS 6	29	12-10-6-5 (16)		GRAVEL, brown, wet, with medium to coarse sand, PID = 0.0 ppm	
30	SS 7	0	4-5-6-6 (11)		PID = 0.0 ppm	32.0 / -24.0
					Bottom of borehole at 32.0 feet.	

Asphalt; USCS Poorly-graded Sand; USCS Well-graded Sand; USCS Poorly-graded Gravel; Split Spoon

140# Wt x 30" fall on 2" OD SS Sampler

Cohesionless	Density	Cohesive	Consistency
0-10	Loose	0-4	Soft
10-30	Med Dense	4-8	Firm
30-50	Dense	8-15	Stiff
50+	Very Dense	15-30	Very Stiff
		30+	Hard

GEOLOGIC LOG

AECOM

PROJECT : **Canal St. Improvements**		SHEET 1 of 2	BORING NO. **SB-1**
SITE LOCATION: Jefferson/Washington and Canal St. Salem, MA	JOB NO.: 60310821	LOCATION: N 3007835 E 818869	Elevation: 20.2' / Total Depth: 30.5'
DRILL CONTRACTOR : GeoSearch	ENG : A. Chin		BEGUN: 12/2/2014
DRILL RIG : CME-B59 Truck	DRILLER : Rodney Dean		FINISHED : 12/3/2014
Hole Size : 4 inch inside			Ground Water (Depth/Elev.) : First observed at 19 ft bgs
Drilling Method : Hollow Stem Auger to 4', then Drive and Wash	Drilling Fluid : Water		Top of Rock (Depth) : Did not reach

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					12" asphalt		
					7" road base		Note: Boring backfilled with grout, asphalt patch 6".
	Hand Augered				Dark brown, poorly graded sand with silt, mostly fine to coarse sand, few fines, few fine gravel	SP-SM	
5	SS-1 4-6	15	6-7-8-9	19"	Olive tan-brown, moist, lean clay, low to moderate plasticity, trace to few fine sand, stiff, mottled	CL	
10	SS-2 9-11	21	8-9-12-14	23"	@9' same, wet, low plasticity, very stiff, no mottling	CL	
15	SS-3 14-16	14	3-7-7-9	24"	@14' same, stiff, mottling	CL	
20							

SAMPLE TYPES:		trace 0 to 5%	SPT Resistance	Approve/Date
SS=2" SPLIT SPOON		few 5 to 10%		
HA=HAND AUGER		little 15 to 25%	Cohesionless Density: 0-4 Very Loose	Cohesive Consistency 0-2 Very Soft
ST=SHELBY TUBE		some 30 to 45%	5-9 Loose 10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff
R=ROCK CORE RUN		mostly >50%	30-49 Dense 50+ Very Dense	16-30 V-Stiff, 31+ Hard

NKD 12/5/2014

GEOLOGIC LOG

AECOM

PROJECT : **Canal St. Improvements**		SHEET 2 of 2	BORING NO. **SB-1**
SITE LOCATION: Jefferson/Washington and Canal St. Salem, MA	JOB NO.: 60323717	LOCATION: N 3007835 E 818869	Elevation: 20.2' / Total Depth: 30.5'

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
	SS-4 19-21'	10	2-6-4-4	23"	@19' same, brown to gray	CL	
25	SS-5 24-26'	3	3-1-2-3	24"	@24' same, gray, soft, no mottling	CL	
30	SS-6 29-31	99	12-37-62-100+	2"	Brown, wet, clayey gravel, fine to coarse gravel, subangular, some fine to coarse sand, some fines, low plasticity, very dense	GC	
35					EOB @ 30.5' bgs		
40							
45							

SAMPLE TYPES:		trace 0 to 5%	SPT Resistance	Approve/Date
SS=2" SPLIT SPOON		few 5 to 10%		
HA=HAND AUGER		little 15 to 25%	Cohesionless Density: 0-4 Very Loose	Cohesive Consistency 0-2 Very Soft
ST=SHELBY TUBE		some 30 to 45%	5-9 Loose 10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff
R=ROCK CORE RUN		mostly >50%	30-49 Dense 50+ Very Dense	16-30 V-Stiff, 31+ Hard

NKD 12/5/2014

GEOLOGIC LOG

AECOM

PROJECT : **Canal St. Improvements**		SHEET 1 of 1	BORING NO. **SB-2**
SITE LOCATION: Loring and Canal St. Salem, MA	JOB NO.: 60310821	LOCATION: N 3007836 E 819013	Elevation: 18.8' / Total Depth: 16 ft
DRILL CONTRACTOR : GeoSearch	ENG : A. Chin		BEGUN: 11/26/2014
DRILL RIG : CME-55LV ATV	DRILLER : Ken B.		FINISHED : 11/26/2014
Hole Size : 3 inch inside			Ground Water (Depth/Elev.) : Did not encounter
Drilling Method : Drive and Wash	Drilling Fluid : Water		Top of Rock (Depth) : 6 ft

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					12" asphalt		
					6" road base		Note: Boring backfilled with grout, asphalt patch 6".
	SS-1 2.5-4.5	6	2-3-3-4	18"	Dark brown-black, moist, fat clay, highly plastic, few fine medium gravel, few organics, medium stiff, mottled	CH	
5	SS-2 4.5-6	24	5-6-18-100+	14"	Brown to dark brown, moist, clayey sand, mostly fine sand, some clay, medium dense	SC	
				9 min	Hard, slightly weathered, dark gray, fine to medium grained, quartz diorite of the Salem Gabbro-Diorite Formation (Proterozoic), low angle to high angle, discolored, open, smooth, very close to moderately spaced joints	ROCK	
	R-1 6-11			3 min			
				4 min			
10				4 min			
				2 min			
				2.5 min	@11' same	ROCK	
	R-2 11-16			10 min			
				3.5 min			
15				3.5 min			
				4.5 min			
20					EOB @ 16' bgs		

REC= 55% RQD= 18%
REC= 97% RQD= 52%

SAMPLE TYPES:		trace 0 to 5%	SPT Resistance	Approve/Date
SS=2" SPLIT SPOON		few 5 to 10%		
HA=HAND AUGER		little 15 to 25%	Cohesionless Density: 0-4 Very Loose	Cohesive Consistency 0-2 Very Soft
ST=SHELBY TUBE		some 30 to 45%	5-9 Loose 10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff
R=ROCK CORE RUN		mostly >50%	30-49 Dense 50+ Very Dense	16-30 V-Stiff, 31+ Hard

NKD 12/1/2014

GEOLOGIC LOG

AECOM

PROJECT : **Canal St. Improvements**		SHEET 1 of 1	BORING NO. **SB-3**
SITE LOCATION: Loring and Canal St. Salem, MA	JOB NO.: 60310821	LOCATION: N 3007902 E 819061	Elevation: 19.0' / Total Depth: 19 ft
DRILL CONTRACTOR : GeoSearch	ENG : A. Chin		BEGUN: 12/3/2014
DRILL RIG : CME-B59 Truck	DRILLER : Rodney Dean		FINISHED : 12/4/2014
Hole Size : 4 inch inside			Ground Water (Depth/Elev.) : Did not encounter
Drilling Method : Hollow Stem Auger to 4', then Drive and Wash	Drilling Fluid : Water		Top of Rock (Depth) : 8.5 ft

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					8" asphalt		
					6" road base		Note: Boring backfilled with grout, asphalt patch 6".
	HA-1				Brown, moist, lean clay, low plasticity, few fine sand	CL	
5	SS-1 4-6	13	3-5-8-9	17"	@4' same, mottled	CL	
					@8.5' weathered rock	ROCK	
10	R-1 9-14		1.5 min	REC= 68% RQD= 8%	Hard, slightly to highly weathered, dark gray, fine to medium grained, quartz diorite of the Salem Gabbro-Diorite Formation (Proterozoic), low angle and moderately dipping, decomposed, open, smooth, very close to closely spaced joints, some portions broken into gravel-sized pieces of rock		
			1 min				
			1 min				
			2.5 min				
			2.5 min				
15	R-2 14-19		1 min	REC= 72% RQD= 28%	@14' same	ROCK	
			1 min				
			0.5 min				
			2 min				
			1 min				
20					EOB @ 19' bgs		

SAMPLE TYPES:		trace 0 to 5%	SPT Resistance	Approve/Date
SS=2" SPLIT SPOON		few 5 to 10%		
HA=HAND AUGER		little 15 to 25%	Cohesionless Density: 0-4 Very Loose	Cohesive Consistency 0-2 Very Soft
ST=SHELBY TUBE		some 30 to 45%	5-9 Loose 10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff
R=ROCK CORE RUN		mostly >50%	30-49 Dense 50+ Very Dense	16-30 V-Stiff, 31+ Hard

NKD 12/5/2014

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	7	209
PROJECT FILE NO.	605146		

BORING LOGS

93692 PSKE-2 BORING LOGS.DWG 14-Oct-2015

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GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements			SHEET	BORING NO.
SITE LOCATION: Loring and Canal St., Salem, MA	JOB NO.: 60310821		1 of 2	SB-4
	LOCATION: N 3008056 E 819101		Elevation: 16.8'	Total Depth: 31.5'
DRILL CONTRACTOR: GeoSearch	ENG: A. Chin		BEGUN: 11/26/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean		FINISHED: 12/1/2014	
Hole Size: 4.25" Inside 8" Outside			Ground Water (Depth/Elev.): First observed at 20 ft bgs	
Drilling Method: Hollow Stem Auger	Drilling Fluid: N/A		Top of Rock (Depth): Did not encounter	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					9" asphalt		
	HA-1		Hand Auger and Air Vac		6" road base		Note: Boring backfilled with grout, asphalt patch 6".
					Brown, moist, lean clay, moderate plasticity	CL	
5							
	SS-1 5-7'	16	4-7-9-12	24"	Light brown, moist, lean clay, moderate plasticity, very stiff, mottling	CL	
10							
	SS-2 10-12'	9	WOR-4-5-10	22"	@10' same, brown, stiff	CL	
15							
	SS-3 15-17'	8	3-4-4-7	24"	@15' same, occasional very thin seams of fine sand	CL	
20							

SPT Resistance

SAMPLE TYPES:					Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5%	Cohesionless Density:	0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKO 12/2/2014
HA=HAND AUGER	few 5 to 10%				
ST=SHELBY TUBE	little 15 to 25%	5-9 Loose	10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	some 30 to 45%	30-49 Dense	50+ Very Dense	16-30 V-Stiff, 31+ Hard	
	mostly >50%				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements			SHEET	BORING NO.
SITE LOCATION: Loring and Canal St., Salem, MA	JOB NO.: 60323717		2 of 2	SB-4
	LOCATION: N 3008056 E 819101		Elevation: 16.8'	Total Depth: 31.5'

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
	SS-4 20-22'	8	2-2-6-5	24"	Brown to gray, wet, lean clay, low plasticity, medium stiff, few fine sand, layers of varying plasticity	CL	
25							
	SS-5 25-27'	19	3-9-11-14	24"	Brown to gray, wet, lean clay, low plasticity, trace fine sand, very stiff, mottling	CL	
30							
	SS-6 30-32'	100+	7-19-100+	21"	Brown, moist, silty sand, mostly fine sand, some silt, with occasional layers of clay	SM	
35							EOB @ 31.5' bgs
40							
45							

SPT Resistance

SAMPLE TYPES:					Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5%	Cohesionless Density:	0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKO 12/2/2014
HA=HAND AUGER	few 5 to 10%				
ST=SHELBY TUBE	little 15 to 25%	5-9 Loose	10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	some 30 to 45%	30-49 Dense	50+ Very Dense	16-30 V-Stiff, 31+ Hard	
	mostly >50%				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements			SHEET	BORING NO.
SITE LOCATION: Loring and Canal St., Salem, MA	JOB NO.: 60310821		1 of 1	SB-5
	LOCATION: N 3008064 E 819044		Elevation: 18.0'	Total Depth: 19 ft
DRILL CONTRACTOR: GeoSearch	ENG: A. Chin		BEGUN: 12/2/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean		FINISHED: 12/2/2014	
Hole Size: 4 inch inside			Ground Water (Depth/Elev.): Did not encounter	
Drilling Method: Hollow Stem Auger to 2.5', then Drive and Wash	Drilling Fluid: Water		Top of Rock (Depth): 8 ft	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					6" asphalt		
					18" road base		Note: Boring backfilled with grout, asphalt patch 6".
	SS-1 2.5-4.5	17	7-7-10-13	19"	Dark brown, clayey sand, fine sand, some clay, low to moderate plasticity, medium dense	SC	
5							
	SS-2 4.5-6.5	33	11-16-17-20	2"	Light brown to gray, moist, lean clay, moderate plasticity, hard	CL	
					@6' weathered rock	ROCK	
10			2.5 min		Hard, slightly weathered, dark gray, fine to medium grained, quartz diorite of the Salem Gabbro-Diorite Formation (Proterozoic), low angle and moderately dipping, discolored, open, smooth, closely spaced joints	ROCK	
	R-1 9-14		2 min	REC= 100% RQD= 50%			
			1.5 min				
			2 min				
			3 min				
15			2 min		@14' same, moderately spaced joints	ROCK	
	R-2 14-19		2 min	REC= 92% RQD= 92%			
			2 min				
			2 min				
			2 min				
20							EOB @ 19' bgs

SPT Resistance

SAMPLE TYPES:					Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5%	Cohesionless Density:	0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKO 12/3/2014
HA=HAND AUGER	few 5 to 10%				
ST=SHELBY TUBE	little 15 to 25%	5-9 Loose	10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	some 30 to 45%	30-49 Dense	50+ Very Dense	16-30 V-Stiff, 31+ Hard	
	mostly >50%				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements			SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60310821		1 of 2	SB-6
	LOCATION: N 3014351 E 819264		Elevation: 18.7'	Total Depth: 31'
DRILL CONTRACTOR: GeoSearch	ENG: A. Borden		BEGUN: 11/25/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean		FINISHED: 11/26/2014	
Hole Size: 4" Inside			Ground Water (Depth/Elev.): First observed at 13 ft bgs	
Drilling Method: Hollow Stem Auger to 12' then Drive and Wash	Drilling Fluid: Water		Top of Rock (Depth): Not Encountered	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
	Hand Augered				Poorly graded sand with silt, loose, dry, dark brown, mostly medium coarse sand, few silt, slightly plastic, little gravel/cobbles, trace brick/concrete, likely fill	SP-SM	Note: Boring backfilled with grout.
5							
	SS-1 5-7'	6	2-3-3-3	18"	Poorly graded sand with gravel, loose, dry, light brown some red, mostly medium sand, trace silt, trace cobbles, little small angular gravel <0.5"	SP	
10							
	SS-2 10-12'	23	2-5-18-50	22"	Well graded sand with gravel, medium dense, moist, light brown, mostly coarse sand, little small angular gravel <0.5" diameter, trace silt, large weathered gravel rock at 12'	SW	
15	SS-3 14-16'	26	11-15-11-11	18"	Well graded sand with gravel, medium dense, wet, brownish gravey, mostly coarse to very coarse sand, little small angular gravel 0.5-1.0" diameter, trace fines	SW	
20							

SPT Resistance

SAMPLE TYPES:					Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5%	Cohesionless Density:	0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKO 12/1/2014
HA=HAND AUGER	few 5 to 10%				
ST=SHELBY TUBE	little 15 to 25%	5-9 Loose	10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	some 30 to 45%	30-49 Dense	50+ Very Dense	16-30 V-Stiff, 31+ Hard	
	mostly >50%				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements			SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60323717		2 of 2	SB-6
	LOCATION: N 3014351 E 819264		Elevation: 18.7'	Total Depth: 31'

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
	SS-4 19-21'	10	7-6-4-3	4"	@19' same, increases gravel content to some gravel	SW	
25							
	SS-5 24-26'	22	10-11-11-11	0"	@24' same	SW	
					@26' to 29' roller bit through boulder		
30							
	SS-6 29-31'	34	15-21-13-17	0"	@29' same, dense	SW	
35							EOB @ 31' bgs
40							
45							

SPT Resistance

SAMPLE TYPES:					Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5%	Cohesionless Density:	0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKO 12/1/2014
HA=HAND AUGER	few 5 to 10%				
ST=SHELBY TUBE	little 15 to 25%	5-9 Loose	10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	some 30 to 45%	30-49 Dense	50+ Very Dense	16-30 V-Stiff, 31+ Hard	
	mostly >50%				

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	8	209
PROJECT FILE NO.	605146		

BORING LOGS

93692 PSKE-2 BORING LOGS.DWG 14-Oct-2015

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements		SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60310821	1 of 2	SB-7
	LOCATION: N 3014353 E 819155	Elevation: 15.6'	Total Depth: 30'
DRILL CONTRACTOR: GeoSearch	ENG: A. Borden	BEGUN: 11/24/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean	FINISHED: 11/24/2014	
Hole Size: 4" Inside		Ground Water (Depth/Elev.): First observed at 12 ft bgs	
Drilling Method: Drive and Wash	Drilling Fluid: Water	Top of Rock (Depth): Not Encountered	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					Asphalt 3"-4", no road base		Note: Boring backfilled with grout, asphalt patch 6".
	SS-1 1.5-3.5'	33	6-12-21-13	12"	Silty sand, dry, dense, dark brown, mostly medium coarse sand, well graded, some silt, non plastic, trace gravel, angular, likely fill	SM	
5	SS-2 4-6'	4	3-2-2-2	6"	Silty sand, very loose, moist/dry, light brownish gray, mostly medium sand, little silt, low plasticity, trace gravel, sub angular, likely fill	SM	
10	SS-3 9-11'	13	6-6-7-9	0"	No recovery, gravel in split spoon, medium dense		
15	SS-4 14-16'	14	9-8-6-5	6"	@ 14' well graded sand with gravel, medium dense, wet, light brown to gray, mostly coarse to very coarse sand, sub angular to angular, trace fines, some small gravel <1" diameter, likely fill @15' silty clay, soft, wet, dark gray to light black, low plasticity, some fine sand, likely fill @15.6' wood/bark, railroad construction material, railroad tie, likely fill	SW CL-ML	
20							

SAMPLE TYPES:		SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5% / few 5 to 10%			NKD 12/1/2014
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose; 5-9 Loose; 10-29 Med. Dense; 30-49 Dense; 50+ Very Dense	Cohesive Consistency 0-2 Very Soft; 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff; 16-30 V-Stiff, 31+ Hard	
ST=SHELBY TUBE	some 30 to 45% / mostly >50%			
R=ROCK CORE RUN				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements		SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60323717	2 of 2	SB-7
	LOCATION: N 3014353 E 819155	Elevation: 15.6'	Total Depth: 30'
DRILL CONTRACTOR: GeoSearch	ENG: A. Borden	BEGUN: 11/24/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean	FINISHED: 11/24/2014	
Hole Size: 4" Inside		Ground Water (Depth/Elev.): First observed at 12 ft bgs	
Drilling Method: Drive and Wash	Drilling Fluid: Water	Top of Rock (Depth): Not Encountered	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
25	SS-5 19-21'	18	2-8-10-12	6"	Well graded gravel, medium dense, wet, bluish/gray, mostly gravel and rock fragments, very angular, few fines, trace sand	GW	
					@20' silty clay, very stiff, brownish gray, low plasticity, few wood fragments (rail road tie), trace fine sand	CL-ML	
	SS-6 24-26'	46	27-25-21-21	6"	Silty gravel, dense, wet, bluish gray / gray, mostly angular gravel, well graded, few coarse to very coarse sand, little silt, non plastic	GM	
30	S-7 28-30'	34	25-21-13-11	10"	Silty sand with gravel, dense, wet, light grayish brown, mostly coarse sand, well graded, angular to sub angular, little silt, slightly plastic, some small diameter gravel <0.5" diameter	SM	
							EOB @ 30' bgs
35							
40							
45							

SAMPLE TYPES:		SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5% / few 5 to 10%			NKD 12/1/2014
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose; 5-9 Loose; 10-29 Med. Dense; 30-49 Dense; 50+ Very Dense	Cohesive Consistency 0-2 Very Soft; 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff; 16-30 V-Stiff, 31+ Hard	
ST=SHELBY TUBE	some 30 to 45% / mostly >50%			
R=ROCK CORE RUN				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements		SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60310821	1 of 2	SB-8
	LOCATION: N 3014467 E 819122	Elevation: 14.4'	Total Depth: 32'
DRILL CONTRACTOR: GeoSearch	ENG: A. Borden	BEGUN: 11/25/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean	FINISHED: 11/25/2014	
Hole Size: 4" Inside		Ground Water (Depth/Elev.): First observed at 16 ft bgs	
Drilling Method: Hollow Stem Auger	Drilling Fluid: Water	Top of Rock (Depth): Not Encountered	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
	Hand Augered				Silty sand, loose, moist, yellowish brown / light gray, mostly medium fine sand, poorly graded, little silt, slightly plastic	SM	Note: Boring backfilled with grout.
5	SS-1 5-7'	15	5-7-8-3	24"	@5' same @5.5' poorly graded sand with silt, medium dense, dry/moist, brownish black, mostly medium sand, rounded to sub rounded, few silt, non plastic, some small diameter gravel <0.5"	SM SP-SM	
10	SS-2 10-12'	5	2-3-2-3	10"	@10' same, loose @10.5' poorly graded sand with silt, loose, moist, dark brownish gray, mostly fine medium sand, rounded to sub rounded, few silt, few small gravel	SP-SM	
15	SS-3 15-17'	8	2-3-5-5	12"	Well graded gravel with silt and sand, loose, saturated, reddish brown, mostly angular gravel, some coarse medium sand, few silt	GW-GM	
20							

SAMPLE TYPES:		SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5% / few 5 to 10%			NKD 12/1/2014
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose; 5-9 Loose; 10-29 Med. Dense; 30-49 Dense; 50+ Very Dense	Cohesive Consistency 0-2 Very Soft; 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff; 16-30 V-Stiff, 31+ Hard	
ST=SHELBY TUBE	some 30 to 45% / mostly >50%			
R=ROCK CORE RUN				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements		SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60323717	2 of 2	SB-8
	LOCATION: N 3014467 E 819122	Elevation: 14.4'	Total Depth: 32'
DRILL CONTRACTOR: GeoSearch	ENG: A. Borden	BEGUN: 11/25/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean	FINISHED: 11/25/2014	
Hole Size: 4" Inside		Ground Water (Depth/Elev.): First observed at 16 ft bgs	
Drilling Method: Hollow Stem Auger	Drilling Fluid: Water	Top of Rock (Depth): Not Encountered	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
25	SS-5 20-22'	4	1-2-2-5	18"	Well graded sand, very loose, wet, grayish brown, medium fine sand, trace silt @21' sand becomes coarse to very coarse, sub rounded to angular @21.5' sand becomes medium fine, poorly graded, more grayish brown, little silt	SW SM	
	SS-5 25-27'	18	4-11-7-3	22"	Lean clay, very stiff, moist, light bluish gray, moderate plasticity, little fine sand	CL	
30	SS-6 30-32'	27	2-11-16-25	6"	Silty sand, medium dense, wet, light brown, mostly medium fine sand, poorly graded, little silt, non plastic	SM	
							EOB @ 32' bgs
35							
40							
45							

SAMPLE TYPES:		SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5% / few 5 to 10%			NKD 12/1/2014
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose; 5-9 Loose; 10-29 Med. Dense; 30-49 Dense; 50+ Very Dense	Cohesive Consistency 0-2 Very Soft; 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff; 16-30 V-Stiff, 31+ Hard	
ST=SHELBY TUBE	some 30 to 45% / mostly >50%			
R=ROCK CORE RUN				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements		SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60310821	1 of 2	SB-9
	LOCATION: N 3014472 E 879232	Elevation: 17.2'	Total Depth: 32'
DRILL CONTRACTOR: GeoSearch	ENG: A. Chin	BEGUN: 12/1/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean	FINISHED: 12/1/2014	
Hole Size: 4.25" Inside 8" Outside		Ground Water (Depth/Elev.): First observed at 19 ft bgs	
Drilling Method: Hollow Stem Auger	Drilling Fluid: NA	Top of Rock (Depth): Did not reach	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
					7" asphalt 12" road base		Note: Boring backfilled with grout, asphalt patch 6".
	SS-1 2.5-4.5	31	12-15-16-15	19"	Dark brown, moist, silty sand, fine to coarse, little fine to medium gravel, dense, likely fill	SM	
5	SS-2 5-7	40	24-20-20-19	15"	Dark brown, moist, silty sand, fine to coarse, little fine to medium gravel, few organics, dense, likely fill	SM	
10	SS-3 10-12	11	5-6-5-7	12"	Dark gray-black, moist, organic silt, fine to coarse, highly organic, some wood, trace bricks, hydrocarbon odor, medium dense, likely fill, similar to planting soil	OL	
15	SS-4 15-17	16	8-7-9-8	0"	No recovery		
20							

SAMPLE TYPES:		SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5% / few 5 to 10%			NKD 12/2/2014
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose; 5-9 Loose; 10-29 Med. Dense; 30-49 Dense; 50+ Very Dense	Cohesive Consistency 0-2 Very Soft; 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff; 16-30 V-Stiff, 31+ Hard	
ST=SHELBY TUBE	some 30 to 45% / mostly >50%			
R=ROCK CORE RUN				

GEOLOGIC LOG — AECOM

PROJECT: Canal St. Improvements		SHEET	BORING NO.
SITE LOCATION: Jefferson/Washington and Canal St., Salem, MA	JOB NO.: 60323717	2 of 2	SB-9
	LOCATION: N 3014472 E 879232	Elevation: 17.2'	Total Depth: 32'
DRILL CONTRACTOR: GeoSearch	ENG: A. Chin	BEGUN: 12/1/2014	
DRILL RIG: CME-B59 Truck	DRILLER: Rodney Dean	FINISHED: 12/1/2014	
Hole Size: 4.25" Inside 8" Outside		Ground Water (Depth/Elev.): First observed at 19 ft bgs	
Drilling Method: Hollow Stem Auger	Drilling Fluid: NA	Top of Rock (Depth): Did not reach	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
25	SS-5 20-22'	9	3-5-4-5	13"	Brown, wet, poorly graded sand with silt, mostly medium sand, few silt, trace gravel, loose	SP-SM	
	SS-6 25-27	16	1-3-13-21	18"	@25' same, medium dense	SP-SM	
30	SS-7 30-32	46	44-34-12-13	12"	@30' same, silty sand, mostly coarse sand, little silt, dense	SM	
							EOB @ 32' bgs
35							
40							
45							

SAMPLE TYPES:		SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	trace 0 to 5% / few 5 to 10%			NKD 12/2/2014
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose; 5-9 Loose; 10-29 Med. Dense; 30-49 Dense; 50+ Very Dense	Cohesive Consistency 0-2 Very Soft; 3-4 Soft, 5-8 M/Stiff, 9-15 Stiff; 16-30 V-Stiff, 31+ Hard	
ST=SHELBY TUBE	some 30 to 45% / mostly >50%			
R=ROCK CORE RUN				

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	9	209
PROJECT FILE NO.	605146		

BORING LOGS

93692 PSKE-2 BORING LOGS.DWG 14-Oct-2015

GEOLOGIC LOG AECOM

PROJECT : **Canal St. Improvements**		SHEET	BORING NO.
SITE LOCATION: Loring and Canal St. Salem, MA	JOB NO.: 60310821	1 of 1	**LB-1**
	LOCATION: N 3007877 E 818967	Elevation: 21.3'	Total Depth: 11 ft
DRILL CONTRACTOR : GeoSearch	ENG : A. Chin	BEGUN: 11/24/2014	
DRILL RIG : CME-55LV ATV	DRILLER : Ken B.	FINISHED : 11/24/2014	
Hole Size : 3 inch inside		Ground Water (Depth/Elev.) : Did not encounter	
Drilling Method : Drive and Wash	Drilling Fluid : Water	Top of Rock (Depth) : 6.5 ft	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
5	SS-1 2.5-4.5	32	6-14-18-16	12"	Light brown, moist, silty sand with gravel, fine sand, some silt, slightly plastic, little gravel, subangular, dense	SM	Note: Boring backfilled with grout.
	SS-2 5-7	100+	15-31-100+	11"	Brown, moist, silty sand with gravel, fine to coarse sand, some silt, slightly plastic, little fine gravel, subrounded, trace organics, very dense	SM	
10	R-1 7-11		4 min 1.5 min 1.5 min 2.5 min	REC= 75% RQD= 33%	Hard, slightly weathered, dark gray, fine to medium grained, quartz diorite of the Salem Gabbro-Diorite Formation (Proterozoic), low angle and moderately dipping, discolored, open, smooth, very close to closely spaced joints	ROCK	EOB @ 11' bgs
15							
20							

SAMPLE TYPES:	trace 0 to 5%	SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	few 5 to 10%			
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKD 12/1/2014
ST=SHELBY TUBE	some 30 to 45%	5-9 Loose 10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	mostly >50%	30-49 Dense 50+ Very Dense	16-30 V-Stiff, 31+ Hard	

GEOLOGIC LOG AECOM

PROJECT : **Canal St. Improvements**		SHEET	BORING NO.
SITE LOCATION: Loring and Canal St. Salem, MA	JOB NO.: 60310821	1 of 1	**LB-2**
	LOCATION: N 3007898 E 818998	Elevation: 21.3'	Total Depth: 7.5 ft
DRILL CONTRACTOR : GeoSearch	ENG : A. Chin	BEGUN: 11/24/2014	
DRILL RIG : CME-55LV ATV	DRILLER : Ken B.	FINISHED : 11/24/2014	
Hole Size : 3 inch inside		Ground Water (Depth/Elev.) : Did not encounter	
Drilling Method : Drive and Wash	Drilling Fluid : Water	Top of Rock (Depth) : 2.3 ft	

Depth (ft)	Sample Type/No.	N Value	Blow Count (per 6 in.) Core Time	Sample Recovery RQD	SAMPLE DESCRIPTION	ASTM Class.	REMARKS
5	R-1 2.5-7.5		4 min 4 min 1.5 min 1 min 1.5 min	REC= 93% RQD= 47%	Light brown, moist, silty sand with gravel, fine sand, some silt, slightly plastic, little gravel, subangular, dense Hard, slightly weathered, dark gray, fine to medium grained, quartz diorite of the Salem Gabbro-Diorite Formation (Proterozoic), low angle and moderately dipping, discolored, open, smooth, closely spaced joints	SM ROCK	Note: Boring backfilled with grout.
10							EOB @ 7.5' bgs
15							
20							

SAMPLE TYPES:	trace 0 to 5%	SPT Resistance		Approve/Date
SS=2" SPLIT SPOON	few 5 to 10%			
HA=HAND AUGER	little 15 to 25%	Cohesionless Density: 0-4 Very Loose	Cohesive Consistency 0-2 Very Soft	NKD 12/1/2014
ST=SHELBY TUBE	some 30 to 45%	5-9 Loose 10-29 Med. Dense	3-4 Soft, 5-8 M/Stiff, 9-15 Stiff	
R=ROCK CORE RUN	mostly >50%	30-49 Dense 50+ Very Dense	16-30 V-Stiff, 31+ Hard	

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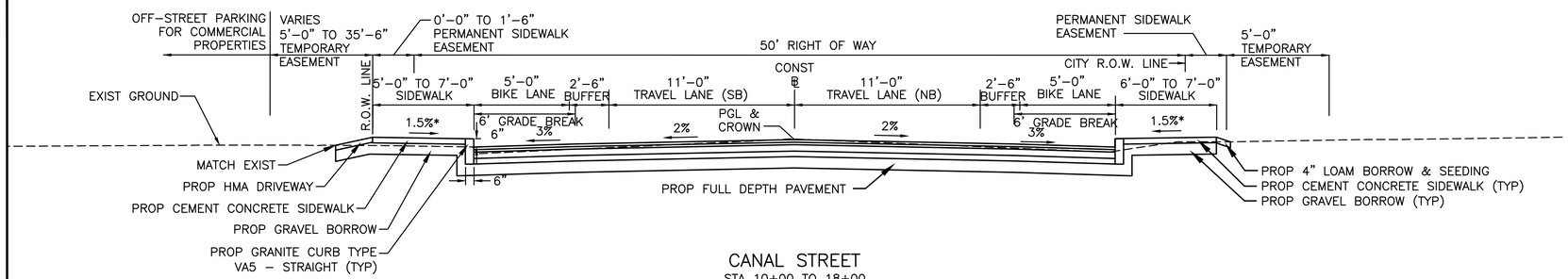
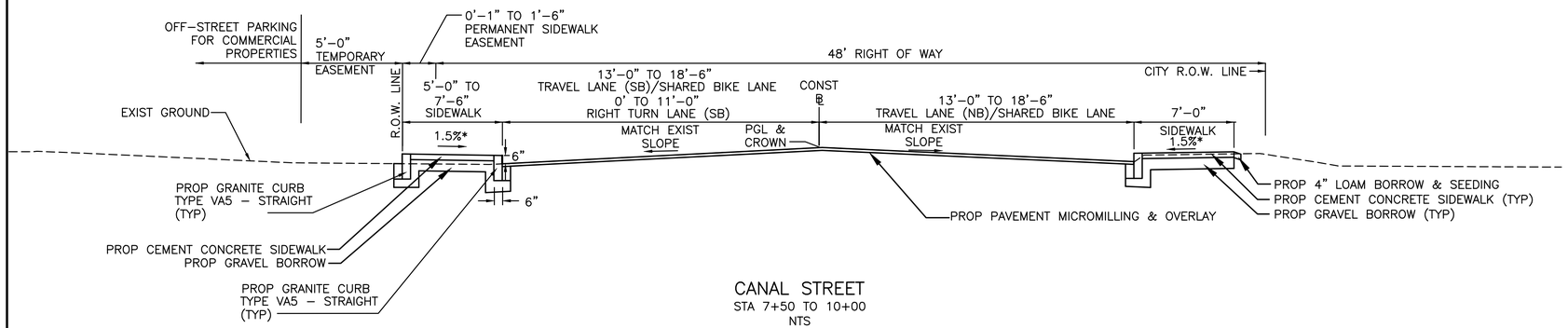
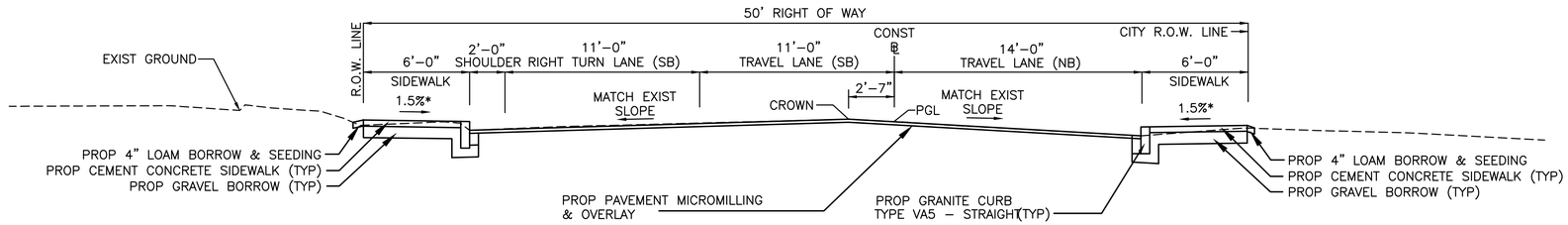


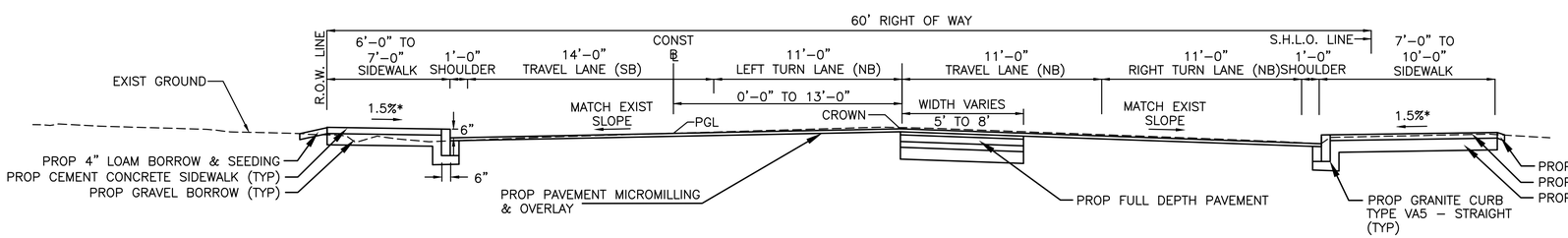
CANAL STREET
STA 10+00 TO 18+00
NTS



CANAL STREET
STA 7+50 TO 10+00
NTS



CANAL STREET
STA 5+50 TO 7+50
NTS



LORING AVENUE
STA 0+50 TO 5+50
NTS

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	10	209
PROJECT FILE NO.	605146		

TYPICAL SECTIONS

PAVEMENT NOTES

PROPOSED PAVEMENT MICROMILLING & OVERLAY

MILLING: 4" PAVEMENT MICROMILLING

SURFACE COURSE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5)
2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0)

FULL DEPTH PAVEMENT GREATER THAN 4' WIDTH

SURFACE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5)
2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0)

BASE: 3–1/2" SUPERPAVE BASE COURSE 37.5 (SBC–37.5)

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUB–BASE
10" GRAVEL BORROW, TYPE B

FULL DEPTH PAVEMENT LESS THAN 4' WIDTH

SURFACE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5)
2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0)

BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE

SUBBASE: 8" GRAVEL BORROW, TYPE B

GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT

SURFACE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5)
2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0)

BASE: 3–1/2" SUPERPAVE BASE COURSE 37.5 (SBC–37.5)

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUB–BASE
3" GRAVEL BORROW, TYPE B
GEOTEXTILE
3" GRAVEL BORROW, TYPE B
12" LIGHT WEIGHT FOAM CONCRETE

CEMENT CONCRETE SIDEWALK, WHEELCHAIR RAMPS & ISLANDS

SURFACE: 4" CEMENT CONCRETE SIDEWALK
AIR ENTRAINED, 4000 PSI, 3/4" 610'

SUBBASE: 8" GRAVEL BORROW, TYPE B

CEMENT CONCRETE DRIVEWAY

SURFACE: 6" CEMENT CONCRETE SIDEWALK AT DRIVEWAYS
AIR ENTRAINED, 4000 PSI, 3/4" 610'

SUBBASE: 8" GRAVEL BORROW, TYPE B

SHARED USE PATH

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

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

* CONSTRUCTION TOLERANCE OF ±0.5%.

GENERAL PAVEMENT 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. ALL HOT MIX ASPHALT WALKS & DRIVEWAYS SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 702 & 703 OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGE.
3. 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.

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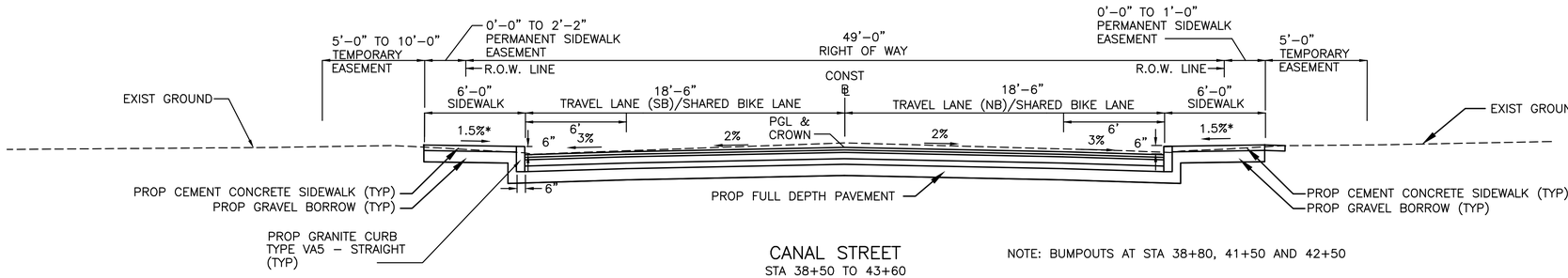
93692 PS&E-2 TYPICAL SECTIONS.DWG 16-Oct-2015

SALEM
CANAL STREET

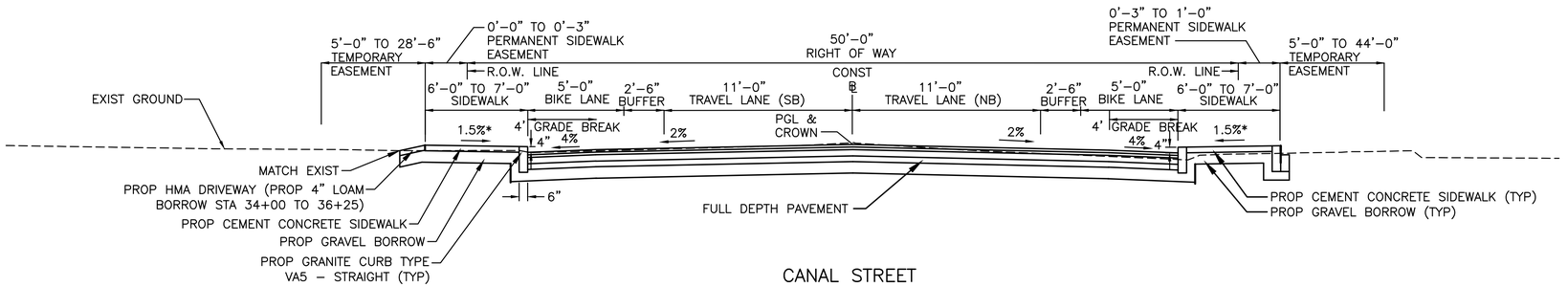
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	11	209
PROJECT FILE NO.	605146		

TYPICAL SECTIONS

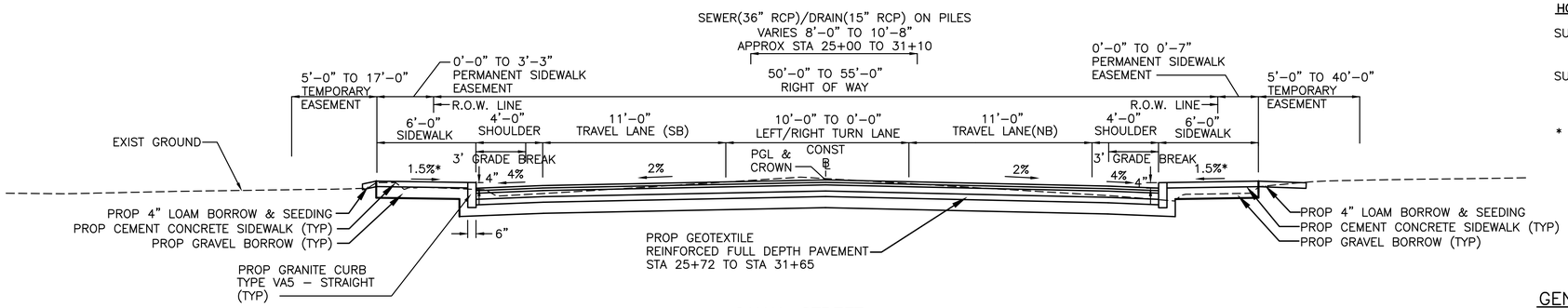


CANAL STREET
STA 38+50 TO 43+60
NTS

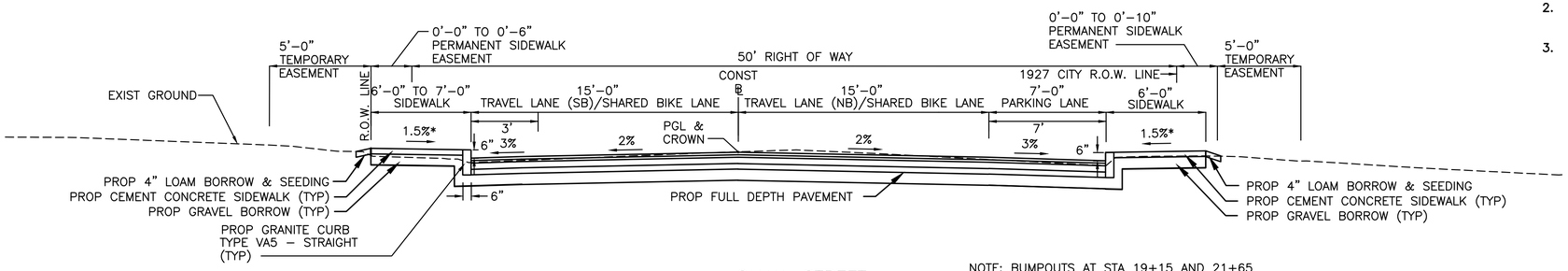
NOTE: BUMPOUTS AT STA 38+80, 41+50 AND 42+50



CANAL STREET
STA 31+00 TO 38+50
NTS



CANAL STREET
STA 25+75 TO 31+00
NTS



CANAL STREET
STA 18+00 TO 25+75
NTS

NOTE: BUMPOUTS AT STA 19+15 AND 21+65

HOT MIX ASPHALT DRIVEWAY

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

SUBBASE: 8" GRAVEL BORROW, TYPE B

THERMOPLASTIC CROSSWALK

SURFACE: 1–3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC–12.5)/ THERMOPLASTIC INLAY
2–1/4" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC–19.0)

BASE: 3–1/2" SUPERPAVE BASE COURSE 37.5 (SBC–37.5)

SUBBASE: 4" DENSE GRADED CRUSHED STONE FOR SUB–BASE
10" GRAVEL BORROW, TYPE B

STAMPED COLORED HOT MIX ASPHALT (OVER CONCRETE–SIDEWALK SECTIONS)

SURFACE: 2" STAMPED COLORED SUPERPAVE SURFACE COURSE 9.5 (SSC–9.5) OVER
4" CEMENT CONCRETE SIDEWALK (SURFACE CONCRETE WITH A FINE
TINE RAKE FINISH AND APPLY TACK COAT AT 0.1GAL/SY)

SUBBASE: 8" GRAVEL BORROW, TYPE B

*CONSTRUCTION TOLERANCE OF 0.5%.

HOT MIX ASPHALT WALK SURFACE

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

SUBBASE: 8" GRAVEL BORROW, TYPE B

* CONSTRUCTION TOLERANCE OF ±0.5%.

GENERAL PAVEMENT 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. ALL HOT MIX ASPHALT WALKS & DRIVEWAYS SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 702 & 703 OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGE.
3. 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.

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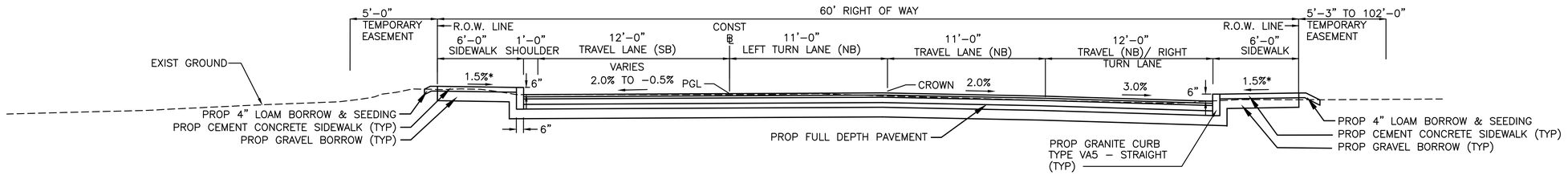
93692 PS&E-2 TYPICAL SECTIONS.DWG 16-Oct-2015

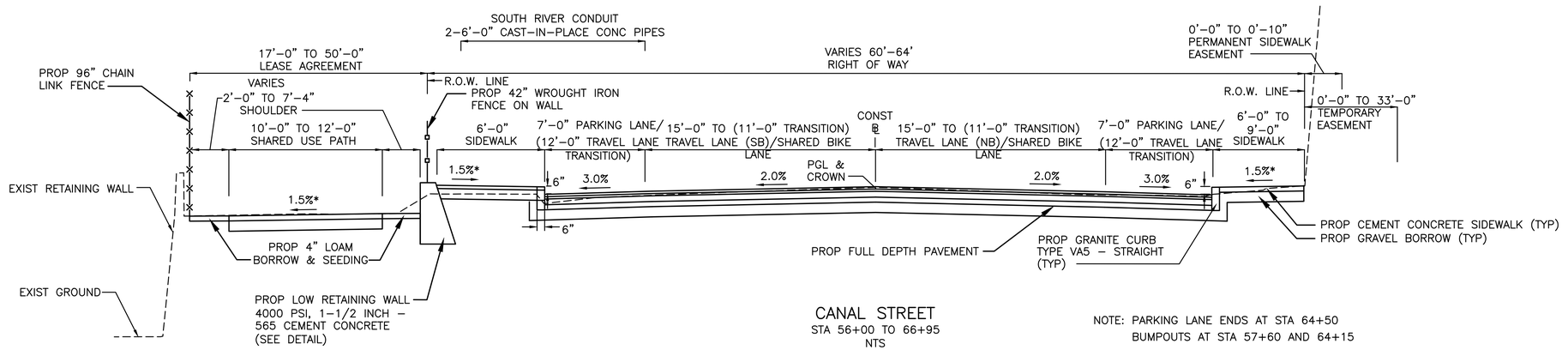
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	12	209
PROJECT FILE NO.	605146		

TYPICAL SECTIONS



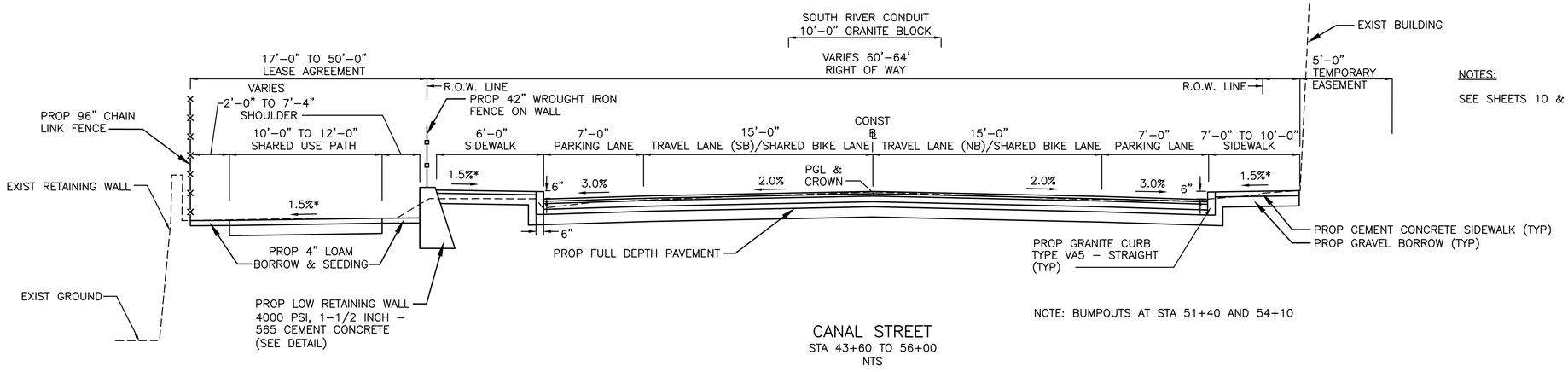
CANAL STREET
STA 66+95 TO 68+50
NTS



CANAL STREET
STA 56+00 TO 66+95
NTS

NOTE: PARKING LANE ENDS AT STA 64+50
BUMPOUTS AT STA 57+60 AND 64+15

* CONSTRUCTION TOLERANCE OF ±0.5%.



CANAL STREET
STA 43+60 TO 56+00
NTS

NOTE: BUMPOUTS AT STA 51+40 AND 54+10

NOTES:

SEE SHEETS 10 & 11 FOR PAVEMENT NOTES.

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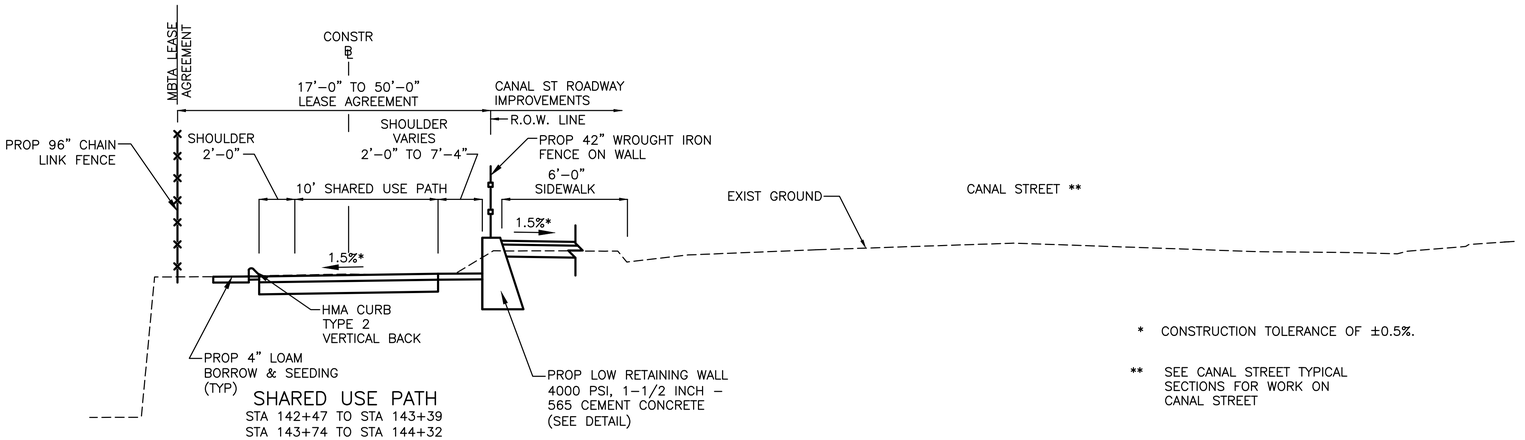
93692 PSKE-2 TYPICAL SECTIONS.DWG 16-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	13	209
PROJECT FILE NO.	605146		

TYPICAL SECTIONS

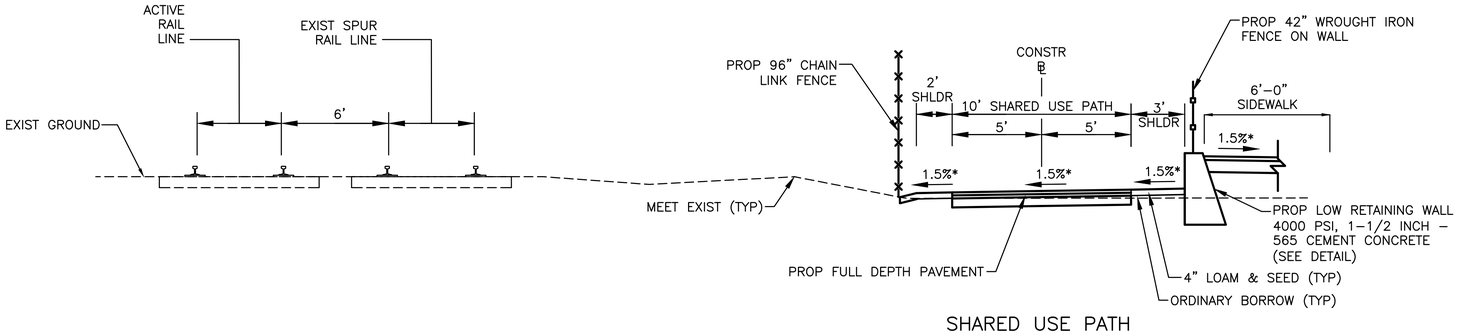


* CONSTRUCTION TOLERANCE OF ±0.5%.

** SEE CANAL STREET TYPICAL SECTIONS FOR WORK ON CANAL STREET

SHARED USE PATH
STA 142+47 TO STA 143+39
STA 143+74 TO STA 144+32
STA 144+67 TO STA 146+32
STA 146+67 TO STA 147+55
STA 147+90 to STA 148+22
STA 148+57 TO STA 150+94
STA 151+29 TO STA 151+97
STA 152+32 TO STA 152+97
STA 153+32 TO STA 153+97
STA 154+32 TO STA 154+97

NTS



* CONSTRUCTION TOLERANCE OF ±0.5%.

SHARED USE PATH
STA 134+65 TO STA 142+47
NTS

93692 PS&E-2 TYPICAL SECTIONS.DWG 16-Oct-2015

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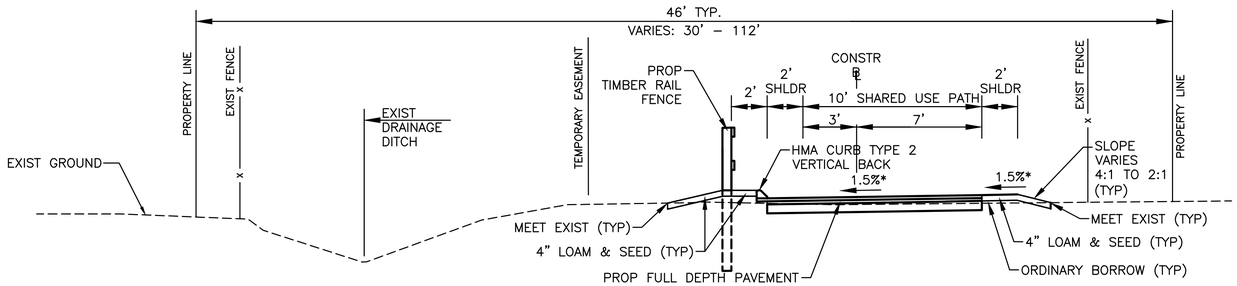
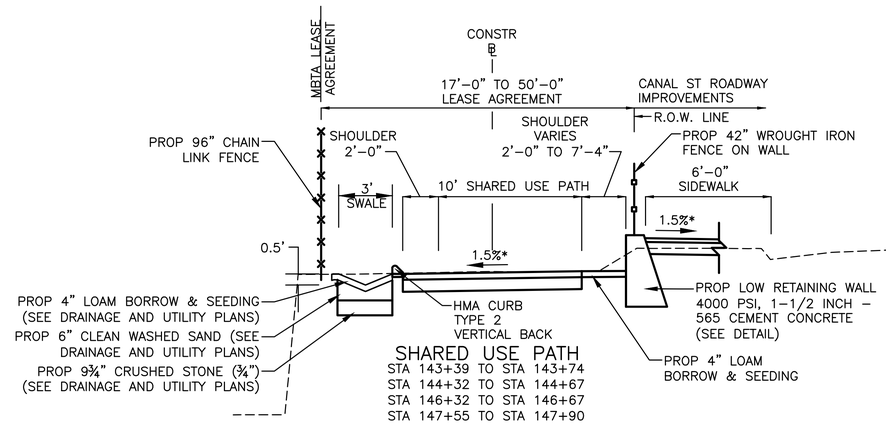
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	14	209
PROJECT FILE NO.	605146		

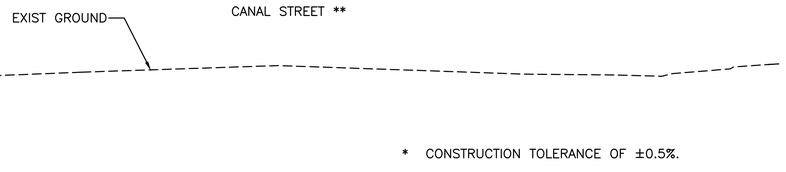
TYPICAL SECTIONS



SHARED USE PATH
STA 155+26 TO STA 156+60
NTS



SHARED USE PATH
STA 143+39 TO STA 143+74
STA 144+32 TO STA 144+67
STA 146+32 TO STA 146+67
STA 147+55 TO STA 147+90
STA 148+22 TO STA 148+57
STA 150+94 TO STA 151+29
STA 151+97 TO STA 152+32
STA 152+97 TO STA 153+32
STA 153+97 TO STA 154+32
STA 154+97 TO STA 155+26
NTS



* CONSTRUCTION TOLERANCE OF ±0.5%.

** SEE CANAL STREET TYPICAL SECTIONS FOR WORK ON CANAL STREET

93692 PS&E-2 TYPICAL SECTIONS.DWG 16-Oct-2015

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HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

SEE BELOW

WATER SUPPLY ALTERATIONS

SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	15	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

CONTINUE BELOW RIGHT

CONTINUE ABOVE LEFT

JEFFERSON AVENUE

LORING AVENUE

CANAL STREET

LIMIT OF WORK
STA 00+50.00
N 3007630.1208
E 819119.3879

LIMIT OF WORK
STA 29+93.00
N 3007900.9894
E 816680.6746

JEFFERSON AVE ℄ = STA 33+71.72
LORING AVE/CANAL ST ℄ = STA 2+93.23

LORING AVE/CANAL ST ℄ = STA 4+03.12
LORING AVE ℄ = STA 100+00

MEET EXIST SIDEWALK
PROP 10' CEM CONC DRIVEWAY
MEET EXIST CURB/SIDEWALK
PROP MILL & OVERLAY
PROP 40' CEM CONC DRIVEWAY
EXCAVATE PAVEMENT & REM CONC SIDEWALK, INSTALL LOAM & SEED
PROP CEM CONC WALKWAY (MATCH EXISTING)
PROP FULL DEPTH PAVEMENT
PROP VERT GRAN CURB TYPE VA5 (TYP)
PROP 15' CEM CONC DRIVEWAY
PROP ISLAND LOAM & SEED
MEET EXIST SIDEWALK (DEPTH=13.57 INV.1=15.62)
PROP 6' CEM CONC SIDEWALK
RELOCATE BUS SHELTER TO STA 105+00 LT LORING AVE (BY OTHERS)
PROP THERMOPLASTIC CROSSWALK
REM MEDIAN ISLAND/PROP FULL DEPTH PAVEMENT
PROP 5' CEM CONC SIDEWALK
PROP PERMANENT EASEMENT
PROP 15' CEM CONC DRIVEWAY
PROP 20' CEM CONC DRIVEWAY
PROP 7' CEM CONC SIDEWALK
PROP 10' CEM CONC DRIVEWAY
PROP 12' CEM CONC DRIVEWAY
PROP 25' CEM CONC DRIVEWAY
PROP 18' CEM CONC DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP 36' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP THERMOSPLASTIC CROSSWALK
PROP WHEELCHAIR RAMP (TYP)
PROP TEMP EASEMENT (TYP)
PROP 9.5' CEM CONC SIDEWALK
PROP CURB CORNER (TYP)
LIMIT OF MILL & OVERLAY
MEET EXIST SIDEWALK
LIMIT OF MILL & OVERLAY
WCR-1 WCR-2 WCR-3 WCR-4 WCR-5 WCR-6 WCR-7 WCR-8 WCR-9 WCR-10 WCR-11 WCR-91 WCR-92
SWTD-1 SWTD-2 SWTD-3 SWTD-4 SWTD-5 SWTD-6 SWTD-7 SWTD-8 SWTD-9 SWTD-10 SWTD-11 SWTD-12 SWTD-86
SAWCUT
CITY LAYOUT
(1909 SHLO #1233)
1909 SHLO LO.WO.1233
L=206.82' R=500.00' Δ=23° 41' 58"
L=68.87' R=450.00' Δ=8° 46' 10"
PC +18.20
PT +36.19
PT +69.53
PC +78.29
PT +25.02
N 8° 44' 46" E 53.27'
Mid +21.61
Mid +12.73
PT +47.16
N 2° 01' 24" W 199.21'
12.5'±
36.5'±
N 16° 57' 12" W 218.20'
7.0'
10.0'
6.0'
9.5'
14.5'
24.0'
14.0'
31.0'
WOODCHIPS
"DO NOT ENTER"
"NO PARKING ANYTIME"
"1A NORTH" "NO PARKING 7AM-9AM 4PM-6PM"
"LEFT LANE FOR LEFT TURN "BUS STOP"
"LORING PLAZA" "AUTO ZONE" "EAST COAST MOTOR SPORTS" "CANAL ST CYCLE" "SPACE 4 RENT" "EATERN BANK"
"NO PARKING"
"NO PARKING ANYTIME"
"DO NOT BLOCK INTERSECTION"
"LEFT LANE MUS TURN LEFT"
PROPOSED EXTENSION OF CANAL STREET 1927

MAP 31 LOT 90
408 JEFFERSON AVENUE
NOW OR FORMERLY
MCSHAY, PAUL
MCSHAY, THERESA
S.E.D.R.D. BOOK 21299 PAGE 192

MAP 31 LOT 88
410 JEFFERSON AVENUE
NOW OR FORMERLY
DOWARD, BRIAN
S.E.D.R.D. BOOK 23086 PAGE 58

MAP 31 LOT 87
414 JEFFERSON AVENUE
NOW OR FORMERLY
BROWN, SAMUEL
S.E.D.R.D. BOOK 30135

MAP 31 LOT 85
96 LORING AVENUE
NOW OR FORMERLY
NOWLAN, RONALD A
300K 3

MAP 31 LOT 93
-105 LORING AVENUE
OW OR FORMERLY
DENNIS JR. & STELLA
S.E.D.R.D.

MAP 31 LOT 92
101 LORING AVENUE
NOW OR FORMERLY
OMEGA REALTY TRUST
S.E.D.R.D.
BOOK 21442 PAGE 477

MAP 31 LOT 71
92 LORING AVENUE
NOW OR FORMERLY
NEWMAN, FLORA L.
S.E.D.R.D.
BOOK 90P07

MAP 32 LOT 27
72 LORING AVENUE
NOW OR FORMERLY
JEFFERSON TRUST, THE
C/O DRUMLIN GROUP
S.E.D.R.D. BOOK 14511 PAGE 317

MAP 32 LOT 22
NOW OR FORMERLY
MAGUIRE, MARILYN C
MAGUIRE, AMY JEAN
S.E.D.R.D.
BOOK 13197 PAGE 435

MAP 32 LOT 21
NOW OR FORMERLY
TOY, JOHN S
TOY, ROSEMARY
S.E.D.R.D.
BOOK 23134 PAGE 168

MAP 32 LOT 23
NOW OR FORMERLY
BECKER, MICHAEL
S.E.D.R.D. BOOK 24092 PAGE 477

MAP 32 LOT 24
NOW OR FORMERLY
LOGLI, FAIK
LOGLI, ALBA
S.E.D.R.D. BOOK 22910 PAGE 2

MAP 32 LOT 25
NOW OR FORMERLY
LAY, DARA
S.E.D.R.D. BOOK 17036 PAGE 181

MAP 32 LOT 26
NOW OR FORMERLY
NIKOLOPOULOS, NICK C.
S.E.D.R.D. BOOK 15900 PAGE 53

MAP 32 LOT 29
71 LORING AVENUE
NOW OR FORMERLY
SALEM ST. COLLEGE ASSISTANCE CORPORATION
S.E.D.R.D./BOOK 14102 PAGE 29

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 29 & 30

CONTINUED ON SHEET NO. 16

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	16	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

PROP HYDRANT STA 8+79 LT

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

CONTINUED ON SHEET NO. 15

STREET

N 2° 01' 24" W 199.21'

CANAL STREET

N 4° 36' 08" W 159.26'

N 1° 47' 24" W 369.60'

PUBLIC – 50 ft. WIDE

KIMBALL ROAD

LORING AVENUE

MAP 32 LOT 30
NOW OR FORMERLY
ESTHER REALTY INC
S.E.D.R.D. BOOK 14511
PAGE 317

MAP 32 LOT 31
NOW OR FORMERLY
ESTHER REALTY INC
S.E.D.R.D. BOOK 14511 PAGE 317

MAP 32 LOT 33
NOW OR FORMERLY
JEDS REALTY TRUST
BORNSTEIN, STEVEN M TR
290 CANAL STREET
S.E.D.R.D. BOOK 15004 PAGE 510
AREA = 0.353 ACRES

MAP 32 LOT 102
NOW OR FORMERLY
J A B TRUST
BERTINI, JOHN A TR
S.E.D.R.D. BOOK 8720 PAGE 485

MAP 23 LOT 144
NOW OR FORMERLY
ESTHER REALTY INC
282 REAR CANAL
S.E.D.R.D.
BOOK 6409 PAGE 585
AREA = 9.350 ACRES

MAP 32 LOT 36
NOW OR FORMERLY
J A B TRUST
BERTINI, JOHN A TR
286 CANAL STREET
S.E.D.R.D. BOOK 8720 PAGE 485
AREA = 1.205 ACRES

MAP 32 LOT 65
NOW OR FORMERLY
CAPPPUCCIO, BERTHA L
S.E.D.R.D.
BOOK 22924 PAGE 580

NOW OR FORMERLY
SALEM ST. UNIVERSITY
ASSISTANT CORPORATION
S.E.D.R.D.
BOOK 14102 PAGE 29

MAP 32 LOT 71
NOW OR FORMERLY
SALEM ST. COLLEGE ASSISTANCE
CORPORATION

MAP 32 LOT 64
285 CANAL STREET
NOW OR FORMERLY
SALEM STATE COLLEGE ASSITANCE CORP.
S.E.D.R.D. BOOK 29712 PAGE 19
PLAN BK 203 PLAN 61

"LORING PLAZA"
"AUTO ZONE"
"EAST COAST MOTOR SPORTS"
"CANAL ST CYCLE"
"SPACE 4 RENT"
"EATERN BANK"

LIMIT OF WORK
PROP HMA DRIVEWAY
PROP 10' MILL & OVERLAY
PROP FULL DEPTH PAVEMENT
PROP HYDRANT
PROP HMA DRIVEWAY
PROP MILL & OVERLAY
PROP HMA DRIVEWAY
PROP 40' CEM CONC DRIVEWAY
PROP 25' CEM CONC DRIVEWAY
PROP PERMANENT EASEMENT
PROP TEMP EASEMENT (TYP)
PROP 5' CEM CONC SIDEWALK
PROP VERT GRAN CURB TYPE VA5
8'X18' SPACE (TYP)
EXCAVATE PAVEMENT, PROP LOAM & SEED (SEE LANDSCAPING PLANS)
MEET EXIST
8'X20' SPACE
PROP MILL & OVERLAY
PROP 28' CEM CONC DRIVEWAY
PROP 22' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP THERMOPLASTIC CROSSWALK
PROP VERT GRAN CURB TYPE VA5 (TYP)
PROP 7' CEM CONC SIDEWALK (TYP)
PROP 28' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP VERT GRAN CURB TYP VA5 (TYP)
PROP 6' CEM CONC SIDEWALK
PROP 35' CEM CONC DRIVEWAY
PROP 25' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP 36' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)
LIMIT OF MILL & OVERLAY
LIMIT OF FULL DEPTH PAVEMENT STA 10+00
MEET EXIST SIDEWALK
PROP VERT GRAN CURB TYPE VA5
RELOCATED BUS SHELTER
MEET EXIST SIDEWALK
PROP CEM CONC SIDEWALK
LIMIT OF MILL & OVERLAY
LIMIT OF WORK STA 105+61 N 300845.7635 E 819335.3326

SAWCUT
SWTD–12
SWTD–13
SWTD–14
SWTD–15
SWTD–16
SWTD–17
SWTD–18
SWTD–19
SWTD–85
SWTD–86
SWTD–87
WCR–10
WCR–11
WCR–12
WCR–13
WCR–14
WCR–15
WCR–87
WCR–88
WCR–93
RET
PI +05.64
PI +46.37
PC +50.92
CITY LAYOUT
1909 SHLO LO NO 1233
(1909 SHLO #1233)
CONTINUE RIGHT
CONTINUE BELOW LEFT

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS
4. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978–490–9236 (CELL).

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 31

CONTINUED ON SHEET NO. 17

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	17	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

28-Oct-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

CONTINUED ON SHEET NO. 16

CONTINUED ON SHEET NO.18

CANAL STREET

TULIP STREET

ROSE STREET

BROADWAY

PROP LIMIT OF GRADING (TYP)

PROP HMA PATH

PROP MILL & OVERLAY

PROP 28' CEM CONC DRIVEWAY

CANAL ST ℄ = STA 13+40.84
SHARED USE PATH ℄ = STA 100+00

SAWCUT

PROP HMA DRIVEWAY

PROP 30' CEM CONC DRIVEWAY

PROP THERMOPLASTIC CROSSWALK

PROP CEM CONC SIDEWALK (TYP)

PROP TEMP EASEMENT (TYP)

PROP FULL DEPTH PAVEMENT

LIMIT OF WORK MEET EXISTING

PROP 10' MILL & OVERLAY

MEET EXIST SIDEWALK

PROP VERT GRAN CURB TYPE VA5 3" REVEAL

PROP THERMOPLASTIC CROSSWALK

PROP HMA DRIVEWAY
PROP VERT GRAN CURB TYP VA5 (TYP)

PROP 28' CEM CONC DRIVEWAY

PROP PERMANENT EASEMENT

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP WHEELCHAIR RAMP (TYP)

PROP 24' HMA DRIVEWAY

PROP 24' CEM CONC DRIVEWAY

PROP 7' CEM CONC SIDEWALK

PROP CEM CONC WCR (TYP)

PROP LOAM & SEED

PROP MILL & OVERLAY

PROP CURB STOP (TYP)

PROP 6' CEM CONC SIDEWALK

PROP 30' CEM CONC DRIVEWAY

MEET EXIST SIDEWALK

PROP PERMANENT EASEMENT

R&D 2 STORY GUARDRAIL

PROP STOCKADE FENCE, REM OLD FENCE

EXISTING MARBLEHEAD BRANCH MULTI-USE TRAIL

N 1° 47' 24" W 369.60'

N 0° 51' 38" W 466.83'

PI +75.24

PI +57.35

SWTD-18 SWTD-19 SWTD-20 SWTD-21 SWTD-22 SWTD-23 SWTD-24

WCR-16 WCR-17 WCR-18 WCR-19 WCR-20 WCR-21 WCR-22

CITY LAYOUT

PUBLIC - 50 ft. WIDE

PUBLIC - 40 ft. WIDE

PRIVATE - 40 ft. WIDE

MAP 23 LOT 144
NOW OR FORMERLY
ESTHER REALTY INC
282 REAR CANAL
S.E.D.R.D.
BOOK 6409 PAGE 588
AREA = 9.350 ACRES

MAP 32 LOT 37
NOW OR FORMERLY
ESTHER REALTY INC
282 CANAL STREET
S.E.D.R.D. BOOK 6409 PAGE 588
AREA = 0.363 ACRES

MAP 32 LOT 38
NOW OR FORMERLY
TWO HUNDRED SIXTY SIX CANAL STREET TRUST
BERTINI, JOHN A TR
BERTINI, FRANK C TR
BERTINI, ESTHER TR
266 CANAL STREET
S.E.D.R.D. BOOK 10716 PAGE 430
AREA 8K 3934 PAGE 89

MAP 32 LOT 39
NOW OR FORMERLY
GARDNER MATTRESS CORP
250-254 CANAL STREET
S.E.D.R.D. BOOK 23951 PAGE 484
AREA = 0.509 ACRES

MAP 32 LOT 227
267 CANAL STREET
NOW OR FORMERLY
CITY OF SALEM
S.E.D.R.D.
BOOK 13827 PAGE 596
ITEM IN BOOK THEREOF

MAP 32 LOT 62
SALEM STATE COLLEGE
ASSISTANCE CORP.
S.E.D.R.D. BOOK 27260 PAGE 87

MAP 32 LOT 60
NOW OR FORMERLY
259 CANAL STREET TRUST
WILSON, LLOYD C TR
PRICE, JENNIFER TR
S.E.D.R.D. BOOK 20015 PAGE 207

MAP 32 LOT 59
NOW OR FORMERLY
LIMA, PETRONIO
LIMA, GIOVANIA
S.E.D.R.D. BOOK 18865 PAGE 284

MAP 32 LOT 61
NOW OR FORMERLY
LAM, QUANG TICH
LAM, DE S
S.E.D.R.D. BOOK 20143 P

MAP 32 LOT 74
NOW OR FORMERLY
CRUGER, CHRISTOPHER W
S.E.D.R.D. BOOK 14122 PAGE 259

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 32

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	18	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

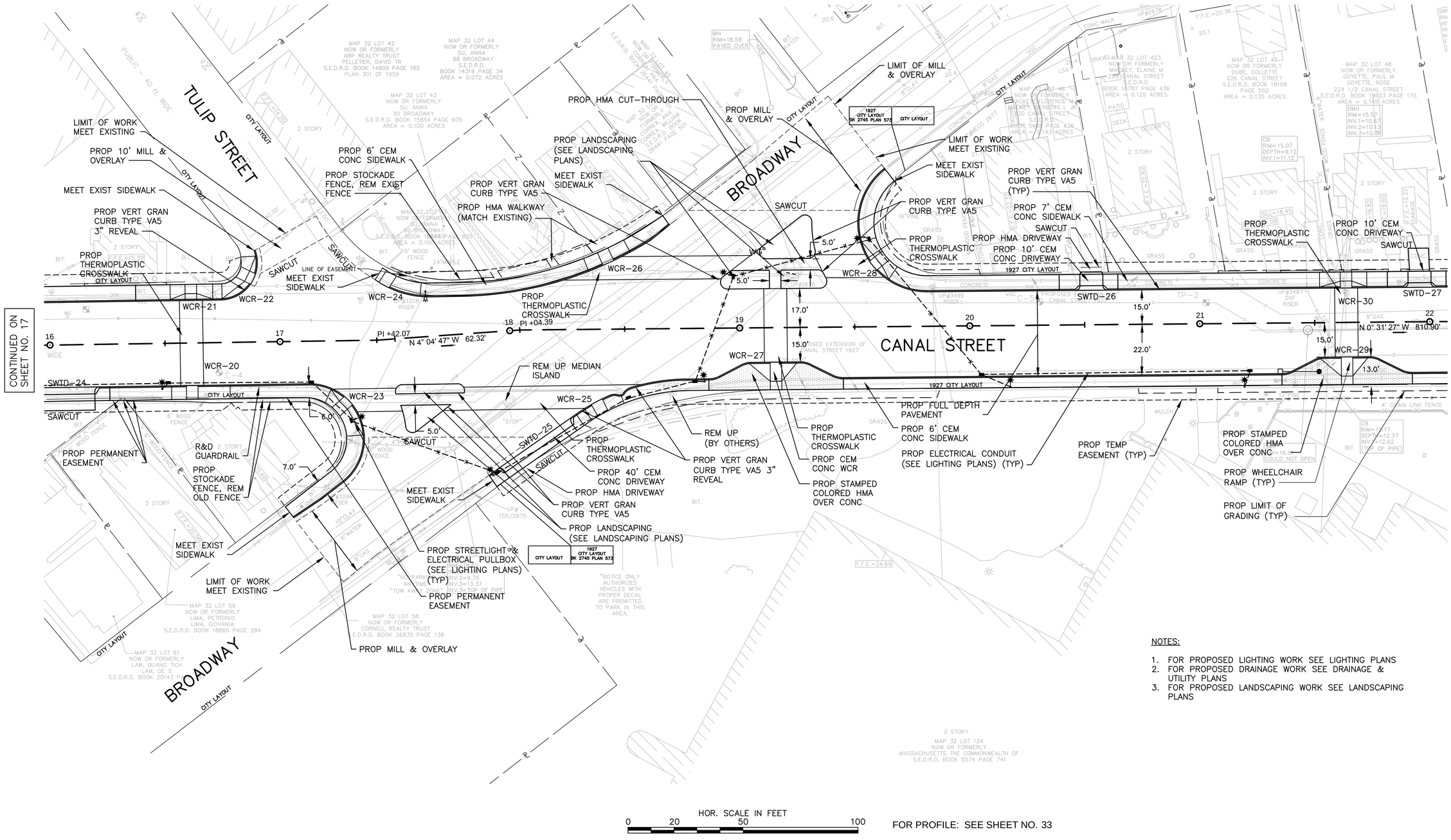
NONE

WATER SUPPLY ALTERATIONS

SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS



HOR. SCALE IN FEET

0 20 50 100

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS

FOR PROFILE: SEE SHEET NO. 33

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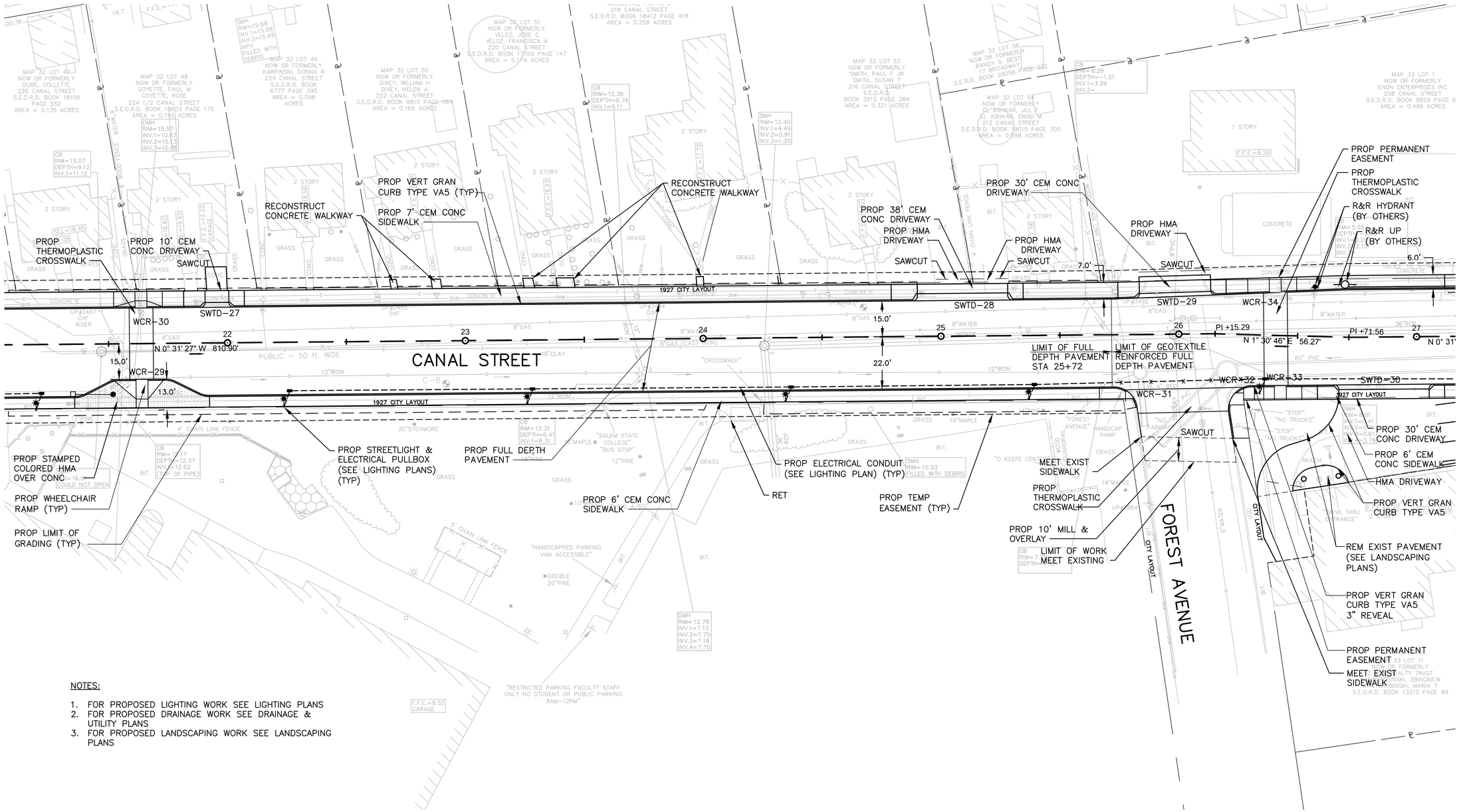
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	19	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS
NONE	NONE	SEE DRAINAGE & UTILITY PLANS	SEE DRAINAGE & UTILITY PLANS


CANAL STREET
PUBLIC – 50 ft. WIDE
FOREST AVENUE
1927 CITY LAYOUT
CONTINUED ON SHEET NO. 18
CONTINUED ON SHEET NO. 20
PROP STAMPED COLORED HMA OVER CONC
PROP WHEELCHAIR RAMP (TYP)
PROP LIMIT OF GRADING (TYP)
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
PROP FULL DEPTH PAVEMENT
PROP 6' CEM CONC SIDEWALK
RET
PROP ELECTRICAL CONDUIT (SEE LIGHTING PLAN) (TYP)
PROP TEMP EASEMENT (TYP)
PROP 10' MILL & OVERLAY
LIMIT OF WORK MEET EXISTING
MEET EXIST SIDEWALK
PROP THERMOPLASTIC CROSSWALK
PROP 10' CEM CONC DRIVEWAY
SAWCUT
RECONSTRUCT CONCRETE WALKWAY
PROP VERT GRAN CURB TYPE VA5 (TYP)
PROP 7" CEM CONC SIDEWALK
PROP 38' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
LIMIT OF FULL DEPTH PAVEMENT STA 25+72
LIMIT OF GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT
PROP PERMANENT EASEMENT
PROP HMA DRIVEWAY
R&R HYDRANT (BY OTHERS)
R&R UP (BY OTHERS)
PROP 6' CEM CONC SIDEWALK
HMA DRIVEWAY
PROP VERT GRAN CURB TYPE VA5
REM EXIST PAVEMENT (SEE LANDSCAPING PLANS)
PROP VERT GRAN CURB TYPE VA5 3" REVEAL
PROP PERMANENT EASEMENT
MEET EXIST SIDEWALK
WCR-29
WCR-30
WCR-31
WCR-32
WCR-33
WCR-34
SWTD-27
SWTD-28
SWTD-29
SWTD-30
N 0° 31' 27" W 810.90'
N 1° 30' 46" E 56.27'
N 0° 31'
PI +15.29
PI +71.56
15.0'
13.0'
22.0'
7.0'
6.0'
22
23
24
25
26
27
MAP 32 LOT 49 NOW OR FORMERLY KARPINSKI, DONNA R 224 CANAL STREET S.E.D.R.D. BOOK 6777 PAGE 395 AREA = 0.098 ACRES
MAP 32 LOT 50 NOW OR FORMERLY DIXEY, WILLIAM H DIXEY, HELEN A 222 CANAL STREET S.E.D.R.D. BOOK 9810 PAGE 563 AREA = 0.165 ACRES
MAP 32 LOT 51 NOW OR FORMERLY VELOZ, JOSE C VELOZ, FRANDISCA A 220 CANAL STREET S.E.D.R.D. BOOK 13700 PAGE 147 AREA = 0.174 ACRES
MAP 32 LOT 53 NOW OR FORMERLY SMITH, PAUL F JR SMITH, SUSAN T 216 CANAL STREET S.E.D.R.D. BOOK 3912 PAGE 384 AREA = 0.321 ACRES
MAP 32 LOT 54 NOW OR FORMERLY EL ASHKAR, JILL F EL ASHKAR, EMAD M 212 CANAL STREET S.E.D.R.D. BOOK 19015 PAGE 300 AREA = 0.098 ACRES
MAP 32 LOT 56 NOW OR FORMERLY RANDY'S BEST 17 BROADWAY S.E.D.R.D. BOOK 29058 PAGE 322
MAP 33 LOT 1 NOW OR FORMERLY ENON ENTERPRISES INC 208 CANAL STREET S.E.D.R.D. BOOK 8859 PAGE 6 AREA = 0.496 ACRES
MAP 33 LOT 11 NOW OR FORMERLY SALTY TRUST KARPINSKI, ZBIGNIEW KARPINSKI, MARIA T S.E.D.R.D. BOOK 13210 PAGE 99
"RESTRICTED PARKING FACULTY STAFF ONLY NO STUDENT OR PUBLIC PARKING 8AM–12PM"
"HANDICAPPED PARKING VAN ACCESSIBLE"
"SALEM STATE COLLEGE" "BUS STOP"
"O KEEFE CENTER FOR THE PERFORMING ARTS"
"DRIVE THRU ENTRANCE"
"STOP" "NO TRUCKS"
"NO PARKING"
"HANDICAP RAMP"
4' CHAIN LINK FENCE
6' CHAIN LINK FENCE
WOOD FENCE
F.F.E.=8.55 GARAGE
F.F.E.=8.26
DMH RIM=12.78 INV.1=7.13 INV.2=7.75 INV.3=7.18 INV.4=7.75
SMH RIM=10.53 FILLED WITH DEBRIS
CB RIM=12.31 DEPTH=6.41 INV.1=8.31
CB RIM=12.17 DEPTH=12.37 INV.2=12.62 (TOP OF PIPE)
CB RIM=15.07 DEPTH=9.12 INV.1=11.12
DMH RIM=15.57 INV.1=10.67 INV.2=10.13 INV.3=10.88
SMH RIM=19.68 INV.1=15.68 INV.2=15.68 INV FILLED WITH DEBRIS
SMH RIM=12.40 INV.1=4.49 INV.2=0.91 INV.3=1.00
CB RIM=12.36 DEPTH=6.76 INV.1=9.11
CB RIM=8.29 DEPTH=-1.51 INV.1=3.99 INV.2=
SMH RIM=8.01 INV.1=4.41 INV.2=0.61 INV.3=3.78
30"SYCAMORE
18"MAPLE
12"PINE
10"PINE
DOUBLE 20"PINE
12"IRON
8"GAS
8"WATER
6"WATER
6"IRON
8"GAS (CASED)
10"CLAY
36"RCP
60" PVC
UP #3497 DXF RISER
UP #3495 DXF
UP #3492
UP #3484
SILL=18.45
SILL=19.65
SILL=16.82
F.F.E.=19.7
F.F.E.=17.72
F.F.E.=18.93
F.F.E.=16.62
F.F.E.=22.22 GARAGE
F.F.E.=22.38
F.F.E.=17.72
F.F.E.=16.70
F.F.E.=16.70 (COULD NOT OPEN)
F.F.E.=20.36
F.F.E.=19.7
F.F.E.=18.93
F.F.E.=16.82
F.F.E.=19.65

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	20	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS	TRAFFIC SIGNAL CONDUIT	WATER SUPPLY ALTERATIONS	DRAINAGE DETAILS
NONE	NONE	R&R HYDRANT STA 26+57 LT	SEE DRAINAGE & UTILITY PLANS

CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

CANAL STREET

BROADWAY

HERSEY AVENUE

OCEAN AVENUE

PROP PERMANENT EASEMENT
PROP THERMOPLASTIC CROSSWALK
R&R HYDRANT (BY OTHERS)
R&R UP (BY OTHERS)
PROP TEMP EASEMENT (TYP)
PROP 30' CEM CONC DRIVEWAY
PROP LIMIT OF GRADING (TYP)
R&R CURB, IN PLACE
PROP 30' CEM CONC DRIVEWAY
PROP 6' CEM CONC SIDEWALK (TYP)
PROP VERT GRAN CURB TYPE VA5 (TYP)
PROP HMA DRIVEWAY
SAWCUT
LIMIT OF DRIVEWAY RECONSTRUCTION
PROP HMA DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP 6' CEM CONC SIDEWALK
PROP GEOGRID REINFORCED FULL DEPTH PAVEMENT
LIMIT OF WORK MEET EXISTING
R&R UP (BY OTHERS)
PROP VERT GRAN CURB TYPE VA5 3" REVEAL
MEET EXIST
R&R CURB
SAWCUT
PROP 10' MILL & OVERLAY
MEET EXIST
PROP WHEELCHAIR RAMP (TYP)
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
PROP HMA DRIVEWAY
SAWCUT
PROP 15' CEM CONC DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP 6' CEM CONC SIDEWALK
HMA DRIVEWAY
PROP VERT GRAN CURB TYPE VA5
REM EXIST PAVEMENT (SEE LANDSCAPING PLANS)
PROP VERT GRAN CURB TYPE VA5 3" REVEAL
PROP PERMANENT EASEMENT
MEET EXIST SIDEWALK
PROP 15' CEM CONC DRIVEWAY
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
PROP VERT GRAN CURB TYPE VA5 3" REVEAL
MEET EXIST SIDEWALK
PROP PERMANENT EASEMENT
LIMIT OF WORK
PROP 6' CEM CONC SIDEWALK
PROP 30' CEM CONC DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP HMA DRIVEWAY
SAWCUT
PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)
PROP VERT GRAN CURB TYPE VA5 3" REVEAL
MEET EXIST SIDEWALK
LIMIT OF WORK MEET EXISTING
PROP MILL & OVERLAY
R&R UP (BY OTHERS)
PROP THERMOPLASTIC CROSSWALK
PROP STAMPED COLORED HMA OVER CONC
MEET EXIST SIDEWALK
LIMIT OF WORK MEET EXISTING
PROP 10' MILL & OVERLAY
SAWCUT
PROP 40' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
MEET EXIST ELEVATION: 6.19'
LIMIT OF GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT STA 31+65
LIMIT OF FULL DEPTH PAVEMENT STA 31+65

PI +15.29
N 1° 30' 46" E 56.27'
PI +71.56
N 0° 31' 27" W 99.92'
PI +71.48
N 2° 13' 52" W 236.83'
PC +08.32
L=41.53' R=500.00'
Δ=4° 45' 32"
Mid +29.08
PT +49.85
N 2° 31' 41" E 46.66'
PC +96.51
Mid +08.59
PT +20.68
L=24.17' R=600.00'
Δ=2° 18' 30"

WCR-32, WCR-33, WCR-34, WCR-35, WCR-36, WCR-37, WCR-38, WCR-39, WCR-40, WCR-41, WCR-42, WCR-43
SWTD-30, SWTD-31, SWTD-32, SWTD-33, SWTD-34, SWTD-35, SWTD-36, SWTD-37, SWTD-38, SWTD-39, SWTD-40
27, 28, 29, 30, 31, 32

1927 CITY LAYOUT
1927 CITY LAYOUT BK 2745 PLAN 573
CITY LAYOUT

MAP 33 LOT 1
NOW OR FORMERLY
ENON ENTERPRISES INC
208 CANAL STREET
S.E.D.R.D. BOOK 8859 PAGE 67
AREA = 0.496 ACRES

MAP 33 LOT 3
NOW OR FORMERLY
MCDONALDS CORPORATION
150 CANAL STREET
S.E.D.R.D. BOOK 6085 PAGE 492
AREA = 0.933 ACRES

MAP 33 LOT 5
NOW OR FORMERLY
144 CANAL STREET NOM REALTY TRUST,
C/O SNAKEBITE REALTY TRUST
S.E.D.R.D. BOOK 28431 PAGE 32

f.k.a. JEFFREY BROTHERS INC.

MAP 33 LOT 62
NOW OR FORMERLY
ST PIERRE, DONALD J
ST PIERRE, PAULINE M
101 OCEAN AVENUE
S.E.D.R.D. BOOK 5217 PAGE 500
AREA = 0.107 ACRES

MAP 33 LOT 63
NOW OR FORMERLY
BEST PETROLEUM NET LEASE LLC
S.E.D.R.D. BOOK 22272 PAGE 16

MAP 33 LOT 64
NOW OR FORMERLY
ODONNELL, PATRICK
TOWNE, WANDA L
S.E.D.R.D. BOOK 13957 PAGE 582

MAP 33 LOT 11
NOW OR FORMERLY
[illegible] TRUST
[illegible]NSKI, ZBINGNIEW
[illegible]SINSKI, MARIA T
S.E.D.R.D. BOOK 13210 PAGE 99

MAP 33 LOT 757
NOW OR FORMERLY
COCA REALTY TRUST
COSTA, NELSON TR
CAFUA, FERNANDO TR
S.E.D.R.D. BOOK 10262 PAGE 167

MAP 33 LOT 26
NOW OR FORMERLY
N & C REALTY TRUST
LAGONAKIS, NONDAS TR
LINARDOS, COSTAS TR
151 CANAL STREET
S.E.D.R.D. BOOK 10644 PAGE 29
AREA = 0.216 ACRES

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 35

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	21	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

93692 PS&E-2 GENERAL.DWG 14-Oct-2015

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

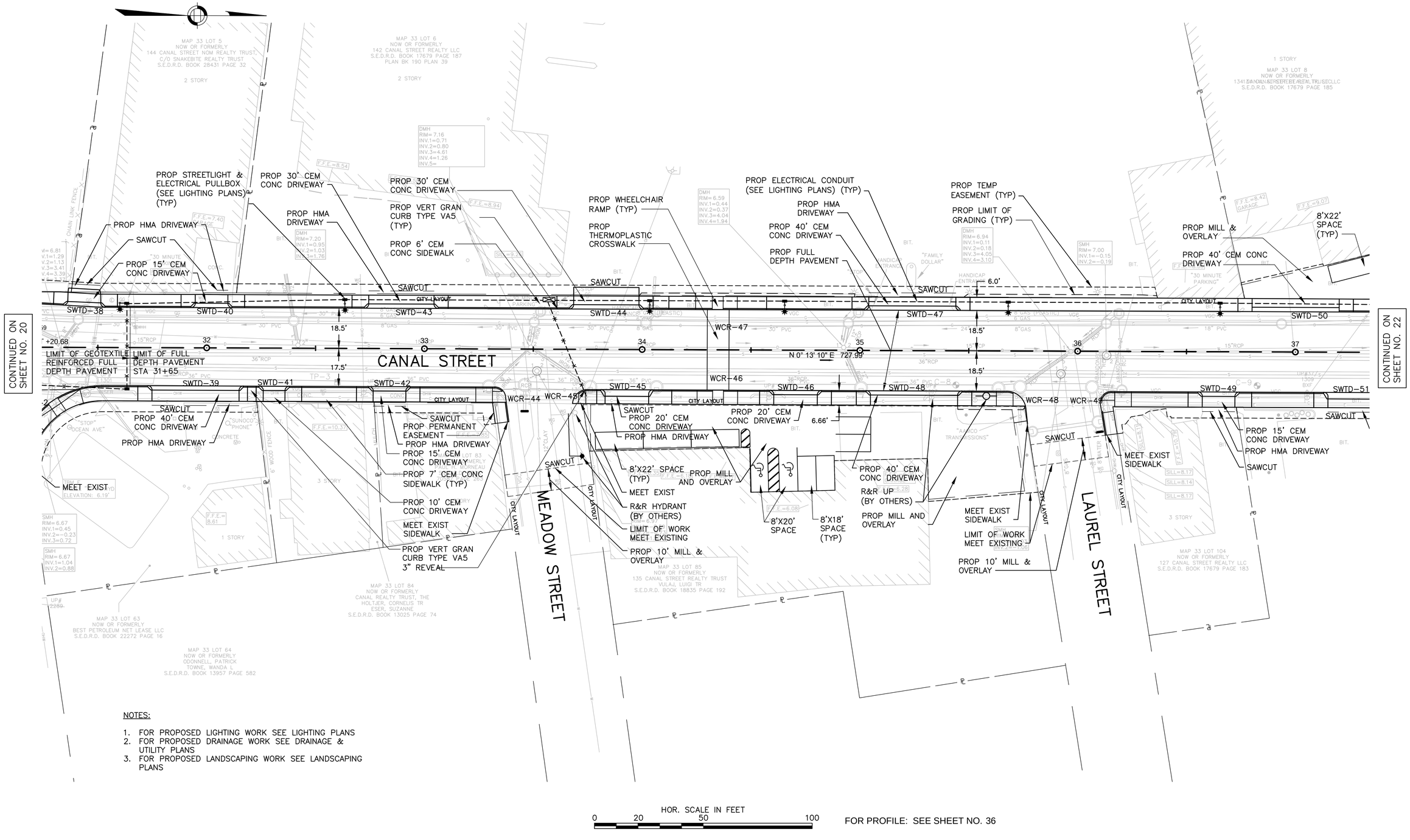
NONE

WATER SUPPLY ALTERATIONS

R&R HYDRANT STA 33+73 RT

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS


CONTINUED ON SHEET NO. 20
CONTINUED ON SHEET NO. 22
CANAL STREET
MEADOW STREET
LAUREL STREET
LIMIT OF GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT
LIMIT OF FULL DEPTH PAVEMENT STA 31+65
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
PROP HMA DRIVEWAY
SAWCUT
PROP 15' CEM CONC DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
PROP 30' CEM CONC DRIVEWAY
PROP VERT GRAN CURB TYPE VA5 (TYP)
PROP 6' CEM CONC SIDEWALK
PROP WHEELCHAIR RAMP (TYP)
PROP THERMOPLASTIC CROSSWALK
PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)
PROP HMA DRIVEWAY
PROP 40' CEM CONC DRIVEWAY
PROP FULL DEPTH PAVEMENT
PROP TEMP EASEMENT (TYP)
PROP LIMIT OF GRADING (TYP)
PROP MILL & OVERLAY
PROP 40' CEM CONC DRIVEWAY
8'X22' SPACE (TYP)
PROP 40' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
MEET EXIST
ELEVATION: 6.19'
PROP 7' CEM CONC SIDEWALK (TYP)
PROP 10' CEM CONC DRIVEWAY
MEET EXIST SIDEWALK
PROP VERT GRAN CURB TYPE VA5 3" REVEAL
SAWCUT
PROP PERMANENT EASEMENT
PROP HMA DRIVEWAY
PROP 15' CEM CONC DRIVEWAY
8'X22' SPACE (TYP)
PROP MILL AND OVERLAY
MEET EXIST
R&R HYDRANT (BY OTHERS)
LIMIT OF WORK MEET EXISTING
PROP 10' MILL & OVERLAY
PROP 20' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
8'X20' SPACE
8'X18' SPACE (TYP)
PROP 40' CEM CONC DRIVEWAY
R&R UP (BY OTHERS)
PROP MILL AND OVERLAY
MEET EXIST SIDEWALK
LIMIT OF WORK MEET EXISTING
PROP 10' MILL & OVERLAY
MEET EXIST SIDEWALK
PROP 15' CEM CONC DRIVEWAY
PROP HMA DRIVEWAY
SAWCUT
N 0° 13' 10" E 727.99'
+20.68
SWTD-38
SWTD-39
SWTD-40
SWTD-41
SWTD-42
SWTD-43
SWTD-44
SWTD-45
SWTD-46
SWTD-47
SWTD-48
SWTD-49
SWTD-50
SWTD-51
WCR-44
WCR-45
WCR-46
WCR-47
WCR-48
WCR-49
18.5'
17.5'
6.0'
6.66'
MAP 33 LOT 5
NOW OR FORMERLY
144 CANAL STREET NOM REALTY TRUST, C/O SNAKEBITE REALTY TRUST
S.E.D.R.D. BOOK 28431 PAGE 32
MAP 33 LOT 6
NOW OR FORMERLY
142 CANAL STREET REALTY LLC
S.E.D.R.D. BOOK 17679 PAGE 187
PLAN BK 190 PLAN 39
MAP 33 LOT 8
NOW OR FORMERLY
134 CANAL STREET REALTY TRUST LLC
S.E.D.R.D. BOOK 17679 PAGE 185
MAP 33 LOT 63
NOW OR FORMERLY
BEST PETROLEUM NET LEASE LLC
S.E.D.R.D. BOOK 22272 PAGE 16
MAP 33 LOT 64
NOW OR FORMERLY
ODONNELL, PATRICK
TOWNE, WANDA L
S.E.D.R.D. BOOK 13957 PAGE 582
MAP 33 LOT 84
NOW OR FORMERLY
CANAL REALTY TRUST, THE
HOLTJER, CORNELIS TR
ESER, SUZANNE
S.E.D.R.D. BOOK 13025 PAGE 74
MAP 33 LOT 85
NOW OR FORMERLY
135 CANAL STREET REALTY TRUST
VULAJ, LUIGI TR
S.E.D.R.D. BOOK 18835 PAGE 192
MAP 33 LOT 104
NOW OR FORMERLY
127 CANAL STREET REALTY LLC
S.E.D.R.D. BOOK 17679 PAGE 183
1 STORY
2 STORY
3 STORY
"STOP" OCEAN AVE"
"SUNOCO PHONE"
"FAMILY DOLLAR"
"AAMCO TRANSMISSIONS"
"30 MINUTE PARKING"
HANDICAP ENTRANCE
CHAIN LINK FENCE
WOOD FENCE
CONCRETE
CITY LAYOUT
F.F.E.=8.54
F.F.E.=8.94
F.F.E.=7.40
F.F.E.=10.32
F.F.E.=8.61
F.F.E.=8.42 GARAGE
F.F.E.=9.07
F.F.E.=6.08
SILL=8.17
SILL=8.14
SILL=8.17
DMH RIM=7.16 INV.1=0.71 INV.2=0.80 INV.3=4.61 INV.4=1.26 INV.5=
DMH RIM=7.20 INV.1=0.95 INV.2=1.03 INV.3=1.76
DMH RIM=6.59 INV.1=0.44 INV.2=0.37 INV.3=4.04 INV.4=1.94
DMH RIM=6.94 INV.1=0.11 INV.2=0.18 INV.3=4.05 INV.4=3.10
SMH RIM=7.00 INV.1e=-0.15 INV.2e=-0.19
SMH RIM=6.67 INV.1=0.45 INV.2=-0.23 INV.3=0.72
SMH RIM=6.67 INV.1=1.04 INV.2=0.88
SMH RIM=6.49
SMH RIM=6.06
TP-3
UP# 2289
UP# 1309 BXF
UP# 1301 ESER
UP# 1300
UP# 1309 BXF
UP# 1309 BXF
UP# 1309 BXF

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	22	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

18-Dec-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

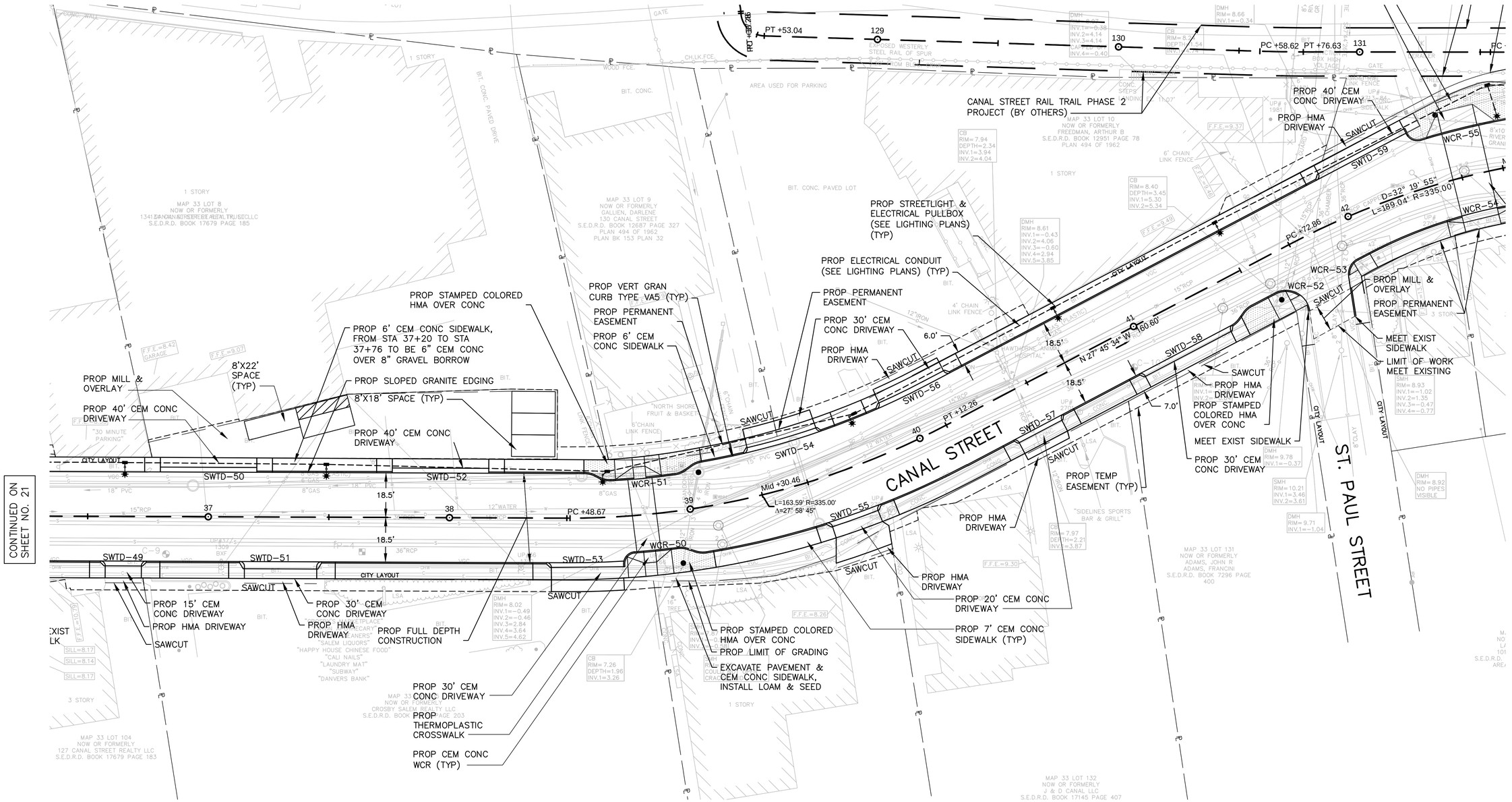
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS



CONTINUED ON SHEET NO. 23

CONTINUED ON SHEET NO. 21

FOR PROFILE: SEE SHEET NO. 37

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	23	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

93692 PS&E-2 GENERAL.DWG 18-Dec-2015

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HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

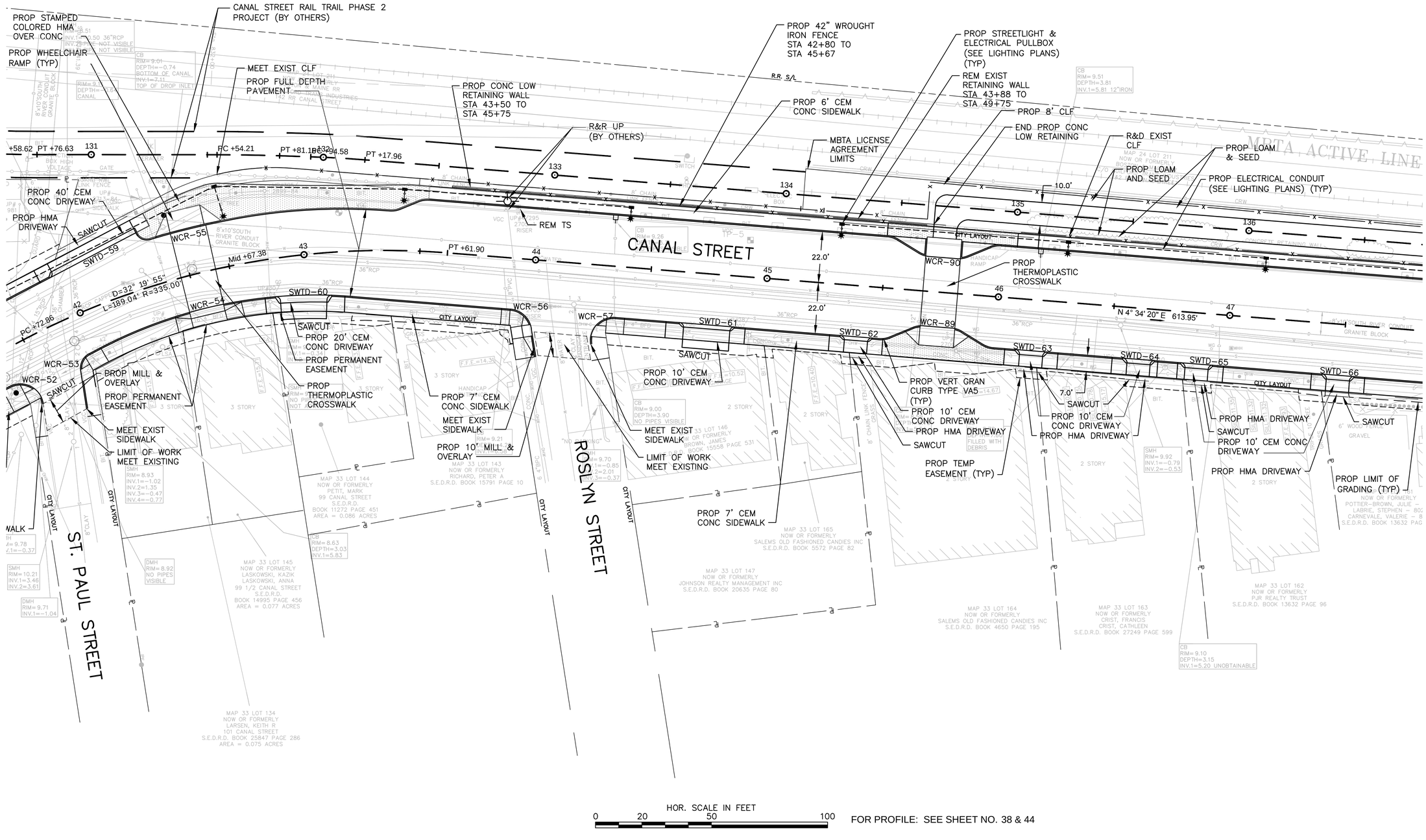
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS



FOR PROFILE: SEE SHEET NO. 38 & 44

CONTINUED ON SHEET NO. 22

CONTINUED ON SHEET NO. 24

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	24	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

Oct 14, 2015 - 6:52am

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HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

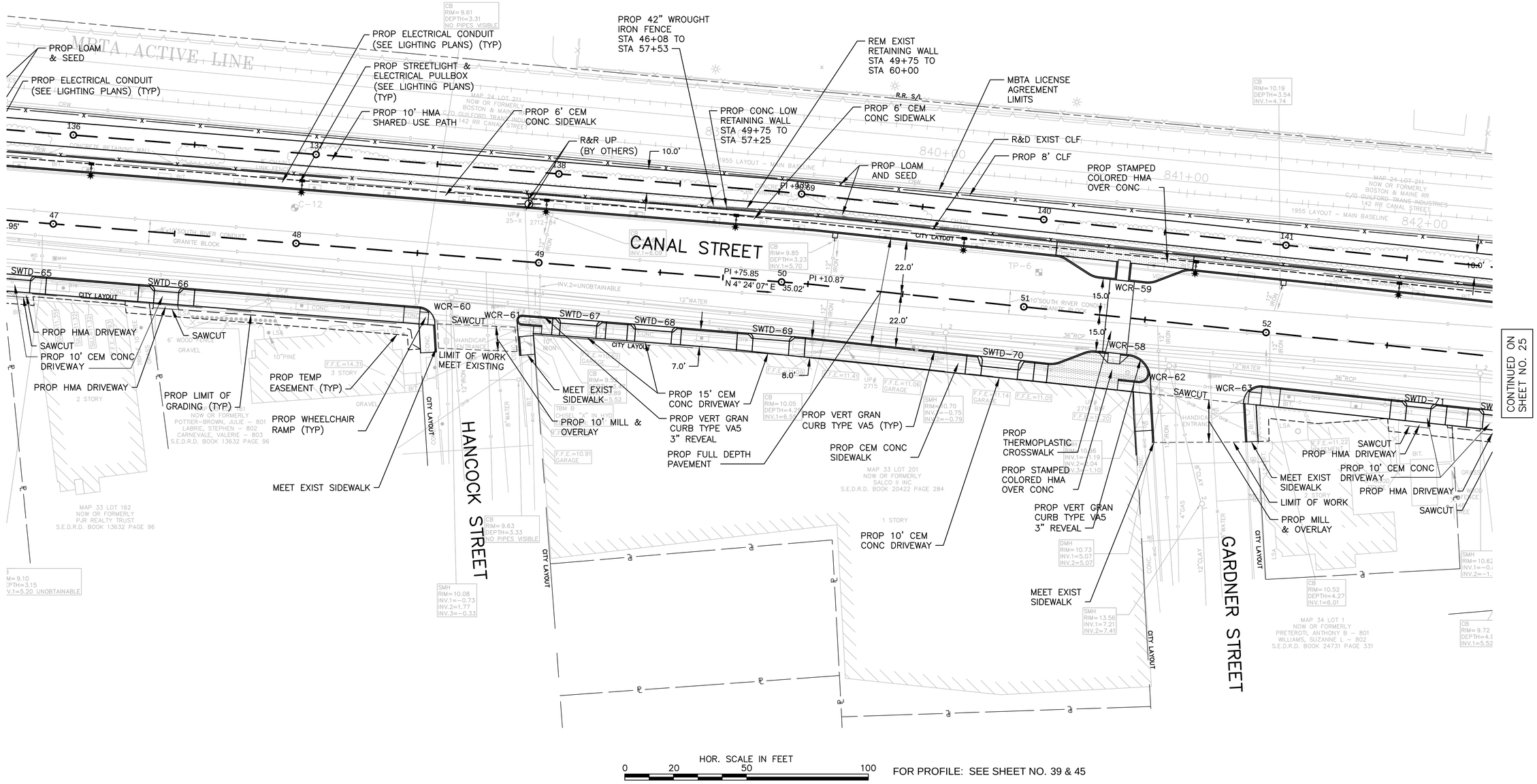
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS



HOR. SCALE IN FEET

0 20 50 100

FOR PROFILE: SEE SHEET NO. 39 & 45

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	25	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

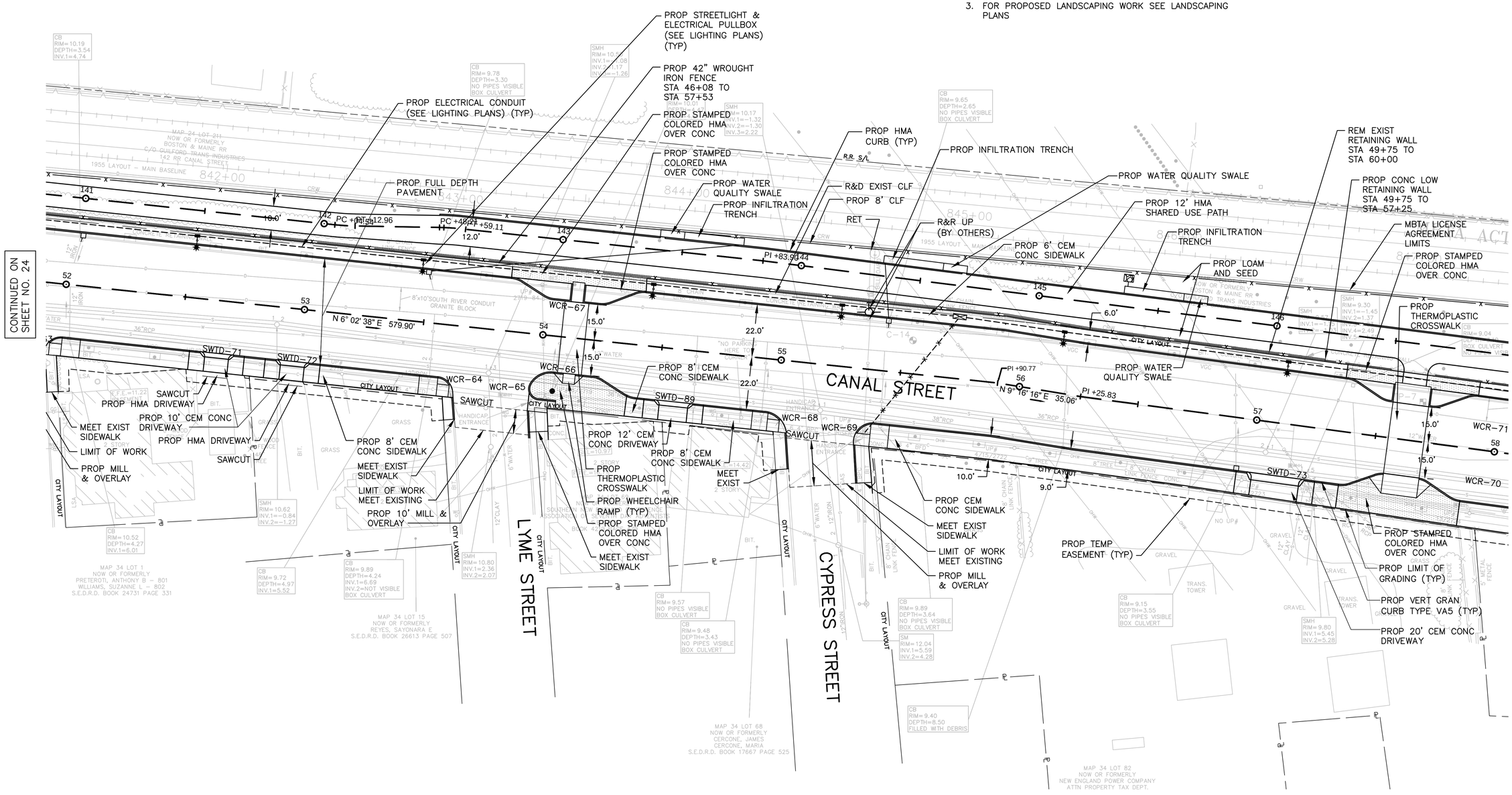
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS



CONTINUED ON SHEET NO. 24

CONTINUED ON SHEET NO. 26

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 40 & 46

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	26	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

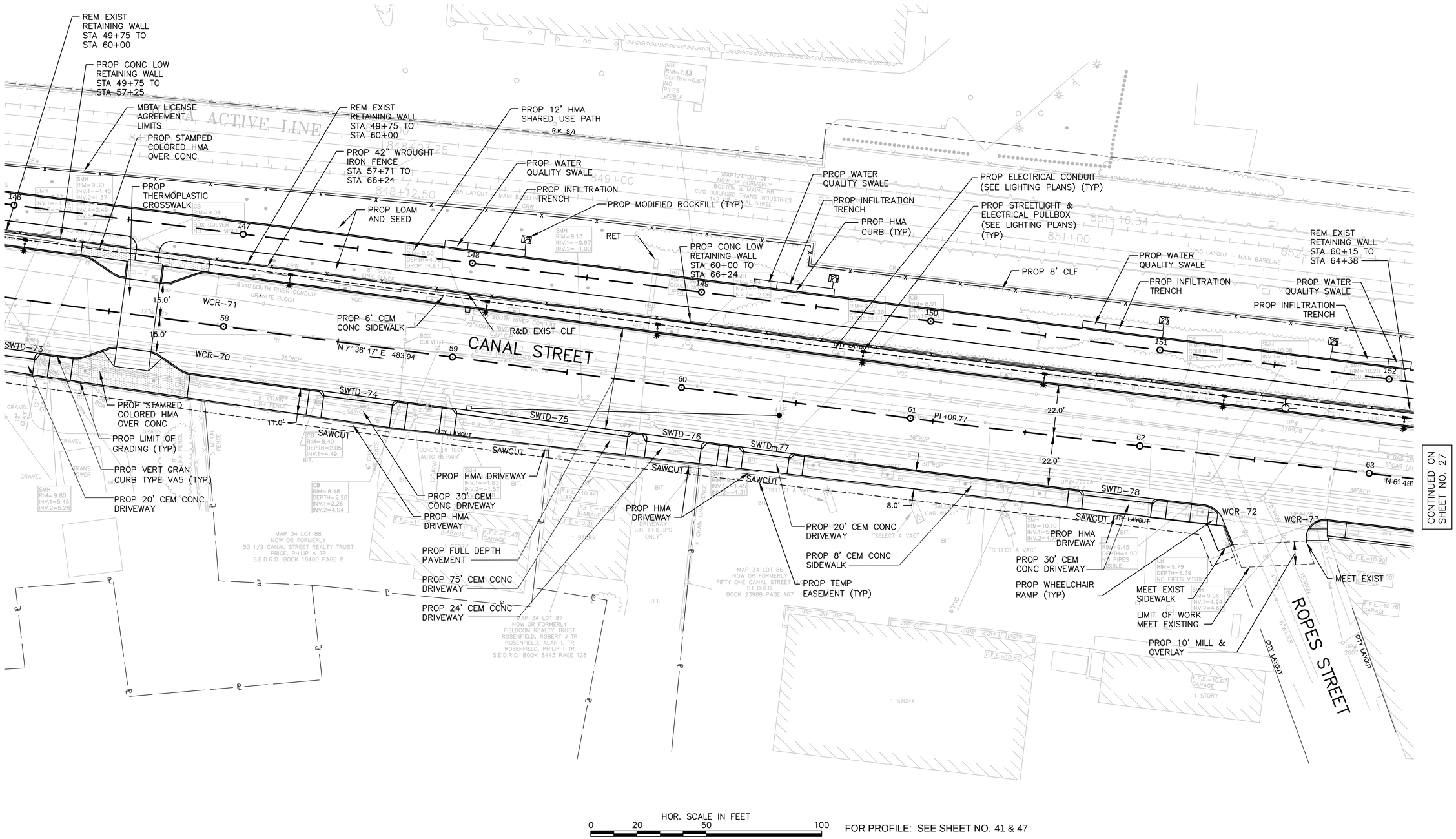
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS



HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 41 & 47

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	27	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

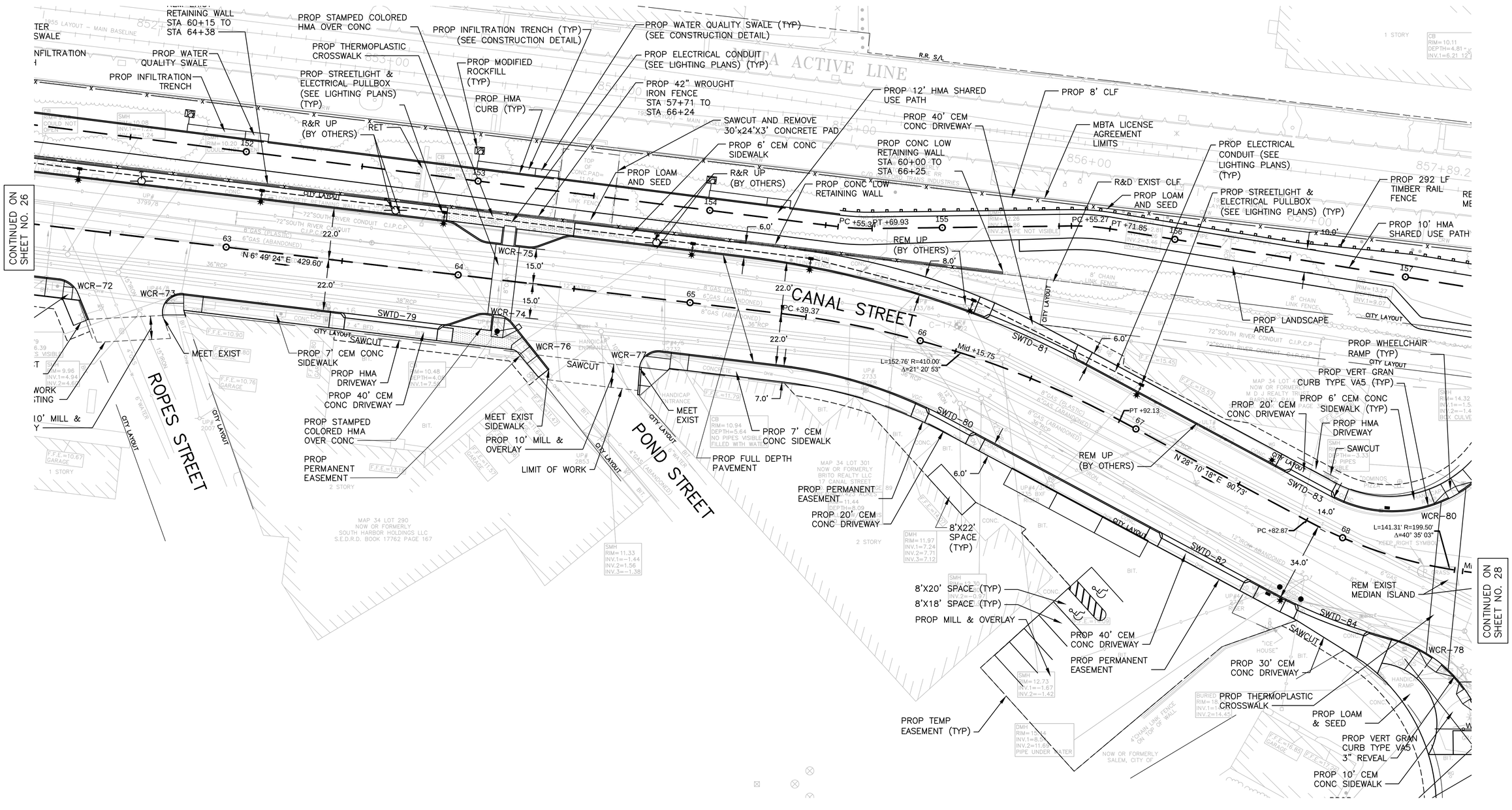
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS

SEE DRAINAGE & UTILITY PLANS

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS



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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	28	209
PROJECT FILE NO.	605146		

CONSTRUCTION PLANS

14-Oct-2015

93692 PS&E-2 GENERAL.DWG

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
SEE BELOW

WATER SUPPLY ALTERATIONS
SEE DRAINAGE & UTILITY PLANS

DRAINAGE DETAILS
SEE DRAINAGE & UTILITY PLANS

CONTINUED ON SHEET NO. 27

CONC LOW ING WALL 0+00 TO 5+25

REM UP (BY OTHERS)

8.0'

CITY LAYOUT

SWTD-81

6.0'

Mid +15.75

6' R=410.00'
=21° 20' 53"

SWTD-80

6.0'

8'X22' SPACE (TYP)

8'X20' SPACE (TYP)

8'X18' SPACE (TYP)

PROP MILL & OVERLAY

PROP TEMP EASEMENT (TYP)

AGREEMENT LIMITS

R&D EXIST CLF

PROP LOAM AND SEED

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

PC +55.27 PT +71.85

PROP LANDSCAPE AREA

PROP 292 LF TIMBER RAIL FENCE

PROP 10' HMA SHARED USE PATH

x 10.0'

RET EXIST MEDIAN ISLAND

MEET EXIST

MILL STREET

PROP WHEELCHAIR RAMP (TYP)

PROP VERT GRAN CURB TYPE VA5 (TYP)

PROP 6' CEM CONC SIDEWALK (TYP)

PROP 20' CEM CONC DRIVEWAY

PROP HMA DRIVEWAY

SAWCUT

WCR-81

WCR-82

WCR-80

PT +92.13

REM UP (BY OTHERS)

N 28° 10' 18" E 90.73'

SWTD-83

14.0'

PC +82.87

L=141.31' R=199.50'
Δ=40° 35' 03"
KEEP RIGHT SYMBOL

Mid +53.52

REM EXIST MEDIAN ISLAND

SWTD-82

34.0'

SWTD-84

PROP 40' CEM CONC DRIVEWAY

PROP PERMANENT EASEMENT

PROP 30' CEM CONC DRIVEWAY

PROP THERMOPLASTIC CROSSWALK

PROP LOAM & SEED

PROP VERT GRAN CURB TYPE VA5 3" REVEAL

PROP 10' CEM CONC SIDEWALK

PROP THERMOPLASTIC CROSSWALK

PROP PERMANENT EASEMENT

PROP 30' DRIVEWAY

MEET EXIST

WCR-78

WCR-79

WG

SAWCUT

SWTD-85

WASHINGTON STREET

LIMIT OF MILL AND OVERLAY

PROP VERT GRAN CURB TYPE VA5

PT +24.18

LIMIT OF MILL AND OVERLAY
MEET EXIST 8' SIDEWALK
PROP THERMOPLASTIC CROSSWALK
PROP STAMPED COLORED HMA OVER CONC ISLAND REM EXIST CONC EDGING

MEET EXIST
PROP MILL AND OVERLAY

PROP PERMANENT EASEMENT
PROP VERT GRAN CURB TYPE VA5 3" REVEAL

LIMIT OF WORK
STA 71+22.00
N 3014618.8110
E 819155.4141

WCR-83
WCR-84

MEET EXIST SIDEWALK
PROP 8'-9' CEM CONC SIDEWALK

N 12° 24' 45" W 314.57'

RETAIN EXIST MEDIAN ISLAND
PROP THERMOPLASTIC CROSSWALK

PROP FULL DEPTH PAVEMENT

WCR-86
WCR-85

LIMIT OF MILL AND OVERLAY STA 69+78

MEET EXIST SIDEWALK

PROP 11' TO 17' CEM CONC SIDEWALK

REM EXIST MEDIAN ISLAND

PROP STAMPED COLORED HMA OVER CONC ISLANDS REM EXIST CONC EDGING

PROP VERT GRAN CURB TYPE VA5

MEET EXIST SIDEWALK

RET EXIST MEDIAN ISLAND

LIMIT OF MILL AND OVERLAY

WASHINGTON STREET

CITY LAYOUT

"RIGHT LANE MUST TURN RIGHT CANAL ST BUSINESS DIST"

"WHITE REFLECTOR"

"WASHINGTON ST" "LEFT LANE MUST TURN LEFT"

"LEFT LANE FOR LEFT TURN"

"RIGHT LANE FOR RIGHT TURN"

"NO PARKING"

72"SOUTH RIVER CONDUIT C.I.P.C.P

MAP 34 LOT 479 NOW OR FORMERLY SALEM, CITY OF

MAP 34 LOT 300 NOW OR FORMERLY SAMARI GROUP, LLC S.E.D.R.D. BOOK 13619 PAGE 141

NOW OR FORMERLY SALEM, CITY OF

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 43 & 49

NOTES:

1. FOR PROPOSED LIGHTING WORK SEE LIGHTING PLANS
2. FOR PROPOSED DRAINAGE WORK SEE DRAINAGE & UTILITY PLANS
3. FOR PROPOSED LANDSCAPING WORK SEE LANDSCAPING PLANS

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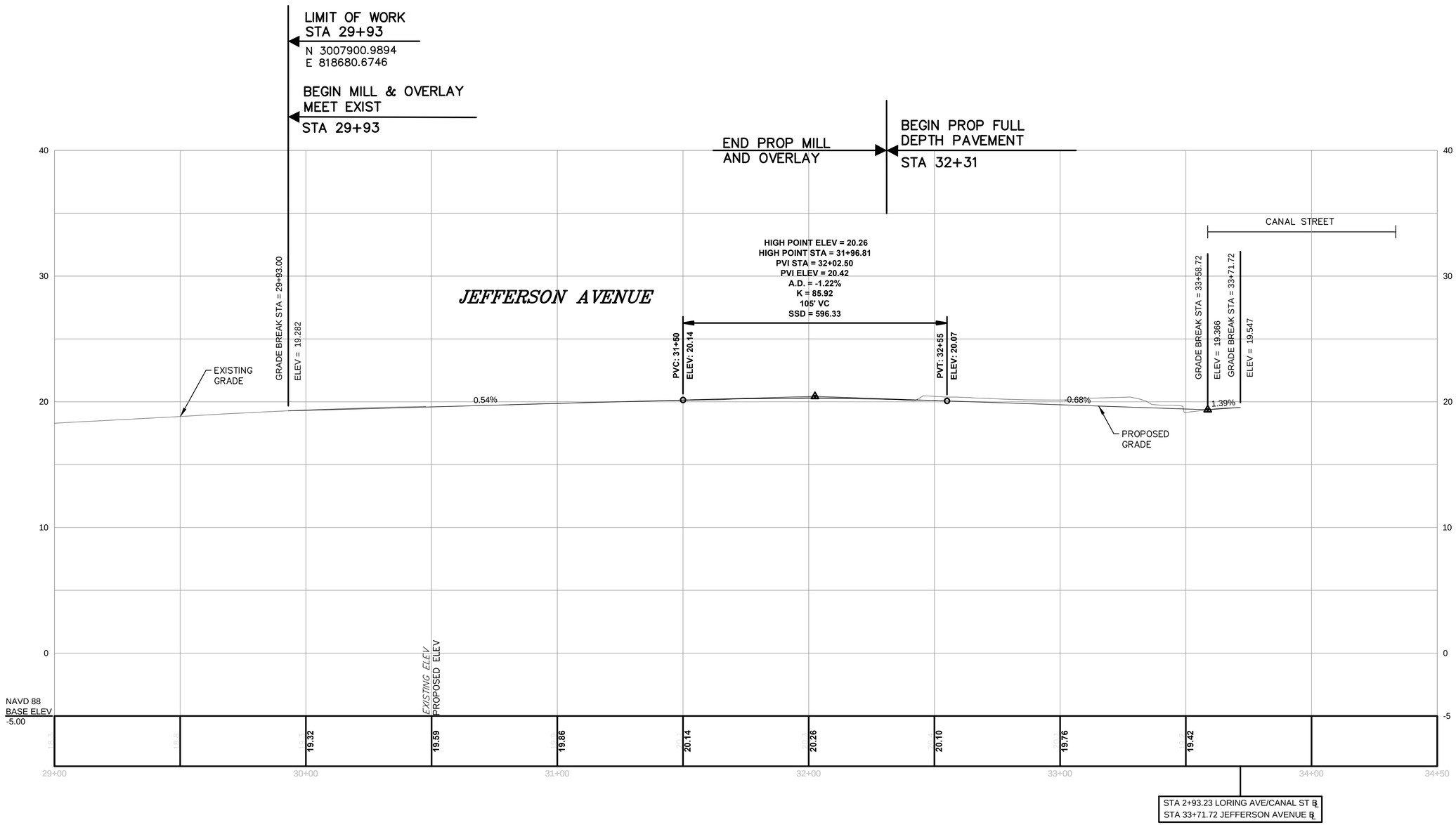
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	29	209
PROJECT FILE NO.	605146		

JEFFERSON AVENUE PROFILE

93692 PS&E-2 PROFILE.DWG 14-Oct-2015



HOR. SCALE IN FEET
0 20 50 100
VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 15

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	30	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG

BEGIN PROJECT
STA 0+50
N 3007630.1208
E 819119.3879

BEGIN MILL & OVERLAY
MEET EXIST
STA 0+50

JEFFERSON AVENUE LT

LORING AVENUE RT

HIGH POINT ELEV = 19.51
HIGH POINT STA = 2+92.78
PVI STA = 3+57.02
PVI ELEV = 19.70
A.D. = -1.35%
K = 148.49
200' VC
SSD = 593.43

LORING AVENUE

PVI STA = 1+58
PVI ELEV = 19.22

PVC: 2+57
ELEV: 19.46

PVT: 4+57
ELEV: 18.60

EXISTING GRADE

PROPOSED GRADE

-0.27%

0.24%

-1.11%

30
20
10
0

NAVD 88
BASE ELEV
-5.00

EXISTING ELEV
PROPOSED ELEV

19.4	19.25	19.33	19.45	19.5	19.50	19.6	19.40	19.12	18.67	18.12	17.57	17.02	16.46

0+50 1+00 2+00 3+00 4+00 5+00 6+00

STA 33+71.72 JEFFERSON AVE ℄
STA 2+93.23 LORING AVE/CANAL ST ℄

STA 4+03.12 LORING AVE/CANAL ST ℄
STA 100+00.00 LORING AVENUE ℄

TEMP BENCHMARK D
CHISEL "X" IN HYD
ELEVATION= 19.91'
STA 4+18.70 35.64' RT

CONTINUED ON SHEET NO. 31

HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 15

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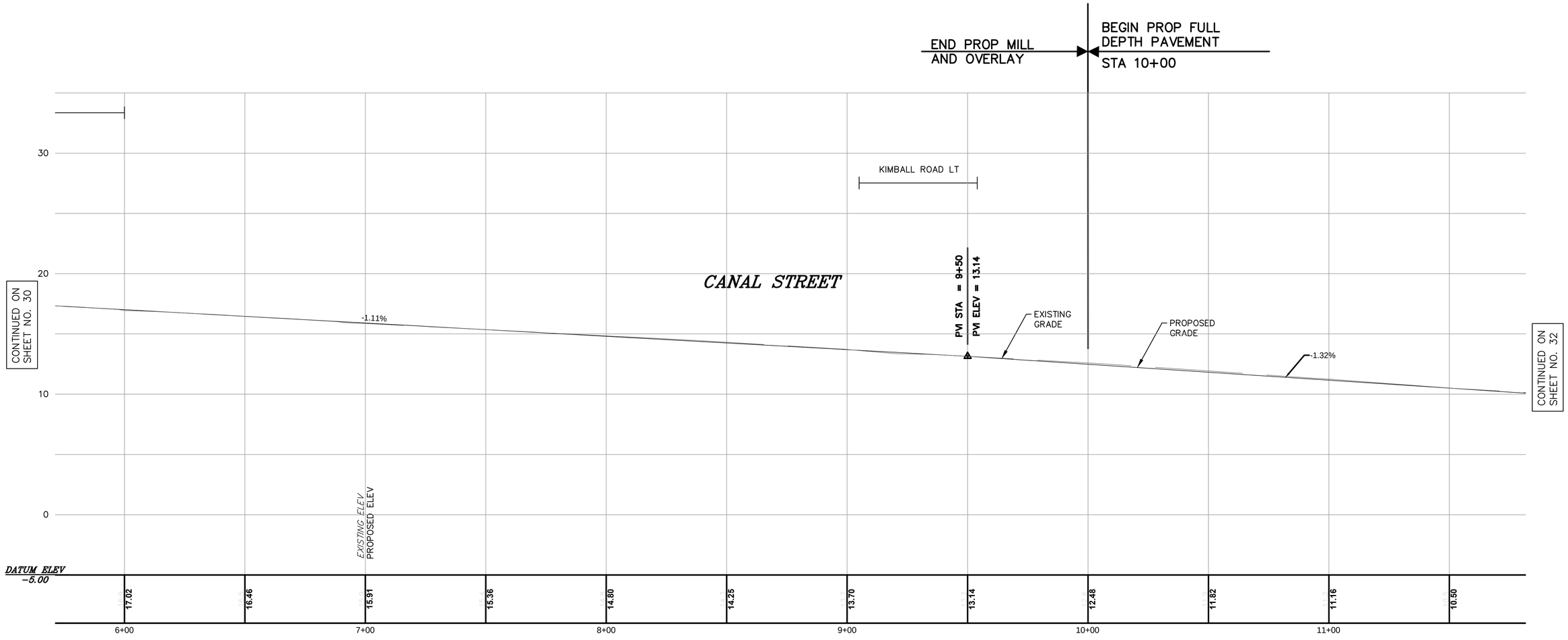
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	31	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100
VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 16

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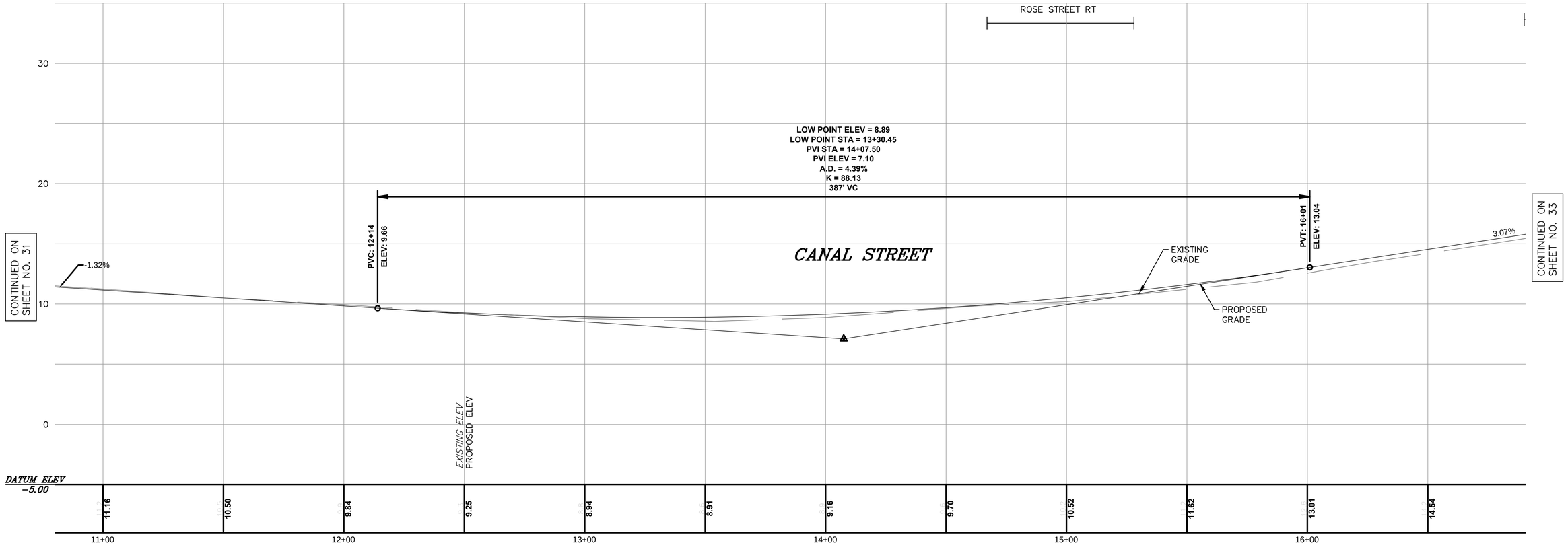
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	32	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

93692 PS&E-2 PROFILE.DWG 14-Oct-2015



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 17

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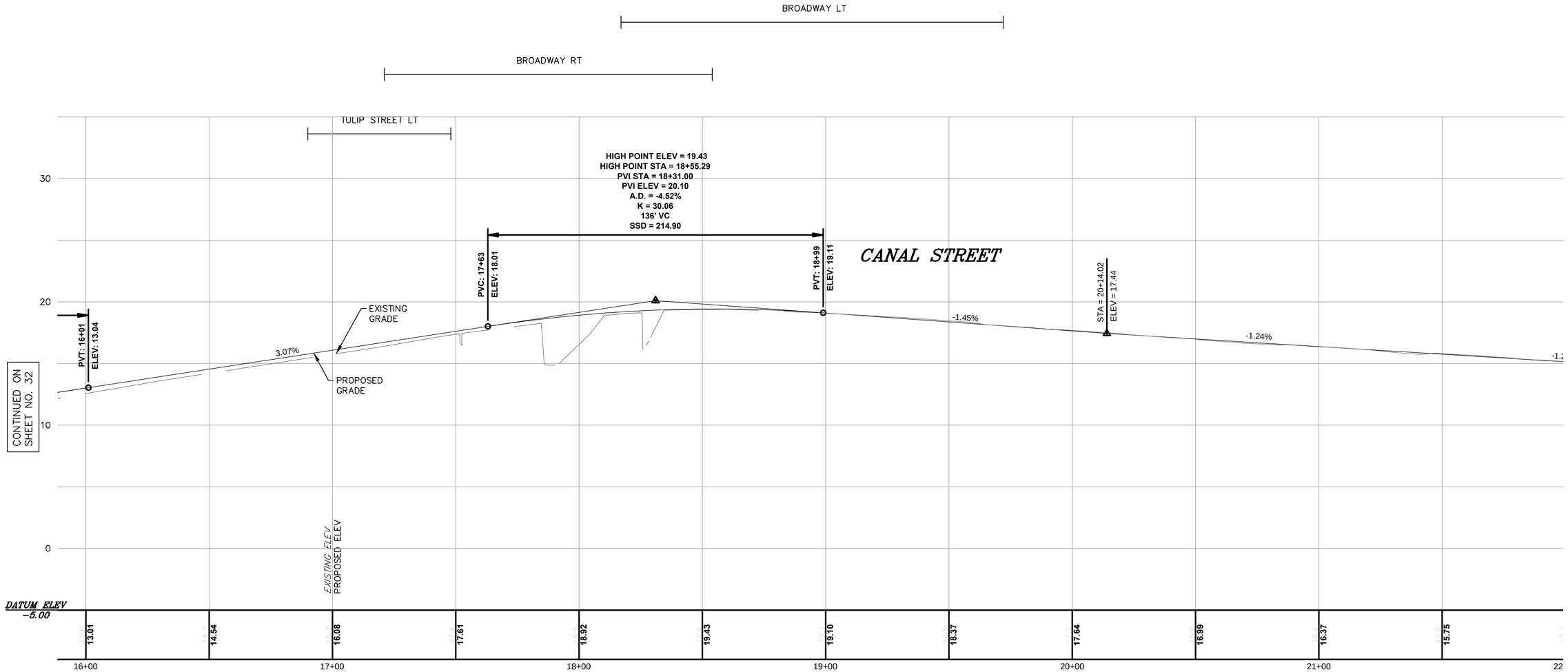
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	33	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

CONSTRUCTION PLAN SEE SHEET 18

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	34	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG

END PROP FULL DEPTH PAVEMENT

BEGIN PROP GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT
STA 25+72

FOREST AVENUE RT

CONTINUED ON SHEET NO. 33

CANAL STREET

HIGH POINT ELEV = 12.84
HIGH POINT STA = 23+85
PVI STA = 24+37.50
PVI ELEV = 12.19
A.D. = -1.36%
K = 77.15
105' VC
SSD = 540.81

LOW POINT ELEV = 5.06
LOW POINT STA = 29+08.86
PVI STA = 28+04.50
PVI ELEV = 2.64
A.D. = 3.83%
K = 151.81
581' VC

PVC: 23+85
ELEV: 12.84

PVT: 24+90
ELEV: 10.82

PVC: 25+14
ELEV: 10.20

-1.24%

-2.60%

PROPOSED GRADE

EXISTING GRADE

CONTINUED ON SHEET NO. 35

EXISTING ELEV.
PROPOSED ELEV

DATUM ELEV
-5.00

1+00	22+00	23+00	24+00	25+00	26+00	27+00
16.37	15.75	15.13	14.51	13.89	13.27	12.64	11.76	10.56	9.31	8.21	7.27	6.50

TEMP BENCHMARK C
CHISEL "X" IN HYD
ELEVATION= 14.53'
STA 22+15.33 18.00' LT

HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 19

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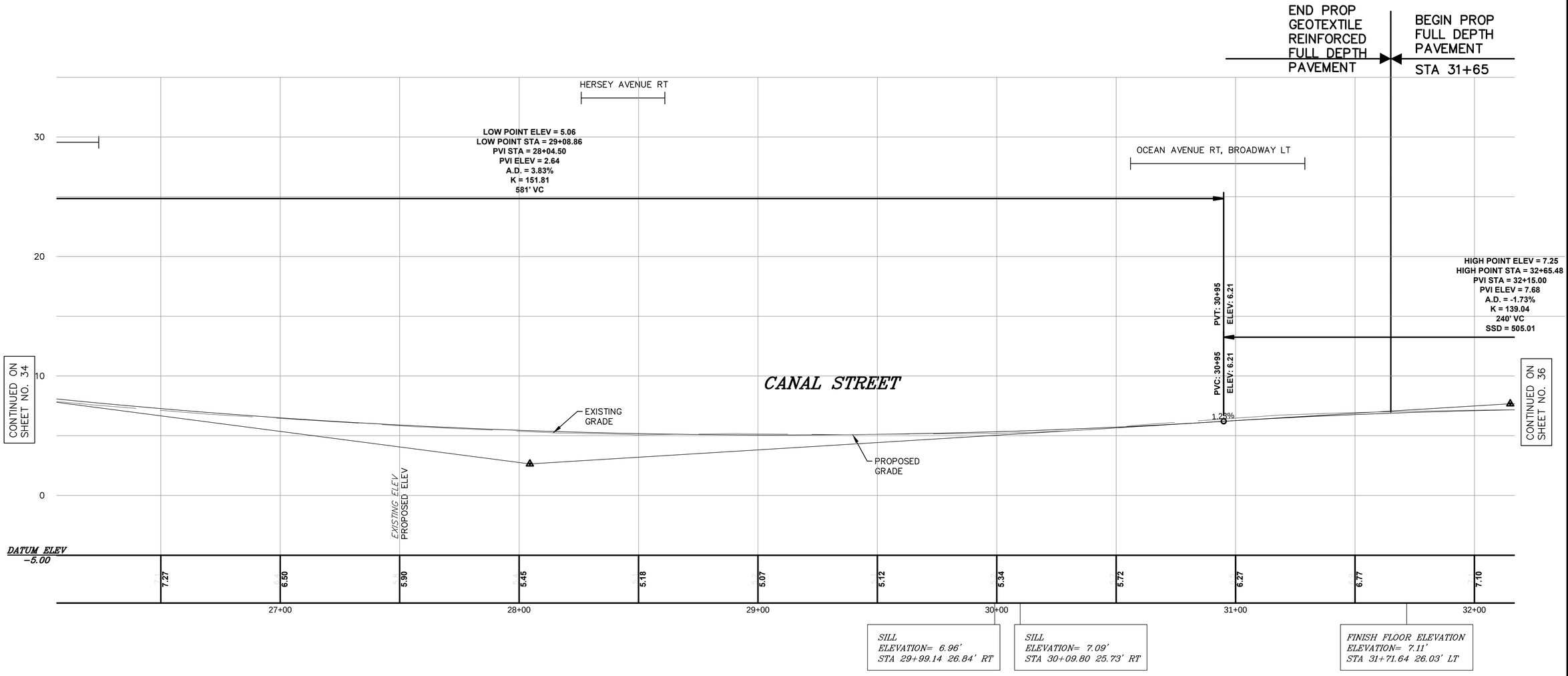
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	35	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 20

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	36	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG

END PROP GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT

BEGIN PROP FULL DEPTH PAVEMENT
STA 31+65

MEADOW STREET RT

LAUREL STREET RT

Y LT

30
20
10
0

HIGH POINT ELEV = 7.25
HIGH POINT STA = 32+65.48
PVI STA = 32+15.00
PVI ELEV = 7.68
A.D. = -1.73%
K = 139.04
240' VC
SSD = 505.01

LOW POINT ELEV = 6.55
LOW POINT STA = 34+95.50
PVI STA = 35+35.00
PVI ELEV = 6.08
A.D. = 1.35%
K = 222.99
302' VC

PVT: 33+35
ELEV: 7.08

PVC: 33+84
ELEV: 6.83

PVT: 36+86
ELEV: 7.37

-0.50%

CANAL STREET

EXISTING GRADE

PROPOSED GRADE

CONTINUED ON SHEET NO. 35

CONTINUED ON SHEET NO. 37

EXISTING ELEV
PROPOSED ELEV

DATUM ELEV
-5.00

EXISTING ELEV	6.77	7.10	7.24	7.21	7.00	6.76	6.60	6.55	6.62	6.80	7.09	7.49
PROPOSED ELEV												

32+00 33+00 34+00 35+00 36+00 37+00

FINISH FLOOR ELEVATION
ELEVATION= 7.11'
STA 31+71.64 26.03' LT

SILL
ELEVATION= 8.11'
STA 36+27.65 30.60' RT

HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 21

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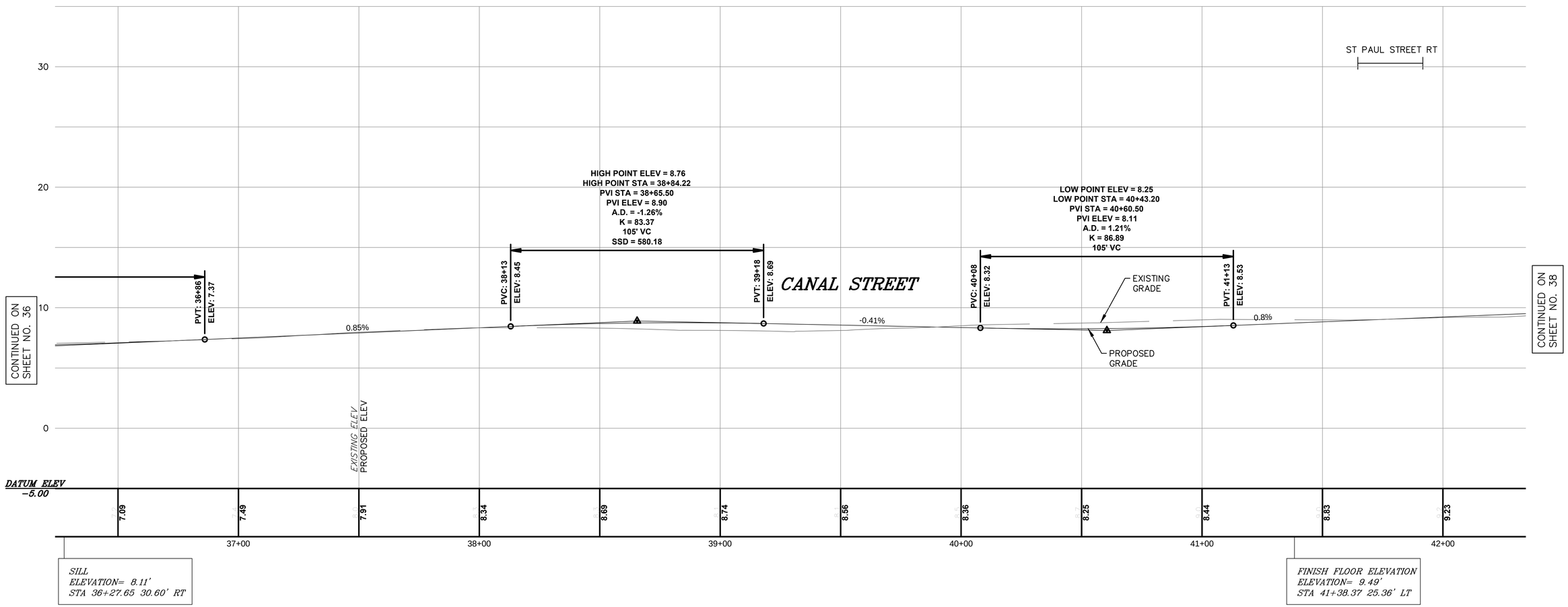
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	37	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 22

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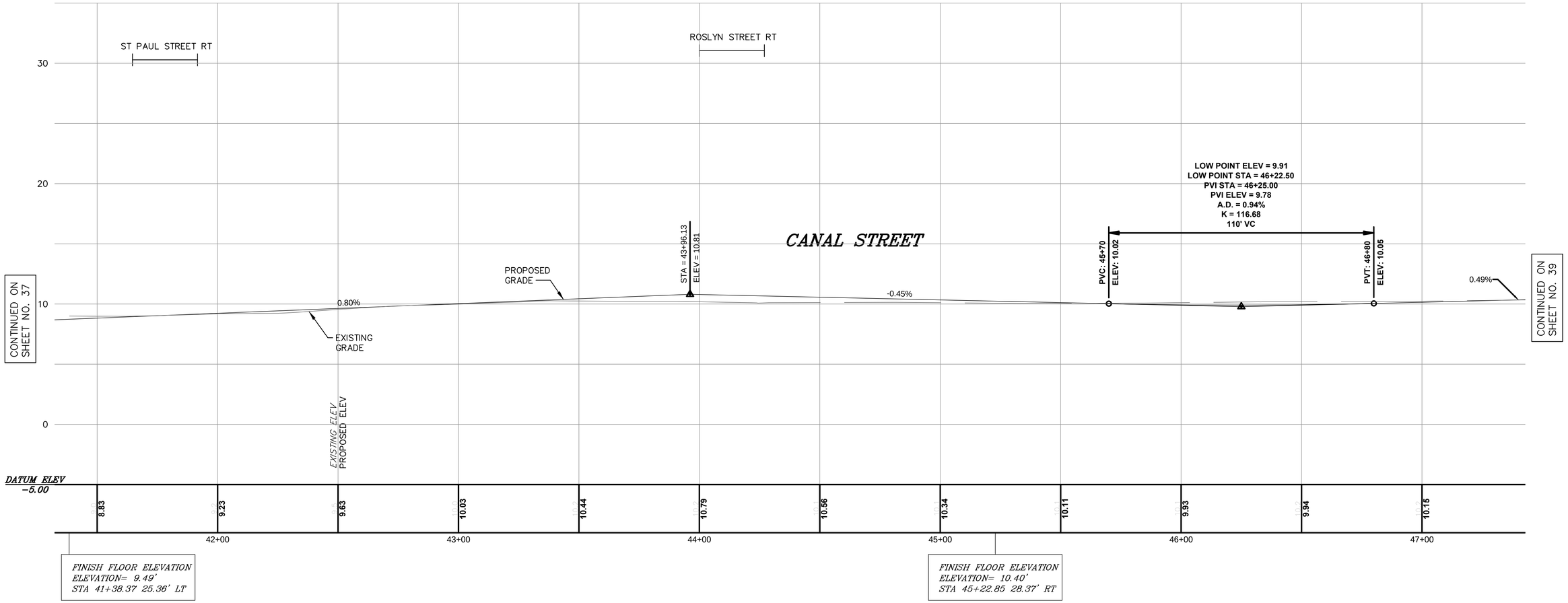
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	38	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 23

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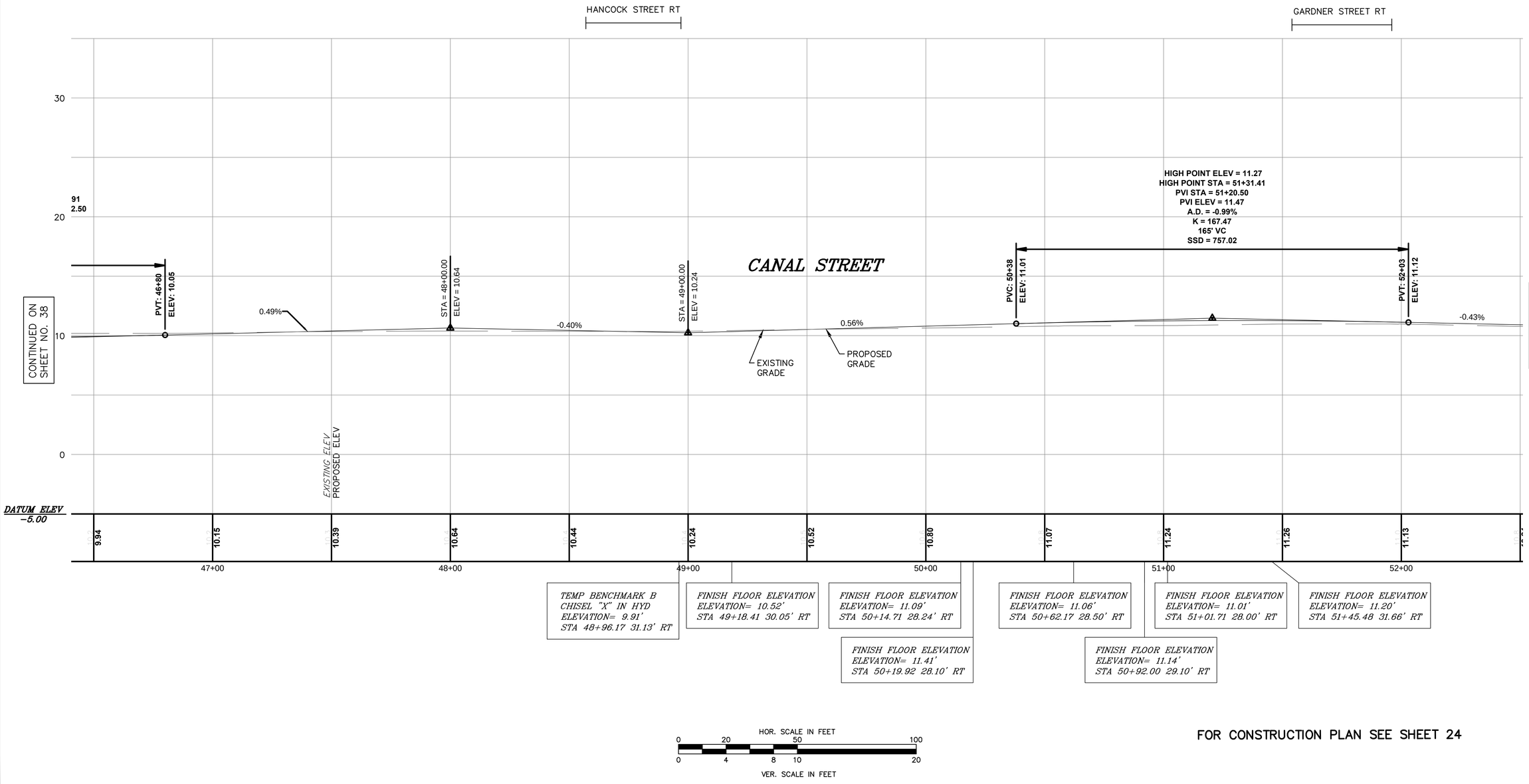
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	39	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 24

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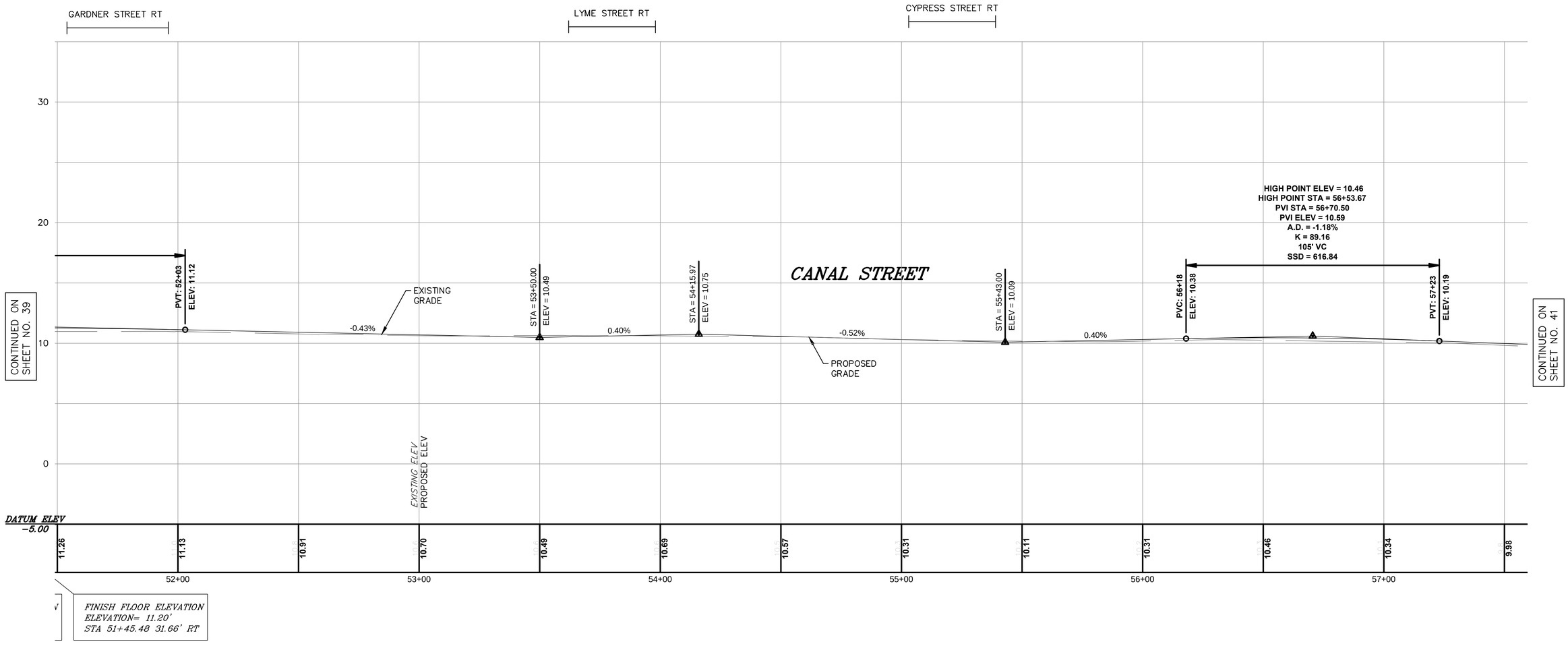
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	40	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE



HOR. SCALE IN FEET
0 20 50 100
VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 25

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93692 PS&E-2 PROFILE.DWG 14-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	41	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG

ROPE STREET RT

30

20

10

0

DATUM ELEV
-5.00

CANAL STREET

EXISTING GRADE

PROPOSED GRADE

-0.78%

0.46%

0.44

EXISTING ELEV
PROPOSED ELEV

POINT ELEV = 10.46
POINT STA = 56+53.67
VI STA = 56+70.50
PVI ELEV = 10.59
A.D. = -1.18%
K = 89.16
105' VC
SSD = 616.84

PVT: 57+23
ELEV: 10.19

LOW POINT ELEV = 9.14
LOW POINT STA = 59+05.49
PVI STA = 58+85.00
PVI ELEV = 8.93
A.D. = 1.22%
K = 122.81
150' VC

PVC: 58+10
ELEV: 9.51

PVT: 59+60
ELEV: 9.26

10.34	9.98	9.59	9.26	9.14	9.22	9.44	9.66	9.88	10.10	10.33	10.55
57+00		58+00		59+00		60+00		61+00		62+00	

CONTINUED ON SHEET NO. 40

CONTINUED ON SHEET NO. 42

HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 26

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	42	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG

ROPE STREET RT

POND STREET RT

30

20

10

0

DATUM ELEV
-5.00

CONTINUED ON SHEET NO. 41

CONTINUED ON SHEET NO. 43

CANAL STREET

0.44%

2.10%

EXISTING GRADE

PROPOSED GRADE

LOW POINT ELEV = 11.84
LOW POINT STA = 65+41.11
PVI STA = 65+99.50
PVI ELEV = 12.10
A.D. = 1.66%
K = 70.51
117' VC

PVC: 65+41
ELEV: 11.84

PVT: 66+58
ELEV: 13.32

EXISTING ELEV
PROPOSED ELEV

62+00	63+00	64+00	65+00	66+00	67+00
10.33	10.55	10.77	10.99	11.21	11.43	11.66	11.88	12.35	13.16	14.21	15.26

FINISH FLOOR ELEVATION
ELEVATION= 11.79'
STA 65+05.30 30.91' RT

HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 27

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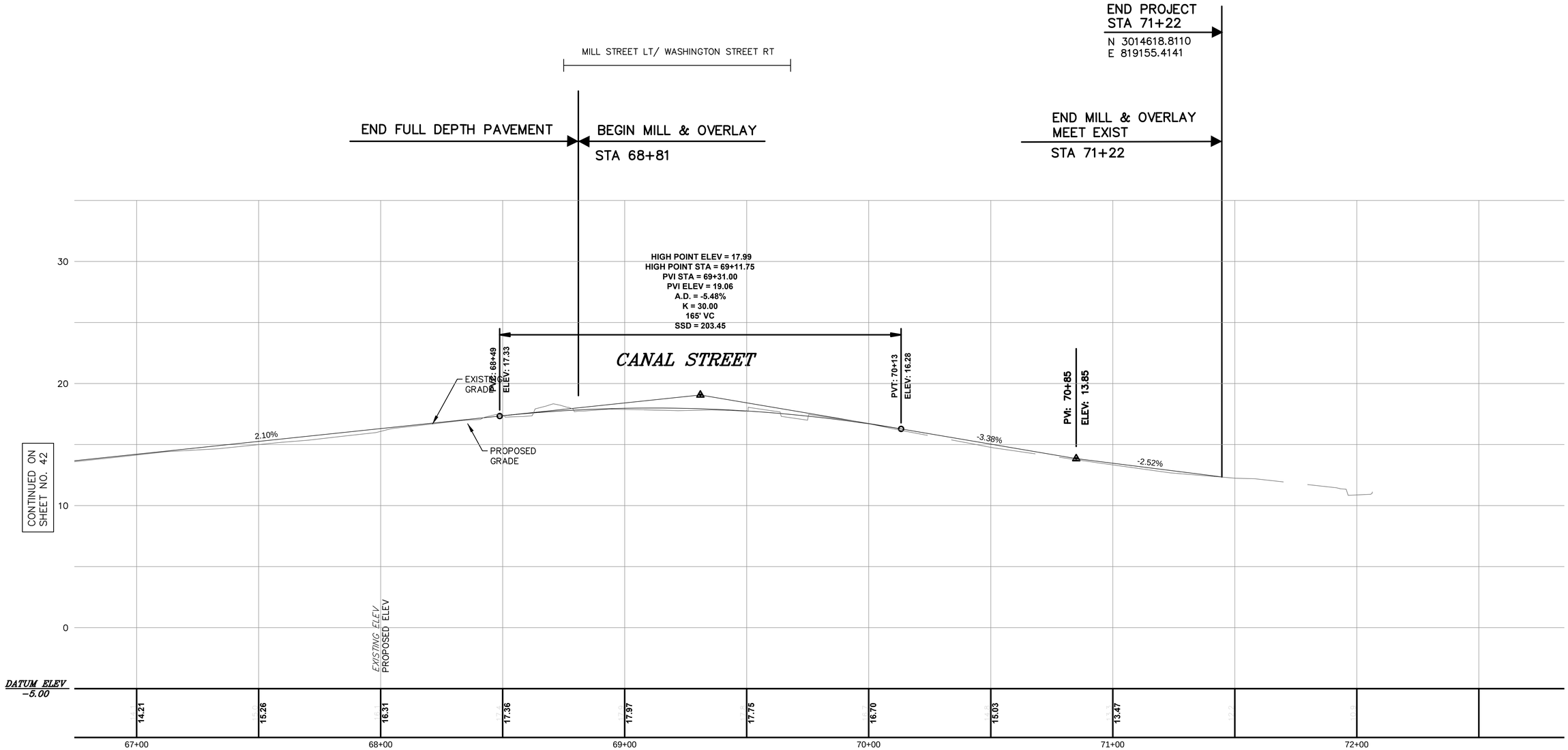
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	43	209
PROJECT FILE NO.	605146		

CANAL STREET PROFILE

93692 PS&E-2 PROFILE.DWG 14-Oct-2015



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 28

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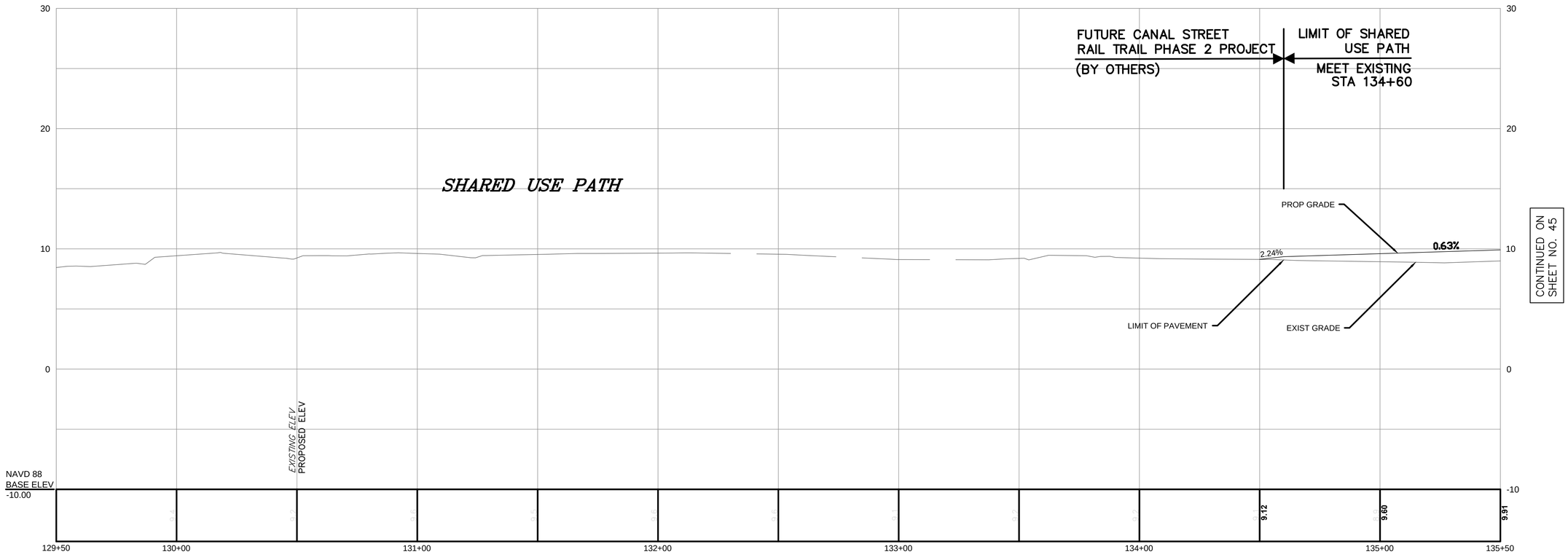
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	44	209
PROJECT FILE NO.	605146		

SHARED USE PATH PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 23

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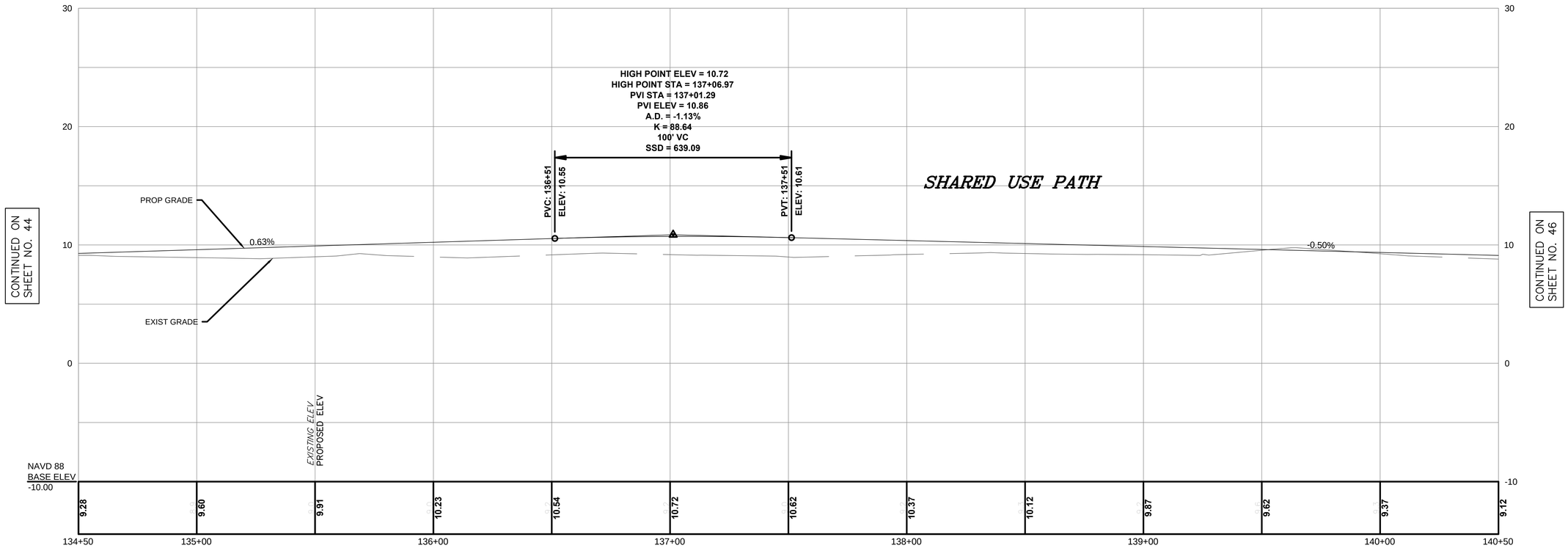
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	45	209
PROJECT FILE NO.	605146		

SHARED USE PATH PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 24

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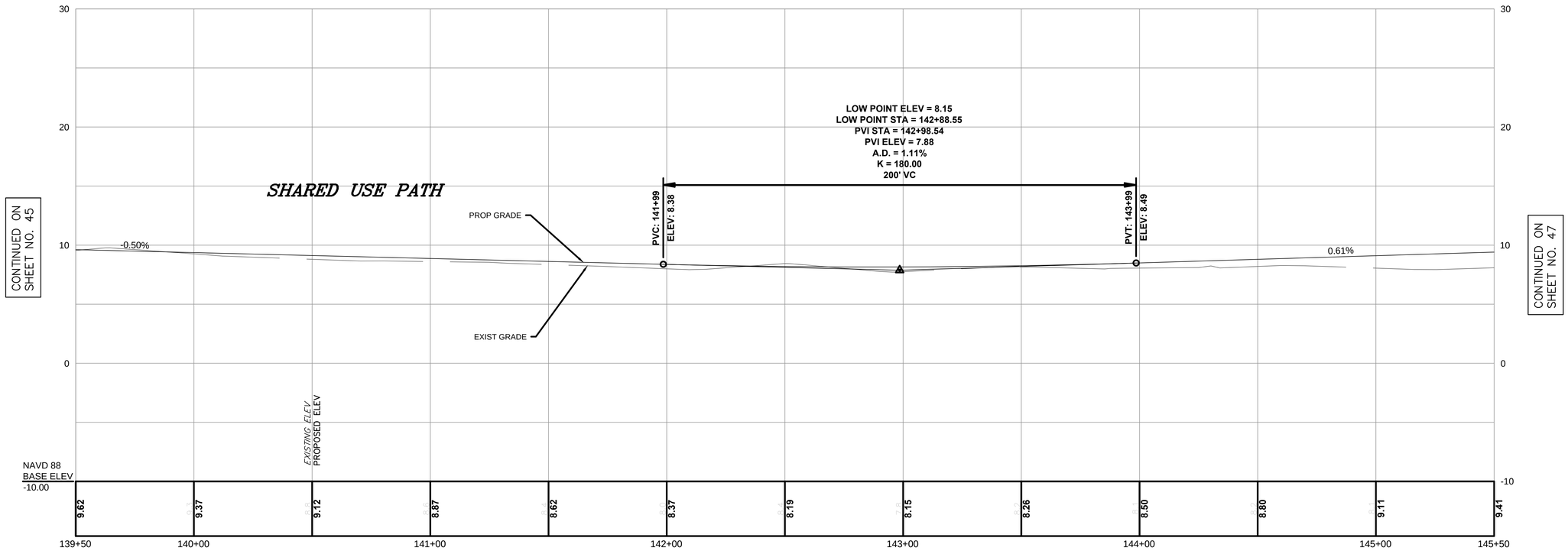
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	46	209
PROJECT FILE NO.	605146		

SHARED USE PATH PROFILE



HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 25

14-Oct-2015
93692 PS&E-2 PROFILE.DWG

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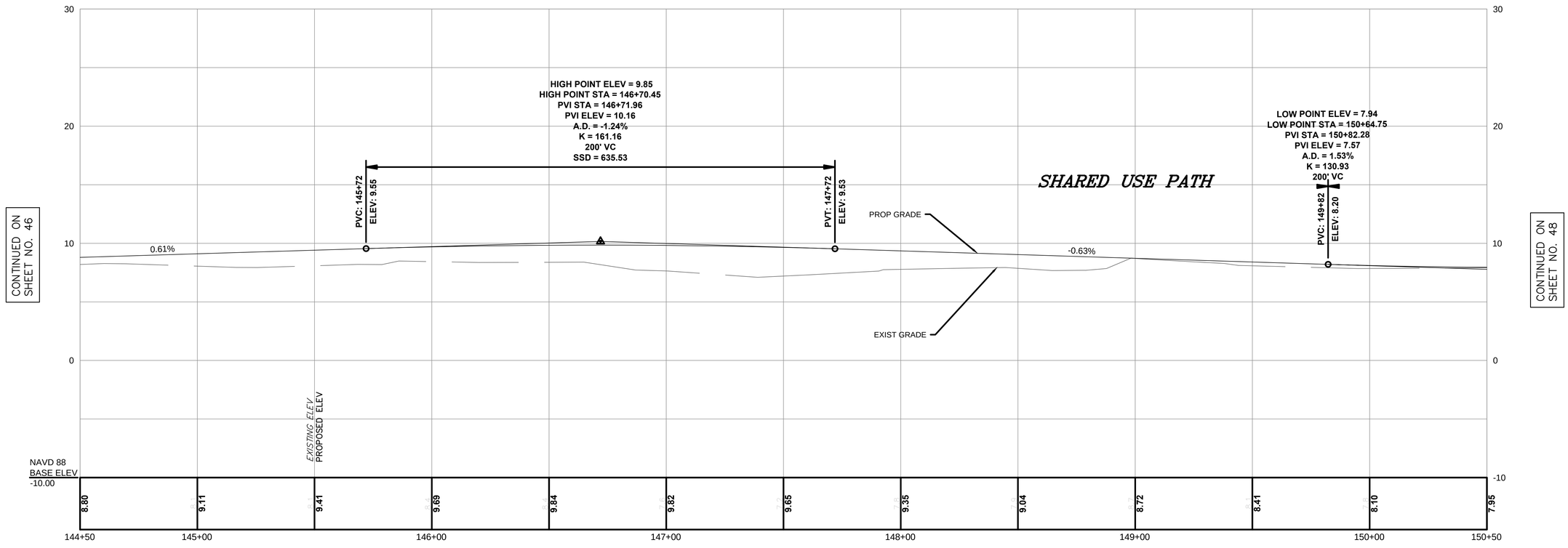
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	47	209
PROJECT FILE NO.	605146		

SHARED USE PATH PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 26

Z:\work\93692\CAD\After Advertised (PS&E-2)\93692 PS&E-2 Profile.dwg

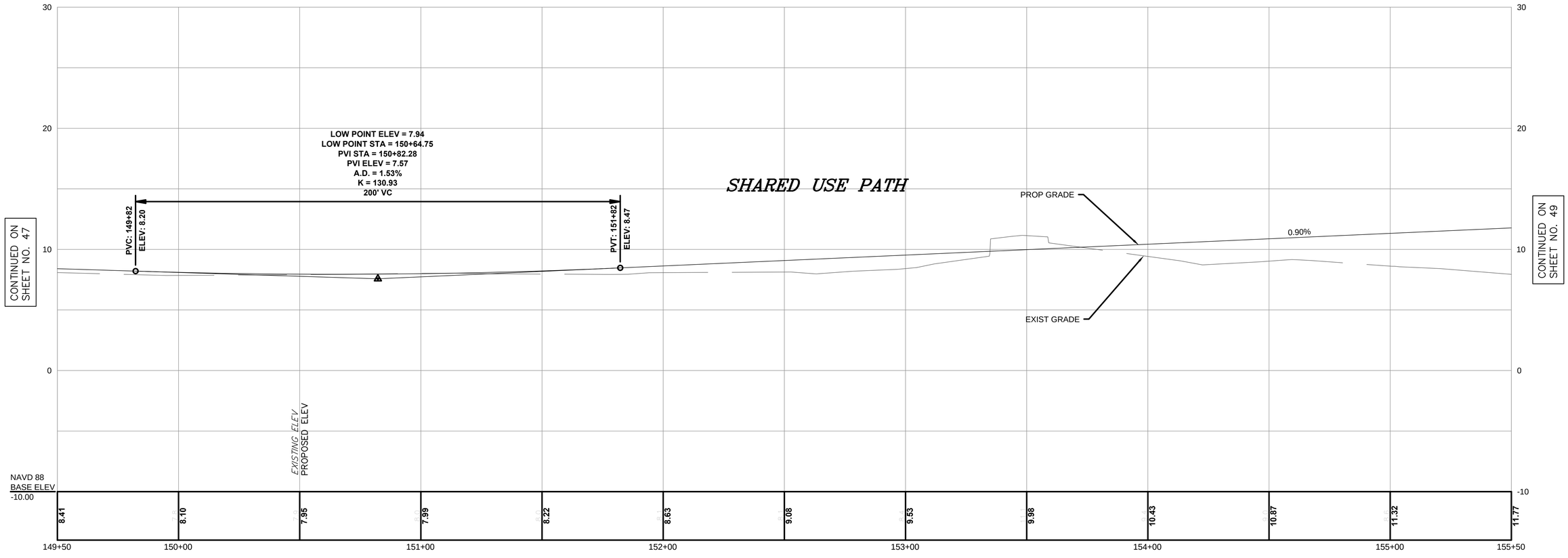
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	48	209
PROJECT FILE NO.	605146		

SHARED USE PATH PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



HOR. SCALE IN FEET
0 20 50 100

VER. SCALE IN FEET
0 4 8 10 20

FOR CONSTRUCTION PLAN SEE SHEET 27

Z:\work\93692\CAD\After Advertised (PS&E-2)\93692 PS&E-2 Profile.dwg

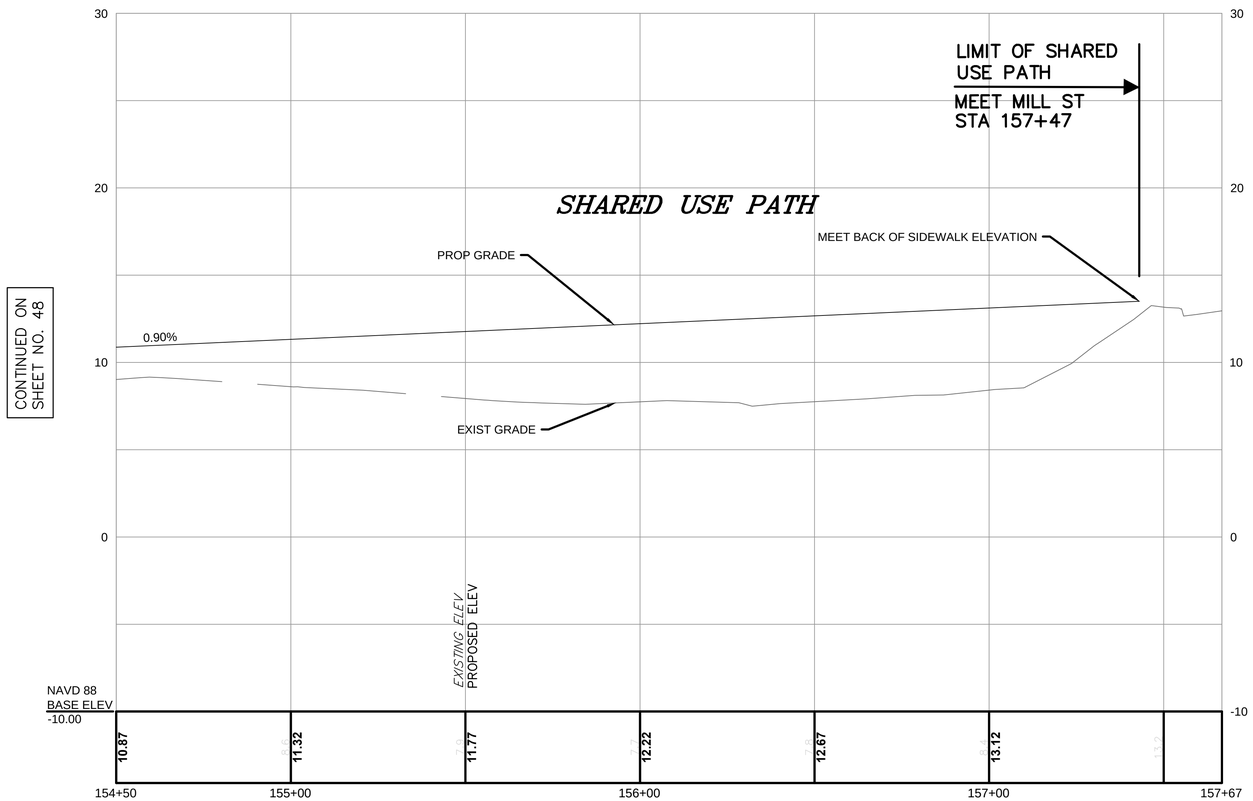
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	49	209
PROJECT FILE NO.	605146		

SHARED USE PATH PROFILE

14-Oct-2015

93692 PS&E-2 PROFILE.DWG



CONTINUED ON SHEET NO. 48

HOR. SCALE IN FEET
0 20 50 100
0 4 8 10 20
VER. SCALE IN FEET

FOR CONSTRUCTION PLAN SEE SHEET 28

Z:\work\93692\CAD\After Advertised (PS&E-2)\93692 PS&E-2 Profile.dwg

JEFFERSON AVE CONSTRUCTION BASELINE DATA				
DESCRIPTION	TANGENT/ CURVE DATA		NORTHING	EASTING
BEG STA 28+47.00			3007958.6575	818546.7859
PC STA 28+61.54	L=14.54'	S62°10'13"E	3007867.5584	818819.8238
PT STA 30+69.53	L=207.98' R=750.00'	Δ=15°53'20" TAN=104.66'	3007881.3506	818754.6054
PC STA 31+36.19	L=66.66'	N78°03'33"E	3007867.5584	818819.8238
PT STA 33+45.32	L=209.13' R=600.00'	Δ=19°58'14" TAN=105.64'	3007860.4579	819027.7767
END STA 33+71.72	L=26.40'	N81°58'13"E	3007864.1460	819053.9210

CANAL STREET CONSTRUCTION BASELINE DATA				
DESCRIPTION	TANGENT/ CURVE DATA		NORTHING	EASTING
BEG STA 0+00.00			3007582.2936	819133.9675
PC STA 02+18.20	L=218.20'	N16°57'12"W	3007791.0122	819070.3417
PT STA 04+25.02	L=206.82' R=500.00'	Δ=23°41'58" TAN=104.91'	3007995.5433	819052.0748
PC STA 04+78.29	L=53.27'	N06°44'46"E	3008048.4460	819058.3326
PT STA 05+47.16	L=68.87' R=450.00'	Δ=8°46'10" TAN=34.50'	3008117.1953	819061.1676
PI STA 07+46.37	L=199.21'	N02°01'24"W	3008316.2819	819054.1341

LORING AVE CONSTRUCTION BASELINE DATA				
DESCRIPTION	TANGENT/ CURVE DATA		NORTHING	EASTING
BEG STA 100+00.00	L=340.94'	N27°31'36"E	3007973.7525	819049.9798
END STA 103+40.94			3008276.1478	819207.5753

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	50	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C1	119.47	100.00	68.03	68° 27' 13"
C2	153.36	1000.00	76.83	8° 47' 13"
C3	6.86	2.26	45.07	174° 16' 12"
C4	49.50	116.00	25.13	24° 26' 50"
C5	8.77	3.00	27.42	167° 30' 50"
C6	38.54	6816.26	19.27	0° 19' 26"
C7	4.39	3.00	2.70	83° 54' 19"
C8	82.91	586.00	41.53	8° 06' 24"
C9	121.52	80.00	75.96	87° 01' 51"
C10	234.72	300.00	123.74	44° 49' 40"
C11	67.57	600.00	33.82	6° 27' 09"
C12	21.34	45.91	10.86	26° 37' 29"
C13	68.33	26.00	99.06	150° 35' 11"
C162	10.93	11.41	5.92	54° 50' 54"
C163	17.71	10.42	11.85	97° 20' 23"

CONTINUE RIGHT

CONTINUE LEFT

JEFFERSON AVENUE

LORING AVENUE

CANAL STREET

LIMIT OF WORK
STA 00+50.00
N 3007630.1208
E 819119.3879

LIMIT OF WORK
STA 30+00.00
N 3007899.2811
E 818687.1897

JEFFERSON AVE ℄ = STA 33+71.72
LORING AVE/CANAL ST ℄ = STA 2+93.23

LORING AVE/CANAL ST ℄ = STA 4+03.12
LORING AVE ℄ = STA 100+00

MAP 31 LOT 87
414 JEFFERSON AVENUE
NOW OR FORMERLY
BROWN, SAMUEL
S.E.D.R.D. BOOK 30135 PAGE 245

MAP 31 LOT 86
92 LORING AVENUE
NOW OR FORMERLY
NEWMAN, FLORA L.
S.E.D.R.D.
BOOK 30P07 PAGE 160

MAP 31 LOT 85
96 LORING AVENUE
NOW OR FORMERLY
NOWLAN, RONALD A
S.E.D.R.D.
IOOK 30440 PAGE 34

MAP 31 LOT 93
105 LORING AVENUE
NOW OR FORMERLY
DENNIS JR., & STELLA
S.E.D.R.D.

MAP 31 LOT 92
101 LORING AVENUE
NOW OR FORMERLY
OMEGA REALTY TRUST
S.E.D.R.D.
BOOK 21442 PAGE 477

MAP 32 LOT 26
NOW OR FORMERLY
NIKOLOPOULOS, NICK C
S.E.D.R.D. BOOK 15900 PAGE 53

MAP 32 LOT 25
NOW OR FORMERLY
LAY, DARA
S.E.D.R.D. BOOK 17036 PAGE 181

MAP 32 LOT 24
NOW OR FORMERLY
LOGLI, FAIK
LOGLI, ALBA
S.E.D.R.D. BOOK 22910 PAGE 2

MAP 32 LOT 23
NOW OR FORMERLY
BECKER, MICHAEL
S.E.D.R.D. BOOK 24092 PAGE 477

MAP 32 LOT 22
NOW OR FORMERLY
MAGUIRE, MARILYN G
MAGUIRE, AMY JEAN
S.E.D.R.D.
BOOK 13197 PAGE 435

MAP 32 LOT 21
NOW OR FORMERLY
TOY, JOHN S
TOY, ROSEMARY
S.E.D.R.D.
BOOK 23134 PAGE 108

MAP 32 LOT 20
71 LORING AVENUE
NOW OR FORMERLY
SALEM ST. COLLEGE ASSISTANCE
CORPORATION
S.E.D.R.D. BOOK 14102 PAGE 29

MAP 32 LOT 27
72 LORING AVENUE
NOW OR FORMERLY
JEFFERSON TRUST, THE
C/O DRUMLIN GROUP
S.E.D.R.D. BOOK 14511 PAGE

N/A L.
94 PAGE 59

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 29 & 30

CONTINUED ON SHEET NO. 51

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015

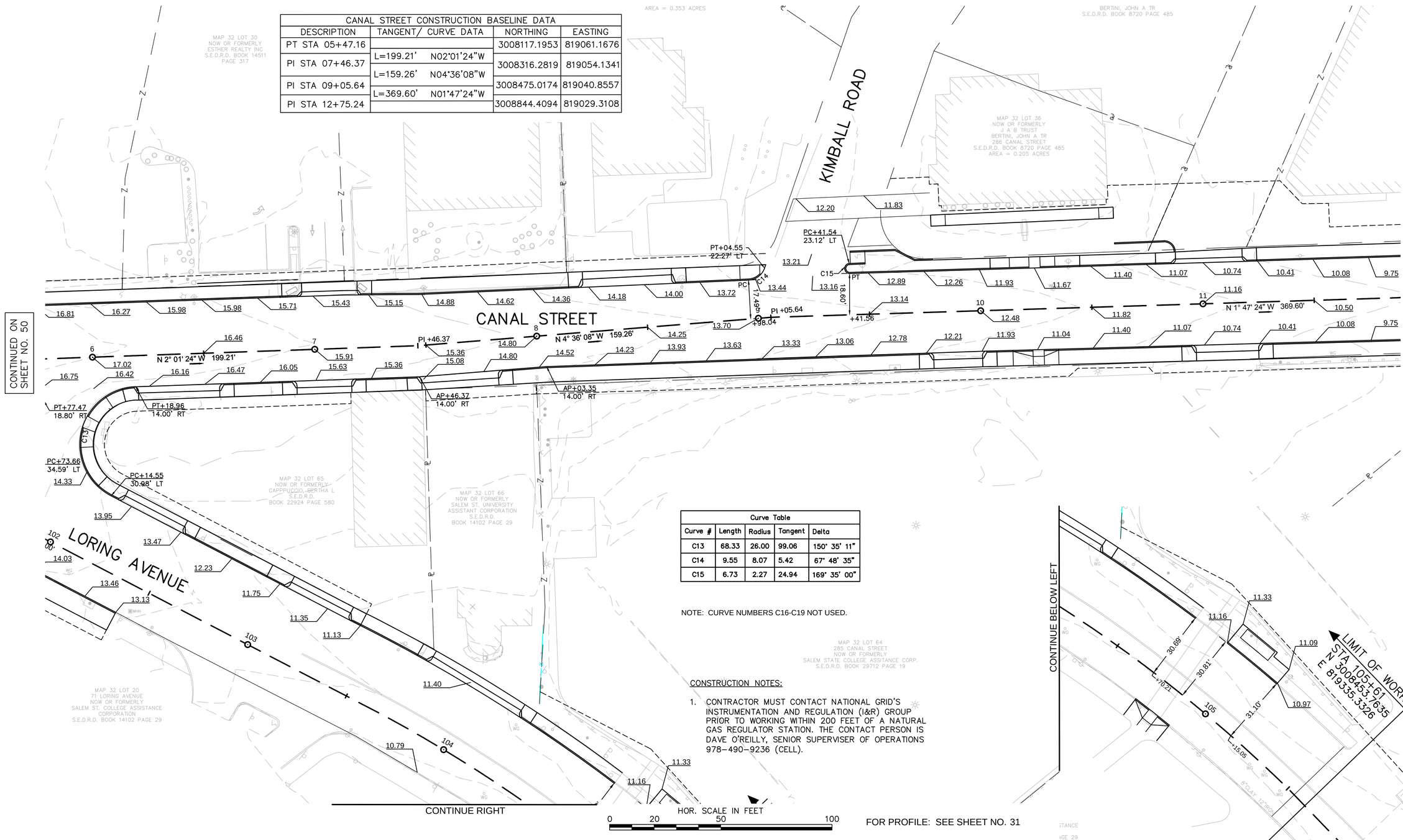
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	51	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PT STA 05+47.16		3008117.1953	819061.1676
PI STA 07+46.37	L=199.21' N02°01'24"W	3008316.2819	819054.1341
PI STA 09+05.64	L=159.26' N04°36'08"W	3008475.0174	819040.8557
PI STA 12+75.24	L=369.60' N01°47'24"W	3008844.4094	819029.3108



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C13	68.33	26.00	99.06	150° 35' 11"
C14	9.55	8.07	5.42	67° 48' 35"
C15	6.73	2.27	24.94	169° 35' 00"

NOTE: CURVE NUMBERS C16-C19 NOT USED.

CONSTRUCTION NOTES:

1. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978-490-9236 (CELL).

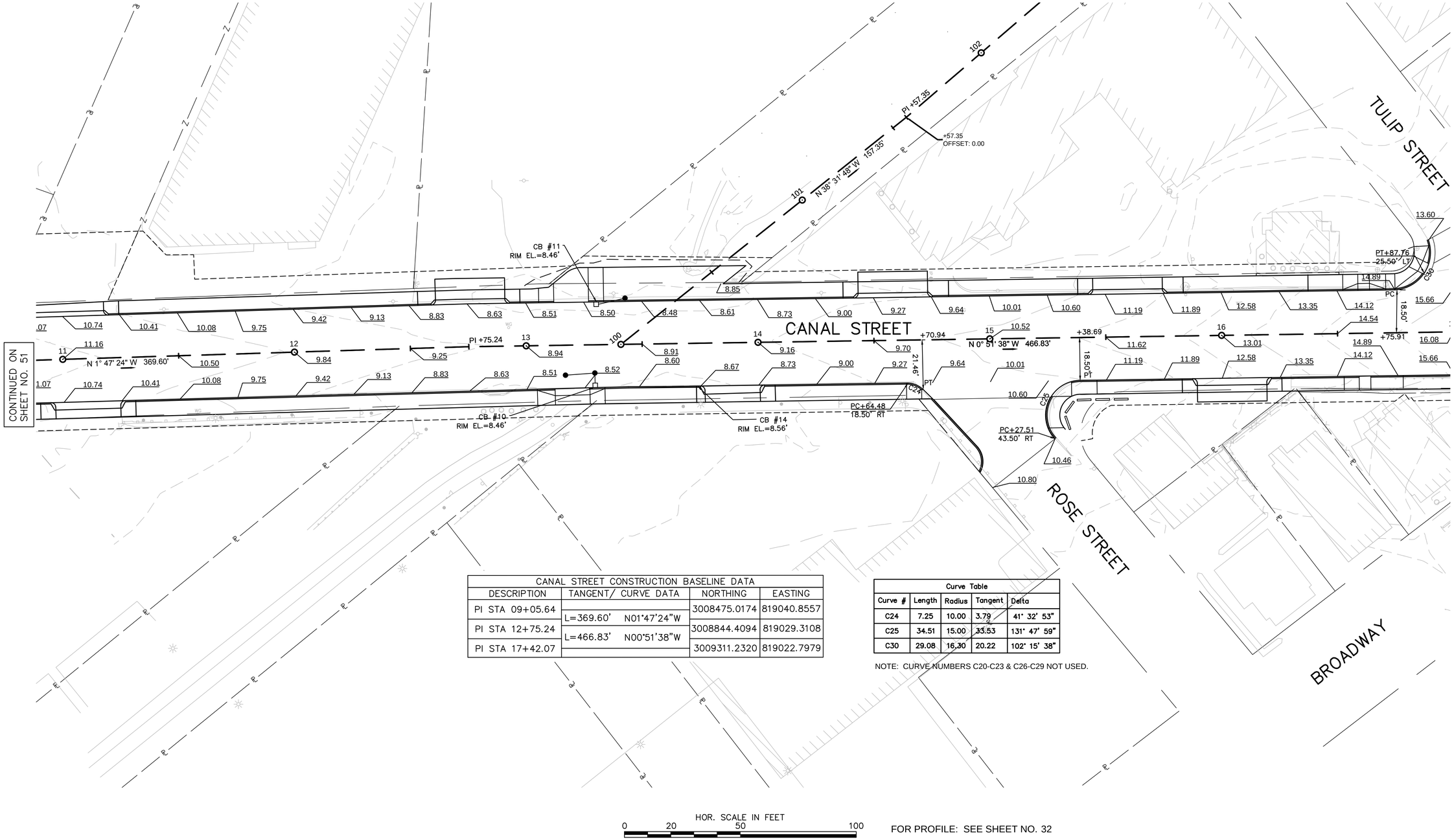
FOR PROFILE: SEE SHEET NO. 31

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	52	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 27-Oct-2015



CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 09+05.64		3008475.0174	819040.8557
	L=369.60' N01°47'24"W		
PI STA 12+75.24		3008844.4094	819029.3108
	L=466.83' N00°51'38"W		
PI STA 17+42.07		3009311.2320	819022.7979

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C24	7.25	10.00	3.79	41° 32' 53"
C25	34.51	15.00	33.53	131° 47' 59"
C30	29.08	16.30	20.22	102° 15' 38"

NOTE: CURVE NUMBERS C20-C23 & C26-C29 NOT USED.

HOR. SCALE IN FEET
0 20 50 100

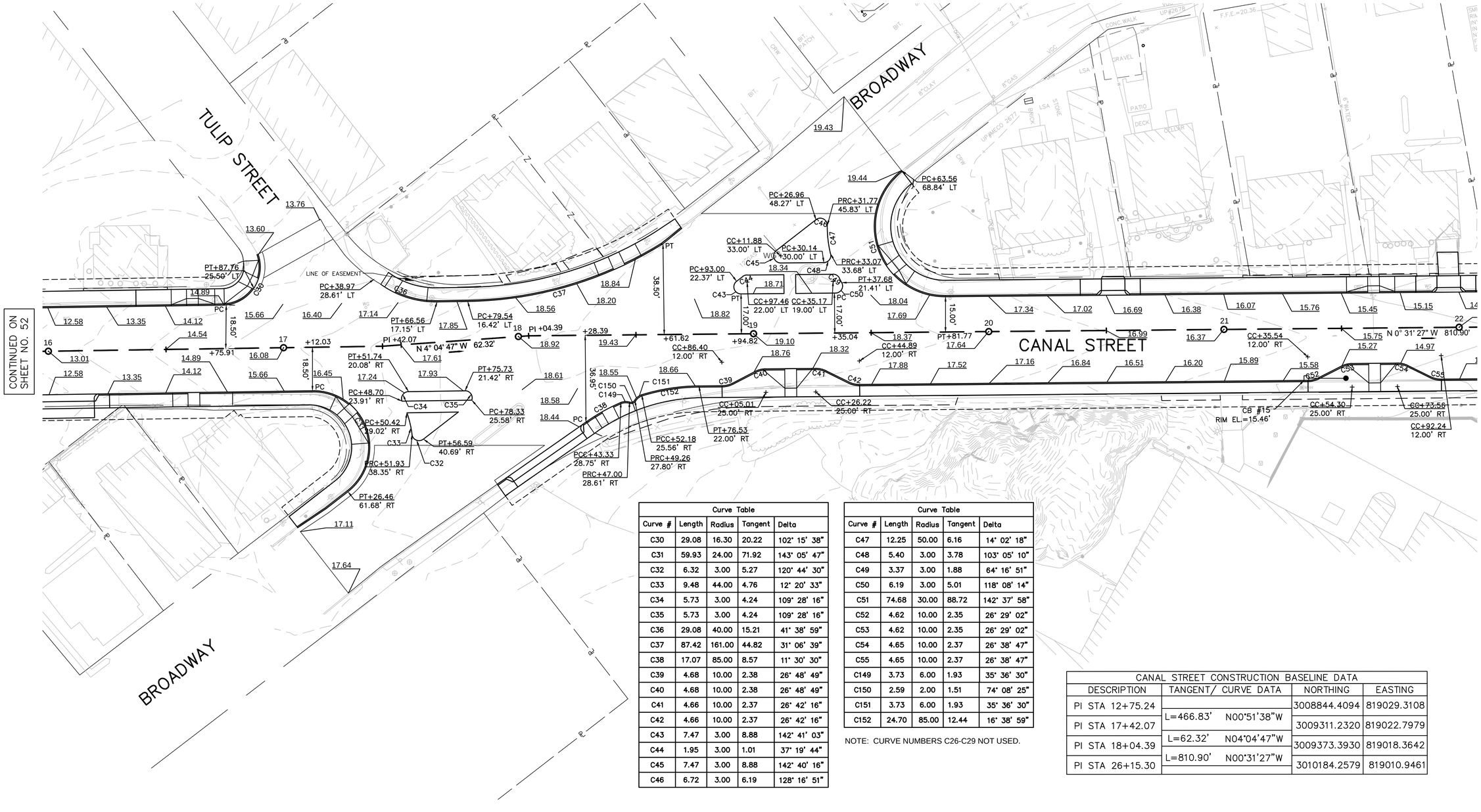
FOR PROFILE: SEE SHEET NO. 32

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	53	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C30	29.08	16.30	20.22	102° 15' 38"
C31	59.93	24.00	71.92	143° 05' 47"
C32	6.32	3.00	5.27	120° 44' 30"
C33	9.48	44.00	4.76	12° 20' 33"
C34	5.73	3.00	4.24	109° 28' 16"
C35	5.73	3.00	4.24	109° 28' 16"
C36	29.08	40.00	15.21	41° 38' 59"
C37	87.42	161.00	44.82	31° 06' 39"
C38	17.07	85.00	8.57	11° 30' 30"
C39	4.68	10.00	2.38	26° 48' 49"
C40	4.68	10.00	2.38	26° 48' 49"
C41	4.66	10.00	2.37	26° 42' 16"
C42	4.66	10.00	2.37	26° 42' 16"
C43	7.47	3.00	8.88	142° 41' 03"
C44	1.95	3.00	1.01	37° 19' 44"
C45	7.47	3.00	8.88	142° 40' 16"
C46	6.72	3.00	6.19	128° 16' 51"

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C47	12.25	50.00	6.16	14° 02' 18"
C48	5.40	3.00	3.78	103° 05' 10"
C49	3.37	3.00	1.88	64° 16' 51"
C50	6.19	3.00	5.01	118° 08' 14"
C51	74.68	30.00	88.72	142° 37' 58"
C52	4.62	10.00	2.35	26° 29' 02"
C53	4.62	10.00	2.35	26° 29' 02"
C54	4.65	10.00	2.37	26° 38' 47"
C55	4.65	10.00	2.37	26° 38' 47"
C149	3.73	6.00	1.93	35° 36' 30"
C150	2.59	2.00	1.51	74° 08' 25"
C151	3.73	6.00	1.93	35° 36' 30"
C152	24.70	85.00	12.44	16° 38' 59"

NOTE: CURVE NUMBERS C26-C29 NOT USED.

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 12+75.24		3008844.4094	819029.3108
	L=466.83' N00°51'38"W		
PI STA 17+42.07		3009311.2320	819022.7979
	L=62.32' N04°04'47"W		
PI STA 18+04.39		3009373.3930	819018.3642
	L=810.90' N00°31'27"W		
PI STA 26+15.30		3010184.2579	819010.9461

HOR. SCALE IN FEET
0 20 50 100

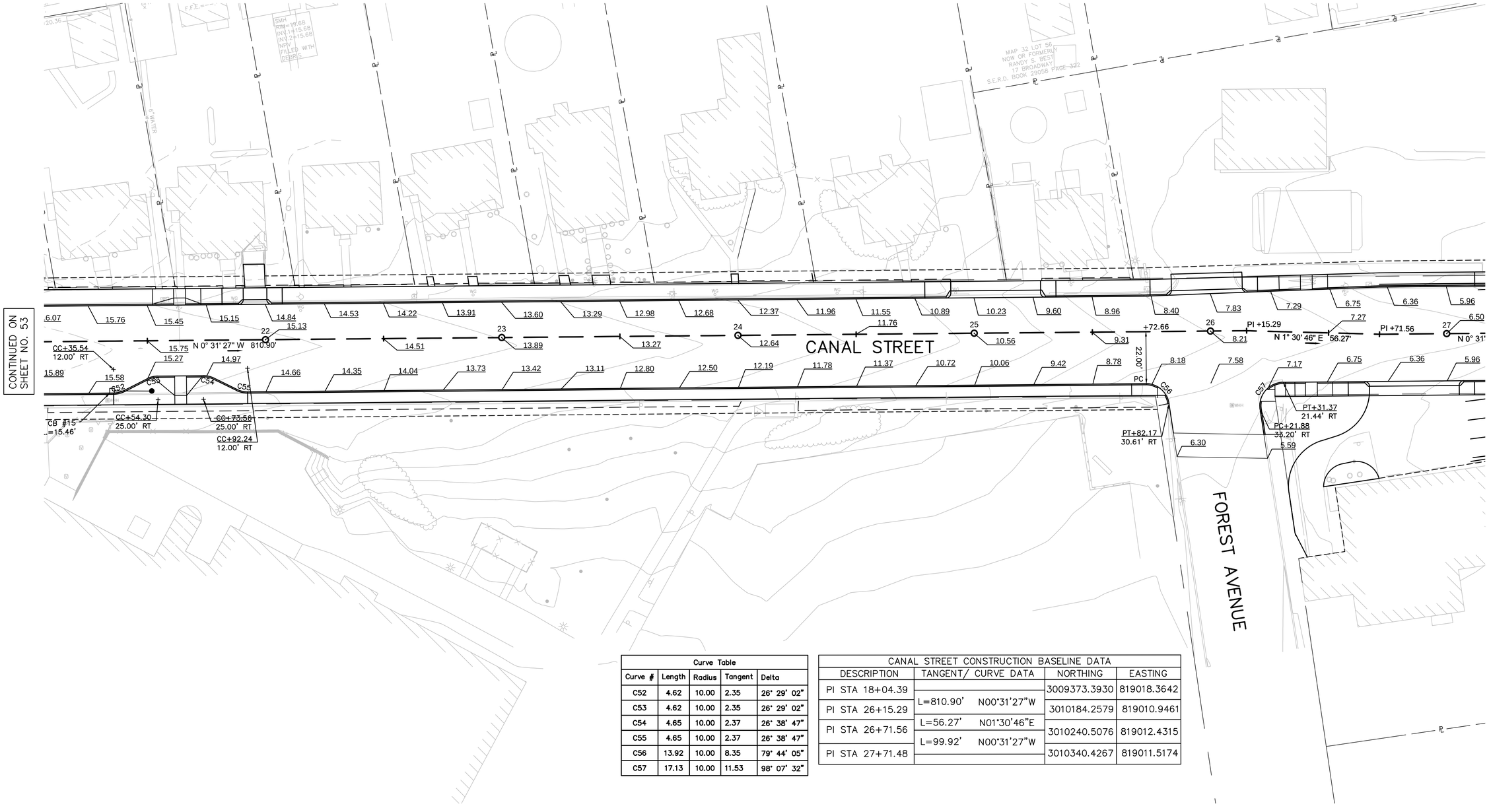
FOR PROFILE: SEE SHEET NO. 33

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	54	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C52	4.62	10.00	2.35	26° 29' 02"
C53	4.62	10.00	2.35	26° 29' 02"
C54	4.65	10.00	2.37	26° 38' 47"
C55	4.65	10.00	2.37	26° 38' 47"
C56	13.92	10.00	8.35	79° 44' 05"
C57	17.13	10.00	11.53	98° 07' 32"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 18+04.39		3009373.3930	819018.3642
	L=810.90' N00°31'27"W		
PI STA 26+15.29		3010184.2579	819010.9461
	L=56.27' N01°30'46"E		
PI STA 26+71.56		3010240.5076	819012.4315
	L=99.92' N00°31'27"W		
PI STA 27+71.48		3010340.4267	819011.5174

HOR. SCALE IN FEET
0 20 50 100

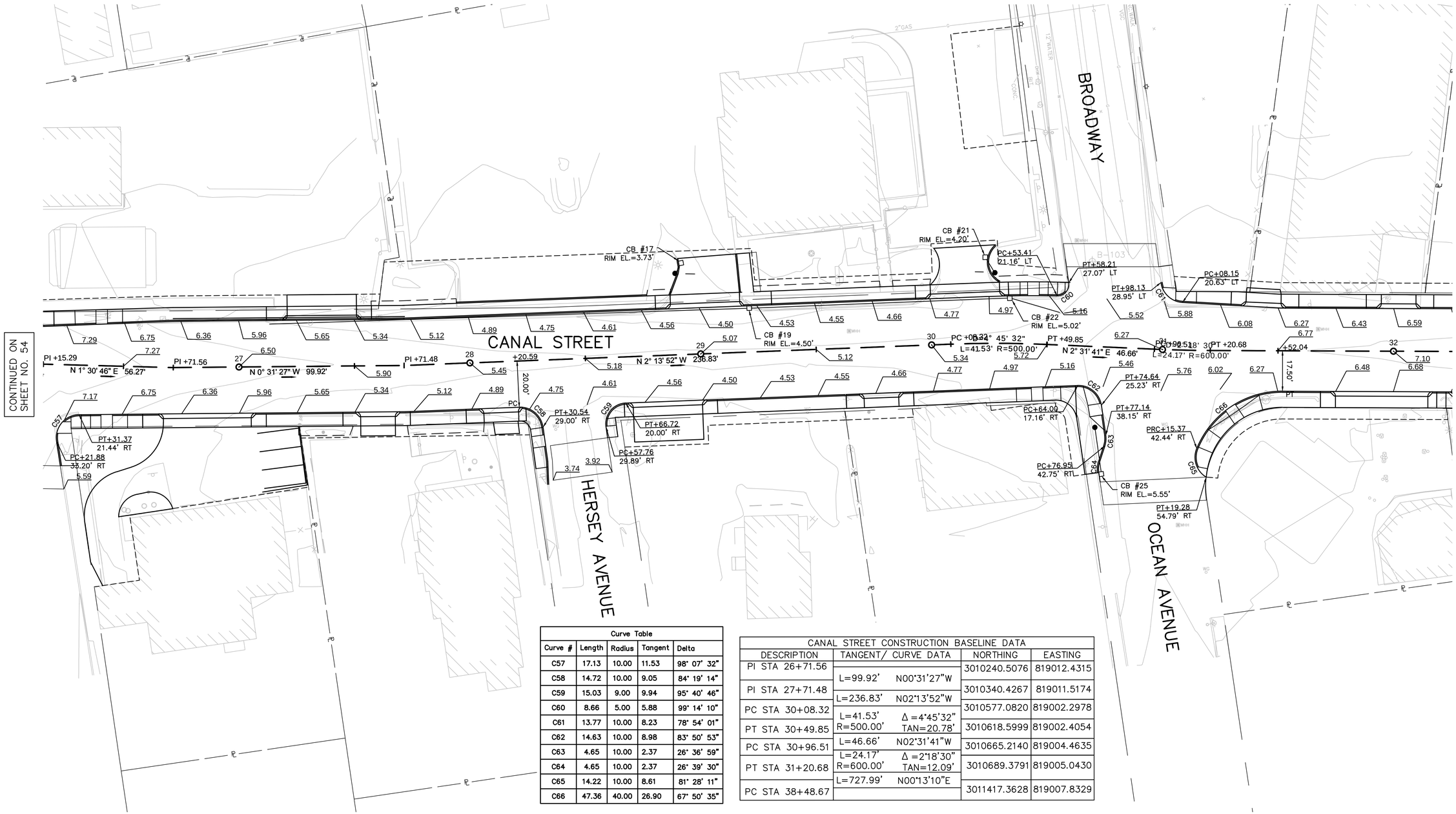
FOR PROFILE: SEE SHEET NO. 34

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	55	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015



CONTINUED ON SHEET NO. 54

CONTINUED ON SHEET NO. 56

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C57	17.13	10.00	11.53	98° 07' 32"
C58	14.72	10.00	9.05	84° 19' 14"
C59	15.03	9.00	9.94	95° 40' 46"
C60	8.66	5.00	5.88	99° 14' 10"
C61	13.77	10.00	8.23	78° 54' 01"
C62	14.63	10.00	8.98	83° 50' 53"
C63	4.65	10.00	2.37	26° 36' 59"
C64	4.65	10.00	2.37	26° 39' 30"
C65	14.22	10.00	8.61	81° 28' 11"
C66	47.36	40.00	26.90	67° 50' 35"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 26+71.56		3010240.5076	819012.4315
	L=99.92' N00°31'27"W		
PI STA 27+71.48		3010340.4267	819011.5174
	L=236.83' N02°13'52"W		
PC STA 30+08.32		3010577.0820	819002.2978
	L=41.53' Δ=4°45'32" R=500.00' TAN=20.78'		
PT STA 30+49.85		3010618.5999	819002.4054
	L=46.66' N02°31'41"W		
PC STA 30+96.51		3010665.2140	819004.4635
	L=24.17' Δ=2°18'30" R=600.00' TAN=12.09'		
PT STA 31+20.68		3010689.3791	819005.0430
	L=727.99' N00°13'10"E		
PC STA 38+48.67		3011417.3628	819007.8329

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 35

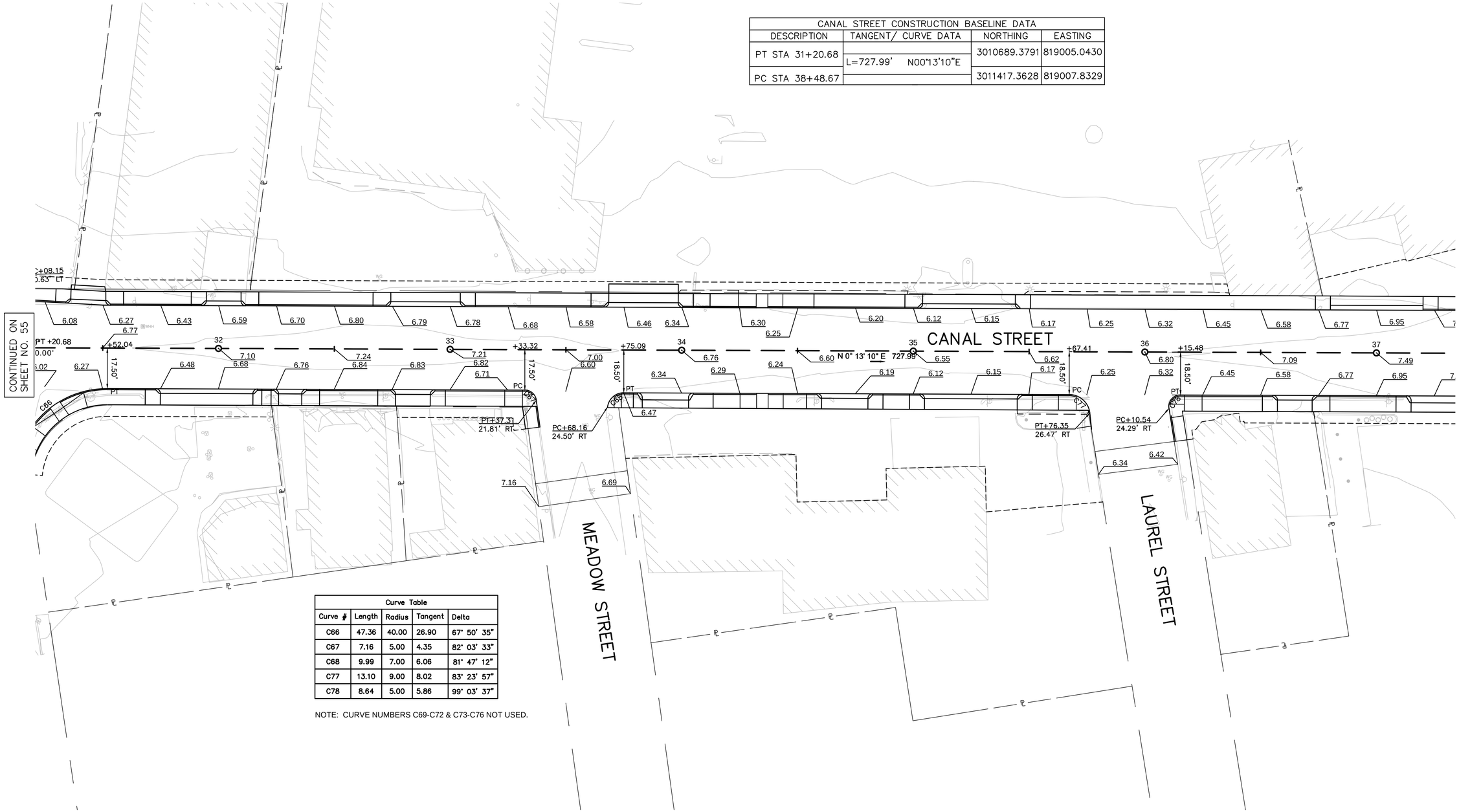
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	56	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PT STA 31+20.68	L=727.99' N00°13'10"E	3010689.3791	819005.0430
PC STA 38+48.67		3011417.3628	819007.8329



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C66	47.36	40.00	26.90	67° 50' 35"
C67	7.16	5.00	4.35	82° 03' 33"
C68	9.99	7.00	6.06	81° 47' 12"
C77	13.10	9.00	8.02	83° 23' 57"
C78	8.64	5.00	5.86	99° 03' 37"

NOTE: CURVE NUMBERS C69-C72 & C73-C76 NOT USED.

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 36

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	57	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 18-Dec-2015

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C79	4.65	10.00	2.37	26° 39' 32"
C80	5.22	10.00	2.67	29° 55' 01"
C81	26.55	320.00	13.28	4° 45' 17"
C82	4.77	10.00	2.43	27° 21' 26"
C83	4.40	10.00	2.24	25° 14' 02"
C84	8.04	5.04	5.16	91° 19' 31"
C85	17.78	350.00	8.89	2° 54' 39"
C86	4.35	10.00	2.21	24° 55' 38"
C87	4.69	10.00	2.39	26° 51' 45"
C88	114.29	353.50	57.65	18° 31' 25"
C89	98.09	316.00	49.44	17° 47' 08"
C90	3.90	10.00	1.97	22° 20' 23"
C91	4.64	10.00	2.36	26° 33' 55"
C92	19.74	10.02	15.09	112° 47' 54"
C93	8.64	7.00	4.97	70° 42' 07"
C94	6.41	5.06	3.72	72° 33' 46"
C95	104.39	272.04	52.85	21° 59' 13"
C98	112.86	200.00	57.98	32° 19' 55"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PT STA 31+20.68	L=727.99' N00°13'10"E	3010689.3791	819005.0430
PC STA 38+48.67	L=163.59' Δ=27°58'45" R=335.00' TAN=83.46'	3011417.3628	819007.8329
PT STA 40+12.26	L=160.60' N27°45'34"W	3011574.6770	818969.7804
PC STA 41+72.86	L=189.04' Δ=32°19'55" R=335.00' TAN=97.11'	3011716.7972	818894.4767
PT STA 43+61.90		3011899.5325	818856.9876

PC +16.70
PC +38.28
PT +37.46
PRC +37.26
PT +53.04
129
N 1° 46' 09" E 205.59'
130
PC +58.62
PT +76.63
131
N 0° 03' 00" E 77.58'
PC +54.2
L=18.00' R=600.00'
Δ=1° 43' 09"
CANAL STREET RAIL TRAIL PHASE 2
PROJECT (BY OTHERS)
CONTINUED ON SHEET NO. 58
PC+33.42
23.10' LT
PRC+37.93
19.50' LT
D=32° 19' 55"
L=189.04' R=335.00'
PC+72.86
PT+96.52
17.71' RT
PC+01.62
17.30' RT
PC+89.74
22.79' RT
PC+67.40
28.95' RT
CC+42.43
25.00' LT
CC+30.70
8.50' LT
CANAL STREET
N 27° 45' 34" W
PT+11.79
18.50' LT
CC+67.81
25.00' LT
PRC+07.97
18.49' LT
CC+95.61
25.00' LT
PT +12.26
CB #28
RIM EL.=7.82'
PT+12.26
18.50' RT
PC+03.47
17.50' LT
D=27° 58' 45"
L=163.59' R=335.00'
CC+03.95
8.50' RT
CC+55.85
8.43' LT
PC +48.67
+75.69
+92.71
PRC C85
PRC+06.65
18.50' RT
PC+70.96
20.21' RT
PC+99.66
17.45' RT
PT+96.74
15.96' RT
CC+92.71
25.00' RT
ST. PAUL STREET
CONTINUED ON SHEET NO. 56

HOR. SCALE IN FEET
0 20 50 100

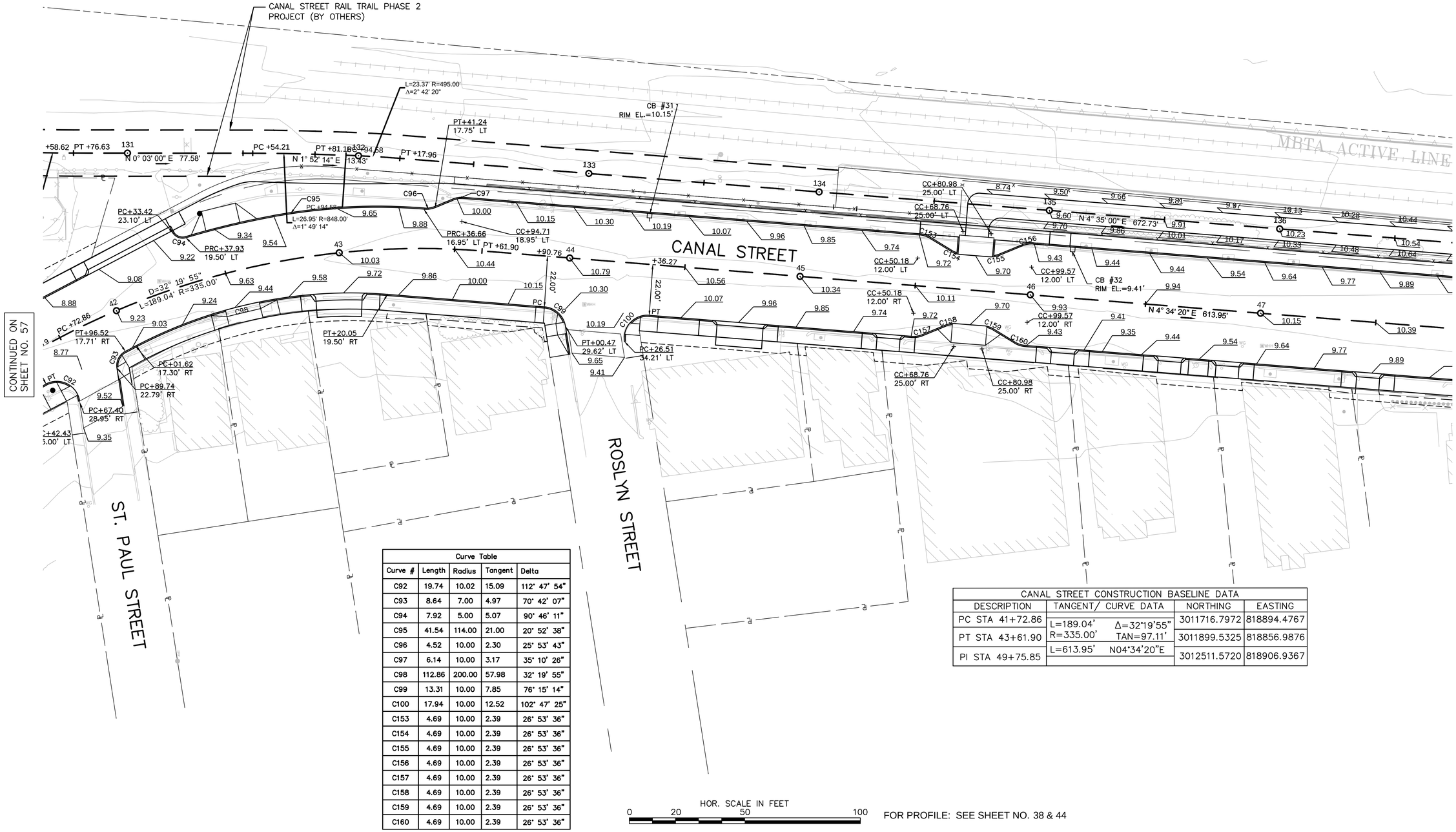
FOR PROFILE: SEE SHEET NO. 37

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	58	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 18-Dec-2015



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C92	19.74	10.02	15.09	112° 47' 54"
C93	8.64	7.00	4.97	70° 42' 07"
C94	7.92	5.00	5.07	90° 46' 11"
C95	41.54	114.00	21.00	20° 52' 38"
C96	4.52	10.00	2.30	25° 53' 43"
C97	6.14	10.00	3.17	35° 10' 26"
C98	112.86	200.00	57.98	32° 19' 55"
C99	13.31	10.00	7.85	76° 15' 14"
C100	17.94	10.00	12.52	102° 47' 25"
C153	4.69	10.00	2.39	26° 53' 36"
C154	4.69	10.00	2.39	26° 53' 36"
C155	4.69	10.00	2.39	26° 53' 36"
C156	4.69	10.00	2.39	26° 53' 36"
C157	4.69	10.00	2.39	26° 53' 36"
C158	4.69	10.00	2.39	26° 53' 36"
C159	4.69	10.00	2.39	26° 53' 36"
C160	4.69	10.00	2.39	26° 53' 36"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PC STA 41+72.86	L=189.04' Δ=32°19'55" R=335.00' TAN=97.11'	3011716.7972	818894.4767
PT STA 43+61.90		3011899.5325	818856.9876
PI STA 49+75.85	L=613.95' N04°34'20"E	3012511.5720	818906.9367

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 38 & 44

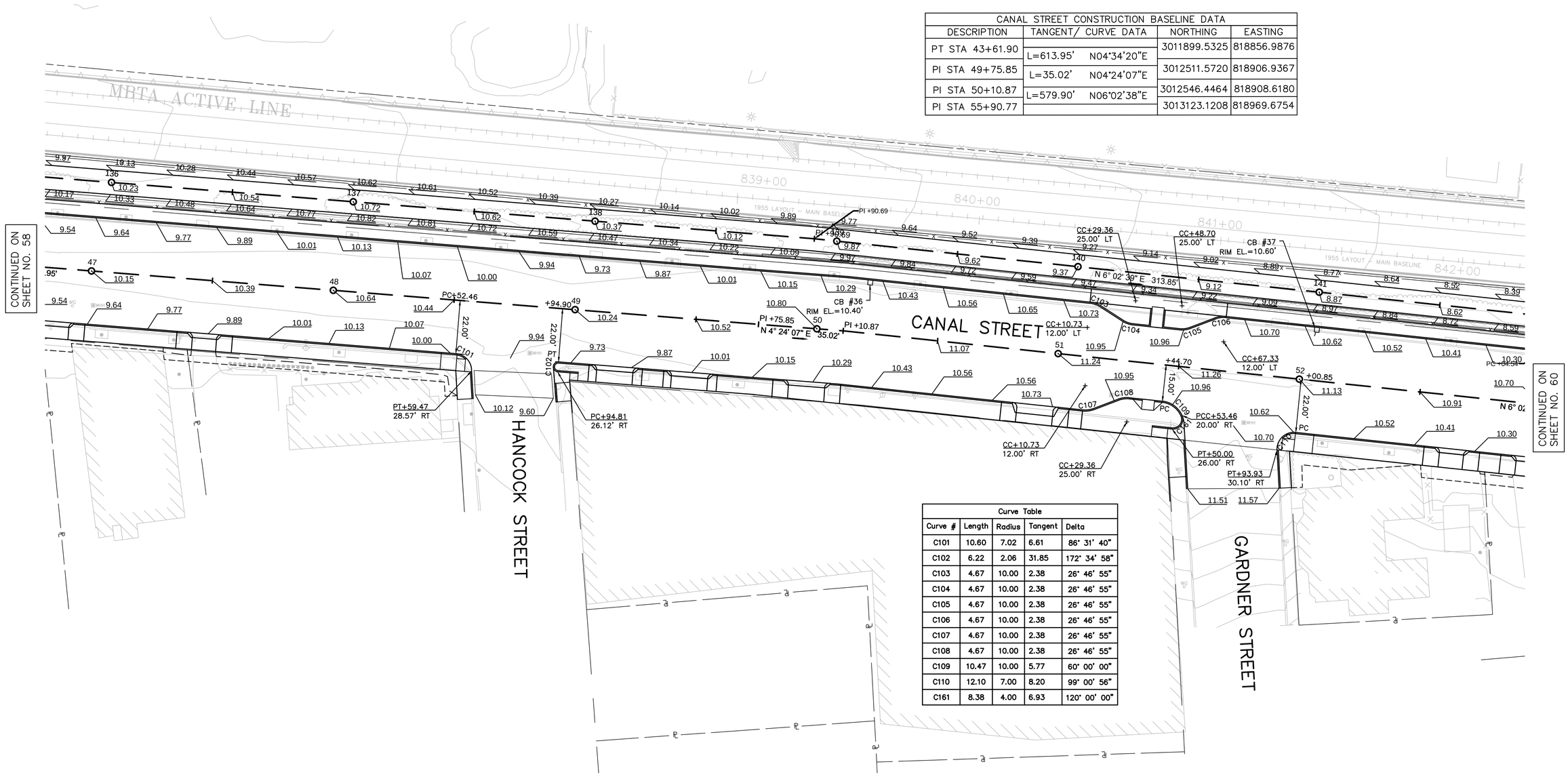
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	59	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT / CURVE DATA	NORTHING	EASTING
PT STA 43+61.90		3011899.5325	818856.9876
	L=613.95' N04°34'20"E		
PI STA 49+75.85		3012511.5720	818906.9367
	L=35.02' N04°24'07"E		
PI STA 50+10.87		3012546.4464	818908.6180
	L=579.90' N06°02'38"E		
PI STA 55+90.77		3013123.1208	818969.6754



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C101	10.60	7.02	6.61	86° 31' 40"
C102	6.22	2.06	31.85	172° 34' 58"
C103	4.67	10.00	2.38	26° 46' 55"
C104	4.67	10.00	2.38	26° 46' 55"
C105	4.67	10.00	2.38	26° 46' 55"
C106	4.67	10.00	2.38	26° 46' 55"
C107	4.67	10.00	2.38	26° 46' 55"
C108	4.67	10.00	2.38	26° 46' 55"
C109	10.47	10.00	5.77	60° 00' 00"
C110	12.10	7.00	8.20	99° 00' 56"
C161	8.38	4.00	6.93	120° 00' 00"

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 39 & 45

SALEM
CANAL STREET

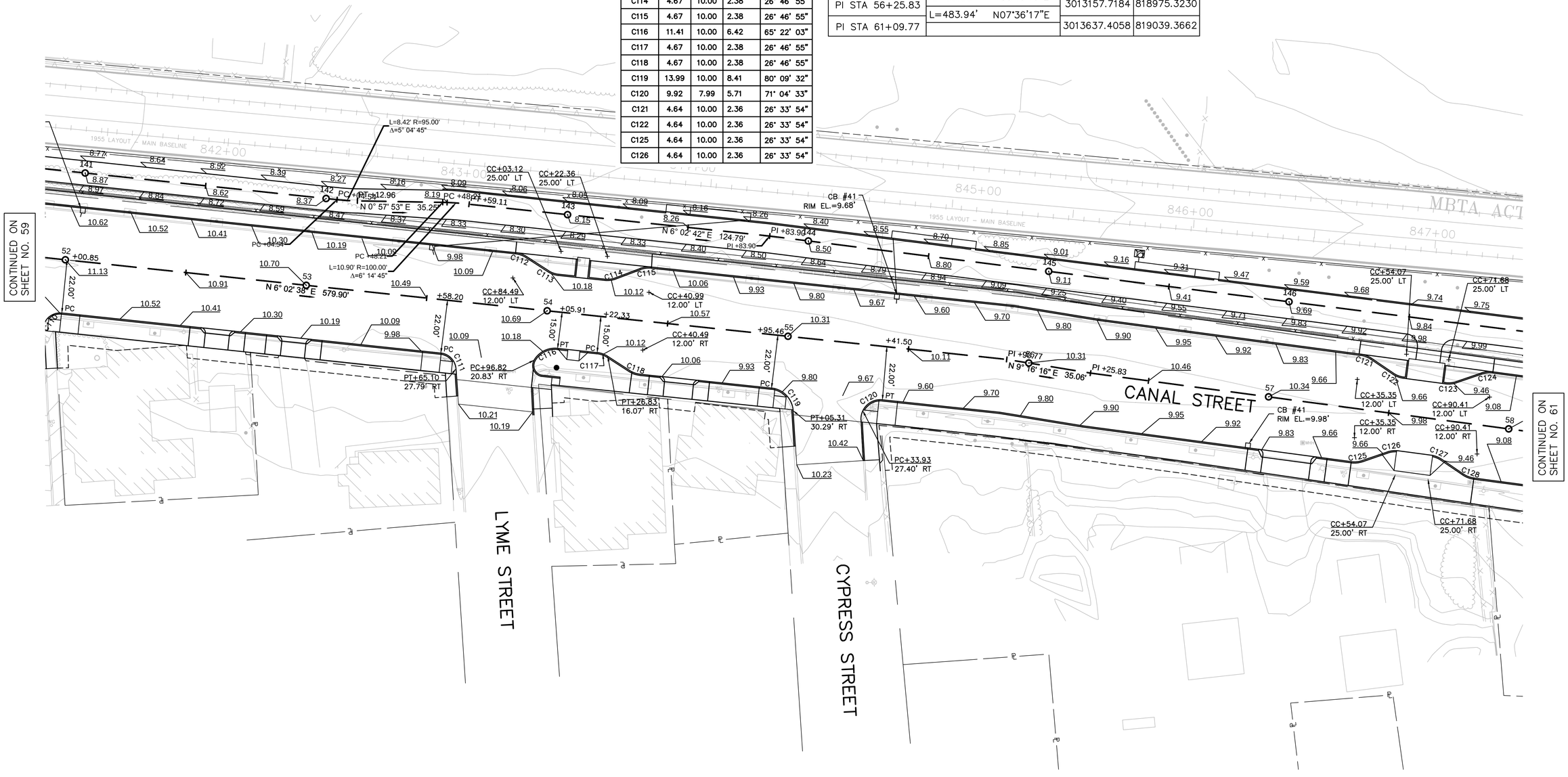
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	60	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C111	9.78	7.00	5.88	80° 03' 30"
C112	4.67	10.00	2.38	26° 46' 55"
C113	4.67	10.00	2.38	26° 46' 55"
C114	4.67	10.00	2.38	26° 46' 55"
C115	4.67	10.00	2.38	26° 46' 55"
C116	11.41	10.00	6.42	65° 22' 03"
C117	4.67	10.00	2.38	26° 46' 55"
C118	4.67	10.00	2.38	26° 46' 55"
C119	13.99	10.00	8.41	80° 09' 32"
C120	9.92	7.99	5.71	71° 04' 33"
C121	4.64	10.00	2.36	26° 33' 54"
C122	4.64	10.00	2.36	26° 33' 54"
C125	4.64	10.00	2.36	26° 33' 54"
C126	4.64	10.00	2.36	26° 33' 54"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 50+10.87		3012546.4464	818908.6180
	L=579.90' N06°02'38"E		
PI STA 55+90.77		3013123.1208	818969.6754
	L=35.06' N09°16'16"E		
PI STA 56+25.83		3013157.7184	818975.3230
	L=483.94' N07°36'17"E		
PI STA 61+09.77		3013637.4058	819039.3662



HOR. SCALE IN FEET
0 20 50 100

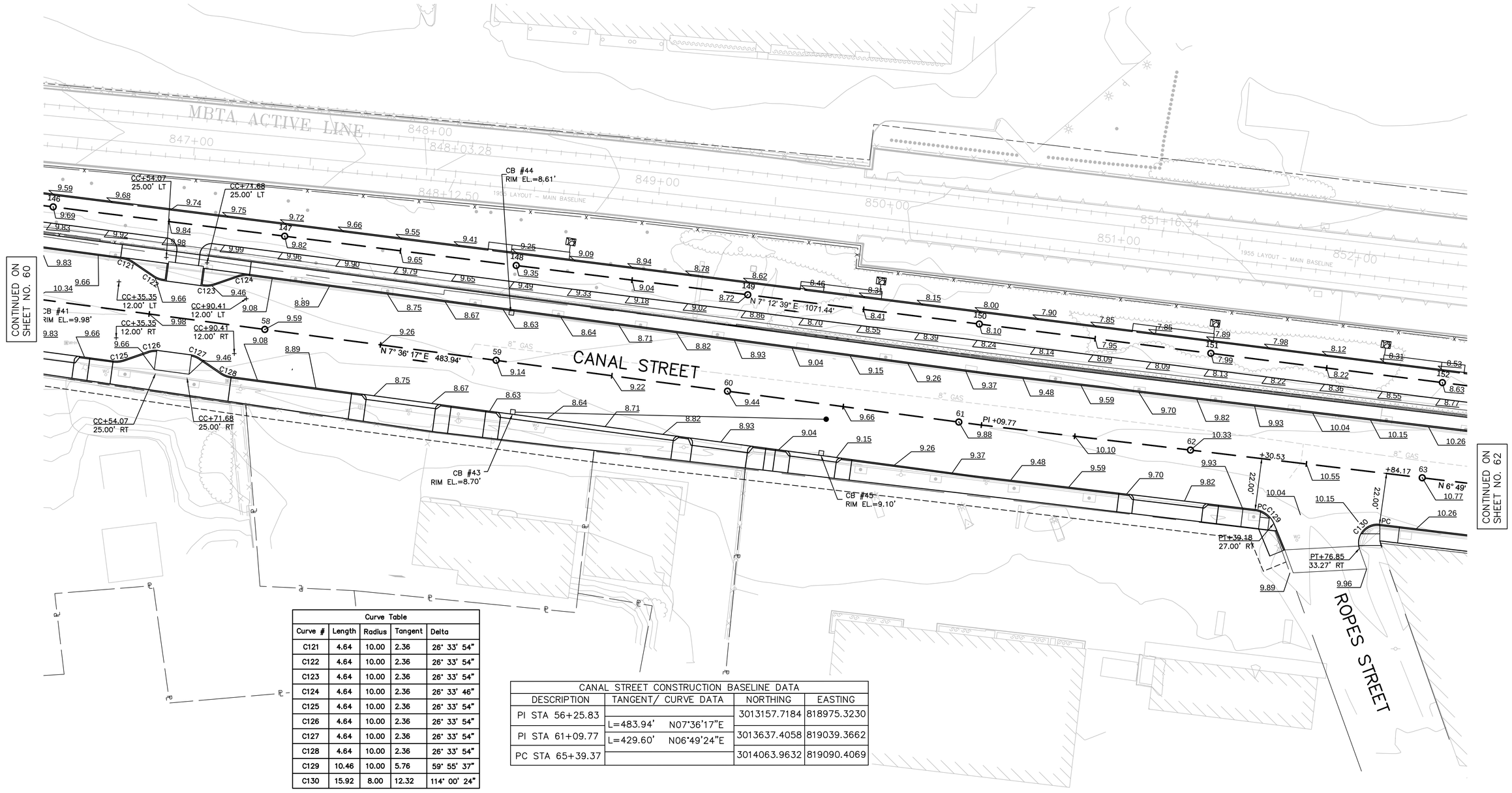
FOR PROFILE: SEE SHEET NO. 40 & 46

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	61	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015



Curve Table				
Curve #	Length	Radius	Tangent	Delta
C121	4.64	10.00	2.36	26° 33' 54"
C122	4.64	10.00	2.36	26° 33' 54"
C123	4.64	10.00	2.36	26° 33' 54"
C124	4.64	10.00	2.36	26° 33' 46"
C125	4.64	10.00	2.36	26° 33' 54"
C126	4.64	10.00	2.36	26° 33' 54"
C127	4.64	10.00	2.36	26° 33' 54"
C128	4.64	10.00	2.36	26° 33' 54"
C129	10.46	10.00	5.76	59° 55' 37"
C130	15.92	8.00	12.32	114° 00' 24"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 56+25.83	L=483.94' N07°36'17"E	3013157.7184	818975.3230
PI STA 61+09.77	L=429.60' N06°49'24"E	3013637.4058	819039.3662
PC STA 65+39.37		3014063.9632	819090.4069

HOR. SCALE IN FEET
0 20 50 100

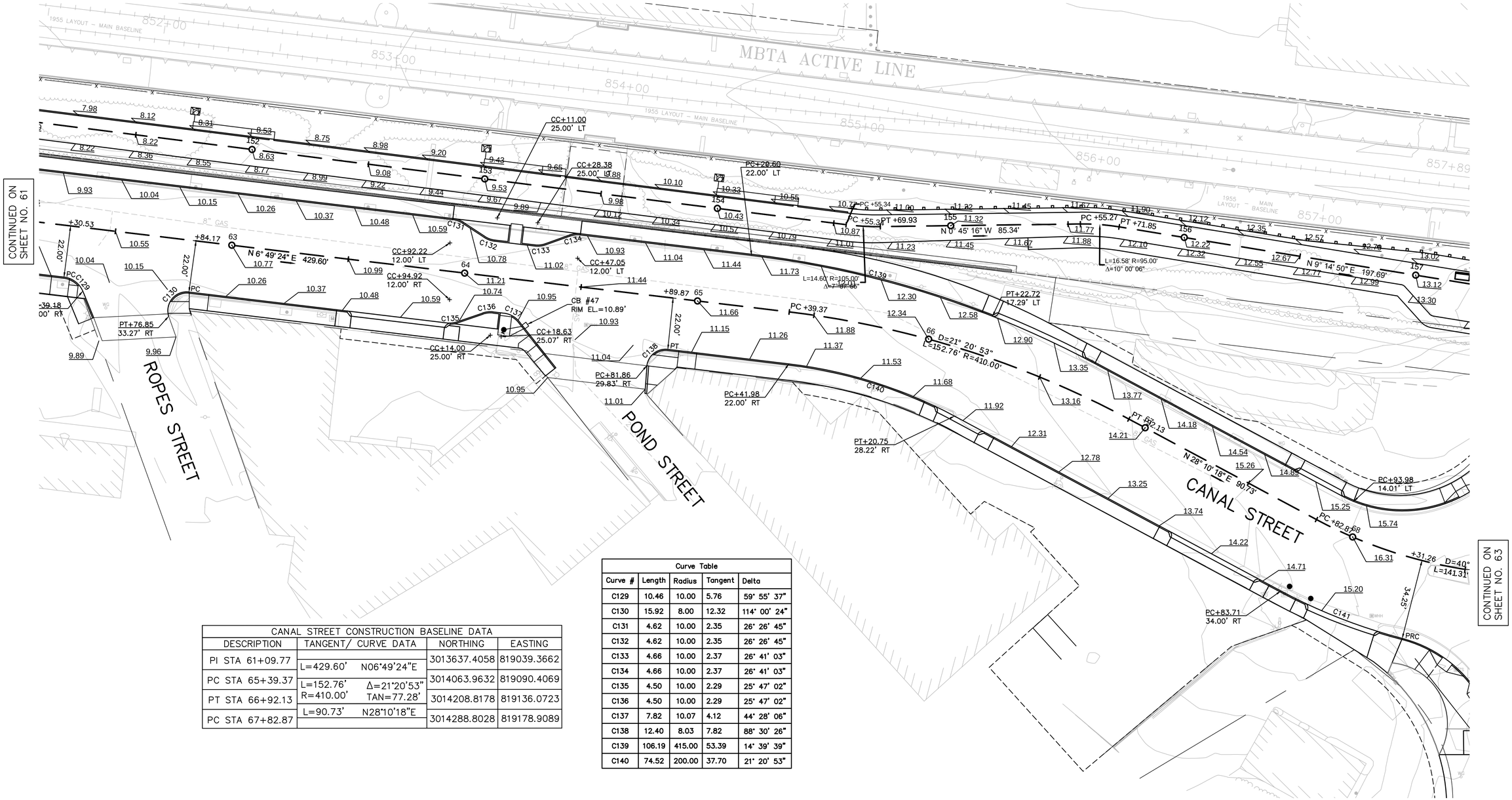
FOR PROFILE: SEE SHEET NO. 41 & 47

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	62	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015



CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PI STA 61+09.77	L=429.60' N06°49'24"E	3013637.4058	819039.3662
PC STA 65+39.37	L=152.76' Δ=21°20'53" R=410.00' TAN=77.28'	3014063.9632	819090.4069
PT STA 66+92.13	L=90.73' N28°10'18"E	3014208.8178	819136.0723
PC STA 67+82.87		3014288.8028	819178.9089

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C129	10.46	10.00	5.76	59° 55' 37"
C130	15.92	8.00	12.32	114° 00' 24"
C131	4.62	10.00	2.35	26° 26' 45"
C132	4.62	10.00	2.35	26° 26' 45"
C133	4.66	10.00	2.37	26° 41' 03"
C134	4.66	10.00	2.37	26° 41' 03"
C135	4.50	10.00	2.29	25° 47' 02"
C136	4.50	10.00	2.29	25° 47' 02"
C137	7.82	10.07	4.12	44° 28' 06"
C138	12.40	8.03	7.82	88° 30' 26"
C139	106.19	415.00	53.39	14° 39' 39"
C140	74.52	200.00	37.70	21° 20' 53"
C141				

HOR. SCALE IN FEET
0 20 50 100

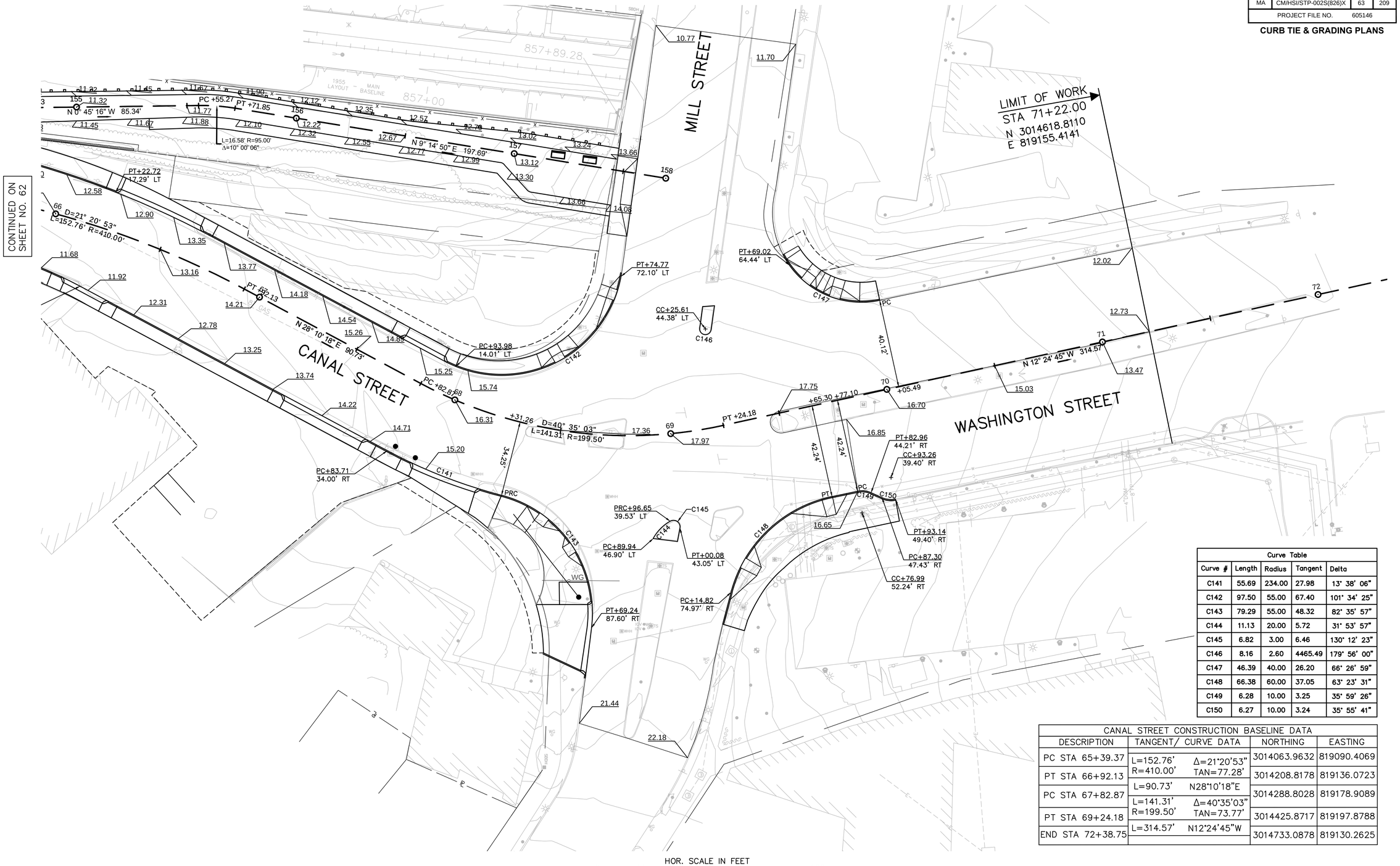
FOR PROFILE: SEE SHEET NO. 42 & 48

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	63	209
PROJECT FILE NO.	605146		

CURB TIE & GRADING PLANS

93692 PS&E-2 CURB TIE.DWG 16-Oct-2015



HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 43 & 49

Curve Table				
Curve #	Length	Radius	Tangent	Delta
C141	55.69	234.00	27.98	13° 38' 06"
C142	97.50	55.00	67.40	101° 34' 25"
C143	79.29	55.00	48.32	82° 35' 57"
C144	11.13	20.00	5.72	31° 53' 57"
C145	6.82	3.00	6.46	130° 12' 23"
C146	8.16	2.60	4465.49	179° 56' 00"
C147	46.39	40.00	26.20	66° 26' 59"
C148	66.38	60.00	37.05	63° 23' 31"
C149	6.28	10.00	3.25	35° 59' 26"
C150	6.27	10.00	3.24	35° 55' 41"

CANAL STREET CONSTRUCTION BASELINE DATA			
DESCRIPTION	TANGENT/ CURVE DATA	NORTHING	EASTING
PC STA 65+39.37	L=152.76' Δ=21°20'53" R=410.00' TAN=77.28'	3014063.9632	819090.4069
PT STA 66+92.13	L=90.73' N28°10'18"E	3014208.8178	819136.0723
PC STA 67+82.87	L=141.31' Δ=40°35'03" R=199.50' TAN=73.77'	3014288.8028	819178.9089
PT STA 69+24.18	L=314.57' N12°24'45"W	3014425.8717	819197.8788
END STA 72+38.75		3014733.0878	819130.2625

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	64	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS
LOCATION 1

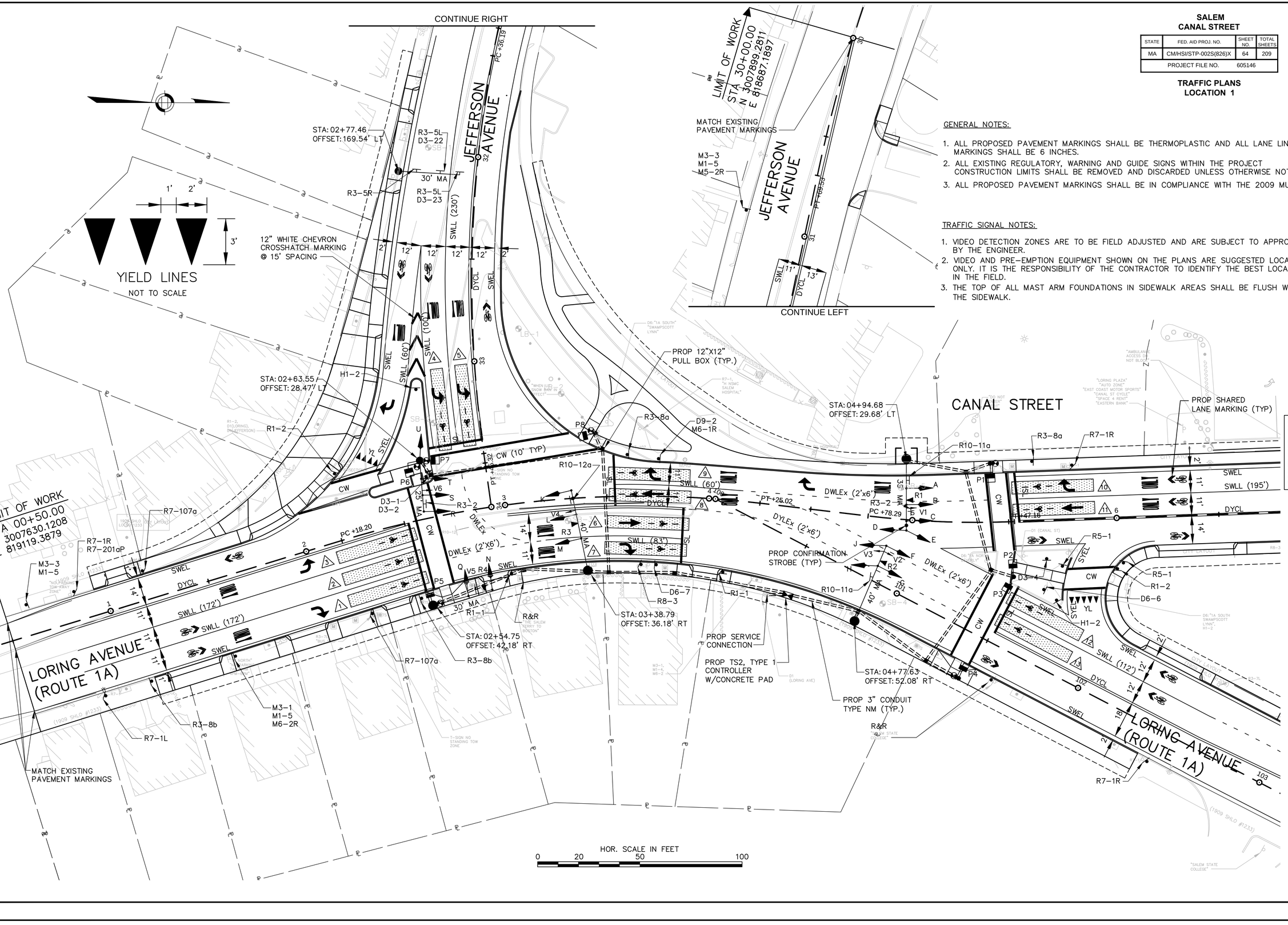
93692 PS&E-2 TRAFFIC.DWG 14-Oct-2015

GENERAL NOTES:

1. ALL PROPOSED PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AND ALL LANE LINE MARKINGS SHALL BE 6 INCHES.
2. ALL EXISTING REGULATORY, WARNING AND GUIDE SIGNS WITHIN THE PROJECT CONSTRUCTION LIMITS SHALL BE REMOVED AND DISCARDED UNLESS OTHERWISE NOTED.
3. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE 2009 MUTCD.

TRAFFIC SIGNAL NOTES:

1. VIDEO DETECTION ZONES ARE TO BE FIELD ADJUSTED AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
2. VIDEO AND PRE-EMPTION EQUIPMENT SHOWN ON THE PLANS ARE SUGGESTED LOCATIONS ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY THE BEST LOCATION IN THE FIELD.
3. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE FLUSH WITH THE SIDEWALK.



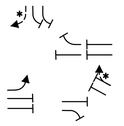
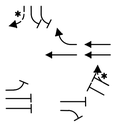
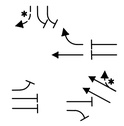
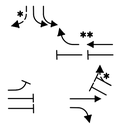
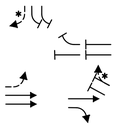
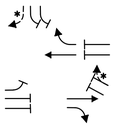
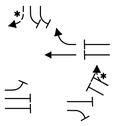
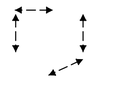
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	65	209
PROJECT FILE NO.	605146		

SEQUENCE & TIMING PLAN
LOCATION 1

93692 PS&E-2 SEQ&TIMING LOC1.DWG 13-Oct-2015

SEQUENCE & TIMING
FOR
FULLY ACTUATED CONTROL
CANAL STREET
&
LORING AVENUE/JEFFERSON AVENUE

	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	CLEARANCE 1	CLEARANCE 2	PED (12)	
				 ** OVERLAP	NOT USED		NOT USED	NOT USED				OPERATION
												FLASHING
	INTERVALS											
APPROACH / DIRECT. / FACES	1 2 3	4 5 6	7 8 9	10 11 12	13 14 15	16 17 18	19 20 21	22 23 24	25 26 27	28 29 30	31 32 33	
CANAL STREET SB A	~~R~~ ~~Y~~ ~~G~~	~~G~~ ~~Y~~ (3) ~~R~~ (3)	~~R~~ ~~Y~~ ~~G~~	~~G~~ ~~Y~~ (4) ~~R~~ (4)		~~R~~ ~~Y~~ ~~G~~			~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~Y~~
CANAL STREET SB B,C	R R R	G Y R	R R R	R R R		R R R			R R R	R R R	R R R	Y
LORING AVENUE NB D,J	R R R	R R R	R R R	G Y R		G G G			G Y (5) R (5)	R R R	R R R	Y
LORING AVENUE SB E,F	R R R	R R R	G Y R	R R R		R R R			R R R	R R R	R R R	R
LORING AVENUE SB G	R R R	R R R	G Y R	R R R		R R R			R R R	R R R	R R R	R
LORING AVENUE NB H	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~G~~ ~~Y~~ (7) ~~R~~ (7)		~~G~~ ~~Y~~ ~~G~~			~~G~~ ~~Y~~ (8) ~~R~~ (8)	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~Y~~
LORING AVENUE NB K	~~G~~ ~~Y~~ (9) ~~R~~ (9)	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~		F+YA ~~Y~~ ~~R~~			~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~Y~~
LORING AVENUE NB L,M	R R R	R R R	R R R	R R R		G Y R			R R R	R R R	R R R	Y
JEFFERSON AVENUE EB N,Q	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~		~~R~~ ~~Y~~ ~~G~~			~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~R~~ ~~Y~~ ~~G~~	~~Y~~
LORING AVENUE SB R,S	R R R	~~G~~ ~~Y~~ ~~R~~	~~G~~ ~~Y~~ ~~R~~	~~G~~ ~~Y~~ ~~R~~		R R R			~~G~~ Y (10) R (10)	~~G~~ Y (10) R (10)	R R R	Y
LORING AVENUE SB T	~~R~~ ~~Y~~ ~~G~~	~~G~~ ~~Y~~ ~~R~~	~~G~~ ~~Y~~ ~~R~~	~~G~~ ~~Y~~ (11) ~~R~~ (11)		~~R~~ ~~Y~~ ~~G~~			~~G~~ ~~Y~~ (11) ~~R~~ (11)	~~G~~ ~~Y~~ (11) ~~R~~ (11)	~~R~~ ~~Y~~ ~~G~~	~~Y~~
LORING AVENUE EB U	R R R	R R R	R R R	G Y R		R R R			R R R	R R R	R R R	R
PEDESTRIAN ALL P1–P8	DW DW DW	DW DW DW	DW DW DW	DW DW DW		DW DW DW			DW DW DW	DW DW DW	W FDW DW	OFF
	* YIELD CONTROL			TIMING IN SECONDS								
MINIMUM GREEN	4	10	4	4		10			3	3		EMERGENCY ONLY
MAX GREEN 1 (M – F, 6AM TO 9AM)	16	39	19	23		18			3	3		
MAX GREEN 2 (ALL OTHER TIMES)	11	38	20	23		22			3	3		
VEHICLE EXTENSION	3	3	3	3		3			3	3		
PED INTERVALS											5 26	
YELLOW CLEARANCE	3	4	4	3		4			4	4		
RED CLEARANCE	2	3	3	2		3			3	3	4	
DETECTION (MEMORY)	NON–LOCK	NON–LOCK	NON–LOCK	NON–LOCK		NON–LOCK			NON–LOCK	NON–LOCK	LOCK	
RECALL	OFF	SOFT	OFF	OFF		SOFT			OFF	OFF	OFF	

NOTES:

1. STANDARD NEMA CLEARANCES SHALL APPLY.
2. ANY TWO NON–CONFLICTING PHASES MAY RUN CONCURRENTLY. IN PRESENCE OF CALLS ON MULTIPLE PHASES SEQUENCE SHALL CONFORM TO PREFERENTIAL DIAGRAM.
3. ~~G~~ IF FOLLOWED BY ø4.
4. ~~G~~ IF FOLLOWED BY ø2+ø6.
5. G IF FOLLOWED BY ø2+ø6.
6. G IF FOLLOWED BY ø4 OR ø2+ø6.
7. ~~G~~ IF FOLLOWED BY ø2+ø6.
8. ~~G~~ IF FOLLOWED BY ø4 OR ø2+ø6.
9. F+YA IF FOLLOWED BY ø2+ø6.
10. G IF FOLLOWED BY ø2+ø6 OR ø3.
11. ~~G~~ IF FOLLOWED BY ø2+ø6 OR ø3.
12. EXCLUSIVE PED PHASE SHALL BE CALLED UPON PUSH BUTTON ACTUATION ONLY.

VIDEO DETECTION ZONES

DETECTION ZONE	VIDEO CAMERA	SIZE	OPERATION	CALL ø	CALL DELAY (SECONDS)	EXTEND ø
1	V4	6'X40'	PRESENCE	6	–	6
2	V4	6'X40'	PRESENCE	6	–	6
3	V4	6'X40'	PRESENCE	1	–	1
4	V5	6'X40'	PRESENCE	4	–	4
5	V5	6'X40'	PRESENCE	4	–	4
6	V3	6'X40'	PRESENCE	6	–	6 & 4
7	V3	6'X40'	PRESENCE	6	–	6 & 4
8	V6	6'X40'	PRESENCE	2	–	2 & 3
9	V6	6'X40'	PRESENCE	2	–	2 & 3
10	V1	6'X40'	PRESENCE	2	–	2
11	V1	6'X40'	PRESENCE	2	–	2
12	V2	6'X40'	PRESENCE	3	–	3
13	V2	6'X40'	PRESENCE	3	–	3

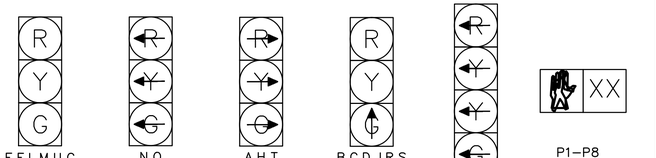
PRE–EMPTION PHASING

RECEIVER AND PRIORITY	PRE–EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
R1	1	SB	ø2
R2	2	WB	ø3
R3	3	NB	ø1 & ø6
R4	4	EB	ø4

NOTES:

1. EMERGENCY VEHICLE PRE–EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL RECEIVERS LOCATED AT THE INTERSECTION.
2. PRE–EMPTION SIGNALS SHALL BE SERVICED IN THE ORDER IN WHICH THEY ARE RECEIVED, WITH NO PRIORITY.
3. IN RESPONSE TO A PRE–EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL RECEIVER R1 (OR OTHERS AS PROVIDED) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY PRE–EMPTION THE ASSOCIATED GREEN PHASE FOR A MINIMUM OF TEN (10) SECONDS, OR UNTIL PRE–EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN PROVIDE PRE–EMPTION PHASE CLEARANCE SERVICE THEN RESUME NORMAL OPERATION, AND RETURN TO THE START OF ø2 + ø6.
4. MINIMUM GREEN, NORMAL VEHICLE AND PEDESTRIAN CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE–EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE–EMPTION SHALL OVERRIDE COORDINATION.

SIGNAL FACES



NOTES:

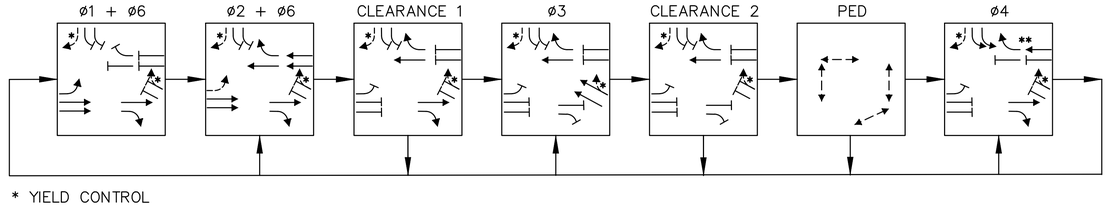
1. ALL VEHICLE AND PEDESTRIAN LENSES SHALL BE LED TYPE.
2. ALL HOUSINGS TO BE PROVIDED WITH TUNNEL VISORS AND 5" BACKPLATES.
3. ALL HOUSINGS TO BE FIXED MOUNTED.
4. ALL HOUSINGS TO HAVE LOUVERED BACKPLATES WITH 2" YELLOW RETRO–REFLECTIVE BORDERS.

MAJOR ITEMS LIST

QUANTITY	ITEM NO.	DESCRIPTION
1	816.01	TS2 TYPE 1 CONTROLLER W/CABINET & FOUNDATION
4		SIGNAL POST & BASE – W/ FDN – 8'
1		25' MAST ARM – STEEL, TYPE II W/ FDN
2		30' MAST ARM – STEEL, TYPE II W/ FDN
1		35' MAST ARM – STEEL, TYPE II W/ FDN
2		40' MAST ARM – STEEL, TYPE II W/ FDN
1		40' MAST ARM – STEEL, TYPE II (SPARE)
2		1 WAY 3 SECTION VEHICLE SIGNAL HOUSING – 12" LED, R/Y/G LEFT TURN ARROWS
3		1 WAY 3 SECTION VEHICLE SIGNAL HOUSING – 12" LED, R/Y/G RIGHT TURN ARROWS
6		1 WAY 3 SECTION VEHICLE SIGNAL HOUSING – 12" LED
6		1 WAY 3 SECTION VEHICLE SIGNAL HOUSING – 12" LED G STRAIGHT ARROW
1		1 WAY 4 SECTION VEHICLE SIGNAL HOUSING – 12" LED R/Y/Y/G LEFT TURN ARROWS. FLASHING YELLOW ARROW
8		PEDESTRIAN SIGNAL HOUSING – 16" GRAPHIC LED
6		ACCESSIBLE PEDESTRIAN SIGNAL ASSEMBLY W/R10–3E SIGN
1		SERVICE CONNECTION (OVERHEAD)
4		OPTICAL RECEIVER (DETECTOR) – ONE WAY
2		OPTICAL PHASE SELECTOR – TWO CHANNELS
2		PREEMPTION CONFIRMATION STROBE (WHITE)
9	811.31	12" x 12" PULLBOX (SD2.031)
6	816.01	VIDEO CAMERA
6		MAST ARM CAMERA MOUNT EXTENSION BRACKETS – 8'
6		VIDEO DETECTION PROCESSOR
2		BUS INTERFACE UNIT (SPARE)
1		MALFUNCTION MANAGEMENT UNIT (MMU2)
PLUS ALL NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION		

NOTE:
TRAFFIC SIGNAL MAST ARMS, POSTS AND BASES, SHALL BE ORNAMENTAL TYPE CONSISTENT WITH CITY OF SALEM STANDARDS AND PAINTED BLACK.

PREFERENTIAL SEQUENCE DIAGRAM
(CALLS ON ALL PHASES)
FOR
CANAL STREET & LORING AVENUE/JEFFERSON AVENUE



* YIELD CONTROL
** OVERLAP

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	66	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E-2 TRAFFIC.DWG 14-Oct-2015

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CONTINUED ON SHEET NO. 64

CONTINUED ON SHEET NO. 67

CANAL STREET

KIMBALL ROAD

LORING AVENUE (ROUTE 1A)

SWEL

SWLL (195')

DYCL

SWLL (112')

DWLEx

8' CW

10' CW

R1-1

R1-2

R2-1

R3-17

R3-17aP

R3-17bP

R4-11

R5-1

R7-1LR

R7-1R

W11-2

W16-7P

D3-3

SL

YL

SP-2

PI +46.37

PI +05.64

PC +70.00

12" WHITE DIAGONAL CROSSHATCH MARKINGS 15' SPACING C-C (TYP.)

BUFFERED BIKE LANE (TYP)

PROP SHARED LANE MARKING (TYP)

PROP BIKE SYMBOL AND ARROW (TYP)

CONTINUE RIGHT

CONTINUE BELOW LEFT

LIMIT OF WORK
STA 105+61
N 900845 3.7635
E 819335.3326

MATCH EXISTING PAVEMENT MARKINGS

"AMBULANCE ACCESS DO NOT BLOCK"

"LORING PLAZA" "AUTO ZONE" "EAST COAST MOTOR SPORTS" "CANAL ST CYCLE" "SPACE 4 RENT" "EASTERN BANK"

"GTOO"

"NO PARKING THIS SIDE OF STREET"

"SALEM STATE COLLEGE"

D6:"1A SOUTH SWAMPSCOTT LYNN", H1-2

(1909 SHLO #233)

1909 SHLO LO NO 1233

CITY LAYOUT

GENERAL NOTES:

1. ALL PROPOSED PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
2. ALL EXISTING REGULATORY, WARNING AND GUIDE SIGNS WITHIN THE PROJECT CONSTRUCTION LIMITS SHALL BE REMOVED AND DISCARDED UNLESS OTHERWISE NOTED.
3. ALL LANE LINE MARKINGS SHALL BE 6 INCHES.
4. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE 2009 MUTCD.
5. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978-490-9236 (CELL).

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	67	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

27-Oct-2015

93692 PS&E-2 TRAFFIC.DWG

GENERAL NOTES:

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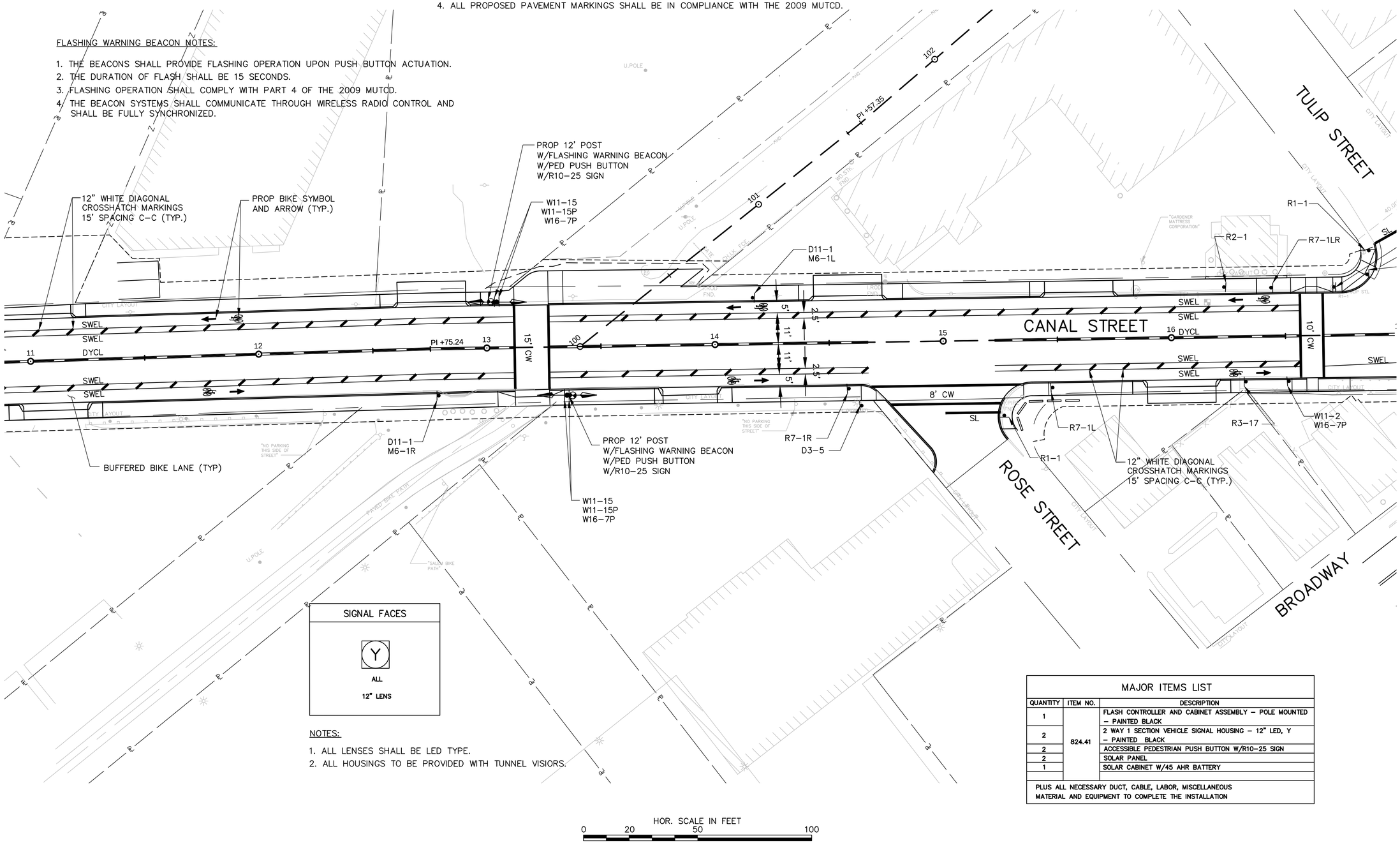
3. ALL LANE LINE MARKINGS SHALL BE 6 INCHES.
4. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE 2009 MUTCD.

FLASHING WARNING BEACON NOTES:

1. THE BEACONS SHALL PROVIDE FLASHING OPERATION UPON PUSH BUTTON ACTUATION.
2. THE DURATION OF FLASH SHALL BE 15 SECONDS.
3. FLASHING OPERATION SHALL COMPLY WITH PART 4 OF THE 2009 MUTCD.
4. THE BEACON SYSTEMS SHALL COMMUNICATE THROUGH WIRELESS RADIO CONTROL AND SHALL BE FULLY SYNCHRONIZED.



SIGNAL FACES
Y
ALL
12" LENS

NOTES:

1. ALL LENSES SHALL BE LED TYPE.
2. ALL HOUSINGS TO BE PROVIDED WITH TUNNEL VISIORS.

HOR. SCALE IN FEET
0 20 50 100

MAJOR ITEMS LIST		
QUANTITY	ITEM NO.	DESCRIPTION
1	824.41	FLASH CONTROLLER AND CABINET ASSEMBLY – POLE MOUNTED – PAINTED BLACK
2		2 WAY 1 SECTION VEHICLE SIGNAL HOUSING – 12" LED, Y – PAINTED BLACK
2		ACCESSIBLE PEDESTRIAN PUSH BUTTON W/R10-25 SIGN
2		SOLAR PANEL
1		SOLAR CABINET W/45 AHR BATTERY
PLUS ALL NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION		

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	68	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E-2 TRAFFIC.DWG 14-Oct-2015

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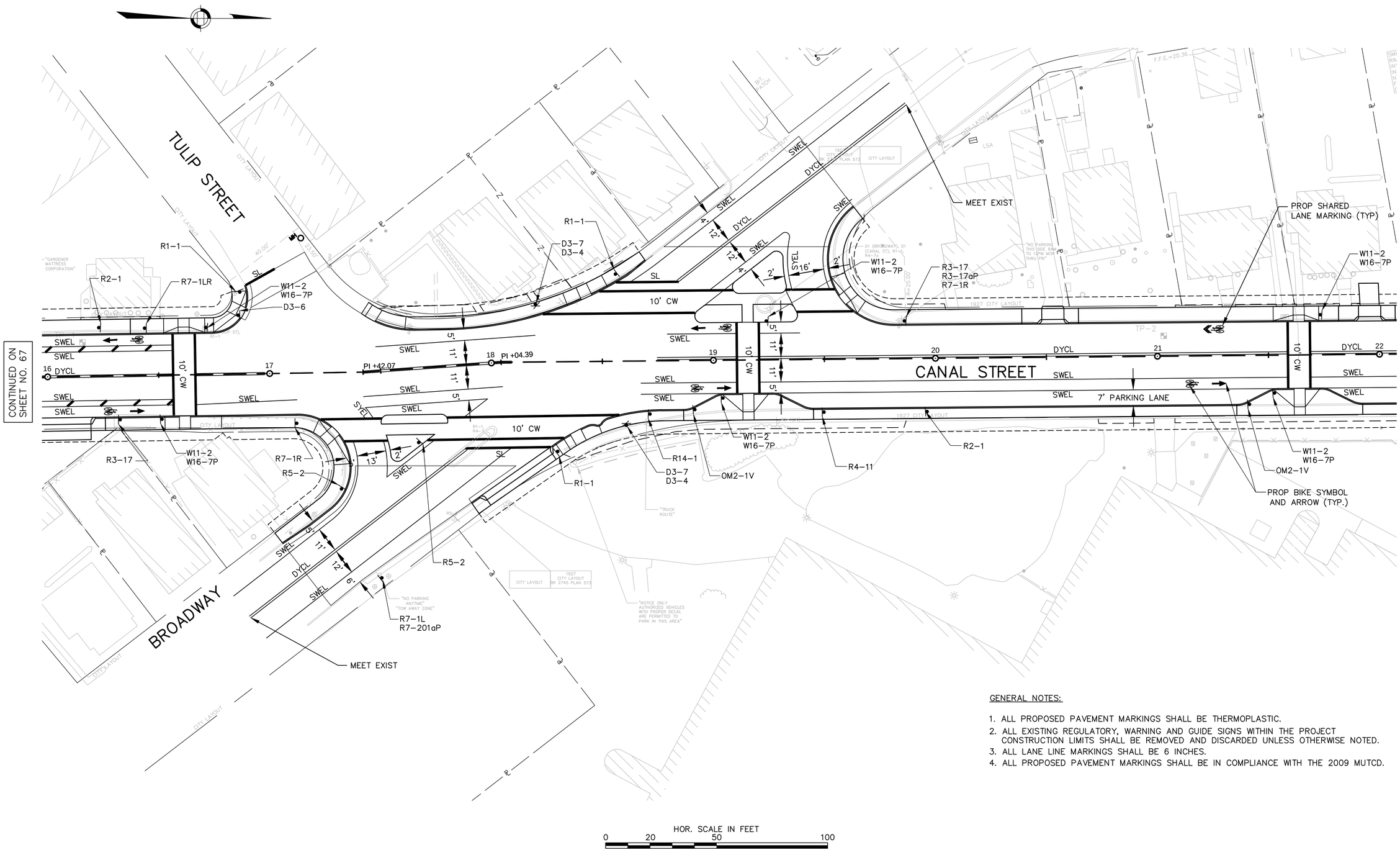

HOR. SCALE IN FEET
0 20 50 100

GENERAL NOTES:

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2. ALL EXISTING REGULATORY, WARNING AND GUIDE SIGNS WITHIN THE PROJECT CONSTRUCTION LIMITS SHALL BE REMOVED AND DISCARDED UNLESS OTHERWISE NOTED.
3. ALL LANE LINE MARKINGS SHALL BE 6 INCHES.
4. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE 2009 MUTCD.

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	69	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E-2 TRAFFIC.DWG 14-Oct-2015

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CONTINUED ON SHEET NO. 68

CONTINUED ON SHEET NO. 70

CANAL STREET

FOREST AVENUE

PROP SHARED LANE MARKING (TYP)

W11-2
W16-7P

OM2-1V

PROP BIKE SYMBOL AND ARROW (TYP.)

R&R
SALEM STATE COLLEGE SHUTTLE BUS STOP

7' PARKING LANE

10' CW

14'

11'

5'

7'

VAR.

DYCL

SWEL

YGL

SWLL (180')

PI +15.29

PI +71.56

R4-11

R3-17
R3-17bP

D3-8

R5-2
NO PARKING THIS SIDE OF STREET

R7-1L

R1-1

"O KEEFE CENTER"

"LOTS A/B"

"HANDICAPPED PARKING VAN ACCESSIBLE"

"DRIVE THRU ENTRANCE"

"NO PARKING THIS SIDE 8AM TO 12PM MON THRU FRI"

MAP 32 LOT 56
NOW OR FORMERLY
RANDY S. BEST
17 BROADWAY
S.E.R.D. BOOK 29058 PAGE 322

1927 CITY LAYOUT

GENERAL NOTES:

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HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	70	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E-2 TRAFFIC.DWG 14-Oct-2015

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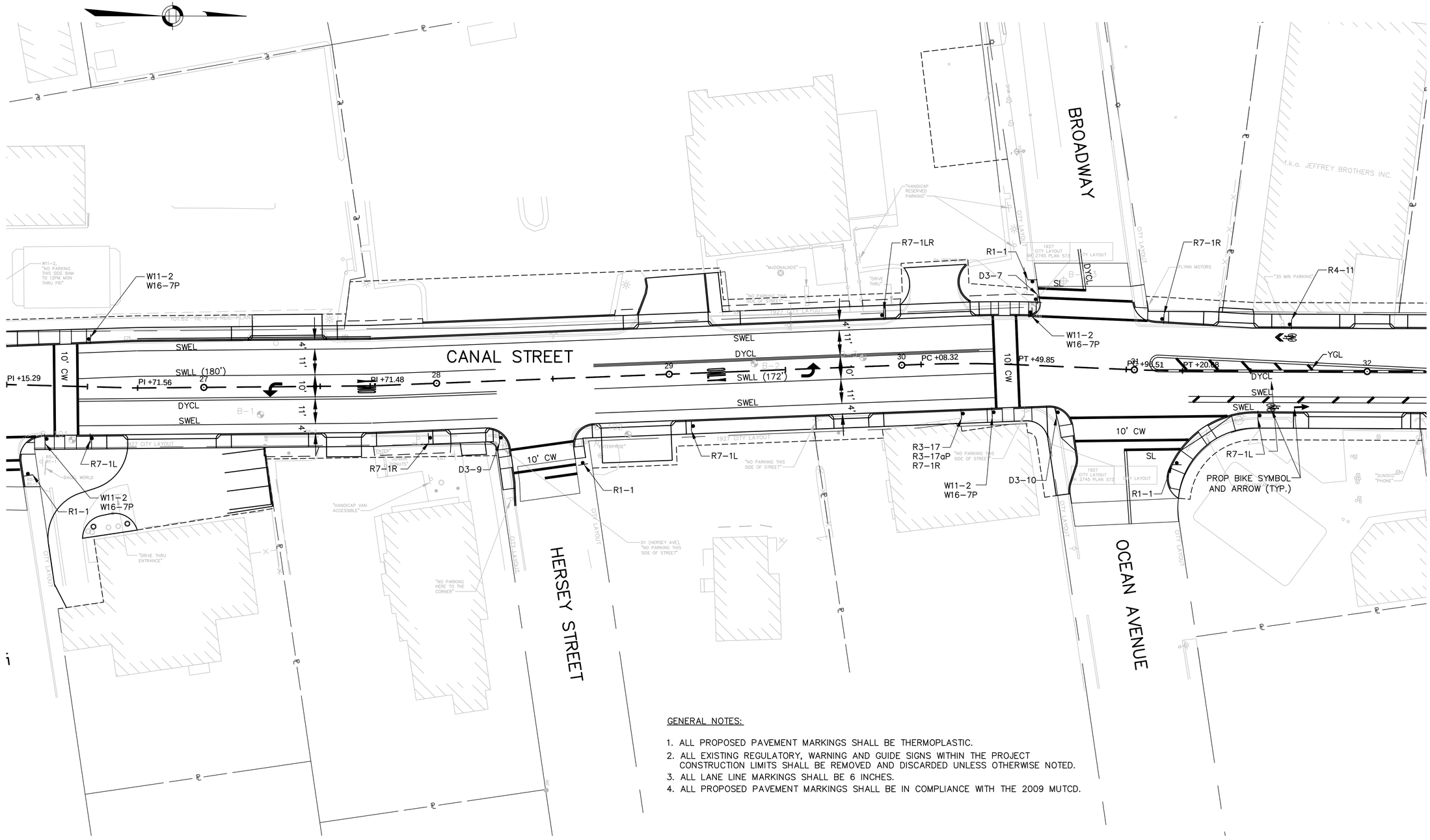

GENERAL NOTES:

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HOR. SCALE IN FEET

0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	71	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E-2 TRAFFIC.DWG 14-Oct-2015

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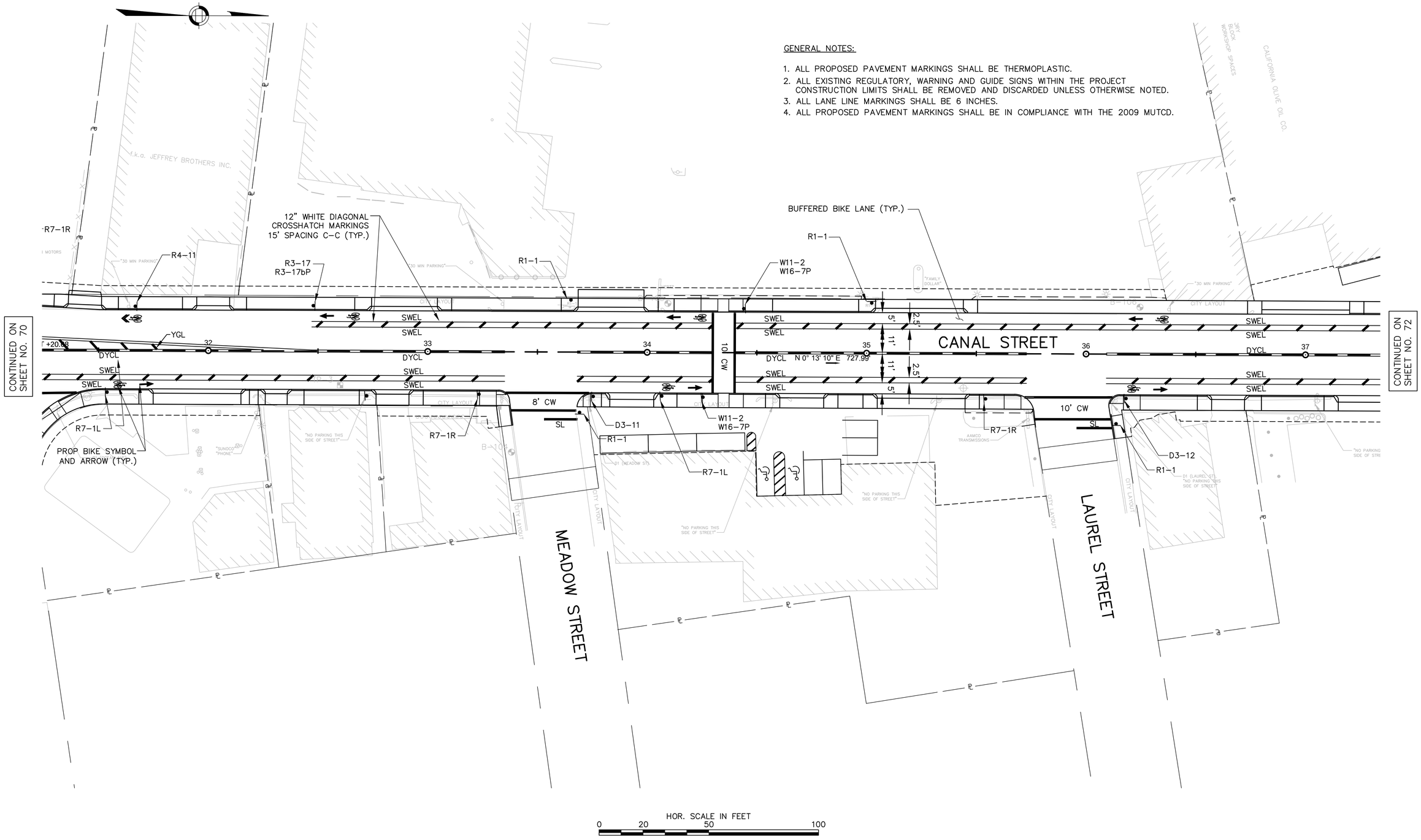

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	72	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

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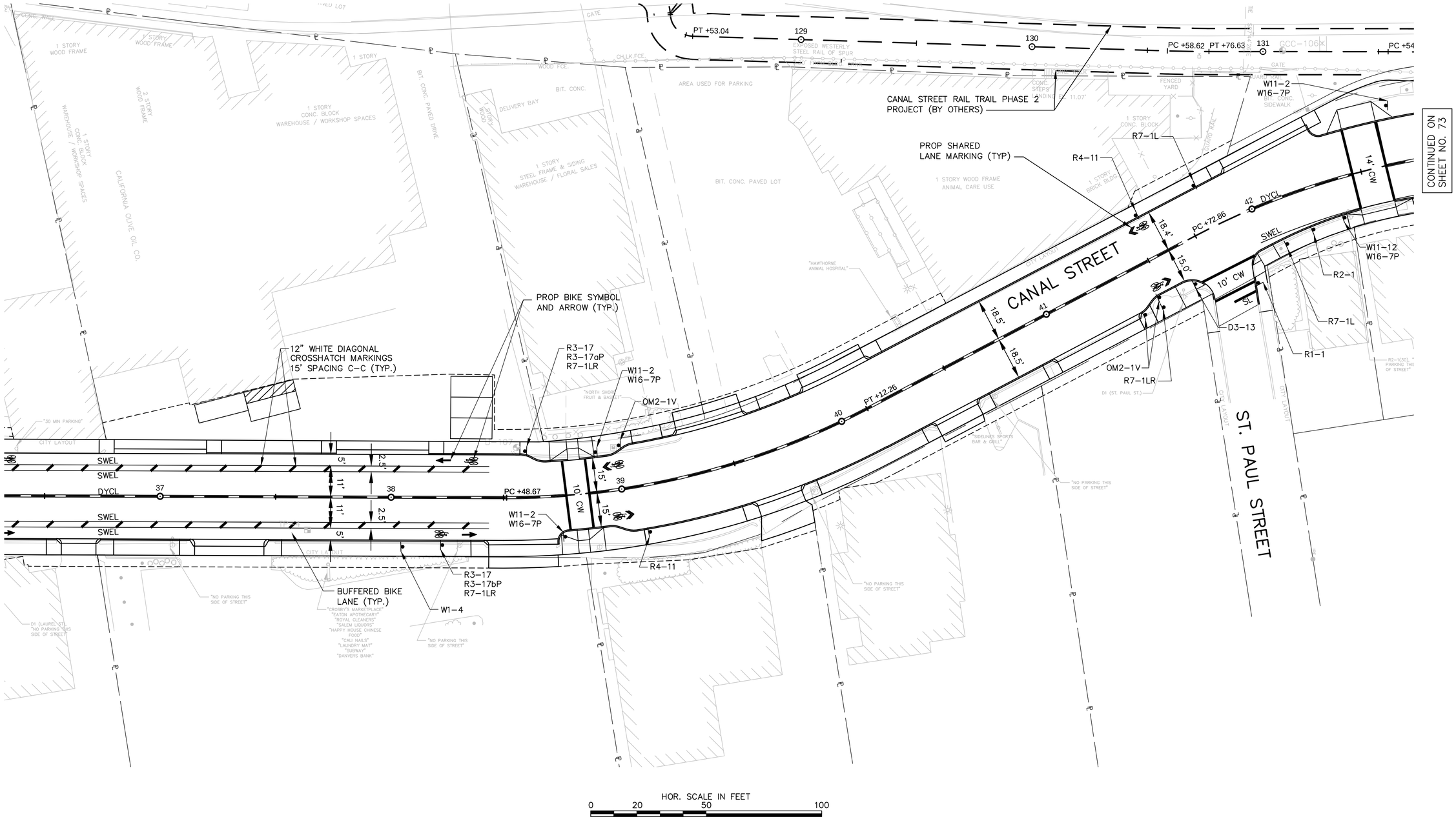

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93692 PS&E-2 TRAFFIC.DWG 18-Dec-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	73	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E-2 TRAFFIC.DWG 18-Dec-2015

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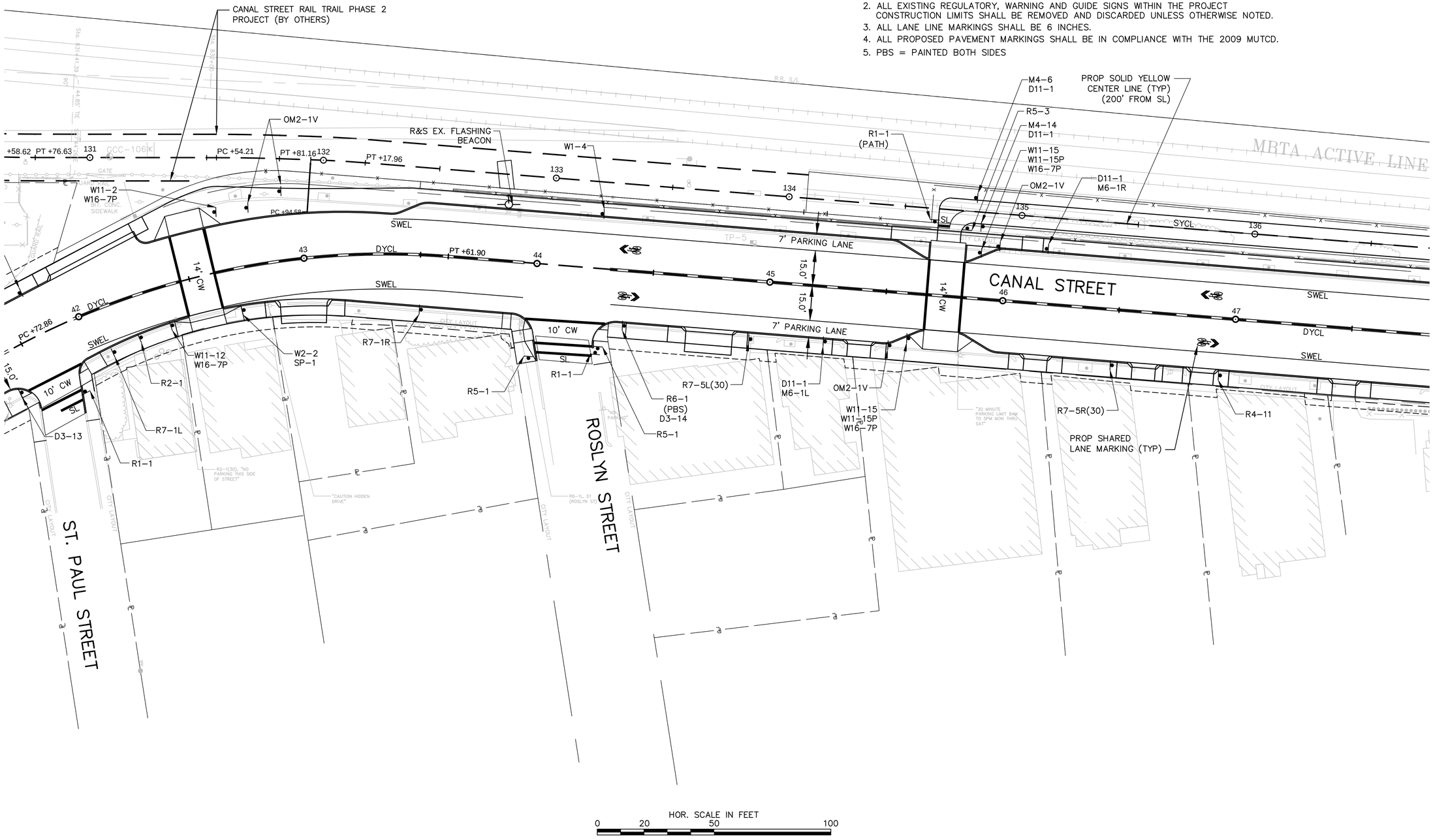
3. ALL LANE LINE MARKINGS SHALL BE 6 INCHES.
4. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE 2009 MUTCD.
5. PBS = PAINTED BOTH SIDES



HOR. SCALE IN FEET
0 20 50 100

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	74	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

14-Oct-2015

93692 PS&E-2 TRAFFIC.DWG

GENERAL NOTES:

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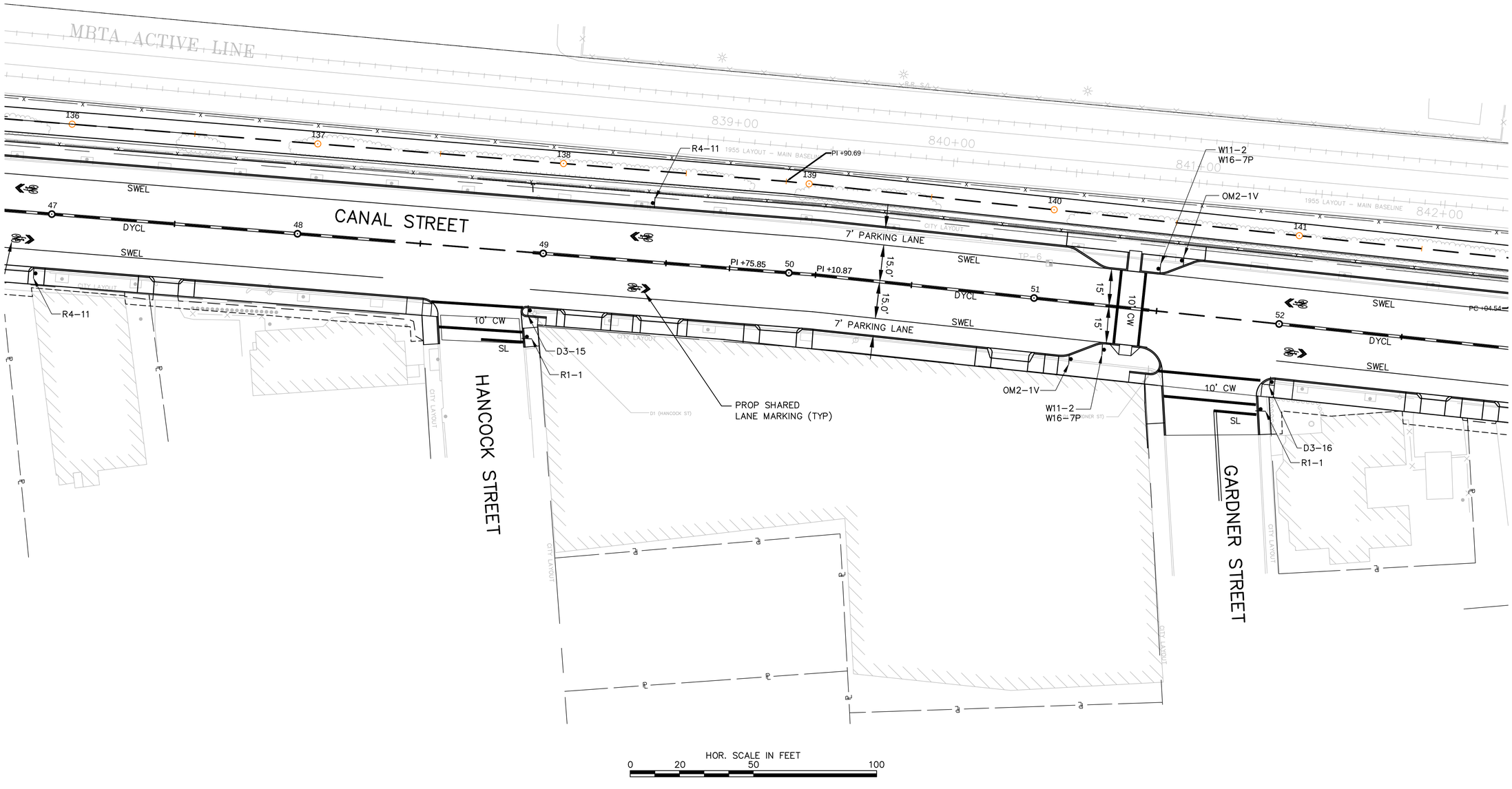

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	75	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

93692 PS&E 2 TRAFFIC.DWG 14-Oct-2015

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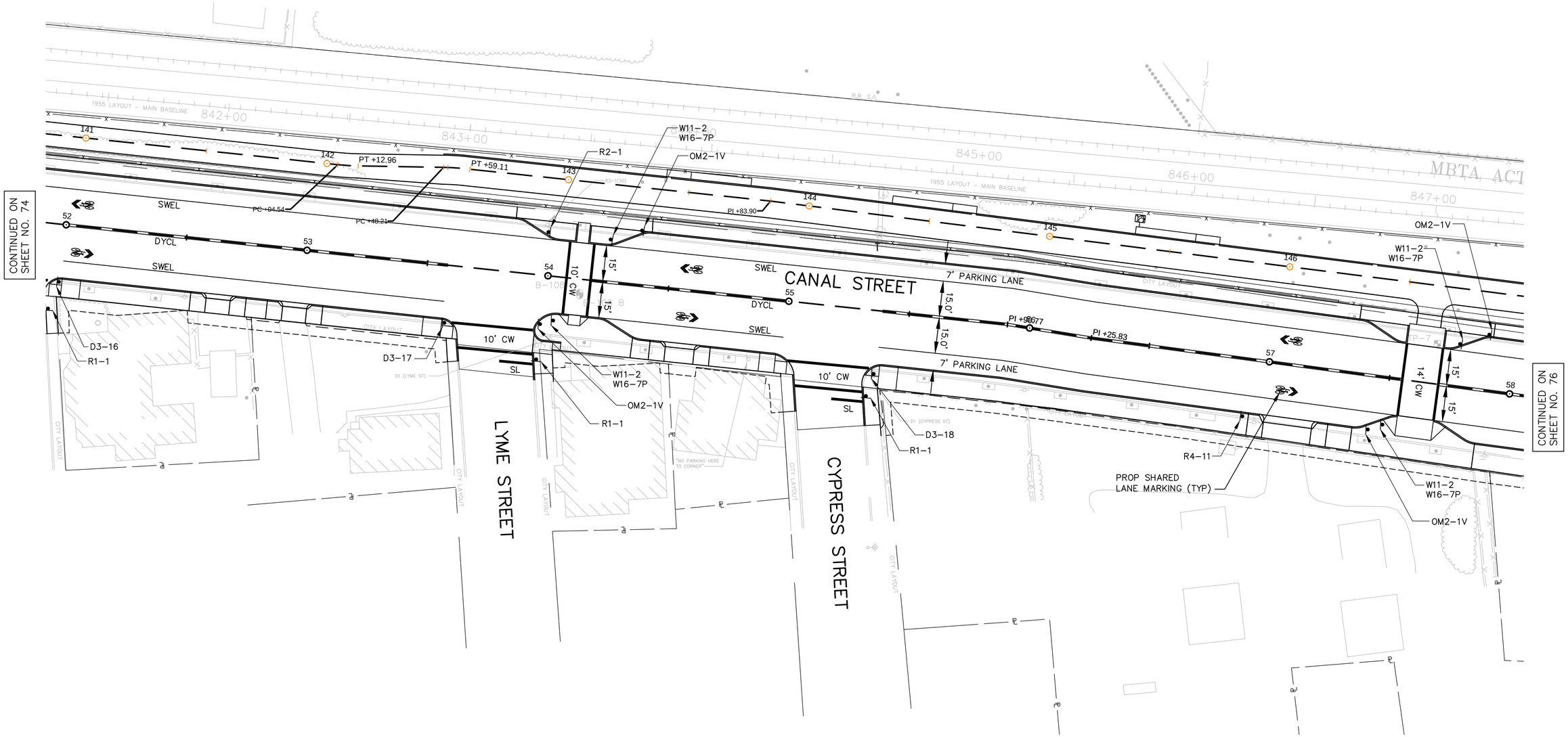

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	76	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

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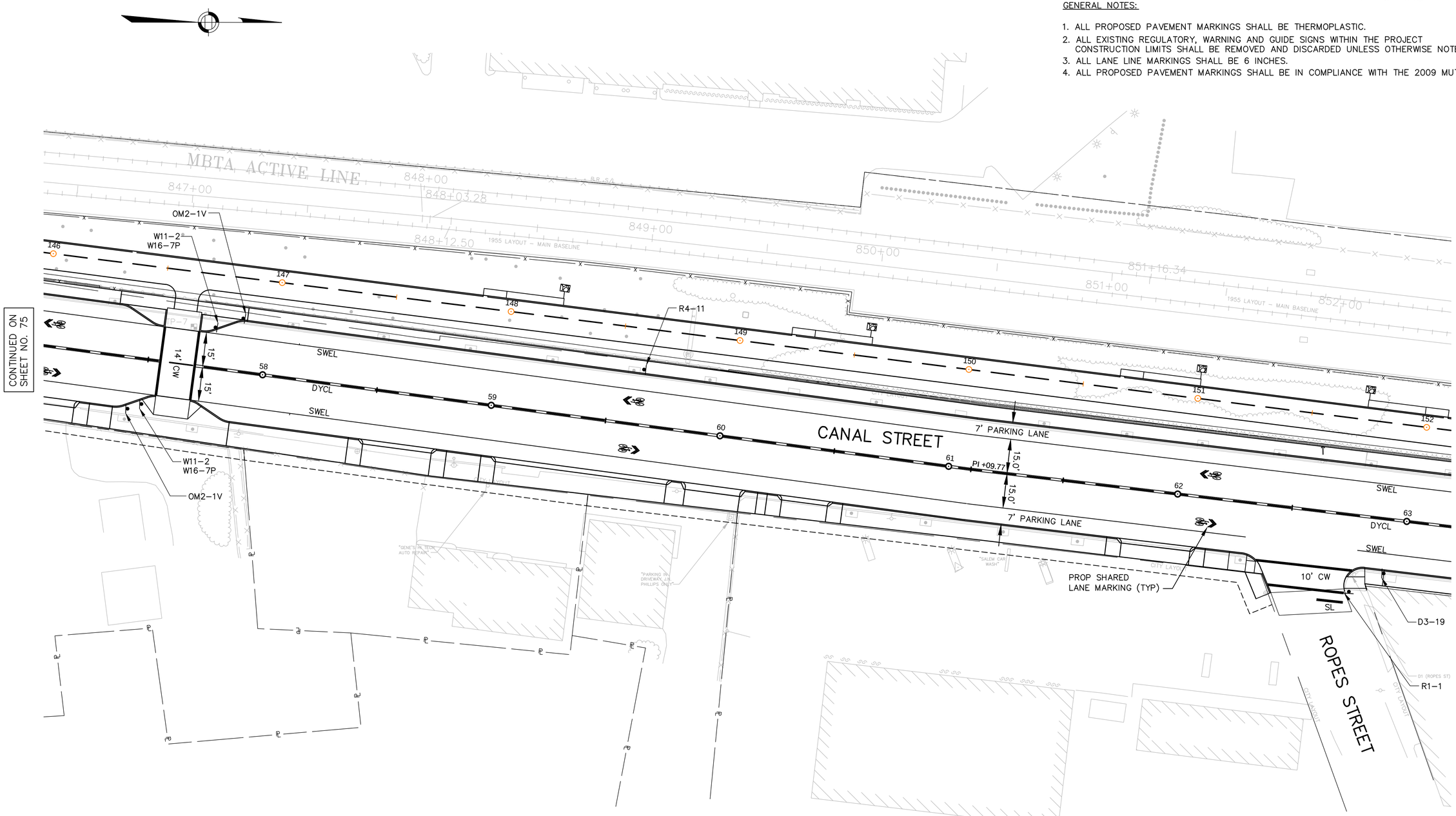

HOR. SCALE IN FEET
0 20 50 100

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93692 PS&E 2 TRAFFIC.DWG 14-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	77	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS

14-Oct-2015

93692 PS&E-2 TRAFFIC.DWG

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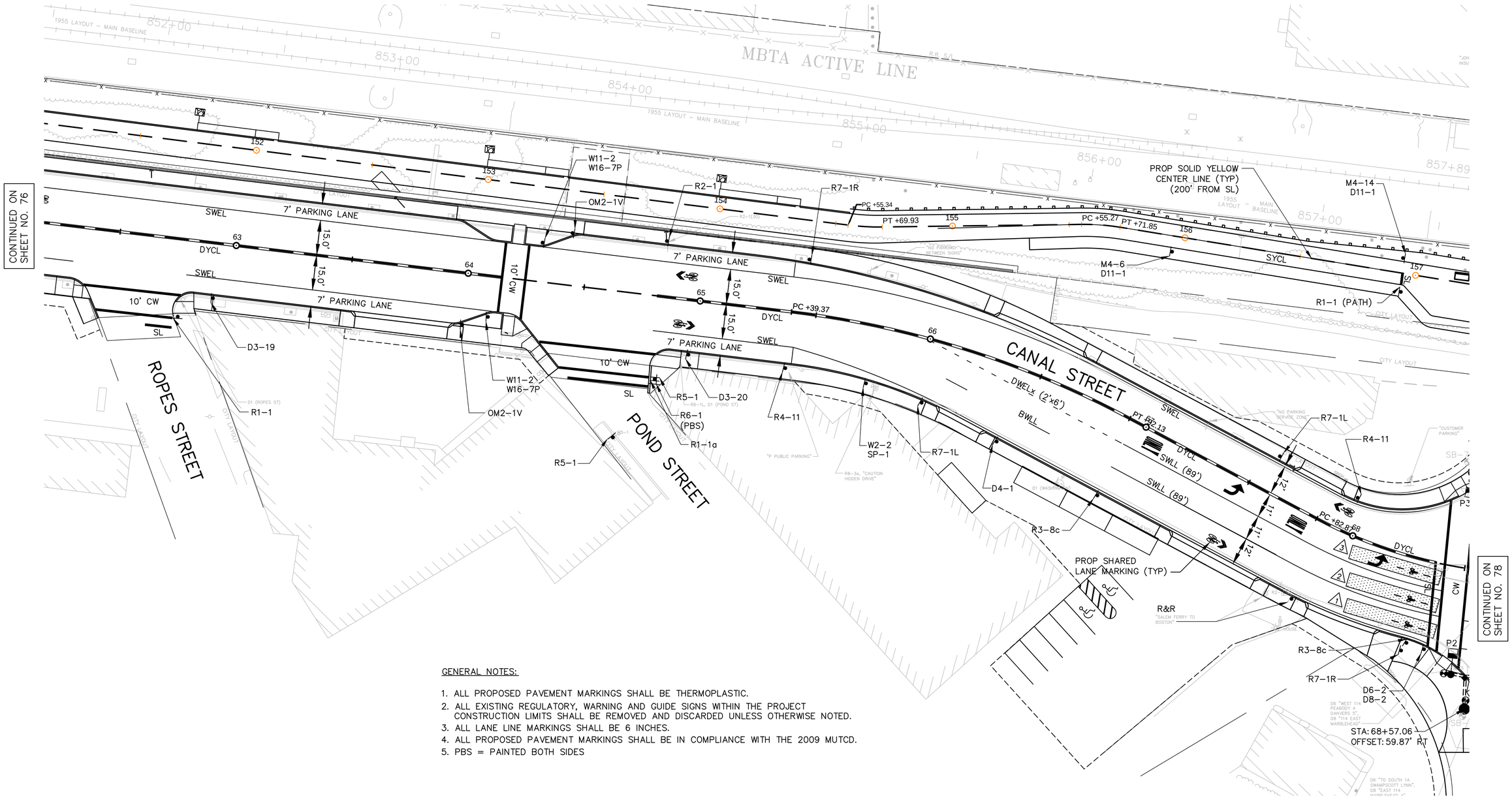

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5. PBS = PAINTED BOTH SIDES

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	78	209
PROJECT FILE NO.	605146		

TRAFFIC PLANS
LOCATION 2

14-Oct-2015

93692 PS&E-2 TRAFFIC.DWG

CONTINUED ON SHEET NO. 77

CANAL STREET

MILL STREET

WASHINGTON STREET (ROUTE 114)

WASHINGTON STREET (ROUTE 114)

LIMIT OF WORK
STA 71+22.00
N 3014618.8110
E 819155.4141

MATCH EXISTING PAVEMENT MARKINGS

PROP SOLID YELLOW CENTER LINE (TYP) (200' FROM SL)

PROP SHARED LANE MARKING (TYP)

PROP CONFIRMATION STROBE (TYP)

PROP 3" CONDUIT TYPE NM (TYP.)

PROP 12"X12" PULL BOX (TYP.)

PROP TS2, TYPE 1 CONTROLLER W/CONCRETE PAD

PROP SERVICE CONNECTION

STA: 68+46.69
OFFSET: 41.20' LT

STA: 68+57.06
OFFSET: 59.87' RT

STA: 69+61.13
OFFSET: 61.89' RT

STA: 69+85.24
OFFSET: 58.01' LT

LIMIT OF MILL AND OVERLAY STA 69+78 MATCH EXISTING PAVEMENT MARKINGS

R&R "SALEM FERRY TO BOSTON"

"SALEM FERRY TO BOSTON" (R&R)

PC +55.27
PT +71.85
PC +82.68
PT +92.13
PT +24.18

HOR. SCALE IN FEET
0 20 50 100

GENERAL NOTES:

1. ALL PROPOSED PAVEMENT MARKINGS SHALL BE THERMOPLASTIC.
2. ALL EXISTING REGULATORY, WARNING AND GUIDE SIGNS WITHIN THE PROJECT CONSTRUCTION LIMITS SHALL BE REMOVED AND DISCARDED UNLESS OTHERWISE NOTED.
3. ALL LANE LINE MARKINGS SHALL BE 6 INCHES.
4. ALL PROPOSED PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE 2009 MUTCD.

TRAFFIC SIGNAL NOTES:

1. VIDEO DETECTION ZONES ARE TO BE FIELD ADJUSTED AND ARE SUBJECT TO APPROVAL BY THE ENGINEER.
2. VIDEO AND PRE-EMPTION EQUIPMENT SHOWN ON THE PLANS ARE SUGGESTED LOCATIONS ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO IDENTIFY THE BEST LOCATION IN THE FIELD.
3. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE FLUSH WITH THE SIDEWALK.

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	79	209
PROJECT FILE NO.	605146		

SEQUENCE & TIMING PLAN
LOCATION 2

93692 PS&E-2 SEQ&TIMING LOC 2.DWG 13-Oct-2015

SEQUENCE & TIMING
FOR
FULLY ACTUATED CONTROL
MILL STREET
&
CANAL STREET/WASHINGTON STREET

	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	PED⑧	
	OL A * OVERLAP		NOT USED		OL B * OVERLAP		OL C * OVERLAP			OPERATION
										FLASHING

			INTERVALS																							
APPROACH	DIRECT.	FACES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
WASHINGTON STREET	SB	A	R	R	R	G/G	Y/Y⑤	R ④				R	R	R	R	R	R	R	R	R	R/G	R/Y	R	R	R	R	R	R	R	Y
WASHINGTON STREET	SB	B	R	R	R	G	Y	R				R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y
WASHINGTON STREET	SB	C	R	R	R	FYA	Y	R				R	R	R	G	Y ⑤	R ⑤	R	R	R	R	R	R	R	R	R	R	R	R	Y
MILL STREET	EB	D	R/G	R/Y	R	R	R	R				G/G	Y/Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
MILL STREET	EB	E	R	R	R	R	R	R				G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
MILL STREET	EB	F	R	R	R	R	R	R				FYA	Y	R	R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R
CANAL STREET	NB	G,H	R	R	R	R	R	R				R	R	R	R	R	R	G	Y	R	R	R	R	R	R	R	R	R	R	Y
CANAL STREET	NB	J	G	Y ③	R ③	R	R	R				R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
WASHINGTON STREET	WB	K	R	R	R	R	R	R				R	R	R	R/G	R/Y ⑤	R ⑤	R	R	R	R	R	R	G/G	Y/Y⑦	R ⑦	R	R	R	R
WASHINGTON STREET	WB	L,M,N	R	R	R	R	R	R				R	R	R	R	R	R	R	R	R	R	R	R	G	Y	R	R	R	R	Y
PEDESTRIAN	ALL	P1–P14	DW	DW	DW	DW	DW	DW				DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	OFF
TIMING IN SECONDS																														
MINIMUM GREEN			4			10						4			4			10			3			4						EMERGENCY ONLY
MAX GREEN 1 (M – F, 6AM TO 9AM)			9			32						38			14			27			13			18						
MAX GREEN 2 (ALL OTHER TIMES)			7			19						21			8			18			6			11						
VEHICLE EXTENSION			3			3						3			3			3			3			3						
PED INTERVALS																											5	27		
YELLOW CLEARANCE				4			4						4			4			4			4			4				
RED CLEARANCE					3			3						3			3			3			3			3			4	
DETECTION (MEMORY)			NON–LOCK			NON–LOCK						NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK			NON–LOCK			LOCK			
RECALL			OFF			SOFT						OFF			OFF			SOFT			OFF			OFF			OFF			

NOTES:

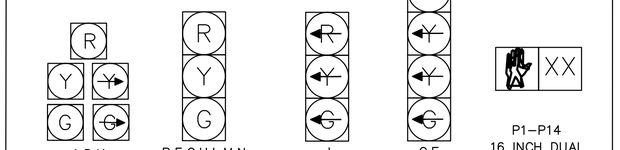
1. STANDARD NEMA CLEARANCES SHALL APPLY.
2. ANY TWO NON–CONFLICTING PHASES MAY RUN CONCURRENTLY. IN PRESENCE OF CALLS ON MULTIPLE PHASES SEQUENCE SHALL CONFORM TO PREFERENTIAL DIAGRAM.
3. ~~G~~ IF FOLLOWED BY ø1 + ø6.
4. G/~~G~~ IF FOLLOWED BY ø4 + ø7.
5. ~~G~~ IF FOLLOWED BY ø2 + ø5.
6. R/~~G~~ IF FOLLOWED BY ø2 + ø5.
7. ~~R~~/G IF FOLLOWED BY ø1 + ø5 OR ø2 + ø5.
8. EXCLUSIVE PED PHASE SHALL BE CALLED UPON PUSH BUTTON ACTIVATION ONLY.

PRE–EMPTION PHASING			
RECEIVER AND PRIORITY	PRE–EMPT PHASE ASSIGNMENT	MOVEMENT	VEHICLE PHASE ASSIGNMENT
R1	1	SB	ø2 & ø5
R2	2	NB	ø1 & ø6
R3	3	WB	ø8
R4	4	EB	ø4 & ø7

NOTES:

1. EMERGENCY VEHICLE PRE–EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL RECEIVERS LOCATED AT THE INTERSECTION.
2. PRE–EMPTION SIGNALS SHALL BE SERVICED IN THE ORDER IN WHICH THEY ARE RECEIVED, WITH NO PRIORITY.
3. IN RESPONSE TO A PRE–EMPTION SIGNAL RECEIVED AT AN INTERSECTION BY OPTICAL RECEIVER R1 (OR OTHERS AS PROVIDED) THE CONTROLLER SHALL HOLD OR ADVANCE TO AND HOLD IN EMERGENCY PRE–EMPTION THE ASSOCIATED GREEN PHASE FOR A MINIMUM OF TEN (10) SECONDS, OR UNTIL PRE–EMPTION SIGNAL CEASES. THE CONTROLLER SHALL THEN PROVIDE PRE–EMPTION PHASE CLEARANCE SERVICE THEN RESUME NORMAL OPERATION, AND RETURN TO THE START OF ø2 + ø6.
4. MINIMUM GREEN, NORMAL VEHICLE AND PEDESTRIAN CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE–EMPTION DEMAND.
5. EMERGENCY VEHICLE PRE–EMPTION SHALL OVERRIDE COORDINATION.

SIGNAL FACES



NOTES:

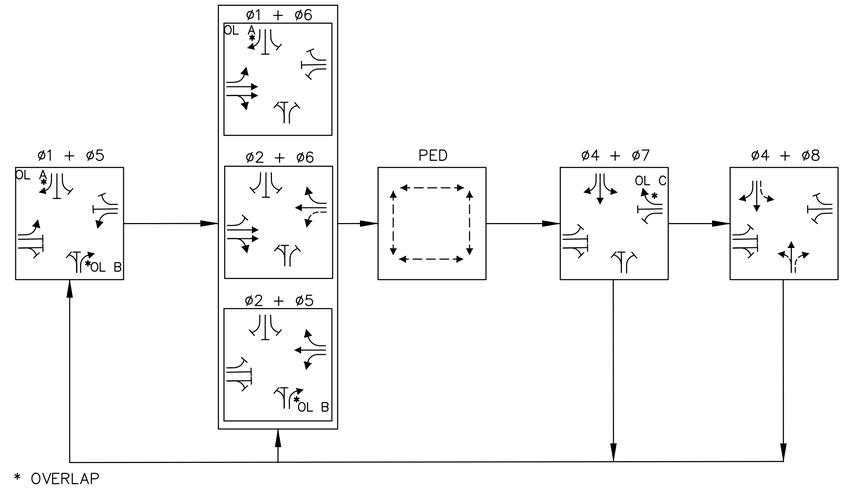
1. ALL VEHICLE AND PEDESTRIAN LENSES SHALL BE LED TYPE.
2. ALL HOUSINGS TO BE PROVIDED WITH TUNNEL VISORS AND 5" BACKPLATES.
3. ALL HOUSINGS TO BE FIXED MOUNTED.
4. ALL HOUSINGS TO HAVE LOUVERED BACKPLATES WITH 2" YELLOW RETRO–REFLECTIVE BORDERS.

VIDEO DETECTION ZONES						
DETECTION ZONE	VIDEO CAMERA	SIZE	OPERATION	CALL ø	CALL DELAY (SECONDS)	EXTEND ø
1	V2	6'X40'	PRESENCE	6	–	6
2	V2	6'X40'	PRESENCE	6	–	6
3	V2	6'X40'	PRESENCE	1	–	1
4	V4	6'X40'	PRESENCE	4	–	4
5	V4	6'X40'	PRESENCE	4	–	4
6	V4	6'X40'	PRESENCE	7	–	7
7	V1	6'X40'	PRESENCE	2	–	2
8	V1	6'X40'	PRESENCE	2	–	2
9	V1	6'X40'	PRESENCE	5	–	5
10	V3	6'X40'	PRESENCE	8	–	8
11	V3	6'X40'	PRESENCE	8	–	8

MAJOR ITEMS LIST		
QUANTITY	ITEM NO.	DESCRIPTION
1	816.02	TS2 TYPE 1 CONTROLLER W/CABINET & FOUNDATION
6		SIGNAL POST & BASE – W/ FDN – 8'
1		SIGNAL POST & BASE – W/ FDN – 10'
3		40' MAST ARM – STEEL, TYPE II W/ FDN
1		45' MAST ARM – STEEL, TYPE II W/ FDN
1		1 WAY 3 SECTION VEHICLE SIGNAL HOUSING – 12" LED, R/Y/G LEFT TURN ARROWS
2		1 WAY 4 SECTION VEHICLE SIGNAL HOUSING – 12" LED, R/Y/G LEFT TURN ARROWS AND FLASHING YELLOW ARROW
7		1 WAY 3 SECTION VEHICLE SIGNAL HOUSING – 12" LED
3		1 WAY 5 SECTION VEHICLE SIGNAL HOUSING – 12" LED
14		PEDESTRIAN SIGNAL HOUSING – 16" GRAPHIC LED
7		ACCESSIBLE PEDESTRIAN SIGNAL ASSEMBLY W/R10–3E SIGN
1		SERVICE CONNECTION (UNDERGROUND)
4		OPTICAL RECEIVER (DETECTOR) – ONE WAY
2		OPTICAL PHASE SELECTOR – TWO CHANNELS
2		PREEMPTION CONFIRMATION STROBE (WHITE)
7	811.31	12" x 12" PULLBOX (SD2.031)
4	816.02	VIDEO CAMERA
4		MAST ARM CAMERA MOUNT EXTENSION BRACKETS – 8'
2		VIDEO DETECTION PROCESSOR
2		BUS INTERFACE UNIT (SPARE)
1		MALFUNCTION MANAGEMENT UNIT (MMU2)
PLUS ALL NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND EQUIPMENT TO COMPLETE THE INSTALLATION		

NOTE:
TRAFFIC SIGNAL MAST ARMS, POSTS AND BASES SHALL BE ORNAMENTAL TYPE CONSISTENT WITH CITY OF SALEM STANDARDS AND PAINTED BLACK.

PREFERENTIAL SEQUENCE DIAGRAM
(CALLS ON ALL PHASES)
FOR
MILL STREET & CANAL STREET/WASHINGTON STREET



TRAFFIC SIGN SUMMARY

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	80	209
PROJECT FILE NO.	605146		

TRAFFIC SIGN SUMMARY
SHEET 1 OF 3

93692 PS&E-2 TSS.DWG 13-Oct-2015

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED (1)	UNIT AREA (S.F.)	AREA IN SQUARE FEET
R1-1	30”	30”	STOP	SEE	STANDARDS(2)		21	SEE	STANDARDS(2)		21	5.18	108.78
R1-1a	36”	36”					1				2	9.00	9.00
R1-1 (PATH)	18”	18”	STOP				2				2	2.25	4.50
R1-2	30”	30”	YIELD				2				2	2.50	2.50
R2-1	24”	30”	SPEED LIMIT 30				6				6	5.00	30.00
R3-2	30”	30”					2				MAST ARM	6.25	12.5
R3-5R	30”	36”	ONLY				1				MAST ARM	7.50	7.50
R3-5L	30”	36”	ONLY				2				MAST ARM	7.50	15.00
R3-7R	30”	30”	RIGHT LANE MUST TURN RIGHT				1				1	6.25	6.25
R3-8a	30”	30”	ONLY ONLY				2				2	6.25	12.50
R3-8b	48”	30”	ONLY ONLY ONLY				10				20	10.00	100.00
R3-8c	48”	30”	ONLY ONLY				2				4	10.00	20.00
R3-17	24”	18”	BIKE LANE				9				**9**	3.00	27.00
R3-17aP	24”	8”	AHEAD				4				WITH R3-17	1.33	5.32
R3-17bP	24”	8”	ENDS				4				WITH R3-17	1.33	5.32
R4-7	24”	30”					3				3	5.00	15.00
R4-11	30”	30”	MAY USE FULL LANE				12				12	6.25	75.00
R5-1	30”	30”	DO NOT ENTER				6				5 1 WITH R1-1a	6.25	37.50
R5-2	24”	24”		↓	↓	↓	3	↓	↓	↓	3	4.00	12.00
R5-3	24”	24”	NO MOTOR VEHICLES	SEE	STANDARDS(2)		2	SEE	STANDARDS(2)		2	4.00	8.00
R6-1 (PBS)	36”	12”	ONE WAY				2				1 WITH D3-14 1 WITH R1-1a	3.00	6.00
R7-1L	12”	18”	NO PARKING ANY TIME				11				11	1.50	16.50
R7-1R	12”	18”	NO PARKING ANY TIME				15				**12** **3** (WITH R3-17)	1.50	18.00
R7-1LR	12”	18”	NO PARKING ANY TIME				7				5 2 (WITH R3-17)	1.50	12.00
R7-5L(30)	12”	18”	30 MINUTE PARKING 8AM-5PM				1				1	1.50	1.50
R7-5R(30)	12”	18”	30 MINUTE PARKING 8AM-5PM				1				1	1.50	1.50
R7-107a	12”	30”					2				2	2.50	5.00
R7-201aP	12”	6”	TOW - AWAY ZONE				2				WITH R7-1L AND R7-1R	0.50	1.00
R8-3	12”	12”					5				5	1.00	5.00
R10-11a	30”	36”	NO TURN ON RED				2	↓	↓	↓	MAST ARM	7.50	15.00
R10-12A	30”	36”	LEFT TURN YIELD ON FLASHING	↓	↓	↓	3	WHITE	BLACK	BLACK	MAST ARM	7.50	22.50
R14-1	24”	18”	TRUCK ROUTE	SEE	STANDARDS(2)		1	SEE	STANDARDS(2)		1	3.00	3.00
H1-2	24”	24”		MASSDOT STANDARD			2	MASSDOT STANDARD			2	4.00	8.00
OM2-1V	6”	12”		SEE	STANDARDS(2)		17	SEE	STANDARDS(2)		17	0.5	8.50

(1) UNLESS OTHERWISE NOTED, ALL POSTS TO BE P-5.
(2) 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.

TRAFFIC SIGN SUMMARY

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	81	209
PROJECT FILE NO.	605146		

TRAFFIC SIGN SUMMARY
SHEET 2 OF 3

93692 PS&E-2 TSS.DWG 13-Oct-2015

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED (1)	UNIT AREA (S.F.)	AREA IN SQUARE FEET
W1–4	30”	30”		SEE	STANDARDS(2)		2	SEE	STANDARDS(2)		2	6.25	12.50
W2–2	24”	24”					2				2	4.00	8.00
W11–2	24”	24”					26				26	4.00	104.00
W11–15	30”	30”					6				2 4 WITH 12’ POST	6.25	25.00
W11–15P	24”	18”	TRAIL X-ING				6				WITH W11–15	3.00	12.00
W16–7P	24”	12”					32				WITH W11–2 AND W11–15	2.00	60.00
D4–1	30”	24”	PARKING				1				1	5.00	5.00
D9–2	18”	18”	H				1				1	2.25	2.25
D11–1	24”	18”	BIKE ROUTE				9				9	3.00	27.00
M1–5	24”	24”	1A	MASSDOT STANDARD			3	MASSDOT STANDARD			3	4.00	12.00
M3–1	24”	12”	NORTH	SEE	STANDARDS(2)		1	SEE	STANDARDS(2)		WITH M1–5	2.00	2.00
M3–3	24”	12”	SOUTH				2				WITH M1–5	2.00	4.00
M4–6	12”	6”	END				2	GREEN	WHITE	WHITE	WITH D11–1	0.50	1.00
M4–14	12”	6”	BEGIN				2	GREEN	WHITE	WHITE	WITH D11–1	0.50	1.00
M5–2R	21”	15”					1	SEE	STANDARDS(2)		WITH M1–5	2.20	2.20
M6–1L/R	21”	15”					6				WITH D9–2 AND D11–1	2.20	13.20
M6–2R	21”	15”					1				WITH M1–5	2.20	2.20
SP–1	24”	18”	HIDDEN DRIVE	4” 4”	4” 2” 4”	N/A	2	YELLOW	BLACK	BLACK	WITH W2–2	3.00	6.00
SP–2	42”	36”	SOUTH / 1A / LORING AVE / JEFFERSON AVE / LEFT LANE / RIGHT LANE	4” 5” 4” 4” 4”	4” 1” 1” 1” 4” 4”	N/A	1	WHITE	BLACK	BLACK	2	10.50	10.50

(1) UNLESS OTHERWISE NOTED, ALL POSTS TO BE P–5.
(2) PER THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE 2012 MASSDOT AMENDMENTS TO THE MUTCD, AND THE 1996 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE. MKR.	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED (1)	UNIT AREA (S.F.)	AREA IN SQUARE FEET
D3–1	VARIES	12”	Loring Ave	SEE	STANDARDS(2)		1	SEE	STANDARDS(2)		1	VARIES	VARIES
D3–2	VARIES	12”	Jefferson Ave				1				WITH D3–1	VARIES	VARIES
D3–3	VARIES	12”	Kimball Rd				1				1	VARIES	VARIES
D3–4	VARIES	12”	Canal St				4				4	VARIES	VARIES
D3–5	VARIES	12”	Rose St				1				1	VARIES	VARIES
D3–6	VARIES	12”	Tulip St				1				1	VARIES	VARIES
D3–7	VARIES	12”	Broadway				3				1 2 W/D3–4	VARIES	VARIES
D3–8	VARIES	12”	Forest Ave				1				1	VARIES	VARIES
D3–9	VARIES	12”	Hersey St				1				1	VARIES	VARIES
D3–10	VARIES	12”	Ocean Ave				1				1	VARIES	VARIES
D3–11	VARIES	12”	Meadow St				1				1	VARIES	VARIES
D3–12	VARIES	12”	Laurel St				1				1	VARIES	VARIES
D3–13	VARIES	12”	St. Paul St				1				1	VARIES	VARIES
D3–14	VARIES	12”	Roslyn St				1				WITH R6–1	VARIES	VARIES
D3–15	VARIES	12”	Hancock St				1				1	VARIES	VARIES
D3–16	VARIES	12”	Gardner St				1				1	VARIES	VARIES
D3–17	VARIES	12”	Lyme St				1				1	VARIES	VARIES
D3–18	VARIES	12”	Cypress St				1				1	VARIES	VARIES
D3–19	VARIES	12”	Ropes St				1				1	VARIES	VARIES
D3–20	VARIES	12”	Pond St				1				1	VARIES	VARIES
D3–21	VARIES	12”	Washington St				2				1	VARIES	VARIES
D3–22	VARIES	18”	Loring Ave				1				ON M/A	VARIES	VARIES
D3–23	VARIES	18”	Canal St				1				ON M/A	VARIES	VARIES
D3–24	VARIES	12”	Mill St				1				WITH D3–4	VARIES	VARIES

(1) UNLESS OTHERWISE NOTED, ALL POSTS TO BE P–5.
(2) PER THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE 2012 MASSDOT AMENDMENTS TO THE MUTCD, AND THE 1996 MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS FOR SIGNS AND SUPPORTS.

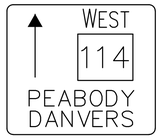
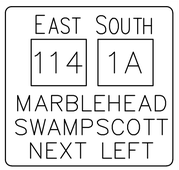
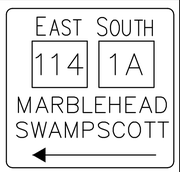
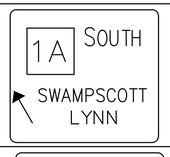
TRAFFIC SIGN SUMMARY

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	82	209
PROJECT FILE NO.	605146		

TRAFFIC SIGN SUMMARY
SHEET 3 OF 3

93692 PS&E-2 TSS.DWG 13-Oct-2015

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH	SIZE OF SIGN HEIGHT	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE MKR	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
D6-1	60"	60"		9"/7"/6"c 6"c 6"c	4" 4" 4" 4" 6"	SHIELD(114) 18"X24" ARROW 8"X36"	1	GREEN REFL TYPE A M9.30.0	SILVER WHITE REFL TYPE A M9.30.0	SILVER WHITE REFL TYPE A M9.30.0	SEE MASSDOT STANDARDS	25.00	25.00
D8-1	48"	42"		7"/6"c 9" 6"c	2.5" 3" 3" 2.5"	SHIELD(114) 18"X24" ARROW 8"X18"	1					14.00	14.00
D6-2	60"	60"		7"/6"c 9" 6"c 6"c	4.0" 3" 5" 5" 6"	SHIELD(114) 18"X24" ARROW 8"X18"	1					25.00	25.00
D8-2	48"	42"		9"/7"/6"c 6"c	2.5" 2.5" 2.5" 2.5"	SHIELD(114) 18"X24" ARROW 8"X24"	1					14.00	14.00
D6-3	60"	66"		7"/6"c 9" 6"c 6"c 6"c	4" 4" 3" 3" 3" 6"	SHIELD(114) 18"X24" SHIELD(1A) 18"X18"	1					27.50	27.50
D6-4	60"	66"		7"/6"c 9" 6"c 6"c	4" 4" 3" 3" 3" 4"	SHIELD(114) 18"X24" SHIELD(1A) 18"X18" ARROW 8"X24"	1					27.50	27.50
D6-5	60"	60"		9"/7"/6"c 6"c 6"c	4" 4" 4" 4" 6"	SHIELD(114) 18"X24" ARROW 8"X36"	1					25.00	25.00
D6-6	60"	60"		9"/7"/6"c 5"c 5"c	10" 6" 6" 10"	SHIELD(1A) 18"X18" ARROW 8"X18" @ 120°	1					25.00	25.00
D6-7	60"	60"		9"/7"/6"c 6"c 6"c	10" 5" 5" 10"	SHIELD(1A) 18"X18" ARROW 8"X18" @ 60°	1					25.00	25.00

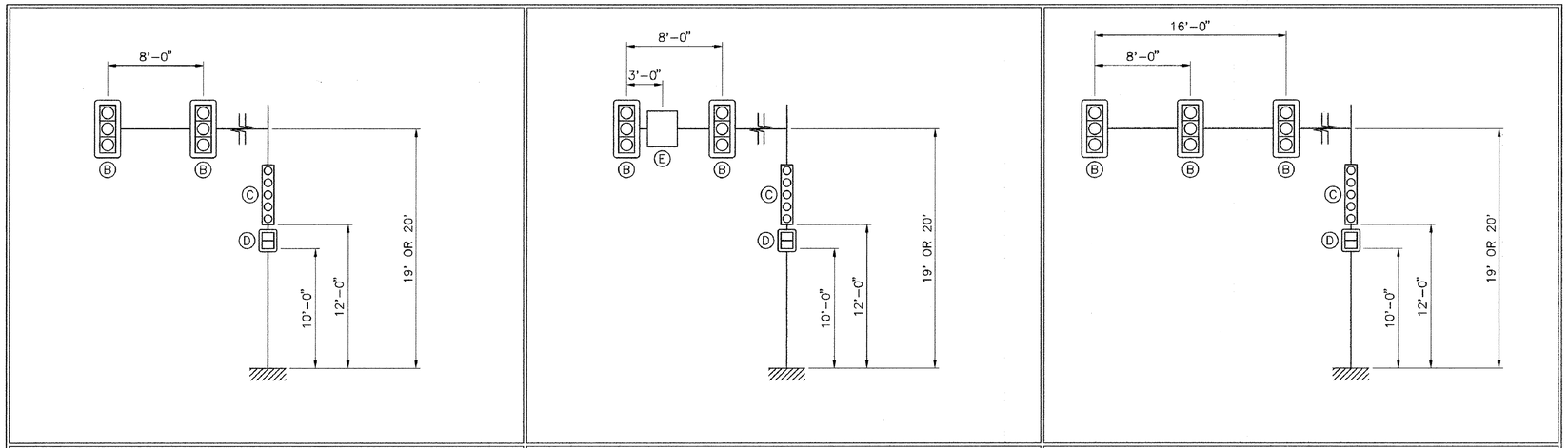
(1) PER THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION "GUIDE SIGN POLICY SECONDARY STATE HIGHWAYS" (2005 EDITION)

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	83	209
PROJECT FILE NO.	605146		

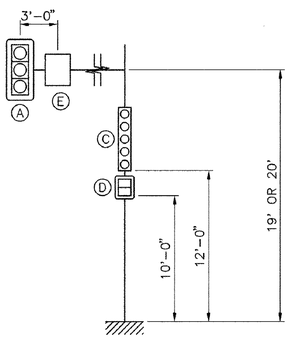
MAST ARM DETAILS - 1 OF 5

93692-PS&E-2 TRAFFIC DETAILS.DWG 14-Oct-2015



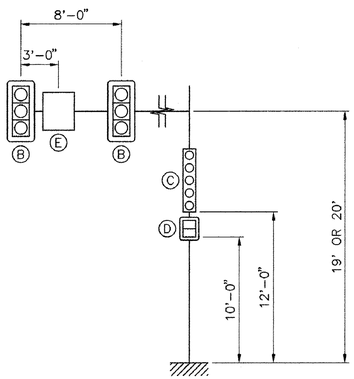
20', 25', 40' & 45' SPANS | 30' SPAN | 35' SPAN

LOAD DEFINITIONS – LIGHT LOADS

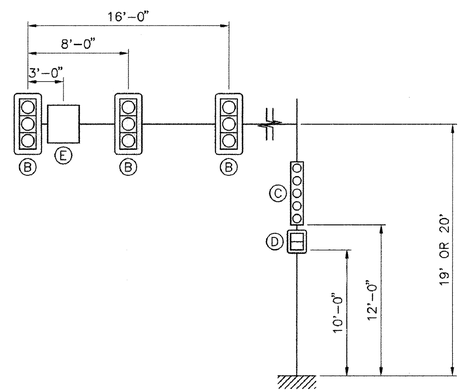


15' SPAN

SHORT SPAN LOADING



20' & 25' SPANS



30', 35', 40' & 45' SPANS

LOAD DEFINITIONS – MEDIUM LOADS

DEVICE	DESCRIPTION	PROJ. AREA (FT^2)	WEIGHT (LBS)
A	3 SECTION, 3 WAY SIGNAL	13.50	202
B	3 SECTION, 1 WAY SIGNAL	8.67	74
C	5 SECTION, 1 WAY SIGNAL	13.33	110
D	DUAL PEDESTRIAN SIGNAL	8.00	80
E	30" X 36" REGULATORY SIGN	7.50	23

NOTE: ALL SIGNALS HAVE 5.0" BACKPLATES

MONTH_DD,_YYYY	ISSUED FOR CONSTRUCTION

Moving Massachusetts Forward. massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS
LIGHT, MEDIUM & SHORT SPAN
LOAD DIAGRAMS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Frank A. Tramontozzi 2/24/2011
CHIEF ENGINEER

BRIDGE ENGINEER

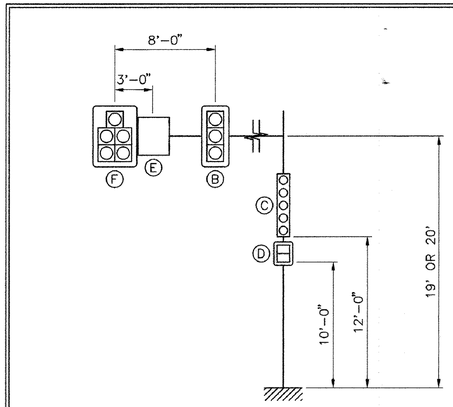
Neal E. Boudreau
TRAFFIC ENGINEER

SALEM
CANAL STREET

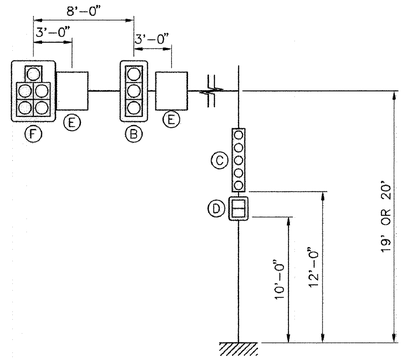
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	84	209
PROJECT FILE NO.	605146		

MAST ARM DETAILS - 2 OF 5

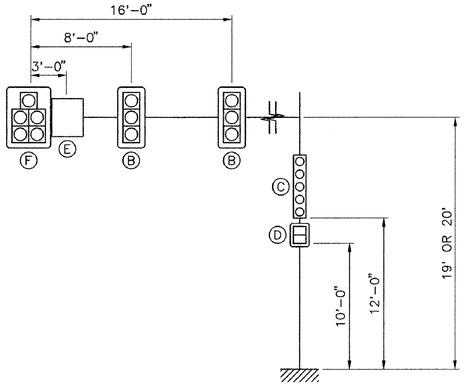
93692-PS&E-2 TRAFFIC DETAILS.DWG 14-Oct-2015



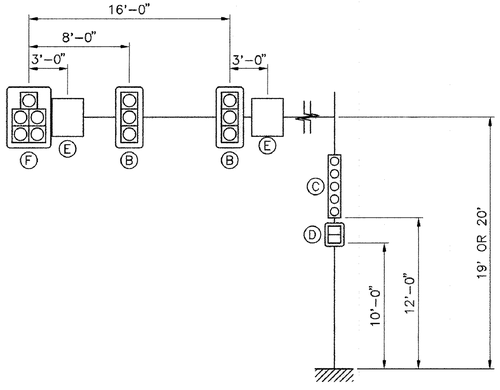
20' SPAN



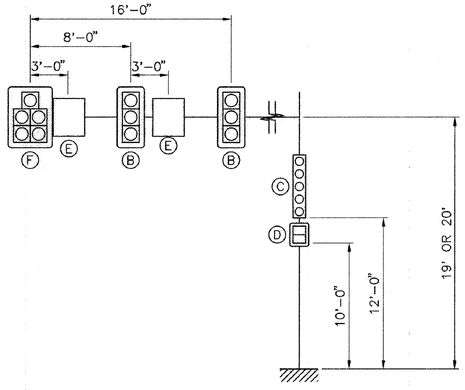
25' SPAN



30' SPAN



35' SPAN



40' & 45' SPANS

LOAD DEFINITIONS – HEAVY LOADS

DEVICE	DESCRIPTION	PROJ. AREA (FT^2)	WEIGHT (LBS)
(A)	3 SECTION, 3 WAY SIGNAL	18.29	202
(B)	3 SECTION, 1 WAY SIGNAL	8.67	74
(C)	5 SECTION, 1 WAY SIGNAL	13.33	110
(D)	DUAL PEDESTRIAN SIGNAL	8.00	80
(E)	30" X 36" REGULATORY SIGN	7.50	23
(F)	5 SECTION, 2 WAY SIGNAL	21.95	215
NOTE: ALL SIGNALS HAVE 5.0" BACKPLATES			

MONTH_DD,_YYYY	ISSUED FOR CONSTRUCTION

Moving Massachusetts Forward. massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS
HEAVY LOAD DIAGRAMS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Frank A. Tramontozzi 2/24/2011
CHIEF ENGINEER

BRIDGE ENGINEER

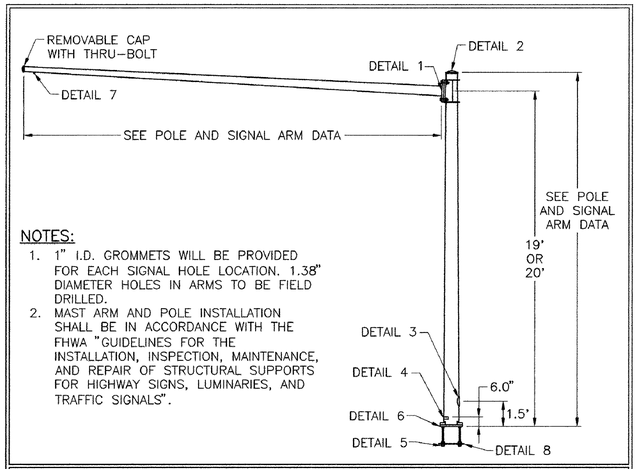
Neil E. Boudreau
TRAFFIC ENGINEER

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	85	209
PROJECT FILE NO.	605146		

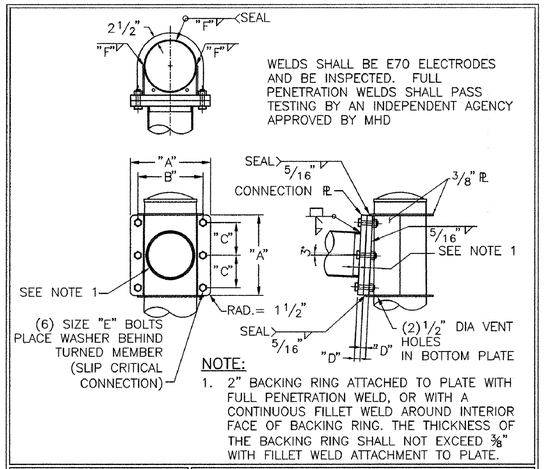
MAST ARM DETAILS - 3 OF 5

93692-PS&E-2 TRAFFIC DETAILS.DWG 14-Oct-2015



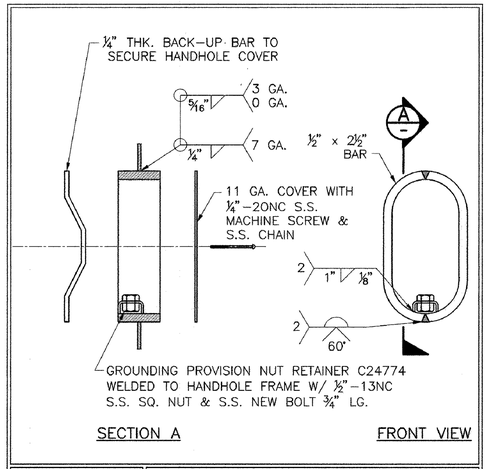
NOTES:
1. 1" I.D. GROMMETS WILL BE PROVIDED FOR EACH SIGNAL HOLE LOCATION. 1.38" DIAMETER HOLES IN ARMS TO BE FIELD DRILLED.
2. MAST ARM AND POLE INSTALLATION SHALL BE IN ACCORDANCE WITH THE FHWA "GUIDELINES FOR THE INSTALLATION, INSPECTION, MAINTENANCE, AND REPAIR OF STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS".

MAST ARM ELEVATION



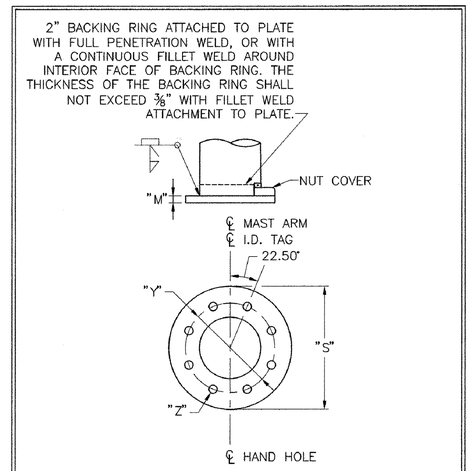
NOTE:
1. 2" BACKING RING ATTACHED TO PLATE WITH FULL PENETRATION WELD, OR WITH A CONTINUOUS FILLET WELD AROUND INTERIOR FACE OF BACKING RING. THE THICKNESS OF THE BACKING RING SHALL NOT EXCEED 3/8" WITH FILLET WELD ATTACHMENT TO PLATE.

DETAIL 1 | SIGNAL ARM ATTACHMENT



SECTION A FRONT VIEW

DETAIL 3 | 4"x8" HANDHOLE

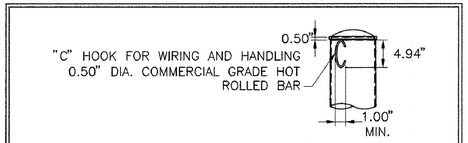


DETAIL 6 | POLE BASE

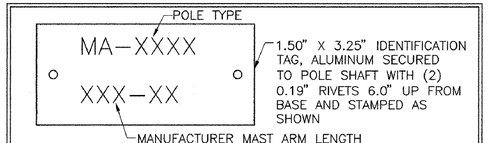
MATERIAL DATA

COMPONENT	DESIGNATION	YIELD (KSI)	COMPONENT	DESIGNATION	YIELD (KSI)
POLE TUBE	ASTM A595 GR. A	55	ARM TUBE	ASTM A595 GR. A	55
POLE BASE PLATE	AASHTO M270	50	ARM CONNECTION PLATE	AASHTO M270	50
ANCHOR BOLTS	AASHTO M314	55	ARM CONNECTING BOLTS	AASHTO M164 **	
GALVANIZING	AASHTO M111 OR M232				

** BOLTS WHICH ACCUMULATE RUST OR DIRT SHALL BE DISCARDED.



DETAIL 2 | POLE TOP



DETAIL 4 | I.D. TAG

POLE AND SIGNAL ARM DATA - LIGHT LOADS

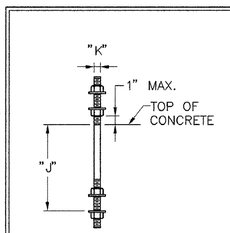
LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE				ANCHOR BOLT		SIGNAL ARM ATTACHMENT DATA					
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	EMBED. LENGTH "J" (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
	15.00	9.00	6.90	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	20.00	9.00	6.20	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	25.00	10.00	6.50	7 GA.	13.00	10.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	20.00	16.00	8.00	1.00	1.00	0.188
	30.00	12.50	8.30	3 GA.	15.50	12.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	23.50	19.00	9.50	1.25	1.25	0.250
	35.00	13.00	8.10	3 GA.	16.00	13.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	24.50	20.00	10.00	1.25	1.25	0.250
	40.00	13.00	7.40	3 GA.	16.00	13.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	24.50	20.00	10.00	1.25	1.25	0.250
	45.00	13.50	7.20	3 GA.	16.50	13.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.313

POLE AND SIGNAL ARM DATA - MEDIUM LOADS

LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE				ANCHOR BOLT		SIGNAL ARM ATTACHMENT DATA					
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	EMBED. LENGTH "J" (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
	15.00	9.00	6.90	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	20.00	10.00	7.20	3 GA.	13.00	10.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	20.00	16.00	8.00	1.00	1.00	0.250
	25.00	11.00	7.50	3 GA.	14.00	11.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	23.50	19.00	9.50	1.25	1.25	0.250
	30.00	13.00	8.80	3 GA.	16.00	13.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	23.50	19.00	9.50	1.25	1.25	0.250
	35.00	14.00	9.10	3 GA.	17.00	14.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	40.00	15.00	9.40	3 GA.	18.00	15.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	45.00	16.00	9.70	0 GA.	19.00	16.06	21.00	0 GA.	29.50	24.00	1.50	1.813	1.50	36.00	29.50	24.00	12.00	1.75	1.50	0.313

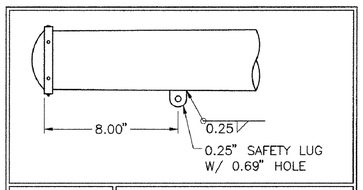
POLE AND SIGNAL ARM DATA - HEAVY LOADS

LOCATIONS	SIGNAL ARM TUBE				POLE TUBE				POLE BASE				ANCHOR BOLT		SIGNAL ARM ATTACHMENT DATA					
	SPAN (FT)	FIXED END DIA. (IN)	FREE END DIA. (IN)	WALL THK.	BASE DIA. (IN)	TOP DIA. (IN)	LENGTH (FT)	WALL THK.	PLATE CIRCLE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	HOLE "Z" (IN)	DIA. "K" (IN)	EMBED. LENGTH "J" (IN)	"A" (IN)	"B" (IN)	"C" (IN)	"D" (IN)	"E" (IN)	"F" (IN)
	15.00	9.00	6.90	7 GA.	12.00	9.06	21.00	7 GA.	29.50	24.00	1.50	1.813	1.50	36.00	19.00	15.00	7.50	1.00	1.00	0.188
	20.00	12.50	9.70	3 GA.	15.50	12.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	24.00	19.00	9.50	1.25	1.25	0.250
	25.00	14.00	10.50	3 GA.	17.00	14.06	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	30.00	15.50	11.30	3 GA.	18.50	15.56	21.00	3 GA.	29.50	24.00	1.50	1.813	1.50	36.00	27.50	22.00	11.00	1.50	1.50	0.250
	35.00	16.50	11.60	0 GA.	19.50	16.56	21.00	0 GA.	34.50	28.00	1.75	2.063	1.75	36.00	29.50	24.00	12.00	1.75	1.50	0.313
	40.00	17.50	11.90	0 GA.	20.50	17.56	21.00	0 GA.	34.50	28.00	1.75	2.063	1.75	36.00	29.50	24.00	12.00	1.75	1.50	0.313
	45.00	18.50	12.20	0 GA.	21.50	18.56	21.00	0 GA.	34.50	28.00	1.75	2.063	1.75	36.00	31.50	26.00	13.00	2.00	1.50	0.313

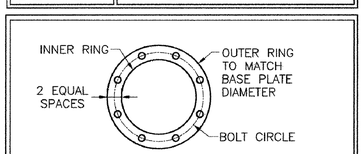


(8) ANCHOR BOLTS WITH (4) HEX NUTS, (4) FLAT WASHERS, AND (1) LOCK-WASHER PER BOLT.

DETAIL 5 | ANCHOR BOLT



DETAIL 7 | SAFETY HANGER LUG



DETAIL 8 | ANCHOR PLATE

MONTH_DD,_YYYY	ISSUED FOR CONSTRUCTION

Moving Massachusetts Forward. massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS DETAILS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Frank A. Tramontozzi 3/24/2011
CHIEF ENGINEER

BRIDGE ENGINEER

Neil E. Boudreau
TRAFFIC ENGINEER

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	86	209
PROJECT FILE NO.	605146		

MAST ARM DETAILS - 4 OF 5

14-Oct-2015

93692-PS&E-2 TRAFFIC DETAILS.DWG

PIER FOUNDATIONS FOR 110 MPH WIND SPEED ZONE

LIGHT LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	6'-0"	18-#8	3'-6"	8'-0"	18-#8	3'-6"	8'-0"	18-#8	3'-6"	9'-0"	18-#8
WET SAND	3'-6"	7'-0"	18-#8	3'-6"	9'-0"	18-#8	3'-6"	9'-0"	18-#8	3'-6"	9'-0"	18-#8
CLAY (MEDIUM STIFF)	3'-6"	11'-0"	18-#8	3'-6"	12'-0"	18-#8 *	3'-6"	12'-0"	18-#8	3'-6"	12'-0"	18-#8
ALLUVIAL	3'-6"	8'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	11'-0"	18-#8

MEDIUM LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	7'-0"	18-#8	3'-6"	9-0"	18-#8	4'-0"	9-0"	18-#9	4'-6"	8'-0"	18-#10
WET SAND	3'-6"	8'-0"	18-#8	3'-6"	9'-0"	18-#8	4'-0"	10'-0"	18-#9	4'-6"	9'-0"	18-#10
CLAY (MEDIUM STIFF)	3'-6"	11'-0"	18-#8	3'-6"	12'-0"	18-#8	4'-0"	13'-0"	18-#9	4'-6"	14'-0"	18-#10
ALLUVIAL	3'-6"	9'-0"	18-#8	3'-6"	10'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	10'-0"	18-#10

HEAVY LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	8'-0"	18-#8	4'-0"	9'-0"	18-#9	4'-6"	10'-0"	18-#10	5'-0"	9'-0"	23-#10
WET SAND	3'-6"	8'-0"	18-#8	4'-0"	10'-0"	18-#9	4'-6"	11'-0"	18-#10	5'-0"	10'-0"	23-#10
CLAY (MEDIUM STIFF)	3'-6"	12'-0"	18-#8	4'-0"	14'-0"	18-#9	4'-6"	15'-0"	18-#10	5'-0"	16'-0"	23-#10
ALLUVIAL	3'-6"	10'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	12'-0"	18-#10	5'-0"	12'-0"	23-#10

* MAST ARM WITH SIGNS ONLY

PIER FOUNDATIONS FOR 130 MPH WIND SPEED ZONE

LIGHT LOADING CONDITIONS

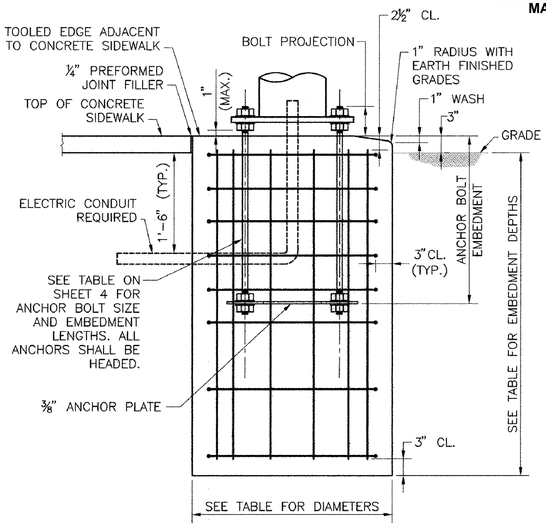
SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	7'-0"	18-#8	3'-6"	9'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	10'-0"	18-#8
WET SAND	3'-6"	8'-0"	18-#8	3'-6"	10'-0"	18-#8	3'-6"	11'-0"	18-#8	3'-6"	11'-0"	18-#8
CLAY (MEDIUM STIFF)	3'-6"	12'-0"	18-#8	3'-6"	13'-0"	18-#8	3'-6"	13'-0"	18-#8	3'-6"	13'-0"	18-#8
ALLUVIAL	3'-6"	9'-0"	18-#8	3'-6"	12'-0"	18-#8	3'-6"	12'-0"	18-#8	3'-6"	13'-0"	18-#8

MEDIUM LOADING CONDITIONS

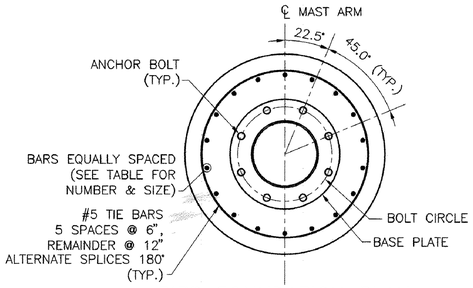
SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	8'-0"	18-#8	3'-6"	10'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	10'-0"	18-#10
WET SAND	3'-6"	8'-0"	18-#8	3'-6"	11'-0"	18-#8	4'-0"	12'-0"	18-#9	4'-6"	11'-0"	18-#10
CLAY (MEDIUM STIFF)	3'-6"	12'-0"	18-#8	3'-6"	14'-0"	18-#8	4'-0"	15'-0"	18-#9	4'-6"	15'-0"	18-#10
ALLUVIAL	3'-6"	10'-0"	18-#8	3'-6"	13'-0"	18-#8	4'-0"	13'-0"	18-#9	4'-6"	12'-0"	18-#10

HEAVY LOADING CONDITIONS

SOIL TYPE	15' & 20' MAST ARMS			25' & 30' MAST ARMS			35' & 40' MAST ARMS			45' MAST ARMS		
	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS	DIAMETER	DEPTH	VERTICAL BARS
DRY SAND	3'-6"	9'-0"	18-#8	4'-0"	11'-0"	18-#9	4'-6"	12'-0"	18-#10	5'-0"	11'-0"	23-#10
WET SAND	3'-6"	10'-0"	18-#8	4'-0"	12'-0"	18-#9	4'-6"	13'-0"	18-#10	5'-0"	12'-0"	23-#10
CLAY (MEDIUM STIFF)	3'-6"	14'-0"	18-#8	4'-0"	15'-0"	18-#9	4'-6"	16'-0"	18-#10	5'-0"	17'-0"	23-#10
ALLUVIAL	3'-6"	11'-0"	18-#8	4'-0"	13'-0"	18-#9	4'-6"	15'-0"	18-#10	5'-0"	14'-0"	23-#10



PIER FOUNDATION DETAIL
NO SCALE



PIER FOUNDATION PLAN
NO SCALE

NOTES:

1. FOUNDATIONS SHALL BE 4000 PSI, 1½", 565 CEMENT CONCRETE.
2. REINFORCEMENT SHALL BE ASTM A615 GRADE 60.
3. ANCHOR BOLTS SHALL BE SET BY TEMPLATE.
4. PROVIDE FOR ELECTRICAL CONDUIT.
5. EXCAVATION SHALL BE BY THE AUGER METHOD TO THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATIONS WITHOUT DISTURBING THE SOIL AROUND AND BELOW THE PROPOSED FOUNDATION BOTTOM. ALTERNATE METHODS OF EXCAVATION MAY BE SUBMITTED TO MASSHIGHWAY FOR APPROVAL IF THEY MEET THE REQUIREMENTS LISTED IN NOTES 6, 7, AND 8.
6. THE EARTH WALLS OF THE FOUNDATION SHALL BE ADEQUATELY AND SECURELY PROTECTED AT ALL TIMES AGAINST CAVE-INS, DISPLACEMENT OF THE SURROUNDING EARTH AND FOR THE EXCLUSION OF GROUND WATER. THIS MAY BE DONE BY THE USE OF STEEL CYLINDER LINERS OR CASINGS THAT ARE APPROVED BY MASSHIGHWAY. IF LINERS ARE USED THEY MAY BE RECLAIMED PROVIDED THAT THEY ARE WITHDRAWN AS THE CONCRETE IS BEING PLACED, MAINTAINING A SUFFICIENT HEAD OF CONCRETE WITHIN THE LINER TO PREVENT REDUCTION IN THE FOUNDATION DIAMETER AND TO PREVENT EXTRANEOUS MATERIAL FROM FALLING IN FROM THE SIDES AND MIXING WITH THE CONCRETE.
7. IF THE SOIL IS DISTURBED OR REMOVED BEYOND THE NEAT LINES OF THE OUTSIDE DIMENSION OF THE FOUNDATION, IT SHALL BE REPLACED WITH CONCRETE. ANY ADDITIONAL COST FOR THE CONCRETE SHALL BE PAID FOR BY THE CONTRACTOR.
8. SPECIAL CARE SHOULD BE GIVEN TO AREAS WHERE WET SOIL IS ENCOUNTERED, TO INSURE THAT THE PREAUGERED HOLE DOES NOT COLLAPSE. THIS MAY REQUIRE THE USE OF STEEL CYLINDER LINERS OR CASINGS TO HOLD THE SOIL IN PLACE UNTIL READY FOR CONCRETE PLACEMENT. THE STEEL CYLINDERS OR CASINGS SHALL BE WITHDRAWN AS THE FOUNDATION CONCRETE IS PLACED.
9. DETERMINATION OF EXISTING SOIL CONDITIONS SHALL BE MADE BY THE DESIGN ENGINEER.
10. IF LEDGE OR POOR SOIL IS ENCOUNTERED (i.e. ONE WHICH DOES NOT APPLY TO THE DESIGN TABLES SHOWN ON THIS SHEET), AN ALTERNATIVE DESIGN SHALL BE PROVIDED BY THE DESIGN ENGINEER. DECISIONS MADE IN NOTES 8 AND 9 SHALL BE SUBMITTED TO MASSHIGHWAY FOR APPROVAL. IF UTILITIES OR OTHER UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED, THE CONTRACTOR SHALL BACKFILL THE AREA TO ITS ORIGINAL CONDITION UNTIL AN ALTERNATE DESIGN HAS BEEN PROVIDED BY THE ENGINEER.

MONTH_DD,_YYYY	ISSUED FOR CONSTRUCTION

Moving Massachusetts Forward
massDOT Highway

STANDARD DRAWINGS

TYPE II MAST ARMS
CORED PIER FOUNDATIONS

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

Frank A. Tramontozzi 7/24/2011
CHIEF ENGINEER

BRIDGE ENGINEER

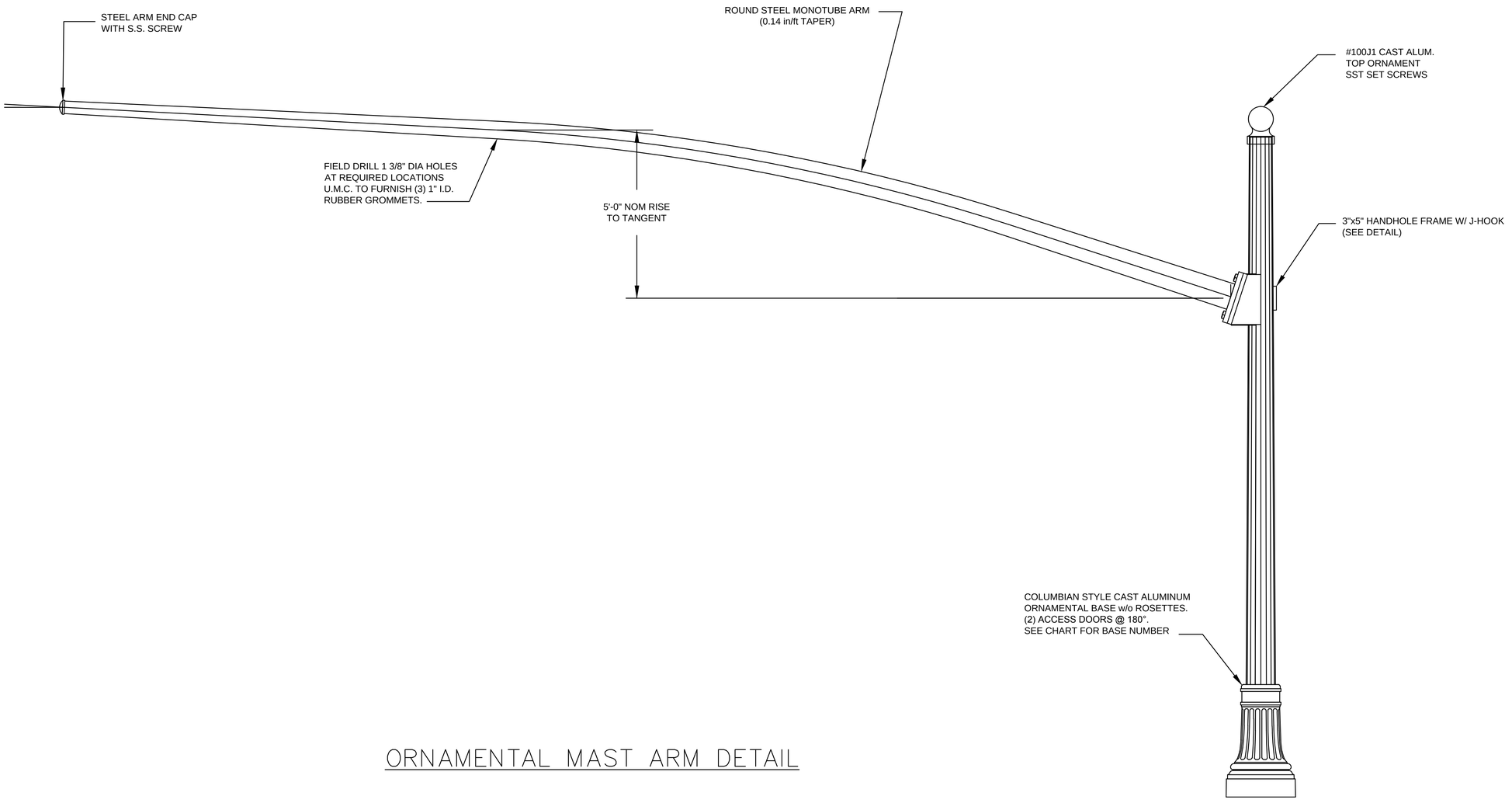
Neil E. Boudreau
TRAFFIC ENGINEER

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	87	209
PROJECT FILE NO.	605146		

MAST ARM DETAILS - 5 OF 5

93692-PS&E-2 TRAFFIC DETAILS.DWG 14-Oct-2015



ORNAMENTAL MAST ARM DETAIL

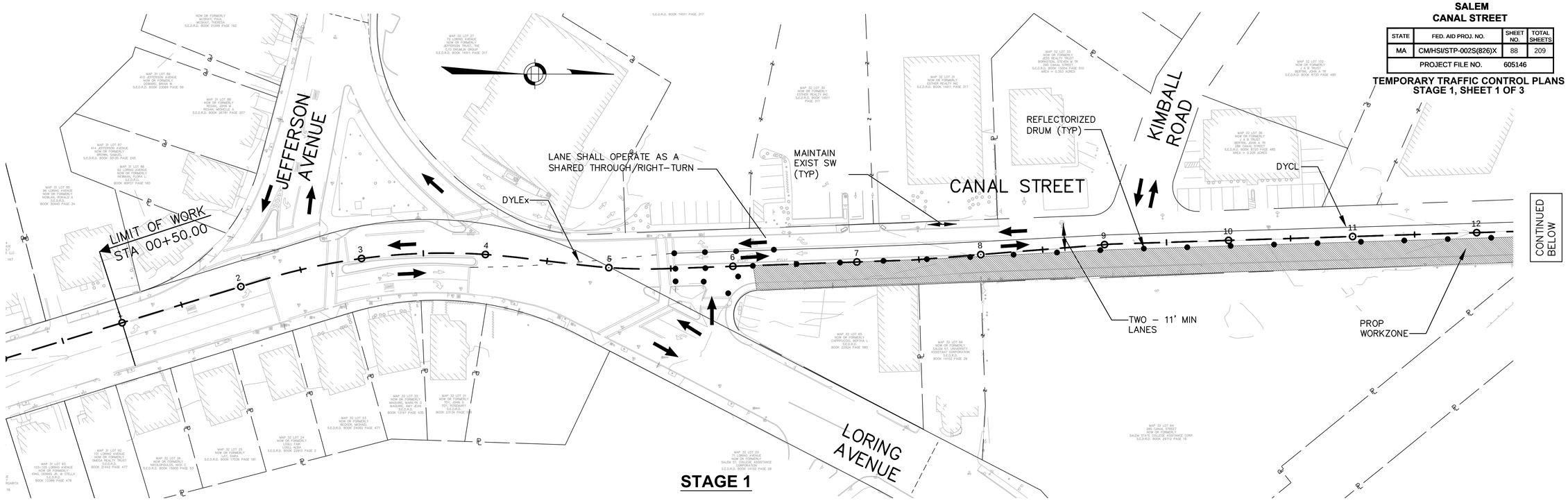
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	88	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 1, SHEET 1 OF 3

28-Oct-2015

95692 PSAE-2 TMP.DWG



GENERAL NOTES

1. REFER TO MASSDOT STANDARD DETAILS SHEETS FOR ADDITIONAL TEMPORARY TRAFFIC CONTROL INFORMATION.
2. REFER TO STANDARD DETAILS SHEETS FOR TYPICAL ADVANCED TEMPORARY WARNING SIGNS.
3. LENGTH OF WORK ZONE SHALL BE DETERMINED BY THE CONTRACTOR AND ADVANCED IN SIMILAR INCREMENTS BETWEEN THE PROJECT LIMITS.

STAGE 1

1. INSTALL TEMPORARY SIGNS, DRUMS, AND OTHER TRAFFIC TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. INSTALL TEMPORARY PAVEMENT MARKINGS.
4. MAINTAIN ONE TRAFFIC LANE PER DIRECTION ON CANAL STREET WHILE PROVIDING ACCESS TO ALL CONNECTING STREETS AND DRIVEWAYS, AND MAINTAIN TEMPORARY PEDESTRIAN PATH.
5. CONSTRUCT FULL DEPTH PAVEMENT, PAVEMENT SIDEWALK, CURB AND ISLANDS WITHIN WORKZONE EXCLUDING BUMPOUTS.

LEGEND

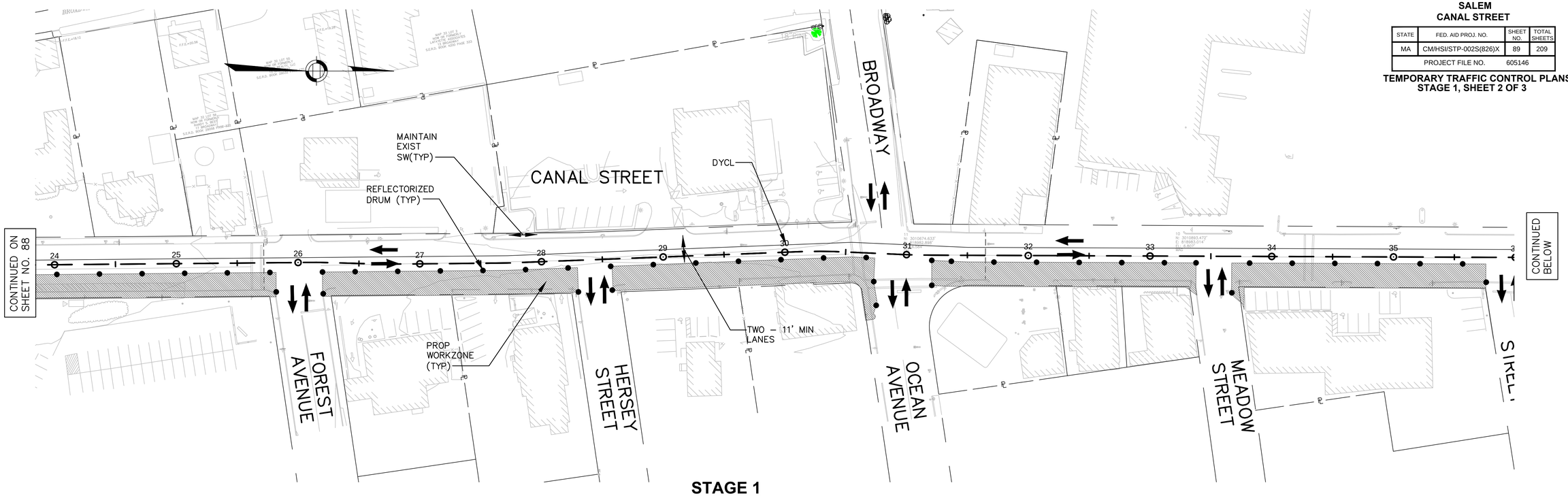
- WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

SALEM
CANAL STREET

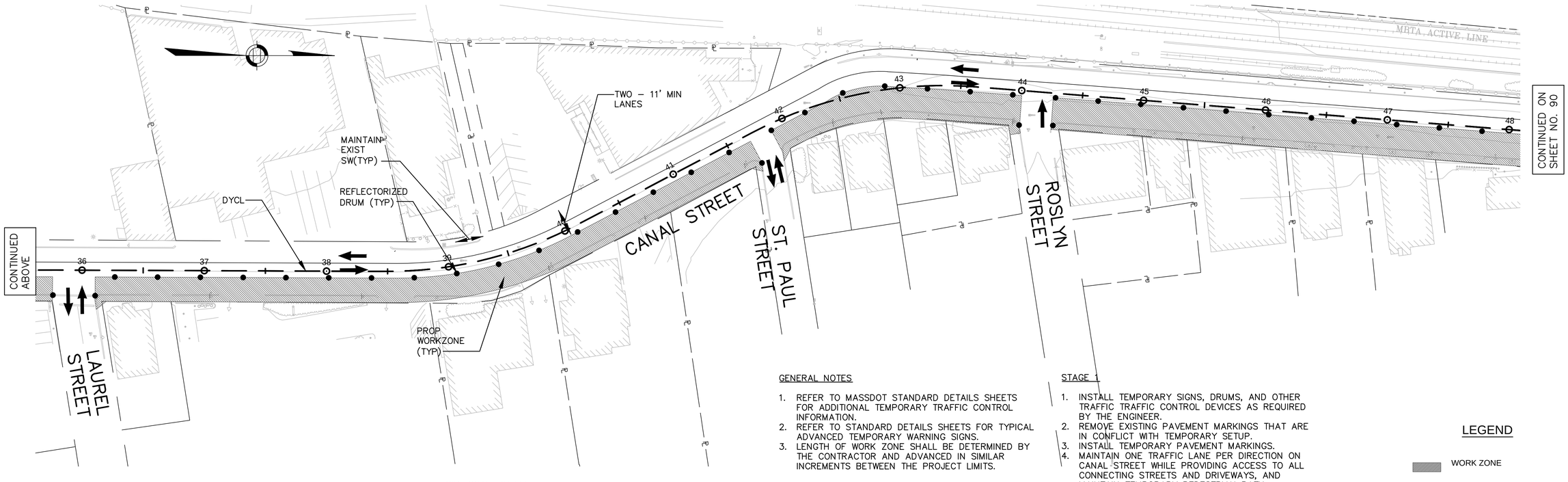
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	89	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 1, SHEET 2 OF 3

93692 PS&E-2 TMP.DWG 28-Oct-2015



STAGE 1



HOR. SCALE IN FEET
0 40 100 200

STAGE 1

GENERAL NOTES

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2. REFER TO STANDARD DETAILS SHEETS FOR TYPICAL ADVANCED TEMPORARY WARNING SIGNS.
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STAGE 1

1. INSTALL TEMPORARY SIGNS, DRUMS, AND OTHER TRAFFIC TRAFFIC CONTROL DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
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LEGEND

- WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

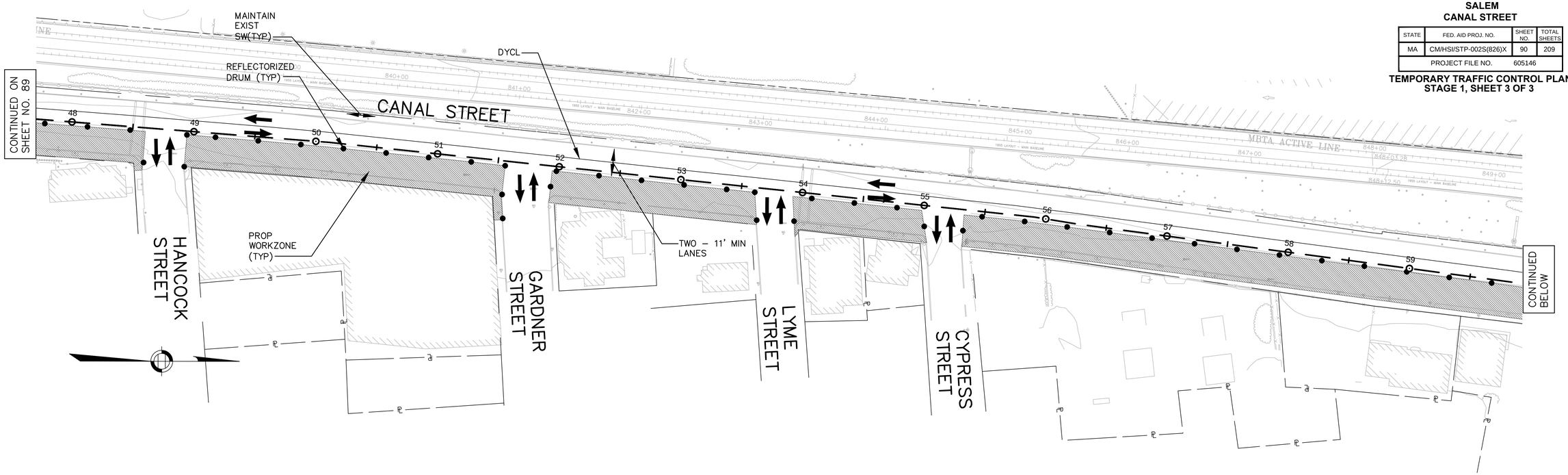
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	90	209
PROJECT FILE NO.	605146		

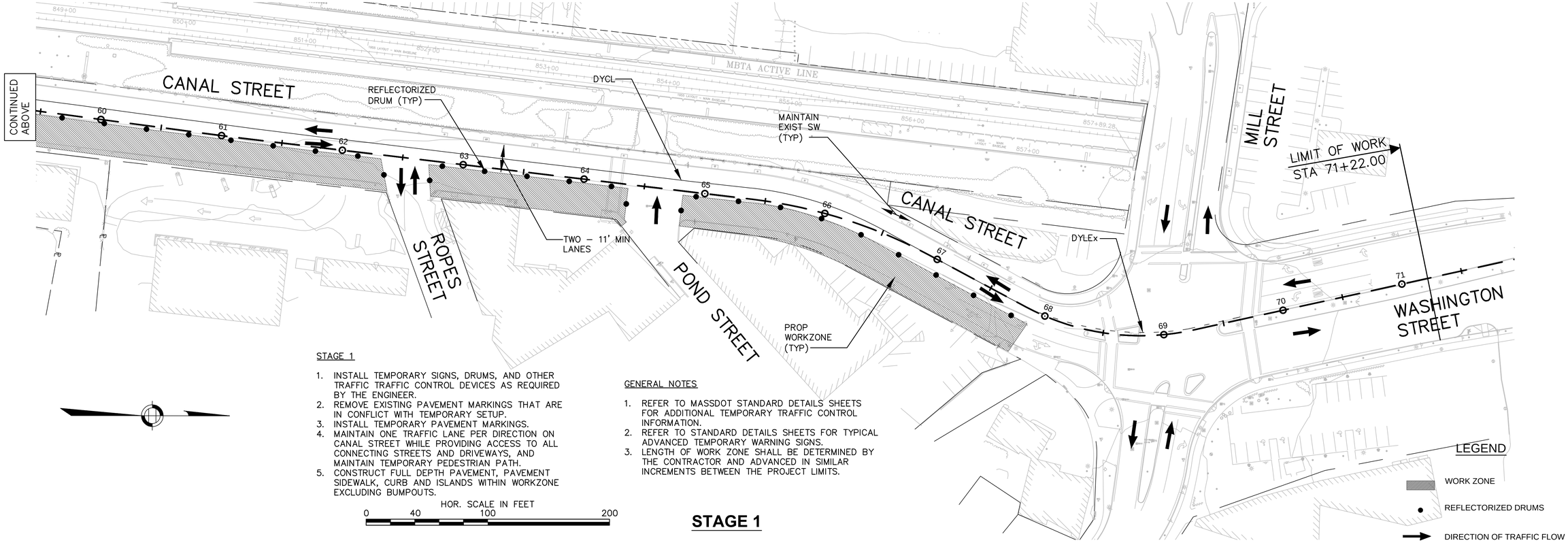
TEMPORARY TRAFFIC CONTROL PLANS
STAGE 1, SHEET 3 OF 3

28-Oct-2015

93692 PS&E-2 TMP.DWG



STAGE 1



STAGE 1

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2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
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GENERAL NOTES

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HOR. SCALE IN FEET
0 40 100 200

LEGEND
- WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

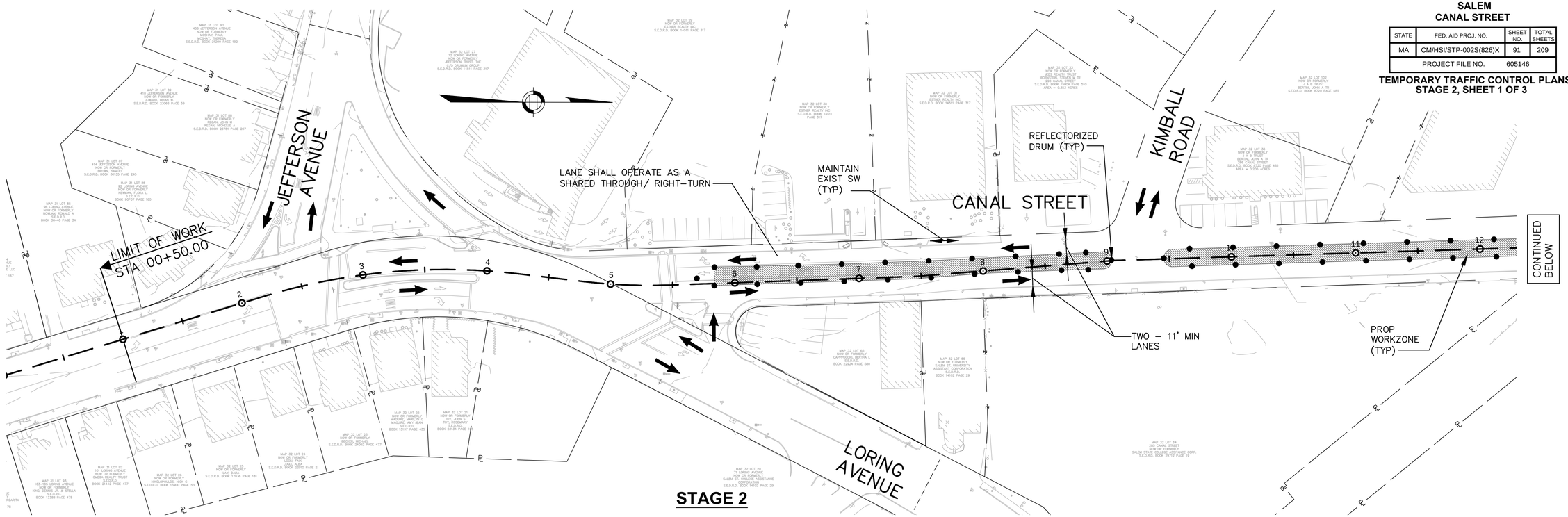
STAGE 1

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	91	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 2, SHEET 1 OF 3

93692 PSAE-2 TMP.DWG 28-Oct-2015



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STAGE 2

1. INSTALL TEMPORARY SIGNS, DRUMS, AND OTHER TRAFFIC MAINTENANCE DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. CONSTRUCT TEMPORARY PAVEMENT MARKINGS.
4. MAINTAIN ONE TRAFFIC LANE PER DIRECTION ON CANAL STREET WHILE PROVIDING ACCESS TO ALL CONNECTING STREETS AND DRIVEWAYS, AND MAINTAIN TEMPORARY PEDESTRIAN PATH.
5. CONSTRUCT FULL DEPTH PAVEMENT, CURB AND SIDEWALK WITHIN WORKZONE.

LEGEND

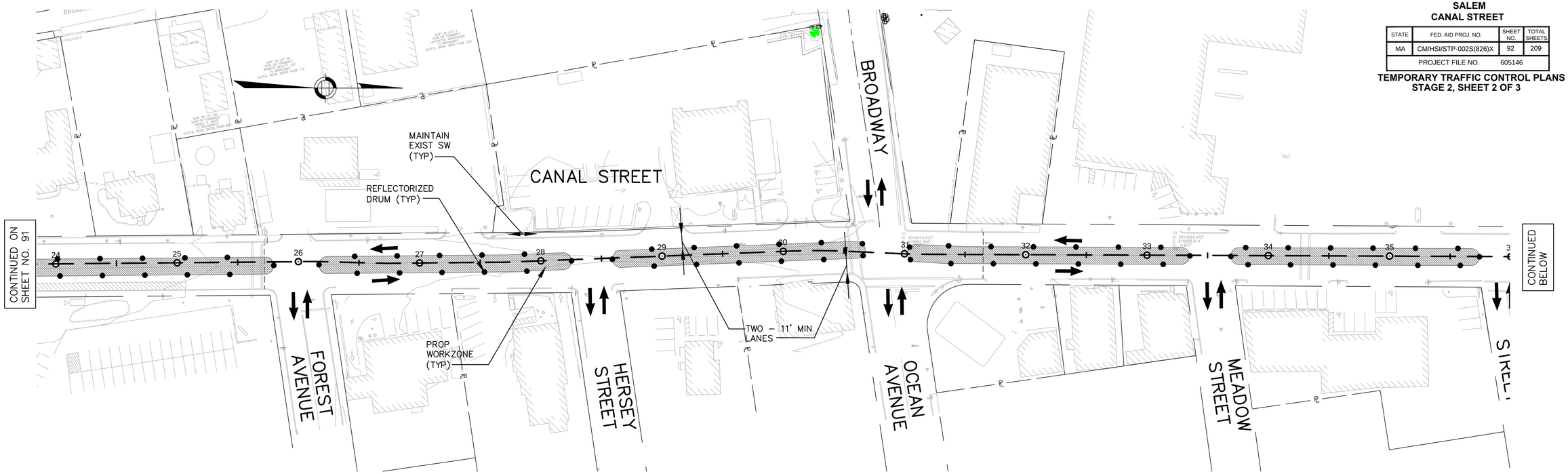
- WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

SALEM
CANAL STREET

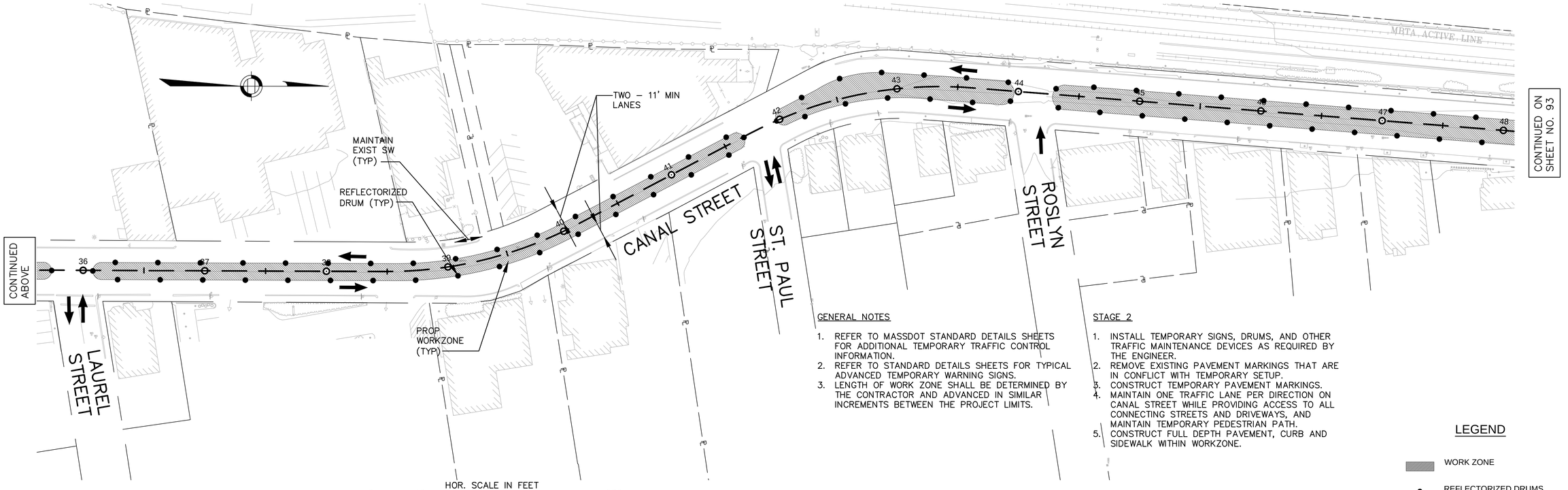
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	92	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 2, SHEET 2 OF 3

93692 PS&E-2 TMP.DWG 28-Oct-2015



STAGE 2



STAGE 2

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STAGE 2

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5. CONSTRUCT FULL DEPTH PAVEMENT, CURB AND SIDEWALK WITHIN WORKZONE.

LEGEND

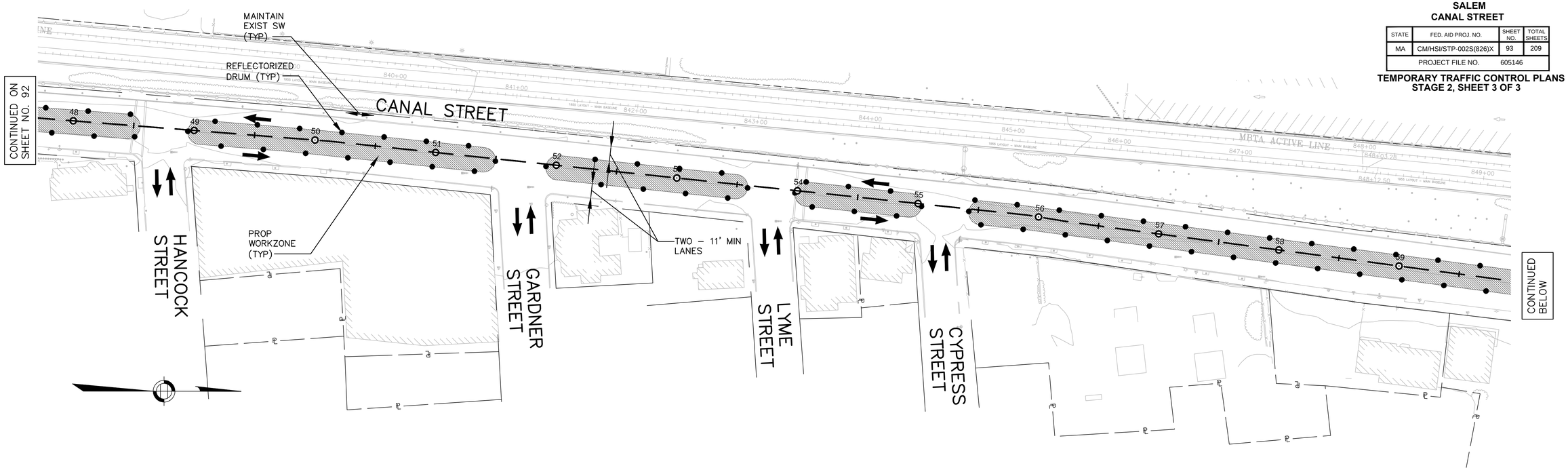
- WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

SALEM
CANAL STREET

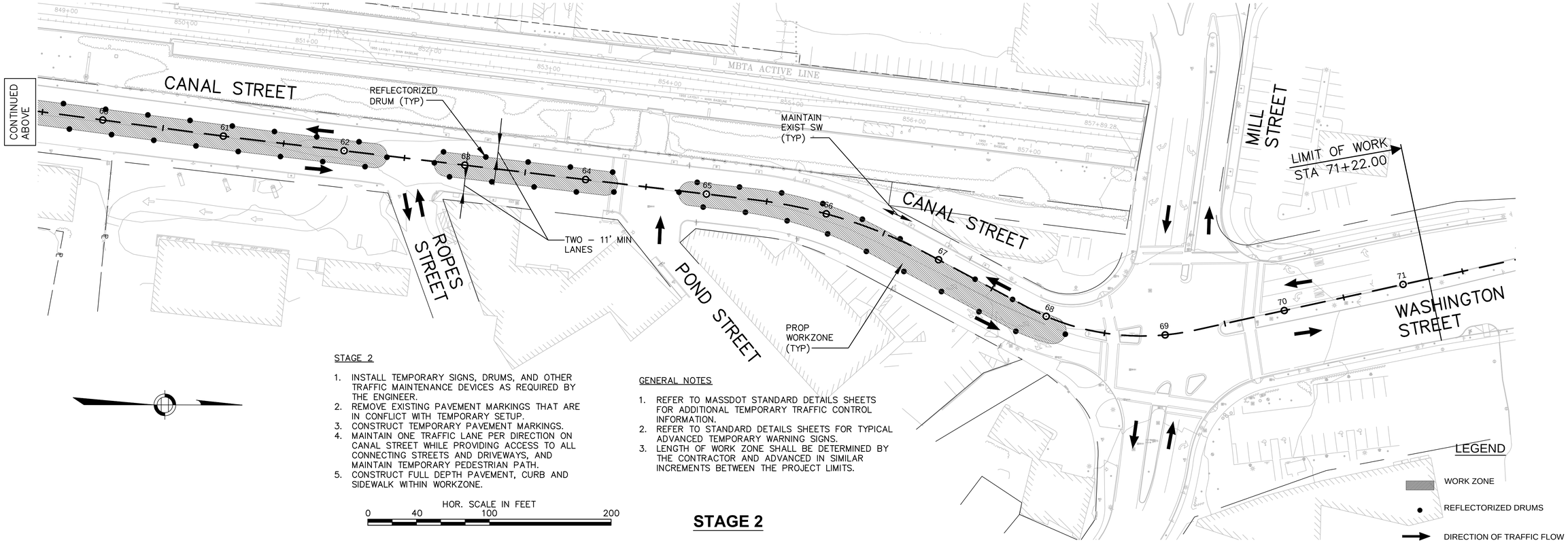
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	93	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 2, SHEET 3 OF 3

93692 PS&E-2 TMP.DWG 28-Oct-2015



STAGE 2



STAGE 2

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3. LENGTH OF WORK ZONE SHALL BE DETERMINED BY THE CONTRACTOR AND ADVANCED IN SIMILAR INCREMENTS BETWEEN THE PROJECT LIMITS.

HOR. SCALE IN FEET
0 40 100 200

STAGE 2

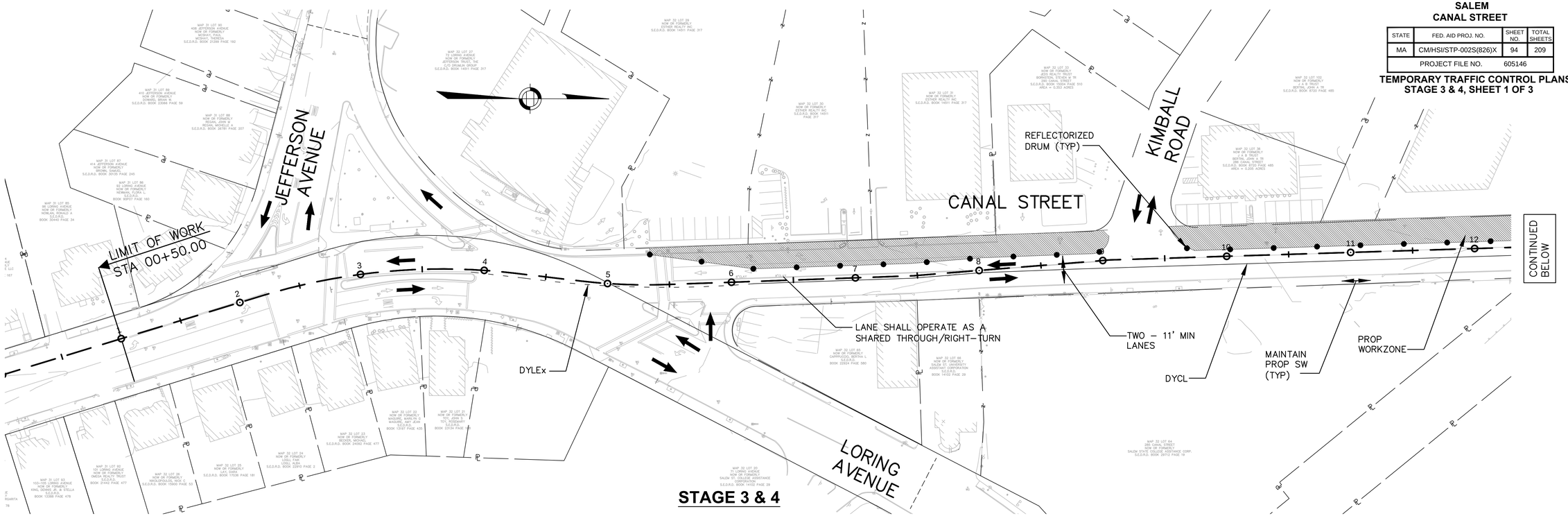
SALEM
CANAL STREET

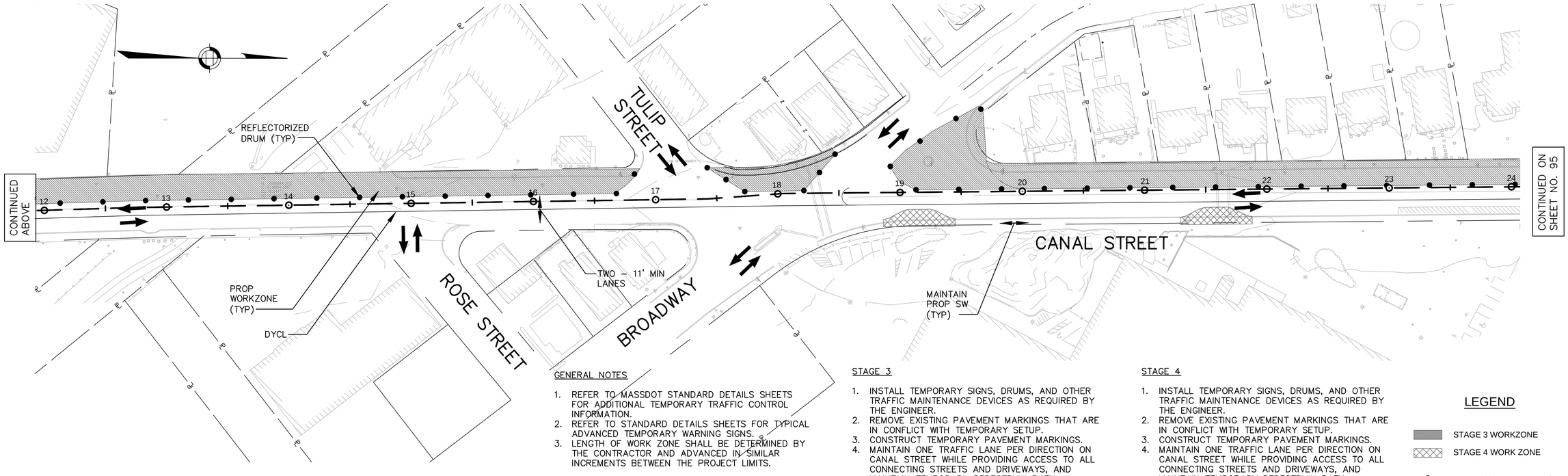
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	94	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 3 & 4, SHEET 1 OF 3

28-Oct-2015

95692 PSaE-2 TMP.DWG





GENERAL NOTES

1. REFER TO MASSDOT STANDARD DETAILS SHEETS FOR ADDITIONAL TEMPORARY TRAFFIC CONTROL INFORMATION.
2. REFER TO STANDARD DETAILS SHEETS FOR TYPICAL ADVANCED TEMPORARY WARNING SIGNS.
3. LENGTH OF WORK ZONE SHALL BE DETERMINED BY THE CONTRACTOR AND ADVANCED IN SIMILAR INCREMENTS BETWEEN THE PROJECT LIMITS.

HOR. SCALE IN FEET
0 40 100 200

STAGE 3 & 4

STAGE 3

1. INSTALL TEMPORARY SIGNS, DRUMS, AND OTHER TRAFFIC MAINTENANCE DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. CONSTRUCT TEMPORARY PAVEMENT MARKINGS.
4. MAINTAIN ONE TRAFFIC LANE PER DIRECTION ON CANAL STREET WHILE PROVIDING ACCESS TO ALL CONNECTING STREETS AND DRIVEWAYS, AND MAINTAIN TEMPORARY PEDESTRIAN PATH.
5. CONSTRUCT FULL DEPTH PAVEMENT, SIDEWALK, CURB AND ISLANDS WITHIN WORKZONE.

STAGE 4

1. INSTALL TEMPORARY SIGNS, DRUMS, AND OTHER TRAFFIC MAINTENANCE DEVICES AS REQUIRED BY THE ENGINEER.
2. REMOVE EXISTING PAVEMENT MARKINGS THAT ARE IN CONFLICT WITH TEMPORARY SETUP.
3. CONSTRUCT TEMPORARY PAVEMENT MARKINGS.
4. MAINTAIN ONE TRAFFIC LANE PER DIRECTION ON CANAL STREET WHILE PROVIDING ACCESS TO ALL CONNECTING STREETS AND DRIVEWAYS, AND MAINTAIN TEMPORARY PEDESTRIAN PATH.
5. CONSTRUCT BUMPOUTS ON NORTHBOUND SIDE OF CANAL STREET.

LEGEND

- STAGE 3 WORKZONE
- STAGE 4 WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	95	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 3 & 4, SHEET 2 OF 3

28-Oct-2015

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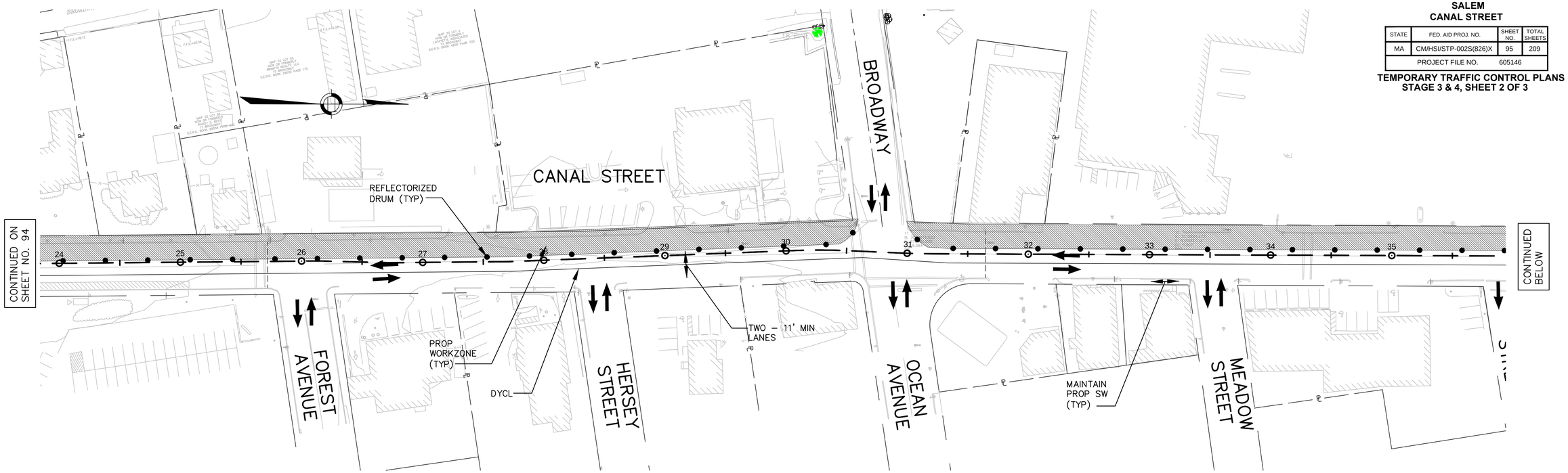
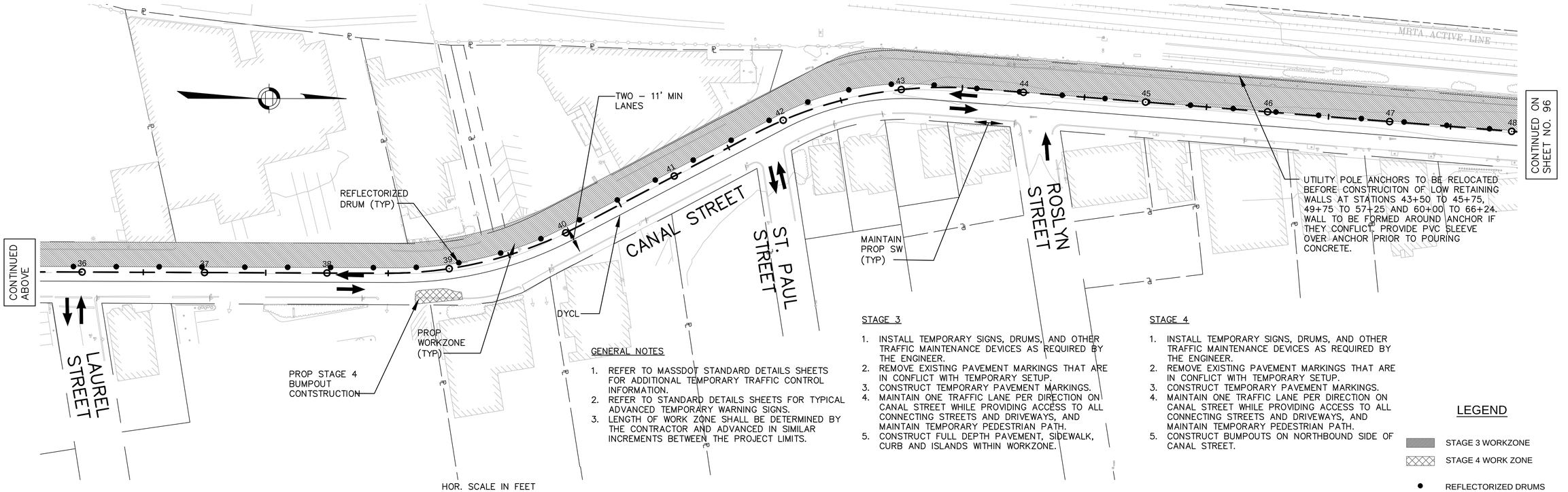


STAGE 3 & 4



STAGE 3 & 4

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5. CONSTRUCT BUMPOUTS ON NORTHBOUND SIDE OF CANAL STREET.

LEGEND

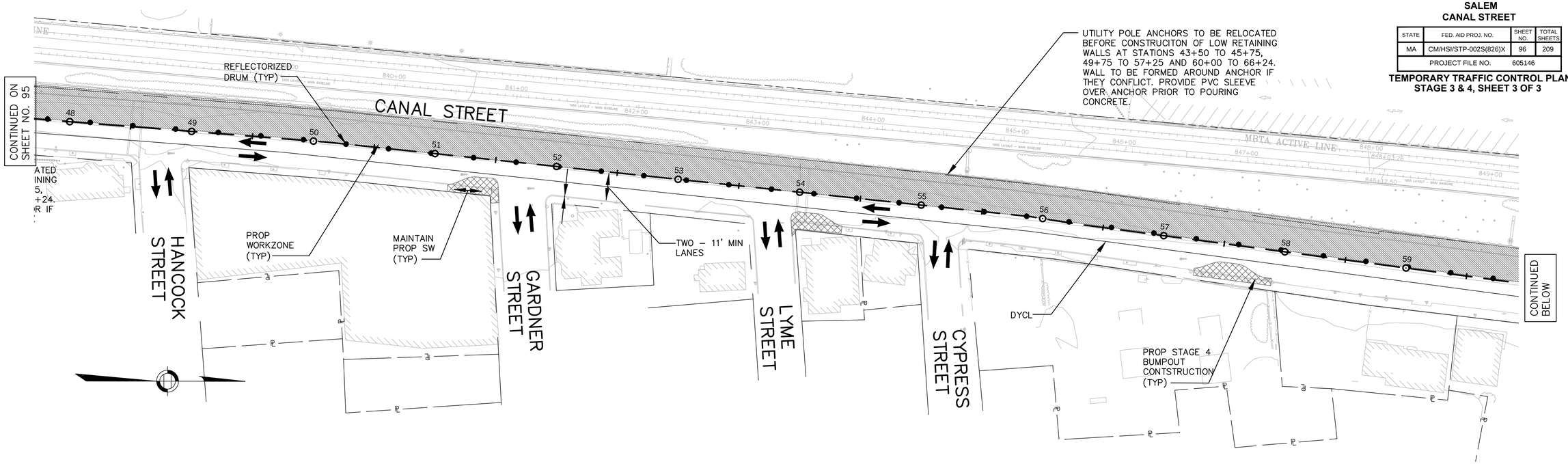
- STAGE 3 WORKZONE
- STAGE 4 WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

SALEM
CANAL STREET

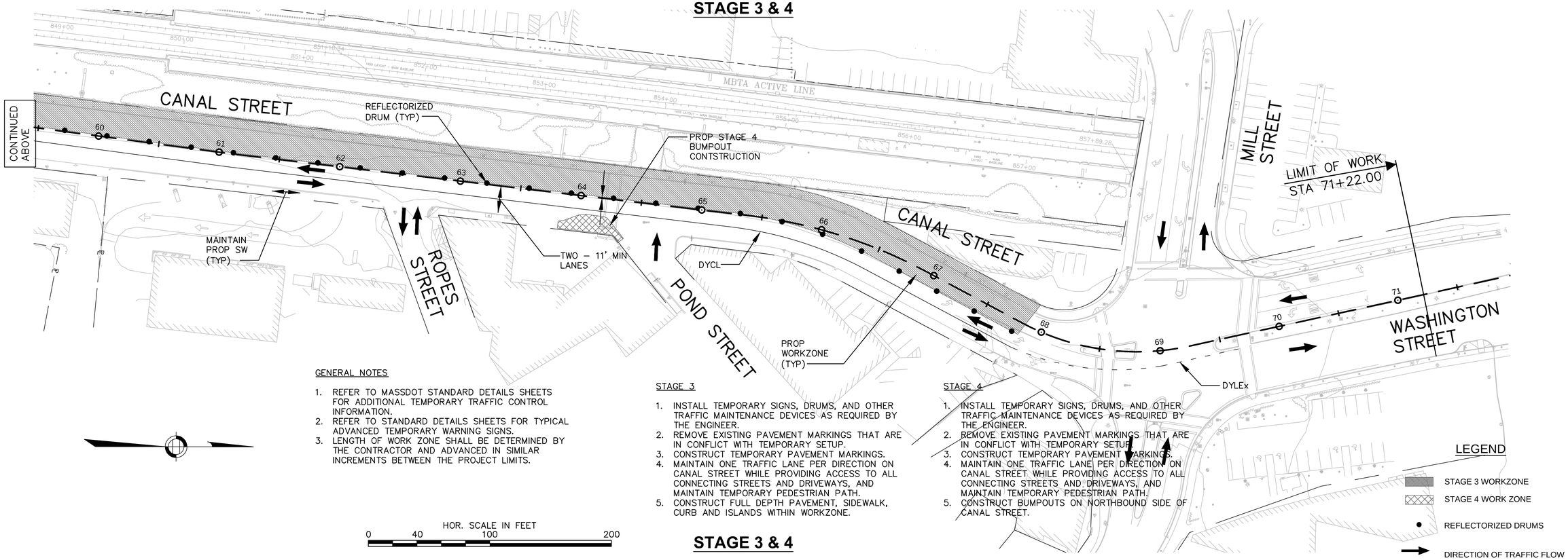
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	96	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STAGE 3 & 4, SHEET 3 OF 3

93692 PS&E-2 TMP.DWG 28-Oct-2015



STAGE 3 & 4



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STAGE 4

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HOR. SCALE IN FEET
0 40 100 200

LEGEND

- STAGE 3 WORKZONE
- STAGE 4 WORK ZONE
- REFLECTORIZED DRUMS
- DIRECTION OF TRAFFIC FLOW

STAGE 3 & 4

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	97	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STANDARD DETAILS

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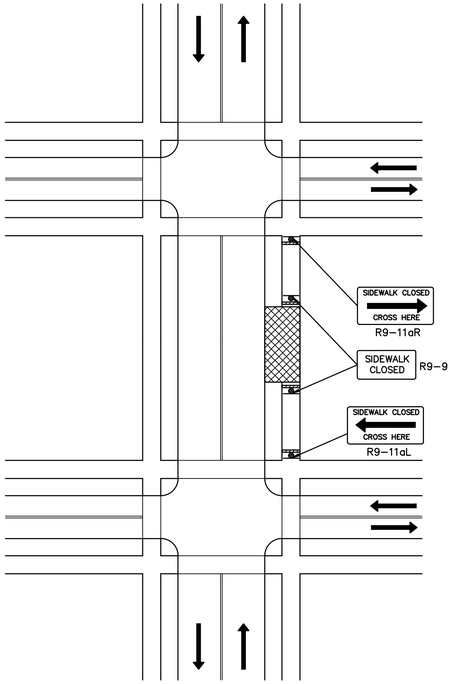
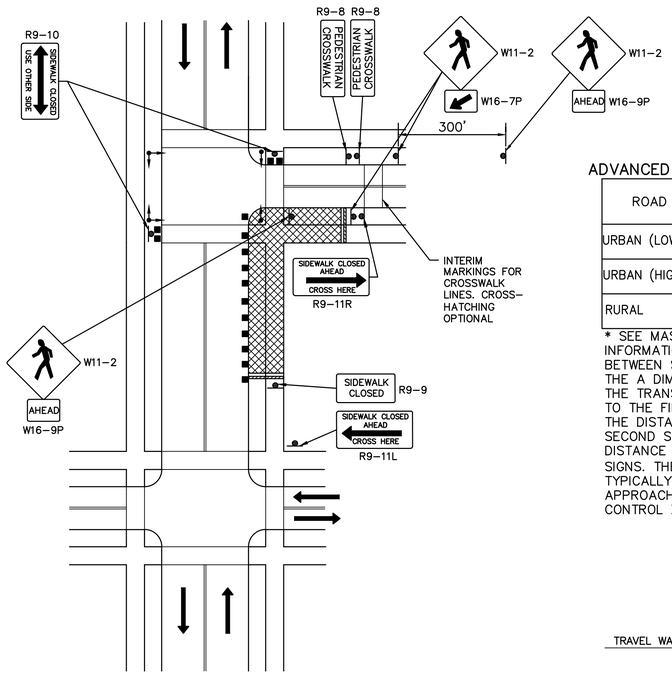


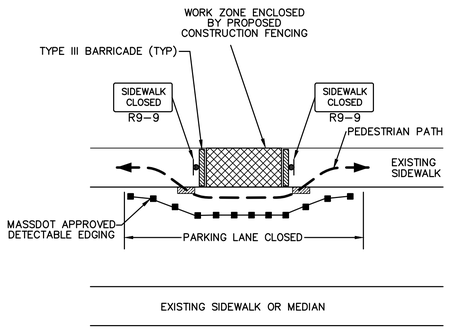
TYPICAL SIDEWALK CLOSURE AND PEDESTRIAN DETOUR PLAN

NOT TO SCALE



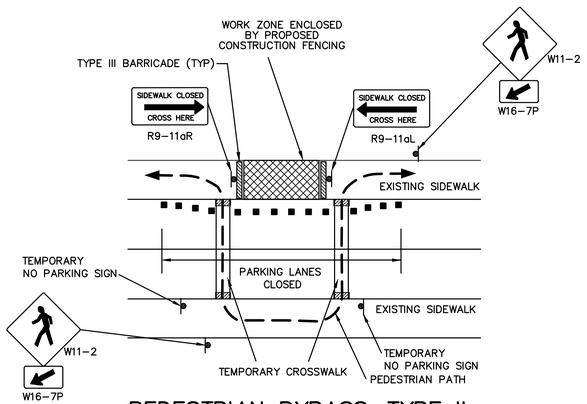
TYPICAL CROSSWALK CLOSURE AND PEDESTRIAN DETOUR PLAN

NOT TO SCALE



PEDESTRIAN BYPASS–TYPE I

NOT TO SCALE



PEDESTRIAN BYPASS–TYPE II

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 AS SHOWN IN PEDESTRIAN BYPASS TYPE 1, 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 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

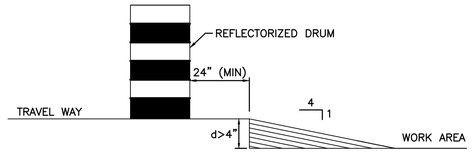
* POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH.

FORMULAS FOR L **

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

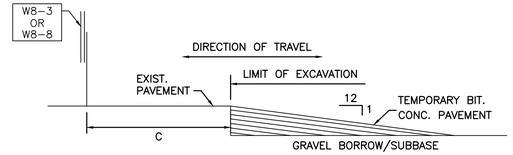
* SPEED CATEGORY TO BE DETERMINED BY STATE HIGHWAY AGENCY IN COOPERATION WITH LOCAL JURISDICTIONS.

** 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.



LATERAL DROP–OFF DETAIL

NOT TO SCALE



LONGITUDINAL DROP–OFF DETAIL

NOT TO SCALE

NOTES:

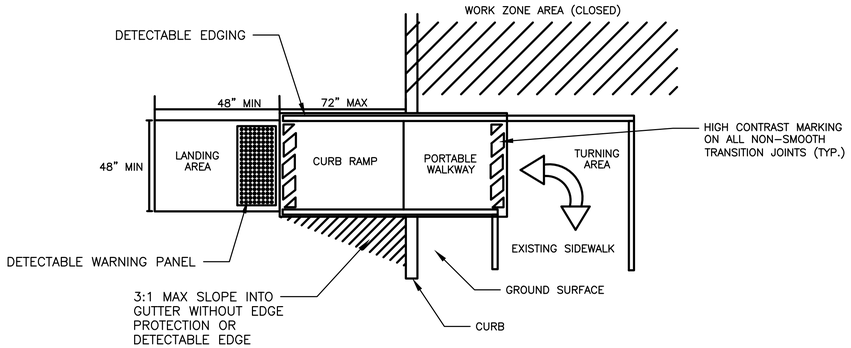
1. ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM WITH THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS.
2. ALL SIGN LEGENDS, BORDERS AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD, INCLUDING ALL REVISIONS.
3. TEMPORARY CONSTRUCTION SIGNING AND ALL 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 FIVE PLASTIC 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. 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.
17. 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.
18. FLOOD LIGHTS SHALL BE PROVIDED TO MARK POLICE DETAIL STATIONS AT NIGHT AS NEEDED.
19. WARNING LIGHTS SHALL BE USED TO MARK CHANNELING DEVICES AT NIGHT ONLY IF APPROVED BY THE ENGINEER.
20. CHANNELING DEVICES ARE TO BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
21. NO SIGNS SHALL BE ATTACHED TO DRUMS OR CONES. ALL SIGNS SHALL BE ATTACHED TO INDEPENDENT SUPPORTS.
22. PAVEMENT MARKINGS WHICH ARE NO LONGER APPLICABLE AND COULD CREATE CONFUSION SHALL BE REMOVED. TEMPORARY PAVEMENT MARKINGS SHALL BE USED AS NECESSARY AND SHALL BE IN PLACE PRIOR TO WORK COMMENCING EACH NIGHT.
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. ALL OPEN TRENCHES SHALL BE COVERED WITH STEEL PLATES WHEN TRENCH WORK IS NOT TAKING PLACE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
26. THE CONTRACTOR SHALL SQUARE OFF FULL WIDTH OF ROADWAY (10:1 SLOPE) AT THE END OF EACH WORK DAY, WHERE APPLICABLE.
27. 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.
27. REFER TO THE LATEST MUTCD AND THE MASSDOT STANDARD DRAWINGS FOR TTCP FOR ADDITIONAL TRAFFIC CONTROL SET UPS, AS REQUIRED.

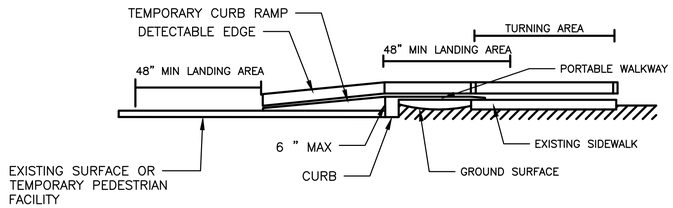
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	98	209
PROJECT FILE NO.	605146		

TEMPORARY TRAFFIC CONTROL PLANS
STANDARD DETAILS

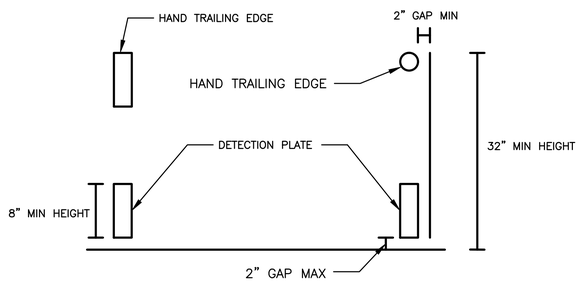
93692 PS&E-2 TMP.DWG 28-Oct-2015





TEMPORARY CURB RAMP–TYPE II

NOT TO SCALE

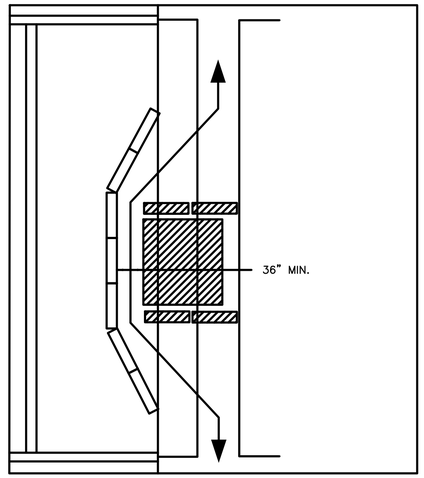


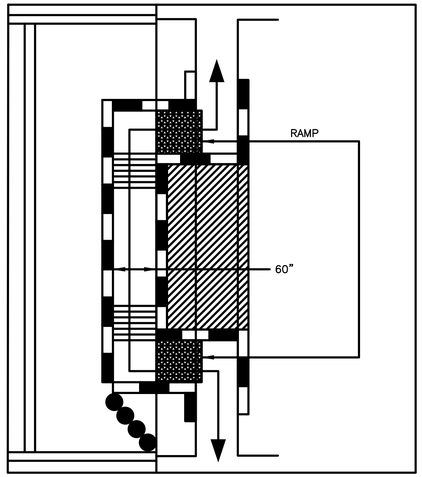
PEDESTRIAN CHANNELIZING DEVICE C.S.

NOT TO SCALE

NOTES

1. THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND TRAILING EDGE AND ITS SUPPORT.
2. A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.





PEDESTRIAN CHANNELIZING DEVICE DETAILS

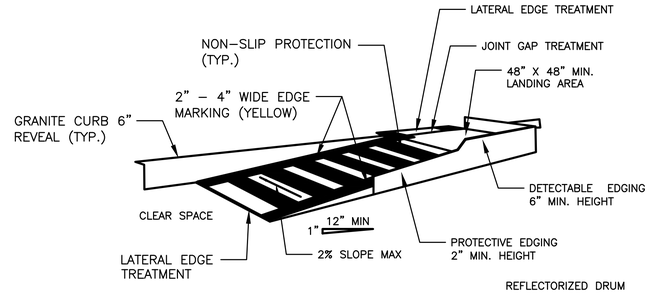
NOT TO SCALE

NOTES

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, TEMPORARY FACILITIES SHALL BE PROVIDED AND THEY SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. A PEDESTRIAN CHANNELIZING DEVICE THAT IS DETECTABLE BY A PERSON WITH A VISUAL DISABILITY TRAVELING WITH THE AID OF A LONG CANE SHALL BE PLACED ACROSS THE FULL WIDTH OF THE CLOSED SIDEWALK.
3. WHEN USED TEMPORARY RAMPS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT (SEE TEMPORARY CURB RAMP DETAILS).
4. THE ALTERNATE PATHWAY SHOULD HAVE A SMOOTH CONTINUOUS HARD SURFACE FOR THE ENTIRE LENGTH OF THE TEMPORARY PEDESTRIAN FACILITY.
5. THE PROTECTIVE REQUIREMENTS OF A TTC SITUATION HAVE PRIORITY IN DETERMINING THE NEED FOR TEMPORARY TRAFFIC BARRIERS AND THEIR USE IN THIS SITUATION SHOULD BE BASED ON ENGINEERING JUDGEMENT.
6. AUDIBLE INFORMATION DEVICES (SEE NOTE BELOW) SHOULD BE CONSIDERED WHERE MIDBLOCK CLOSINGS AND CHANGED CROSSWALK AREAS CAUSE INADEQUATE COMMUNICATION TO BE PROVIDED TO PEDESTRIANS WHO HAVE VISUAL DISABILITIES

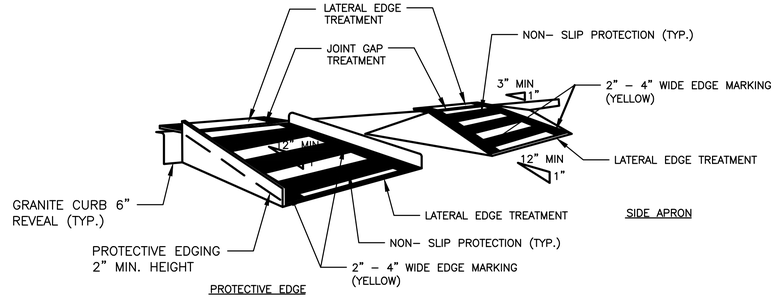
AUDIBLE DEVICES

1. FOR LONG TERM SIDEWALK CLOSURES (AT A MINIMUM OVERNIGHT) A FORM OF SPEECH MESSAGING FOR PEDESTRIANS WITH VISUAL DISABILITIES SHALL BE PROVIDED. AUDIBLE INFORMATION DEVICES SUCH AS DETECTABLE BARRIERS OR BARRICADES AND OTHER PASSIVE PEDESTRIAN ACTIVATION (MOTION ACTIVATED) DEVICES SHOULD BE CONSIDERED FOR THESE CASES.



TEMPORARY CURB RAMP – PARALLEL TO CURB

NOT TO SCALE



TEMPORARY CURB RAMP – PERPENDICULAR TO CURB

NOT TO SCALE

NOTES

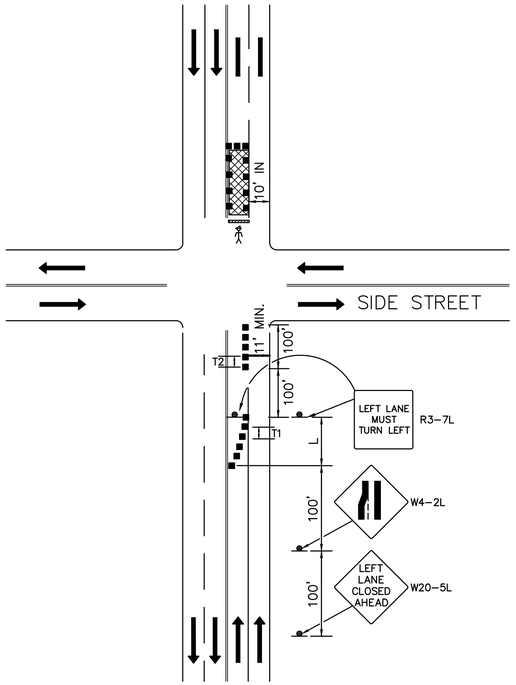
1. CURB RAMPS SHALL BE 60 IN. MINIMUM WIDTH WITH A FIRM, STABLE AND NON–SLIP SURFACE.
2. PROTECTIVE EDGING WITH A 2 IN. MINIMUM HEIGHT SHALL BE INSTALLED WHEN THE CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6 IN. OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN THE CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3 IN. OR MORE.
3. DETECTIBLE EDGING WITH 6 IN. MINIMUM HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
4. CURB RAMPS AND LANDINGS SHOULD HAVE A 1:50 (2%) MAX CROSS–SLOPE
5. CLEAR SPACE OF 48 X 48 IN. MINIMUM SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
6. THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A CONTRASTING COLOR 2 TO 4 IN. WIDE MARKING. THE MARKING IS OPTIONAL WHERE COLOR CONTRASTING EDGING IS USED.
7. WATER FLOW IN THE GUTTER SYSTEM SHALL HAVE MINIMAL RESTRICTION.
8. LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 0.5 IN. WIDTH.
9. CHANGES BETWEEN SURFACE HEIGHTS SHOULD NOT EXCEED 0.5 IN. LATERAL EDGES SHOULD BE VERTICAL UP TO 0.25 IN. HIGH, AND BEVELED AT 1:2 BETWEEN 0.25 IN. AND 0.5 IN. HIGH.

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	99	209
PROJECT FILE NO.	605146		

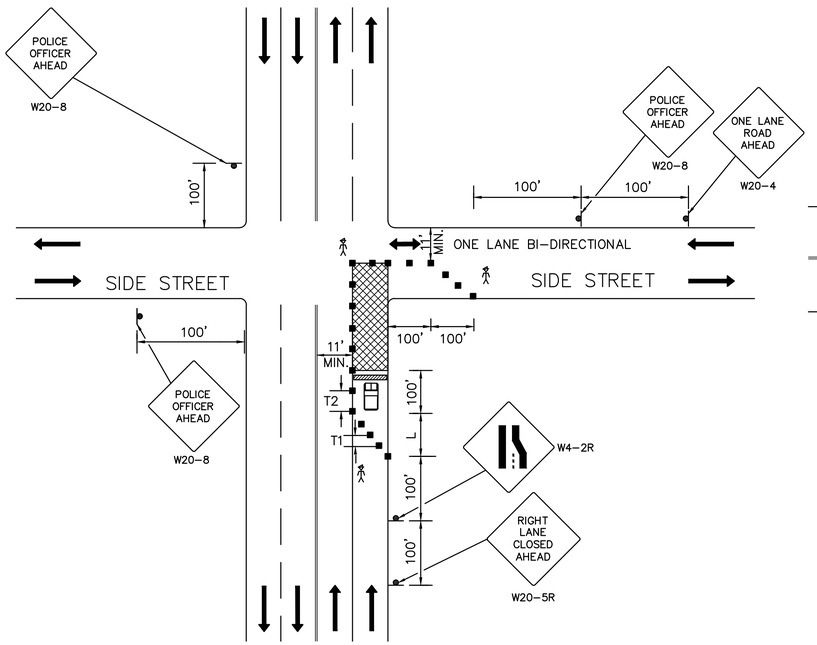
TEMPORARY TRAFFIC CONTROL PLANS
STANDARD DETAILS

93692 PSaE-2 TMP.DWG 28-Oct-2015



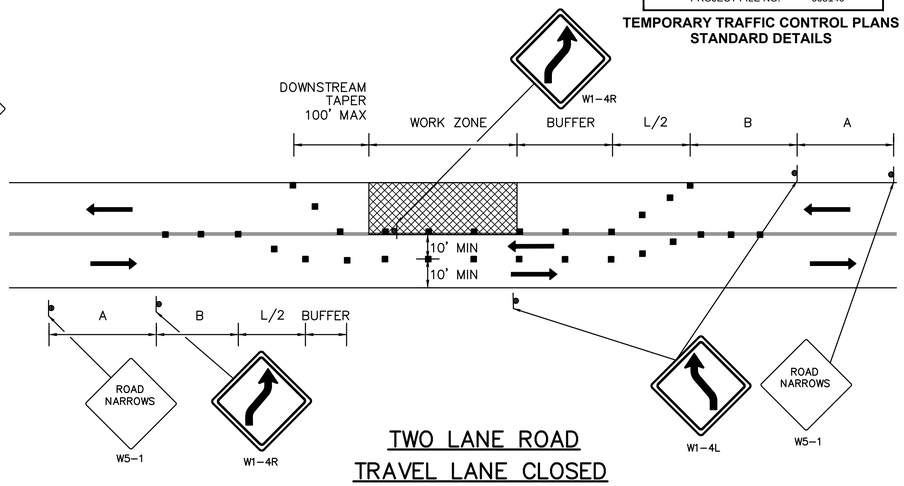
LEFT-HAND LANE CLOSURE ON THE FAR SIDE OF AN INTERSECTION

NOT TO SCALE



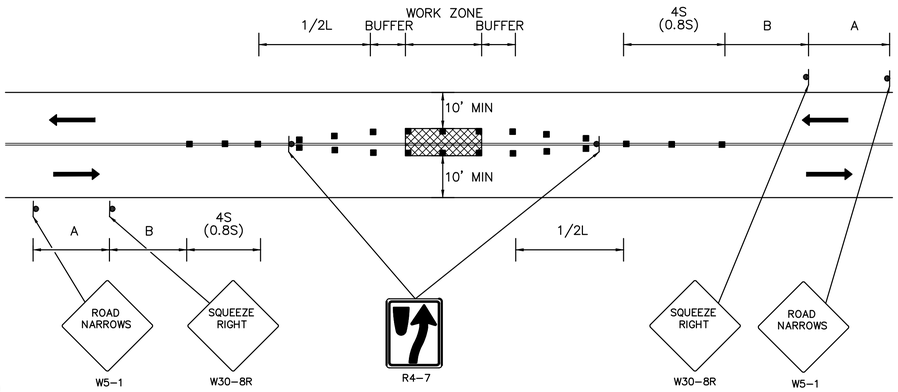
INTERSECTION WORK (BI-DIRECTIONAL)

NOT TO SCALE



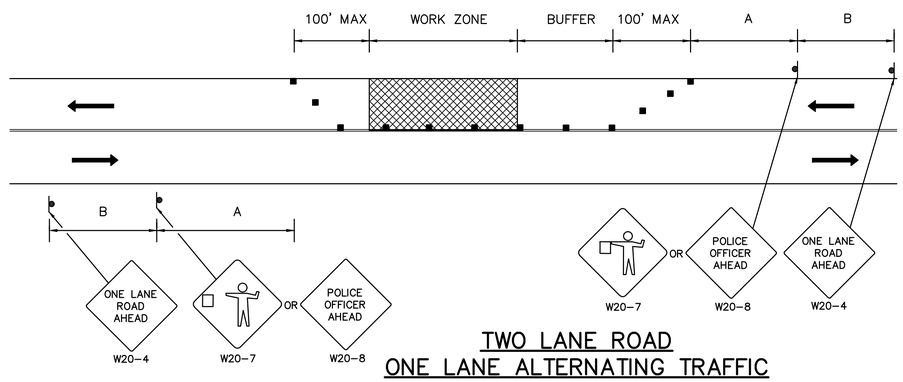
TWO LANE ROAD TRAVEL LANE CLOSED

NOT TO SCALE



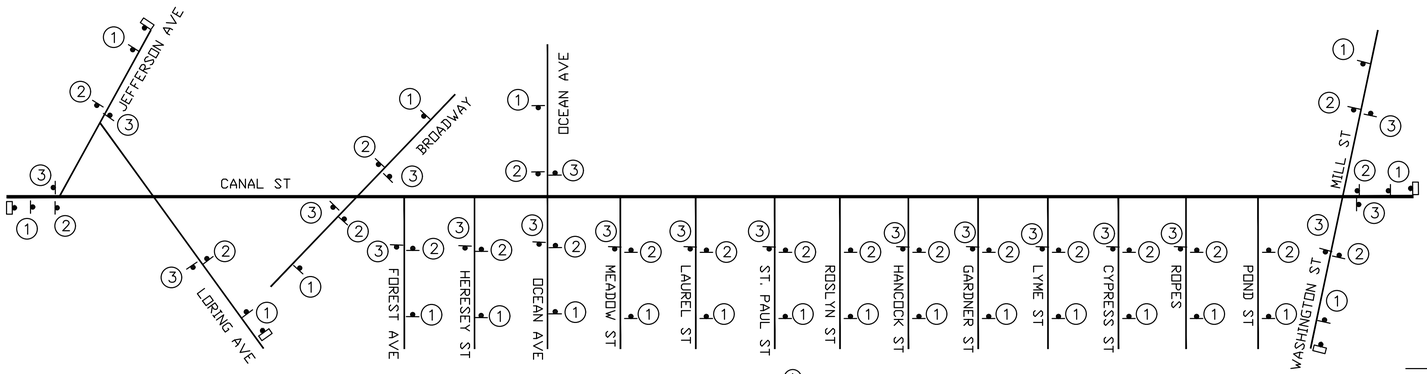
TWO LANE ROAD CENTER OF ROAD CLOSURE

NOT TO SCALE



TWO LANE ROAD ONE LANE ALTERNATING TRAFFIC

NOT TO SCALE



TYPICAL ADVANCED CONSTRUCTION SIGNING

NOT TO SCALE

KEY

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

NOTES FOR ADVANCED CONSTRUCTION SIGNING

EXACT LOCATION OF SIGNS SHOWN ABOVE SHALL BE APPROVED BY THE ENGINEER.*

ADVANCED CONSTRUCTION SIGNS SHALL BE INSTALLED PRIOR TO THE START OF WORK.

R2-10e SIGNS SHALL BE INSTALLED 100' PAST END OF WORK.

*FOR GUIDANCE USE URBAN (LOW SPEED) DISTANCES SHOWN ON TABLE 1.

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	100	209
PROJECT FILE NO.	605146		

CONSTRUCTION SIGN SUMMARY

93692-PS&E-2 CSS.DWG 13-Oct-2015

CONSTRUCTION SIGN SUMMARY

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (IN.)	SIZE OF SIGN HEIGHT (IN.)	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE MKR	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST[1] SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
R2-10a*	48	36	WORK ZONE / SPEEDING FINES DOUBLED	SEE	STANDARDS[2]		21	SEE	STANDARDS[2]		42	12.00	252.00
R2-10e*	48	36	END ROAD WORK / DOUBLE FINES END				19				38	12.00	228.00
R3-7L	30	30	LEFT LANE MUST TURN LEFT				2				2	6.25	12.50
R4-7	24	30					32				32	5.00	160.00
R9-8	36	18	PEDESTRIAN CROSSWALK				4				2 BACK TO BACK	4.50	9.00
R9-9	30	18	SIDEWALK CLOSED				4				4	3.75	15.00
R9-10	48	24	SIDEWALK CLOSED / USE OTHER SIDE				17				34	8.00	136.00
R9-11L	48	24	SIDEWALK CLOSED AHEAD / CROSS HERE				2				2	8.00	16.00
R9-11R	48	24	SIDEWALK CLOSED AHEAD / CROSS HERE				2				2	8.00	16.00
R9-11aL	48	24	SIDEWALK CLOSED / CROSS HERE				2				2	8.00	16.00
R9-11aR	48	24	SIDEWALK CLOSED / CROSS HERE				2				2	8.00	16.00
W1-4L	30	30					2				4	6.25	12.50
W1-4R	30	30					2				4	6.25	12.50
W4-2L	36	36					3				2	9.00	27.00
W4-2R	36	36					3				2	9.00	27.00
W5-1	36	36	ROAD NARROWS	↓	↓	↓	3	↓	↓	↓	3	9.00	27.00

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (IN.)	SIZE OF SIGN HEIGHT (IN.)	TEXT	TEXT DIMENSIONS (INCHES) LETTER HEIGHT	TEXT DIMENSIONS (INCHES) VERTICAL SPACING	TEXT DIMENSIONS (INCHES) ARROW RTE MKR	NUMBER OF SIGNS REQUIRED	COLOR BACKGROUND	COLOR LEGEND	COLOR BORDER	POST[1] SIZE AND NUMBER REQUIRED	UNIT AREA IN SQUARE FEET	TOTAL AREA IN SQUARE FEET
W11-2	30	30		SEE	STANDARDS[2]		4	SEE	STANDARDS[2]		4	6.25	25.00
W13-1*	18	18	XX M.P.H.				22				0 22 MTD W/W20-1	2.25	49.50
W16-7p	24	12					2				0 2 MTD W/ W11-2	2.00	4.00
W16-9p	24	12	AHEAD				2				0 4 MTD W/ W11-2	2.00	4.00
W20-1	36	36	ROAD WORK AHEAD				22				22	9.00	198.00
W20-4	36	36	ONE LANE ROAD AHEAD				2				2	9.00	18.00
W20-5L	36	36	LEFT LANE CLOSED AHEAD				2				2	9.00	18.00
W20-5R	36	36	RIGHT LANE CLOSED AHEAD				2				2	9.00	18.00
W20-7	36	36					3				3	9.00	27.00
W20-8*	36	36	POLICE OFFICER AHEAD				3				3	9.00	27.00
W20-8R*	36	36	SQUEEZE RIGHT	↓	↓	↓	3	↓	↓	↓	3	9.00	27.00

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.

SALEM
CANAL STREET

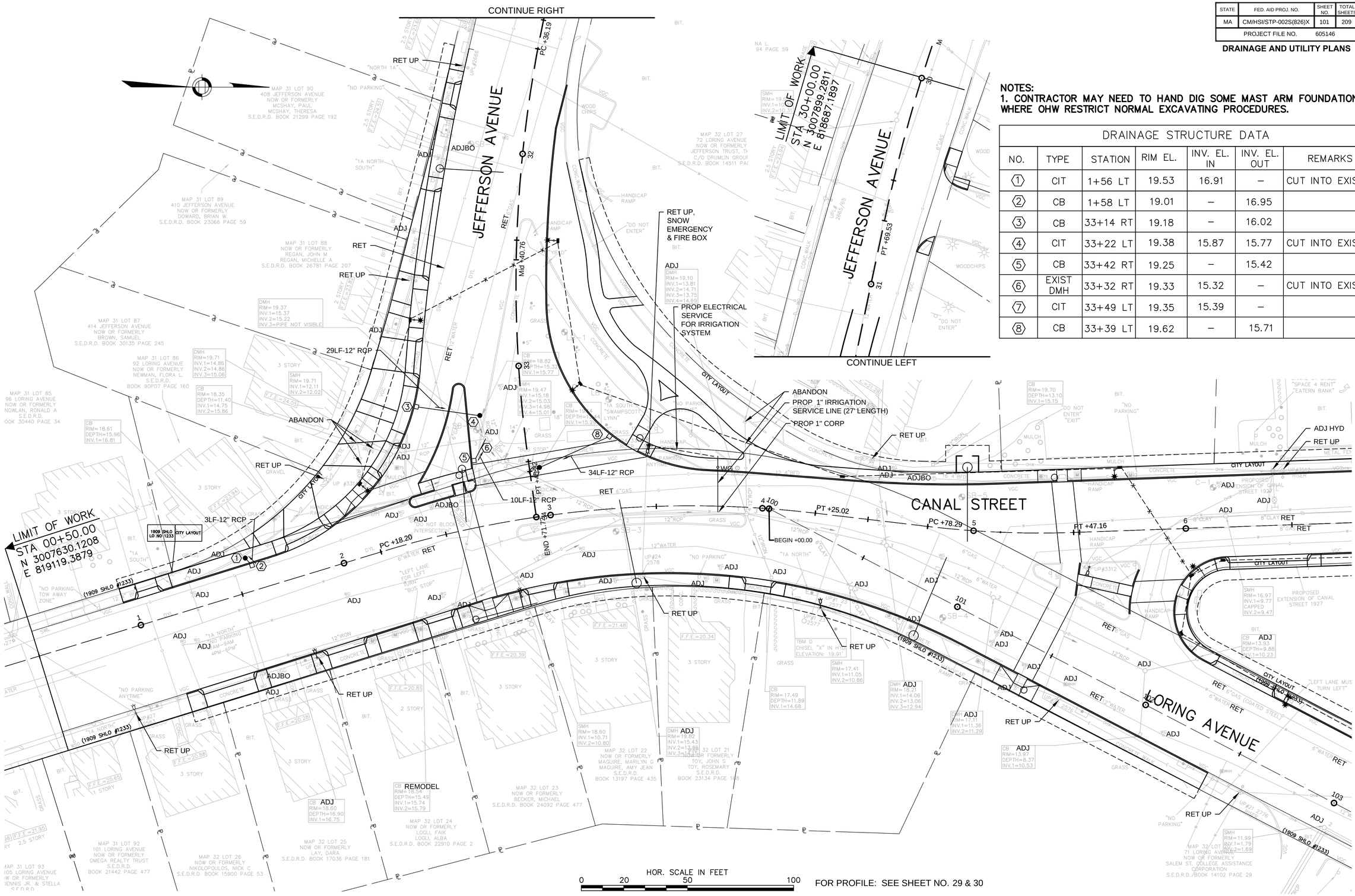
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	101	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

NOTES:
1. CONTRACTOR MAY NEED TO HAND DIG SOME MAST ARM FOUNDATIONS WHERE OHW RESTRICT NORMAL EXCAVATING PROCEDURES.

DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
①	CIT	1+56 LT	19.53	16.91	–	CUT INTO EXIST CB
②	CB	1+58 LT	19.01	–	16.95	
③	CB	33+14 RT	19.18	–	16.02	
④	CIT	33+22 LT	19.38	15.87	15.77	CUT INTO EXIST CB
⑤	CB	33+42 RT	19.25	–	15.42	
⑥	EXIST DMH	33+32 RT	19.33	15.32	–	CUT INTO EXIST DMH
⑦	CIT	33+49 LT	19.35	15.39	–	
⑧	CB	33+39 LT	19.62	–	15.71	



CONTINUED ON SHEET NO. 102

FOR PROFILE: SEE SHEET NO. 29 & 30

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93692 PS&E-2 DRAIN & UTIL.DWG 16-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	102	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

16-Oct-2015

93692 PS&E-2 DRAIN & UTIL.DWG

CONTINUED ON SHEET NO. 101

CONTINUED ON SHEET NO. 103

CANAL STREET

KIMBALL ROAD

LORING AVENUE

MAP 32 LOT 30 NOW OR FORMERLY ESTHER REALTY INC S.E.D.R.D. BOOK 14511 PAGE 317

MAP 32 LOT 31 NOW OR FORMERLY ESTHER REALTY INC S.E.D.R.D. BOOK 14511 PAGE 317

MAP 32 LOT 33 NOW OR FORMERLY JEDS REALTY TRUST BORNSTEIN, STEVEN M TR 290 CANAL STREET S.E.D.R.D. BOOK 15004 PAGE 510 AREA = 0.353 ACRES

MAP 32 LOT 36 NOW OR FORMERLY J A B TRUST BERTINI, JOHN A TR 286 CANAL STREET S.E.D.R.D. BOOK 8720 PAGE 485 AREA = 0.205 ACRES

MAP 32 LOT 102 NOW OR FORMERLY J A B TRUST BERTINI, JOHN A TR S.E.D.R.D. BOOK 8720 PAGE 485

MAP 23 LOT 144 NOW OR FORMERLY ESTHER REALTY INC 282 REAR CANAL S.E.D.R.D. BOOK 6409 PAGE 587 AREA = 9.350 ACRES

MAP 32 LOT 65 NOW OR FORMERLY CAPPPUCCIO, BERTHA L S.E.D.R.D. BOOK 22924 PAGE 580

MAP 32 LOT 66 NOW OR FORMERLY SALEM ST. UNIVERSITY ASSISTANT CORPORATION S.E.D.R.D. BOOK 14102 PAGE 29

MAP 32 LOT 71 LORING AVENUE NOW OR FORMERLY SALEM ST. COLLEGE ASSISTANCE CORPORATION S.E.D.R.D./BOOK 14102 PAGE 29

"LORING PLAZA" "AUTO ZONE" "EAST COAST MOTOR SPORTS" "CANAL ST CYCLE" "SPACE 4 RENT" "EATERN BANK"

PROPOSED EXTENSION OF CANAL STREET 1927

PROP HYDRANT, UNPLUG 6" DI PIPE

PROP 8' - 6" DI PIPE

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

PROP ELECTR (SEE LIGHTIN

CITY LAYOUT

CITY LAYOUT 1909 SHLO LO NO 1233

(1909 SHLO #1233)

PI +46.37

PI +05.64

PC +70.00

Mid +60.46

PT +50.0

LIMIT OF WORK
STA 105+61
N 3008453.7695
E 819335.3326

CONTINUE BELOW LEFT

CONTINUE RIGHT

NOTES:

1. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978-490-9236 (CELL).

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 31

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	103	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

CONTINUED ON SHEET NO. 102

CONTINUED ON SHEET NO. 104

CANAL STREET

TULIP STREET

ROSE STREET

PI +57.35

PI +75.24

BEGIN +00.00

MAP 23 LOT 144
NOW OR FORMERLY
ESTHER REALTY INC
282 REAR CANAL
S.E.D.R.D.
BOOK 6409 PAGE 588
AREA = 9.350 ACRES

MAP 32 LOT 37
NOW OR FORMERLY
ESTHER REALTY INC
282 CANAL STREET
S.E.D.R.D. BOOK 6409 PAGE 588
AREA = 0.363 ACRES

MAP 32 LOT 38
NOW OR FORMERLY
TWO HUNDRED SIXTY SIX CANAL STREET TRUST
BERTINI, JOHN A TR
BERTINI, FRANK C TR
BERTINI, ESTHER TR
266 CANAL STREET
S.E.D.R.D. BOOK 10716 PAGE 430
AREA = 0.304 ACRES

MAP 32 LOT 39
NOW OR FORMERLY
GARDNER MATTRESS CORP
250-254 CANAL STREET
S.E.D.R.D. BOOK 23951 PAGE 484
AREA = 0.509 ACRES

MAP 32 LOT 227
267 CANAL STREET
NOW OR FORMERLY
CITY OF SALEM
S.E.D.R.D.
BOOK 13827 PAGE 596
AREA = 1.021 ACRES

MAP 32 LOT 62
SALEM STATE COLLEGE
ASSISTANCE CORP.
S.E.D.R.D. BOOK 27260 PAGE 87

10LF-12" RCP

9LF-12" RCP

2LF-12" RCP

PROP FLASHING WARNING BEACON

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

RET UP

ADJ

ADJBO

RET

CITY LAYOUT

REMODEL

"GARDENER MATTRESS CORPORATION"

PROPOSED EXTENSION OF CANAL STREET 1927

"SALEM BIKE PATH"

"ROSE STREET"

"NO PARKING ANY TIME"

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
⟨9⟩	DMH	13+17 RT	8.63	3.96	3.96	CONSTRUCT MANHOLE OVER EXIST. PIPE
⟨10⟩	GI	13+30 RT	8.46	–	4.16	
⟨11⟩	CB	13+30 LT	8.46	–	5.15	
⟨12⟩	CIT	13+44 LT	8.46	5.05(CB3)	4.95 (EXIST.)	CUT INTO EXIST. CB, ADJ PROP MH COVER TO FALL WITHIN LEFT SIDE RAMP BEHIND CURB
⟨5⟩	CB	13+30 RT	8.64	4.00	4.00	INSTALL MANHOLE COVER

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 32

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93692 PS&E-2 DRAIN & UTIL.DWG 27-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	104	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

16-Oct-2015

93692 PS&E-2 DRAIN & UTIL.DWG

CONTINUED ON SHEET NO. 103

CONTINUED ON SHEET NO. 105

TULIP STREET

BROADWAY

CANAL STREET

MAP 32 LOT 42
NOW OR FORMERLY
ABP REALTY TRUST
PELLETIER, DAVID TR
S.E.D.R.D. BOOK 14809 PAGE 185
PLAN 301 OF 1959

MAP 32 LOT 44
NOW OR FORMERLY
SU, ANNA
88 BROADWAY
S.E.D.R.D.
BOOK 14319 PAGE 34
AREA = 0.072 ACRES

MAP 32 LOT 43
NOW OR FORMERLY
SU, ANNA
90 BROADWAY
S.E.D.R.D. BOOK 15854 PAGE 605
AREA = 0.100 ACRES

MAP 32 LOT 45
NOW OR FORMERLY
CORREIA, ANA
CORREIA, WILLIAM
S.E.D.R.D. BOOK
28441 PAGE 501

MAP 32 LOT 46
NOW OR FORMERLY
MACKEY, FLORENCE M
MACKEY, HERBERT L JR
230 CANAL STREET
S.E.D.R.D.
BOOK 5488 PAGE 626
AREA = 0.1143 ACRES

MAP 32 LOT 423
NOW OR FORMERLY
MACKEY, ELAINE M
228 CANAL STREET
S.E.D.R.D.
BOOK 18787 PAGE 436
AREA = 0.125 ACRES

MAP 32 LOT 41
NOW OR FORMERLY
DUBE, COLLETTE
236 CANAL STREET
S.E.D.R.D. BOOK 18109
PAGE 552
AREA = 0.155 ACRES

MAP 32 LOT 48
NOW OR FORMERLY
GOYETTE, PAUL M
GOYETTE, ROSE
224 1/2 CANAL STREET
S.E.D.R.D. BOOK 15903 PAGE 175
AREA = 0.1451 ACRES

MAP 32 LOT 59
NOW OR FORMERLY
LIMA, PETRONIO
LIMA, GIOVANIA
S.E.D.R.D. BOOK 18865 PAGE 284

MAP 32 LOT 61
NOW OR FORMERLY
LAM, QUANG TICH
LAM, DE S
S.E.D.R.D. BOOK 20143 PAGE 387

MAP 32 LOT 58
NOW OR FORMERLY
CORNELL REALTY TRUST
S.E.D.R.D. BOOK 26835 PAGE 136

MAP 32 LOT 124
NOW OR FORMERLY
MASSACHUSETTS THE COMMONWEA
S.E.D.R.D. BOOK 5574 PAGE

LINE OF EASEMENT

1927 CITY LAYOUT BK 2745 PLAN 573

PROP 1" CORP

PROP 1" IRRIGATION SERVICE LINE (8' LENGTH)

PROP ELECTRICAL SERVICE FOR IRRIGATION SYSTEM

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

PROPOSED EXTENSION OF CANAL STREET 1927

REMODEL

13LF-12" RCP

"NO PARKING ANYTIME" "TOW AWAY ZONE"

"NOTICE ONLY AUTHORIZED VEHICLES WITH PROPER DECAL ARE PREMITTED TO PARK IN THIS AREA.

PI +42.07

PI +04.39

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
15	GI	21+35 RT	15.46	–	12.75	
16	REMODEL	21+52 RT	16.05	12.62	12.62 (EXIST.)	CUT INTO EXIST. CB, R&S FRAME & GRATE, INSTALL MH COVER

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 33

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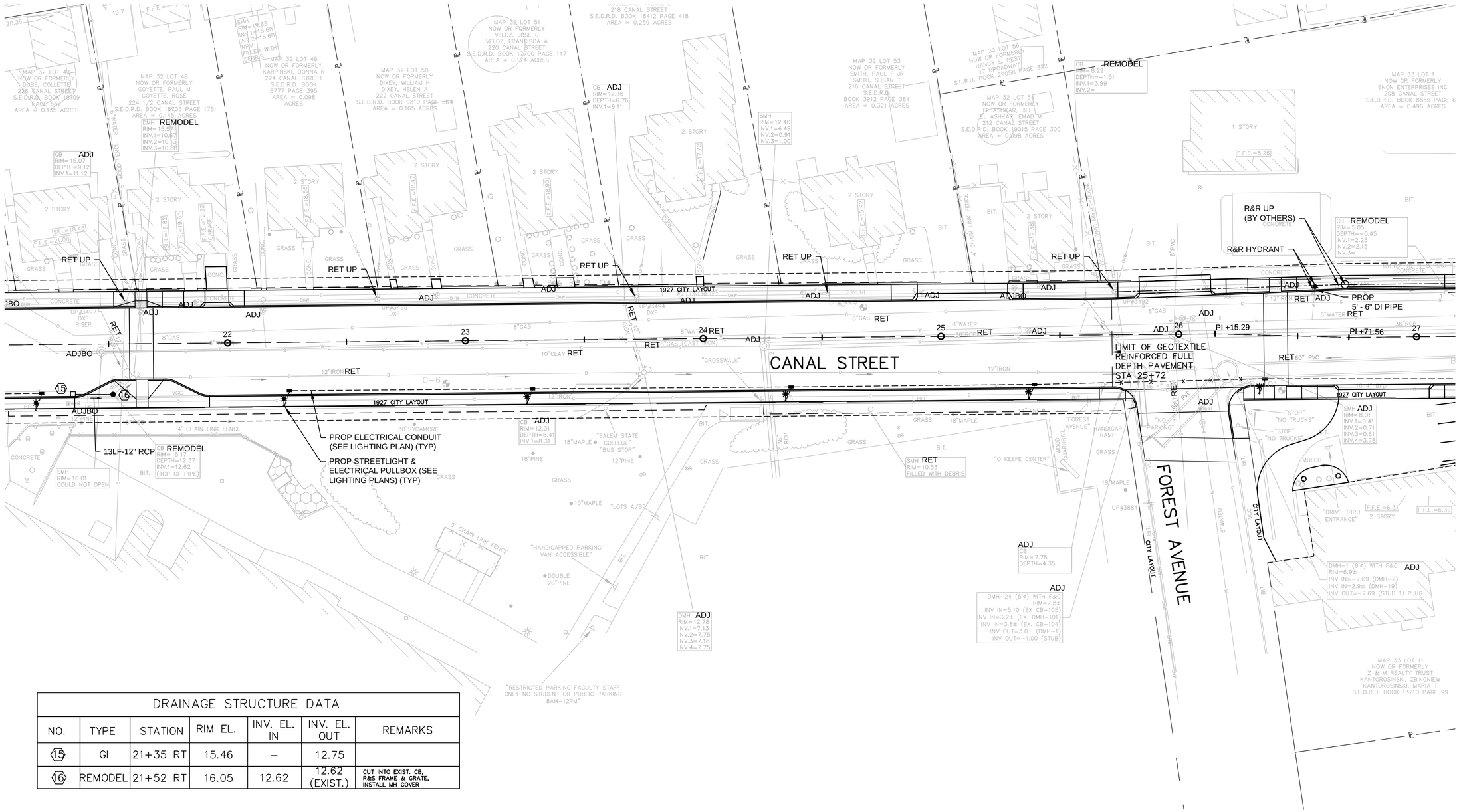
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	105	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

93692 PS&E-2 DRAIN & UTIL.DWG 16-Oct-2015



DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
15	GI	21+35 RT	15.46	–	12.75	
16	REMODEL	21+52 RT	16.05	12.62	12.62 (EXIST.)	CUT INTO EXIST. CB, R&S FRAME & GRATE, INSTALL MH COVER

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 34

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	106	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

93692 PS&E-2 DRAIN & UTIL.DWG 16-Oct-2015

CONTINUED ON SHEET NO. 105

CONTINUED ON SHEET NO. 107

CANAL STREET

BROADWAY

HERSEY AVENUE

OCEAN AVENUE

MAP 33 LOT 1
NOW OR FORMERLY
ENON ENTERPRISES INC
208 CANAL STREET
S.E.D.R.D. BOOK 8859 PAGE 67
AREA = 0.496 ACRES

MAP 33 LOT 3
NOW OR FORMERLY
MCDONALDS CORPORATION
150 CANAL STREET
S.E.D.R.D. BOOK 6085 PAGE 492
AREA = 0.933 ACRES

MAP 33 LOT 5
NOW OR FORMERLY
144 CANAL STREET NOM REALTY TRUST,
C/O SNAKEBITE REALTY TRUST
S.E.D.R.D. BOOK 28431 PAGE 32

MAP 33 LOT 62
NOW OR FORMERLY
ST PIERRE, DONALD J
ST PIERRE, PAULINE M
101 OCEAN AVENUE
S.E.D.R.D. BOOK 5217 PAGE 500
AREA = 0.107 ACRES

MAP 33 LOT 63
NOW OR FORMERLY
BEST PETROLEUM NET LEASE LLC
S.E.D.R.D. BOOK 22272 PAGE 16

MAP 33 LOT 64
NOW OR FORMERLY
ODONNELL, PATRICK
TOWNE, WANDA L
S.E.D.R.D. BOOK 13957 PAGE 582

MAP 33 LOT 36
NOW OR FORMERLY
N & C REALTY TRUST
LAGONAKIS, NONDAS TR
LINARDOS, COSTAS TR
151 CANAL STREET
S.E.D.R.D. BOOK 10644 PAGE 29
AREA = 0.216 ACRES

R&R UP (BY OTHERS)
R&R HYDRANT
REMODEL
PROP 5' - 6" DI PIPE
APPROX LOCATION OF BURIED DMH
REM EXIST PIPE
R&R UP (BY OTHERS)
204LF-12" RCP
R&R UP (BY OTHERS)
4LF-12" RCP
ABANDON
REM EXIST CB, CONNECT EXIST PIPES
R&R CURB, IN PLACE
2LF-12" RCP
109LF-24" RCP
R&R UP (BY OTHERS)
REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & GRATE RIM=5.83
R&R CURB
4LF-12" RCP
8LF-24" RCP
R&R UP (BY OTHERS)
20LF-24" RCP
4LF-12" RCP
ABANDON
REM EXIST CB, CONNECT EXIST PIPES
ADJ MONITORING WELL
LIMIT OF GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT STA. 31+65
PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
RET UP
RET UP
R&R UP (BY OTHERS)
16LF-12" RCP
REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & COVER RIM=6.47

PI +15.29
PI +71.56
PI +71.48
PC +08.32
PT +49.85
PC +96.51
PT +20.68

1927 CITY LAYOUT
CITY LAYOUT
1927 CITY LAYOUT BK 2745 PLN 573 CITY LAYOUT

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
17	CB	28+93 LT	3.73	–	1.85	
18	DMH	28+90 LT	4.40	1.80	1.80	CONSTR OVER EXIST PIPE
19	CB	29+22 LT	4.50	1.76	1.76	
20	DMH	30+27 LT	5.30	2.48	2.48	CONSTR OVER EXIST PIPE
21	CB	30+24 LT	4.20	–	1.30	
22	CB	30+34 LT	5.02	1.21	1.21	
23	EXIST DMH	30+56 LT	5.40	1.12	1.12	CUT INTO EXIST. DMH
24	CIT	30+72 RT	5.95	2.49	2.49	CUT INTO EXIST. CB
25	CB	30+76 RT	5.55	–	2.57	

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 35

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	107	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

CONTINUED ON SHEET NO. 106

CONTINUED ON SHEET NO. 108

CANAL STREET

MEADOW STREET

LAUREL STREET

REM PLUG TO DMH-17

REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & COVER RIM=6.52

REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & GRATE RIM=6.30

REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & COVER RIM=7.08

REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & COVER RIM=6.71

REM STEEL PLATE AND RAISE TO GRADE WITH FRAME & GRATE, ADJ TO CURB LINE RIM=6.30

LIMIT OF GEOTEXTILE REINFORCED FULL DEPTH PAVEMENT STA. 31+65

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

PROP 25' - 6" DI PIPE

REM PLUG TO CB-7

RET UP

R&R HYDRANT

R&R UP (BY OTHERS)

MAP 33 LOT 5
NOW OR FORMERLY
144 CANAL STREET NOM REALTY TRUST,
C/O SNAKEBITE REALTY TRUST
S.E.D.R.D. BOOK 28431 PAGE 32

MAP 33 LOT 6
NOW OR FORMERLY
142 CANAL STREET REALTY LLC
S.E.D.R.D. BOOK 17679 PAGE 187
PLAN BK 190 PLAN 39

MAP 33 LOT 8
NOW OR FORMERLY
134 CANAL STREET REALTY LLC
S.E.D.R.D. BOOK 17679 PAGE 185

MAP 33 LOT 83
NOW OR FORMERLY
PAUL H. MORNEAU
S.E.D.R.D. BOOK
70587 PAGE 263

MAP 33 LOT 84
NOW OR FORMERLY
CANAL REALTY TRUST, THE
HOLTJER, CORNELIS TR
ESER, SUZANNE
S.E.D.R.D. BOOK 13025 PAGE 74

MAP 33 LOT 85
NOW OR FORMERLY
135 CANAL STREET REALTY TRUST
VULAJ, LUIGJ TR
S.E.D.R.D. BOOK 18835 PAGE 192

MAP 33 LOT 104
NOW OR FORMERLY
127 CANAL STREET REALTY LLC
S.E.D.R.D. BOOK 17679 PAGE 183

MAP 33 LOT 63
NOW OR FORMERLY
BEST PETROLEUM NET LEASE LLC
S.E.D.R.D. BOOK 22272 PAGE 16

MAP 33 LOT 64
NOW OR FORMERLY
ODONNELL, PATRICK
TOWNE, WANDA L
S.E.D.R.D. BOOK 13957 PAGE 582

f.k.a. JEFFREY BROTHERS INC.

CALIFORNIA CONCRETE REAL TRUST LLC

CALIFORNIA LIVE OIL CO.

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 36

93692 PS&E-2 DRAIN & UTIL.DWG 16-Oct-2015

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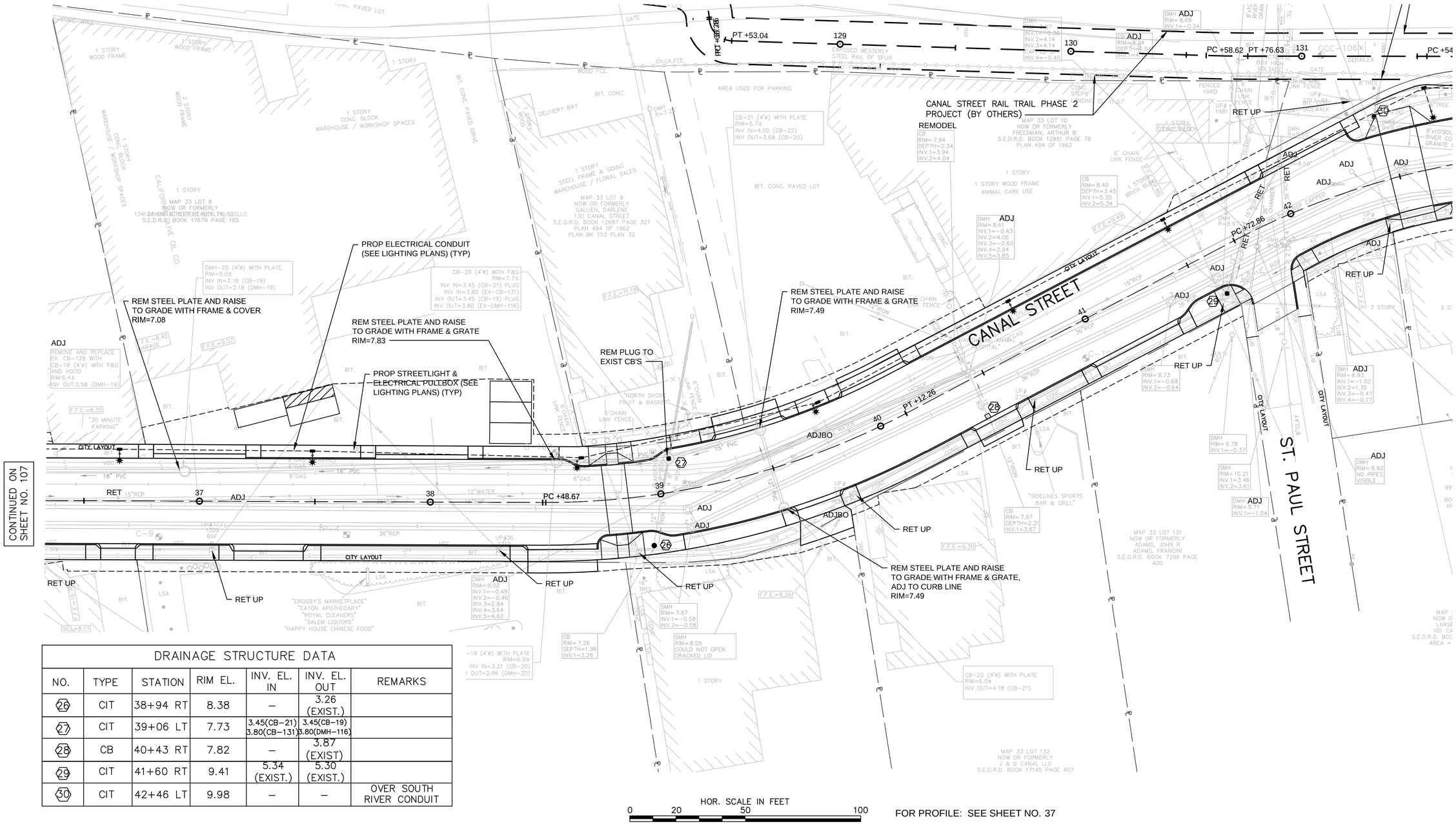
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	108	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS



DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
26	CIT	38+94 RT	8.38	–	3.26 (EXIST.)	
27	CIT	39+06 LT	7.73	3.45(CB–21) 3.80(CB–131)	3.45(CB–19) 3.80(DMH–116)	
28	CB	40+43 RT	7.82	–	3.87 (EXIST)	
29	CIT	41+60 RT	9.41	5.34 (EXIST.)	5.30 (EXIST.)	
30	CIT	42+46 LT	9.98	–	–	OVER SOUTH RIVER CONDUIT

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93692 PS&E-2 DRAIN & UTIL.DWG 18-Dec-2015

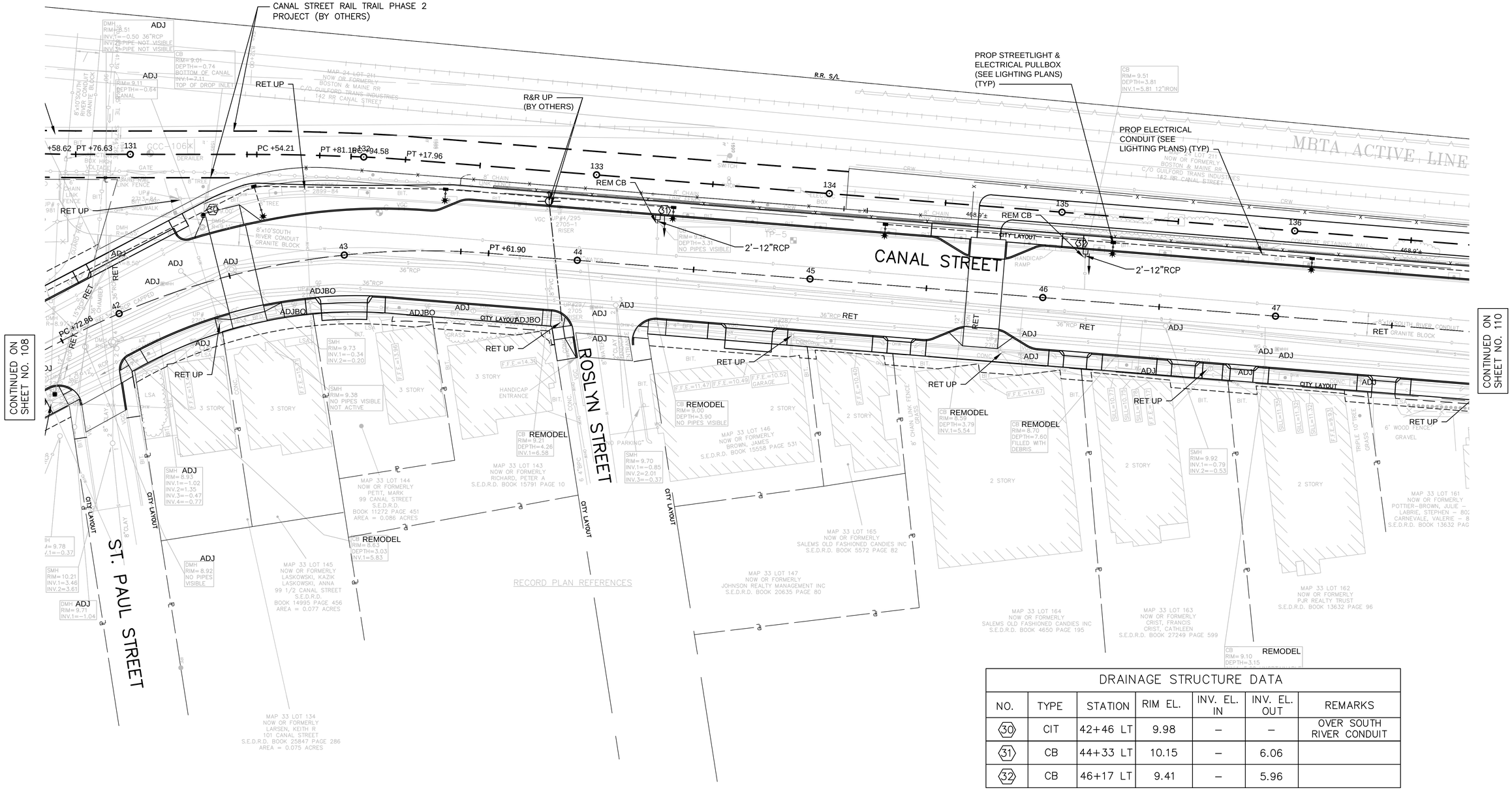
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	109	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

18-Dec-2015

93692 PS&E-2 DRAIN & UTIL.DWG



DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
30	CIT	42+46 LT	9.98	–	–	OVER SOUTH RIVER CONDUIT
31	CB	44+33 LT	10.15	–	6.06	
32	CB	46+17 LT	9.41	–	5.96	

FOR PROFILE: SEE SHEET NO. 38 & 44

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	110	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

CONTINUED ON SHEET NO. 109

CONTINUED ON SHEET NO. 111

MBTA ACTIVE LINE

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

R&R UP (BY OTHERS)

R.R. S/L

1955 LAYOUT – MAIN BASELINE

839+00 840+00 841+00 842+00

CANAL STREET

HANCOCK STREET

GARDNER STREET

CITY LAYOUT

REM CB

2'–12"RCP

30LF-12" RCP

RET UP

RET GRANITE BLOCK

REMODEL

MAP 33 LOT 161
NOW OR FORMERLY
POTTER–BROWN, JULIE – 801
LABRIE, STEPHEN – 802
CARNEVALE, VALERIE – 803
S.E.D.R.D. BOOK 13632 PAGE 96

MAP 33 LOT 162
NOW OR FORMERLY
PJR REALTY TRUST
S.E.D.R.D. BOOK 13632 PAGE 96

MAP 33 LOT 201
NOW OR FORMERLY
SALCO II INC
S.E.D.R.D. BOOK 20422 PAGE 284

MAP 34 LOT 1
NOW OR FORMERLY
PRETEROTI, ANTHONY B – 801
WILLIAMS, SUZANNE L – 802
S.E.D.R.D. BOOK 24731 PAGE 331

MAP 24 LOT 211
NOW OR FORMERLY
BOSTON & MAINE RR
C/O GUILFORD TRANS INDUSTRIES
142 RR CANAL STREET

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
33	CB	50+20 LT	10.40	–	5.86	
34	CB	52+05 LT	10.60	–	4.85	

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 39 & 45

16-Oct-2015

93692 PS&E-2 DRAIN & UTIL.DWG

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	111	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

16-Oct-2015

93692 PS&E-2 DRAIN & UTIL.DWG

Oct 16, 2015 — 11:10am

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CONTINUED ON SHEET NO. 110

CONTINUED ON SHEET NO. 112

CANAL STREET

LYME STREET

CYPRESS STREET

PROP WATER QUALITY SWALE

PROP INFILTRATION TRENCH

PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)

PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)

PROP STONE FOR PIPE ENDS

REM CB

95'–6"HDPE

24'–6"HDPE

R&R UP (BY OTHERS)

2'–12"RCP

RET UP

REM

REMODEL

ADJ

CITY LAYOUT

PC +12.96

PC +48.24

PI +59.11

PI +83.90

PI +90.77

PI +25.83

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
34	CB	52+05 LT	10.60	–	4.85	
35	CB	53+50 LT	10.04	–	–	
36	CIT	54+06 RT	11.00	–	4.61 EXIST	
37	ADJ CB	55+43 LT	9.69	–	–	ADJUST CB RIM TO PROP CURB LINE
38	CB	56+94 RT	9.90	–	5.50 EXIST	BUILD OVER EXIST PIPE

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 40 & 46

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	112	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

93692 PS&E-2 DRAIN & UTIL.DWG 16-Oct-2015

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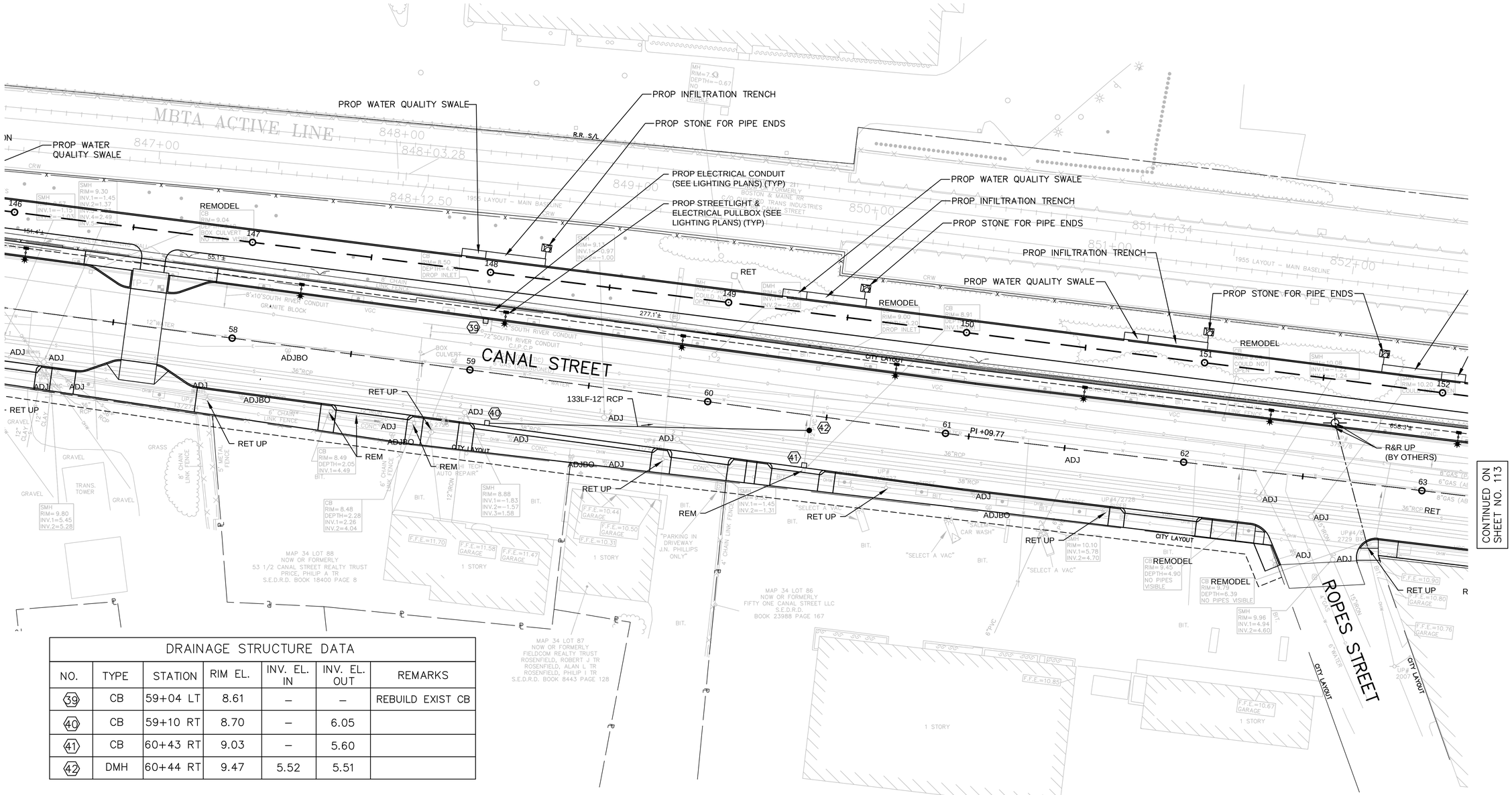

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
39	CB	59+04 LT	8.61	–	–	REBUILD EXIST CB
40	CB	59+10 RT	8.70	–	6.05	
41	CB	60+43 RT	9.03	–	5.60	
42	DMH	60+44 RT	9.47	5.52	5.51	

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 41 & 47

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	113	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

16-Oct-2015

93692 PS&E-2 DRAIN & UTIL.DWG

Oct 16, 2015 – 11:10am

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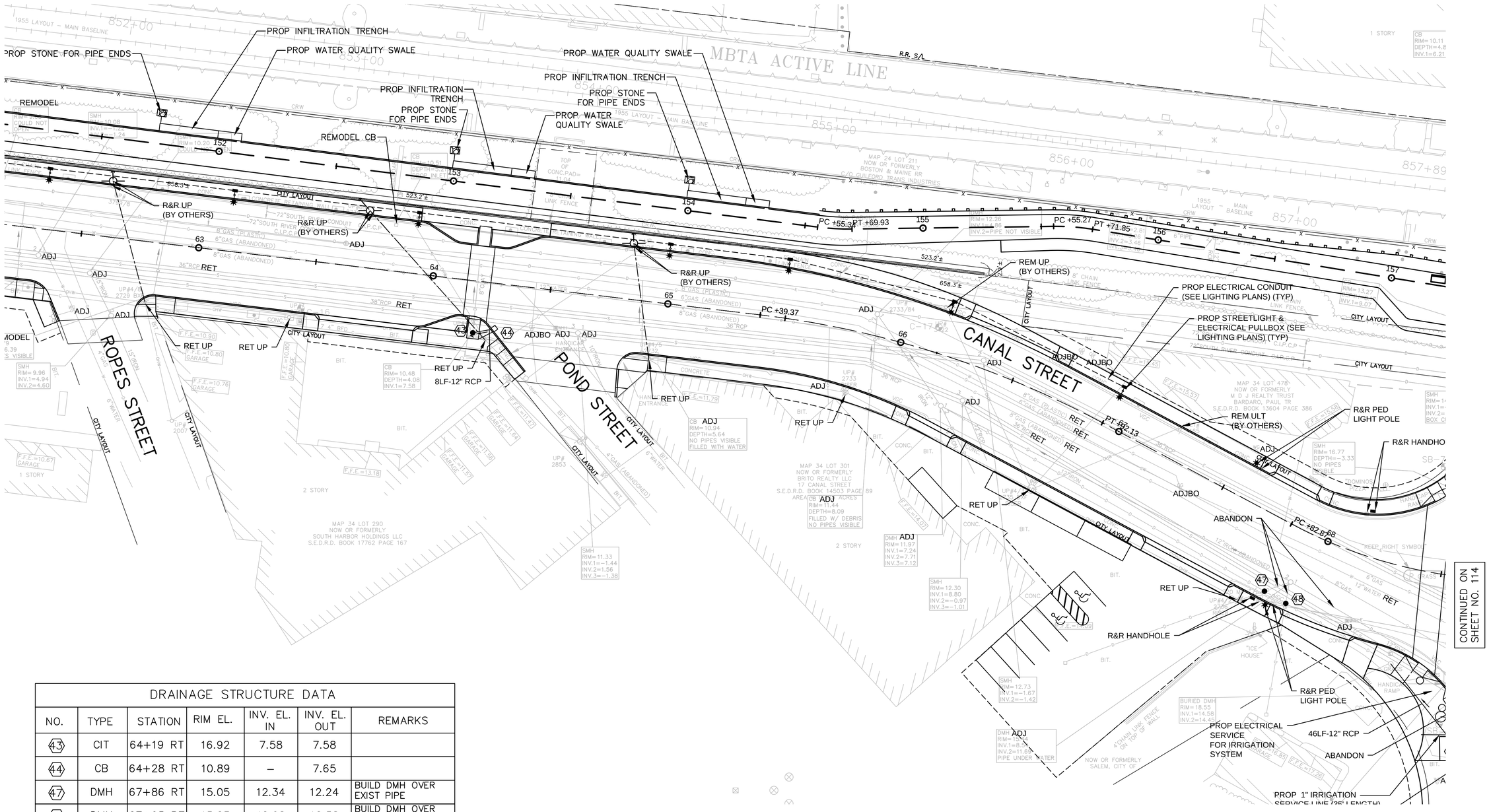

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
43	CIT	64+19 RT	16.92	7.58	7.58	
44	CB	64+28 RT	10.89	–	7.65	
47	DMH	67+86 RT	15.05	12.34	12.24	BUILD DMH OVER EXIST PIPE
48	DMH	67+95 RT	15.23	12.68	12.58	BUILD DMH OVER EXIST PIPE

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 42 & 48

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	114	209
PROJECT FILE NO.	605146		

DRAINAGE AND UTILITY PLANS

16-Oct-2015

93692 PS&E-2 DRAIN & UTIL.DWG

CONTINUED ON SHEET NO. 113

CANAL STREET

MILL STREET

WASHINGTON STREET

LIMIT OF WORK
STA 71+22.00
N 3014618.8110
E 819155.4141

PC +55.27
PT +71.85
PC +82.68
PT +82.13
END +69.54
PT +24.18

REM UP (BY OTHERS)
PROP ELECTRICAL CONDUIT (SEE LIGHTING PLANS) (TYP)
PROP STREETLIGHT & ELECTRICAL PULLBOX (SEE LIGHTING PLANS) (TYP)
REM ULT (BY OTHERS)
R&R PED LIGHT POLE
R&R HANDHOLE
RET UP
ABANDON
R&R HANDHOLE
R&R PED LIGHT POLE
PROP ELECTRICAL SERVICE FOR IRRIGATION SYSTEM
46LF-12" RCP
ABANDON
PROP 1" IRRIGATION SERVICE LINE (35' LENGTH)
PROP 1" CORP

CITY LAYOUT

ADJ
ADJBO
RET

DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM EL.	INV. EL. IN	INV. EL. OUT	REMARKS
47	DMH	67+86 RT	15.05	12.34	12.24	BUILD DMH OVER EXIST PIPE
48	DMH	67+95 RT	15.23	12.68	12.58	BUILD DMH OVER EXIST PIPE
49	DMH	68+64 RT	19.57	15.62	15.52	BUILD DMH OVER EXIST PIPE

HOR. SCALE IN FEET
0 20 50 100

FOR PROFILE: SEE SHEET NO. 43 & 49

NOTES:
1. CONTRACTOR MAY NEED TO HAND DIG SOME MAST ARM FOUNDATIONS WHERE OHW RESTRICT NORMAL EXCAVATING PROCEDURES.

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93692 PS&E-2 DRAINAGE DETAIL.DWG 14-Oct-2015

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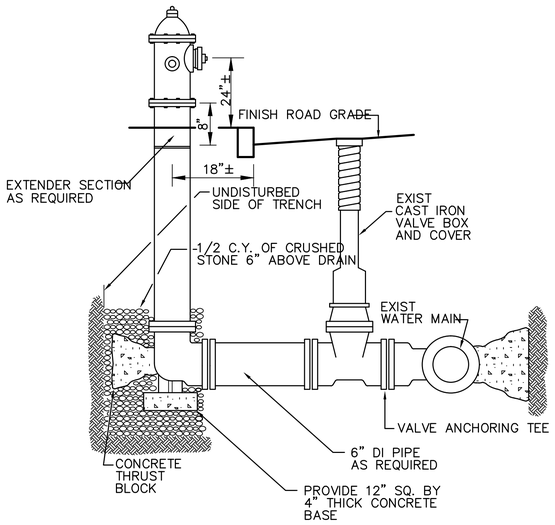


HYDRANT INSTALLATION

NOT TO SCALE

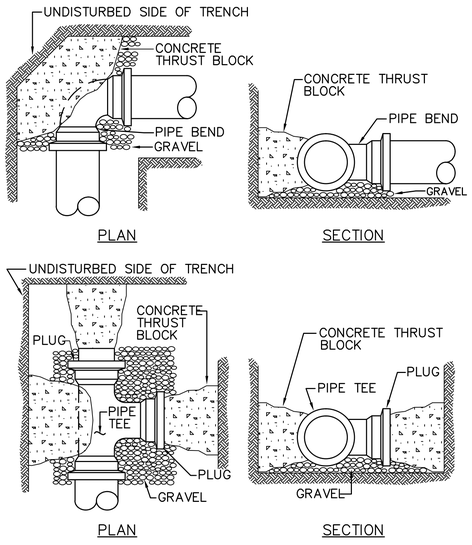
MINIMUM BEARING AREA – SQ. FT.					
PIPE DIAMETER (INCHES)	TEES, DEAD ENDS VALVES	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
4	2.0	2.0	2.0	2.0	2.0
6	2.5	3.6	2.0	2.0	2.0
8	4.4	6.2	3.3	2.0	2.0
10	6.5	9.2	5.0	2.6	2.0
12	8.9	12.6	6.8	3.4	2.0
14	12.0	16.9	9.2	4.6	2.3
16	14.8	–	11.4	5.8	2.9
18	–	–	12.8	7.3	3.7
20	–	–	16.8	8.6	4.2
24	–	–	–	12.0	6.0
30	–	–	–	–	9.1
36	–	–	–	–	12.7
42	–	–	–	–	16.8

NOTES :

1. BEARING AREAS, BASED ON SOIL BEARING CAPACITY OF 4,000 PSF. MINIMUM BEARING AREA IS 2.0 SQUARE FEET.
2. IF SOIL HAS DIFFERENT BEARING CAPACITY THAN NOTED, NEW BEARING CAN BE CALCULATED BY RATIO I.E., IF SOIL HAS BEARING OF 2,000 PSF, MULTIPLY TABULATED VALVE BY 4/2.
3. TABLE IS FOR HORIZONTAL RESTRAINT ONLY.
4. VALUES SHOWN ARE FOR TEST PRESSURE OF 150 PSI WITH A 100 PSI SURGE ALLOWANCE.
5. THRUST BLOCKS SHALL NOT BE PLACED AGAINST THE FOLLOWING SOILS: A) PEAT, ORGANIC SILT AND ORGANIC SOILS; B) SOFT CLAY; C) RUBBISH FILL AND OTHER UNSUITABLE ARTIFICIAL FILL; D) SHATTERED SHALE; E) INORGANIC SILT AND VERY FINE SANDS.
6. WHERE POSSIBLE, POUR CONCRETE ANCHOR BLOCKS AGAINST UNDISTURBED EARTH. OTHERWISE, PLACE COMPACTED BACKFILL USING GRAVEL AND WELL GRADED SAND AFTER REMOVING FORMS.
7. BACKFILL SHOULD BE COMPACTED TO AT LEAST 90 PERCENT OF MAXIMUM DRY UNIT WEIGHT DETERMINED BY ASTM TEST DESIGNATION D–1557.

MINIMUM THRUST BLOCK SIZING

NOT TO SCALE

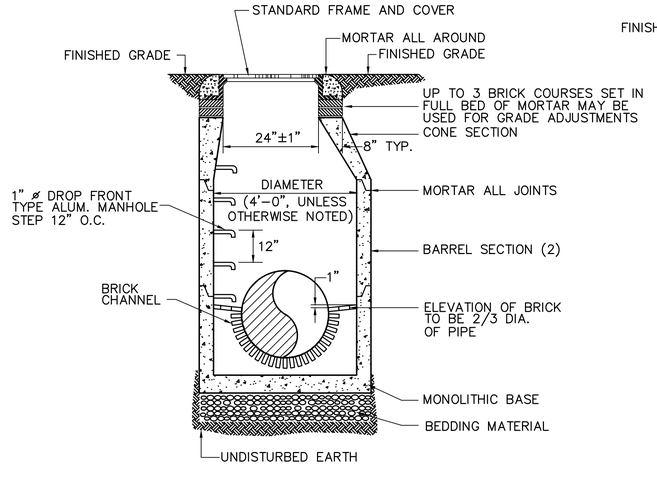


NOTE: ALL FITTINGS TO BE PLACED ON WELL CONSOLIDATED GRAVEL

THRUST BLOCK PLACEMENT ON BENDS, TEES AND PLUGS

NOT TO SCALE

DIAMETER	WALL THICKNESS	FLOOR THICKNESS
4 FT.	5 IN.	6 IN.
5 FT.	6 IN.	7 IN.
6 FT.	7 IN.	8 IN.

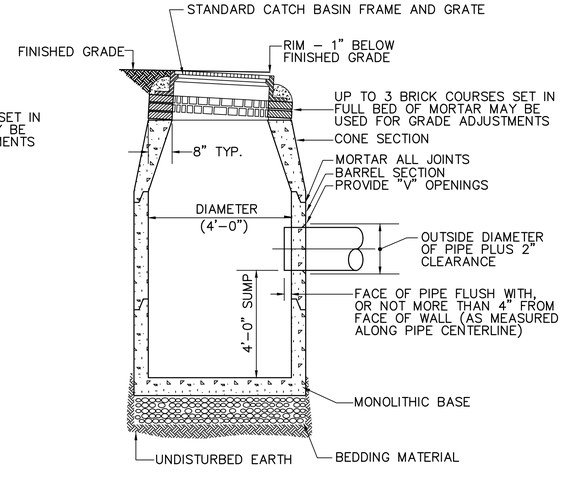


NOTE:
MINIMUM 6" BEDDING SHALL BE USED AS DIRECTED

PRECAST CONCRETE DRAIN MANHOLE IN ROAD

NOT TO SCALE

DIAMETER	WALL THICKNESS	FLOOR THICKNESS
4 FT.	5 IN.	6 IN.



NOTE:
1. WHERE FLAT TOP DRAINAGE STRUCTURE IS REQUIRED, CONICAL SECTION SHALL BE REPLACED W/ STRAIGHT BARREL SECTION & 8" THICK SLAB SECTION. SEE SPECIFICATIONS.
2. MINIMUM 6" BEDDING SHALL BE USED AS DIRECTED

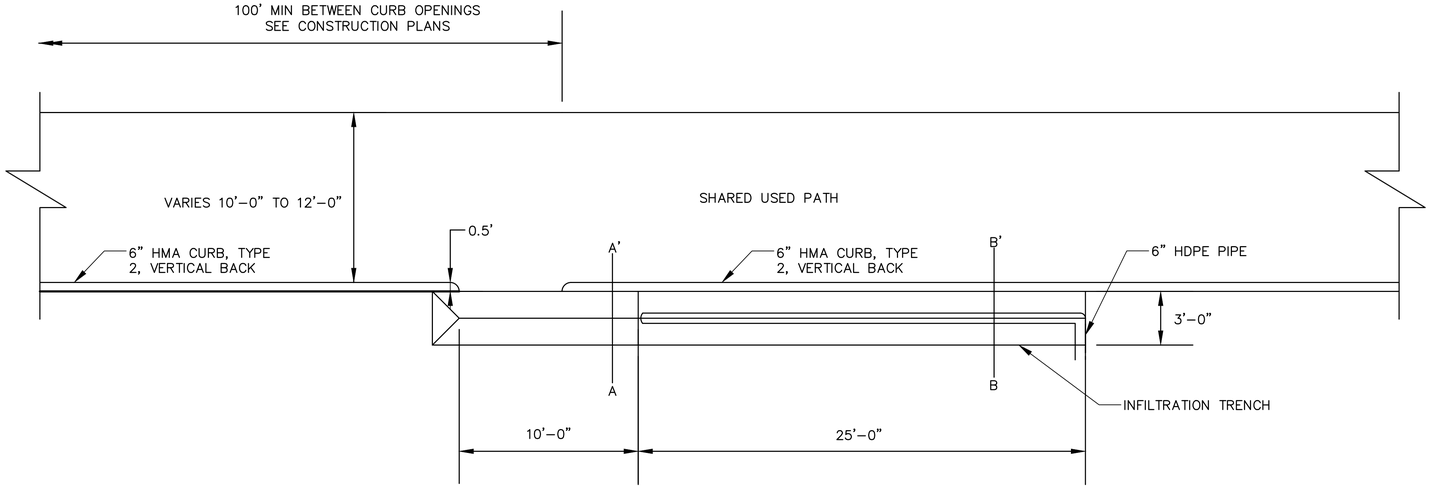
PRECAST CONCRETE CATCH BASIN IN ROAD

NOT TO SCALE

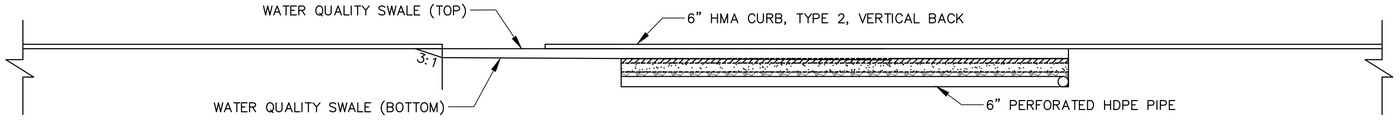
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	116	209
PROJECT FILE NO.	605146		

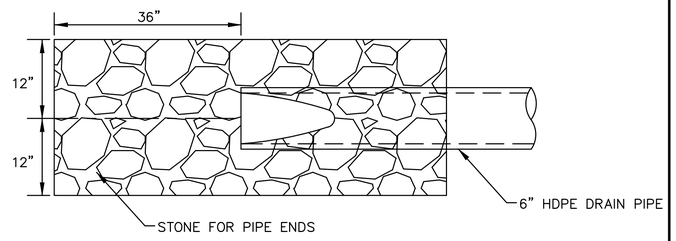
DRAINAGE AND UTILITY DETAILS



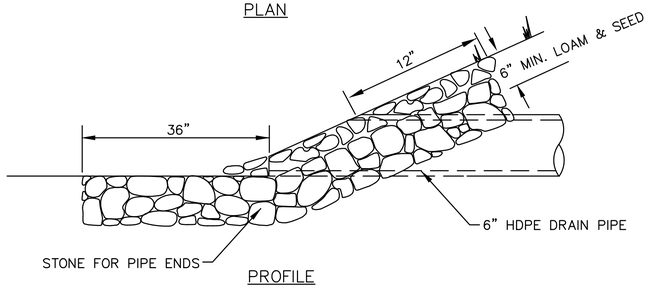
WATER QUALITY SWALE AND INFILTRATION TRENCH DETAIL
PLAN VIEW



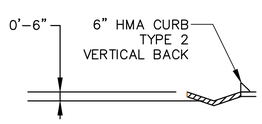
WATER QUALITY SWALE AND INFILTRATION TRENCH DETAIL
PROFILE VIEW



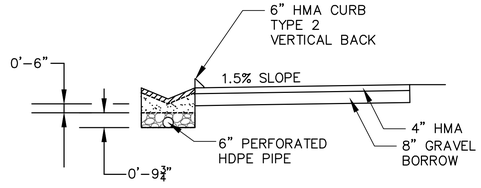
PLAN



PROFILE



WATER QUALITY SWALE DETAIL
SECTION VIEW A–A'



INFILTRATION TRENCH DETAIL
SECTION VIEW B–B'

KEY

- LOAM & SEED
- CLEAN WASHED SAND
- CRUSHED STONE (3/4")
- GEOTEXTILE

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

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93692 PS&E-2 DRAINAGE DETAIL.DWG 14-Oct-2015

PLANS

EXISTING COBRA HEAD LUMINAIRE ON UTILITY POLE

EXISTING COBRA HEAD LUMINAIRE ON UTILITY POLE

A — PROPOSED 26'-6" LIGHT POLE WITH LUMINAIRE (A - DENOTES LUMINAIRE TYPE LABEL)

B — PROPOSED LED COBRA HEAD REPLACEMENT LUMINAIRE (B - DENOTES LUMINAIRE TYPE LABEL)

C — PROPOSED 18'-5" LIGHT POLE WITH LUMINAIRE (C - DENOTES LUMINAIRE TYPE LABEL)

PROPOSED ELECTRICAL HANDHOLE 24"X12"X36" UNLESS OTHERWISE NOTED

PROPOSED ELECTRICAL ROADWAY LIGHTING LOAD CENTER

PROPOSED DIRECT BURIED 3" ELECTRICAL CONDUIT TYPE NM - UNLESS OTHERWISE NOTED

PROPOSED CONCRETE ENCASED 3" ELECTRICAL CONDUIT TYPE NM - UNLESS OTHERWISE NOTED

LUMINAIRE CALLOUT TAG

LUMINAIRE NUMBER	CIRCUIT NUMBER
STATION	
ARM LENGTH	ANSI/IES DISTRIBUTION
MOUNTING HEIGHT	LUMINAIRE WATTAGE

ABBREVIATIONS

EHH	ELECTRICAL HAND HOLE
EL	ELEVATION
RECP	RECEPTACLE
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G	GROUND
LLF	LIGHT LOSS FACTOR
LTG	LIGHTING
MIN	MINIMUM
NM	NON-METTALIC CONDUIT
TYP	TYPICAL
W	DENOTES WATERTIGHT EQUIPMENT
WP	DENOTES WEATHERPROOF EQUIPMENT
XST	EXISTING

GENERAL NOTES

1. CONDUIT INSTALLATIONS ARE SHOWN DIAGRAMMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT AND STRUCTURAL CONDITIONS. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON EXISTING AND PROPOSED UTILITIES.
2. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE OWNER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
3. ITEMS SHALL BE PROVIDED WITH NEMA ENCLOSURE AS INDICATED ON THE EQUIPMENT ENCLOSURE SCHEDULE.
4. RETAIN ALL EXISTING LIGHT FIXTURES AND POLES UNLESS OTHERWISE NOTED. LIGHT FIXTURES AND WIRING TO BE REMOVED BY NATIONAL GRID.
5. THE PROPOSED LIGHTING LOAD CENTERS SHALL BE PLACED ON NEW FOUNDATIONS IN COORDINATION WITH THE NATIONAL GRID, THE CITY OF SALEM, AND THE ENGINEER.
6. LOCATIONS OF LIGHT POLES ARE EXACT (UNLESS FIELD CONDITIONS DICTATE OTHERWISE), HANDHOLES, CONDUITS, JUNCTION BOXES ARE APPROXIMATE ONLY AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER TO SUIT CONDITIONS.
4. NEW COBRAHEAD LUMINAIRE REPLACING EXISTING COBRAHEAD LUMINAIRE SHALL BE REINSTALLED ON EXISTING MOUNTING ARM AND REUSE THE EXISTING CONDUCTORS.
5. LUMINAIRE HEIGHT SHALL BE FROM THE TOP OF THE FOUNDATION.
6. THE CONTRACTOR SHALL NOTIFY DIG SAFE PRIOR TO CONSTRUCTION.
7. ALL PROPOSED STREET LIGHTING CONDUIT BURIED UNDER GROUND SHALL BE 3" NM PVC.
8. ALL LUMINAIRE POLE ANCHOR BOLT SIZES, NUMBER, LENGTH AND BOLT CIRCLE SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.
9. ALL WIRING SHALL BE IN ACCORDANCE WITH SECTION 813.20 OF THE MASSCHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS.
10. ALUMINUM WIRING SHALL NOT BE USED.
11. GROUNDING CONDUCTORS SHALL BE CONTINUOUS.
12. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UL AND SHALL BE INSTALLED IN ACCORDANCE WITH SUCH LISTINGS.
13. INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL CODES, REGULATIONS AND REQUIREMENTS OF ALL MUNICIPAL, STATE, FEDERAL AND OTHER PUBLIC OR PRIVATE AUTHORITIES WHICH HAVE JURISDICTION. IN EACH CASE, CODES ARE MINIMUM REQUIREMENTS.
15. THE LUMINAIRES ON-BOARD CIRCUITRY SHALL INCLUDE SURGE PROTECTION DEVICES (SPD'S) TO WITHSTAND HIGH REPETITION NOISE TRANSIENTS AS A RESULT OF UTILITY LINE SWITCHING, NEARBY LIGHTNING STRIKES, AND OTHER INTERFERENCE.
16. THE LUMINAIRE AND ASSOCIATED ON-BOARD CIRCUITRY SHALL MEET CLASS A EMISSION LIMITS UNDER THE FEDERAL COMMUNICATIONS COMMISSION REGULATIONS CONCERNING THE EMISSION OF ELECTRONIC NOISE.
17. THE LUMINAIRES TOTAL HARMONIC DISTORTION (CURRENT AND VOLTAGE) INDUCED INTO AN AC POWER LINE BY A LUMINAIRE SHALL NOT EXCEED 20 PERCENT.
18. THE CANAL STREET LIGHTING IS BASED ON THE LIGHTING LEVELS OF 0.7 FC INDICATED IN THE AASHTO DESIGN GUIDE FOR LOCAL INTERMEDIATE AND USE AND R3 TYPE PAVING.
19. ROADWAY LUMINAIRE NUMBERS AND LOCATIONS ARE BASED ON SPRING CITY LIGHTING CAT. # SEE DETAIL SHEET, PHOTOMETRIC DATA "LCH-LE100-X2-45-CR3-GR10.IES", TYPE III DISTRIBUTION AND COOPER INDUSTRIES CAT. OVF-B04-LED-E-U-SL3-AP, PHOTOMETRIC DATA "OVFBO4EDEUSL3.IES" TYPE III DISTRIBUTION..
20. OTHER MANUFACTURER'S PRODUCTS MAY BE SUBSTITUTED FOR THE ROADWAY LUMINAIRES INDICATED IF THE INSTALLED LUMINAIRE LIGHT UTILIZATION AND MINIMUM FC FOR CANAL STREET ARE AS LEAST AS GREAT AS THAT INDICATED IN GENERAL NOTE 18.
21. WIRING INDICATED ON THE DRAWINGS IS BASED ON 100 WATT LED LUMINAIRES, IF ANOTHER LUMINAIRE WITH A HIGHER WATTAGE IS UTILIZED FOR THIS PROJECT THEN IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADJUST THE WIRING SIZES FOR VOLTAGE DROP TO ACCOMMODATE THE HIGHER WATTAGE LUMINAIRES.
22. THE LIGHTING SYSTEM WILL BE OWNED AND MAINTAINED BY THE CITY OF SALEM AFTER CONSTRUCTION IS COMPLETE.

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	117	209
PROJECT FILE NO.	605146		

LIGHTING PLANS
ELECTRICAL SYMBOLS, LEGEND AND GENERAL NOTES

93692 PS&E-2 LIGHTING.DWG 15-Oct-2015

EQUIPMENT ENCLOSURE SCHEDULE

LOCATION	NEMA TYPE				
	1	3R	4	4X	12
OUTDOORS		X			

LUMINAIRE SCHEDULE

SYMBOL	QTY	LABEL	ARRANGEMENT	VOLTAGE	LUMENS	LLF	DESCRIPTION	ARM LENGTH	WATTS	NO. LAMPS	MANUFACTURER	LUMCAT
	73	A	SINGLE	120	ABOSOLUTE	1.00	HISTORICAL CAST ALUMINUM PENDANT LED LUMINARIE	6'-0"	100	-	SPRING CITY ELECTRICAL	SEE DETAIL ON SHEET 160
	8	B	SINGLE	FIELD VERIFY	ABOSOLUTE	1.00	LED COBRA HEAD TYPE LUMINAIRE	XST	95	-	COOPER INDUSTRIES	OVFB04LEDEUSL3AP4U-0A/RA1016
	1	C	SINGLE	120	ABOSOLUTE	1.00	HISTORICAL CAST ALUMINUM LED LUMINARIE	-	55	-	KING LUMINIARE	SEE DETAIL ON SHEET 159

NUMERIC SUMMARY

DESCRIPTION	SYMBOL	AVG	MAX	MIN	MAX/MIN	AVG/MIN
CANAL STREET	+	1.1 fc	2.4 fc	0.1 fc	24.0:1	11.0:1

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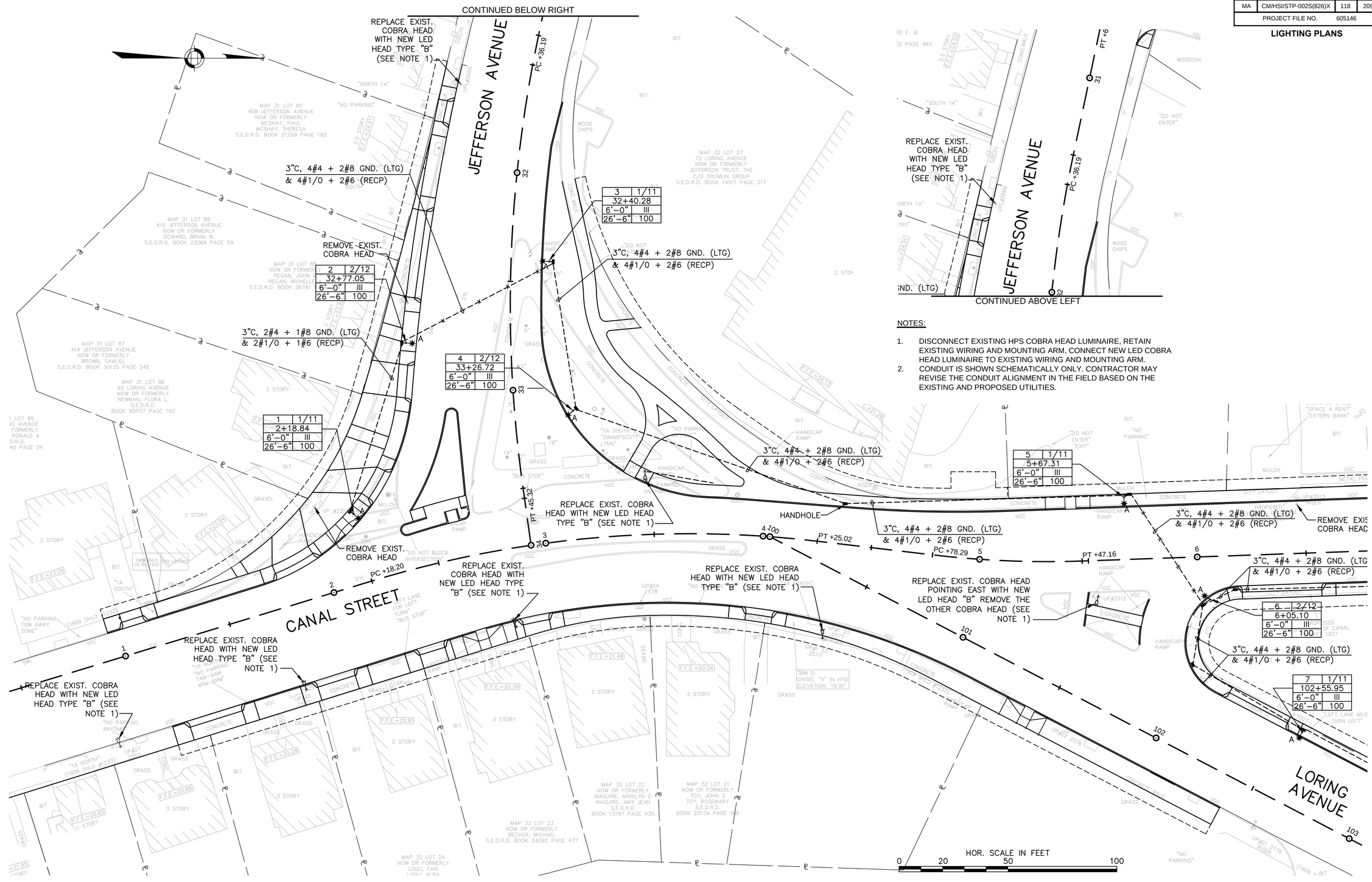
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	118	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG



NOTES:

1. DISCONNECT EXISTING HPS COBRA HEAD LUMINAIRE, RETAIN EXISTING WIRING AND MOUNTING ARM, CONNECT NEW LED COBRA HEAD LUMINAIRE TO EXISTING WIRING AND MOUNTING ARM.
2. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

CONTINUED ON SHEET NO. 119

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	119	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

93692 PS&E-2 LIGHTING.DWG 15-Oct-2015

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CONTINUED ON SHEET NO. 118

CONTINUED ON SHEET NO. 120

CONTINUE BELOW LEFT

CONTINUE RIGHT

KIMBALL ROAD

CANAL STREET

LORING AVENUE

MAP 32 LOT 30
NOW OR FORMERLY
ESTHER REALTY INC
S.E.D.R.D. BOOK 14511
PAGE 317

MAP 32 LOT 31
NOW OR FORMERLY
ESTHER REALTY INC
S.E.D.R.D. BOOK 14511 PAGE 317

MAP 32 LOT 33
NOW OR FORMERLY
JEDS REALTY TRUST
BORNSTEIN, STEVEN M TR
290 CANAL STREET
S.E.D.R.D. BOOK 15004 PAGE 510
AREA = 0.353 ACRES

MAP 32 LOT 36
NOW OR FORMERLY
J A B TRUST
BERTINI, JOHN A TR
286 CANAL STREET
S.E.D.R.D. BOOK 8720 PAGE 485
AREA = 0.205 ACRES

MAP 32 LOT 102
NOW OR FORMERLY
J A B TRUST
BERTINI, JOHN A TR
S.E.D.R.D. BOOK 8720 PAGE 485

MAP 23 LOT 144
NOW OR FORMERLY
ESTHER REALTY INC
282 REAR CANAL
S.E.D.R.D.
BOOK 6409 PAGE 585
AREA = 9.350 ACRES

MAP 32 LOT 65
NOW OR FORMERLY
CAPPPUCCIO, BERTHA L
S.E.D.R.D.
BOOK 22924 PAGE 580

MAP 32 LOT 66
NOW OR FORMERLY
SALEM ST. UNIVERSITY
ASSISTANT CORPORATION
S.E.D.R.D.
BOOK 14102 PAGE 29

MAP 32 LOT 20
71 LORING AVENUE
NOW OR FORMERLY
SALEM ST. COLLEGE ASSISTANCE
CORPORATION

MAP 32 LOT 64
285 CANAL STREET
NOW OR FORMERLY
SALEM STATE COLLEGE ASSITANCE CORP.
S.E.D.R.D. BOOK 29712 PAGE 19
PLAN BK 203 PLAN 61

"LORING PLAZA"
"AUTO ZONE"
"EAST COAST MOTOR SPORTS"
"CANAL ST CYCLE"
"SPACE 4 RENT"
"EATERN BANK"

"CITCO"

"LEFT LANE MUST TURN LEFT"

"NO PARKING"

"BUS STOP"

"SALEM DINER"

HANDICAP RAMP

HANDHOLE

LOAD CENTER #1

LIMIT OF WORK
STA 105+61
N 3008453.1635
E 819335.3326

PROPOSED EXTENSION OF CANAL STREET 1927

PROPOSED EXTENSION OF CANAL STREET 1927

CITY LAYOUT

1909 SHLO LO NO 1233

1 STORY

2 STORY

F.F.E.=17.78

F.F.E.=14.68 GARAGE

F.F.E.=14.85 GARAGE

F.F.E.=14.44

F.F.E.=13.31

F.F.E.=13.37

F.F.E.=14.50

F.F.E.=12.89

MULCH

CONCRETE

BIT.

VGC

METAL FENCE

6' CHAIN LINK FENCE

GRASS

CONC. WALK

DIRECTIONAL ARROW

SIGN POST

UP#19-2574 (1909 SHLO #2333)

UP#21 2776 RISER

UP#21 3512 RISER

UP#19-3583 8"DLAY 12"RCP

UP#19-3583 BXF

6	2/12
6+05.10	
6'–0"	III
26'–6"	100

7	1/11
102+55.95	
6'–0"	III
26'–6"	100

8	1/11
6+89.40	
6'–0"	III
26'–6"	100

9	2/12
7+95.33	
6'–0"	III
26'–6"	100

10	1/11
8+93.46	
6'–0"	III
26'–6"	100

11	2/12
10+12.79	
6'–0"	III
26'–6"	100

12	3/13
11+26.61	
6'–0"	III
26'–6"	100

7A	2/12
104+95.00	
–	III
18'–5"	75

3"C, 4#4 + 2#8 GND. (LTG) & 4#1/0 + 2#6 (RECP)

3"C, 2#4 + 1#8 GND. (LTG) & 2#1/0 + 1#6 (RECP)

4"C, 3#4/0 + 1#6 GND. (LTG)

REMOVE EXIST. COBRA HEAD

ELECTRICAL UTILITY CONNECTION PER STANDARDS

PI +46.37

PI +05.64

PI +50.92

PC

A

B

C

Z

NOTES:

1. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978–490–9236 (CELL).
2. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	120	209
	PROJECT FILE NO. 605146		

LIGHTING PLANS

93692 PS&E-2 LIGHTING.DWG 27-Oct-2015

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CONTINUED ON SHEET NO. 119

CONTINUED SHEET NO.

MAP 23 LOT 144
NOW OR FORMERLY
ESTHER REALTY INC
282 REAR CANAL
S.E.D.R.D.
BOOK 6409 PAGE 586
AREA = 9.350 ACRES

MAP 32 LOT 37
NOW OR FORMERLY
ESTHER REALTY INC
282 CANAL STREET
S.E.D.R.D. BOOK 6409 PAGE 588
AREA = 0.363 ACRES

MAP 32 LOT 38
NOW OR FORMERLY
TWO HUNDRED SIXTY SIX CANAL STREET TRUST
BERTINI, JOHN A TR
BERTINI, FRANK C TR
BERTINI, ESTHER TR
266 CANAL STREET
S.E.D.R.D. BOOK 10716 PAGE 430
AREA = 0.3041 ACRES

MAP 32 LOT 39
NOW OR FORMERLY
GARDNER MATTRESS CORP
250-254 CANAL STREET
S.E.D.R.D. BOOK 23951 PAGE 484
AREA = 0.509 ACRES

1 STORY
2 STORY
3 STORY
BIT.
GRAVEL
GRASS
CITY LAYOUT
F.F.E.=13.37
F.F.E.=10.51
F.F.E.=11.68
F.F.E.=12.37
F.F.E.=15.39
F.F.E.=12.28 GARAGE
F.F.E.=13.76
F.F.E.=20.60
F.F.E.=20.39
PROPOSED EXTENSION OF CANAL STREET 1927
"GARDENER MATTRESS CORPORATION"
UP#3505
UP#1005/1005
UP#22
UP#3502
UP#3503
UP#3501 RISER
UP#3500
UP#2310
UP#3504
UP# 2978
"SALEM BIKE PATH"
SIGN NOT IN READABLE CONDITION
"ROSE STREET"
6' WOOD FENCE
6' WOOD PICKET FENCE
EDGE OF PAVEMENT

TULIP STREET
CANAL STREET
ROSE STREET
BROADWAY

PI +57.36
PI +75.24

REMOVE EXIST. COBRA HEAD

ELECTRICAL UTILITY SERVICE CONNECTION PER UTILITY STANDARDS

GND. (LTG)

2#8 GND. (LTG)
2#6 (RECP)

C, 4#4 + 2#8 GND. (LTG)
4#1/0 + 2#6 (RECP)

3"C, 4#4 + 2#8 GND. (LTG) & 4#1/0 + 2#6 (RECP)

12	3/13
11+26.61	
6'-0"	III
26'-6"	100

13	4/14
12+30.56	
6'-0"	III
26'-6"	100

14	3/13
13+40.33	
6'-0"	III
26'-6"	100

15	4/14
14+36.35	
6'-0"	III
26'-6"	100

16	3/13
15+42.09	
6'-0"	III
26'-6"	100

17	4/14
16+51.18	
6'-0"	III
26'-6"	100

MAP 32 LOT 227
267 CANAL STREET
NOW OR FORMERLY
CITY OF SALEM
S.E.D.R.D.
BOOK 13827 PAGE 596
BOOK 1327 PAGE 596
PLAN BK 205 PLAN #7

MAP 32 LOT 62
SALEM STATE COLLEGE
ASSISTANCE CORP.
S.E.D.R.D. BOOK 27260 PAGE 87

MAP 32 LOT 74
NOW OR FORMERLY
CRUGER, CHRISTOPHER W
S.E.D.R.D. BOOK 14122 PAGE 259

MAP 32 LOT 60
NOW OR FORMERLY
259 CANAL STREET TRUST
WILSON, LLOYD C TR
PRICE, JENNIFER TR
S.E.D.R.D. BOOK 20015 PAGE 207

MAP 32 LOT 59
NOW OR FORMERLY
LIMA, PETRONIO
LIMA, GIOVANIA
S.E.D.R.D. BOOK 18865 PAGE 284

MAP 32 LOT 61
NOW OR FORMERLY
LAM, QUANG TICH
LAM, DE S
S.E.D.R.D. BOOK 20143 P

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	121	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG

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CONTINUED ON SHEET NO. 120

CONTINUED ON SHEET NO. 122

TULIP STREET

BROADWAY

CANAL STREET

REPLACE EXIST. COBRA HEAD WITH NEW LED HEAD TYPE "B" (SEE NOTE 1)

REMOVE EXIST. COBRA HEAD

3"C, 4#4 + 2#8 GND. (LTG) & 4#1/0 + 2#6 (RECP)

16	4/14
16+51.18	
6'–0"	III
26'–6"	100

17	3/13
17+32.29	
6'–0"	III
26'–6"	100

19	4/14
17+88.90	
6'–0"	III
26'–6"	100

20	3/13
18+84.58	
6'–0"	III
26'–6"	100

21	4/14
18+95.75	
6'–0"	III
26'–6"	100

22	3/13
19+54.01	
6'–0"	III
26'–6"	100

23	4/14
20+17.42	
6'–0"	III
26'–6"	100

24	3/13
21+19.26	
6'–0"	III
26'–6"	100

PI +42.07

PI +04.39

MAP 32 LOT 42 NOW OR FORMERLY ABP REALTY TRUST PELLETIER, DAVID TR S.E.D.R.D. BOOK 14809 PAGE 185 PLAN 301 OF 1959

MAP 32 LOT 44 NOW OR FORMERLY SU, ANNA 88 BROADWAY S.E.D.R.D. BOOK 14319 PAGE 34 AREA = 0.072 ACRES

MAP 32 LOT 43 NOW OR FORMERLY SU, ANNA 90 BROADWAY S.E.D.R.D. BOOK 15854 PAGE 605 AREA = 0.100 ACRES

MAP 32 LOT 45 NOW OR FORMERLY SU, ANNA 90 BROADWAY S.E.D.R.D. BOOK 15854 PAGE 605 AREA = 0.100 ACRES

MAP 32 LOT 46 NOW OR FORMERLY MACKEY, FLORENCE M MACKEY, HERBERT L JR 230 CANAL STREET S.E.D.R.D. BOOK 5488 PAGE 626 AREA = 0.143 ACRES

MAP 32 LOT 423 NOW OR FORMERLY MACKEY, ELAINE M 228 CANAL STREET S.E.D.R.D. BOOK 18787 PAGE 436 AREA = 0.125 ACRES

MAP 32 LOT 47 NOW OR FORMERLY DUBE, COLLETTE 226 CANAL STREET S.E.D.R.D. BOOK 18109 PAGE 552 AREA = 0.135 ACRES

MAP 32 LOT 48 NOW OR FORMERLY GOYETTE, PAUL M GOYETTE, ROSE 224 1/2 CANAL STREET S.E.D.R.D. BOOK 15903 PAGE 175 AREA = 0.145 ACRES

MAP 32 LOT 59 NOW OR FORMERLY LIMA, PETRONIO LIMA, GIOVANIA S.E.D.R.D. BOOK 18865 PAGE 284

MAP 32 LOT 61 NOW OR FORMERLY LAM, QUANG TICH LAM, DE S S.E.D.R.D. BOOK 20143 P

MAP 32 LOT 58 NOW OR FORMERLY CORNELL REALTY TRUST S.E.D.R.D. BOOK 26835 PAGE 136

MAP 32 LOT 124 NOW OR FORMERLY MASSACHUSETTS THE COMMONWEALTH OF S.E.D.R.D. BOOK 5574 PAGE 741

"NO PARKING ANYTIME" "TOW AWAY ZONE"

"NOTICE ONLY AUTHORIZED VEHICLES WITH PROPER DECAL ARE PERMITTED TO PARK IN THIS AREA."

NOTES:

1. DISCONNECT EXISTING HPS COBRA HEAD LUMINAIRE, RETAIN EXISTING WIRING AND MOUNTING ARM, CONNECT NEW LED COBRA HEAD LUMINAIRE TO EXISTING WIRING AND MOUNTING ARM.
2. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

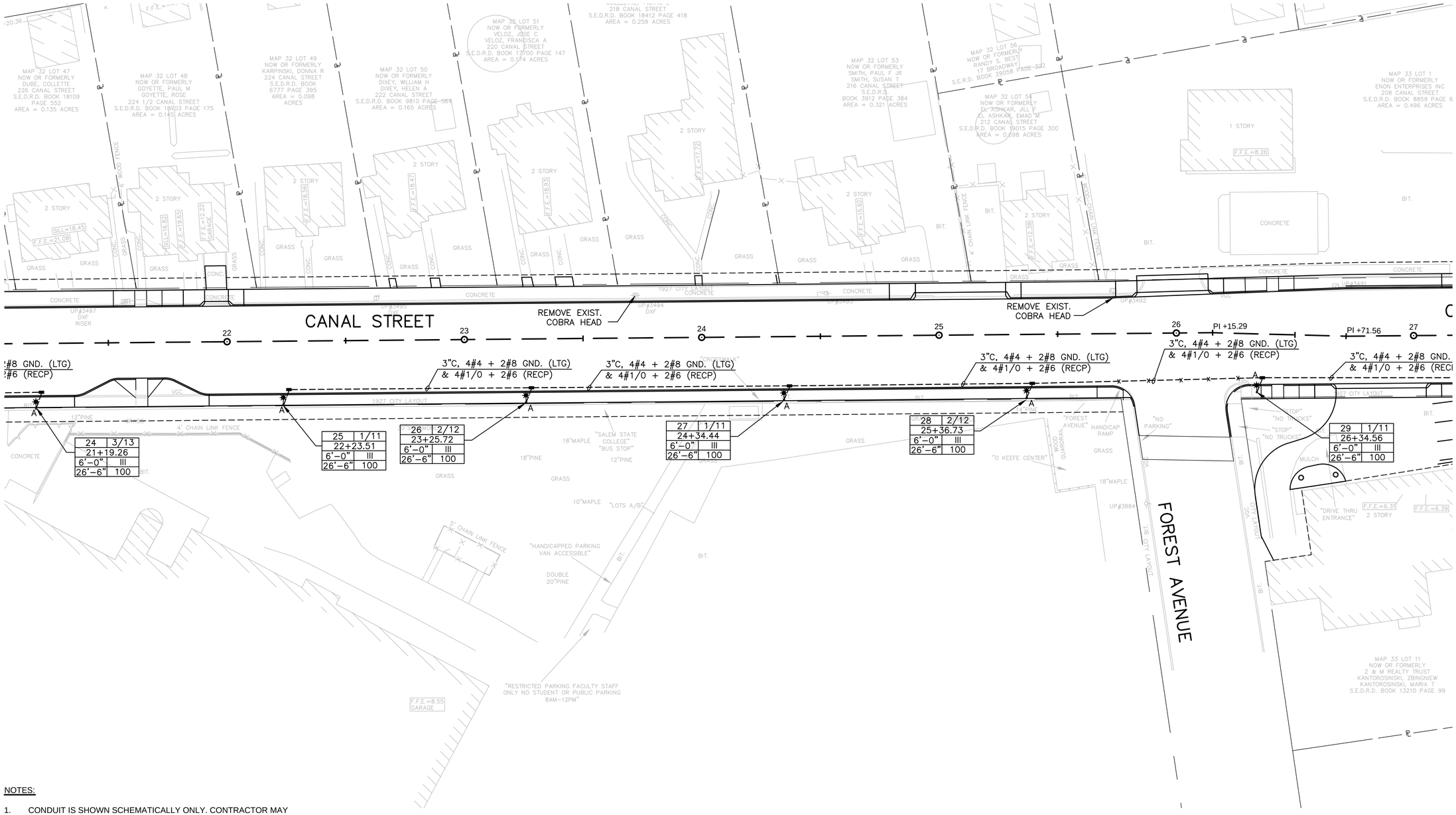
HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	122	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

93692 PS&E-2 LIGHTING.DWG 15-Oct-2015



NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	123	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG

CONTINUED ON SHEET NO. 122

CONTINUED ON SHEET NO. 124

CANAL STREET

BROADWAY

HERSEY AVENUE

OCEAN AVENUE

PI +15.29
+ 2#8 GND. (LTG)
+ 2#6 (RECP)

PI +71.56 27
3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

PI +71.48 28

30	2/12
27+44.11	
6'-0"	III
26'-6"	100

REMOVE EXIST. COBRA HEAD

REMOVE EXIST. COBRA HEAD

REMOVE EXIST. COBRA HEAD

32	2/12
29+49.27	
6'-0"	III
26'-6"	100

30 PC +08.32

PT +49.85

PI +96.51

PT +20.68

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

34	2/12
31+59.98	
6'-0"	III
26'-6"	100

32

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

29	1/11
26+34.56	
6'-0"	III
26'-6"	100

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

31	1/11
28+24.45	
6'-0"	III
26'-6"	100

33	1/11
30+70.05	
6'-0"	III
26'-6"	100

REMOVE EXIST. COBRA HEAD

MAP 33 LOT 1
NOW OR FORMERLY
ENON ENTERPRISES INC
208 CANAL STREET
S.E.D.R.D. BOOK 8859 PAGE 67
AREA = 0.496 ACRES

MAP 33 LOT 3
NOW OR FORMERLY
MCDONALDS CORPORATION
150 CANAL STREET
S.E.D.R.D. BOOK 6085 PAGE 492
AREA = 0.933 ACRES

MAP 33 LOT 5
NOW OR FORMERLY
144 CANAL STREET NOM REALTY TRUST
C/O SNAKEBITE REALTY TRUST
S.E.D.R.D. BOOK 28431 PAGE 32

MAP 33 LOT 11
NOW OR FORMERLY
Z & M REALTY TRUST
KANTOROSINSKI, ZBIGNIEW
KANTOROSINSKI, MARIA T
S.E.D.R.D. BOOK 13210 PAGE 99

MAP 33 LOT 757
NOW OR FORMERLY
COCA REALTY TRUST
COSTA, NELSON TR
CAFUA, FERNANDO TR
S.E.D.R.D. BOOK 10262 PAGE 167

MAP 33 LOT 36
NOW OR FORMERLY
N & C REALTY TRUST
LAGONAKIS, NONDAS TR
LINARDOS, COSTAS TR
151 CANAL STREET
S.E.D.R.D. BOOK 10644 PAGE 29
AREA = 0.216 ACRES

MAP 33 LOT 62
NOW OR FORMERLY
ST PIERRE, DONALD J
ST PIERRE, PAULINE M
101 OCEAN AVENUE
S.E.D.R.D. BOOK 5217 PAGE 500
AREA = 0.107 ACRES

MAP 33 LOT 63
NOW OR FORMERLY
BEST PETROLEUM NET LEASE LLC
S.E.D.R.D. BOOK 22272 PAGE 16

MAP 33 LOT 64
NOW OR FORMERLY
ODONNELL, PATRICK
TOWNE, WANDA L
S.E.D.R.D. BOOK 13957 PAGE 582

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	124	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

93692 PS&E-2 LIGHTING.DWG 15-Oct-2015

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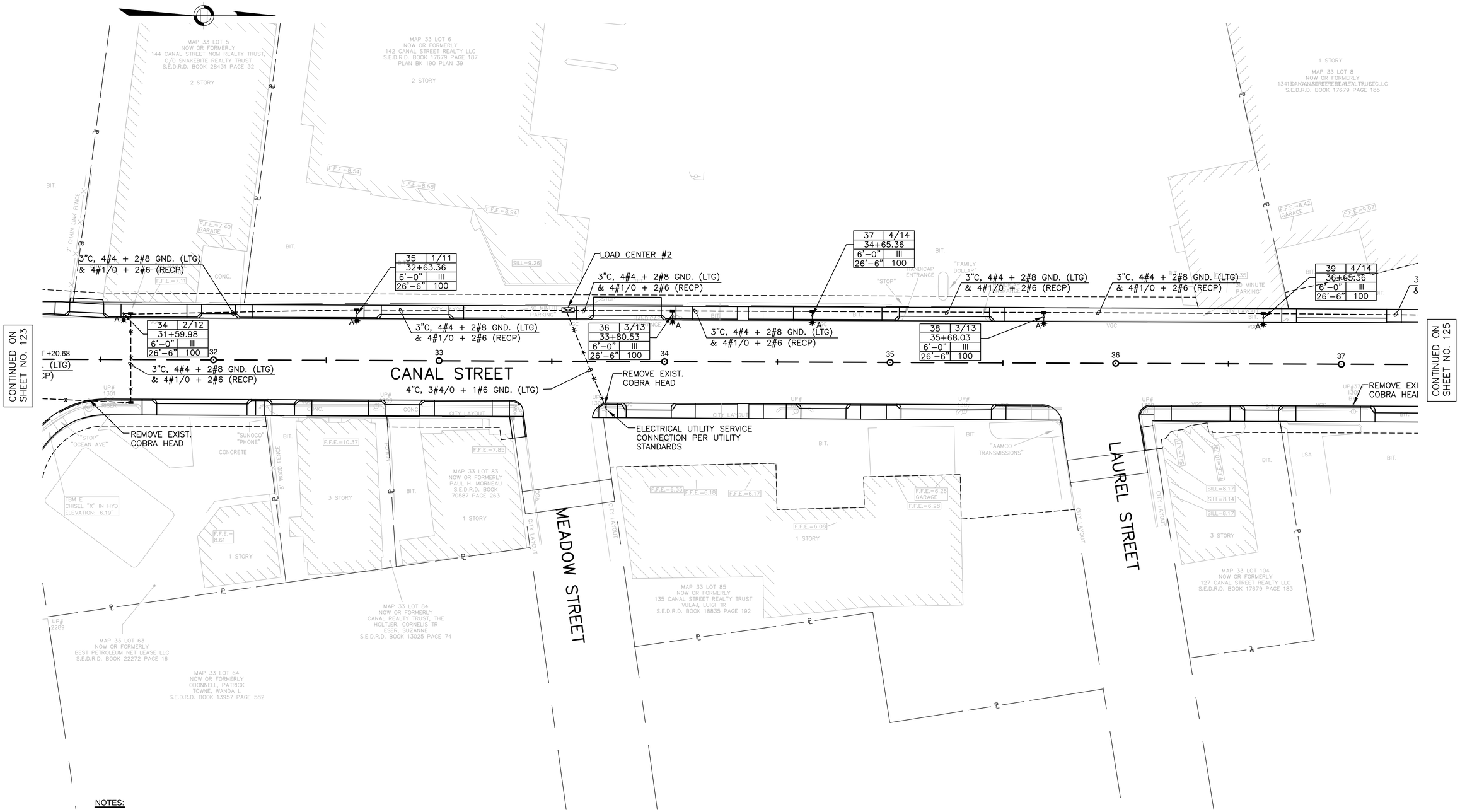

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	125	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

18-Dec-2015

93692 PS&E-2 LIGHTING.DWG

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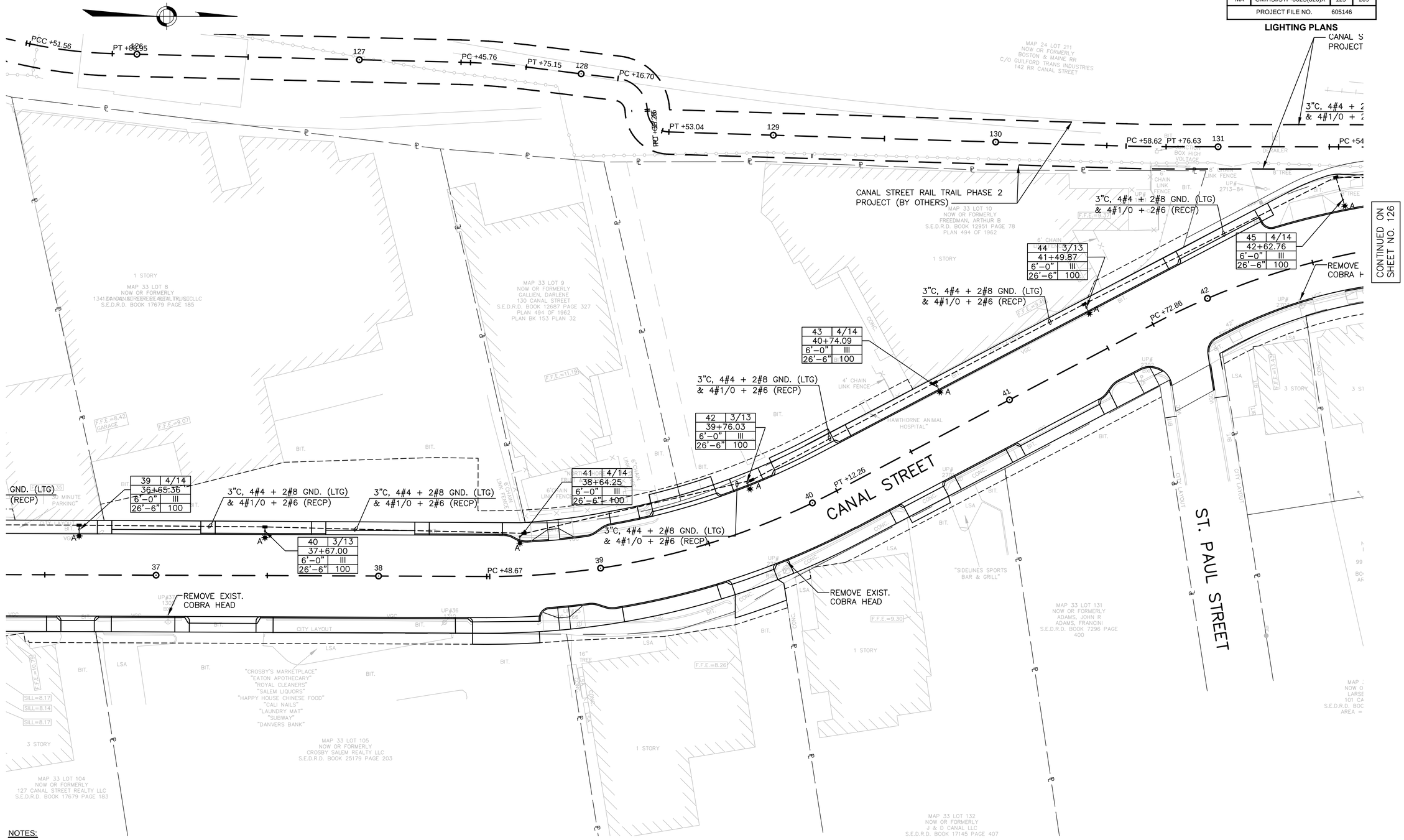

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	126	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

18-Dec-2015

93692 PS&E-2 LIGHTING.DWG

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CONTINUED ON SHEET NO. 125

CONTINUED ON SHEET NO. 127

CANAL STREET RAIL TRAIL PHASE 2 PROJECT (BY OTHERS)

3"C, 4#4 + 2#8 GND. (LTG) & 4#1/0 + 2#6 (RECP)

45	4/14
42+62.76	
6'–0"	III
26'–6"	100

46	3/13
43+42.81	
6'–0"	III
26'–6"	100

47	4/14
44+39.36	
6'–0"	III
26'–6"	100

48	1/11
45+30.39	
6'–0"	III
26'–6"	100

49	2/12
46+28.27	
6'–0"	III
26'–6"	100

50	1/11
47+13.71	
6'–0"	III
26'–6"	100

REMOVE EXIST. COBRA HEAD

MBTA ACTIVE LINE

CANAL STREET

ST. PAUL STREET

ROSLYN STREET

MAP 33 LOT 144
NOW OR FORMERLY
PETIT, MARK
99 CANAL STREET
S.E.D.R.D.
BOOK 11272 PAGE 451
AREA = 0.086 ACRES

MAP 33 LOT 145
NOW OR FORMERLY
LASKOWSKI, KAZIK
LASKOWSKI, ANNA
99 1/2 CANAL STREET
S.E.D.R.D.
BOOK 14995 PAGE 456
AREA = 0.077 ACRES

MAP 33 LOT 134
NOW OR FORMERLY
LARSEN, KEITH R
101 CANAL STREET
S.E.D.R.D. BOOK 25847 PAGE 286

MAP 33 LOT 143
NOW OR FORMERLY
RICHARD, PETER A
S.E.D.R.D. BOOK 15791 PAGE 10

MAP 33 LOT 146
NOW OR FORMERLY
BROWN, JAMES
S.E.D.R.D. BOOK 15558 PAGE 531

MAP 33 LOT 147
NOW OR FORMERLY
JOHNSON REALTY MANAGEMENT INC
S.E.D.R.D. BOOK 20635 PAGE 80

MAP 33 LOT 165
NOW OR FORMERLY
SALEMS OLD FASHIONED CANDIES INC
S.E.D.R.D. BOOK 5572 PAGE 82

MAP 33 LOT 164
NOW OR FORMERLY
SALEMS OLD FASHIONED CANDIES INC
S.E.D.R.D. BOOK 4650 PAGE 195

MAP 33 LOT 163
NOW OR FORMERLY
CRIST, FRANCIS
CRIST, CATHLEEN
S.E.D.R.D. BOOK 27249 PAGE 599

MAP 33 LOT 162
NOW OR FORMERLY
PJR REALTY TRUST
S.E.D.R.D. BOOK 13632 PAGE 96

MAP 33 LOT 161
NOW OR FORMERLY
POTTIER–BROWN, JULIE –
LABRIE, STEPHEN – 80
CARNEVALE, VALERIE – 8
S.E.D.R.D. BOOK 13632 PAG

MAP 24 LOT 211
NOW OR FORMERLY
BOSTON & MAINE RR
C/O GUILFORD TRANS INDUSTRIES
142 RR CANAL STREET

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	127	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG

CONTINUED ON SHEET NO. 126

CONTINUED ON SHEET NO. 128

MBTA ACTIVE LINE

CANAL STREET

HANCOCK STREET

GARDNER STREET

50	1/11
47+13.71	
6'–0"	III
26'–6"	100

51	2/12
48+00.53	
6'–0"	III
26'–6"	100

52	1/11
49+1.33	
6'–0"	III
26'–6"	100

53	2/12
49+79.42	
6'–0"	III
26'–6"	100

54	1/11
50+72.83	
6'–0"	III
26'–6"	100

55	2/12
51+68.49	
6'–0"	III
26'–6"	100

56	1/11
52+52.42	
6'–0"	III
26'–6"	100

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

REMOVE EXIST. COBRA HEAD

MAP 24 LOT 211
NOW OR FORMERLY
BOSTON & MAINE RR
C/O GUILFORD TRANSPORTATION
142 RR CANAL

MAP 33 LOT 161
NOW OR FORMERLY
POTTER–BROWN, JULIE – 801
LABRIE, STEPHEN – 802
CARNEVALE, VALERIE – 803
S.E.D.R.D. BOOK 13632 PAGE 96

MAP 33 LOT 162
NOW OR FORMERLY
PJR REALTY TRUST
S.E.D.R.D. BOOK 13632 PAGE 96

MAP 33 LOT 201
NOW OR FORMERLY
SALCO II INC
S.E.D.R.D. BOOK 20422 PAGE 284

MAP 34 LOT 1
NOW OR FORMERLY
PRETEROTI, ANTHONY B – 801
WILLIAMS, SUZANNE L – 802
S.E.D.R.D. BOOK 24731 PAGE 331

TBM B
CHISEL "X" IN HYD
ELEVATION: 9.91'

HANDICAP ENTRANCE

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	128	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

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CONTINUED ON SHEET NO. 127

CONTINUED ON SHEET NO. 129

3"C, 4#4 + 2#8 GND. (LTG) & 4#1/0 + 2#6 (RECP)

56	1/11
52+52.42	
6'-0"	III
26'-6"	100

57	2/12
53+47.29	
6'-0"	III
26'-6"	100

58	1/11
54+28.00	
6'-0"	III
26'-6"	100

59	2/12
55+23.00	
6'-0"	III
26'-6"	100

60	3/13
56+15.04	
6'-0"	III
26'-6"	100

61	4/14
57+10.07	
6'-0"	III
26'-6"	100

PC +01+12.96
PC +48+24.59
PI +83.90
PI +90.77
PI +226.83

4"C, 3#4/0 + 1#6 GND. (LTG)

REMOVE EXIST. COBRA HEAD

LOAD CENTER #3

ELECTRICAL UTILITY SERVICE CONNECTION PER UTILITY STANDARDS

CANAL STREET
LYME STREET
CYPRESS STREET

MAP 24 LOT 211
NOW OR FORMERLY
BOSTON & MAINE RR
C/O GUILFORD TRANS INDUSTRIES

MAP 34 LOT 1
NOW OR FORMERLY
PRETEROTI, ANTHONY B – 801
WILLIAMS, SUZANNE L – 802
S.E.D.R.D. BOOK 24731 PAGE 331

MAP 34 LOT 15
NOW OR FORMERLY
REYES, SAYONARA E
S.E.D.R.D. BOOK 26613 PAGE 507

MAP 34 LOT 69
NOW OR FORMERLY
SOUTHERN NEW ENGLAND CONFERENCE
ASSOCIATION OF SEVENTH DAY ADVENTISTS
S.E.D.R.D.
BOOK 4219 PAGE 479

MAP 34 LOT 68
NOW OR FORMERLY
CERCONE, JAMES
CERCONE, MARIA
S.E.D.R.D. BOOK 17667 PAGE 525

MAP 34 LOT 82
NOW OR FORMERLY
NEW ENGLAND POWER COMPANY
ATTN PROPERTY TAX DEPT.

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	129	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG

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CONTINUED ON SHEET NO. 128

+ 2#8 GND. (LTG)
+ 2#6 (RECP)

"C, 4#4 + 2#8 GND. (LTG)
: 4#1/0 + 2#6 (RECP)

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

3"C, 4#4
& 4#1/0

MBTA ACTIVE LINE

MAP 124 LOT 211
NOW OR FORMERLY
BOSTON & MAINE RR
C/O GUILFORD TRANS INDUSTRIES
142 RR CANAL STREET

CANAL STREET

ROPES STREET

61	4/14	
57+10.07		
6'–0"	III	
26'–6"	100	

62	3/13	
58+19.53		
6'–0"	III	
26'–6"	100	

63	4/14	
59+11.77		
6'–0"	III	
26'–6"	100	

64	3/13	
59+86.27		
6'–0"	III	
26'–6"	100	

65	4/14	
60+76.03		
6'–0"	III	
26'–6"	100	

66	3/13	
61+55.42		
6'–0"	III	
26'–6"	100	

67	4/14	
62+33.70		
6'–0"	III	
26'–6"	100	

68	3/13	
63+12.37		
6'–0"	III	
26'–6"	100	

REMOVE EXIST.
COBRA HEAD

REMOVE EXIST.
COBRA HEAD

REMOVE EXIST.
COBRA HEAD

REMOVE EXIST.
COBRA HEAD

PI 61+26.77

277.1±

255.1±

MAP 34 LOT 88
NOW OR FORMERLY
53 1/2 CANAL STREET REALTY TRUST
PRICE, PHILIP A TR
S.E.D.R.D. BOOK 18400 PAGE 8

MAP 34 LOT 87
NOW OR FORMERLY
FIELDCOM REALTY TRUST
ROSENFIELD, ROBERT J TR
ROSENFIELD, ALAN L TR
ROSENFIELD, PHILIP I TR
S.E.D.R.D. BOOK 8443 PAGE 128

MAP 34 LOT 86
NOW OR FORMERLY
FIFTY ONE CANAL STREET LLC
S.E.D.R.D.
BOOK 23988 PAGE 167

"GENE'S HI TECH
AUTO REPAIR"

"PARKING IN
DRIVEWAY
J.N. PHILLIPS
ONLY"

"SELECT A VAC"

"SELECT A VAC"

"SELECT A VAC"

"SUNRISE
CAR WASH"

F.F.E.=10.44
GARAGE

F.F.E.=10.50
GARAGE

F.F.E.=10.31

F.F.E.=11.70

F.F.E.=11.58
GARAGE

F.F.E.=11.47
GARAGE

F.F.E.=10.85

F.F.E.=10.67
GARAGE

F.F.E.=10.90

F.F.E.=10.80
GARAGE

F.F.E.=10.76
GARAGE

1 STORY

1 STORY

1 STORY

1 STORY

6' CHAIN LINK FENCE

8' CHAIN LINK FENCE

4' METAL FENCE

4' CHAIN LINK FENCE

GRAVEL

GRASS

TRANS. TOWER

BIT.

CONC.

UP#
13.0274

UP#
2725

UP#
2728

UP#
2729

UP#
2727

UP#
2007

UP#4/2728

DRY LAYOUT

DITCH

VGC

CONTINUED ON SHEET NO. 130

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	130	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG

CONTINUED ON SHEET NO. 129

3"C, 4#4 + 2#8 GND. (LTG)
& 4#1/0 + 2#6 (RECP)

67	4/14
62+33.70	
6'–0"	III
26'–6"	100

68	3/13
63+12.37	
6'–0"	III
26'–6"	100

69	4/14
63+91.17	
6'–0"	III
26'–6"	100

70	3/13
64+98.24	
6'–0"	III
26'–6"	100

71	4/14
65+48.60	
6'–0"	III
26'–6"	100

72	3/13
66+16.49	
6'–0"	III
26'–6"	100

73	4/14
66+93.44	
6'–0"	III
26'–6"	100

3"C, 2#4 + 1#8 GND. (LTG)
& 2#1/0 + 1#6 (RECP)

MBTA ACTIVE LINE

CANAL STREET

ROPES STREET

POND STREET

REMOVE EXIST. COBRA HEAD

R&R PED LIGHT POLE

R&R HANDHOLE

PC +39.37

PC +55.53

PT +69.93

PC +55.27

PT +71.85

PT +82.13

PC +82.68

MAP 34 LOT 290
NOW OR FORMERLY
SOUTH HARBOR HOLDINGS LLC
S.E.D.R.D. BOOK 17762 PAGE 167

MAP 34 LOT 301
NOW OR FORMERLY
BRITO REALTY LLC
17 CANAL STREET
S.E.D.R.D. BOOK 14503 PAGE 89
AREA = 0.423 ACRES

MAP 24 LOT 211
NOW OR FORMERLY
BOSTON & MAINE RR
C/O GUILFORD TRANS INDUSTRIES

MAP 34 LOT 478
NOW OR FORMERLY
CJ REALTY TRUST
S.E.D.R.D. BOOK 29386 PAGE 79

NOW OR FORMERLY
SALEM, CITY OF

"DOMINOS PIZZA"

"ICE HOUSE"

"KEEP RIGHT SYMBOL"

CONTINUED ON SHEET NO 131

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	131	209
PROJECT FILE NO.	605146		

LIGHTING PLANS

15-Oct-2015

93692 PS&E-2 LIGHTING.DWG

CONTINUED ON SHEET NO. 130

MILL STREET

WASHINGTON STREET

73	4/14
66+93.44	
6'-0"	III
26'-6"	100

3"C, 2#4 + 1#8 GND. (LTC)
& 2#1/0 + 1#6 (RECP)

REMOVE EXIST. COBRA HEAD

REMOVE EXIST. COBRA HEAD

R&R PED LIGHT POLE

R&R HANDHOLE

R&R HANDHOLE

R&R PED LIGHT POLE

PC +55.27
PT +71.85
PT +62.13
PC +82.68
PT +24.18

155 156 157 158 66 72 71 70 69

"NO PARKING"
"KEEP RIGHT SYMBOL"
"MILL ST" "CANAL ST"
"WEST 114" "PEABODY 42" "DANVERS 35" "MARBLEHEAD"
"TO 1A SOUTH" "SWAMPSCOTT" "LYNN"
"ICE HOUSE"
"PUBLIC PARKING"
"RIGHT LANE FOR RIGHT TURN"
"30 MPH"
"NO PARKING"
"WASHINGTON ST" "LEFT LANE MUST TURN LEFT"
"LEFT LANE FOR LEFT TURN"
"RIGHT LANE MUST TURN RIGHT CANAL ST BUSINESS DIST."
"WHITE REFLECTOR"
SIGN IN NOT READABLE CONDITION
STONE RETAINING WALL
HANDICAP RAMP
12"SYCAMORE
10"SYCAMORE
MAP 34 LOT 479 NOW OR FORMERLY SALEM, CITY OF
F.F.E.=12.76
1 STORY
MAP 34 LOT 478 NOW OR FORMERLY 1 REALTY TRUST S.E.D.R.D. BOOK 13686 PAGE 286
F.F.E.=15.45
F.F.E.=15.58
"DOMINOS PIZZA"
MAP 34 LOT 300 NOW OR FORMERLY SAMARI GROUP, LLC S.E.D.R.D. BOOK 13619 PAGE 141
F.F.E.=14.09
F.F.E.=16.80 GARAGE
F.F.E.=17.26
F.F.E.=18.54
F.F.E.=23.37
3 STORY
F.F.E.=19.96
F.F.E.=19.26
F.F.E.=16.62
F.F.E.=14.35
F.F.E.=13.49
F.F.E.=11.95
1 STORY
NOW OR FORMERLY SALEM, CITY OF
4' CHAIN LINK FENCE ON TOP OF WALL
8" CHAIN LINK FENCE
6" PIPE
UP#4 2735 BXF RISER
UP#5 2735 BXF RISER
UP#6 2735 BXF RISER
UP#7 2735 BXF RISER
INV.=3.48
INV.=3.81
523.2'±
658.3'±
CITY LAYOUT
BIT.
CONC.
VGC
SBC
GRASS
BRICK
HANDICAP RAMP

NOTES:

1. CONDUIT IS SHOWN SCHEMATICALLY ONLY. CONTRACTOR MAY REVISE THE CONDUIT ALIGNMENT IN THE FIELD BASED ON THE EXISTING AND PROPOSED UTILITIES.

HOR. SCALE IN FEET
0 20 50 100

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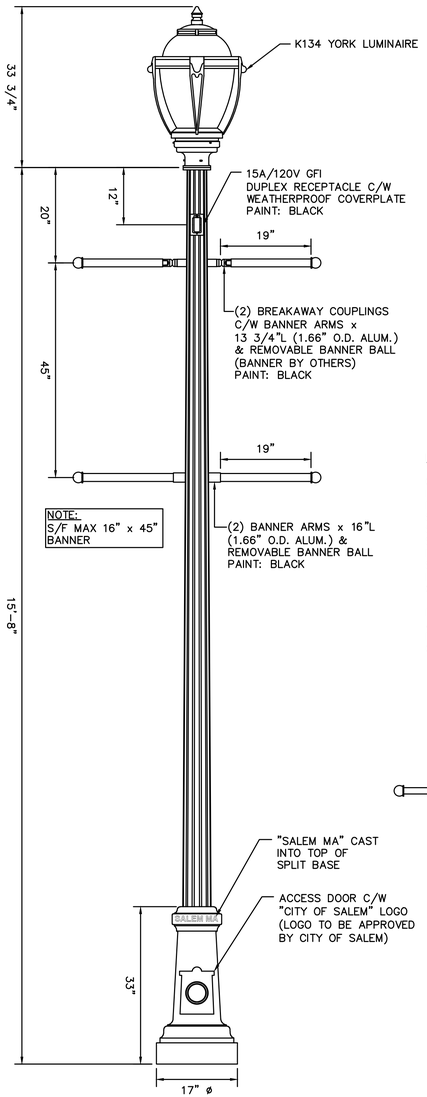
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	132	209
PROJECT FILE NO.	605146		

LIGHTING DETAILS

93692 PS&E-2 LIGHTING DETAILS.DWG 14-Oct-2015



ORNAMENTAL LIGHT POLE AND FIXTURE
N.T.S.

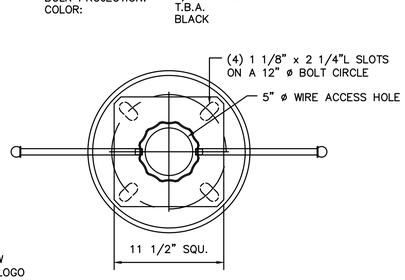
LUMINAIRE SPECIFICATIONS

CATALOGUE NO.:	K134R-P4AR-III-LED-75(SSL)-7030-120:277-K4/K42
MANUFACTURER:	KING LUMINAIRE
GLOBE MAT'L:	ACRYLIC
IES CLASSIFIC.:	TYPE III
WATTAGE:	75W
LIGHT SOURCE:	LED
LINE VOLTAGE:	120V (MULTI-TAP)
POLE ADAPTOR:	K4/K42
COLOR:	BLACK

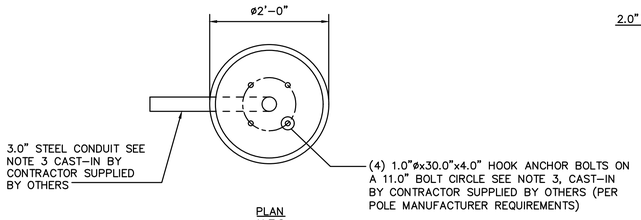
QUICK DISCONNECT ☒
TERMINAL BLOCK ☐

POLE BASE SPECIFICATIONS

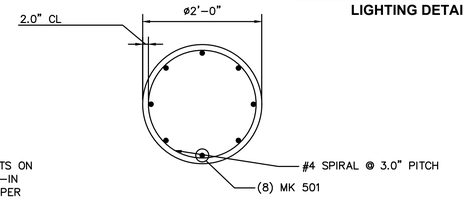
CATALOGUE NO.:	KSB85-A-FF-15'-8"-DR-BA
MANUFACTURER:	KING LUMINAIRE
POLE HEIGHT:	15'-8"
SHAFT TIP SIZE:	4 1/8"
SHAFT BUTT SIZE:	6 5/16"
SHAFT MATERIAL:	12 FLAT FLUTED FORMED ALUM.
BASE MATERIAL:	CAST ALUMINUM
SLIPFITTER:	3 1/2" O.D. x 3 1/2" LONG
POLE WEIGHT:	T.B.A.
OPTIONS:	DUPLEX RECEPTACLE BANNER ARMS
BOLT CIRCLE:	12" ø
ANCHOR BOLTS:	3/4" ø x 27"L
BOLR PROJECTION:	T.B.A.
COLOR:	BLACK



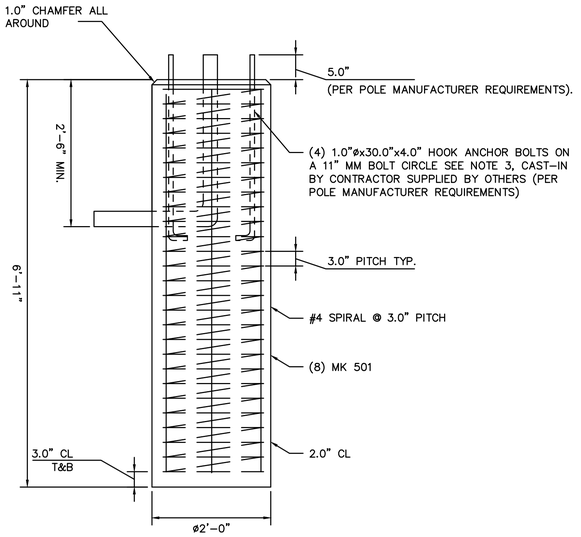
BASE DETAIL
N.T.S



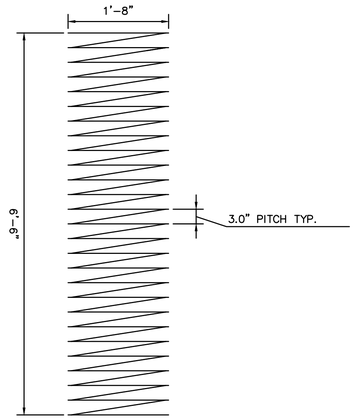
PLAN
N.T.S.



REINFORCING DETAIL
N.T.S.



ELEVATION
N.T.S.



#4 SPRIAL

BENDING SCHEDULE
N.T.S.

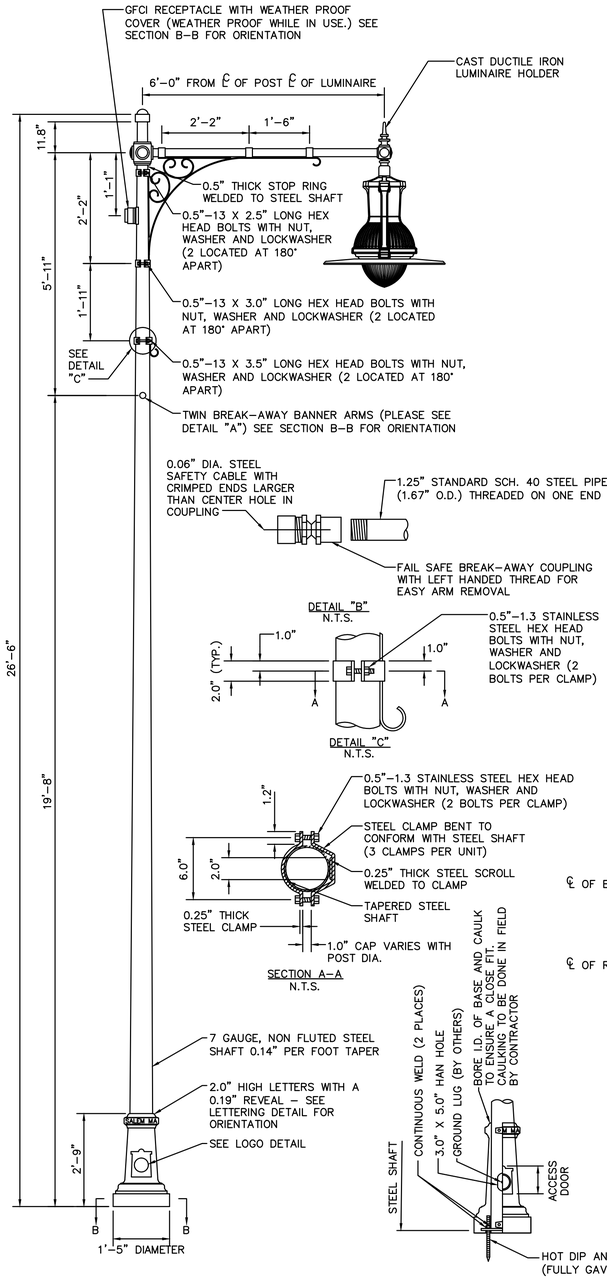
GENERAL NOTES:

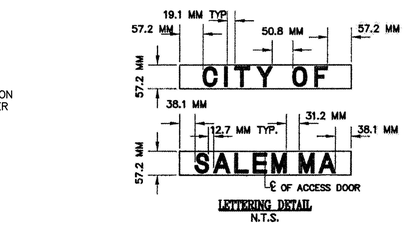
1. CONCRETE STRENGTH f'c – 4350 PSI.
2. REINFORCING STEEL: ATSM A615 (REBAR) GRADE 60.
3. CONTRACTOR TO SUPPLY ANCHOR BOLTS, TEMPLATE, CONDUIT SWEEPS AND GROUND WIRE, PRODUCTION WILL NOT BEGIN UNTIL CONTRACTOR RECEIVES THESE ITEMS.
4. CONTRACTOR TO SPECIFY DIMENSION OF EXTENSION LENGTH ABOVE TOP OF PRECAST BASE OF BOTH CONDUIT AND ANCHOR BOLTS PRIOR TO APROVAL OF BASE.

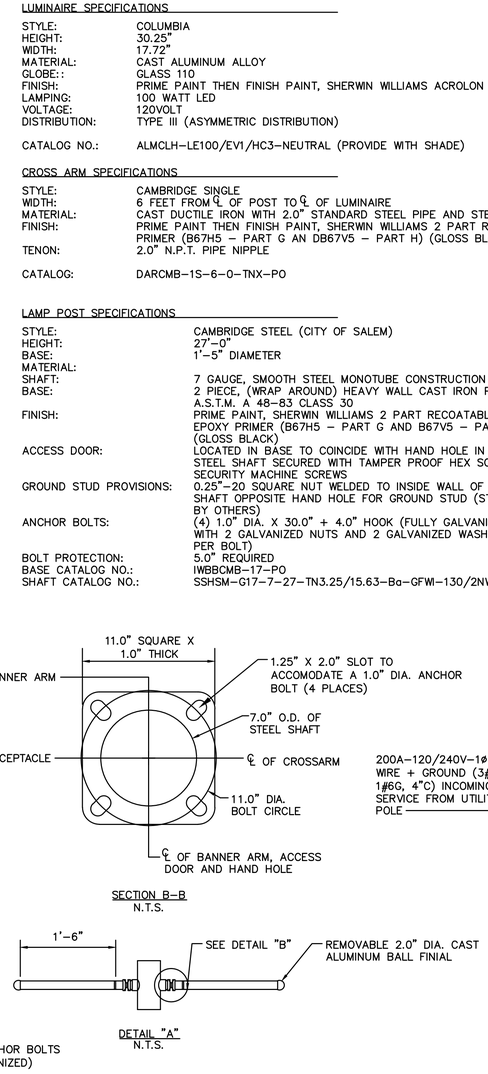
SUBMITTAL REQUIREMENTS

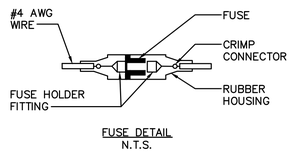
1. 2 SPARE LUMINARIES AND 2 SPARE POLE BASES SHALL BE PROVIDED TO THE CITY OF SALEM, MA.
2. LUMINARIES ARE TO HAVE CUT-OFF OPTICS AS SHOWN, UNLESS OTHER WISE NOTED ON THE LIGHTING PLANS.
3. FIXTURES AND POLES MANUFACTURED BY HOLOPHANE OR ANTIQUE LIGHTING COMPANY WILL BE CONSIDERED PROVIDED THEY MATCH THE DESIGN AND CASTING FEATURES OF THE SPECIFIED LUMINAIRES AND POLE BASES.
4. TO REQUEST APPROVAL OF AN EQUAL LISTED ABOVE, SUBMIT ONE LUMINAIRE AND ONE CAST BASE WITH THE SALEM CREST FROM THE SPECIFIED MANUFACTURER IN NOTE 2 ABOVE AND ONE LUMINAIRE AND POLE BASE FROM AN ALTERNATE MANUFACTURER LISTED ABOVE
5. FOR APPROVAL.

   SHOULD THE SUBMITTED LUMINAIRE/POLE BASE BE SHOWN TO MATCH THE SPECIFED LUMINAIRE/POLE BASE, THE SAMPLES SUBMITTED FOR APPROVAL SHALL BE TURNED OVER TO THE CITY OF SALEM, MA TO MEET THE REQUIREMENT OF SPARES LISTED IN NOTE 1 ABOVE.









LUMINAIRE SPECIFICATIONS

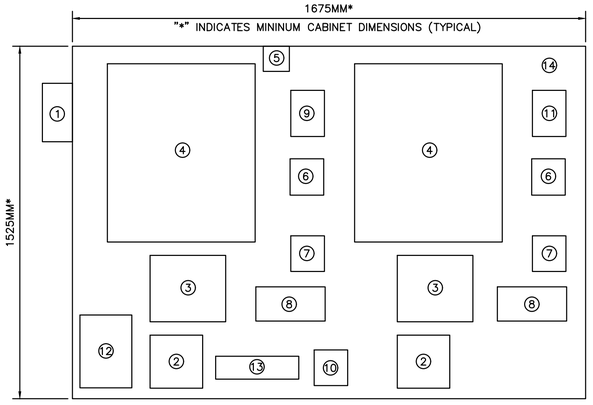
STYLE:	COLUMBIA
HEIGHT:	30.25"
WIDTH:	17.72"
MATERIAL:	CAST ALUMINUM ALLOY
GLOBE::	GLASS 110
FINISH:	PRIME PAINT THEN FINISH PAINT, SHERWIN WILLIAMS ACROLON – CLASSIC BLACK
LAMPING:	100 WATT LED
VOLTAGE:	120VOLT
DISTRIBUTION:	TYPE III (ASYMMETRIC DISTRIBUTION)
CATALOG NO.:	ALMCLH–LE100/EV1/HC3–NEUTRAL (PROVIDE WITH SHADE)

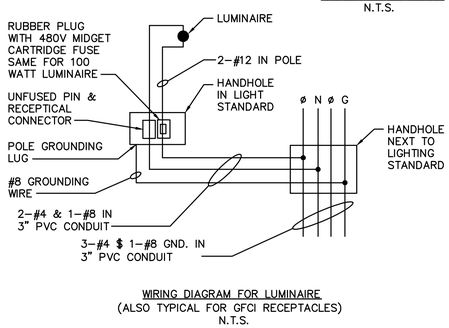
CROSS ARM SPECIFICATIONS

STYLE:	CAMBRIDGE SINGLE
WIDTH:	6 FEET FROM ℄ OF POST TO ℄ OF LUMINAIRE
MATERIAL:	CAST DUCTILE IRON WITH 2.0" STANDARD STEEL PIPE AND STEEL SCROLL WORK
FINISH:	PRIME PAINT THEN FINISH PAINT, SHERWIN WILLIAMS 2 PART RECOATABLE EPOXY PRIMER (B67H5 – PART G AN DB67V5 – PART H) (GLOSS BLACK)
TENON:	2.0" N.P.T. PIPE NIPPLE
CATALOG:	DARCMB–1S–6–0–TNX–PO

LAMP POST SPECIFICATIONS

STYLE:	CAMBRIDGE STEEL (CITY OF SALEM)
HEIGHT:	27'–0"
BASE:	1'–5" DIAMETER
MATERIAL:	
SHAFT:	7 GAUGE, SMOOTH STEEL MONOTUBE CONSTRUCTION
BASE:	2 PIECE, (WRAP AROUND) HEAVY WALL CAST IRON PER A.S.T.M. A 48–83 CLASS 30
FINISH:	PRIME PAINT, SHERWIN WILLIAMS 2 PART RECOATABLE EPOXY PRIMER (B67H5 – PART G AND B67V5 – PART H) (GLOSS BLACK)
ACCESS DOOR:	LOCATED IN BASE TO COINCIDE WITH HAND HOLE IN STEEL SHAFT SECURED WITH TAMPER PROOF HEX SOCKET SECURITY MACHINE SCREWS
GROUND STUD PROVISIONS:	0.25"–20 SQUARE NUT WELDED TO INSIDE WALL OF SHAFT OPPOSITE HAND HOLE FOR GROUND STUD (STUD BY OTHERS)
ANCHOR BOLTS:	(4) 1.0" DIA. X 30.0" + 4.0" HOOK (FULLY GALVANIZED WITH 2 GALVANIZED NUTS AND 2 GALVANIZED WASHERS PER BOLT)
BOLT PROTECTION:	5.0" REQUIRED
BASE CATALOG NO.:	IWBBCMB–17–PO
SHAFT CATALOG NO.:	SSHSM–G17–7–27–TN3.25/15.63–Ba–GFWI–130/2NW–PO





SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	133	209
PROJECT FILE NO.	605146		

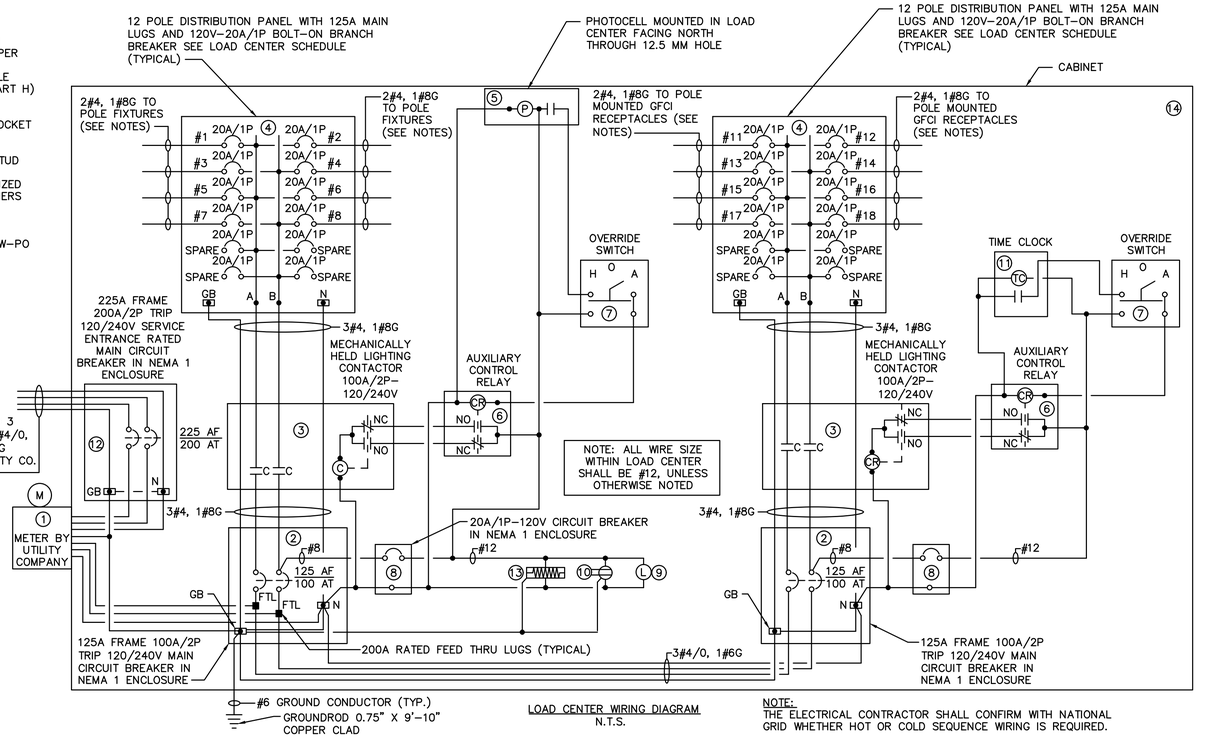
LIGHTING DETAILS

NOTES:

1. #8 WIRE SHOULD BE BUTT SPLICED TO THE #4'S WHEN WIRING TO THE CIRCUIT BREAKERS.
2. #12 WIRE SHOULD BE BUTT SPLICED TO THE #4'S WHEN WIRING TO POLE FIXTURES AND GFI RECEPTACLES FOR FINAL CONNECTIONS.

(1) UTILITY METER
(2) 225AF/200AT/2P–240V CIRCUIT BREAKER
(3) MECHANICALLY HELD LIGHTING CONTACTOR 100A–2P–240V
(4) MAIN LUGS ONLY 225A DISTRIBUTION PANEL
(5) PHOTOCELL
(6) AUXILARY CONTROL RELAY
(7) HAND–OFF–AUTO OVERRIDE SWITCH
(8) 20AF/20AT–1P 120 VOLT CIRCUIT BREAKER
(9) 100 WATT INCANDESCENT LAMP SOCKET AND SWITCH
(10) 20A GFI RECEPTACLE
(11) 24hr/365day, ASTRONOMICAL TIME CLOCK
(12) 225AF/200AT/2P–240V SERVICE ENTRANCE RATED CIRCUIT BREAKER
(13) 500W/120V,1ø HEATER KIT WITH STRIP HEATER, GUARDS & THERMOSTAT
(14) NEMA 3R ENCLOSURE, 2 DOOR (1 LOUVERED), PAD–LOCKABLE

(NOTE: FIELD VERIFY ARRANGEMENT OF COMPONENTS WITHIN CABINET)



LOAD CENTER WIRING DIAGRAM
N.T.S.

NOTE:
THE ELECTRICAL CONTRACTOR SHALL CONFIRM WITH NATIONAL GRID WHETHER HOT OR COLD SEQUENCE WIRING IS REQUIRED.

93692 PSAE-2 LIGHTING DETAILS.DWG 14-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	134	209
PROJECT FILE NO.	605146		

LIGHTING DETAILS

93692 PSAE-2 LIGHTING DETAILS.DWG 14-Oct-2015

LOAD CENTER SCHEDULE – SALEM CANAL STREET LOAD CENTER NO. 1 LIGHTING PANELBOARD

	CIRCUIT BREAKER							
CIRCUIT NUMBER	FRAME SIZE AMPS	TRIP SETTING	I C AMPS	POLES	VOLTAGE	NAMEPLATE INSCRIPTION	CONN. LOAD KVA	REMARKS
1	70	20	10,000	1	120	CANAL ST. SB & JEFF. AVE. EB,WB	0.60	LUM 1, 3, 5, 7, 8, 10
2	70	20	10,000	1	120	CAN. ST. NB & LORING. AVE. SB,NB	0.60	LUM 2, 4, 6, 9, 11, 7A
3	70	20	10,000	1	120	CANAL ST. SB & JEFF. AVE. EB,WB	0.70	LUM 14, 16, 18, 20, 22, 24
4	70	20	10,000	1	120	CANAL ST. NB & SB	0.60	LUM 12, 13, 15, 17, 19, 21, 23
5	70	20	10,000	1	120	SPARE		
6	70	20	10,000	1	120	SPARE		
7	70	20	10,000	1	120	SPARE		
8	70	20	10,000	1	120	SPARE		
9	70					SPACE		
10	70					SPACE		
11	70					SPACE		
12	70					SPACE		

LOAD CENTER SCHEDULE – SALEM CANAL STREET LOAD CENTER NO. 2 LIGHTING PANELBOARD

	CIRCUIT BREAKER							
CIRCUIT NUMBER	FRAME SIZE AMPS	TRIP SETTING	I C AMPS	POLES	VOLTAGE	NAMEPLATE INSCRIPTION	CONN. LOAD KVA	REMARKS
1	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	0.6	LUM 25, 27, 29, 31, 33, 35
2	70	20	10,000	1	120	CANAL STREET NORTHBOUND	0.5	LUM 26, 28, 30, 32, 34,
3	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	0.60	LUM 36, 38, 40, 42, 44, 46
4	70	20	10,000	1	120	CANAL STREET NORTHBOUND	0.60	LUM 37, 39, 41, 43, 45, 47
5	70	20	10,000	1	120	SPARE		
6	70	20	10,000	1	120	SPARE		
7	70	20	10,000	1	120	SPARE		
8	70	20	10,000	1	120	SPARE		
9						SPACE		
10						SPACE		
11						SPACE		
12						SPACE		

LOAD CENTER SCHEDULE – SALEM CANAL STREET LOAD CENTER NO. 3 LIGHTING PANELBOARD

	CIRCUIT BREAKER							
CIRCUIT NUMBER	FRAME SIZE AMPS	TRIP SETTING	I C AMPS	POLES	VOLTAGE	NAMEPLATE INSCRIPTION	CONN. LOAD KVA	REMARKS
1	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	0.6	LUM 48, 50, 52, 54, 56, 58
2	70	20	10,000	1	120	CANAL STREET NORTHBOUND	0.6	LUM 49, 51, 53, 55, 57, 59
3	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	0.7	LUM 60, 62, 64, 66, 68, 70, 72
4	70	20	10,000	1	120	CANAL STREET NORTHBOUND	0.7	LUM 61, 63, 65, 67, 69, 71, 73
5	70	20	10,000	1	120	SPARE		
6	70	20	10,000	1	120	SPARE		
7	70	20	10,000	1	120	SPARE		
8	70	20	10,000	1	120	SPARE		
9						SPACE		
10						SPACE		
11						SPACE		
12						SPACE		

LOAD CENTER SCHEDULE – SALEM CANAL STREET LOAD CENTER NO. 1 RECEPTACLE PANELBOARD

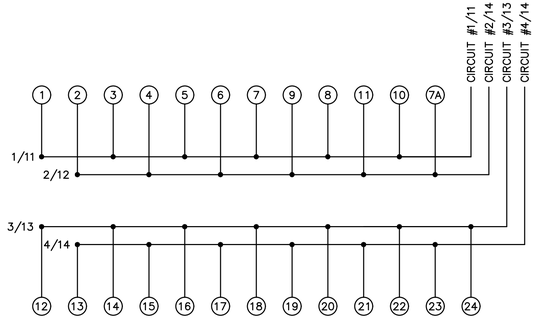
	CIRCUIT BREAKER							
CIRCUIT NUMBER	FRAME SIZE AMPS	TRIP SETTING	I C AMPS	POLES	VOLTAGE	NAMEPLATE INSCRIPTION	CONN. LOAD KVA	REMARKS
11	70	20	10,000	1	120	CANAL ST. SB & JEFF. AVE. EB,WB	1.08	GFCI 1, 3, 5, 7, 8, 10
12	70	20	10,000	1	120	CAN. ST. NB & LORING. AVE. SB,NB	1.08	GFCI 2, 4, 6, 9, 11, 7A
13	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	1.26	GFCI 12, 14, 16, 18, 20, 22, 24
14	70	20	10,000	1	120	CANAL STREET NORTHBOUND	1,08	GFCI 13, 15, 17, 19, 21, 23
15	70	20	10,000	1	120	SPARE		
16	70	20	10,000	1	120	SPARE		
17	70	20	10,000	1	120	SPARE		
18	70	20	10,000	1	120	SPARE		
19	70					SPACE		
20	70					SPACE		
21	70					SPACE		
22	70					SPACE		

LOAD CENTER SCHEDULE – SALEM CANAL STREET LOAD CENTER NO. 2 RECEPTACLE PANELBOARD

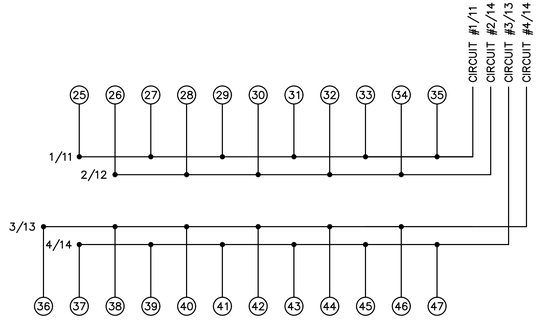
	CIRCUIT BREAKER							
CIRCUIT NUMBER	FRAME SIZE AMPS	TRIP SETTING	I C AMPS	POLES	VOLTAGE	NAMEPLATE INSCRIPTION	CONN. LOAD KVA	REMARKS
11	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	1.08	GFCI 25, 27, 29, 31, 33, 35
12	70	20	10,000	1	120	CANAL STREET NORTHBOUND	0.90	GFCI 26, 28, 30, 32, 34
13	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	1.08	GFCI 36, 38, 40, 42, 44, 46
14	70	20	10,000	1	120	CANAL STREET NORTHBOUND	1.08	GFCI 37, 39, 41, 43, 45, 47
15	70	20	10,000	1	120	SPARE		
16	70	20	10,000	1	120	SPARE		
17	70	20	10,000	1	120	SPARE		
18	70	20	10,000	1	120	SPARE		
19						SPACE		
20						SPACE		
21						SPACE		
22						SPACE		

LOAD CENTER SCHEDULE – SALEM CANAL STREET LOAD CENTER NO. 3 RECEPTACLE PANELBOARD

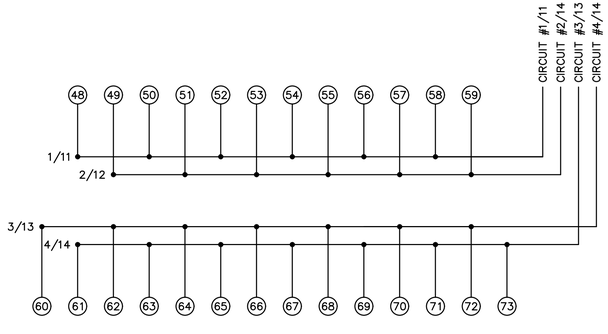
	CIRCUIT BREAKER							
CIRCUIT NUMBER	FRAME SIZE AMPS	TRIP SETTING	I C AMPS	POLES	VOLTAGE	NAMEPLATE INSCRIPTION	CONN. LOAD KVA	REMARKS
11	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	1.08	GFCI 48, 50, 52, 54, 56, 58
12	70	20	10,000	1	120	CANAL STREET NORTHBOUND	1.08	GFCI 49, 51, 53, 55, 57, 59
13	70	20	10,000	1	120	CANAL STREET SOUTHBOUND	1.26	GFCI 60, 62, 64, 66, 68, 70, 72
14	70	20	10,000	1	120	CANAL STREET NORTHBOUND	1.26	GFCI 61, 63, 65, 67, 69, 71, 73
15	70	20	10,000	1	120	SPARE		
16	70	20	10,000	1	120	SPARE		
17	70	20	10,000	1	120	SPARE		
18	70	20	10,000	1	120	SPARE		
19						SPACE		
20						SPACE		
21						SPACE		
22						SPACE		



WIRING DIAGRAM – LOAD CENTER NO. 1



WIRING DIAGRAM – LOAD CENTER NO. 2



WIRING DIAGRAM – LOAD CENTER NO. 3

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	135	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
2	PA	PLATANUS ACERFOLIA 'BLOODGOOD'	PLANETREE	2"–2.5" CALIPER
ORNAMENTAL TREES				
4	AM	AMELANCHIER CANADENSIS 'GLENFORM'	RAINBOW PILLAR SERVICEBERRY	6'–7'
5	MA	MALUS 'CENTURION'	CRABAPPLE	1.5"–2" CALIPER
SHRUBS				
7	HY	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS'	OAKLEAF HYDRANGEA	#3 POT, 18"–24"
32	IT	ITEA VIRGINICA 'LITTLE HENRY'	SWEETSPIRE	#3 POT, 18"–24"
9	JC	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	COLUMNAR JUNIPER	5'–6'
23	JH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#3 POT, 18"–24"
6	PM	PINUS MUGO 'PUMILIO'	DWARF MUGO PINE	18"–24"
9	PO	PHYSOCARPUS OPULIFOLIUS 'LITTLE DEVIL'	NINEBARK	#3 POT, 2'–3'
27	RO	ROSA KNOCK OUT 'PINK DOUBLE'	SUNNY KNOCK OUT ROSE	#3 POT, 18"–24"
44	VA	VACCINIUM ANGUSTIFOLIUM	LOW BUSH BLUEBERRIES	1 GALLON, 18" O.C. SPACING
7	VB	VIBURNUM DENTATUM 'BLUE MUFFIN'	VIBURNUM	2.5'–3'
PERENNIALS				
40	AL	ACHILLEA 'PAPRIKA'	YARROW	1 GALLON, 15" O.C. SPACING
13	CL	CALAMAGROSTIS 'KARL FOERSTER'	FEATHER REED GRASS	1 GALLON, 24" O.C. SPACING
47	NP	NEPETA 'WALKER'S LOW'	CATMINT	1 GALLON, 18" O.C. SPACING
49	RF	RUDBECKIA FULGIDA 'EARLY BIRD GOLD'	BLACK–EYED SUSAN	1 GALLON, 24" O.C. SPACING

JEFFERSON AVENUE

CANAL STREET

LORING AVENUE

PC +42.61

PC +18.20

PT +25.02

PC +78.29

PT +47.16

PROP LOAM & SEED

REM

RET

1–PA
10–NP
5–CL
5–RF
3–RO
1–HY
PROP BENCH (TYP)
3–JC
1–AM
7–IT
3–VB
CONNECT TO EXIST PATH
6–IT
5–HY
3–MA
15–AL
15–NP
3–PO
1–VB
7–RO
5–IT
9–RO
1–MA
5–JH
3–PM
12–RF
44–VA
3–AM
12–JH
15–AL
1–PM
3–CL
10–RF/
10–AL/
7–NP
3–JH
3–IT
5–RO
10–NP
15–NP
6–IT
32.27
10.00'
PROP IRRIGATION SYSTEM
4.00
PROTECT AND RETAIN EXIST PLANTS IN ISLAND TO REMAIN
PROP THERMOPLASTIC CROSSWALK (TYP)

MAP 31 LOT 90
408 JEFFERSON AVENUE
NOW OR FORMERLY
MCSHAY, PAUL
MCSHAY, THERESA
S.E.D.R.D. BOOK 21299 PAGE 192

MAP 31 LOT 89
410 JEFFERSON AVENUE
NOW OR FORMERLY
DOWARD, BRIAN W.
S.E.D.R.D. BOOK 23066 PAGE 59

MAP 31 LOT 88
NOW OR FORMERLY
REGAN, JOHN M
REGAN, M
S.E.D.R.D. BOOK

MAP 31 LOT 87
414 JEFFERSON AVENUE
NOW OR FORMERLY
BROWN, SAMUEL
S.E.D.R.D. BOOK 30135 PAGE 245

MAP 31 LOT 86
92 LORING AVENUE
NOW OR FORMERLY
NEWMAN, FLORA L.
S.E.D.R.D.
BOOK 90P07 PAGE 160

LOT 85
G AVENUE
FORMERLY
RONALD A
D.R.D.
10 PAGE 34

MAP 32 LOT 27
72 LORING AVENUE
NOW OR FORMERLY
JEFFERSON TRUST, THE
C/O DRUMLIN GROUP
S.E.D.R.D. BOOK 14511 PAGE 317

MAP 31 LOT 92
101 LORING AVENUE
NOW OR FORMERLY
OMEGA REALTY TRUST
S.E.D.R.D.
BOOK 21442 PAGE 477

MAP 32 LOT 26
NOW OR FORMERLY
NIKOLOPOULOS, NICK C
S.E.D.R.D. BOOK 15900 PAGE 53

MAP 32 LOT 25
NOW OR FORMERLY
LAY, DARA
S.E.D.R.D. BOOK 17036 PAGE 181

MAP 32 LOT 24
NOW OR FORMERLY
LOGLI, FAIK
LOGLI, ALBA
S.E.D.R.D. BOOK 22910 PAGE 2

MAP 32 LOT 23
NOW OR FORMERLY
BECKER, MICHAEL
S.E.D.R.D. BOOK 24092 PAGE 477

MAP 32 LOT 22
NOW OR FORMERLY
MAGUIRE, MARILYN G
MAGUIRE, AMY JEAN
S.E.D.R.D.
BOOK 13197 PAGE 435

MAP 32 LOT 21
NOW OR FORMERLY
TOY, JOHN S
TOY, ROSEMARY
S.E.D.R.D.
BOOK 23134 PAGE 188

MAP 32 LOT 20
71 LORING AVENUE
NOW OR FORMERLY
SALEM ST. COLLEGE ASSISTANCE CORPORATION
S.E.D.R.D. BOOK 14102 PAGE 29

(1909 SHLO #1233)

CITY LAYOUT

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

HOR. SCALE IN FEET
0 20 50 100

CONTINUED ON SHEET NO. 136

14-Oct-2015
93892 PS&E-2 LANDSCAPING.DWG

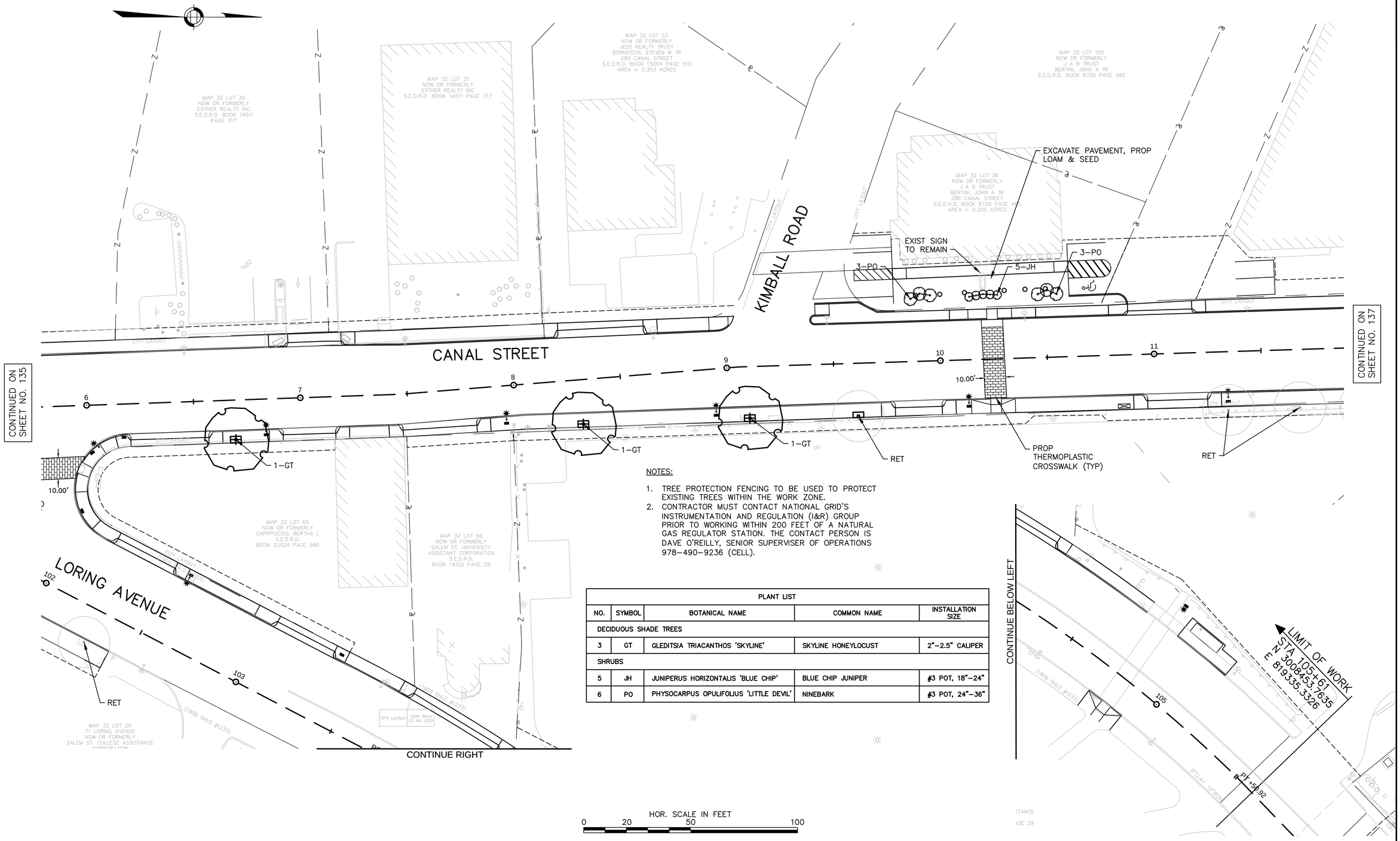
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	136	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSkE-2 LANDSCAPING.DWG



NOTES:

1. TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE.
2. CONTRACTOR MUST CONTACT NATIONAL GRID'S INSTRUMENTATION AND REGULATION (I&R) GROUP PRIOR TO WORKING WITHIN 200 FEET OF A NATURAL GAS REGULATOR STATION. THE CONTACT PERSON IS DAVE O'REILLY, SENIOR SUPERVISER OF OPERATIONS 978-490-9236 (CELL).

PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
3	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"-2.5" CALIPER
SHRUBS				
5	JH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#3 POT, 18"-24"
6	PO	PHYSOCARPUS OPULIFOLIUS 'LITTLE DEVIL'	NINEBARK	#3 POT, 24"-36"

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	137	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

93892 PSXE-2 LANDSCAPING.DWG 27-Oct-2015

CONTINUED ON SHEET NO. 136

CONTINUED ON SHEET NO. 138

CANAL STREET

TULIP STREET

ROSE STREET

PROP

PROP THERMOPLASTIC CROSSWALK (TYP)

1–AC

1–GT

RET

REM

PROP LOAM & SEED

PI +57.35

15.00'

10.00'

PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
1	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER
2	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER

HOR. SCALE IN FEET
0 20 50 100

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

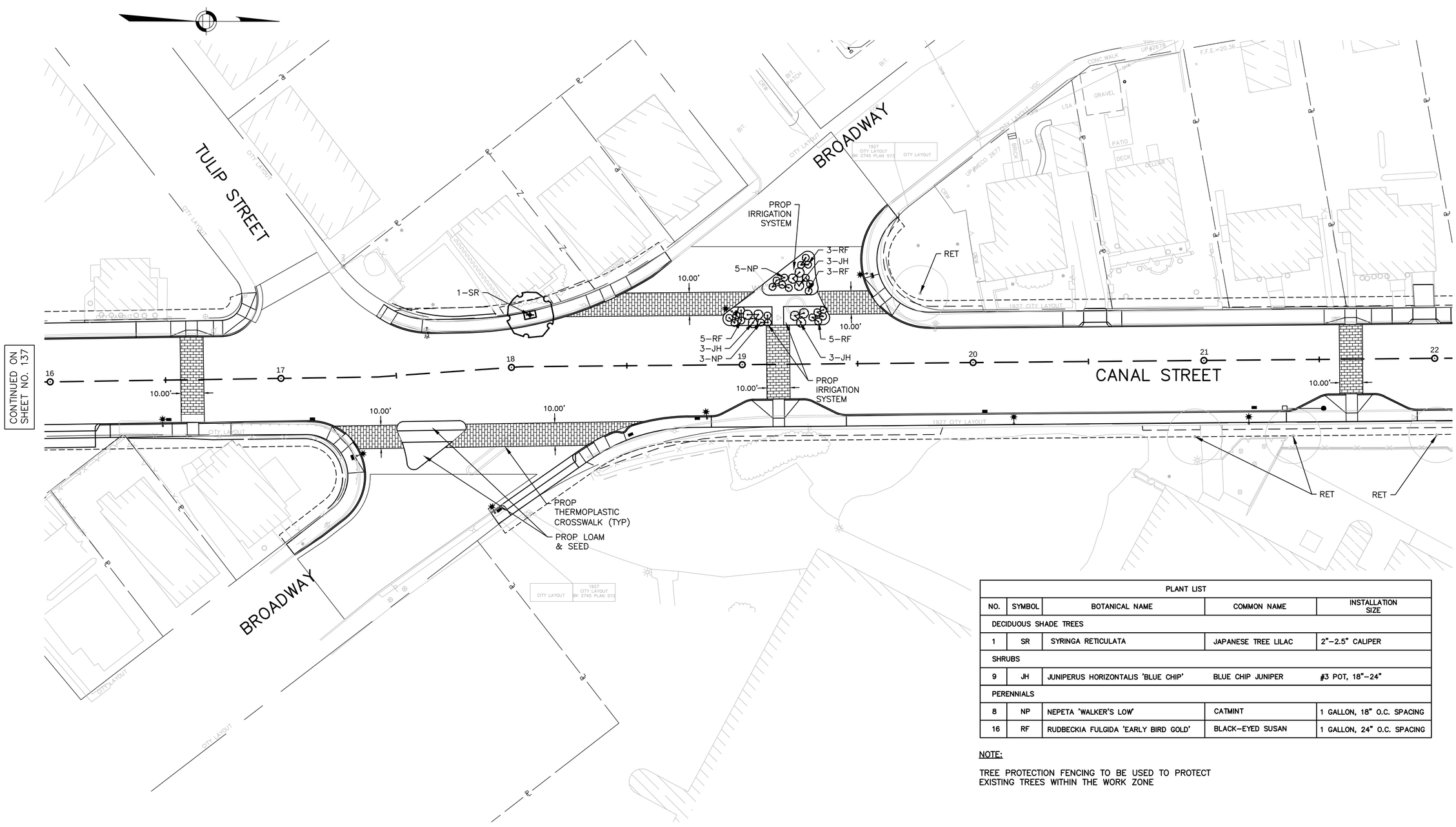
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	138	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSXE-2 LANDSCAPING.DWG



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
1	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER
SHRUBS				
9	JH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#3 POT, 18"–24"
PERENNIALS				
8	NP	NEPETA 'WALKER'S LOW'	CATMINT	1 GALLON, 18" O.C. SPACING
16	RF	RUDBECKIA FULGIDA 'EARLY BIRD GOLD'	BLACK–EYED SUSAN	1 GALLON, 24" O.C. SPACING

NOTE:

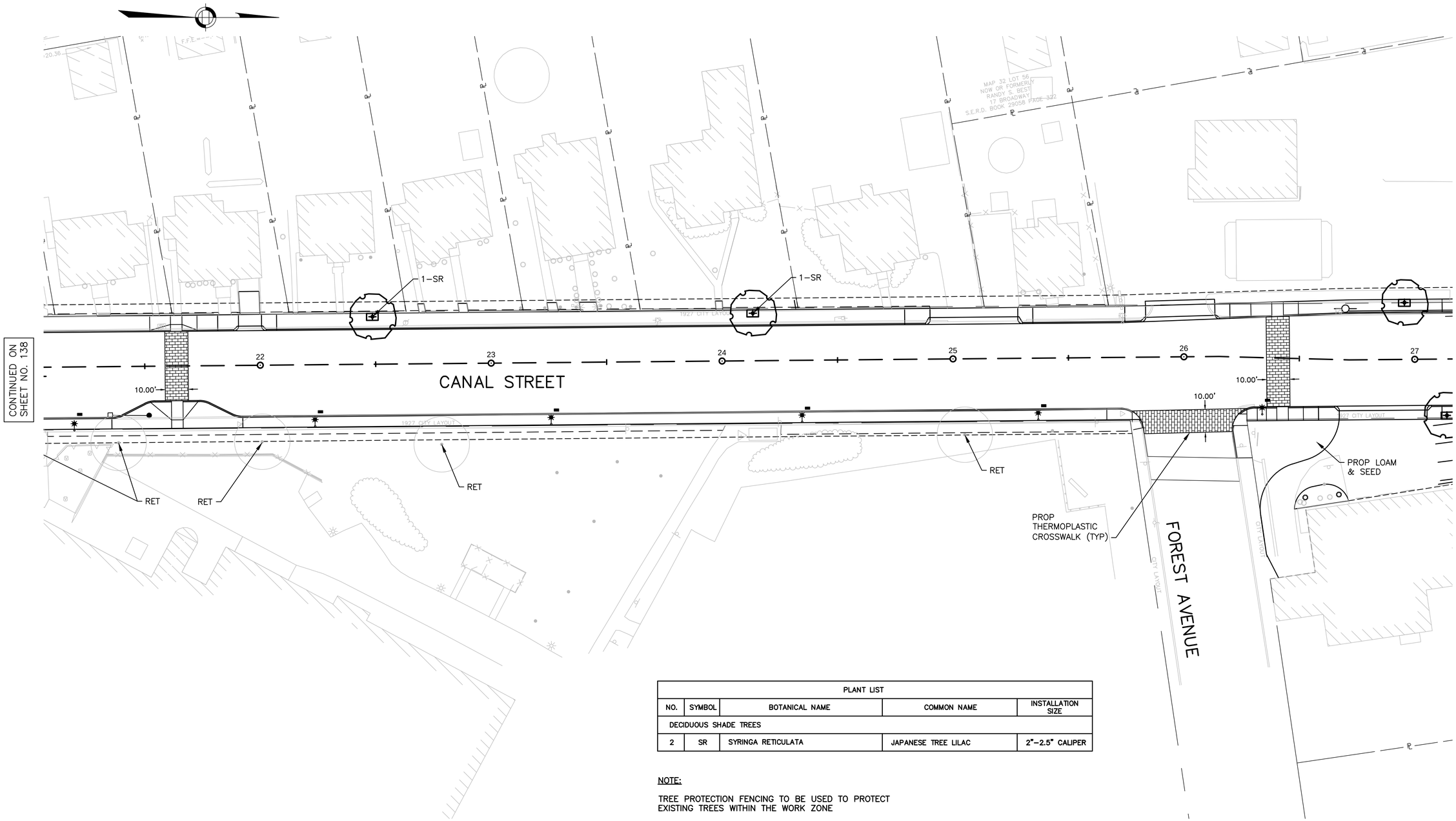
TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	139	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

93692 PSkE-2 LANDSCAPING.DWG 14-Oct-2015



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
2	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

HOR. SCALE IN FEET
0 20 50 100

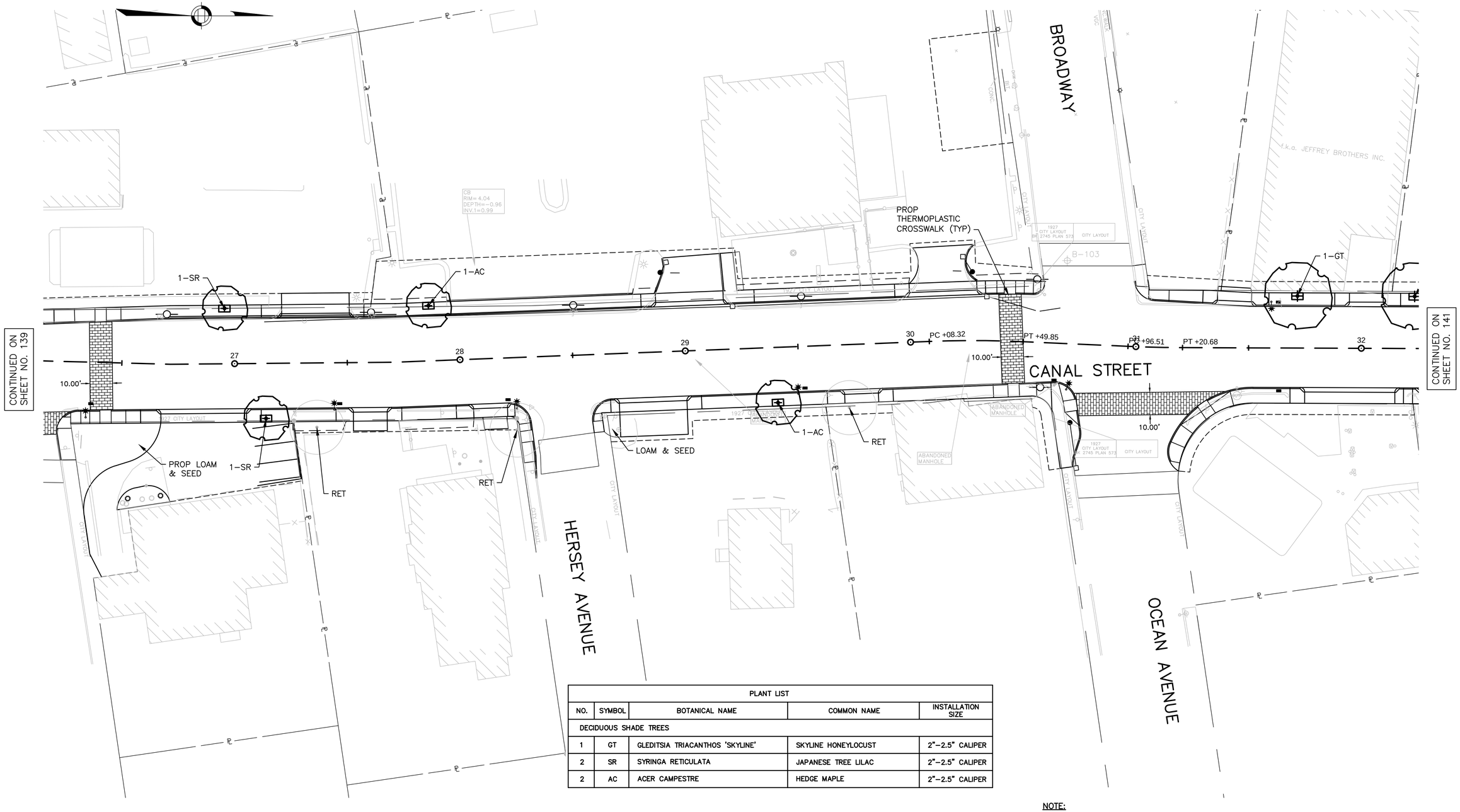
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	140	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSXE-2 LANDSCAPING.DWG



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
1	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER
2	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER
2	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER

HOR. SCALE IN FEET
0 20 50 100

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	141	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

93892 PSXE-2 LANDSCAPING.DWG 14-Oct-2015

CONTINUED ON SHEET NO. 140

CONTINUED ON SHEET NO. 142

f.k.a. JEFFREY BROTHERS INC.

3RY BLOCK WORKSHOP SPACES

CALIFORNIA OLIVE OIL CO.

1–GT

1–GT

RET

RET

+20.68 32 33 34 35 36 37

10.00'

CANAL STREET

MEADOW STREET

LAUREL STREET

PROP THERMOPLASTIC CROSSWALK (TYP)

RET

CITY LAYOUT

PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
2	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

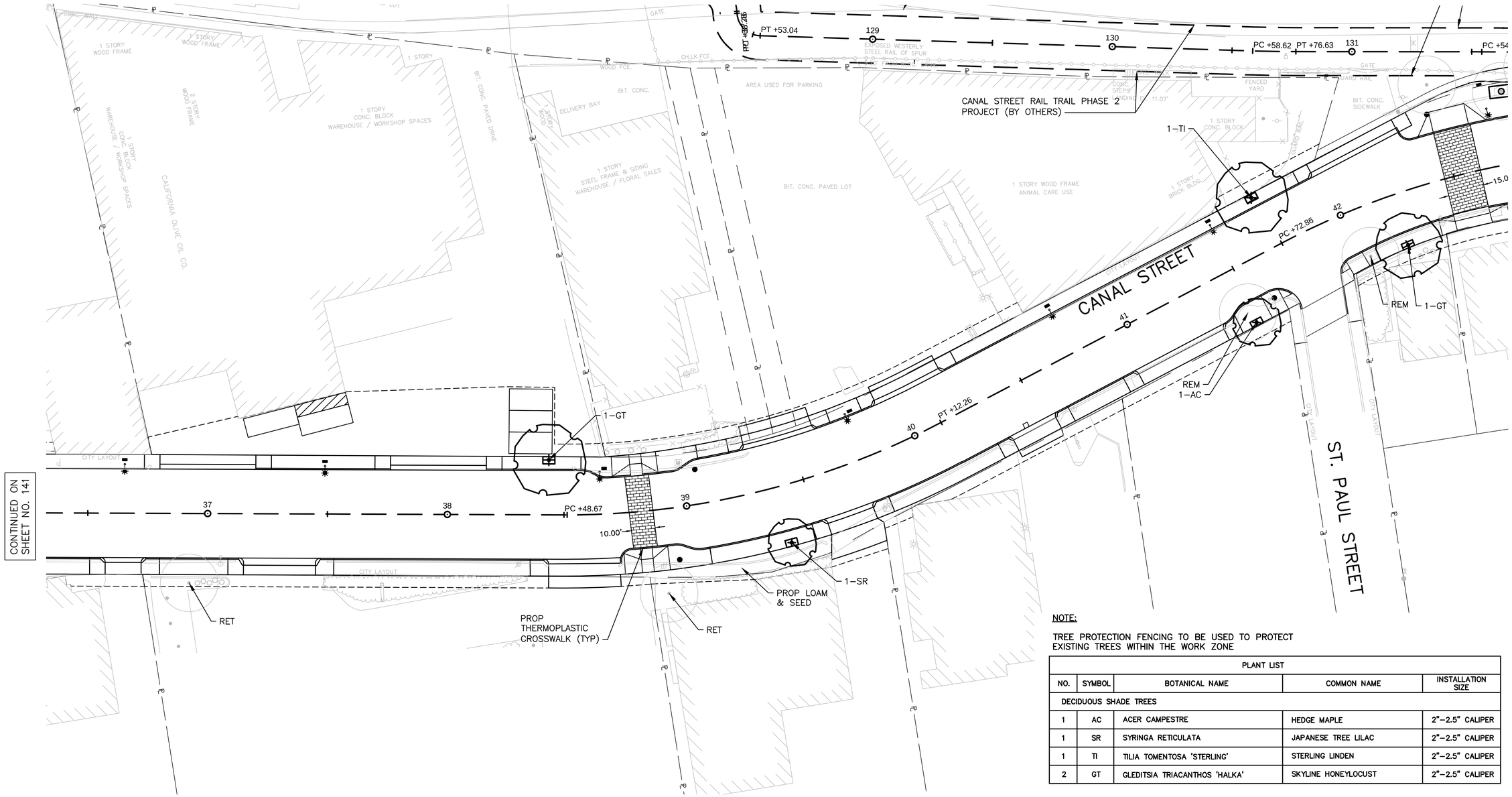
HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	142	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

93892 PSXE-2 LANDSCAPING.DWG 18-Dec-2015



NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
1	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER
1	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER
1	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"–2.5" CALIPER
2	GT	GLEDITSIA TRIACANTHOS 'HALKA'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER

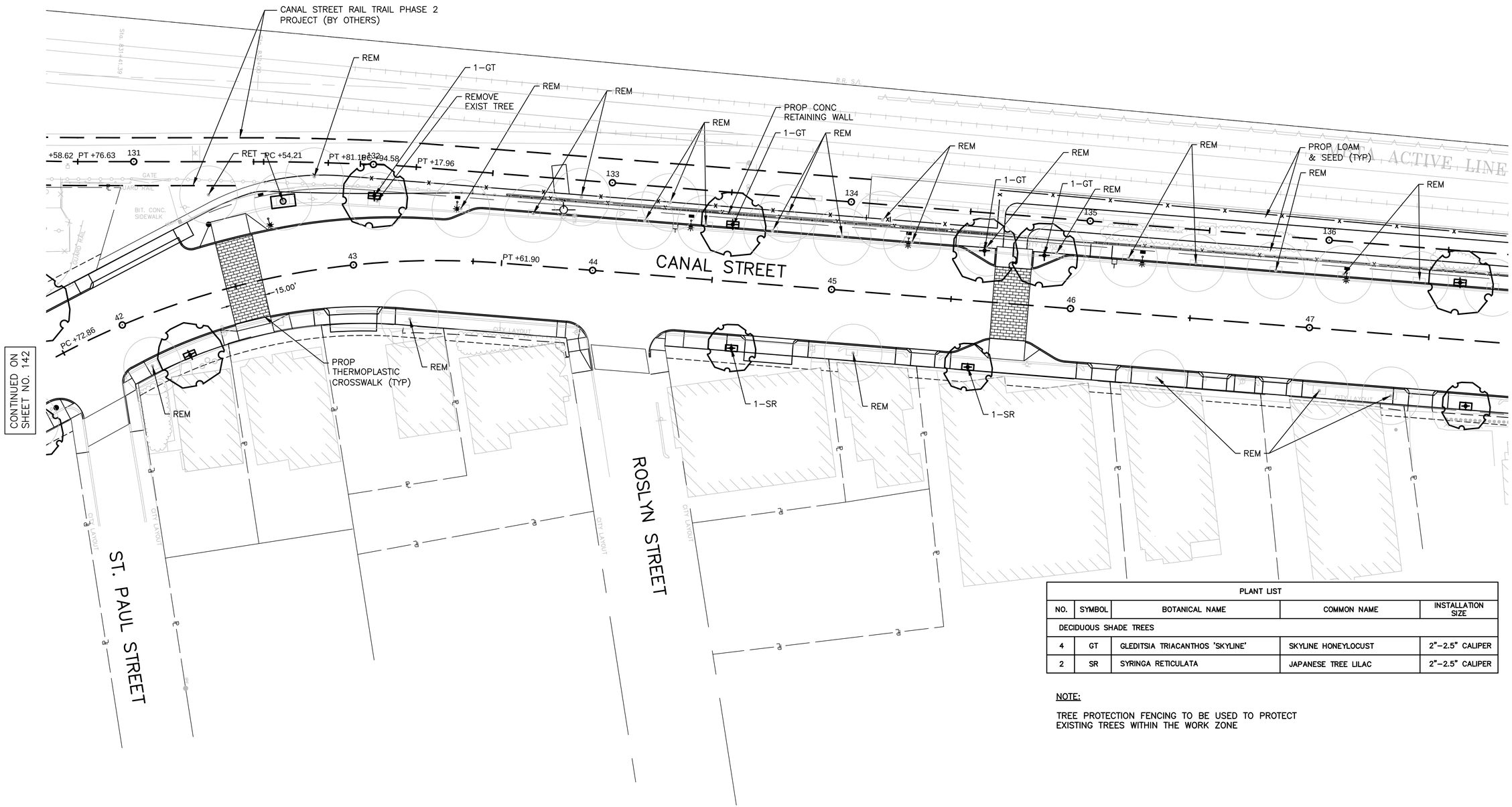
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	143	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

18-Dec-2015

93892 PSxE-2 LANDSCAPING.DWG



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
4	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER
2	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	144	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSkE-2 LANDSCAPING.DWG

CONTINUED ON SHEET NO. 143

CONTINUED ON SHEET NO. 145

PROP LOAM & SEED (TYP)
REM
1–TI
PROP CONC RETAINING WALL
PROP 10' HMA SHARED USE PATH
1–AC
PROP THERMOPLASTIC CROSSWALK (TYP)
ACTIVE LINE
1955 LAYOUT – MAIN BASELINE
839+00
840+00
842+00
PI 48.89
10.00
136
137
138
139
140
141
47
48
49
50
51
52
CANAL STREET
HANCOCK STREET
GARDNER STREET
CITY LAYOUT

PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
1	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER
4	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"–2.5" CALIPER

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

HOR. SCALE IN FEET
0 20 50 100

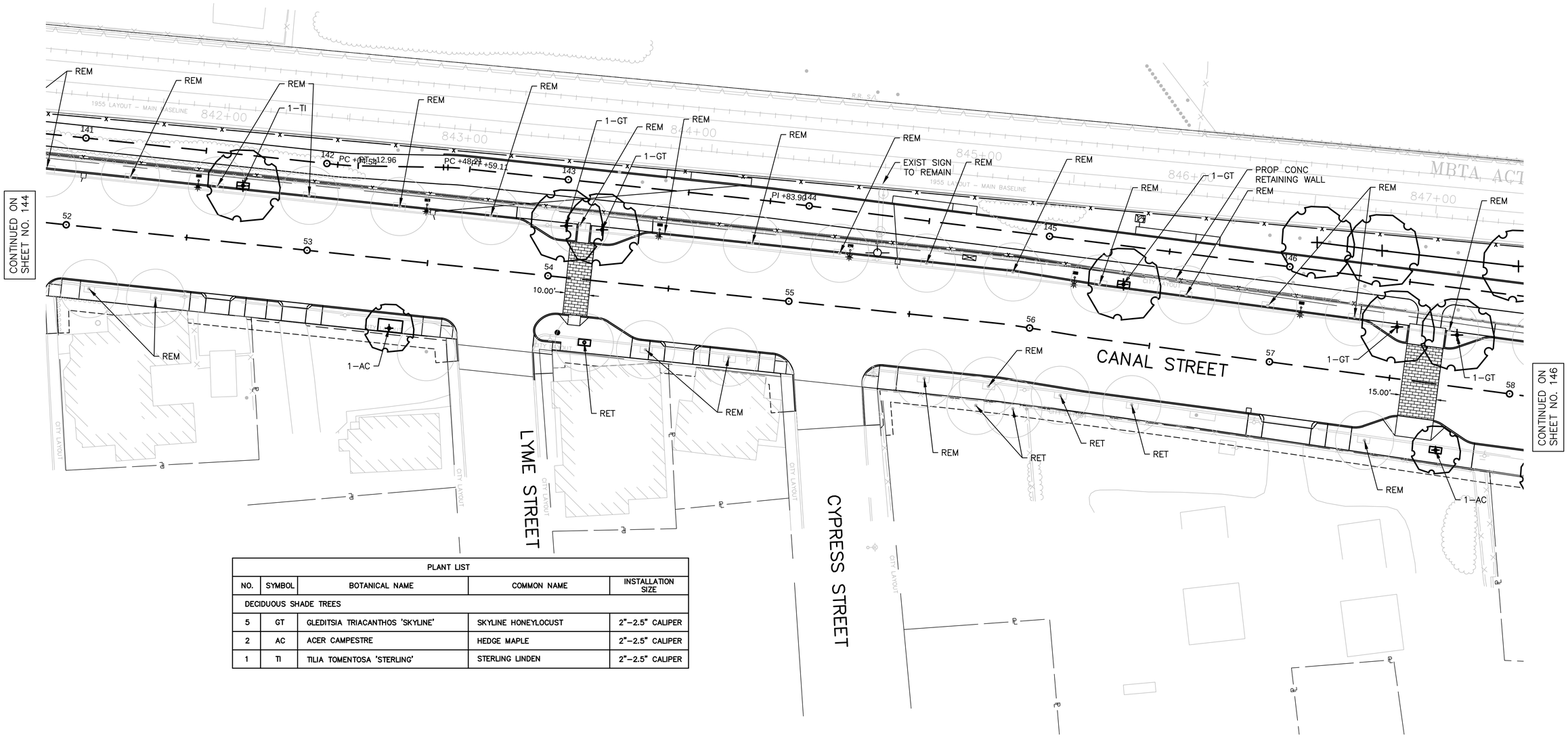
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	145	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSXE-2 LANDSCAPING.DWG



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
5	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER
2	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER
1	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"–2.5" CALIPER

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

HOR. SCALE IN FEET
0 20 50 100

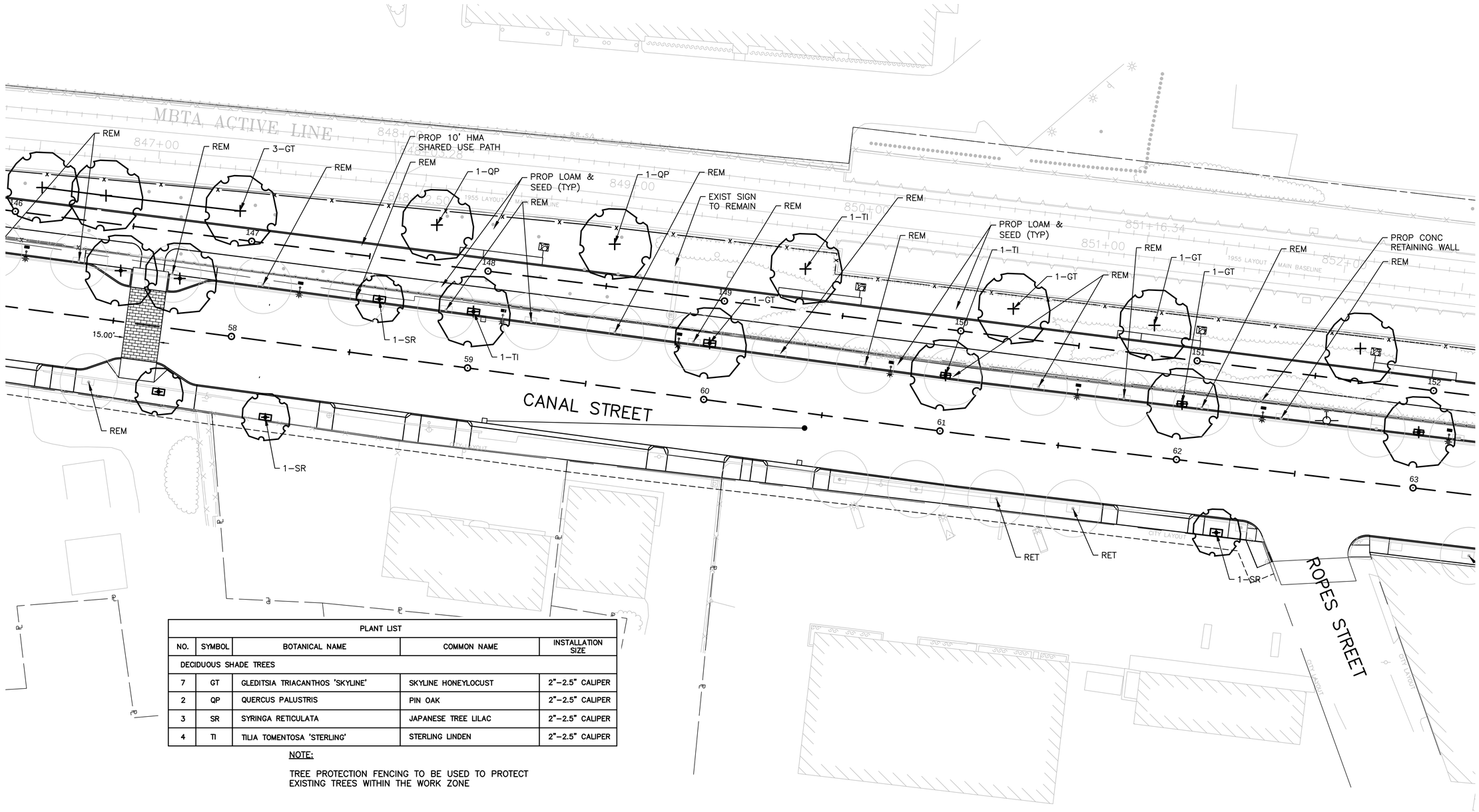
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	146	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSXE-2 LANDSCAPING.DWG



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
7	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER
2	QP	QUERCUS PALUSTRIS	PIN OAK	2"–2.5" CALIPER
3	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER
4	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"–2.5" CALIPER

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

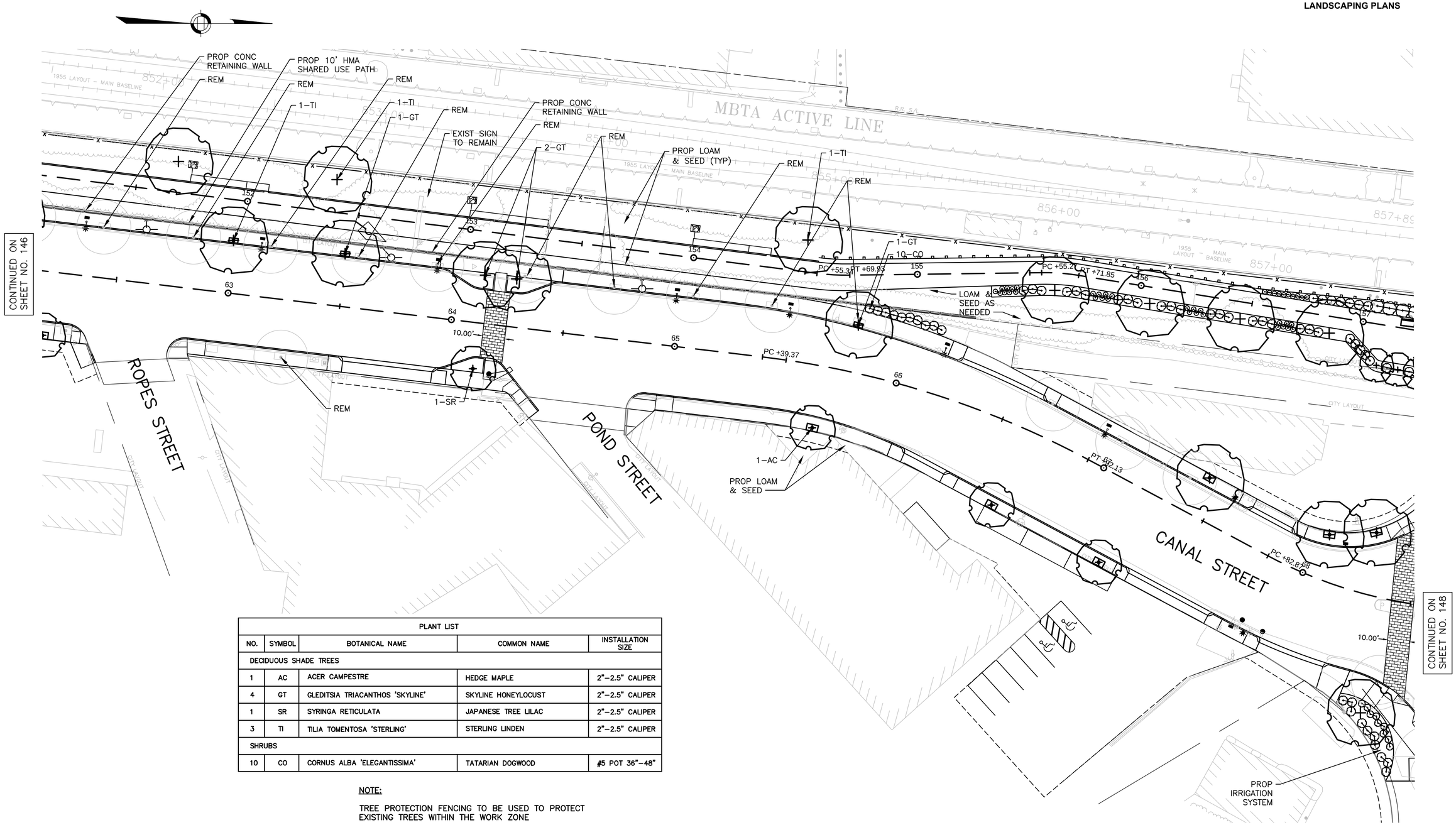
HOR. SCALE IN FEET
0 20 50 100

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	147	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

93892 PSXE-2 LANDSCAPING.DWG 14-Oct-2015



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
1	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER
4	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER
1	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"–2.5" CALIPER
3	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"–2.5" CALIPER
SHRUBS				
10	CO	CORNUS ALBA 'ELEGANTISSIMA'	TATARIAN DOGWOOD	#5 POT 36"–48"

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

HOR. SCALE IN FEET
0 20 50 100

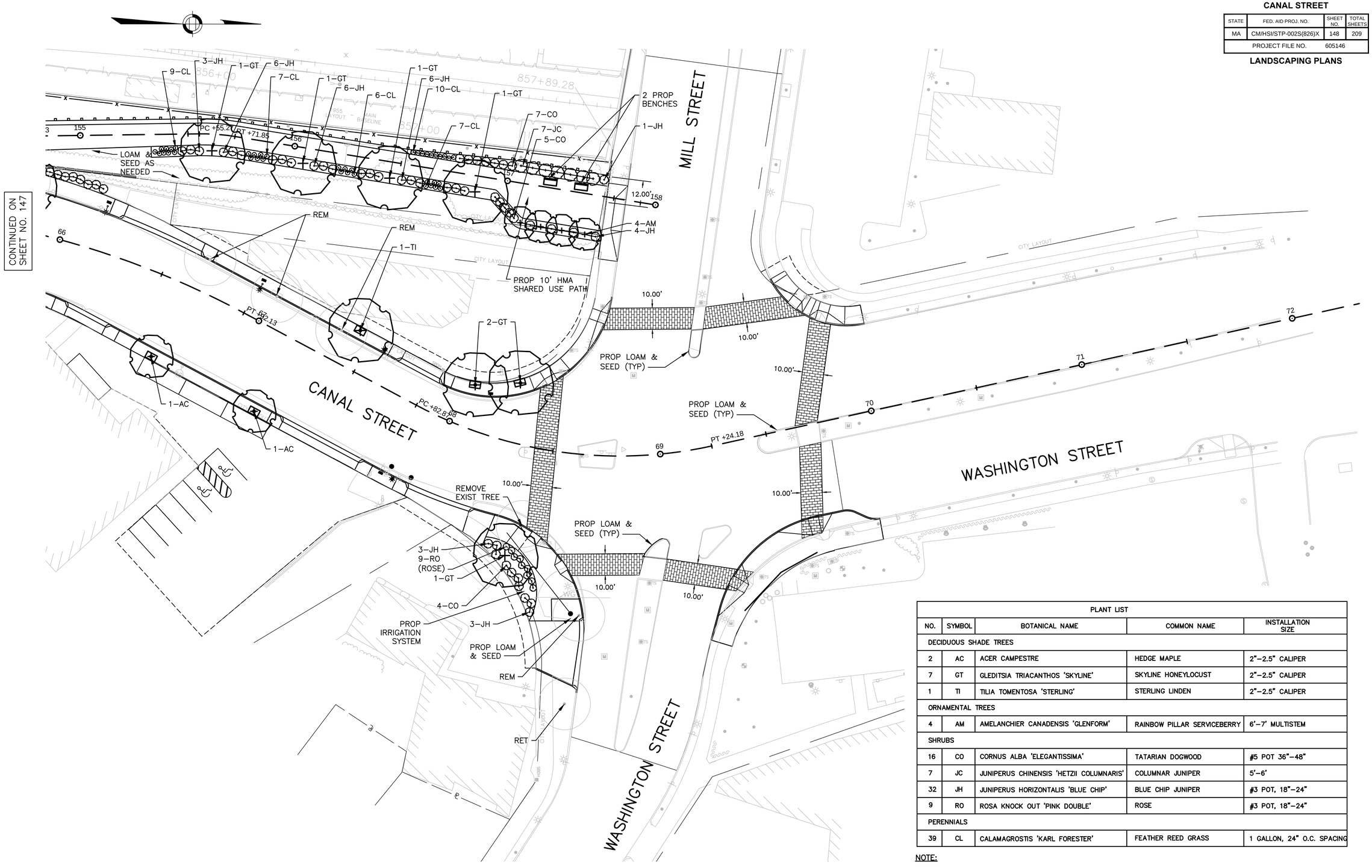
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	148	209
PROJECT FILE NO.	605146		

LANDSCAPING PLANS

14-Oct-2015

93892 PSXE-2 LANDSCAPING.DWG



PLANT LIST				
NO.	SYMBOL	BOTANICAL NAME	COMMON NAME	INSTALLATION SIZE
DECIDUOUS SHADE TREES				
2	AC	ACER CAMPESTRE	HEDGE MAPLE	2"–2.5" CALIPER
7	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"–2.5" CALIPER
1	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"–2.5" CALIPER
ORNAMENTAL TREES				
4	AM	AMELANCHIER CANADENSIS 'GLENFORM'	RAINBOW PILLAR SERVICEBERRY	6'–7' MULTISTEM
SHRUBS				
16	CO	CORNUS ALBA 'ELEGANTISSIMA'	TATARIAN DOGWOOD	#5 POT 36"–48"
7	JC	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	COLUMNAR JUNIPER	5'–6'
32	JH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#3 POT, 18"–24"
9	RO	ROSA KNOCK OUT 'PINK DOUBLE'	ROSE	#3 POT, 18"–24"
PERENNIALS				
39	CL	CALAMAGROSTIS 'KARL FORESTER'	FEATHER REED GRASS	1 GALLON, 24" O.C. SPACING

NOTE:

TREE PROTECTION FENCING TO BE USED TO PROTECT EXISTING TREES WITHIN THE WORK ZONE

PROJECT SUMMARY PLANT LIST

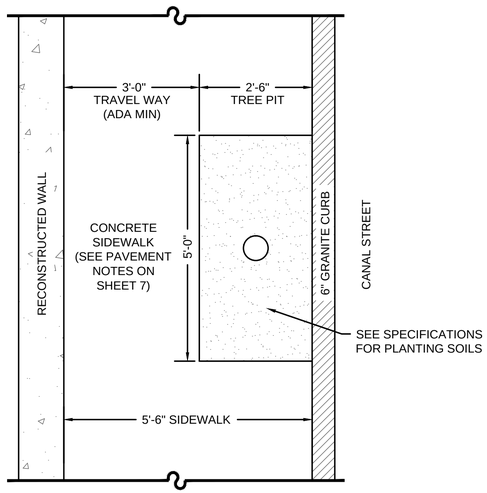
PLANT LIST

TREES (B&B UNLESS OTHERWISE SPECIFIED) ALL TREES TO BE TAGGED BY THE LANDSCAPE ARCHITECT

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS / MATURE HEIGHT
10	AC	ACER CAMPESTRE	HEDGE MAPLE	2"-2.5" CALIPER	
8	AM	AMELANCHIER CANADENSIS 'GLENFORM'	RAINBOW PILLAR SERVICEBERRY	6'-7'	B&B, MULTISTEM
37	GT	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	2"-2.5" CALIPER	
5	MA	MALUS 'CENTURION'	CRABAPPLE	1.5"-2" CALIPER	
2	PA	PLATANUS ACERFOLIA 'BLOODGOOD'	PLANETREE	2"-2.5" CALIPER	
2	QP	QUERCUS PALUSTRIS	PIN OAK	2"-2.5" CALIPER	
12	SR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2"-2.5" CALIPER	
14	TI	TILIA TOMENTOSA 'STERLING'	STERLING LINDEN	2"-2.5" CALIPER	

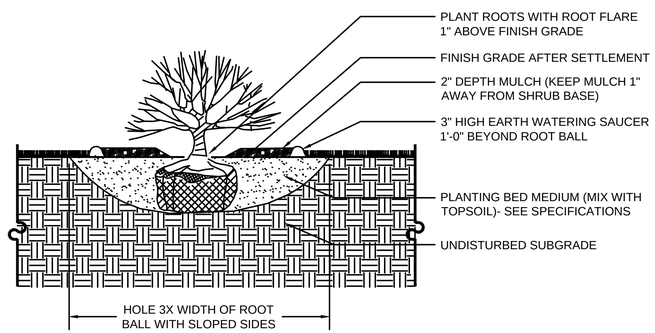
SHRUBS, GRASSES & PERENNIALS

NO.	KEY	BOTANICAL NAME	COMMON NAME	INSTALL SIZE	REMARKS/MATURE HEIGHT
40	AL	ACHILLEA 'PAPRIKA'	YARROW	2 GALLON	
52	CL	CALAMAGROSTIS 'KARL FOERSTER'	FEATHER REED GRASS	2 GALLON	ORNAMENTAL GRASS
26	CO	CORNUS ALBA 'ELEGANTISSIMA'	TATARIAN DOGWOOD	#5 POT, 36"-48"	
7	HY	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS'	OAKLEAF HYDRANGEA	#3 POT, 18"-24"	
32	IT	ITEA VIRGINICA 'LITTLE HENRY'	SWEETSPIRE	#3 POT, 18"-24"	
16	JC	JUNIPERUS CHINENSIS 'HETZII COLUMNARIS'	COLUMNAR HETZ JUNIPER	5'-6'	B&B
69	JH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#3 POT, 18"-24"	18"-24" SPREAD
55	NP	NEPETA 'WALKER'S LOW'	CATMINT	1 GALLON	
6	PM	PINUS MUGO 'PUMILIO'	DWARF MUGO PINE	#3 POT, 18"-24"	
15	PO	PHYSOCARPUS OPULIFOLIUS 'LITTLE DEVIL'	NINEBARK	#5 POT, 24"-36"	
65	RF	RUDBECKIA FULGIDA 'EARLY BIRD GOLD'	BLACK-EYED SUSAN	2 QUART	
36	RO	ROSA KNOCK OUT 'RADSUNNY'	SUNNY KNOCK OUT ROSE	#3 POT, 18"-24"	HOT PINK FLOWERS
44	VA	VACCINIUM ANGUSTIFOLIUM	LOW BUSH BLUEBERRY	1 QUART	GROUNDCOVER
7	VB	VIBURNUM DENTATUM 'BLUE MUFFIN'	VIBURNUM	2.5'-3'	B&B



STREET TREE PLANTING

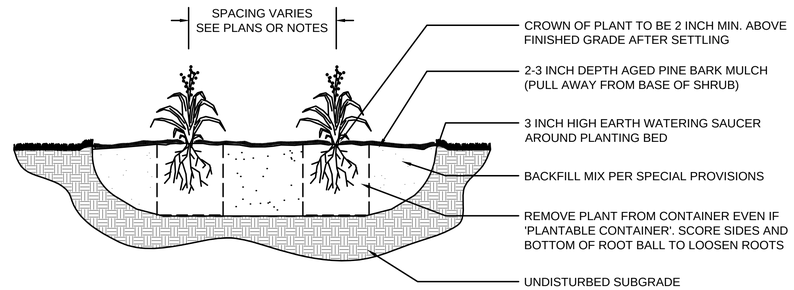
NTS



SHRUB PLANTING

NTS

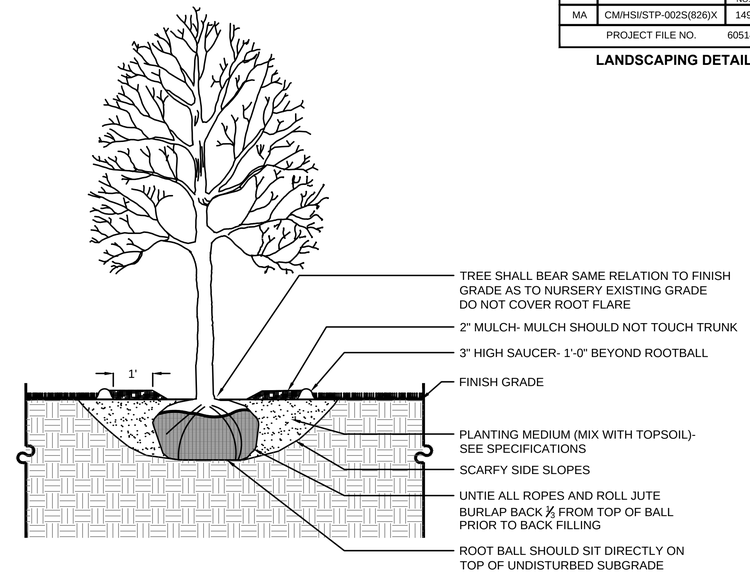
NOTES:
1. SCARIFY SOILS CONTINUOUSLY TO A DEPTH OF 4" AT INTERFACE BETWEEN SOIL TYPES AND LIFTS TO PROMOTE BLENDING OF SOILS
2. SEE PLANT LIST AND PLANS FOR SPACING



PERENNIAL PLANTING

NTS

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



DECIDUOUS TREE PLANTING

NTS

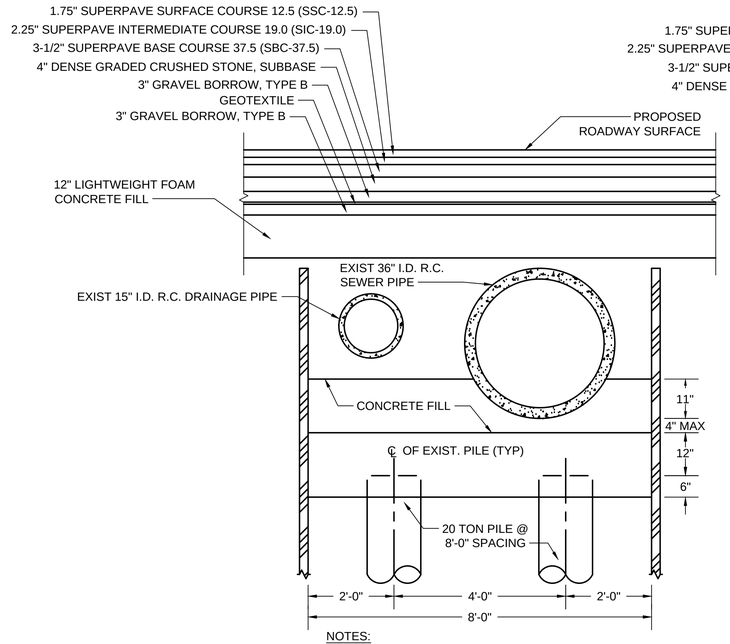
NOTE:
PLANT MATERIAL SHALL NOT BE BROUGHT TO THE SITE IN WIRE BASKETS OR IN POLY-BURLAP

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	149	209
PROJECT FILE NO.	605146		

LANDSCAPING DETAILS

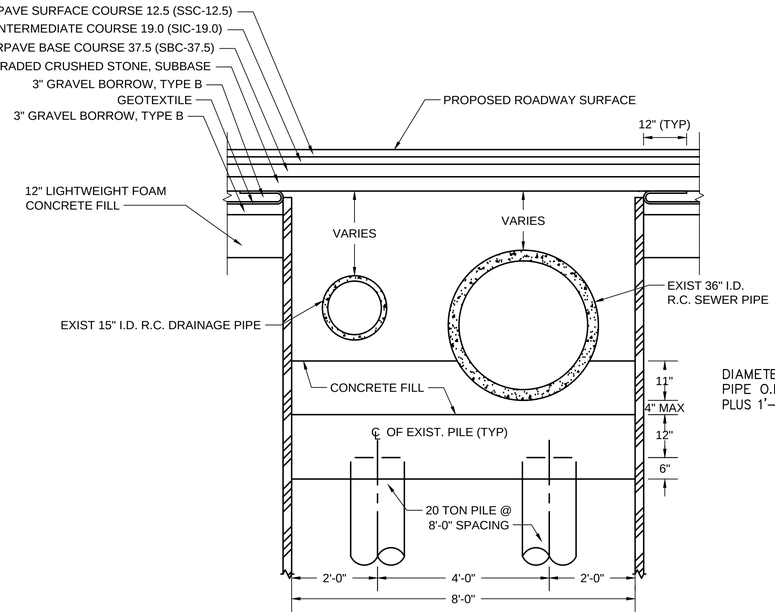
93692 PS&E-2 LANDSCAPING DETAILS.DWG 27-Oct-2015



NOTES:
FOR BID PURPOSE, CONSIDER CASE 1 FOR GEOTEXTILE QUANTITY ESTIMATE.

CASE 1 – GEOTEXTILE WITH EXISTING SEWER PIPE

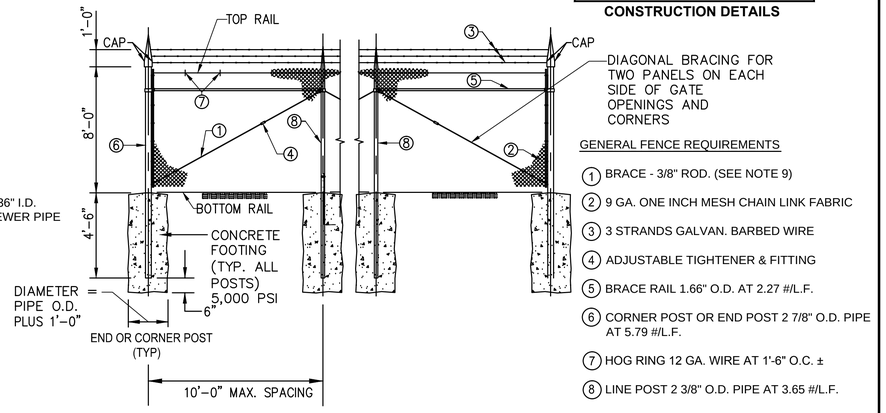
NTS



NOTES:
1. THIS DETAIL IS FOR THE CONDITION WHEN STEEL SHEETING IS IN CONFLICT WITH THE GEOTEXTILE INSTALLATIONS.
2. CONTRACTOR TO FIELD DETERMINE THE TOP OF EXISTING SHEETING CUTOFF ELEVATION.
3. THESE DIMENSIONS VARY AT THE SEWER PIPE MANHOLE, DRAIN PIPE MANHOLE AND OTHER LOCATIONS.

CASE 3 – GEOTEXTILE DETAIL IN CONFLICT WITH STEEL SHEETING

NTS



GENERAL FENCE REQUIREMENTS

1. BRACE - 3/8" ROD. (SEE NOTE 9)
2. 9 GA. ONE INCH MESH CHAIN LINK FABRIC
3. 3 STRANDS GALVAN. BARBED WIRE
4. ADJUSTABLE TIGHTENER & FITTING
5. BRACE RAIL 1.66" O.D. AT 2.27 #/L.F.
6. CORNER POST OR END POST 2 7/8" O.D. PIPE AT 5.79 #/L.F.
7. HOG RING 12 GA. WIRE AT 1'-6" O.C. ±
8. LINE POST 2 3/8" O.D. PIPE AT 3.65 #/L.F.

TYPICAL CHAIN LINK FENCE WITH BARBED WIRE

NTS

GENERAL FENCE NOTES

1. ALL FENCE COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. UNLESS OTHERWISE SPECIFIED.
2. ALL LINE POSTS SHALL BE SAME LENGTH UNLESS OTHERWISE SPECIFIED.
3. TENSION WIRE CLIPS AT 1'-6" O.C. 12 GA. WIRE.
4. CORNER POST SHALL BE INSTALLED WHERE CHANGE IN FENCE HORIZONTAL ALIGNMENT EXCEEDS 15 DEGREES.
5. BARBED WIRE AND EXTENSION ARMS:

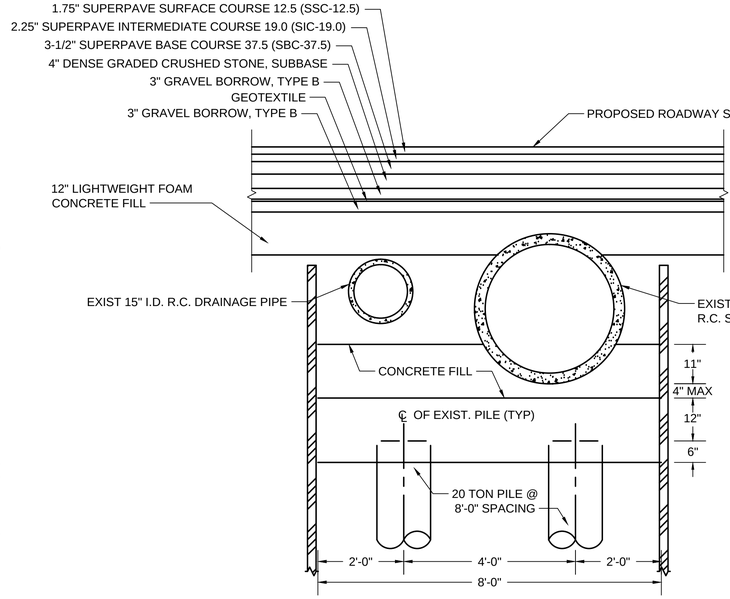
A. BARBED WIRE: ASTM A121, METALLIC COATED CARBON STEEL, 12-1/2 GAUGE, 4-POINT ROUNDS BARBS, CLASS 3 COATING.

B. EXTENSION ARMS: PROJECTING AT AN ANGLE OF APPROXIMATELY 45 DEGREES, FITTED WITH CLIPS OR OTHER MEANS OF ATTACHING THREE STRANDS OF BARBED WIRE, THE TOP OUTSIDE WIRE APPROXIMATELY 12 INCHES FROM THE FENCE LINE AND THE OTHER WIRES SPACED UNIFORMLY BETWEEN THE TOP OUTSIDE WIRE AND THE FENCE FABRIC.

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	150	209
PROJECT FILE NO.	605146		

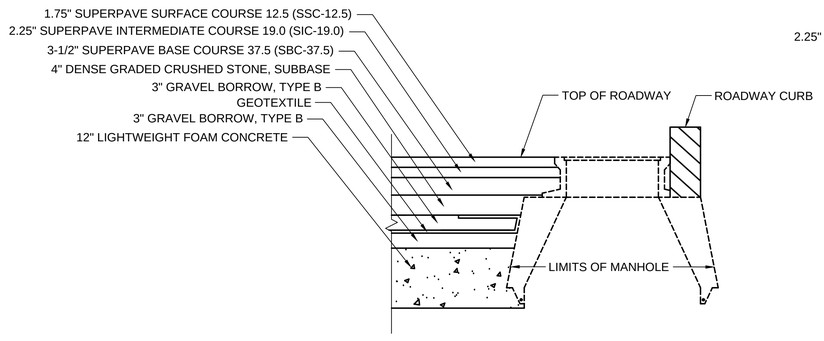
CONSTRUCTION DETAILS



NOTES:
THESE DIMENSIONS VARY AT THE SEWER PIPE MANHOLE, DRAIN PIPE MANHOLE AND OTHER LOCATIONS.

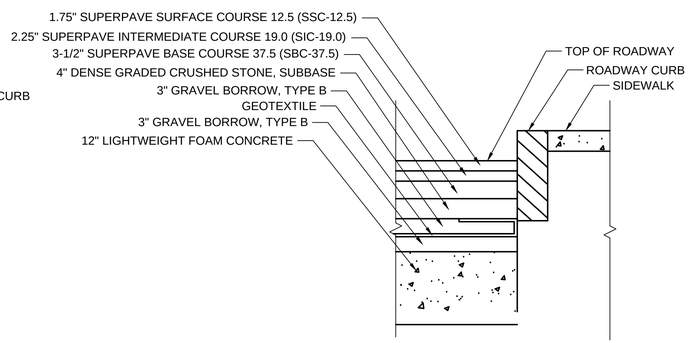
CASE 2 – GEOTEXTILE INC CONFLICT WITH EXISTING SEWER PIPE

NTS



END TREATEMENT – ROADWAY CURB WITH UNDERGROUND UTILITY

NTS



END TREATMENT – ROADWAY CURB WITH SIDEWALK

NTS

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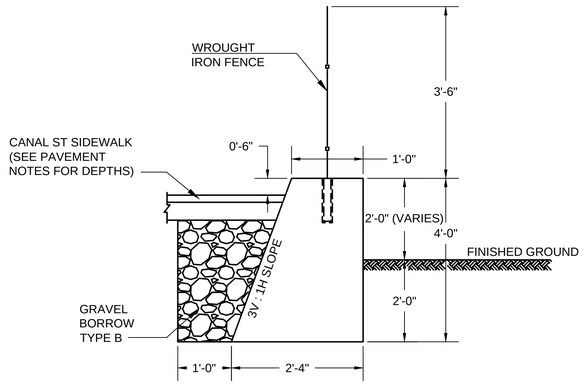
93692 PS&E-2 CONST DETAIL.DWG 28-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	151	209
PROJECT FILE NO.	605146		

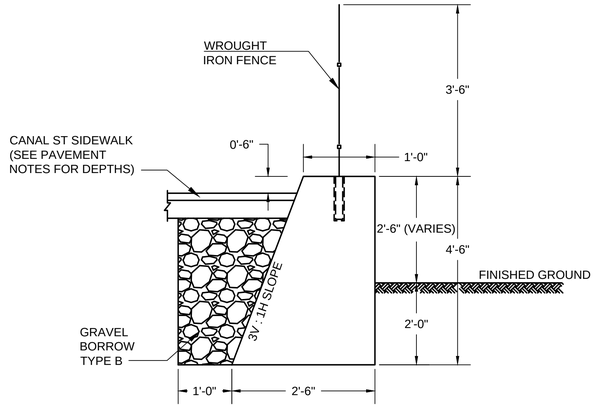
CONSTRUCTION DETAILS



NOTES:
1. 4000 PSI, 1.5 IN., 565 CEMENT CONCRETE TO BE USED.
2. PROVIDE A PVC SLEEVE AROUND GUY WIRE ANCHOR AT LOCATIONS WHERE ANCHORS INTERFERE WITH RETAINING WALL. GUY ANCHORS ARE TO BE INSTALLED BEFORE CONSTRUCTION OF THE WALL.

LOW RETAINING WALL
STA 43+50 TO STA 48+50

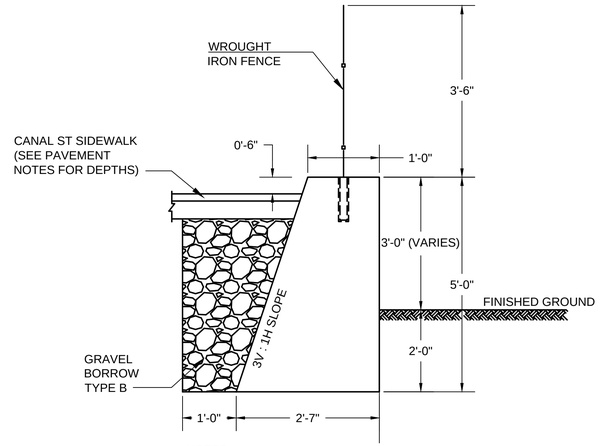
NTS



NOTES:
1. 4000 PSI, 1.5 IN., 565 CEMENT CONCRETE TO BE USED.
2. PROVIDE A PVC SLEEVE AROUND GUY WIRE ANCHOR AT LOCATIONS WHERE ANCHORS INTERFERE WITH RETAINING WALL. GUY ANCHORS ARE TO BE INSTALLED BEFORE CONSTRUCTION OF THE WALL.

LOW RETAINING WALL
STA 48+50 TO STA 56+50

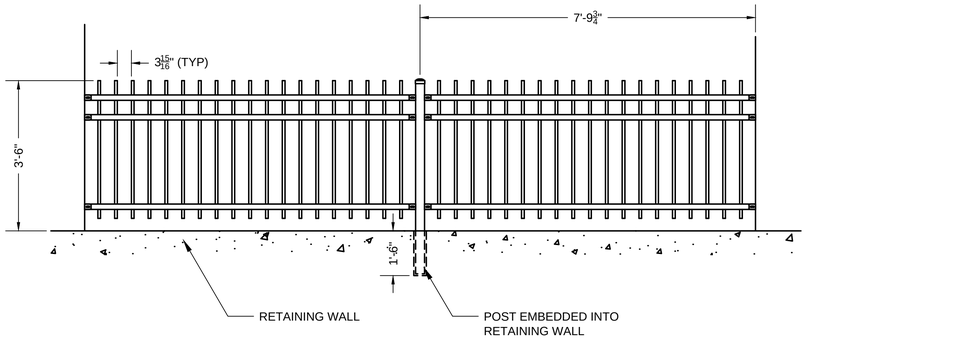
NTS



NOTES:
1. 4000 PSI, 1.5 IN., 565 CEMENT CONCRETE TO BE USED.
2. PROVIDE A PVC SLEEVE AROUND GUY WIRE ANCHOR AT LOCATIONS WHERE ANCHORS INTERFERE WITH RETAINING WALL. GUY ANCHORS ARE TO BE INSTALLED BEFORE CONSTRUCTION OF THE WALL.

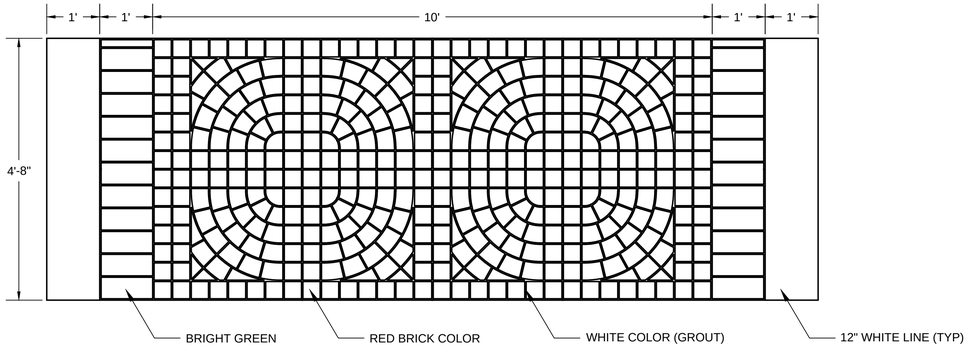
LOW RETAINING WALL
STA 56+50 TO STA 66+24

NTS



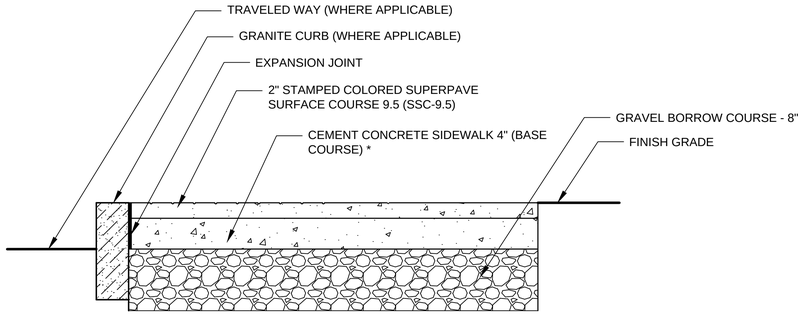
WROUGHT IRON FENCE

NTS



14' THERMOPLASTIC HMA CROSSWALK PATTERN

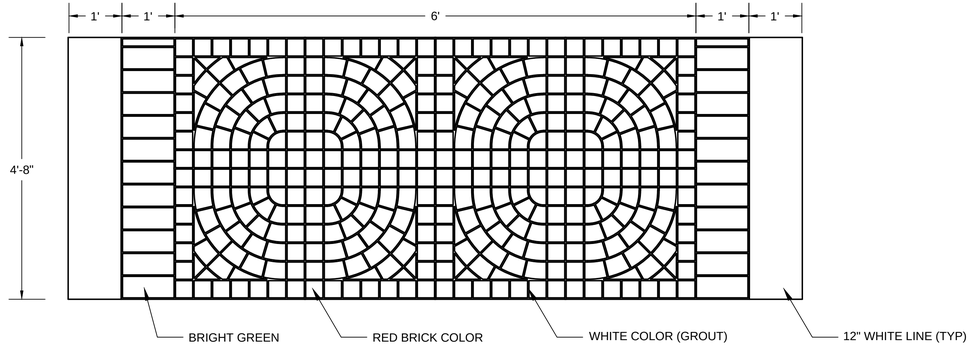
NTS



NOTES:
* FINISH CONCRETE WITH A FINE TINE RAKE FINISH AND APPLY TACK COAT AT A RATE OF 0.1 GAL/SY.

STAMPED COLORED HMA
(OVER CONCRETE – SIDEWALK SECTIONS)

NTS



10' THERMOPLASTIC HMA CROSSWALK PATTERN

NTS

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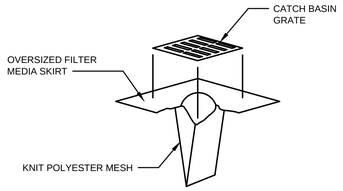
93692 PS&E-2 CONST DETAIL DWG 14-Oct-2015

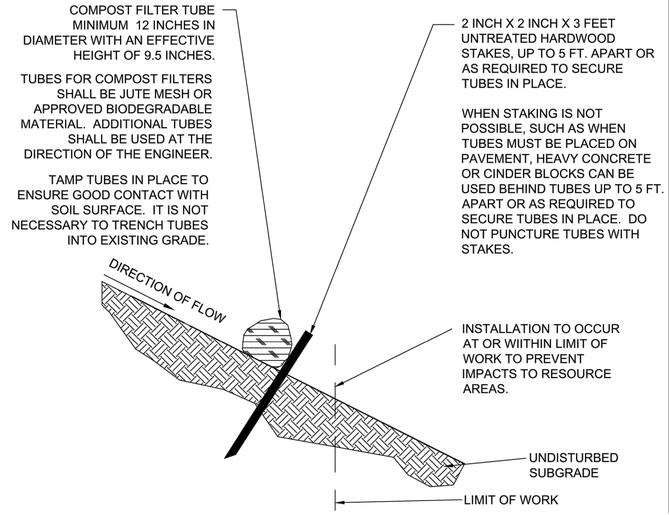
SALEM
CANAL STREET

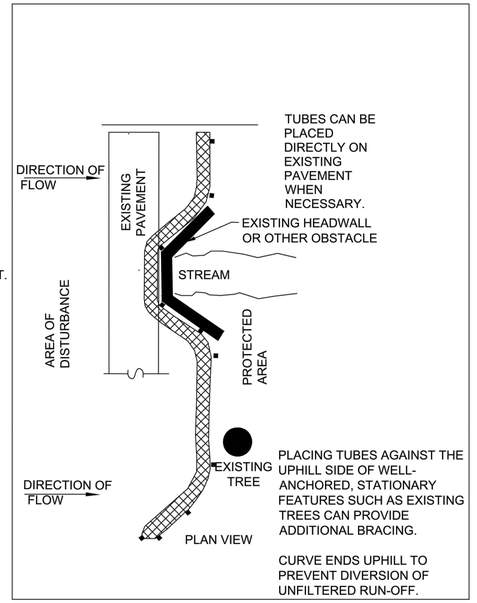
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	152	209
	PROJECT FILE NO. 605146		

CONSTRUCTION DETAILS



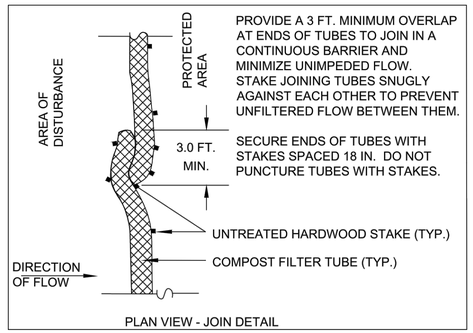
SILT SACK (PAVED AREAS)





GENERAL NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.



SINGLE COMPOST FILTER TUBE DETAIL

EROSION PROTECTION NOTES

1. EROSION PROTECTION MEASURES SHALL BE CHECKED AND MAINTAINED ON A DAILY BASIS. SEDIMENT DEPOSITS UPSTREAM OF THE BALES OR COMPOST FILTER TUBES SHALL BE REMOVED ON A REGULAR BASIS.

2. REPAIR OR PLACEMENT OF EROSION CONTROL MEASURES SHALL BE MADE PROMPTLY AS NEEDED, OR AS DIRECTED BY THE ENGINEER.

3. EROSION CONTROL BLANKETS SHALL BE INSTALLED ALONG DISTURBED SLOPES WITH POTENTIAL TO ERODE, AS QUICKLY AS POSSIBLE.

CONSTRUCTION SEQUENCE

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, THE CONTRACTOR SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE. MODIFICATIONS TO THE SEQUENCE NECESSARY TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

1. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS AND AS INDICATED BY THE EROSION PROTECTION NOTES PRIOR TO THE COMMENCEMENT OF EARTH WORK.

2. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUN-OFF QUALITY.

3. A SILT FENCE SHALL BE CONSTRUCTED AROUND MATERIAL STOCKPILES IN A MANNER TO PROVIDE ACCESS AND AVOID EROSION OUTSIDE OF THE AREA.

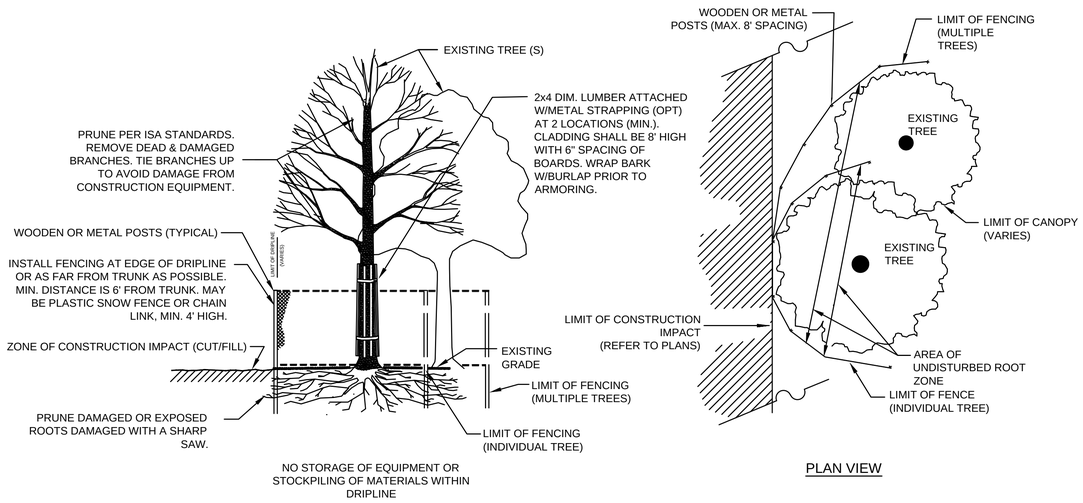
4. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED, MULCH AND RIPRAP.

5. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.

6. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND CONSTRUCTION IS COMPLETE.

7. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, FROM DRAIN PIPES, DITCHES, CURB LINES, ETC., RESULTING FROM SOIL EROSION AND/OR CONSTRUCTION OPERATIONS. MATERIAL SHALL NOT BE DEPOSITED NEAR WETLANDS AND OR WATER COURSE.

8. DISCHARGES INTO STREAMS OR WATERWAYS ARE NOT PERMITTED.



TREE PROTECTION-EXISTING TREE(S)

NOT TO SCALE

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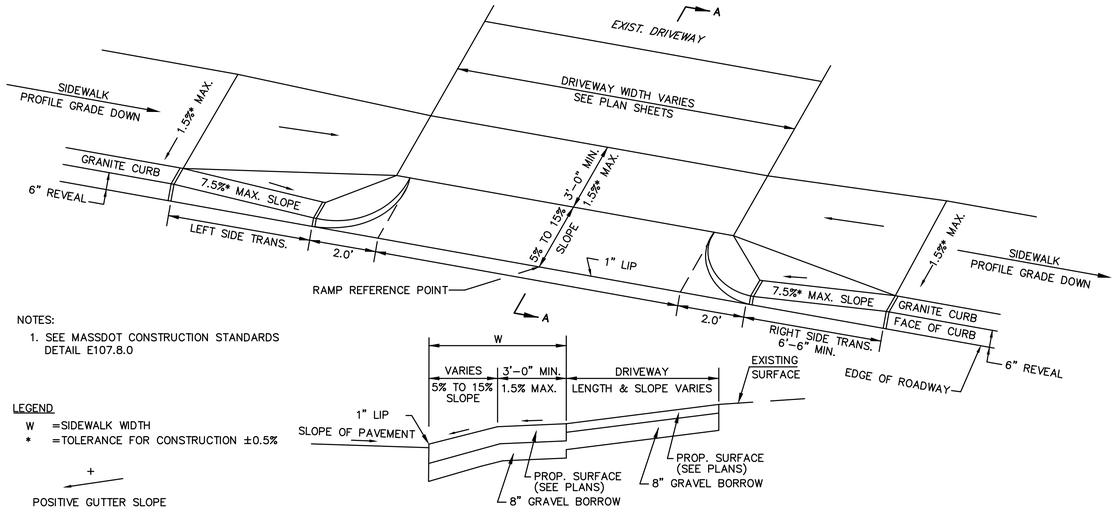


NOTES:

1. SEE MASSDOT CONSTRUCTION STANDARDS DETAIL E107.8.0

LEGEND

W =SIDEWALK WIDTH

* =TOLERANCE FOR CONSTRUCTION ±0.5%

\+ POSITIVE GUTTER SLOPE

\− NEGATIVE GUTTER SLOPE

SECTION A – A

SIDEWALK THROUGH DRIVEWAY WITH CURB RETURNS

NOT TO SCALE

SWTD #	SWTD REFERENCE POINT		WIDTH OF SIDEWALK	PATH OF TRAVEL	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	STATION	OFFSET				LEFT SIDE	RIGHT SIDE
SWTD–1	1+07.85	15.43' LT	7.0'	5.0'	−0.27%	7'–8"	6'–6"
SWTD–2	1+31.39	36.52' RT	9.5'	7.5'	+0.27%	6'–6"	7'–8"
SWTD–3	1+89.25	36.16' RT	9.5'	4.0'	−0.24%	7'–8"	6'–6"
SWTD–4	1+87.12	20.96' LT	7.0'	5.0'	+0.24%	6'–6"	7'–8"
SWTD–5	33+36.60	63.19' RT	7.0'	5.0'	+0.69%	6'–6"	7'–8"
SWTD–6	33+93.63	44.81' RT	7.0'	5.0'	+0.69%	6'–6"	7'–8"
SWTD–7	32+39.82	37.56' RT	7.0'	5.0'	+0.69%	6'–6"	7'–8"
SWTD–8	31+77.84	32.66' RT	7.0'	5.0'	+0.69%	6'–6"	7'–8"
SWTD–9	2+36.70	35.57' RT	9.5'	7.5'	−0.24%	7'–8"	6'–6"
SWTD–10	2+90.08	32.21' RT	6.0'	4.0'	−0.24%	7'–8"	6'–6"
SWTD–11	4+00.80	33.35' RT	7.0'	5.0'	+1.11%	6'–6"	9'–0"
SWTD–12	6+38.38	14.00' RT	6.0'	4.0'	+1.11%	6'–6"	9'–0"
SWTD–13	7+07.56	24.00' LT	6.0'	4.0'	−1.11%	9'–0"	6'–6"
SWTD–14	7+03.72	14.00' RT	6.0'	4.0'	+1.11%	6'–6"	9'–0"
SWTD–15	7+64.08	14.00' RT	6.0'	4.0'	−1.11%	9'–0"	6'–6"
SWTD–16	8+42.63	20.96' LT	6.5'	4.0'	−1.11%	9'–0"	6'–6"
SWTD–17	9+89.22	18.27' RT	6.0'	4.0'	+1.32%	6'–6"	9'–0"
SWTD–18	11+03.30	19.00' LT	6.0'	4.0'	−1.32%	9'–0"	6'–6"
SWTD–19	11+10.37	18.61' RT	7.0'	4.0'	+1.32%	6'–6"	9'–0"
SWTD–20	12+80.79	19.00' LT	6.0'	4.0'	−1.32%	9'–0"	6'–6"
SWTD–21	13+88.73	18.50' RT	7.0'	4.0'	+1.32%	6'–6"	9'–0"
SWTD–22	14+58.52	19.00' LT	7.0'	4.0'	+1.27%	6'–6"	9'–0"
SWTD–23	15+59.75	19.00' LT	7.0'	4.0'	+1.94%	6'–6"	9'–0"
SWTD–24	16+04.22	19.00' RT	6.0'	3.0'	+2.88%	6'–6"	11'–0"
SWTD–25	18+10.62	49.17' RT	6.0'	3.0'	−0.70%	3'–10" (3")	6'–6"
SWTD–26	20+53.09	16.00' LT	7.0'	4.0'	−1.24%	9'–0"	6'–6"
SWTD–27	21+95.74	16.00' LT	7.0'	4.0'	−1.24%	9'–0"	6'–6"
SWTD–28	25+13.24	16.00' LT	7.0'	3.0'	−2.80%	11'–0"	6'–6"
SWTD–29	25+98.59	16.54' LT	7.0'	4.0'	−1.94%	9'–0"	6'–6"
SWTD–30	27+18.12	20.00' RT	6.0'	4.0'	+1.23%	6'–6"	9'–0"
SWTD–31	27+36.08	20.00' LT	6.0'	4.0'	−1.09%	9'–0"	6'–6"
SWTD–32	27+59.97	20.00' RT	6.0'	4.0'	+0.90%	6'–6"	7'–8"
SWTD–33	28+12.70	20.00' RT	6.0'	4.0'	+0.56%	3'–3" (3")	7'–8"
SWTD–34	28+84.90	20.00' RT	6.0'	4.0'	+0.08%	6'–6"	3'–10"(3")
SWTD–35	29+02.71	20.00' LT	6.0'	4.0'	+0.02%	6'–6"	13'–9"
SWTD–36	29+77.38	20.00' RT	6.0'	4.0'	+0.08%	6'–6"	3'–10"(3")
SWTD–37	30+15.08	20.05' LT	6.0'	4.0'	+0.82%	6'–6"	7'–8"(3")
SWTD–38	31+43.62	19.37' LT	6.0'	4.0'	+0.82%	6'–6"	7'–8"
SWTD–39	31+95.03	19.00' RT	7.0'	4.0'	−0.30%	3'–10"(3")	6'–6"
SWTD–40	32+02.17	19.00' LT	6.0'	4.0'	+0.38%	6'–6"	7'–8"
SWTD–41	32+31.05	19.00' RT	7.0'	4.0'	−0.15%	7'–8"	3'–3"(3")
SWTD–42	32+84.04	19.00' RT	7.0'	4.0'	+0.19%	6'–6"	7'–8"
SWTD–43	32+89.34	19.00' LT	6.0'	4.0'	−0.30%	7'–8"	6'–6"
SWTD–44	33+83.46	19.00' LT	6.0'	4.0'	−0.48%	7'–8"	6'–6"
SWTD–45	33+90.58	19.00' RT	6.0'	4.0'	+0.44%	6'–6"	3'–10"(3")
SWTD–46	34+75.57	19.00' RT	6.0'	4.0'	+0.08%	6'–6"	7'–8"
SWTD–47	35+23.99	19.00' LT	6.0'	4.0'	+0.18%	6'–6"	7'–8"
SWTD–48	35+24.96	19.00' RT	6.0'	4.0'	−0.18%	7'–8"	6'–6"
SWTD–49	36+64.85	19.00' RT	7.0'	4.0'	−0.70%	7'–8"	6'–6"
SWTD–51	37+30.06	19.00' RT	7.0'	3.0'	−0.77%	7'–8"	6'–6"
SWTD–53	38+56.84	19.00' RT	7.0'	4.0'	+0.40%	6'–6"	7'–8"
SWTD–54	39+44.92	19.00' LT	6.0'	4.0'	+0.02%	6'–6"	7'–8"
SWTD–55	39+63.80	19.00' RT	7.0'	4.0'	−0.20%	7'–8"	6'–6"
SWTD–56	40+06.70	19.00' LT	6.0'	4.0'	+0.61%	6'–6"	7'–8"
SWTD–57	40+45.88	19.03' RT	7.0'	4.0'	−0.69%	7'–8"	6'–6"
SWTD–58	41+14.76	18.50' RT	7.0'	4.0'	−0.69%	7'–8"	6'–6"
SWTD–59	42+14.76	21.92' LT	6.0'	4.0'	+0.69%	6'–6"	7'–8"
SWTD–60	42+97.76	17.70' RT	7.0'	4.0'	−0.69%	7'–8"	6'–6"
SWTD–61	44+80.37	22.00' RT	7.0'	4.0'	+0.45%	6'–6"	7'–8"
SWTD–62	45+39.85	22.00' RT	7.0'	4.0'	+0.45%	6'–6"	7'–8"
SWTD–63	46+15.56	22.00' RT	7.0'	4.0'	+0.11%	6'–6"	7'–8"
SWTD–64	46+61.98	22.00' RT	7.0'	4.0'	−0.28%	7'–8"	6'–6"
SWTD–65	46+87.07	22.00' RT	7.0'	4.0'	−0.45%	7'–8"	6'–6"
SWTD–66	47+48.15	22.00' RT	7.0'	4.0'	−0.45%	7'–8"	6'–6"
SWTD–67	49+18.34	22.00' RT	7.0'	4.0'	−0.30%	7'–8"	6'–6"
SWTD–68	49+49.26	22.00' RT	7.0'	4.0'	−0.30%	7'–8"	6'–6"
SWTD–69	49+97.62	22.00' RT	7.0'	4.0'	−0.30%	7'–8"	6'–6"
SWTD–70	50+92.90	22.00' RT	8.0'	4.0'	−0.30%	7'–8"	6'–6"
SWTD–71	52+65.14	22.00' RT	8.0'	4.0'	+0.60%	6'–6"	7'–8"
SWTD–72	52+96.93	22.00' RT	8.0'	4.0'	+0.60%	6'–6"	7'–8"
SWTD–73	57+10.28	22.00' RT	9.0'	4.0'	+0.82%	6'–6"	7'–8"
SWTD–74	58+61.43	22.00' RT	11.0'	4.0'	+0.82%	6'–6"	7'–8"
SWTD–75	59+41.86	22.00' RT	9.0'	4.0'	−0.43%	7'–8"	6'–6"
SWTD–76	60+00.56	22.00' RT	9.0'	4.0'	−0.43%	7'–8"	6'–6"
SWTD–77	60+39.66	22.00' RT	9.0'	4.0'	−0.43%	7'–8"	6'–6"
SWTD–78	61+92.70	22.00' RT	8.0'	4.0'	−0.43%	7'–8"	6'–6"
SWTD–79	63+68.63	22.00' RT	7.0'	4.0'	−0.43%	7'–8"	6'–6"
SWTD–80	66+22.31	28.75' RT	6.0'	4.0'	−1.67%	9'–0"	6'–6"
SWTD–81	66+42.90	17.23' LT	6.0'	4.0'	+1.95%	6'–6"	9'–0"
SWTD–82	67+51.05	34.00' RT	6.0'	4.0'	−1.95%	9'–0"	6'–6"
SWTD–83	67+75.98	14.00' LT	6.0'	4.0'	+1.95%	6'–6"	9'–0"
SWTD–84	68+07.47	34.13' RT	VARIES	VARIES	−1.95%	9'–0"	6'–6"
SWTD–85	68+68.73	94.17' RT	VARIES	VARIES	−1.95%	9'–0"	3'–3"(3")
SWTD–86	102+35.28	30.98' LT	6.0'	4.0'	−2.83%	13'–0"	6'–6"
SWTD–87	103+19.45	30.95' LT	6.0'	4.0'	−1.60%	11'–0"	6'–6"
SWTD–88	103+97.43	30.67' LT	6.0'	4.0'	−0.43%	6'–6"	6'–6"
SWTD–89	54+57.26	22.00' RT	8.0'	4.0'	−0.52%	6'–6"	6'–6"

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	153	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

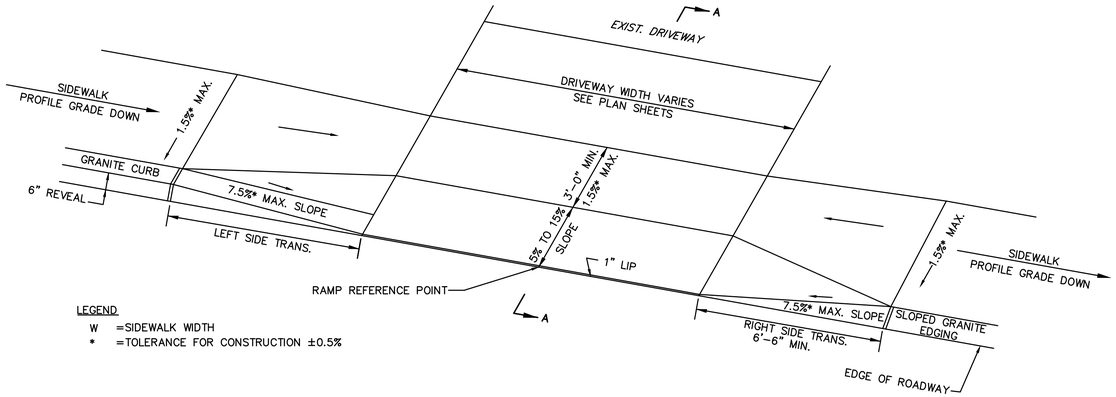
93692 PS&E-2 WCR DETAIL.DWG 14-Oct-2015

SALEM
CANAL STREET

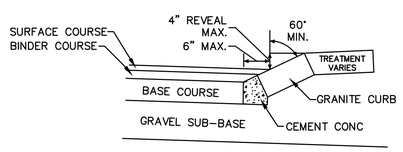
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	154	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

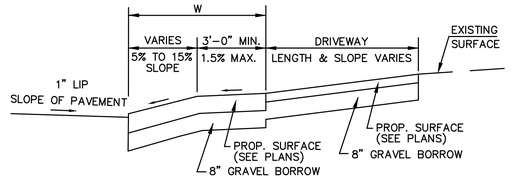
93692 PS&E-2 WCR DETAIL.DWG 14-Oct-2015



LEGEND
W =SIDEWALK WIDTH
* =TOLERANCE FOR CONSTRUCTION ±0.5%



SLOPED GRANITE EDGING



SECTION A – A

\+
POSITIVE GUTTER SLOPE
–
NEGATIVE GUTTER SLOPE

SIDEWALK THROUGH DRIVEWAY WITH SLOPED GRANITE EDGING

NOTE: SEE MASSDOT CONST STD E 106.5.0
SEE MASSDOT CONST STD E 107.7.0

NOT TO SCALE

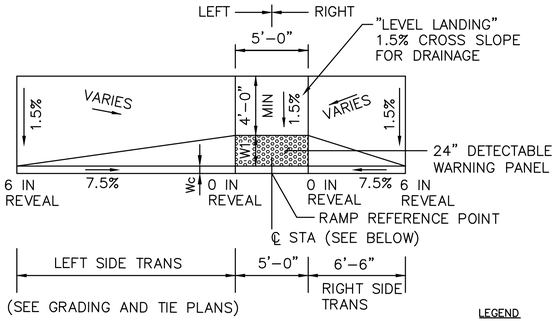
SWTD #	SWTD REFERENCE POINT		WIDTH OF SIDEWALK	PATH OF TRAVEL	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	STATION	OFFSET				LEFT SIDE	RIGHT SIDE
SWTD–50	37+00.06	19.00' LT	6.0'	4.0'	0.77%	6'–6"	7'–8"
SWTD–52	37+96.25	19.00' LT	6.0'	4.0'	0.75%	6'–6"	7'–8"

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	155	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

93692 PS&E-2 WCR DETAIL.DWG 14-Oct-2015



STYLE A

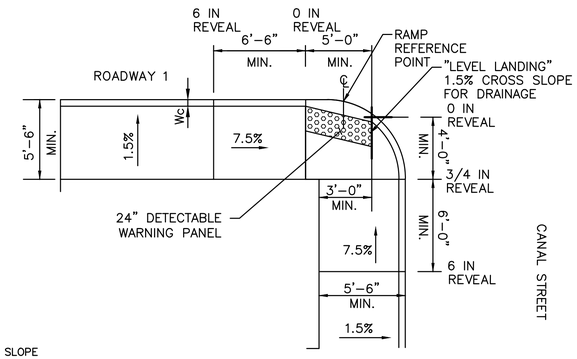
NOTE: SEE MASSDOT CONST STD E 107.2.0
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

\+ POSITIVE GUTTER SLOPE

– NEGATIVE GUTTER SLOPE

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–1	CANAL STREET	2+15.10	24.76' LT	3'–0"	7'–0"	5'–0"	4'–0"	+0.2%	6'–6"	7'–8"
WCR–4	CANAL STREET	2+62.60	33.97' RT	5'–0"	9'–6"	5'–0"	4'–6"	–0.2%	7'–8"	6'–6"
WCR–7	CANAL STREET	5+24.32	67.29' RT	5'–0"	9'–6"	5'–0"	4'–6"	+1.1%	6'–6"	9'–0"
WCR–14	CANAL STREET	10+25.45	18.27' RT	3'–0"	7'–0"	5'–0"	4'–0"	+1.3%	6'–6"	9'–0"
WCR–21	CANAL STREET	16+61.54	18.50' LT	3'–0"	7'–0"	5'–0"	4'–0"	+3.1%	6'–6"	7'–0"(3")
WCR–23	CANAL STREET	17+31.25	28.26' RT	3'–6"	7'–6"	5'–0"	4'–0"	–3.1%	14'–0"	6'–6"
WCR–22	CANAL STREET	16+86.25	23.50' LT	3'–0"	7'–0"	5'–0"	4'–0"	–3.1%	14'–0"	7'–6"(3")
WCR–28	CANAL STREET	19+56.90	28.22' LT	3'–0"	7'–0"	5'–0"	4'–0"	–1.5%	9'–0"	6'–6"
WCR–30	CANAL STREET	21+63.78	15.00' LT	3'–0"	7'–0"	5'–0"	4'–0"	–1.2%	9'–0"	6'–6"
WCR–40	CANAL STREET	30+74.96	26.89' RT	5'–0"	10'–9"	5'–0"	5'–9"	+2.0%	6'–6"	11'–0"
WCR–42	CANAL STREET	31+28.11	25.69' RT	3'–0"	7'–0"	5'–0"	4'–0"	–2.2%	11'–0"	11'–0"
WCR–50	CANAL STREET	38+81.59	15.00' RT	5'–0"	10'–6"	5'–0"	5'–6"	+0.5%	6'–6"	7'–8"
WCR–51	CANAL STREET	38+80.41	15.00' LT	5'–0"	9'–6"	5'–0"	4'–6"	–0.5%	7'–8"	6'–6"
WCR–80	CANAL STREET	68+42.40	30.16' LT	3'–2"±	7'–2"±	5'–0"	4'–0"±	+0.5%	6'–6"	7'–8"
WCR–81	CANAL STREET	68+72.43	63.51' LT	3'–9"±	7'–9"±	5'–0"	4'–0"±	–5.0%	15'–0"	6'–6"
WCR–82	CANAL STREET	68+85.80	111.75' LT	5'–0"	9'–0"	15'–0"	4'–0"	3.4%	14'–0"	6'–6"
WCR–83	CANAL STREET	69+73.03	57.21' LT	4'–6"±	8'–6"±	5'–0"	4'–0"±	–2.5%	11'–0"	3'–3"(3")
WCR–84	CANAL STREET	69+86.76	44.95' LT	5'–0"	9'–1"±	5'–0"	4'–1"±	+1.5%	3'–3"(3")	9'–0"
WCR–93	LORING AVENUE	104+81.38	14.24' LT	5'–0"	9'–0"±	5'–0"	4'–0"±	–0.4%	6'–6"	7'–8"



\+ POSITIVE GUTTER SLOPE

– NEGATIVE GUTTER SLOPE

"T" INTERSECTION WHEELCHAIR RAMP

NOT TO SCALE

NOTE: SEE MASSDOT CONST STD E 107.6.4
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

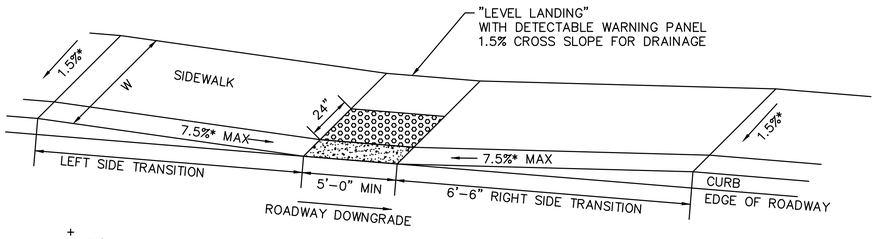
WR #	RAMP REFERENCE POINT		LEVEL LANDING LENGTH	RAMP WIDTH	ROADWAY 1 WIDTH OF SIDEWALK	TRANSITION 1 LENGTH		CANAL ST. WIDTH OF SIDEWALK	CANAL STREET TRANSITION LENGTH	
	STATION	OFFSET				GUTTER GRADE	L1		GUTTER GRADE	L
WCR–19	15+28.49	22.50' RT	4'–0"	5'–0"	16.00'	+3.0%	14'–0"	6.00'	+2.3%	11'–0"
WCR–32	26+23.52	25.72' RT	4'–0"	5'–0"	7.00'	+3.0%	14'–0"	6.00'	+1.9%	9'–0"
WCR–43	30+99.95	24.84' LT	4'–0"	5'–0"	4.50'	+1.4%	9'–0"	6.00'	+1.2%	9'–0"
WCR–44	33+37.34	22.00' RT	3'–3"	5'–0"	6.3'	+1.3%	9.0'	7.0'	–0.5%	7'–8"
WCR–48	35+74.89	22.50' RT	4'–0"	5'–0"	5.20'	+0.1%	7'–8"	6.00'	+0.3%	7'–8"
WCR–52	41+68.01	23.16' RT	5'–0"	5'–0"	5.4'	+4.8%	15.0'	10.6'	+0.7%	6'–6"
WCR–53	41+89.62	23.17' RT	5'–0"	5'–0"	5.3'	+4.8%	15.0'	7.0'	+0.7%	7'–8"
WCR–57	44+27.61	27.00' RT	4'–0"	5'–0"	7.00'	+1.9%	9'–0"	7.00'	+0.5%	7'–8"
WCR–60	48+58.99	26.48' RT	5'–0"	5'–0"	7.50'	+2.6%	11.0'	7.0'	+0.4%	6'–6"
WCR–63	51+94.01	27.50' RT	5'–0"	5'–0"	5.0'	+6.5%	15.0'	8.0'	+0.3%	7'–8"
WCR–64	53+65.04	27.50' RT	5'–0"	5'–0"	4.5'	+1.1%	9.0'	8.0'	–0.5%	7'–8"
WCR–68	55+04.39	27.50' RT	5'–0"	5'–0"	5.4'	+5.0%	15.0'	8.0'	+0.5%	6'–6"
WCR–72	62+39.48	27.50' RT	4'–0"	5'–0"	7.0'	+0.7%	7'–8"	8.00'	–0.4%	7'–8"
WCR–77	64+82.68	26.50' RT	4'–0"	5'–0"	8.50'	+0.9%	7'–8"	7.00'	+0.4%	7'–8"
WCR–92	30+26.50 (JEFFERSON)	24.69' RT	4'–0"	5'–0"	4.5'	+0.5%	7'–8"	6'–5" (JEFFERSON)	+0.6%	7'–8" (JEFFERSON)

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	156	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

93692 PS&E-2 WCR DETAIL.DWG 14-Oct-2015



WHEELCHAIR RAMP ON NARROW SIDEWALK

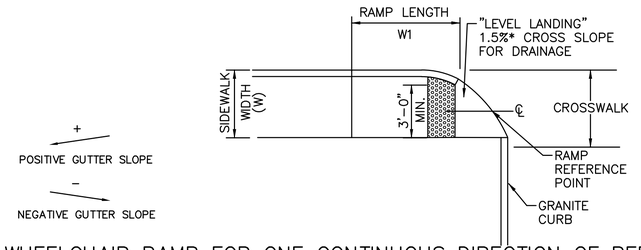
NOT TO SCALE

NOTES: SEE MASSDOT CONST STD E 107.2.1
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT		WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'-0"	DEPTH OF LEVEL LANDING Min. 4'-0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	STATION	OFFSET					LEFT SIDE	RIGHT SIDE
WCR-9	5+42.50	23.98' LT	6'-0"	5'-0"	6'-0"	-1.1%	9'-0"	6'-6"
WCR-11	5+95.34	29.41' RT	5'-9"	5'-0"	5'-9"	+1.1%	6'-6"	9'-0"
WCR-15	10+24.83	18.50' LT	5'-0"	5'-0"	5'-0"	-1.3%	7'-8"	6'-6"
WCR-20	16+61.55	18.50' RT	6'-0"	5'-0"	6'-0"	+3.1%	14'-0"	6'-6"
WCR-24	17+49.37	22.12' LT	6'-0"	5'-0"	6'-0"	+3.1%	LEVEL	14'-0"
WCR-25	18+37.57	31.46' RT	6'-0"	5'-0"	6'-0"	-0.5%	7'-8"	3'-3"(3")
WCR-26	18+43.19	28.80' LT	6'-0"	5'-0"	6'-0"	+0.4%	6'-6"	7'-8"
WCR-33	26+41.28	21.00' RT	6'-0"	5'-0"	6'-0"	+1.9%	6'-6"	4'-6"(3")
WCR-34	26+40.14	17.97' LT	6'-4"	5'-0"	6'-4"	-1.9%	9'-0"	6'-6"
WCR-35	28+31.12	34.85' RT	5'-6"	5'-0"	5'-6"	-1.5%	9'-0"	3'-3"(3")
WCR-36	28+57.99	32.18' RT	4'-6"	5'-0"	4'-6"	+1.5%	3'-3"(3")	N/A
WCR-37	30+46.31	18.61' RT	6'-0"	5'-0"	6'-0"	-0.9%	7'-8"	6'-6"
WCR-38	30+43.42	20.87' LT	6'-0"	5'-0"	6'-0"	+0.9%	3'-3"(3")	3'-10"(3")
WCR-46	34+34.98	15.00' RT	9'-6"	5'-0"	9'-6"	+0.3%	6'-6"	7'-8"
WCR-47	34+34.62	18.50' LT	6'-0"	5'-0"	6'-0"	-0.2%	7'-8"	6'-6"
WCR-76	64+36.14	28.28' RT	6'-0"	5'-0"	6'-0"	-0.5%	7'-8"	6'-6"



WHEELCHAIR RAMP FOR ONE CONTINUOUS DIRECTION OF PEDESTRIAN TRAVEL

NOTE: SEE MASSDOT CONST STD E 107.6.0
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

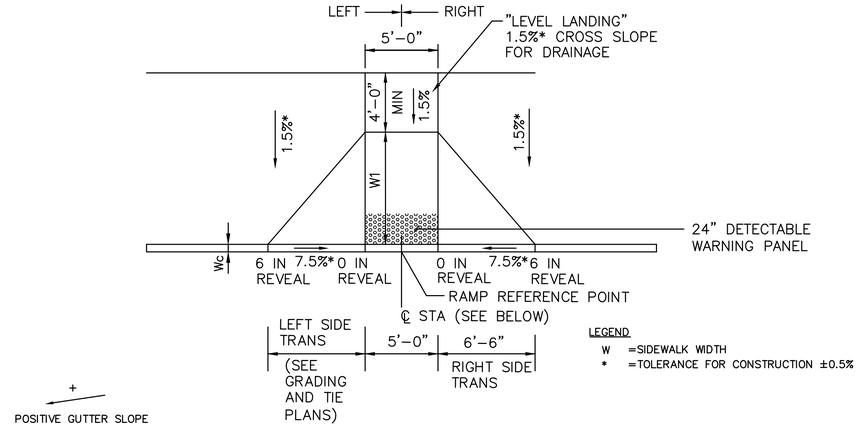
WCR #	RAMP REFERENCE POINT			WIDTH OF SIDEWALK (W)	WIDTH OF OPENING 3'-0" MIN	ROADWAY GUTTER SLOPE	LENGTH OF RAMP (W1)
	BASELINE	STATION	OFFSET				
WCR-12	CANAL STREET	9+04.35	21.85' LT	6.68'	4.00'	-1.1%	9'-0"
WCR-18	CANAL STREET	14+72.96	23.50' RT	6.87'	4.00'	+1.6%	6'-6"
WCR-31	CANAL STREET	25+80.27	26.00' RT	6.00'	4.00'	-2.2%	11'-0"
WCR-39	CANAL STREET	30+58.21	25.26' LT	6.00'	4.00'	+1.0%	3'-3"(3")
WCR-41	CANAL STREET	31+17.49	53.28' RT	7.00'	4.00'	+1.7%	6'-6"
WCR-45	CANAL STREET	33+68.76	22.50' RT	6.00'	4.00'	-0.5%	3'-3"(3")
WCR-87	CANAL STREET	9+78.84	41.23' LT	5.00'	5.00'	VARIES	6'-6"
WCR-88	CANAL STREET	10+60.92	45.26' LT	5.00'	5.00'	VARIES	6'-6"
WCR-91	JEFFERSON STREET	30+74.62	22.94 RT	6.04'	3.00'	+0.6	6'-6"

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	157	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

93692 PS&E-2 WCR DETAIL.DWG 14-Oct-2015

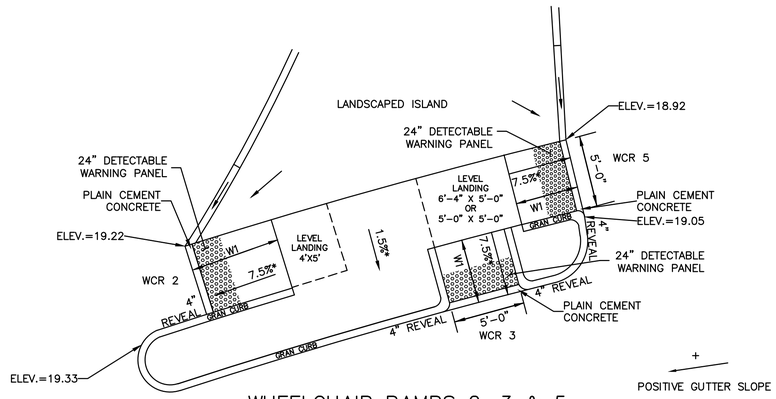


LEGEND
W =SIDEWALK WIDTH
* =TOLERANCE FOR CONSTRUCTION ±0.5%

STYLE B

NOTE: SEE MASSDOT CONST STD E 107.3.0
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–27	CANAL STREET	19+15.62	15.00' RT	8'–4"	13'–0"	5'–0"	4'–8"	+1.5%	6'–6"	9'–0"
WCR–29	CANAL STREET	21+63.93	15.00' RT	8'–4"	13'–0"	5'–0"	4'–8"	+1.2%	6'–6"	9'–0"
WCR–70	CANAL STREET	57+62.88	15.00' RT	8'–4"	17'–3"	15'–0"	8'–11"	+0.7%	6'–6"	7'–8"
WCR–85	CANAL STREET	69+20.56	62.75' RT	8'–4"	15'–6"	5'–0"	7'–2"	+4.5%	6'–6"	15'–0"
WCR–86	CANAL STREET	69+63.00	42.13' RT	8'–4"	17'–0"	5'–0"	8'–8"	+4.5%	6'–6"	15'–0"
WCR–89	CANAL STREET	45+74.87	15.00' RT	8'–4"	14'–0"	15'–0"	5'–8"	–0.4%	7'–8"	6'–6"

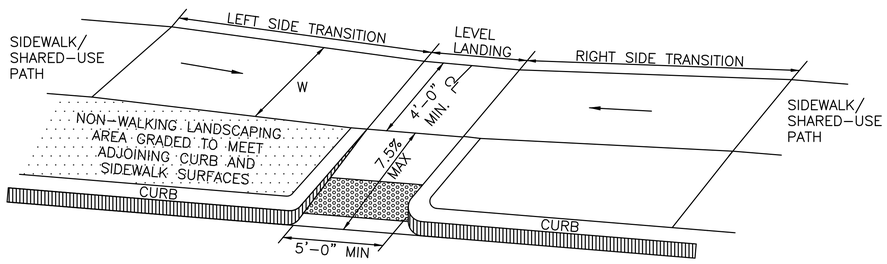


WHEELCHAIR RAMPS 2, 3 & 5

NOTE: SEE MASSDOT CONST STD E 107.6.9
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

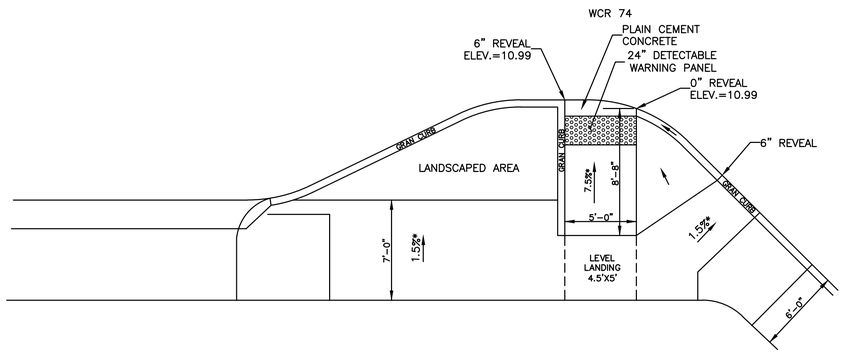
LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–2	CANAL STREET	2+39.06	22.57' LT	6'–4"	VARIES	5'–0"	5'–0"	+2.2%	6'–6"	CURB RETURN
WCR–3	CANAL STREET	2+60.74	16.77' LT	5'–7"	VARIES	5'–0"	> 4'–0"		CURB RETURN	CURB RETURN
WCR–5	CANAL STREET	2+68.54	24.15' LT	3'–4"	VARIES	5'–0"	> 4'–0"	+2.6%	CURB RETURN	6'–6"



WHEELCHAIR RAMP WITH LANDSCAPING STRIP
NTS

WCR #	RAMP REFERENCE POINT		WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	STATION	OFFSET					LEFT SIDE	RIGHT SIDE
WCR–59	51+39.08	15.00' LT	13'–0"	5'–0"	4'–8"	LEVEL	LEVEL	LEVEL
WCR–67	54+12.74	15.00' LT	13'–0"	5'–0"	4'–8"	+0.4%	LEVEL	LEVEL
WCR–71	57+62.84	15.00' LT	13'–0"	15'–0"	4'–8"	–0.8%	LEVEL	LEVEL
WCR–75	64+19.70	15.00' LT	13'–0"	5'–0"	4'–8"	+0.4%	LEVEL	LEVEL
WCR–90	45+74.87	15.00' LT	13'–0"	15'–0"	4'–8"	–0.4%	LEVEL	LEVEL



WHEELCHAIR RAMP 74

NOTE: SEE MASSDOT CONST STD E 107.6.9
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–74	CANAL STREET	64+19.59	15.04' RT	8'–8"	14.00'	5'–0"	4'–6"	+0.4%	7'–8"	LEVEL

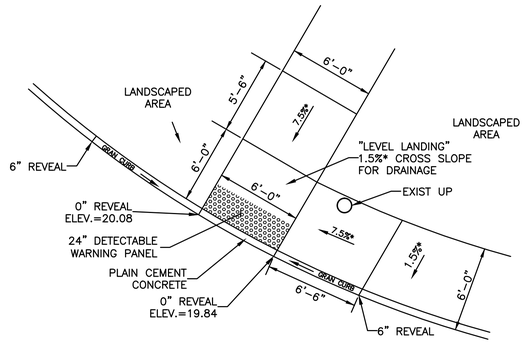
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	158	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

14-Oct-2015

93692 PS&E-2 WCR DETAIL.DWG



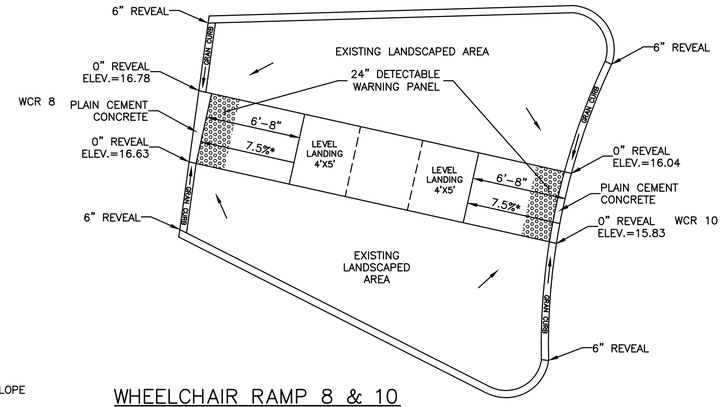
\+
POSITIVE GUTTER SLOPE
–
NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMP 6

NOTE: SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.2.1
SEE MASSDOT CONST STD E 107.6.4

LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–6	CANAL STREET	3+39.66	27.27' LT	5'–6"	6'–0"	6'–0"	6'–0"	–1.1%	9'–0"	6'–8"



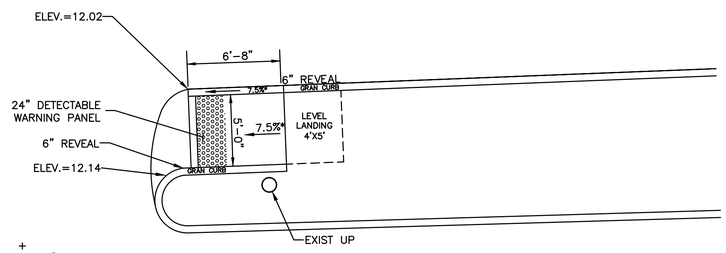
\+
POSITIVE GUTTER SLOPE
–
NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMP 8 & 10

NOTE: SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.0

LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–8	CANAL STREET	5+48.15	22.13' RT	6'–8"	5'–0"	5'–0"	12'–6"	–	4'–9"	4'–9"
WCR–10	CANAL STREET	5+73.77	28.76' RT	6'–8"	5'–0"	5'–0"	12'–6"	–	8'–2"	8'–2"



\+
POSITIVE GUTTER SLOPE
–
NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMP 13

NOTE: SEE MASSDOT CONST STD E 107.6.9
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND
* =TOLERANCE FOR CONSTRUCTION ±0.5%

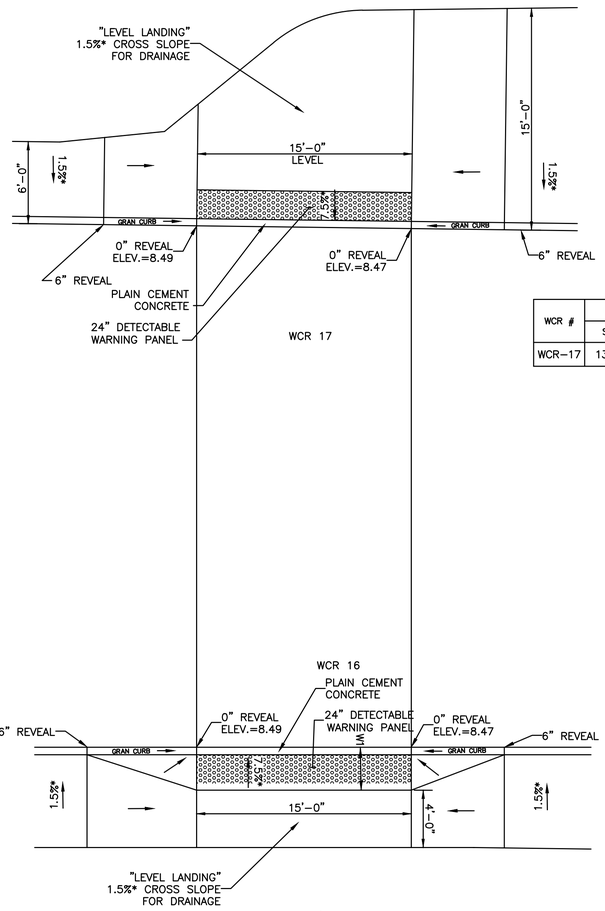
WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'–0"	DEPTH OF LEVEL LANDING Min. 4'–0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR–13	CANAL STREET	9+40.42	21.50' LT	6'–8"	10'–4"	5'–0"	> 4'–0"		CURB RETURN	CURB RETURN

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	159	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

93692 PS&E-2 WCR DETAIL.DWG 27-Oct-2015



\+ POSITIVE GUTTER SLOPE

\− NEGATIVE GUTTER SLOPE

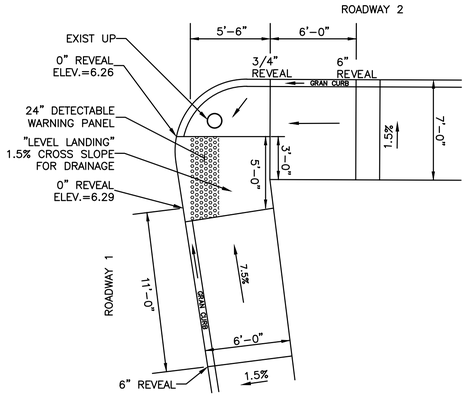
WHEELCHAIR RAMP 17

NOTE: SEE MASSDOT CONST STD E 107.2.1
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.5

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT		WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'-0"	DEPTH OF LEVEL LANDING Min. 4'-0"	ROADWAY GUTTER SLOPE	TRANSITION LENGTH	
	STATION	OFFSET					LEFT SIDE	RIGHT SIDE
WCR-17	13+19.66	18.50' LT	6'-0" 15'-0"	15'-0"	8'-6" 15'-0"	0.0%	6'-6"	6'-6"



\+ POSITIVE GUTTER SLOPE

\− NEGATIVE GUTTER SLOPE

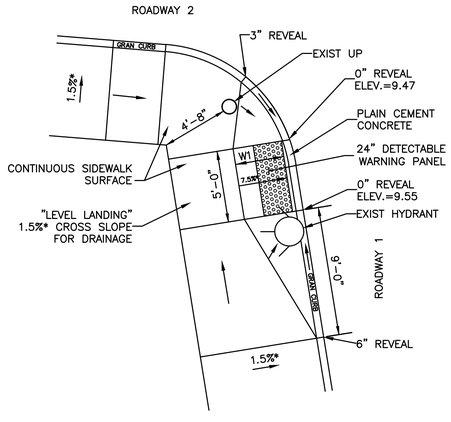
WHEELCHAIR RAMP 49

NOTE: SEE MASSDOT CONST STD E 107.6.4
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT		LEVEL LANDING LENGTH	RAMP WIDTH	ROADWAY 1 WIDTH OF SIDEWALK	TRANSITION 1 LENGTH		ROADWAY 2 WIDTH OF SIDEWALK	TRANSITION 2 LENGTH	
	STATION	OFFSET				GUTTER GRADE	L1		GUTTER GRADE	L2
WCR-49	36+10.50	23.00' RT	5'-0"	5'-0"	6.0'	+2.1%	11.0'	7.0'	-0.5%	6'-0"



\+ POSITIVE GUTTER SLOPE

\− NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMP 16

NOTE: SEE MASSDOT CONST STD E 107.2.0
SEE MASSDOT CONST STD E 107.3.0
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.5

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'-0"	DEPTH OF LEVEL LANDING Min. 4'-0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR-16	CANAL STREET	13+19.66	18.64' RT	3'-0"	7'-0"	15'-0"	4'-0"	0.0%	6'-6"	6'-6"

WHEELCHAIR RAMP 56

NOTE: SEE MASSDOT CONST STD E 107.2.0
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

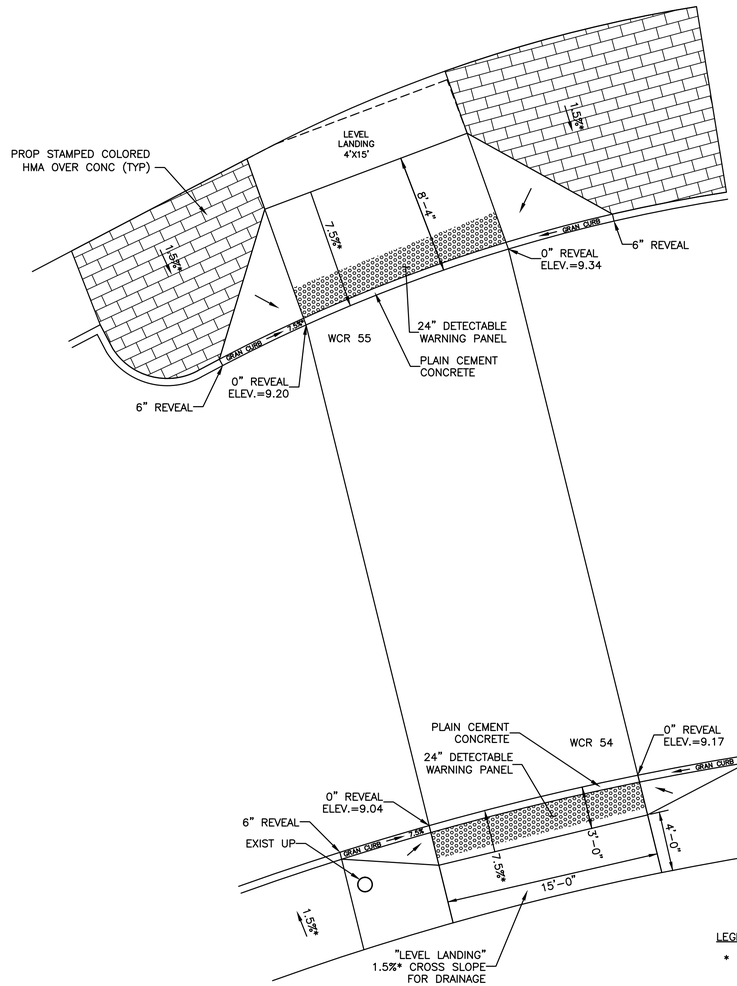
WCR #	RAMP REFERENCE POINT		LEVEL LANDING LENGTH	RAMP WIDTH	ROADWAY 1 WIDTH OF SIDEWALK	TRANSITION 1 LENGTH		ROADWAY 2 WIDTH OF SIDEWALK	TRANSITION 2 LENGTH	
	STATION	OFFSET				GUTTER GRADE	L1		GUTTER GRADE	L2
WCR-56	43+99.07	26.44' RT	> 4'-0"	5'-0"	8.7'	+1.2%	9.0'	7.0'	-0.7%	3'-8"

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	160	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

93692 PS&E-2 WCR DETAIL.DWG 14-Oct-2015



LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

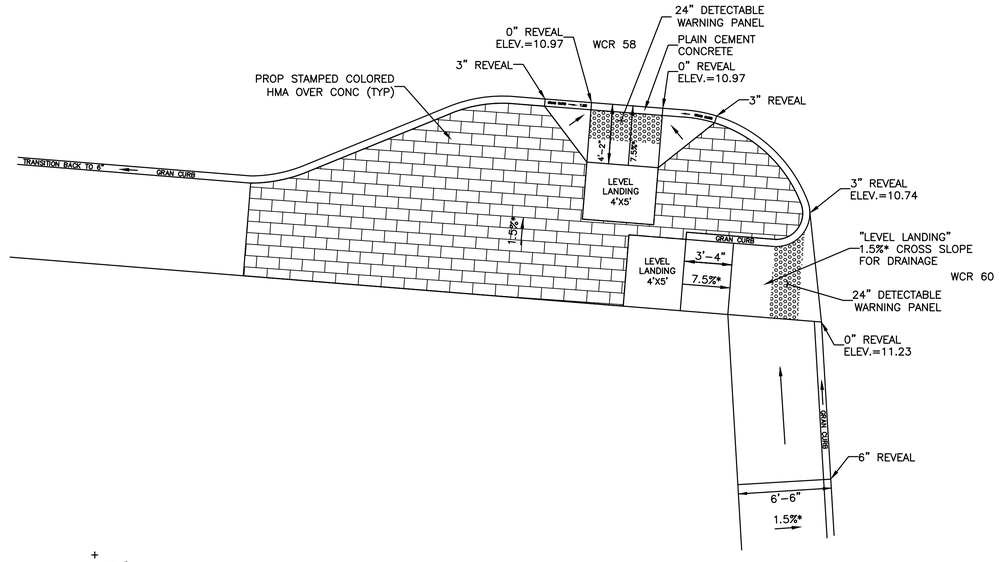
\+ POSITIVE GUTTER SLOPE

\− NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMPS 54 & 55

NOTE: SEE MASSDOT CONST STD E 107.2.0
SEE MASSDOT CONST STD E 107.3.0
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.5

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'−0"	DEPTH OF LEVEL LANDING Min. 4'−0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR−54	CANAL STREET	42+53.57	15.37' RT	3'−0"	7'−0"	15'−0"	4'−0"	+0.7%	7'−8"	6'−6"
WCR−55	CANAL STREET	42+53.13	21.62' LT	8'−4"	12'−4"	15'−0"	4'−0"	+0.7%	6'−6"	7'−8"



\+ POSITIVE GUTTER SLOPE

\− NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMPS 58 & 62

NOTE: SEE MASSDOT CONST STD E 107.6.3
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.9
SEE MASSDOT CONST STD E 107.6.4

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'−0"	DEPTH OF LEVEL LANDING Min. 4'−0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR−58	CANAL STREET	51+39.05	15.00' RT	4'−2"(3")	14'−0"	5'−0"	> 4'−0"	+0.4%	3'−10"(3")	3'−3"(3")
WCR−62	CANAL STREET	51+48.91	22.50' RT	3'−3"(3")	VARIES	5'−0"	> 4'−0"	+6.5%	15'−0"	CURB RETURN

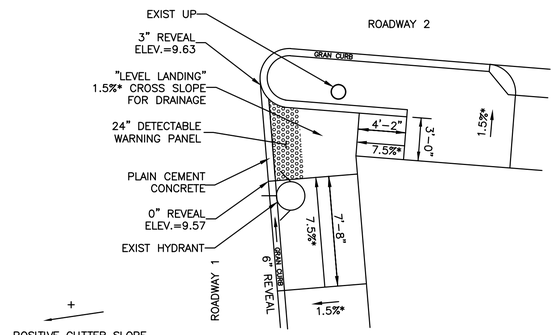
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	161	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

14-Oct-2015

93692 PS&E-2 WCR DETAIL.DWG



WHEELCHAIR RAMP 61

NOTE: SEE MASSDOT CONST STD E 107.6.4
SEE MASSDOT CONST STD E 107.6.9
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

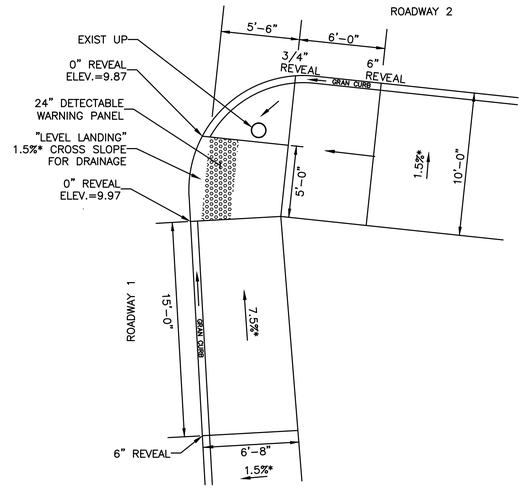
LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

\+ POSITIVE GUTTER SLOPE

\– NEGATIVE GUTTER SLOPE

WCR #	RAMP REFERENCE POINT		LEVEL LANDING LENGTH	RAMP WIDTH	ROADWAY 1 WIDTH OF SIDEWALK	TRANSITION 1 LENGTH		ROADWAY 2 WIDTH OF SIDEWALK	TRANSITION 2 LENGTH	
	STATION	OFFSET				GUTTER GRADE	L1		GUTTER GRADE	L2
WCR-61	48+93.45	26.62' RT	5'-0"	5'-0"	6.2'	+0.5%	7.67'	7.0'	+0.5%	CURB RETURN



\+ POSITIVE GUTTER SLOPE

\– NEGATIVE GUTTER SLOPE

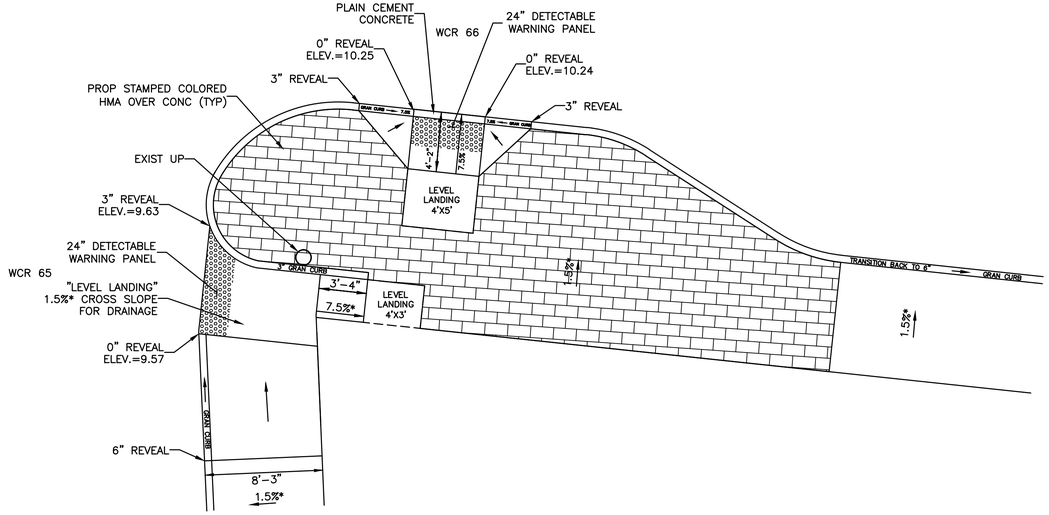
WHEELCHAIR RAMP 69

NOTE: SEE MASSDOT CONST STD E 107.6.4
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT		LEVEL LANDING LENGTH	RAMP WIDTH	ROADWAY 1 WIDTH OF SIDEWALK	TRANSITION 1 LENGTH		ROADWAY 2 WIDTH OF SIDEWALK	TRANSITION 2 LENGTH	
	STATION	OFFSET				GUTTER GRADE	L1		GUTTER GRADE	L2
WCR-69	55+33.51	29.50' RT	5'-6"	5'-0"	6.75'	+5.0%	15.0'	10.0'	-0.5%	6'-0"



WHEELCHAIR RAMPS 65 & 66

NOTE: SEE MASSDOT CONST STD E 107.6.3
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.9
SEE MASSDOT CONST STD E 107.6.4

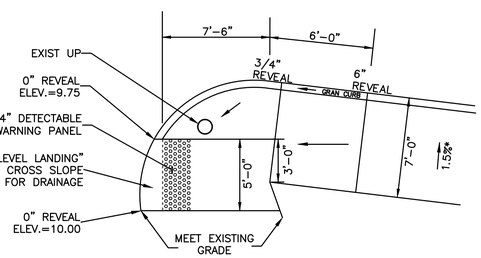
LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

\+ POSITIVE GUTTER SLOPE

\– NEGATIVE GUTTER SLOPE

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP	DEPTH OF LEVEL LANDING Min. 4'-0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR-65	CANAL STREET	53+96.18	27.50' RT	3'-4" (3")	8'-3"	3'-0"	> 4'-0"	+0.8%	CURB REVEAL	7'-8"
WCR-66	CANAL STREET	54+12.69	15.00' RT	4'-2" (3")	15'-0"	5'-0"	> 4'-0"	-0.4%	3'-3" (3")	3'-10" (3")



\+ POSITIVE GUTTER SLOPE

\– NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMP 73

NOTE: SEE MASSDOT CONST STD E 107.6.4
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.9.0

LEGEND

* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT		LEVEL LANDING LENGTH	RAMP WIDTH	ROADWAY 1 WIDTH OF SIDEWALK	TRANSITION 1 LENGTH		ROADWAY 2 WIDTH OF SIDEWALK	TRANSITION 2 LENGTH	
	STATION	OFFSET				GUTTER GRADE	L1		GUTTER GRADE	L2
WCR-73	62+76.58	27.50' RT	> 4'-0"	5'-0"	–	–	–	7'-0"	-0.4%	> 7'-8"

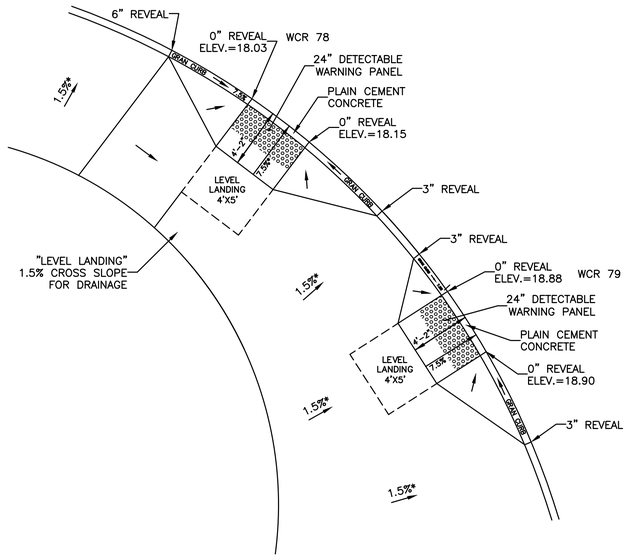
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	162	209
PROJECT FILE NO.	605146		

WHEELCHAIR RAMP/DRIVEWAY DETAILS

14-Oct-2015

93692 PS&E-2 WCR DETAIL.DWG



\+
POSITIVE GUTTER SLOPE

\-
NEGATIVE GUTTER SLOPE

WHEELCHAIR RAMPS 78 & 79

NOTE: SEE MASSDOT CONST STD E 107.2.0
SEE MASSDOT CONST STD E 107.9.0
SEE MASSDOT CONST STD E 107.6.5
SEE MASSDOT CONST STD E 107.6.3

LEGEND

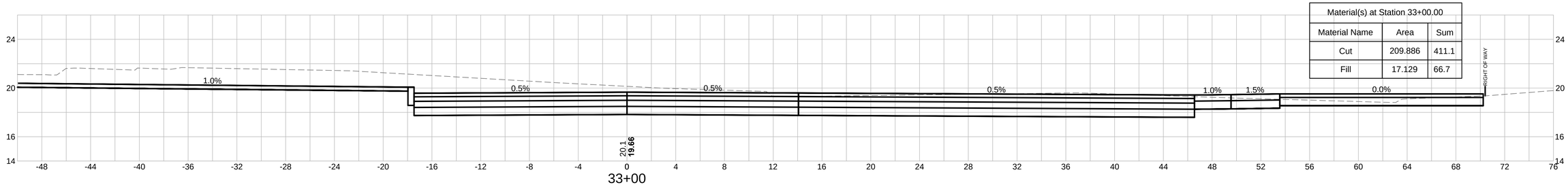
* =TOLERANCE FOR CONSTRUCTION ±0.5%

WCR #	RAMP REFERENCE POINT			LENGTH OF PRIMARY RAMP (W1)	WIDTH OF SIDEWALK	WIDTH OF RAMP Min. 5'-0"	DEPTH OF LEVEL LANDING Min. 4'-0"	GUTTER	TRANSITION LENGTH	
	BASELINE	STATION	OFFSET						LEFT SIDE	RIGHT SIDE
WCR-78	CANAL STREET	68+47.74	38.79' RT	4'-2"	VARIES	5'-0"	> 4'-0"	+3.5%	7'-0"(3")	6'-6"
WCR-79	CANAL STREET	68+60.54	51.16' RT	4'-2"	VARIES	5'-0"	> 4'-0"	+3.5%	7'-0" (3")	3'-3"(3")

SALEM
CANAL STREET

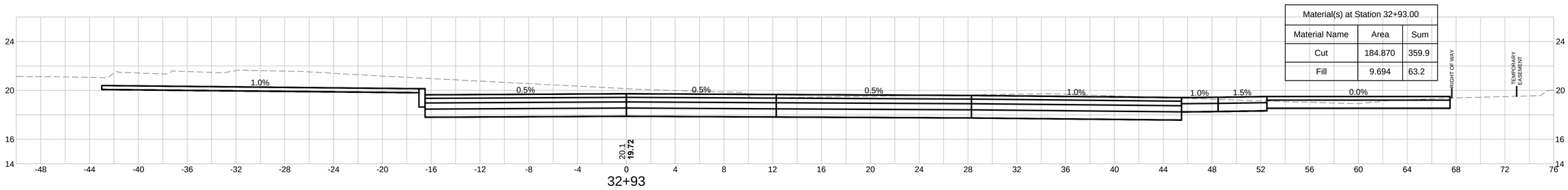
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	163	209
PROJECT FILE NO.	605146		

JEFFERSON AVENUE CROSS SECTIONS



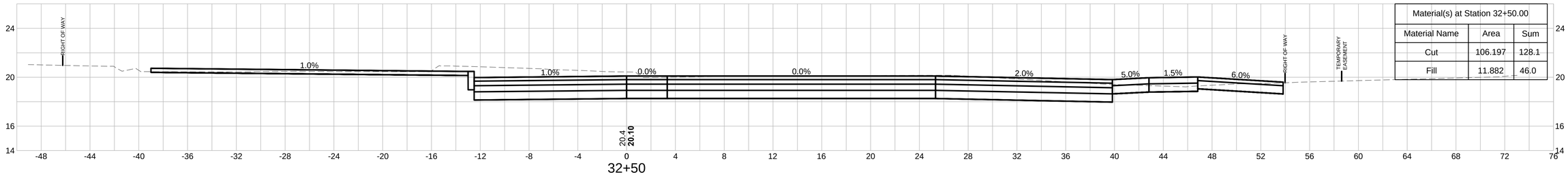
Material(s) at Station 33+00.00

Material Name	Area	Sum
Cut	209.886	411.1
Fill	17.129	66.7



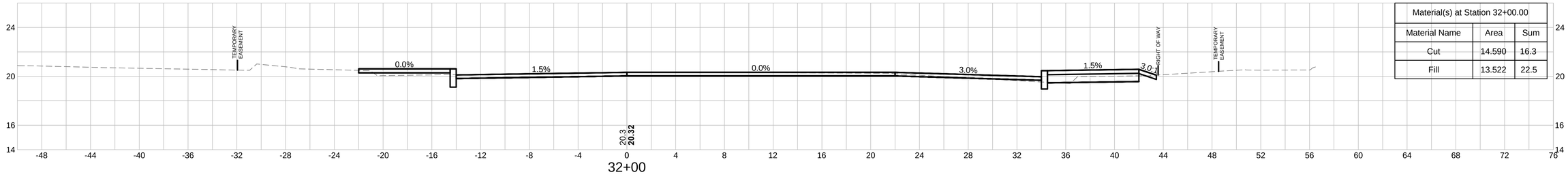
Material(s) at Station 32+93.00

Material Name	Area	Sum
Cut	184.870	359.9
Fill	9.694	63.2



Material(s) at Station 32+50.00

Material Name	Area	Sum
Cut	106.197	128.1
Fill	11.882	46.0



Material(s) at Station 32+00.00

Material Name	Area	Sum
Cut	14.590	16.3
Fill	13.522	22.5

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	164	209
PROJECT FILE NO.	605146		

JEFFERSON AVENUE CROSS SECTIONS

15-Oct-2015 93692 PS&E-2 CROSS SECTIONS.DWG

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Material(s) at Station 33+50.00		
Material Name	Area	Sum
Cut	197.708	806.6
Fill	14.002	97.8

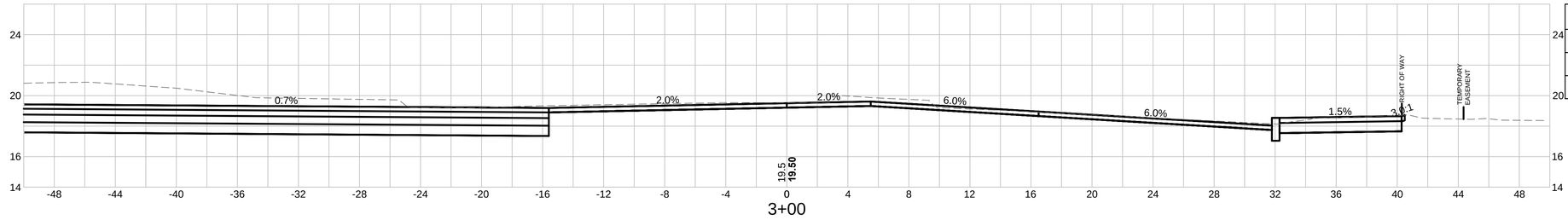
Material(s) at Station 33+35.00		
Material Name	Area	Sum
Cut	220.913	690.3
Fill	17.377	89.1

HOR. SCALE IN FEET
0 4 10 20

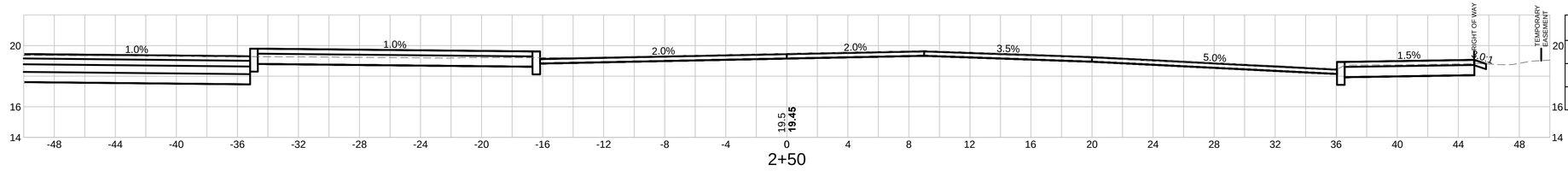
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	165	209
PROJECT FILE NO.	605146		

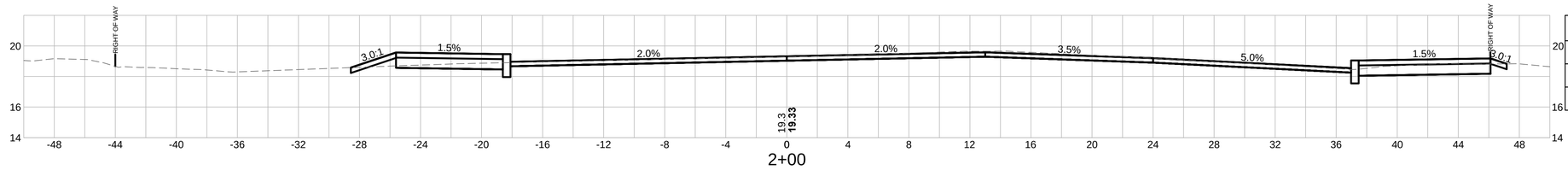
CANAL STREET CROSS SECTIONS



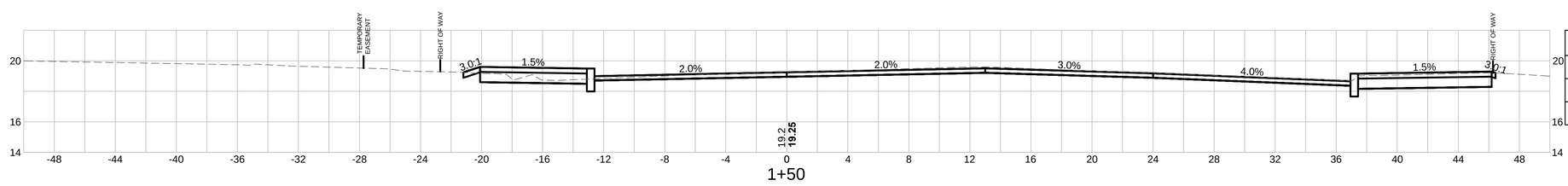
Material(s) at Station 3+00.00		
Material Name	Area	Sum
Cut	81.933	282.9
Fill	3.092	61.0



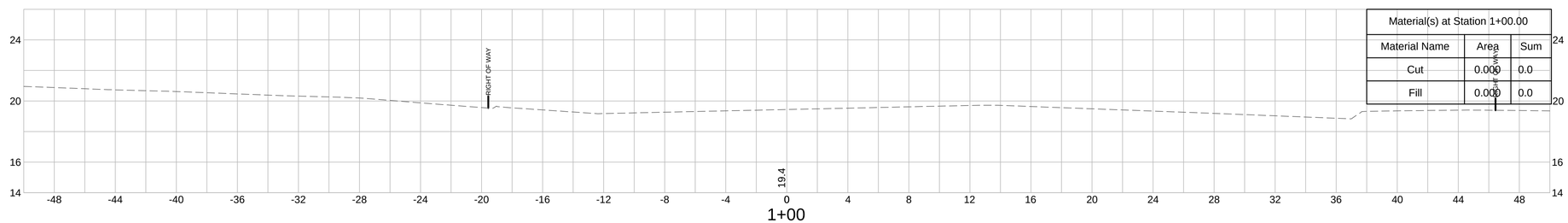
Material(s) at Station 2+50.00		
Material Name	Area	Sum
Cut	60.246	151.2
Fill	12.615	46.4



Material(s) at Station 2+00.00		
Material Name	Area	Sum
Cut	24.708	72.6
Fill	11.605	24.0



Material(s) at Station 1+50.00		
Material Name	Area	Sum
Cut	26.824	24.8
Fill	7.161	6.6



Material(s) at Station 1+00.00		
Material Name	Area	Sum
Cut	0.000	0.0
Fill	0.000	0.0

HOR. SCALE IN FEET
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15-Oct-2015
93692 PS&E-2 CROSS SECTIONS.DWG

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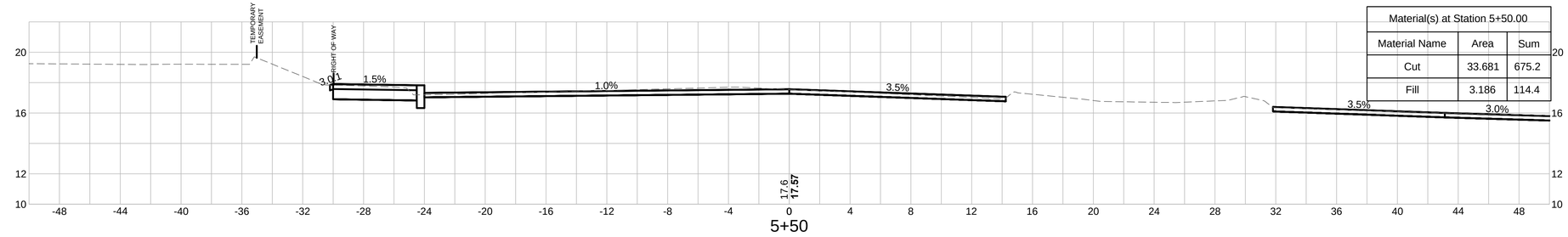
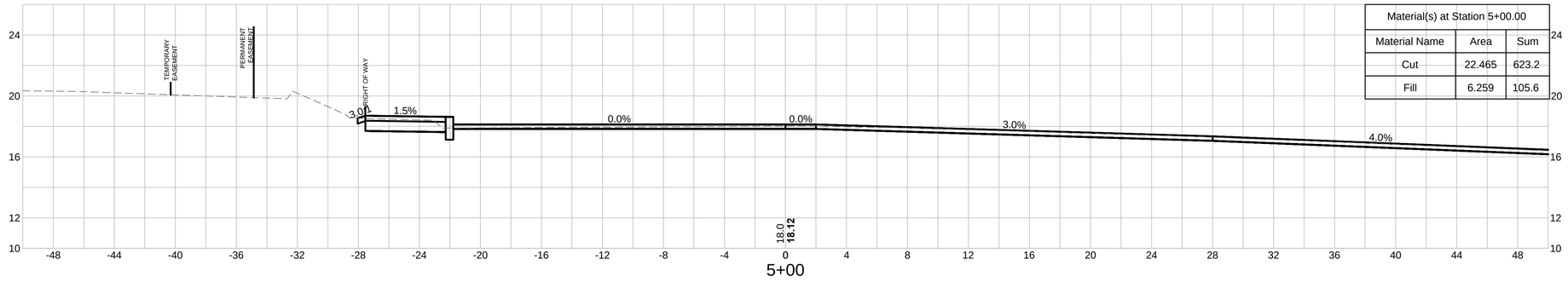
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	166	209
PROJECT FILE NO.	605146		

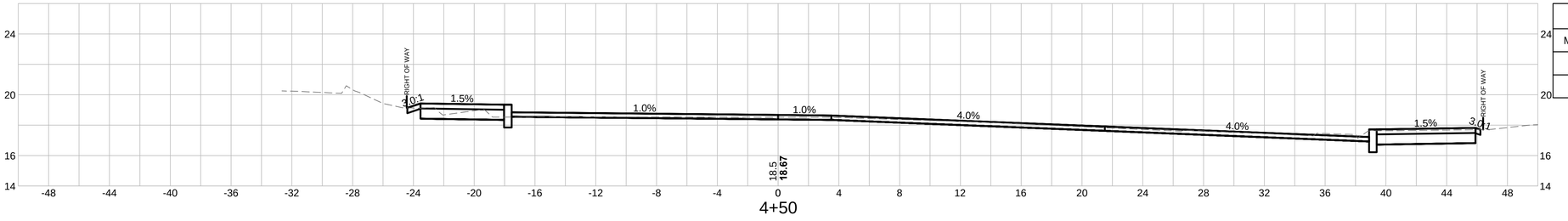
CANAL STREET CROSS SECTIONS



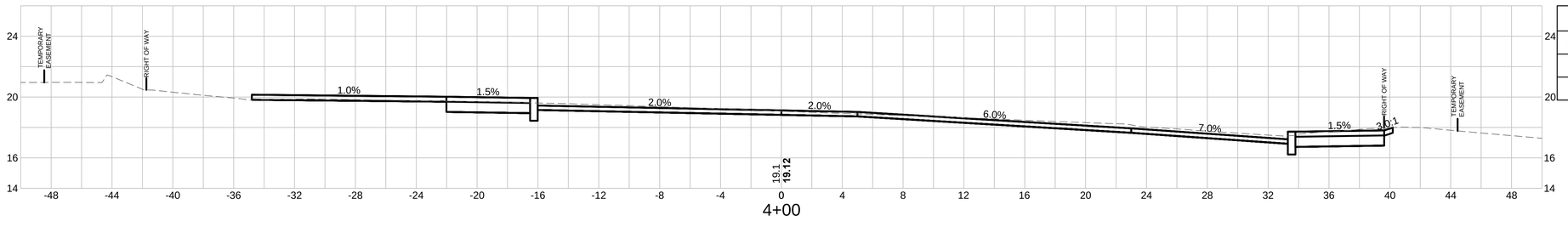
Material(s) at Station 5+50.00		
Material Name	Area	Sum
Cut	33.681	675.2
Fill	3.186	114.4



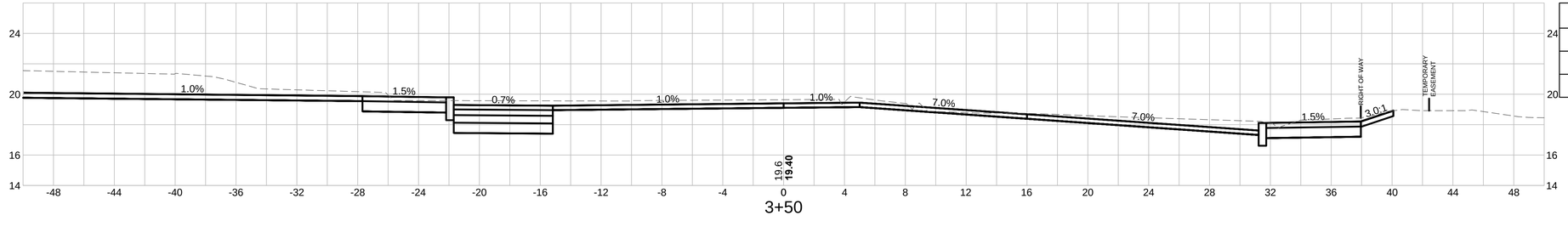
Material(s) at Station 5+00.00		
Material Name	Area	Sum
Cut	22.465	623.2
Fill	6.259	105.6



Material(s) at Station 4+50.00		
Material Name	Area	Sum
Cut	19.942	584.0
Fill	10.921	89.7



Material(s) at Station 4+00.00		
Material Name	Area	Sum
Cut	30.387	537.4
Fill	6.445	73.6



Material(s) at Station 3+50.00		
Material Name	Area	Sum
Cut	81.275	434.0
Fill	2.070	65.8

HOR. SCALE IN FEET
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15-Oct-2015

93692 PS&E-2 CROSS SECTIONS.DWG

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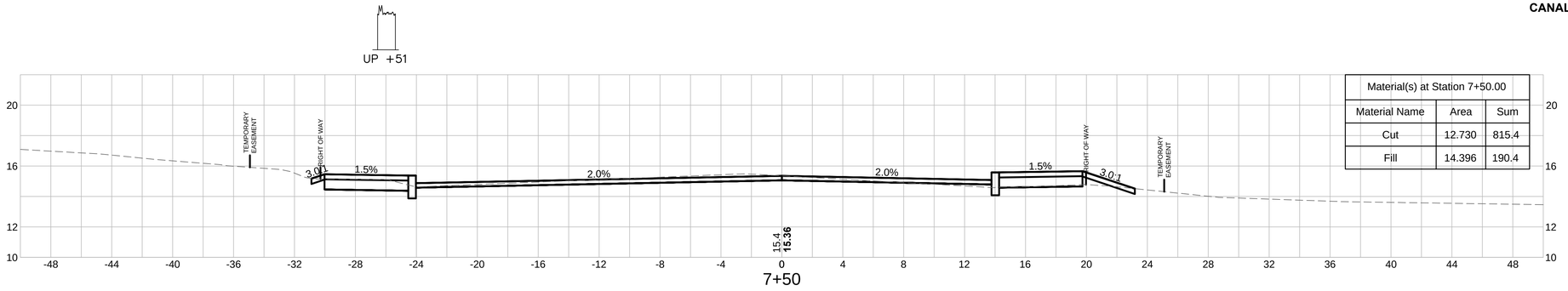
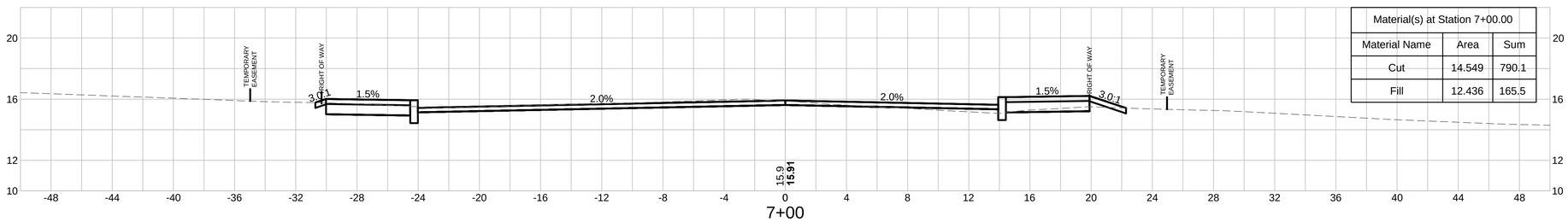
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	167	209
PROJECT FILE NO.	605146		

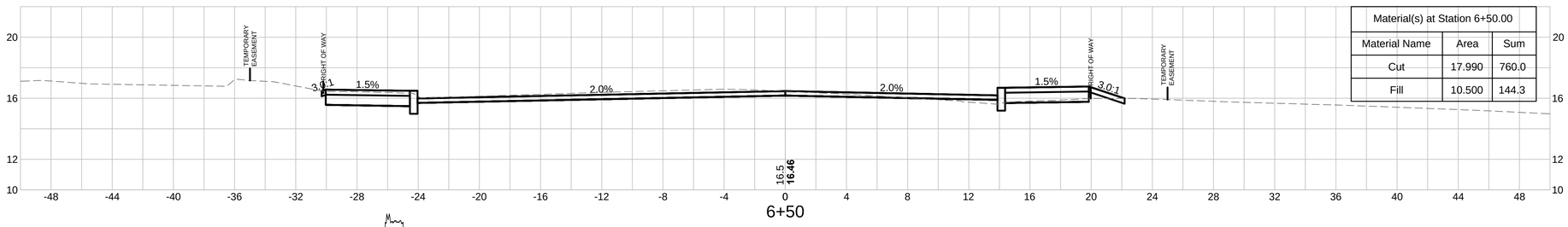
CANAL STREET CROSS SECTIONS



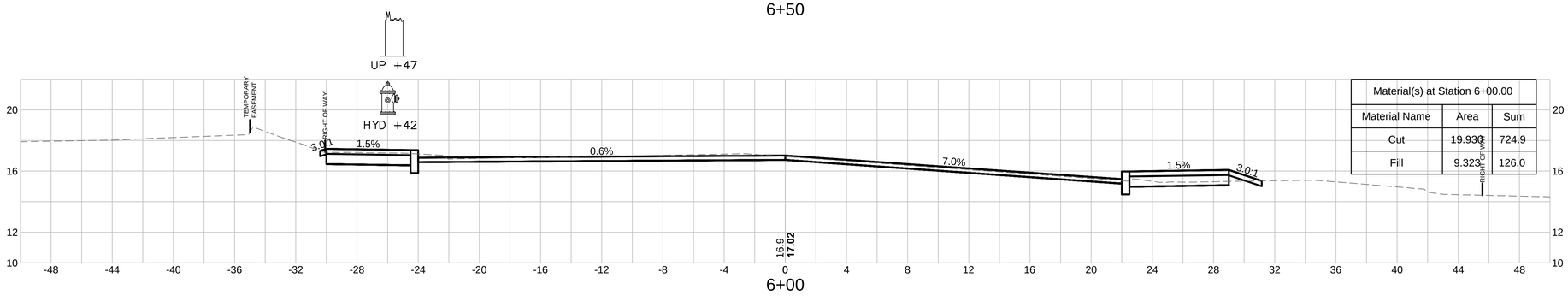
Material(s) at Station 7+50.00		
Material Name	Area	Sum
Cut	12.730	815.4
Fill	14.396	190.4



Material(s) at Station 7+00.00		
Material Name	Area	Sum
Cut	14.549	790.1
Fill	12.436	165.5



Material(s) at Station 6+50.00		
Material Name	Area	Sum
Cut	17.990	760.0
Fill	10.500	144.3



Material(s) at Station 6+00.00		
Material Name	Area	Sum
Cut	19.930	724.9
Fill	9.323	126.0

HOR. SCALE IN FEET
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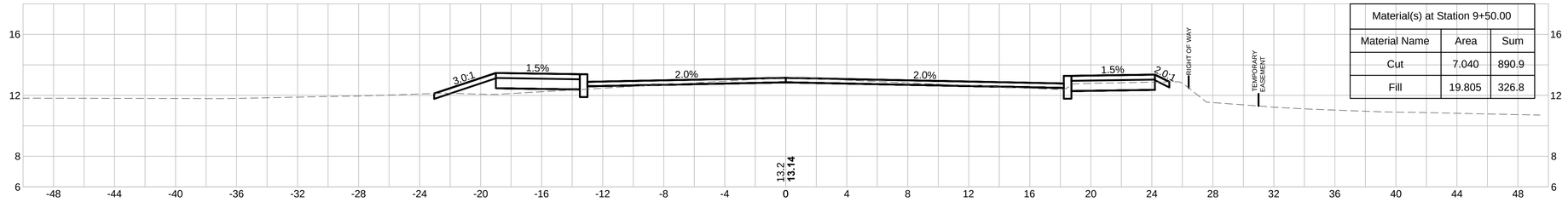
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	168	209
PROJECT FILE NO.	605146		

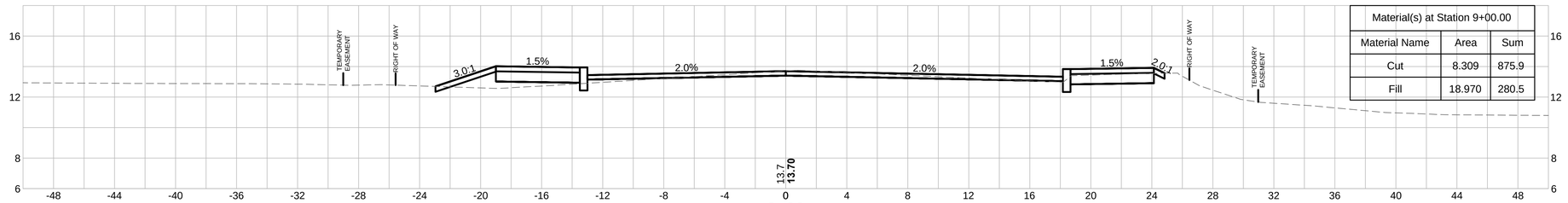
CANAL STREET CROSS SECTIONS



Material(s) at Station 9+50.00

Material Name	Area	Sum
Cut	7.040	890.9
Fill	19.805	326.8

UP +47

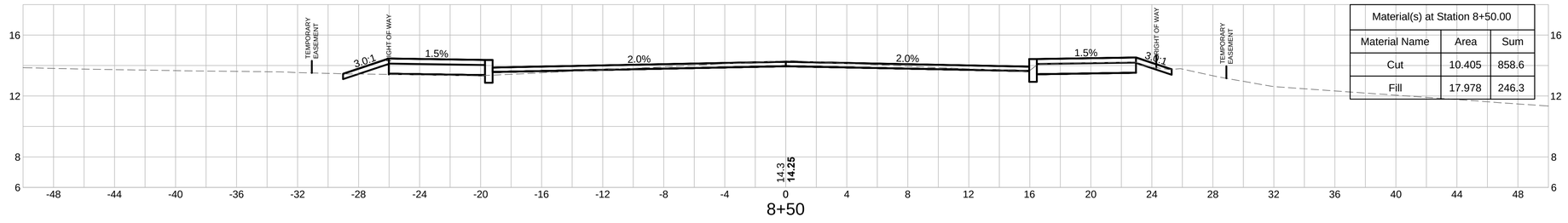


Material(s) at Station 9+00.00

Material Name	Area	Sum
Cut	8.309	875.9
Fill	18.970	280.5

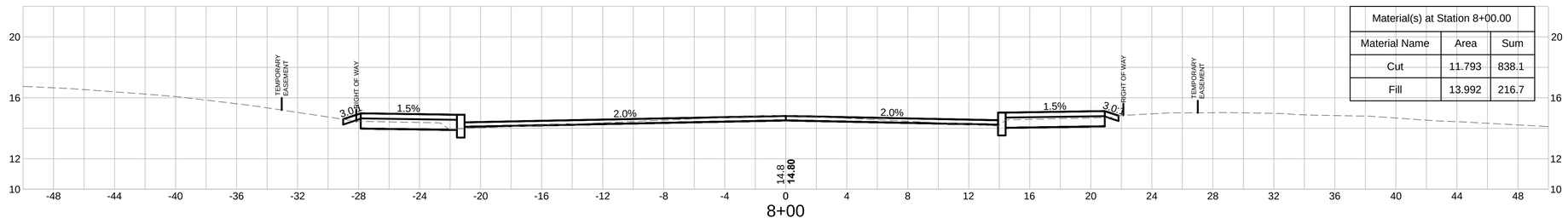
UP +67

UP +83



Material(s) at Station 8+50.00

Material Name	Area	Sum
Cut	10.405	858.6
Fill	17.978	246.3



Material(s) at Station 8+00.00

Material Name	Area	Sum
Cut	11.793	838.1
Fill	13.992	216.7

HOR. SCALE IN FEET

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93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	169	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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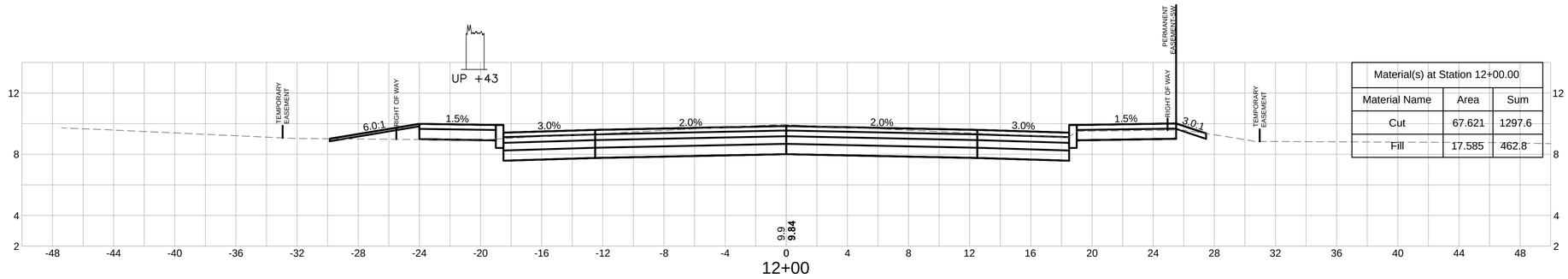
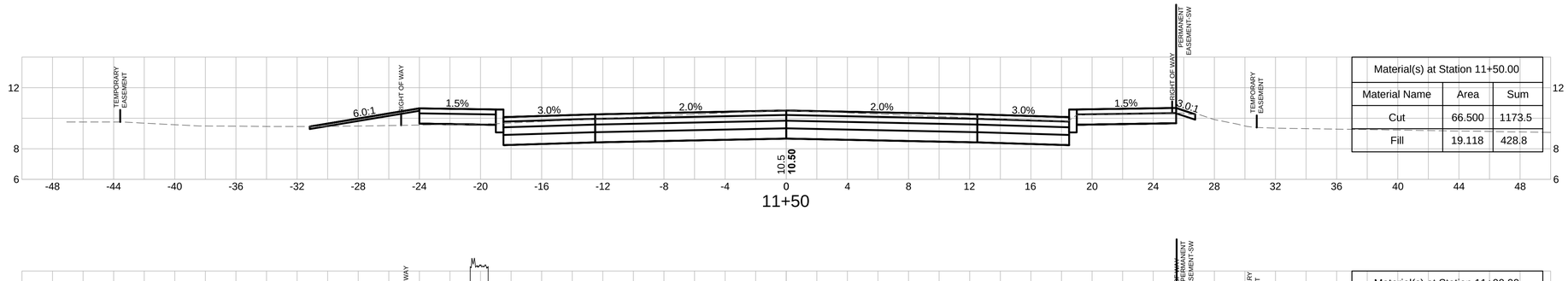
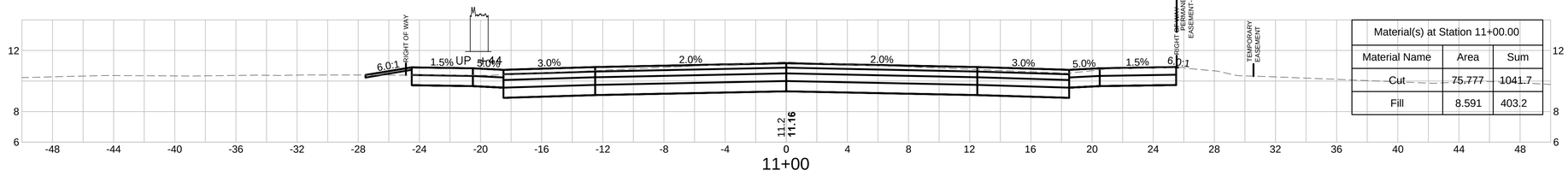


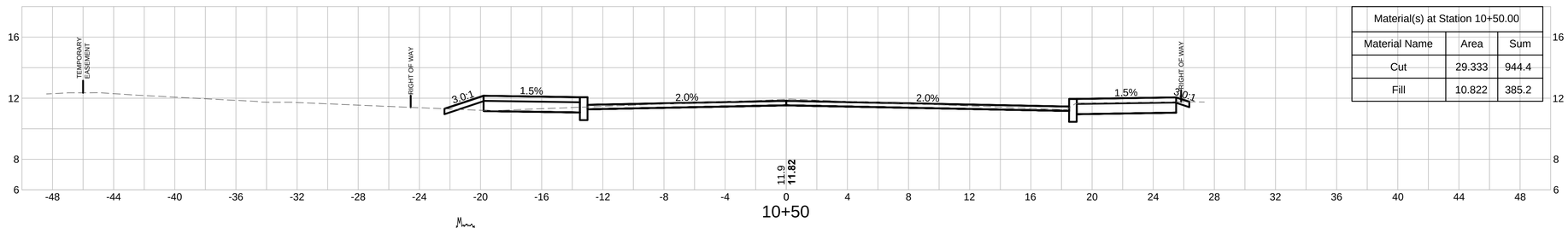
Material(s) at Station 12+00.00		
Material Name	Area	Sum
Cut	67.621	1297.6
Fill	17.585	462.8



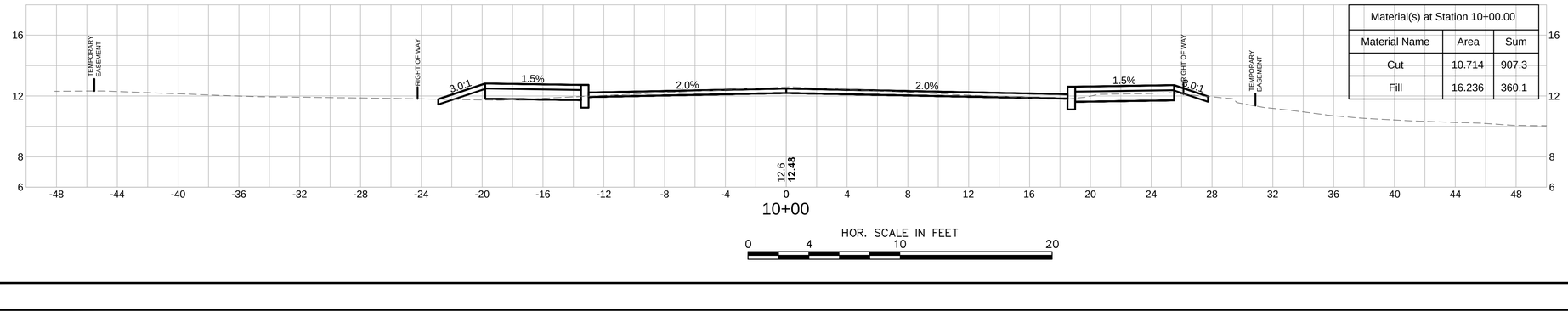
Material(s) at Station 11+50.00		
Material Name	Area	Sum
Cut	66.500	1173.5
Fill	19.118	428.8



Material(s) at Station 11+00.00		
Material Name	Area	Sum
Cut	75.777	1041.7
Fill	8.591	403.2



Material(s) at Station 10+50.00		
Material Name	Area	Sum
Cut	29.333	944.4
Fill	10.822	385.2



Material(s) at Station 10+00.00		
Material Name	Area	Sum
Cut	10.714	907.3
Fill	16.236	360.1

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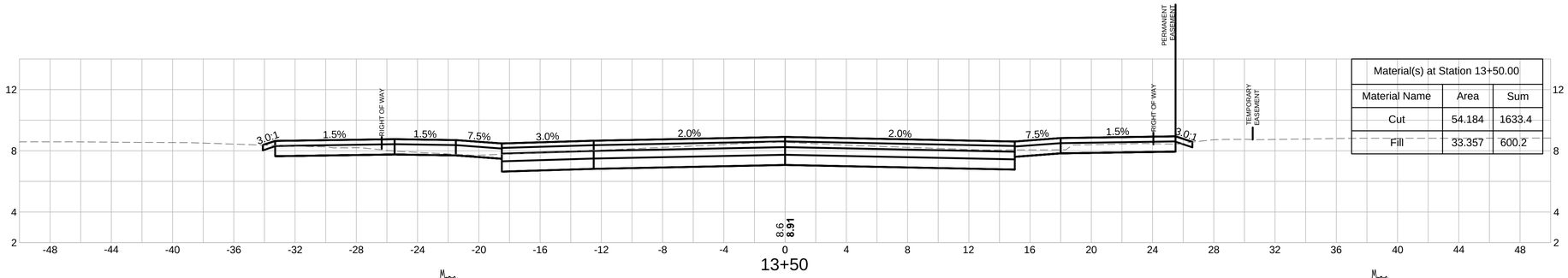
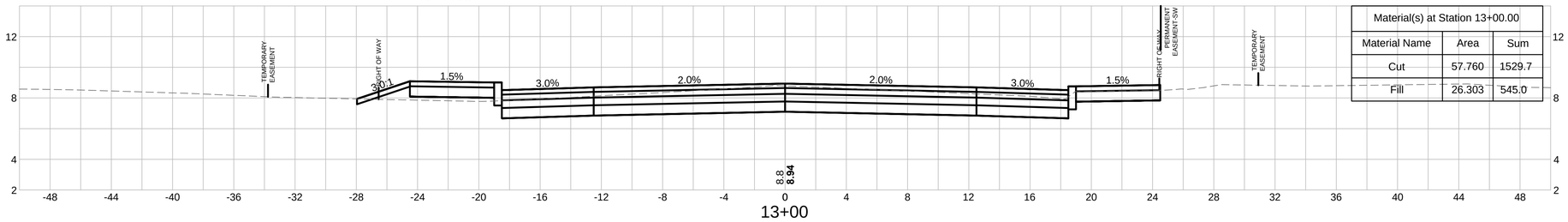
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	170	209
PROJECT FILE NO.	605146		

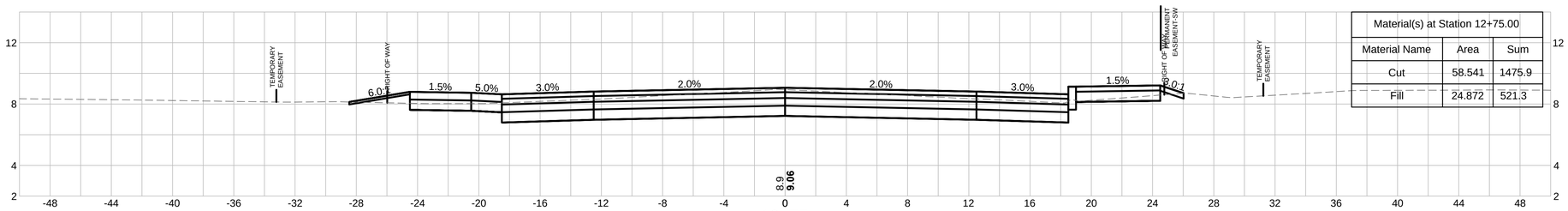
CANAL STREET CROSS SECTIONS



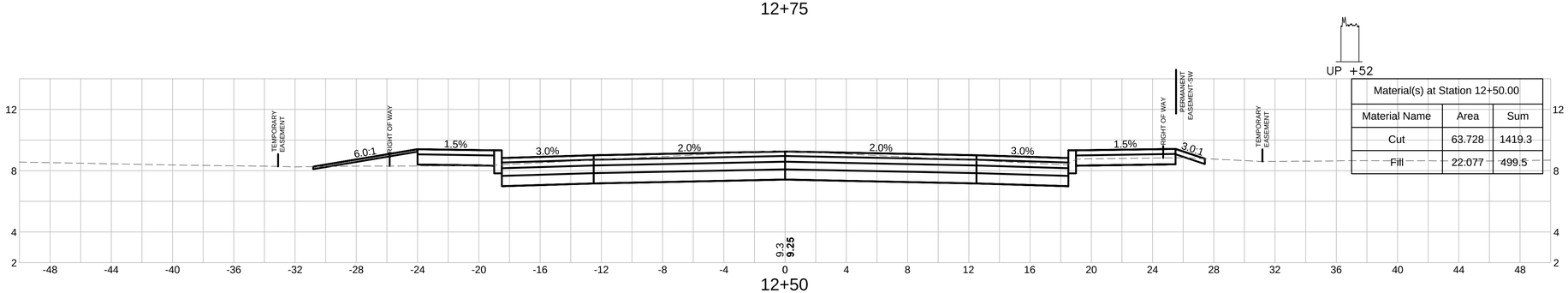
Material(s) at Station 13+50.00		
Material Name	Area	Sum
Cut	54.184	1633.4
Fill	33.357	600.2



Material(s) at Station 13+00.00		
Material Name	Area	Sum
Cut	57.760	1529.7
Fill	26.303	545.0



Material(s) at Station 12+75.00		
Material Name	Area	Sum
Cut	58.541	1475.9
Fill	24.872	521.3



Material(s) at Station 12+50.00		
Material Name	Area	Sum
Cut	63.728	1419.3
Fill	22.077	499.5

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG

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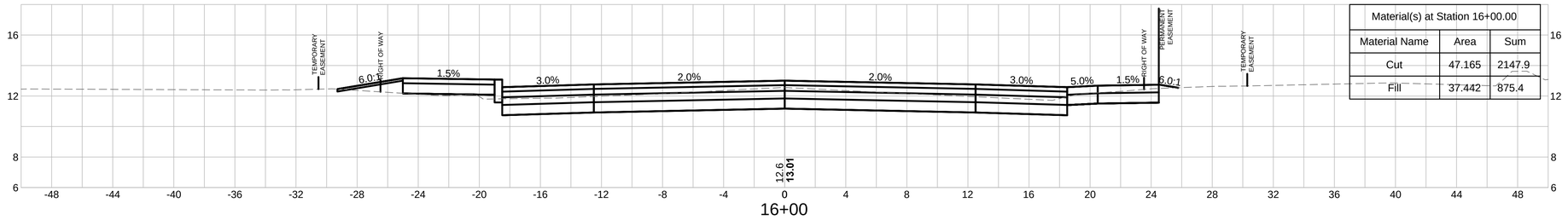
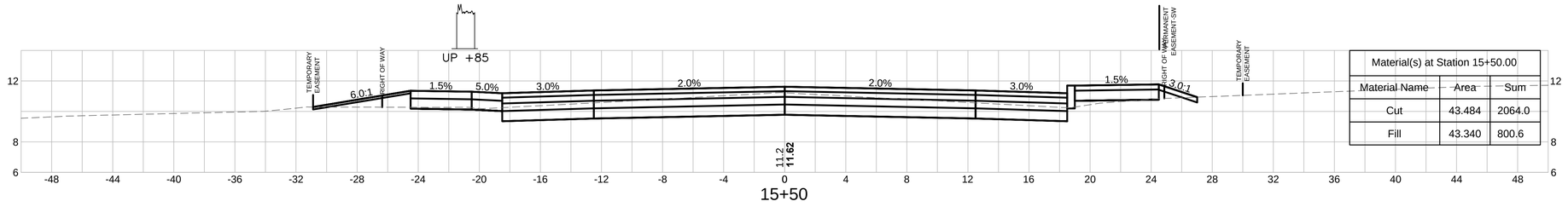


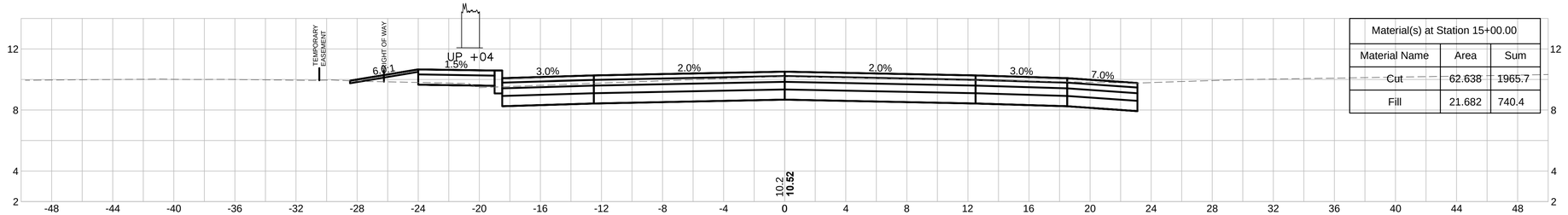
16+00

Material(s) at Station 16+00.00		
Material Name	Area	Sum
Cut	47.165	2147.9
Fill	37.442	875.4



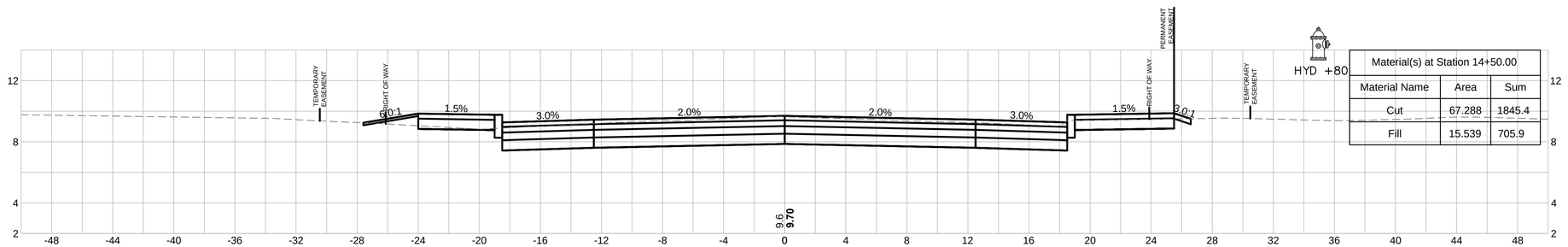
15+50

Material(s) at Station 15+50.00		
Material Name	Area	Sum
Cut	43.484	2064.0
Fill	43.340	800.6



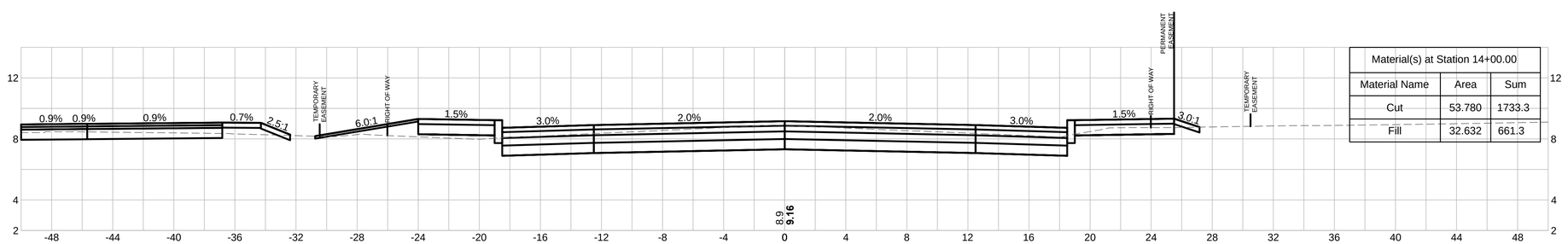
15+00

Material(s) at Station 15+00.00		
Material Name	Area	Sum
Cut	62.638	1965.7
Fill	21.682	740.4



14+50

Material(s) at Station 14+50.00		
Material Name	Area	Sum
Cut	67.288	1845.4
Fill	15.539	705.9



14+00

Material(s) at Station 14+00.00		
Material Name	Area	Sum
Cut	53.780	1733.3
Fill	32.632	661.3

HOR. SCALE IN FEET

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	171	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

16-Oct-2015

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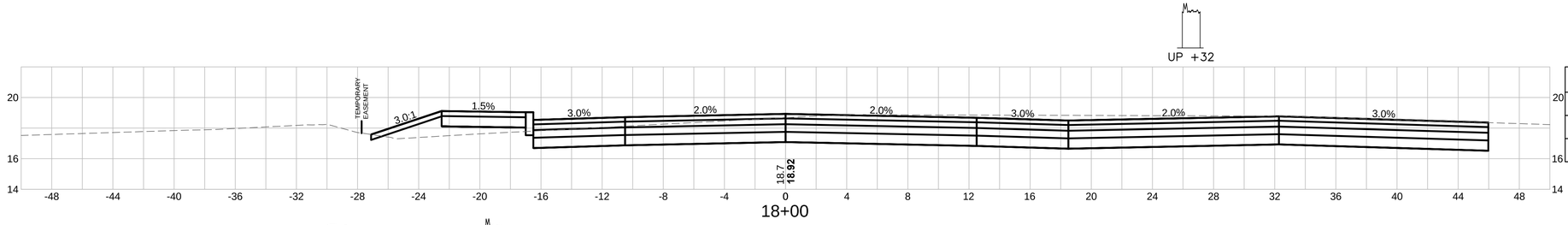
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	172	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS



Material(s) at Station 18+00.00		
Material Name	Area	Sum
Cut	111.216	2739.4
Fill	21.664	1084.2

Material(s) at Station 17+50.00		
Material Name	Area	Sum
Cut	114.894	2530.1
Fill	29.567	1036.8

Material(s) at Station 17+00.00		
Material Name	Area	Sum
Cut	75.619	2353.7
Fill	35.683	976.4

Material(s) at Station 16+50.00		
Material Name	Area	Sum
Cut	48.462	2238.8
Fill	33.397	912.4

HOR. SCALE IN FEET
0 4 10 20

15-Oct-2015
93692 PS&E-2 CROSS SECTIONS.DWG

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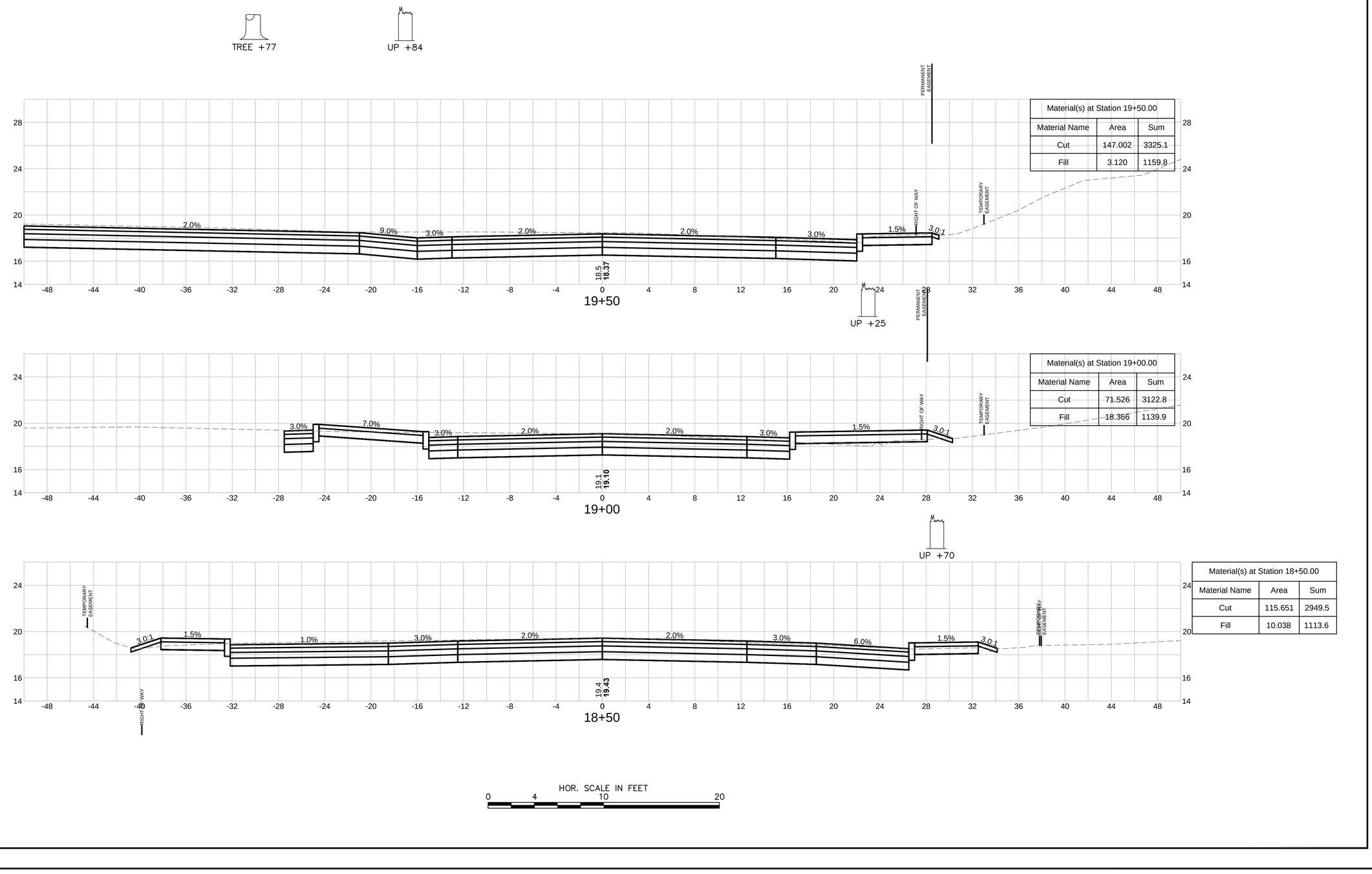
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	173	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS



Material(s) at Station 19+50.00

Material Name	Area	Sum
Cut	147.002	3325.1
Fill	3.120	1159.8

Material(s) at Station 19+00.00

Material Name	Area	Sum
Cut	71.526	3122.8
Fill	18.366	1139.9

Material(s) at Station 18+50.00

Material Name	Area	Sum
Cut	115.651	2949.5
Fill	10.038	1113.6

HOR. SCALE IN FEET
0 4 10 20

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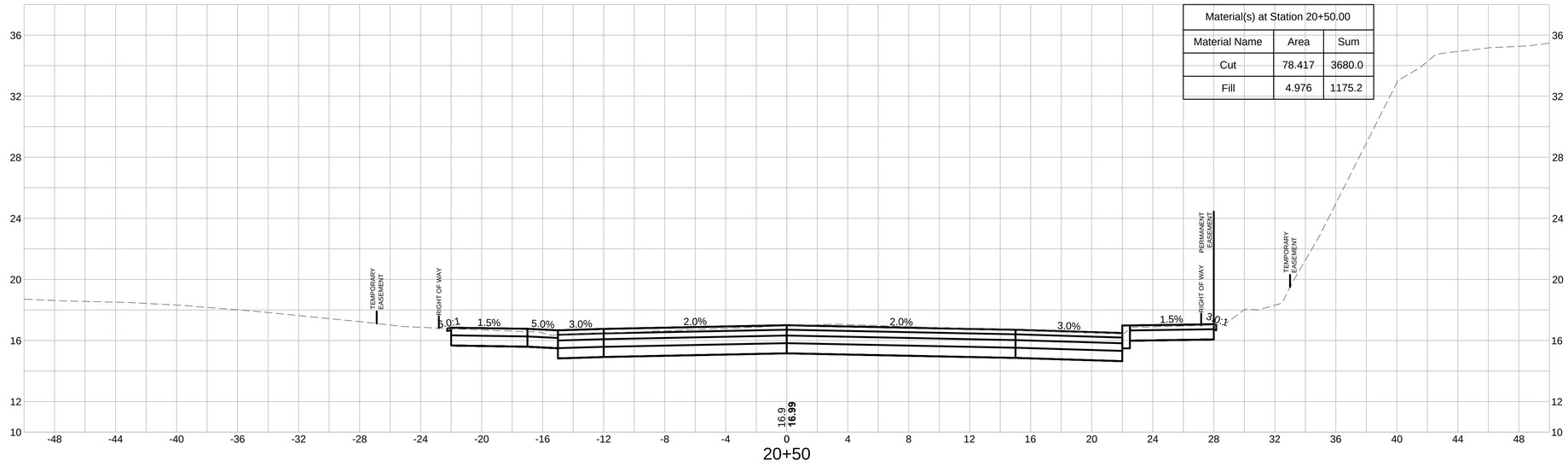
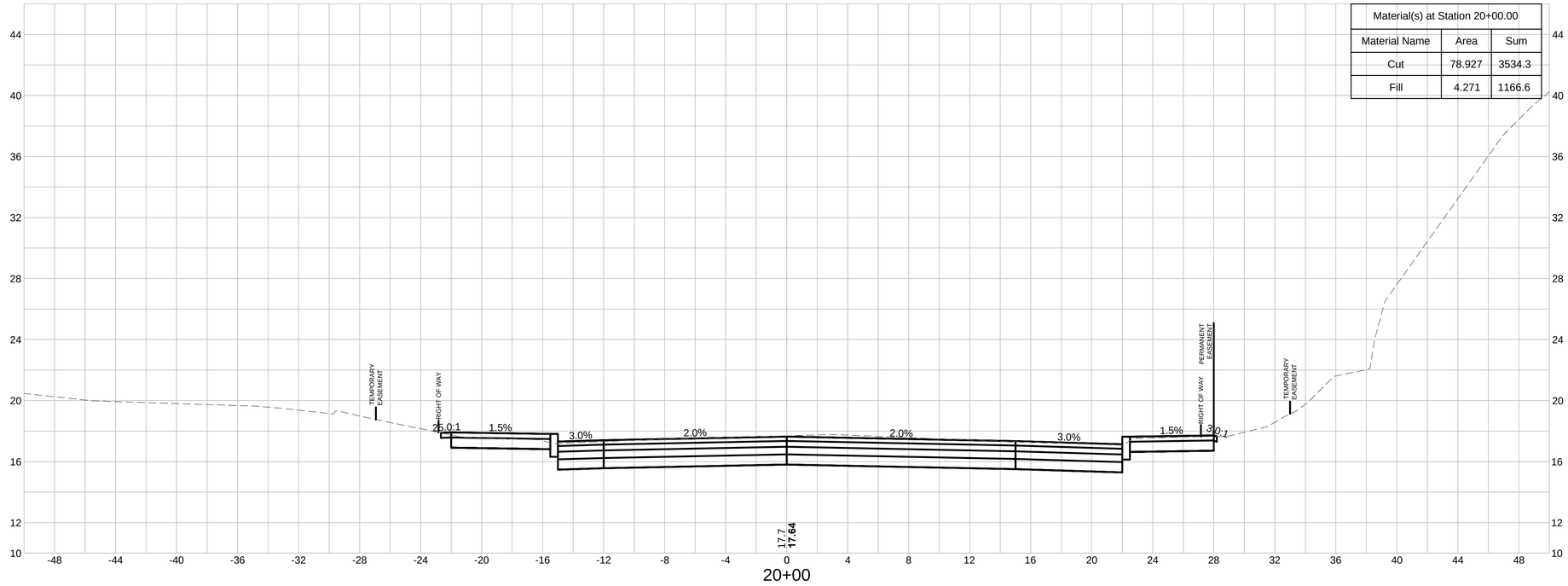
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	174	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS





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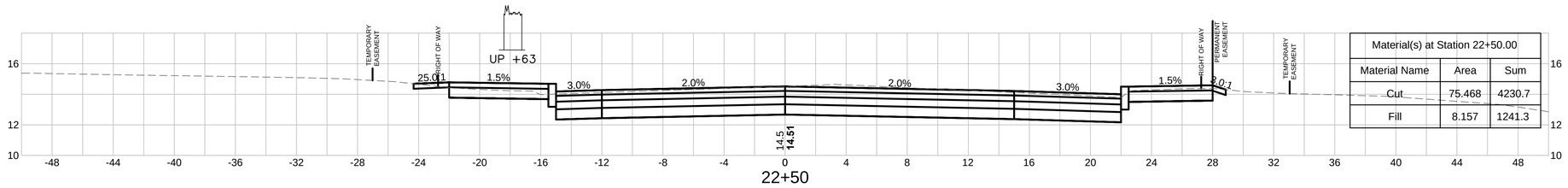
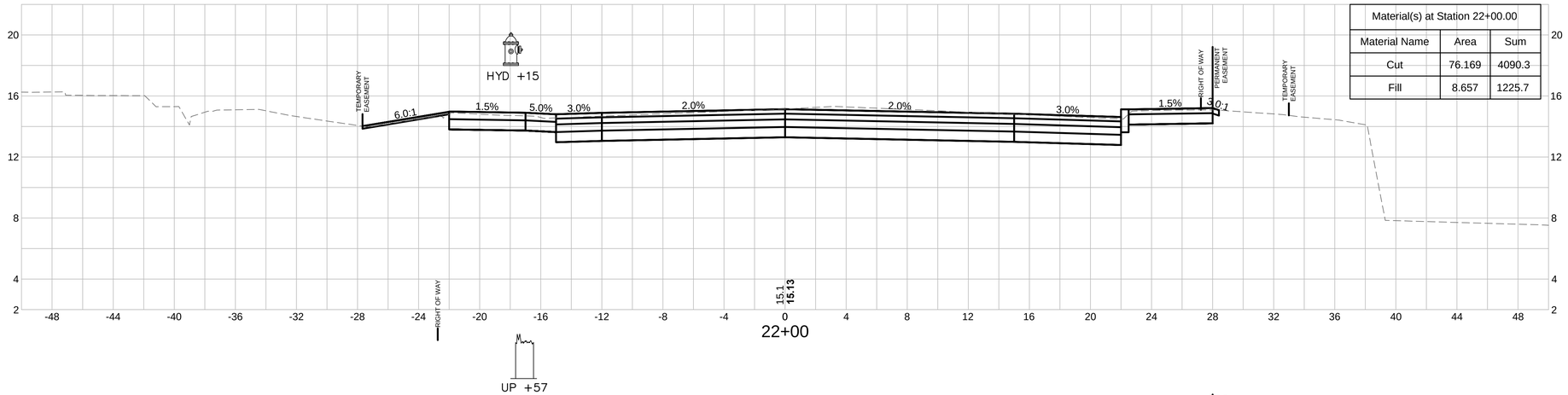
15-Oct-2015 93692 PS&E-2 CROSS SECTIONS.DWG



Material(s) at Station 22+50.00		
Material Name	Area	Sum
Cut	75.468	4230.7
Fill	8.157	1241.3



Material(s) at Station 22+00.00		
Material Name	Area	Sum
Cut	76.169	4090.3
Fill	8.657	1225.7

Material(s) at Station 21+50.00		
Material Name	Area	Sum
Cut	69.855	3955.1
Fill	11.587	1206.9

Material(s) at Station 21+00.00		
Material Name	Area	Sum
Cut	74.389	3821.5
Fill	8.880	1188.0

HOR. SCALE IN FEET
0 4 10 20

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	175	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

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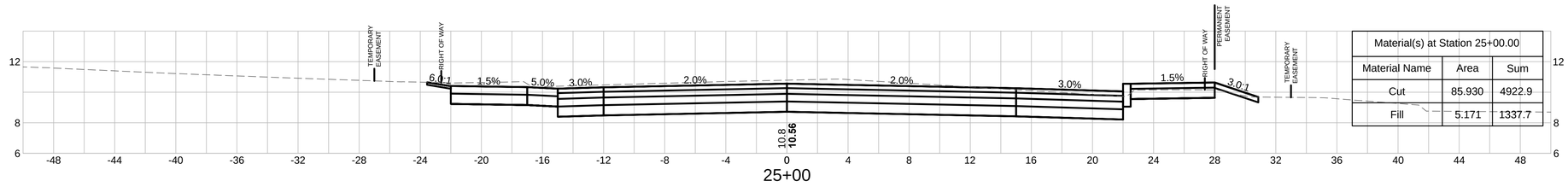
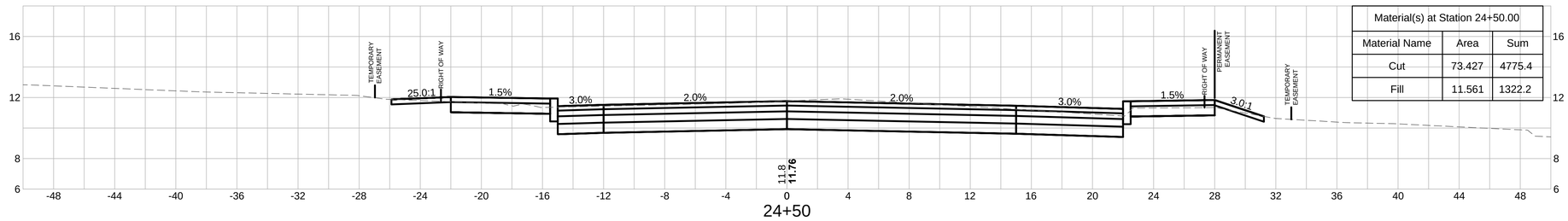
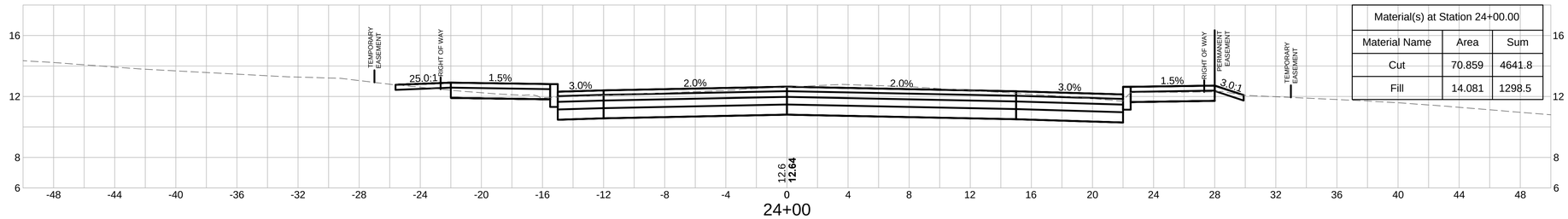


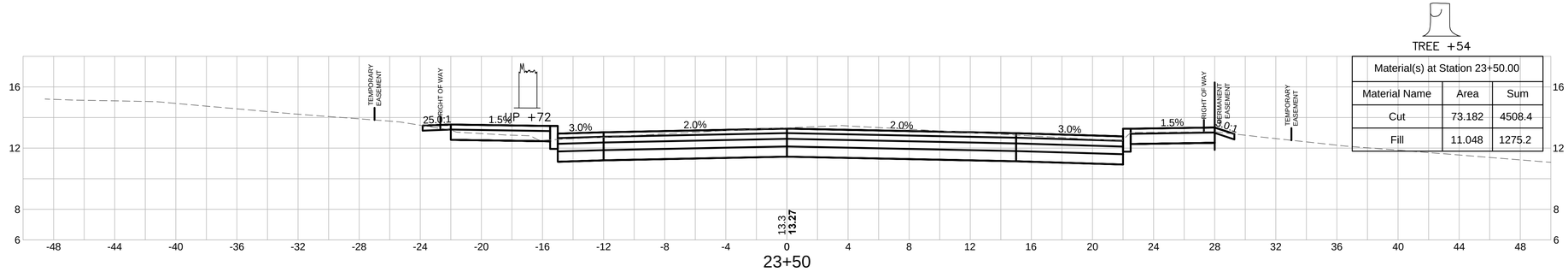
Material(s) at Station 25+00.00		
Material Name	Area	Sum
Cut	85.930	4922.9
Fill	5.171	1337.7



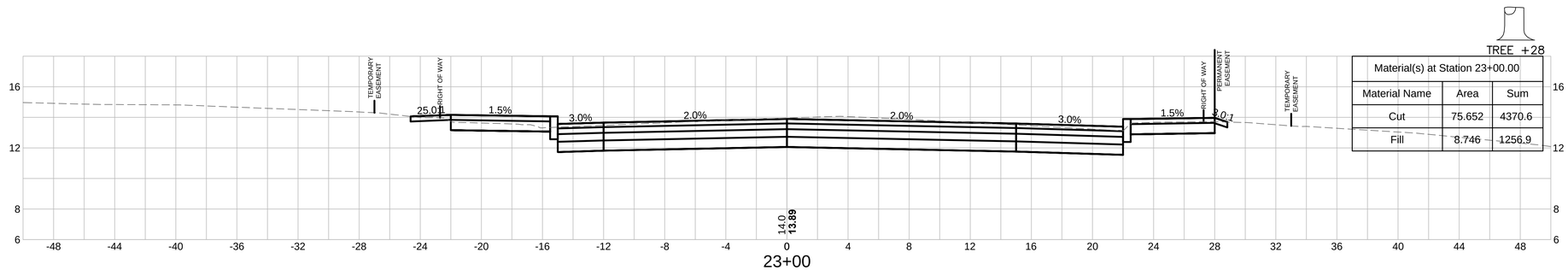
Material(s) at Station 24+50.00		
Material Name	Area	Sum
Cut	73.427	4775.4
Fill	11.561	1322.2



Material(s) at Station 24+00.00		
Material Name	Area	Sum
Cut	70.859	4641.8
Fill	14.081	1298.5



Material(s) at Station 23+50.00		
Material Name	Area	Sum
Cut	73.182	4508.4
Fill	11.048	1275.2



Material(s) at Station 23+00.00		
Material Name	Area	Sum
Cut	75.652	4370.6
Fill	8.746	1256.9

HOR. SCALE IN FEET

0 4 10 20

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	176	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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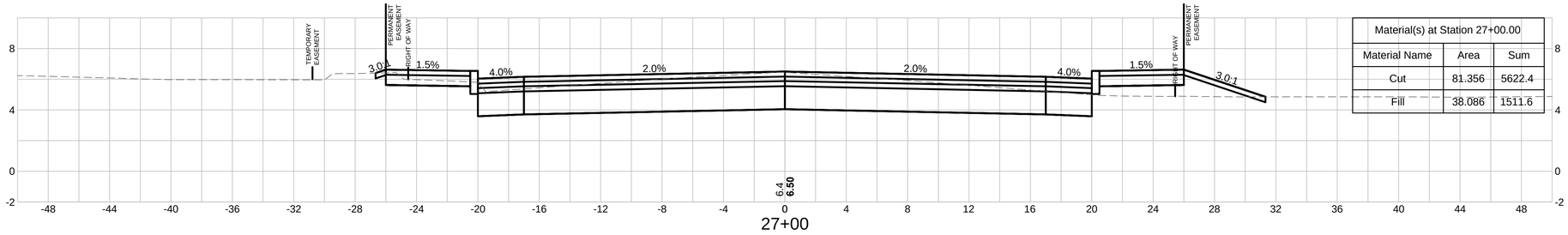
SALEM
CANAL STREET

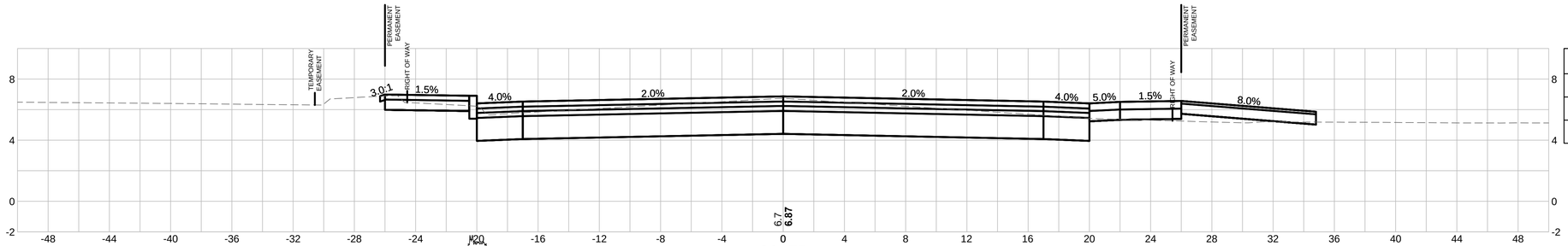
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	177	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS



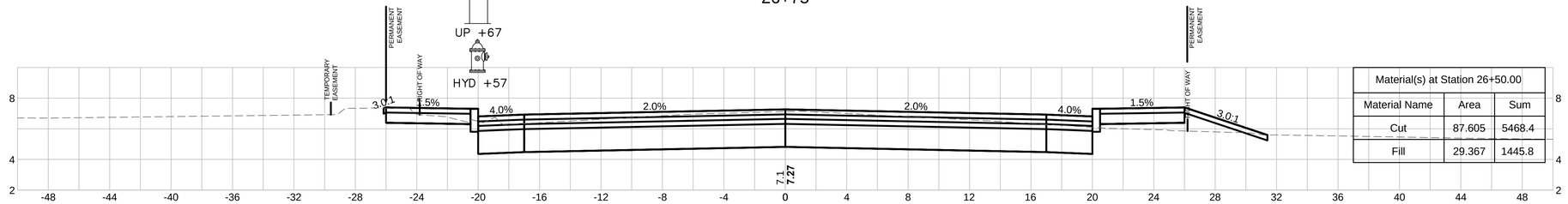
27+00

Material(s) at Station 27+00.00		
Material Name	Area	Sum
Cut	81.356	5622.4
Fill	38.086	1511.6



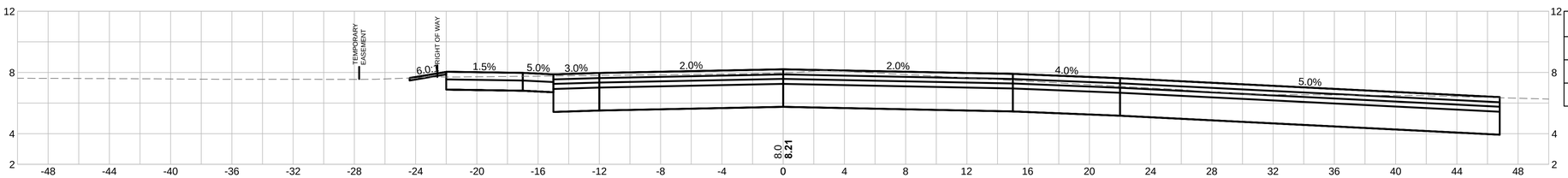
26+75

Material(s) at Station 26+75.00		
Material Name	Area	Sum
Cut	81.868	5546.9
Fill	37.361	1476.7



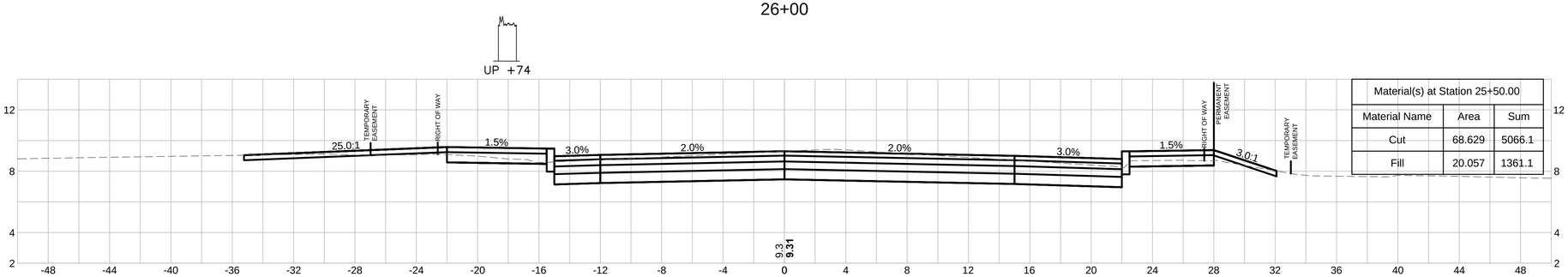
26+50

Material(s) at Station 26+50.00		
Material Name	Area	Sum
Cut	87.605	5468.4
Fill	29.367	1445.8



26+00

Material(s) at Station 26+00.00		
Material Name	Area	Sum
Cut	139.163	5258.5
Fill	21.040	1399.1



25+50

Material(s) at Station 25+50.00		
Material Name	Area	Sum
Cut	68.629	5066.1
Fill	20.057	1361.1

HOR. SCALE IN FEET
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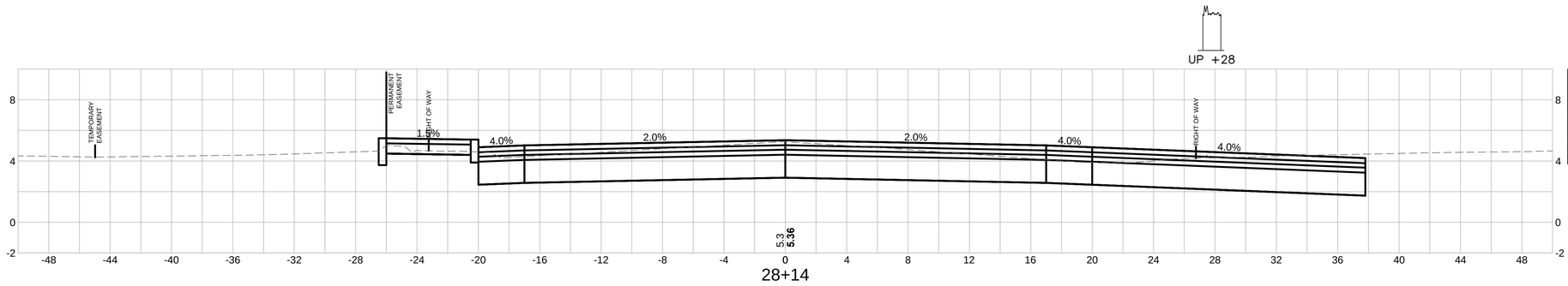
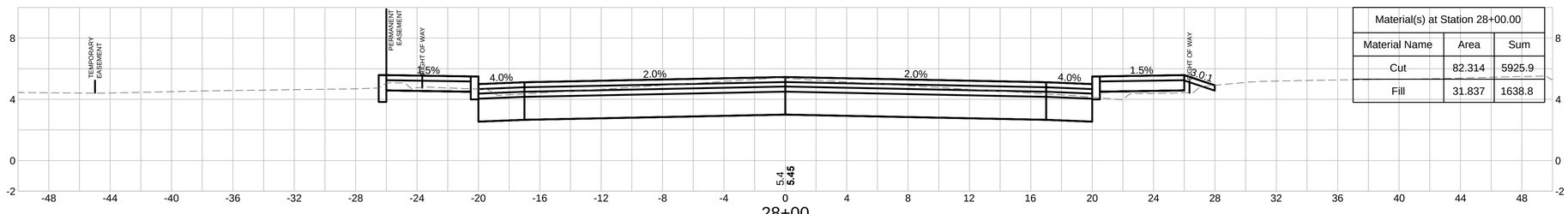
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	178	209
PROJECT FILE NO.	605146		

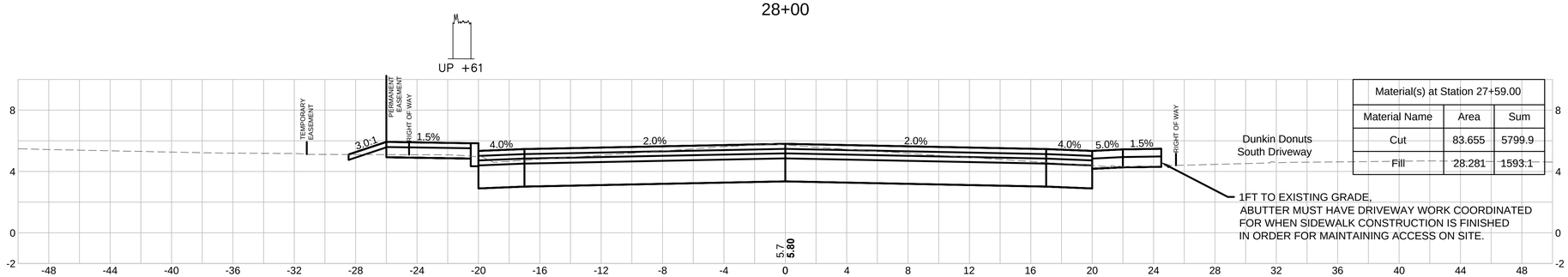
CANAL STREET CROSS SECTIONS



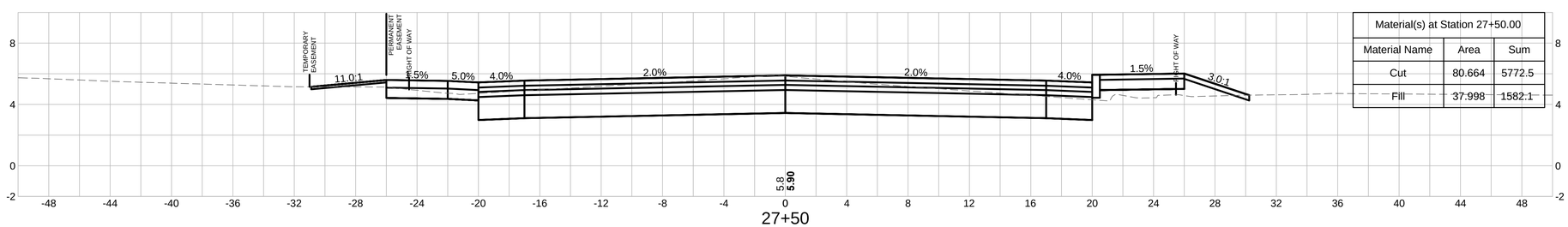
Material(s) at Station 28+14.00		
Material Name	Area	Sum
Cut	98.693	5972.8
Fill	34.331	1655.9



Material(s) at Station 28+00.00		
Material Name	Area	Sum
Cut	82.314	5925.9
Fill	31.837	1638.8



Material(s) at Station 27+59.00		
Material Name	Area	Sum
Cut	83.655	5799.9
Fill	28.281	1593.1



Material(s) at Station 27+50.00		
Material Name	Area	Sum
Cut	80.664	5772.5
Fill	37.998	1582.1

HOR. SCALE IN FEET
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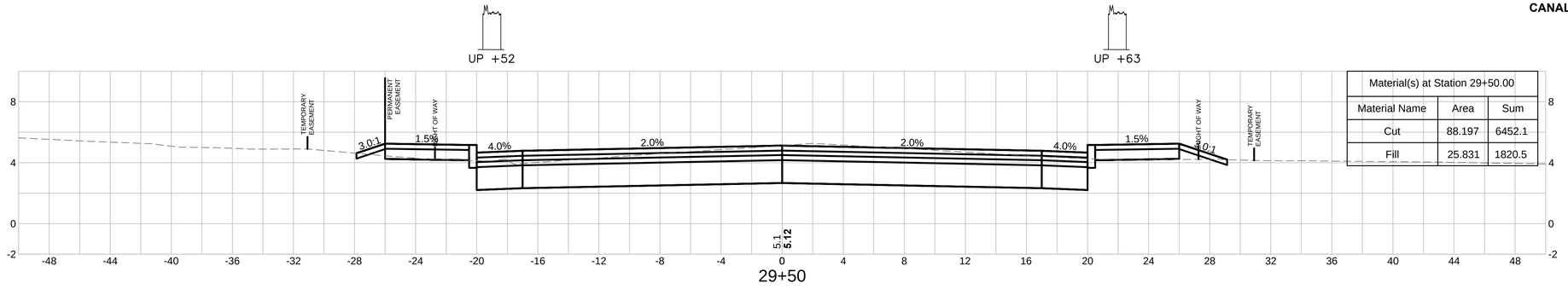
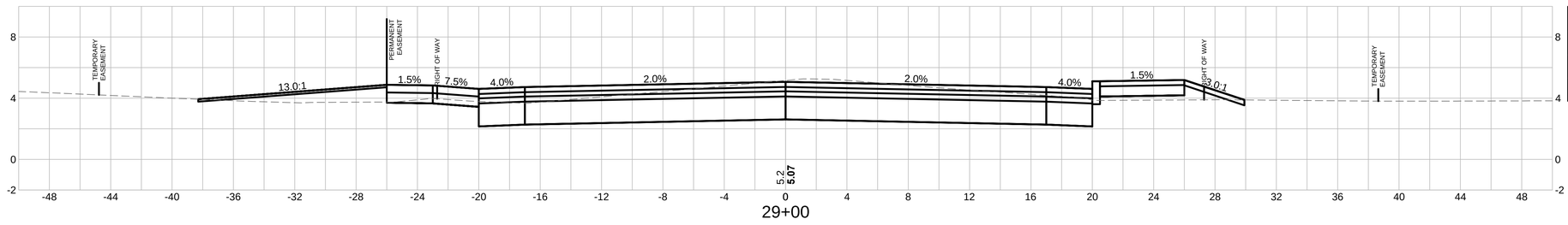
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	179	209
PROJECT FILE NO.	605146		

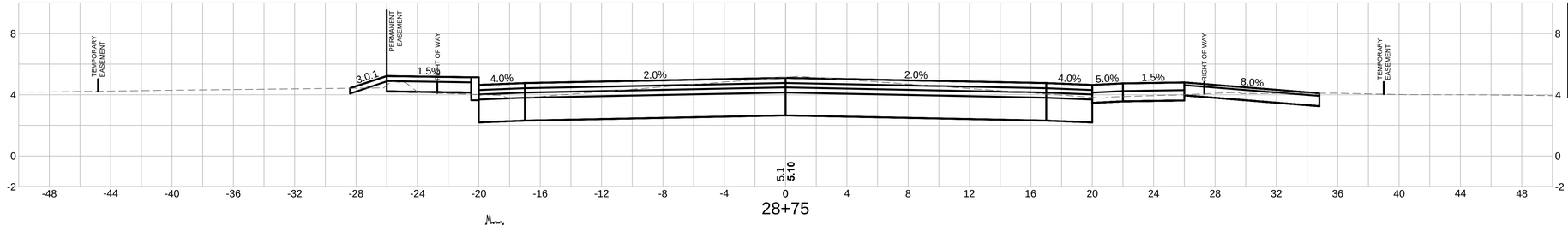
CANAL STREET CROSS SECTIONS



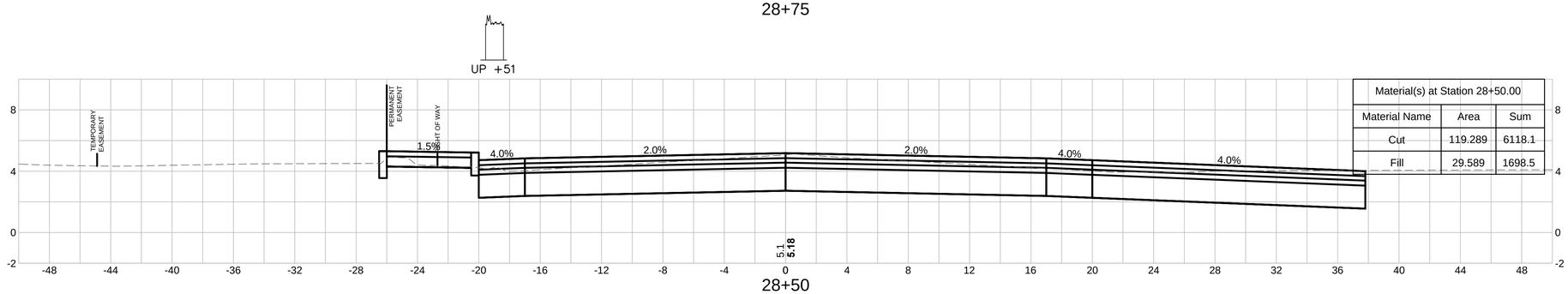
Material(s) at Station 29+50.00		
Material Name	Area	Sum
Cut	88.197	6452.1
Fill	25.831	1820.5



Material(s) at Station 29+00.00		
Material Name	Area	Sum
Cut	85.014	6293.7
Fill	39.579	1761.5



Material(s) at Station 28+75.00		
Material Name	Area	Sum
Cut	88.400	6214.3
Fill	31.954	1727.0



Material(s) at Station 28+50.00		
Material Name	Area	Sum
Cut	119.289	6118.1
Fill	29.589	1698.5

HOR. SCALE IN FEET
0 4 10 20

15-Oct-2015
93692 PS&E-2 CROSS SECTIONS.DWG

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	180	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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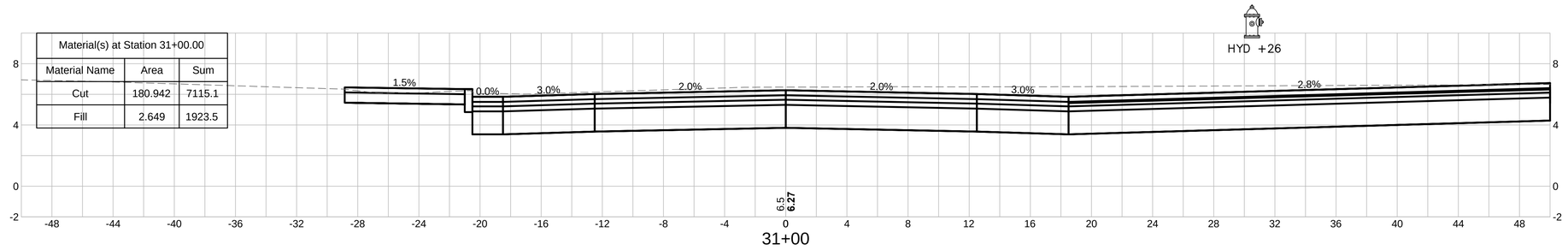
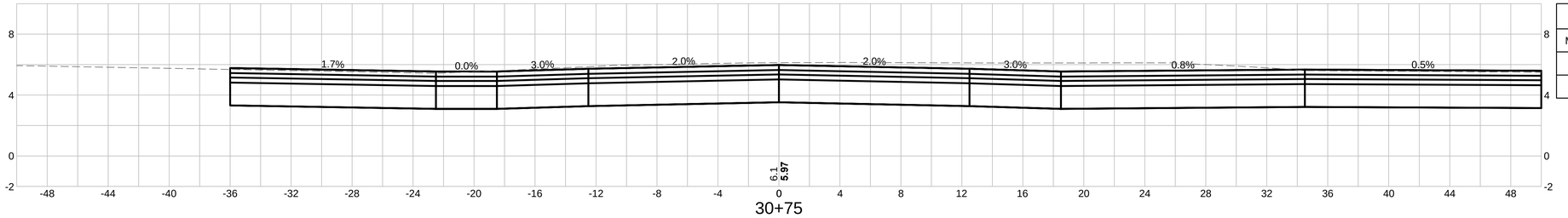
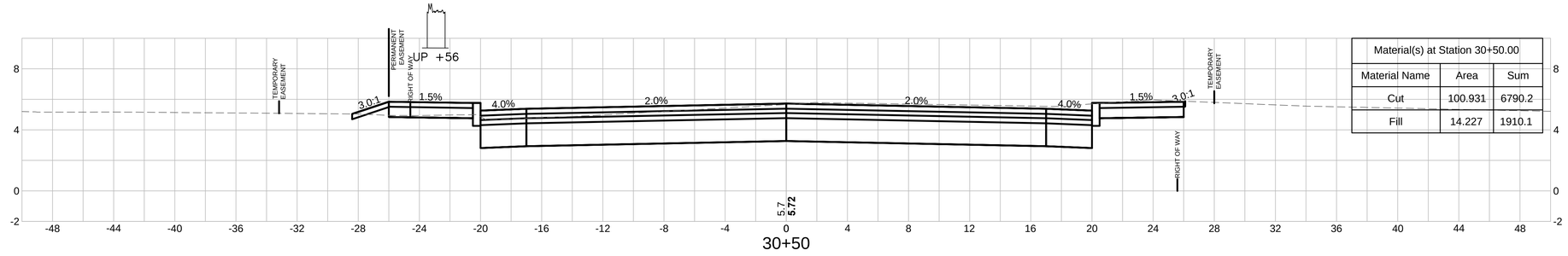


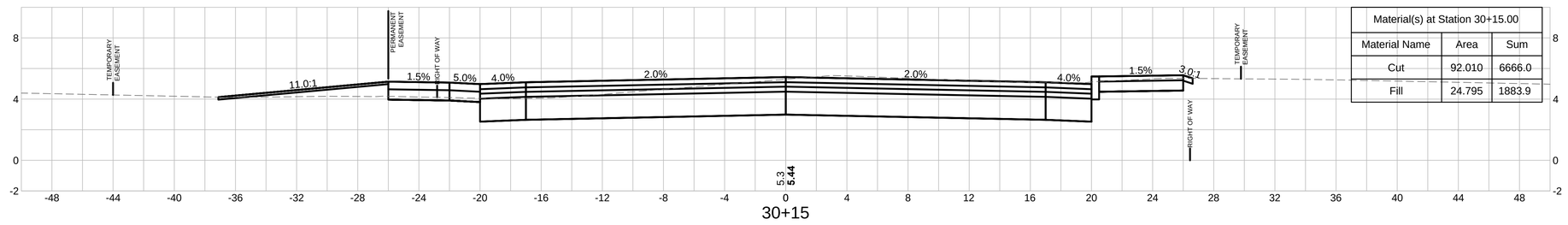
Material(s) at Station 31+00.00		
Material Name	Area	Sum
Cut	180.942	7115.1
Fill	2.649	1923.5



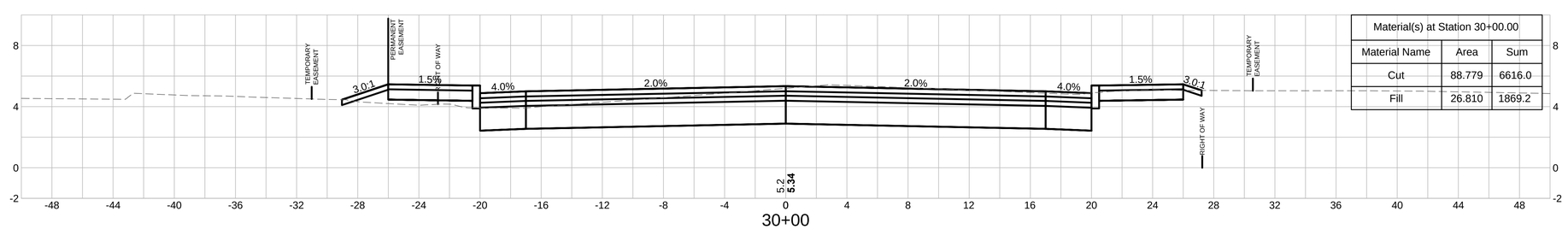
Material(s) at Station 30+75.00		
Material Name	Area	Sum
Cut	209.934	6934.2
Fill	6.069	1919.5



Material(s) at Station 30+50.00		
Material Name	Area	Sum
Cut	100.931	6790.2
Fill	14.227	1910.1



Material(s) at Station 30+15.00		
Material Name	Area	Sum
Cut	92.010	6666.0
Fill	24.795	1883.9



Material(s) at Station 30+00.00		
Material Name	Area	Sum
Cut	88.779	6616.0
Fill	26.810	1869.2

HOR. SCALE IN FEET
0 4 10 20

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	181	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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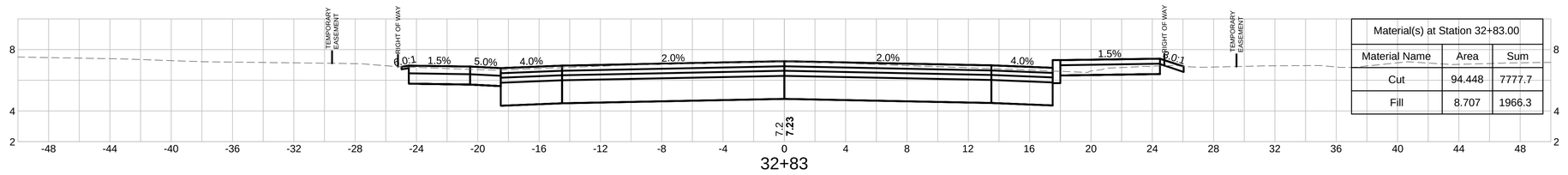
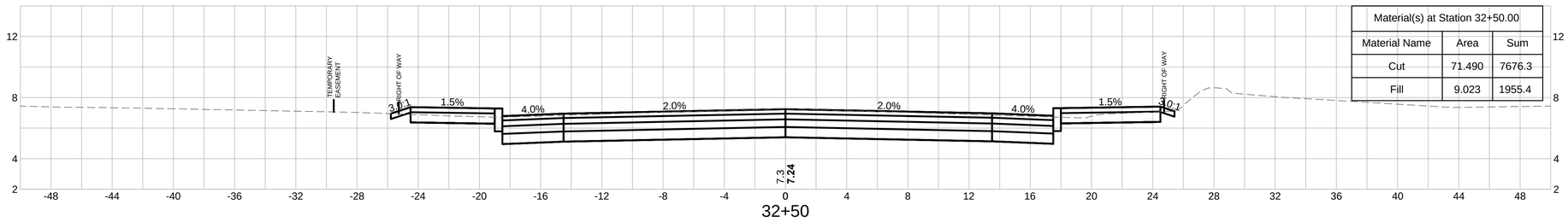
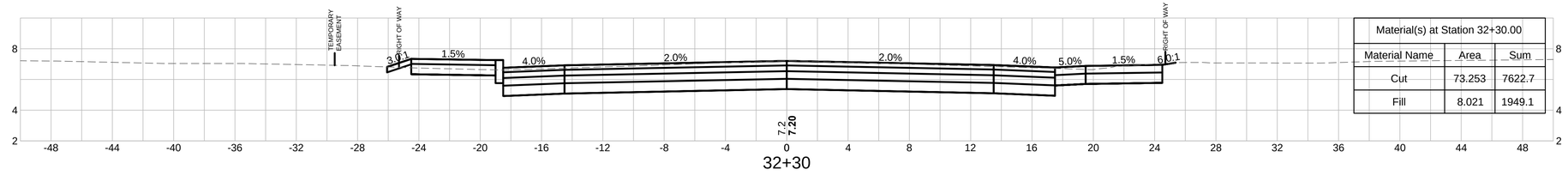
UP +72



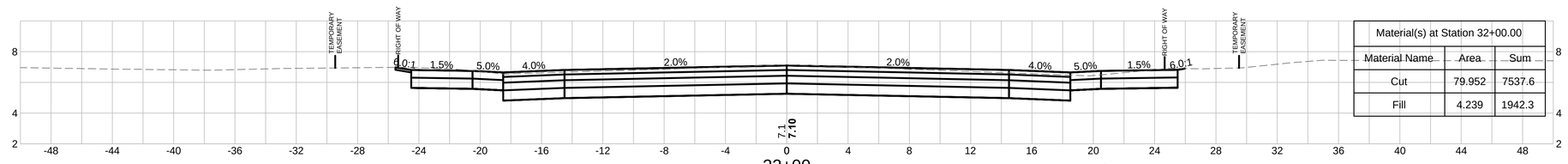
Material(s) at Station 32+83.00		
Material Name	Area	Sum
Cut	94.448	7777.7
Fill	8.707	1966.3



Material(s) at Station 32+50.00		
Material Name	Area	Sum
Cut	71.490	7676.3
Fill	9.023	1955.4

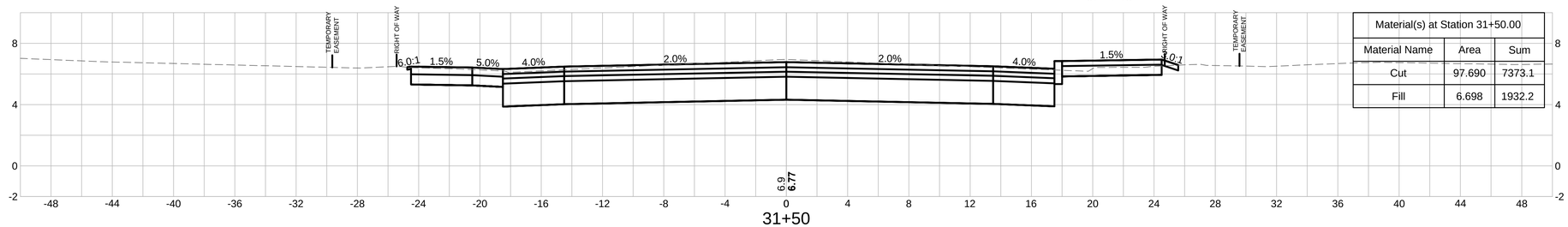


Material(s) at Station 32+30.00		
Material Name	Area	Sum
Cut	73.253	7622.7
Fill	8.021	1949.1



Material(s) at Station 32+00.00		
Material Name	Area	Sum
Cut	79.952	7537.6
Fill	4.239	1942.3

UP +45



Material(s) at Station 31+50.00		
Material Name	Area	Sum
Cut	97.690	7373.1
Fill	6.698	1932.2

HOR. SCALE IN FEET
0 4 10 20

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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	182	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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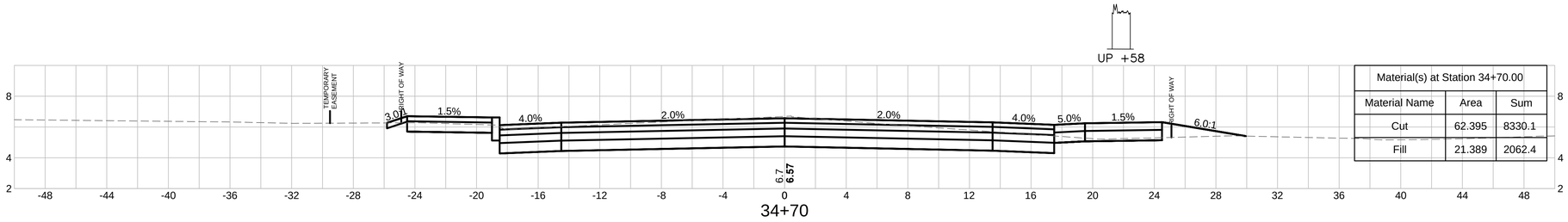
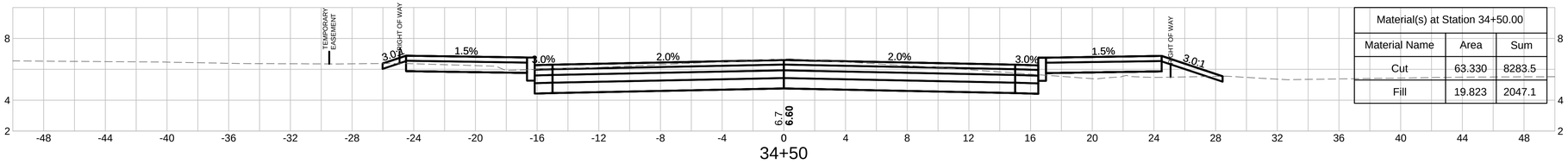
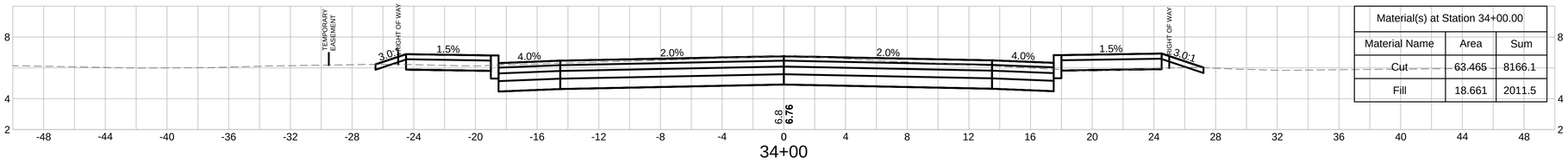


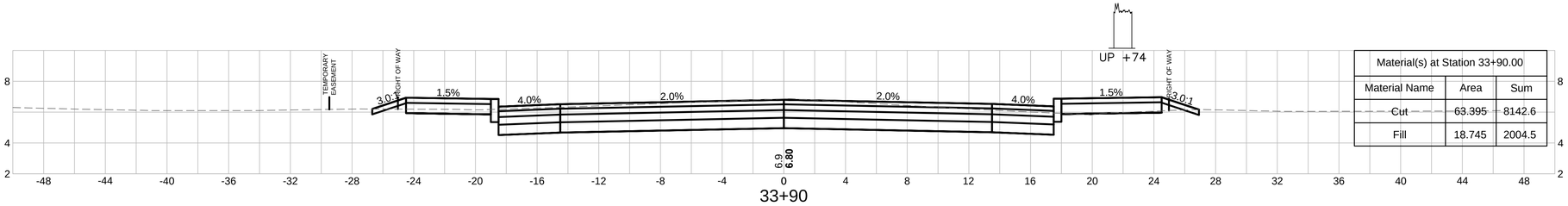
Material(s) at Station 34+70.00		
Material Name	Area	Sum
Cut	62.395	8330.1
Fill	21.389	2062.4



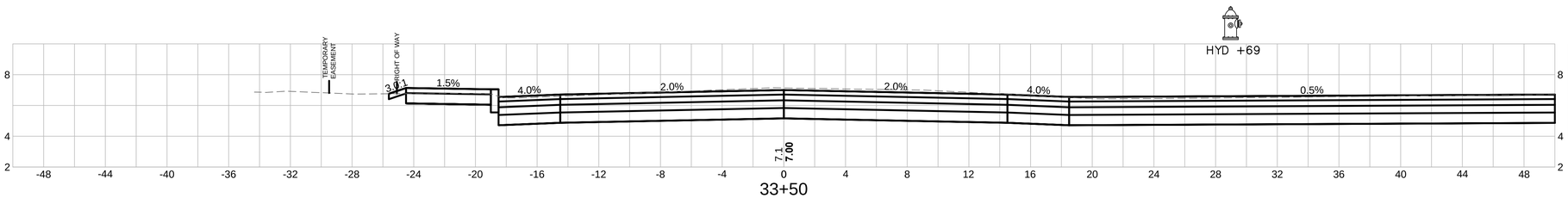
Material(s) at Station 34+50.00		
Material Name	Area	Sum
Cut	63.330	8283.5
Fill	19.823	2047.1



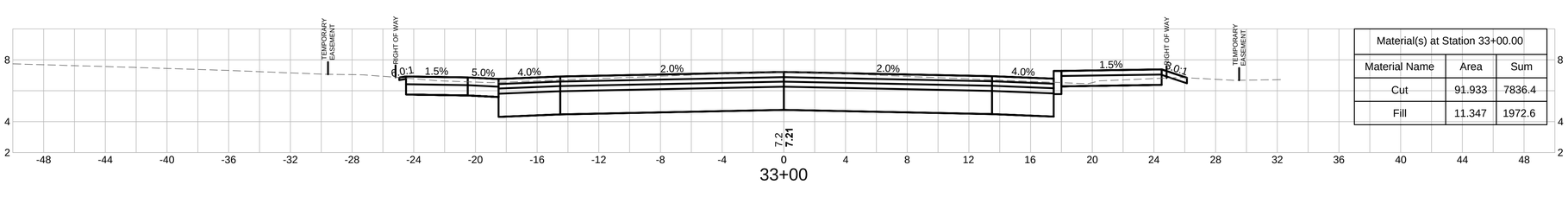
Material(s) at Station 34+00.00		
Material Name	Area	Sum
Cut	63.465	8166.1
Fill	18.661	2011.5



Material(s) at Station 33+90.00		
Material Name	Area	Sum
Cut	63.395	8142.6
Fill	18.745	2004.5



Material(s) at Station 33+50.00		
Material Name	Area	Sum
Cut	104.473	8018.3
Fill	4.541	1987.3



Material(s) at Station 33+00.00		
Material Name	Area	Sum
Cut	91.933	7836.4
Fill	11.347	1972.6

HOR. SCALE IN FEET
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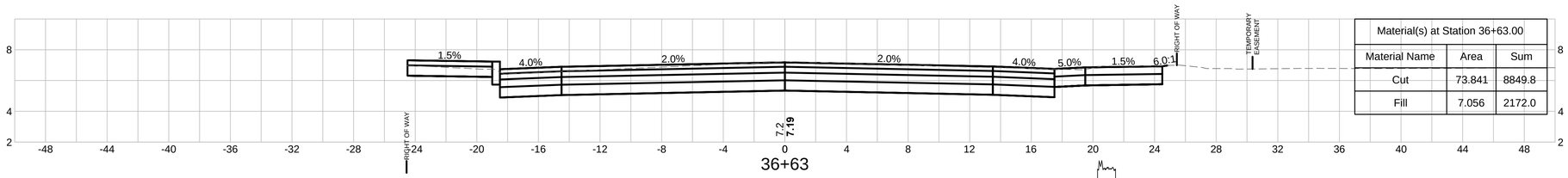
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	183	209
PROJECT FILE NO.	605146		

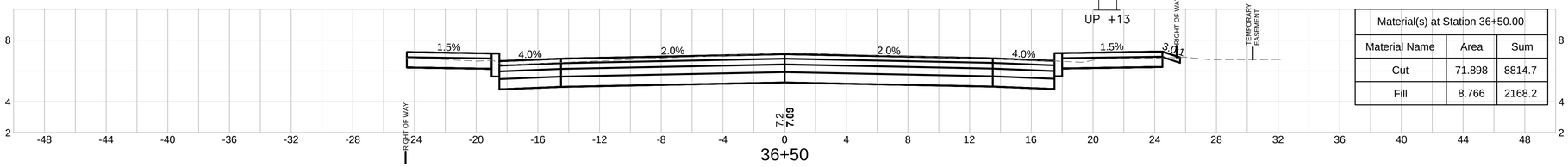
CANAL STREET CROSS SECTIONS

15-Oct-2015

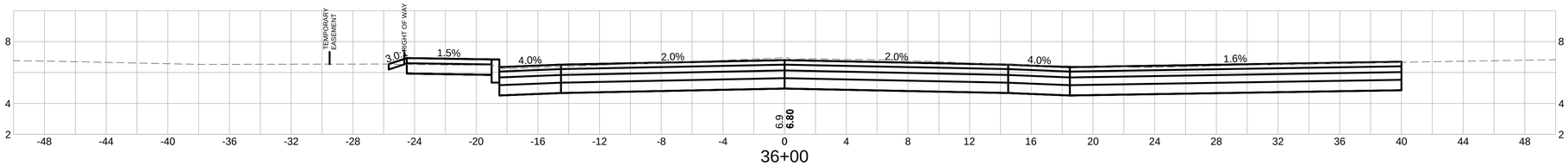
93692 PS&E-2 CROSS SECTIONS.DWG



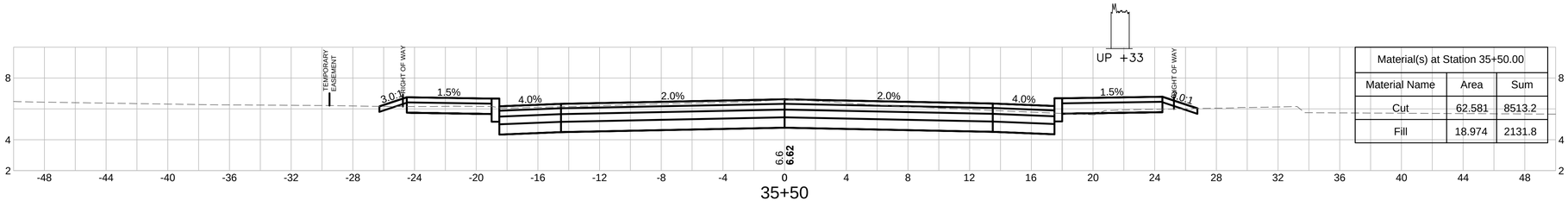
Material(s) at Station 36+63.00		
Material Name	Area	Sum
Cut	73.841	8849.8
Fill	7.056	2172.0



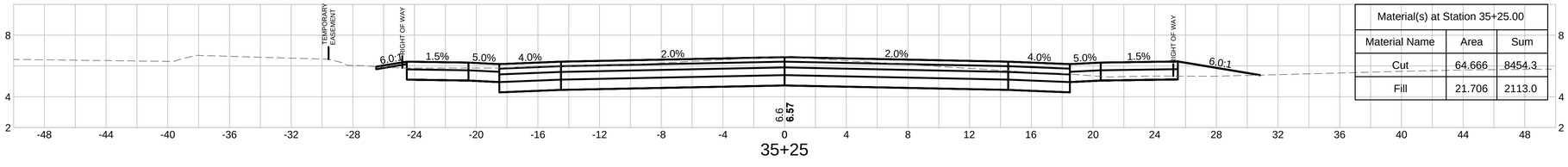
Material(s) at Station 36+50.00		
Material Name	Area	Sum
Cut	71.898	8814.7
Fill	8.766	2168.2



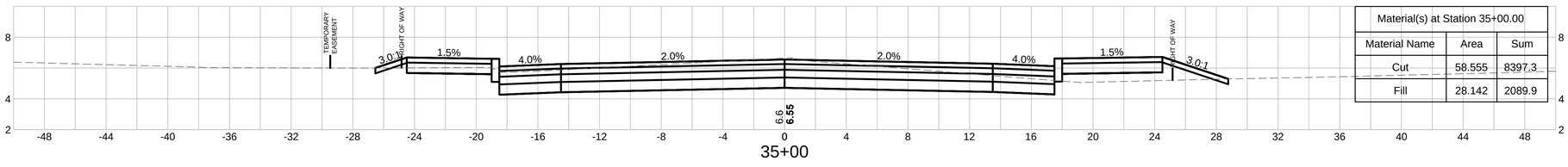
Material(s) at Station 36+00.00		
Material Name	Area	Sum
Cut	95.556	8659.6
Fill	5.789	2154.7



Material(s) at Station 35+50.00		
Material Name	Area	Sum
Cut	62.581	8513.2
Fill	18.974	2131.8



Material(s) at Station 35+25.00		
Material Name	Area	Sum
Cut	64.666	8454.3
Fill	21.706	2113.0



Material(s) at Station 35+00.00		
Material Name	Area	Sum
Cut	58.555	8397.3
Fill	28.142	2089.9

HOR. SCALE IN FEET
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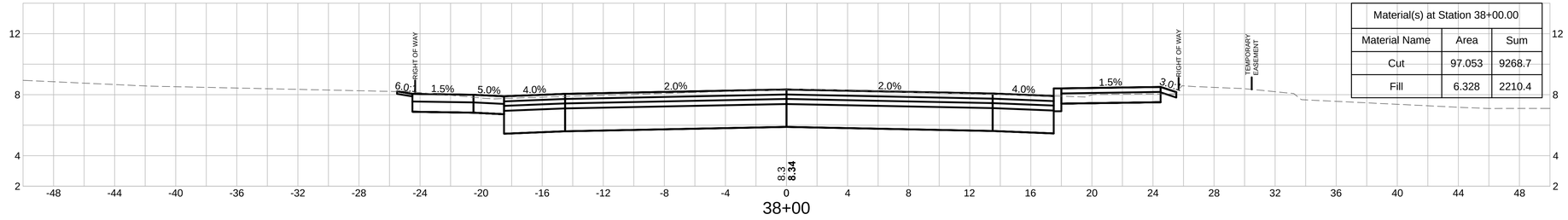
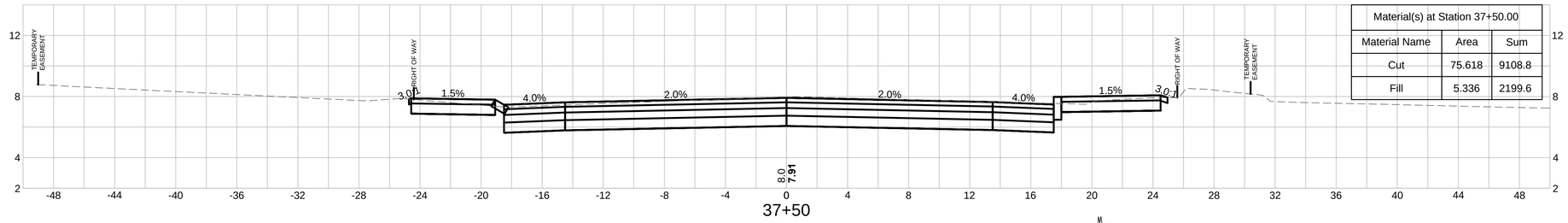
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	184	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

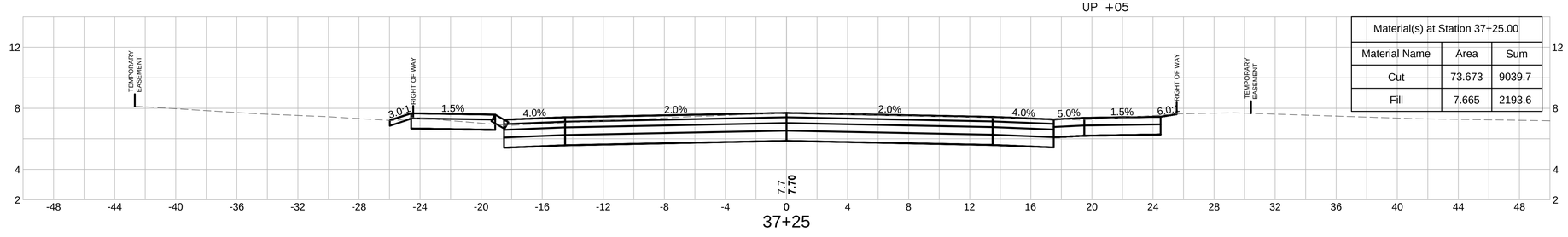


Material(s) at Station 38+00.00		
Material Name	Area	Sum
Cut	97.053	9268.7
Fill	6.328	2210.4

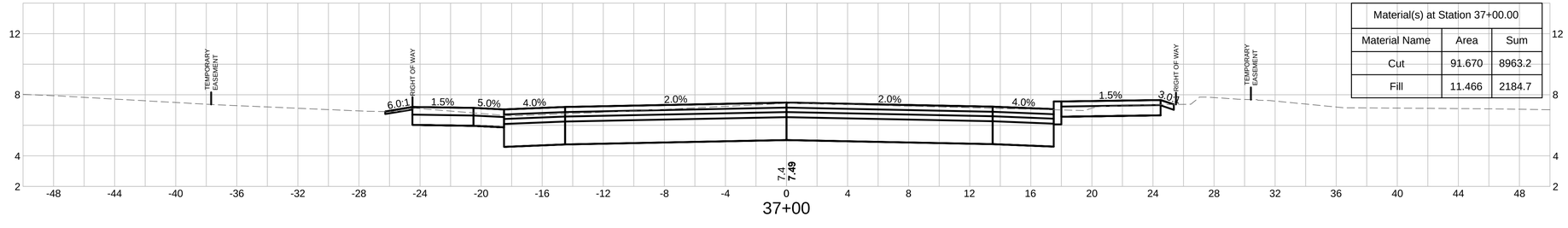


Material(s) at Station 37+50.00		
Material Name	Area	Sum
Cut	75.618	9108.8
Fill	5.336	2199.6

UP +05



Material(s) at Station 37+25.00		
Material Name	Area	Sum
Cut	73.673	9039.7
Fill	7.665	2193.6



Material(s) at Station 37+00.00		
Material Name	Area	Sum
Cut	91.670	8963.2
Fill	11.466	2184.7

HOR. SCALE IN FEET
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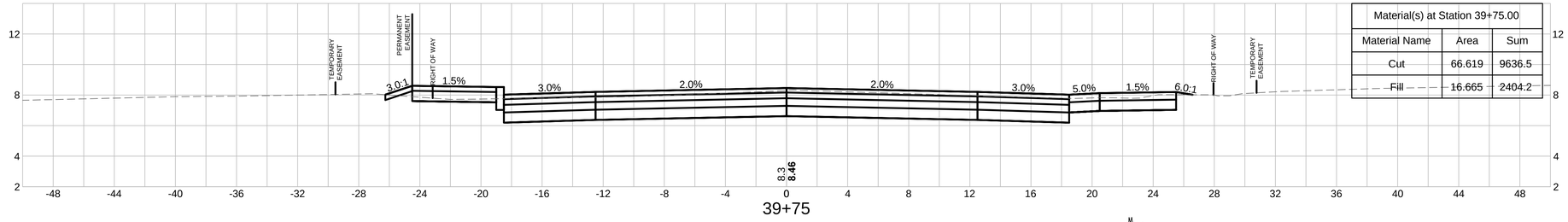
SALEM
CANAL STREET

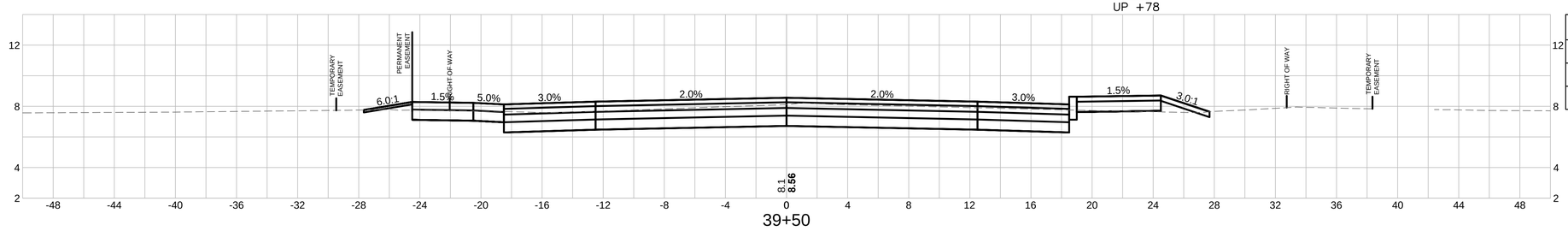
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	185	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

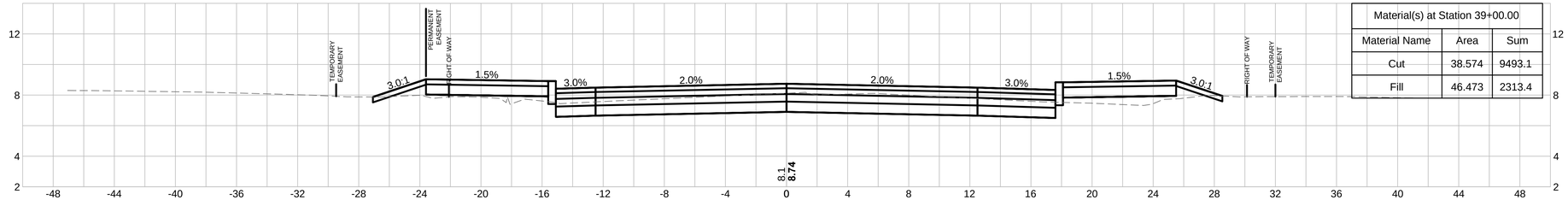


Material(s) at Station 39+75.00		
Material Name	Area	Sum
Cut	66.619	9636.5
Fill	16.665	2404.2

UP +78



Material(s) at Station 39+50.00		
Material Name	Area	Sum
Cut	55.309	9580.0
Fill	28.881	2383.1

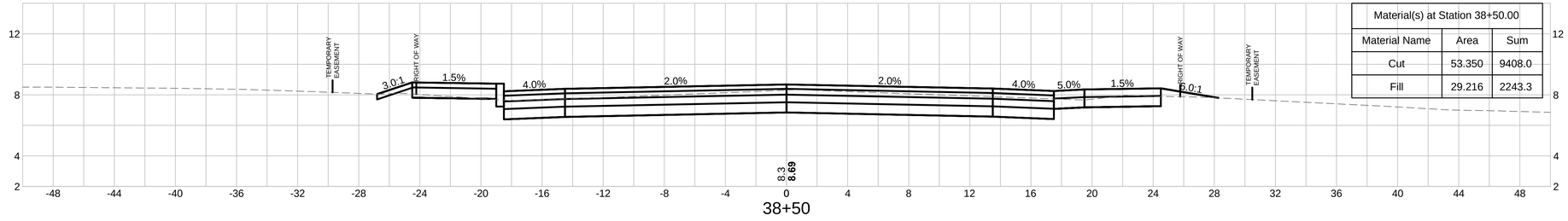


Material(s) at Station 39+00.00		
Material Name	Area	Sum
Cut	38.574	9493.1
Fill	46.473	2313.4

HYD +86

UP +88

TREE +89



Material(s) at Station 38+50.00		
Material Name	Area	Sum
Cut	53.350	9408.0
Fill	29.216	2243.3

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG

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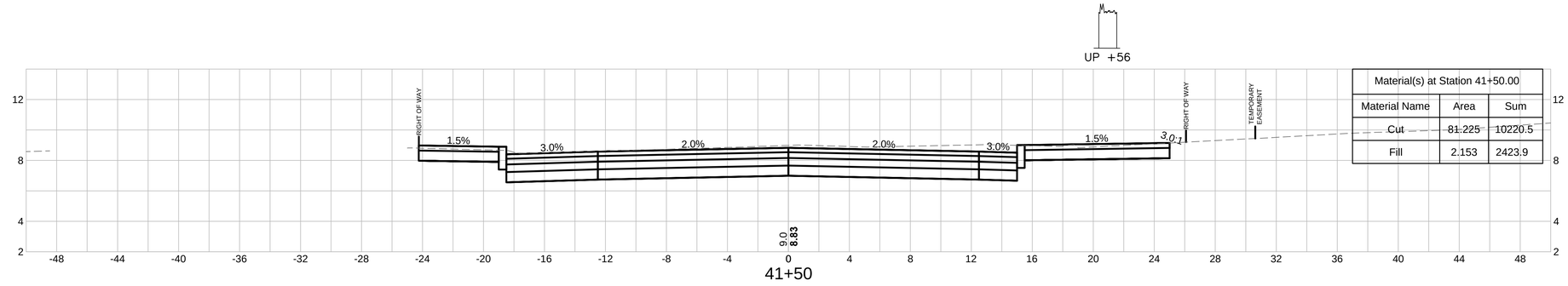
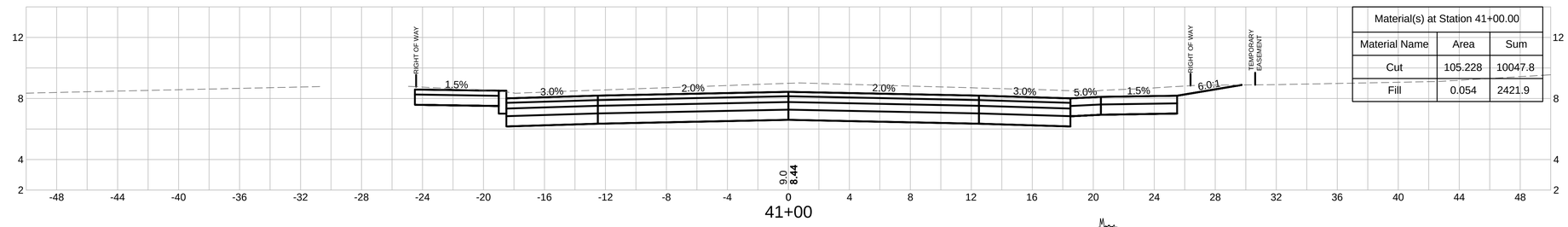
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	186	209
PROJECT FILE NO.	605146		

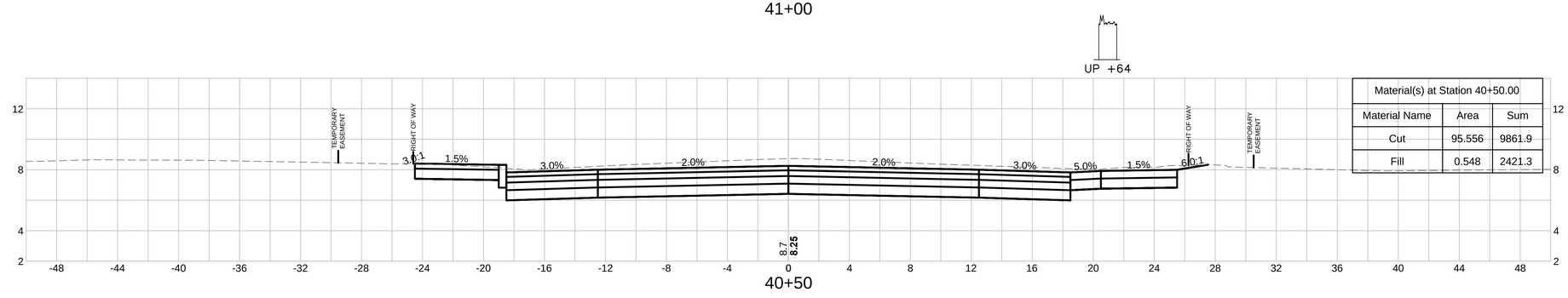
CANAL STREET CROSS SECTIONS



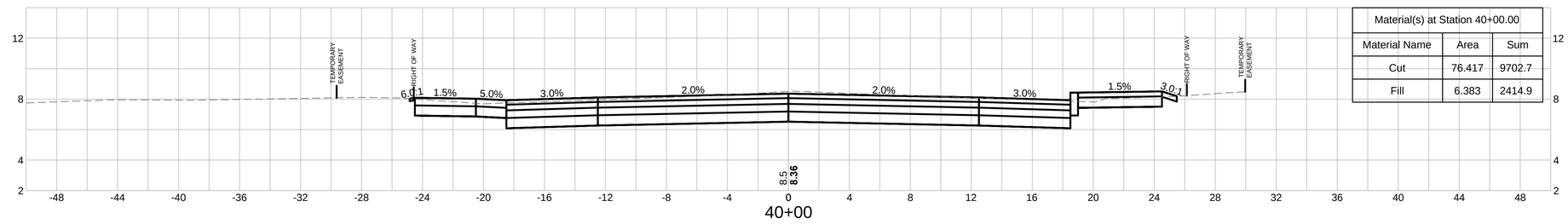
Material(s) at Station 41+50.00		
Material Name	Area	Sum
Cut	81.225	10220.5
Fill	2.153	2423.9



Material(s) at Station 41+00.00		
Material Name	Area	Sum
Cut	105.228	10047.8
Fill	0.054	2421.9



Material(s) at Station 40+50.00		
Material Name	Area	Sum
Cut	95.556	9861.9
Fill	0.548	2421.3



Material(s) at Station 40+00.00		
Material Name	Area	Sum
Cut	76.417	9702.7
Fill	6.383	2414.9

HOR. SCALE IN FEET
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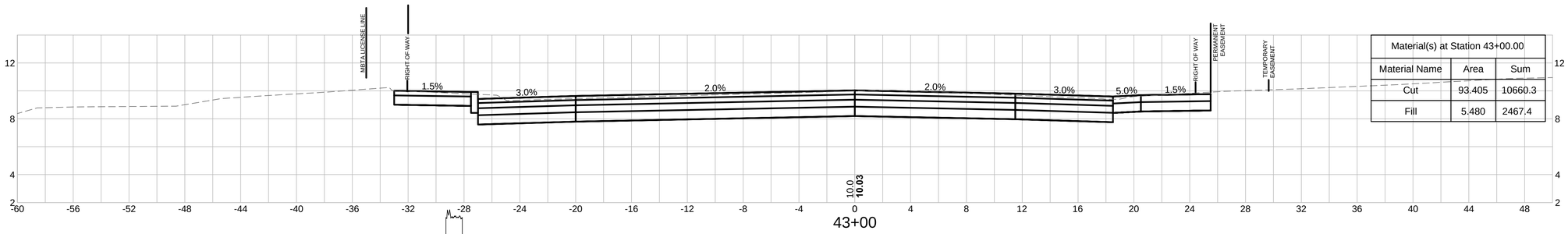
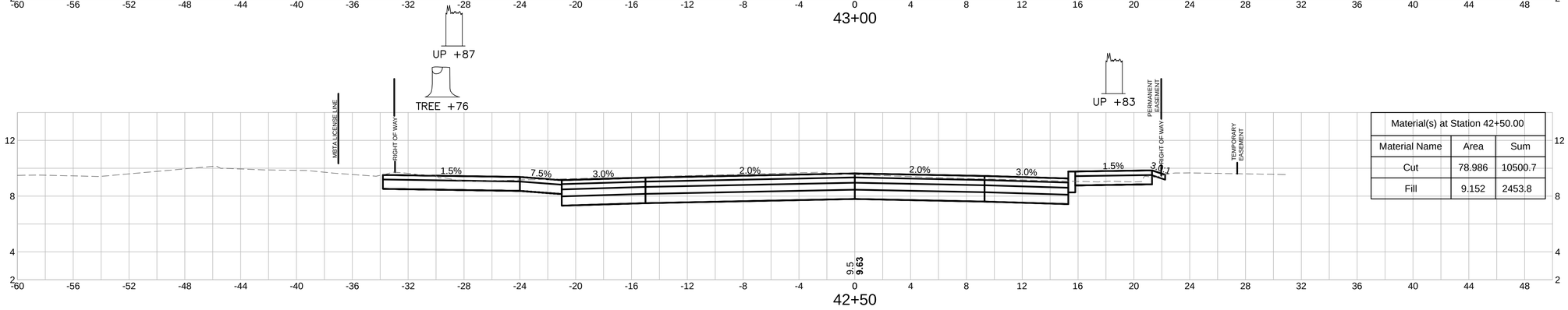
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	187	209
PROJECT FILE NO.	605146		

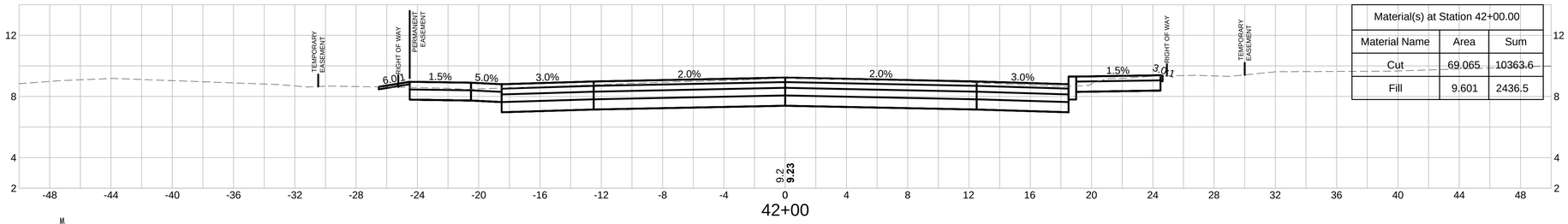
CANAL STREET CROSS SECTIONS



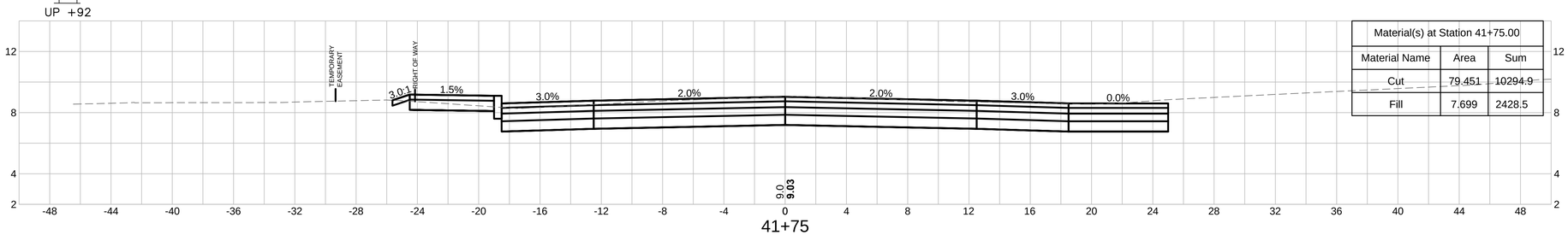
Material(s) at Station 43+00.00		
Material Name	Area	Sum
Cut	93.405	10660.3
Fill	5.480	2467.4



Material(s) at Station 42+50.00		
Material Name	Area	Sum
Cut	78.986	10500.7
Fill	9.152	2453.8



Material(s) at Station 42+00.00		
Material Name	Area	Sum
Cut	69.065	10363.6
Fill	9.601	2436.5



Material(s) at Station 41+75.00		
Material Name	Area	Sum
Cut	79.451	10294.9
Fill	7.699	2428.5

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG

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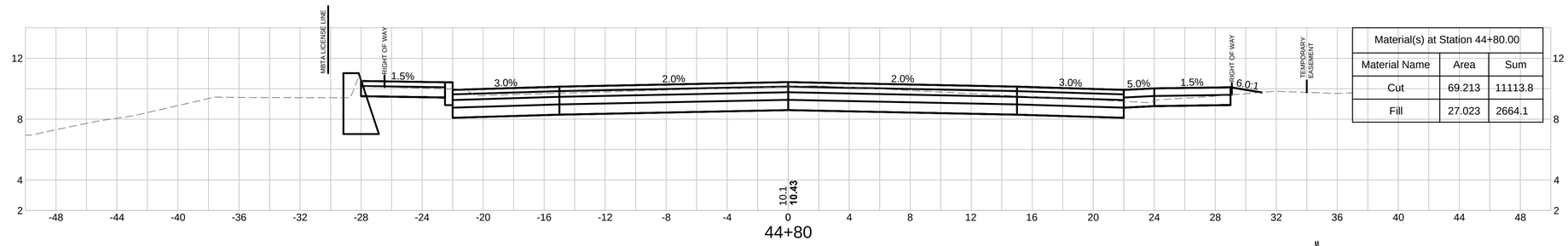
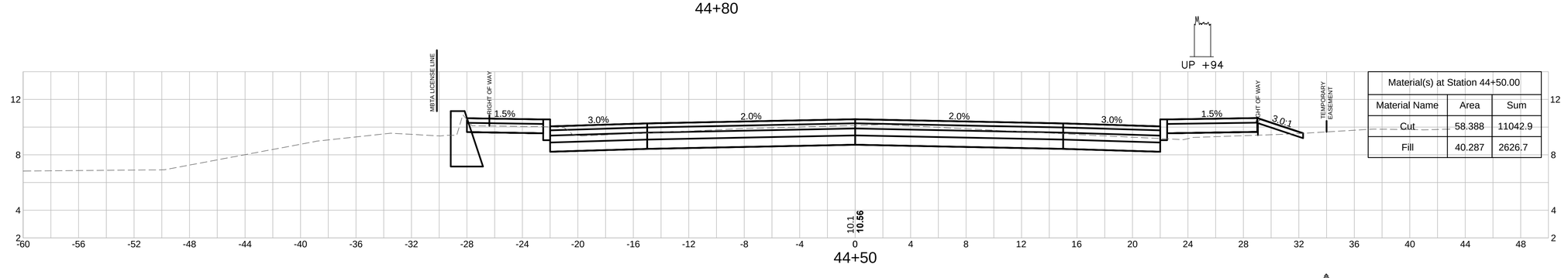
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	188	209
PROJECT FILE NO.	605146		

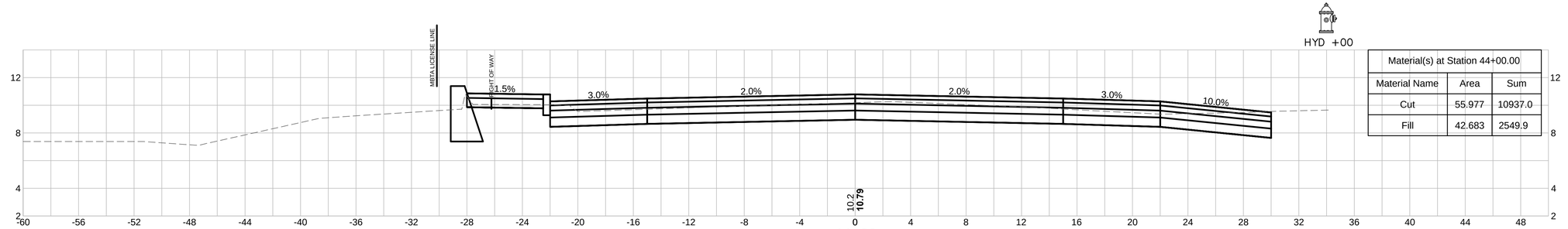
CANAL STREET CROSS SECTIONS



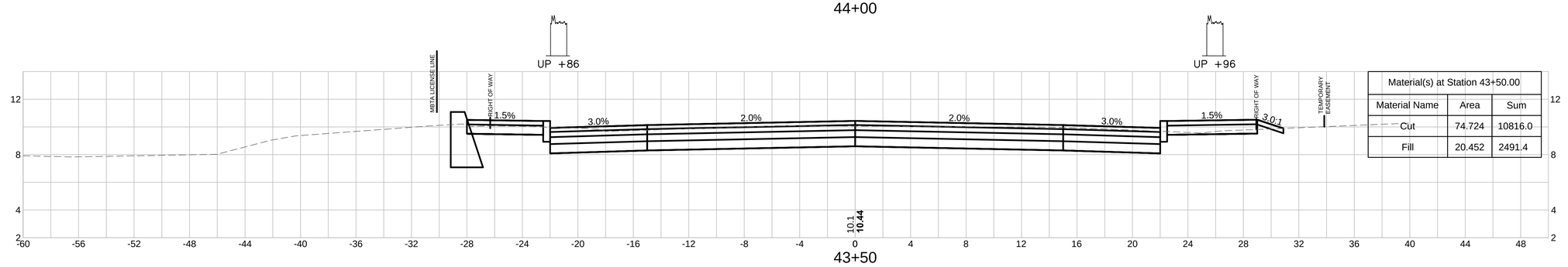
Material(s) at Station 44+80.00		
Material Name	Area	Sum
Cut	69.213	11113.8
Fill	27.023	2664.1



Material(s) at Station 44+50.00		
Material Name	Area	Sum
Cut	58.388	11042.9
Fill	40.287	2626.7



Material(s) at Station 44+00.00		
Material Name	Area	Sum
Cut	55.977	10937.0
Fill	42.683	2549.9



Material(s) at Station 43+50.00		
Material Name	Area	Sum
Cut	74.724	10816.0
Fill	20.452	2491.4

HOR. SCALE IN FEET
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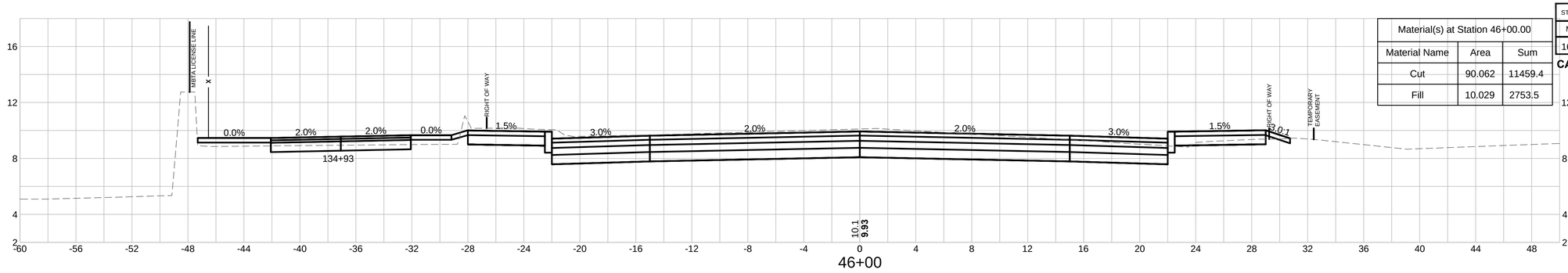
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

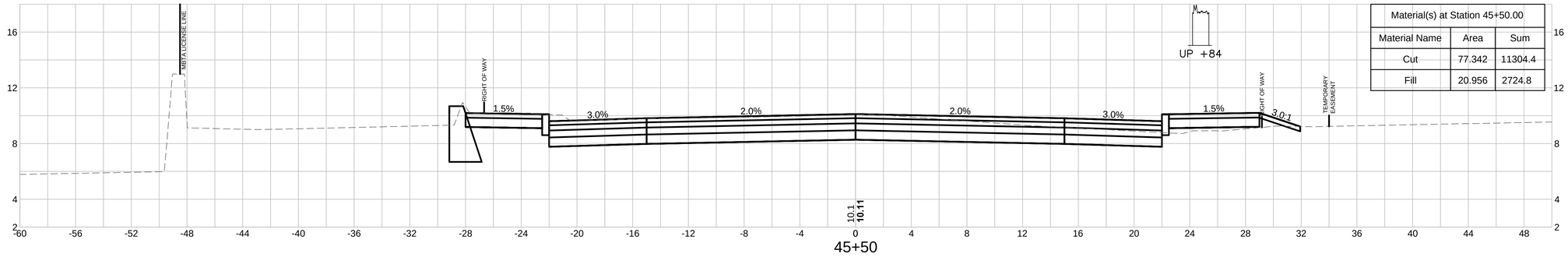
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	189	209
16	PROJECT FILE NO.	605146	

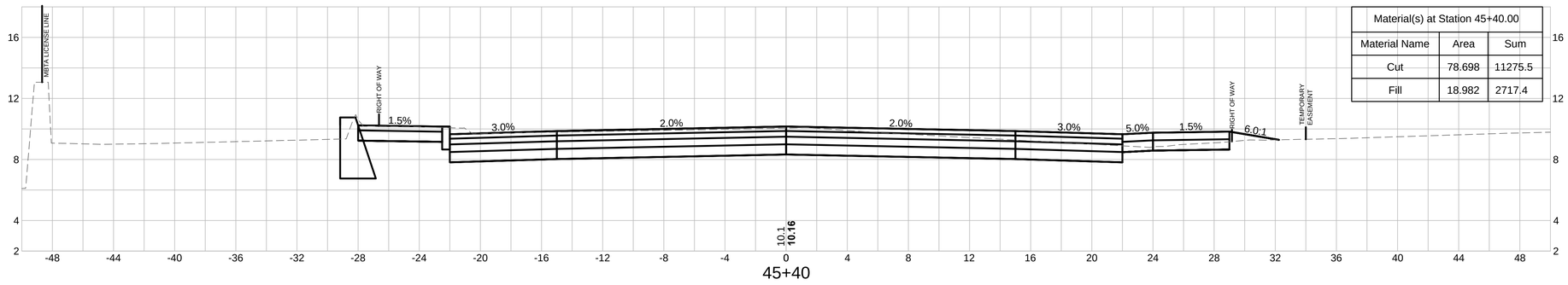
CANAL STREET CROSS SECTIONS



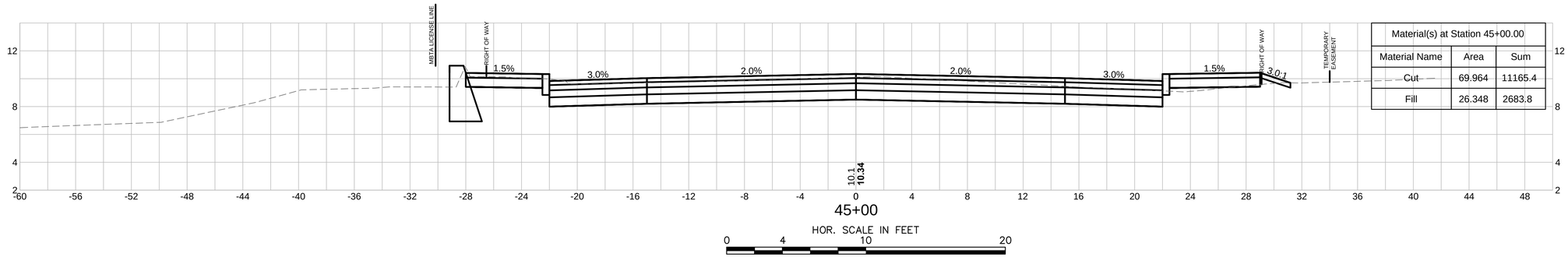
Material(s) at Station 46+00.00		
Material Name	Area	Sum
Cut	90.062	11459.4
Fill	10.029	2753.5



Material(s) at Station 45+50.00		
Material Name	Area	Sum
Cut	77.342	11304.4
Fill	20.956	2724.8



Material(s) at Station 45+40.00		
Material Name	Area	Sum
Cut	78.698	11275.5
Fill	18.982	2717.4



Material(s) at Station 45+00.00		
Material Name	Area	Sum
Cut	69.964	11165.4
Fill	26.348	2683.8

HOR. SCALE IN FEET
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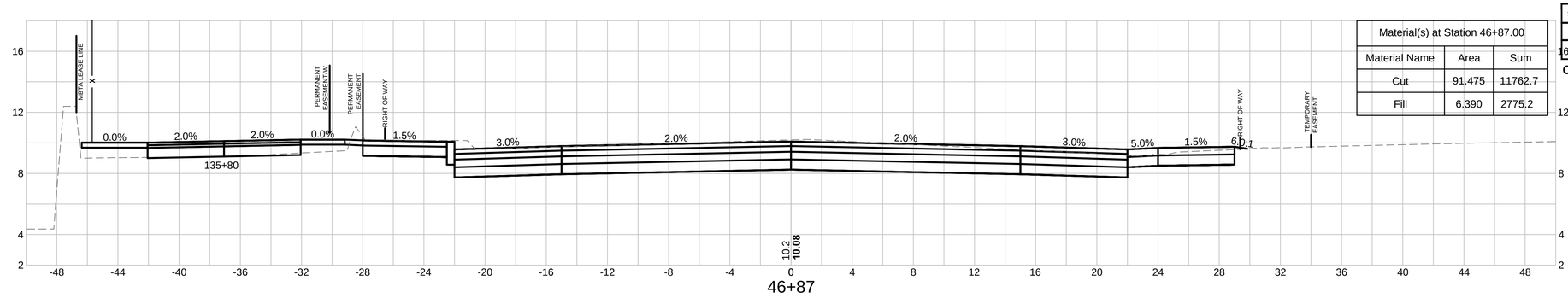
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

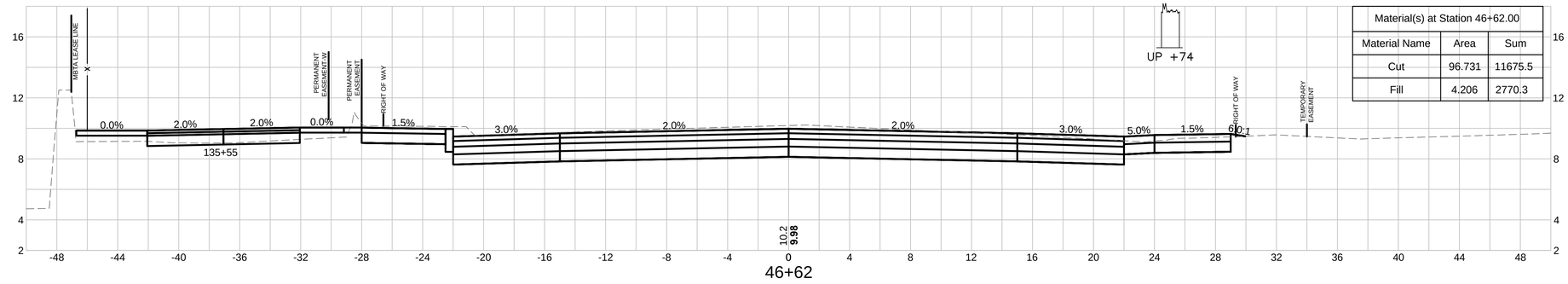
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	190	209
PROJECT FILE NO.	605146		

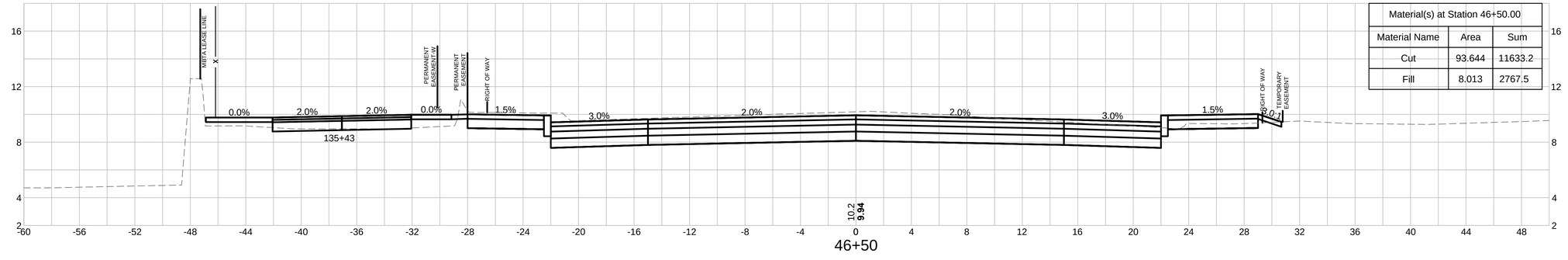
CANAL STREET CROSS SECTIONS



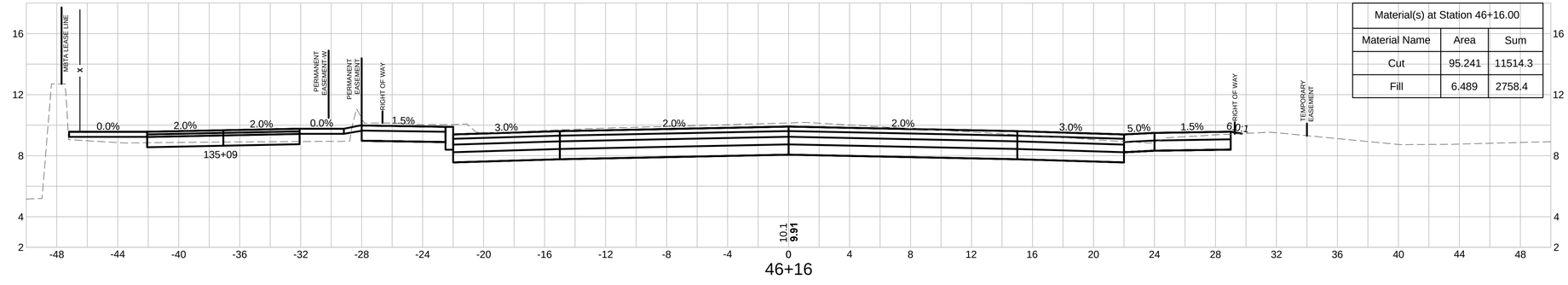
Material(s) at Station 46+87.00		
Material Name	Area	Sum
Cut	91.475	11762.7
Fill	6.390	2775.2



Material(s) at Station 46+62.00		
Material Name	Area	Sum
Cut	96.731	11675.5
Fill	4.206	2770.3



Material(s) at Station 46+50.00		
Material Name	Area	Sum
Cut	93.644	11633.2
Fill	8.013	2767.5



Material(s) at Station 46+16.00		
Material Name	Area	Sum
Cut	95.241	11514.3
Fill	6.489	2758.4

HOR. SCALE IN FEET

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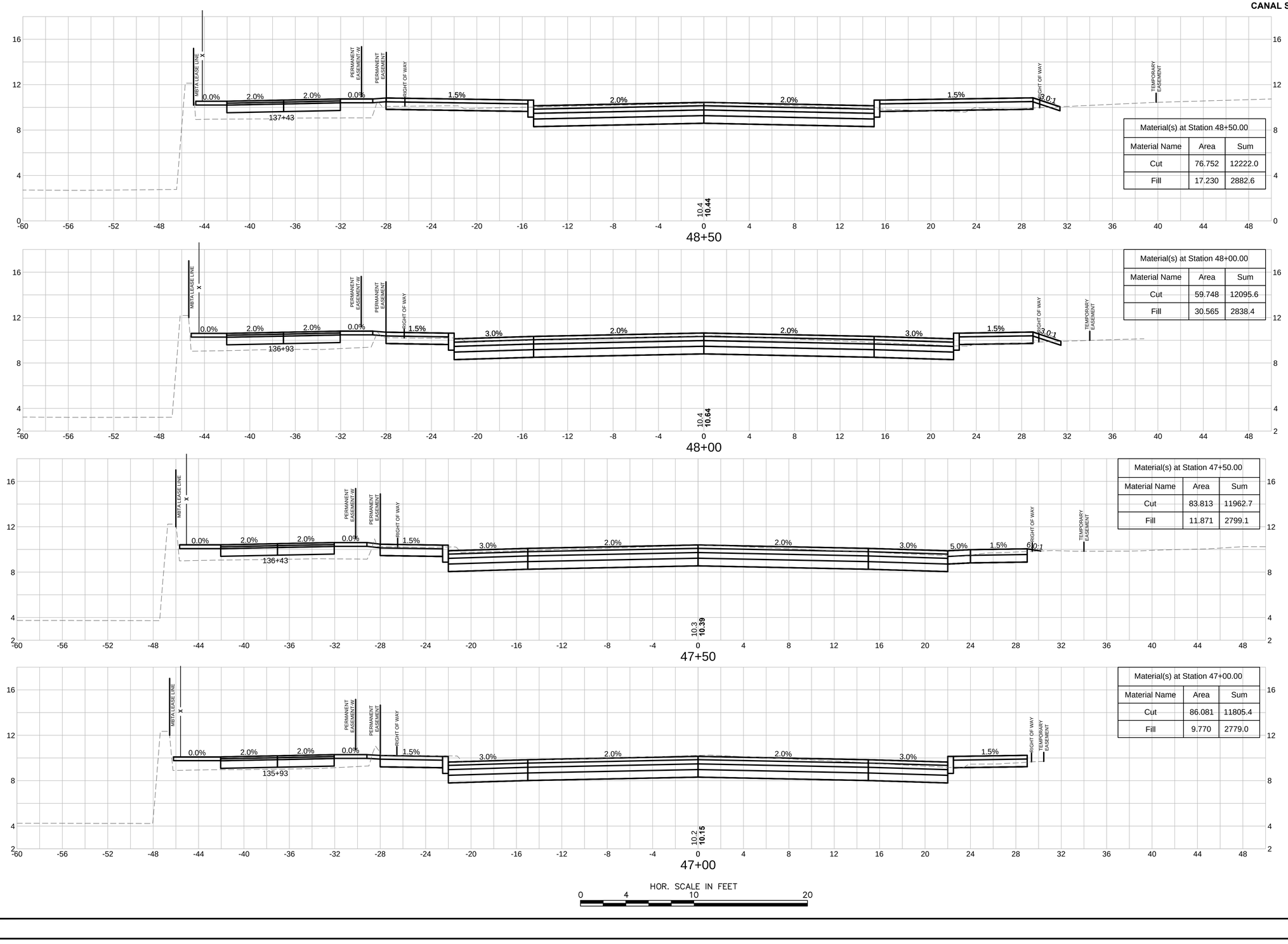
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	191	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS



Material(s) at Station 48+50.00

Material Name	Area	Sum
Cut	76.752	12222.0
Fill	17.230	2882.6

Material(s) at Station 48+00.00

Material Name	Area	Sum
Cut	59.748	12095.6
Fill	30.565	2838.4

Material(s) at Station 47+50.00

Material Name	Area	Sum
Cut	83.813	11962.7
Fill	11.871	2799.1

Material(s) at Station 47+00.00

Material Name	Area	Sum
Cut	86.081	11805.4
Fill	9.770	2779.0

HOR. SCALE IN FEET
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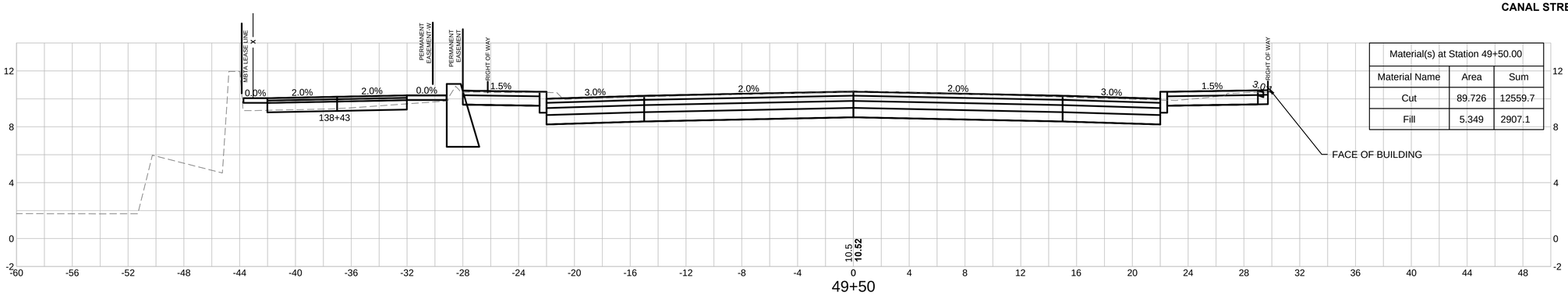
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

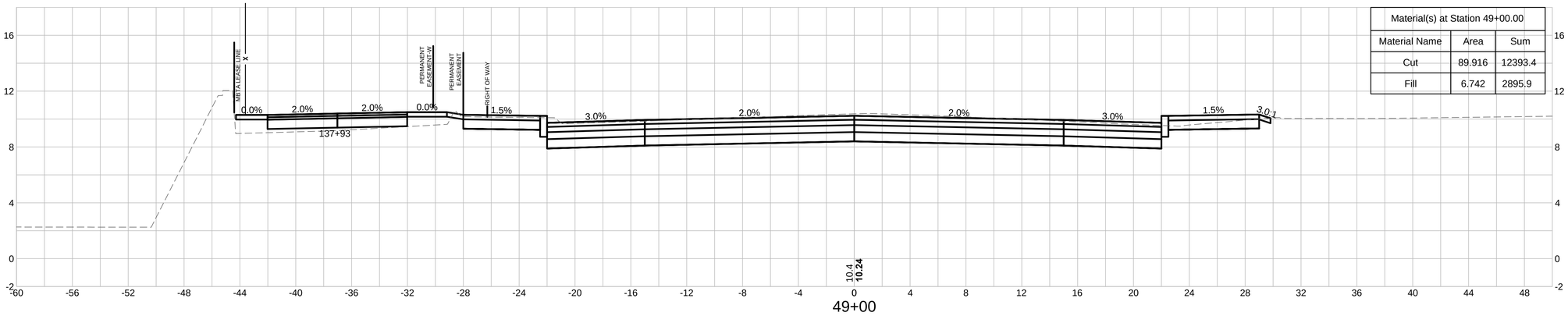
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	192	209
PROJECT FILE NO.	605146		

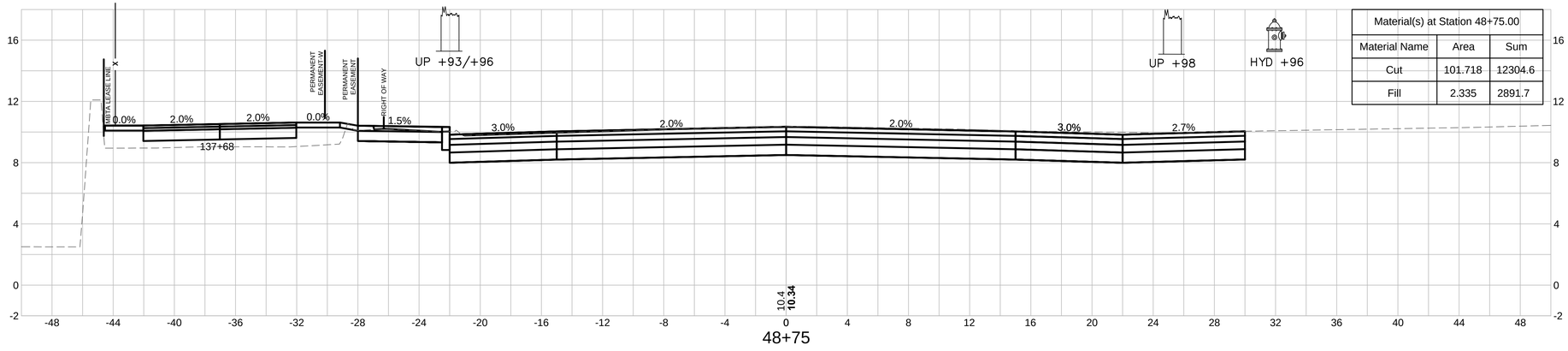
CANAL STREET CROSS SECTIONS



Material(s) at Station 49+50.00		
Material Name	Area	Sum
Cut	89.726	12559.7
Fill	5.349	2907.1



Material(s) at Station 49+00.00		
Material Name	Area	Sum
Cut	89.916	12393.4
Fill	6.742	2895.9



Material(s) at Station 48+75.00		
Material Name	Area	Sum
Cut	101.718	12304.6
Fill	2.335	2891.7

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG

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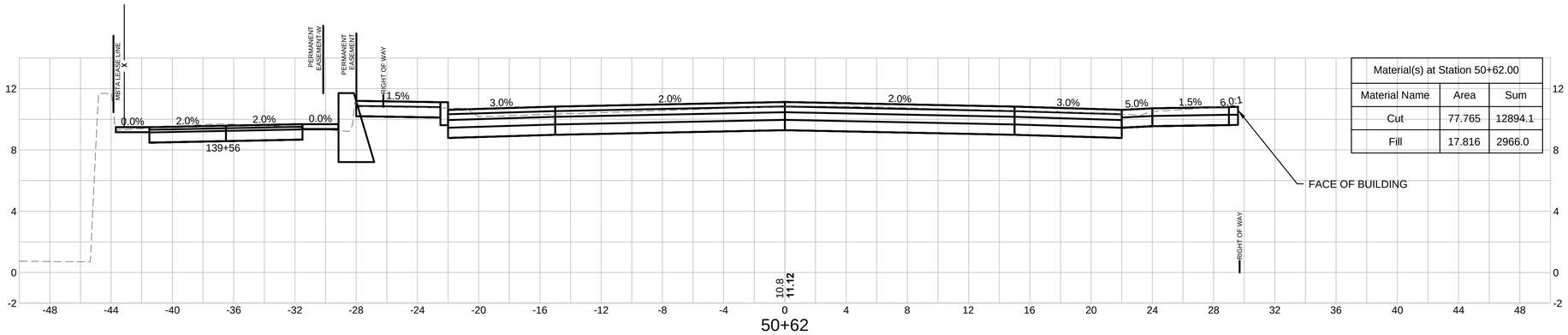
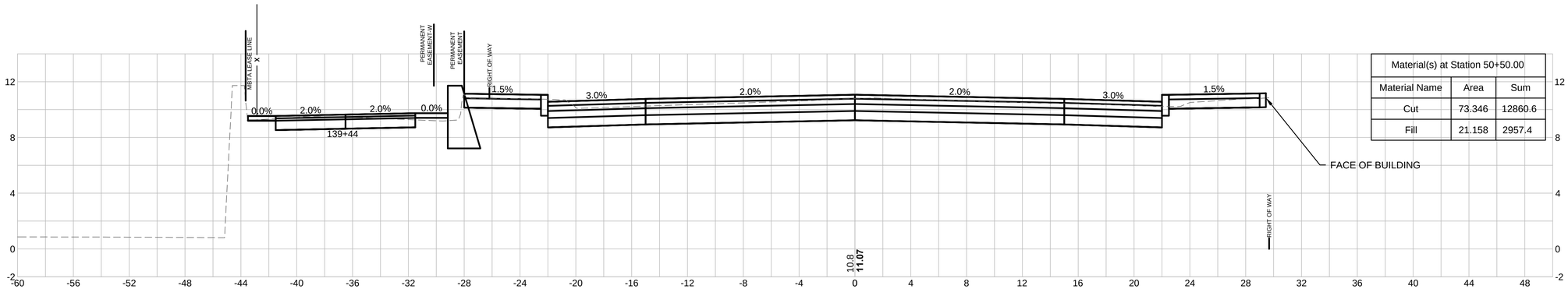
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	193	209
PROJECT FILE NO.	605146		

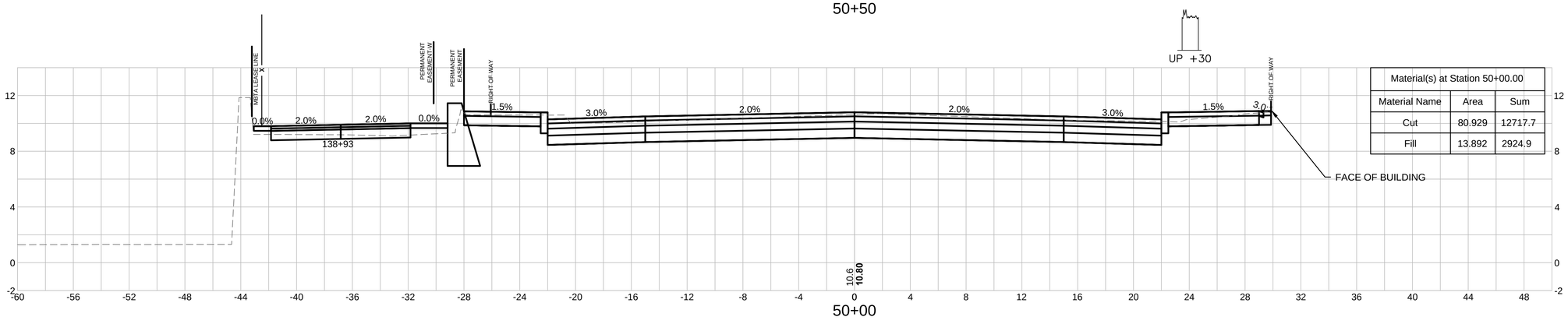
CANAL STREET CROSS SECTIONS



Material(s) at Station 50+62.00		
Material Name	Area	Sum
Cut	77.765	12894.1
Fill	17.816	2966.0



Material(s) at Station 50+50.00		
Material Name	Area	Sum
Cut	73.346	12860.6
Fill	21.158	2957.4



Material(s) at Station 50+00.00		
Material Name	Area	Sum
Cut	80.929	12717.7
Fill	13.892	2924.9

HOR. SCALE IN FEET
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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	194	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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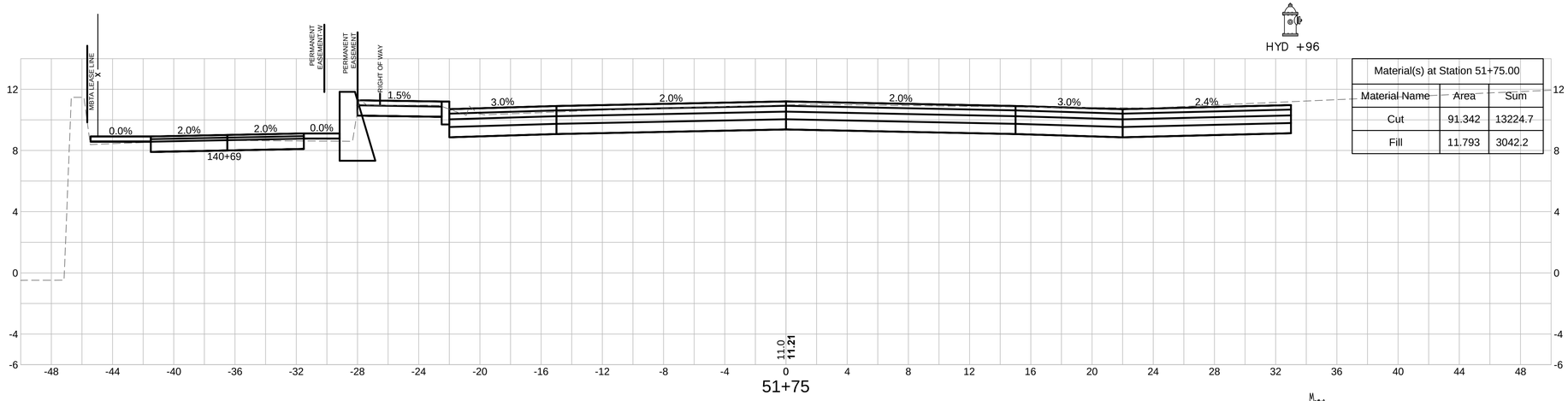
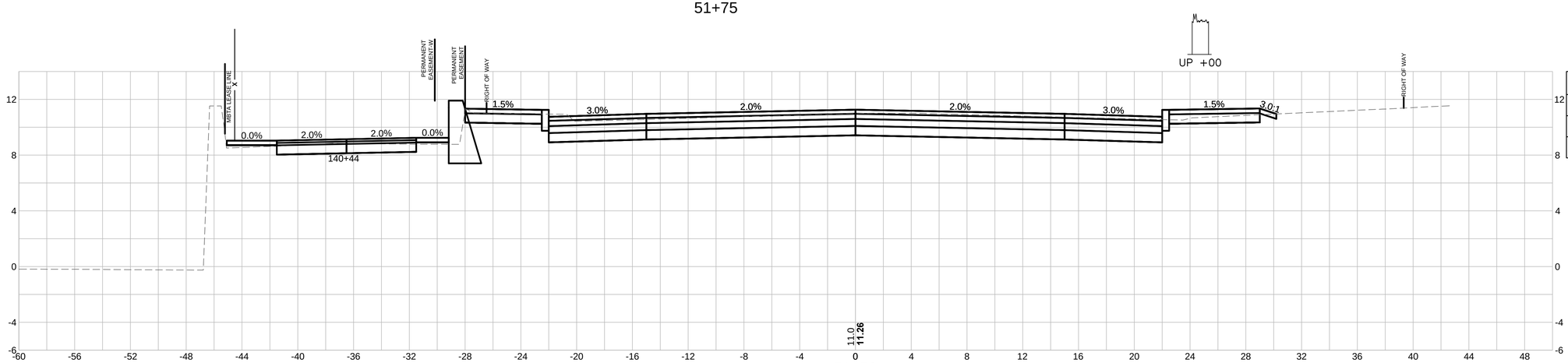
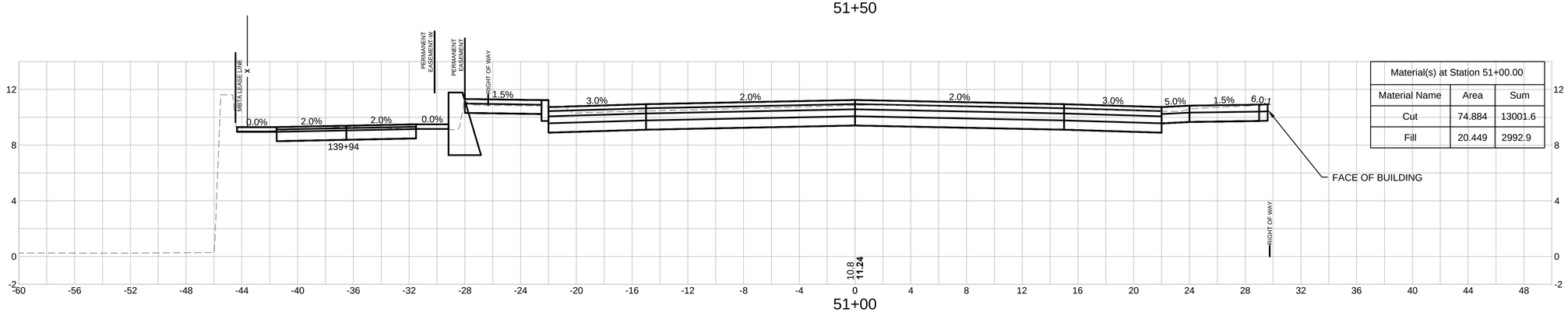
93692 PS&E-2 CROSS SECTIONS.DWG



Material(s) at Station 51+75.00		
Material Name	Area	Sum
Cut	91.342	13224.7
Fill	11.793	3042.2



Material(s) at Station 51+50.00		
Material Name	Area	Sum
Cut	80.290	13145.2
Fill	17.870	3028.4



Material(s) at Station 51+00.00		
Material Name	Area	Sum
Cut	74.884	13001.6
Fill	20.449	2992.9

HOR. SCALE IN FEET
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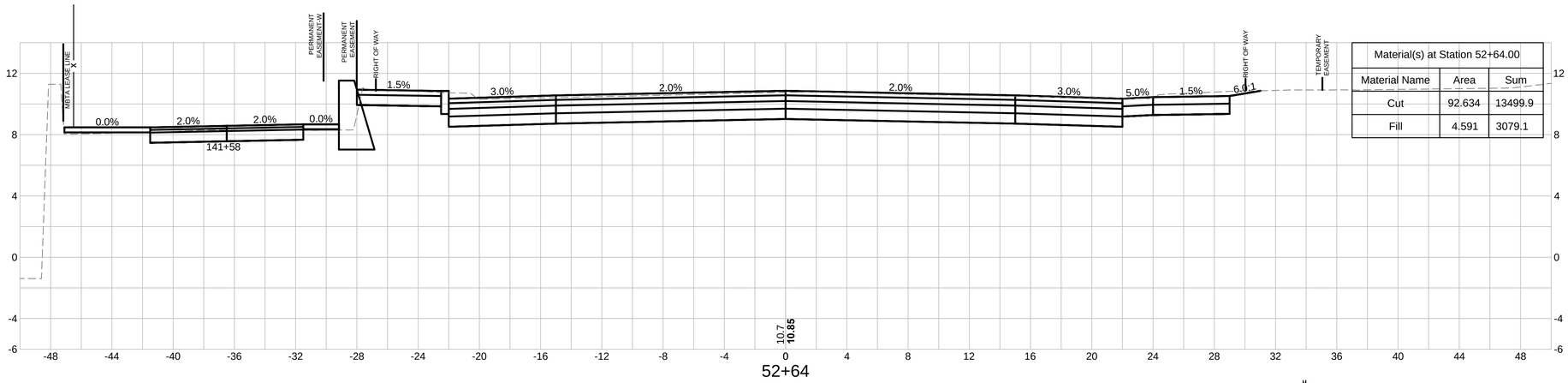
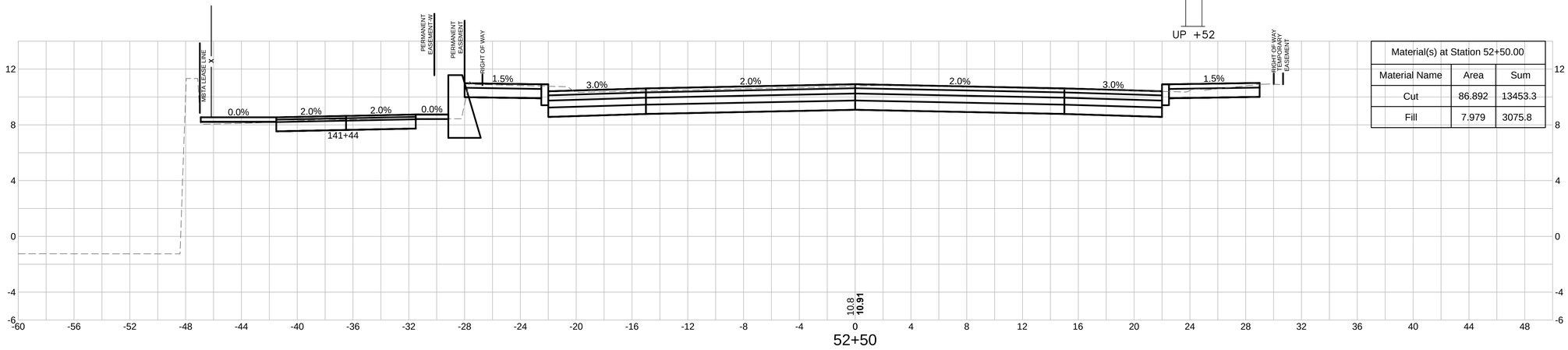
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	195	209
PROJECT FILE NO.	605146		

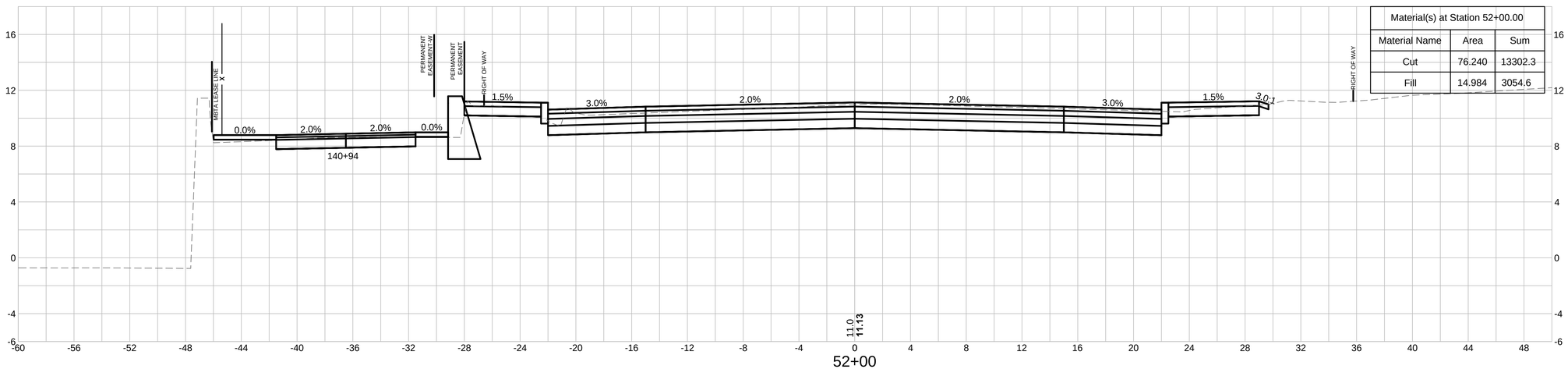
CANAL STREET CROSS SECTIONS



Material(s) at Station 52+64.00		
Material Name	Area	Sum
Cut	92.634	13499.9
Fill	4.591	3079.1



Material(s) at Station 52+50.00		
Material Name	Area	Sum
Cut	86.892	13453.3
Fill	7.979	3075.8



Material(s) at Station 52+00.00		
Material Name	Area	Sum
Cut	76.240	13302.3
Fill	14.984	3054.6

HOR. SCALE IN FEET
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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	196	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

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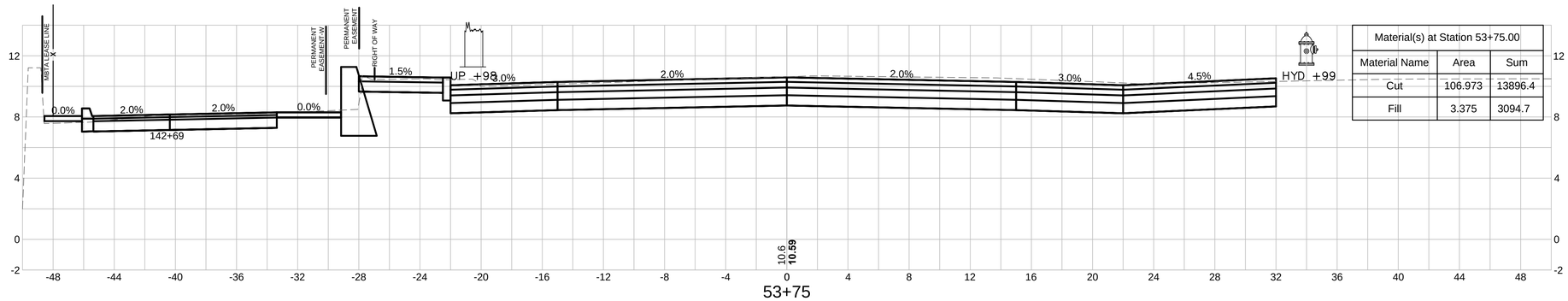
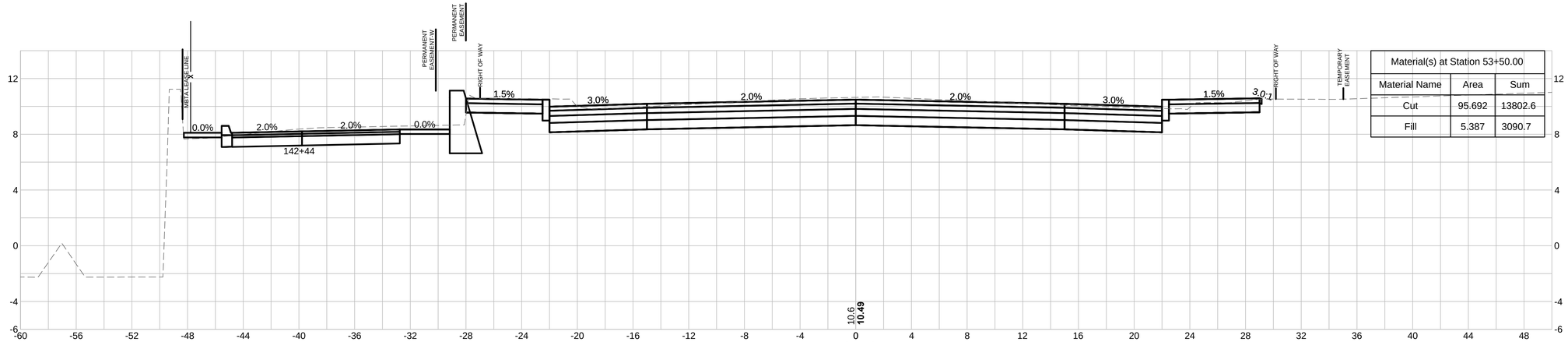
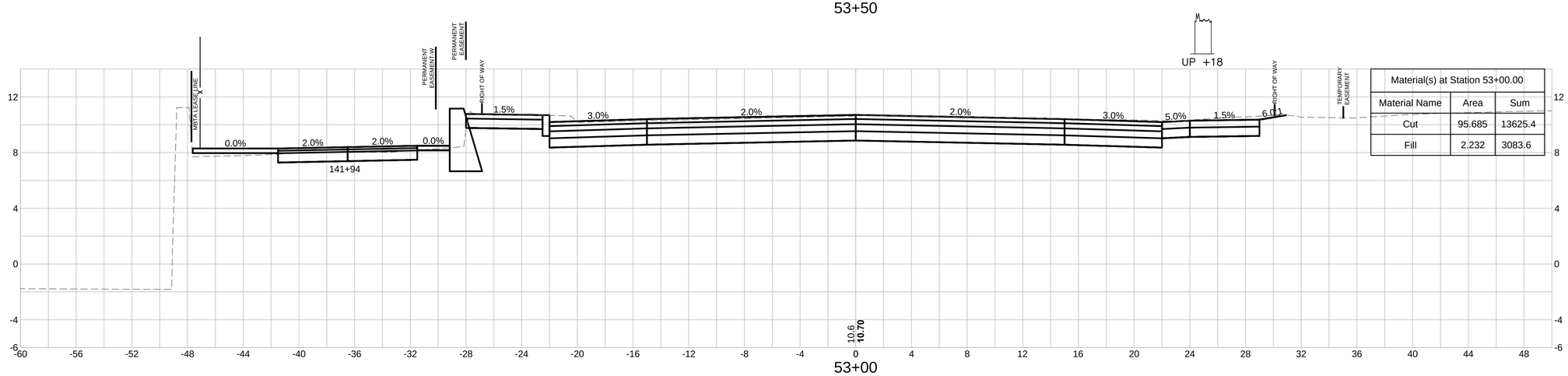


Material(s) at Station 53+75.00		
Material Name	Area	Sum
Cut	106.973	13896.4
Fill	3.375	3094.7



Material(s) at Station 53+50.00		
Material Name	Area	Sum
Cut	95.692	13802.6
Fill	5.387	3090.7



Material(s) at Station 53+00.00		
Material Name	Area	Sum
Cut	95.685	13625.4
Fill	2.232	3083.6

HOR. SCALE IN FEET
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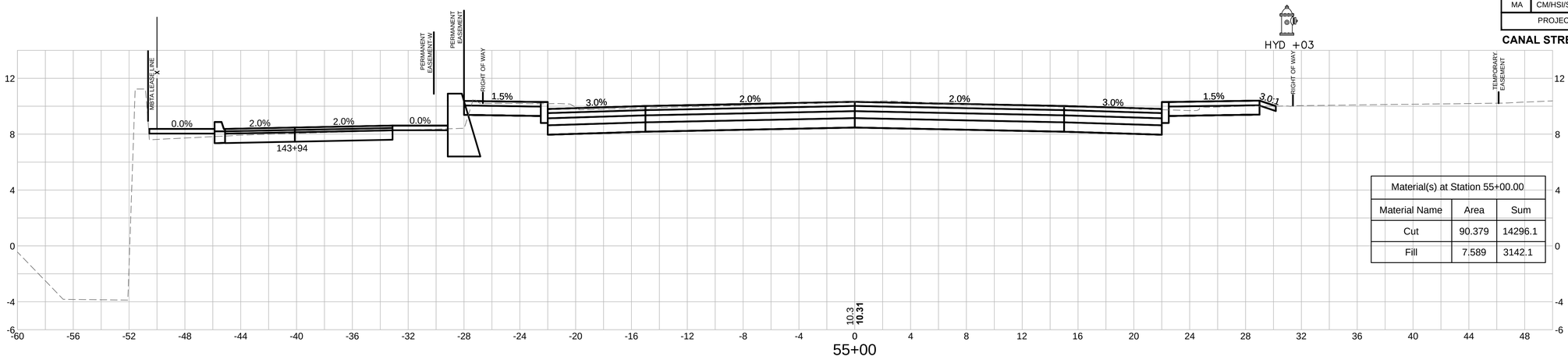
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	197	209
PROJECT FILE NO.	605146		

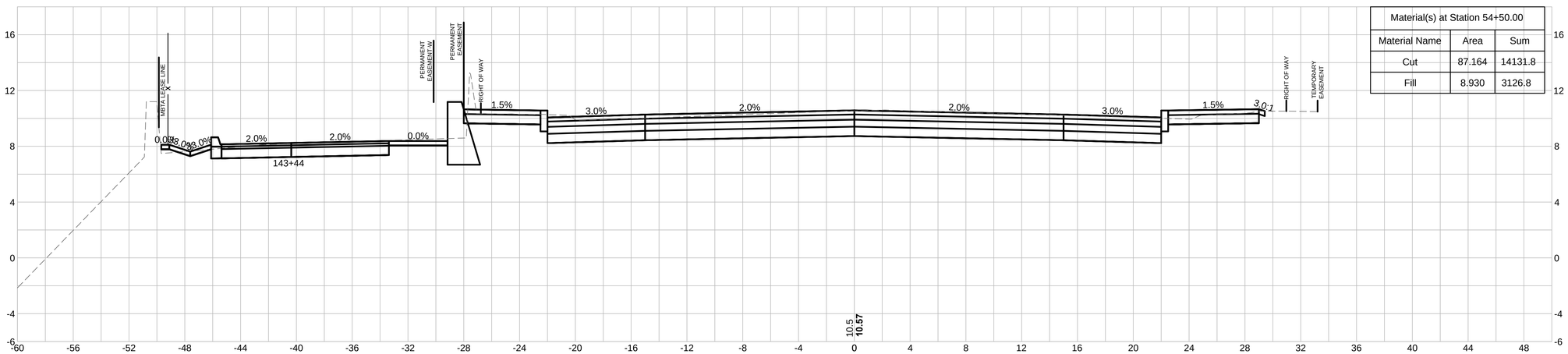
CANAL STREET CROSS SECTIONS

15-Oct-2015

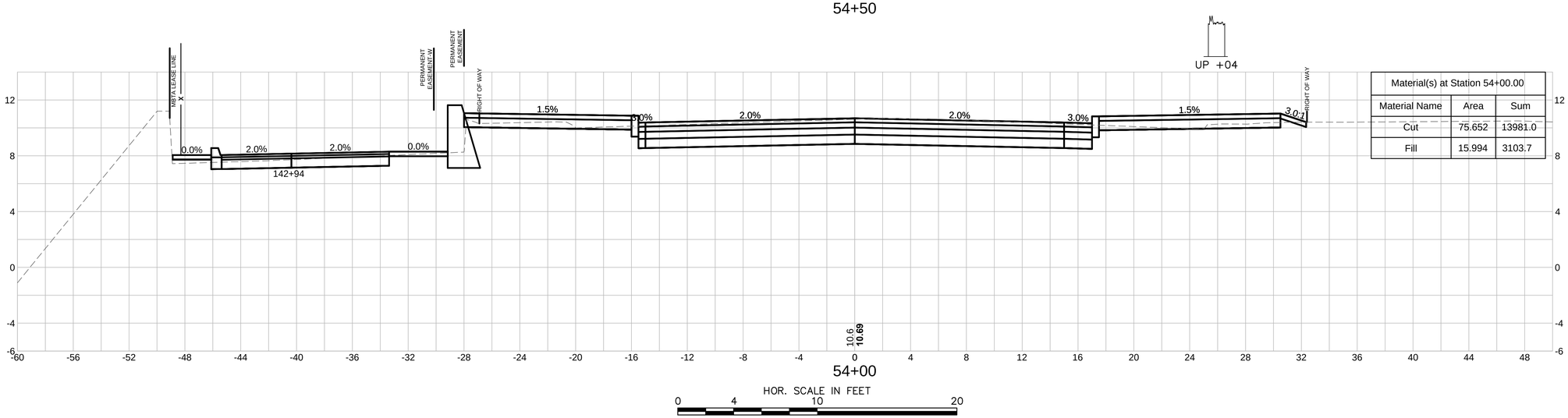
93692 PS&E-2 CROSS SECTIONS.DWG



Material(s) at Station 55+00.00		
Material Name	Area	Sum
Cut	90.379	14296.1
Fill	7.589	3142.1



Material(s) at Station 54+50.00		
Material Name	Area	Sum
Cut	87.164	14131.8
Fill	8.930	3126.8



Material(s) at Station 54+00.00		
Material Name	Area	Sum
Cut	75.652	13981.0
Fill	15.994	3103.7

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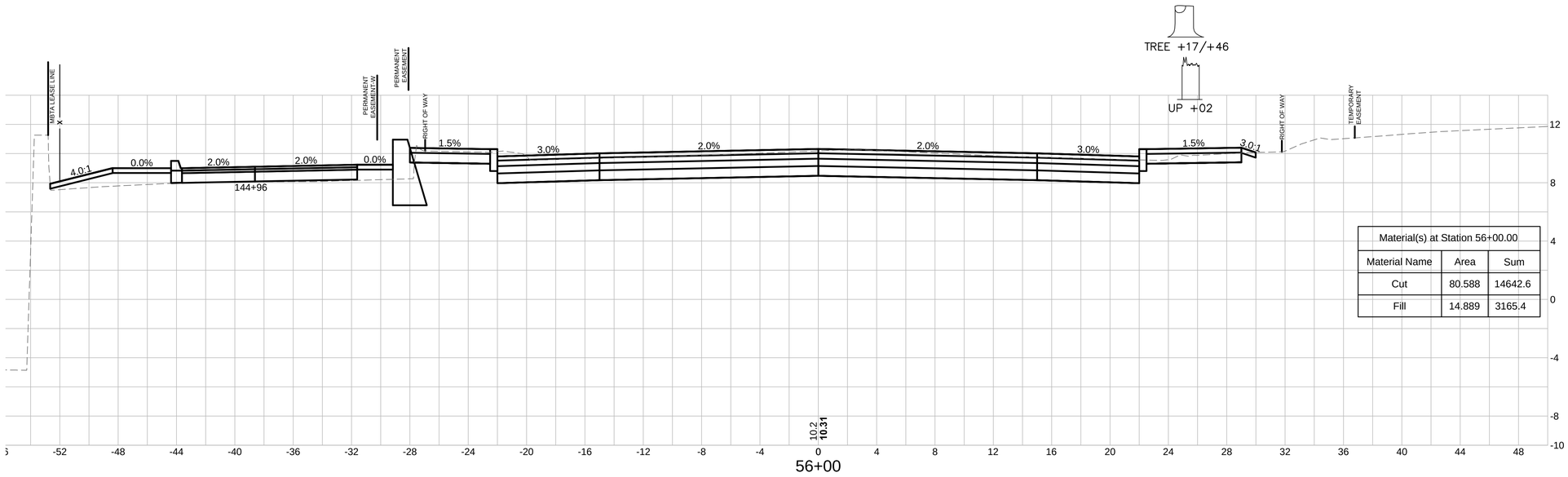
SALEM
CANAL STREET

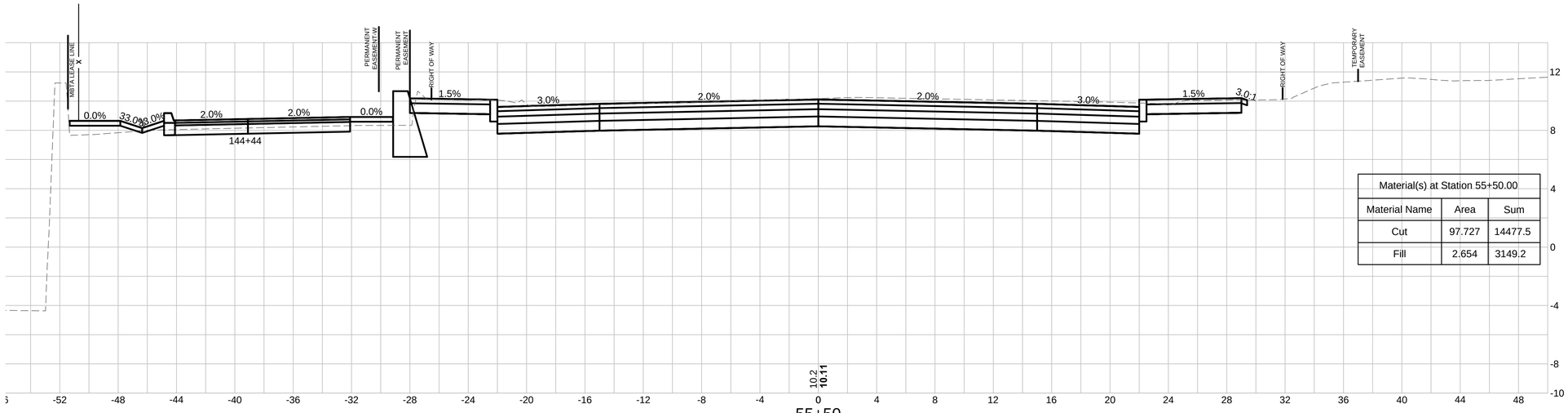
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	198	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

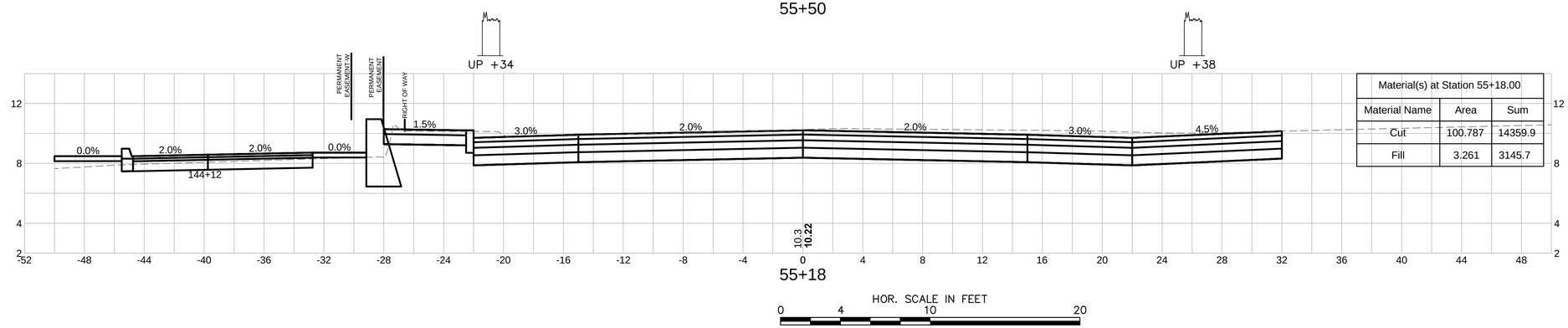
15-Oct-2015
93692 PS&E-2 CROSS SECTIONS.DWG



Material(s) at Station 56+00.00		
Material Name	Area	Sum
Cut	80.588	14642.6
Fill	14.889	3165.4



Material(s) at Station 55+50.00		
Material Name	Area	Sum
Cut	97.727	14477.5
Fill	2.654	3149.2



Material(s) at Station 55+18.00		
Material Name	Area	Sum
Cut	100.787	14359.9
Fill	3.261	3145.7

HOR. SCALE IN FEET
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SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	199	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

15-Oct-2015

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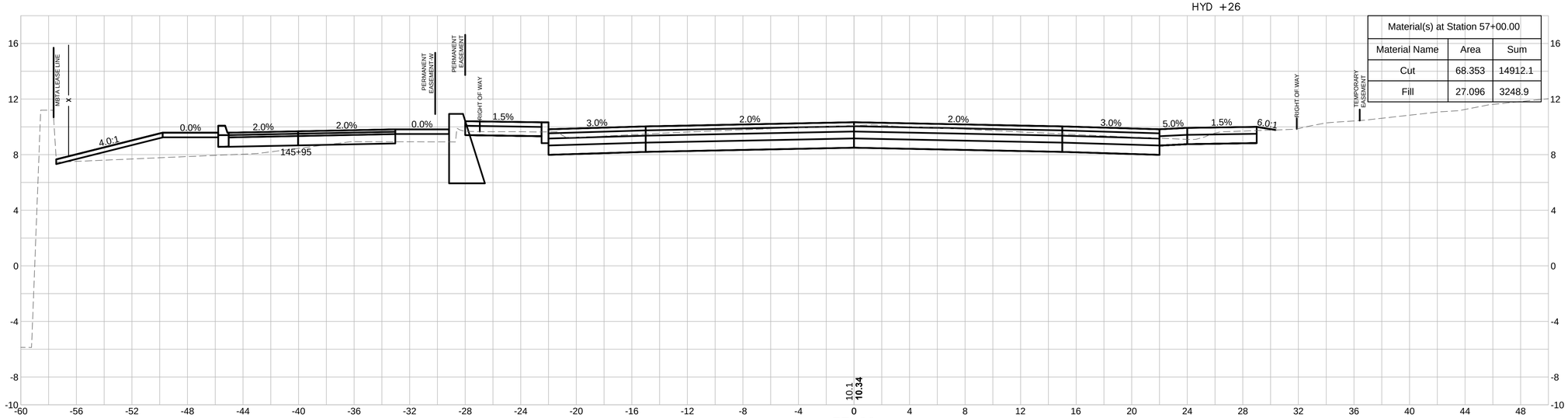
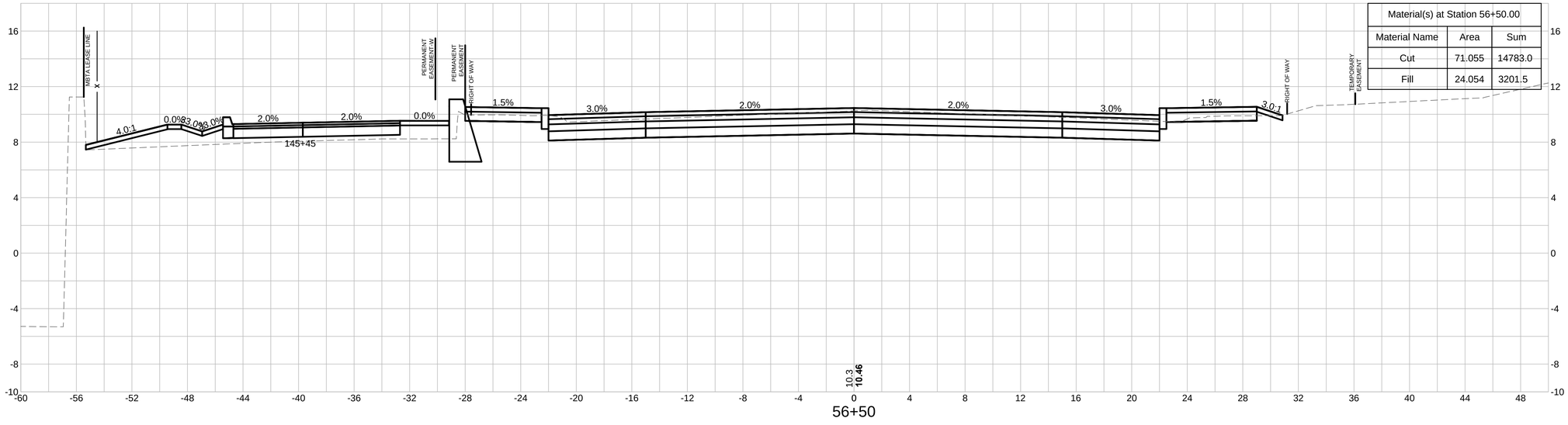
HYD +26



Material(s) at Station 57+00.00		
Material Name	Area	Sum
Cut	68.353	14912.1
Fill	27.096	3248.9

UP +97



Material(s) at Station 56+50.00		
Material Name	Area	Sum
Cut	71.055	14783.0
Fill	24.054	3201.5

HOR. SCALE IN FEET
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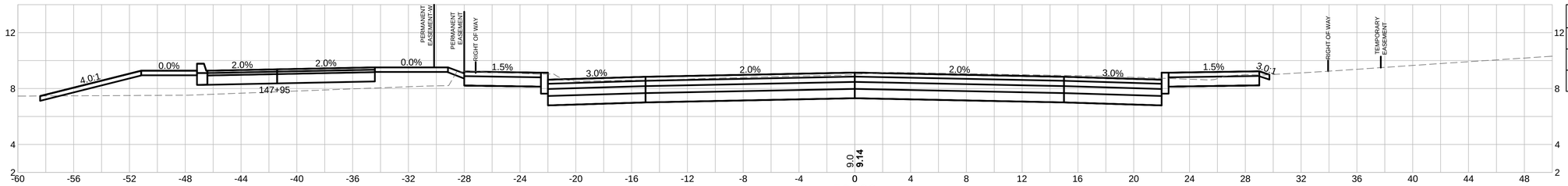
SALEM
CANAL STREET

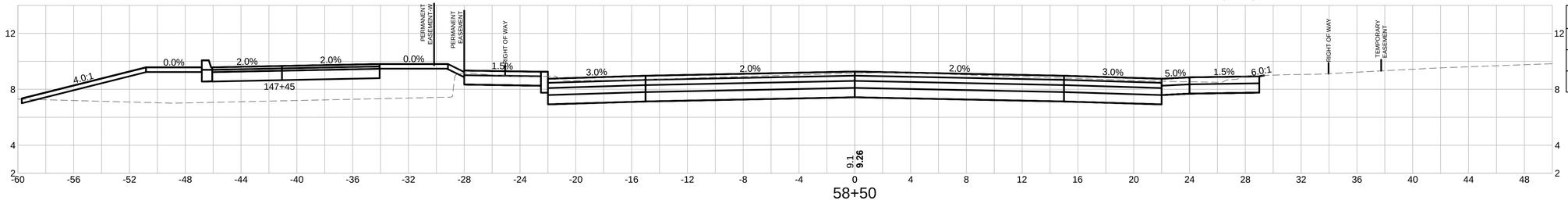
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	200	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

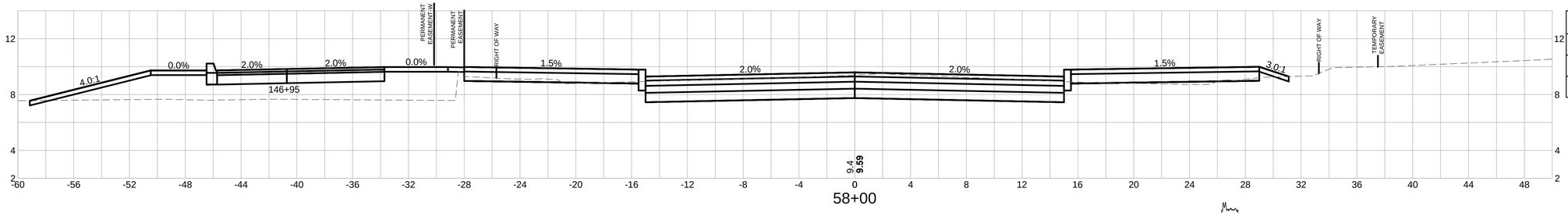


Material(s) at Station 59+00.00		
Material Name	Area	Sum
Cut	89.534	15471.8
Fill	7.243	3386.5

UP +87

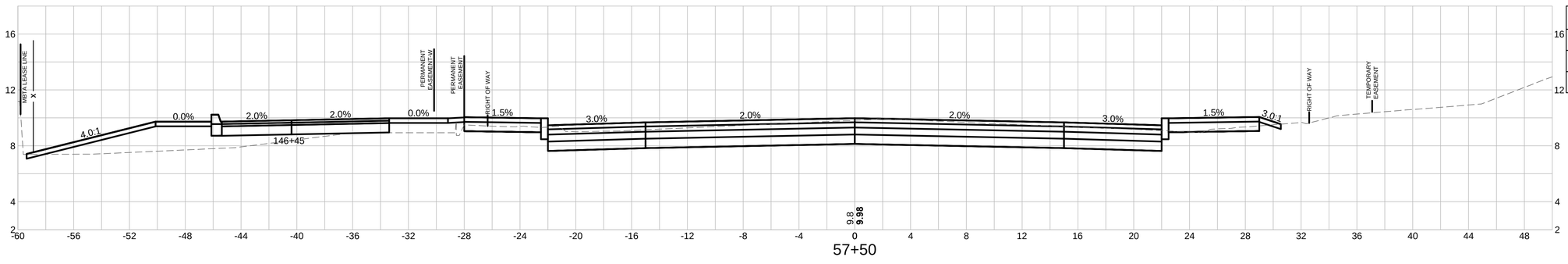


Material(s) at Station 58+50.00		
Material Name	Area	Sum
Cut	85.239	15310.0
Fill	10.189	3370.3



Material(s) at Station 58+00.00		
Material Name	Area	Sum
Cut	66.047	15169.9
Fill	23.983	3338.7

UP +93



Material(s) at Station 57+50.00		
Material Name	Area	Sum
Cut	72.034	15042.1
Fill	22.971	3295.2

HOR. SCALE IN FEET
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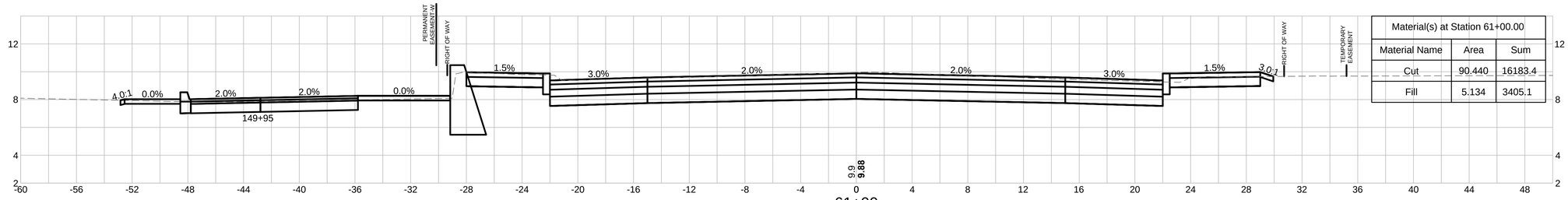
CANAL STREET

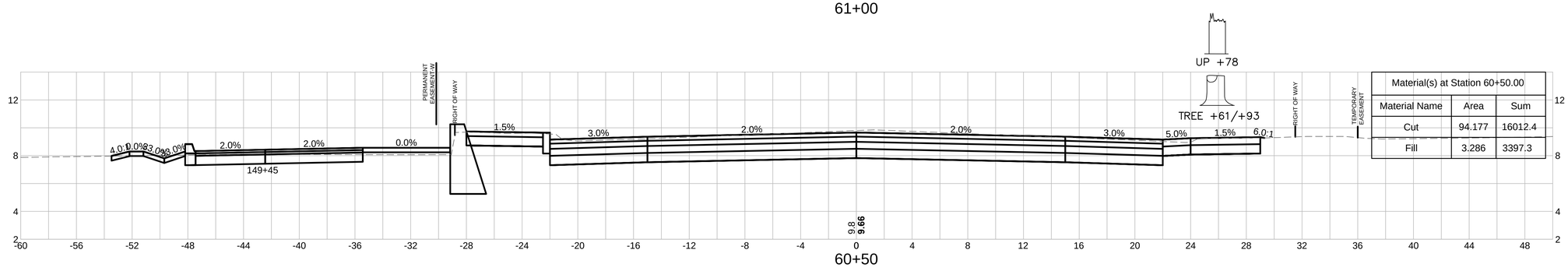
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	201	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS



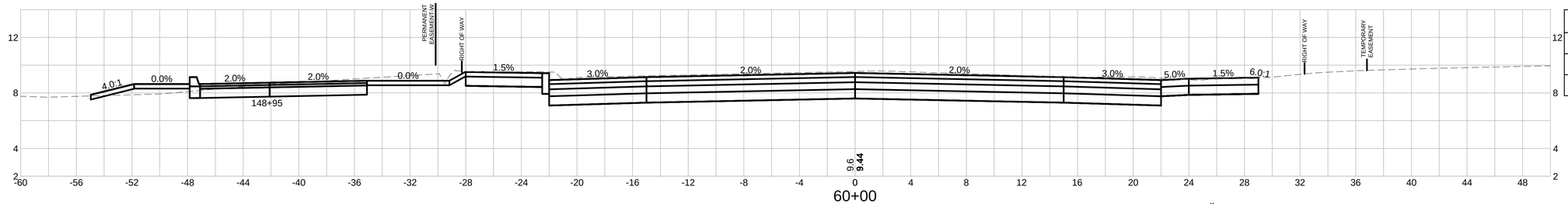
61+00

Material(s) at Station 61+00.00		
Material Name	Area	Sum
Cut	90.440	16183.4
Fill	5.134	3405.1



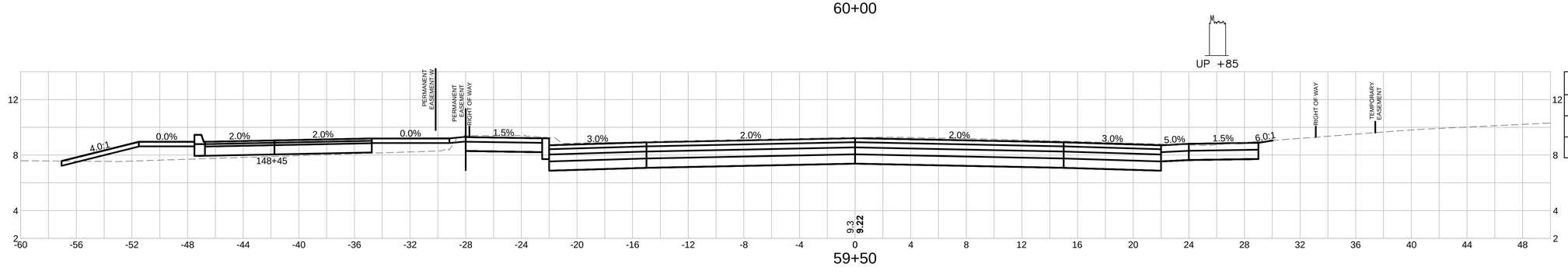
60+50

Material(s) at Station 60+50.00		
Material Name	Area	Sum
Cut	94.177	16012.4
Fill	3.286	3397.3



60+00

Material(s) at Station 60+00.00		
Material Name	Area	Sum
Cut	100.588	15832.1
Fill	0.240	3394.0



59+50

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

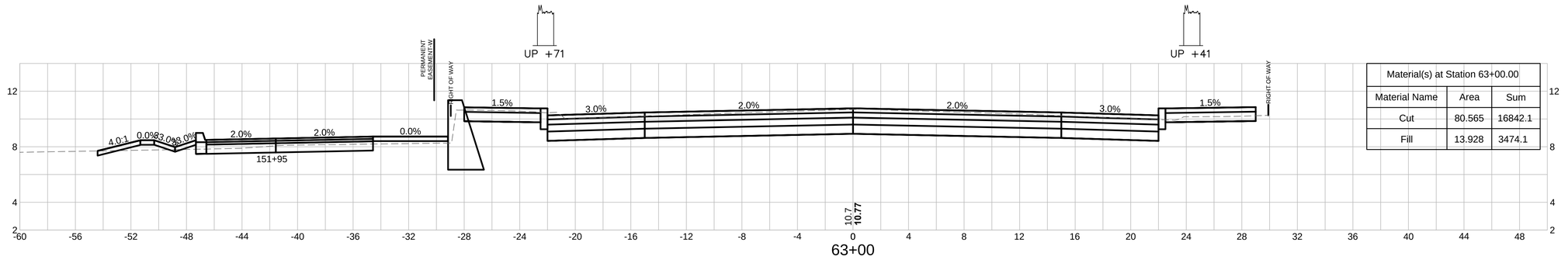
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	202	209
PROJECT FILE NO.	605146		

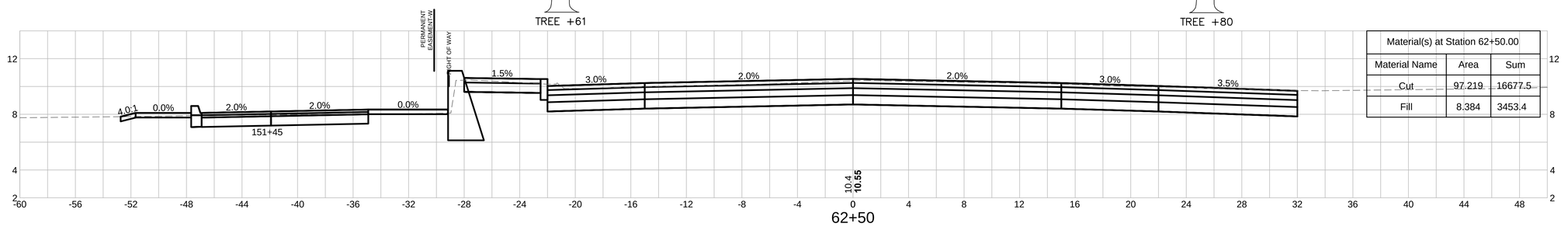
CANAL STREET CROSS SECTIONS

15-Oct-2015

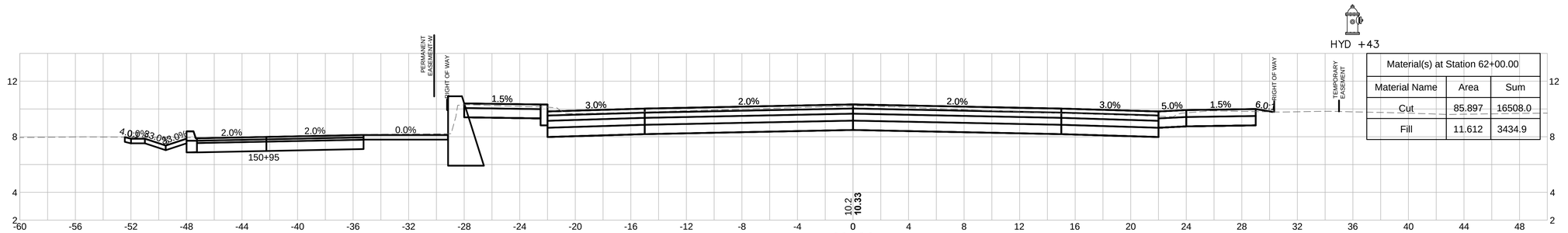
93692 PS&E-2 CROSS SECTIONS.DWG



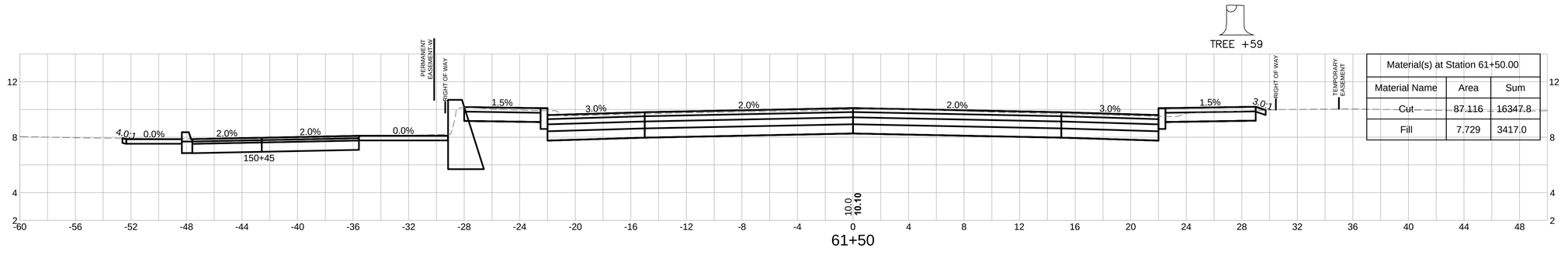
Material(s) at Station 63+00.00		
Material Name	Area	Sum
Cut	80.565	16842.1
Fill	13.928	3474.1



Material(s) at Station 62+50.00		
Material Name	Area	Sum
Cut	97.219	16677.5
Fill	8.384	3453.4



Material(s) at Station 62+00.00		
Material Name	Area	Sum
Cut	85.897	16508.0
Fill	11.612	3434.9



Material(s) at Station 61+50.00		
Material Name	Area	Sum
Cut	87.116	16347.8
Fill	7.729	3417.0

HOR. SCALE IN FEET
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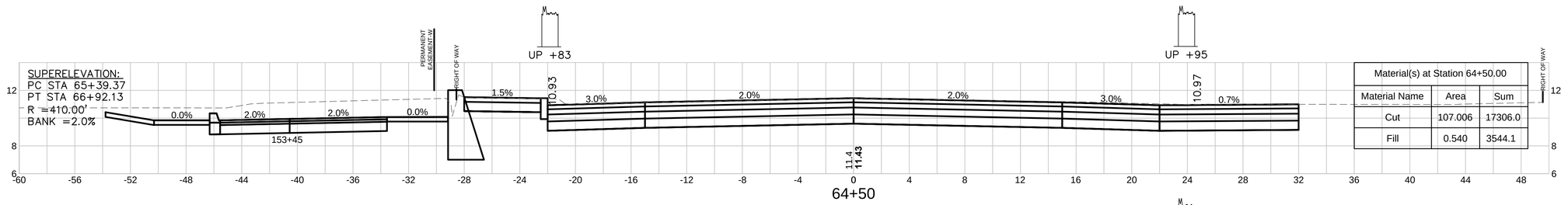
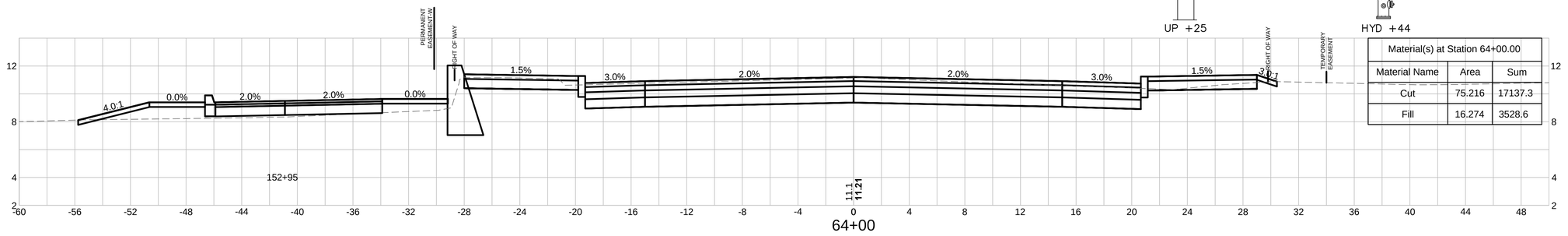
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	203	209
PROJECT FILE NO.	605146		

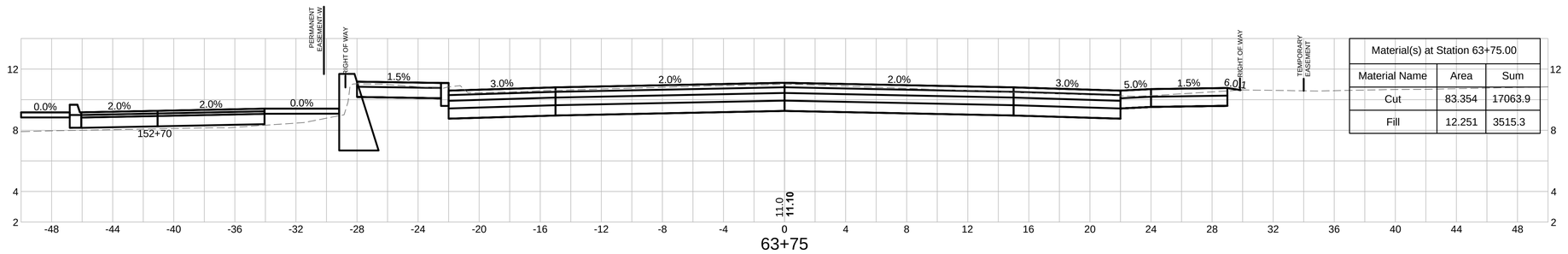
CANAL STREET CROSS SECTIONS



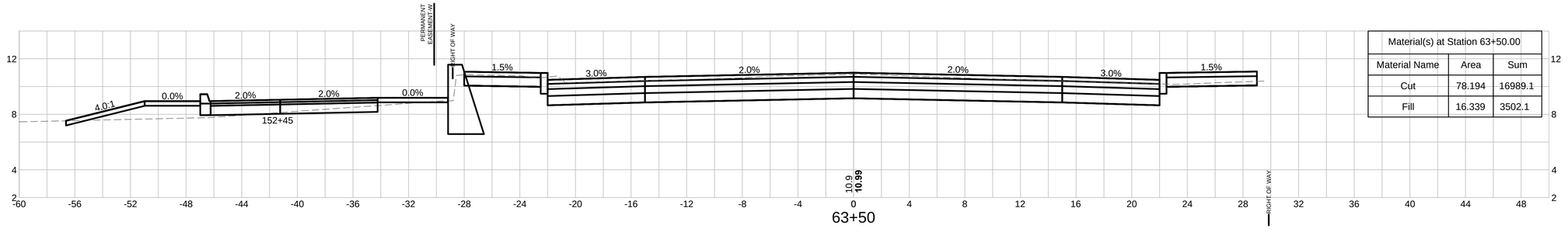
Material(s) at Station 64+50.00		
Material Name	Area	Sum
Cut	107.006	17306.0
Fill	0.540	3544.1



Material(s) at Station 64+00.00		
Material Name	Area	Sum
Cut	75.216	17137.3
Fill	16.274	3528.6



Material(s) at Station 63+75.00		
Material Name	Area	Sum
Cut	83.354	17063.9
Fill	12.251	3515.3



Material(s) at Station 63+50.00		
Material Name	Area	Sum
Cut	78.194	16989.1
Fill	16.339	3502.1

HOR. SCALE IN FEET
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93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015

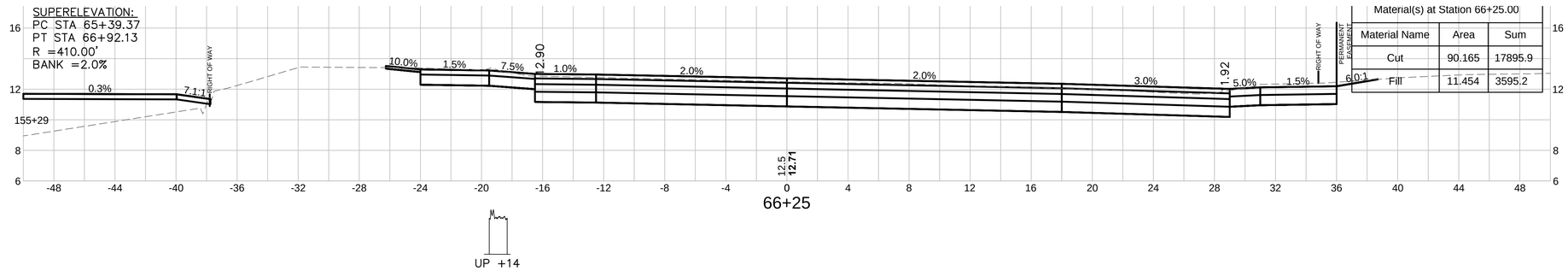
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	204	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS

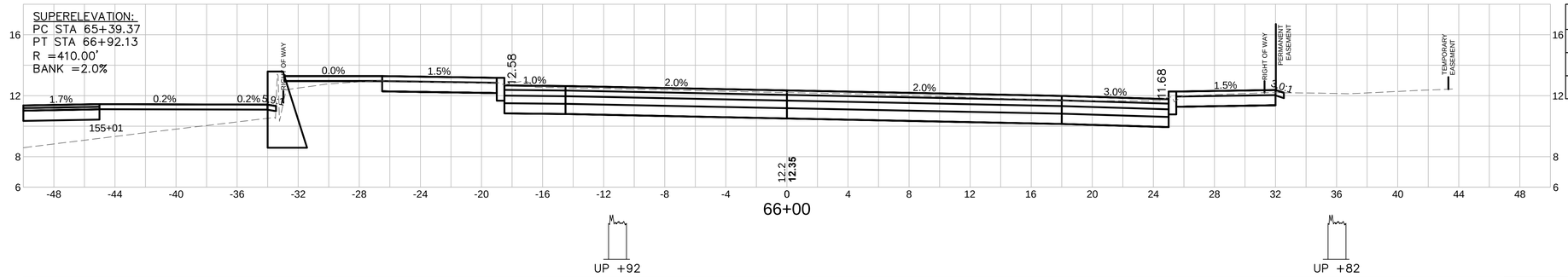
15-Oct-2015

93692 PS&E-2 CROSS SECTIONS.DWG



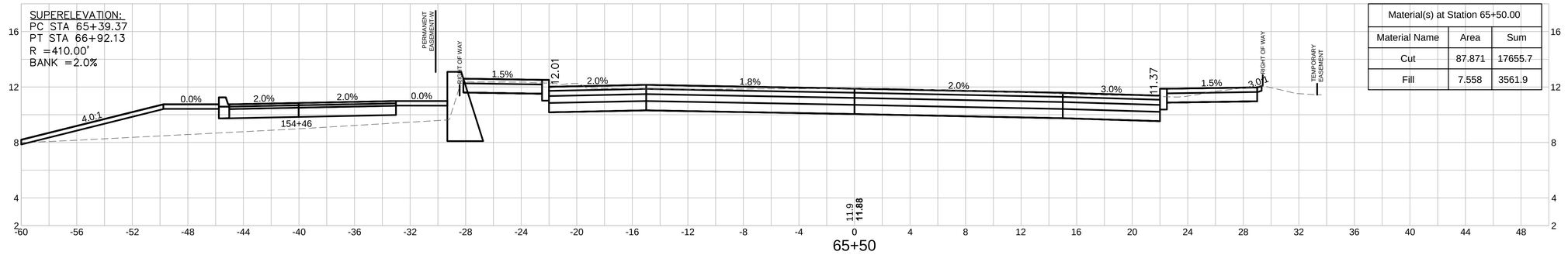
Material(s) at Station 66+25.00

Material Name	Area	Sum
Cut	90.165	17895.9
Fill	11.454	3595.2



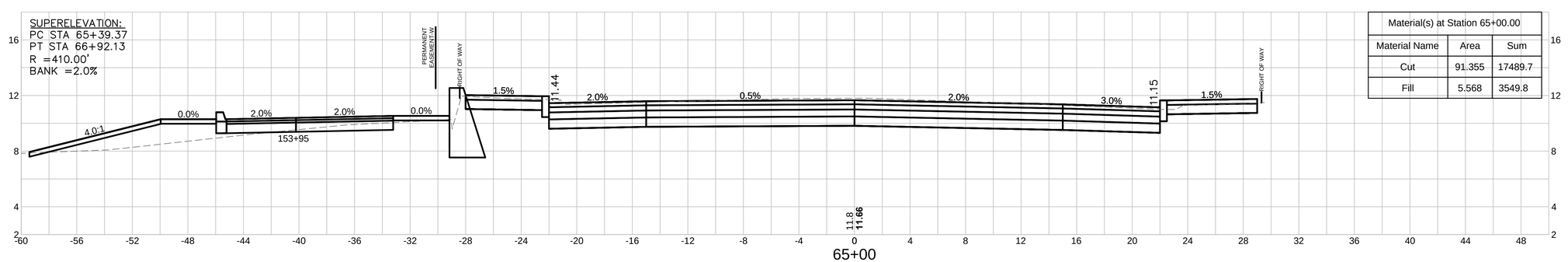
Material(s) at Station 66+00.00

Material Name	Area	Sum
Cut	84.354	17815.1
Fill	15.089	3582.9



Material(s) at Station 65+50.00

Material Name	Area	Sum
Cut	87.871	17655.7
Fill	7.558	3561.9



Material(s) at Station 65+00.00

Material Name	Area	Sum
Cut	91.355	17489.7
Fill	5.568	3549.8

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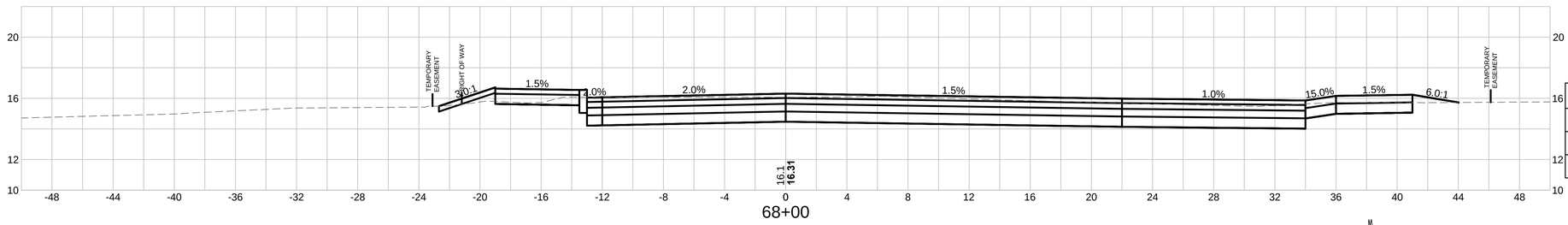
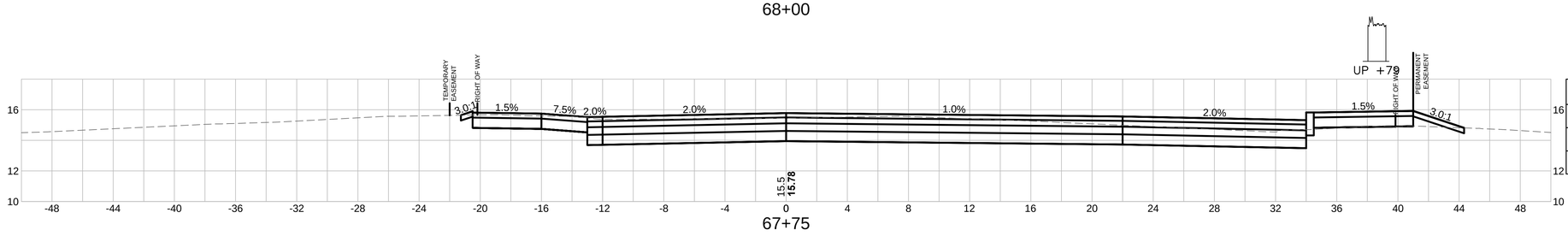
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	205	209
PROJECT FILE NO.	605146		

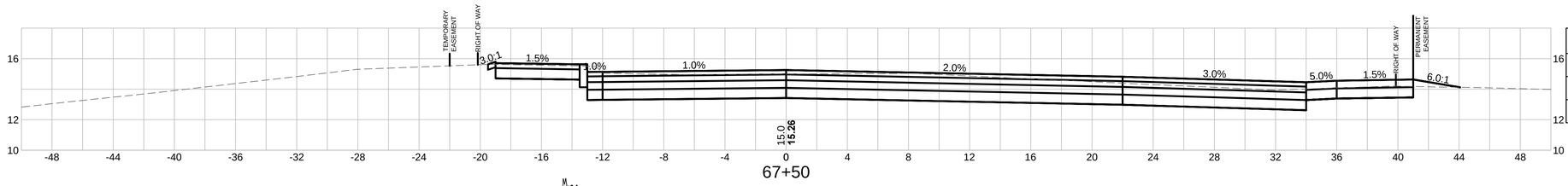
CANAL STREET CROSS SECTIONS



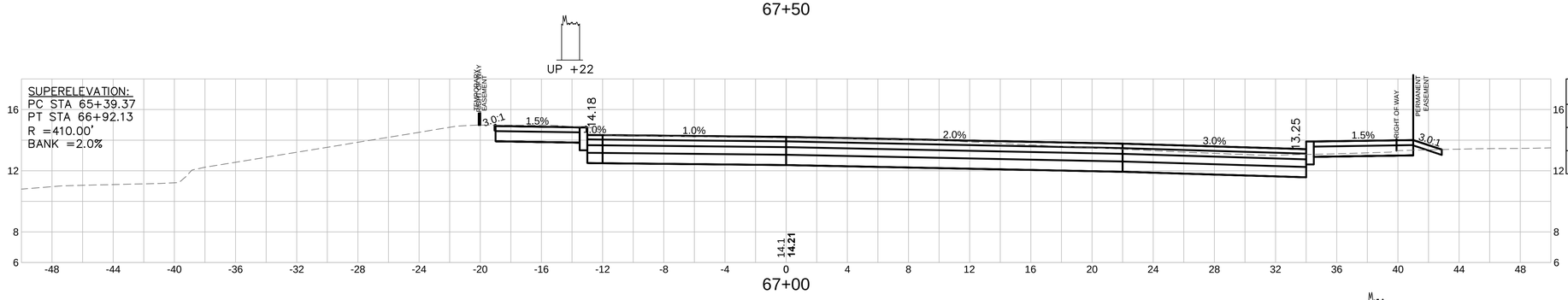
Material(s) at Station 68+00.00		
Material Name	Area	Sum
Cut	84.067	18441.1
Fill	19.392	3703.0



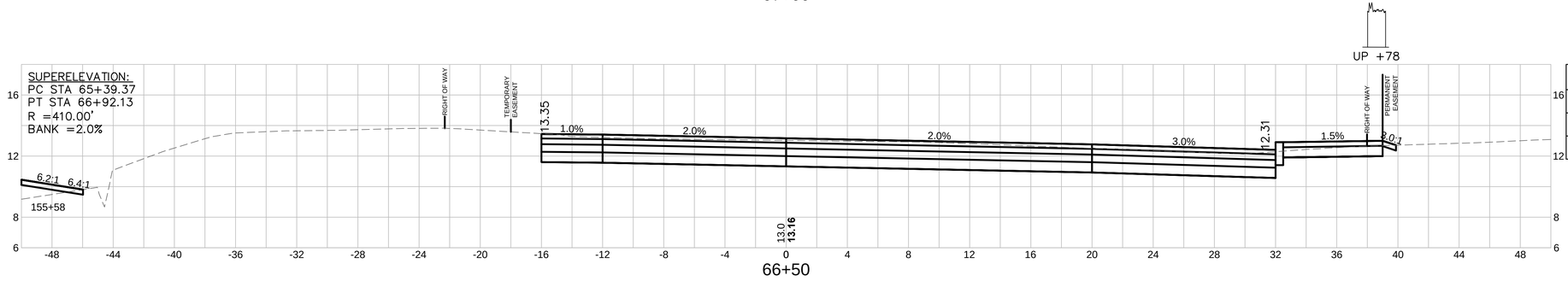
Material(s) at Station 67+75.00		
Material Name	Area	Sum
Cut	75.445	18367.3
Fill	27.936	3681.1



Material(s) at Station 67+50.00		
Material Name	Area	Sum
Cut	84.330	18293.3
Fill	17.599	3660.0



Material(s) at Station 67+00.00		
Material Name	Area	Sum
Cut	86.948	18134.7
Fill	14.470	3630.3



Material(s) at Station 66+50.00		
Material Name	Area	Sum
Cut	83.896	17976.5
Fill	11.842	3606.0

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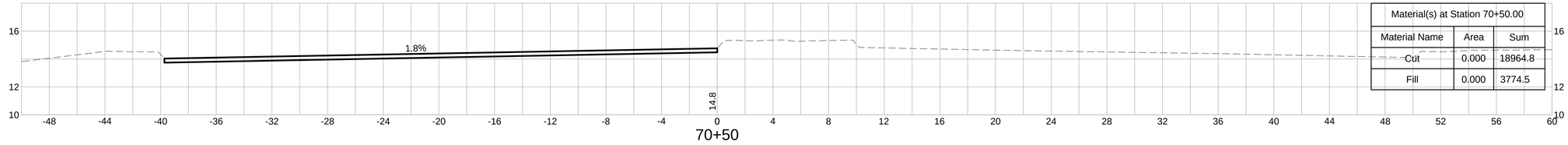
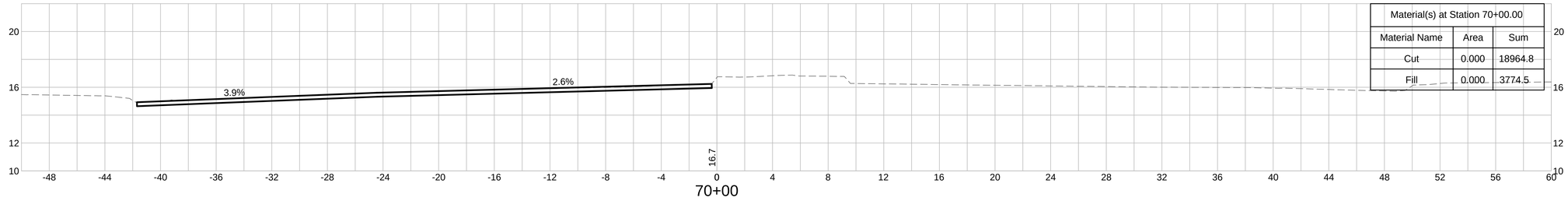
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	206	209
PROJECT FILE NO.	605146		

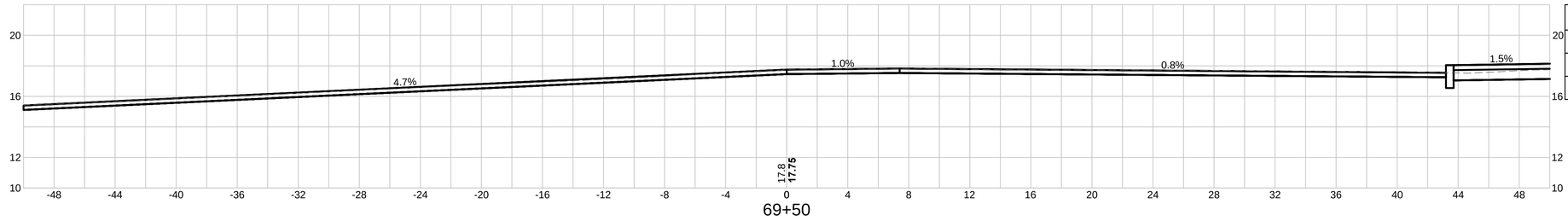
CANAL STREET CROSS SECTIONS



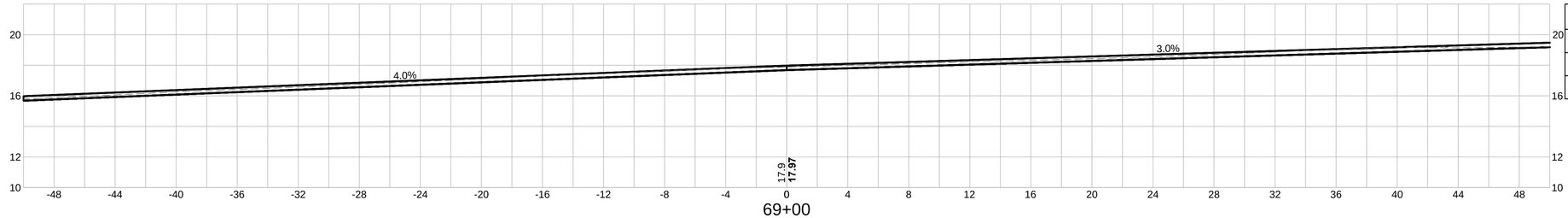
Material(s) at Station 70+50.00		
Material Name	Area	Sum
Cut	0.000	18964.8
Fill	0.000	3774.5



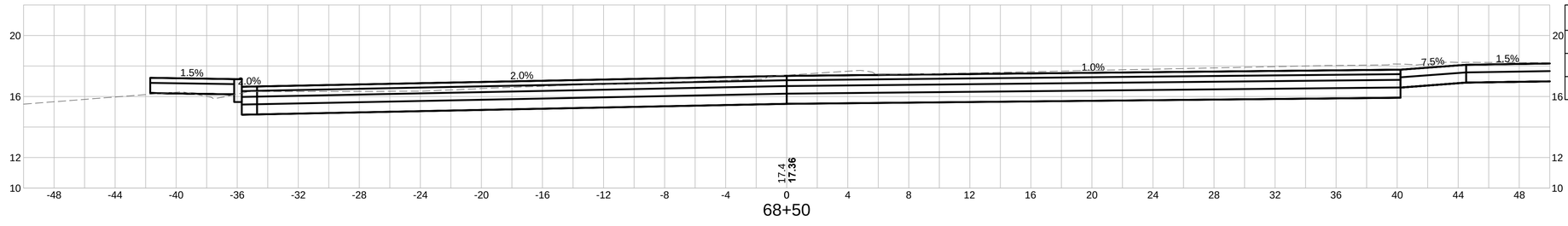
Material(s) at Station 70+00.00		
Material Name	Area	Sum
Cut	0.000	18964.8
Fill	0.000	3774.5



Material(s) at Station 69+50.00		
Material Name	Area	Sum
Cut	29.722	18937.3
Fill	5.366	3769.5



Material(s) at Station 69+00.00		
Material Name	Area	Sum
Cut	63.161	18851.3
Fill	4.682	3760.2



Material(s) at Station 68+50.00		
Material Name	Area	Sum
Cut	147.895	18655.9
Fill	18.834	3738.4

HOR. SCALE IN FEET
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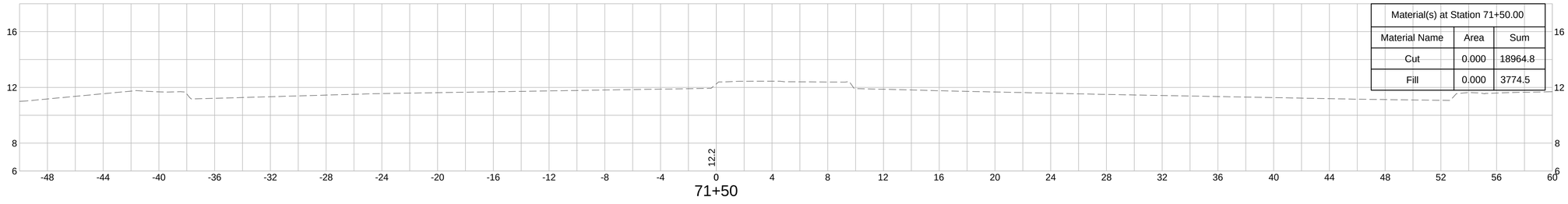
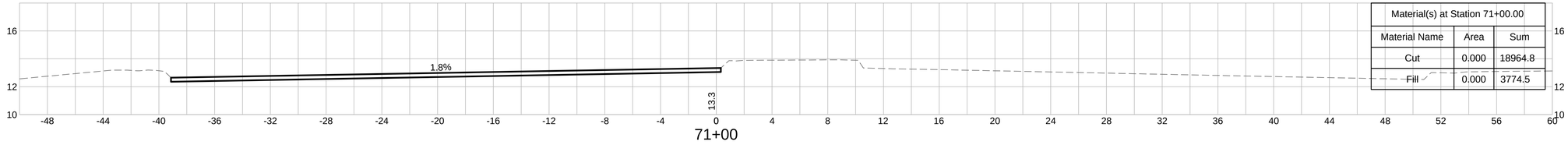
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	207	209
PROJECT FILE NO.	605146		

CANAL STREET CROSS SECTIONS



Material(s) at Station 71+50.00		
Material Name	Area	Sum
Cut	0.000	18964.8
Fill	0.000	3774.5



Material(s) at Station 71+00.00		
Material Name	Area	Sum
Cut	0.000	18964.8
Fill	0.000	3774.5

HOR. SCALE IN FEET
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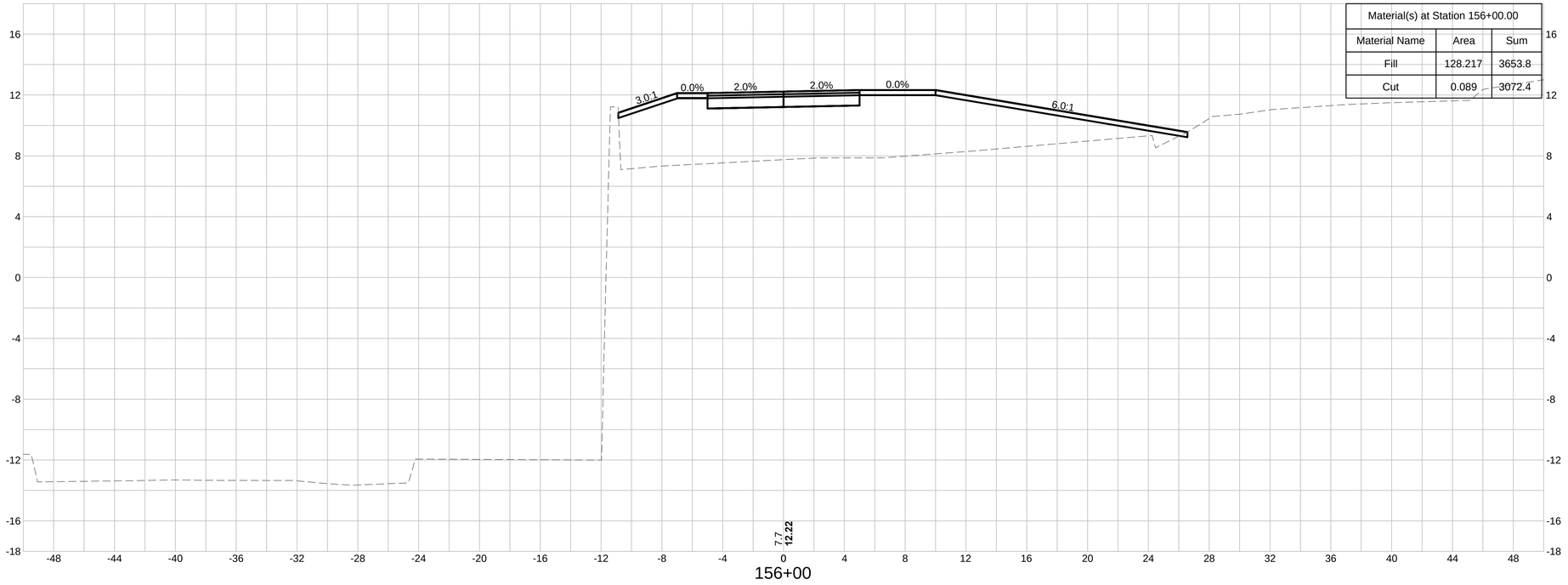
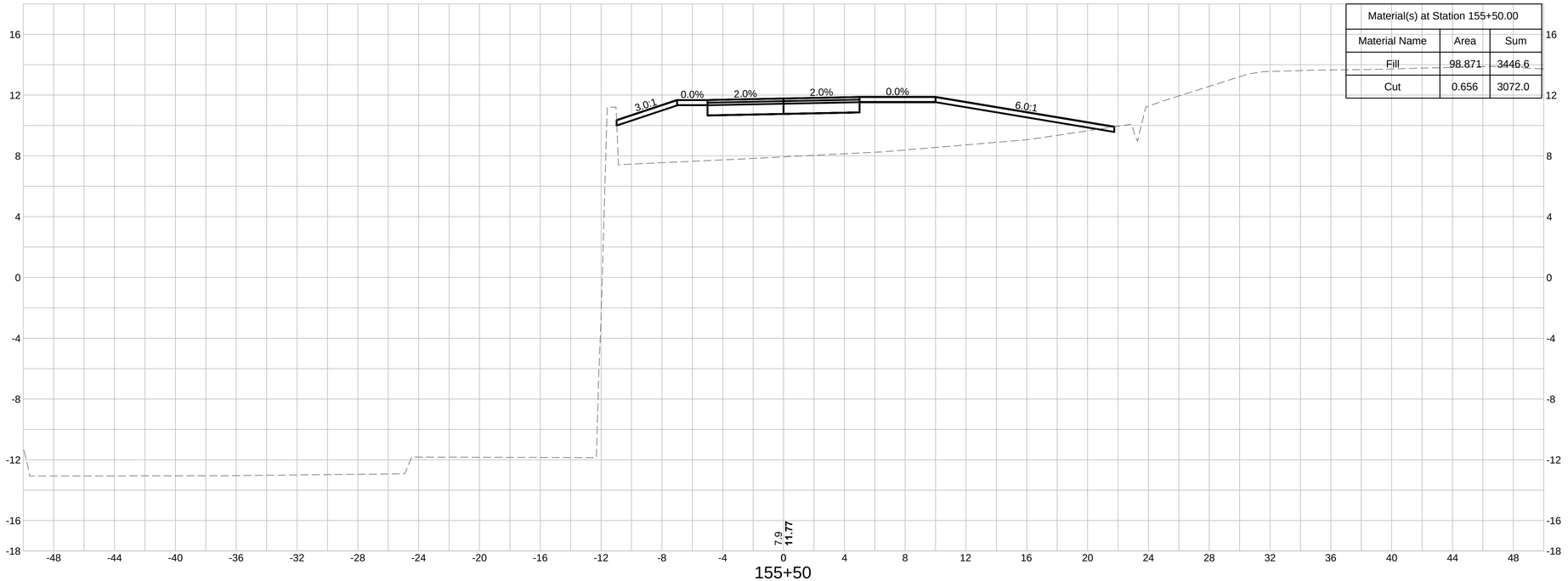
93692 PS&E-2 CROSS SECTIONS.DWG 15-Oct-2015



Material(s) at Station 156+00.00		
Material Name	Area	Sum
Fill	128.217	3653.8
Cut	0.089	3072.4



Material(s) at Station 155+50.00		
Material Name	Area	Sum
Fill	98.871	3446.6
Cut	0.656	3072.0

SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-002S(826)X	208	209
PROJECT FILE NO.	605146		

SHARED USE PATH CROSS SECTIONS

NOTES:

1. FOR SHARED USE PATH CROSS SECTIONS STA 135+00 TO STA 155+00 SEE CANAL STREET CROSS SECTIONS SHEET NO. 192 THROUGH 204.

HOR. SCALE IN FEET
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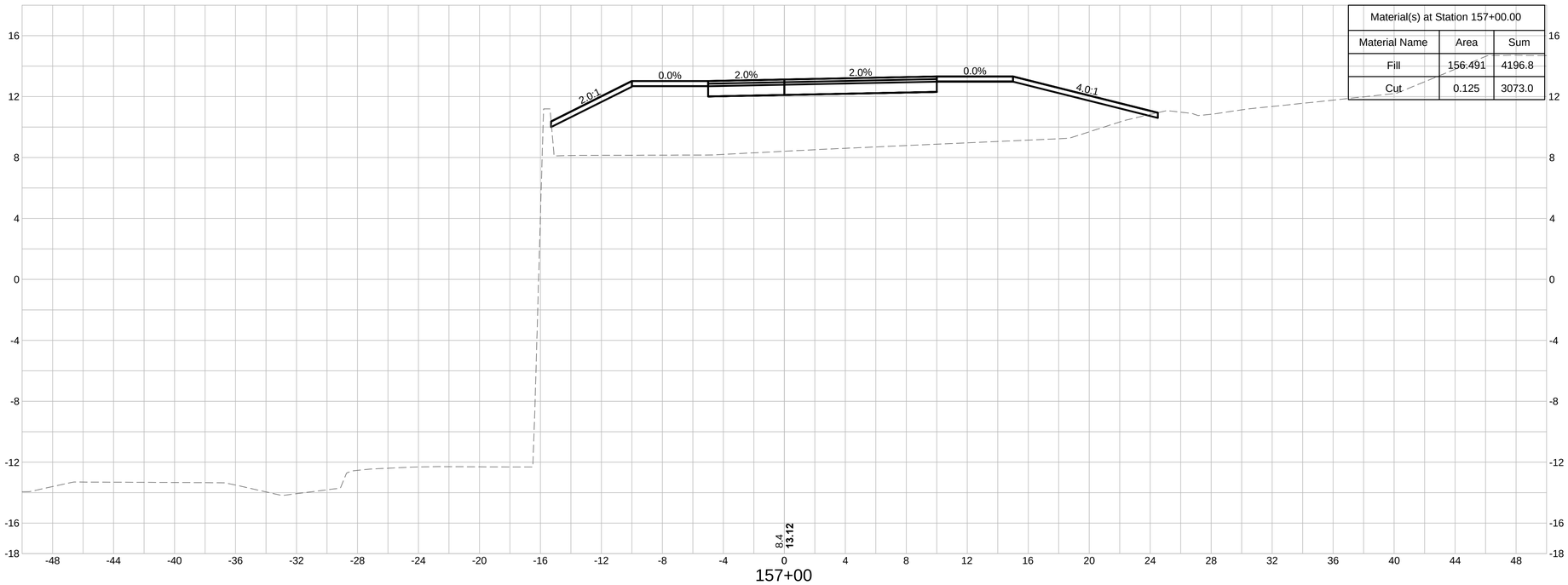
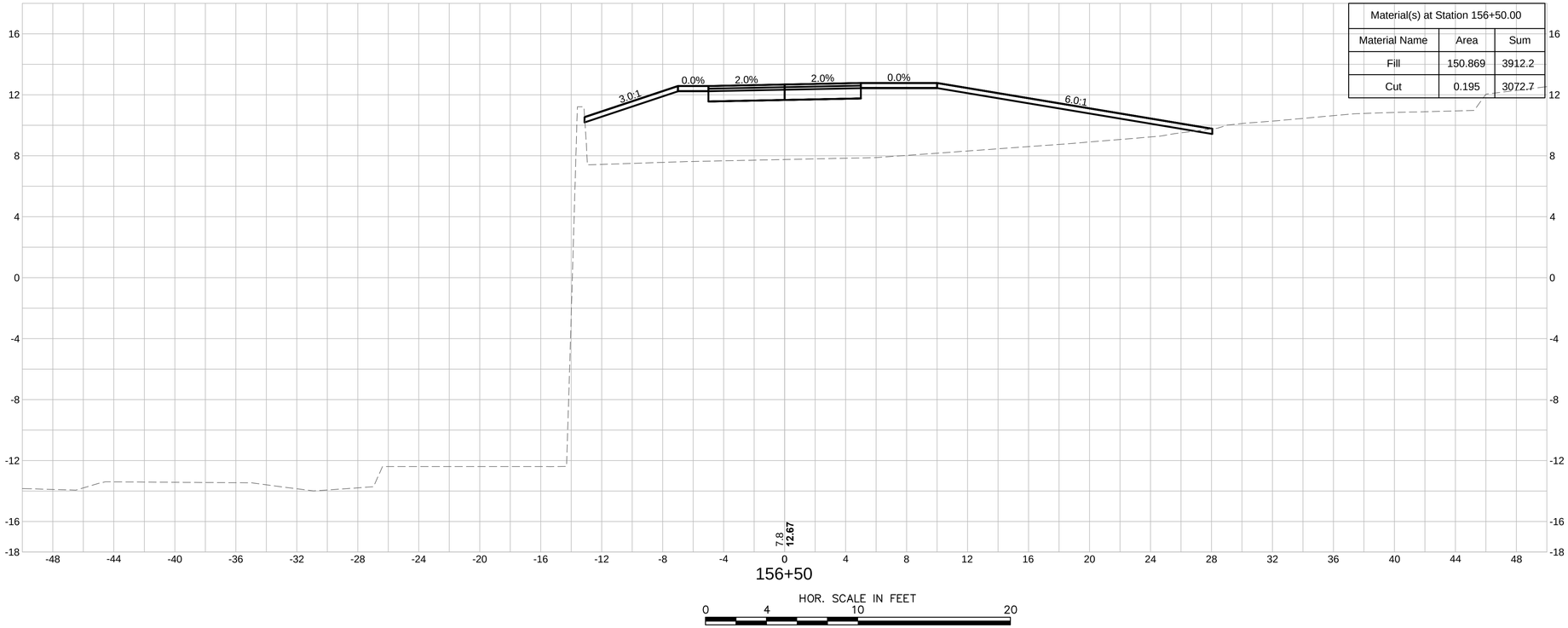
SALEM
CANAL STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	CM/HSI/STP-0025(826)X	209	209
PROJECT FILE NO.	605146		

SHARED USE PATH CROSS SECTIONS



Material(s) at Station 157+00.00		
Material Name	Area	Sum
Fill	156.491	4196.8
Cut	0.125	3073.0



Material(s) at Station 156+50.00		
Material Name	Area	Sum
Fill	150.869	3912.2
Cut	0.195	3072.7

HOR. SCALE IN FEET
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