

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	61
PROJECT FILE NO.		608743	
TITLE SHEET & INDEX			

SAFE ROUTES TO SCHOOL
BATES ELEMENTARY SCHOOL
IN THE CITY OF
SALEM
ESSEX COUNTY

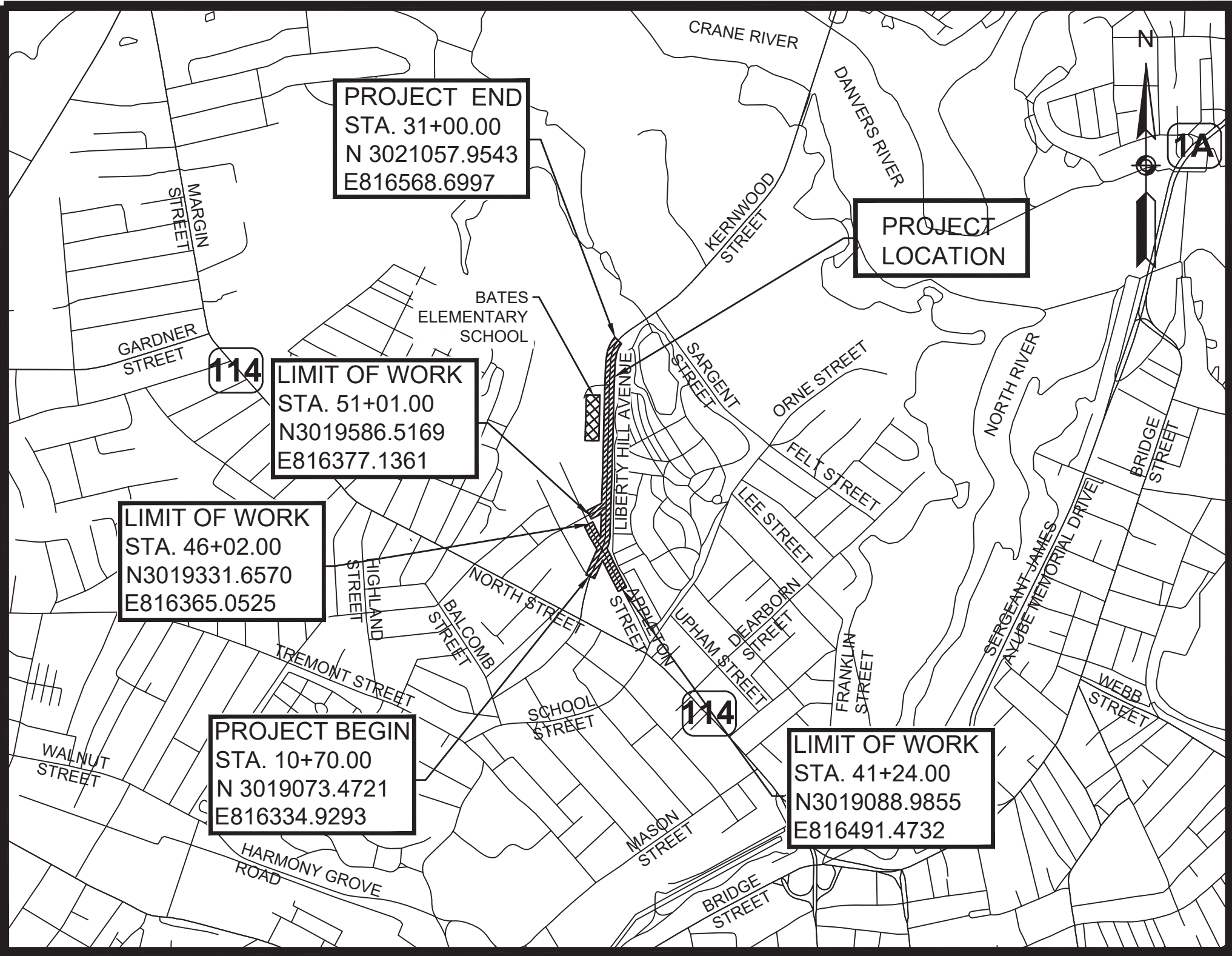
THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED APRIL 1, 2019, THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

FEDERAL AID PROJECT NO. TAP-XXXX(XXX)X

PS&E SUBMITTAL

INDEX

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DESIGN DESIGNATION (LIBERTY HILL AVENUE)

DESIGN SPEED	30 MPH
ADT (2016)	6,137
ADT (2018)	6,260
K	20%
D	66%
T (PEAK HOUR)	15%
T (AVERAGE DAY)	17%
DHV	1,252
DDHV	826
FUNCTIONAL CLASSIFICATION	URBAN ARTERIAL

DATE	DESCRIPTION	REV #
12/31/2019	PS&E SUBMISSION	0
8/19/2019	100% SUBMISSION	0
5/25/2018	25/75% SUBMISSION	0



TOOLE
DESIGN

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR DATE

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

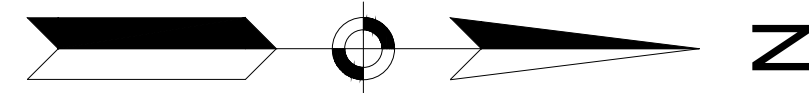
APPROVED

HIGHWAY ADMINISTRATOR DATE

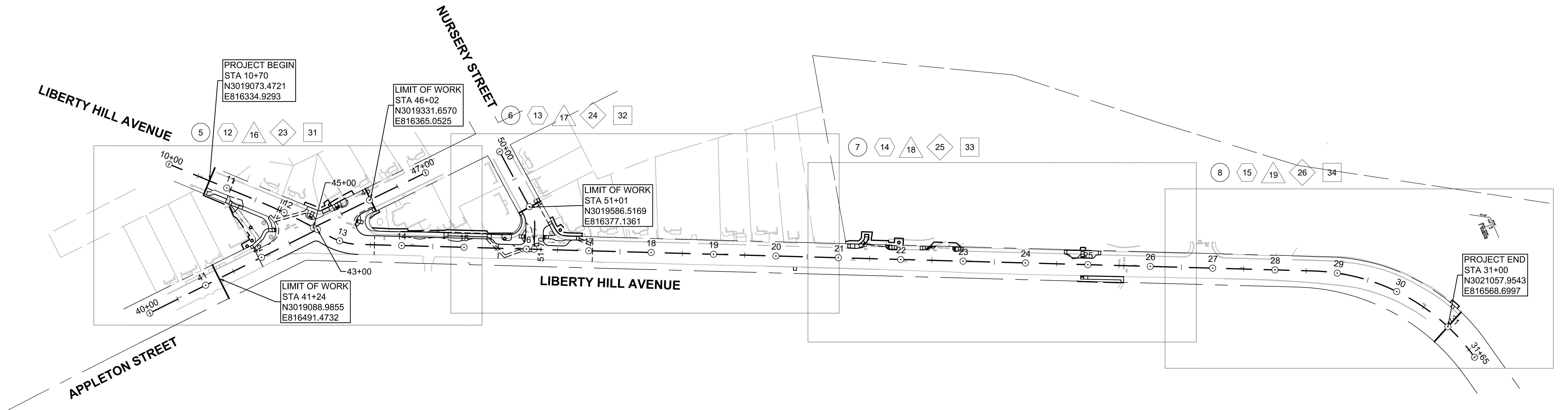
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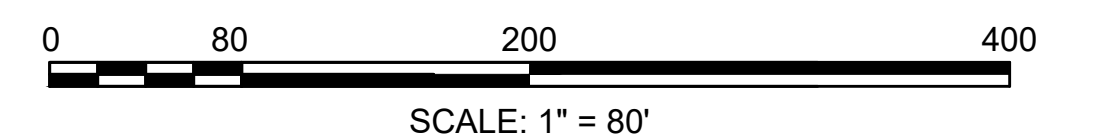
GENERAL SYMBOLS			TRAFFIC SYMBOLS			ABBREVIATIONS					
EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	GENERAL	SALEM BATES ELEMENTARY SCHOOL				
		JERSEY BARRIER			CONTROLLER PHASE ACTUATED	AADT	ANNUAL AVERAGE DAILY TRAFFIC	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
		CATCH BASIN			TRAFFIC SIGNAL HEAD (SIZE AS NOTED)	ABAN	ABANDON	MA	-	2	61
		CATCH BASIN CURB INLET			WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)	A.C.	ASPHALT CONCRETE	PROJECT FILE NO. 608743			
		FLAG POLE			VIDEO DETECTION CAMERA	ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE	LEGEND & ABBREVIATIONS			
		GAS PUMP			MICROWAVE DETECTOR	ADJ	ADJUST TO ELEVATION	ABBREVIATIONS (cont.)			
		MAIL BOX			PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE	APPROX.	APPROXIMATE	GENERAL			
		POST SQUARE			EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT	BC	BOTTOM OF CURB	PWW	PAVED WATER WAY		
		POST CIRCULAR			VEHICULAR SIGNAL HEAD	BD.	BOUND	R	RADIUS OF CURVATURE		
		WELL			VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED	BIT.	BITUMINOUS	RCP	REINFORCED CONCRETE PIPE		
		ELECTRIC HANDHOLE			FLASHING BEACON	BL	BASELINE	R&D	REMOVE AND DISPOSE		
		FENCE GATE POST			PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)	BLDG	BUILDING	RD	ROAD		
		GAS GATE			RAILROAD SIGNAL	BM	BENCHMARK	RDWY	ROADWAY		
		BORING HOLE			SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)	BO	BY OTHERS	REM	REMOVE		
		MONITORING WELL			MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)	BOS	BOTTOM OF SLOPE	RET	RETAIN		
		TEST PIT			HIGH MAST POLE OR TOWER	BR.	BRIDGE	RET WALL	RETAINING WALL		
		HYDRANT			SIGN AND POST	CB	CATCH BASIN	ROW	RIGHT OF WAY		
		LIGHT POLE			SIGN AND POST (2 POSTS)	CBCI	CATCH BASIN WITH CURB INLET	R&R	REMOVE AND RESET		
		COUNTY BOUND			MAST ARM WITH LUMINAIRE	CC	CEMENT CONCRETE	RR	RAILROAD		
		GPS POINT			OPTICAL PRE-EMPTION DETECTOR	CCM	CEMENT CONCRETE MASONRY	R&S	REMOVE AND STACK		
		CABLE MANHOLE			CONTROL CABINET, GROUND MOUNTED	CEM	CEMENT	RT	RIGHT		
		DRAINAGE MANHOLE			CONTROL CABINET, POLE MOUNTED	CI	CURB INLET	SB	STONE BOUND		
		ELECTRIC MANHOLE			FLASHING BEACON CONTROL AND METER PEDESTAL	CIP	CAST IRON PIPE	SHLD	SHOULDER		
		GAS MANHOLE			LOAD CENTER ASSEMBLY	CL	CENTERLINE	SHLO	STATE HIGHWAY LAYOUT LINE		
		MISC MANHOLE			PULL BOX 12"x12" (OR AS NOTED)	CLF	CHAIN LINK FENCE	SMH	SEWER MANHOLE		
		SEWER MANHOLE			ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)	CMP	CORRUGATED METAL PIPE	SSD	STOPPING SIGHT DISTANCE		
		TELEPHONE MANHOLE			TRAFFIC SIGNAL CONDUIT	CO.	COUNTY	ST	STREET		
		WATER MANHOLE				CONC	CONCRETE	STA	STATION		
		MASSACHUSETTS HIGHWAY BOUND				CONT	CONTINUOUS	SW	SIDEWALK		
		MONUMENT				CONST	CONSTRUCTION	T	TANGENT DISTANCE OF CURVE/TRUCK %		
		STONE BOUND				CR GR	CROWN GRADE	TAN	TANGENT		
		TOWN OR CITY BOUND				CSP	CORRUGATED STEEL PIPE	TC	TOP OF CURB		
		TRAVERSE OR TRIANGULATION STATION				DHV	DESIGN HOURLY VOLUME	TEMP	TEMPORARY		
		TROLLEY POLE OR GUY POLE				DI	DROP INLET	TOS	TOP OF SLOPE		
		TRANSMISSION POLE				DIA	DIAMETER	TOW	TOP OF WATER		
		UTILITY POLE W/ FIREBOX				DIP	DUCTILE IRON PIPE	TYP	TYPICAL		
		UTILITY POLE WITH DOUBLE LIGHT				DW	STEADY DON'T WALK - PORTLAND ORANGE	UP	UTILITY POLE		
		UTILITY POLE W / 1 LIGHT				DWY	DRIVEWAY	VAR	VARIES		
		UTILITY POLE				ELEV (or EL.)	ELEVATION	VC	VERTICAL CURVE		
		BUSH				EMB	EMBANKMENT	VERT	VERTICAL		
		TREE				EOP	EDGE OF PAVEMENT	VGC	VERTICAL GRANITE CURB		
		STUMP				EXC	EXCAVATION	WCR	WHEEL CHAIR RAMP		
		SWAMP / MARSH				EXIST (or EX)	EXISTING	WG	WATER GATE		
		WATER GATE				F&C	FRAME AND COVER	WIP	WROUGHT IRON PIPE		
		PARKING METER				F&G	FRAME AND GRATE	WM	WATER METER/WATER MAIN		
		OVERHEAD CABLE/WIRE				FDN.	FOUNDATION	WSO	WATER SHUT OFF VALVE		
		CURBING				FLDSTN	FIELDSTONE	X-SECT	CROSS SECTION		
		CONTOURS (ON-THE-GROUND SURVEY DATA)				FYG	FLUORESCENT YELLOW- GREEN	TRAFFIC SIGNAL ABBREVIATIONS			
		CONTOURS (PHOTOGRAMMETRIC DATA)				GAR	GARAGE	CAB	CABINET		
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)				GD	GROUND	CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT		
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)				GG	GAS GATE	DW	STEADY UPRAISED HAND		
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)				GI	GUTTER INLET	FDW	FLASHING UPRAISED HAND		
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)				GIP	GALVANIZED IRON PIPE	FR	FLASHING CIRCULAR RED		
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)				GRAN	GRANITE	FRL	FLASHING RED LEFT ARROW		
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)				GRAV	GRAVEL	FRR	FLASHING RED RIGHT ARROW		
		BALANCED STONE WALL				GRD	GUARD	FY	FLASHING CIRCULAR YELLOW		
		GUARD RAIL - STEEL POSTS				HDW	HEADWALL	FYL	FLASHING YELLOW LEFT ARROW		
		GUARD RAIL - WOOD POSTS				HMA	HOT MIX ASPHALT	FYR	FLASHING YELLOW RIGHT ARROW		
		CHAIN LINK OR METAL FENCE				HOR	HORIZONTAL	G	STEADY CIRCULAR GREEN		
		WOOD FENCE				HYD	HYDRANT	GL	STEADY GREEN LEFT ARROW		
		HAY BALES/SILT FENCE				INV	INVERT	GR	STEADY GREEN RIGHT ARROW		
		TREE LINE				JCT	JUNCTION	GSL	STEADY GREEN SLASH LEFT ARROW		
		SAWCUT LINE				L	LENGTH OF CURVE	GSR	STEADY GREEN SLASH RIGHT ARROW		
		TOP OR BOTTOM OF SLOPE				LB	LEACH BASIN	GV	STEADY GREEN VERTICAL ARROW		
		EDGE OF PAVEMENT				LP	LIGHT POLE	OL	OVERLAP		
		LIMIT OF MICROMILLING AND OVERLAY				LT	LEFT	PED	PEDESTRIAN		
		BANK OF RIVER OR STREAM				MAX	MAXIMUM	PTZ	PAN, TILT, ZOOM		
		BORDER OF WETLAND				MB	MAILBOX	R	STEADY CIRCULAR RED		
		100 FT WETLAND BUFFER				MH	MANHOLE	RL	STEADY RED LEFT ARROW		
		200 FT RIVERFRONT BUFFER				MHB	MASSACHUSETTS HIGHWAY BOUND	RR	STEADY RED RIGHT ARROW		
		STATE HIGHWAY LAYOUT				MIN	MINIMUM	TR SIG	TRAFFIC SIGNAL		
		TOWN OR CITY LAYOUT				NIC	NOT IN CONTRACT	TSC	TRAFFIC SIGNAL CONDUIT		
		COUNTY LAYOUT				NO.	NUMBER	W	STEADY WALKING PERSON		
		RAILROAD SIDELINE				PC	POINT OF CURVATURE	Y	STEADY CIRCULAR YELLOW		
		TOWN OR CITY BOUNDARY LINE				PCC	POINT OF COMPOUND CURVATURE	YL	STEADY YELLOW LEFT ARROW		
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE				P.G.L.	PROFILE GRADE LINE				
		EASEMENT				PI	POINT OF INTERSECTION				
						POC	POINT ON CURVE				
						POT	POINT ON TANGENT				
						PRC	POINT OF REVERSE CURVATURE				
						PROJ	PROJECT				
						PROP	PROPOSED				
						PSB	PLANTABLE SOIL BORROW				
						PT	POINT OF TANGENCY				
						PVC	POINT OF VERTICAL CURVATURE				
						PVI	POINT OF VERTICAL INTERSECTION				
						PVMT	PAVEMENT				
						PVT	POINT OF VERTICAL TANGENCY				

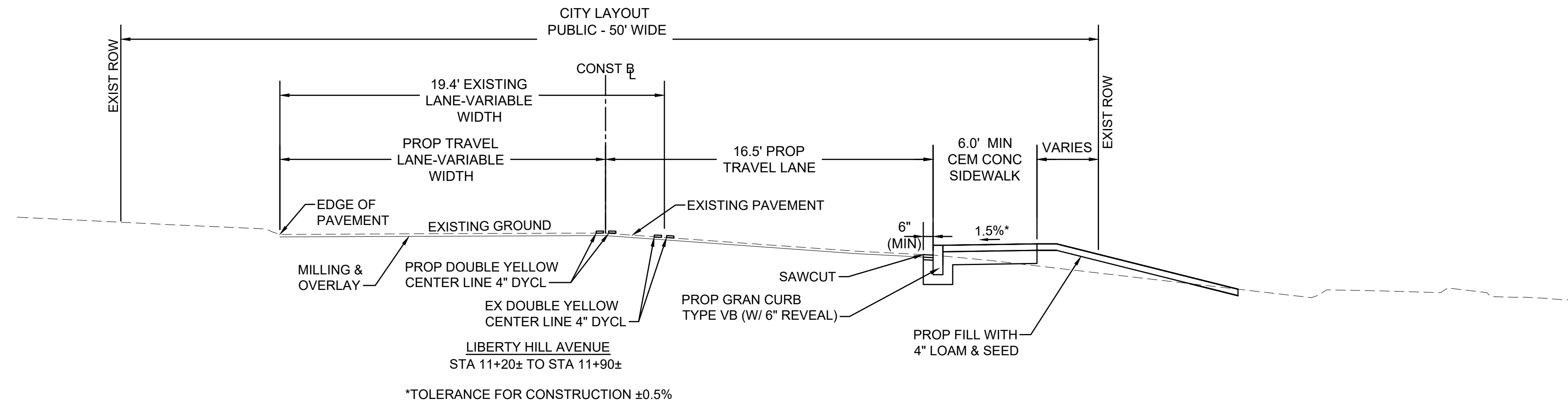
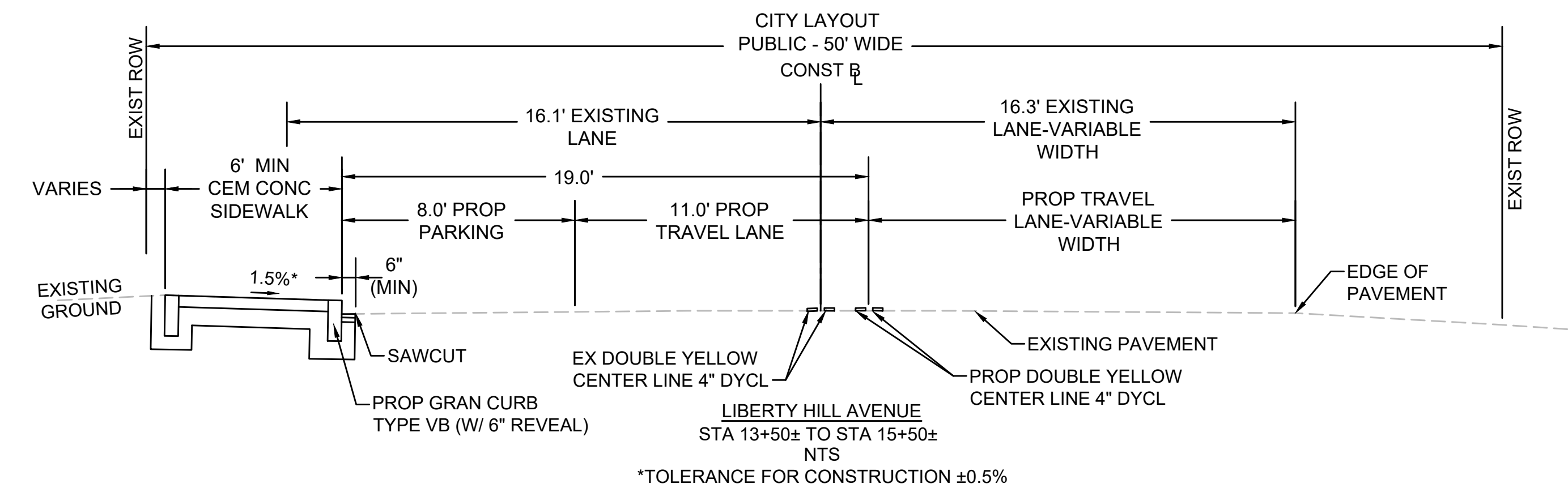
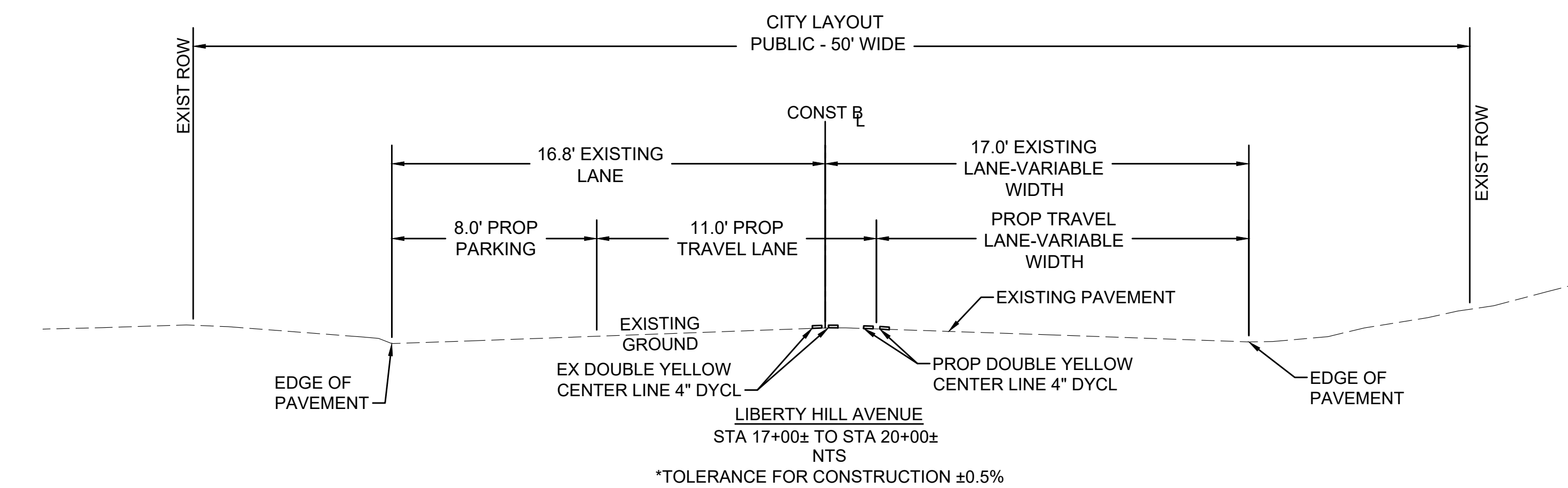
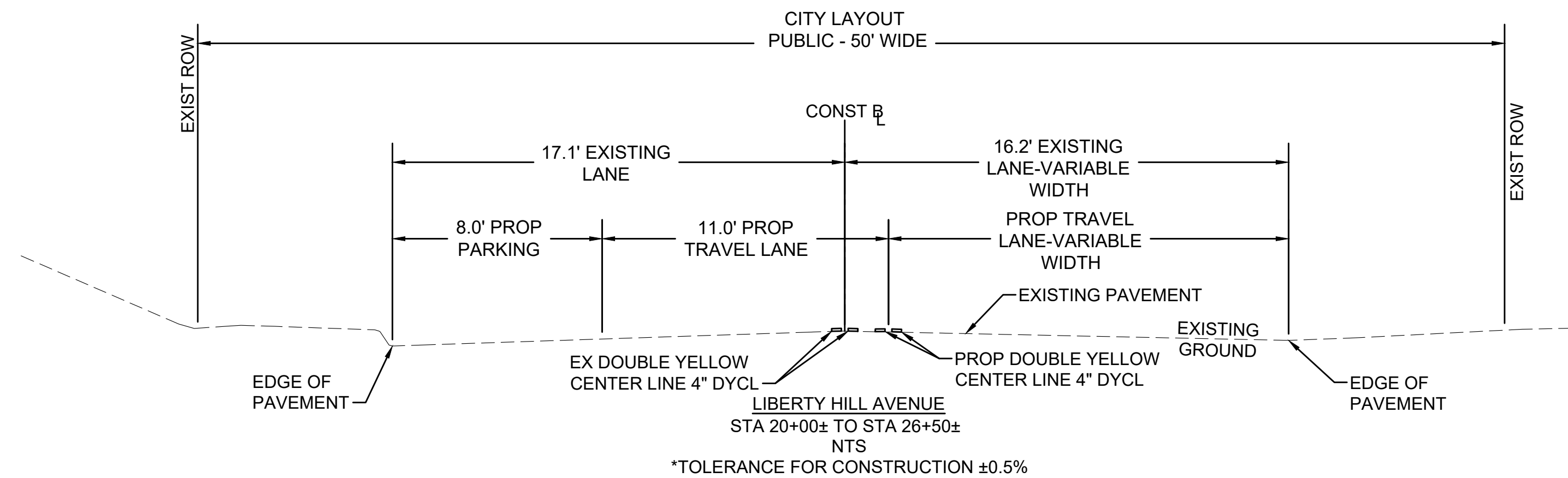


SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	61
PROJECT FILE NO.		608743	
KEY PLAN			



LEGEND	
(X)	CONSTRUCTION PLAN
(X)	CURB TIE PLAN
(X)	GRADING PLAN
(X)	TRAFFIC SIGNS & PAVEMENT MARKINGS
(X)	DRAINAGE & UTILITY PLAN





GENERAL PAVEMENT NOTE:

1. ANY EXISTING GRAVEL BASE DEEMED SUITABLE FOR REUSE BY THE RESIDENT ENGINEER SHALL REMAIN AND BE COMPACTED. ADD GRAVEL BORROW TYPE b AS REQUIRED.
2. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED BETWEEN ALL ASPHALT SURFACES AND SAWCUT JOINTS BEFORE PAVING. HMA JOINT SEALANT SHALL BE APPLIED TO ALL COLD JOINTS (LONGITUDINAL AND TRANSVERSE) BEFORE PAVING SURFACE COURSE. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT A RATE OF 0.05 GAL/SY, EXCEPT OVER MILLED AND CEMENT CONCRETE SURFACES, WHERE THE APPLICATION RATE SHALL BE 0.07 GAL/SY. ALL SURFACES SHALL BE CLEAN OF ALL ORGANICS, DEBRIS, AND SAND PRIOR TO PAVING.
3. ASPHALT EMULSION FOR TACK COAT SHALL BE GRADE RS-1H AND SHALL MEET THE REQUIREMENTS OF AASHTO M 140.
4. ALL HMA SUPPLIED SHALL BE MODIFIED USING WARM MIX ADDITIVE IN ACCORDANCE WITH SECTION 450.

CEMENT CONCRETE SIDEWALK/WHEELCHAIR RAMP

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

BASE: 8" GRAVEL BORROW TYPE B

CEMENT CONCRETE AT DRIVEWAY

SURFACE: 6" CEMENT CONCRETE
(4000 PSI, 3/4", 610, AIR-ENTRAINED)

8" GRAVEL BORROW TYPE B

HOT MIX ASPHALT (HMA) FULL DEPTH

SURFACE: 1.5" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
INTERMEDIATE: 2.5" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)

BASE: 6" CEMENT CONCRETE BASE COURSE OVER
(HIGH EARLY STRENGTH)

SUB-BASE 8" GRAVEL BORROW TYPE B
(SEE GENERAL PAVEMENT NOTE 1)

HOT MIX ASPHALT (HMA) SIDEWALK

SURFACE: 1.0" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
1.5" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5)

BASE: 8" GRAVEL BORROW TYPE B

MILLING & OVERLAY SURFACE COURSE

SURFACE: 1.5" SUPERPAVE SURFACE COURSE (SSC-9.5)
PAVEMENT MILLING 1.5" MICROMILLING

FULL DEPTH PAVEMENT CONSTRUCTION FOR UTILITY TRENCH

SURFACE: 1.0" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER
5.50" SUPERPAVE INTERMEDIATE COURSE 19.0 (SIC-19.0)
PLACED IN TWO LAYERS
BASE: 12" GRAVEL BORROW TYPE B

HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

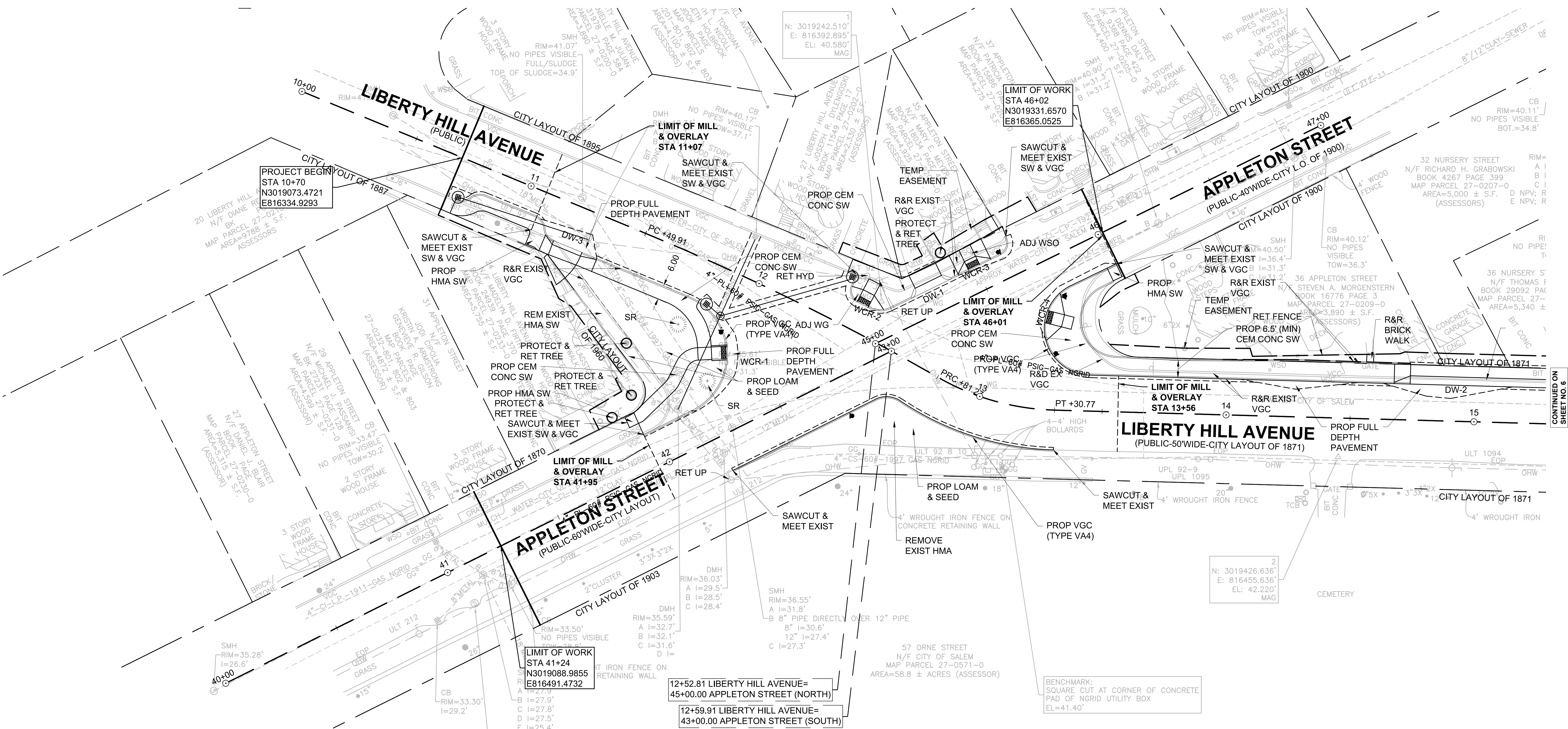
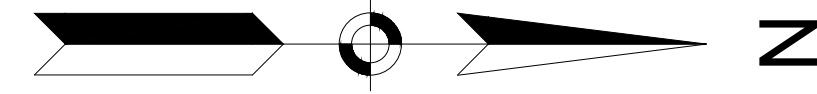
DRAINAGE DETAILS

SEE SHEET 31

SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	61
PROJECT FILE NO.		608743	

CONSTRUCTION PLANS



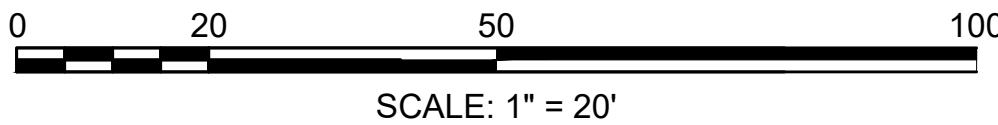
CONSTRUCTION NOTES:

- EXISTING CONDITIONS INFORMATION PLAN BY NITSCH ENGINEERING SURVEY CONSULTANTS, BOSTON MASSACHUSETTS DATED NOVEMBER 2017. HORIZONTAL DATUM = NAD83 (MASSACHUSETTS STATE PLANE COORDINATES). VERTICAL DATUM = NAVD88
- ALL EXISTING STATE, COUNTY, CITY, AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED. THE CONTRACTOR WILL BE RESPONSIBLE FOR PRESERVING ALL EXISTING PROPERTY PINS AND HIGHWAY BOUNDS AND WILL REPLACE ANY PROPERTY PINS AND HIGHWAY BOUNDS THAT ARE DISPLACED DURING CONSTRUCTION TO THEIR LOCATION JUST PRIOR TO CONSTRUCTION.
- THE TERM "MEET EXIST" MEANS TO MEET BOTH THE EXISTING ALIGNMENT AND ELEVATION.
- AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 3'-0" SHALL BE MAINTAINED PAST ALL OBSTRUCTIONS FOR THE PROPOSED CONDITION (UTILITY POLES, SIGNS, MAILBOXES, ALONG DRIVEWAY OPENINGS, ETC.)
- PROPOSED GRANITE TRANSITION CURBING SHALL BE USED AT ALL WHEELCHAIR RAMPS TO MEET EXISTING PAVEMENT WHEN REQUIRED.
- ADJUST ALL MANHOLES, HANDHOLES, AND OTHER SURFACE STRUCTURES WITHIN THE PROPOSED LIMIT OF WORK.

LEGEND:

- WCR-# WHEELCHAIR RAMP IDENTIFIER
- DW-# DRIVEWAY IDENTIFIER

PROPOSED PLANTING TABLE						
ABBREVIATION	SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
SR		2	SYRINGA RETICULATA	JAPANESE LILAC TREE	2"-2.5"	



HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

WATER SUPPLY ALTERATIONS

NONE

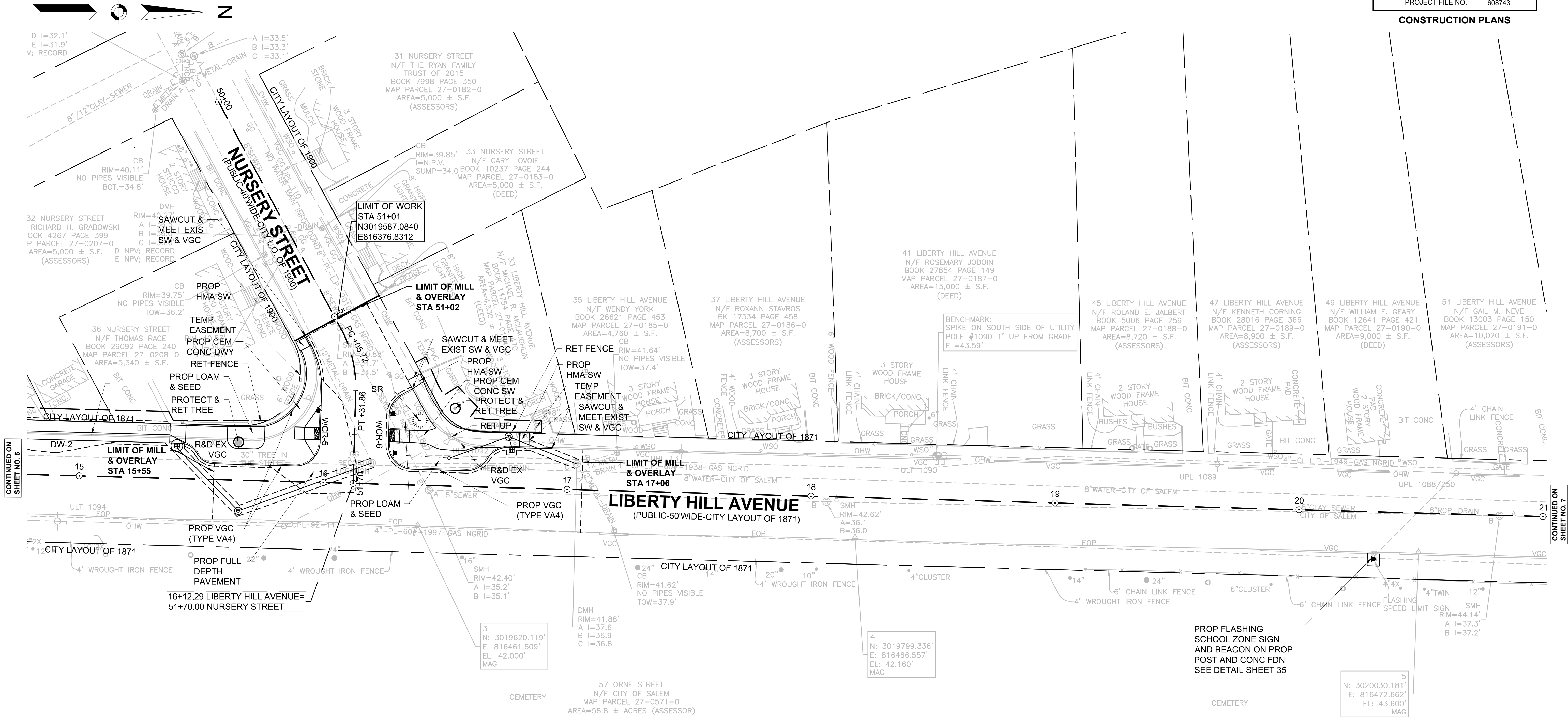
DRAINAGE DETAILS

SEE SHEET 32

SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	61
PROJECT FILE NO.		608743	

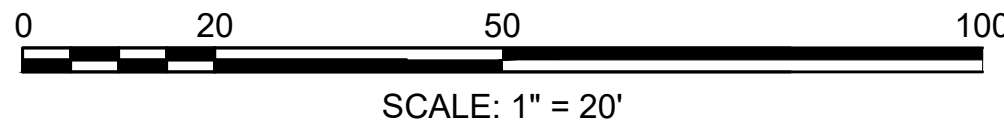
CONSTRUCTION PLANS



PROPOSED PLANTING TABLE						
ABBREVIATION	SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
SR		1	SYRINGA RETICULATA	JAPANESE LILAC TREE	20-30 FEET	

LEGEND:

- WCR-# WHEELCHAIR RAMP IDENTIFIER
DW-# DRIVEWAY IDENTIFIER



HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

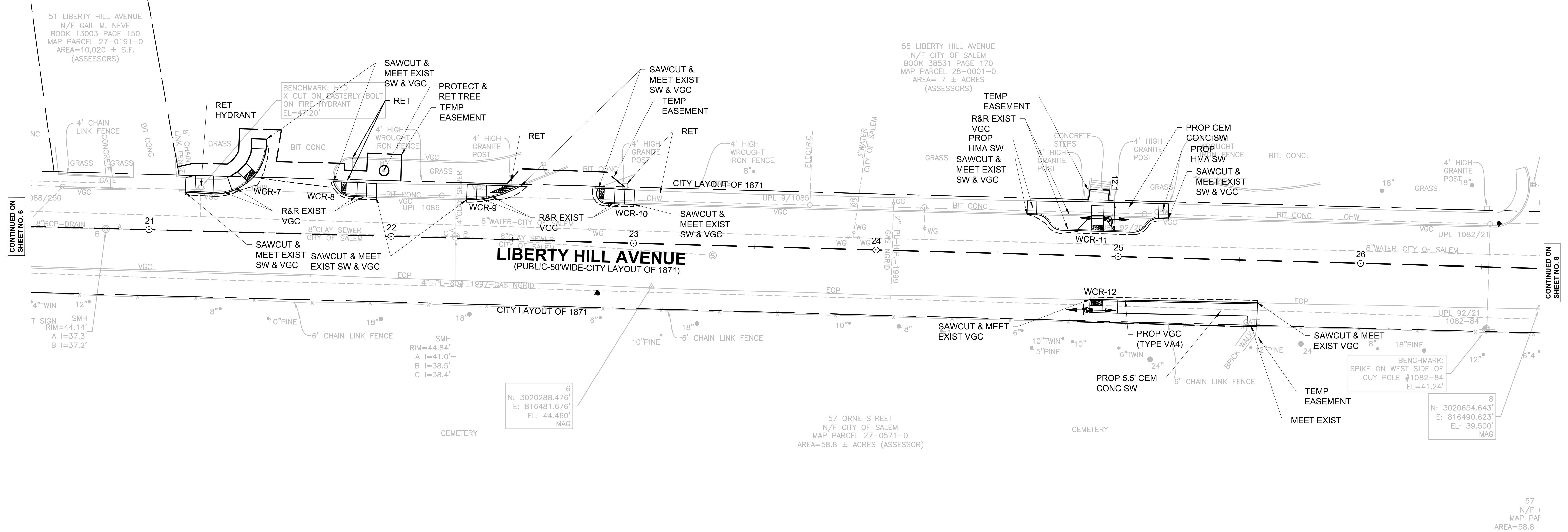
WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 33

SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	61
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CONSTRUCTION PLANS			

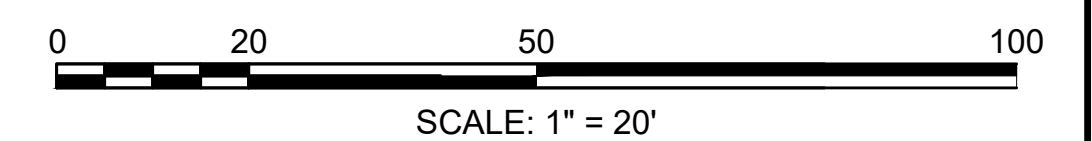


NOTES:

- CONTRACTOR SHALL CUT DIAGONAL DETECTABLE WARNING PANELS ON WCR-#9 TO MATCH AS SHOWN ON PLANS.

LEGEND:

WCR-# WHEELCHAIR RAMP IDENTIFIER
DW-# DRIVEWAY IDENTIFIER



HIGHWAY GUARD DETAILS

NONE

TRAFFIC SIGNAL CONDUIT

NONE

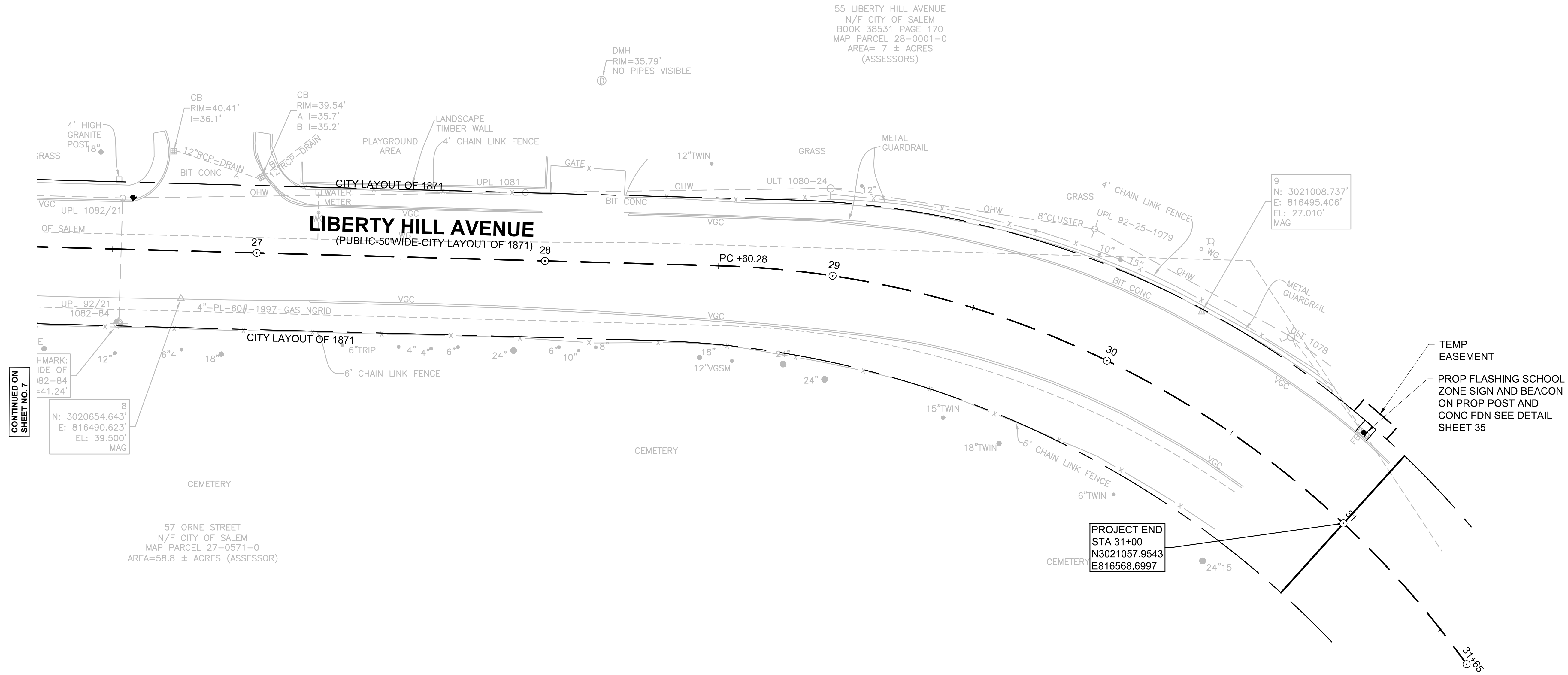
WATER SUPPLY ALTERATIONS

NONE

DRAINAGE DETAILS

SEE SHEET 34

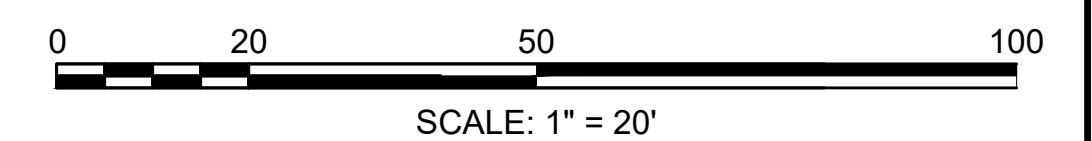
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CONSTRUCTION PLANS			



LEGEND:

WCR-# WHEELCHAIR RAMP IDENTIFIER

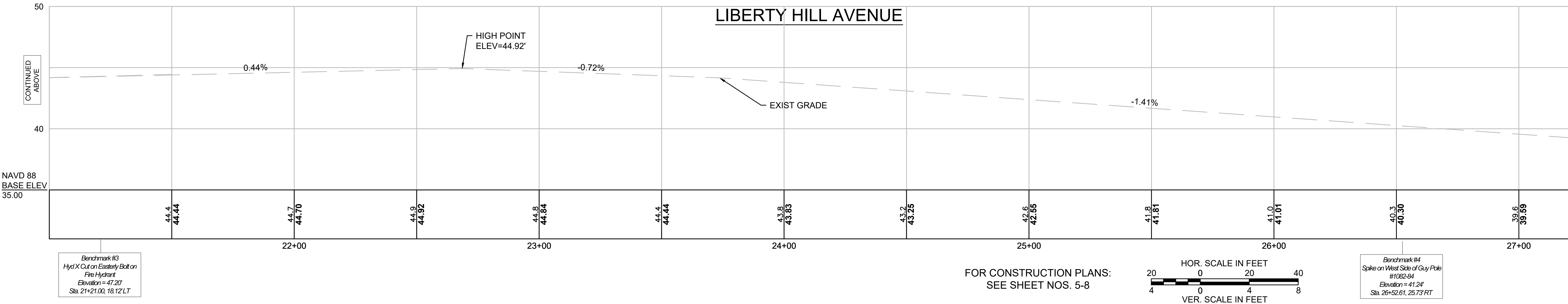
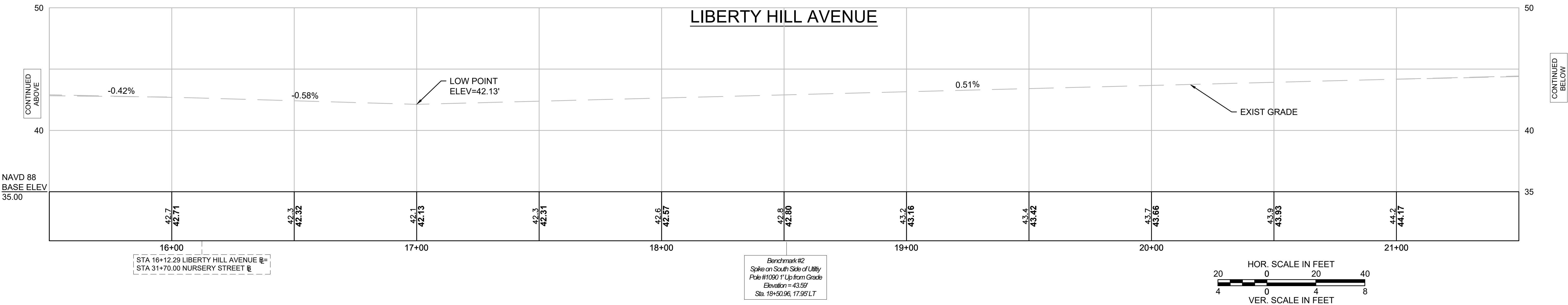
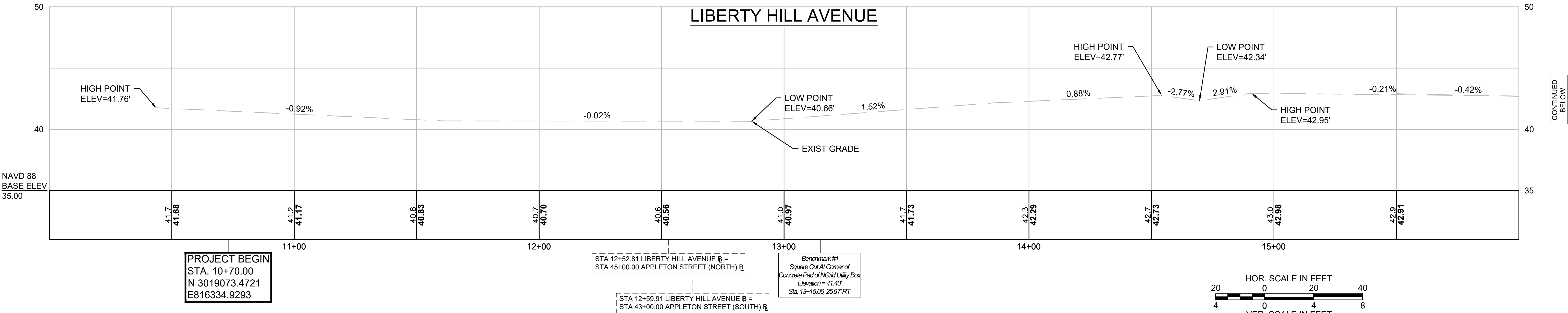
DW-# DRIVEWAY IDENTIFIER



SALEM
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MA	-	9	61
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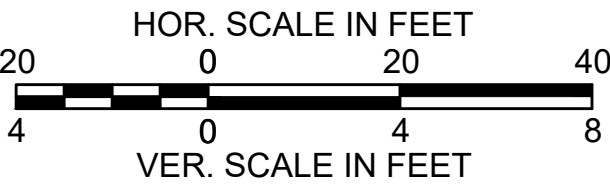
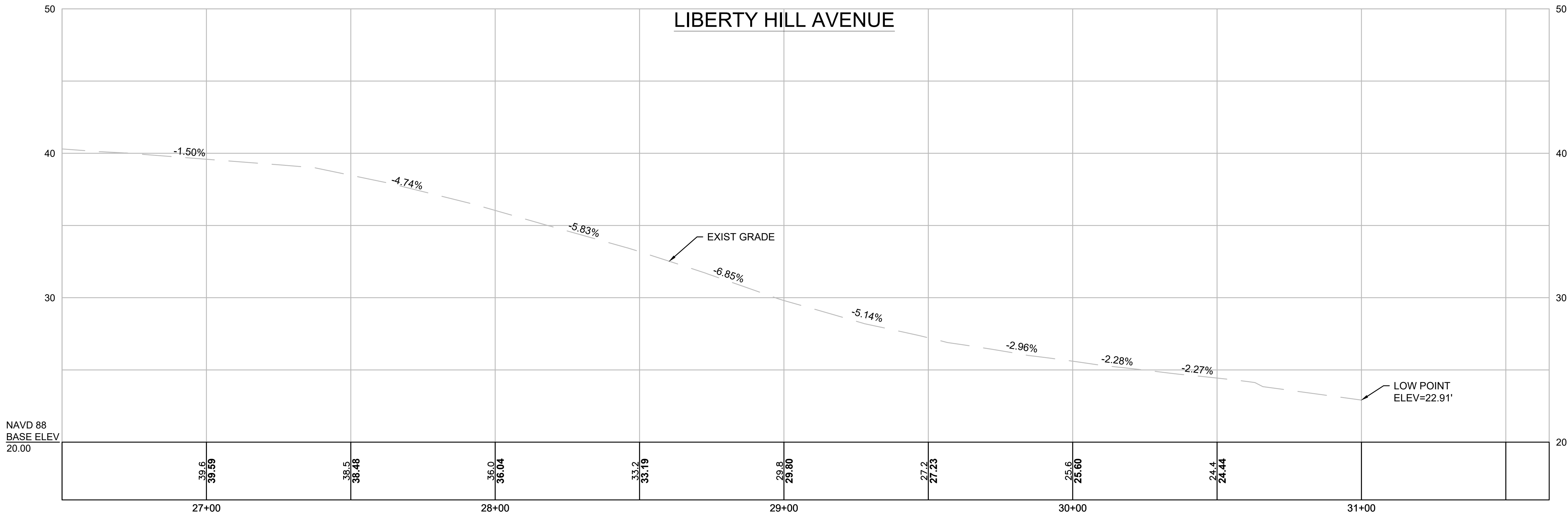
PROFILE - LIBERTY HILL AVENUE



SALEM
BATES ELEMENTARY SCHOOL

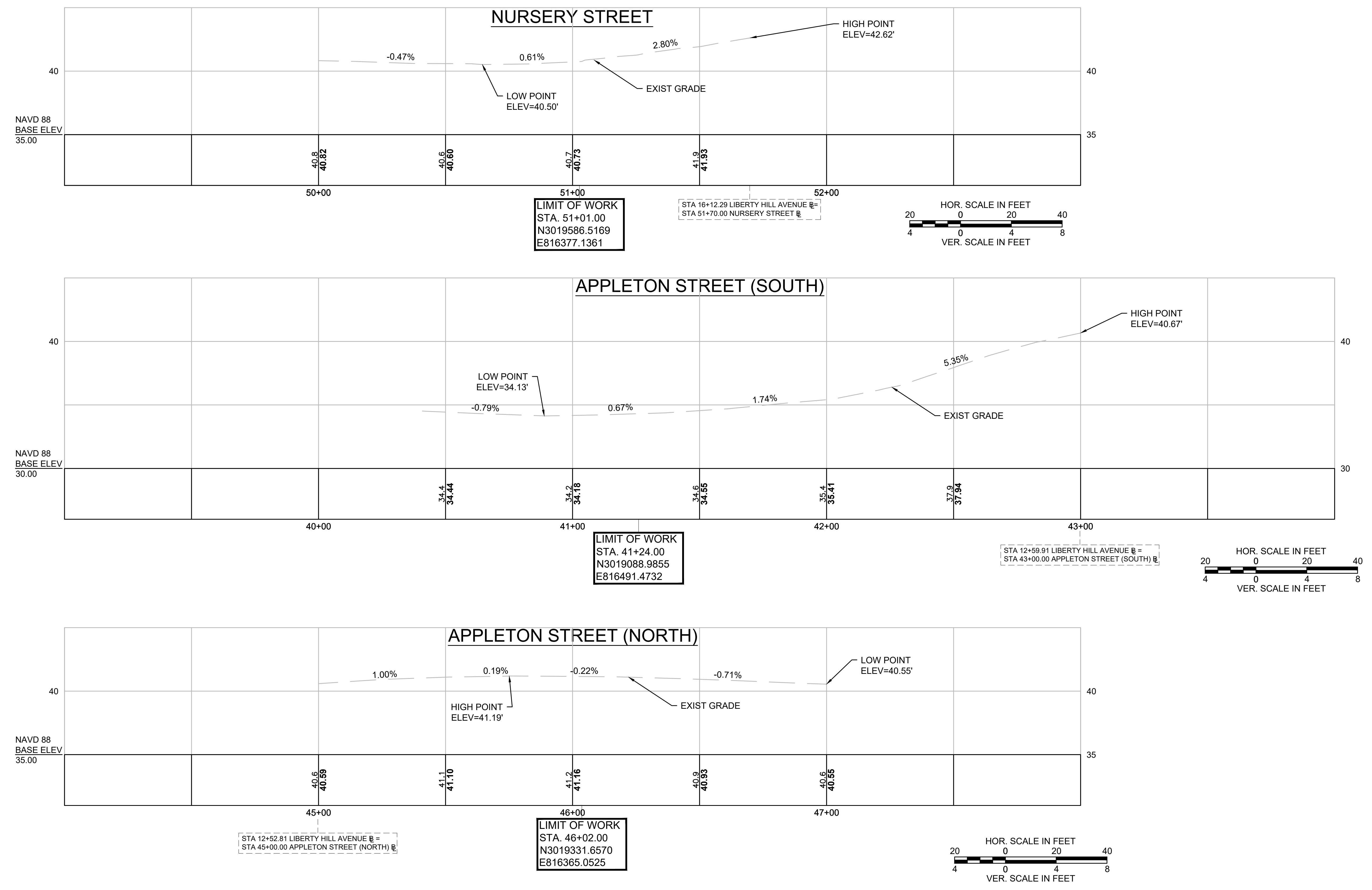
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MA	-	10	61
PROJECT FILE NO.		608743	

PROFILE - LIBERTY HILL AVENUE

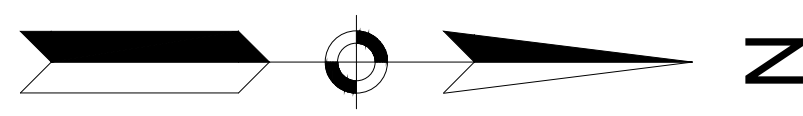


PROJECT END
STA. 31+00.00
N 3021057.9543
E816568.6997

FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 7-8

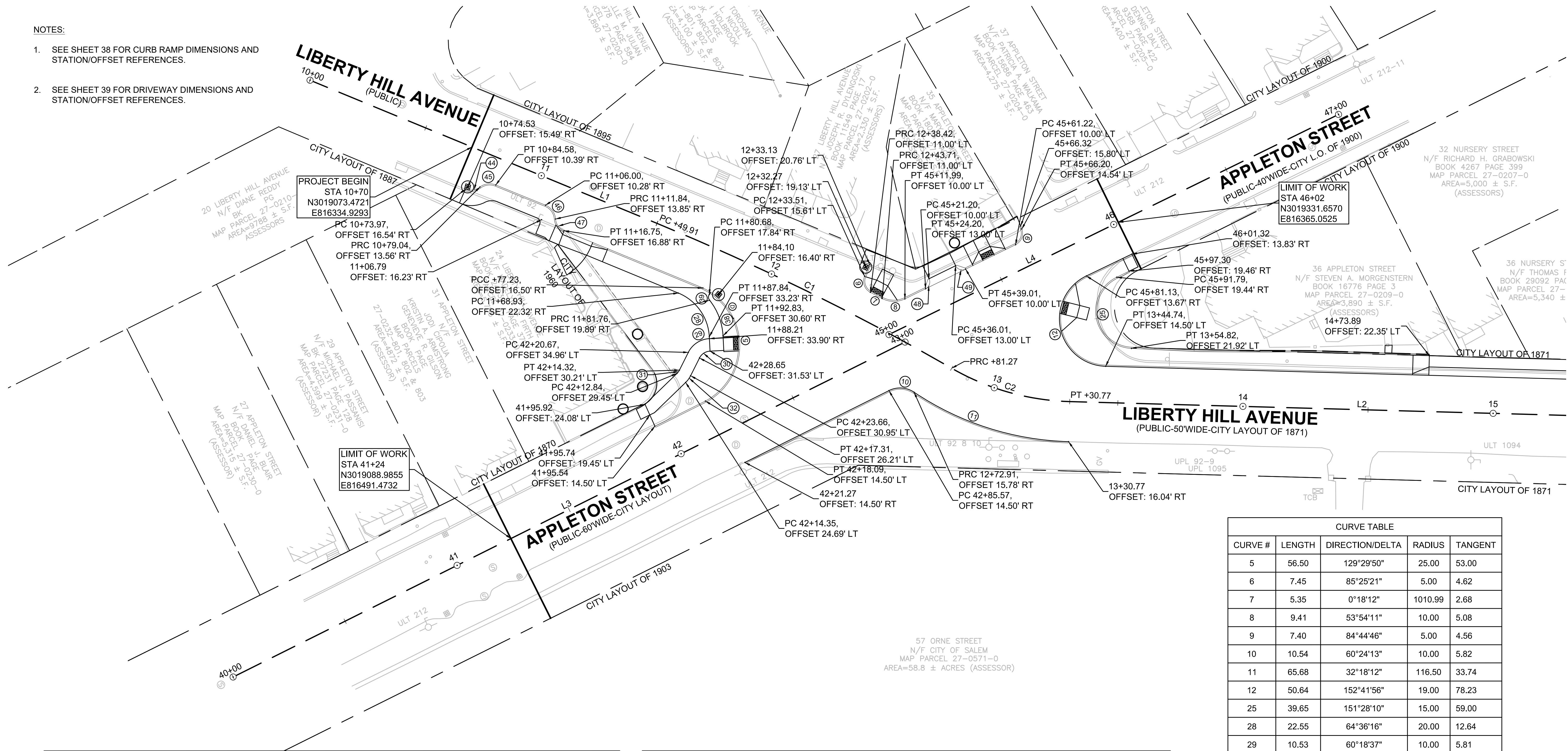


FOR CONSTRUCTION PLANS:
SEE SHEET NOS. 5-6



NOTES:

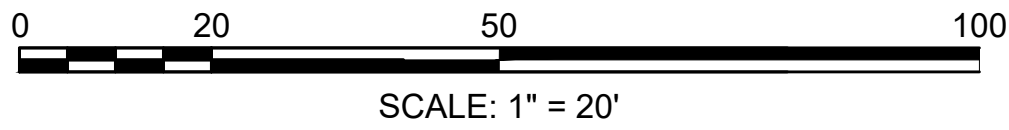
- SEE SHEET 38 FOR CURB RAMP DIMENSIONS AND STATION/OFFSET REFERENCES.
- SEE SHEET 39 FOR DRIVEWAY DIMENSIONS AND STATION/OFFSET REFERENCES.



LIBERTY HILL AVENUE CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L1	10+00.00	3019008.759	816308.247		N22°26'00"E 149.91'	11+49.91	3019147.328	816365.456
C1	11+49.91	3019147.328	816365.456	R=1000.00' Δ=7°31'34" L=131.36' T=65.77'		12+81.27	3019265.107	816423.401
C2	12+81.27	3019265.107	816423.401	R=100.00' Δ=28°21'49" L=49.50' T=25.27'		13+30.77	3019312.261	816436.725
L2	13+30.77	3019312.261	816436.725		N1°35'45"E 1529.50'	28+60.28	3020841.171	816479.319
C27	28+60.28	3020841.171	816479.319	R=330.00' Δ=52°54'28" L=304.73' T=164.20'		31+65.00	3021100.651	816617.576

APPLETON STREET (SOUTH) CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L3	40+00.00	3018978.018	816546.810		N26°30'15"W 300.00'	43+00.00	3019246.487	816412.932

APPLETON STREET (NORTH) CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L4	45+00.00	3019240.051	816409.921		N26°05'43"W 200.00'	47+00.00	3019419.664	816321.947



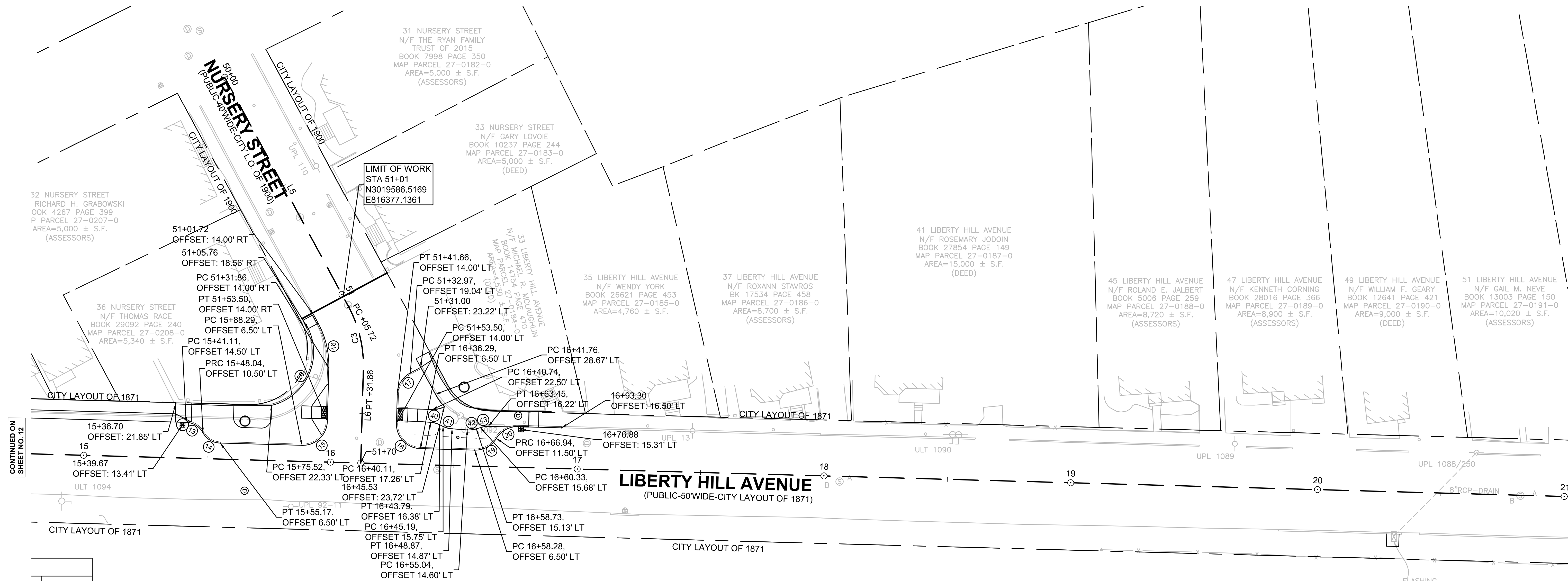
CURVE TABLE				
CURVE #	LENGTH	DIRECTION/DELTA	RADIUS	TANGENT
5	56.50	129°29'50"	25.00	53.00
6	7.45	85°25'21"	5.00	4.62
7	5.35	0°18'12"	1010.99	2.68
8	9.41	53°54'11"	10.00	5.08
9	7.40	84°44'46"	5.00	4.56
10	10.54	60°24'13"	10.00	5.82
11	65.68	32°18'12"	116.50	33.74
12	50.64	152°41'56"	19.00	78.23
25	39.65	151°28'10"	15.00	59.00
28	22.55	64°36'16"	20.00	12.64
29	10.53	60°18'37"	10.00	5.81
30	5.26	60°18'37"	5.00	2.90
31	1.67	19°10'16"	5.00	0.84
32	3.35	19°10'16"	10.00	1.69
38	15.45	35°24'06"	25.00	7.98
39	2.46	70°30'03"	2.00	1.41
44	6.14	58°39'39"	6.00	3.37
45	6.68	58°50'53"	6.50	3.67
46	7.21	63°35'22"	6.50	4.03
47	6.08	63°17'10"	5.50	3.39
48	4.71	90°00'00"	3.00	3.00
49	4.71	89°52'26"	3.00	2.99

SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	12	61
PROJECT FILE NO.		608743	
CURB TIE PLANS			

CONTINUED ON
SHEET NO. 13

SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	13	61
PROJECT FILE NO.		608743	

CURB TIE PLANS



CONTINUED ON
SHEET NO. 12

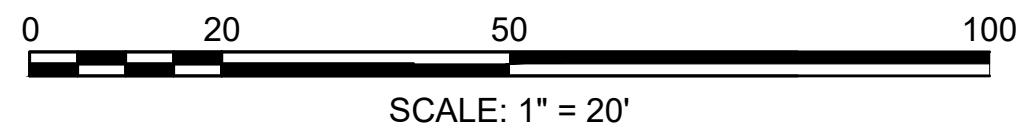
CONTINUED ON
SHEET NO. 14

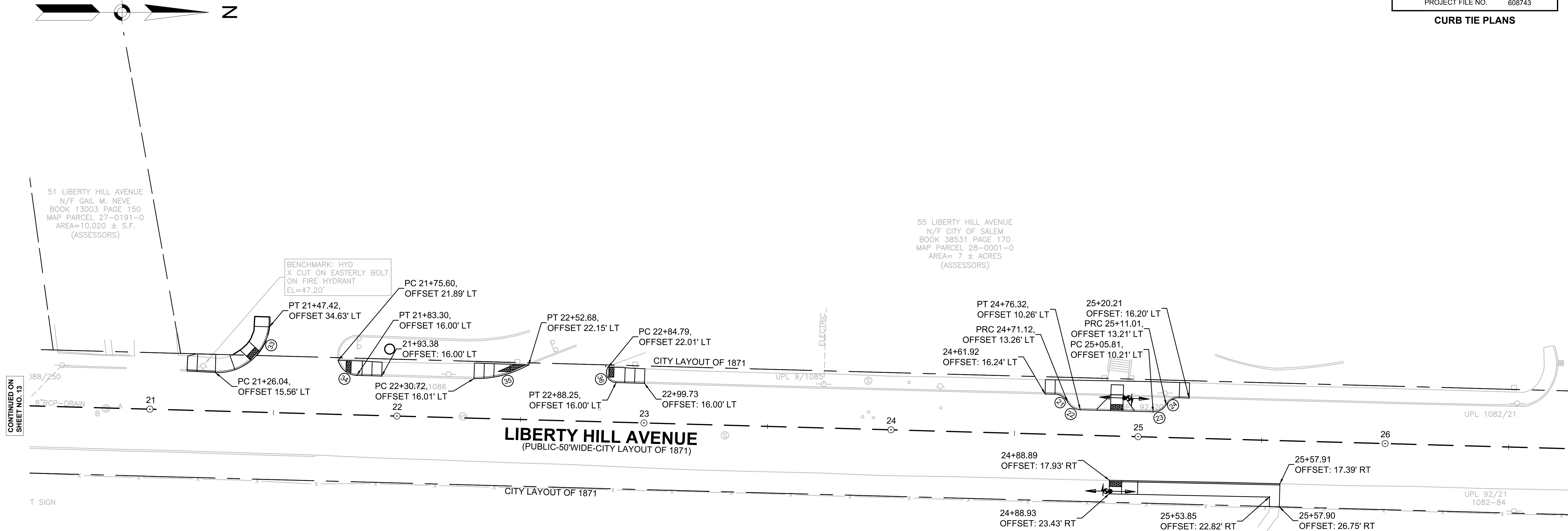
S	TANGENT
	53.00

NURSERY STREET CONSTRUCTION BASELINE DATA								
NUMBER	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
L5	50+00.00	3019538.542	816288.260		N61°38'38"E 105.72'	51+05.72	3019588.754	816381.294
C3	51+05.72	3019588.754	816381.294	R=50.00' Δ=29°57'09" L=26.14' T=13.38'		51+31.86	3019594.734	816406.434

CURVE TABLE				
CURVE #	LENGTH	DIRECTION/DELTA	RADIUS	TANGENT
13	8.38	60°00'00"	8.00	4.62
14	8.58	61°27'58"	8.00	4.76
15	15.71	90°00'00"	10.00	10.00
16	18.82	29°57'09"	36.00	9.63
17	10.52	60°17'46"	10.00	5.81
26	39.52	102°20'57"	22.12	27.49
40	3.81	21°48'05"	10.00	1.93
41	3.81	21°48'05"	10.00	1.93
42	3.74	21°25'41"	10.00	1.89
43	3.18	18°13'17"	10.00	1.60

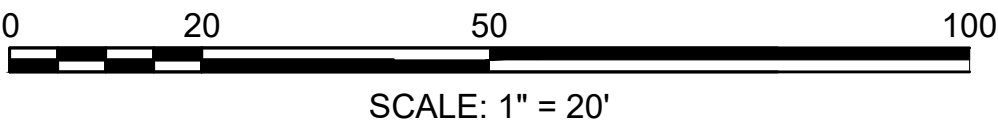
- NOTES:
- SEE SHEET 38 FOR CURB RAMP DIMENSIONS AND STATION/OFFSET REFERENCES.
 - SEE SHEET 39 FOR DRIVEWAY DIMENSIONS AND STATION/OFFSET REFERENCES.





CURVE TABLE				
CURVE #	LENGTH	DIRECTION/DELTA	RADIUS	TANGENT
21	6.28	60°00'00"	6.00	3.46
22	6.28	60°00'00"	6.00	3.46
23	6.28	60°00'00"	6.00	3.46
33	31.53	86°01'06"	21.00	19.59
34	10.43	74°41'45"	8.00	6.10
35	23.06	29°21'22"	45.00	11.79
36	8.38	120°05'42"	4.00	6.94

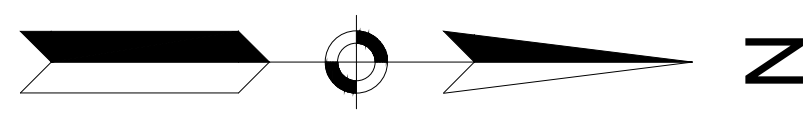
- NOTES:
- SEE SHEET 38 FOR CURB RAMP DIMENSIONS AND STATION/OFFSET REFERENCES.
 - SEE SHEET 39 FOR DRIVEWAY DIMENSIONS AND STATION/OFFSET REFERENCES.



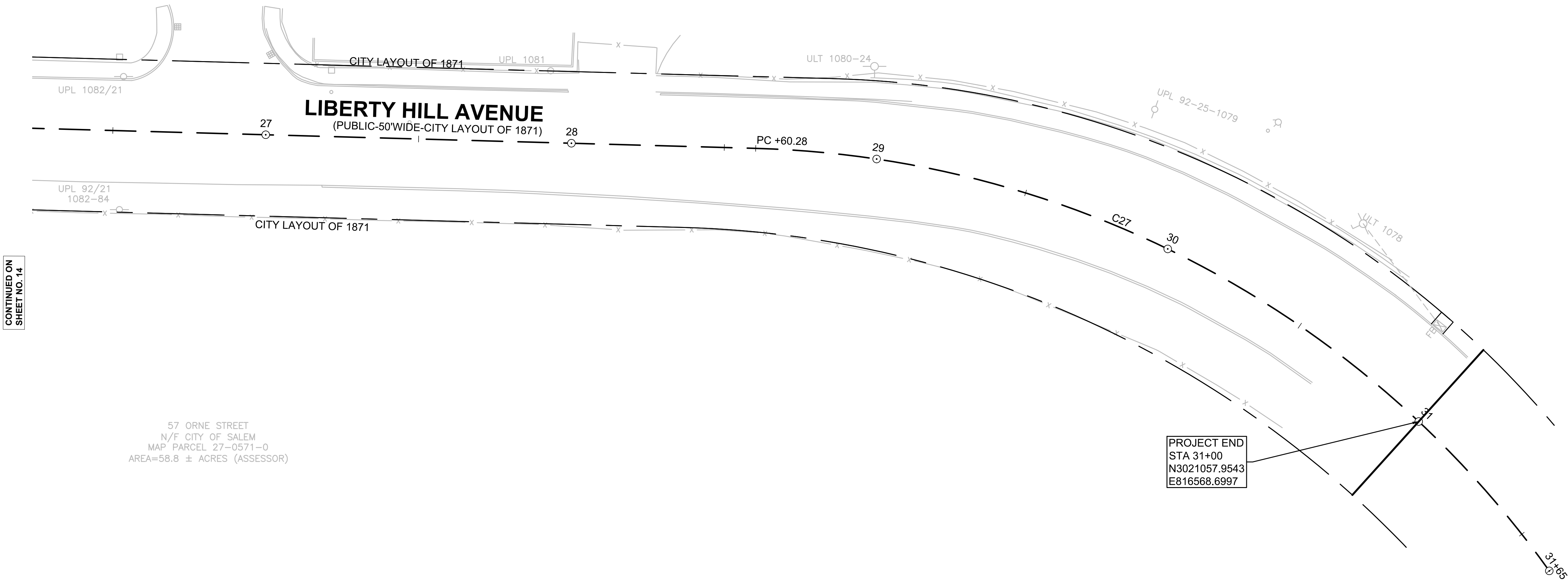
SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	61
PROJECT FILE NO.		608743	

CURB TIE PLANS



55 LIBERTY HILL AVENUE
N/F CITY OF SALEM
BOOK 38531 PAGE 170
MAP PARCEL 28-0001-0
AREA= 7 ± ACRES
(ASSESSORS)



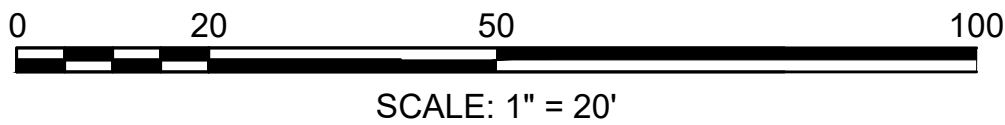
CONTINUED ON
SHEET NO. 14

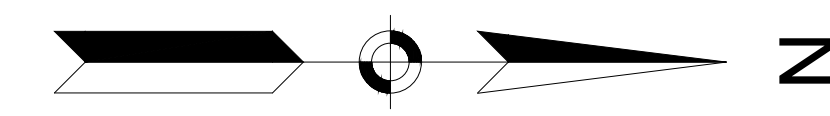
57 ORNE STREET
N/F CITY OF SALEM
MAP PARCEL 27-0571-0
AREA=58.8 ± ACRES (ASSESSOR)

PROJECT END
STA 31+00
N3021057.9543
E816568.6997

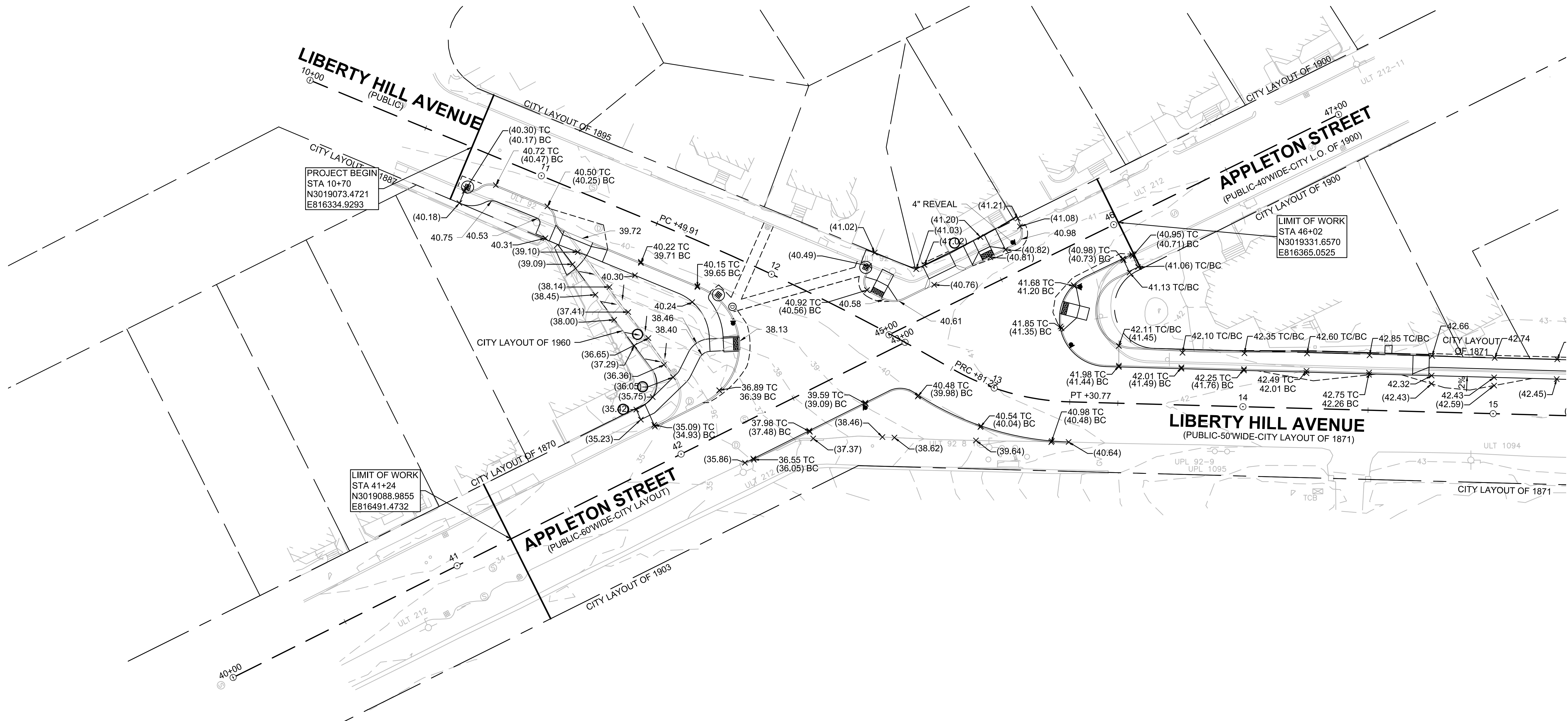
NOTES:

- SEE SHEET 38 FOR CURB RAMP DIMENSIONS AND STATION/OFFSET REFERENCES.
- SEE SHEET 39 FOR DRIVEWAY DIMENSIONS AND STATION/OFFSET REFERENCES.



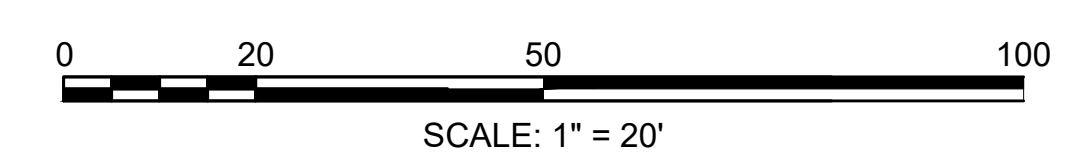


SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	16	61
PROJECT FILE NO.		608743	
GRADING PLANS			

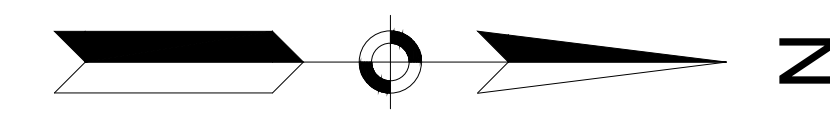


- LEGEND:**
- 8.45 — PROPOSED ELEVATION
 - (8.42) — EXISTING ELEVATION
 - 8.38 TC (7.88) BC — TOP OF CURB BOTTOM OF CURB/EXISTING ELEVATION
 - 8.38 TC 7.88 BC — TOP OF CURB BOTTOM OF CURB/PROPOSED ELEVATION

- NOTES:**
1. PROPOSED TOP OF CURB ELEVATIONS NOT SHOWN AT WHEELCHAIR RAMP AND DRIVEWAY OPENINGS AND TRANSITIONS. TC = (EG)
 2. MAXIMUM CURB REVEAL TO BE 7".
 3. PROPOSED ELEVATION AT BOTTOM OF CURB INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.

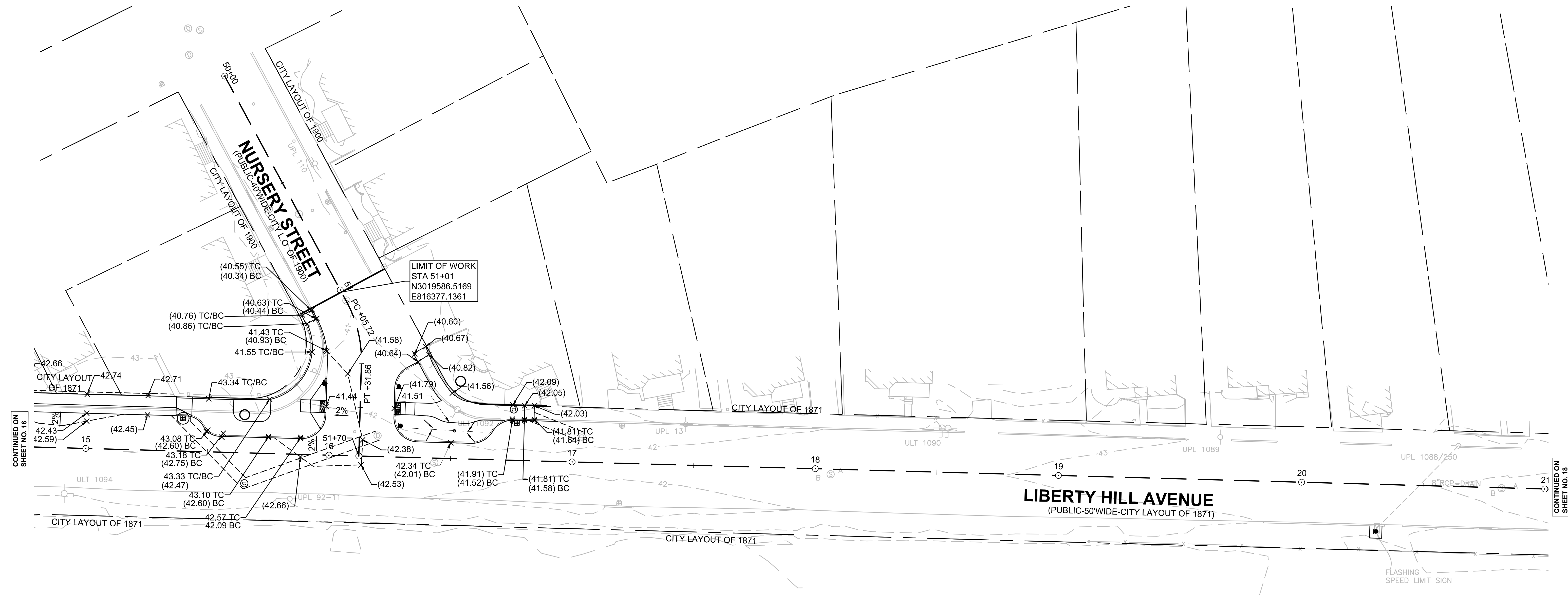


CONTINUED ON
SHEET NO. 17



SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	17	61
PROJECT FILE NO.		608743	

GRADING PLANS



CONTINUED ON
SHEET NO. 16

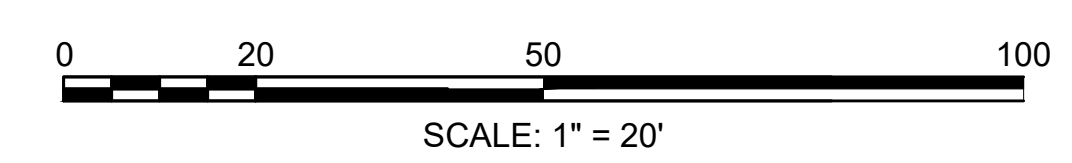
CONTINUED ON
SHEET NO. 18

LEGEND:

- 8.45 PROPOSED ELEVATION
- (8.42) EXISTING ELEVATION
- 8.38 TC
(7.88) BC TOP OF CURB
BOTTOM OF CURB/EXISTING ELEVATION
- 8.38 TC
7.88 BC TOP OF CURB
BOTTOM OF CURB/PROPOSED ELEVATION

NOTES:

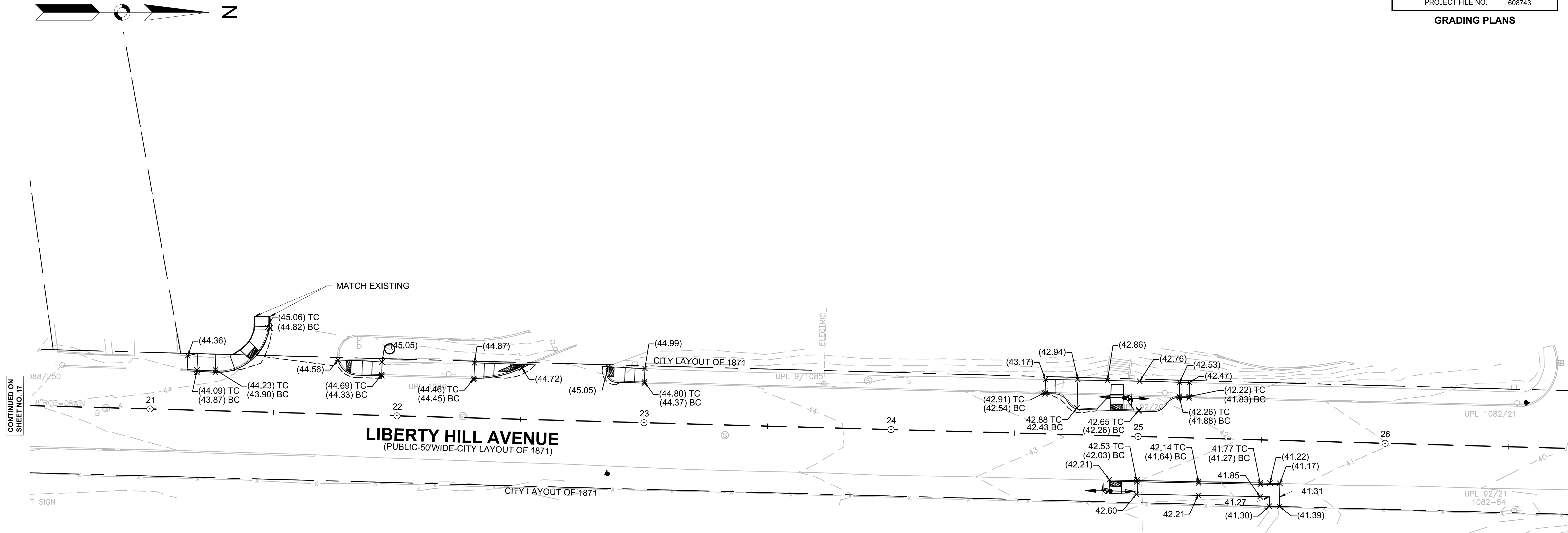
- PROPOSED TOP OF CURB ELEVATIONS NOT SHOWN AT WHEELCHAIR RAMP AND DRIVEWAY OPENINGS AND TRANSITIONS. TC = (EG)
- MAXIMUM CURB REVEAL TO BE 7".
- PROPOSED ELEVATION AT BOTTOM OF CURB INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.



SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	18	61
PROJECT FILE NO.		608743	

GRADING PLANS



- LEGEND:
- 8.45

PROPOSED ELEVATION
- (8.42)

EXISTING ELEVATION
- 8.38 TC
(7.88) BC

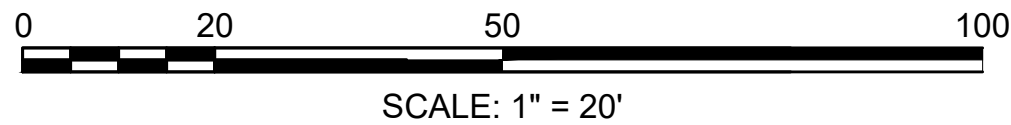
TOP OF CURB
BOTTOM OF CURB/EXISTING ELEVATION
- 8.38 TC
7.88 BC

TOP OF CURB
BOTTOM OF CURB/PROPOSED ELEVATION

- NOTES:
1. PROPOSED TOP OF CURB ELEVATIONS NOT SHOWN AT WHEELCHAIR RAMP AND DRIVEWAY OPENINGS AND TRANSITIONS. TC = (EG)

2. MAXIMUM CURB REVEAL TO BE 7".

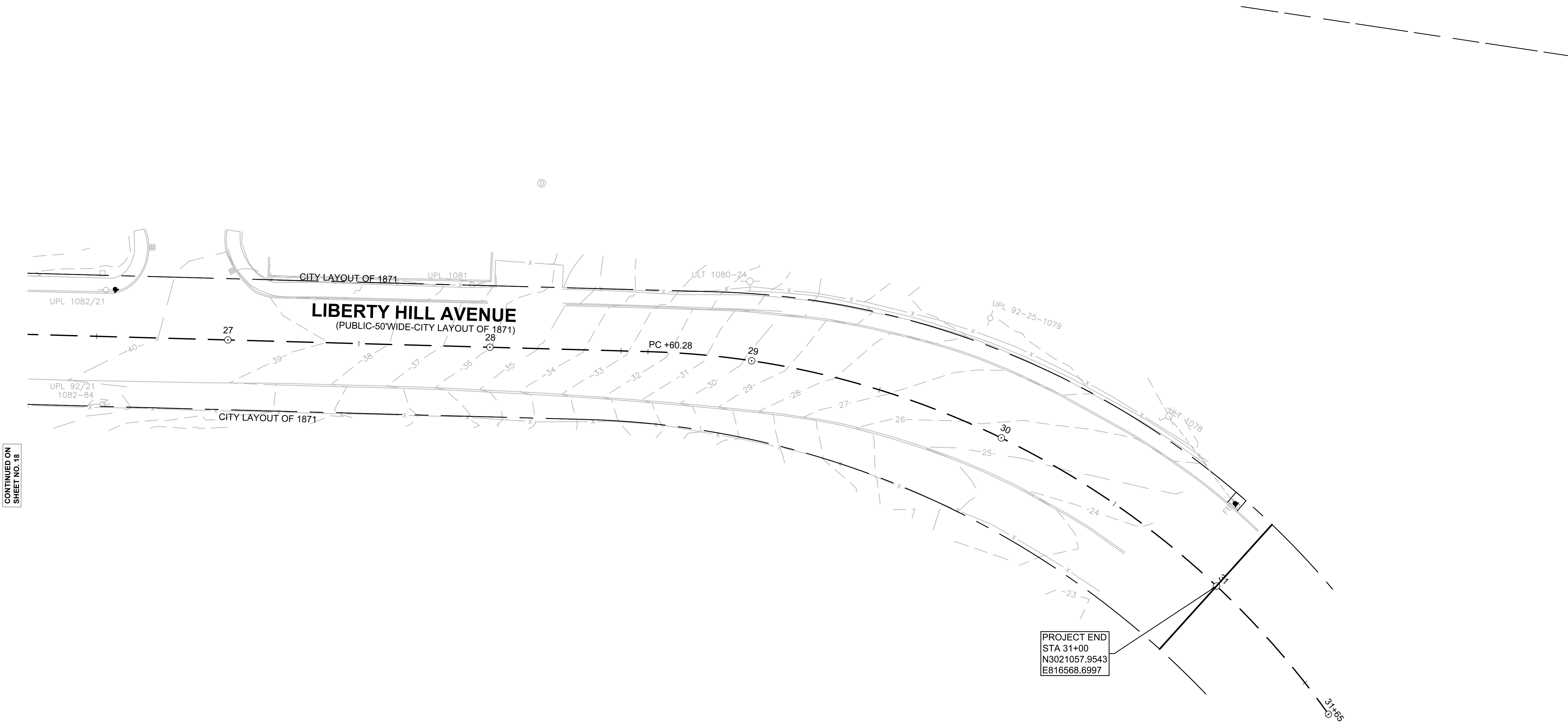
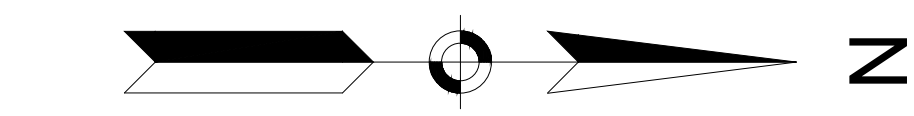
3. PROPOSED ELEVATION AT BOTTOM OF CURB INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.



SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	61
PROJECT FILE NO.		608743	

GRADING PLANS



CONTINUED ON
SHEET NO. 18

LEGEND:

- 8.45

PROPOSED ELEVATION
- (8.42)

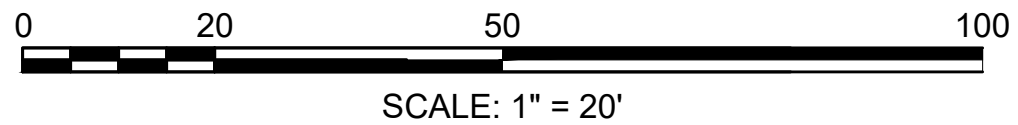
EXISTING ELEVATION
- 8.38 TC
(7.88) BC

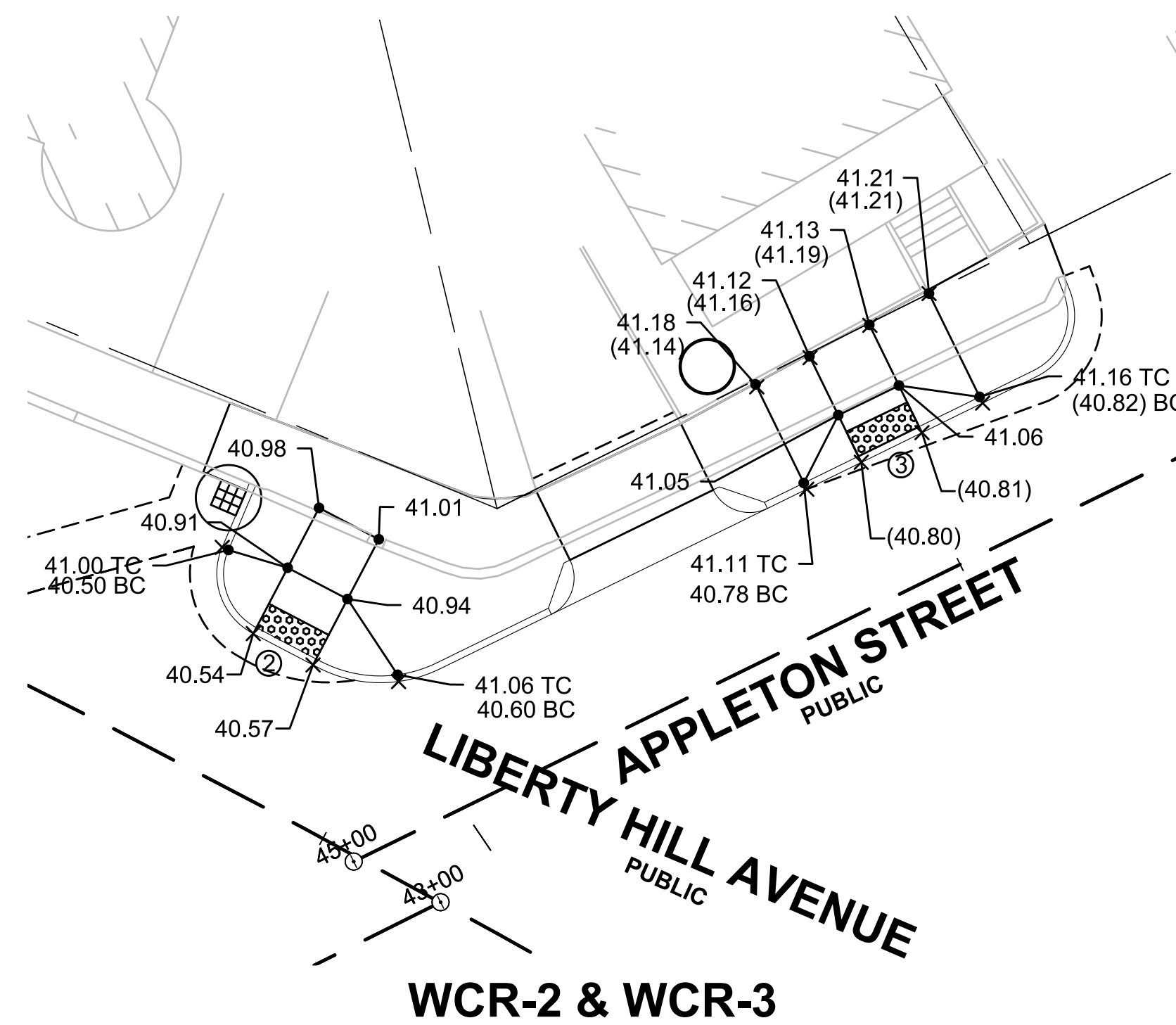
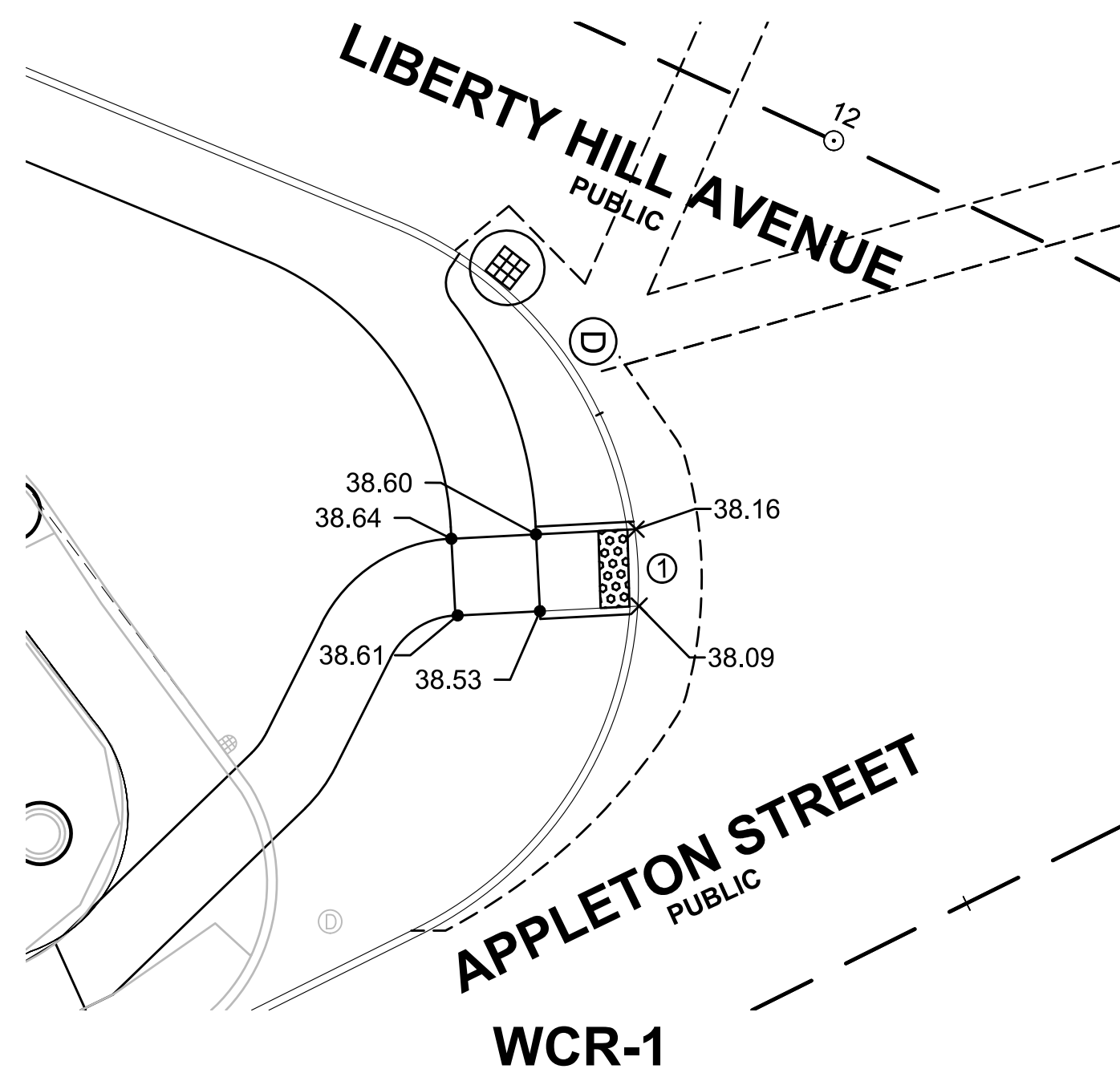
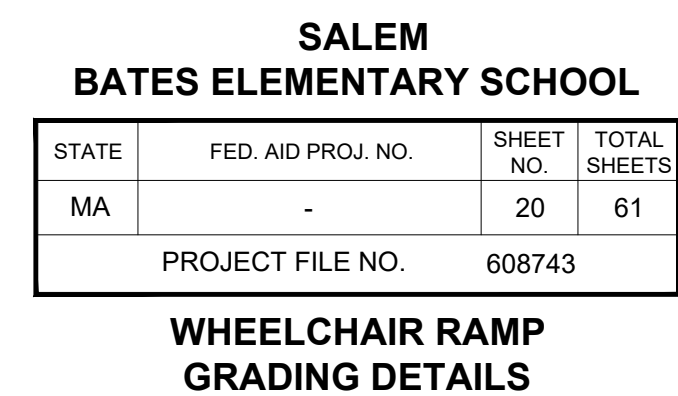
TOP OF CURB
BOTTOM OF CURB/EXISTING ELEVATION
- 8.38 TC
7.88 BC

TOP OF CURB
BOTTOM OF CURB/PROPOSED ELEVATION

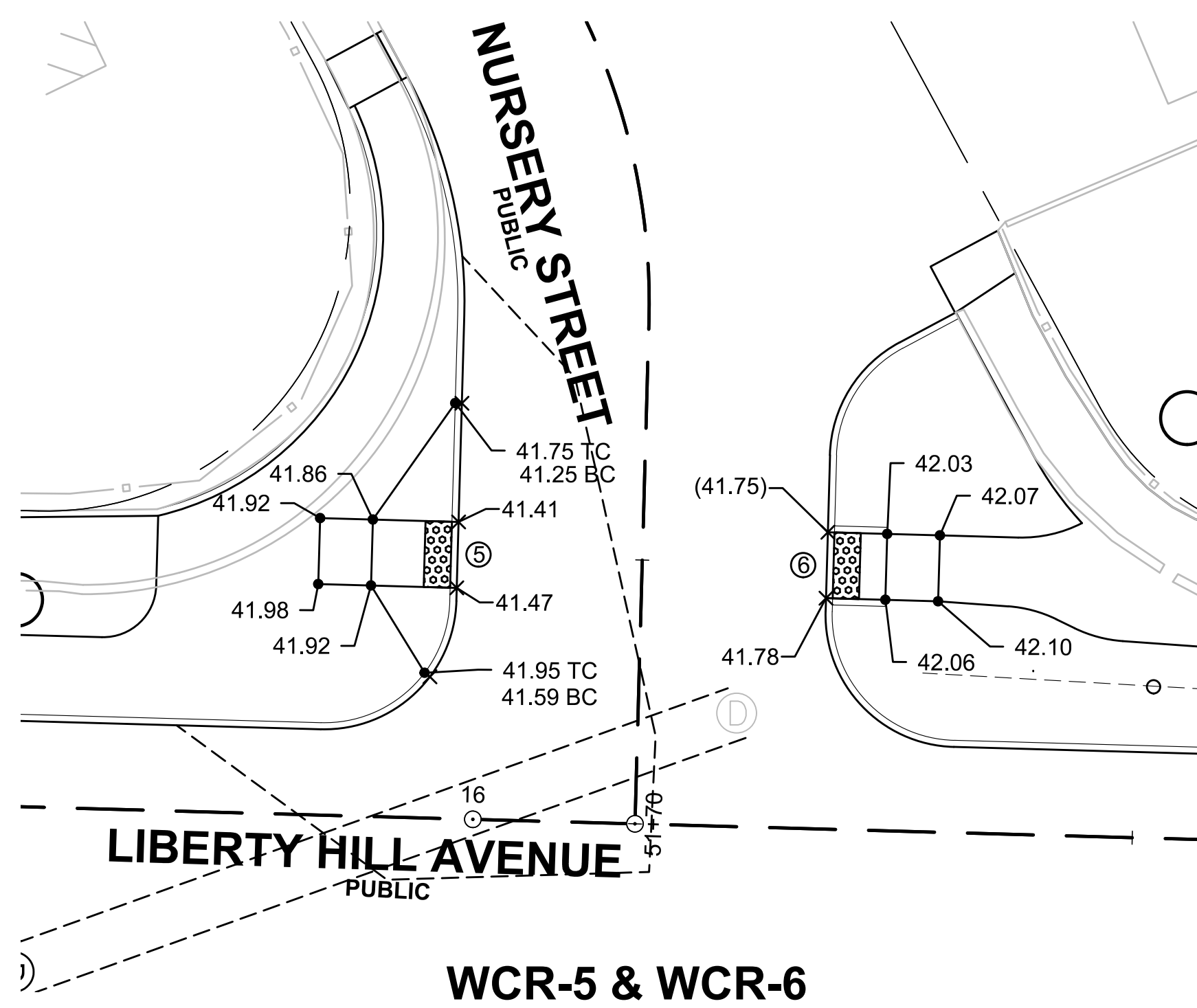
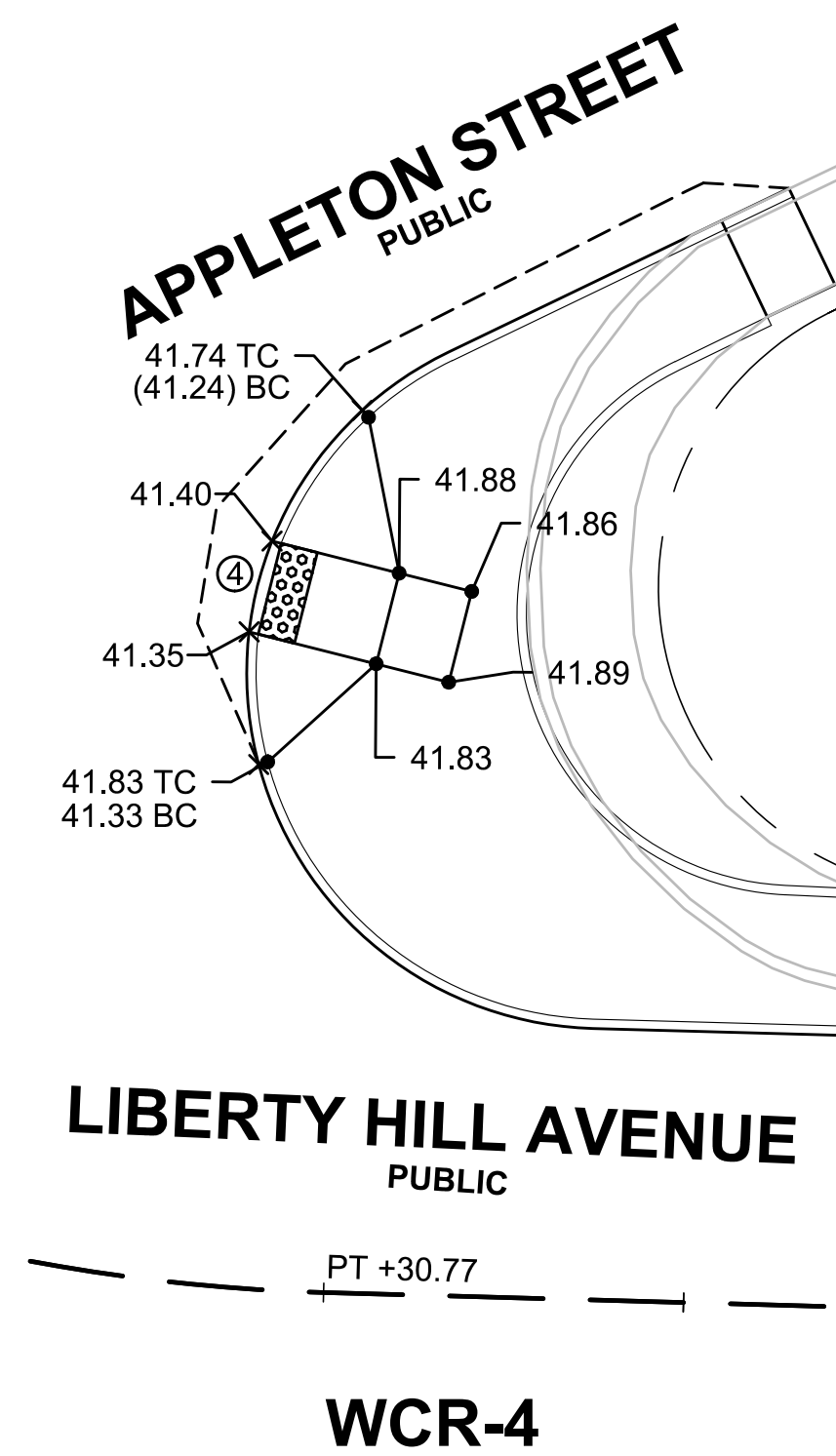
NOTES:

- PROPOSED TOP OF CURB ELEVATIONS NOT SHOWN AT WHEELCHAIR RAMP AND DRIVEWAY OPENINGS AND TRANSITIONS. TC = (EG)
- MAXIMUM CURB REVEAL TO BE 7".
- PROPOSED ELEVATION AT BOTTOM OF CURB INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.

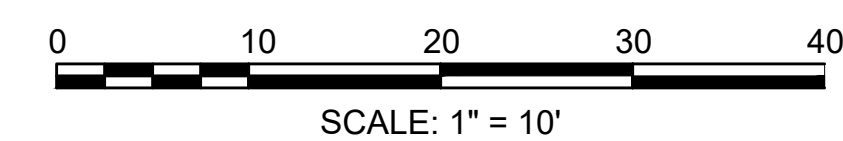


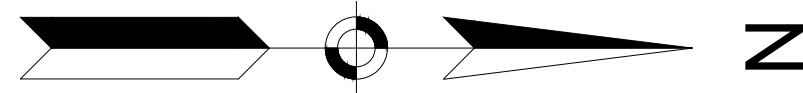


- NOTES:**
1. MAXIMUM CURB REVEAL TO BE 7".
 2. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER SURFACE STRUCTURES THAT CANNOT BE REMOVED OR RESET IS WITHIN THE PROPOSED OR EXISTING CURB RAMP, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACE/COVER SHALL BE FLUSH WITH THE CURB RAMP SURFACE.
 3. THE ROADWAY CROSS SLOPE SHALL NOT EXCEED 1.5%*, INCLUDING, BUT NOT LIMITED TO, . TRANSITION RAMP CROSS SLOPE, LEVEL LANDING AND THE PROPOSED RAMP OPENING.
 4. A CURB RAMP RUNNING SLOPE SHALL NOT EXCEED 7.5%*.
 5. PROPOSED ELEVATION AT GUTTER LINE INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.
 6. SEE SHEET 38 FOR CURB RAMP DIMENSIONS AND STATION/OFFSET REFERENCES.

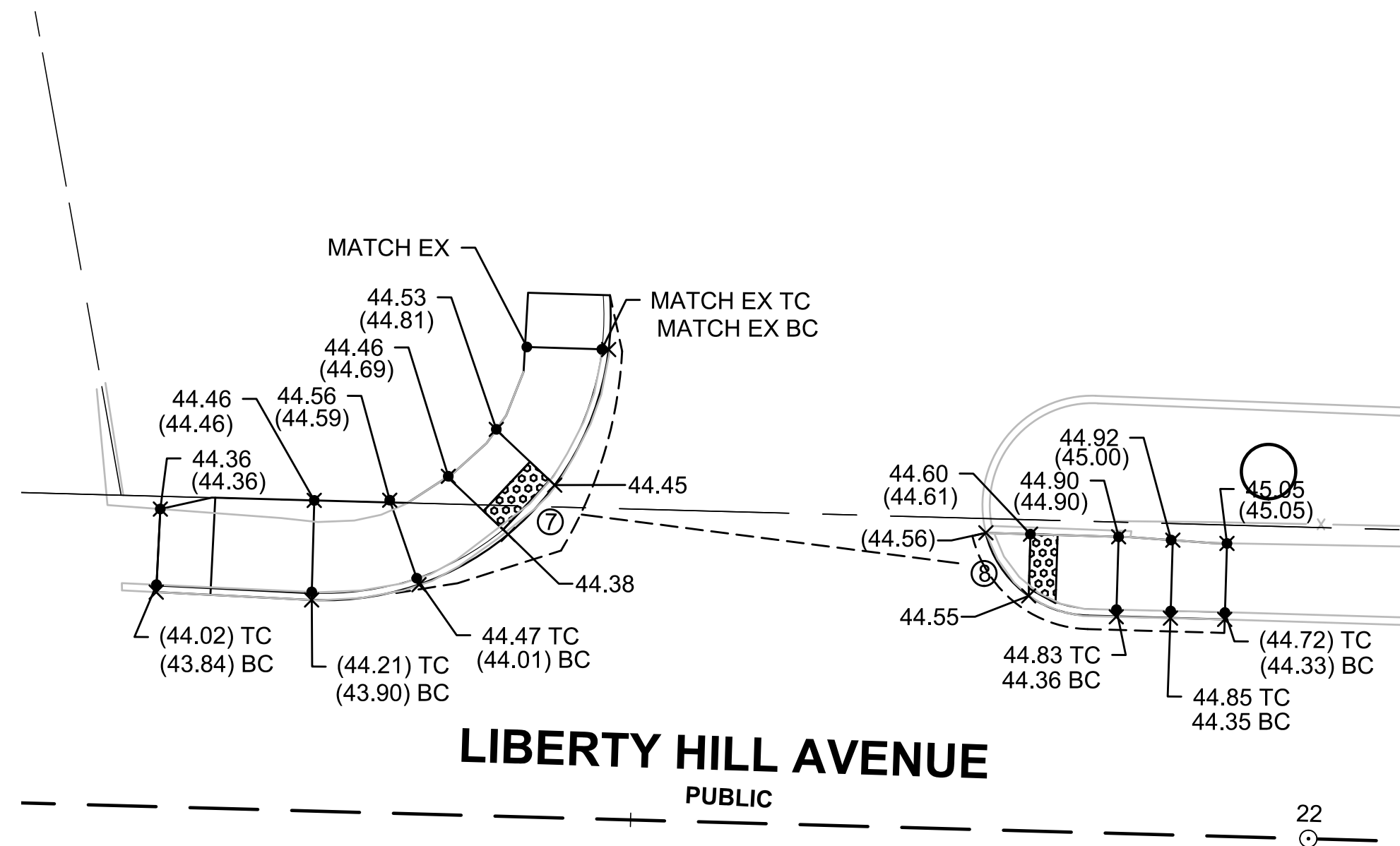


- LEGEND:**
 (XX.XX) EXISTING ELEVATION
 XX.XX PROPOSED ELEVATION
 BC BOTTOM OF CURB
 TC TOP OF CURB
 * ±0.5% TOLERANCE FOR CONSTRUCTION
 # WHEELCHAIR RAMP IDENTIFIER

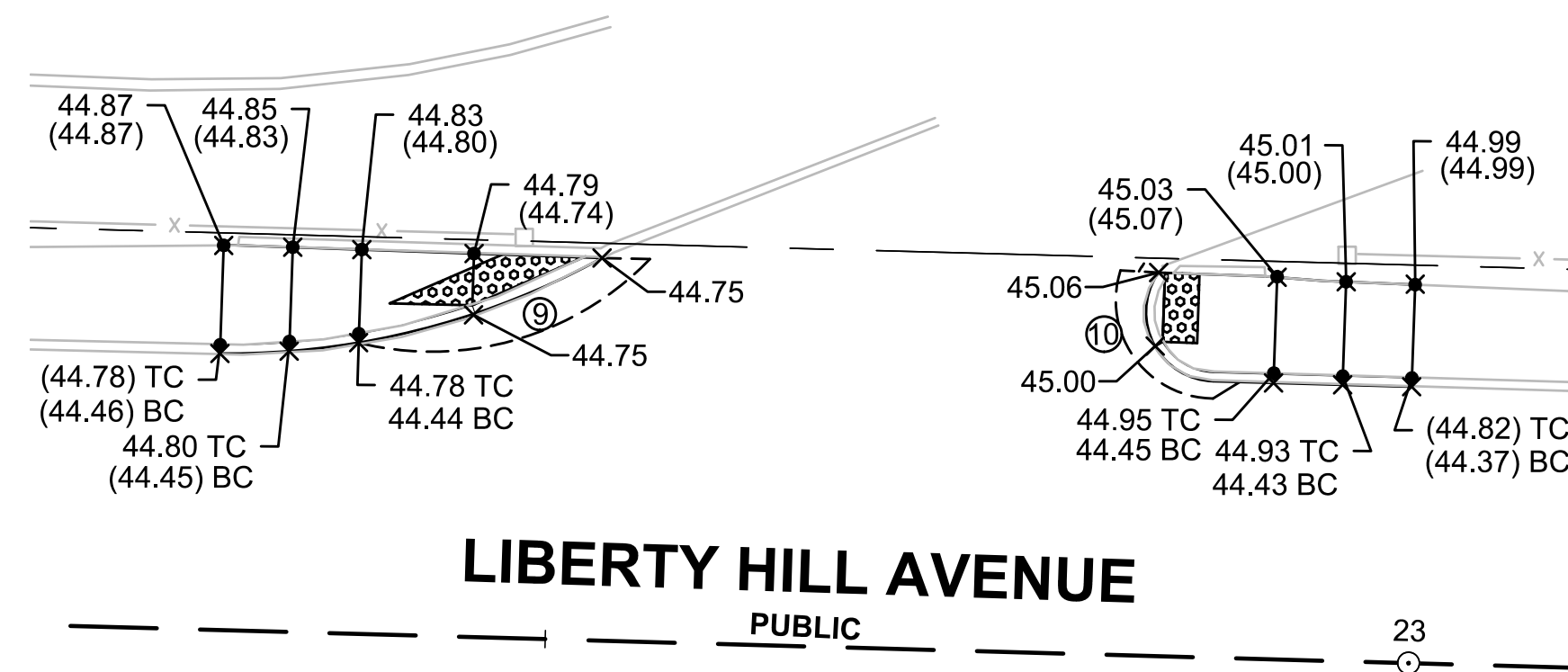




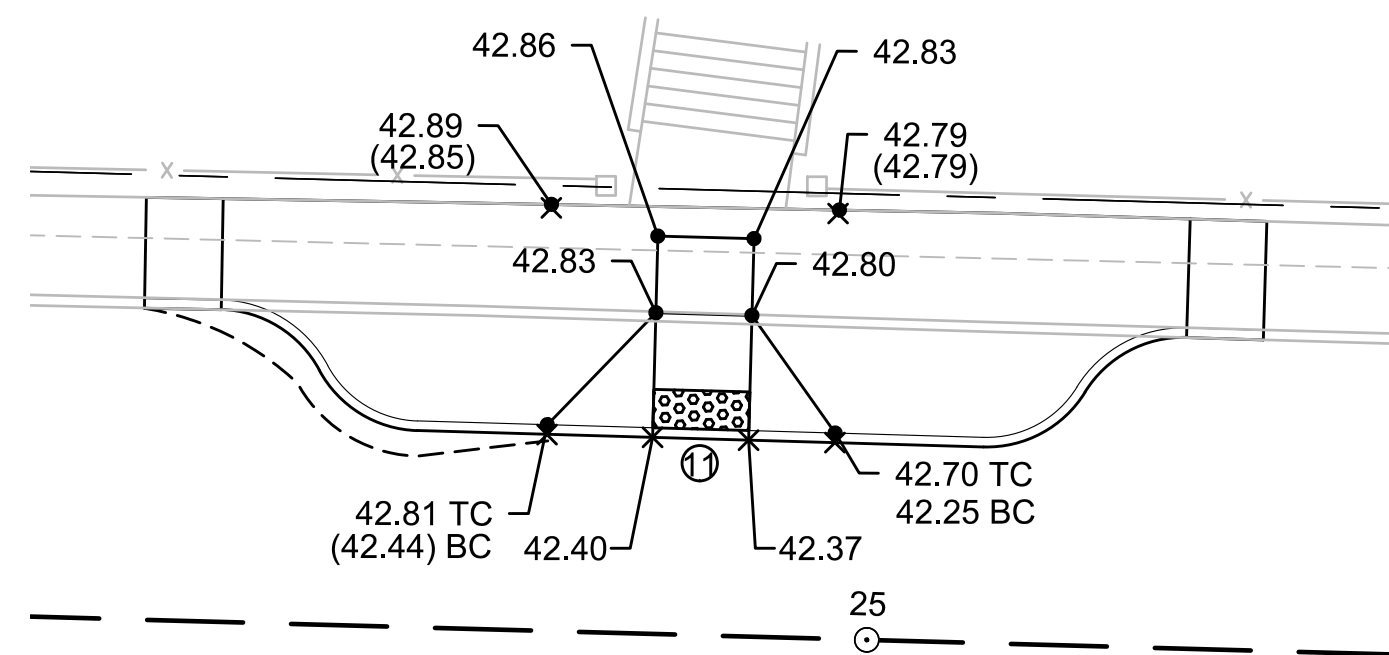
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	21	61
PROJECT FILE NO.		608743	
WHEELCHAIR RAMP GRADING DETAILS			



WCR-7 & WCR-8



WCR-9 & WCR-10



WCR-11 & WCR-12

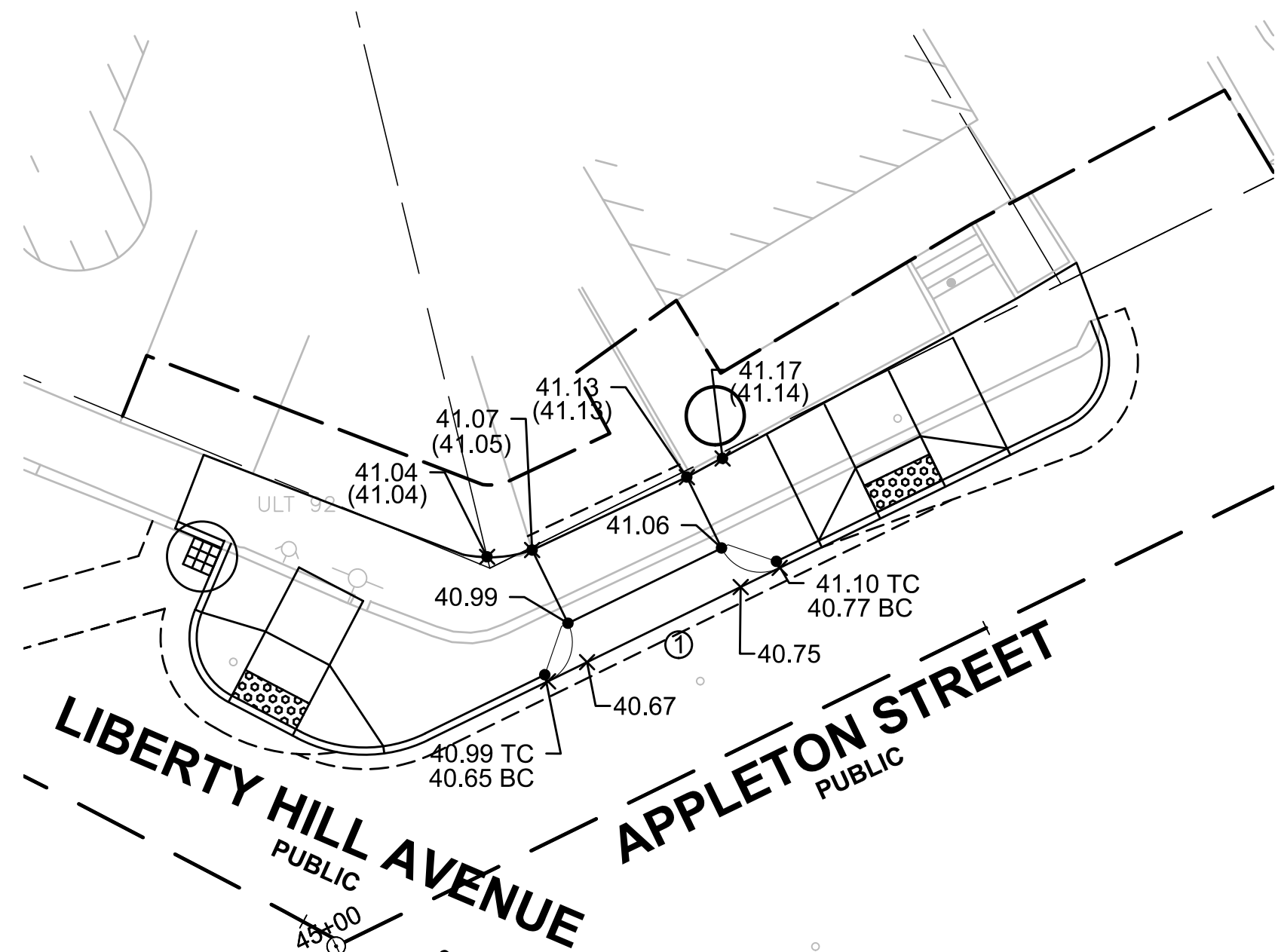
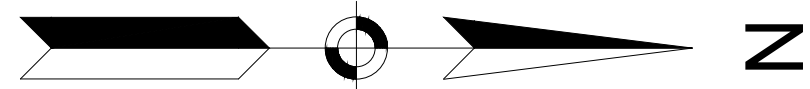
NOTES:

1. MAXIMUM CURB REVEAL TO BE 7".
2. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER SURFACE STRUCTURES THAT CANNOT BE REMOVED OR RESET IS WITHIN THE PROPOSED OR EXISTING CURB RAMP, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACE/COVER SHALL BE FLUSH WITH THE CURB RAMP SURFACE.
3. THE ROADWAY CROSS SLOPE SHALL NOT EXCEED 1.5%*, INCLUDING, BUT NOT LIMITED TO, TRANSITION RAMP CROSS SLOPE, LEVEL LANDING AND THE PROPOSED RAMP OPENING.
4. A CURB RAMP RUNNING SLOPE SHALL NOT EXCEED 7.5%*.
5. PROPOSED ELEVATION AT GUTTER LINE INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.
6. SEE SHEET 38 FOR CURB RAMP DIMENSIONS AND STATION/OFFSET REFERENCES.

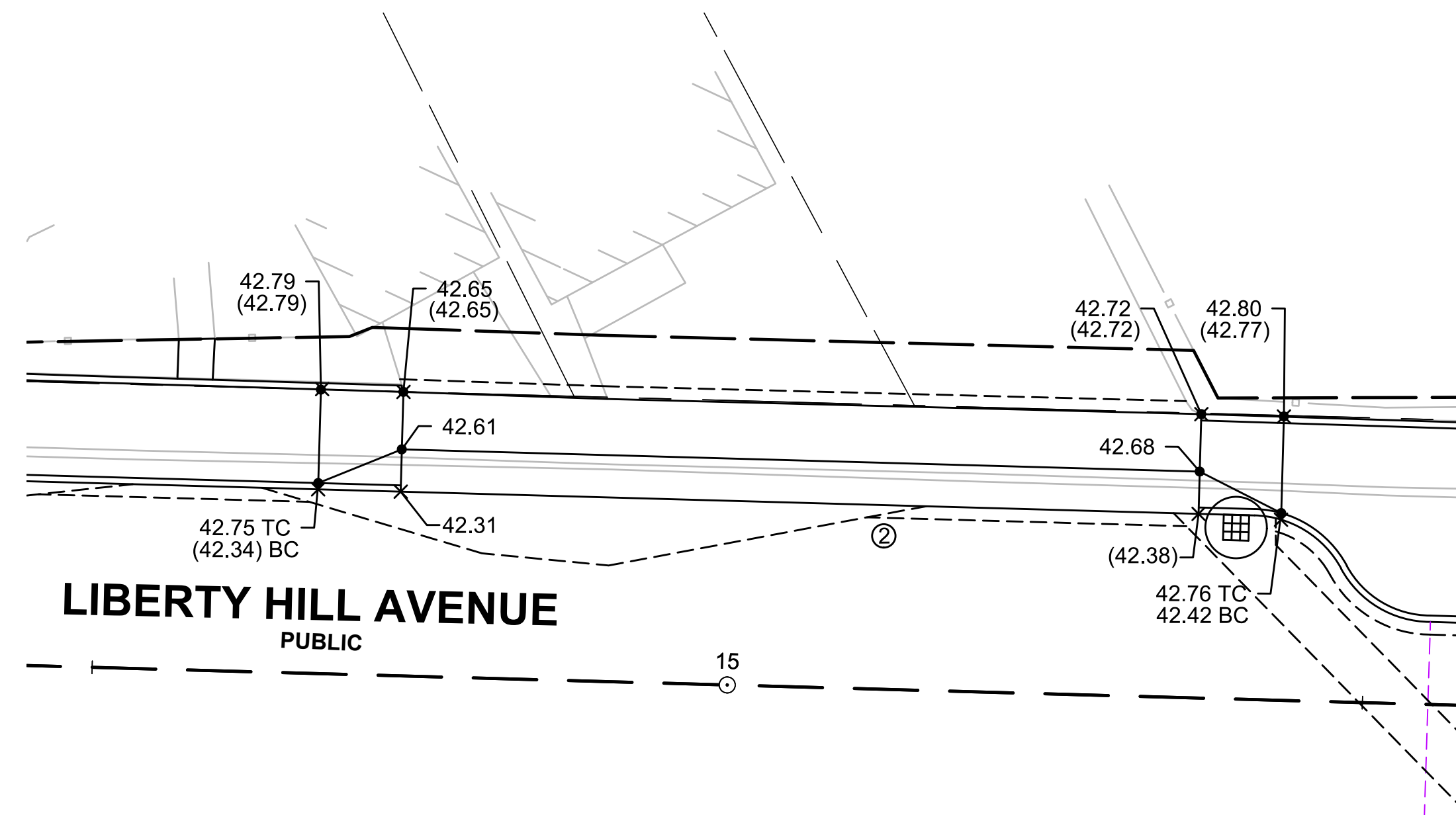
LEGEND:

(XX.XX) EXISTING ELEVATION
XX.XX PROPOSED ELEVATION
BC BOTTOM OF CURB
TC TOP OF CURB
* ±0.5% TOLERANCE FOR CONSTRUCTION
Ⓢ WHEELCHAIR RAMP IDENTIFIER

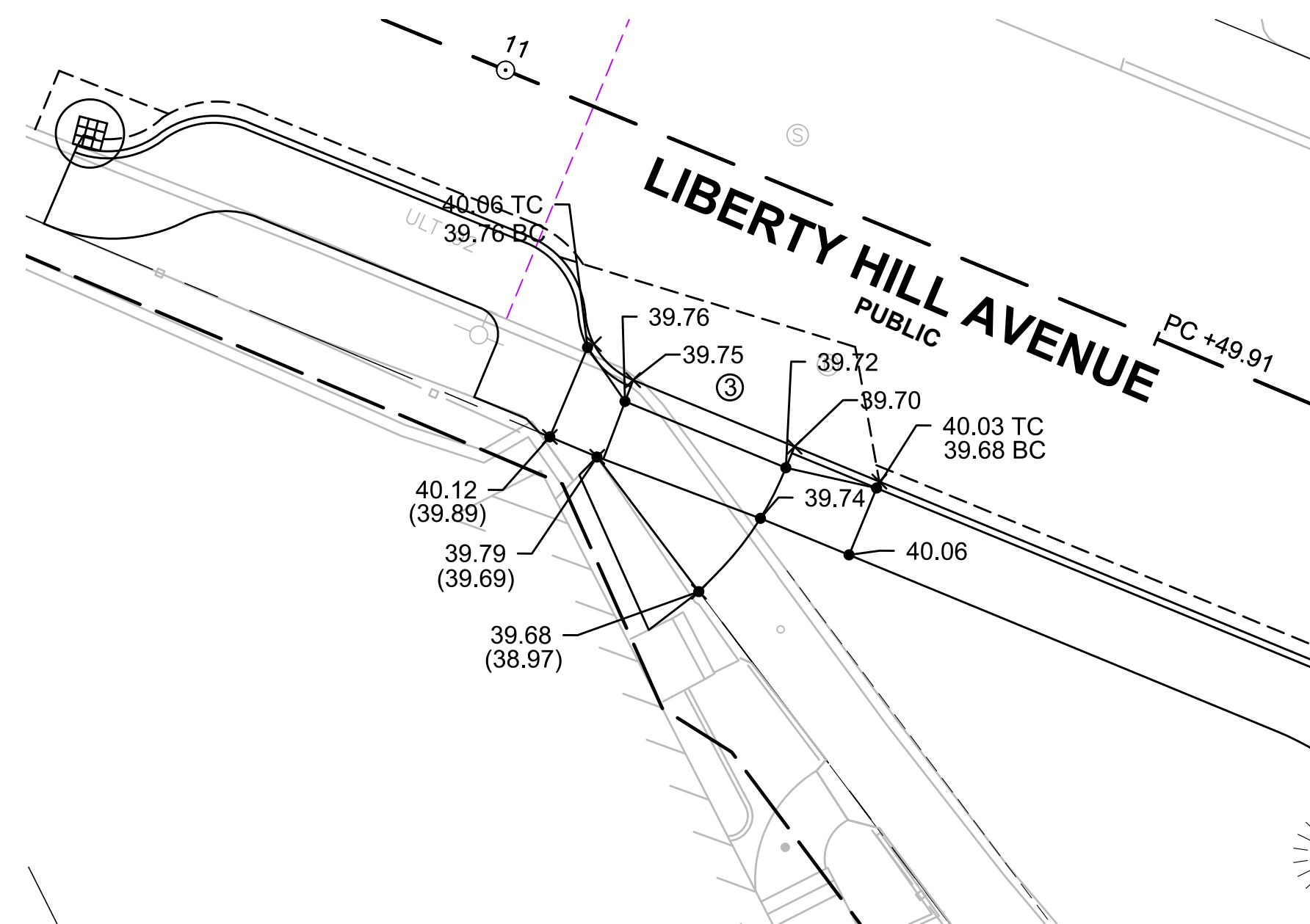




DW-1



DW-2



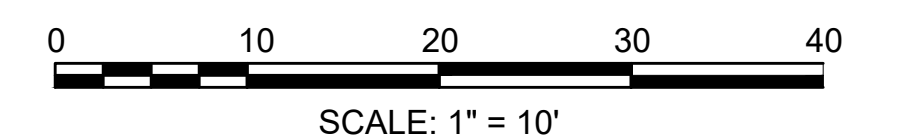
DW-3

NOTES:

1. MAXIMUM CURB REVEAL TO BE 7".
2. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER SURFACE STRUCTURES THAT CANNOT BE REMOVED OR RESET IS WITHIN THE PROPOSED OR EXISTING DRIVEWAY, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACE/COVER SHALL BE FLUSH WITH THE DRIVEWAY SURFACE.
3. A DRIVEWAY RUNNING SLOPE SHALL NOT EXCEED 15%*.
4. PROPOSED ELEVATION AT GUTTER LINE INDICATES CHANGE OF ELEVATION FROM EXISTING ROADWAY IN ORDER TO MAINTAIN POSITIVE DRAINAGE. ADJACENT SAWCUT LINE TO MATCH EXISTING ELEVATION.
5. SEE SHEET 39 FOR DRIVEWAY DIMENSIONS AND STATION/OFFSET REFERENCES.

LEGEND:

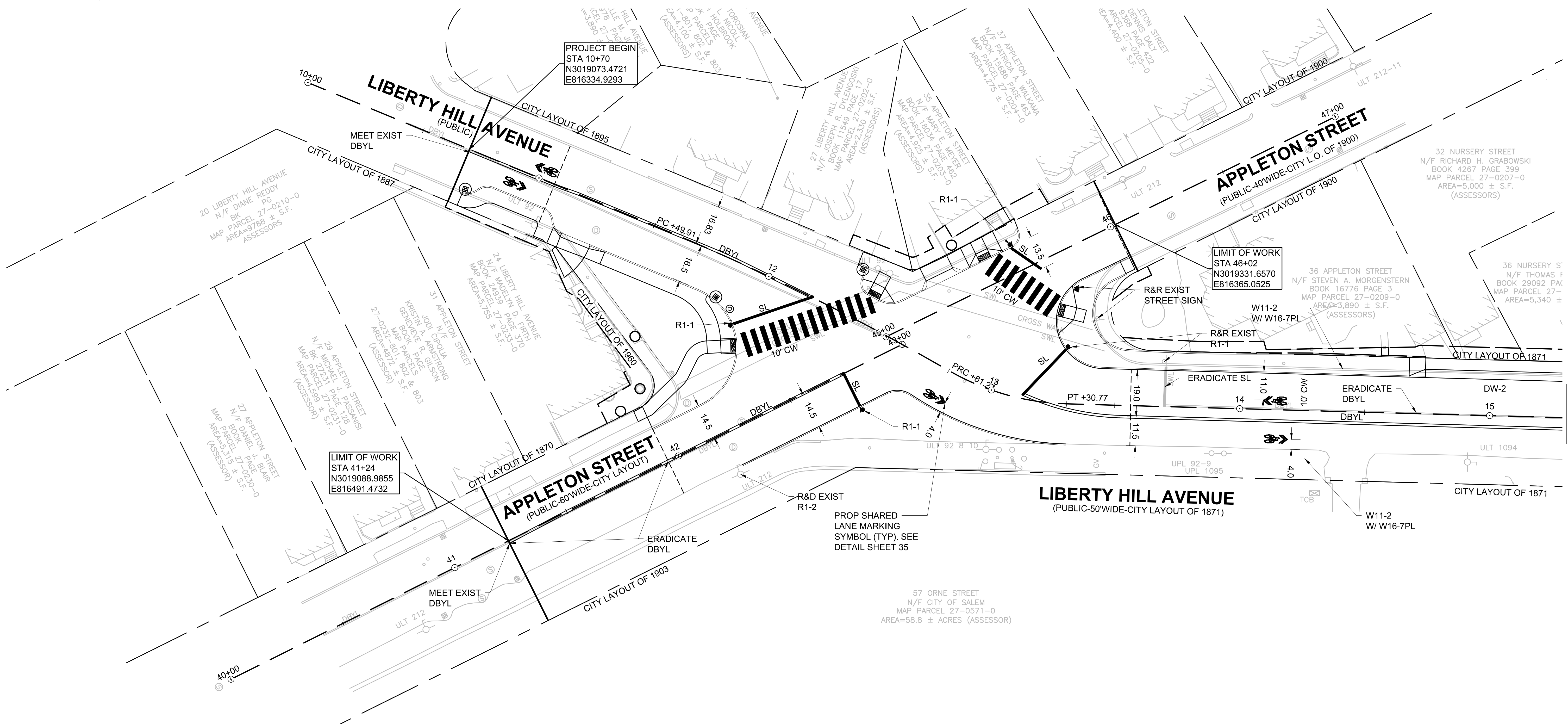
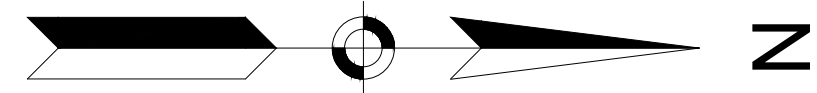
(XX.XX) EXISTING ELEVATION
XX.XX PROPOSED ELEVATION
BC BOTTOM OF CURB
TC TOP OF CURB
* ±0.5% TOLERANCE FOR CONSTRUCTION
⊕ DRIVEWAY IDENTIFIER



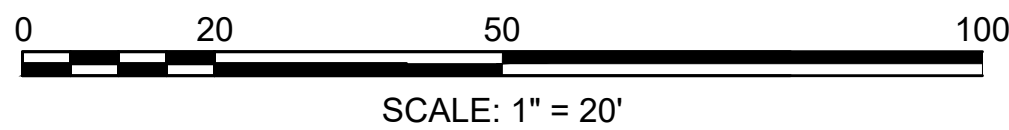
SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	23	61
PROJECT FILE NO.		608743	

TRAFFIC SIGNS & PAVEMENT MARKINGS



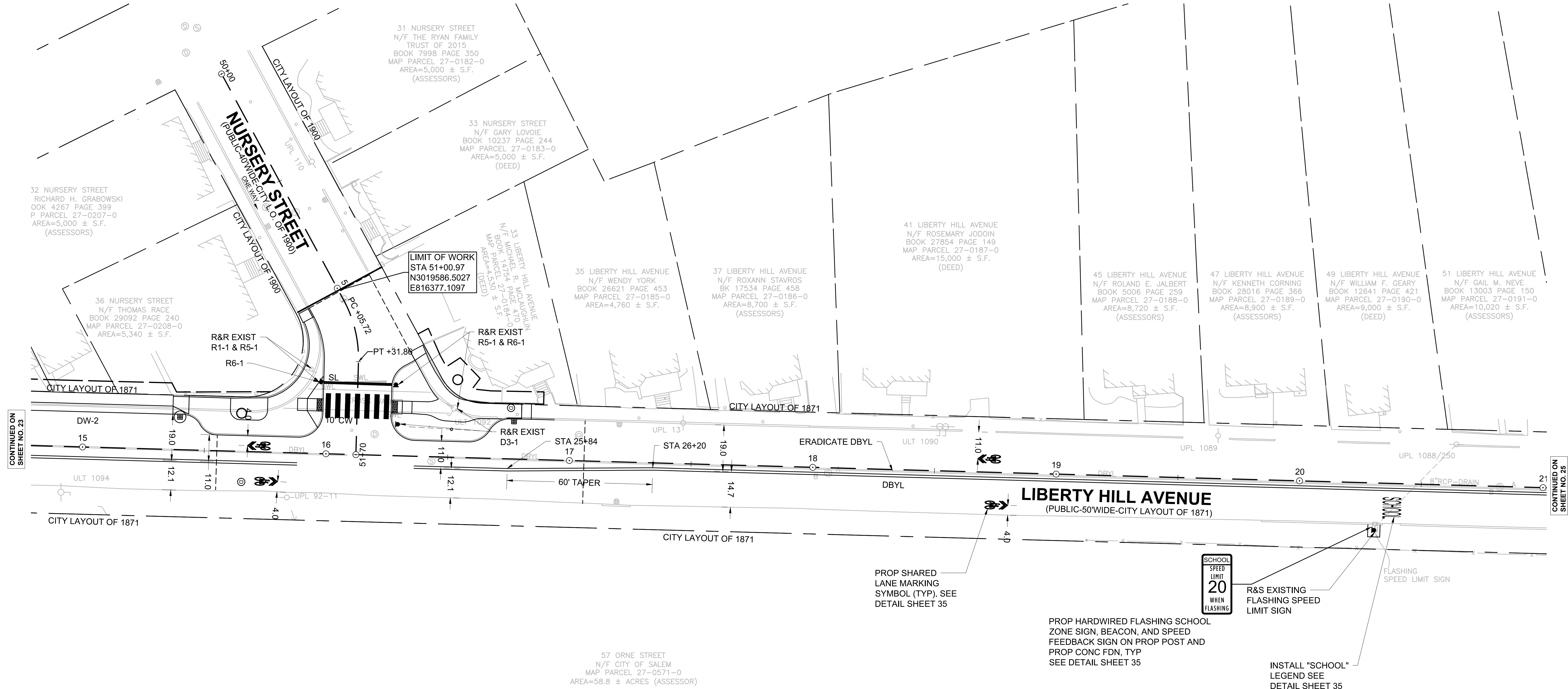
- NOTES:
- ALL PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL BE APPLIED USING THERMOPLASTIC MATERIALS.
 - ERADICATE ALL CONFLICTING PAVEMENT MARKINGS USING AN APPROVED MASSDOT METHOD.
 - ALL PROP SIGNS OR R&R SIGNS SHALL NOT BE MOUNTED ON UTILITY POLES.
 - SEE SHEET 27 FOR TRAFFIC SIGN SUMMARY.



CONTINUED ON
SHEET NO. 24

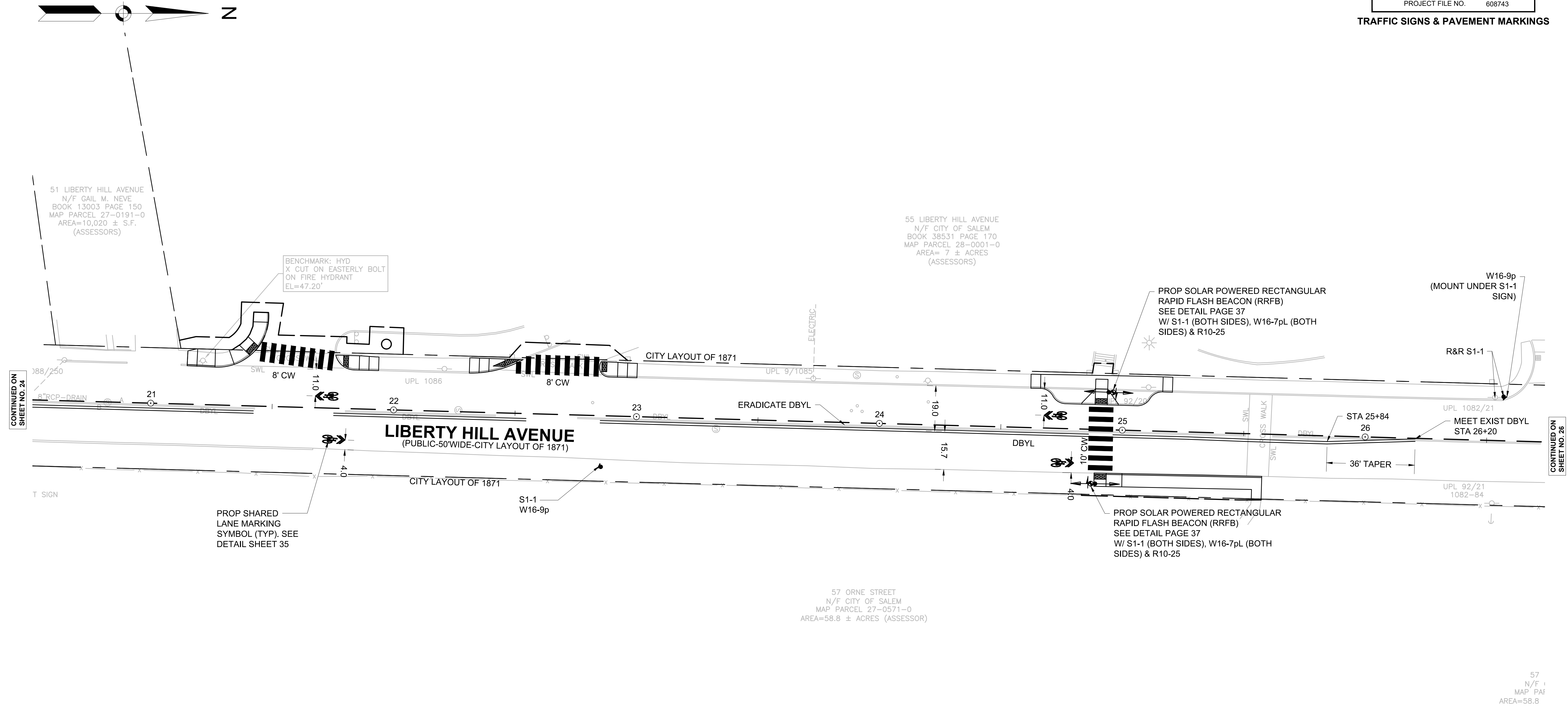
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	24	61
PROJECT FILE NO.		608743	

TRAFFIC SIGNS & PAVEMENT MARKINGS



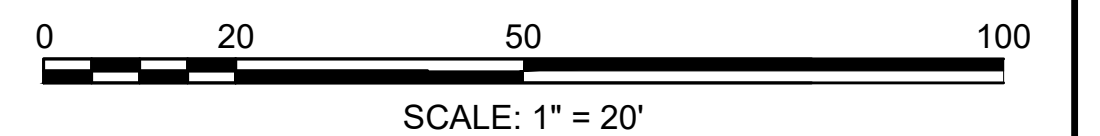
NOTES:

- ALL PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL BE APPLIED USING THERMOPLASTIC MATERIALS.
- ERADICATE ALL CONFLICTING PAVEMENT MARKINGS USING AN APPROVED MASSDOT METHOD.
- ALL PROP SIGNS OR R&R SIGNS SHALL NOT BE MOUNTED ON UTILITY POLES.
- CONTRACTOR TO ENSURE THAT THE FLASHING SCHOOL ZONE SIGN MEETS THE REQUIREMENTS SET IN THE MASSACHUSETTS AMENDMENTS TO THE MUTCD CHAPTER 7E.
- SEE SHEET 27 FOR TRAFFIC SIGN SUMMARY.



NOTES:

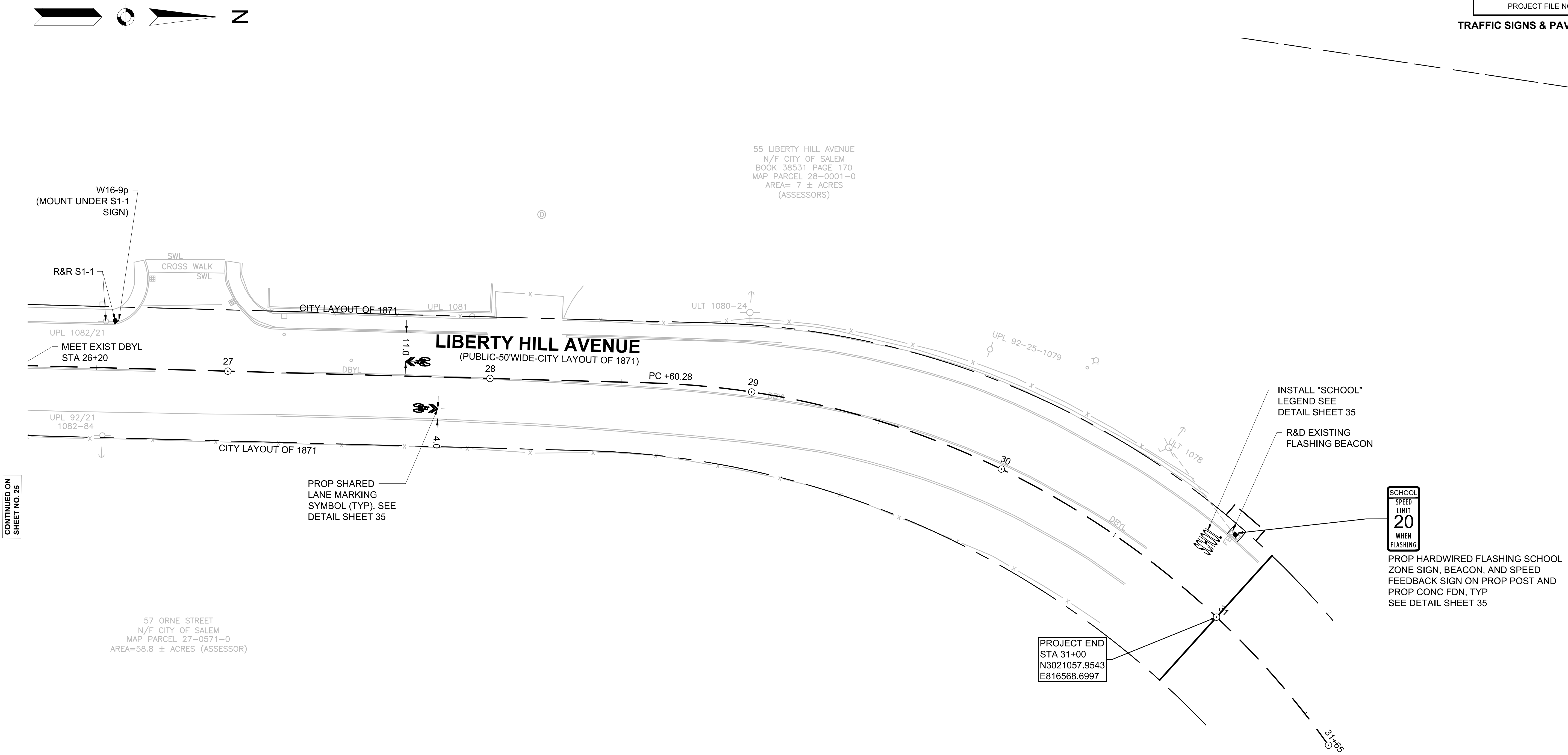
1. ALL PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL BE APPLIED USING THERMOPLASTIC MATERIALS.
2. ERADICATE ALL CONFLICTING PAVEMENT MARKINGS USING AN APPROVED MASSDOT METHOD.
3. ALL PROP SIGNS OR R&R SIGNS SHALL NOT BE MOUNTED ON UTILITY POLES.
4. SEE SHEET 27 FOR TRAFFIC SIGN SUMMARY.



SALEM
BATES ELEMENTARY SCHOOL

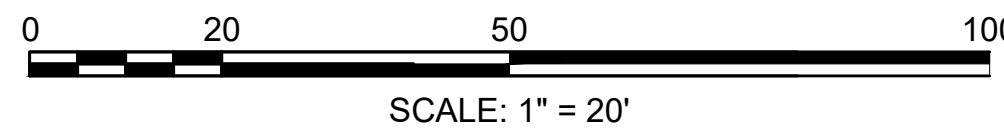
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	26	61
PROJECT FILE NO.		608743	

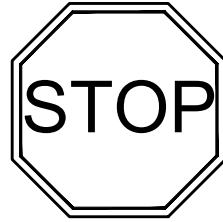
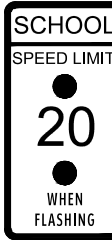
TRAFFIC SIGNS & PAVEMENT MARKINGS



CONTINUED ON
SHEET NO. 25

- NOTES:
- ALL PAVEMENT MARKINGS WITHIN THE LIMITS OF WORK SHALL BE APPLIED USING THERMOPLASTIC MATERIALS.
 - ERADICATE ALL CONFLICTING PAVEMENT MARKINGS USING AN APPROVED MASSDOT METHOD.
 - ALL PROP SIGNS OR R&R SIGNS SHALL NOT BE MOUNTED ON UTILITY POLES.
 - CONTRACTOR TO ENSURE THAT THE FLASHING SCHOOL ZONE SIGN MEETS THE REQUIREMENTS SET IN THE MASSACHUSETTS AMENDMENTS TO THE MUTCD CHAPTER 7E.
 - SEE SHEET 27 FOR TRAFFIC SIGN SUMMARY.



ID NUMBER	SIZE OF SIGN (in.)		LEGEND	TEXT DIMENSIONS (in.)			NUMBER OF SIGNS REQUIRED	COLOR*			POST SIZE AND NUMBER REQUIRED	UNIT AREA (SF)	TOTAL AREA (SF)
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR.		BACKGROUND	LEGEND	BORDER			
R1-1	30	30		SEE MUTCD STANDARD DETAIL			3	RED	WHITE	WHITE	P-5 3 REQ'D	6.25	18.75
R6-1	36	12					1	BLACK	BLACK	WHITE	MOUNT W/ R1-1 AND R5-1	3.00	3.00
R10-25	9	12					2	WHITE	BLACK	BLACK	MOUNT ON RRFB	0.75	1.50
S1-1	36	36					5	FYG	BLACK	BLACK	P-5 1 REQ'D & MOUNT 4 ON RRFB	9.00	45.00
S5-1	24	48					2	FYG/WHITE	BLACK	BLACK	POST AND CONC FDN, SEE DETAIL SHEET 35	8.00	16.00
W16-7PL	24	12					4	FYG	BLACK	BLACK	MOUNT 4 ON RRFB, MOUNT 2 W/ S1-1	2.00	8.00
W16-9P	24	12					2	FYG	BLACK	BLACK	MOUNT 2 W/ S1-1	2.00	4.00

SIGN SUMMARY NOTES:

1.

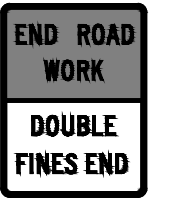
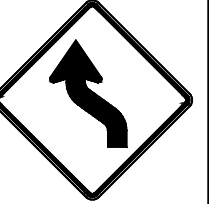
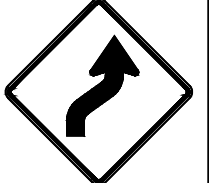
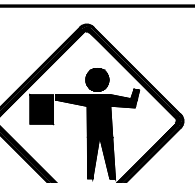
FYG = FLUORESCENT YELLOW-GREEN
2.

SCHOOL ZONE SPEED LIMIT SIGNS (S5-1) SHALL HAVE THE FOLLOWING COLOR:

"SCHOOL" TAB PORTION - FYG BACKGROUND WITH BLACK LEGEND AND BORDER
"SPEED LIMIT" PORTION- WHITE BACKGROUND WITH BLACK LEGEND AND BORDER
3.

THE MINIMUM MOUNTING HEIGHT OF POST-MOUNTED SIGNS, MEASURED VERTICALLY FROM THE BOTTOM OF THE SIGN TO THE TOP OF CURB OR SIDEWALK, OR THE ELEVATION OF THE NEAR EDGE OF TRAVEL WAY, SHALL BE 7 FEET UNLESS OTHERWISE SPECIFIED.
4.

ALL SIGN ASSEMBLY POSTS SHALL BE P-5 POSTS AND SHALL BE INSTALLED IN ACCORDANCE WITH SUBSECTION 840.60 OF THE MASSDOT SUPPLEMENTAL SPECIFICATIONS, DATED APRIL 1, 2019.

TRAFFIC SIGN SUMMARY													
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		LEGEND	TEXT DIMENSIONS (in)			NUMBER OF SIGNS REQUIRED	COLOR			UNIT AREA (SF)	TOTAL AREA (SF)	
	WIDTH	HEIGHT		LETTER HEIGHT	VERTICAL SPACING	ARROW RTE. MKR		BACK-GROUND	LEGEND	BORDER			
MA-R2-10a	48	36		MASSDOT STANDARD SIGN			4	FL. ORANGE	WHITE	BLACK	BLACK	12.00	48.00
MA-R2-10e	36	48					4	FL. ORANGE	WHITE	BLACK	BLACK	12.00	48.00
R9-9	30	18					SEE 2009 MUTCD FOR DIMENSIONS			2	WHITE	BLACK	BLACK
R9-11aL	24	12					1	WHITE	BLACK	BLACK	2.00	2.00	
R9-11aR	24	12					1			WHITE	BLACK	BLACK	2.00
W1-4L	36	36					2	FL. ORANGE	BLACK	BLACK	9.00	18.00	
W1-4R	36	36					2			FL. ORANGE	BLACK	BLACK	9.00
W5-1	36	36					2	FL. ORANGE	BLACK	BLACK	9.00	18.00	
W11-2	30	30					4			FY	BLACK	BLACK	6.25
W16-7pL	24	12					4	FY	BLACK	BLACK	2.00	8.00	
W20-1	36	36					4			FL. ORANGE	BLACK	BLACK	9.00
W20-4	36	36					4	FL. ORANGE	BLACK	BLACK	9.00	36.00	
W20-7a	36	36					4			FL. ORANGE	BLACK	BLACK	9.00
W21-5a	36	36					4	FL. ORANGE	BLACK	BLACK	9.00	36.00	
MA-W20-7b	36	36					MASSDOT STANDARD SIGN			4	FL. ORANGE	BLACK	BLACK

NOTES:

- ALL CONSTRUCTION SIGNING, DRUMS, BARRICADES AND OTHER DEVICES SHALL CONFORM WITH THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AS AMENDED.
- ALL DRUMS SHALL BE APPROXIMATELY PLACED AND MOVED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES. WORK MAY REQUIRE ADDITIONAL SIGNS, DRUMS AND OTHER TRAFFIC CONTROL DEVICES, GRADING AND TEMPORARY PAVEMENT FOR PASSAGE OF PEDESTRIAN, VEHICULAR AND EMERGENCY TRAFFIC THROUGH THE WORK AREAS, BOTH DURING AND AFTER WORKING HOURS, TO MAINTAIN SUCH ACCESS. THE FIRST TEN DRUMS SHALL BE MOUNTED WITH SEQUENTIAL FLASHING LIGHTS. MAX SPACING OF DRUMS/CONES IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS CONDUIT INSTALLATION, EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
- A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION ON TWO WAY STREETS SHALL BE MAINTAINED AT ALL TIMES. TRAFFIC DURING WORKING HOURS MAY BE REDUCED TO ONE LANE UNDER POLICE CONTROL FOR SHORT TIME PERIODS WHEN REQUIRED FOR THE WORK, AS APPROVED BY MASSDOT.
- GRADE SEPARATIONS IN EXCESS OF 2" DURING NON-WORKING HOURS SHALL REQUIRE DELINEATION BY USE OF DRUMS.
- EXCAVATION EDGES IN EXCESS OF 4" DEEP SHALL BE PROTECTED DURING NON-WORKING HOURS BY BACKFILLING WITH A WEDGE OF GRAVEL OR SOIL TO COMPACTED 4:1 SLOPE.
- NON-ESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED DURING NON-WORKING HOURS.
- FLAGGERS MAY NOT BE USED FOR TRAFFIC CONTROL AT INTERSECTIONS.
- SEE SHEET 21 FOR PEDESTRIAN TRAFFIC CONTROL DETAILS.
- CONTRACTOR SHALL MAINTAIN ADA-COMPLIANT PEDESTRIAN ACCESS AT ALL TIMES, SPECIFICALLY INCLUDING PEDESTRIAN GUIDANCE SYSTEMS AT WORK ZONES. ACCESS SHALL BE MAINTAINED ALONG ALL SIDEWALKS AND CROSSWALKS, TO ALL ABUTTERS, AND TO ALL MBTA BUS STOPS OR TRAIN STATIONS. ANY PEDESTRIAN DETOURS SHALL INCLUDE A FULLY ADA-COMPLIANT PEDESTRIAN DETOUR ROUTE WITH PROPER BARRICADES, RAILINGS, RAMPS, AND SIGNAGE.

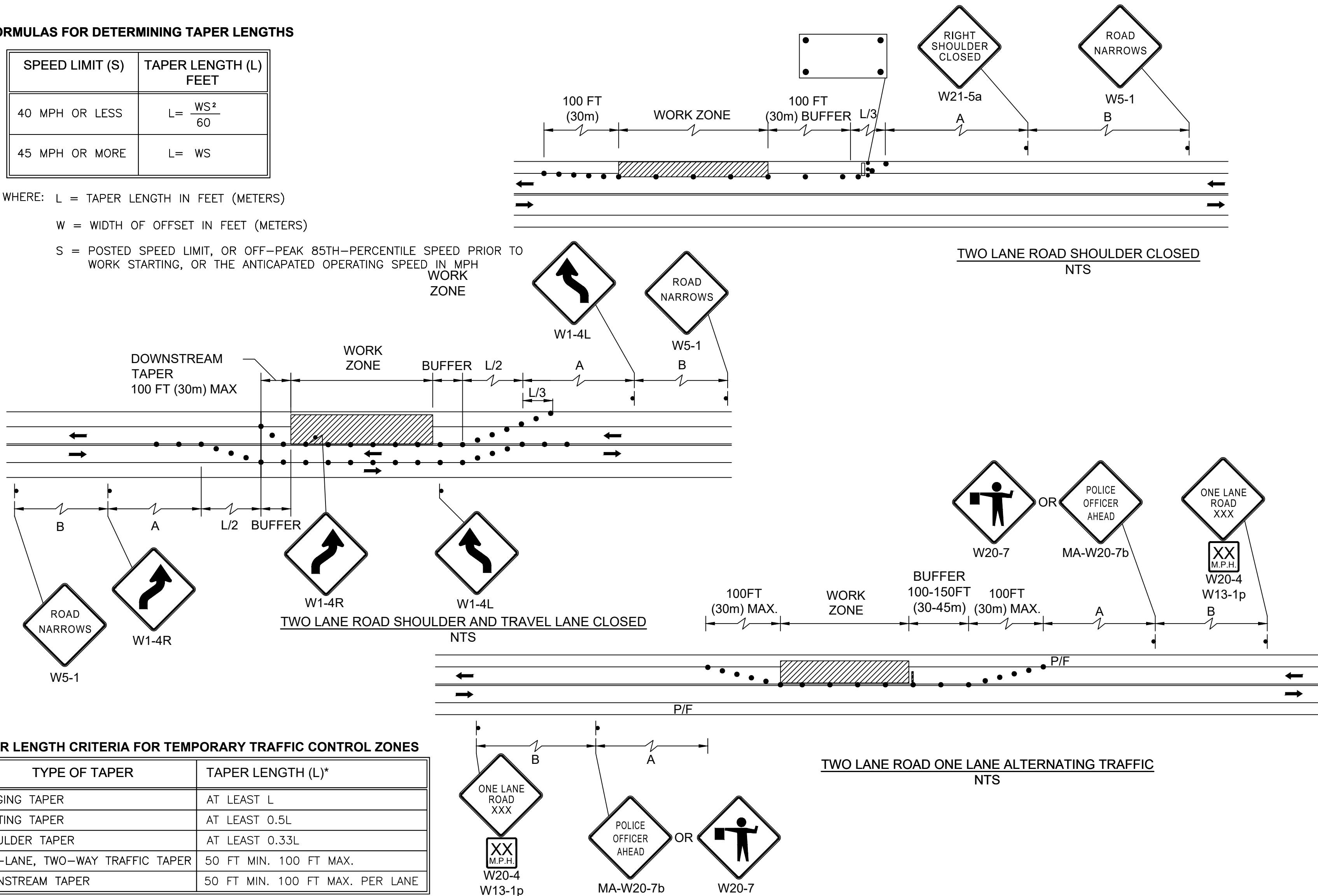
FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	$L = WS$

WHERE: L = TAPER LENGTH IN FEET (METERS)

W = WIDTH OF OFFSET IN FEET (METERS)

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED IN MPH



TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

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

SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	28	61
PROJECT FILE NO.		608743	

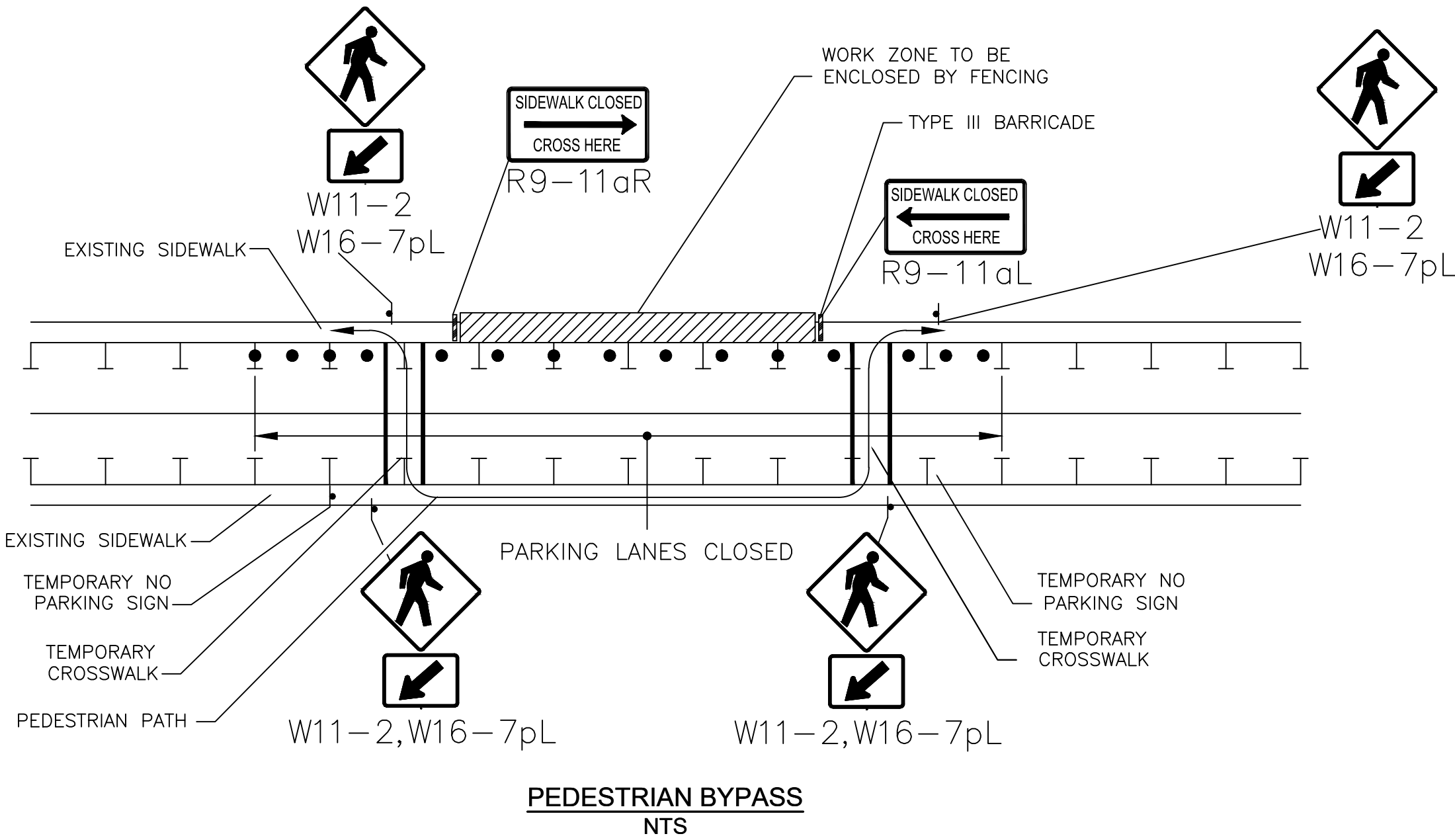
TEMPORARY TRAFFIC CONTROL PLANS

NOTES:

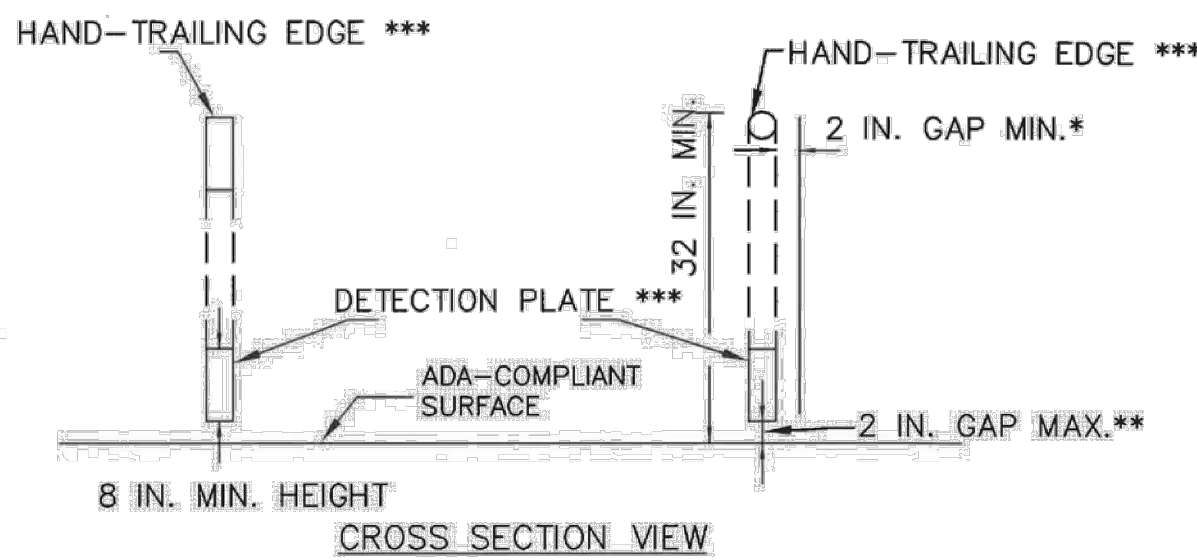
- ALL TEMPORARY TRAFFIC CONTROL WORK SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND ALL REVISIONS, UNLESS SUPERCEDED WITH THE MUTCD.
- ALL SIGN LEGENDS, BORDERS, AND MOUNTING SHALL BE IN ACCORDANCE WITH THE MUTCD.
- TEMPORARY CONSTRUCTION SIGNING, AND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

SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	29	61
PROJECT FILE NO.		608743	

TEMPORARY TRAFFIC CONTROL PLANS

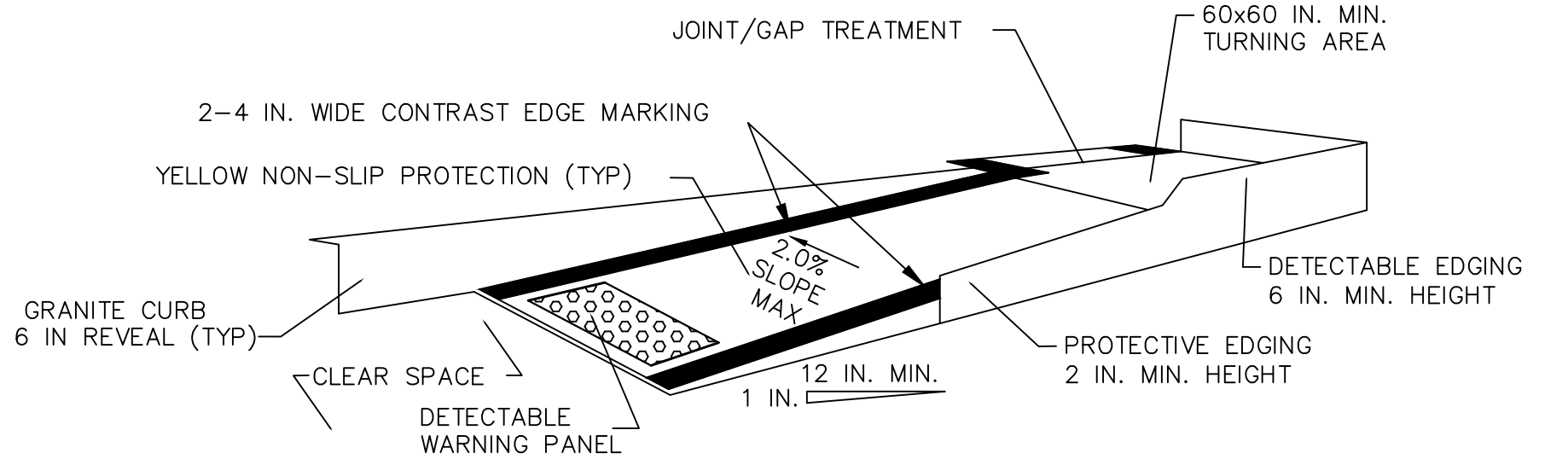


- NOTES:
1. ADDITIONAL ADVANCE WARNING MAY BE NECESSARY.
 2. CONTROLS ONLY FOR PEDESTRIAN TRAFFIC ARE SHOWN. VEHICULAR TRAFFIC SHOULD BE HANDLED AS SHOWN ELSEWHERE.
 3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
 4. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, 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. TEMPORARY CURB RAMPS WILL BE REQUIRED AT ALL TEMPORARY CROSSWALK LOCATIONS.
 5. BYPASS IS TO BE USED IN CONJUNCTION WITH THE PROPOSED LANE CLOSURE DETAILS AND DURING CONSTRUCTION STAGING, AS DIRECTED BY THE ENGINEER.
 6. THE TEMPORARY SIDEWALK SHOULD BE A MINIMUM OF 4 FEET WIDE. IF THIS WALKWAY EXCEEDS 200 FEET THEN A 5 FOOT X 5 FOOT PASSING ZONE. (FOR SHORT TERM SETUPS < 10 HOURS, THIS CONDITION MAY BE WAIVED. A NOTE WOULD NEED TO BE INCLUDED IN THE TTCF THAT STATES HOW THE CONTRACTOR SHOULD ADDRESS THIS ISSUE.)

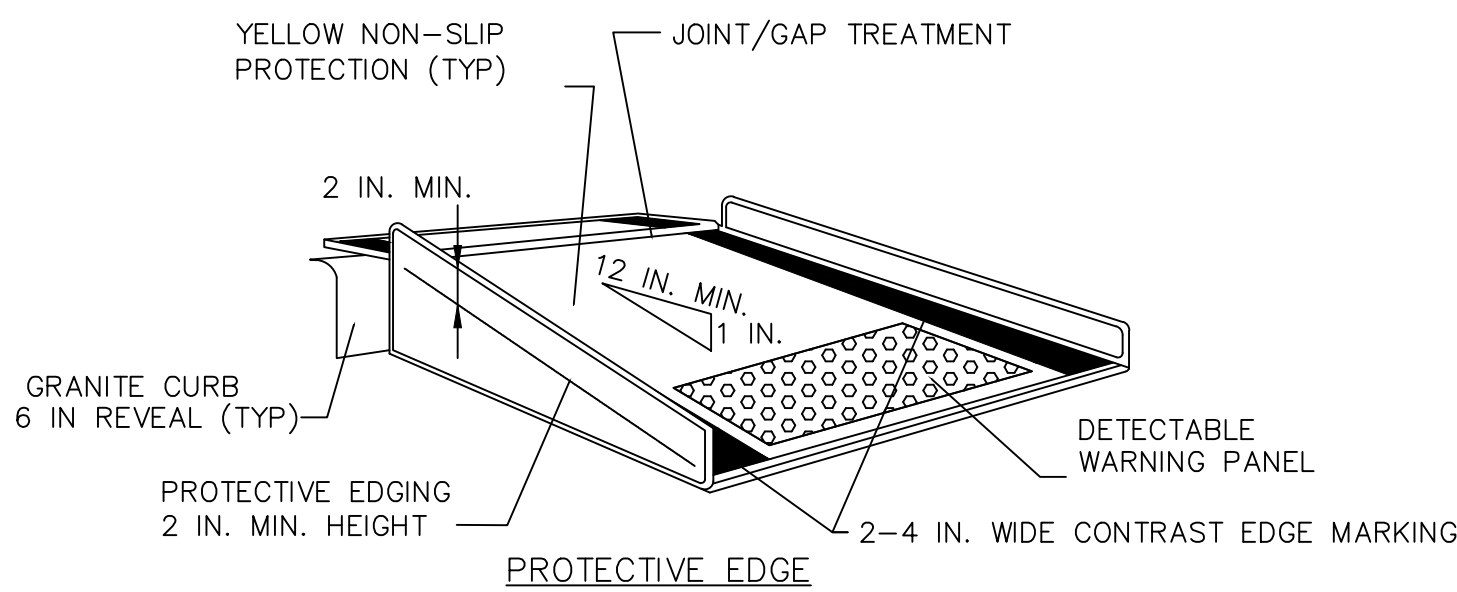


PEDESTRIAN CHANNELIZING DEVICE

- NOTES:
- * THERE SHALL BE A 2 INCH GAP BETWEEN THE HAND-TRAILING EDGE AND ITS SUPPORT.
 - ** A MAXIMUM 2 INCH GAP BETWEEN THE BOTTOM OF THE BOTTOM RAIL AND THE SURFACE MAY BE USED TO PROVIDE DRAINAGE.
 - *** THE HAND-TRAILING EDGE AND DETECTION PLATE SHALL BE CONTINUOUS THROUGHOUT THE LENGTH OF THE PATH SUCH THAT A PEDESTRIAN USER WITH A LONG CANE CAN FOLLOW IT.

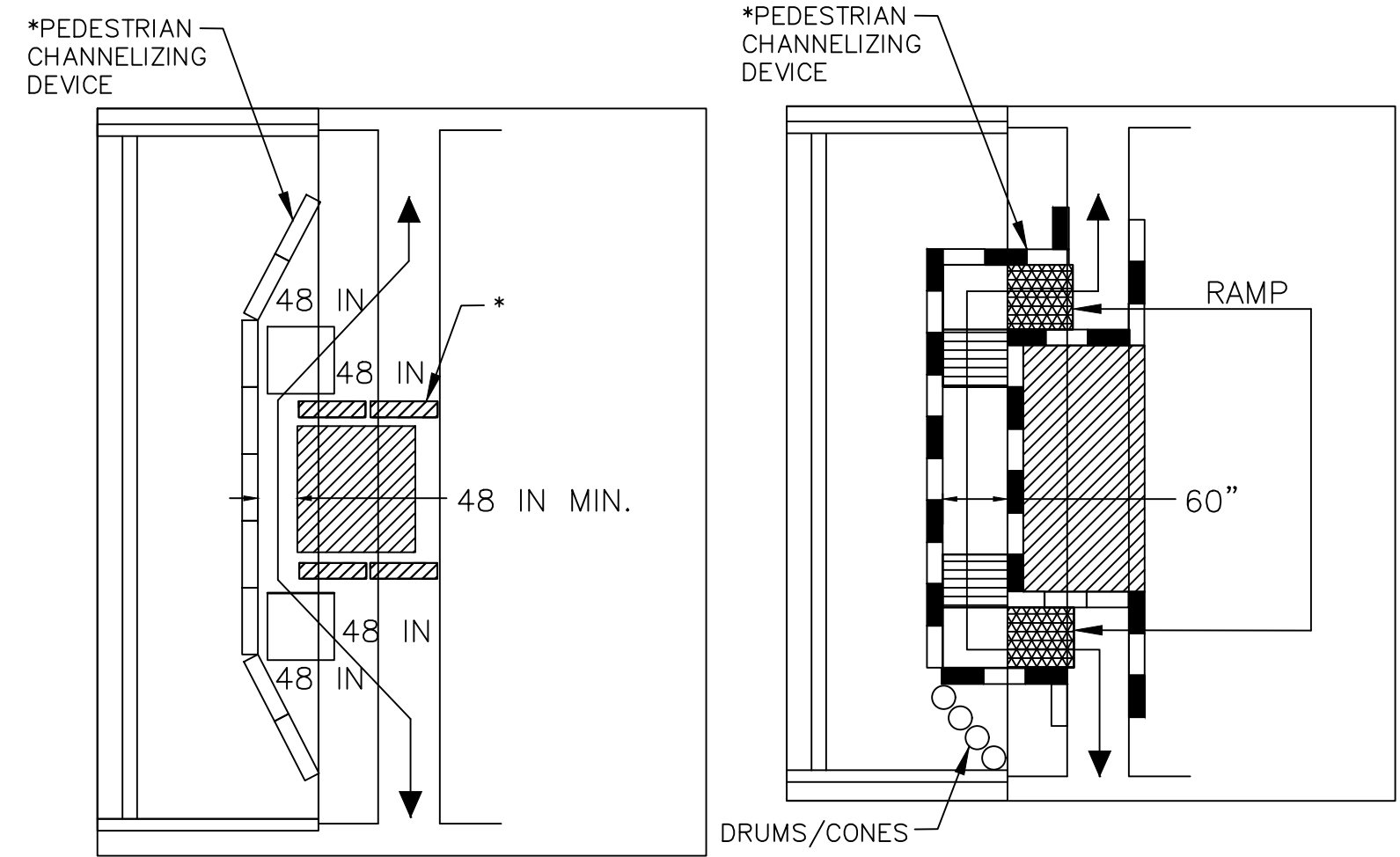


TEMPORARY CURB RAMP-PARALLEL TO CURB
NTS



TEMPORARY CURB RAMP-PERPENDICULAR TO CURB
NTS

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

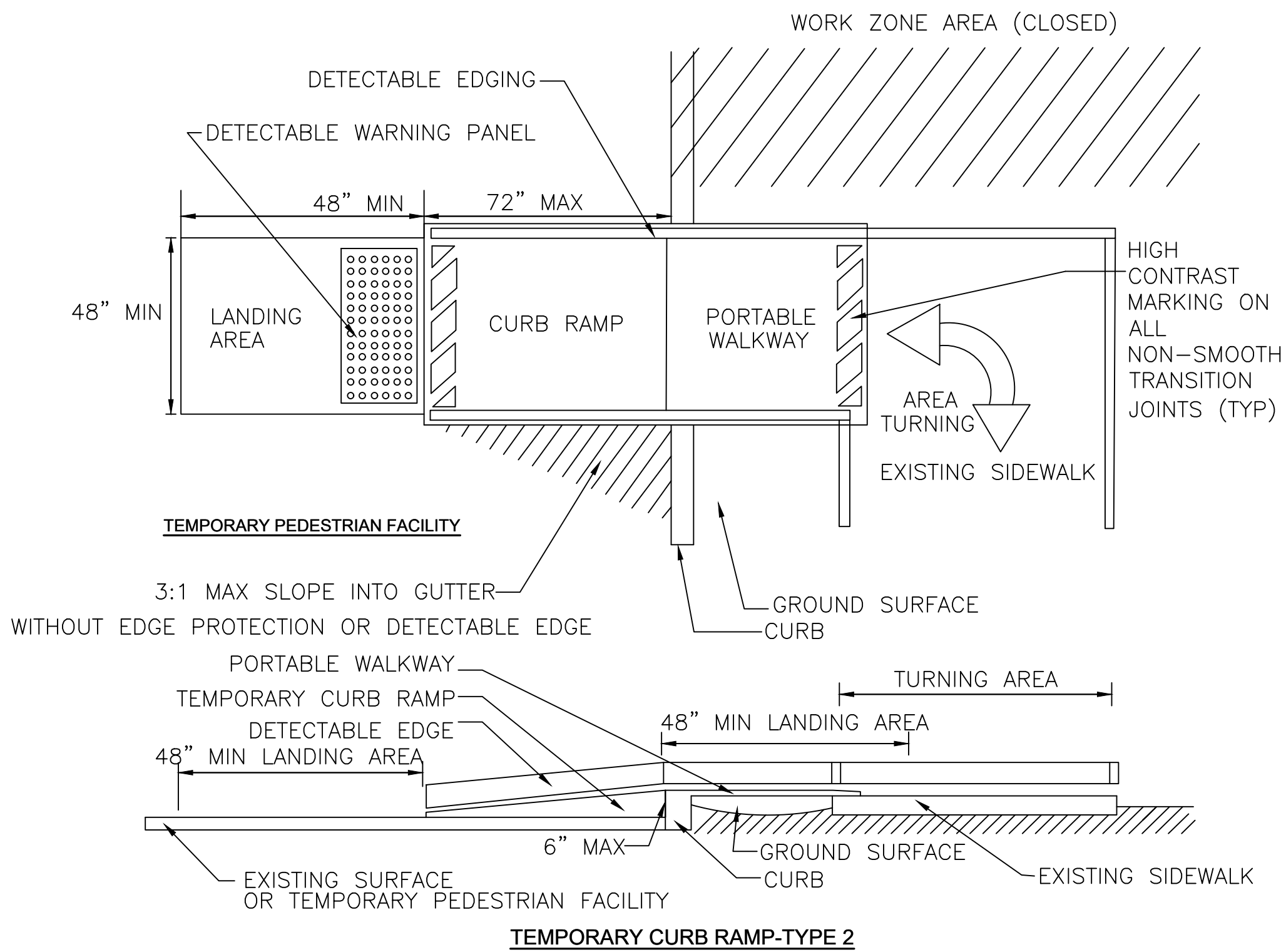


PEDESTRIAN BYPASS
NTS

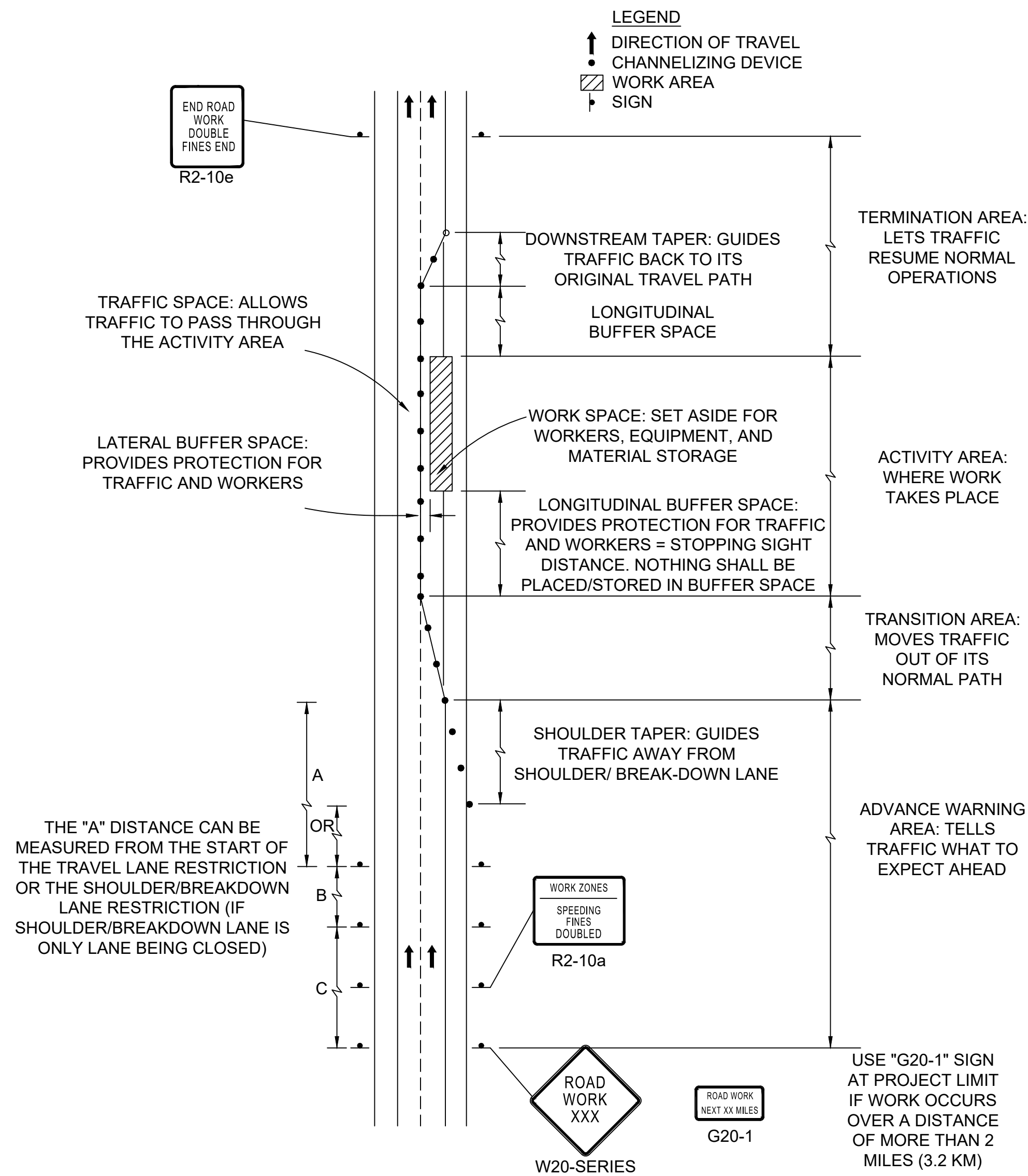
- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, temporary facilities shall be provided and they shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
- A pedestrian channelizing device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
- When used, temporary ramps shall comply with Americans with Disabilities Act (see Figures Ped-1 & Ped-2).
- The alternate pathway should have a smooth continuous hard surface for the entire length of the temporary pedestrian facility.
- 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 judgment.
- Audible information devices should be considered where midblock closings and changed crosswalk areas cause inadequate communication to be provided to pedestrians who have visual disabilities.

AUDIBLE DEVICES

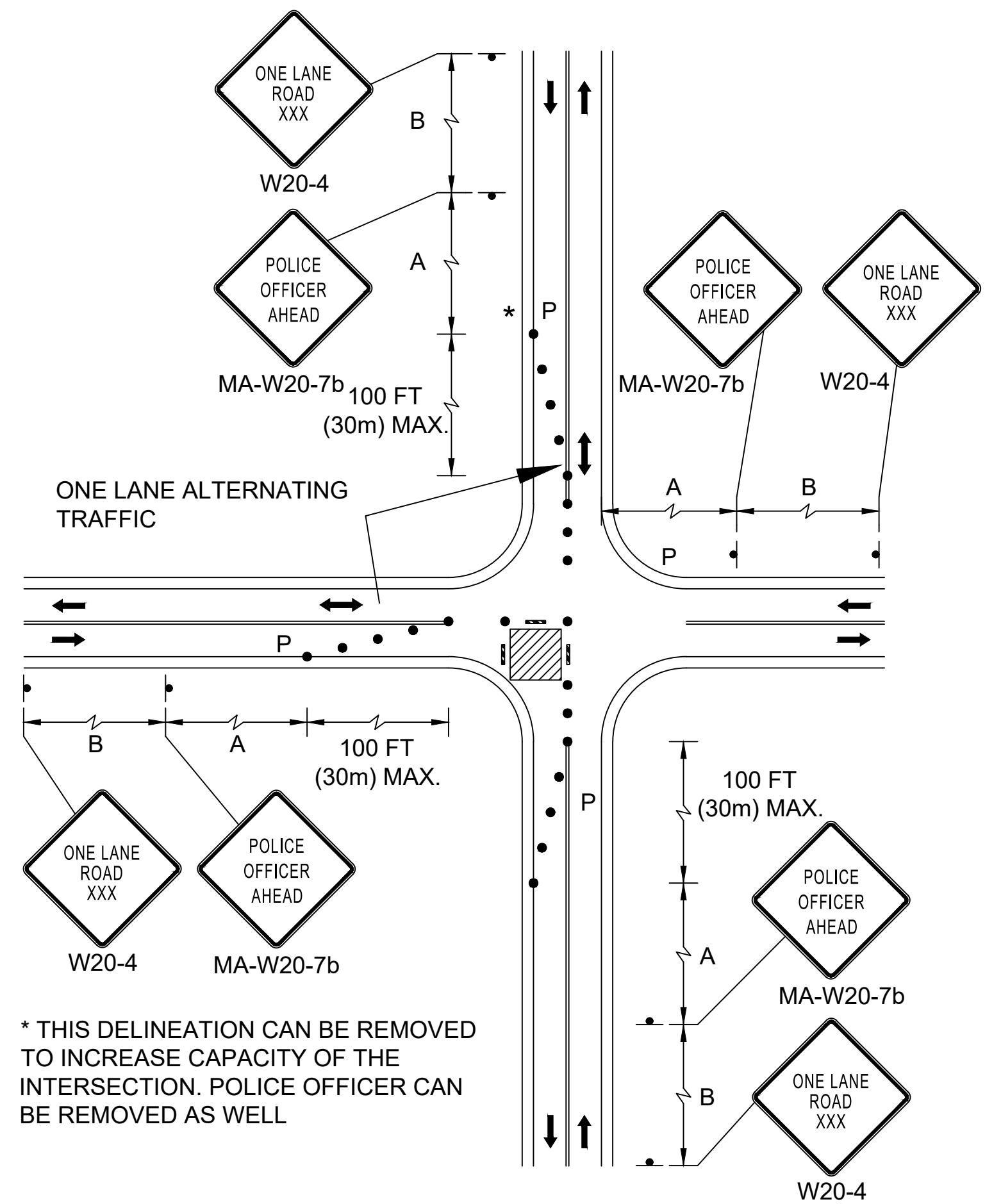
For long term sidewalk closures (at a minimum overnight) a form of speech messaging for pedestrians with visual disabilities shall be provided. Audible information devices such as detectable barriers or barricades and other passive pedestrian activation (motion activated) devices should be considered for these cases. These audible devices can be mountable or stand alone.



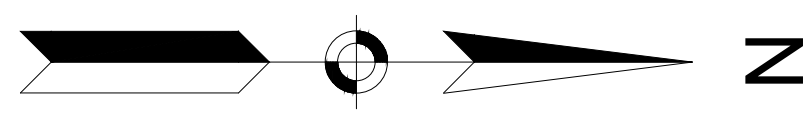
TEMPORARY CURB RAMP-TYPE 2



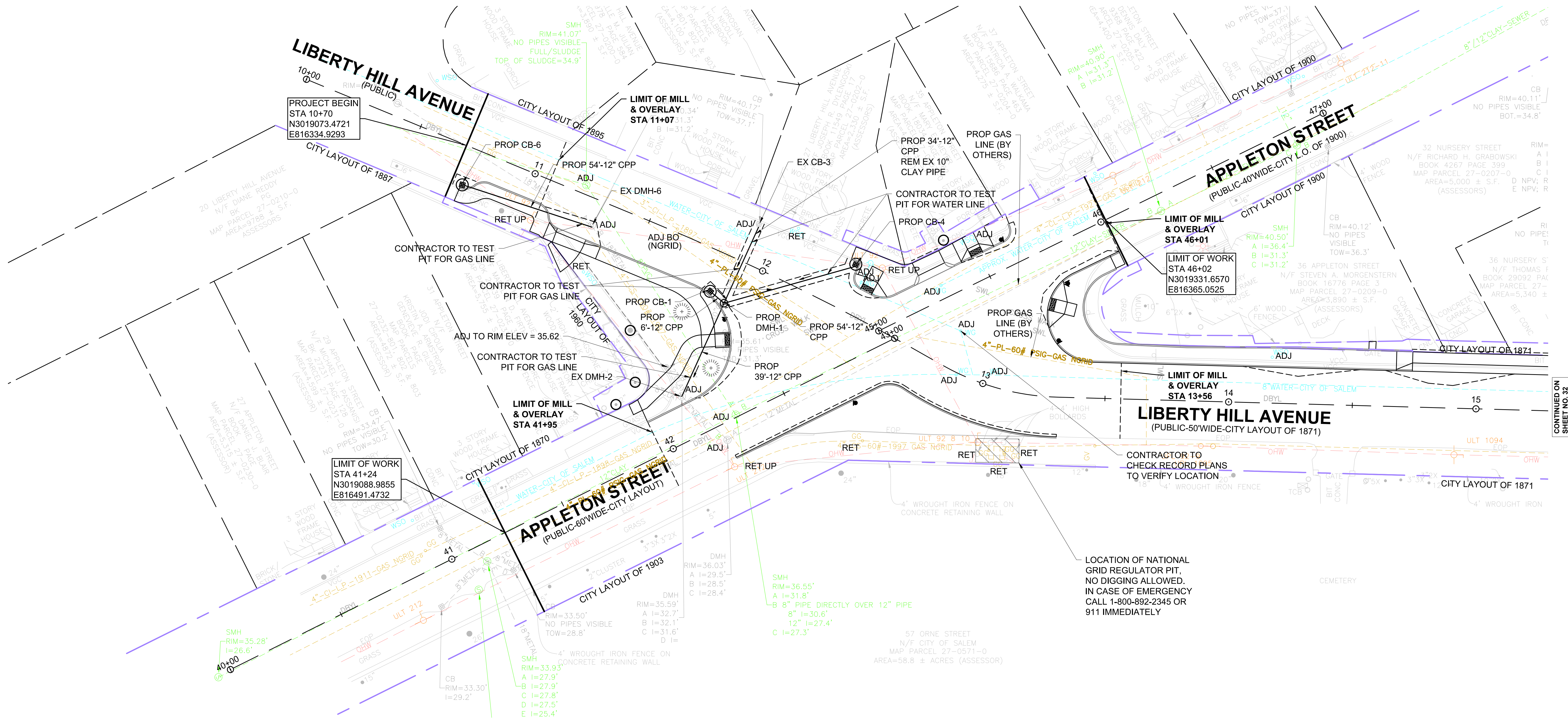
COMPONENT PARTS OF A TEMPORARY TRAFFIC CONTROL (TTC) ZONE



SINGLE LANE APPROACH ONE QUADRANT CLOSURE



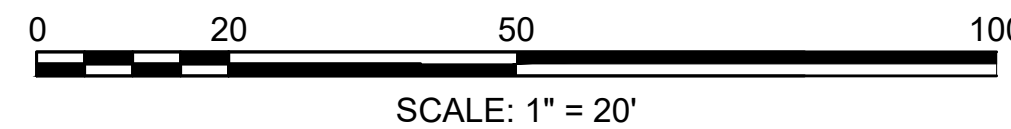
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	31	61
PROJECT FILE NO.		608743	
DRAINAGE & UTILITY PLANS			



UTILITY NOTES

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL CONTACT DIGSAFE (811 OR 1-888-DIG-SAFE) A MINIMUM OF 72 HOURS PRIOR TO ANY CONSTRUCTION TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
3. ALL MUNICIPALLY OWNED UTILITY STRUCTURES (CATCH BASINS, DRAIN MANHOLES, SEWER MANHOLES, WATER GATES, ETC.) SHALL BE ADJUSTED BY THE CONTRACTOR TO FINISHED GRADE UNLESS DIRECTED OTHERWISE.
4. THE CONTRACTOR SHALL CLEAN ALL EXISTING DRAINAGE STRUCTURES AND PIPES THAT ARE BEING REMODELED, ADJUSTED, OR CONNECTED TO ON THE PLANS AND SHALL COORDINATE AND CONTACT THE SALEM DEPARTMENT OF PUBLIC WORKS PRIOR.
5. ALL PRIVATELY OWNED UTILITY STRUCTURES (GAS GATES, ELECTRIC/TELEPHONE MANHOLES, ETC.) SHALL BE ADJUSTED TO FINISHED GRADE BY THE PRIVATE UTILITY COMPANY, UNLESS DIRECTED OTHERWISE. THE CONTRACTOR SHALL COORDINATE WITH PRIVATE UTILITY COMPANIES FOR THE ALTERATION AND ADJUSTMENT, AS NECESSARY.
6. PROPOSED LATERAL DRAIN PIPES SHALL BE INSTALLED WITH A PITCH OF 1.0% (MINIMUM) UNLESS OTHERWISE NOTED.
7. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTORS EXPENSE.

DRAINAGE DATA TABLE					
STR ID	ALIGNMENT	STA & OFFSET	RIM	INV STR	INV DATA
CB-1	LIBERTY HILL AVENUE	11+84.11 16.4' RT	39.69	DMH-1 OUT	35.69
				CB-1 IN	35.46
DMH-1	LIBERTY HILL AVENUE	11+91.29 18.4' RT	39.46	EX-CB-3 IN	35.13
				EX DMH-2 OUT	35.12
				CB-4 IN	35.13
EX DMH-2	LIBERTY HILL AVENUE	11+91.09 16.38' LT	(35.59)	DMH-1 IN	31.7
CB-4	LIBERTY HILL AVENUE	12+32.28 19.09' LT	40.49	DMH-1 OUT	36.49
EX CB-3	LIBERTY HILL AVENUE	42+12.49 17.44' LT	(40.17)	DMH-1 OUT	MATCH EXISTING PIPE
CB-6	LIBERTY HILL AVENUE	10+74.64 15.27' RT	40.22	EX DMH-6-OUT	36.22
EX DMH-6	LIBERTY HILL AVENUE	11+29.11 10.62' RT	(40.32)	EX-PIPE-IN	31.30
				EX-PIPE-OUT	31.20
				CB-6 IN	35.68

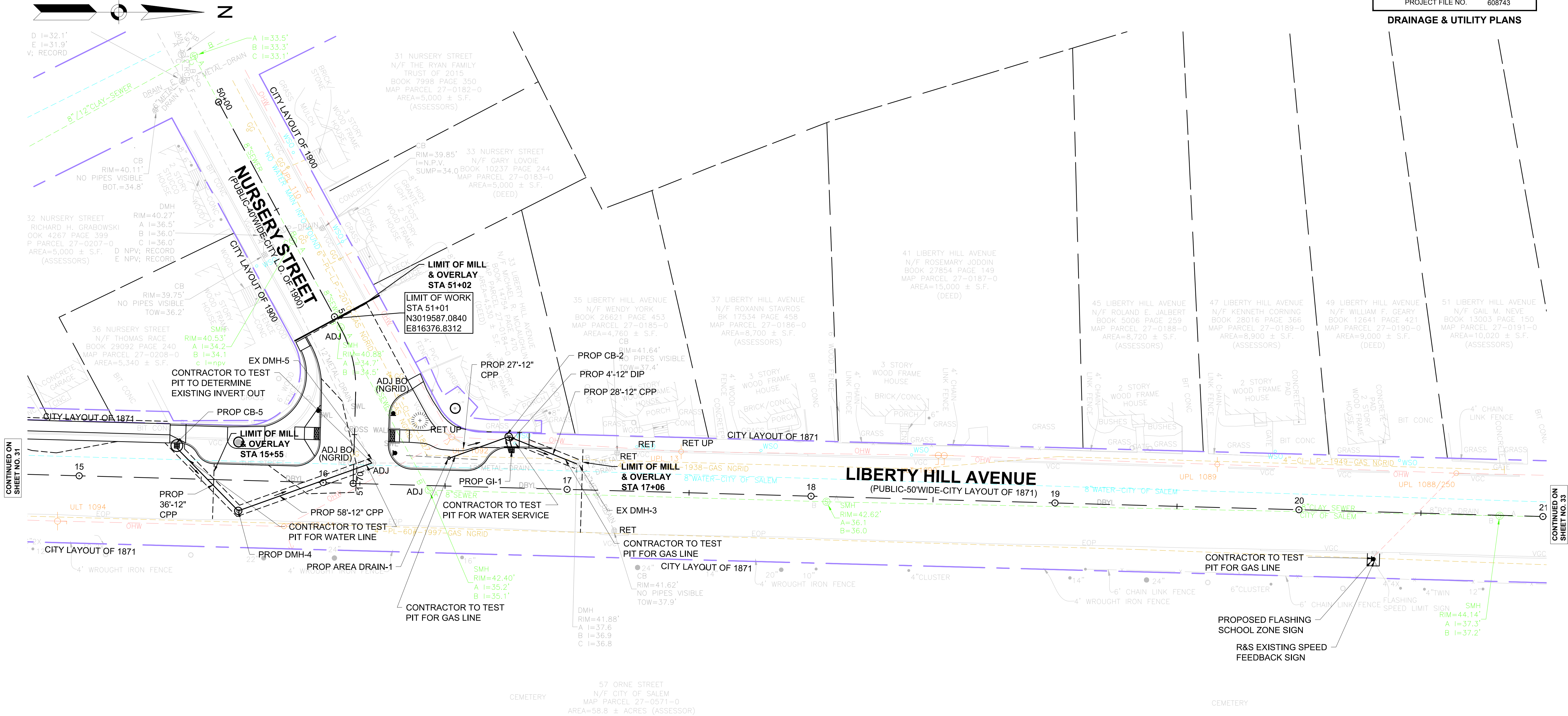


CONTINUED ON
SHEET NO. 32

SALEM
BATES ELEMENTARY SCHOOL

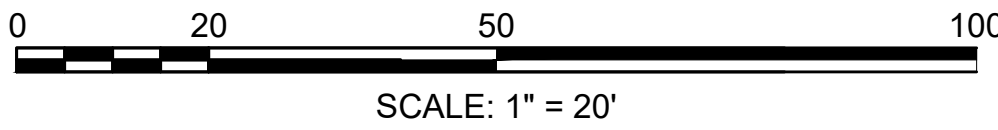
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	32	61
PROJECT FILE NO.		608743	

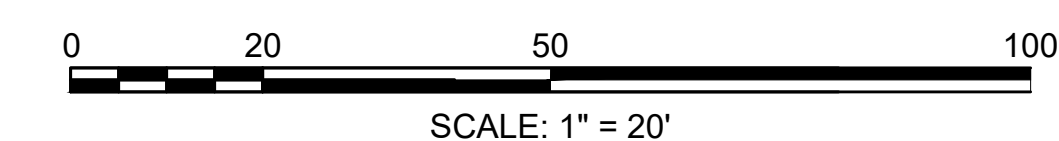
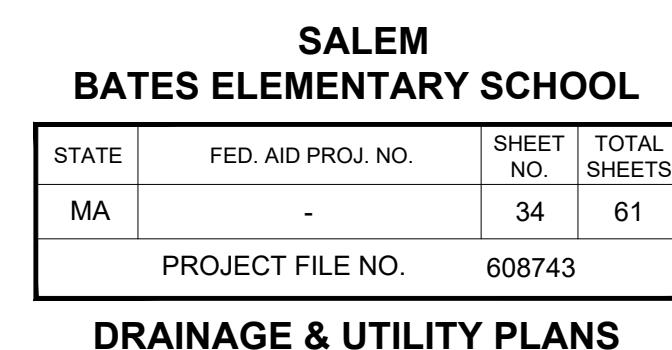
DRAINAGE & UTILITY PLANS

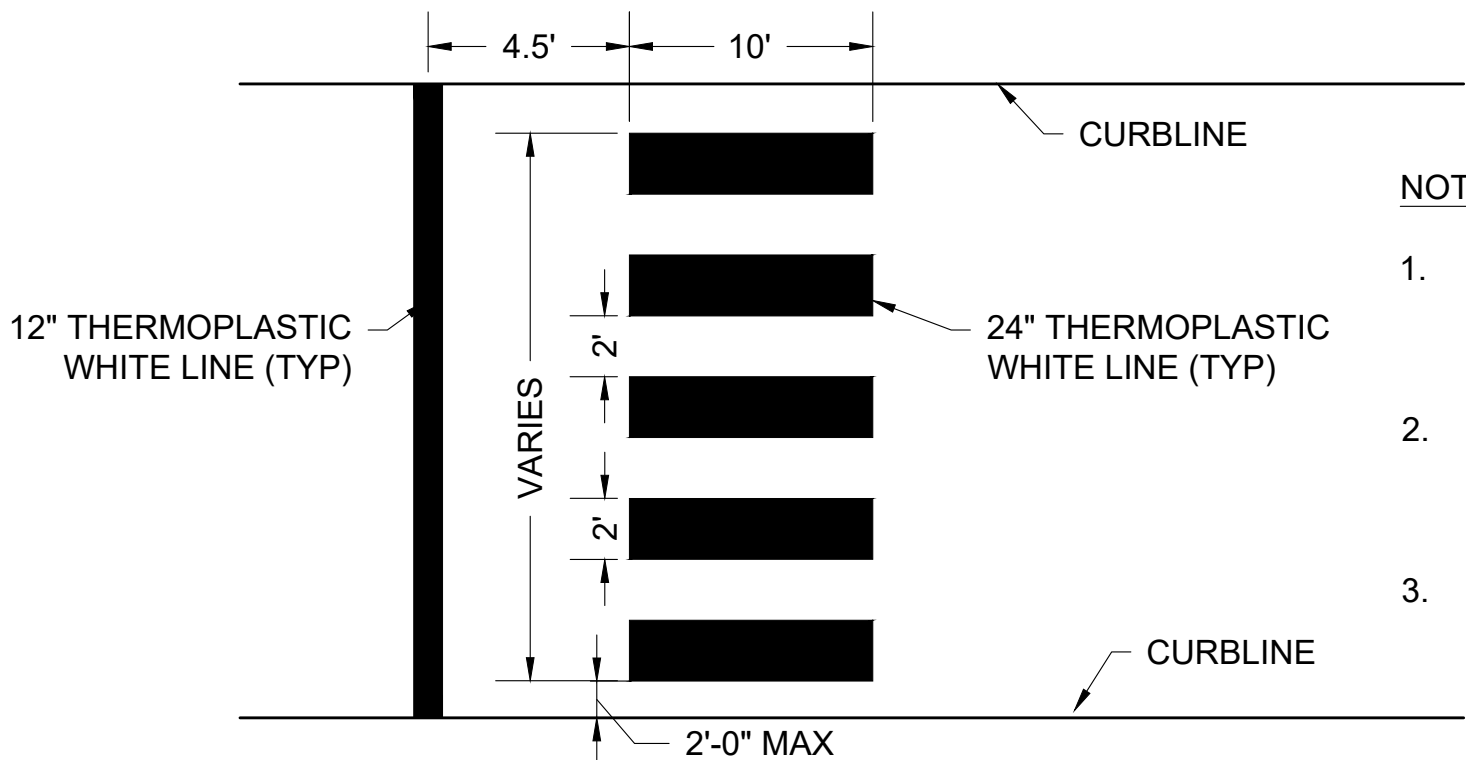


DRAINAGE DATA TABLE					
STR ID	ALIGNMENT	STA & OFFSET	RIM	INV STR	INV DATA
CB-5	LIBERTY HILL AVENUE	15+39.69 13.50' LT	42.40	DMH-4 OUT	38.40*
DMH-4	LIBERTY HILL AVENUE	15+65.55 12.53' RT	42.50	CB-5 IN	38.22*
				EX DMH-5 OUT	38.21*
EX DMH-5	LIBERTY HILL AVENUE	16+19.88 8.61' LT	(42.26)	DMH-4 IN	37.92*
AREA DRAIN-1	LIBERTY HILL AVENUE	16+48.05 13.40' LT	41.31	CB-2 OUT	38.33
CB-2	LIBERTY HILL AVENUE	16+75.48 20.93' LT	42.06	AREA DRAIN-1 IN	38.06
				GI-1 IN	39.03
				EX DMH-3 OUT	37.35
GI-1	LIBERTY HILL AVENUE	16+76.87 15.42' LT	41.57	CB-2 OUT	39.07
				EX-PIPE-IN-A	37.60
EX DMH-3	LIBERTY HILL AVENUE	17+03.64 10.56' LT	(41.88)	EX-PIPE-IN-B	36.90
				EX-PIPE-IN-C	36.80
				CB-2 IN	36.90

*NOTE: INVERT INFORMATION FOR EX DMH-5 IS UNAVAILABLE. PROPOSED INVERTS FOR EX DMH-5, CB-5, & DMH-4 MAY NEED TO BE ADJUSTED BASED ON RESULTS OF TEST PIT BY CONTACTOR.



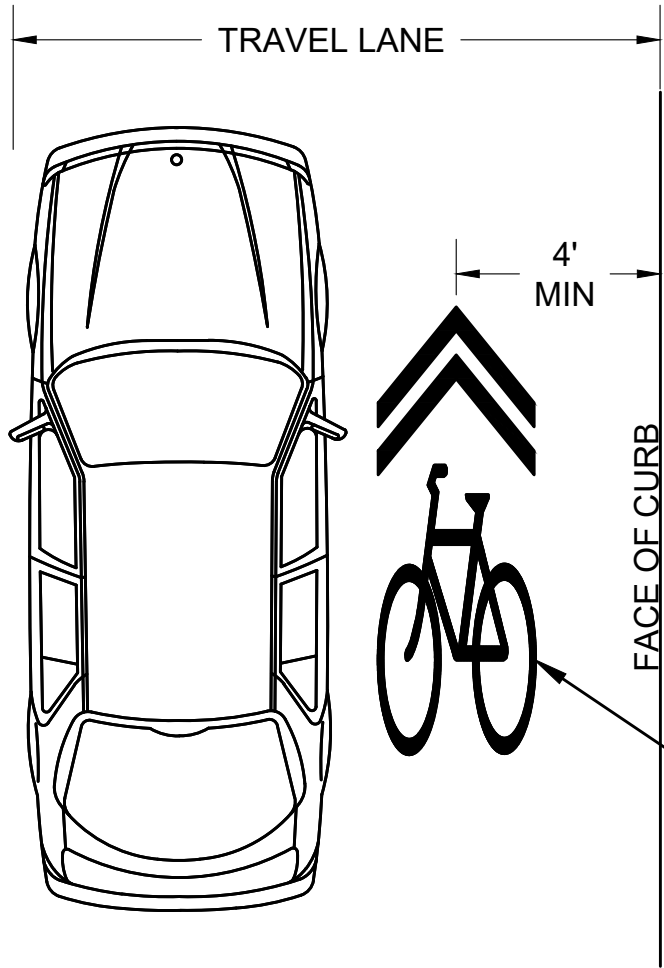




TYPICAL CONTINENTAL STYLE CROSSWALK PAVEMENT MARKING
NOT TO SCALE

NOTES:

1. ALL 24" LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 12" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY THE ENGINEER PRIOR TO APPLICATION.
3. CROSSWALK BARS SHALL BE PLACED OUTSIDE THE VEHICULAR WHEEL PATH WHEREVER POSSIBLE.

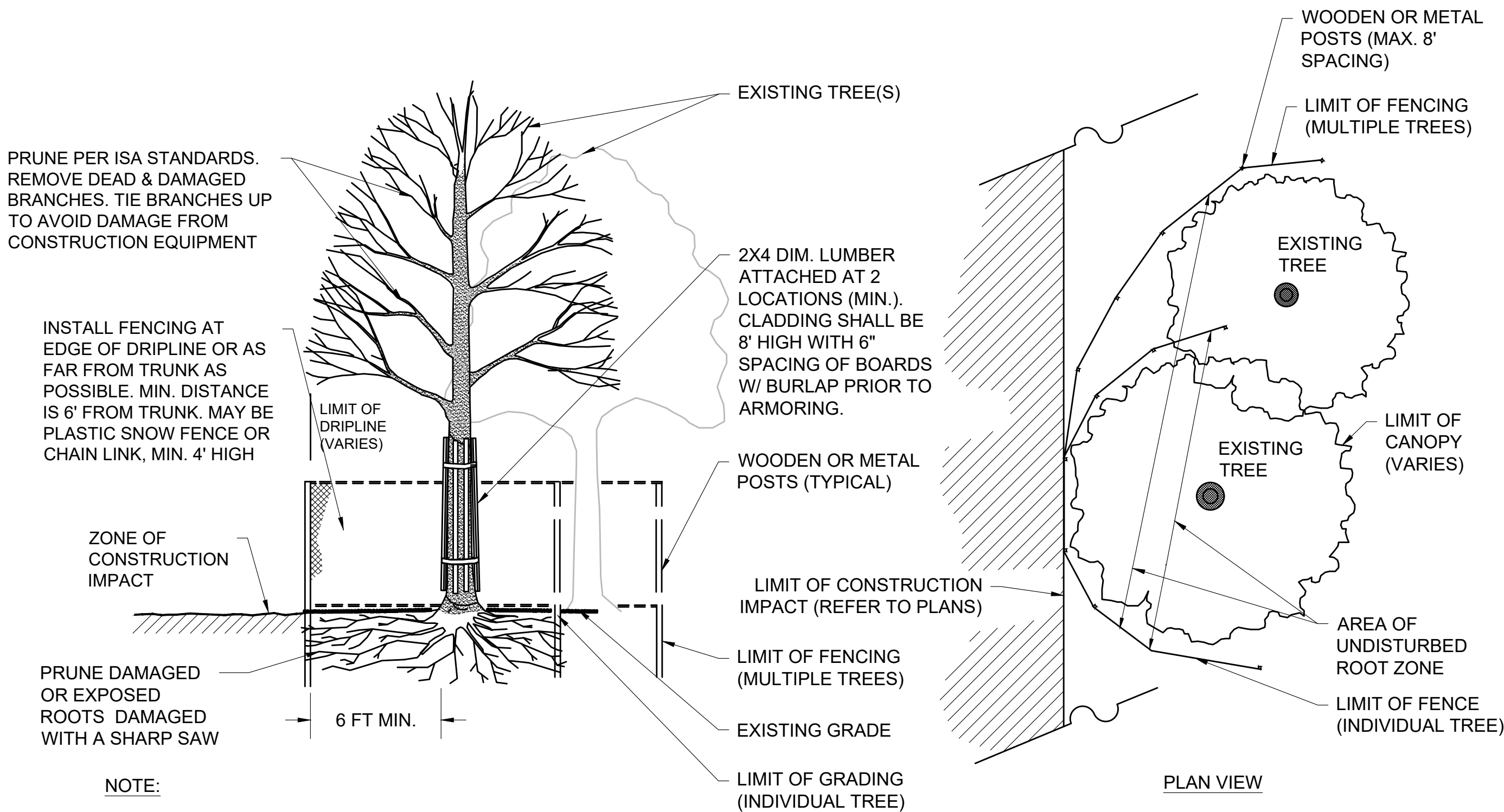


SHARED LANE MARKING SYMBOL
PLACEMENT ADJACENT TO CURB WITHOUT PARKING
NOT TO SCALE

SHARED LANE MARKING SYMBOL NOTES:

1. IN LOCATIONS WITH ON-STREET PARKING, SHARED LANE MARKING SYMBOLS SHALL BE PLACED SO THAT THEIR CENTERS ARE A MINIMUM OF 11 FEET FROM THE ADJACENT FACE OF CURB UNLESS OTHERWISE NOTED ON THE PLANS.
2. IN LOCATIONS WITHOUT PARKING, SHARED LANE MARKING SYMBOLS SHALL BE PLACED SO THAT THEIR CENTERS ARE A MINIMUM OF 4 FEET FROM THE ADJACENT FACE OF CURB UNLESS OTHERWISE NOTED ON THE PLANS.
3. IF LOCATED IN A TURN LANE, SHARED LANE MARKING SYMBOLS SHALL BE CENTERED IN THE LANE UNLESS OTHERWISE NOTED ON THE PLANS.
4. DO NOT PLACE SYMBOLS ON LANE LINES.
5. SEE PLANS FOR SYMBOL LOCATIONS.

SHARED LANE MARKING
CENTERED IN LANE WHEN
POSTED SPEED LIMIT IS 25
MPH OR LOWER. SEE
MANUAL ON UNIFORM
TRAFFIC CONTROL DEVICES
(MUTCD) FOR MORE DETAILS

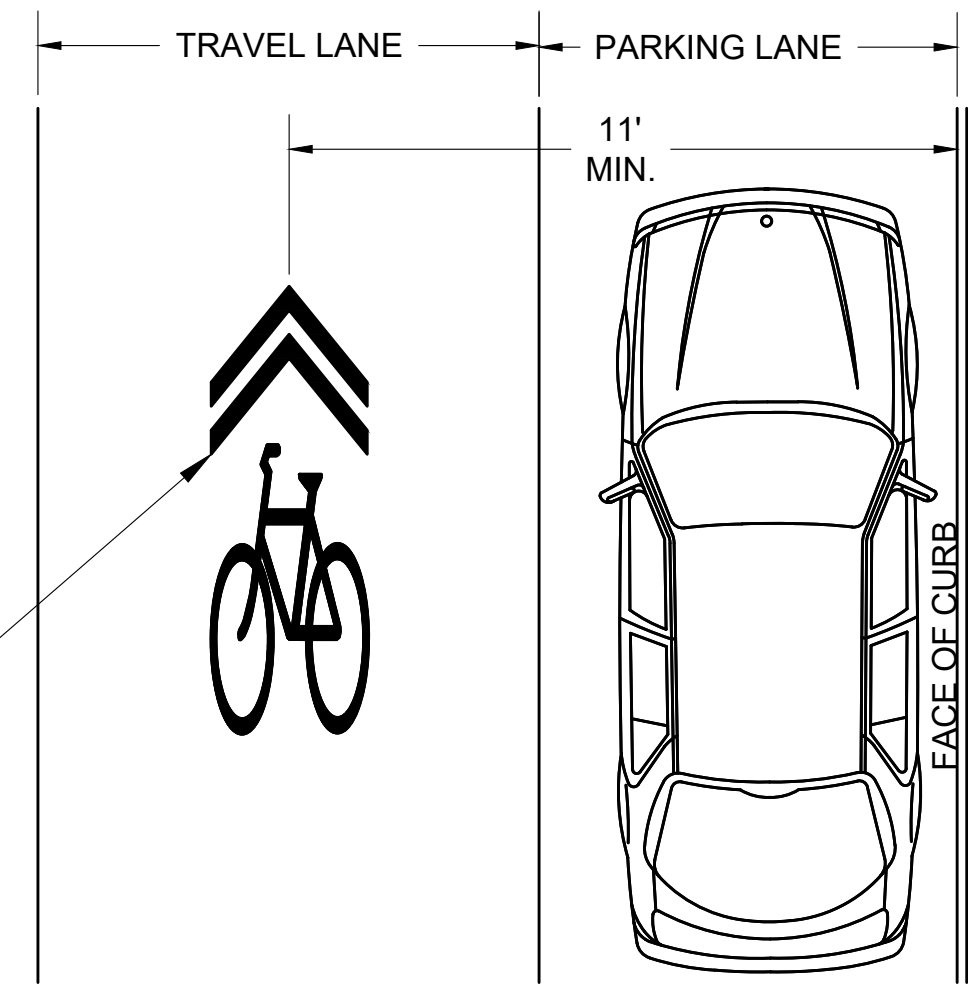


NOTE:

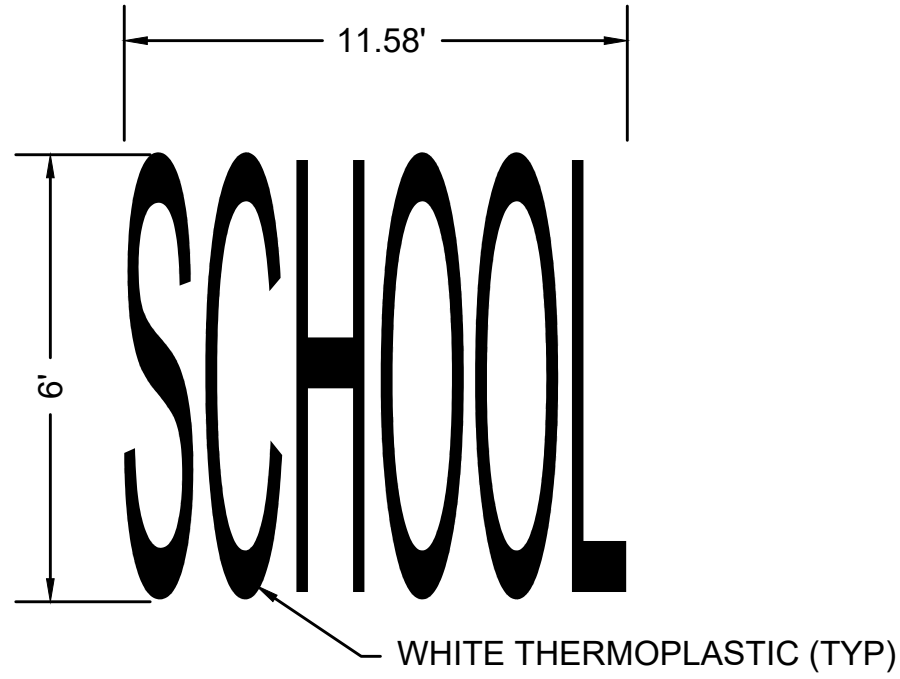
NO STORAGE OF EQUIPMENT OR STOCKPILING OF MATERIALS WITHIN DRIPLINE OF THE TREE IS ALLOWED.

TREE PROTECTION - EXISTING TREE
NOT TO SCALE

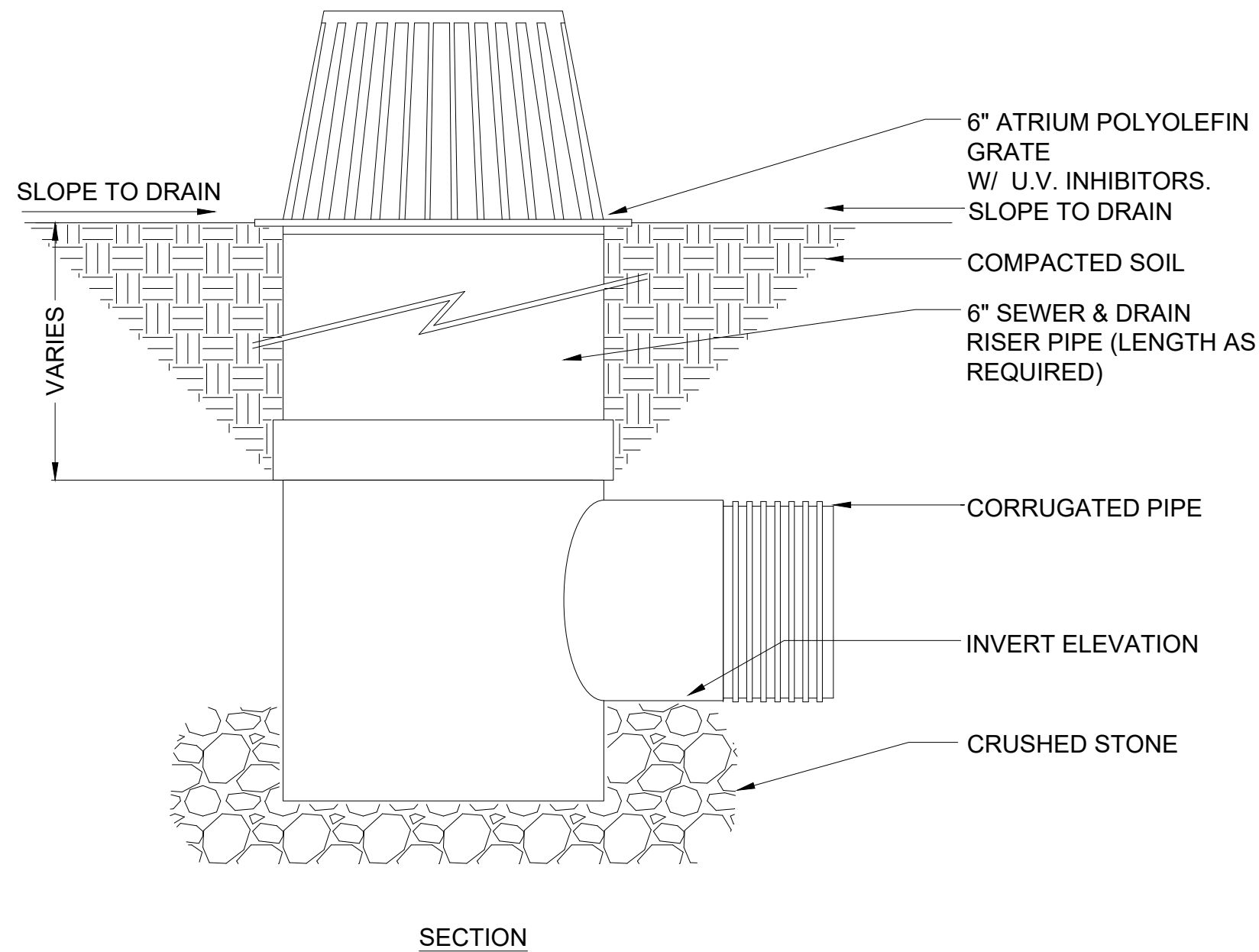
SHARED LANE MARKING
CENTERED IN LANE WHEN
POSTED SPEED LIMIT IS 25
MPH OR LOWER. SEE
MANUAL ON UNIFORM
TRAFFIC CONTROL DEVICES
(MUTCD) FOR MORE DETAILS



SHARED LANE MARKING SYMBOL
PLACEMENT ADJACENT TO PARKING
NOT TO SCALE



TYPICAL "SCHOOL" PAVEMENT MARKING DETAIL
NOT TO SCALE



NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.

AREA DRAIN
NOT TO SCALE

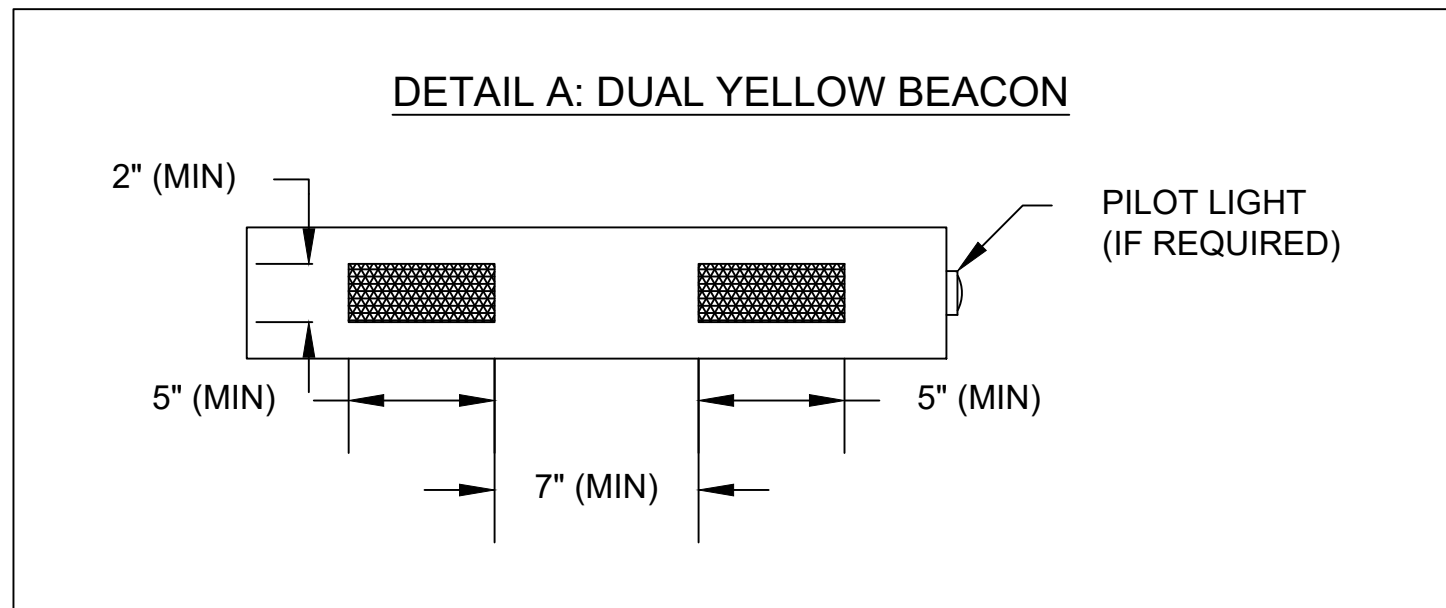
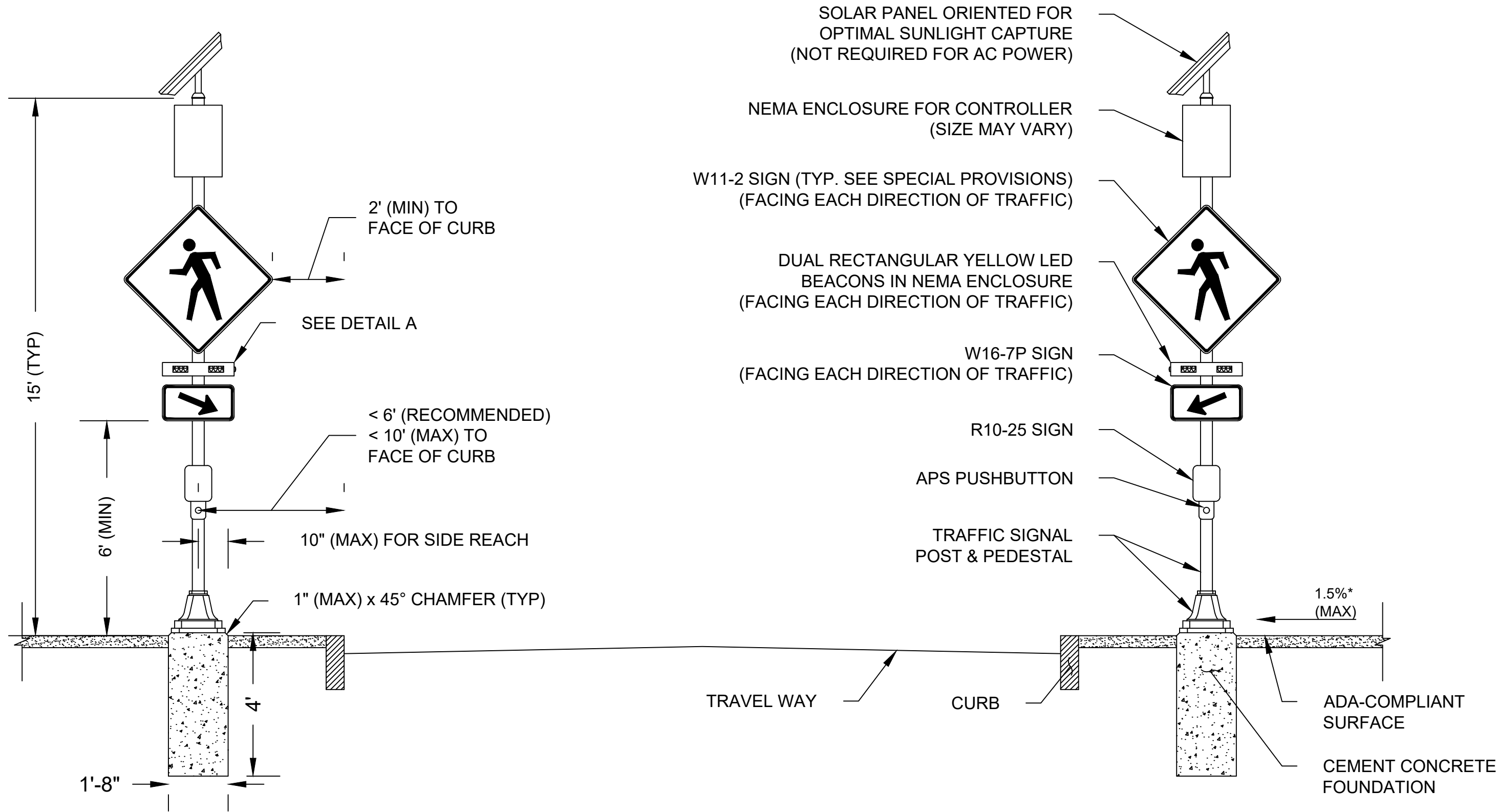
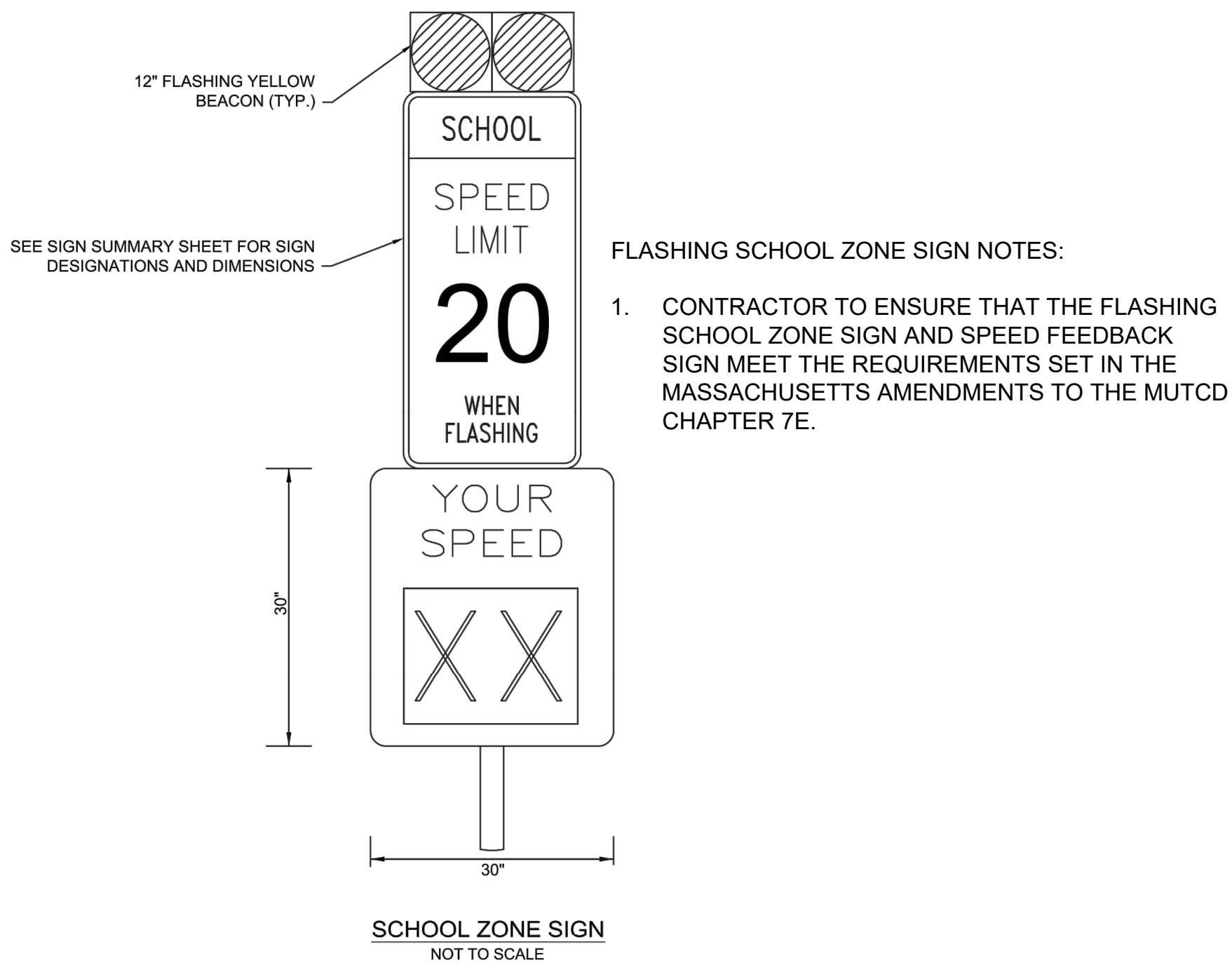
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	35	61
PROJECT FILE NO.		608743	

CONSTRUCTION DETAILS

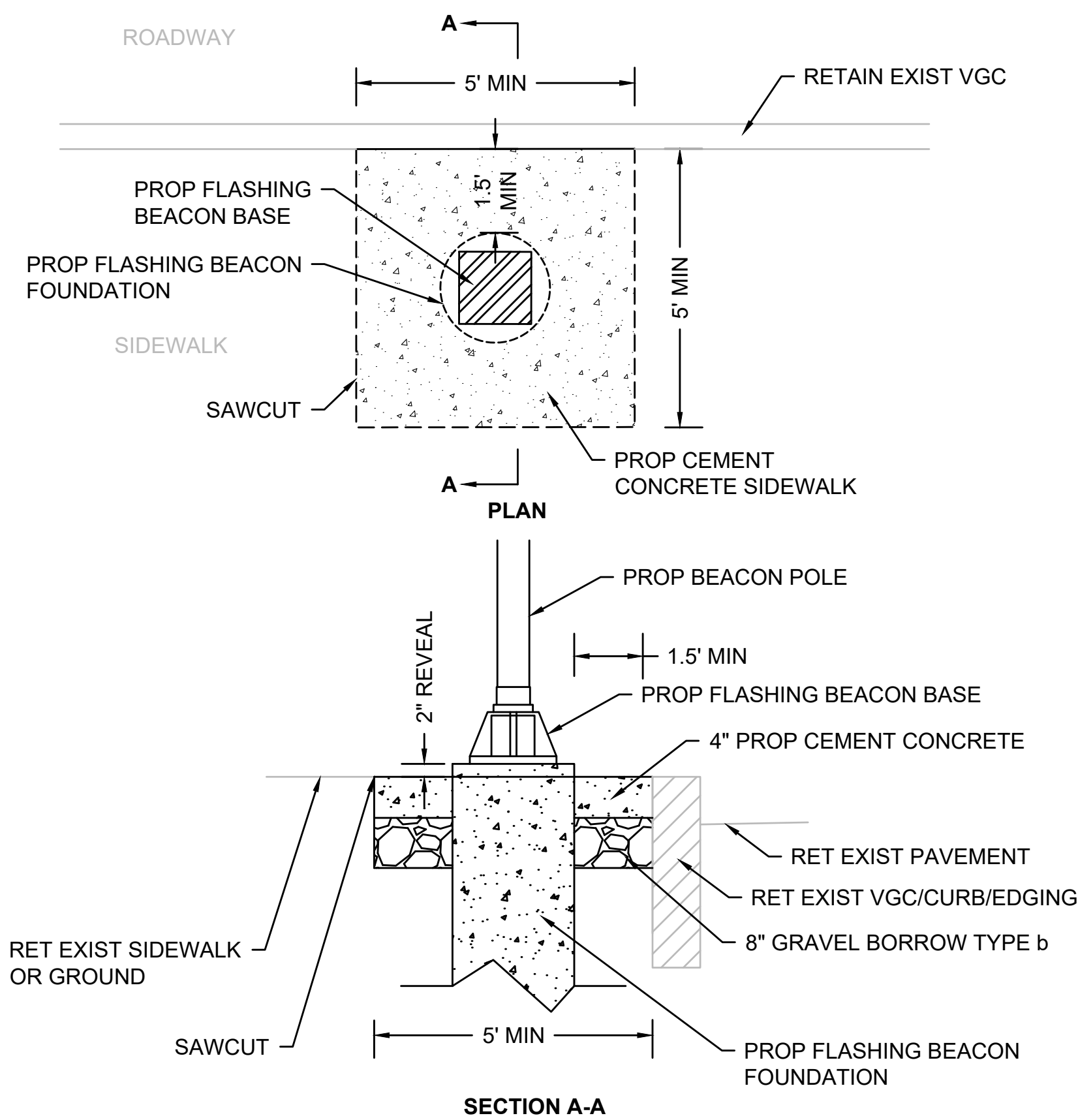
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	37	61
PROJECT FILE NO.		608743	
CONSTRUCTION DETAILS			

- NOTES:
- CROSSWALK AND ADA-COMPLIANT RAMPS NOT SHOWN. SEE PLANS FOR LOCATIONS.
 - REFER TO THE SPECIAL PROVISIONS FOR SIGN DIMENSIONS.
 - ALL CONDUIT, PULL BOXES, SERVICE CONNECTIONS, AND EQUIPMENT GROUNDING REQUIRED FOR AC POWER IS NOT SHOWN IN THIS DETAIL AND SHALL BE PAID FOR SEPARATELY UNDER THEIR RESPECTIVE PAY ITEMS.
 - ACCESS TO ALL PEDESTRIAN ACTUATED CONTROLS SHALL BE ADA/AAB COMPLIANT.
 - *0.5% CONSTRUCTION TOLERANCE FOR CROSS-SLOPE.

- MAJOR ITEMS LIST
- 2 CEMENT CONCRETE FOUNDATIONS PER 812.30.1
 - 2 15' TRAFFIC SIGNAL POSTS & PEDESTALS
 - 2 APS PUSHBUTTON SYSTEMS
 - 4 DUAL RECTANGULAR YELLOW LED BEACONS IN NEMA ENCLOSURES
 - 2 R10-25 SIGNS
 - 4 W11-2 SIGNS
 - 2 W16-7PR SIGNS
 - 2 W16-7PL SIGNS
 - 2 SOLAR PANEL SYSTEMS (NOT REQUIRED FOR AC POWER)
 - 2 NEMA ENCLOSURES FOR ALL COMPONENTS NEEDED TO MEET FUNCTIONAL REQUIREMENTS PER SPECIAL PROVISIONS
 - 2 BATTERY SYSTEMS (NOT REQUIRED FOR AC POWER)
- PLUS ALL MOUNTING AND SUPPORTING HARDWARE AND WIRING NECESSARY TO COMPLETE A WORKING SYSTEM.



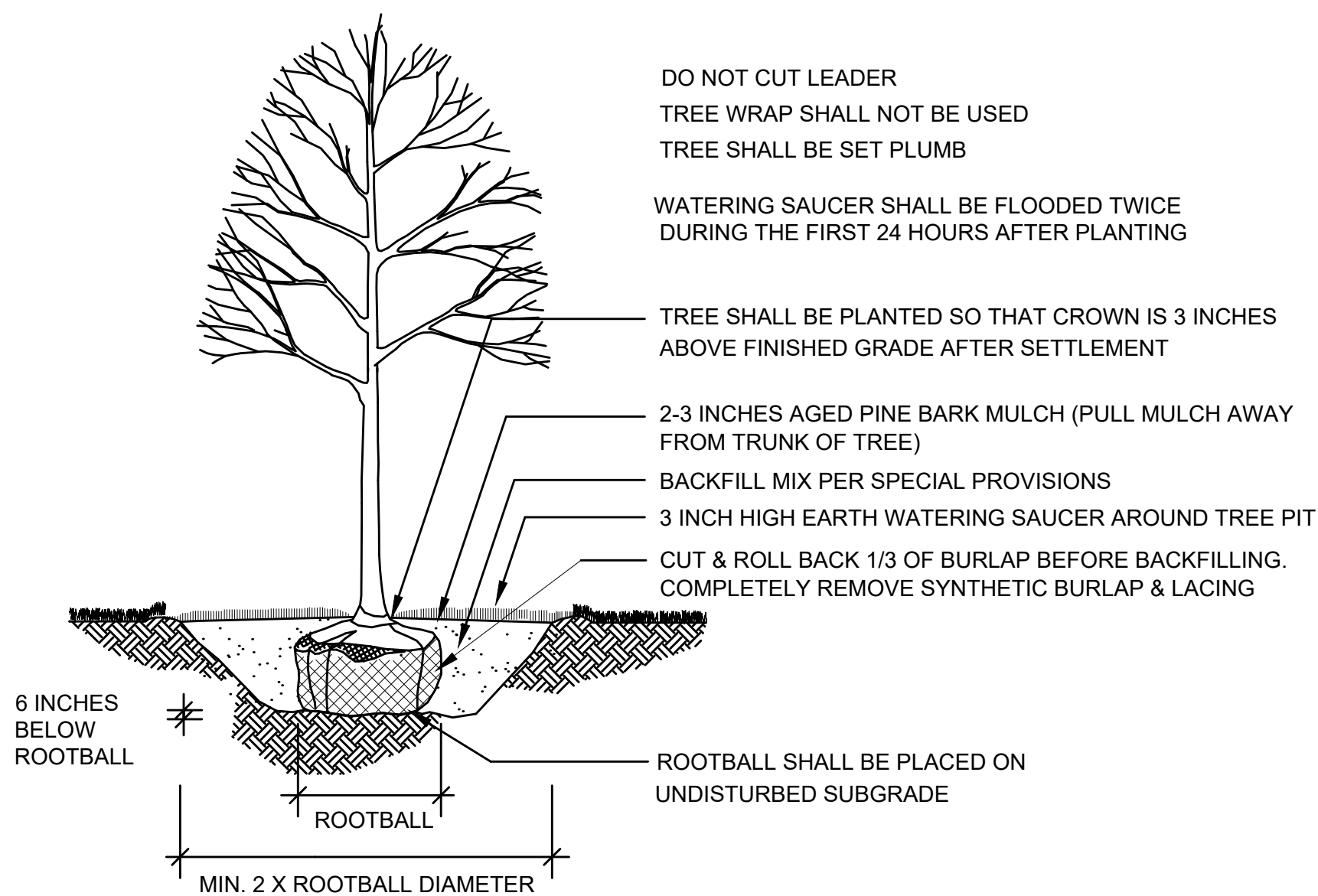
- RRFB OPERATIONAL NOTES:
- RRFBs SHALL WIG-WAG FLASH WHEN ACTIVATED BY PEDESTRIAN PUSH BUTTON.
 - THE SYSTEM SHALL BE CAPABLE OF PROVIDING A FLASHING RATE OF 70 TO 80 CYCLES PER MINUTE.



NOTE:

ELECTRICAL WIRING NOT SHOWN FOR CLARITY

FLASHING SCHOOL ZONE SIGN INSTALLATION DETAIL
NOT TO SCALE



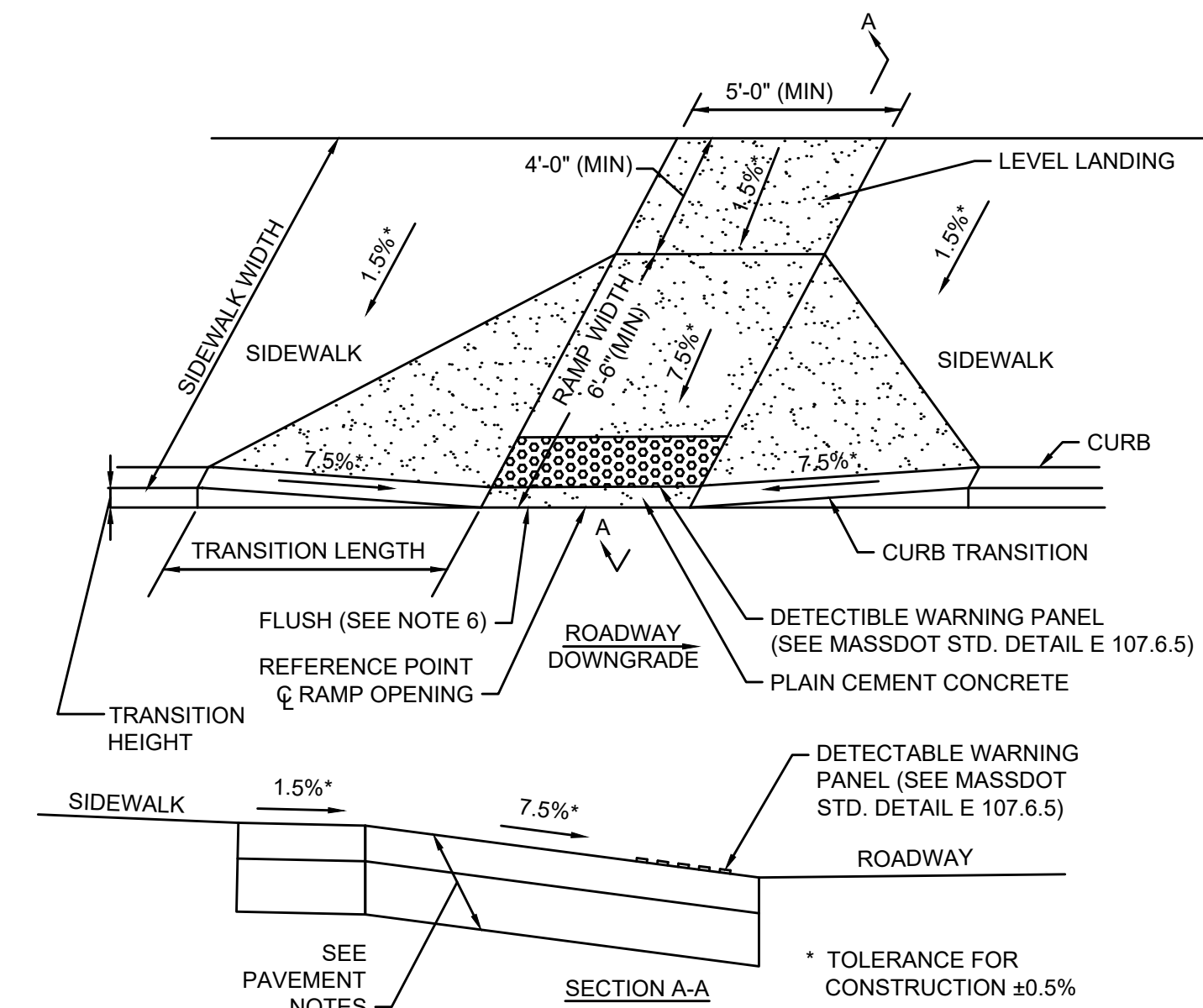
DECIDUOUS TREE PLANTING
NOT TO SCALE

SALEM
BATES ELEMENTARY SCHOOL

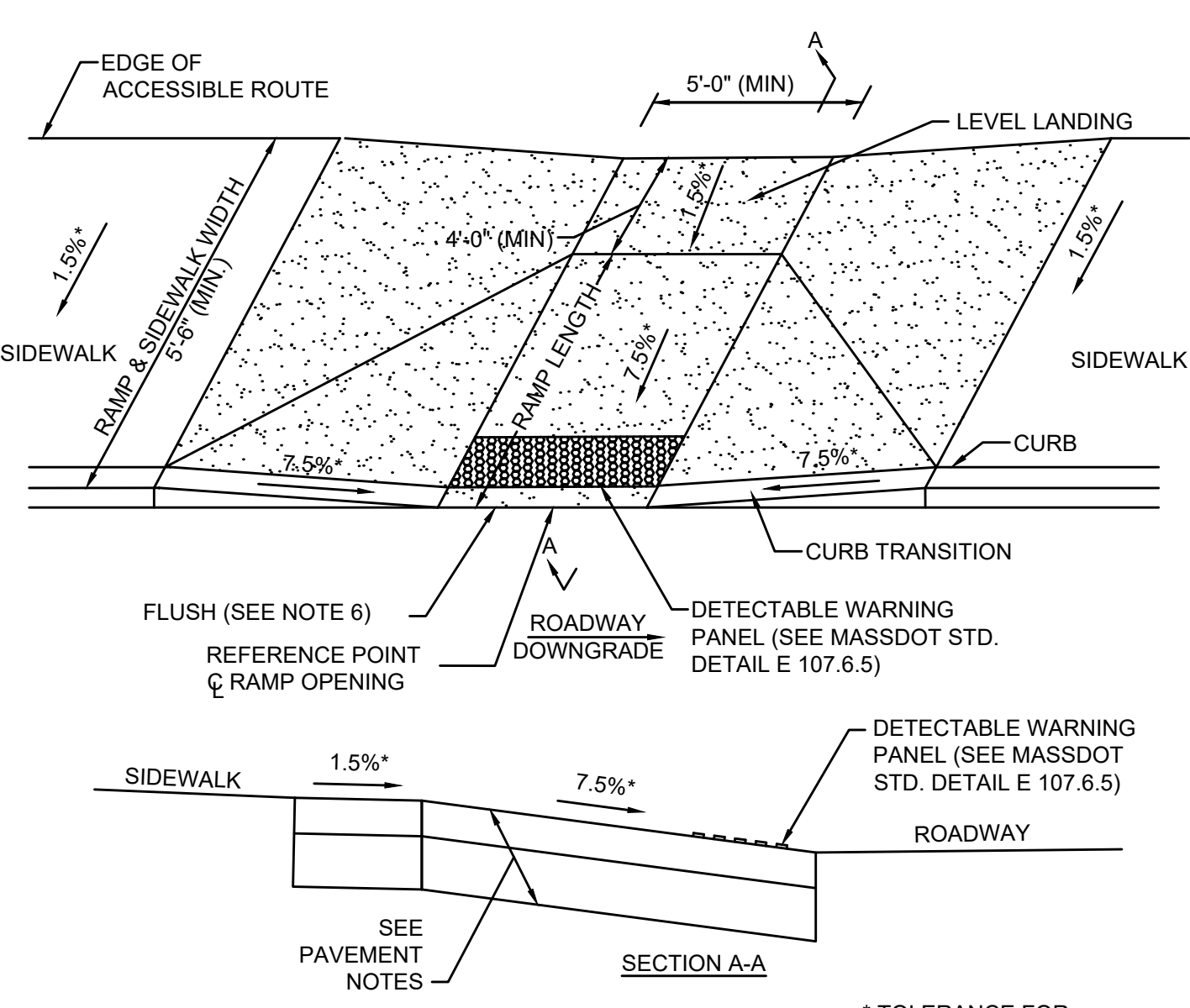
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	38	61
PROJECT FILE NO.		608743	

WHEELCHAIR RAMP DETAILS

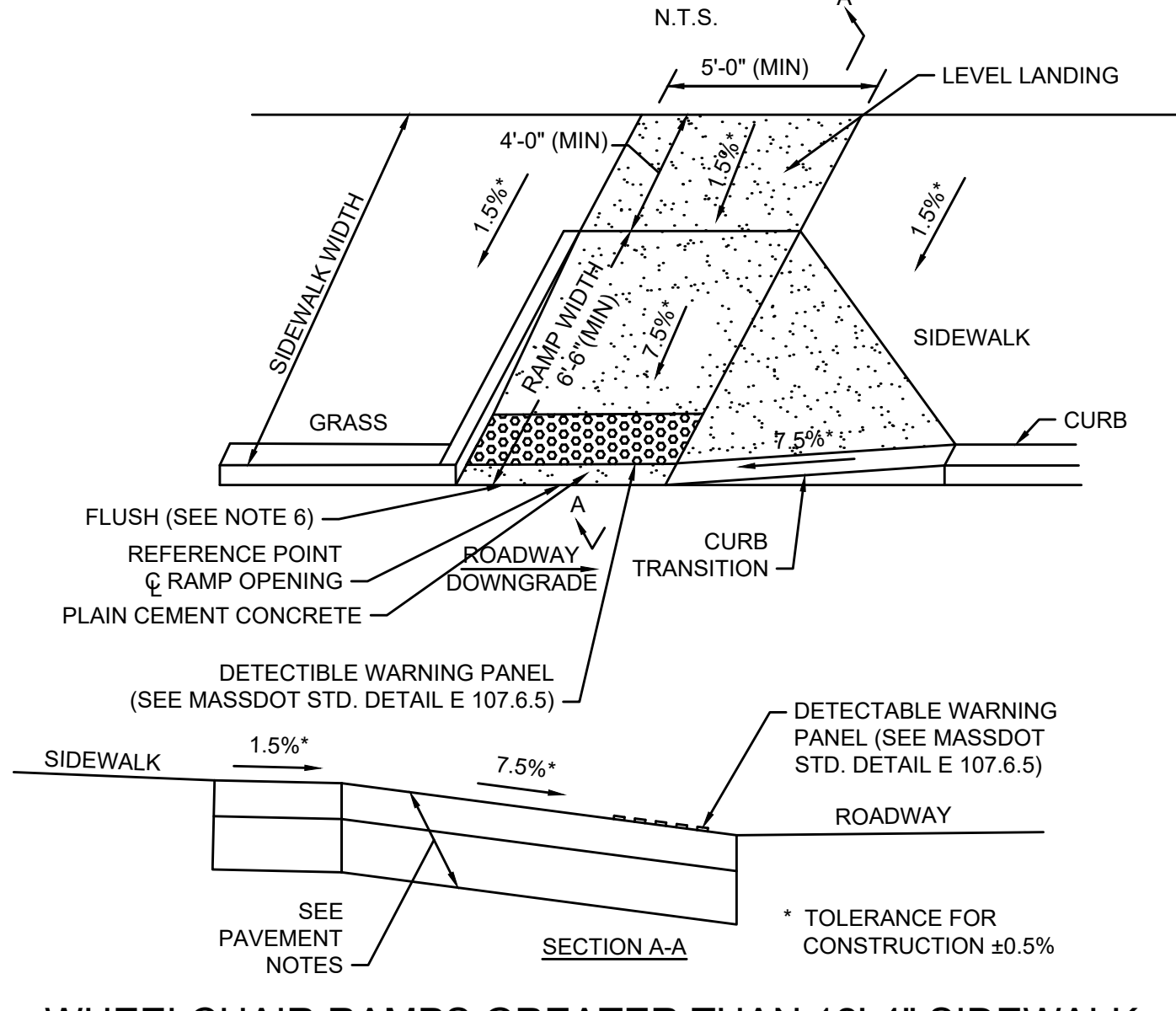
- WHEELCHAIR RAMP NOTES:
- MAXIMUM ALLOWABLE LONGITUDINAL SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMP SHALL BE DESIGNED TO 4.5% ±0.5% (7.5% ±0.5% FOR CURB RAMP) CROSS SLOPES ARE DESIGNED AT 1.5%
 - A MINIMUM OF 3'-0" CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
 - CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
 - RAMP, CURB AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
 - WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'x5' PASSING AREA SHALL BE PROVIDED AT INTERVALS NOT TO EXCEED 200 FT.
 - ELIMINATE CURBING AT RAMP WHERE IT ABUTS ROADWAY.
 - DETECTABLE WARNING PANELS ARE REQUIRED ON ALL PROPOSED WHEELCHAIR RAMP AND ARE TO BE INSTALLED IN ACCORDANCE WITH CONSTRUCTION STANDARD E 107.6.5 (OCTOBER 2017). CONTRACTOR SHALL PROVIDE 6" BETWEEN DETECTABLE WARNING PANEL AND EDGE OF CONCRETE WHERE IT ABUTS LOAM & SEED. COLOR SHALL BE YELLOW.
 - SIDEWALK SHALL NOT BE LESS THAN 4' WIDE.



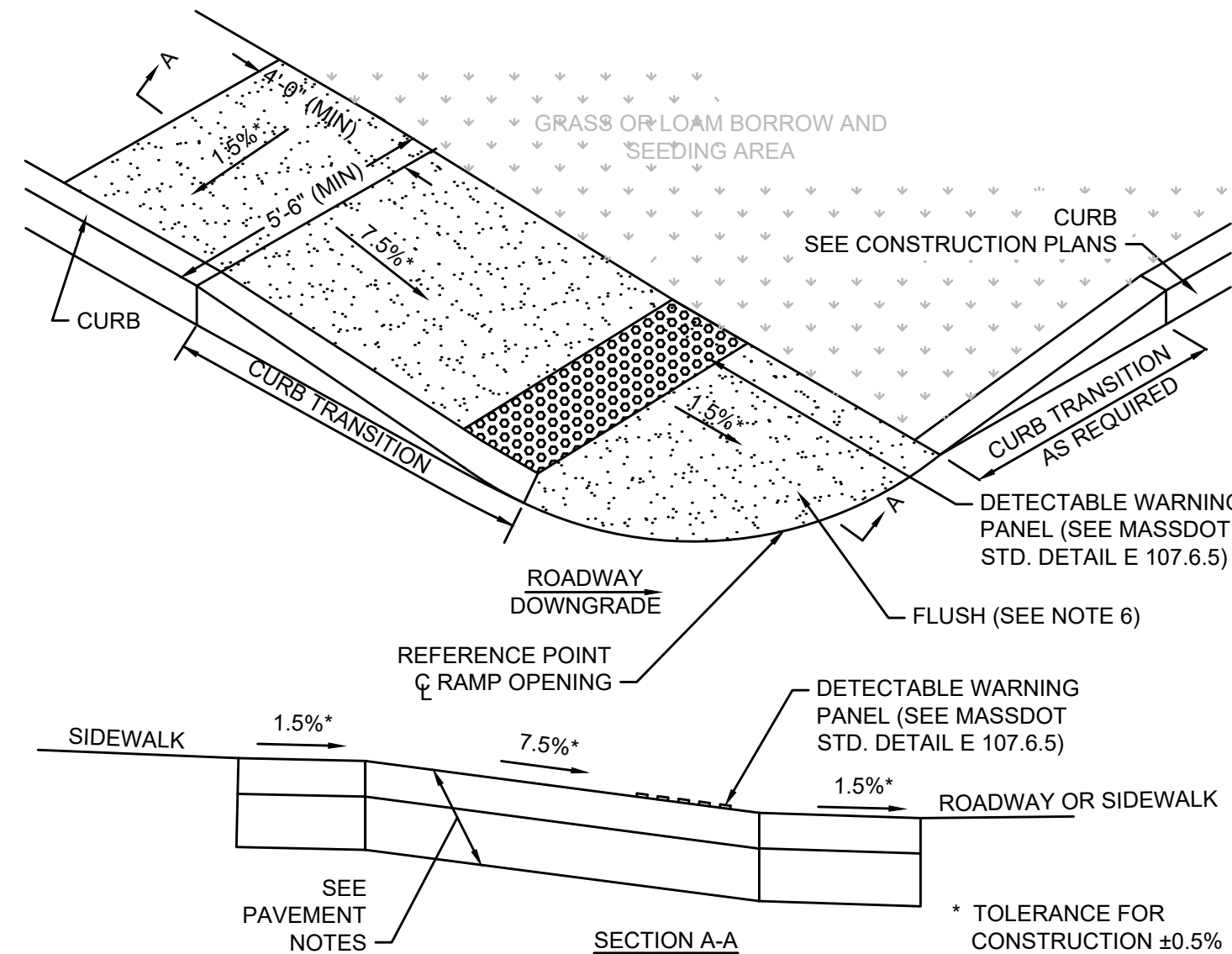
WHEELCHAIR RAMPs GREATER THAN 12'-4" SIDEWALK
TYPE A (MASSDOT STD DWG E107.3.0)



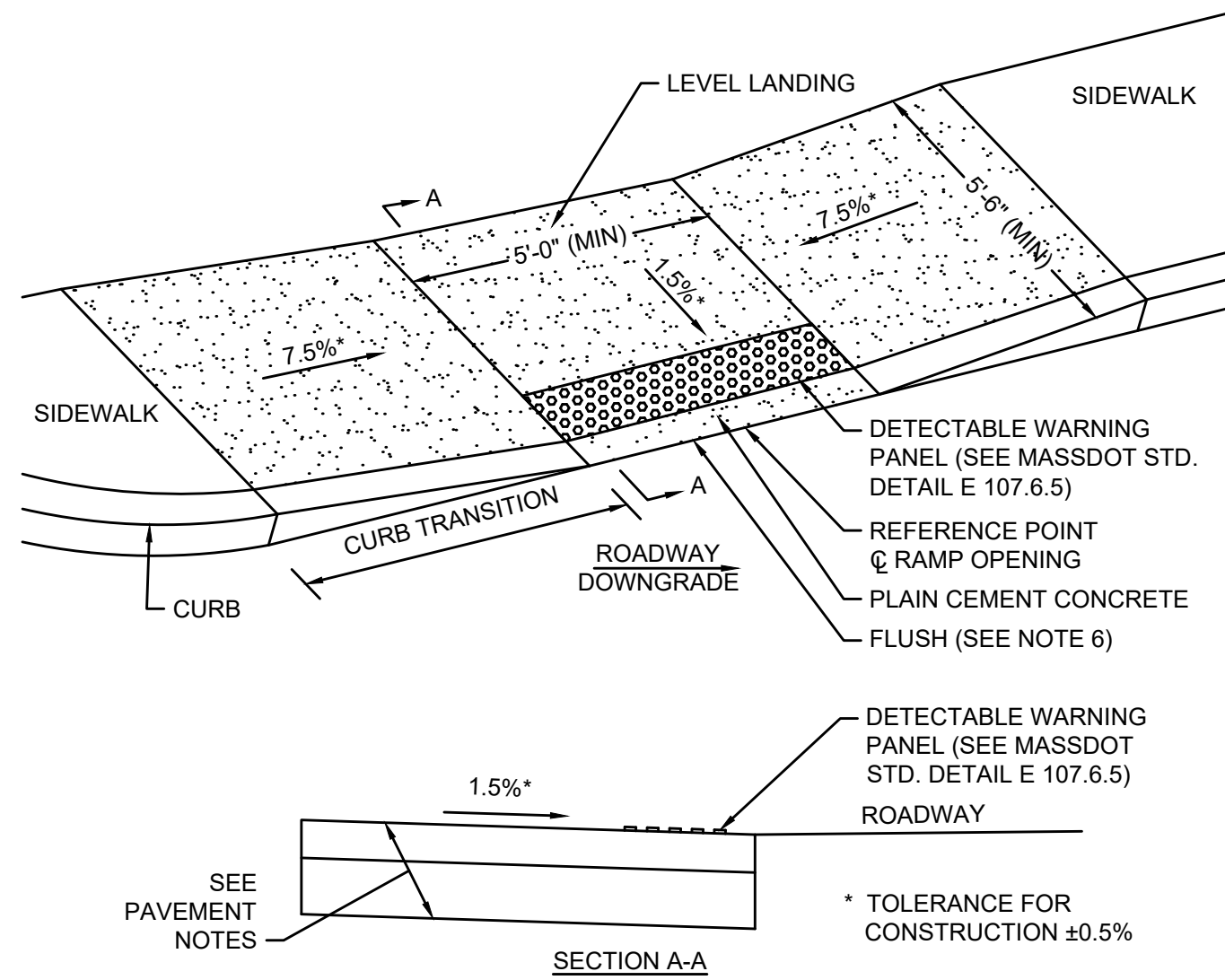
WHEELCHAIR RAMPs ON NARROW SIDEWALK
WITH DETECTABLE WARNING PANEL
TYPE B (MASSDOT STD DWG E107.2.0)



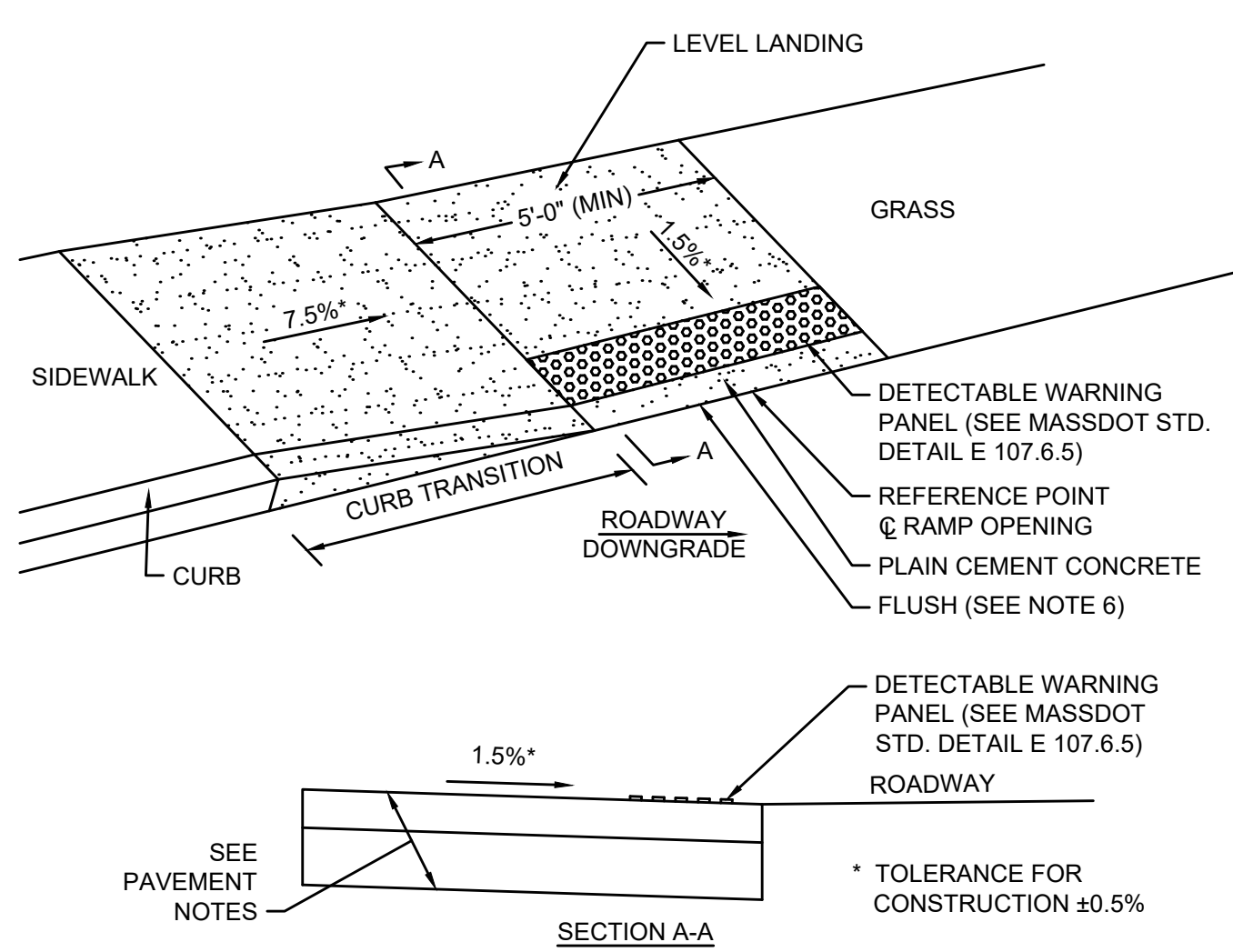
WHEELCHAIR RAMPs GREATER THAN 12'-4" SIDEWALK
TYPE C
N.T.S.



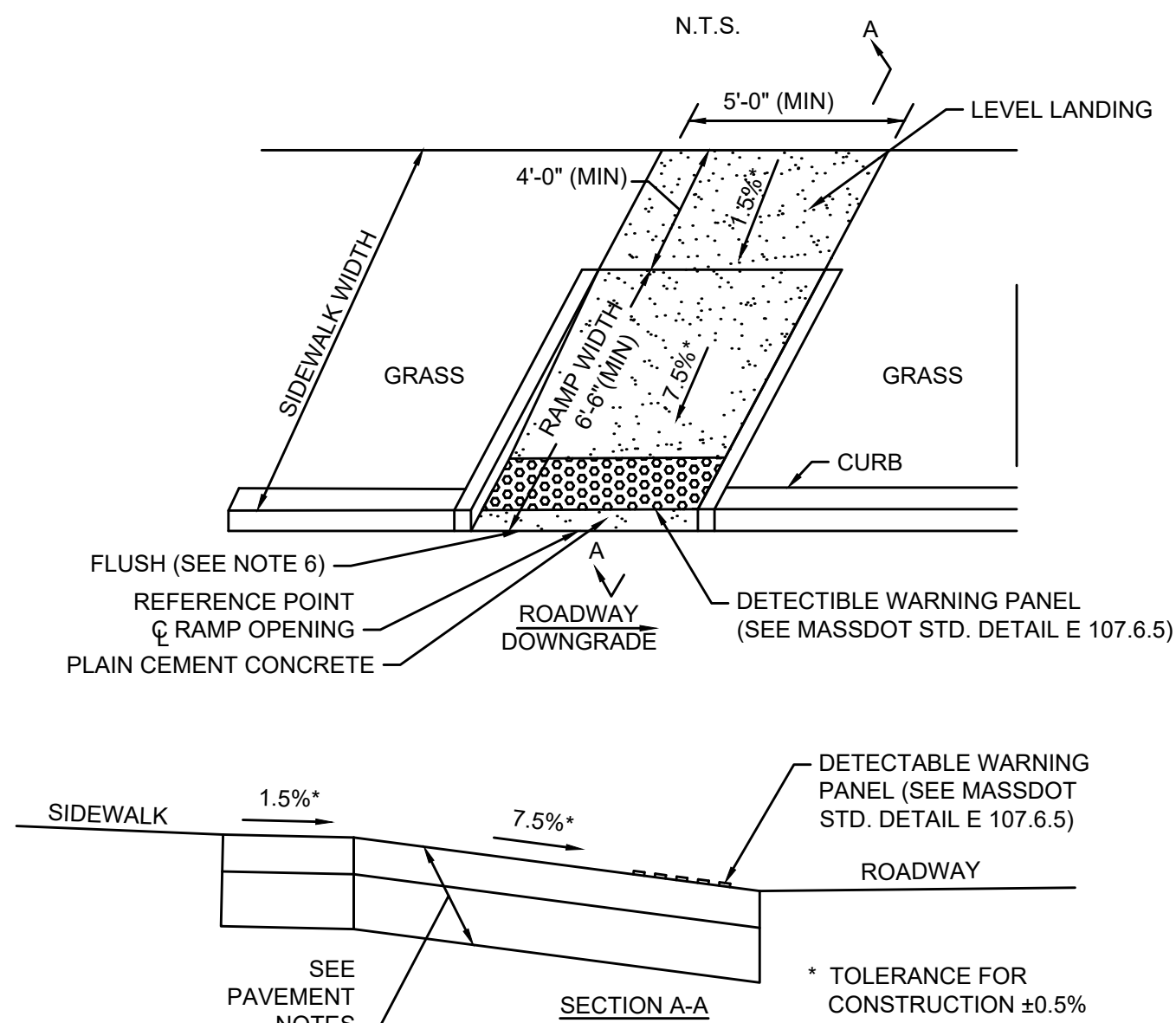
WHEELCHAIR RAMP FOR ONE CONTINUOUS
DIRECTION OF PEDESTRIAN TRAVEL
TYPE D (MASSDOT STD DWG E107.6.0)



WHEELCHAIR RAMPs ON NARROW SIDEWALK
WITH DETECTABLE WARNING PANEL
TYPE E (MASSDOT STD DWG E107.2.1)



WHEELCHAIR RAMPs ON NARROW SIDEWALK
WITH DETECTABLE WARNING PANEL
TYPE F
N.T.S.



WHEELCHAIR RAMPs GREATER THAN 12'-4" SIDEWALK
TYPE G
N.T.S.

WHEELCHAIR RAMP DATA												
NUMBER	TYPE	STREET NAME	WHEELCHAIR RAMP REFERENCE		OPENING WIDTH (FT)	ROADWAY GUTTER SLOPE	RAMP LENGTH (FT)	SIDEWALK WIDTH (FT)	TRANSITION LEFT		TRANSITION RIGHT	
			STATION	OFFSET					LENGTH (FT)	REVEAL (IN)	LENGTH (FT)	REVEAL (IN)
1	G	LIBERTY HILL AVENUE	12+00.54	30.52' RT	5.0	-1.40%	6	11	-	6.0	-	6.0
2	A	LIBERTY HILL AVENUE	12+41.07	11.00' LT	5.0	-0.60%	5	15.7	7.5	6.0	6.6	5.5
3	B	APPLETON STREET	45+49.25	10.00' LT	5.0	-0.20%	3.4	9.0	4.5	4.0	5.0	4.0
4	A	APPLETON STREET	45+66.50	20.38' RT	5.0	1.00%	6.5	20	8.5	6.0	7.1	6.0
5	A	NURSERY STREET	51+50.00	14.00' RT	5.0	1.20%	6	12.5	7.0	4.3	9.0	6.0
6	G	NURSERY STREET	51+50.00	14.00' LT	5.0	-0.60%	4	22.3	-	6.0	-	6.0
7	E	LIBERTY HILL AVENUE	21+42.2	22.56' LT	5.0	-1.40%	5.6	6.1	7.4	5.5	10.8	2.4
11	A	LIBERTY HILL AVENUE	25+55.84	10.25' LT	5.0	0.60%	6	11.5	5.5	4.4	4.5	5.4
12	F	LIBERTY HILL AVENUE	25+55.91	17.39' RT	5.0	-1.40%	5.0	5.0	6.5	6.0	-	-

WHEELCHAIR RAMP "TYPE D" DATA							
NUMBER	TYPE	STREET NAME	DRIVEWAY REFERENCE		OPENING WIDTH (FT)	ROADWAY GUTTER SLOPE	RAMP LENGTH (FT)
			STATION	OFFSET			
8	D	LIBERTY HILL AVENUE	21+76.6	19.58' LT	4.0	0.20%	6.5
9	D	LIBERTY HILL AVENUE	22+49.4	20.40' LT	3.0	0.00%	6.5
10	D	LIBERTY HILL AVENUE	22+84.2	20.10' LT	4.0	1.30%	6.5

ROADWAY
PROFILE GRADE

= 0%
> 0% - 1%
> 1% - 2%
> 2% - 3%
> 3% - 4%
> 4% - 5%

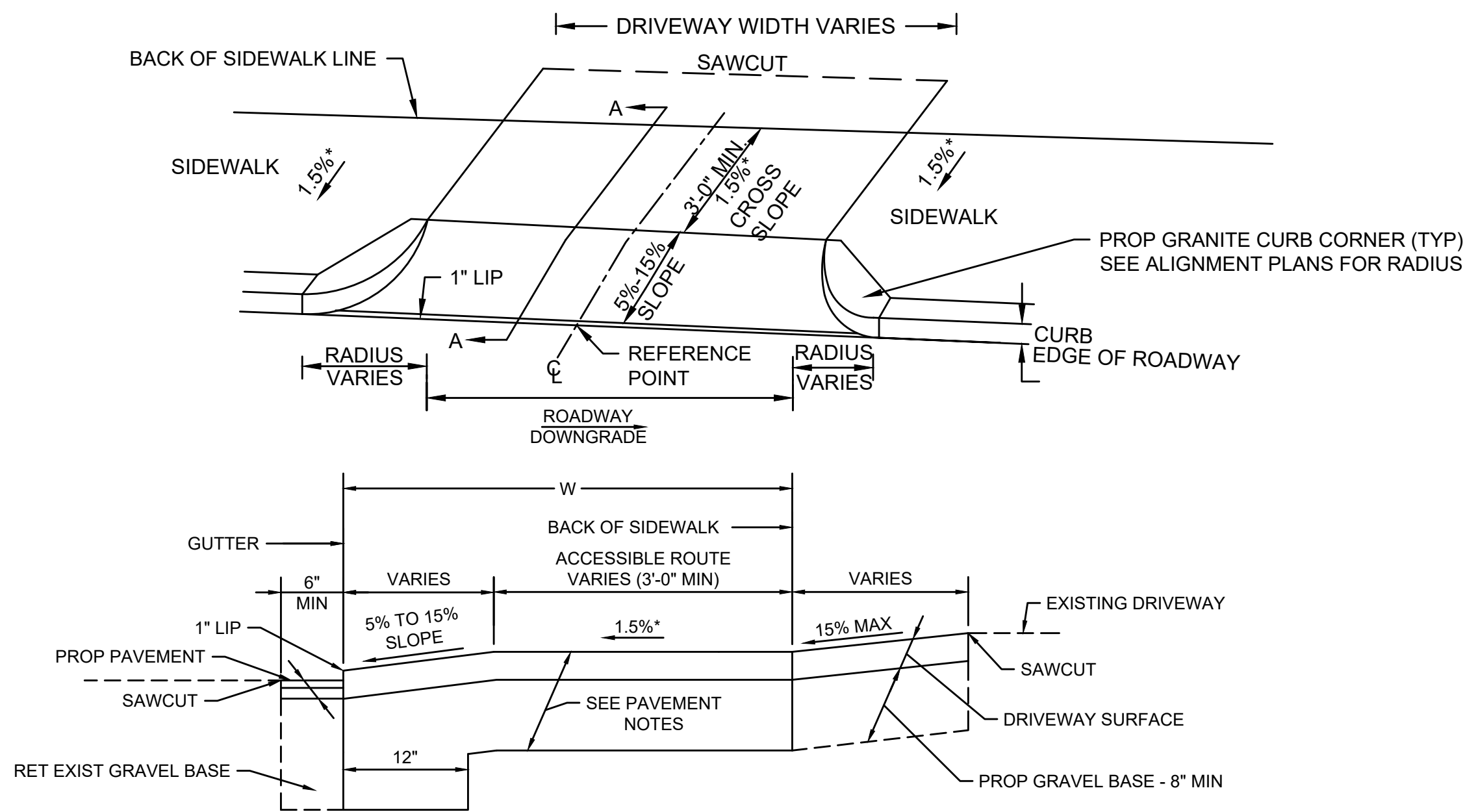
HIGH SIDE TRANSITION LENGTH FOR VARYING CURB REVEALS (3"-6")				
REVEAL				
3"	4"	5"	6"	
3.0'	4.0'	5.5'	6.5'	
3.5'	5.0'	6.0'	7.7'	
4.5'	6.0'	7.5'	9.0'	
5.5'	7.0'	9.0'	11.0'	
7.0'	9.5'	11.5'	14.0'	
10.0'	13.0'	15' MAX	15' MAX	

MINIMUM CURB TRANSITION LENGTH FOR
WHEELCHAIR RAMPs (MASSDOT STD DWG
E107.9.0) MODIFIED

*E107.9.0 NOTE:

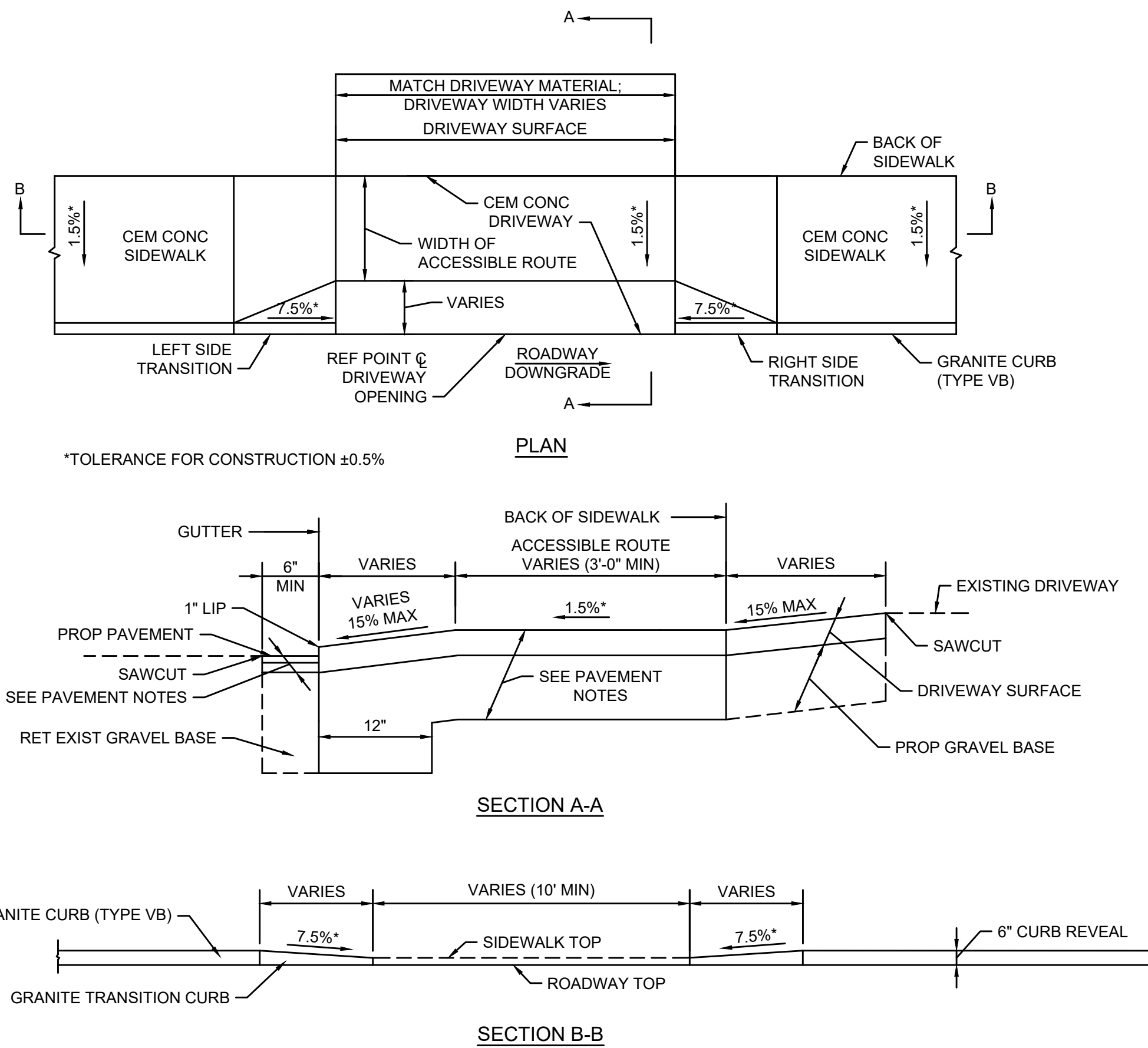
APPLIES ONLY WHERE THE TRANSITION CURB SLOPE IS 7.5%, CURB REVEAL IS 6", THE SIDEWALK IS STRAIGHT, AND THE GUTTER SLOPE IS EXACTLY THE SAME AS THE ROADWAY PROFILE GRADE.

SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	39	61
PROJECT FILE NO.		608743	
WHEELCHAIR RAMP DETAILS			



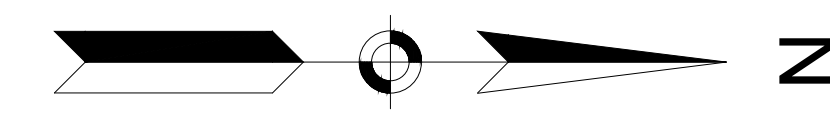
**PROPOSED SIDEWALK THROUGH DRIVEWAYS
WITH CURB RETURNS - MODIFIED E 107.8.0**
N.T.S.

NOTE:
 * CONSTRUCTION TOLERANCE ±0.5%
 HSL = HIGH SIDE TRANSITION LENGTH
 W = SIDEWALK WIDTH
 CC = CEMENT CONCRETE
 HMA = HOT MIX ASPHALT



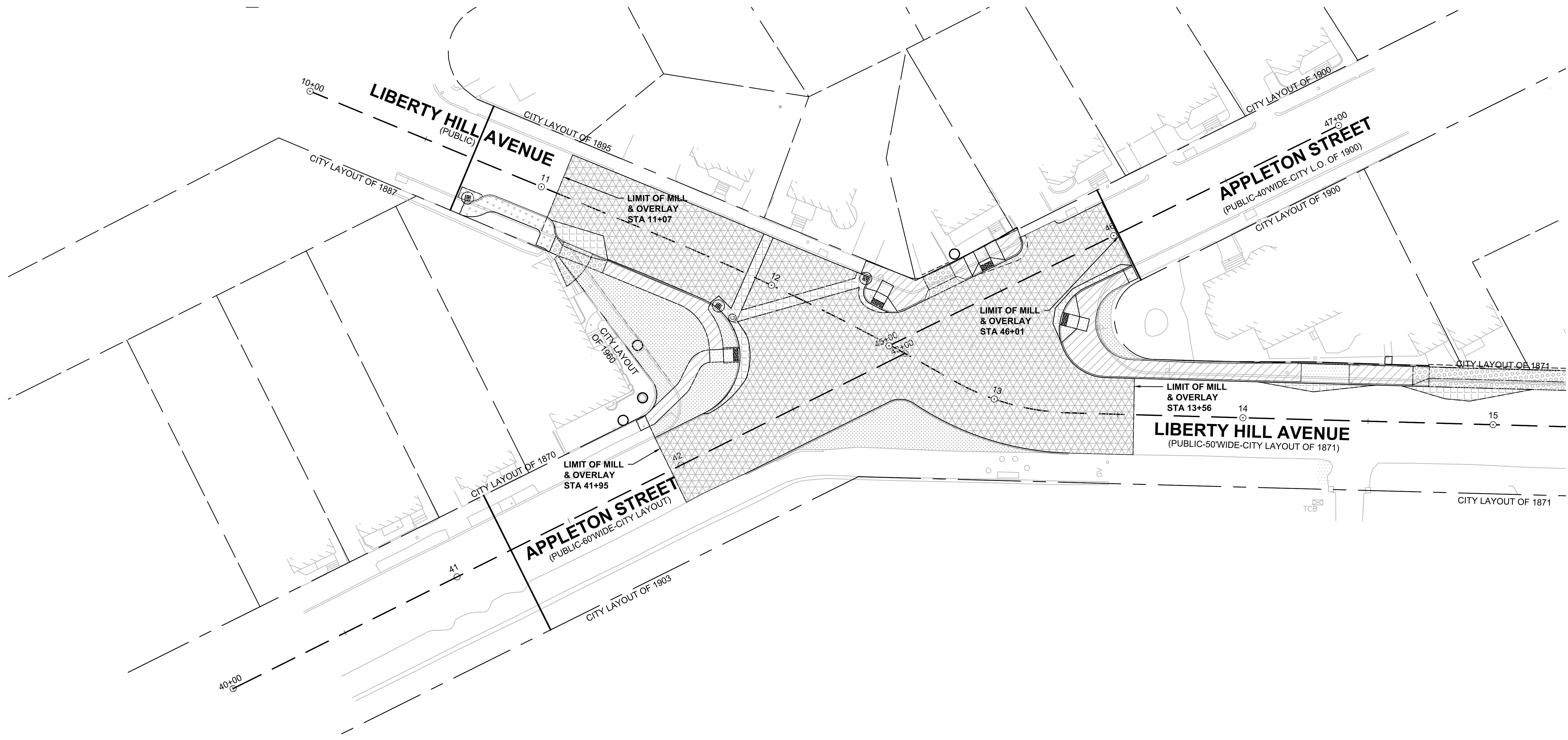
PROPOSED SIDEWALK THROUGH DRIVEWAY
N.T.S.

DRIVEWAY DATA												
NUMBER	STREET NAME	DRIVEWAY SURFACE	DRIVEWAY REFERENCE		WIDTH (FT)	ROADWAY GUTTER SLOPE	WIDTH OF SW (FT)	WIDTH OF ACCESSIBLE ROUTE	TRANSITION LEFT		TRANSITION RIGHT	
			STATION	OFFSET					LENGTH	REVEAL	LENGTH	REVEAL
1	APPLETON STREET	CEM CONC	45+30.10	10.00' LT	17.8	-0.67%	9.1	5.5	-	4.0	-	4.0
2	LIBERTY HILL AVENUE	CEM CONC	15+05.29	14.50' LT	62.8	-0.1%	7.6	4.5	6.5	5.0	6.5	4.0
3	LIBERTY HILL AVENUE	CEM CONC	11+22.94	16.88' RT	12.4	-0.4%	5.1	4.2	6.5	4.2	4.2	3.6



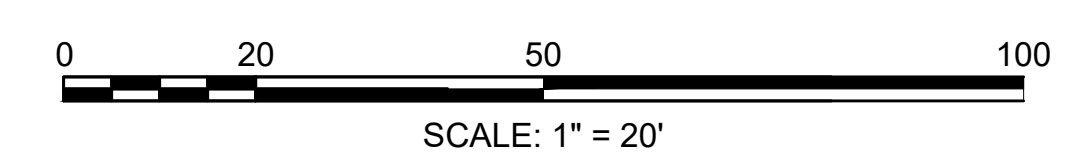
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	40	61
PROJECT FILE NO.		608743	

PAVING PLANS



LEGEND:

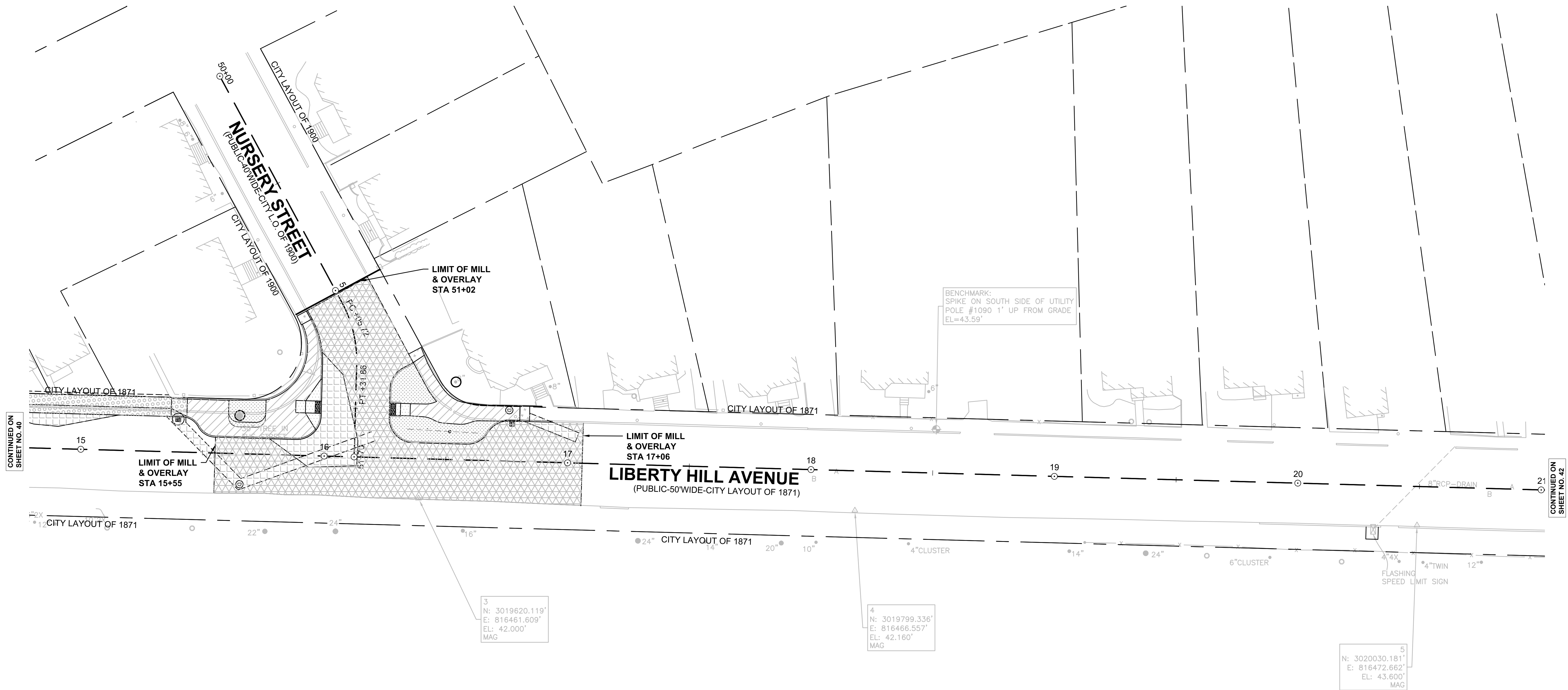
- CEMENT CONCRETE SIDEWALK
- HMA SIDEWALK
- CEMENT CONCRETE DRIVEWAY
- CEMENT CONCRETE WHEELCHAIR RAMP
- MILL & OVERLAY
- HMA FULL DEPTH
- LOAM & SEED



SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	41	61
PROJECT FILE NO.		608743	

PAVING PLANS

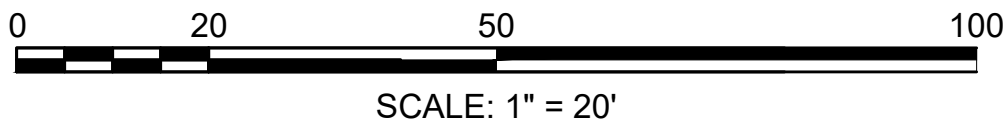


CONTINUED ON
SHEET NO. 40

CONTINUED ON
SHEET NO. 42

LEGEND:

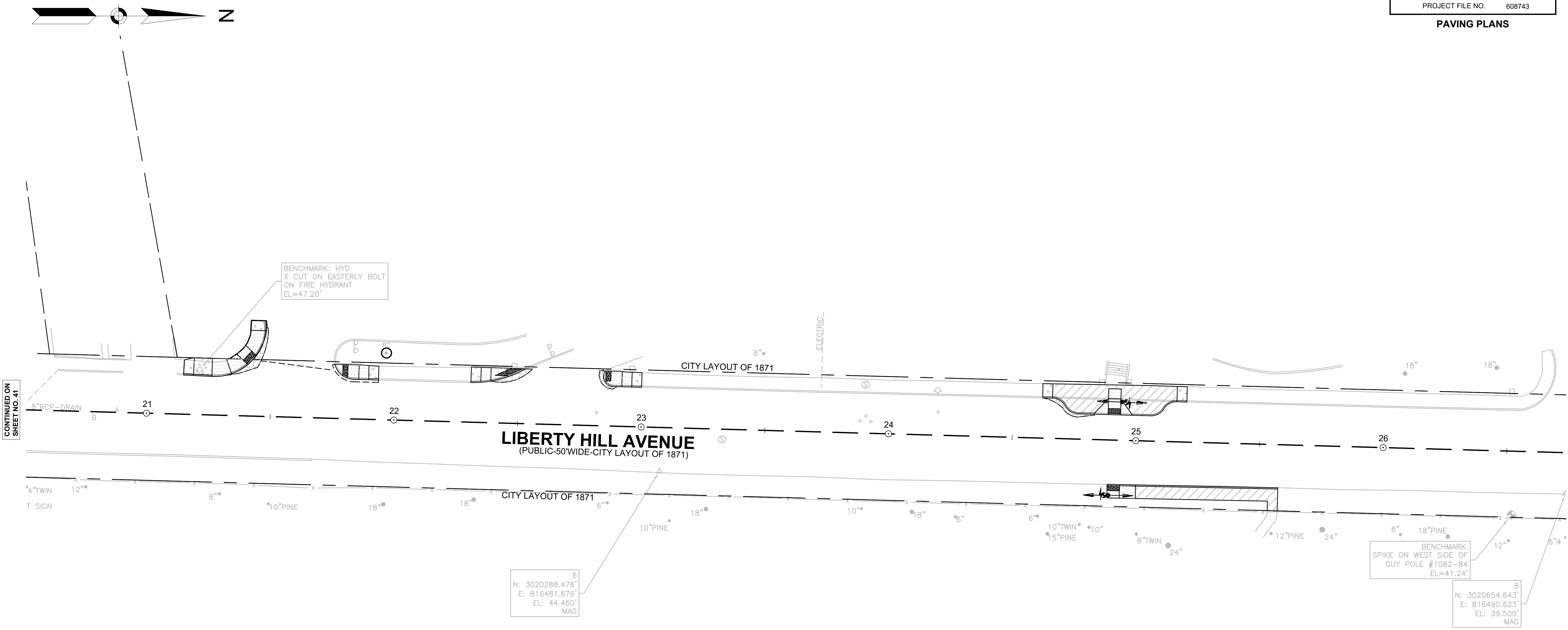
- CEMENT CONCRETE SIDEWALK
- HMA SIDEWALK
- CEMENT CONCRETE DRIVEWAY
- CEMENT CONCRETE WHEELCHAIR RAMP
- MILL & OVERLAY
- HMA FULL DEPTH
- LOAM & SEED



SALEM
BATES ELEMENTARY SCHOOL

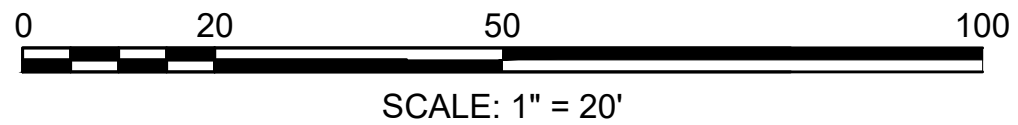
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	42	61
PROJECT FILE NO.		608743	

PAVING PLANS



LEGEND:

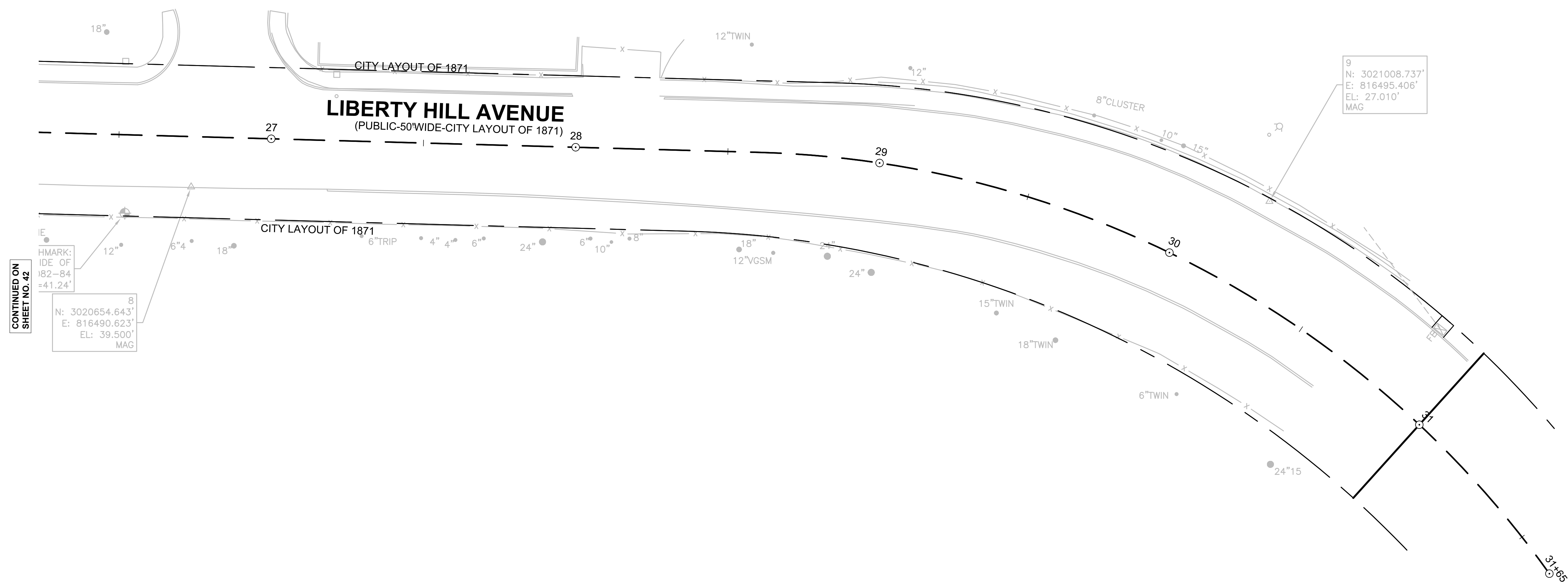
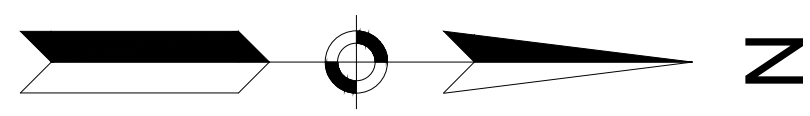
- CEMENT CONCRETE SIDEWALK
- HMA SIDEWALK
- CEMENT CONCRETE DRIVEWAY
- CEMENT CONCRETE WHEELCHAIR RAMP
- MILL & OVERLAY
- HMA FULL DEPTH
- LOAM & SEED



SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	43	61
PROJECT FILE NO.		608743	

PAVING PLANS



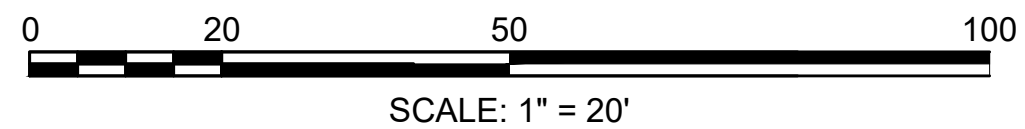
CONTINUED ON
SHEET NO. 42

8
N: 3020654.643'
E: 816490.623'
EL: 39.500'
MAG

9
N: 3021008.737'
E: 816495.406'
EL: 27.010'
MAG

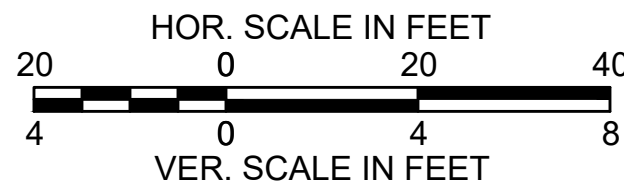
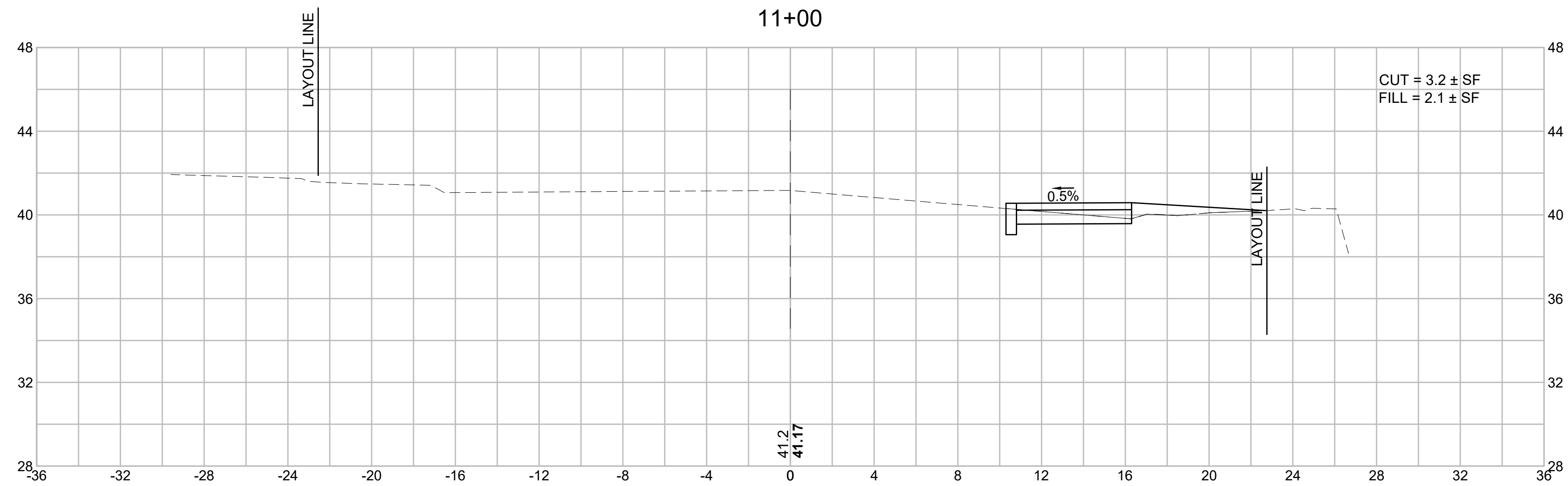
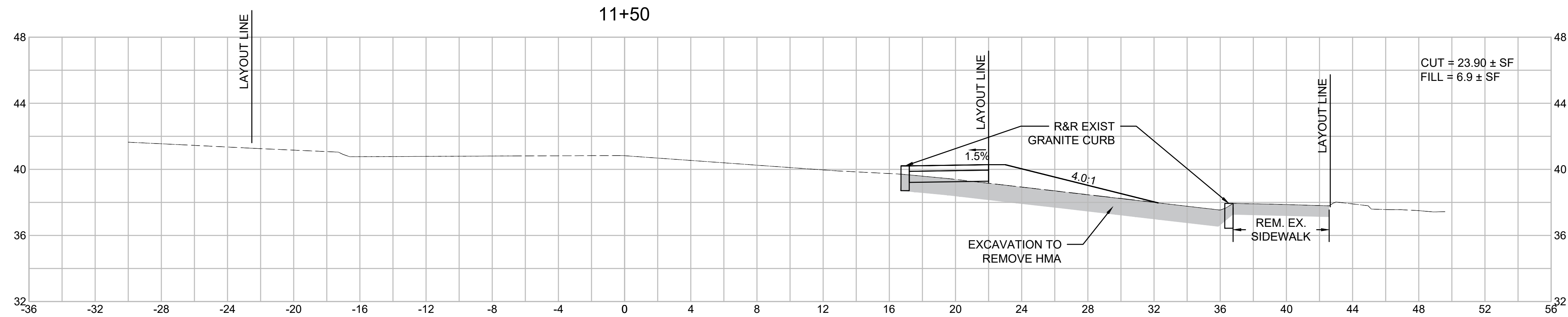
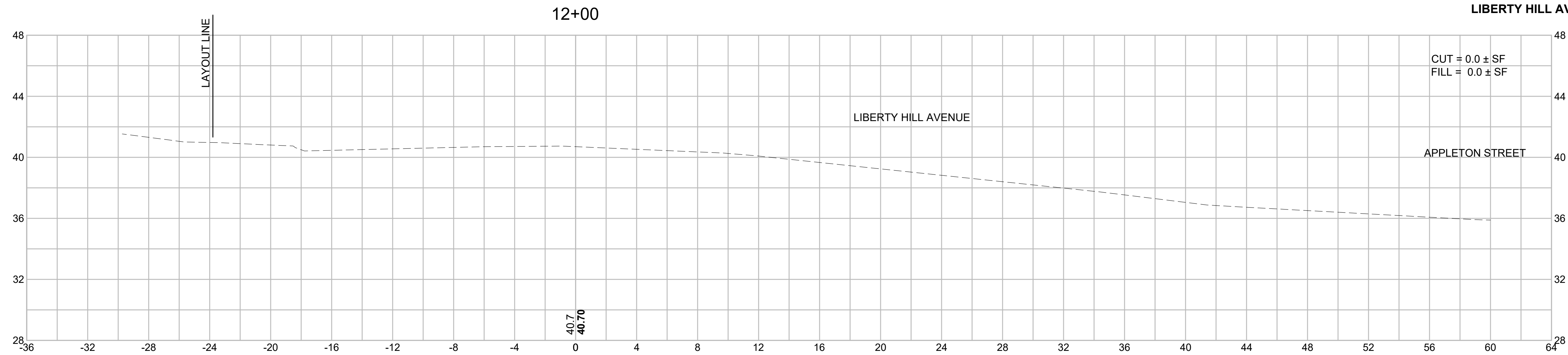
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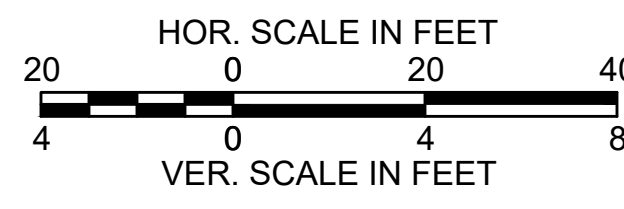
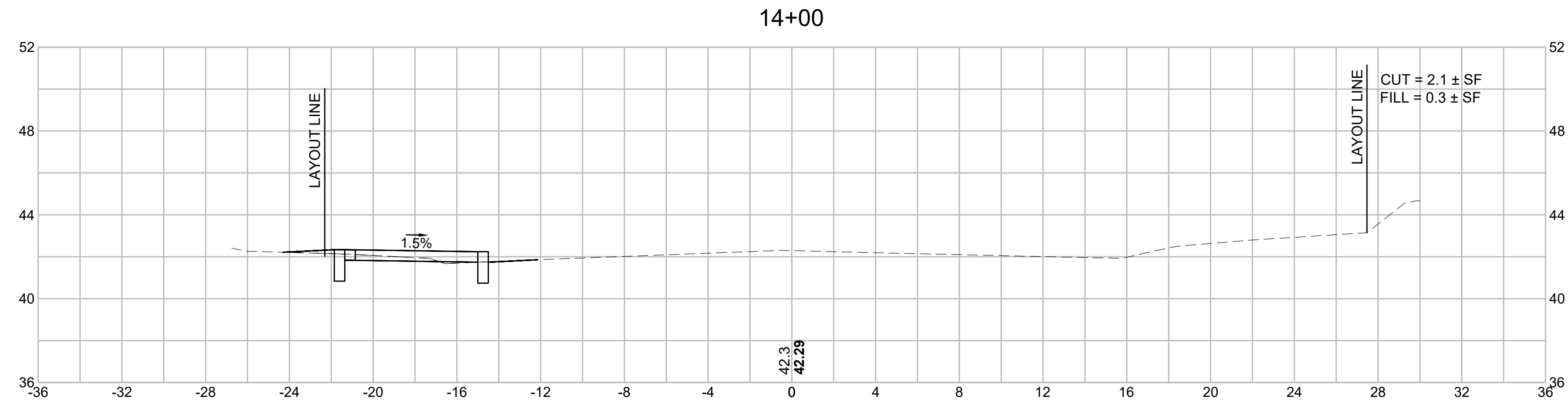
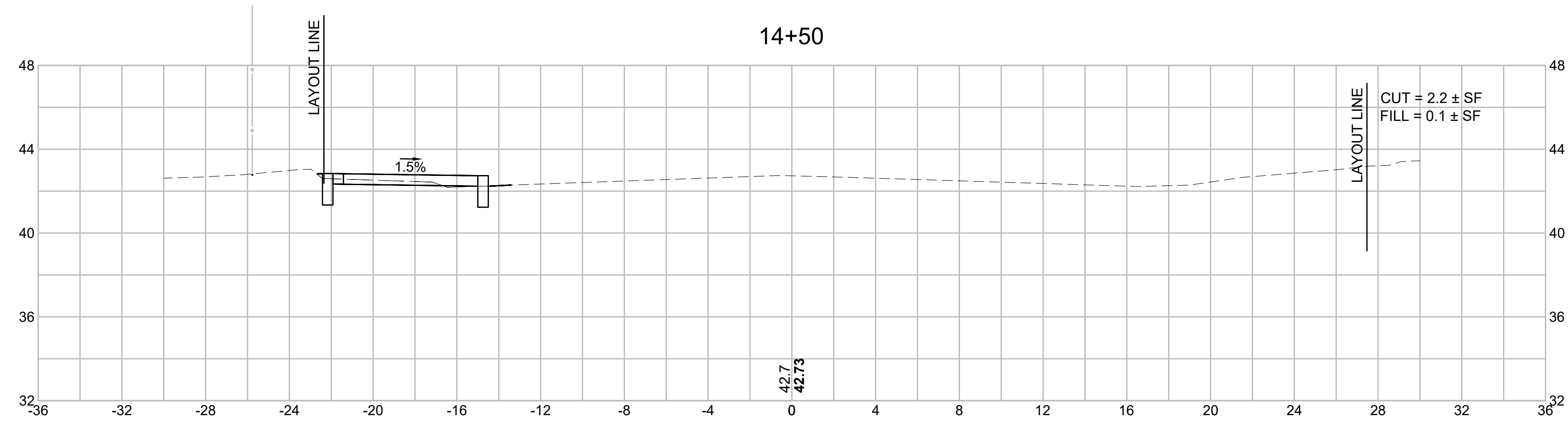
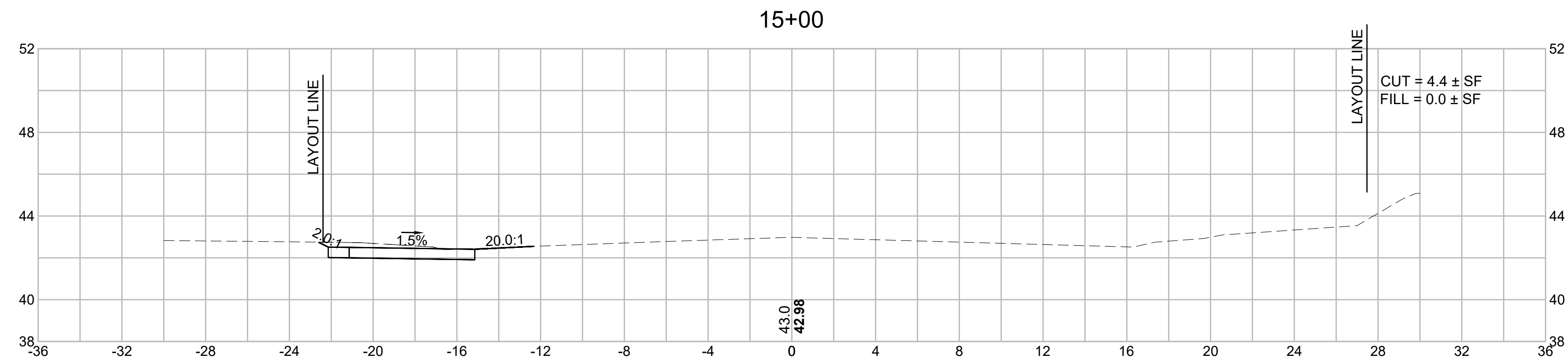
- CEMENT CONCRETE SIDEWALK
- HMA SIDEWALK
- CEMENT CONCRETE DRIVEWAY
- CEMENT CONCRETE WHEELCHAIR RAMP
- MILL & OVERLAY
- HMA FULL DEPTH
- LOAM & SEED

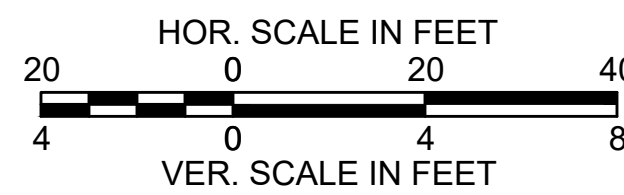
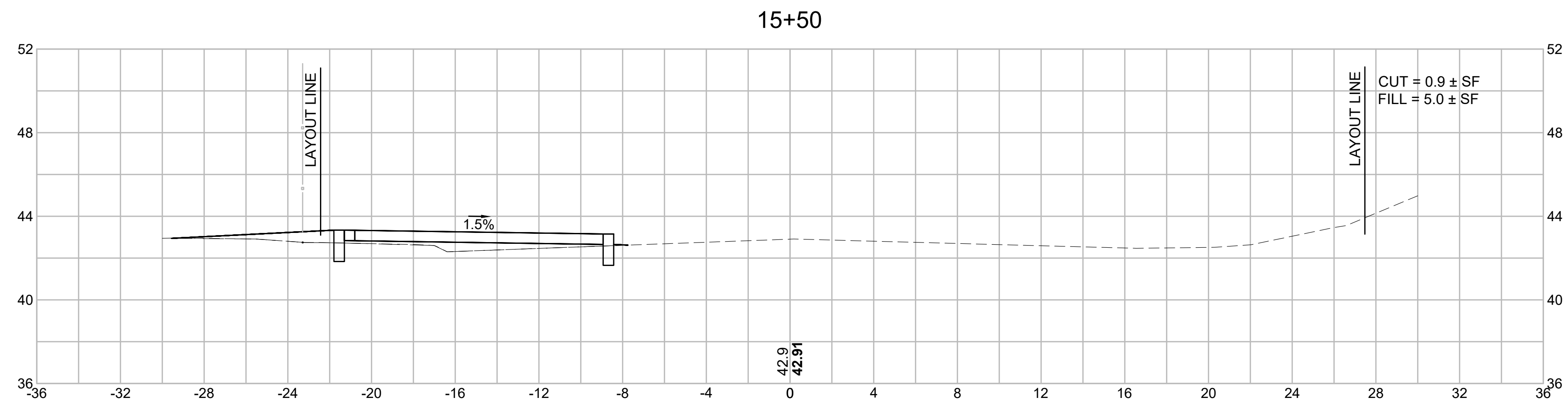
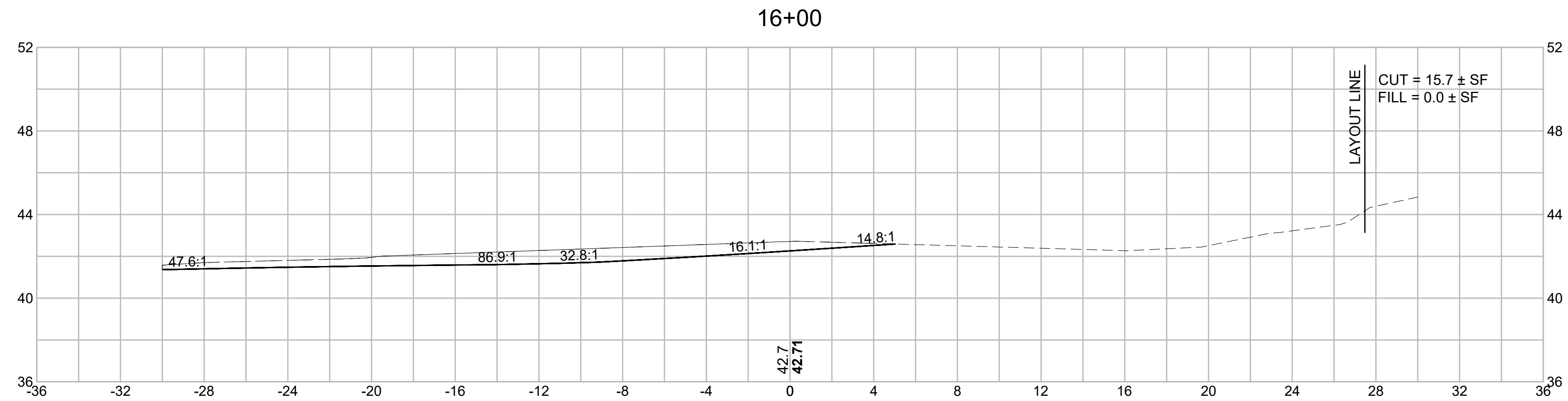
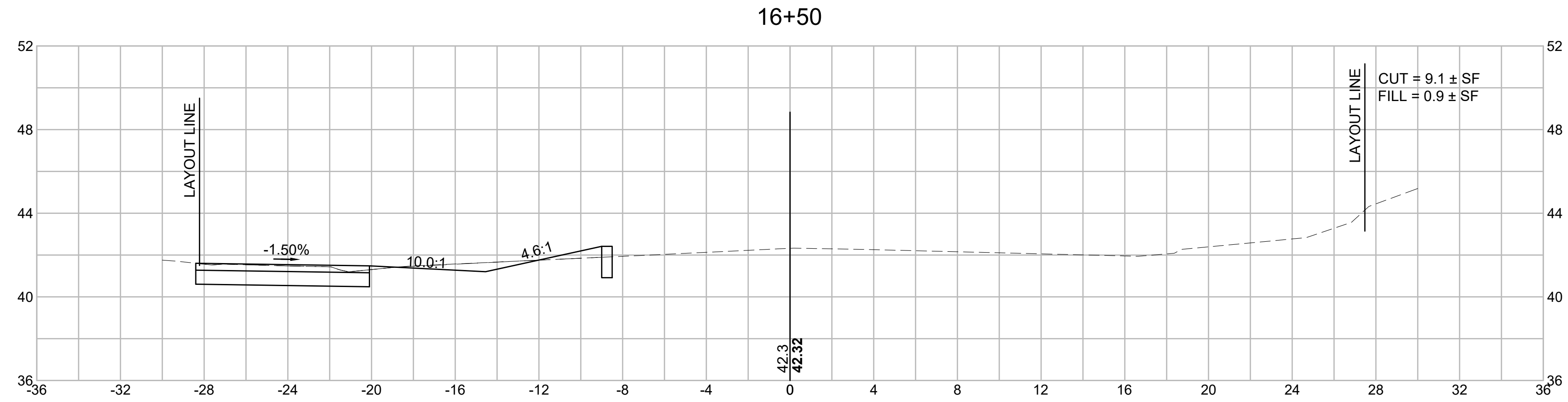


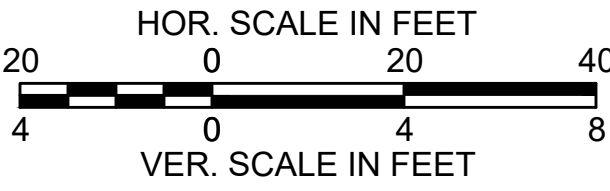
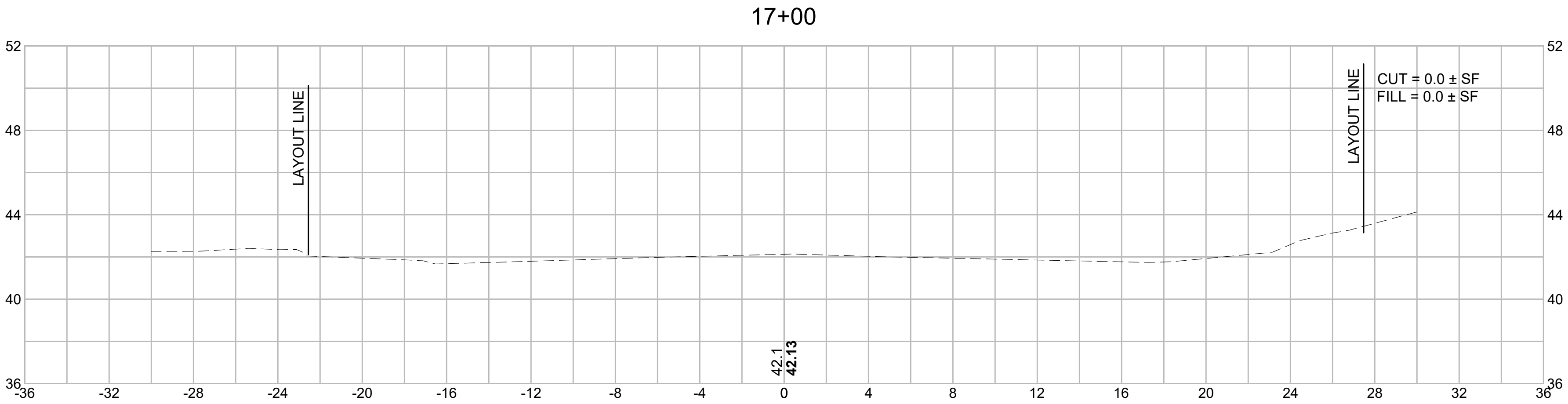
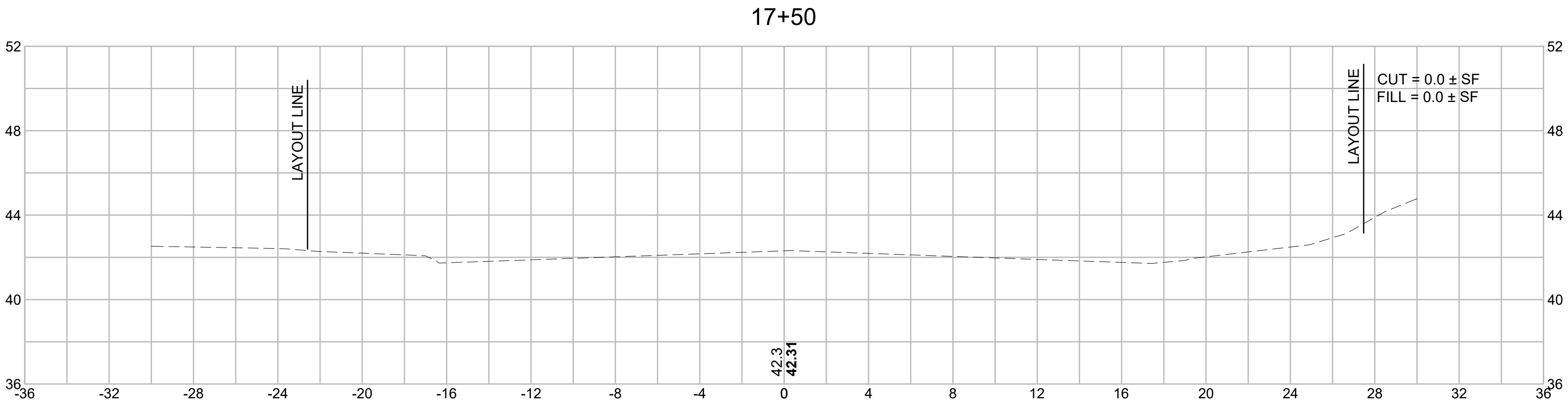
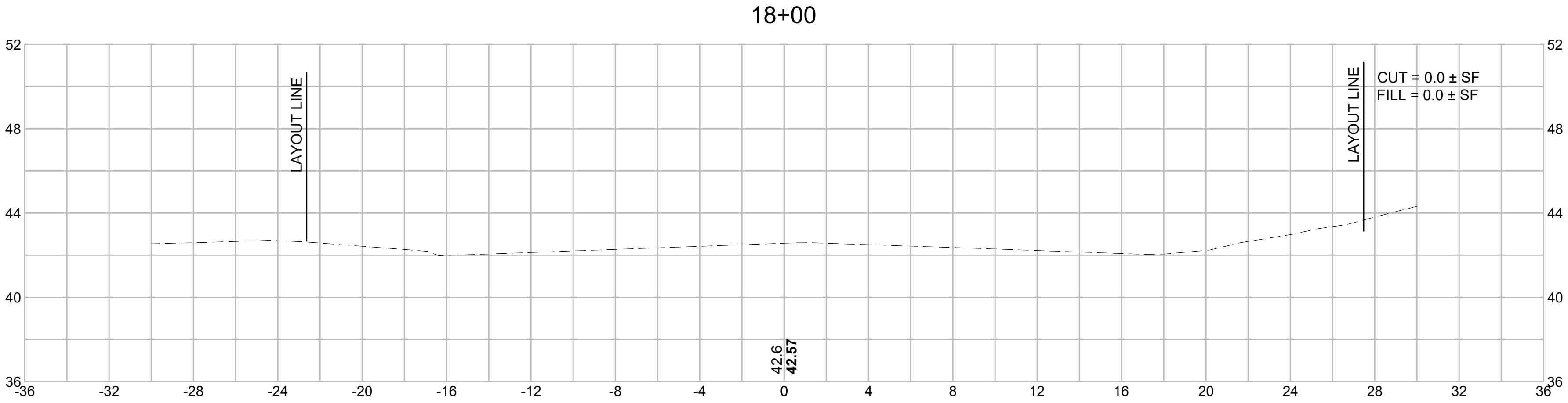
SALEM BATES ELEMENTARY SCHOOL			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	44	61
PROJECT FILE NO.		608743	

CROSS SECTIONS
LIBERTY HILL AVENUE





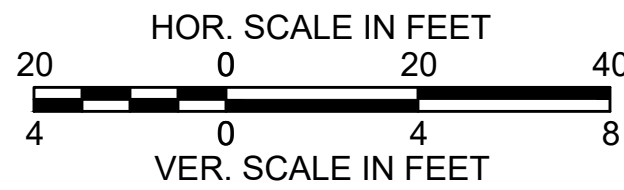
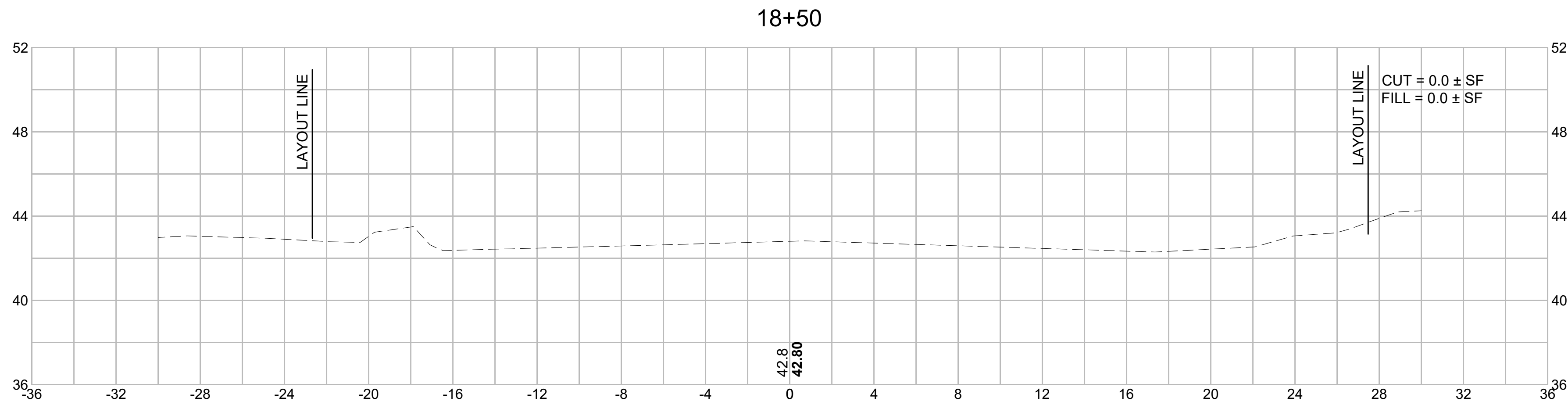
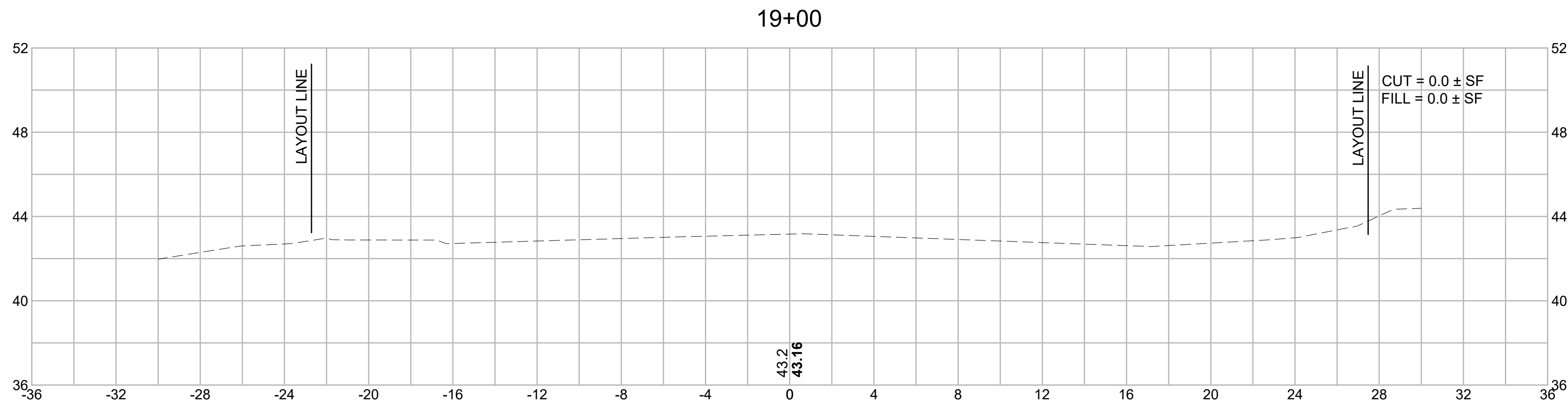
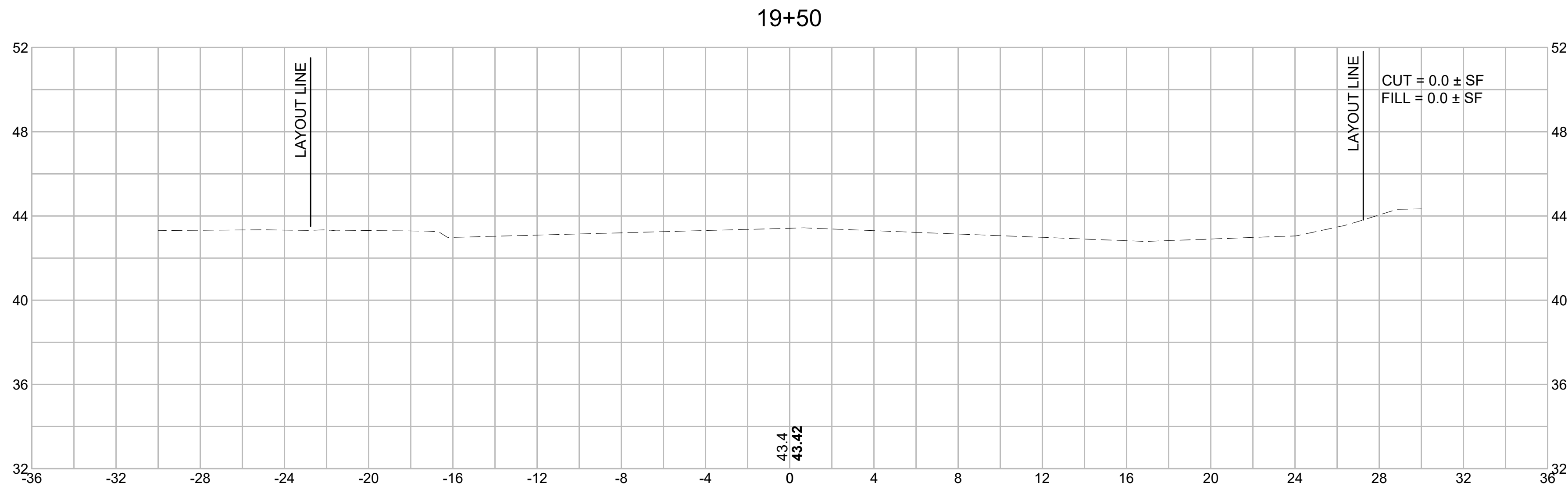


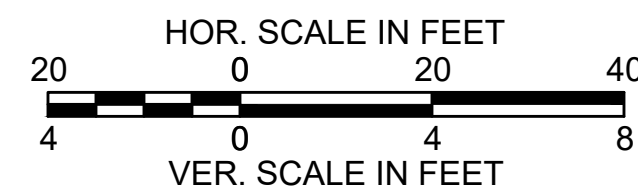
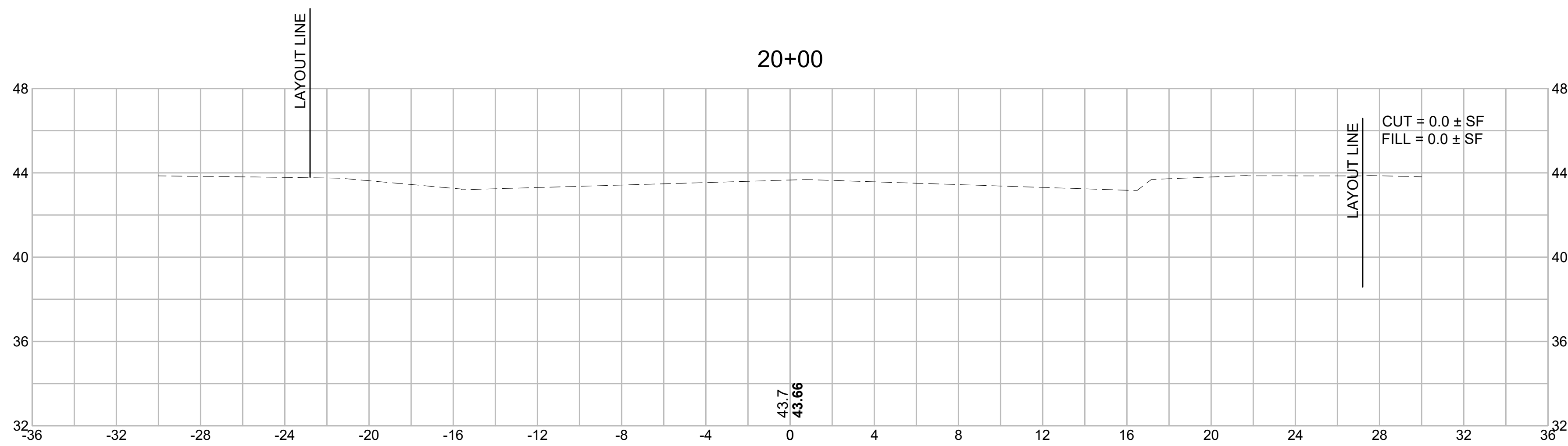
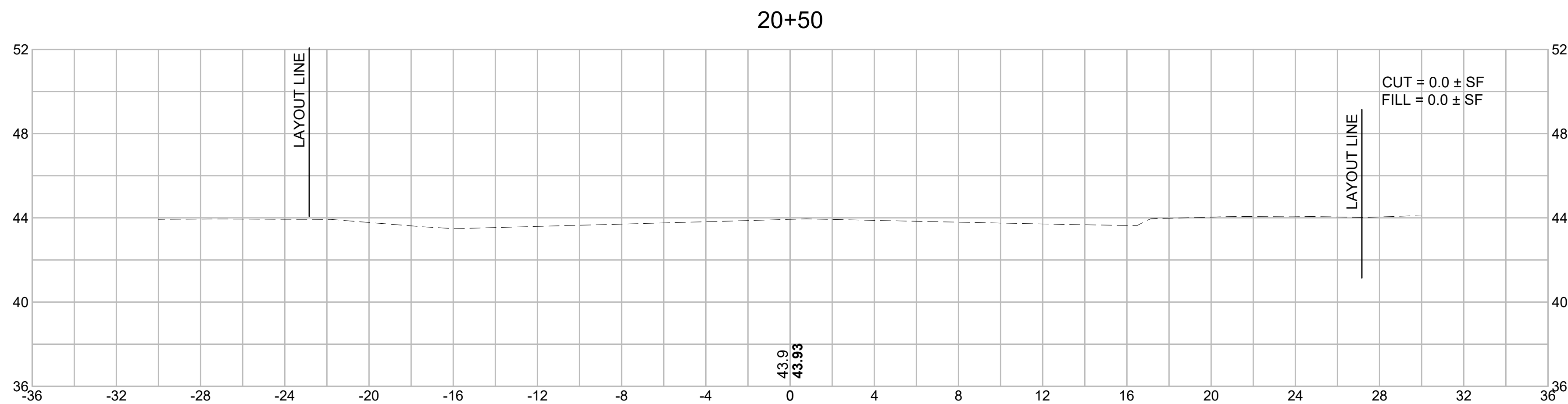
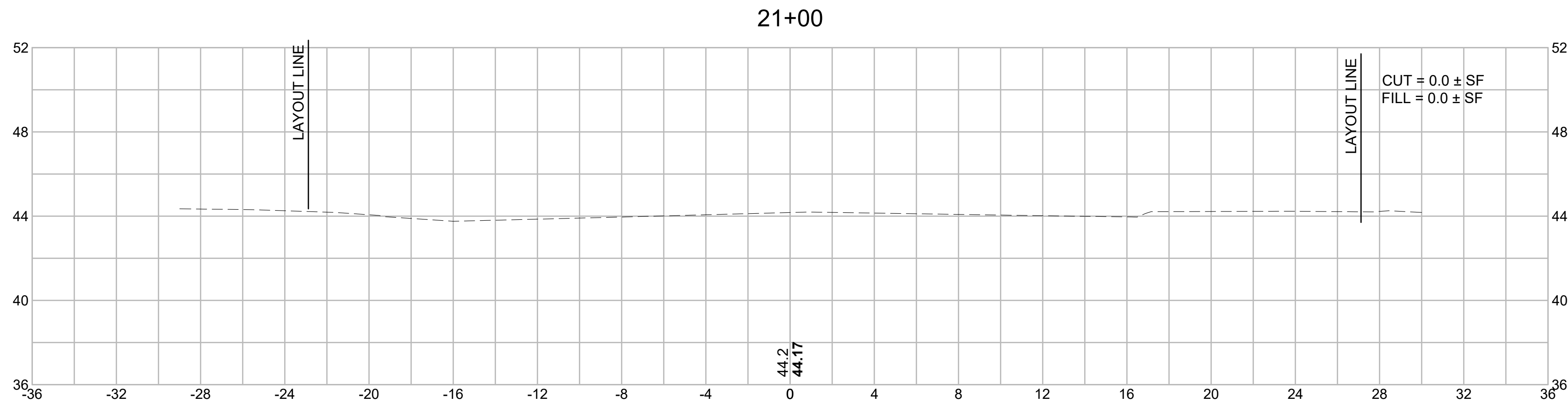


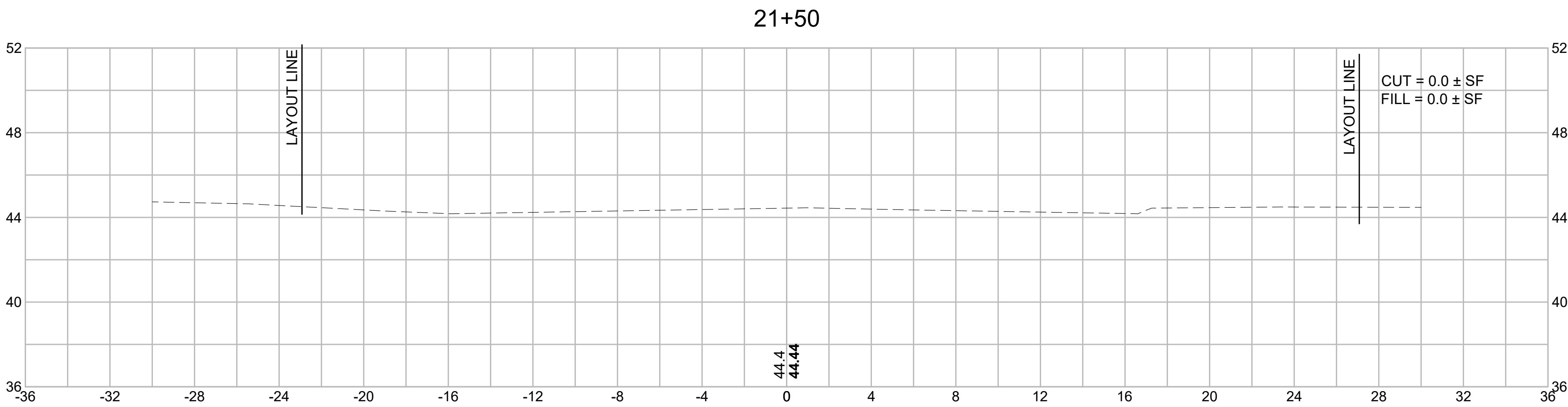
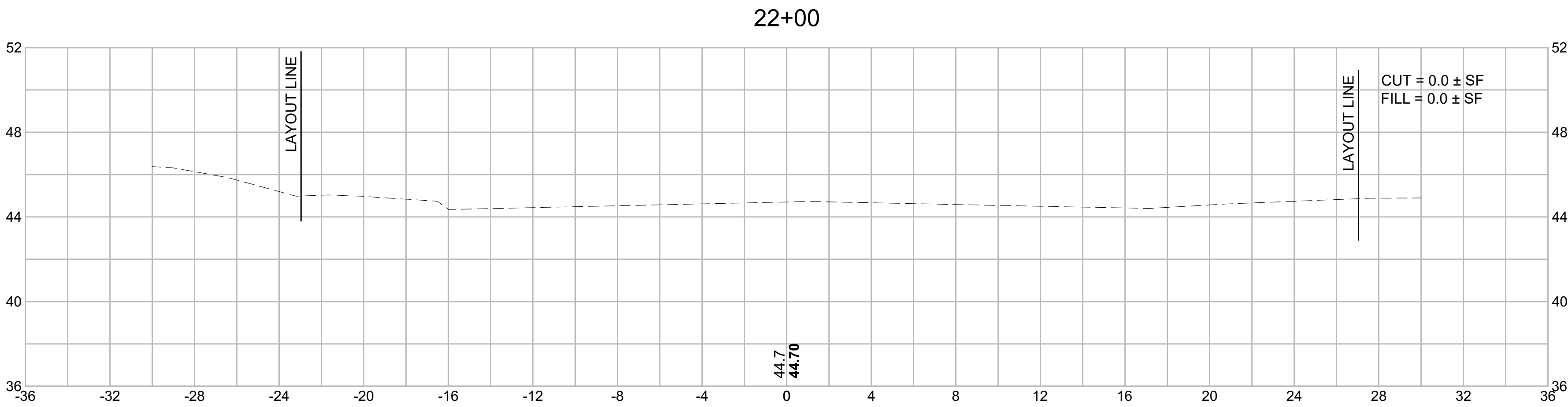
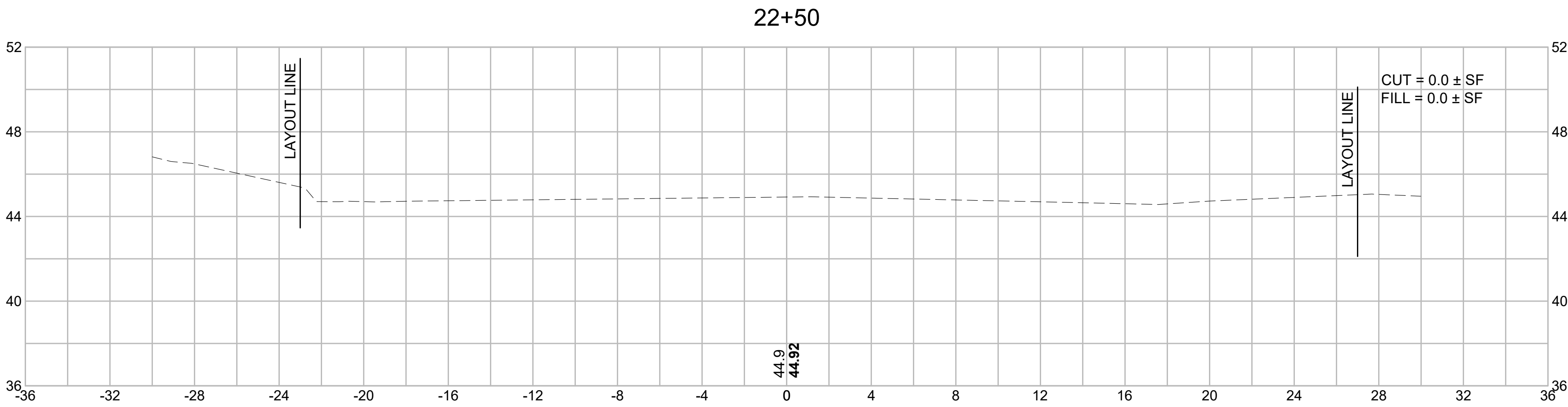
SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	49	61
PROJECT FILE NO.		608743	

CROSS SECTIONS
LIBERTY HILL AVENUE



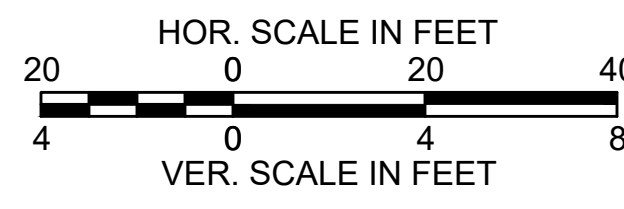
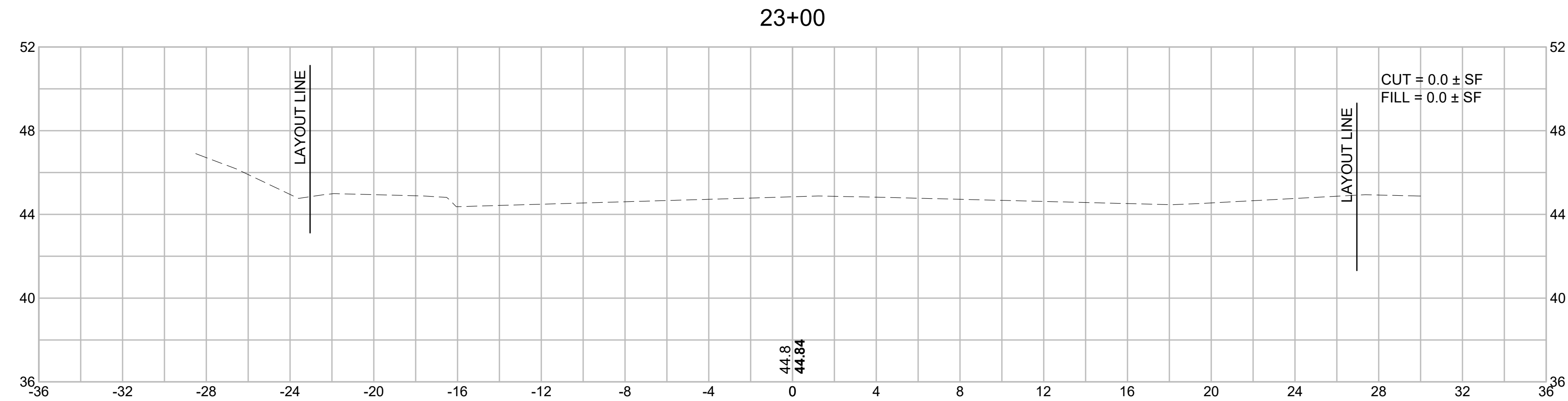
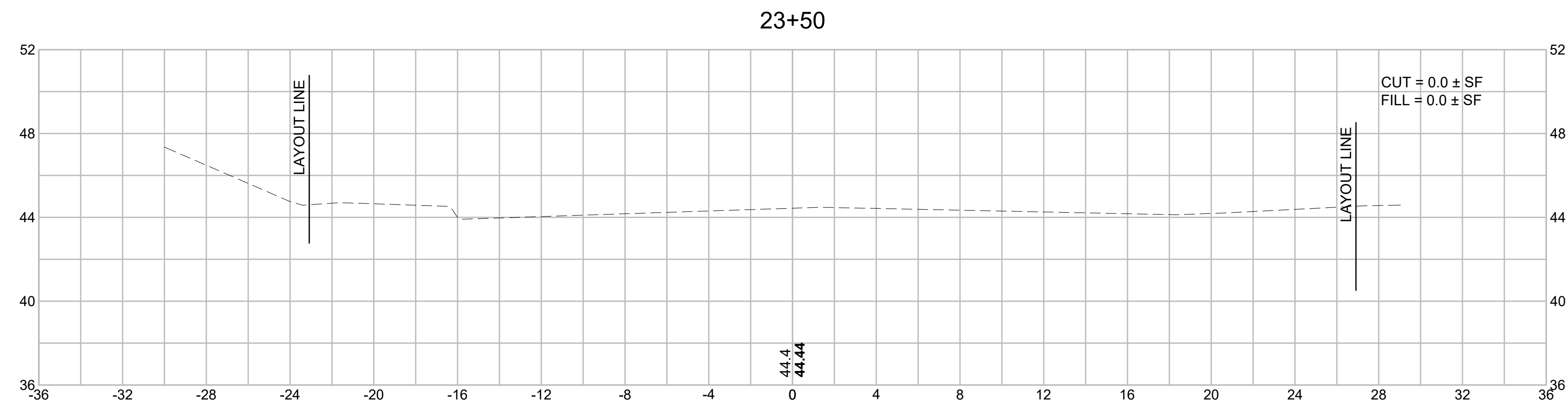
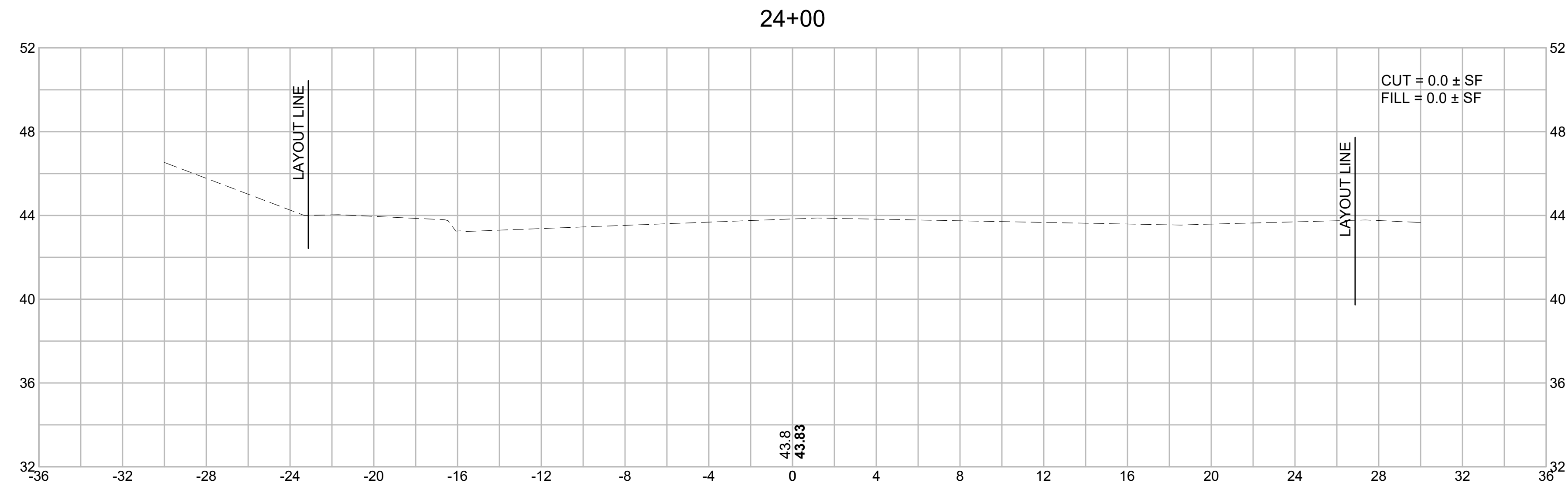




SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	52	61
PROJECT FILE NO.		608743	

CROSS SECTIONS
LIBERTY HILL AVENUE

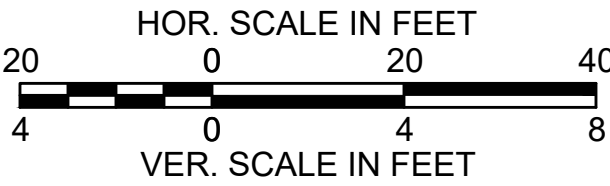
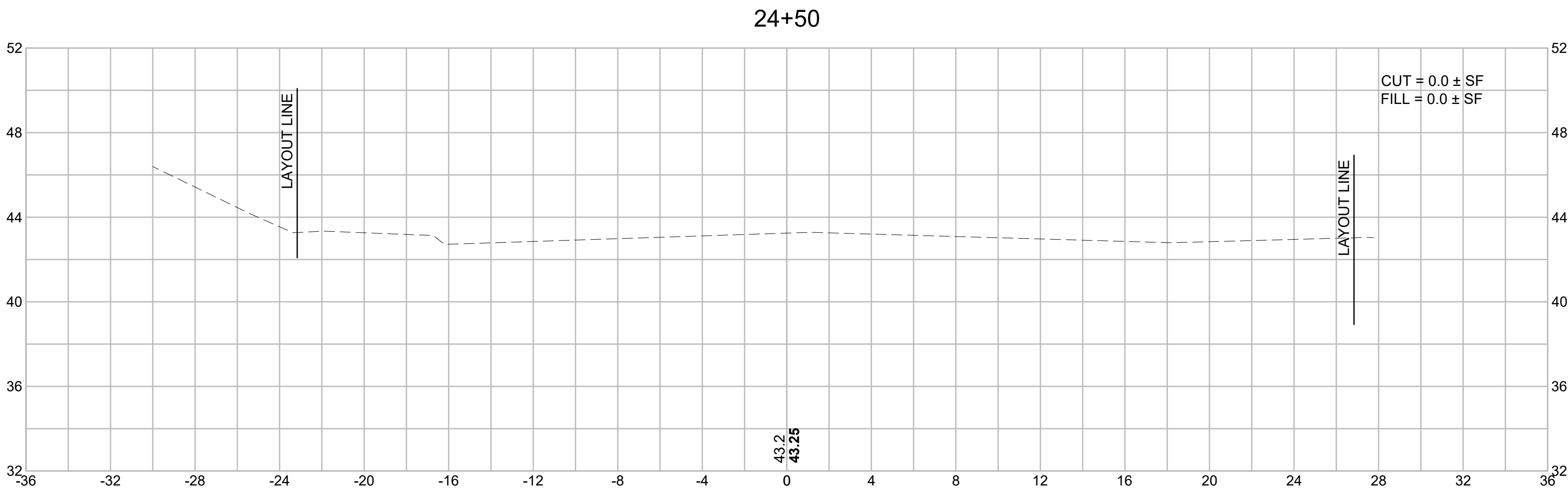
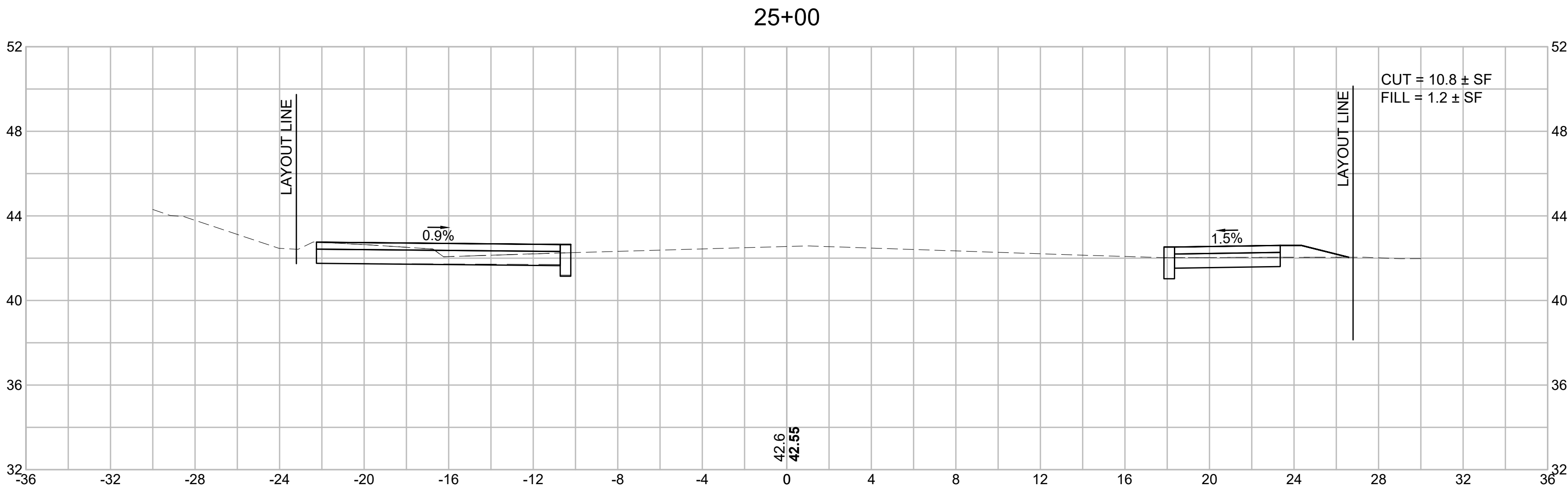
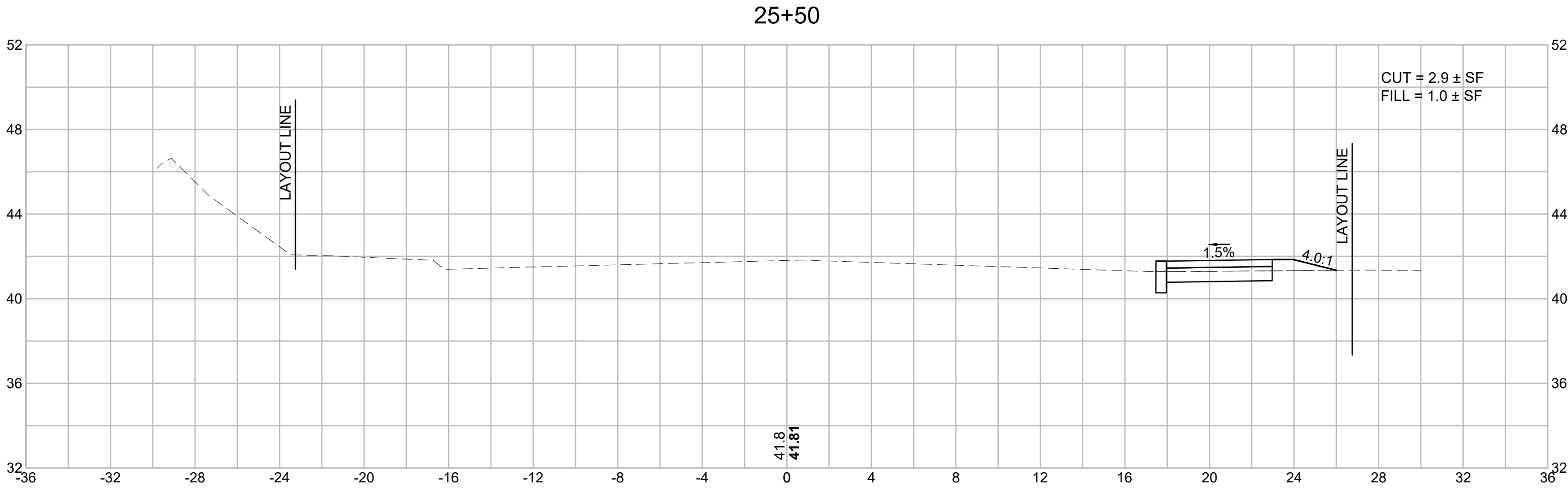


SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	53	61

PROJECT FILE NO. 608743

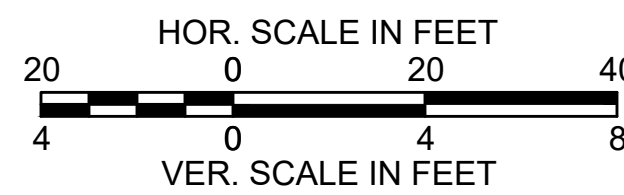
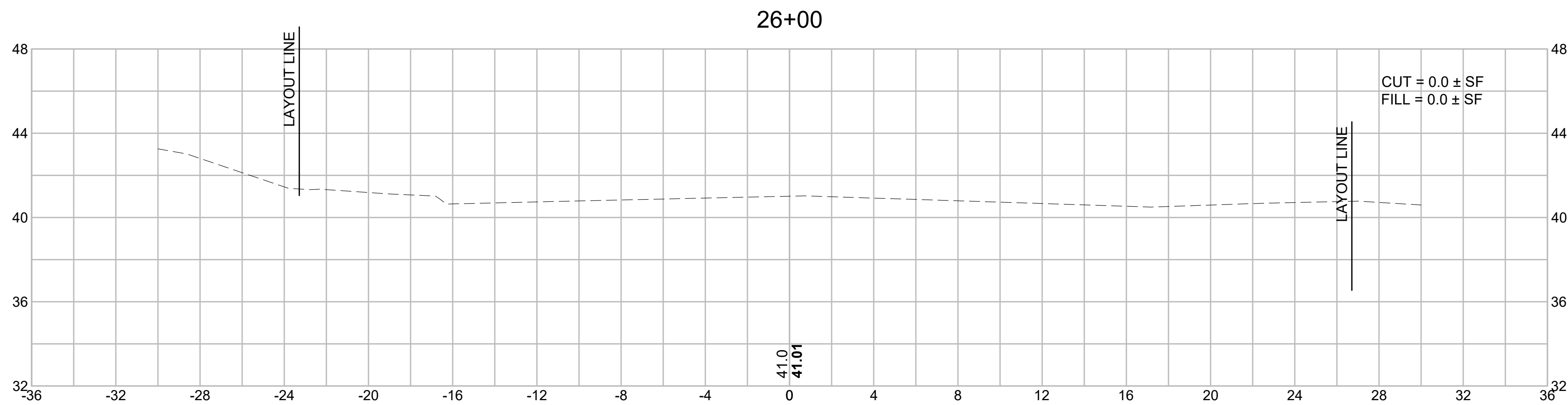
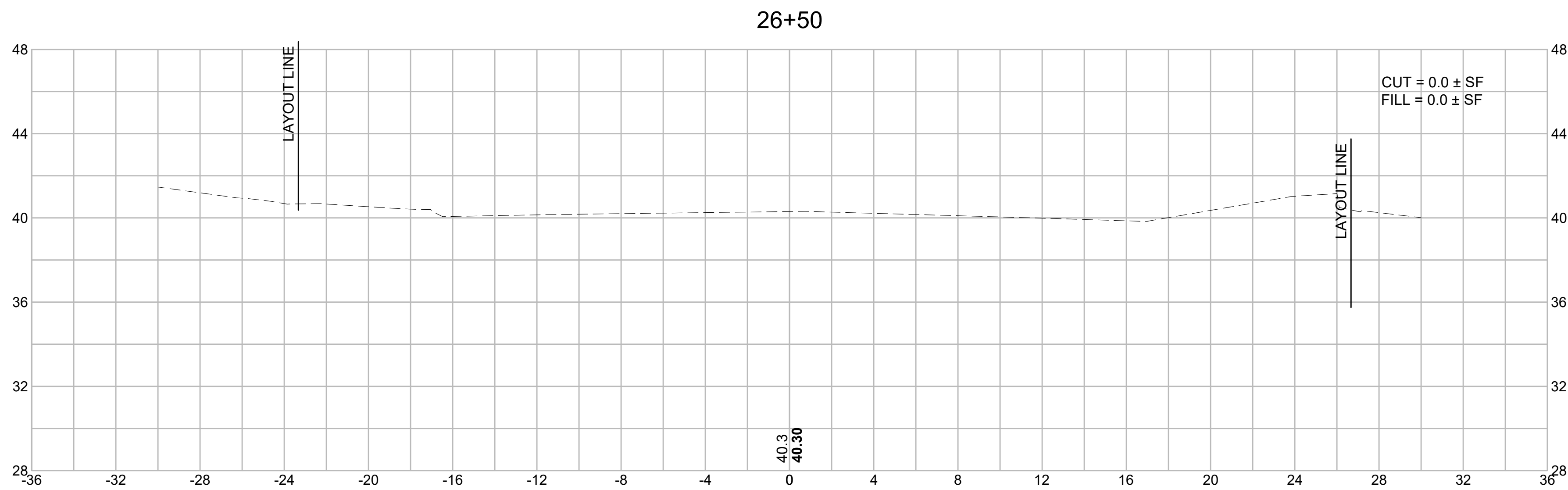
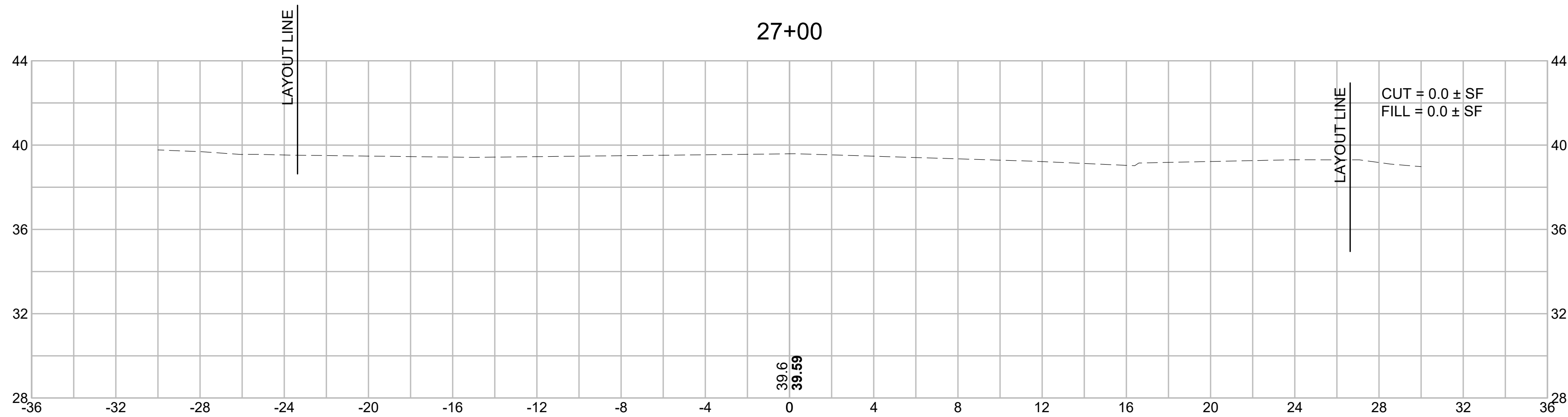
CROSS SECTIONS
LIBERTY HILL AVENUE

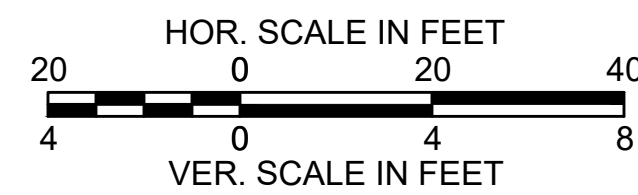
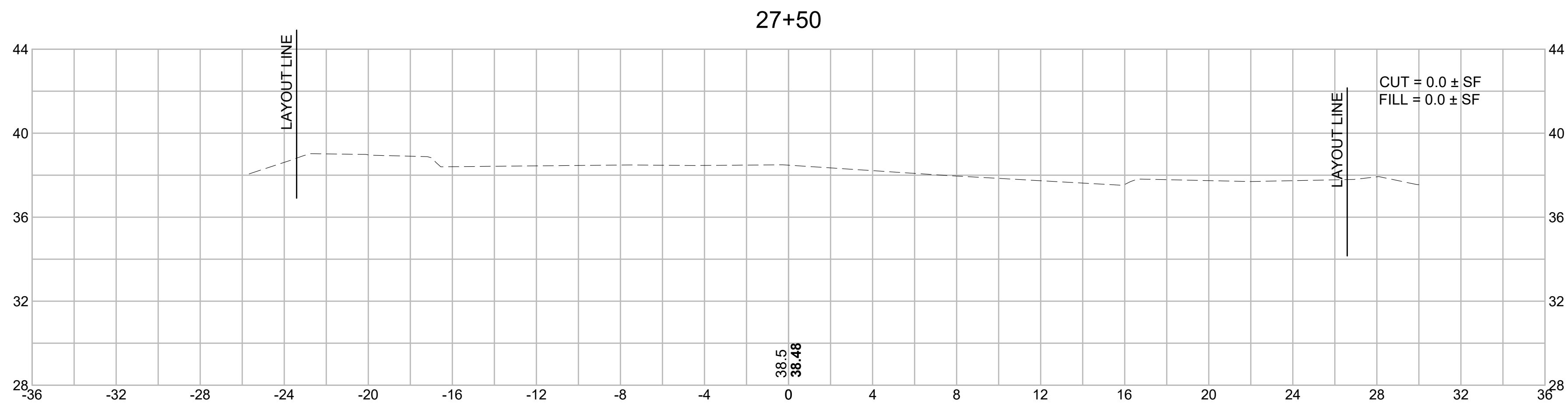
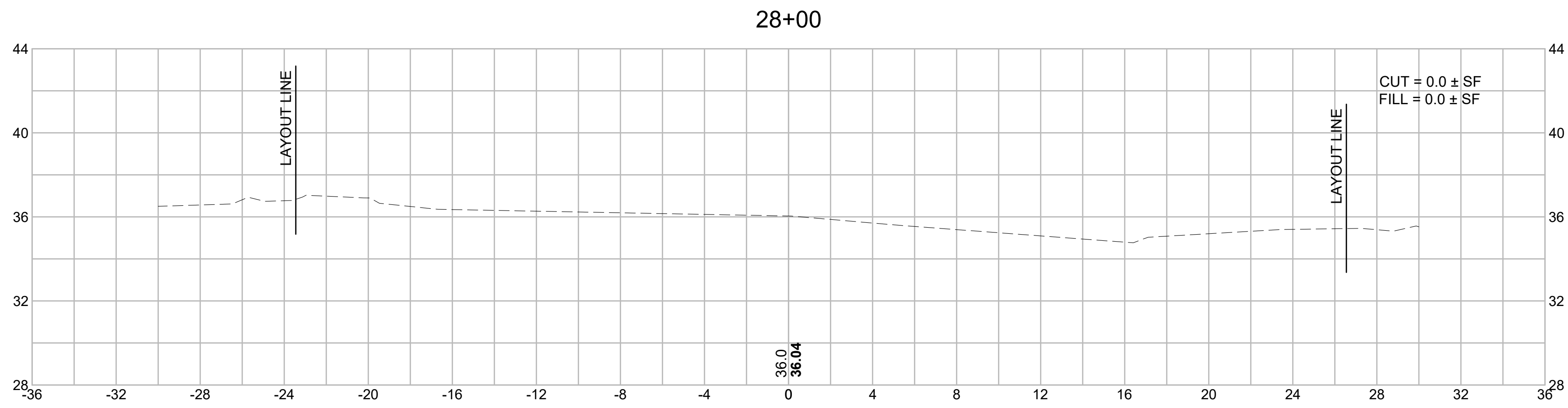
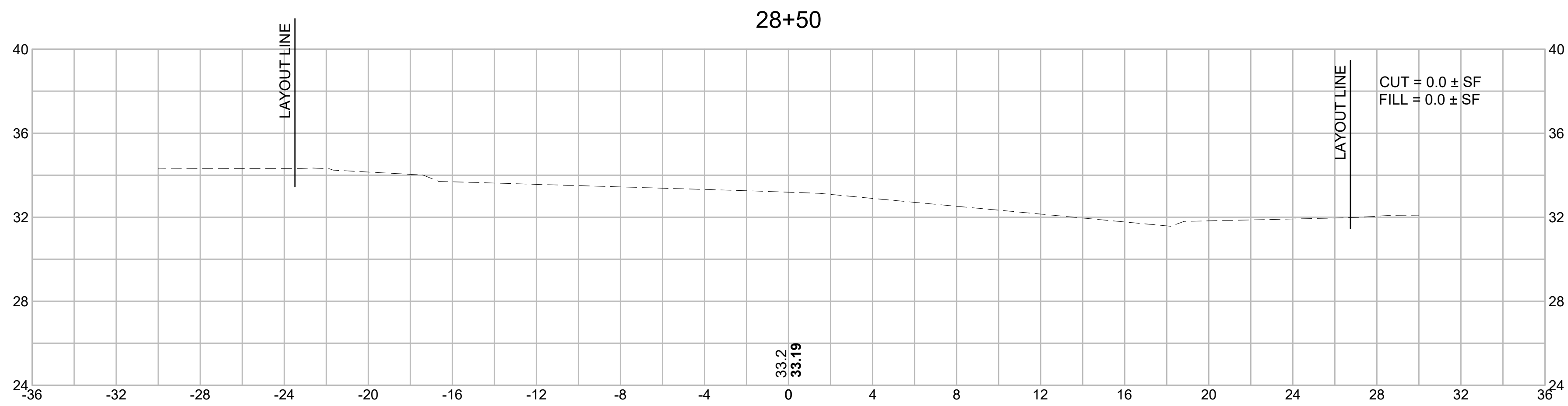


SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	54	61
PROJECT FILE NO.		608743	

CROSS SECTIONS
LIBERTY HILL AVENUE



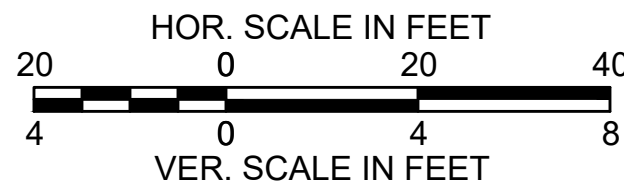
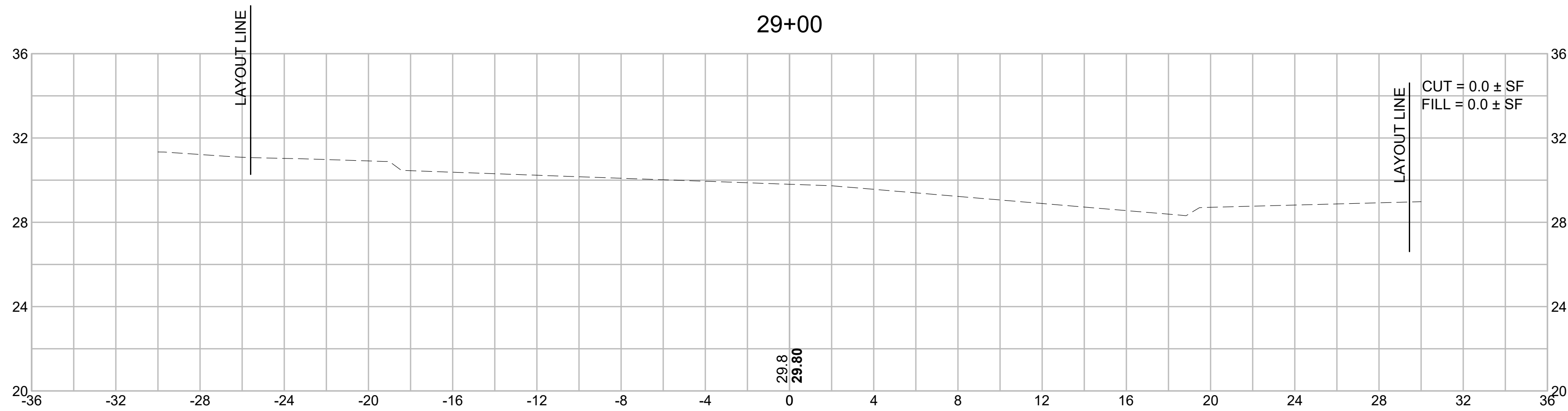
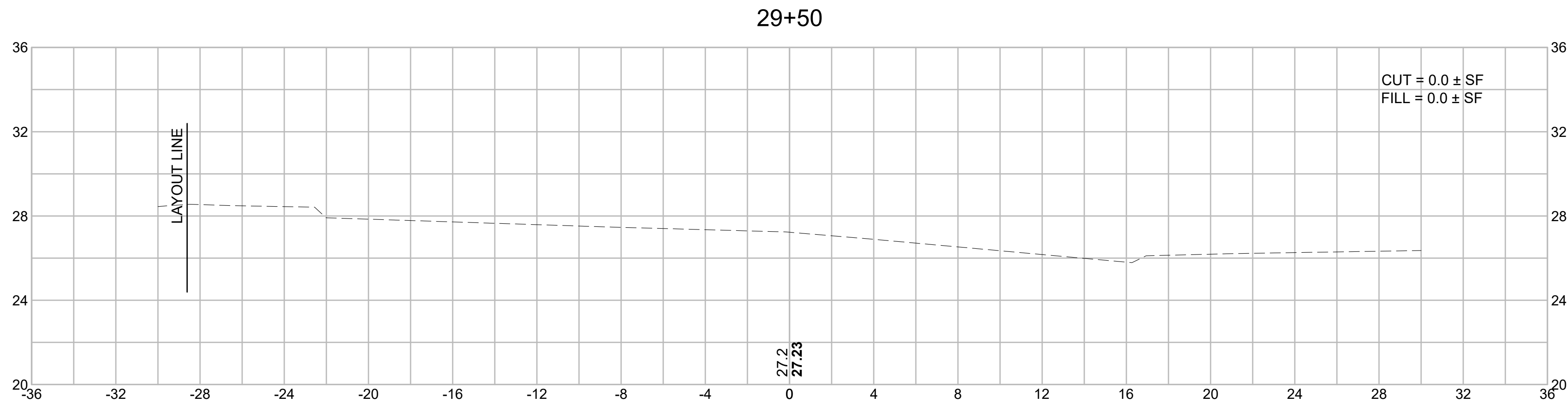
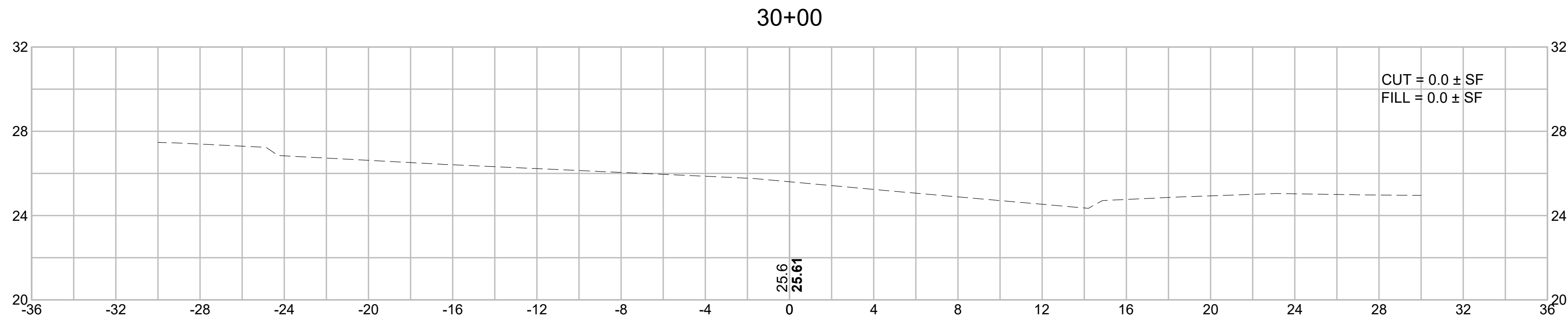


SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	56	61

PROJECT FILE NO. 608743

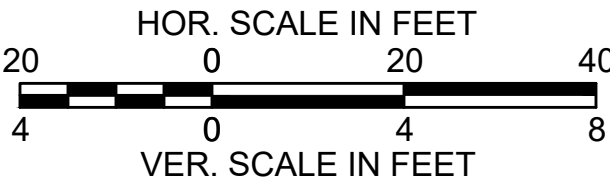
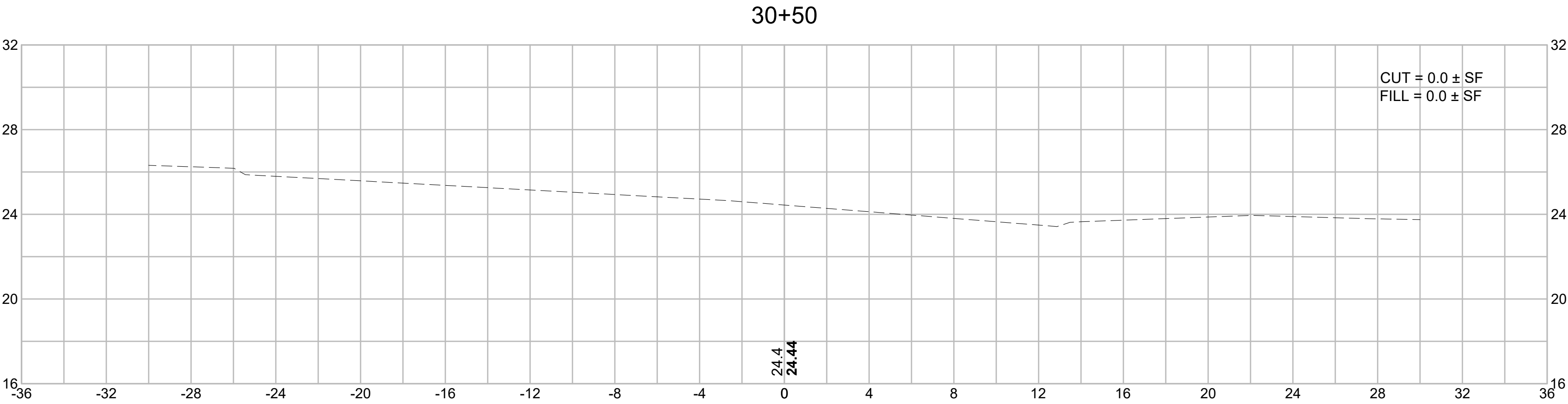
CROSS SECTIONS
LIBERTY HILL AVENUE

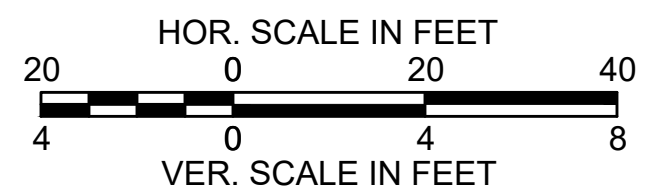
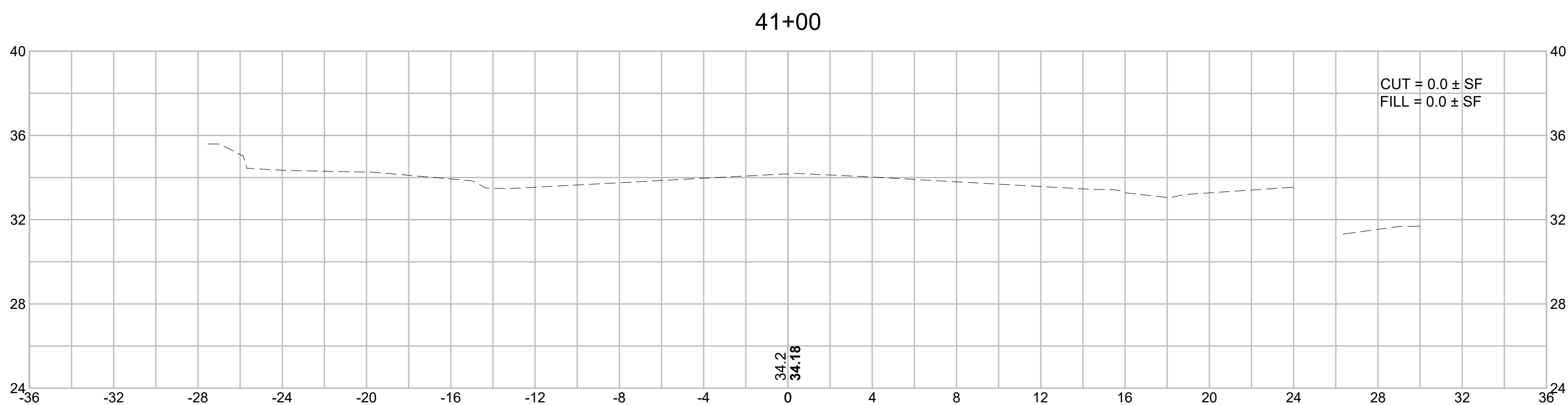
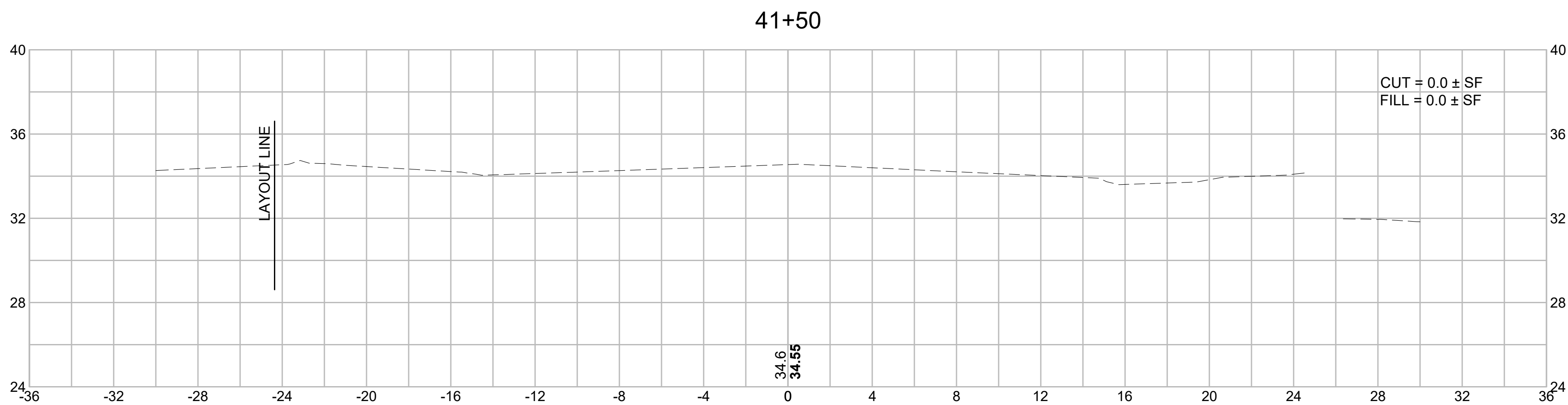
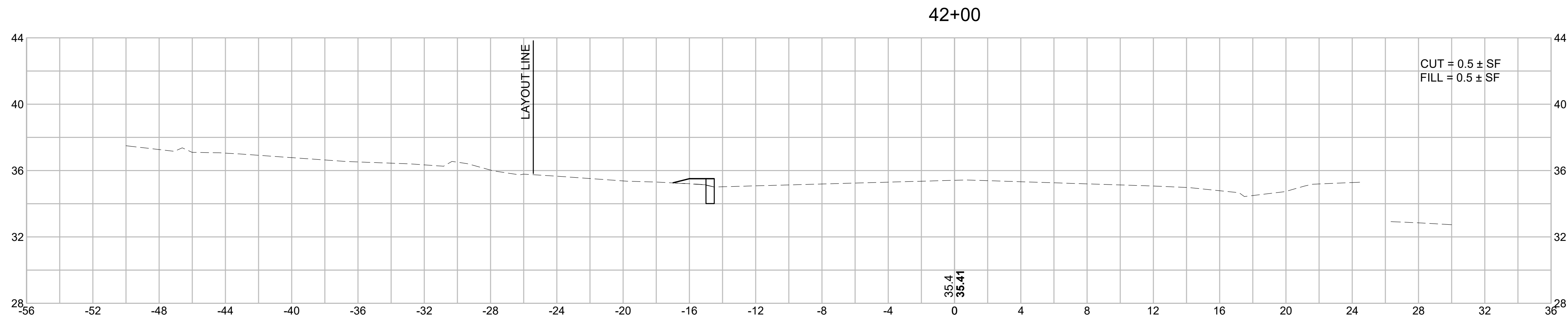


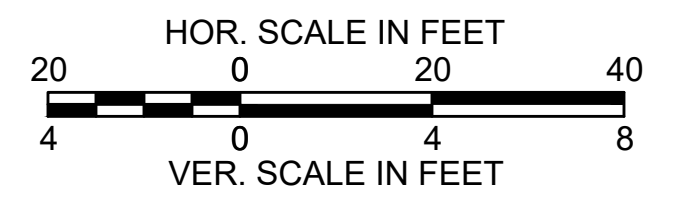
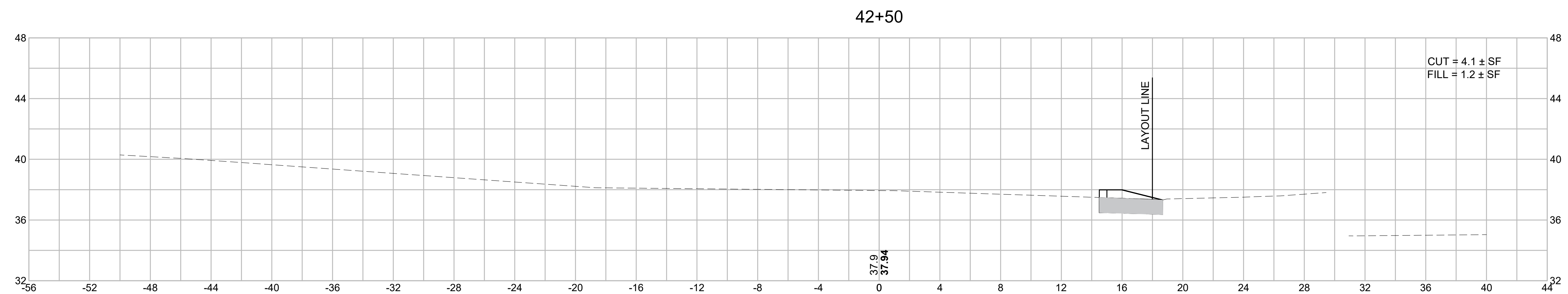
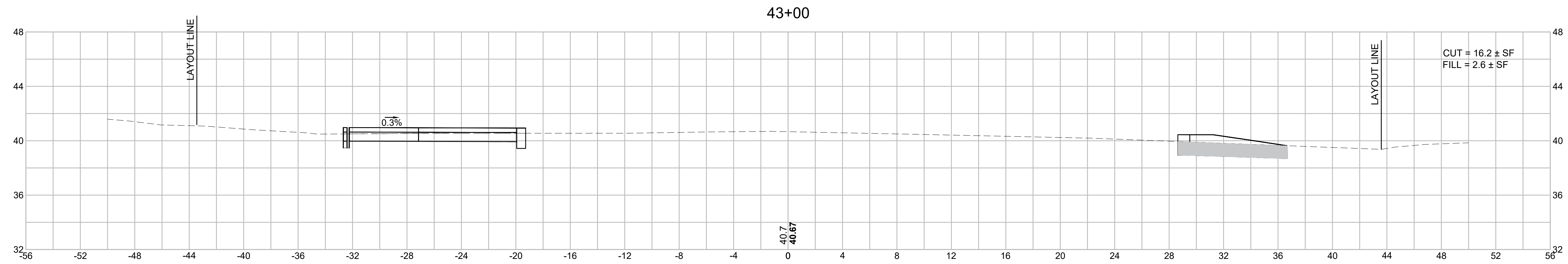
SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	57	61
PROJECT FILE NO.		608743	

CROSS SECTIONS
LIBERTY HILL AVENUE







SALEM
BATES ELEMENTARY SCHOOL

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	60	61
PROJECT FILE NO.		608743	

CROSS SECTIONS
APPLETON STREET

