

THE COMMONWEALTH OF MASSACHUSETTS

HAMILTON CANAL DISTRICT

PLAN AND PROFILE OF

JACKSON STREET EXTENSION

IN THE CITY OF

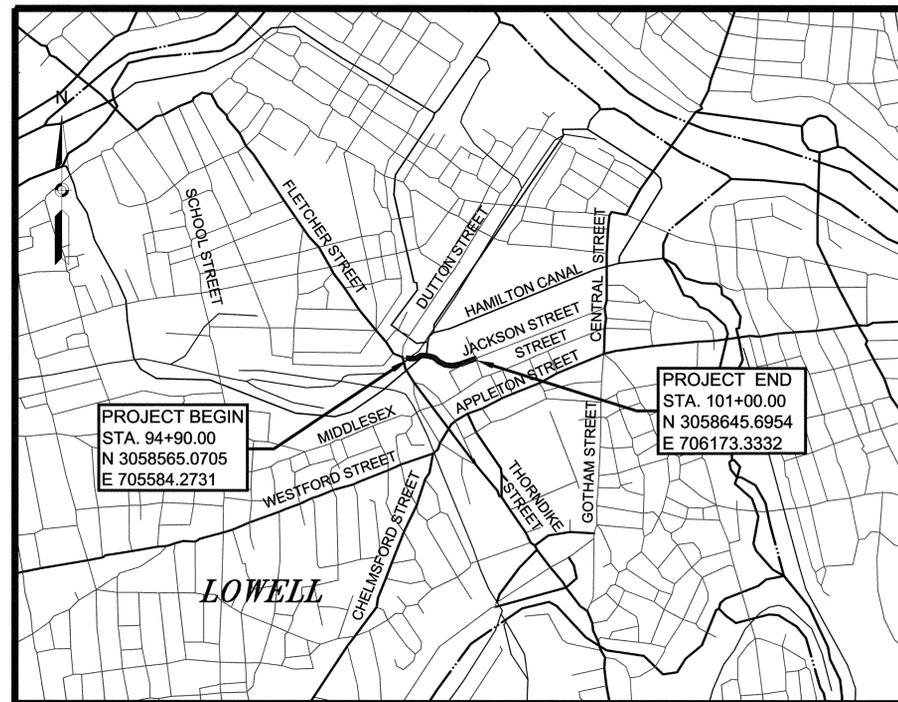
LOWELL

MIDDLESEX COUNTY

LOWELL
JACKSON STREET EXTENSION
TITLE SHEET & INDEX
SHEET 01 OF 24

10809-JACKSON-EXT-COV.DWG 16-Oct-2013

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REFERENCE MANUALS

THE MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DATED 1988, AS AMENDED, THE SUPPLEMENTAL SPECIFICATIONS DATED JUNE 15, 2012, THE LATEST INTERIM SUPPLEMENTAL SPECIFICATIONS, THE 2012 CONSTRUCTION STANDARD DETAILS, THE 1996 CONSTRUCTION AND TRAFFIC STANDARD DETAILS, (AS RELATED TO TRAFFIC STANDARD DETAILS ONLY), 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.

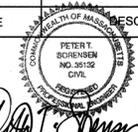


SCALE 1" = 1000'

LENGTH OF PROJECT = 610 FEET = 0.116 MILES

OCTOBER, 2013

DATE	DESCRIPTION	REV #

<p>SHEET NUMBERS 9-16</p> <p style="text-align: right;">  <i>Keith R. Pogarian</i> 10/25/13 ELECTRICAL ENGINEER EVERETT ENGINEERS, LLC </p>	<p style="text-align: right;">  <i>Peter T. Sorenson</i> 10/25/13 CIVIL ENGINEER DATE </p> <p style="text-align: right;">  Vanasse Hangen Brustlin, Inc. <small>• Civil, Environmental & Transportation Engineering Services • 101 Walnut Street, Watertown, Massachusetts 02471 Tel: 617 924-1770 • Fax: 617 924-2286</small> </p>
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GENERAL SYMBOLS

EXISTING	PROPOSED	
□ CB (OR GI, LB)	● CB	CATCH BASIN (OR GUTTER INLET, OR LEACHING BASIN)
□ CICI (OR GICI)	● CICI (OR GICI)	CATCH BASIN (OR GUTTER INLET) WITH CURB INLET (GUTTERMOUTH)
	■ CB	EDGESTONE-TYPE NOTED
	□ GICI	GUTTER INLET WITH CURB INLET
		EDGESTONE-TYPE NOTED
		EDGE OF ROAD
○ EHH	● EHH	ELECTRIC HANDHOLE (NUMBER AS NOTED)
⊙ EMH	● EMH	ELECTRIC MANHOLE "
⊙ TMH	● TMH	TELEPHONE MANHOLE "
○ WMH	● WMH	WATER MANHOLE "
⊙ SMH	● SMH	SEWER MANHOLE "
⊙ DMH	● DMH	DRAINAGE MANHOLE "
	● CIT	CHANGE IN TYPE (CATCH BASIN TO DRAINAGE MANHOLE)
	● DMH/SMH	DRAINAGE/SEWER MANHOLE REMODELED/REBUILT
○ GG	● GG	GAS GATE
○ WGT	● WG	WATER GATE
○ CS	● CS	CURB STOP
○ HYD	● HYD	HYDRANT
○ FA	● FA	FIRE ALARM BOX
○ PM	● PM	PARKING METER
○ LP	● LP	STREET LIGHT POLE
○ PB	● PB	PULL BOX
○ UP	● UP	UTILITY POLE
○ GUY	● GUY	GUY POLE
12" RCP D	21'-12"RCP D	DRAIN PIPE (UNDER 24")
	21'-24"RCP D	DRAIN PIPE (DOUBLE LINE 24" AND OVER)
8" VCP S	82'-8"VCP S	SEWER MAIN " "
	E	ELECTRIC DUCT " "
4" HP G	8"GAS G	GAS MAIN " "
8" C.I. W	12"DI W	WATER MAIN " "
	T	TELEPHONE DUCT " "
□ MB	■ MB	MAIL BOX
□ □ ▽ ▽ ▽ ▽ ▽ ▽ ▽ ▽	T T T T T T T T	HIGHWAY GUARD (TYPE NOTED)
x x x x x x x x	x o x	FENCE (SIZE AND TYPE NOTED)
		RETAINING WALL (TYPE NOTED)
□ MHB	■ MHB	HIGHWAY/PROPERTY BOUND (TYPE NOTED)
LABEL/DATE	LABEL/DATE	CITY, TOWN, OR COUNTY LAYOUT
		STATE HIGHWAY LAYOUT (S.H.L.O.)
		EASEMENT LINE
		PROPERTY LINE
		CITY, TOWN, OR COUNTY BOUNDARY
		STATE BOUNDARY
		BASE OR SURVEY LINE
		CONSTRUCTION BASELINE
		TREE (SIZE AND TYPE NOTED)
	⊕ B-1	BORINGS, PAVEMENT CORES
	⊕ TP-1	TEST PIT
		EROSION CONTROL BARRIER
		WATER ELEVATION

PAVEMENT MARKINGS AND SIGNING SYMBOLS

EXISTING	PROPOSED	
→	→	PAVEMENT ARROW AND LEGEND
SWCHL	SWCHL	CROSSWALK, 2-12" WHITE LINES (WIDTH NOTED)
SL	SL	STOP LINE, 12" WHITE LINE 4.0' BEHIND CW (TYP)
	▼▼▼▼	YIELD LINE, 24" x 36" WHITE TRIANGLE, 36" O.C.
	SWCHL	SOLID WHITE CHANNELIZING LINE-SIZE AS NOTED
	BWLL	BROKEN WHITE LANE LINE - 4"
	SWLL	SOLID WHITE LANE LINE - 4"
	DYCL	DOUBLE YELLOW CENTER LINE - 4"
	SYEL	SOLID YELLOW EDGE LINE - 4"
	SWEL	SOLID WHITE EDGE LINE - 4"
	BYLL	BROKEN YELLOW LANE LINE - 4"
		BICYCLE LANE
		BICYCLE DETECTION LEGEND
		SIGN AND POST
		DELINEATOR

ABBREVIATIONS

GENERAL				UTILITIES	
ABAN	ABANDON	MB	MAILBOX	ACCOMP	ASHPALT COATED CORRIGATED METAL PIPE
ADJ	ADJUST	MIN	MINIMUM	CAP	CORRUGATED ALUMINUM PIPE
APPROX	APPROXIMATE	MOD	MODIFIED	CIP	CAST IRON PIPE
BIT	BITUMINOUS	NIC	NOT IN CONTRACT	CIT	CHANGE IN TYPE
BOS	BOTTOM OF SLOPE	NTS	NOT TO SCALE	COND	CONDUIT
(BO)	BY OTHERS	OC	ON CENTER	DIP	DUCTILE IRON PIPE
CEM	CEMENT	OD	OUTSIDE DIAMETER	FES	FLARED END SECTION
CLF	CHAINLINK FENCE	PED	PEDESTRIAN	F&C	FRAME AND COVER
CONC	CONCRETE	PERF	PERFORATED	F&G	FRAME AND GRATE
CONSTR	CONSTRUCTION	PGL	PROFILE GRADE LINE	HDPE	HIGH DENSITY POLYETHYLENE PIPE
CW	CROSS WALK	PROP	PROPOSED	HW	HEADWALL
DIA	DIAMETER	PVMT	PAVEMENT	HYD	HYDRANT
ELEC	ELECTRIC	REM	REMOVE	INV	INVERT
ELEV	ELEVATION	REMOD	REMODEL	PVC	POLYVINYLCHLORIDE PIPE
ENTR	ENTRANCE	RET	RETAIN	PWW	PAVED WATER WAY
EOP	EDGE OF PAVEMENT	ROW	RIGHT OF WAY	RCP	REINFORCED CONCRETE PIPE
EXIST	EXISTING	R&D	REMOVE AND DISCARD	TSV&B	TAPPING SLEEVE VALVE AND BOX
EXT	EXTENSION	R&R	REMOVE AND RESET	UP	UTILITY POLE
FDP	FULL DEPTH PAVEMENT	R&S	REMOVE AND STACK		
FND	FOUNDATION	RT	RIGHT		
GRAN	GRANITE	SHLD	SHOULDER		
HMA	HOT MIX ASPHALT	STA	STATION		
LOAM	LOAM BORROW	TEMP	TEMPORARY		
LT	LEFT	TOS	TOP OF SLOPE		
LSA	LANDSCAPING	TRANS	TRANSITION		
MAX	MAXIMUM	TYP	TYPICAL		
		WWM	WELDED WIRE MESH		

ALIGNMENT/GRADING

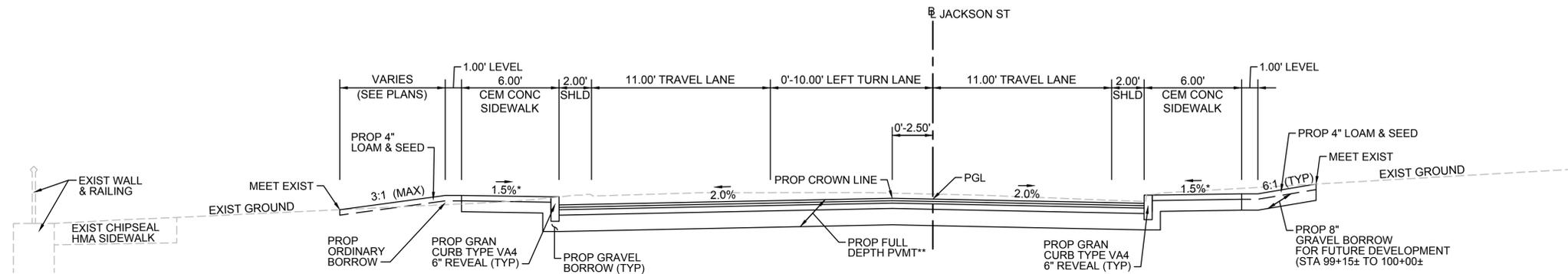
CC	CENTER OF CURVE
D	DEFLECTION ANGLE
HP	HIGH POINT
LP	LOW POINT
PC	POINT OF CURVE
PI	POINT OF INTERSECTION
PNT	POINT
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
25.45	SPOT ELEVATION

PROFILES

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

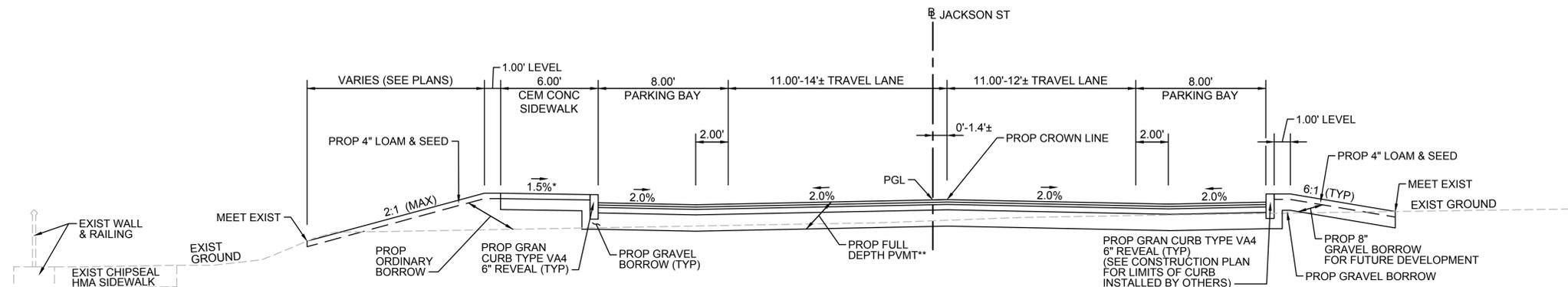
GENERAL NOTES

- TOPOGRAPHICAL INFORMATION FROM A SURVEY BY VANASSE HANGEN BRUSTLIN, INC., WATERTOWN, MASSACHUSETTS BETWEEN THE DATES OF FEBRUARY 24, 2009 AND APRIL 18, 2009 AND BY HANCOCK ASSOCIATES, CHELMSFORD, MASSACHUSETTS IN MARCH, 2013. HORIZONTAL DATUM FOR THIS PROJECT IS NAD 83, AND VERTICAL DATUM IS NAVD 88.
- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- CARE SHOULD BE TAKEN TO AVOID IMPACT TO EXISTING UTILITY POLES AND OVERHEAD WIRES. THE CONTRACTOR SHALL CONFORM TO ALL UTILITY CLEARANCE REQUIREMENTS DURING CONSTRUCTION OPERATIONS.
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE STRUCTURES AS NECESSARY FOR CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
- THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
- IF REQUIRED, EXISTING UTILITY POLES WILL BE RELOCATED OR REMOVED BY OTHERS.
- TREES AND SHRUBS WITHIN THE LIMITS OF GRADING SHALL BE REMOVED ONLY UPON APPROVAL OF THE ENGINEER.
- AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT NO EXPENSE TO THE OWNER.
- THE TERM "PROPOSED" (PROP) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IN SUITABLE CONDITION IDENTIFIED AS "REMOVE AND RESET" (R&R).
- JOINTS BETWEEN HOT MIX ASPHALT ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH HOT POURED RUBBERIZED ASPHALT SEALER.
- ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE RETAINED UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- ALL EXISTING GRANITE CURB FOUND TO BE IN SUITABLE CONDITION BY THE ENGINEER SHALL BE RE-USED IN THE PROPOSED WORK, EXCEPT CURVED STONES OF A DIFFERENT RADIUS THAN PROPOSED CURB.
- ALL EXISTING STATE, COUNTY, AND CITY LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATIONS ARE NOT GUARANTEED.
- DEMOLITION OR REMOBILIZATION REQUIRED DURING CONSTRUCTION SHALL BE AT THE EXPENSE OF THE CONTRACTOR WITH NO ADDITIONAL COMPENSATION.
- THE CONTRACTOR SHALL PAVE TO INTERMEDIATE COURSE. GRADES SHOWN ARE FINAL GRADES. CASTINGS WITHIN THE ROADWAY SHALL BE SET 1-3/4" LOWER THAN FINAL GRADES TO MATCH INTERMEDIATE COURSE ELEVATIONS. STRUCTURE CASTINGS WILL BE ADJUSTED UP WHEN THE SURFACE COURSE MATERIAL IS PLACED BY OTHERS IN THE FUTURE. THE CONTRACTOR SHALL INSTALL PAVEMENT MARKINGS AS SHOWN ON THE INTERMEDIATE COURSE AND THE MARKINGS SHALL BE PAINT. FINAL PAVEMENT MARKINGS SHALL BE INSTALLED BY OTHERS IN THE FUTURE AND SHALL BE THERMOPLASTIC.



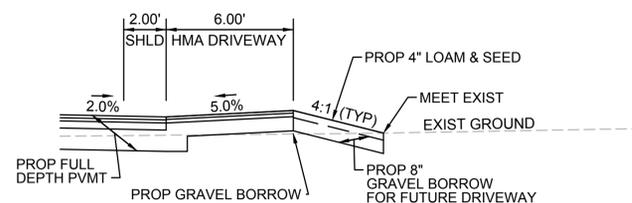
TYPICAL SECTION - JACKSON ST

STA 99+15± TO STA 100+75±
 NTS
 *TOLERANCE FOR CONSTRUCTION ±0.5%
 **CONTRACTOR TO INSTALL BASE COURSE AND INTERMEDIATE COURSE. SURFACE COURSE BY OTHERS.



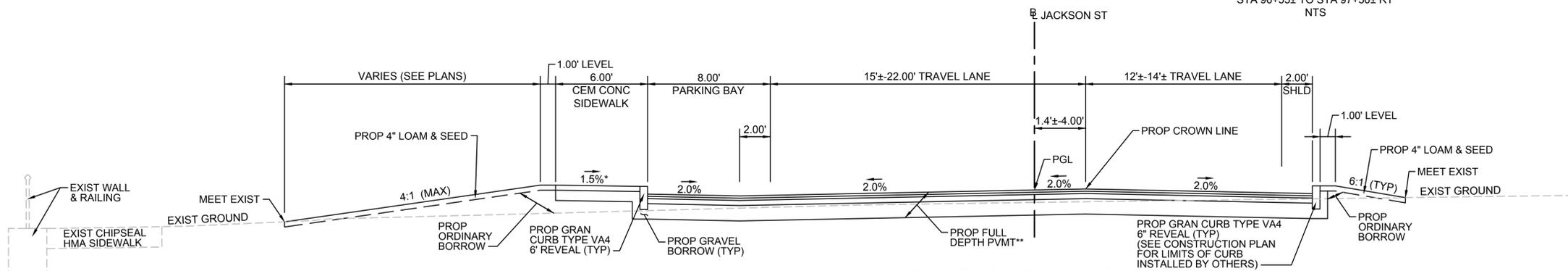
TYPICAL SECTION - JACKSON ST

STA 97+50± TO STA 99+15±
 NTS
 *TOLERANCE FOR CONSTRUCTION ±0.5%
 **CONTRACTOR TO INSTALL BASE COURSE AND INTERMEDIATE COURSE. SURFACE COURSE BY OTHERS.



TYPICAL SECTION - JACKSON ST

STA 96+55± TO STA 97+50± RT
 NTS



TYPICAL SECTION - JACKSON ST

STA 95+90± TO STA 97+50±
 NTS
 *TOLERANCE FOR CONSTRUCTION ±0.5%
 **CONTRACTOR TO INSTALL BASE COURSE AND INTERMEDIATE COURSE. SURFACE COURSE BY OTHERS.

PAVEMENT NOTES

PROPOSED FULL DEPTH PAVEMENT
 SURFACE: 3-1/2" HOT MIX ASPHALT
 *(1-3/4" SURFACE COURSE TYPE B OVER 1-3/4" INTERMEDIATE COURSE TYPE B).
 BASE: 4" HOT MIX ASPHALT BASE COURSE MATERIAL PLACED IN ONE COURSE.
 SUBBASE: 12" GRAVEL BORROW, TYPE b.

PROPOSED CEMENT CONCRETE WALK/ WHEELCHAIR RAMP
 SURFACE: 4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610 WITH 6"x6" W1.4XW1.4 WELDED WIRE MESH REINFORCEMENT
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE DRIVEWAY
 SURFACE: 6" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610 WITH 6"x6" W2.9XW2.9 WELDED WIRE MESH REINFORCEMENT
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

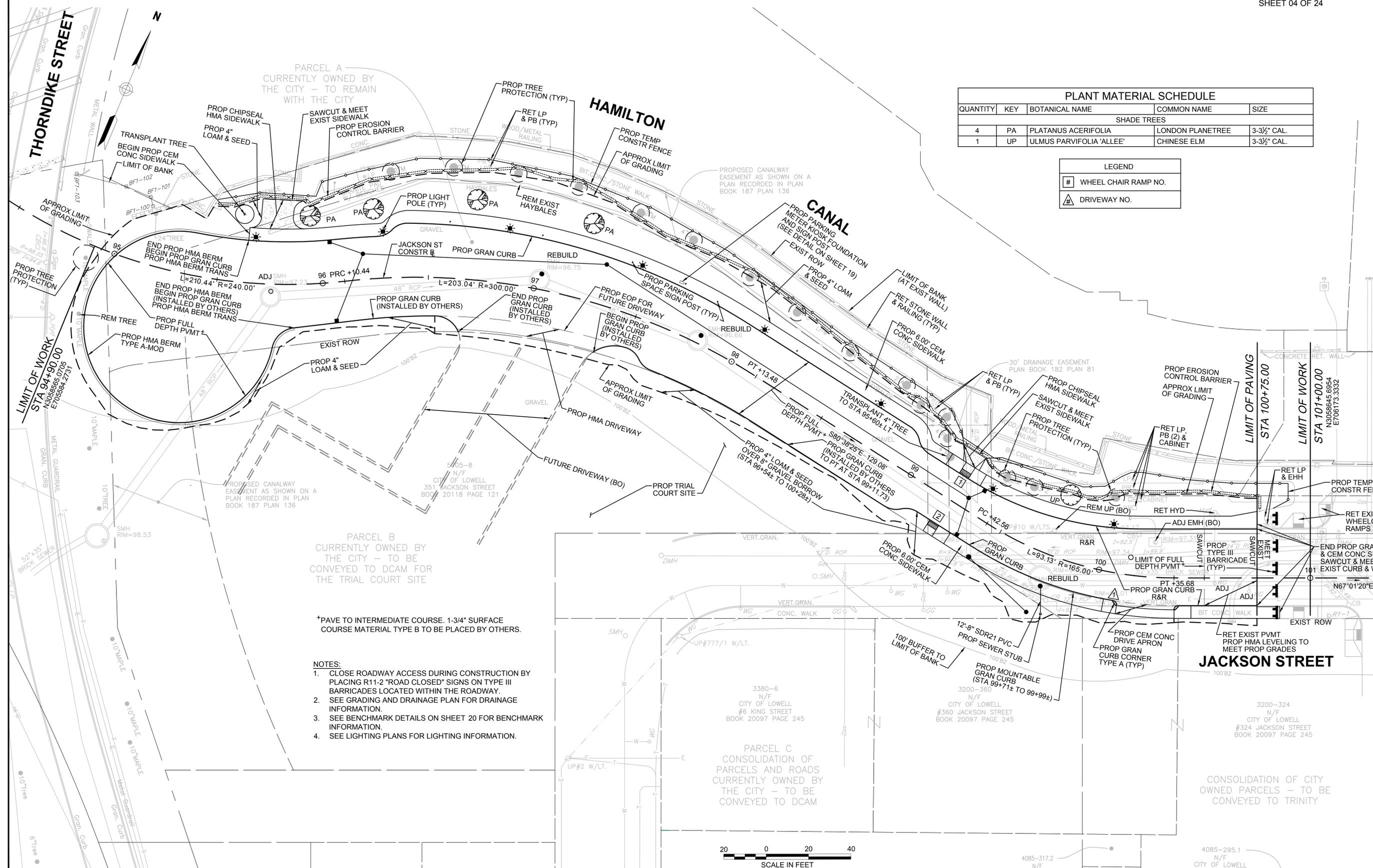
PROPOSED CHIPSEAL HOT MIX ASPHALT WALK
 SURFACE: BITUMINOUS SEAL COAT AND COVER AGGREGATE
 1-1/2" HMA SURFACE COURSE TYPE B
 2-1/2" HMA INTERMEDIATE COURSE TYPE B
 FOUNDATION: 4" DENSE GRADED CRUSHED STONE
 8" GRAVEL BORROW, TYPE b

PROPOSED HOT MIX ASPHALT DRIVEWAY
 SURFACE: 3-1/2" HOT MIX ASPHALT (1-1/2" TOP COURSE OVER 2" BINDER COURSE)
 FOUNDATION: 8" GRAVEL BORROW, TYPE b

†PAVE TO INTERMEDIATE COURSE.
 1-3/4" SURFACE COURSE MATERIAL TYPE B TO BE PLACED BY OTHERS.

PLANT MATERIAL SCHEDULE				
QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE
SHADE TREES				
4	PA	PLATANUS ACERIFOLIA	LONDON PLANETREE	3-3 1/2" CAL.
1	UP	ULMUS PARVIFOLIA 'ALLEE'	CHINESE ELM	3-3 1/2" CAL.

LEGEND	
#	WHEEL CHAIR RAMP NO.
▲	DRIVEWAY NO.



PARCEL B
 CURRENTLY OWNED BY
 THE CITY - TO BE
 CONVEYED TO DCAM FOR
 THE TRIAL COURT SITE

*PAVE TO INTERMEDIATE COURSE. 1-3/4" SURFACE COURSE MATERIAL TYPE B TO BE PLACED BY OTHERS.

- NOTES:**
1. CLOSE ROADWAY ACCESS DURING CONSTRUCTION BY PLACING R11-2 "ROAD CLOSED" SIGNS ON TYPE III BARRICADES LOCATED WITHIN THE ROADWAY.
 2. SEE GRADING AND DRAINAGE PLAN FOR DRAINAGE INFORMATION.
 3. SEE BENCHMARK DETAILS ON SHEET 20 FOR BENCHMARK INFORMATION.
 4. SEE LIGHTING PLANS FOR LIGHTING INFORMATION.



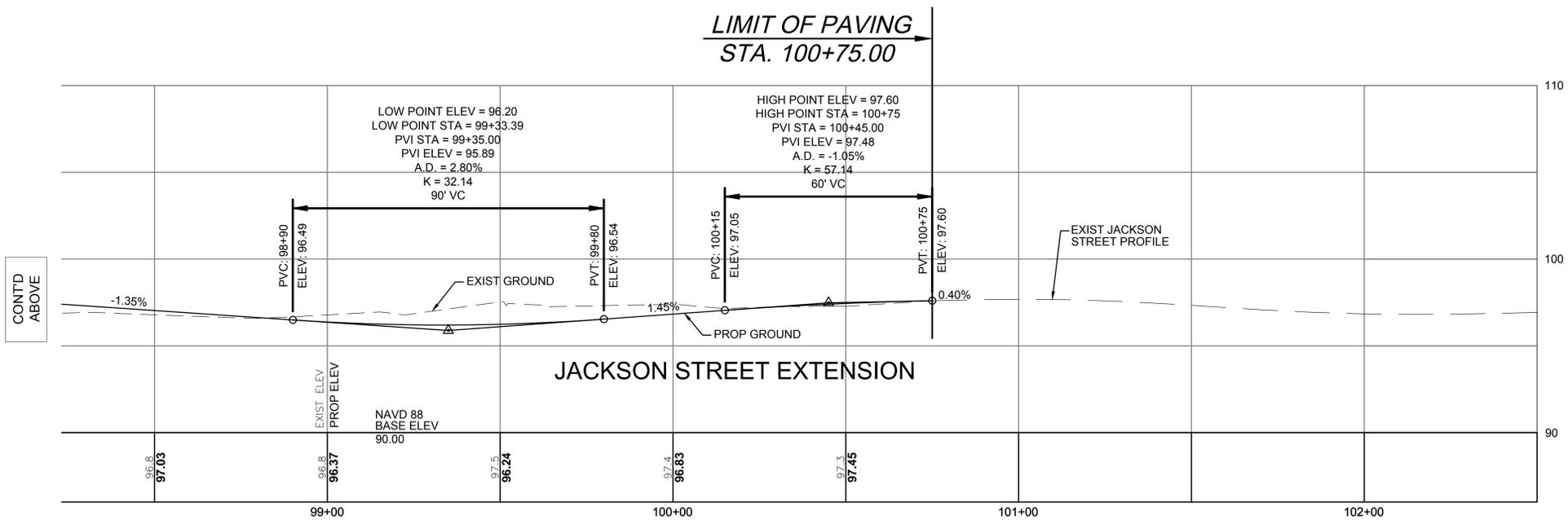
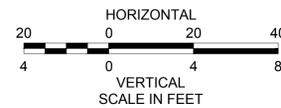
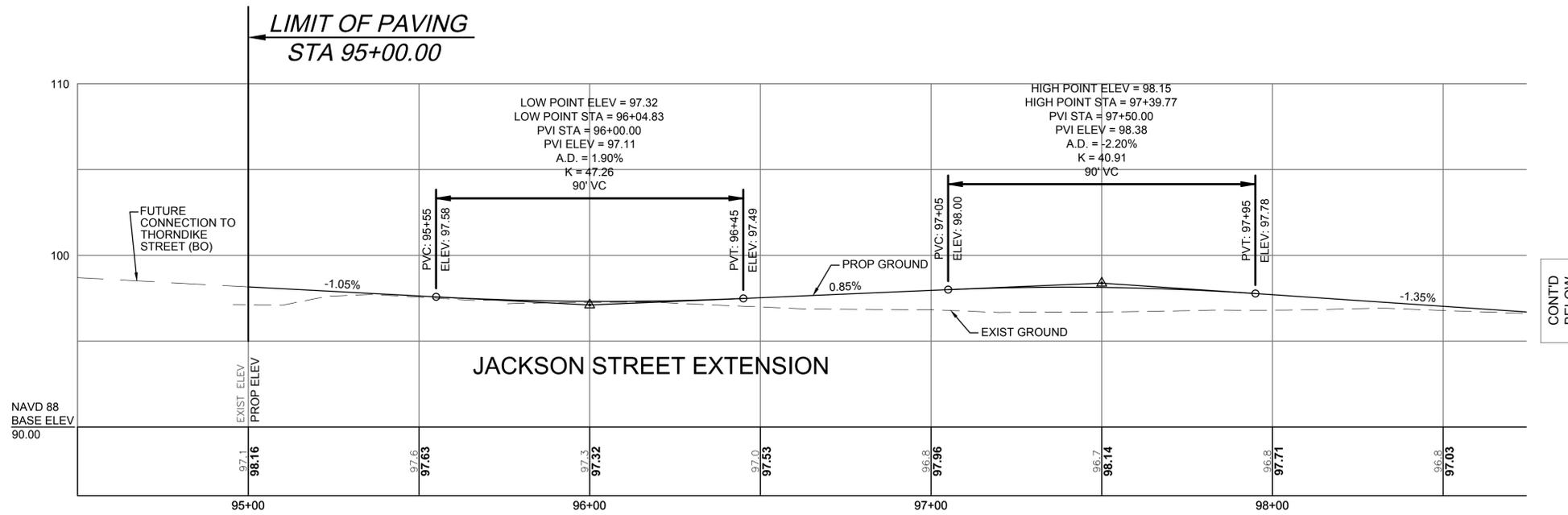
CANAL STREET

JACKSON STREET

THORNDIKE STREET

HAMILTON

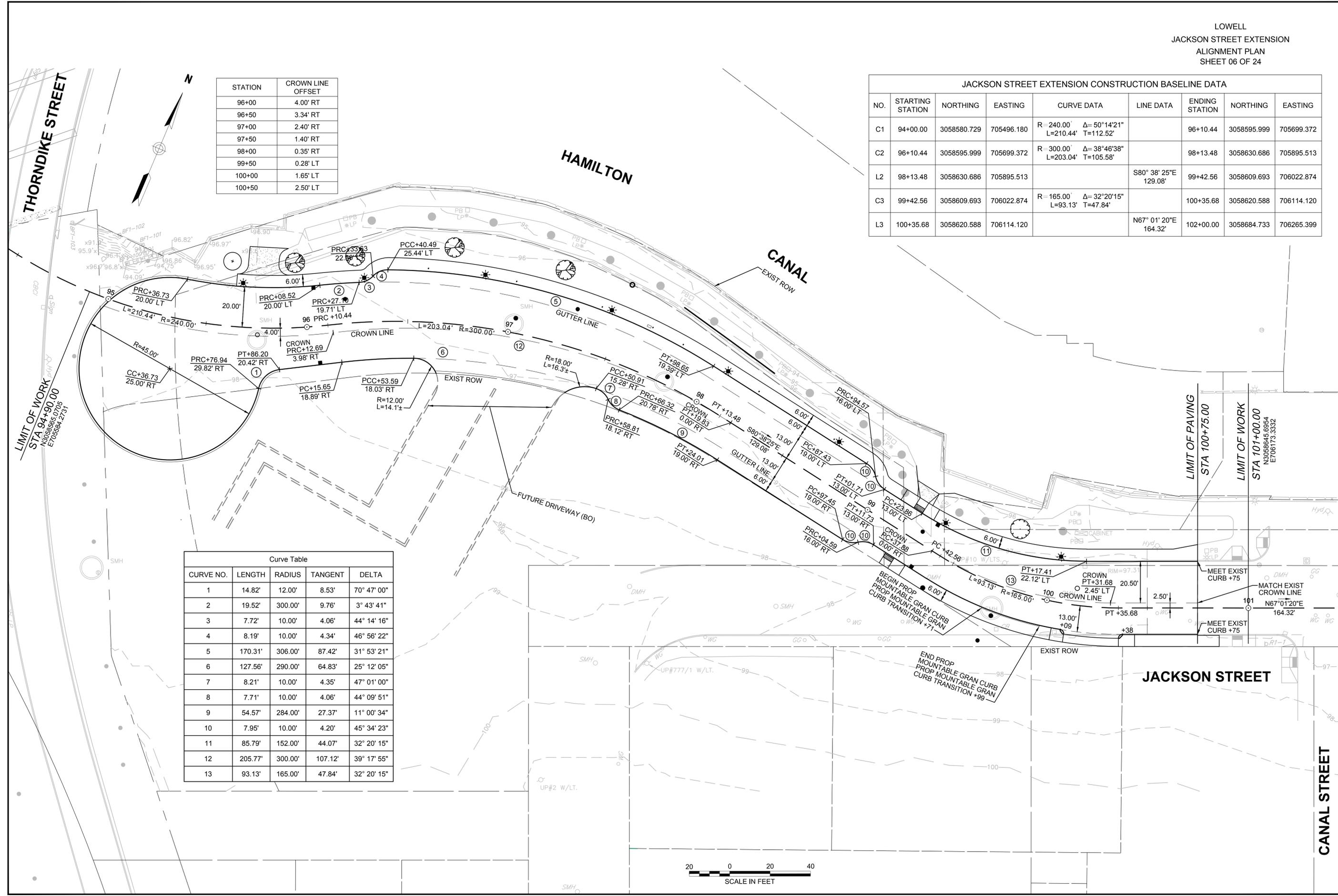
CANAL



NO.	STARTING STATION	NORTHING	EASTING	CURVE DATA	LINE DATA	ENDING STATION	NORTHING	EASTING
C1	94+00.00	3058580.729	705496.180	R = 240.00' Δ = 50°14'21" L = 210.44' T = 112.52'		96+10.44	3058595.999	705699.372
C2	96+10.44	3058595.999	705699.372	R = 300.00' Δ = 38°46'38" L = 203.04' T = 105.58'		98+13.48	3058630.686	705895.513
L2	98+13.48	3058630.686	705895.513		S80° 38' 25"E 129.08'	99+42.56	3058609.693	706022.874
C3	99+42.56	3058609.693	706022.874	R = 165.00' Δ = 32°20'15" L = 93.13' T = 47.84'		100+35.68	3058620.588	706114.120
L3	100+35.68	3058620.588	706114.120		N67° 01' 20"E 164.32'	102+00.00	3058684.733	706265.399

STATION	CROWN LINE OFFSET
96+00	4.00' RT
96+50	3.34' RT
97+00	2.40' RT
97+50	1.40' RT
98+00	0.35' RT
99+50	0.28' LT
100+00	1.65' LT
100+50	2.50' LT

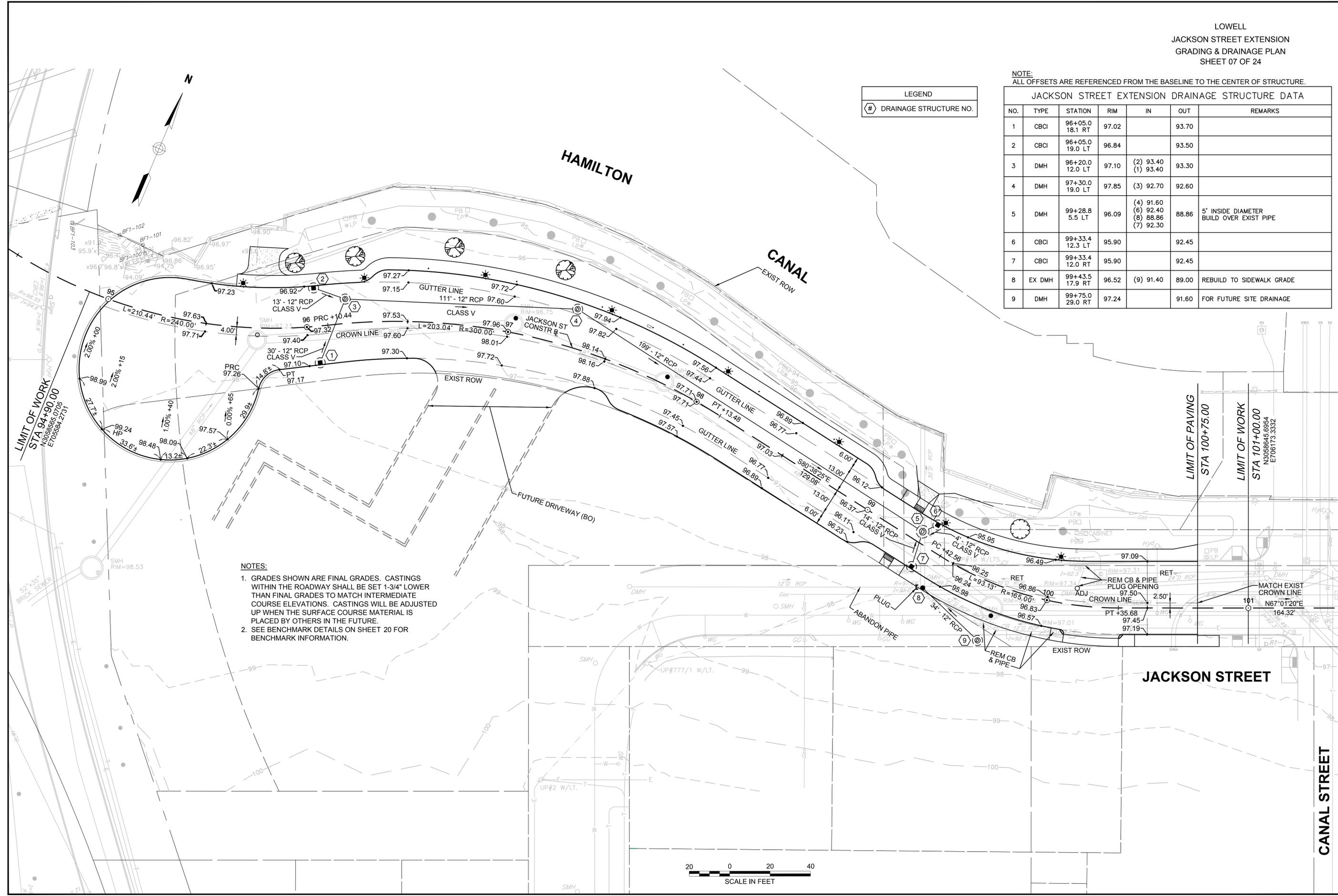
CURVE NO.	LENGTH	RADIUS	TANGENT	DELTA
1	14.82'	12.00'	8.53'	70° 47' 00"
2	19.52'	300.00'	9.76'	3° 43' 41"
3	7.72'	10.00'	4.06'	44° 14' 16"
4	8.19'	10.00'	4.34'	46° 56' 22"
5	170.31'	306.00'	87.42'	31° 53' 21"
6	127.56'	290.00'	64.83'	25° 12' 05"
7	8.21'	10.00'	4.35'	47° 01' 00"
8	7.71'	10.00'	4.06'	44° 09' 51"
9	54.57'	284.00'	27.37'	11° 00' 34"
10	7.95'	10.00'	4.20'	45° 34' 23"
11	85.79'	152.00'	44.07'	32° 20' 15"
12	205.77'	300.00'	107.12'	39° 17' 55"
13	93.13'	165.00'	47.84'	32° 20' 15"



NOTE:
 ALL OFFSETS ARE REFERENCED FROM THE BASELINE TO THE CENTER OF STRUCTURE.

JACKSON STREET EXTENSION DRAINAGE STRUCTURE DATA						
NO.	TYPE	STATION	RIM	IN	OUT	REMARKS
1	CBCI	96+05.0 18.1 RT	97.02		93.70	
2	CBCI	96+05.0 19.0 LT	96.84		93.50	
3	DMH	96+20.0 12.0 LT	97.10	(2) 93.40 (1) 93.40	93.30	
4	DMH	97+30.0 19.0 LT	97.85	(3) 92.70	92.60	
5	DMH	99+28.8 5.5 LT	96.09	(4) 91.60 (6) 92.40 (8) 88.86 (7) 92.30	88.86	5' INSIDE DIAMETER BUILD OVER EXIST PIPE
6	CBCI	99+33.4 12.3 LT	95.90		92.45	
7	CBCI	99+33.4 12.0 RT	95.90		92.45	
8	EX DMH	99+43.5 17.9 RT	96.52	(9) 91.40	89.00	REBUILD TO SIDEWALK GRADE
9	DMH	99+75.0 29.0 RT	97.24		91.60	FOR FUTURE SITE DRAINAGE

LEGEND	
(#)	DRAINAGE STRUCTURE NO.



- NOTES:**
- GRADES SHOWN ARE FINAL GRADES. CASTINGS WITHIN THE ROADWAY SHALL BE SET 1-3/4" LOWER THAN FINAL GRADES TO MATCH INTERMEDIATE COURSE ELEVATIONS. CASTINGS WILL BE ADJUSTED UP WHEN THE SURFACE COURSE MATERIAL IS PLACED BY OTHERS IN THE FUTURE.
 - SEE BENCHMARK DETAILS ON SHEET 20 FOR BENCHMARK INFORMATION.



STREET LIGHT AND POWER DRAWING LEGEND

---	SECONDARY UNDERGROUND CONDUIT TYPE NM FOR STREET LIGHTING AND POWER WITH SAND BED AND BLANKET WITH TYPE RM VERTICAL ELBOWS. REFER TO TRENCHING DETAILS
H □	SECONDARY HAND HOLE, TYPE HH.
EM  SLC	STREET LIGHT AND POWER CABINET WITH NATIONAL GRID METER SOCKET AND CONCRETE FOUNDATION. (EXISTING)
3 ○	CONDUIT AND CABLE CONFIGURATION, REFER TO CONDUIT AND CABLE SCHEDULE.
EM  CATV	CABLE TELEVISION SERVICE CABINET (BY OTHERS) WITH NATIONAL GRID UTILITY METER SOCKET AND SERVICE DISCONNECT.
FU □	BUSSMAN IN-LINE NON-BREAKAWAY CRIMP TYPE TRON FUSE HOLDER WITH TYPE FNM TIME DELAY FUSE. REFER TO SCHEMATIC WIRING DIAGRAMS FOR LOCATIONS AND FUSE SIZES.
13  φ	TYPE L1 LUMINAIRE, LIGHT STANDARD WITH RECEPTACLE AND CONCRETE FOUNDATION. NUMBER INDICATES BRANCH CIRCUIT NUMBER FROM STREET LIGHT & POWER CABINET. REFER TO DETAIL SHEETS.

ABBREVIATIONS

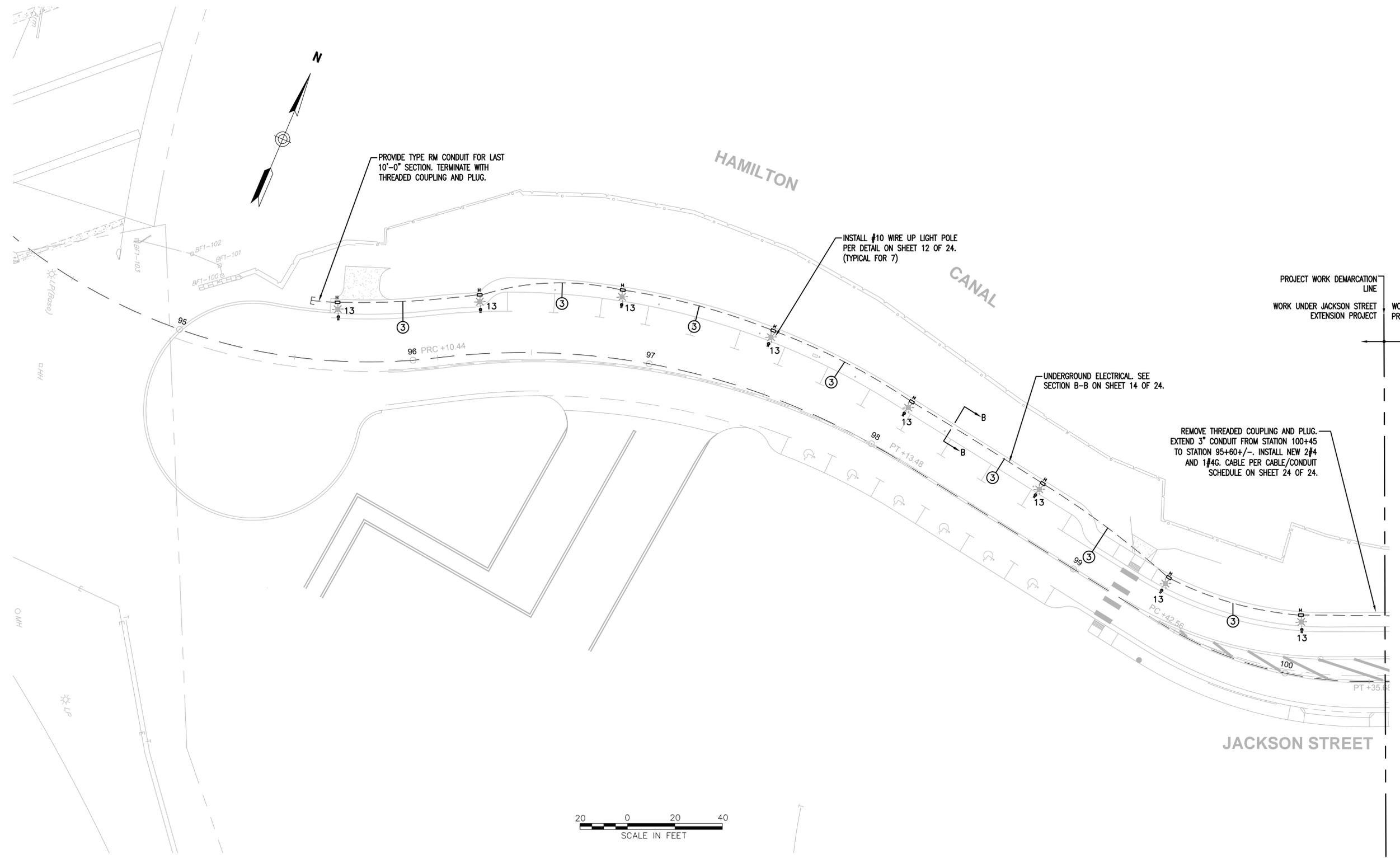
#	AMERICAN WIRE GAUGE
A	AMP
AF	AMPS, FRAME
AT	AMPS, TRIP
AFF	ABOVE FINISHED FLOOR
AWG	AMERICAN WIRE GAUGE
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT
CKT	CIRCUIT
CONC	CONCRETE
COND	CONDUIT
DISC	DISCONNECT SWITCH
EL	ELEVATION
F	FUSE
FL	FLOOR
FR	FRAME
FT	FEET
FU	FUSE
G	GROUND
GND	GROUND
HV	HIGH VOLTAGE
IN	INCH
KAIC	KILOAMPERES INTERRUPTING CAPACITY
KCMIL	KILOCIRCULAR MILS
KV	KILOVOLTS
KVA	KILOVOLTAMPERES
KW	KILOWATTS
LA	LIGHTNING ARRESTER
LF	LINEAR FEET
LV	LOW VOLTAGE
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
N	NETURAL
NEC	NATIONAL ELECTRICAL CODE (NEC)
NESC	NATIONAL ELECTRICAL SAFETY CODE (NESC)
NF	NON-FUSED
NIC	NOT IN THIS CONTRACT (WORK SHOWN FOR FUTURE CONTRACT)
OHE	OVERHEAD ELECTRIC
P	POLE OR PHASE
PH	PHASE
PNL	PANEL
PROV	PROVISION
RM	ROOM
SW	SWITCH
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WIRE OR WATTS
XFMR	TRANSFORMER
φ	PHASE (A, B, OR C)

NOTES:

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MASSACHUSETTS STATE BUILDING CODE (780 CMR), THE MASSACHUSETTS ELECTRICAL CODE (527 CMR 12.00), THE NATIONAL ELECTRICAL CODE (NFPA 70) AND LOCAL INSPECTIONAL AUTHORITY REQUIREMENTS AND APPROVALS. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS REQUIRED BY JURISDICTIONAL INSPECTION AUTHORITIES
- PRIOR TO PERFORMING ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT DIGSAFE. MASSACHUSETTS LAW (M.G.L. CH. 82, A.40) REQUIRES THAT ANYONE WHO EXCAVATES ON PUBLIC OR PRIVATE PROPERTY WHERE UNDERGROUND UTILITIES MAY EXIST, MUST NOTIFY THE UTILITY COMPANIES OF SUCH ACTIVITY. EXCEPT IN AN EMERGENCY SITUATION, AT LEAST 72 HOURS NOTICE IS REQUIRED, NOT INCLUDING WEEKENDS AND HOLIDAYS.
- EXISTING UNDERGROUND UTILITIES INDICATED ON THE DRAWINGS ARE BASED ON ORIGINAL DESIGN DRAWINGS, ARE APPROXIMATE ONLY AND MUST BE FIELD VERIFIED BY THE CONTRACTOR IN ALL AREAS AFFECTED BY THE WORK. NOT ALL EXISTING UTILITIES ARE INDICATED OR KNOWN.
- THE CONTRACTOR'S WORK ACTIVITIES MUST BE SCHEDULED AROUND SELECTIVE NO-WORK AND/OR LIGHTING OUTAGE PERIODS RESTRICTING THE PERMITTED WORK TIMES AND/OR LOCATIONS. REFER TO THE SPECIFICATIONS FOR REQUIREMENTS.
- WHERE MINIMUM BURIAL DEPTH OF RACEWAYS INDICATED CANNOT BE MAINTAINED DUE TO AVOIDANCE OF EXISTING BURIED UTILITIES OR OTHER SUBSURFACE STRUCTURES, THE BURIAL DEPTH SHALL BE PERMITTED TO BE REDUCED, WITH APPROVAL OF THE ENGINEER, TO A LESSER DEPTH PERMITTED BY 527 CMR 12.00 WHERE CONCRETE ENCASEMENT OR COVER IS PROVIDED. THIS SHALL BE REQUESTED BY CONTRACTOR ON A CASE BY CASE BASIS.
- THE PLANS INDICATE PROPOSED CONDUIT ROUTING AND ASSOCIATED TRENCHING THROUGH PAVEMENT, CEMENT CONCRETE SIDEWALK AND GRASSY (UNPAVED) SURFACE CONDITIONS. THE CONTRACTOR MAY ALTER THE PROPOSED ROUTE TO MINIMIZE TRENCHING EXCEPT THAT TRENCHING OUTSIDE OF GRASSY AREAS IS REQUIRED TO AVOID DAMAGING ESTABLISHED TREE ROOTS. EXISTING TREES AND PLANTINGS ARE NOT INDICATED ON THE PLANS AND SHALL BE FIELD LOCATED BY CONTRACTOR DURING TRENCH ROUTE PLANNING. THE PROPOSED LOCATIONS OF ALL TRENCHES SHALL BE MARKED ON THE PARKING SURFACE AND WALKWAYS PRIOR TO TRENCHING FOR APPROVAL BY THE OWNER OR ENGINEER.
- CABLE TAGS IDENTIFYING EACH WIRE AT ALL ACCESSIBLE POINTS IN THE RACEWAY AND LUMINAIRE SYSTEM, INCLUDING HAND HOLES, POLE BASES AND LIGHTING CONTROL CABINETS SHALL BE AFFIXED TO EACH PHASE AND NEUTRAL WIRE. THE TAG SHALL BE NYLON AND ATTACHED TO CABLE USING INTEGRAL NYLON TIES. MARKING FOR PHASE CONDUCTORS SHALL INDICATE CIRCUIT NUMBER AND PHASE LETTER (I.E. 15B) AND WHERE MORE THAN ONE NEUTRAL IS INSTALLED, THE NEUTRAL CONDUCTOR MARKING SHALL INDICATE CIRCUITS SERVED (I.E. 13, 15). CABLE TAG MARKING SHALL BE PERMANENT AND WATERPROOF.

STREET LIGHT AND POWER DRAWING LIST

SHEET #	DRAWING TITLE
09	LIGHTING PLANS – LEGEND AND GENERAL NOTES
10	LIGHTING PLANS – STREET LIGHT AND POWER PLAN SHEET 1 OF 2
11	LIGHTING PLANS – STREET LIGHT AND POWER PLAN SHEET 2 OF 2
12	LIGHTING PLANS – TYPE L1 STREET LIGHT DETAILS
13	LIGHTING PLANS – TYPE L1 BASE SPLICING DETAILS, EHH HAND HOLE DETAIL
14	LIGHTING PLANS – TYPE L1 HAND HOLE DETAILS
15	LIGHTING PLANS – STREET LIGHTING AND POWER CABINET #1 WIRING
16	LIGHTING PLANS – STREET LIGHTING AND POWER CABINET PANEL AND CONDUIT/CABLE SCHEDULE



PROJECT WORK DEMARCATION LINE
 WORK UNDER JACKSON STREET
 EXTENSION PROJECT

WORK UNDER REVERE STREET
 PROJECT (UON)

WORK UNDER
 PHASE I
 INFRASTRUCTURE
 PROJECT



EXISTING 3" CONDUIT

INSTALL NEW CABLE PER CABLE AND CONDUIT SCHEDULE
 FROM STREET LIGHTING AND POWER CABINET #1 TO
 JACKSON STREET EXTENSION

EXISTING STREET LIGHTING AND
 POWER CABINET #1.

TERMINATION HANDHOLE

TERMINATION HANDHOLE

JACKSON STREET

PROVIDE SAME WEATHERPROOF SPLICES
 AS LIGHTING BRANCH CIRCUITS.

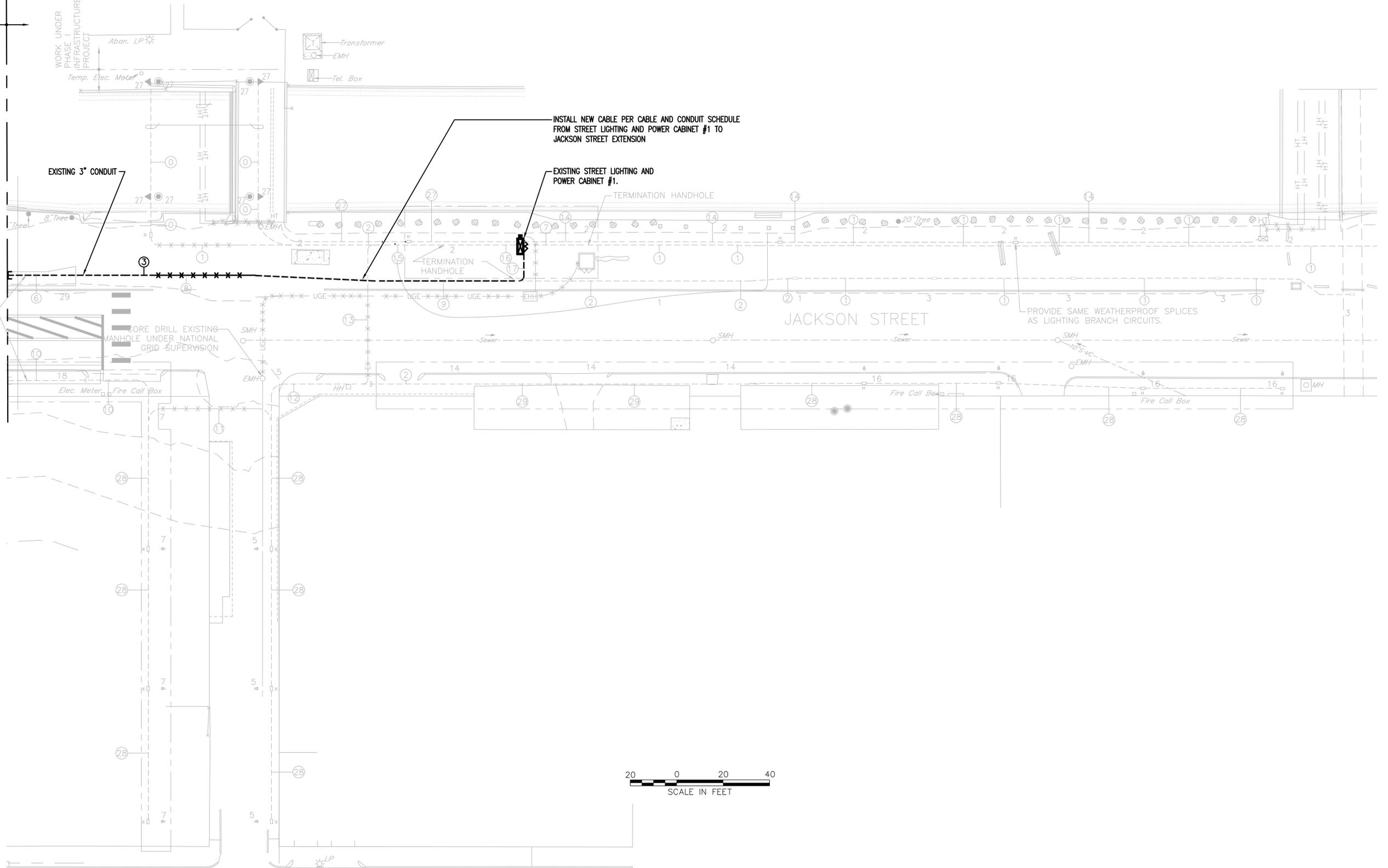
PROVIDE TYPE RM CONDUIT
 FOR LAST 10'-0" SECTION
 TERMINATE WITH THREADED
 COUPLING AND PLUG

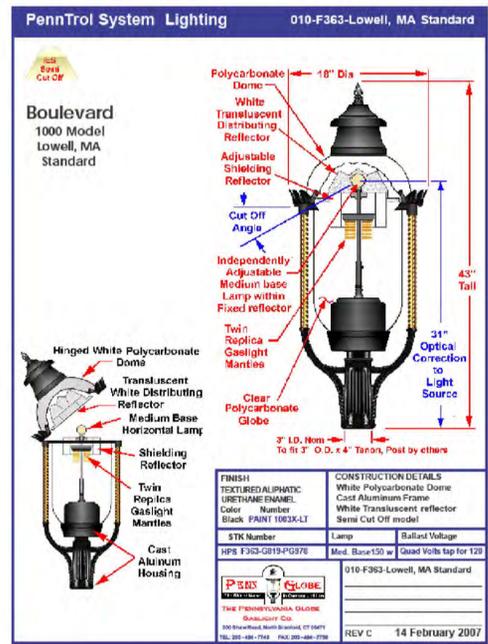
CORE DRILL EXISTING
 MANHOLE UNDER NATIONAL
 GRID SUPERVISION

Elec. Meter Fire Call Box

Fire Call Box

Fire Call Box





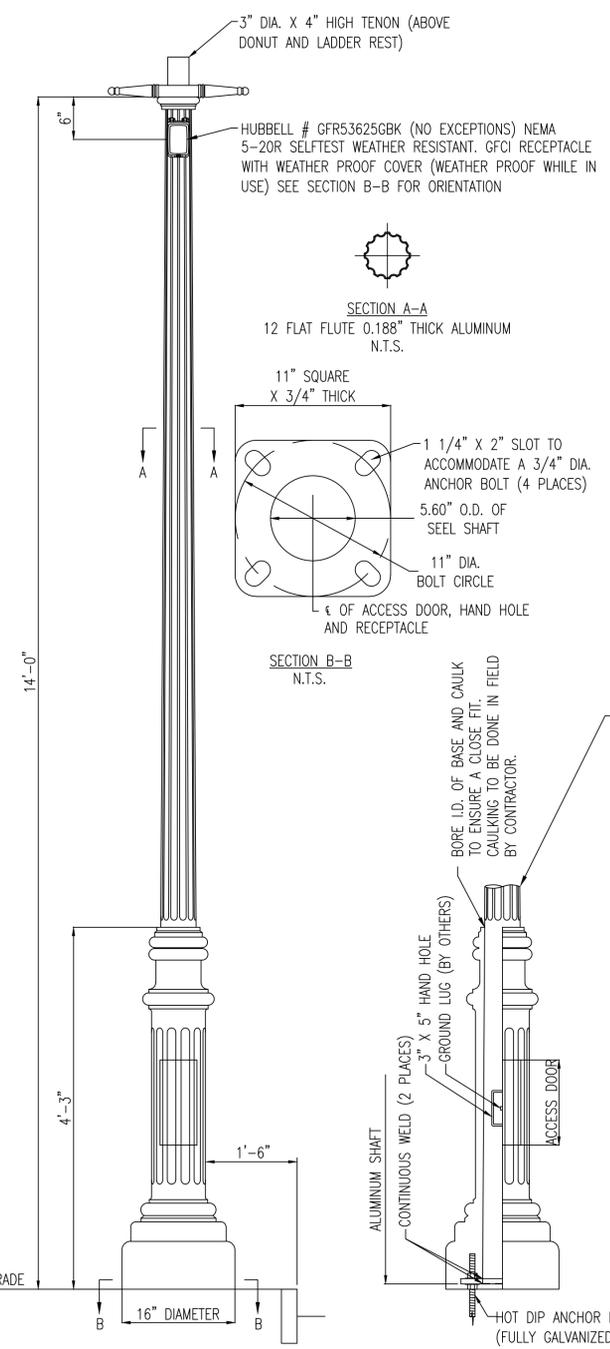
LUMINAIRE

NOTES:

1. TYPE L1 LUMINAIRE SHALL BE MANUFACTURED BY PENN GLOBE. NO SUBSTITUTE SHALL BE ACCEPTABLE.
2. PROVIDE 120 VAC HIGH POWER FACTOR MULTI-TAP CORE AND COIL BALLAST AS MANUFACTURED BY PHILLIPS ADVANCE # 71A8192, ANSI CODE S-55, WITH A GENERAL ELECTRIC, LOW MERCURY, 150WATT HIGH PRESSURE SODIUM LAMP, GE #LU150/MED/ECO FOR B17 MEDIUM SCREW SHELL LAMP SOCKET FOR STREET LIGHTING.
3. THE LUMINAIRES HAVE ENGRAVED STAMPINGS IN THE HOUSING TO DISTINGUISH BETWEEN THE "STREET" AND "HOUSE" SIDE FOR POSITIONING OF THE REFLECTOR FOR OPTIMUM PHOTOMETRIC OUTPUT @ EACH POLE LOCATION. ALIGN THE STREET SIDE OF EACH REFLECTOR IN PARALLEL WITH CURBLINE.

BASE MOUNTING TOLERANCE IS POLE SPOT ELEVATION ± 1/4" MAXIMUM. MOUNTING GAP TO BE FIELD GROUDED. FIXTURE POLE TO BE PLUMBED USING STAINLESS STEEL SAIM PLATE STOCK FROM .01 TO .25 INCHES

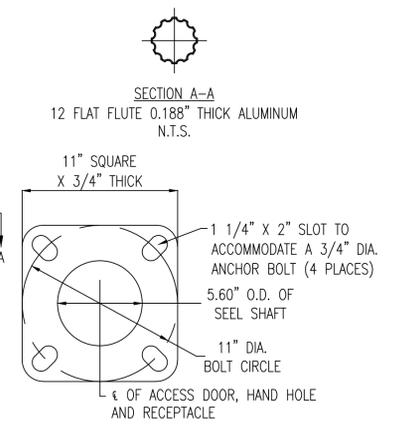
FINISHED GRADE. REFER TO CIVIL AND LANDSCAPE SHEETS FOR SPOT ELEVATIONS FOR LIGHT POLE BASES AND SIDEWALK AND PLANTER BED DETAILS FOR POLE BASE MOUNTING.



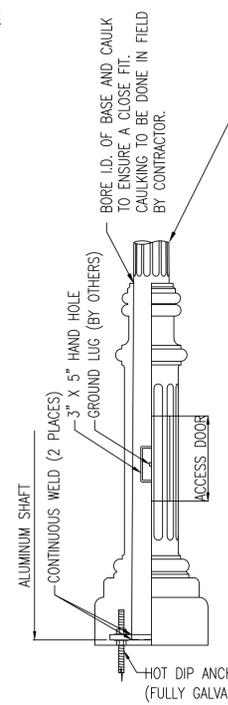
LIGHTING STANDARD
 NTS

LAMP POST SPECIFICATIONS

STYLE:	HANCOCK ALUMINUM
HEIGHT:	14'-0"
BASE:	16" DIAMETER
MATERIAL:	12 FLAT FLUTE, 0.188" THICK TAPERED ALUMINUM SHAFT
SHAFT:	1 PIECE (SLIP OVER), CAST ALUMINUM ALLOY
BASE:	A.N.S.I. 356 PER A.S.T.M. B26-95
FINISH:	PRIME PAINT THEN FINISH PAINT, SHERWIN WILLIAMS ACROLON - CLASSIC BLACK
ACCESS DOOR:	LOCATED IN BASE SECURED WITH TAMPER PROOF HEX SOCKET SECURITY MACHINE SCREWS
GROUND STUD PROVISIONS:	1/4"-20 SQUARE NUT WELDED TO INSIDE WALL OF SHAFT OPPOSITE HAND HOLE TO ACCOMMODATE GROUND STUD (STUD BY OTHERS)
ANCHOR BOLTS:	(4) 3/4" X 24" LONG + 3" HOOK (FULLY GALVANIZED WITH 2 GALVANIZED NUTS AND 2 GALVANIZED WASHERS PER BOLT)
BOLT PROJECTION:	5" REQUIRED
TENON:	3" DIA. X 4" HIGH (ABOVE DONUT AND LADDER REST)
BASE CATALOG NO.:	ASBHC-16-CB
SHAFT CATALOG NO.:	ASH2F-A18-5.6-14.0-TN3.0/4.0-323/2NW-CB



SECTION B-B
 N.T.S.

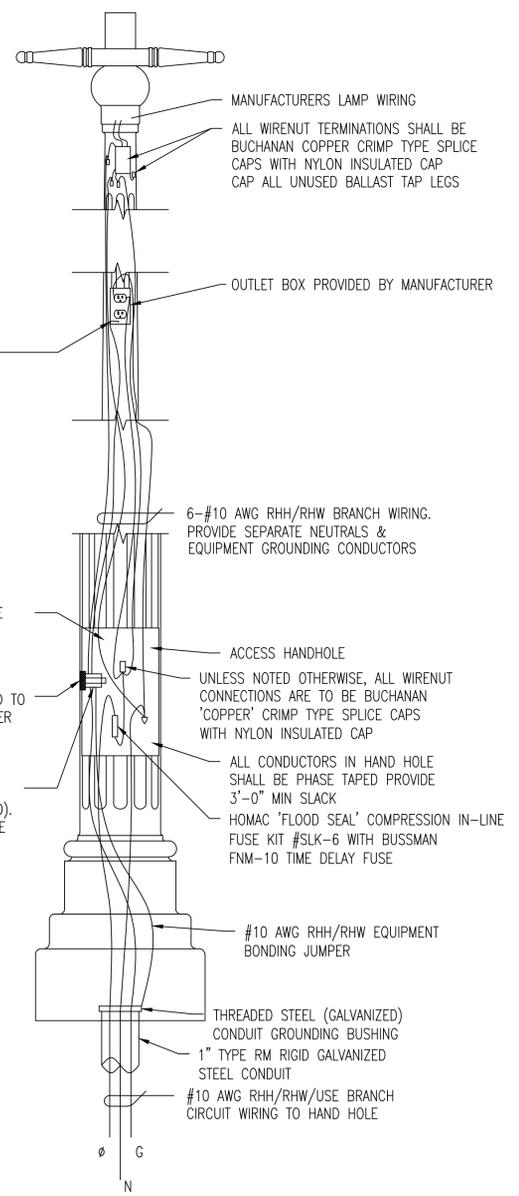


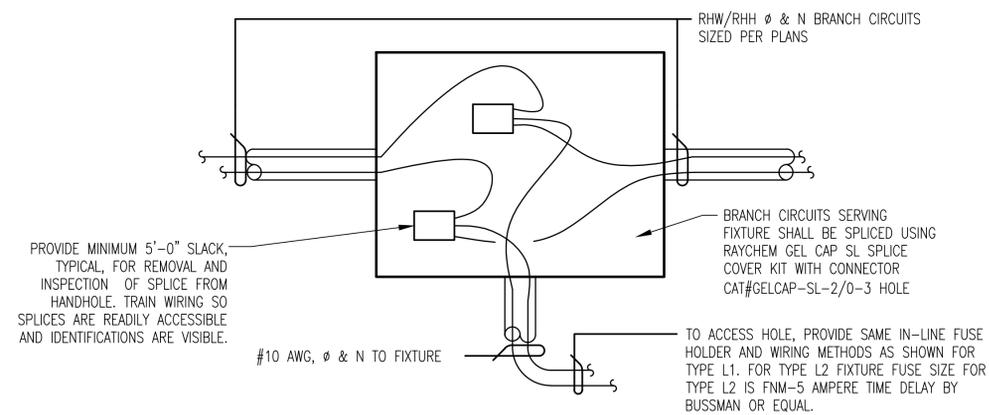
SCHEMATIC WIRING DIAGRAM ILLUSTRATING CONNECTION METHODS AND MATERIALS
 NTS

PHASE AND NEUTRAL CONDUCTORS SHALL BE PROVIDED WITH I.D. MARKER SLEEVES. NEUTRALS TO BE IDENTIFIED WITH CIRCUITS BEING SERVED.

1/4"-20 SQUARE NUT WELDED TO SHAFT WALL BY MANUFACTURER

1/4"-20 GALVANIZED STEEL THREADED STUD WITH FW,LW AND ACORN HEX NUT(GALVANIZED). ALL EQUIPMENT GROUNDING CONDUCTORS ARE TO BE TERMINATED USING COPPER COMPRESSION RING TONGUE LUGS, BY ELECTRICAL CONTRACTOR.

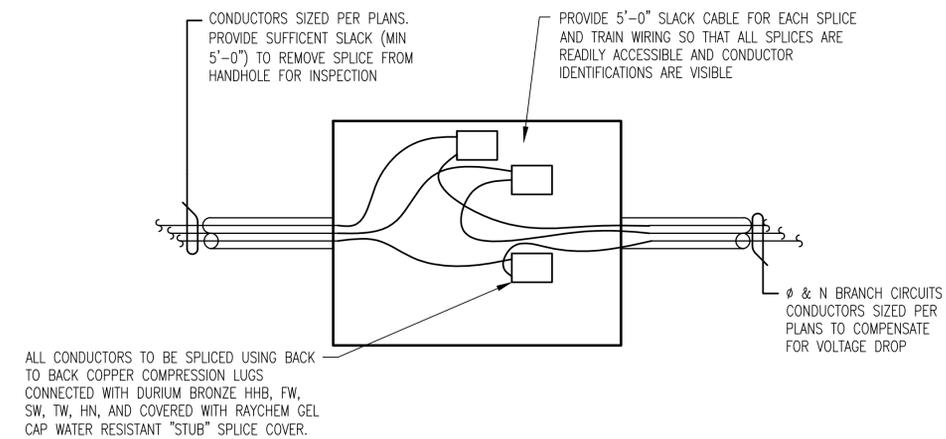




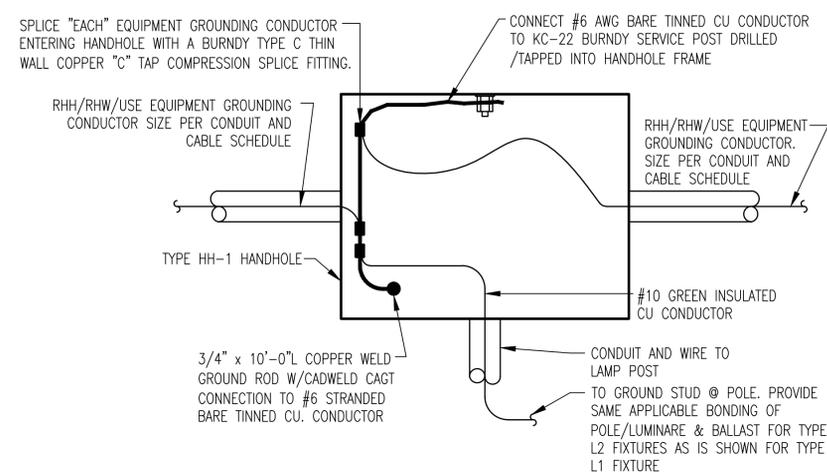
DETAIL – BRANCH CIRCUIT SPLICING @ FIXTURE HANDHOLES

NOTES:

'THRU' BRANCH CIRCUITS NOT SERVING FIXTURE SHALL BE SPLICED WHERE NECESSARY USING SPLICING METHODS @ TERMINATION HANDHOLE



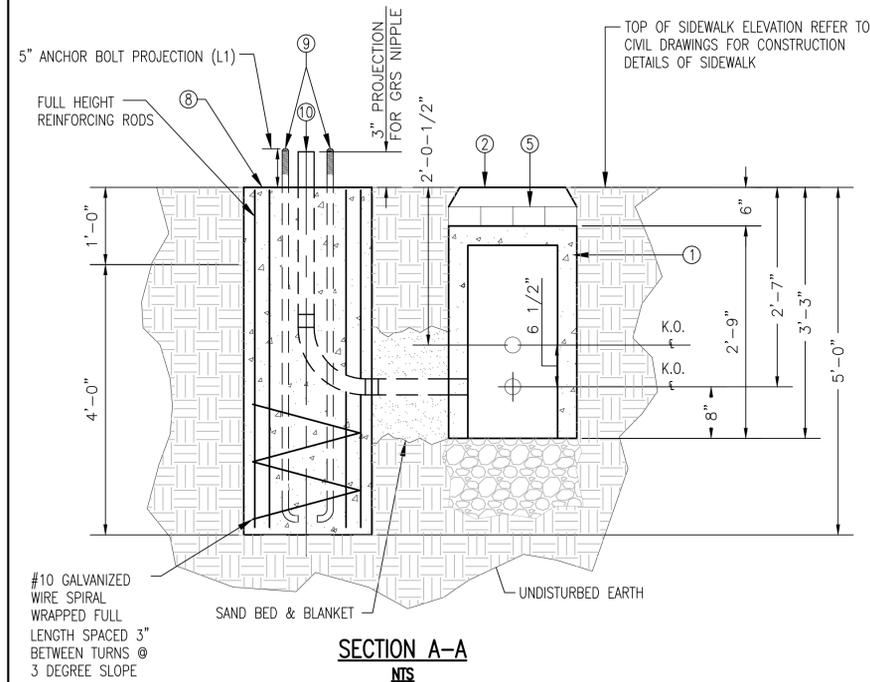
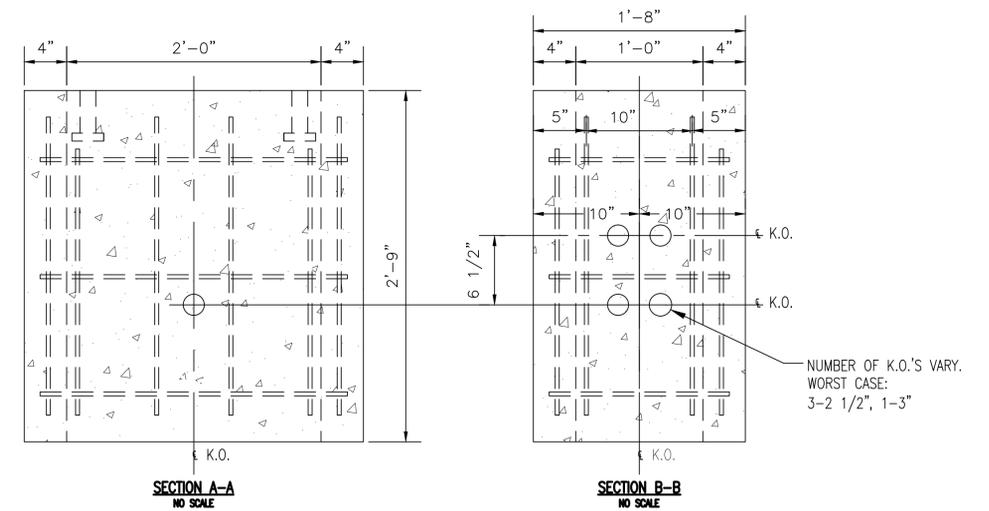
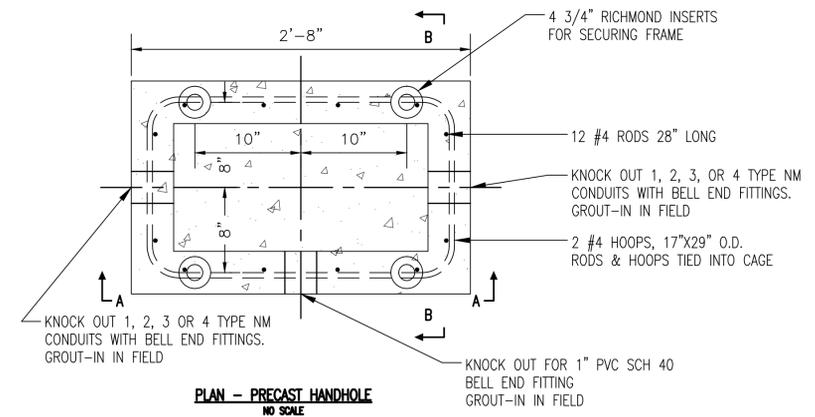
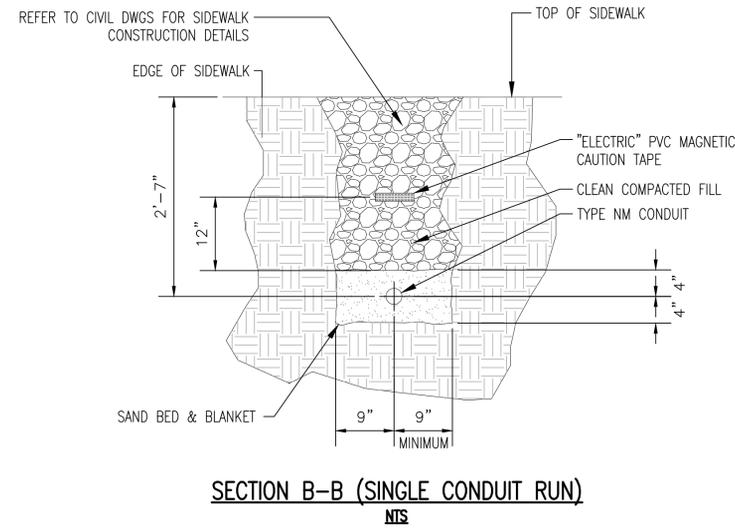
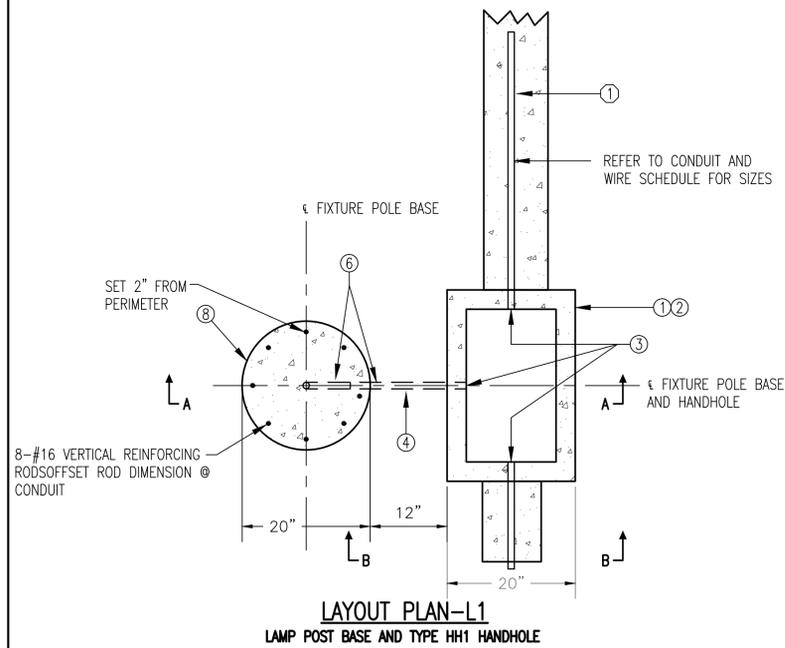
DETAIL – 'THRU' BRANCH CIRCUIT SPLICING @ TERMINATION HANDHOLE



DETAIL – EQUIPMENT GROUNDING SPLICING AT HANDHOLES/LAMPOST

NOTES:

PROVIDE SUFFICIENT SLACK FOR #6 BONDING CONDUCTOR AND EQUIPMENT GROUNDING CONDUCTORS TO TRAIN CONDUCTORS AROUND PERIMETER OF HAND HOLE.



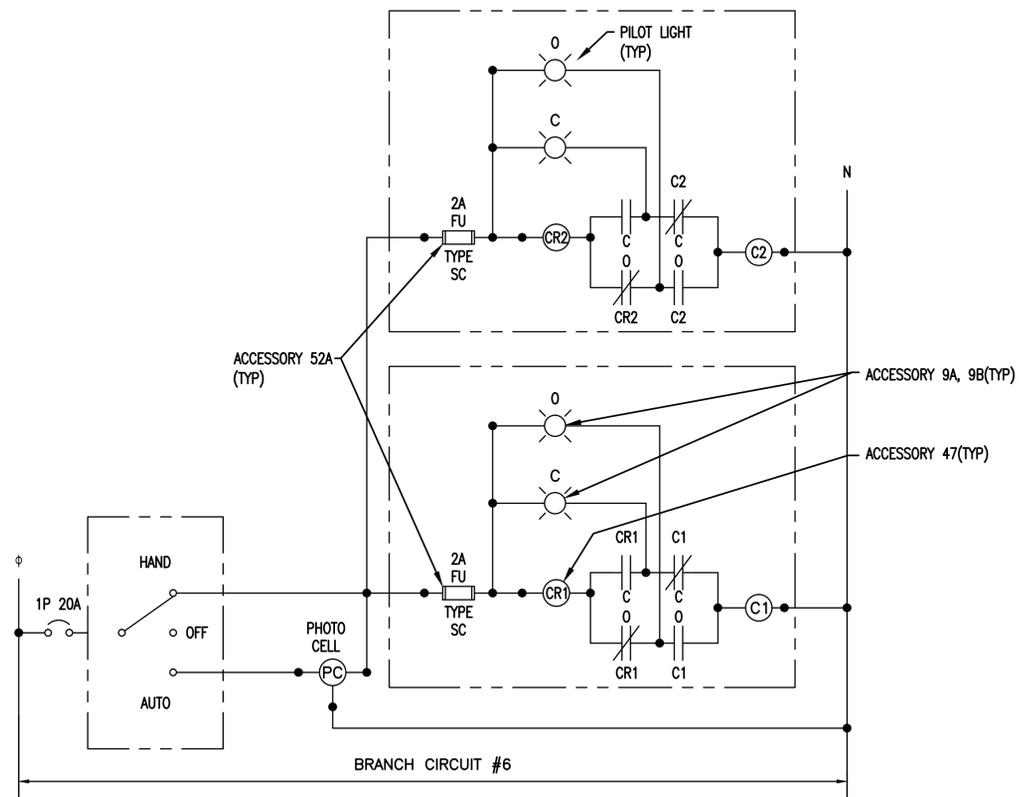
EQUIPMENT LEGEND		
ITEM	DESCRIPTION	COMMENTS
①	PRECAST HANDHOLE, REFER TO DETAIL, THIS DRAWING	
②	GALVANIZED STEEL FRAME AND COVER, REFER TO DETAIL, THIS DRAWING	
③	PVC SCH 40 BELL END FITTING, GROUT IN, IN FIELD	
④	1" PVC SCH 40 NIPPLE W/ FEMALE ADAPTER	
⑤	BRICK COARSE AND LEVELING MORTAR	
⑥	1" STANDARD RADIUS TYPE RM GALVANIZED RIGID STEEL ELBOW COUPLING AND NIPPLE	NOTE 2
⑦	THREADED GROUNDED BUSHING	
⑧	20" DIA x 4'6" PRECAST POLE BASE, 5000PSI COMPRESSIVE STRENGTH CONCRETE AT 28 DAYS	
⑨	TYPE L1 - 4'-1" DIA X 48"+6" HOOK, FULLY GALVANIZED. REFER TO HANCOCK LAMP POST DETAIL FOR BOLT CIRCLE AND FASTENING HARDWARE TYPE L2 - 4'-3/4" DIA X 48"+6" HOOK, FULLY GALVANIZED. REFER TO NATIONAL PARK SERVICE LAMP POST DETAIL FOR BOLT CIRCLE AND FASTENING HARDWARE	NOTE 1
⑩	THREADED GROUNDED BUSHING	NOTE 2

- NOTES:**
- PROVIDE PVC CAPS TO PROTECT THREADS UNTIL LAMP POSTS ARE SET
 - PROVIDE THREADED BLANKING PENNYS ON BOTH CONDUIT ENDS UNTIL POSTS ARE SET, PIPED AND WIRED TO PROTECT THREADS.

ITEM 1 - LIGHT POLE CONCRETE PRECAST HAND HOLE HH DETAIL LOCATED IN SIDEWALK 'ONLY'

- NOTES:**
- CONCRETE TO HAVE 3000# COMPRESSIVE STRENGTH AT 28 DAYS CURING TIME
 - HAND HOLES TO BE MANUFACTURED BY SCITUATE RAY PRECAST CO., 120 CLAY PIT ROAD MASRHFIELD, MA, OLD CASTLE PRECAST OR APPROVED EQUAL
 - SHOP DRAWINGS TO BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF ANY FABRICATION FOR EACH CONFIGURATION OF THRU-DUCTS AS REQUIRED BY THE PLANS.
 - REFER TO DETAIL, THIS DRAWING, FOR GALVANIZED STEEL FRAME AND COVER

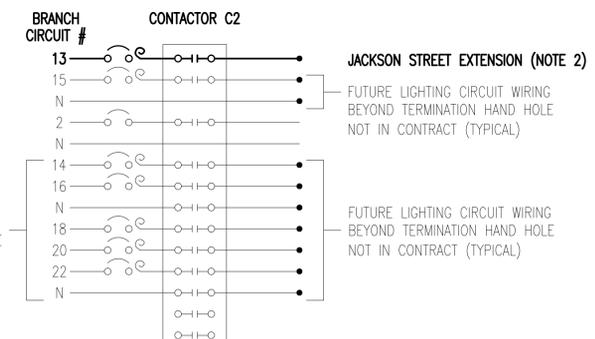
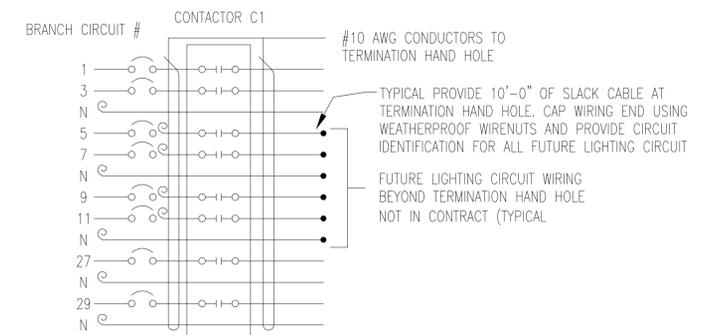
NUMBER OF K.O.'S VARY.
 WORST CASE:
 3-2 1/2", 1-3"



NOTE:

SLC #1 IS EXISTING. DIAGRAM SHOWN FOR INFORMATION ONLY.

STREET LIGHTING CONTROL CABINET #1, SCHEMATIC WIRING DIAGRAM



TYPICAL - PROVIDE 10'-0" SLACK CABLE @ PANELBOARD AND PROVIDE CIRCUIT IDENTIFICATION FOR ALL FUTURE LIGHTING ϕ AND N CONDUCTORS

NOTES:

1. RUN NEUTRAL CONDUCTORS WITHOUT SPLICE THRU CONTACTOR ENCLOSURE TO PREVENT INDUCTIVE HEATING.
2. CONNECT NEW BRANCH CIRCUIT TO JACKSON ST EXTENSION LIGHTING ON EXISTING CONTACTOR C2 CIRCUIT 13 IN SLC #1.

STREET LIGHTING BRANCH CIRCUIT SCHEMATIC WIRING DIAGRAM

DESIGNATION: STREET LIGHT LIGHTING & POWER CABINET #1			SERVICE ENTRANCE LABEL WITH INTEGRAL TVSS - 30 POLE		
VOLTAGE: 208/120V 3P 4W + GROUND - 30 POLE			22,000 AMPERES SYMMETRICAL INTERRUPTING		
MAINS: 200 AMPERE WITH 225AF/150AT BOTTOM FEED MAIN CIRCUIT BREAKER			RATING @ 250VAC - FULLY RATED, SERIES RATING NOT ACCEPTABLE		
GROUND BUS: COPPER BUSSING WITH FULL NEUTRAL			SURFACE MOUNTED		
COPPER			MAXIMUM ALLOWED DIMENSIONS - 44"H x 20"W x 5 3/4" D		

CONDUCTOR SIZE	CIRCUIT NO.	LOAD SERVED	CONNECTED LOAD KVA			CIRCUIT BREAKER		CIRCUIT BREAKER POLE	TRIP	CONNECTED LOAD KVA			LOAD SERVED	CIRCUIT NO.	CONDUCTOR SIZE
			φ A	φ B	φ C	TRIP	POLE			φ A	φ B	φ C			
#8	1	LIGHTING VIA C1	1.68			20	1	1	20	0.99			LIGHTING VIA C2	2	#8
#8	3	LIGHTING VIA C1		1.68		20	1	1	20		0.58		CABINET MAINTENANCE	4	#12
#6	5	FUTURE LIGHTING VIA C1			1.68	20	1	1	20			0.1	CONTACTOR COILS	6	#12
#6	7	FUTURE LIGHTING VIA C1	1.68			20	1	1	30	1.94			REVERE ST-H20-NORMAL	8	#10
#6	9	FUTURE LIGHTING VIA C1		0.84		20	1	1	30		1.94		REVERE ST-H20-REDUNDANT	10	#10
#6	11	FUTURE LIGHTING VIA C1			1.66	20	1	1	20			0.58	REVERE ST-HT CABINET	12	#10
#4	13	JACKSON ST EXT LTG VIA C1	1.26			20	1	1	20	1.68			FUTURE LIGHTING VIA C2	14	#6
#4	15	FUTURE LIGHTING VIA C2		1.26		20	1	1	20		1.68		FUTURE LIGHTING VIA C2	16	#6
#8	17	APPLETON BRIDGE-H20-NORMAL			0.9	20	1	1	20			1.68	FUTURE LIGHTING VIA C2	18	#4
#8	19	APPLETON BRIDGE-H20-REDUNDANT	0.9			20	1	1	20	1.68			FUTURE LIGHTING VIA C2	20	#4
#8	21	APPLETON BRIDGE-H20-NORMAL		0.9		20	1	1	20		1.68		FUTURE LIGHTING VIA C2	22	#4
#8	23	APPLETON BRIDGE-H20-REDUNDANT			0.9	20	1	1	20			1.68	SPARE	24	-
#8	25	APPLETON BRIDGE-HT CABINET	0.58			20	1	1	20	1.68			SPARE	26	-
#8	27	REVERE BRIDGE LTG VIA C1		1.86		20	1	1	20				SPACE	28	-
#8	29	LIGHTING VIA C1			0.84	20	1	1	20				SPACE	30	-
SUBTOTAL CONNECTED LOAD, KVA			6.1	6.54	5.98					7.97	5.89	4.04	SUBTOTAL CONNECTED LOAD, KVA		

φ A SUBTOTAL CONNECTED LOAD, 14.07 KVA	DESIGN LOAD KVA - 1.25x36.52 = 45.65
φ B SUBTOTAL CONNECTED LOAD, 12.43 KVA	DESIGN LOAD, AMPERES @ 208/120V3P4W-127
φ C SUBTOTAL CONNECTED LOAD, 10.02 KVA	SERVICE ENTRANCE AMPACITY - 150
TOTAL CONNECTED LOAD, 36.52 KVA	SERVICE ENTRANCE SIZE - 2"-4#1/0 RHH/RHW

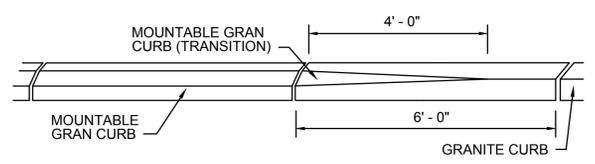
NOTES:

- CIRCUIT BREAKERS TO BE BOLT-ON TYPE FULLY RATED.
- BRANCH CIRCUIT CONDUCTOR SIZES INDICATED ARE TO BE INSTALLED FROM RESPECTIVE LIGHTING FIXTURE TO HAND HOLE MARKED AS 'TERMINATION HANDHOLE'. CONDUCTORS FROM TERMINATION HANDHOLE TO CONTACTORS AND PANEL BOARD CIRCUIT BREAKERS AND NEUTRAL/GROUND BUSES ARE TO BE #10 AWG PHASE, NEUTRAL AND GROUND CONDUCTOR SPLICES IN TERMINATION HANDHOLE ARE TO BE MADE USING SINGLE BARREL COPPER COMPRESSION LUGS, MOUNTED BACK TO BACK, CONNECTED WITH DURIUM BRONZE HEX HEAD BOLT, FLAT WASHER, SPLIT LOCKWASHER, TOOTH LOCKWASHER, HEX NUT, SPLICE IS TO BE INSULATED USING RAYCHEM WATER RESISTANT GEL CAP "STUB" SPLICES COVER KIT. REFER TO TYPICAL SPLICING DETAIL.
- STREET LIGHTING AND POWER CABINET #1 IS EXISTING. NEW LIGHTING BRANCH CIRCUIT SHALL BE INSTALLED FROM CIRCUIT 13.

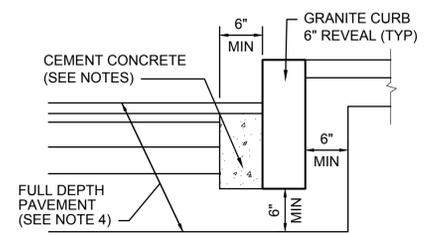
STREET LIGHTING AND POWER CONDUIT AND CABLE SCHEDULE					
SYMBOL	CONDUIT SIZE		NUMBER AND SIZE OF CONDUCTOR		COMMENTS
	LOWER	UPPER	LOWER	UPPER	
①	3/4"		2#10 & 1#10G		NOTE 1,9
①	2 1/2"		2#8 & 1#8G		NOTE 1
②	2 1/2"		3#8 & 1#8G		NOTE 1
③	3"		2#4 & 1#4G		NOTE 1
④	3"		3#4 & 1#4G		NOTE 1
⑤	3"		2#6, 3#4G & 1#4G		NOTE 1
⑥	3"		3#6, 3#4G & 1#4G		NOTE 1,5
⑦	1 1/2"		2#10 & 1#10G		NOTE 1
⑧	3"	3"	2#8, & 1#8G	3#6, 3#4 & 1#4G	NOTE 1,2,3
⑨	2 1/2"	3"	2#8, & 1#8G	3#6, 3#4 & 1#4G	NOTE 1,2,3
⑩	3"		4#4 & 1#4G		NOTE 1,5
⑪	3"	3"	2#6 & 1#6G	4#4 & 1#4G	NOTE 1,2,3
⑫	3"	3"	3#6 & 1#6G	4#4 & 1#4G	NOTE 1,2,3
⑬	3", 3"	3"	3#6, & 1#6G, 3#6 & 1#6G	4#4 & 1#4G	NOTE 1,2,3,5
⑭	1 1/2"		10#8 & 1#8G		NOTE 1,4,6
⑮	2-2 1/2"	3"	3#8, 1#8G, 3#6 & 1#6G (7)	3#6 & 1#6G, 4#4 & 1#4G	NOTE 1,2,3
⑯	1 1/2"	1 1/2"	2#10, 2#10 & 1#10G	10#10 & 1#10G	NOTE 1,2,8
⑰	1 1/2"	1 1/2"	5#10 & 1#10G	6#10 & 1#10G	NOTE 1,4,8
⑱	2 1/2"	2 1/2"	3#6, 2#6 & 1#6G	2#4 & 1#4G	NOTE 1,2,3
⑲	2 1/2"	2 1/2"	4#6, 2#6 & 1#6G	2#4 & 1#4G	NOTE 1,2,3
⑳	2 1/2"	2 1/2"	2#8 & 1#8G	2#6 & 1#6G	NOTE 1,2,3
㉑	2 1/2"	2 1/2"	3#8 & 1#8G	2#6 & 1#6G	NOTE 1,2,3
㉒	1 1/2"	1 1/2"	3#10 & 1#10G	2#10 & 1#10G	NOTE 1,2,3,8
㉓	1 1/2"	1 1/2"	6#10 & 1#10G	2#10 & 1#10G	NOTE 1,2,3,8
㉔	2 1/2"	2 1/2"	2#6 & 1#6G	2#4 & 1#4G	NOTE 1,2,5
㉕	2 1/2"		2#4 & 1#4G		NOTE 1,2,5
㉖	2 1/2"	2 1/2"	2#6 & 1#6G		NOTE 1,2,5
㉗	1 1/2"		6#10 & 1#10G		NOTE 1,4
㉘	2 1/2"		2#6 & 1#6G		NOTE 1
㉙	2 1/2"		3#6 & 1#6G		NOTE 1
㉚	1 1/2"		10#10 & 1#10G		NOTE 1,4,6

NOTES:

- MAINTAIN SEPARATE NEUTRAL CONDUCTORS FOR GROUPS OF MULTI-WIRE BRANCH CIRCUITS AS SHOWN. IDENTIFY EACH MULTI-WIRE NEUTRAL WITH EACH BRANCH CIRCUIT WITHIN THE GROUP IN ALL HANDHOLES, LIGHT STANDARD HANDHOLE, STREET LIGHT AND POWER CABINET WIREWAY, LIGHTING CONTACTOR AND PANEL BOARD.

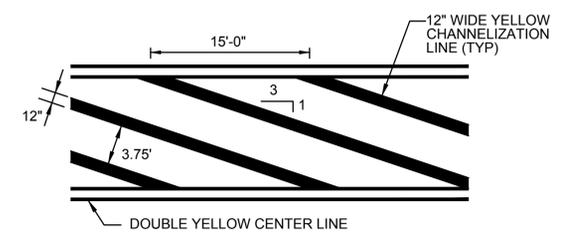


MOUNTABLE GRANITE CURB TRANSITION
SCALE: NTS



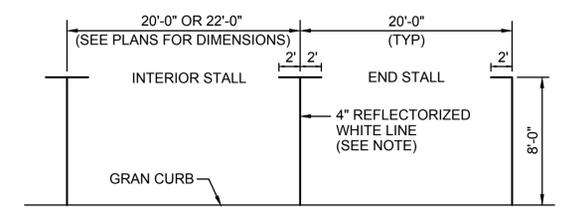
- NOTES:**
1. TO BE PLACED IF CURB IS INSTALLED AFTER HOT MIX ASPHALT
 2. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB
 3. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.
 4. PAVE TO INTERMEDIATE COURSE. 1-3/4" SURFACE COURSE MATERIAL TYPE B TO BE PLACED BY OTHERS.

GRANITE CURB IN FULL DEPTH PAVEMENT
SCALE: NTS



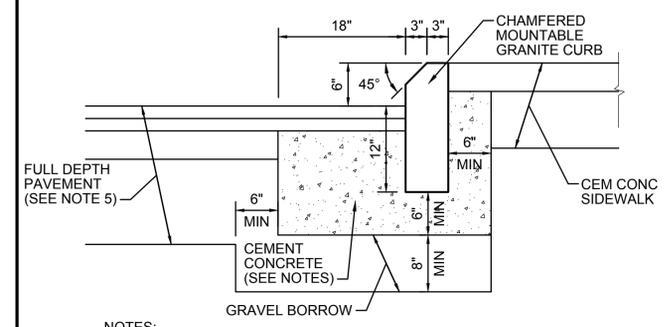
- NOTES**
1. THE CONTRACTOR SHALL INSTALL PAVEMENT MARKINGS AS SHOWN ON THE INTERMEDIATE COURSE AND THE MARKINGS SHALL BE PAINT. FINAL PAVEMENT MARKINGS SHALL BE INSTALLED BY OTHERS IN THE FUTURE AND SHALL BE THERMOPLASTIC.
 2. LAYOUT OF GORE LINES SHALL BE APPROVED BY A LOWELL DPW REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.

CHANNELIZED MARKINGS
SCALE: NTS



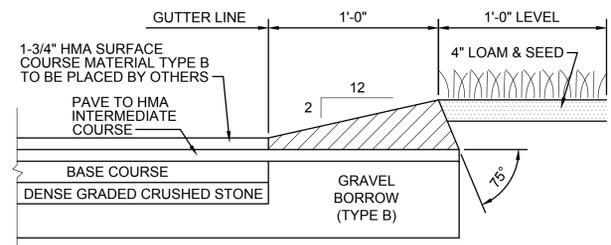
- NOTES**
1. THE CONTRACTOR SHALL INSTALL PAVEMENT MARKINGS AS SHOWN ON THE INTERMEDIATE COURSE AND THE MARKINGS SHALL BE PAINT. FINAL PAVEMENT MARKINGS SHALL BE INSTALLED BY OTHERS IN THE FUTURE AND SHALL BE THERMOPLASTIC.

PARKING STALL MARKINGS
SCALE: NTS

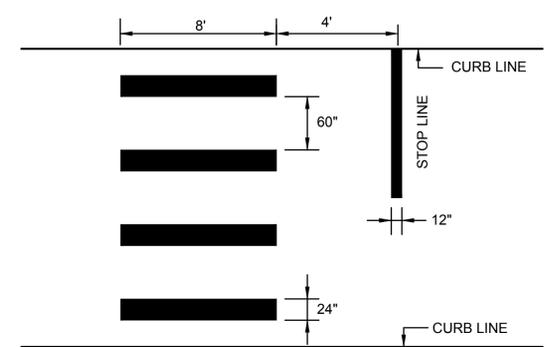


- NOTES:**
1. CONCRETE SHALL BE INCLUDED IN PRICE BID FOR GRANITE CURB
 2. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED. ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT BE USED AS A SUBSTITUTE.
 3. THERMAL FINISH TOP AND SLOPED CURB FACE.
 4. DRESS CURB 6" DOWN BACK FACE.
 5. PAVE TO INTERMEDIATE COURSE. 1-3/4" SURFACE COURSE MATERIAL TYPE B TO BE PLACED BY OTHERS.

MOUNTABLE GRANITE CURB
SCALE: NTS

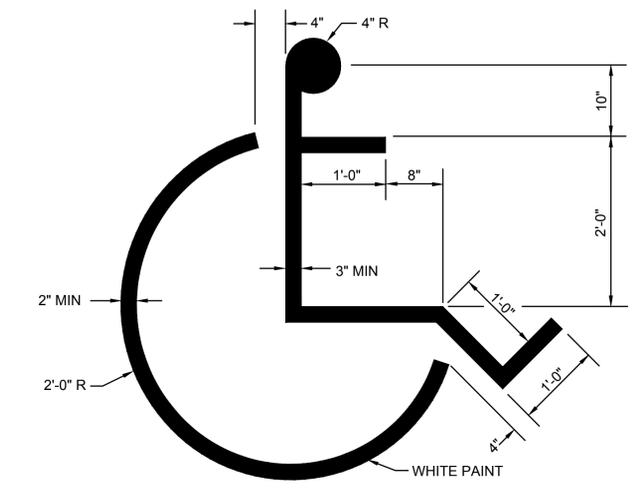


HMA BERM TYPE A-MODIFIED (USED WITH FULL DEPTH PAVEMENT)
SCALE: NTS



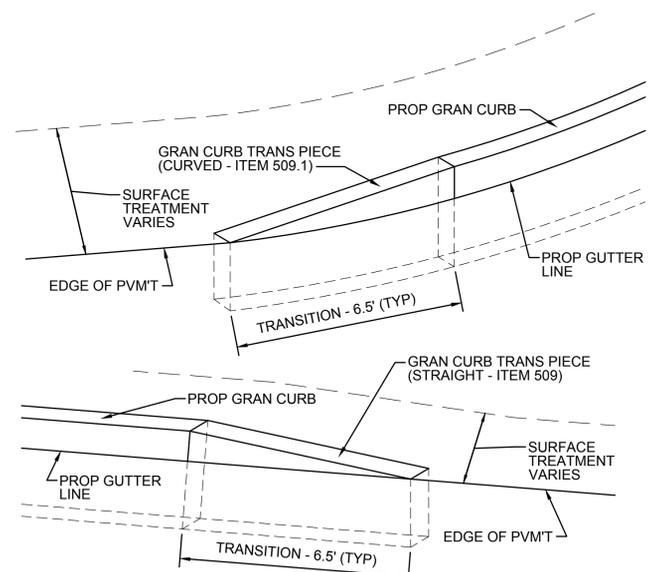
- NOTES**
1. THE CONTRACTOR SHALL INSTALL PAVEMENT MARKINGS AS SHOWN ON THE INTERMEDIATE COURSE AND THE MARKINGS SHALL BE PAINT. FINAL PAVEMENT MARKINGS SHALL BE INSTALLED BY OTHERS IN THE FUTURE AND SHALL BE THERMOPLASTIC.
 2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY A LOWELL DPW REPRESENTATIVE PRIOR TO APPLICATION.

STANDARD CROSSWALK
SCALE: NTS

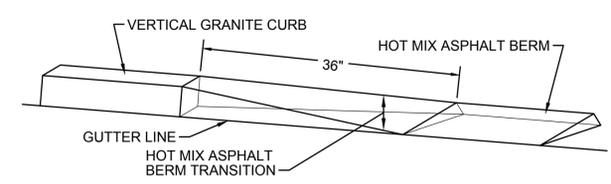


NOTE:
SYMBOL SHALL BE CENTERED IN THE PARKING STALL.

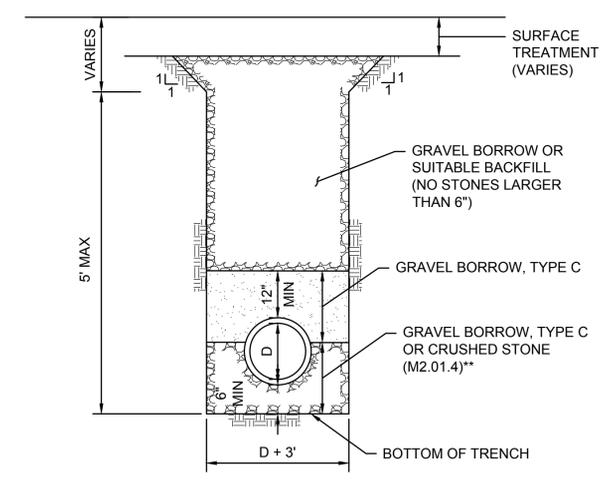
HANDICAPPED PARKING STALL SYMBOL
SCALE: NTS



GRANITE CURB TRANSITION PIECE
SCALE: NTS

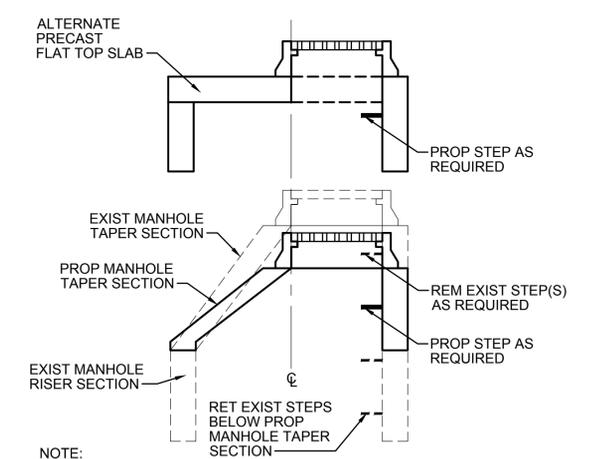


HOT MIX ASPHALT BERM TRANSITION
SCALE: NTS



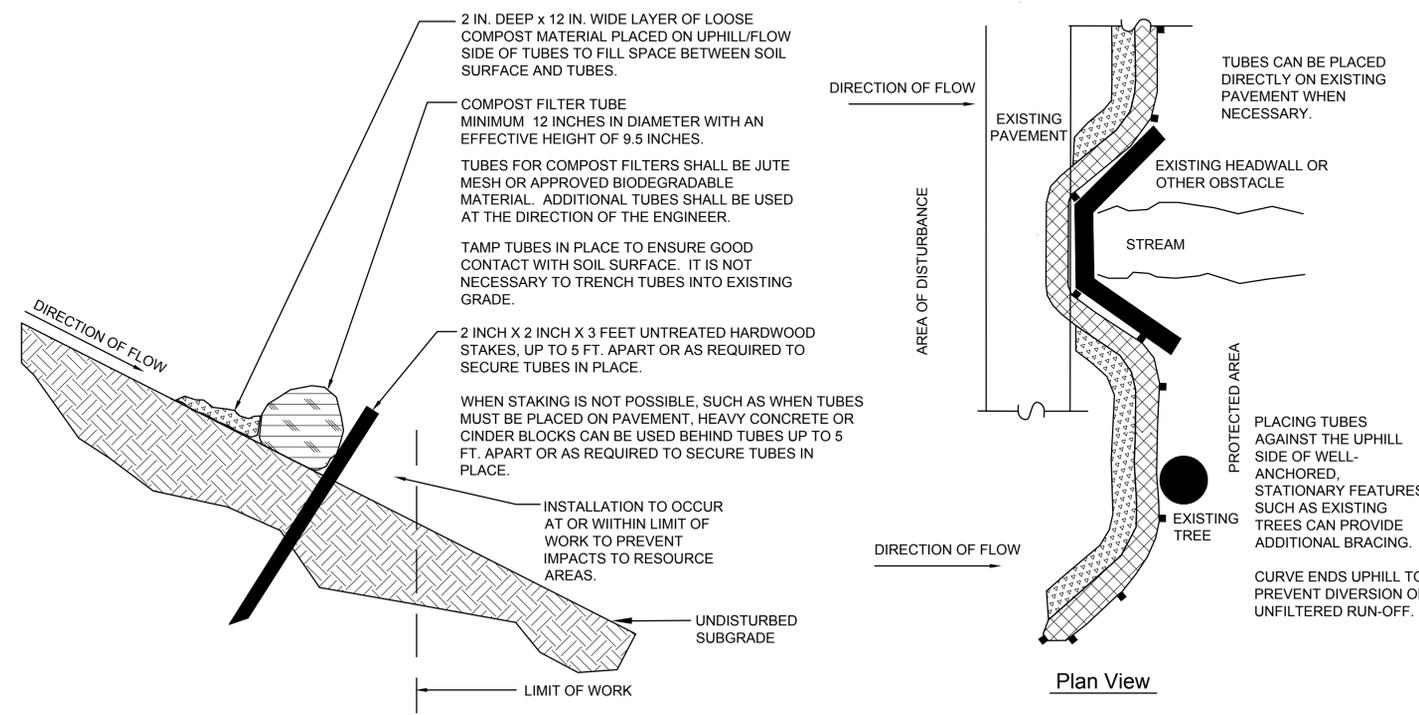
*CRUSHED STONE TO BE USED DURING WET CONDITIONS AS DIRECTED BY THE ENGINEER

TRENCH DETAIL
SCALE: NTS DWG: TRENCH-05 DATE: MARCH 2013

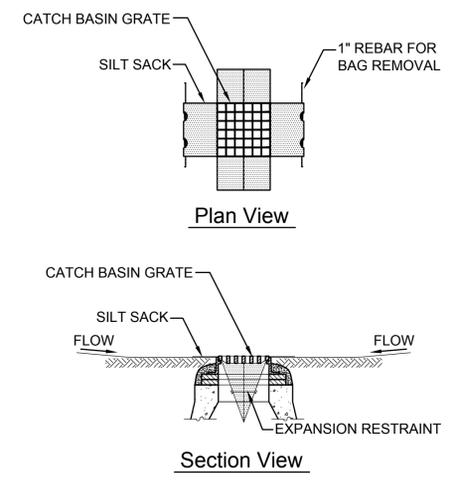
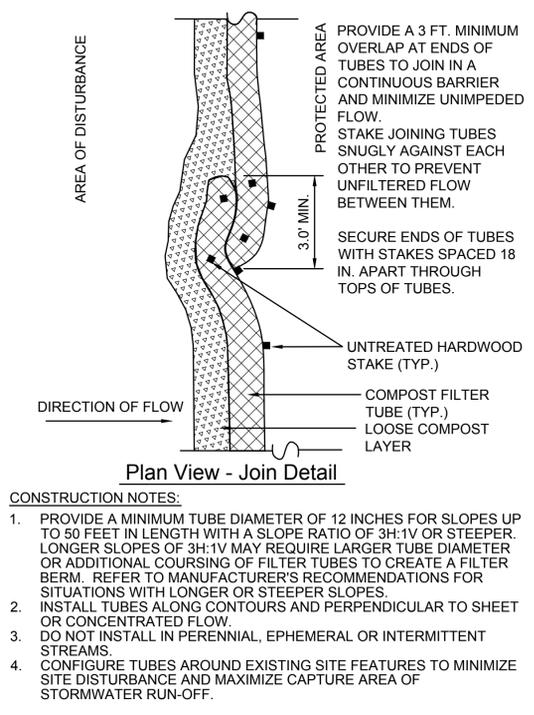


NOTE:
BASED ON ACTUAL FIELD CONDITIONS; THE CONTRACTOR SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.

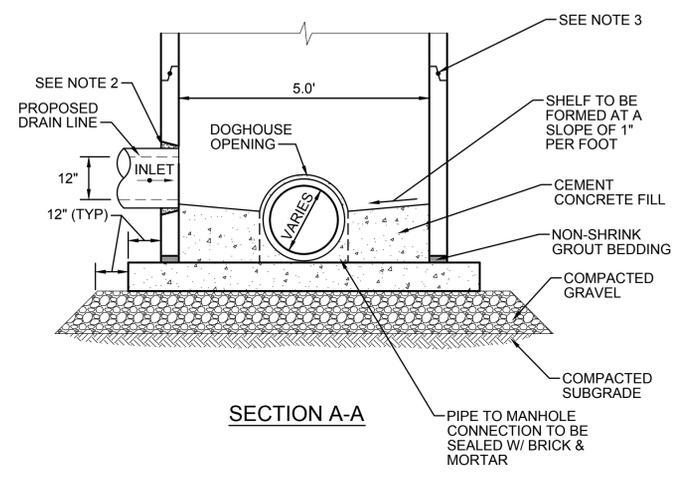
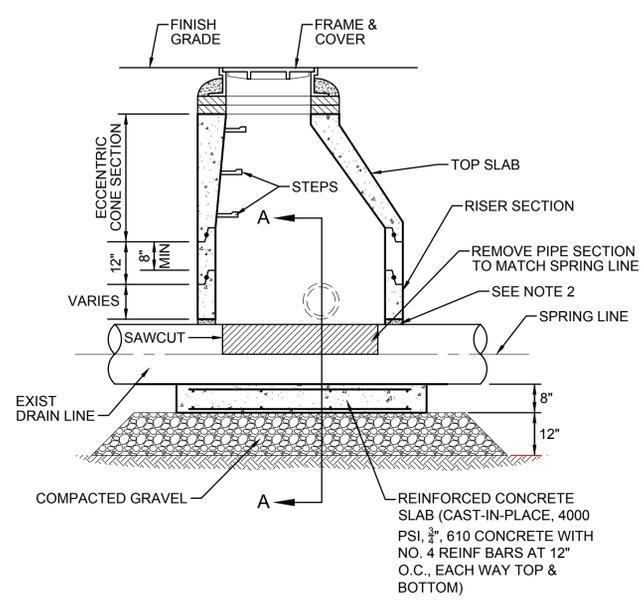
SEWER & DRAINAGE MANHOLE REBUILD (LOWER)
SCALE: NTS



EROSION CONTROL BARRIER - COMPOST FILTER TUBE
SCALE: NTS

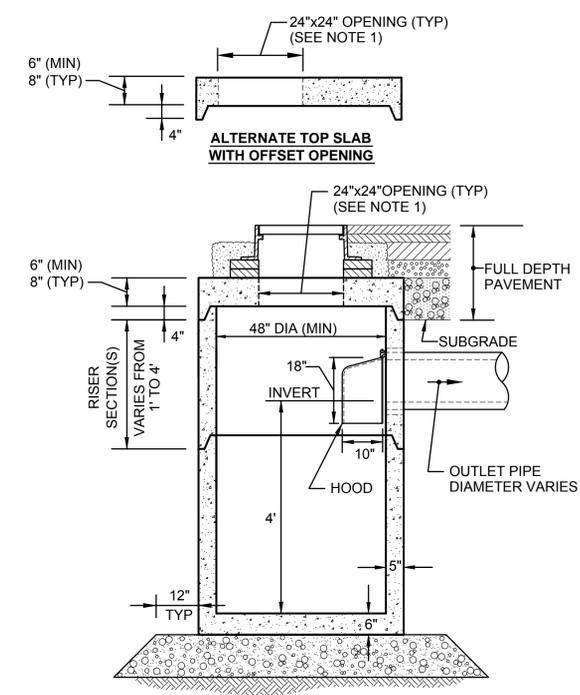


SILT SACK SEDIMENT TRAP
SCALE: NTS



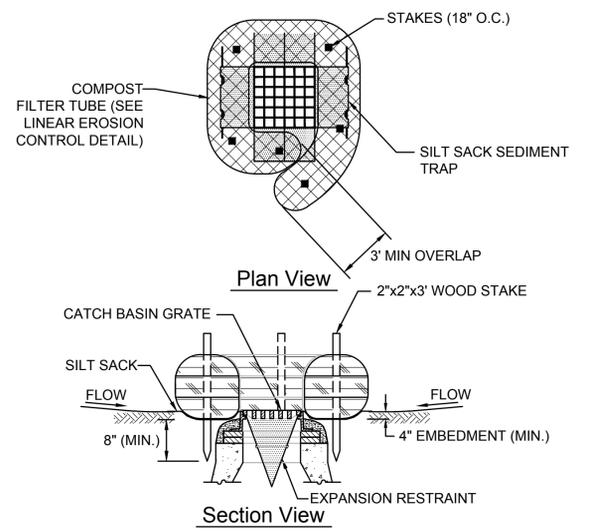
- CONSTRUCTION NOTES:
1. STRUCTURE SHALL BE DESIGNED FOR HS-20 LOADING.
 2. PROVIDE OPENINGS FOR PIPES WITH 2" MAXIMUM CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS (NON-SHRINK GROUT.)
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.

DRAINAGE MANHOLE OVER EXISTING PIPE
SCALE: NTS



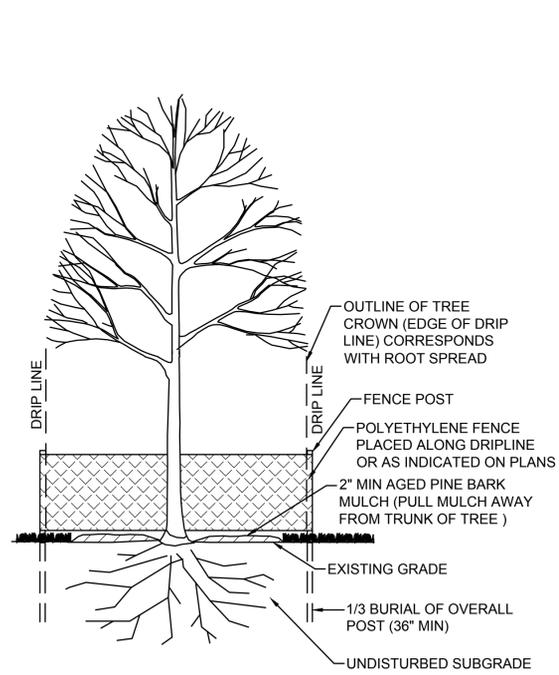
- NOTES:
1. TOP SLAB FOR CBCI SHALL HAVE 24"x 27" RECTANGULAR OPENING.
 2. 6" MINIMUM SPACE FROM TOP OF KNOCKOUT TO BOTTOM OF ROOF SLAB JOINT REQUIRED WHEN USING HOODS.
 3. ALL SECTIONS SHALL BE RATED FOR HS-20 LOADING.

DEEP SUMP CATCH BASIN WITH HOOD
SCALE: NTS



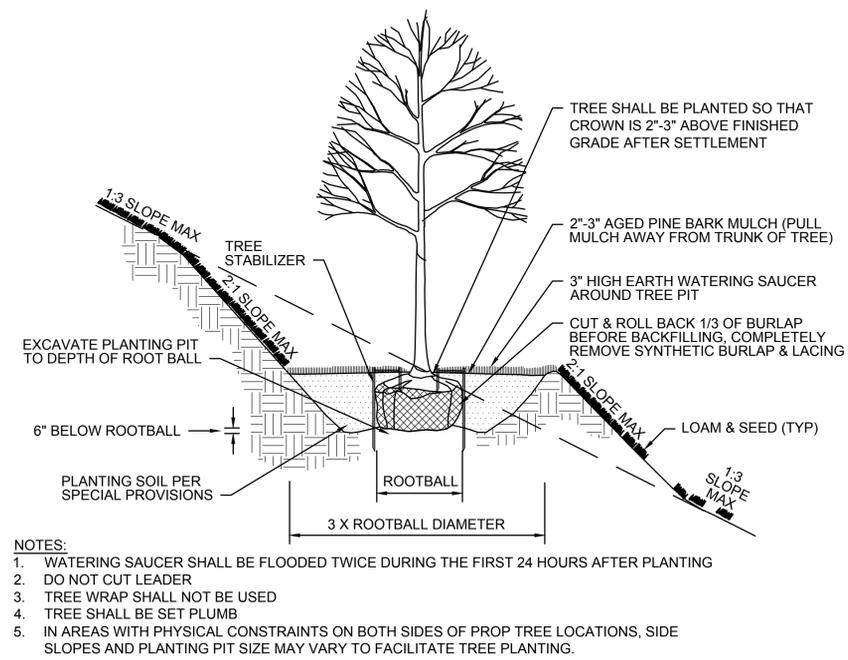
- CONSTRUCTION NOTES:
1. ENCLOSE STRUCTURE WITH COMPOST TUBES IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION. MAINTAIN UNTIL PAVING BINDER COURSE IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
 2. IF GRATE IS AGAINST EXISTING CURB THEN TUBE IS TO BE PLACED AROUND THREE SIDES OF GRATE ONLY.
 3. GRATE TO BE PLACED OVER SILT SACK.
 4. COMPOST TUBES SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

EROSION CONTROL BARRIER
SCALE: NTS



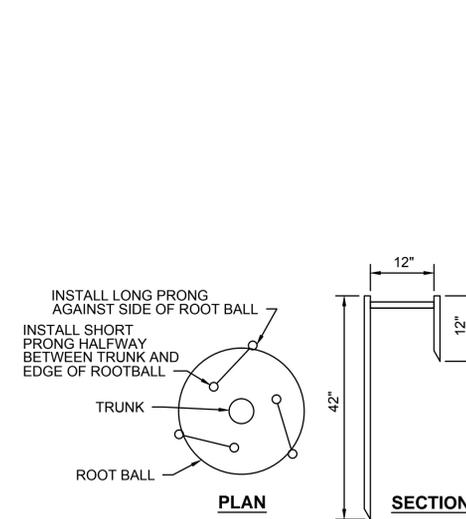
TREE PROTECTION

SCALE: NTS



DECIDUOUS TREE PLANTING IN SLOPE OR ON LEVEL GROUND

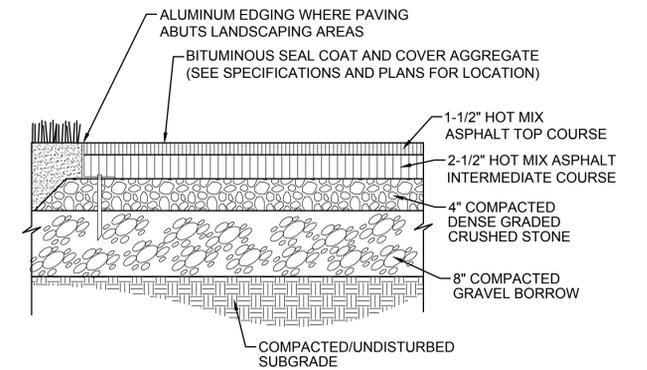
SCALE: NTS



NOTE:
 THE CONTRACTOR SHALL VERIFY LOCATIONS OF SUBGRADE PIPES AND UTILITIES PRIOR TO PLACEMENT OF STABILIZERS TO AVOID CONFLICT. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ANY DAMAGE DUE TO PLACEMENT OF STABILIZERS.

TREE STABILIZATION

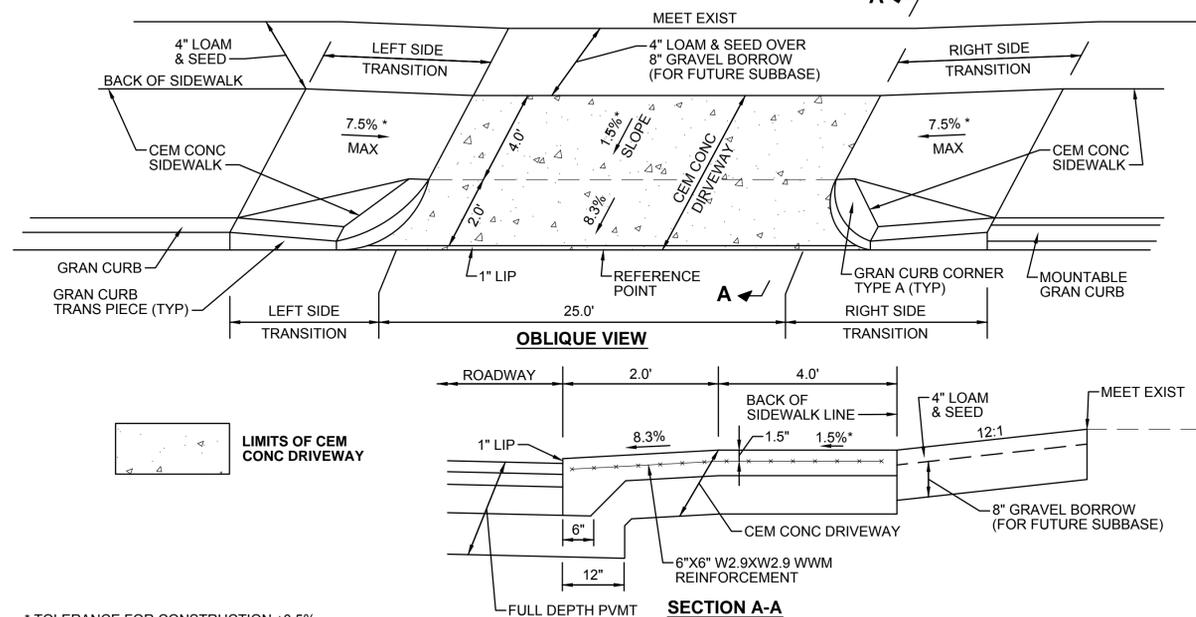
SCALE: NTS



CHIPSEAL HOT MIX ASPHALT WALK

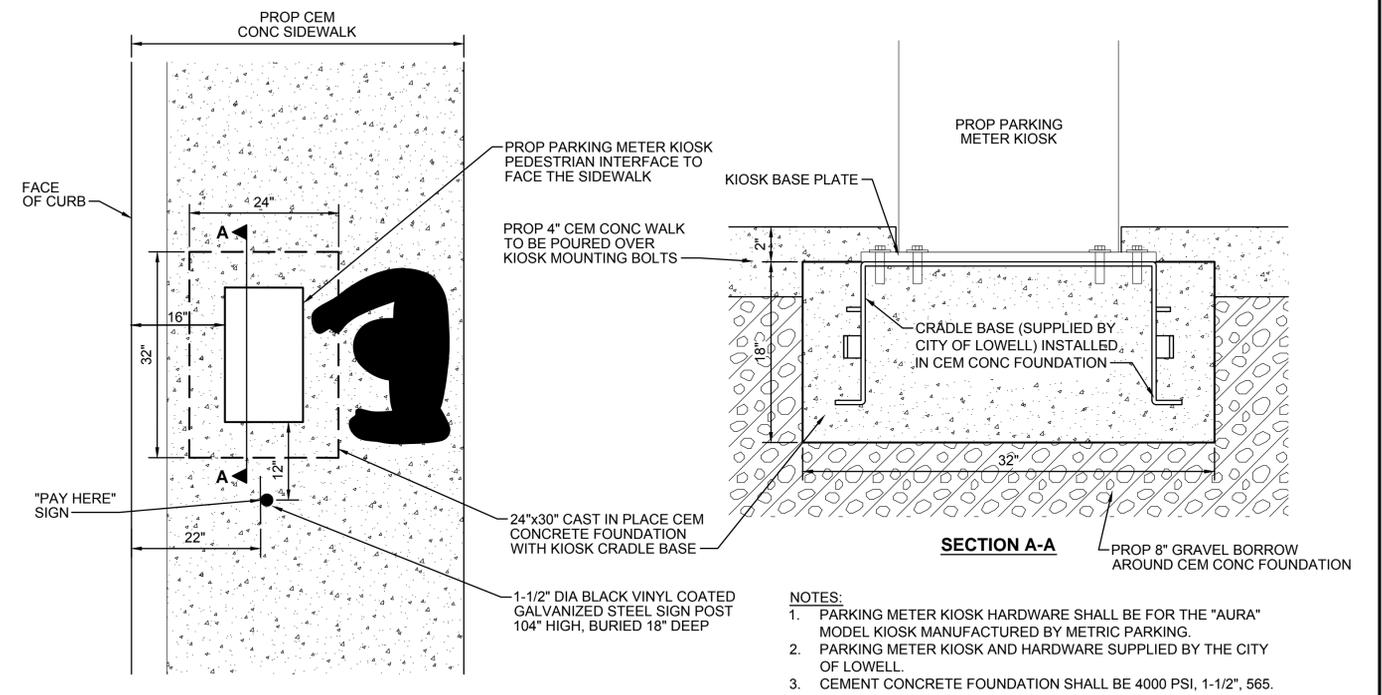
SCALE: NTS

TRANSITION CURB FOR DRIVEWAYS WITH SIDEWALK								
NO.	LOCATION (REF. POINT)	SIDEWALK WIDTH	LEFT SIDE			RIGHT SIDE		
			ROADWAY GUTTER	REVEAL	TRANS	ROADWAY GUTTER	REVEAL	TRANS
1	100+16.6 13.0' RT	6.0'	1.00%	6"	8.0'	-1.35%	6"	6.5'



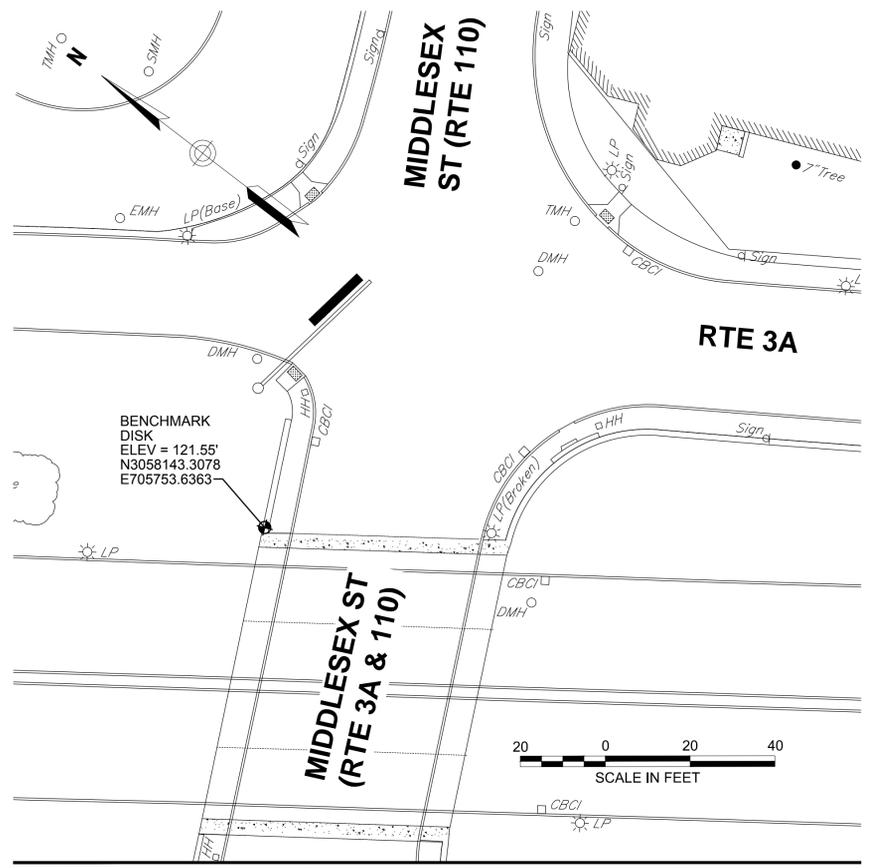
CEM CONC DRIVEWAY WITH SIDEWALK AND TYPE A CURB CORNERS

SCALE: NTS

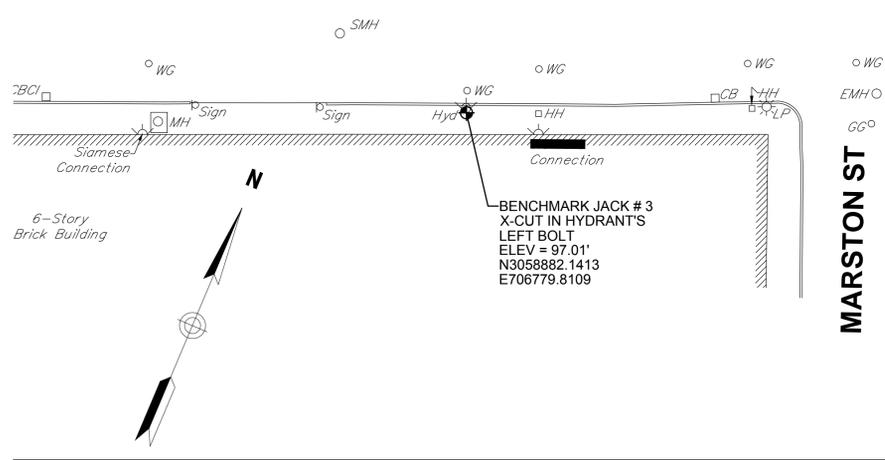


PARKING METER KIOSK FOUNDATION AND "PAY HERE" SIGN

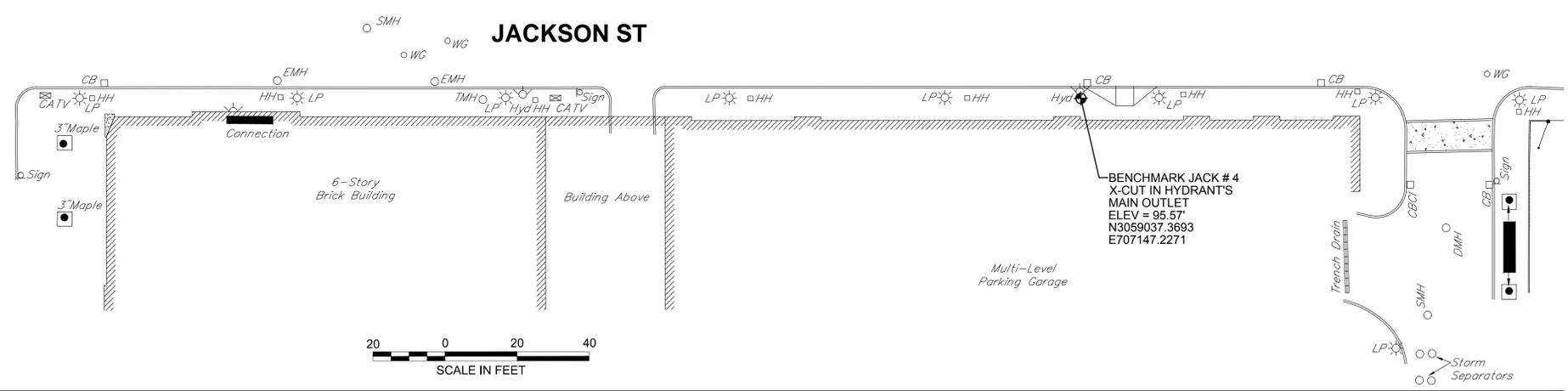
SCALE: NTS



EXISTING BENCH MARK SOUTH OF JACKSON ST EXTENSION
 SCALE: 1" = 20'



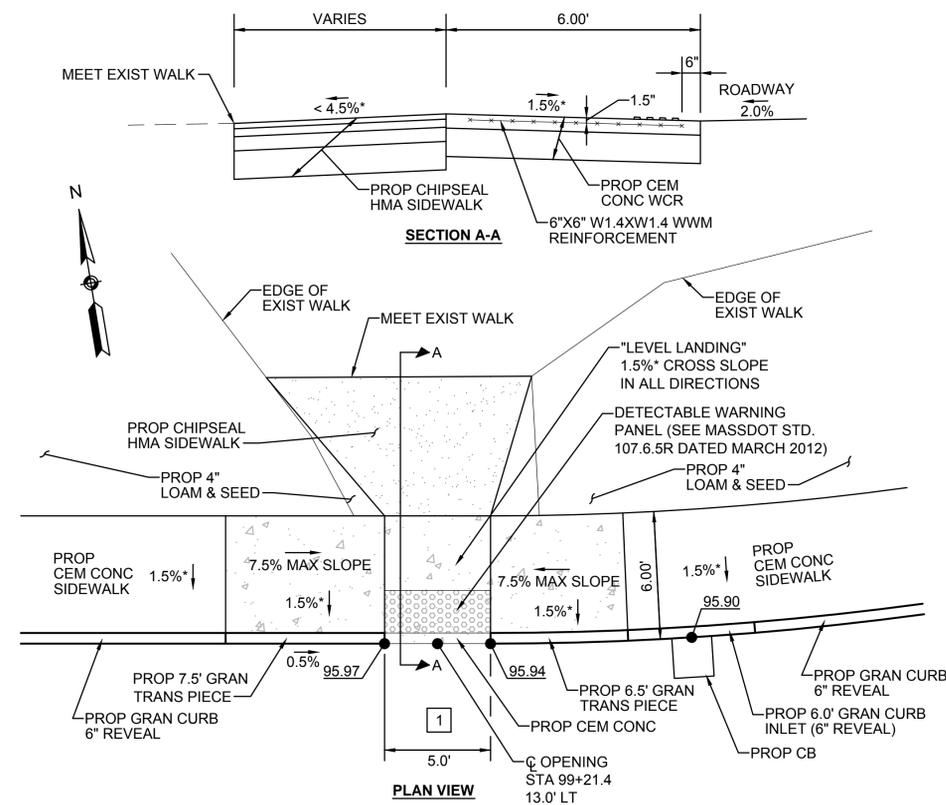
EXISTING BENCH MARKS EAST OF JACKSON ST EXTENSION
 SCALE: 1" = 20'



SCALE IN FEET

LEGEND

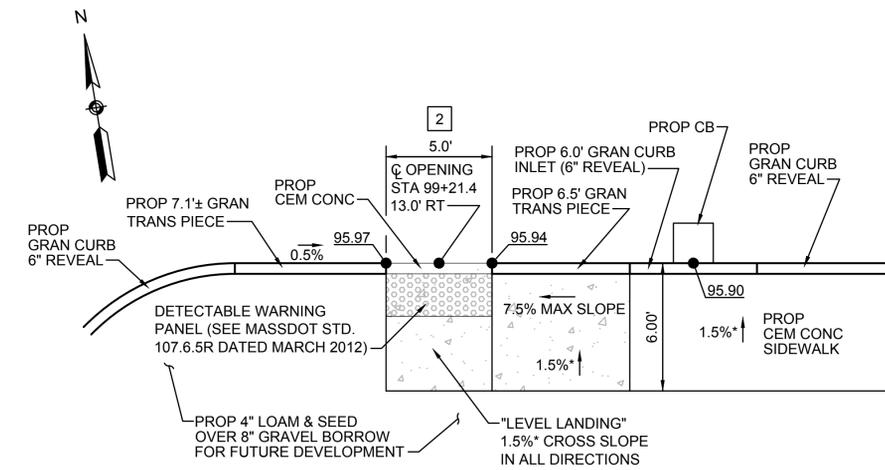
-  = LIMITS OF PROP CEM CONC WCR
-  = LIMITS OF PROP CHIPSEAL HMA SIDEWALK
-  = PROP DETECTABLE WARNING PANEL



*TOLERANCE FOR CONSTRUCTION ±0.5%

WHEELCHAIR RAMP NUMBER 1

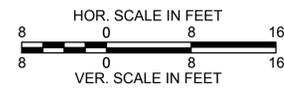
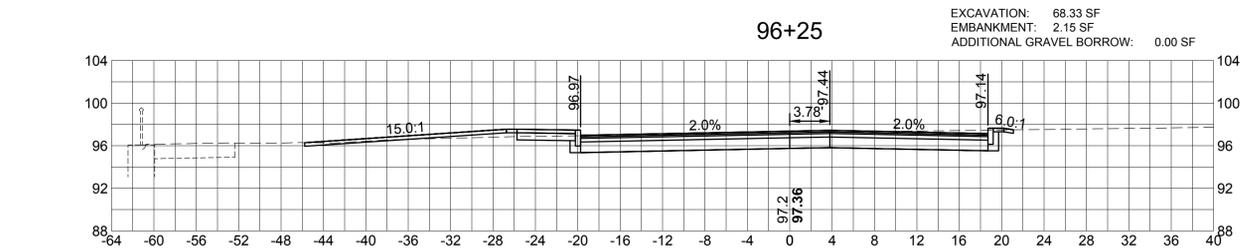
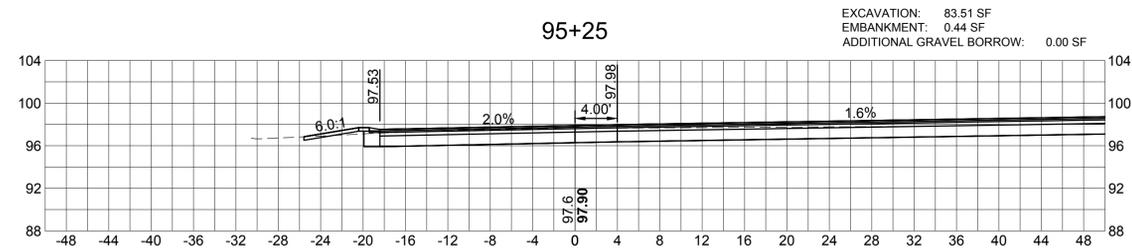
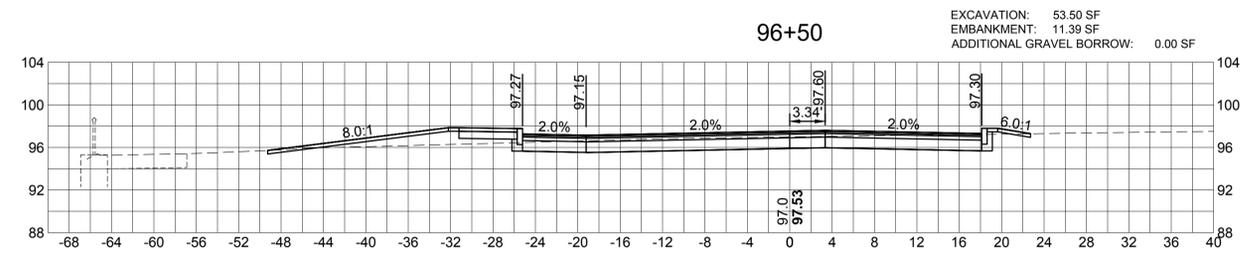
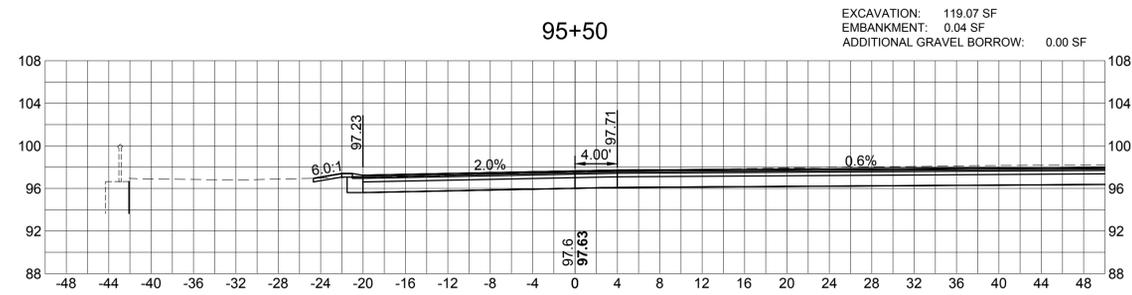
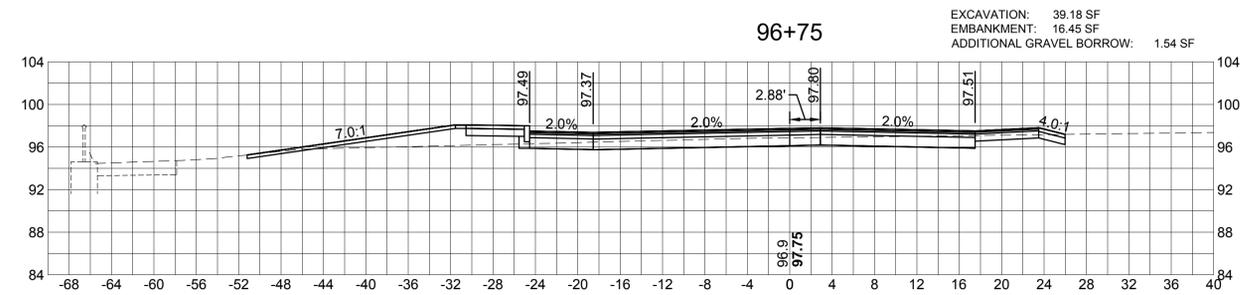
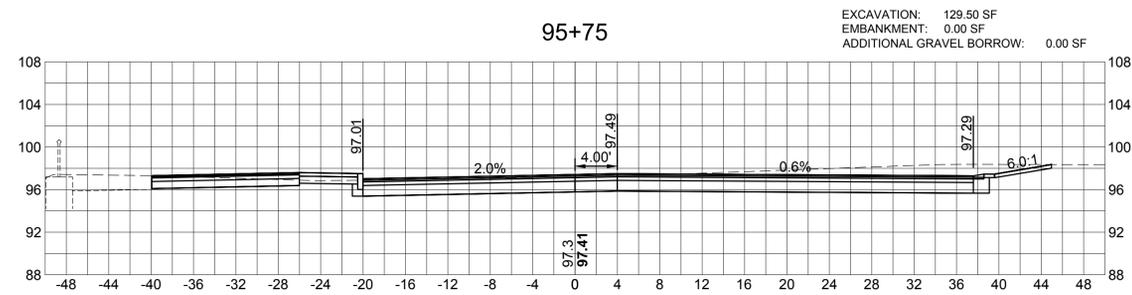
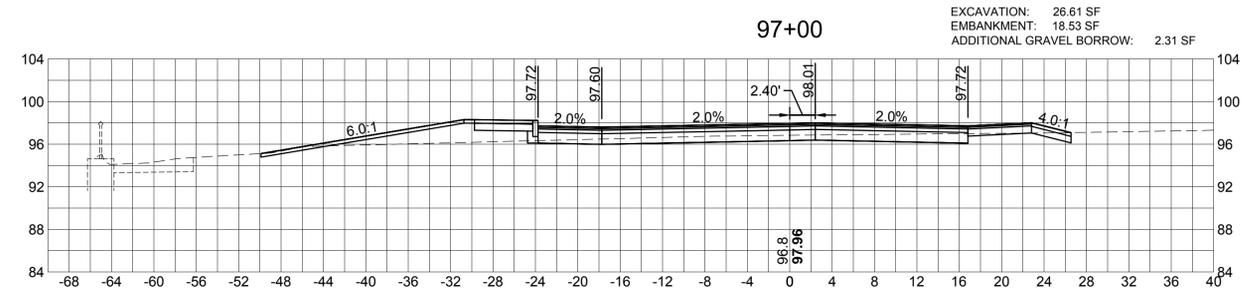
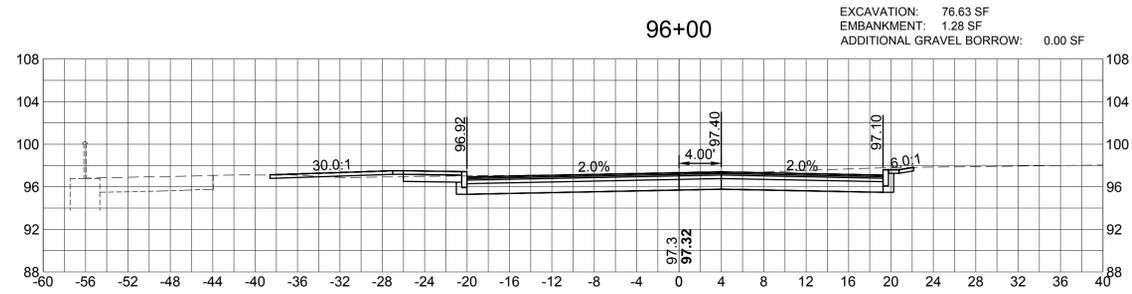
SCALE: 1" = 4'

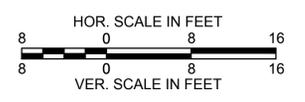
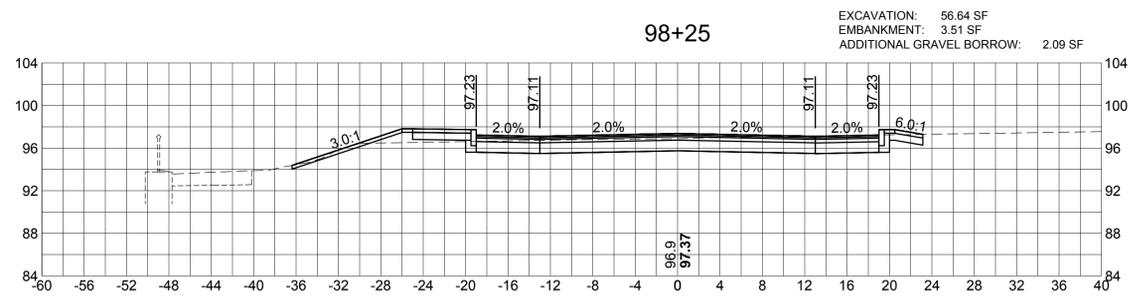
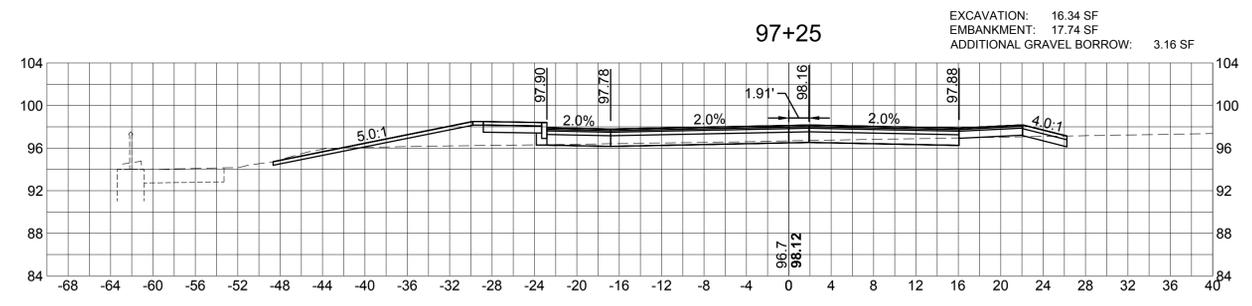
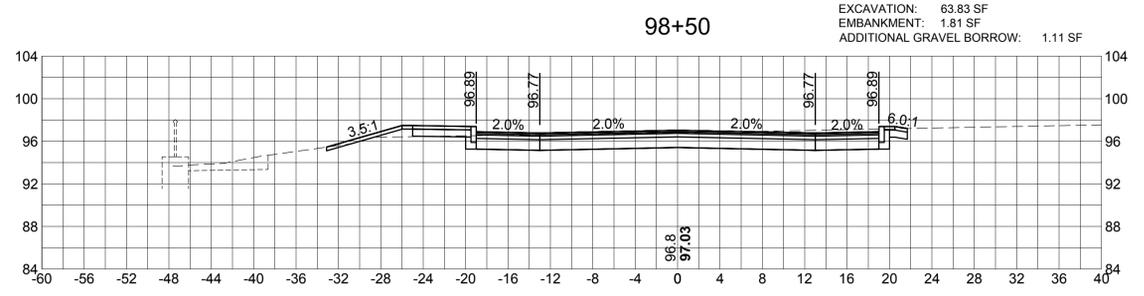
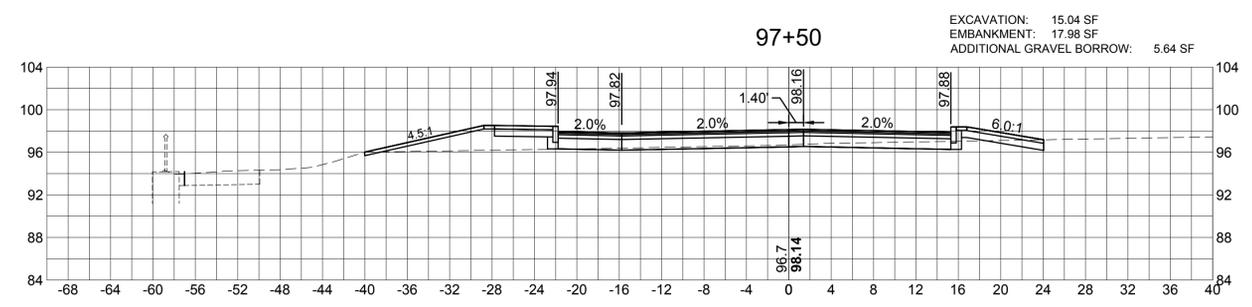
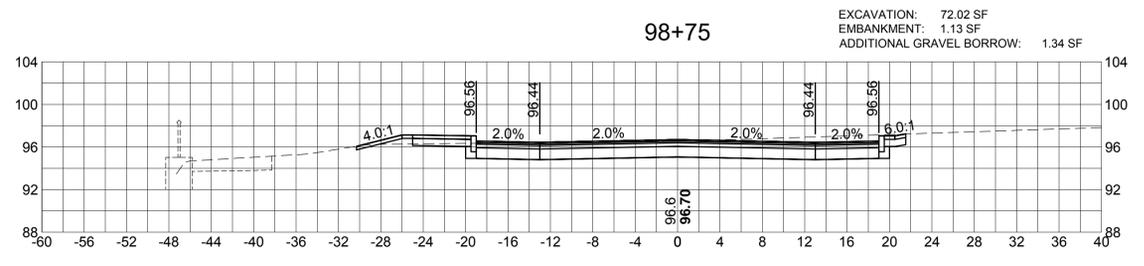
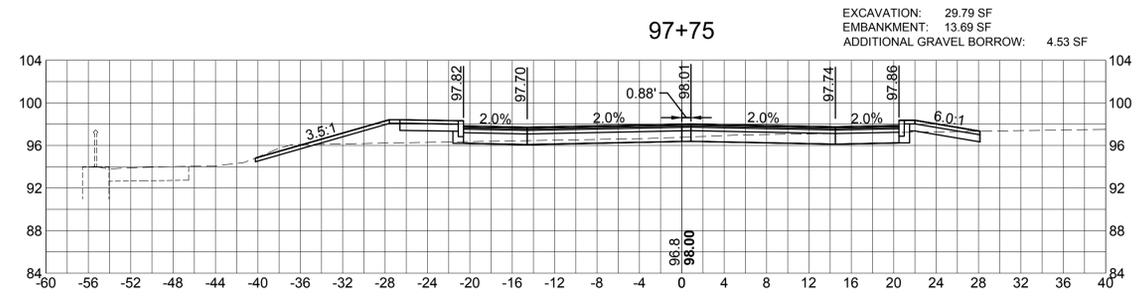
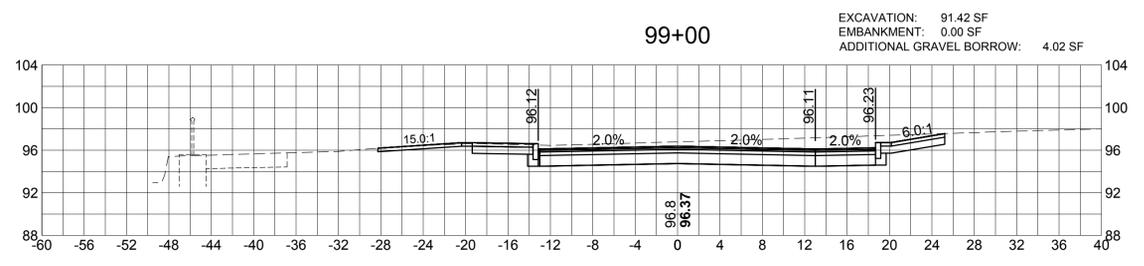
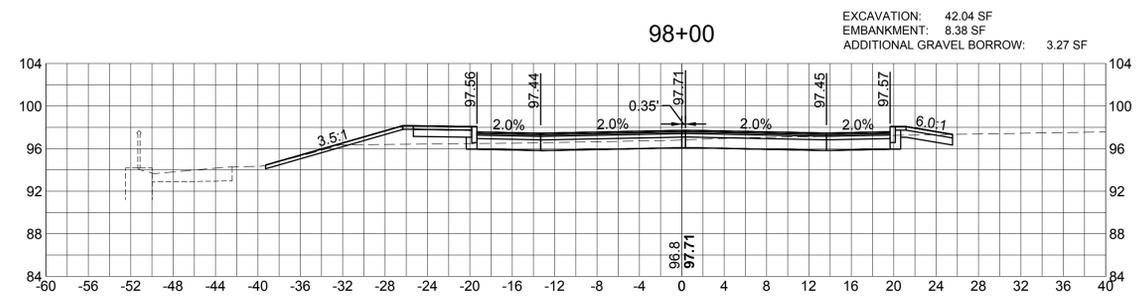


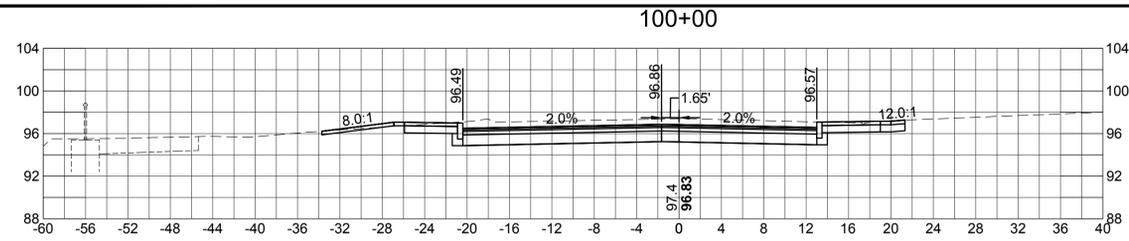
*TOLERANCE FOR CONSTRUCTION ±0.5%

WHEELCHAIR RAMP NUMBER 2

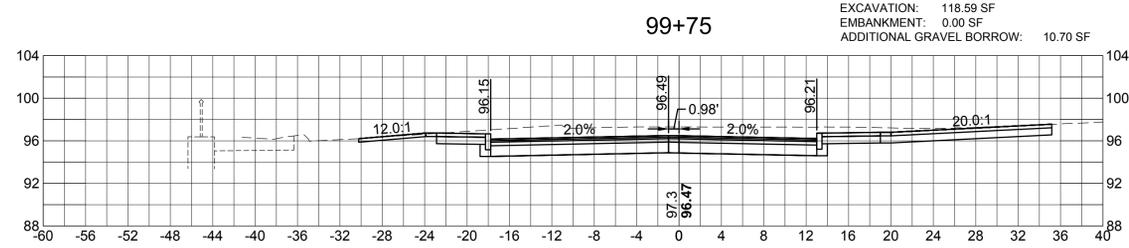
SCALE: 1" = 4'



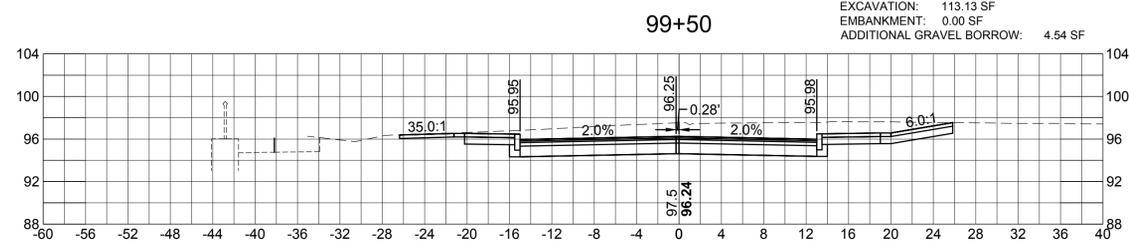




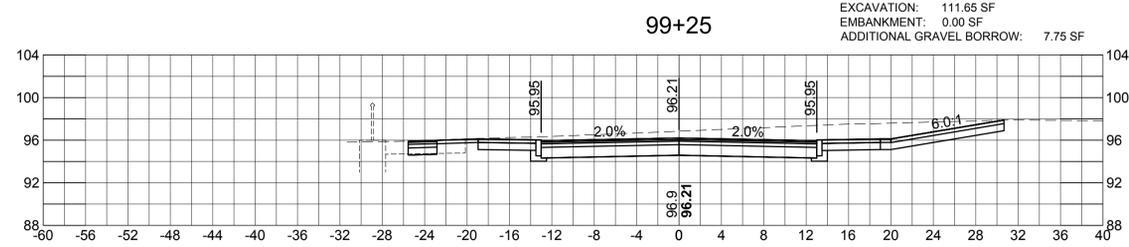
EXCAVATION: 88.06 SF
 EMBANKMENT: 0.07 SF
 ADDITIONAL GRAVEL BORROW: 1.56 SF



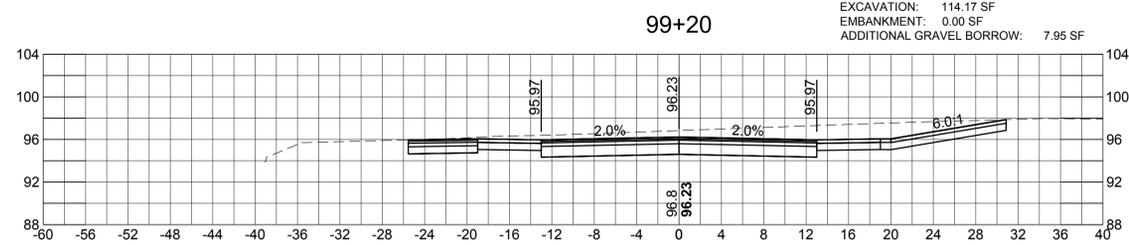
EXCAVATION: 118.59 SF
 EMBANKMENT: 0.00 SF
 ADDITIONAL GRAVEL BORROW: 10.70 SF



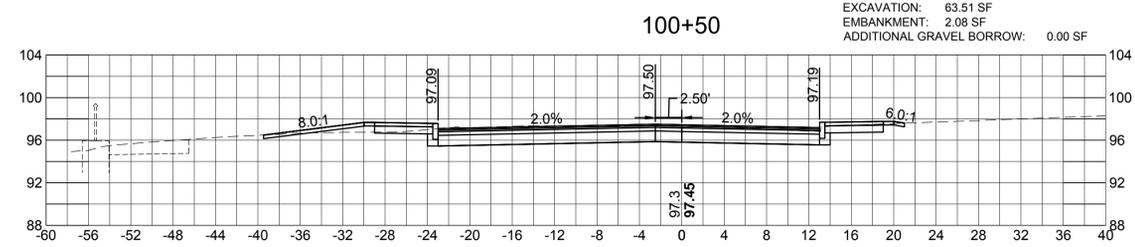
EXCAVATION: 113.13 SF
 EMBANKMENT: 0.00 SF
 ADDITIONAL GRAVEL BORROW: 4.54 SF



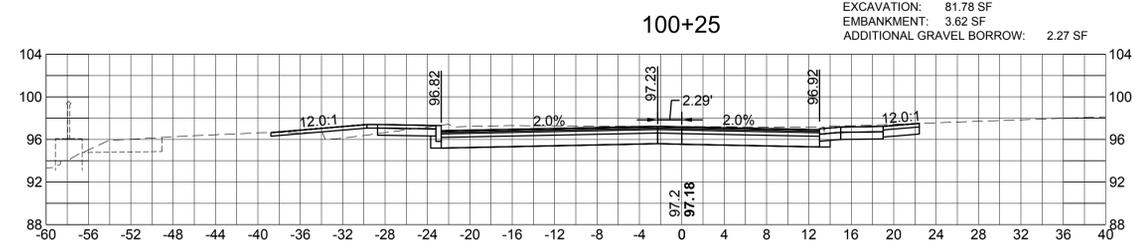
EXCAVATION: 111.65 SF
 EMBANKMENT: 0.00 SF
 ADDITIONAL GRAVEL BORROW: 7.75 SF



EXCAVATION: 114.17 SF
 EMBANKMENT: 0.00 SF
 ADDITIONAL GRAVEL BORROW: 7.95 SF



EXCAVATION: 63.51 SF
 EMBANKMENT: 2.08 SF
 ADDITIONAL GRAVEL BORROW: 0.00 SF



EXCAVATION: 81.78 SF
 EMBANKMENT: 3.62 SF
 ADDITIONAL GRAVEL BORROW: 2.27 SF

