

JACOBS

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IN ASSOCIATION WITH:





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MBTA BOSTON COLLEGE STATION BOSTON, MASSACHUSETTS MBTA CONTRACT NO. XXXXXX

15% DESIGN SUBMITTAL

August 8, 2012

DRAFT

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ISSUE

Horiz. NONE

Vert. NONE

DATE: 8-08-2012

PJC KMG XX SHEET

NOT FOR CONSTRUCTION

LEGEND **ABBREVIATIONS** ABUT **ABUTMENT** OC ON CENTER **EXISTING PROPOSED EXISTING PROPOSED** AHD AHEAD OD OUTSIDE DIAMETER CATCH BASIN FIRE ALARM ARCH ARCHITECTURAL OFF OFFSET CBCI APPROX **APPROXIMATE** ОН OVERHEAD CATCH BASIN w/CURB INLET WASTE BASKET BASELINE OTM OTHER TRACK MATERIALS 12"**.....** PΕ 12"~~~ BOT воттом POLYETHYLENE DROP INLET TREE (w/ DIA) BRG **BEARING** PED PEDESTRIAN PERF BIT BITUMINOUS PERFORATED 0 MANHOLE DRAINAGE 0 OHW OVERHEAD WIRES OHW PGL PROPOSED GRADE LINE BK BACK PK/NL PARKER-KALON COMPANY NAIL (E) (E) UGASLN-P MANHOLE ELECTRIC UNDERGROUND GAS LINE СВ CATCH BASIN PLATE, PROPERTY LINE MH? CENTER LINE PLAT PLATFORM MANHOLE UNKNOWN UNDERGROUND WATER LINE UWLN-P UWIN-F CIH CENTRAL INSTRUMENT HOUSE PROP PROPOSED CIP CAST IRON PIP, CAST IN PLACE PSI POUNDS PER SQUARE INCH S HANDICAPPED RAMP MANHOLE SEWER HCR CLF CHAIN LINK FENCE PVC POLYVINYL CHLORIDE CL CLASS **PVMT** PAVEMENT 1 MANHOLE TELEPHONE CSW CONCRETE SIDEWALK CSW REMOVE & RELOCATE R&R CL/CLR CLEAR RIGHT OF WAY R/W 0 CORRUGATED METAL PIPE MANHOLE CABLE BCSW BIT. CONC. SIDEWALK BCSW CMP RCP REINFORCED CONCRETE PIPE CNR CORNER 뱀 REINF REINFORCING HANDHOLF BIT. CONC. CURB BCC CO CLEAN OUT RELOC RELOCATE COL COLUMN MASS HIGHWAY DEPT. HANDHOLE BIT CONC. BERM BCB RET RETAINING COMM COMMUNICATION CONC CONCRETE RH RIGHT HAND DEPT. OF PUBLIC WORKS HANDHOLE CCB CAPE COD BERM CCB R.O.W. RIGHT OF WAY CONN CONNECTION RR SPK RAILROAD SPIKE CONST CONSTRUCTION ĞC GAS GATE GRANITE CURB GC RT RIGHT COORD COORDINATE RT/RTE ROUTE CU FT CUBIC FEET WG WATER GATE EOP EDGE OF PAVEMENT EOP RSC RIGID STEEL CONDUIT CULV CULVERT SB SOUTHBOUND CW CROSSWALK GATE UNKNOWN CROSSING SIGNAL CSo SBC DEPT DEPARTMENT STONE BOX CULVERT SF SQUARE FEET DH DRILL HOLE \Diamond LIGHT POLE CROSSING SIGNAL w/ GATE CSG SIM SIMILAR DIA DIAMETER SL STOP LINE DMH DRAIN MANHOLE TO UP UTILITY POLE G UP CROSSING SIGNAL w/ PED. GATE CS-PG-SMH SEWER MANHOLE DWGS DRAWINGS ₩ UPL SPA/SP DYCL DOUBLE YELLOW CENTER LINE SPACES UTILITY POLE w/ LIGHT POLE CROSSING GATE ONLY (NO SIGNAL) CGo DITTO SS STAINLESS STEEL DO SGN SGN ST SIGN STAKE (PROPERTY LINE MARKER) EASTBOUND STA STATION EΒ STK/NL STAKE NAIL EL/ELEV ELEVATION WETLAND FLAG · BOL BOLLARD BOL STR STRINGER EQ EQUAL X STRUCT STRUCTURAL HYDRANT RAILROAD CROSSING SIGN o X-ING o X-ING EQN **EQUATION** SQ SQUARE EST ESTIMATED FLAG POLE CONCRETE PAD СР SW SIDEWALK EX/EXIST EXISTING SWLL SINGLE WHITE LANE LINE EXP **EXPANSION** G₩ -Φ SIGNAL CONTROL BOX **GUY WIRE** □ SCB SWPPP STORMWATER POLLUTION PREVENTION FIN FINISH PLAN FT FOOT GP -⊕ GUY POLE ELECTRIC BOX □ ELB SYEL SINGLE YELLOW EDGE LINE GAGE GA TC TRACK CENTER GALV GALVANIZED STONE BOUND □ MP MILEPOST п МР TOP OF RAIL T/R GC GRANITE CURB TBR TO BE REMOVED GGR GAS GATE GROUND STONE BOUND w/ DRILL HOLE GUARD RAIL TYP TYPICAL GRS GALVANIZED RIGID STEEL DH O TRK TRACK HEX HEXAGONAL DRILL HOLE STONE WALL UG UNDERGROUND HH HAND HOLE GM **VERT** VERTICAL H.S. HIGH STRENGTH GAS METER PROPERTY LINE INTERSTATE W/ WITH MAILBOX LIMIT OF WORK LD. INSIDE DIAMETER WB WESTBOUND INCH TEL. ⊠ WC WHEELCHAIR INVERT TELEPHONE RETAINING WALL INV WET WETLAND JΤ JOINT WP WORKING POINT SPOT GRADE TRAFFIC SIGNAL 112×12 190.40 LF LINEAR FEET WWF WELDED WIRE FABRIC (LOCATION OF ELEVATION) LEFT HAND LH MW (MW) XING CROSSING SOIL BORING MONITORING WELL L.O.W. LIMIT OF WORK LEFT LT STRAW BALES/SILT FENCE ELECTRICAL LINE – F – MAX MAXIMUM MBCR MASSACHUSETTS BAY COMMUTER RAIL MASSACHUSETTS BAY TRANSPORTATION AUTHORITY OVERHEAD WIRES -COM-COMMUNICATIONS LINE -COM-MIN. /MIN MINIMUM BOSTON COLLEGE STATION DESIGN PROJECT M.O.W. MAINTENANCE OF WAY DRAIN LINE GAS LINE CONTRACT NO. XXXXXXX MP MILE POST M.U.T.C.D MANUAL ON UNIFORM TRAFFIC BOSTON COLLEGE STATION WATER LINE TREE LINE CONTROL DEVICES ABBREVIATIONS AND LEGEND MPH MILES PER HOUR SEWER LINE ____ s ___ CONTOUR ____ 20 ____ NB NORTH BOUND MASSACHUSETTS BAY TRANSPORTATION AUTHORITY **JACOBS** NEC NECESSARY LIMIT OF CLEARING & GRUBBING --- · ---NIC NOT IN CONTRACT 15% SUBMITTAL NIS NOT IN SCOPE NO. NUMBER ISSUE Horiz, NONE NOT FOR CONSTRUCTION NOM NOMINAL Vert. NONE NTS NOT TO SCALE PJCKMG XX SHEET DATE: 8-08-2012

- THE CONTRACTOR SHALL SET BARRICADES, WARNING LIGHTS, AND OTHER PROTECTIVE DEVICES THAT ARE NECESSARY, IN THE JUDGMENT OF THE ENGINEER, FOR THE PROTECTION OF THE PUBLIC IN ACCORDANCE WITH M.U.T.C.D. LATEST EDITION.
- THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND GRADES IN THE FIELD BEFORE COMMENCING WORK AND PROMPTLY NOTIFY
 THE ENGINEER OF ANY DISCREPANCIES. WHERE THE CLEAR INTENT OF THE NEW WORK IS TO MATCH EXISTING CONDITIONS, THE FIELD DATA
 SHALL GOVERN.
- 3. ALL ITEMS DESIGNATED AS "REMOVE" AND NOT RELOCATED AS PART OF THIS PROJECT, AND DETERMINED TO BE IN SALVAGEABLE CONDITION BY THE ENGINEER, SHALL BE DELIVERED TO MBTA RAILROAD OPERATIONS MATERIAL YARD IN CHARLESTOWN, MA, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. NO DELIVERY WILL BE GREATER THAN 60 MILES, ONE WAY. SUCH DELIVERY OF MATERIALS MUST BE COORDINATED WITH THE ENGINEER PRIOR TO DELIVERY.
- 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LEASING OR OTHERWISE OBTAINING TEMPORARY RIGHTS TO LANDS NECESSARY FOR AREAS OF CONSTRUCTION STAGING AND/OR STORING CONSTRUCTION MATERIALS AND EQUIPMENT.
- 5. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE APPROPRIATE AGENCIES OF THE CITY OF FITCHBURG AND THE TOWN OF NEWTON, AND SHALL AVOID CONSTRUCTION RELATED IMPACTS TO THE ADJACENT AND ADJOINING AREAS.
- 6. CONTRACTOR WILL NOT BE ALLOWED TO WORK WITHIN THE "FOUL" AREA OF THE RAILROAD (15 FEET FROM CENTERLINE OF TRACK) WITHOUT FIRST OBTAINING ROADWAY WORKER PROTECTION (RWP) SAFETY TRAINING FROM THE MBTA, FOR ALL PERSONS PLANNING ON WORKING WITHIN THE MBTA RIGHT OF WAY. CONTRACTOR SHALL COORDINATE FLAGGING PROTECTION FROM THE OPERATING RAILROAD. CONTRACTOR SHALL ALSO COORDINATE AND COMPLY WITH MBTA RAILROAD OPERATIONS, WORK REQUIREMENTS, AND RESTRICTIONS.
- 7. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF THIS CONTRACT WITH THE LOCAL UTILITY COMPANIES FOR RELOCATION OF THEIR FACILITIES AS REQUIRED FOR THE CONSTRUCTION.
- 3. ADDITIONAL NOTES ARE INDICATED ON THE PLANS AND DETAILS.
- 9. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY STATE AND LOCAL PERMITS (INCLUDING INSPECTIONS AND SIGN-OFFS FROM APPLICABLE TOWN, CITY DEPARTMENTS) FOR THE CONSTRUCTION OF THE STATION.
- 10. THE LIMITS OF WORK ARE GENERALLY DEFINED BY THE RAILROAD RIGHT OF WAY AND THE LIMITS AS SHOWN ON THE PLANS. WHERE ENCROACHMENT ONTO ADJACENT PROPERTY IS NECESSARY OR REQUIRED FOR EXECUTION OF THE WORK, THE CONTRACTOR SHALL SEEK THE APPROPRIATE APPROVALS FROM THE LAND OWNERS AND NOTIFY THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORK.
- 11. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL ACTIVITIES OF THE CITY OF BOSTON AND TOWN OF NEWTON.

UTILITY NOTES:

- 1. MAINTAIN AND PROTECT ALL EXISTING ELECTRIC, SIGNAL, COMMUNICATION, PHONE, SEWER, GAS, WATER, AND DRAINAGE SYSTEMS
 THROUGHOUT CONSTRUCTION. CONTRACTOR TO SUBMIT UTILITY RELOCATION, ABANDONMENT AND PHASING PLAN THAT IS COORDINATED AND
 APPROVED BY THE RESPECTIVE PUBLIC AND PRIVATE UTILITY JURISDICTIONS FOR ENGINEER'S APPROVAL.
- 2. EXISTING UTILITY LINES INDICATED OR NOTED ON THESE DRAWINGS ARE SHOWN AS OBTAINED FROM EXISTING INFORMATION AND ARE ONLY APPROXIMATE IN LOCATION. EXISTING UTILITIES OTHER THAN THOSE INDICATED ON THIS DRAWING MAY BE ON THE SITE. THE CONTRACTOR IS WARNED TO PROCEED WITH CAUTION WITH ALL WORK, ESPECIALLY EXCAVATION WORK. THE CONTRACTOR IS TO MAKE ALL POSSIBLE INVESTIGATIONS AS TO POSSIBLE UNMARKED UTILITY LINES. BEFORE DESIGNING, EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORATION, OR REPAIRING, ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. CONTRACTOR SHALL NOTIFY DIG-SAFE AT LEAST 72 BUSINESS HOURS BEFORE ANY CONSTRUCTION BEGINS AT 1-888-344-7233. OR 811.

EROSION CONTROL/ENVIRONMENTAL NOTES:

- 1. REMOVAL AND DISPOSAL OF TREE LIMBS AND OR PRUNED TREE ROOT SYSTEMS WITHIN THE LIMITS OF WORK AS SHOWN ARE ANTICIPATED. ONLY IF SO REQUIRED, A STATE LICENSED SUBCONTRACTOR SHALL PERFORM THE WORK AS NEEDED TO ACCOMMODATE THE PLOWING AND TRENCHING VEHICLE'S LATERAL AND VERTICAL ACCESS AND WORKING CLEARANCE REQUIREMENTS.
- 2. SITE WORK WILL BE COMPLETED CONCURRENTLY WITH THE SITE PREPARATION AND TREE REMOVAL WORK. THE CONTRACTOR SHALL REPLACE—IN—KIND ANY EXISTING PAVEMENT, ADJACENT GREEN AREAS, FENCING, PAVEMENT MARKINGS AND ANY OTHER EXISTING FEATURES UNINTENTIONALLY IMPACTED BY THE CONSTRUCTION SITE CLEARING AT NO ADDITIONAL COST TO THE CONTRACTOR.
- 5. IF TIRE AND/OR HEAVY EQUIPMENT TRACK DAMAGE HAS OCCURRED BUT HAS NOT SIGNIFICANTLY DISTURBED OR DESTROYED EXISTING ROAD PAVEMENT SURFACES ALONG THE SITE ACCESS ROADWAYS, IN THE OPINION OF THE ENGINEER, ONLY THEN WILL NO IN-KIND PAVEMENT REPLACEMENT BE REQUIRED. SIMILARLY WITH ON-SITE ADJACENT GREEN AREAS ALONG THE PROPERTY BOUNDARY, IF NO DISTURBANCE OF SURFACE VEGETATION HAS OCCURRED, THEN NO RE-SEEDING WILL BE NECESSARY IN THESE INSTANCES. SHOULD SEEDING FOR THIS PURPOSE OTHERWISE BECOME NECESSARY, IT SHALL BE PROVIDED AT NO ADDITIONAL PAYMENT TO THE CONTRACTOR UNDER ALL OTHER CONDITIONS WHERE EXISTING SITE-PERIMIETER GRASS SURFACES HAVE BEEN ACCIDENTALLY EXCAVATED AND OR DESTROYED. SEED MIXTURES TO BE APPLIED WILL VARY WITH THE TIME OF YEAR THAT SEED APPLICATION OCCURS TO MAXIMIZE GERMINATION AND PLANT PROPAGATION.
- 4. IN SOME LOCATIONS, STEEP GRASS SLOPES WILL BE DAMAGED BY TRENCH EXCAVATION EXPOSING BARE SOILS AND PROMOTING EROSIVE CONDITIONS. THESE LOCATIONS SHALL BE RE-GRADED, RE-SEEDED, AND IMPROVED WITH THE APPROPRIATE EROSION CONTROL MEASURES AS WARRANTED (E.G. MULCHING, MATTING, GEOTEXTILE/NETTING). THE SEED MIXTURE SHALL MEET MASSDOT MATERIALS REQUIREMENTS AND BE A MIXTURE OF LOCALLY INDIGENOUS GRASS SPECIES OR EROSION CONTROL MIX, APPROPRIATE FOR THESE SITE SPECIFIC CONDITIONS.
- 5. RESTORATION OF SURFACE GROUND FOLLOWING ANY TRENCH EXCAVATIONS FOR UTILITY OR OTHER REASONS SHALL INCLUDE THE PLACEMENT OF CLEAN FILL COMPACTED TO MINIMIZE FUTURE ADVERSE SETTLEMENT. THE SURFACE WILL BE RE—GRADED TO CONFORM TO SURROUNDING CONTOURS AND RESTORED WITH THE APPROPRIATE SURFACE TREATMENT MATERIAL AS REQUIRED. IN AREAS WHERE WETLANDS ARE IN CLOSE PROXIMITY OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL PLACE THE NECESSARY SILT FENCING (GEOTEXTILE SEDIMENT FILTERS) AND STRAW BALES TO CONTROL EROSION AND MINIMIZE THE OCCURRENCES OF TRANSPORTED SEDIMENT TO THESE WETLAND AREAS.
- 6. IF ANY UNKNOWN HAZARDOUS MATERIALS ARE UNEXPECTEDLY ENCOUNTERED IN THE SOILS DURING EXCAVATION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SUSPEND EXCAVATION OPERATIONS UNTIL THE SITUATION CAN BE PROPERLY EVALUATED.
- 7. IN THE EVENT THAT PREVIOUSLY UNKNOWN CULTURAL RESOURCES ARE DISCOVERED DURING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH THE ACCIDENTAL FINDINGS PLAN FOR THE PROJECT. THE PLAN MAY BE IMPLEMENTED THROUGH THE FOLLOWING STEPS SHOULD AN ACCIDENTAL FIND BE UNCOVERED BY A CONSTRUCTION INSPECTOR, THE CONTRACTOR OR A SUBCONTRACTOR DURING CONSTRUCTION OPERATIONS:
 - A. CONSTRUCTION ACTIVITIES IN THE AREA OF AN ACCIDENTAL FIND WILL BE IMMEDIATELY HALTED UPON THE DISCOVERY. THE MEASURED SETBACK DISTANCE TO ESTABLISH AS THE TEMPORARY NON-ENCROACHMENT BOUNDARY PERMITTING FURTHER EVALUATION SHALL BE APPROXIMATELY 30 TO 50 FEET IN ALL DIRECTIONS FROM THE FIND LOCATION. SPECIAL CONSIDERATION SHOULD BE GIVEN TO THE POSSIBLE EXTENSION OF THIS NO WORK PERMITTED ZONE IF LATER DETERMINED AS REQUIRED.
 - 3. THE CONTRACTOR WILL NOTIFY THE STATE CORONER IN ADDITION TO THE THE APPLICABLE STATE HISTORIC PRESERVATION OFFICIAL (SHPO). IF THE FINDINGS ARE HUMAN REMAINS, ALL RELEVANT RECOMMENDATIONS REGARDING TREATMENT OF SUCH REMAINS WILL BE FOLLOWED. THE SHPO WILL IDENTIFY THE APPROPRIATE NATIVE AMERICAN GROUPS WITH WHOM TO CONSULT WITH TO INITIATE EARLY COORDINATION BETWEEN SHPO AND ALL INTERESTED PARTIES, A DECISION WILL BE MADE FOR THE TREATMENT OF THE REMAINS. THESE PARTIES, THE COUNTY CORONER, AND POLICE OFFICIALS WILL ALL BE NOTIFIED WITHIN 24 HOURS OF ANY ACCIDENTAL FIND.
 - C. SPECIFIC SHPO INSTRUCTIONS CONCERNING AN ACCIDENTAL FIND RESULTING FROM THE NOTIFICATIONS DESCRIBED ABOVE WILL BE FOLLOWED ON A CASE—BY—CASE BASIS. AT A MINIMUM, SUFFICIENT ARCHEOLOGICAL WORK WILL BE PERFORMED ON THE ACCIDENTAL FIND LOCATION TO STABILIZE DEPOSITS, PROTECTING DEPOSITS FROM SCAVENGERS OR LOOTERS, AND TO COLLECT READILY AVAILABLE SAMPLES (E.G. FOR RADIOCARBON DATING) TO ESTIMATE THE AGE OF THE DEPOSITS AND TO IDENTIFY LINEAL OR CULTURAL DESCENDENTS.
 - D. THE SHPO WILL FOLLOW THROUGH ON THE COURSE OF ACTION TO COMPLY WITH SECTION 106. THIS MAY REQUIRE DEVELOPMENT OF AN MEMORANDUM OF AGREEMENT (MOA) OR IMPLEMENTATION OF ACTIONS INVOLVING THE FIND THAT SATISFY SECTION 106 REGULATIONS AND MAY INVOLVE CONSULTATION WITH NATIVE AMERICAN GROUPS. CONSTRUCTION SHALL REMAIN HALTED IN THE IMMEDIATE AREA OF THE ACCIDENTAL FIND UNTIL THE SHPO INDICATES IN WRITING THAT THE WORK MAY PROCEED IN THIS AREA.

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AME:	ATE:	

STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

BOSTON COLLEGE STATION
GENERAL NOTES

JACOBS STREET
BOSTON, MA 02210
GENERAL NOTES

MASSACHUSETTS BAY TRANSPORTATION
AUTHORITY
APPROVED BY:

DESCRIPTION
BY 0460 APP.

PROJECT MANAGER
Date
Project Manager:
Description
Descrip

DATE: 8-08-2012

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE

PJCKMGXXX SHEET

CC CS Dc JR Lc Ls L.T. PC PCC Ы PIC PIS PITO POL PS SC SERR ST S.T. Тс TS Χo

HORIZONTAL ALIGNMENT DEFINITIONS

- DISTANCE BETWEEN CENTERS OF CIRCLE
- CENTER OF CIRCLE
- CURVE TO SPIRAL
- DEGREE OF CURVE DEFINED BY THE CHORD DEFINITION
- EXTERNAL DISTANCE FROM MIDPOINT OF CIRCULAR CURVE TO PIC
- ANGLE OF INTERSECTION OF MAIN TANGENTS AT PI
- JERK RATE
- LENGTH OF CIRCULAR CURVE BETWEEN SC AND CS
- LENGTH OF SPIRAL FROM
- LONG TANGENT OF SPIRAL; DISTANCE FROM PIS TO TS (OR PIS TO ST)
- OFFSET FROM PC (OF PT) TO MAIN TANGENT
- POINT OF CURVE
- POINT OF COMPOUND CURVATURE
- POINT OF INTERSECTION OF MAIN TANGENTS
- POINT OF INTERSECTION OF LINES TANGENT AT SC AND CS
- POINT OF INTERSECTION OF MAIN TANGENT AND LINE TANGENT
- POINT OF INTERSECTION OF TURNOUT
- POINT ON LINE
- POINT OF SWITCH
- POINT OF TANGENCY; ON SPIRALED CURVES THIS POINT IS OFFSET A DISTANCE "o" FROM THE
- RADIUS OF CIRCULAR CURVE
- SPIRAL TO CURVE
- SUPERELEVATION RUNOFF RATE
- SPIRAL TO TANGENT
- SHORT TANGENT OF SPIRAL; DISTANCE FROM PIS TO CS (OR PIS TO SC)
- DISTANCE FROM SC (OR CS) TO PIC IN SPIRALED CURVE, OR TANGENT FROM PC (OR PT) TO PI IN A SIMPLE CURVE
- TANGENT TO SPIRAL
- DISTANCE ALONG MAIN TANGENT FROM TS (OR ST) TO PERPENDICULAR OFFSET OF PC
- DISTANCE ALONG MAIN TANGENT FROM TS (OR ST) TO PERPENDICULAR OFFSET OF SC (OR
- PERPENDICULAR OFFSET FROM MAIN TANGENT TO CS (OR SC)
- DELTA ANGLE
- SPIRAL ANGLE; CENTRAL ANGLE OF SPIRAL
- ANGLE OF INTERSECTION OF TANGENTS OF CIRCULAR CURVE ONLY
- MAIN TANGENTS THOSE LINES TANGENT TO ALIGNMENT AT TS AND ST WHICH INTERSECT AT PI

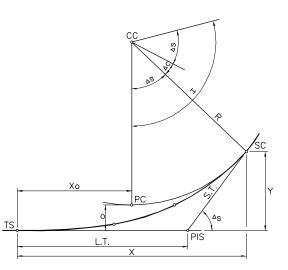
SPEED/SUPERELEVATION DATA

- DESIGN SPEED IN MPH
- Ea ACTUAL SUPERELEVATION
- Еe EQUILIBRIUM SUPERELEVATION
- UNBALANCED SUPERELEVATION

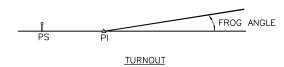
NOT FOR CONSTRUCTION

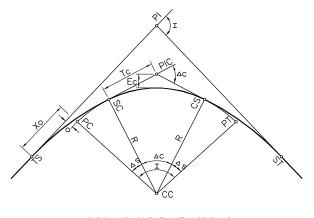
VERTICAL ALIGNMENT DEFINITIONS

- G1 INCOMING GRADE
- G2 OUTGOING GRADE
- LENGTH OF VERTICAL CURVE
- PVC POINT OF VERTICAL CURVATURE
- POINT OF INTERSECTION OF GRADES
- PVT POINT OF VERTICAL TANGENCY
- PERCENT RATE OF CHANGE OF GRADE PER 100 FEET

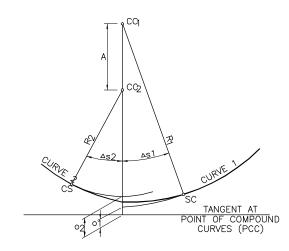


SPIRAL

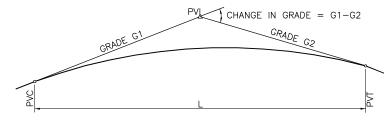




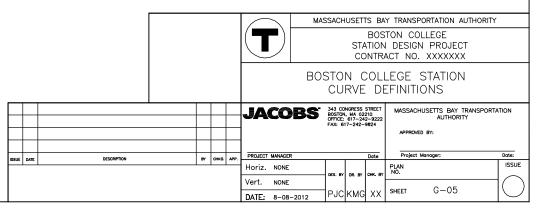
CIRCULAR CURVE WITH SPIRALS



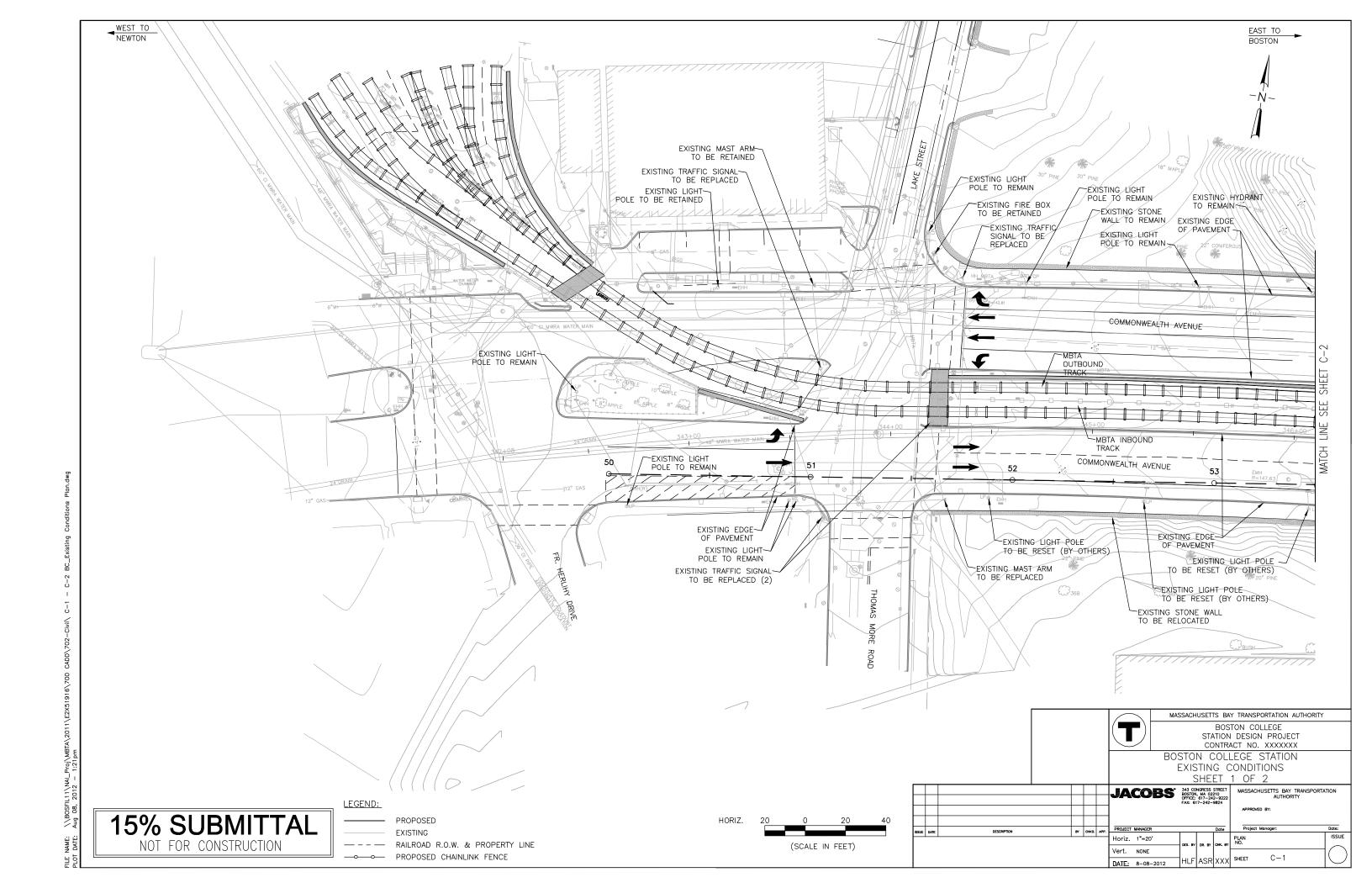
COMPOUND SPIRAL

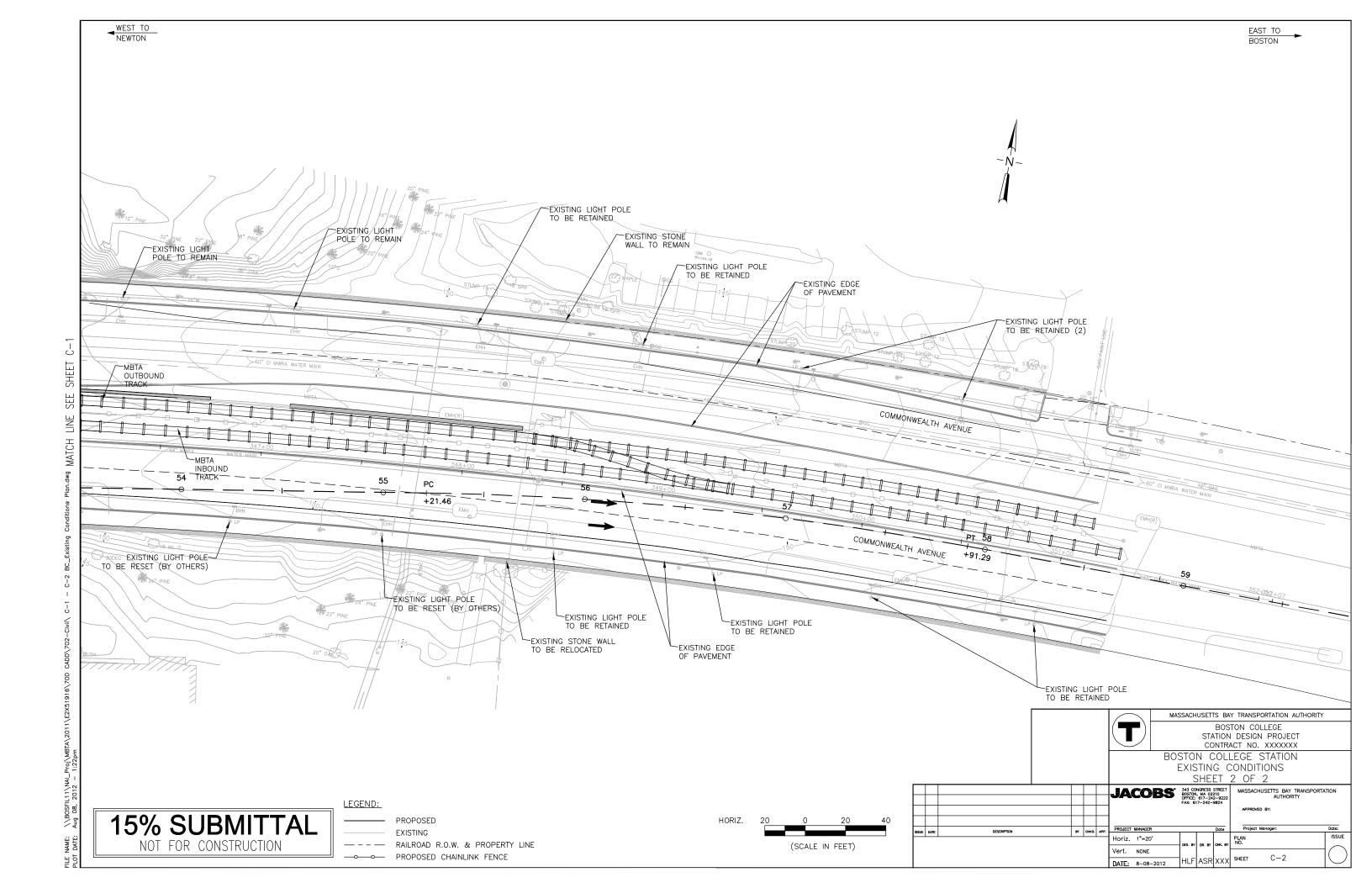


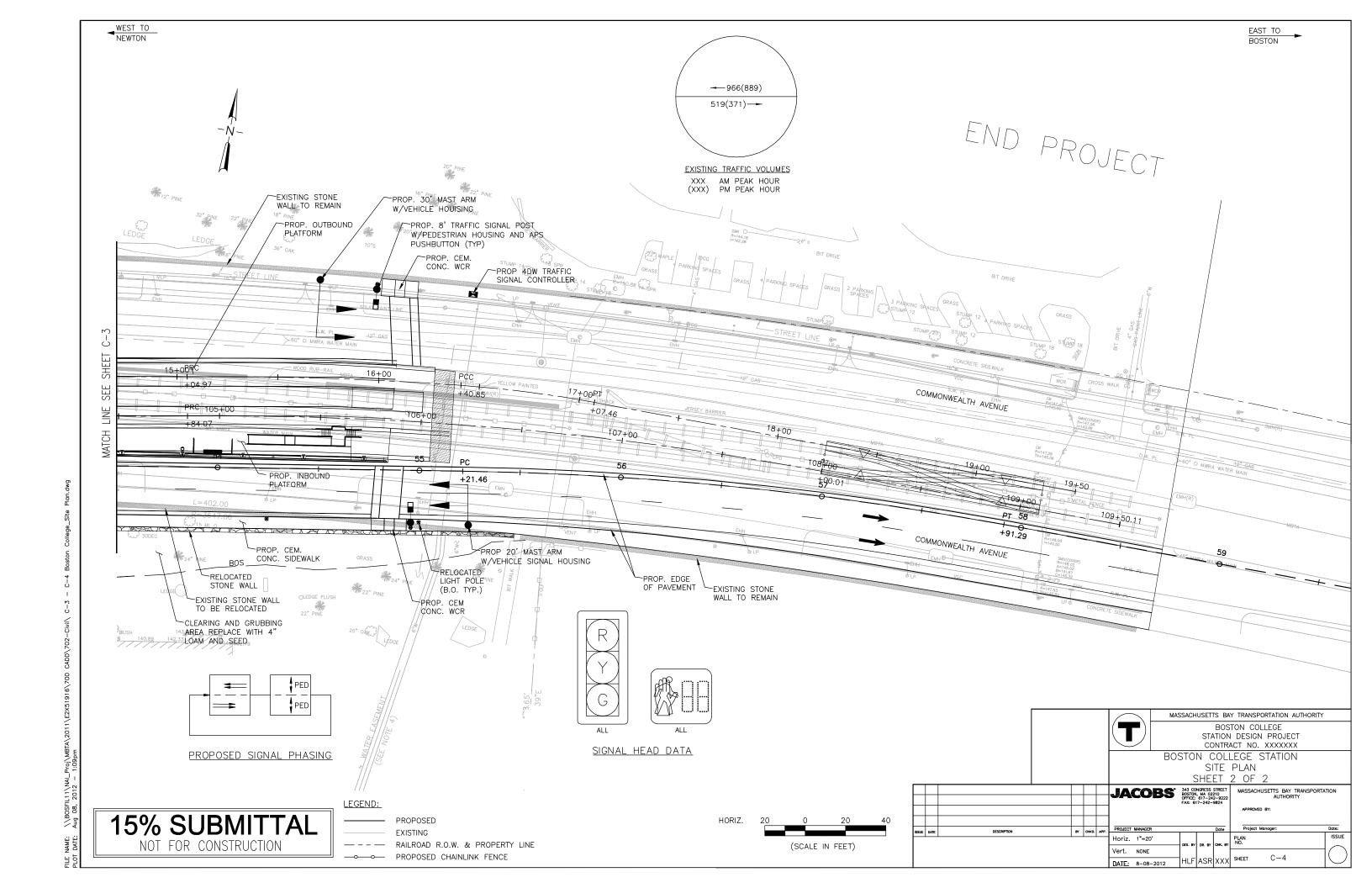
VERTICAL CURVE

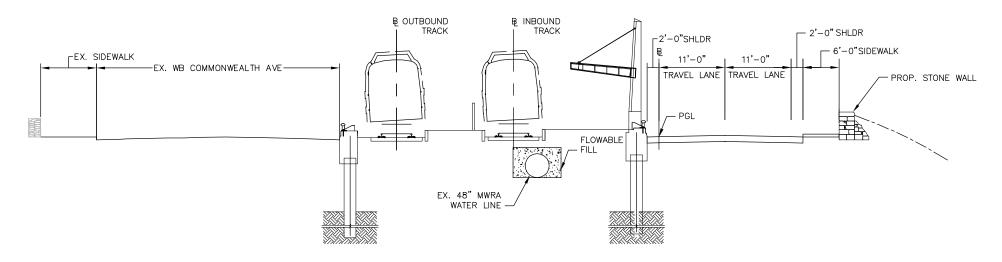


15% SUBMITTAL





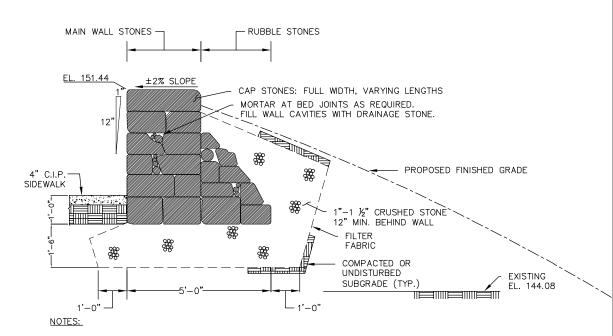




TYPICAL SECTION - LOOKING EAST SCALE: $\frac{1}{8}$ " = 1'-0"

HORIZ.

(SCALE IN FEET)

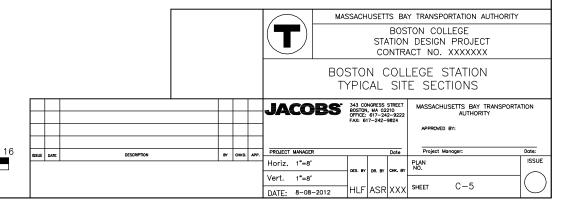


- 1. THE CONTRACTOR SHALL REMOVE AND RESET THE STONE WALL MAKING EVERY EFFORT TO RETURN WALL STONES TO THEIR ORIGINAL PRECONSTRUCTION CONDITION; MAINSTONES SHALL BE USED BELOW THE CAP STONE AND RUBBLE STONES SHALL BE USED AS THE WALL
- 2. WHEN RECONSTRUCTING THE STONE WALL, THE CONTRACTOR SHALL REMOVE ANY GAPS IN THE WALLI THAT OCCURED DUE TO PREVIOUS DAMAGE. ALL JOINTS IN THE RECONSTRUCTED WALL SHALL NOT EXCEED 2" BETWEEN STONES.

 3. THE CONTRACTOR SHALL REPLACE UNSUITABLE OR MISSING ORIGINAL STONES WITH STONES
- OF SIMILAR SIZE AND APPEARANCE.

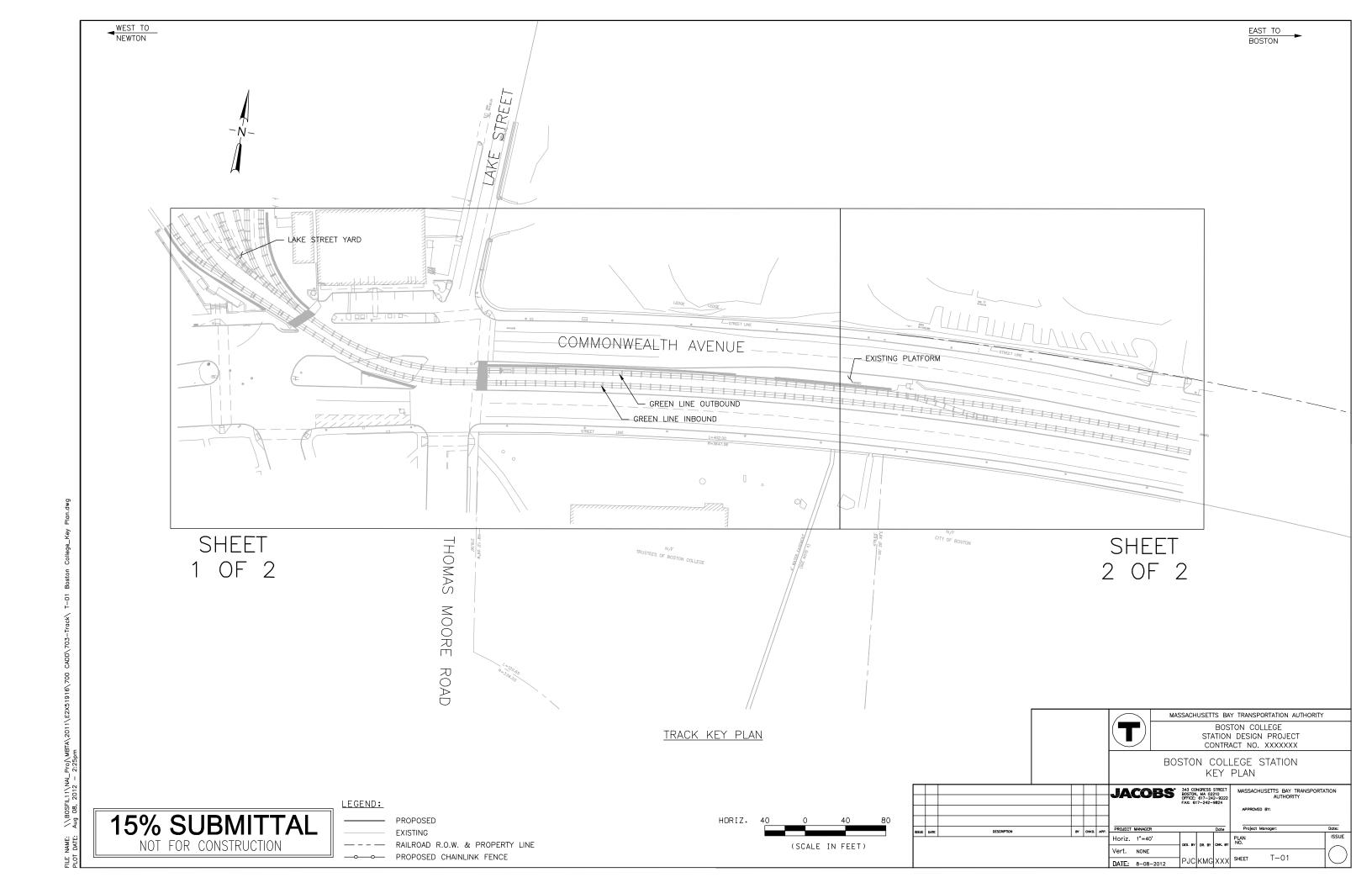
RELOCATED DRY-LAID STONE WALL CROSS-SECTION

N.T.S



15% SUBMITTAL

NOT FOR CONSTRUCTION



ſ	CURVE	PT.	STATION	BFARING	COORDIN	NATES	DATA/REMARKS
	NO.	FI.	STATION	BEARING	NORTHING	EASTING	- DATA/ REMARKS
닐		POL	100+00.000	S 67'05'05.5483" E	2949148.5321	746211.0353	
TANGENT							
Ž							
1 1		TS	100+94.858		2949111.5976	746298.4072	Δ_{S} = 03'13'45.8345" L _S = 31.00'
SPIRAL		PIS			2949103.5493	746317.4460	X= 30.990' Y= 0.582' O= 0.146' Xo= 15.498'
S		SC	101+25.858		2949100.0674	746327.1784	L.T.= 20.670' S.T.= 10.336'
ш			101+25.858				Δ_{c} = 25°09'47.8677" Lc= 120.775' V= XXMPH Ea= XX"
CURVE	(C-1)	PI			2949358.9949	746419.8151	Dc = XXX $Tc = 61.377'$ CC: NXX $Ee = XX''$
디디			102+46.633				R = 275.00' Ec= 6.766' EXX Eu= XX"
		CS	102+46.633		2949085.2506	746446.0655	Δ_{S} = 03'13'45.8345" Ls= 31.000'
SPIRAL		PIS			2949086.2373	746456.3548	X= 30.990' Y= 0.582' O= 0.146' Xo= 15.498'
S.		ST	102+77.633		2949089.3663	746476.7867	L.T.= 20.670' S.T.= 10.336'
TANGENT							
팋				N 81°17'34.9149" E			
Ι¥							
1 1		TS	106+02.025		2949138.4731	746797.4399	Δ_{S} = 01°14′20.3744″ L_{S} = 31.000′
SPIRAL		PIS			2949141.6017	746817.8689	X= 30.999' Y= .0223' O= 0.056 Xo= 15.61'
ß		SC	106+33.025		2949142.9448	746828.1150	L.T.= 20.667' S.T.= 10.334'
ų			106+33.025				\triangle_{C} = 07*09'25.5268" Lc= 89.536' V= XXMPH Ea= XX"
CURVE	(C-2)	PI			2948432.2454	746921.2763	Dc = XX Tc = 44.826' CC: NXX Ee = XX''
Ö			107+22.561				R= 716.779' Ec= 1.400' EXX Eu= XX"
		CS	107+22.561		2949149.0142	746917.3871	$\Delta_{S}=01^{\circ}14'20.3744''$ $L_{S}=31.000'$
18		PIS			2949149.0703	746927.7207	X= 30.999' Y= 0.223' O= 0.056' Xo= 15.500'
TANGENT SPIRAL		ST	107+53.561		2949148.7355	746948.3852	L.T.= 20.667' S.T.= 10.334'
Ι							
뗂							
M		POE	109+65.000	S 89°04'18.8095" E	2949145.3107	747159.7967	

PROPOSED OUTBOUND BASELINE

	CURVE	PT.	STATION	BEARING	COORDII	NATES	DATA/REMARKS
	NO.	' '.	SIATION	BLAKING	NORTHING	EASTING	DAIN ILIMAKKS
E		POL	10+00.00	S 67'42'31.4873" E	2949177.7048	746191.6868	
TANGENT							
₹							
		TS	10+87.171		2949137.7359	746269.1542	Δ_{S} = 03'21'04.5453" L_{S} = 31.000'
SPIRAL		PIS			2949128.2583	746287.5237	X= 30.989' Y= 0.604' O= 0.151' Xo= 15.498'
S		SC	11+18.171		2949124.0638	746296.9711	L.T.= 20.670' S.T.= 10.337'
ш			11+18.171				\triangle_{c} = 29°17'44.5073" Lc= 135.496' V= XXMPH Ea= XX"
CURVE	(c-3)	PI			2949366.2661	746404.5027	Dc= XXX Tc= 69.264' CC: NXX Ee= XX"
디디			12+53.667				R= 265.000' Ec= 8.902' EXX Eu= XX"
		CS	12+53.667		2949102.4230	746429.2374	Δ_{S} = 03'21'04.5453" L_{S} = 31.000'
SPIRAL		PIS			2949103.3878	746439.5290	X= 30.989' Y= 0.604' O= 0.151' X ₀ = 15.498'
S		ST	12+84.667		2949106.5169	746459.9612	L.T.= 20.670' S.T.= 10.337'
Þ							
TANGENT				N 81°17'34.9149" E			
₹							
		TS	15+91.986		2949153.0392	746763.7386	Δ_{S} = 01'32'52.9200" L_{S} = 31.000'
SPIRAL		PIS			2949156.1679	746784.1679	X= 30.998' Y= 0.279' O= 0.070' Xo= 15.500'
S		SC	16+22.986		2949157.4557	746794.4214	L.T.= 20.667' S.T.= 10.334'
Ψ.			16+22.986				\triangle_{C} = 06°32'20.4357" Lc= 65.473' V= XXMPH Ea= XX"
CURVE	(C-4)	PI			2948588.2423	746865.9153	Dc= XX Tc= 32.772' CC: NXX Ee= XX"
ੋ			16.88.459				R= 573.686' Ec= 0.935' EXX Eu= XX"
		CS	16+88.459		2949161.8945	746859.7083	Δ_{S} = 01°32′52.9200″ L_{S} = 31.000′
SPIRAL		PIS			2949162.0063	746870.0418	X= 30.998' Y= 0.279' O= 0.070' Xo= 15.500'
		ST	17+19.459		2949161.6715	746890.7065	L.T.= 20.667' S.T.= 10.334'
ΙŻ							
TANGENT							
Ι¥		POE	19+75.000	S 89'07'18.8095" E	2949157.5323	747146.2141	

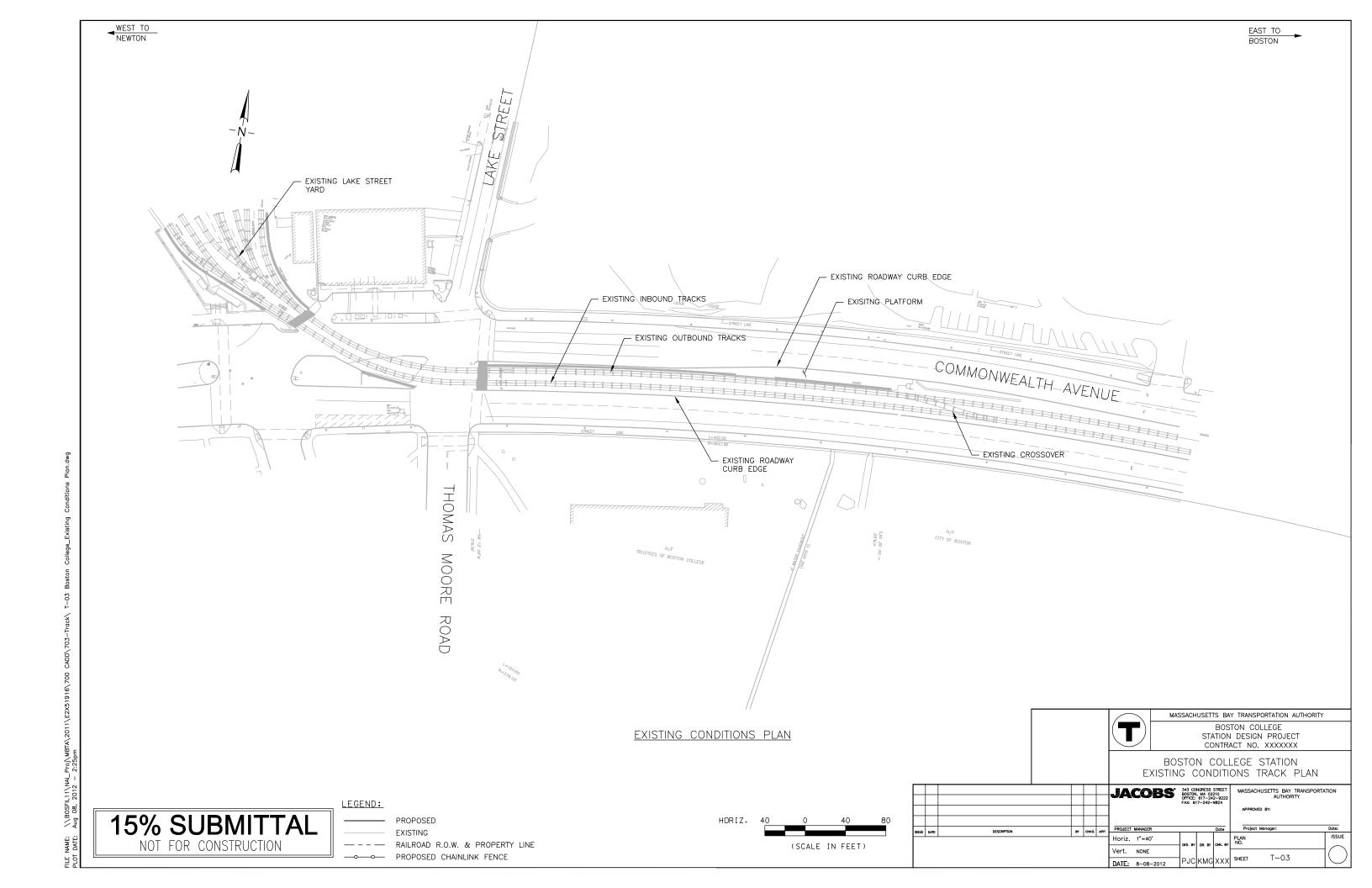
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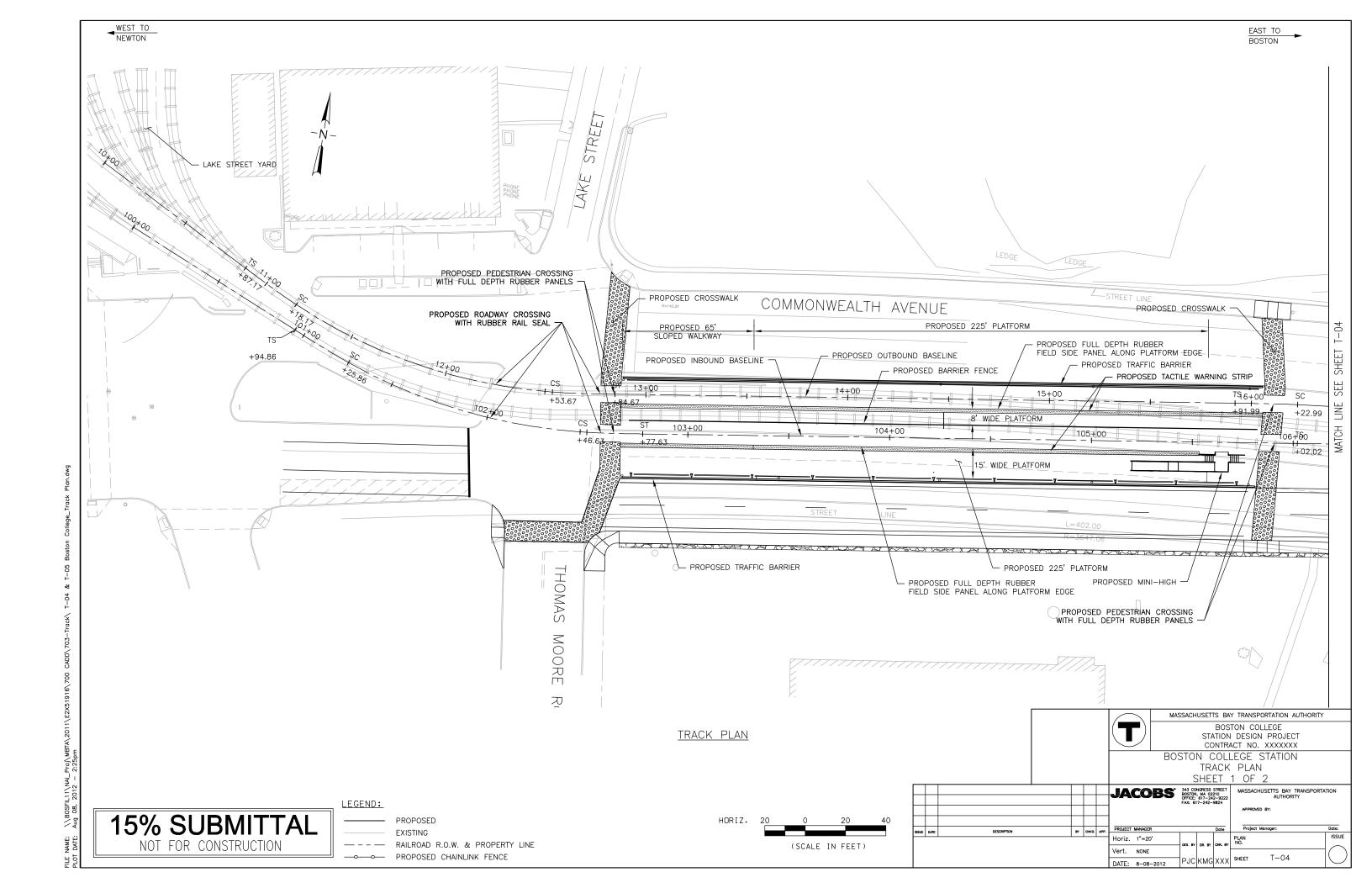
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

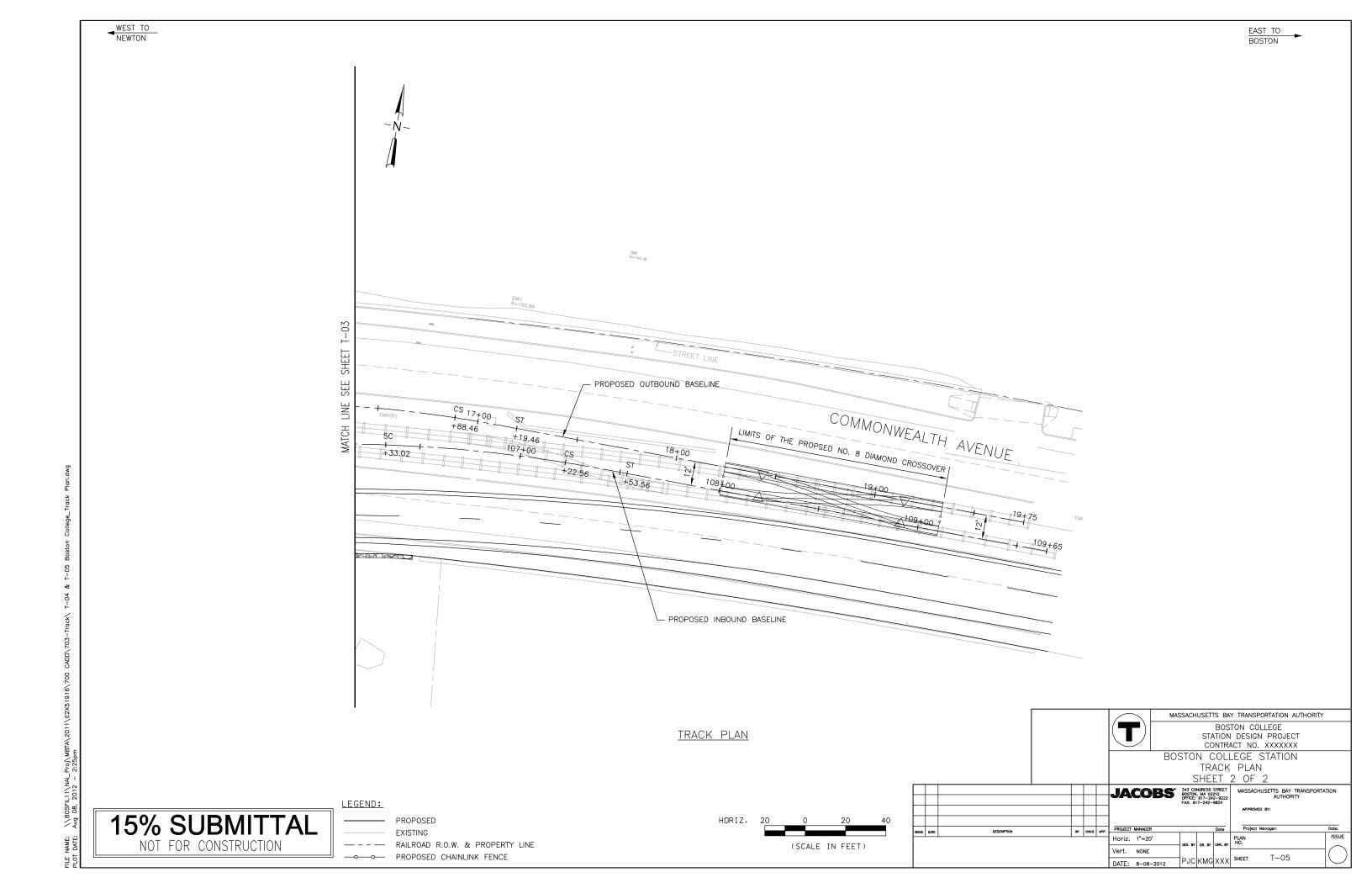
BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXX

BOSTON COLLEGE STATION
ALIGNMENT AND CURVE DATA TABLE

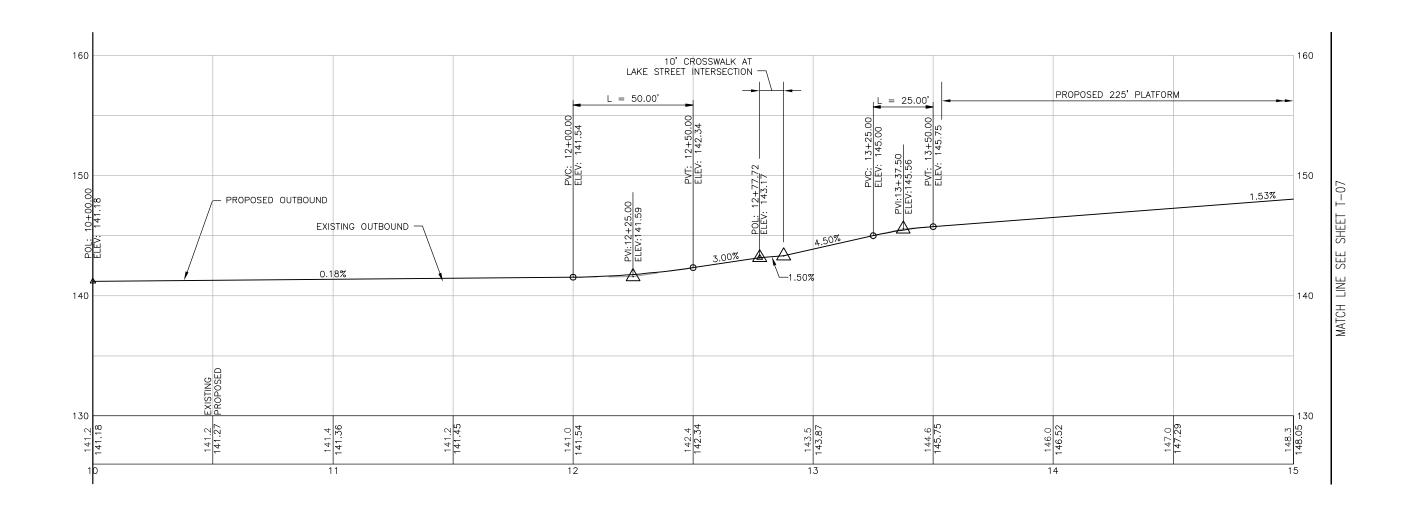
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							1700 017	2-12 5		APPROVED BY:	
										Bullet Manager	D-1
SSUE	DATE	DESCRIPTION	BY	CHKD.	APP.	PROJECT MANAGER			Date	Project Manager:	Date:
						Horiz. NONE	DES. BY	DR. BY	снк. ву	PLAN NO.	ISSUE
						Vert. NONE				T 02	1
						DATE: 8-08-2012	PJC	KMG :	XXX	SHEET T-02	

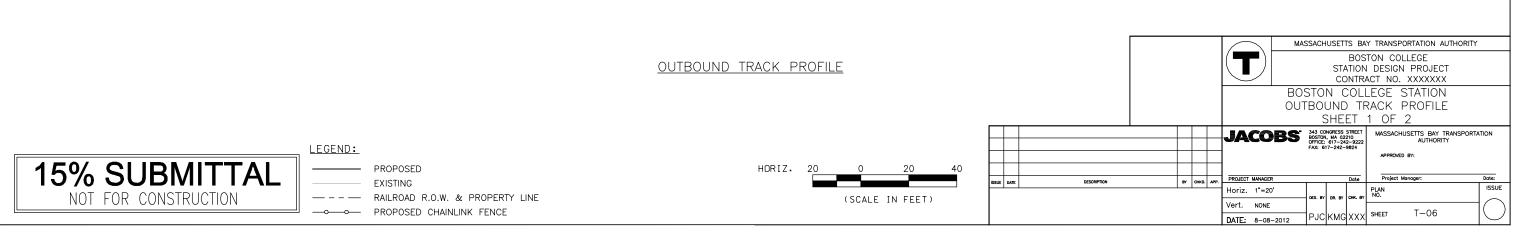






WEST TO BOSTON BOSTON

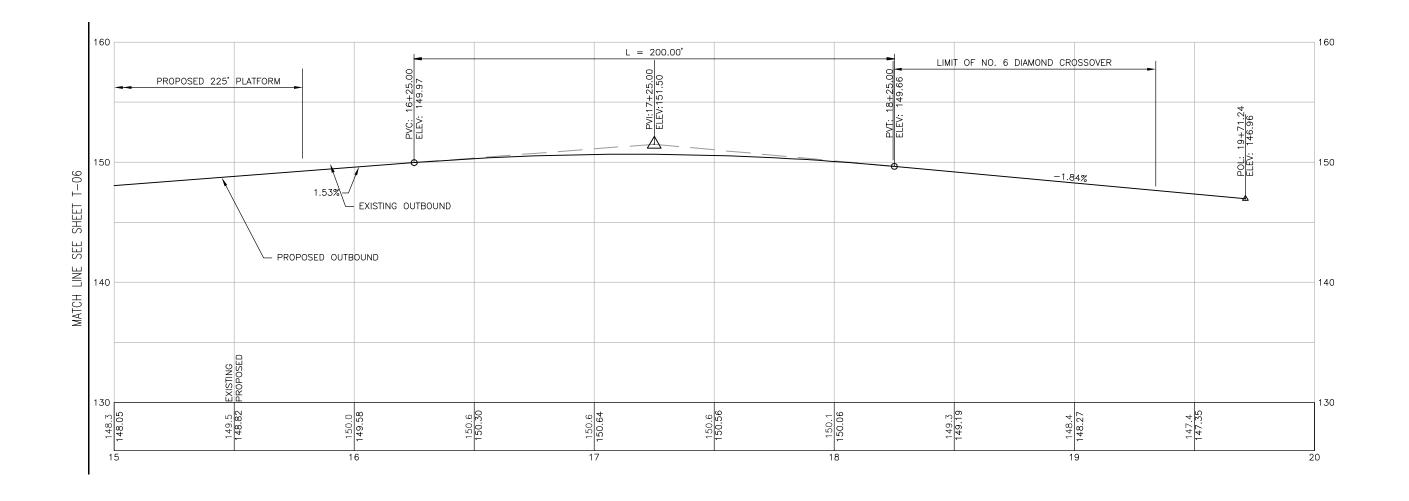


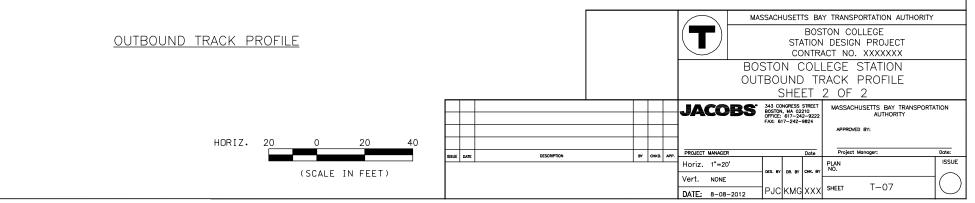


PLOT DATE: Aug 08, 2012 - 2:25pm

WEST TO NEWTON







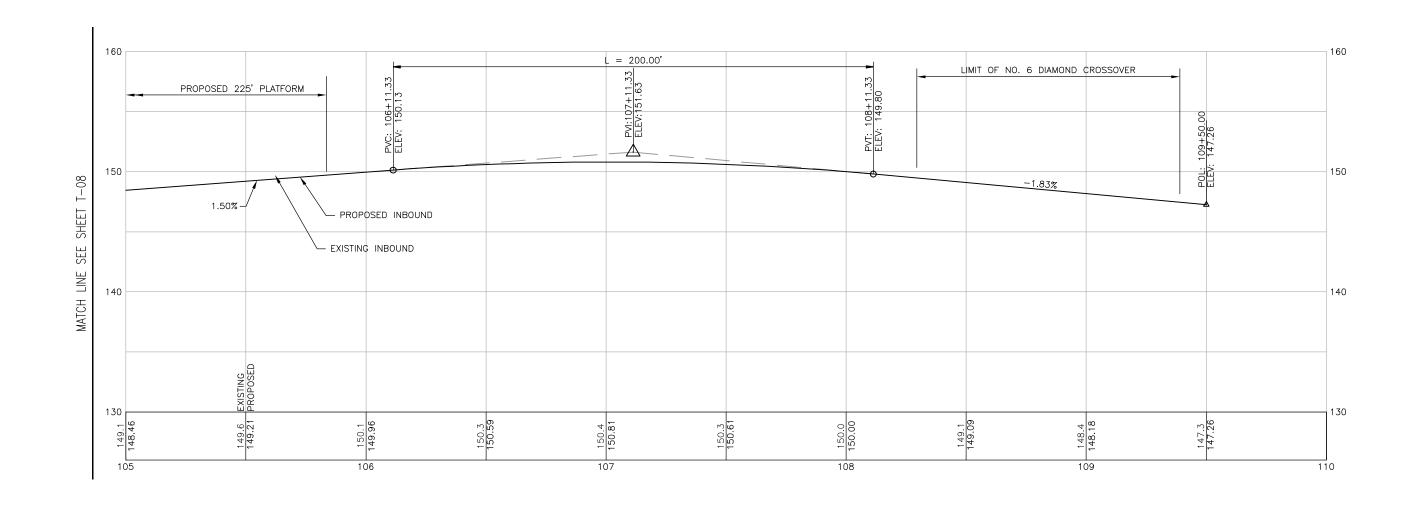
15% SUBMITTAL NOT FOR CONSTRUCTION

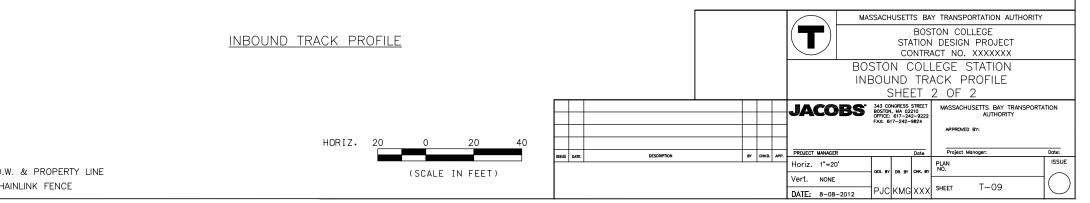
LEGEND: ------ PROPOSED ----EXISTING

WEST TO NEWTON EAST TO BOSTON 160 160 10' CROSSWALK AT LAKE STREET INTERSECTION PROPOSED 225' PLATFORM L = 25.00'L = 50.00PVT: 103+28.93 ELEV: 145.90 PVC: 103+03.93 ELEV: 145.21 PVC: 101+65.97 ELEV: 141.60 PVI:103+16.43 ELEV:145.71 100+00.00 00 141.60 POL: 102+56.6 ELEV: 143.57 150 SHEET 1.50%— SEE - PROPOSED INBOUND 0.00% MATCH LINE 140 EXISTING INBOUND 130 141.7 141.5 141.1 149.1 144.2 147.0 145.6 148.4 103 MASSACHUSETTS BAY TRANSPORTATION AUTHORITY BOSTON COLLEGE STATION DESIGN PROJECT CONTRACT NO. XXXXXXX INBOUND TRACK PROFILE BOSTON COLLEGE STATION INBOUND TRACK PROFILE SHEET 1 OF 2 JACOBS 343 CONGRESS STREET BOSTON, MA 02210 OFFICE: 617–242–9222 FAX: 617–242–9824 MASSACHUSETTS BAY TRANSPORTATION AUTHORITY LEGEND: 15% SUBMITTAL --- PROPOSED HORIZ. 20 ----EXISTING ISSUE Horiz. 1"=20' NOT FOR CONSTRUCTION (SCALE IN FEET) Vert. NONE PJC KMG XXX SHEET DATE: 8-08-2012

WEST TO NEWTON





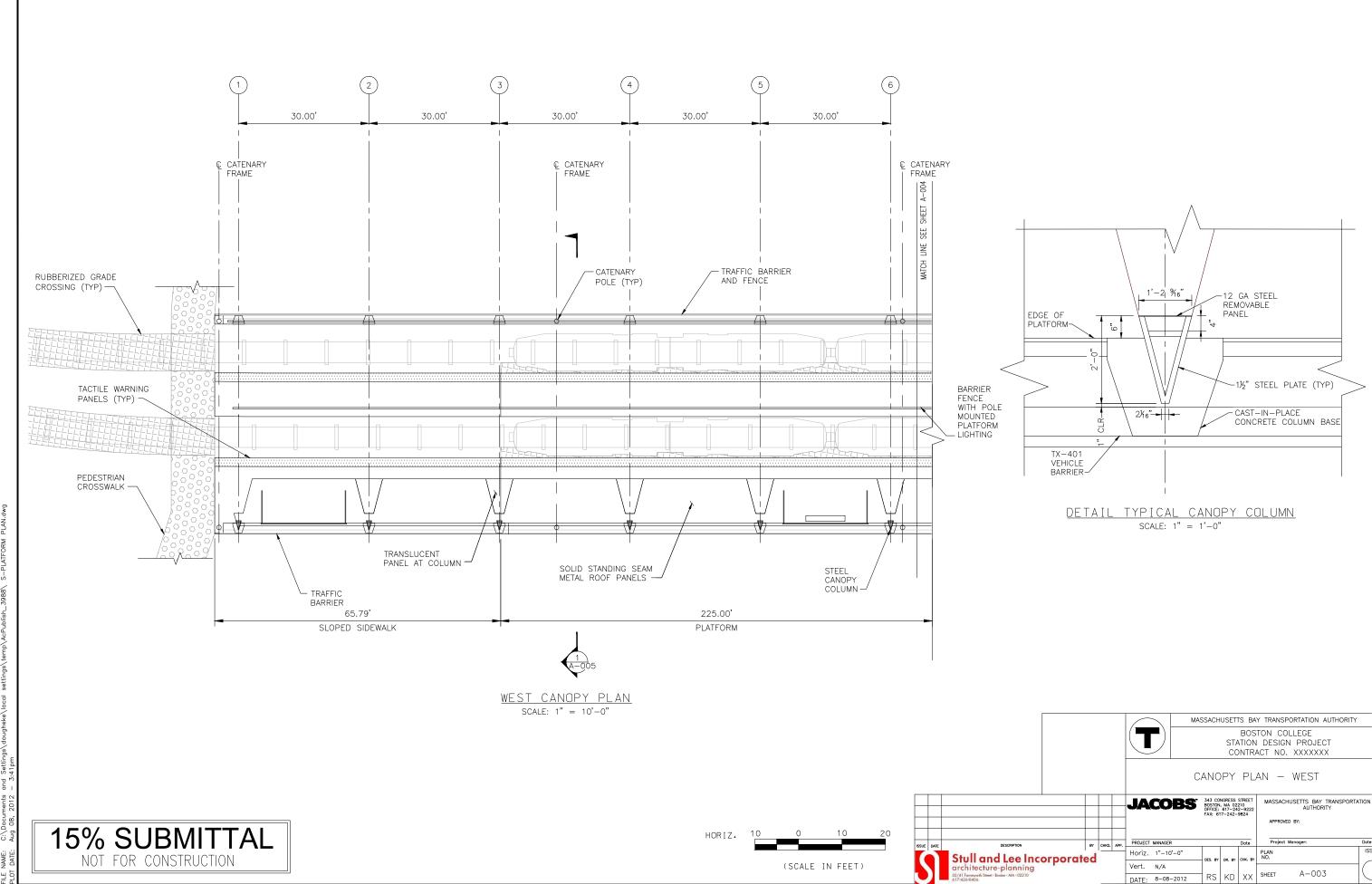


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LEGEND: ------ PROPOSED ----EXISTING

15% SUBMITTAL NOT FOR CONSTRUCTION

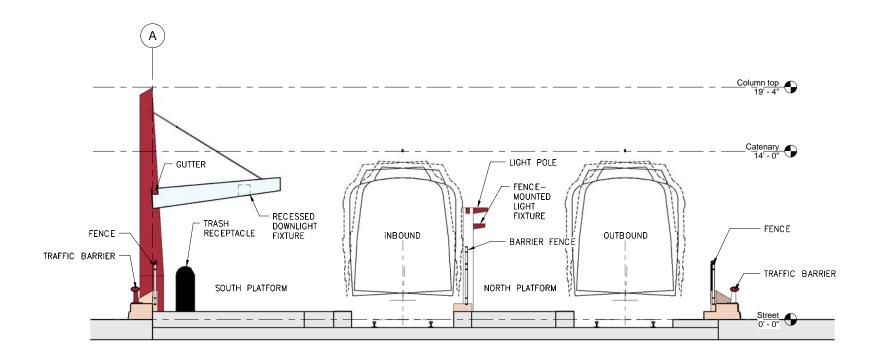
DATE: 8-08-2012



DATE: 8-08-2012

15% SUBMITTAL NOT FOR CONSTRUCTION

RS KD XX SHEET DATE: 8-08-2012



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

Cross Section - Typical

JACOBS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON AVERAGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

Cross Section - Typical

MASSACHUSETTS BAY TRANSPORTATION
AUTHORITY

APPROVED BY:

PROJECT MANAGER

Horiz. 1/4" = 1"-0"

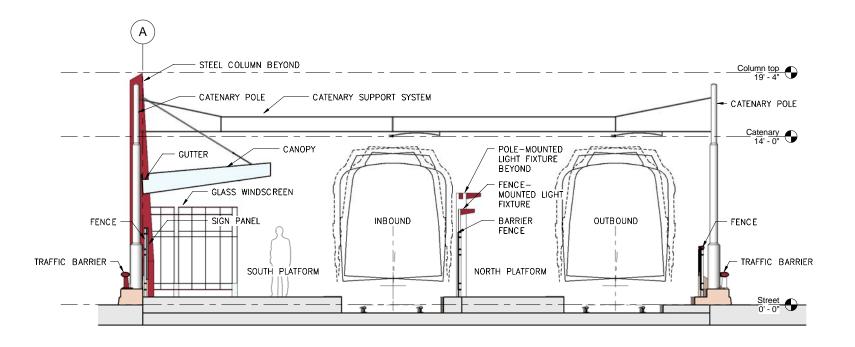
Vert. 1/4" = 1"-0"

Vert. 1/4" = 1"-0"

DATE: 08.08.2012

DATE: 08.08.2012

DATE: 08.08.2012



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

Cross Section - Windscreen

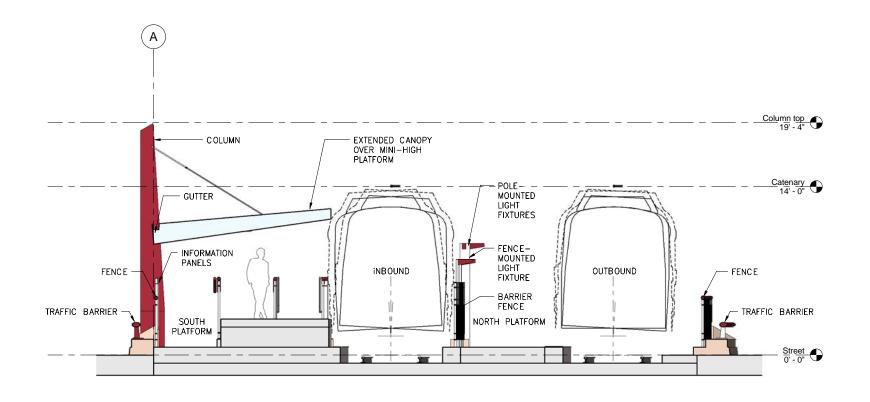
JACOBS

33.00NGRESS STREET
OFFICE: 617-242-9822
PAX: 617-242-9824

MASSACHUSETTS BAY TRANSPORTATION
AUTHORITY
APPROVED BY:

PROJECT MANAGER
Horiz. 1/4" = 1"-0"
Date: 08.08.2012

MASSACHUSETTS BAY TRANSPORTATION
AUTHORITY
APPROVED BY:
Date: Date:



MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

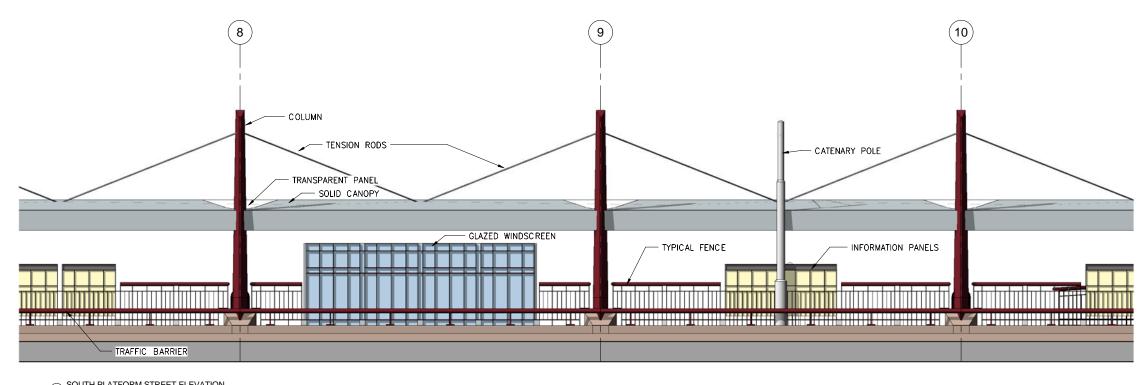
BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

Cross section - Mini High

JACOBS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON, MA, 10210
PROJECT MANAGER
PROJ



TENSION SUPPORT RODS

TENSION SUPPORT RODS

CATENARY POLE

TRANSLUCENT PANEL

SOUID CANOPY

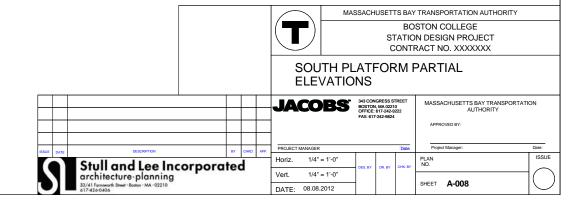
RECESSED DOWNLIGHTS

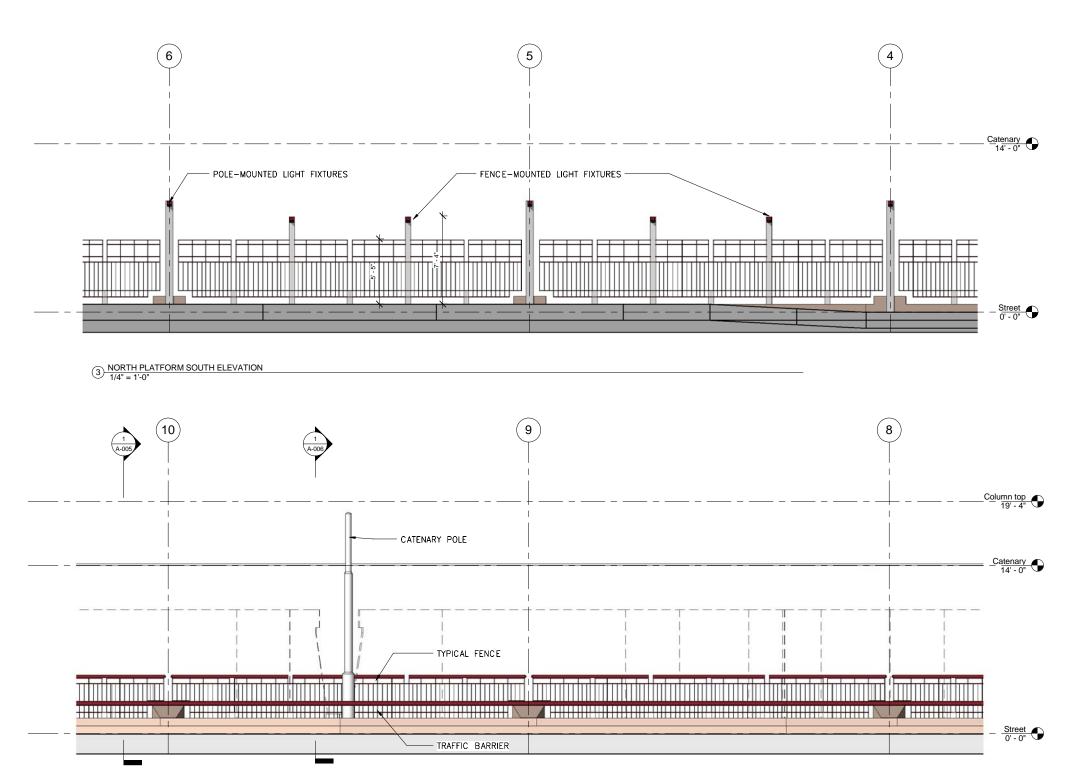
GLASS WINDSCREEN

TRASH RECEPTACLE

BENCH SEATING

2 SOUTH PLATFORM INSIDE ELEVATION 1/4" = 1'-0"





2 NORTH ELEVATION FROM COMM. AVE

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

NORTH PLATFORM PARTIAL
ELEVATIONS

JACOBS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

NORTH PLATFORM PARTIAL
ELEVATIONS

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
APPROVED BY:

PROJECT MANAGER

Date

PROJECT MANAGER

PROJECT MANAGER

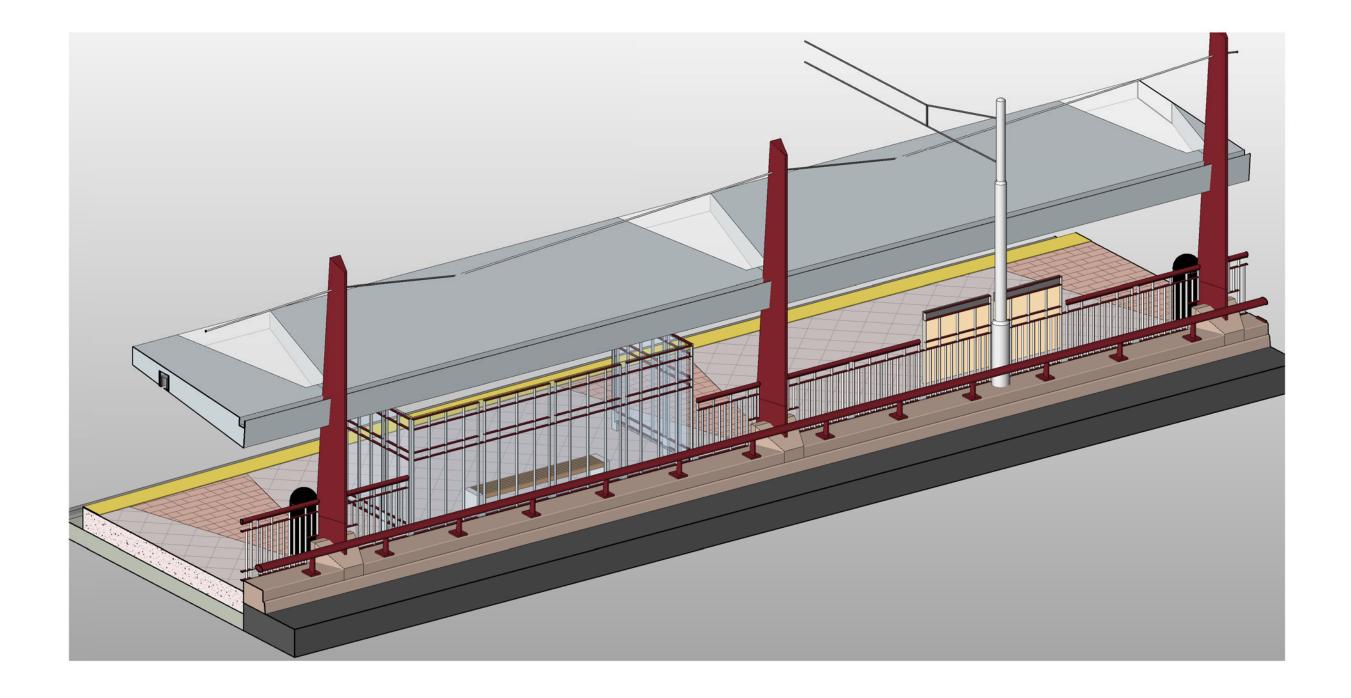
PROJECT MANAGER

NO.

SHEET A-009

SHEET A-009

15% SUBMITTAL

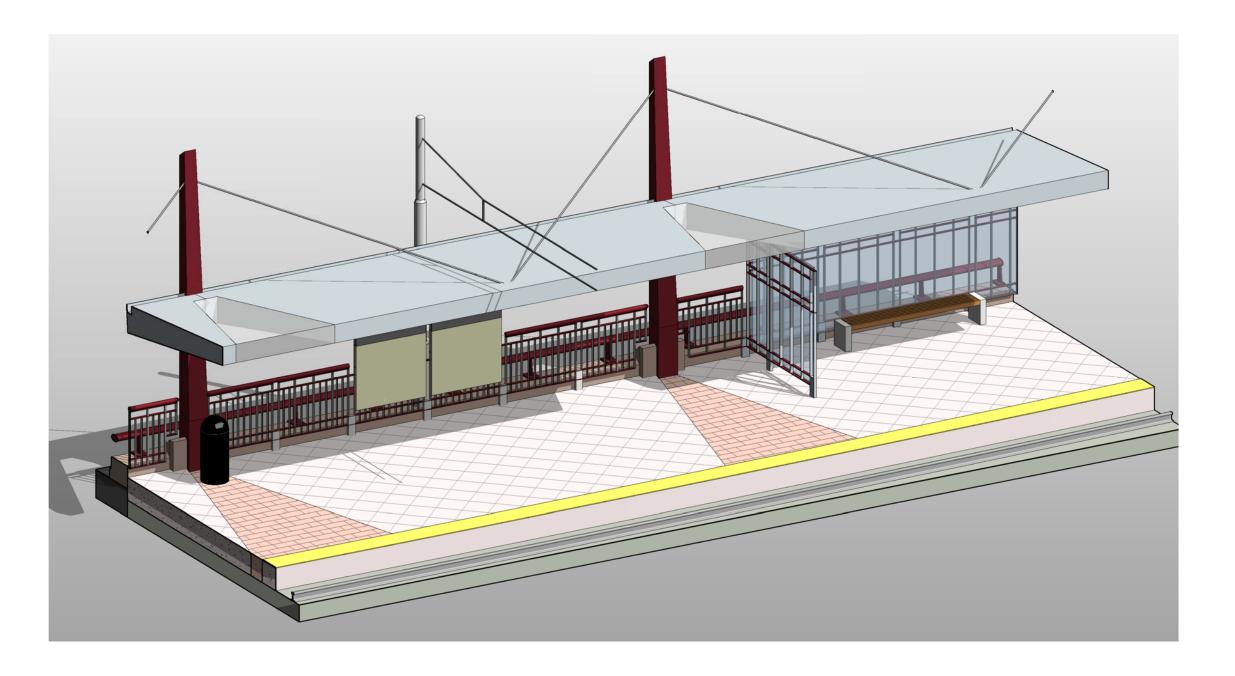


MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE STATION DESIGN PROJECT CONTRACT NO. XXXXXXX

SOUTH PLATFORM DETAIL ISOMETRIC - STREET

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-					JACOBS [*]	BOSTON OFFICE:	, MA 0221 617-242-9	0 222	MASSACHUSETTS BAY TRANSPORTAT AUTHORITY	ION
									APPROVED BY:	
ATE	DESCRIPTION	BY	CHKD.	APP.	PROJECT MANAGER			Date	Project Manager:	Date:
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П	architecture-planning				Vert.				SHEET A D1D	()
L	33/41 Farnsworth Street - Boston - MA - 02210 617-426-0406				DATE: 08.08.2012				SHEET A-UTU	
	TE .	Stull and Lee Incorpora architecture-planning 37/41 Farmeroth Street - Booken - MA - 02210	Stull and Lee Incorporated architecture planning 33/41 Formouth Steel* Bodon - MA - 02210	Stull and Lee Incorporated architecture-planning 33/41 Fammorth Street - Bodge - MA - 02210	Stull and Lee Incorporated architecture-planning 37/41 Farmworth Sheet - Bodion - MA - 00210	Stull and Lee Incorporated architecture-planning 3/4/4 Engraped State St	Stull and Lee Incorporated architecture-planning 32/4/ Insures the without the Acception of	Stull and Lee Incorporated architecture-planning 3/1/4/Exempt Services (197-20) 3/1/4/Exempt	Stull and Lee Incorporated architecture-planning 32/4/ Enroy More 1920 1920 1920 1920 1920 1920 1920 1920	Stull and Lee Incorporated architecture-planning 32/4/1 Events 18 - 2010 1970 1970 1970 1970 1970 1970 1970 1

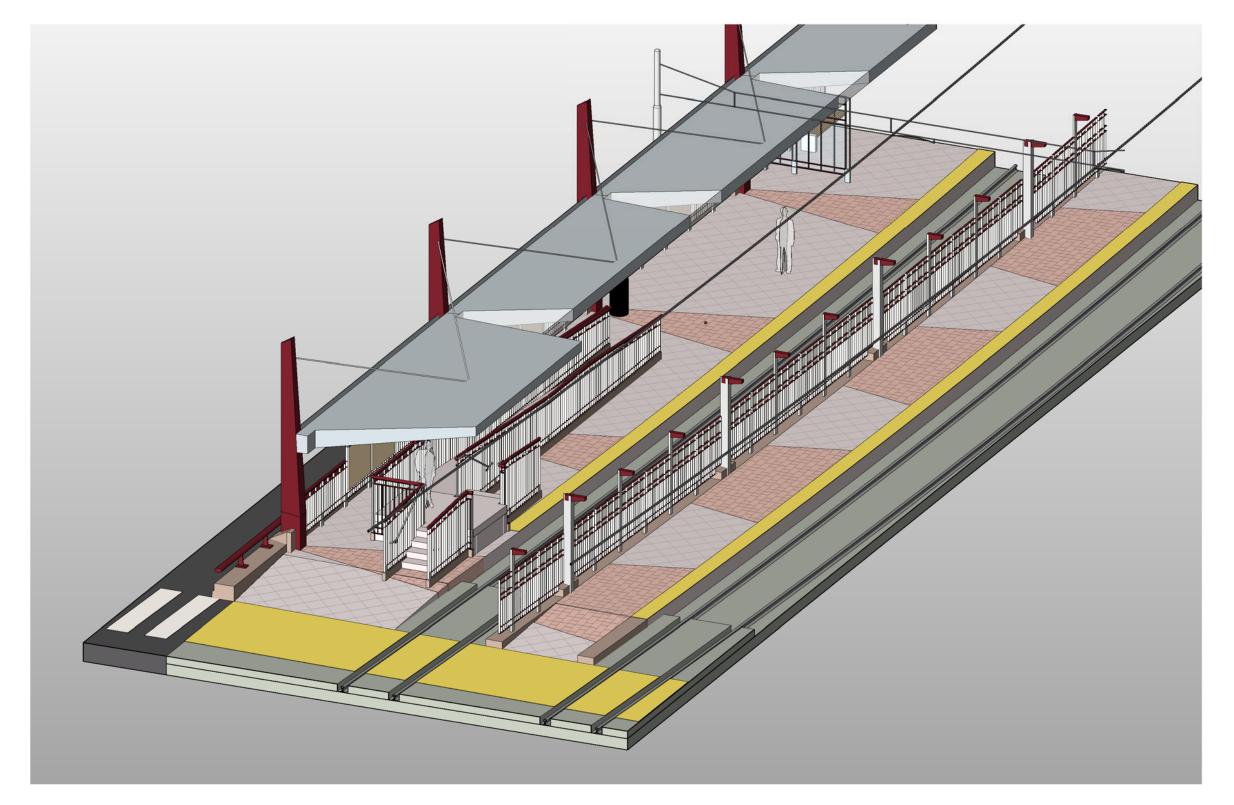


MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE STATION DESIGN PROJECT CONTRACT NO. XXXXXXX

SOUTH PLATFORM DETAIL ISOMETRIC - INSIDE

						- INSIDE					
						JACOBS	BOSTON	GRESS S I, MA 0221 617-242-9	0	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	
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										APPROVED BY:	
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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE STATION DESIGN PROJECT CONTRACT NO. XXXXXXX

ISOMETRIC DETAIL - MINI HIGH AND NORTH PLATFORM

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						JACOBS	BOSTON	GRESS ST	0	MASSACHUSETTS BAY TRANSPORTA	TION
								617-242-9 -242-9824		AUTHORITI	
										APPROVED BY:	
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Ų,		Styll and Lee Incorpor	are			Vert.	DES. BY	DR. BY	CHK BY	NO.	\perp
•	٦I	architecture planning 33/41 Farnsworth Street - Boston - MA - 02210				veit.				SHEET A-012	-1(-)
	יי	617-426-0406				DATE: 08.08.2012				GALLE A-012	

15% SUBMITTAL

- ET-01 DRAWING INDEX AND GENERAL NOTES
- ET-02 LEGEND AND ABBREVIATIONS
- ET-03 EXISTING PLAN AND MATERIAL ALLOCATION
- ET-04 PROPOSED PLAN AND MATERIAL ALLOCATION
- ET-05 EXISTING WIRING PROFILE (NOT INCLUDED IN 15%)
- ET-06 PROPOSED WIRING PROFILE (NOT INCLUDED IN 15%)
- ET-07 TROLLEY WIRE SCHEMATIC
- ET-08 TROLLEY WIRE PARTICULARS
- ET-09 TROLLEY WIRE ERECTION GRAPH
- ET-10 FEEDER WIRE PARTICULARS
- ET-11 SECTIONALIZATION PLAN (NOT INCLUDED IN 15%)
- ET-12 TYPICAL STRUCTURE CONFIGURATION
- ET-13 CANTILEVER ASSEMBLIES
- ET-14 CROSS SPAN ASSEMBLIES (NOT INCLUDED IN 15%)

- 1. THE CONTRACTOR SHALL SET BARRIERS, WARNING LIGHTS, AND OTHER PROTECTIVE DEVICES THAT ARE NECESSARY, IN THE JUDGEMENT OF THE ENGINEER, FOR THE PROTECTION OF THE PUBLIC IN ACCORDANCE WITH MBTA STANDARDS.
- 2. EXISTING UTILITY LINES INDICATED OR NOTED ON THESE DRAWINGS ARE SHOWN AS OBTAINED FROM EXISTING INFORMATION AND ARE ONLY APPROXIMATE IN LOCATION. EXISTING UTILITIES OTHER THAN THOSE INDICATED ON THESE DRAWINGS MAY BE ON THE SITE. THE CONTRACTOR IS WARNED TO PROCEED WITH CAUTION WITH ALL WORK, ESPECIALLY EXCAVATION WORK. THE CONTRACTOR IS TO MAKE ALL POSSIBLE INVESTIGATIONS AS TO POSSIBLE UNMARKED UTILITY LINES, BEFORE DESIGNING EXCAVATION, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORATION, OR REPAIRING. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN. CONTRACTOR SHALL NOTIFY DIG-SAFE AT LEAST 72 BUSINESS HOURS BEFORE ANY CONSTRUCTION BEGINS AT 1-888-344-7233.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LEASING OR OTHERWISE OBTAINING TEMPORARY RIGHTS TO LANDS NECESSARY FOR AREAS OF CONSTRUCTION STAGING AND/OR STORING CONSTRUCTION MATERIALS AND EQUIPMENT.
- 4. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE APPOPRIATE AGENCIES OF THE CITY OF BOSTON AND SHALL AVOID CONSTRUCTION RELATED IMPACTS TO THE ADJACENT AND ADJOINING AREAS.
- 5. CONTRACTOR WILL NOT BE ALLOWED TO WORK WITHING THE "FOUL" AREA OF THE RAILROAD (10 FEET FROM THE CENTERLINE OF TRACK) WITHOUT FIRST OBTAINING ROADWAY WORKER PROTECTION (RWP) SAFETY TRAINING, FOR ALL PERSONS PLANNING ON WORKING WITHIN THE MBTA RIGHT OF WAY. CONTRACTOR SHALL COORDINATE FLAGGING PROTECTION FROM THE OPERATING RAILROAD. THE CONTRACTOR SHALL ALSO COORDINATE AND COMPLY WITH MBTA RAILROAD OPERATIONS, WORK REQUIREMENTS, AND RESTRICTIONS.
- 6. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL UTILITY COMPANIES FOR RELOCATION OF THEIR FACILITIES AS REQUIRED FOR THE
- ADDITIONAL NOTES WILL BE INDICATED ON THE VARIOUS CIVIL, ARCHITECTURAL, STRUCTURAL, ELECTRICAL, TRACK AND STATION COMMUNICATIONS PLANS INCLUDED IN SUBSEQUENT STATION CONTRACT DRAWING SUBMITTALS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY STATE AND LOCAL PERMITS (INCLUDING INSPECTIONS AND SIGN-OFFS FROM APPLICABLE CITY DEPARTMENTS) FOR THE CONSTRUCTION OF BOSTON COLLEGE STATION.
- THE CONTRACTOR SHALL USE REASONABLE AND ACCEPTABLE INDUSTRY PRACTICES AND CONSTRUCTION PROCEDURES, AND FOLLOW RECOMMENDED MANUFACTURER PROCEDURES DURING THE CATENARY INSTALLATION.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS NECESSARY FOR CONSTRUCTION PRIOR TO COMMENCING FABRICATION AND INSTALLATION.
- BEFORE COMMENCEMENT OF WORK THE CONTRACTOR SHALL ESTABLISH THE EXACT SEQUENCE AND PROCEDURES TO BE UTILIZED BASED ON MANPOWER, EQUIPMENT MATERIAL AND TRACK AVAILABILITY AND SUBMIT A PLAN OF CONSTRUCTION.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY BOSTON COLLEGE

STATION DESIGN PROJECT CONTRACT NO. XXXXXXX

OVERHEAD CATENARY SYSTEM DRAWING INDEX AND GENERAL NOTES

					JACOBS	BOSTON OFFICE:		210 2-9222	MASSACHUSETTS BAY TRANSF AUTHORITY	ORTATION
						FAX: 6	7-242-	9824	APPROVED BY:	
					PROJECT MANAGER			Date	Project Manager:	Date:
DATE	DESCRIPTION	BY	CHKD.	APP.	Horiz. NONE	DES. BY	00.00	снк. ву	PLAN NO.	ISSUE
					Vert. NONE				SHEET ET-01	$\neg \cap$
					DATE: 8-08-2012	WK	WK	TF	SHEET LI-UT	

DRAFT NOT FOR CONSTRUCTION LEGEND

ABBREVIATIONS

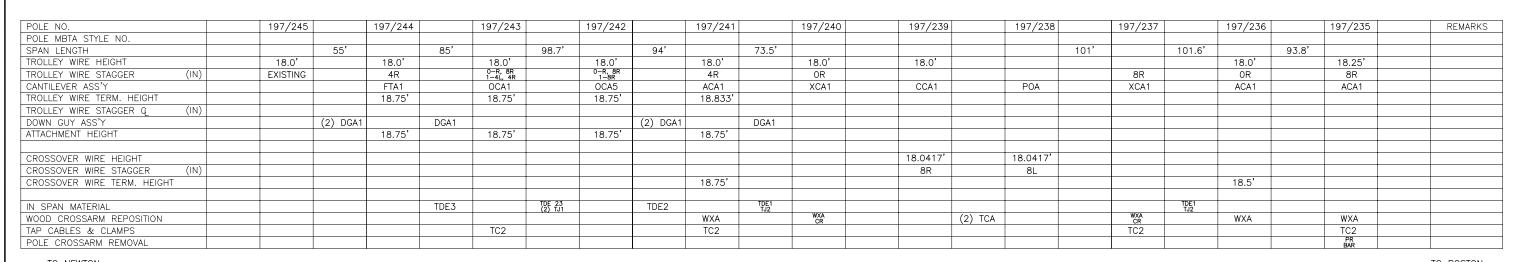
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NOT FOR CONSTRUCTION

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BOSTON COLLEGE
STATION DESIGN PROJECT
CONTRACT NO. XXXXXXXX

OVERHEAD CATENARY SYSTEM LEGEND AND ABBREVIATIONS

						JACOBS.		NGRESS I, MA 02 617-24	STREET 210 2-9222	MASSACHUSETTS BAY TRANSPORT AUTHORITY	ATION
_								17-242-			
										APPROVED BY:	
E	DATE	DESCRIPTION	BY	CHKD.	APP.	PROJECT MANAGER			Date	Project Manager:	Date:
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						Vert. NONE	DES. BY	DR. BY	CHK. BY	NO.	
						vert. NONE				SHEET ET-02	()
						DATE: 8-08-2012	WK	WK	TF	31221	
_											



TO BOSTON _TO NEWTON 1000 MCM -DISCONNECT SWITCH FEEDER WIRE MID SPAN TO BE RELOCATED ORDINATE 101 101.6 93.8 EXISTING DEADEND -OUTBOUND 73.5 NO. 2/0 OB TROLLEY WIRE TRACK **TENSIONING** EXISTING DEADEND -UNIT (TYP) (SPAN FT) 750 MCM FEEDER WIRE EXISTING NO 2/0 TROLLEY WIRE 13/4" ÍNBOUND - 1000 MCM TRACK DISCONNECT SWITCH -4½" EXISTING NO 4/0-FEEDER WIRE TROLLEY WIRE @ -TO REMAIN TROLLEY WIRE TRACK CROSSOVER INSULATOR -(TYP) EXISTING DEADEND -NO. 2/0 IB TROLLEY WIRE

NOTES:

- 1. FOR DRAWING INDEX, SEE SHEET ET-01.
- 2. STAGGER IS SHOWN REFERENCED TO THE CENTERLINE OF PANTOGRAPH. ALL REFERENCE TO L(LEFT) OR R(RIGHT) IS WITH RESPECT TO FACING OUTBOUND (TOWARDS NEWTON).
- 3. ADDITIONAL TROLLEY WIRE STAGGER IS SHOWN (WHERE APPLICABLE) WITH RESPECT TO CENTERLINE OF TRACK. THIS VALUE COMPENSATES FOR THE MID—ORDINATE OF A CURVE OF GIVEN RADIUS AND A CHORD LENGTH OF 21 FEET (PANTOGRAPH PLACEMENT ON A CAR).

DISCONNECT SWITCH

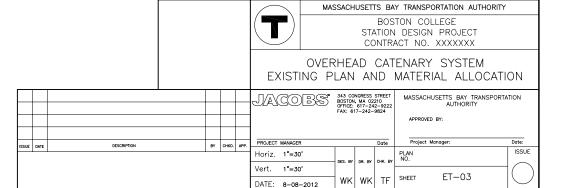
TO BE RELOCATED

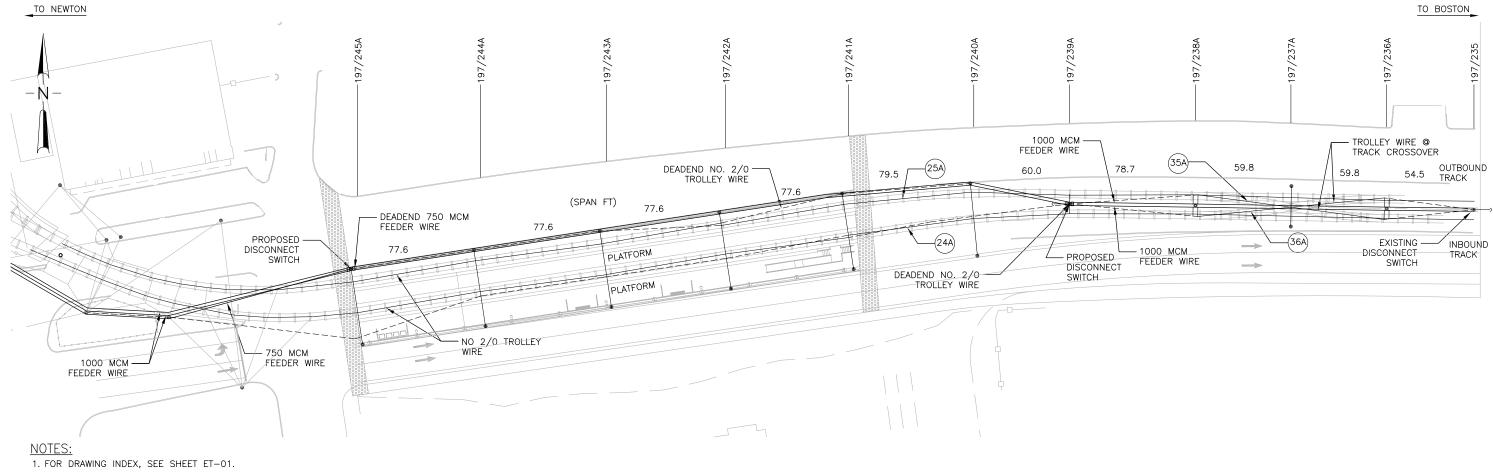
750 MCM

FEEDER WIRE

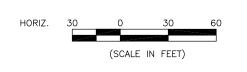


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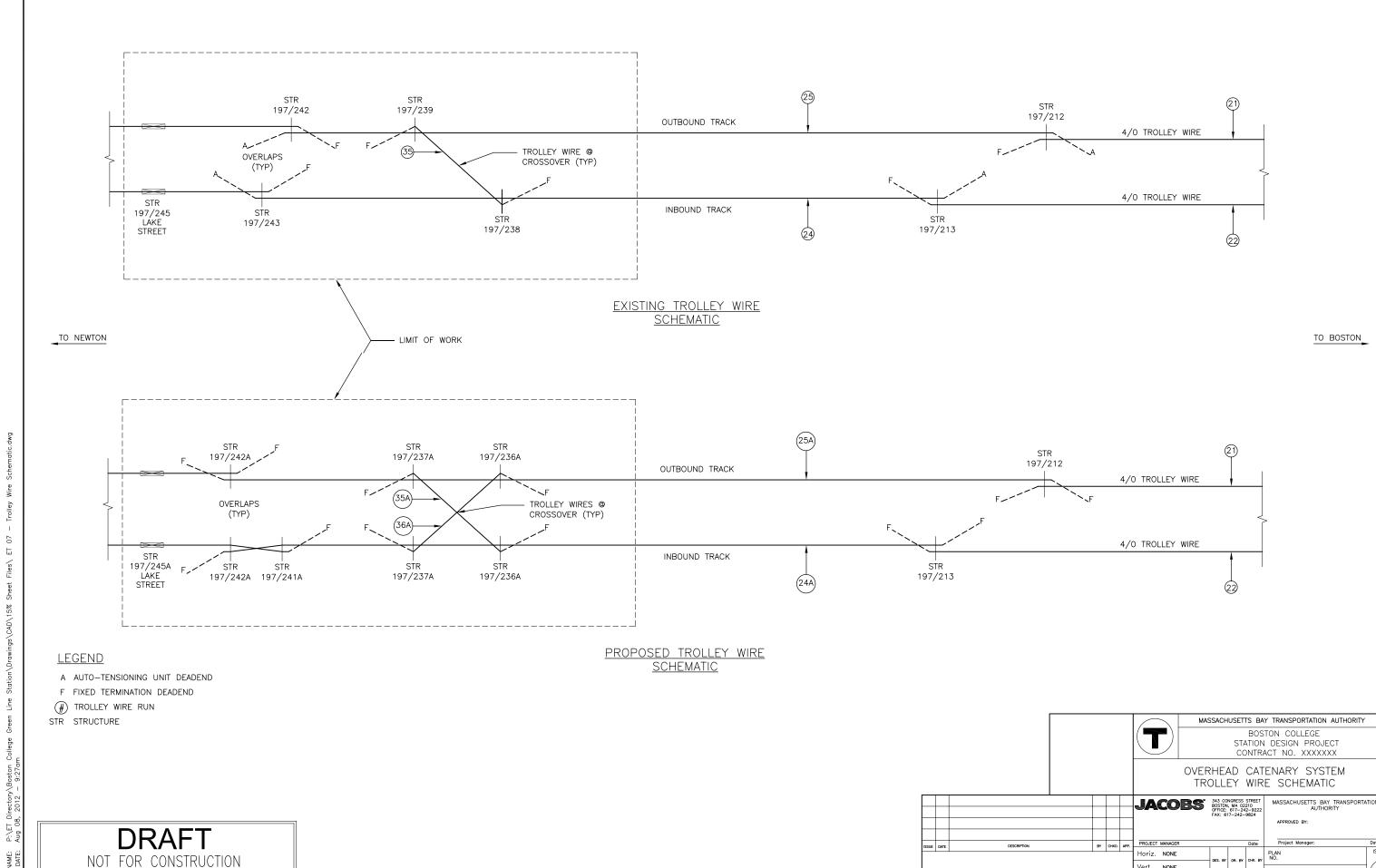


- 2. STAGGER IS SHOWN REFERENCED TO THE CENTERLINE OF PANTOGRAPH. ALL REFERENCE TO L(LEFT) OR R(RIGHT) IS WITH RESPECT TO FACING OUTBOUND (TOWARDS NEWTON).
- 3. DATA IN THE MATERIAL ALLOCATION WITH THE NOTATIONS 'N' OR 'S' REFER TO THE NORTH(N) OR SOUTH(S) POLE OF THE PORTAL STRUCTURES.



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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY BOSTON COLLEGE STATION DESIGN PROJECT CONTRACT NO. XXXXXXX OVERHEAD CATENARY SYSTEM PROPOSED PLAN AND MATERIAL ALLOCATION JACOBS 343 CONGRESS STREET BOSTON, MA 02210 OFFICE: 617-242-9222 FAX: 617-242-9824 MASSACHUSETTS BAY TRANSPORTATION AUTHORITY APPROVED BY: ISSUE Horiz. 1"=30" Vert. 1"=30" ET-04 WK WK TF SHEET



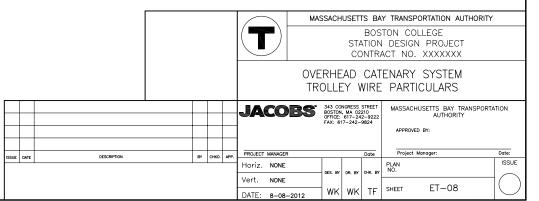
WK WK TF SHEET

TROLLEY WIRE PARTIC	ULARS	
	UNITS	AUXILLARY WIRE
MAKE UP OF CONDUCTOR		4/0 SOLID GROOVED WIRE
SYMBOL		
MATERIAL		COPPER
DIAMETER	IN	0.482
CROSS SECTIONAL AREA	SQ IN	0.1665
WEIGHT OF CONDUCTOR	LB/FT	0.642
RADIAL THICKNESS OF ICE (PART ICE)	IN	0.500
WEIGHT OF ICE (PART ICE)	LB/FT	0.611
WEIGHT OF CONDUCTOR WITH ICE (PART ICE)	LB/FT	1.253
RADIAL THICKNESS OF ICE (FULL ICE)	IN	0.500
WEIGHT OF ICE (FULL ICE)	LB/FT	0.611
WEIGHT OF CONDUCTOR WITH ICE (FULL ICE)	LB/FT	1.253
BREAKING LOAD	LB	10822
MAXIMUM SPAN / EQUIVALENT SPAN	FT	95
TENSIONS AT : 60°F NO WIND, NO ICE	LB	3000
120°F NO WIND, NO ICE	LB	1542
-10°F NO WIND, NO ICE	LB	4566
O'F NO WIND, FULL ICE	LB	4623
0°F 8 PSF WIND, FULL ICE	LB	4643
CONDUCTOR SAGS ON 95 FT SPAN AT:		
60°F NO WIND	FT	0.241
120°F NO WIND	FT	0.470
-10°F NO WIND, NO ICE	FT	0.150
O°F NO WIND, FULL ICE	FT	0.306
MODULUS OF ELASTICITY	PSI	17.00E+06
COEFFICIENT OF EXPANSION	/°F	9.40E-06
MINIMUM FACTOR OF SAFETY		2.33

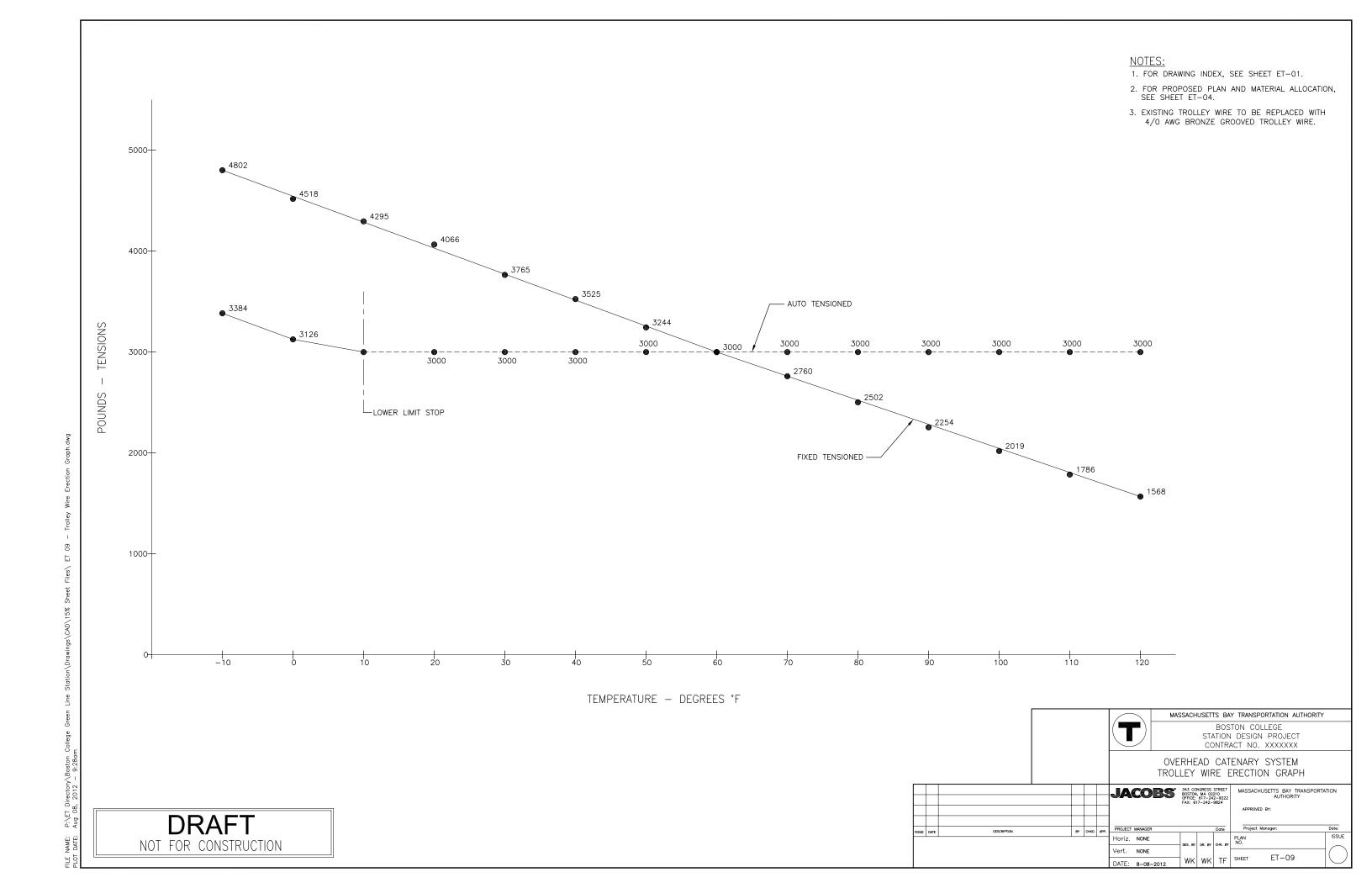
WIRE TENSIONS LBS (NO ICE, NO WIND)										
		,								
TEMPERATURE	TENSION	SAG								
(*F)	(LB)	(FT)								
-20	5093	0.142								
-10	4829	0.150								
0	4566	0.159								
10	4303	0.168								
20	4041	0.179								
30	3779	0.192								
40	3518	0.206								
50	3258	0.222								
60	3000	0.241								
70	2744	0.264								
80	2491	0.291								
90	2242	0.323								
100	1999	0.362								
110	1764	0.411								
120	1542	0.470								

NOTES

- 1. FOR DRAWING INDEX, SEE SHEET ET-01.
- 2. FOR PROPOSED PLAN AND MATERIAL ALLOCATION, SEE SHEET ET-04.



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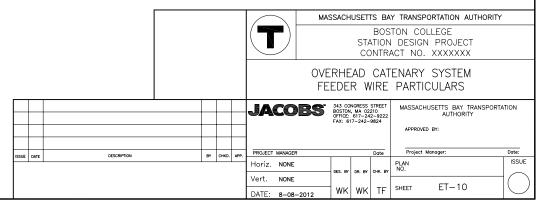


TROLLEY WIRE F	PARTIC	ULARS	
	UNITS	AUXILLARY WIRE	AUXILLARY WIRE
MAKE UP OF CONDUCTOR		750 MCM, FEEDER WIRE	1000 MCM, FEEDER WIRE
SYMBOL			
MATERIAL		COPPER	COPPER
DIAMETER	IN	0.998	1.152
CROSS SECTIONAL AREA	SQ IN	0.7820	1.042
WEIGHT OF CONDUCTOR	LB/FT	2.316	3.088
RADIAL THICKNESS OF ICE (PART ICE)	IN	0.500	0.500
WEIGHT OF ICE (PART ICE)	LB/FT	0.931	1.027
WEIGHT OF CONDUCTOR WITH ICE (PART ICE)	LB/FT	3.247	4.115
RADIAL THICKNESS OF ICE (FULL ICE)	IN	0.500	0.500
WEIGHT OF ICE (FULL ICE)	LB/FT	0.931	1.027
WEIGHT OF CONDUCTOR WITH ICE (FULL ICE)	LB/FT	3.247	4.115
BREAKING LOAD	LB	34090	45030
MAXIMUM SPAN / EQUIVALENT SPAN	FT	119	119
TENSIONS AT : 60°F NO WIND, NO ICE	LB	1185	1580
120°F NO WIND, NO ICE	LB	1061	1414
-10°F NO WIND, NO ICE	LB	1365	1820
O°F NO WIND, FULL ICE	LB	1892	2402
O°F 8 PSF WIND, FULL ICE	LB	1976	2484
CONDUCTOR SAGS ON 95 FT SPAN AT:			
60°F NO WIND	FT	3.430	3.430
120°F NO WIND	FT	3.832	3.832
-10°F NO WIND, NO ICE	FT	2.896	2.896
O°F NO WIND, FULL ICE	FT	3.012	3.007
MODULUS OF ELASTICITY	PSI	17.00E+06	17.00E+06
COEFFICIENT OF EXPANSION	/°F	9.40E-06	9.40E-06
MINIMUM FACTOR OF SAFETY	1	17.25	18.13

WIRE TENSIONS LBS (NO ICE, NO WIND)									
	750	MCM	1000 MCM						
TEMPERATURE	TENSION	SAG	TENSION	SAG					
(°F)	(LB)	(FT)	(LB)	(FT)					
-20	1445	2.812	1927	2.812					
-10	1404	2.896	1871	2.896					
0	1365	2.978	1820	2.978					
10	1329	3.057	1773	3.057					
20	1296	3.135	1729	3.135					
30	1266	3.211	1688	3.211					
40	1237	3.286	1649	3.286					
50	1210	3.359	1614	3.359					
60	1185	3.430	1580	3.430					
70	1161	3.500	1548	3.500					
80	1139	3.569	1519	3.569					
90	1118	3.636	1490	3.636					
100	1098	3.703	1464	3.703					
110	1079	3.768	1438	3.768					
120	1061	3.832	1414	3.832					

NOTES:

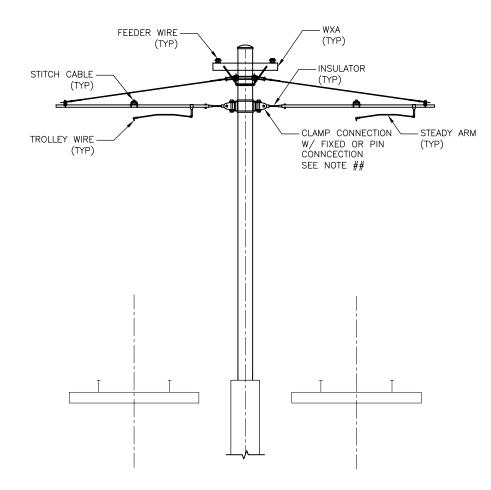
- 1. FOR DRAWING INDEX, SEE SHEET ET-01.
- 2. FOR PROPOSED PLAN AND MATERIAL ALLOCATION, SEE SHEET ET-04.

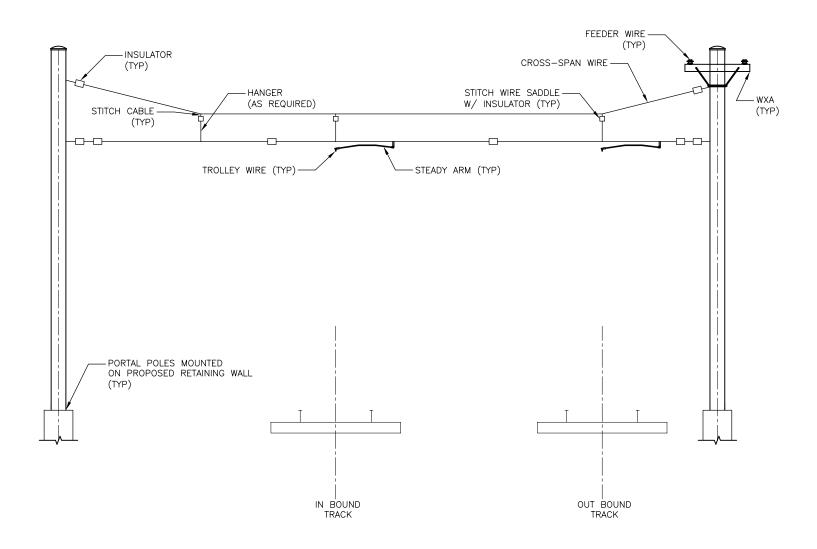


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NOTES

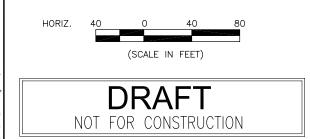
- 1. FOR DRAWING INDEX, SEE SHEET ET-01.
- 2. FOR PROPOSED PLAN AND MATERIAL ALLOCATION, SEE SHEET ET-04.

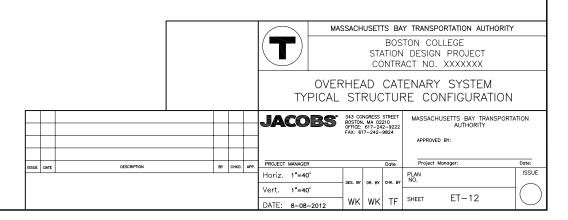




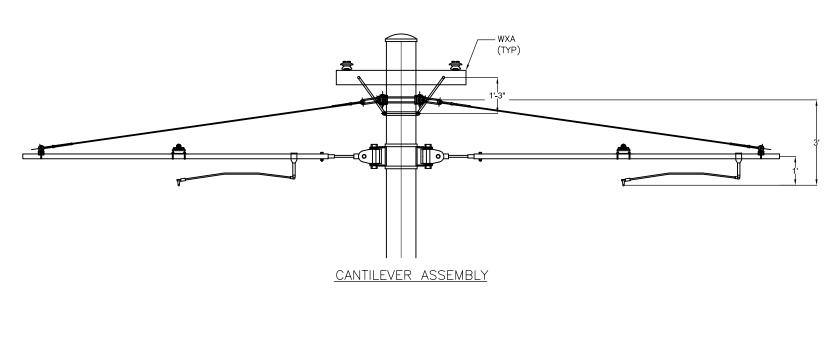
TYPICAL CENTER POLE CANTILEVER-ACA & OCA

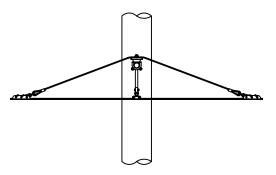
TYPICAL CROSS SPAN STRUCTURE - CSA

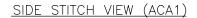


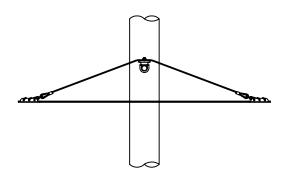


ME: 7:t1 InterdityLostation College Green Line Station (Litamings)(ADV.15% Steet rijes), E1 12 — 1ypical Statione Commit TE: Aug 08, 2012 — 9:29am

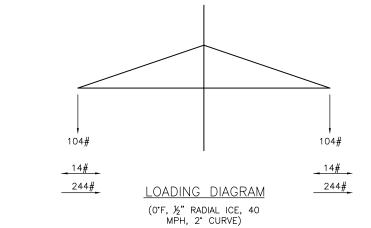


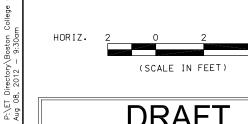






SIDE STITCH VIEW (ACA2)





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NOTES:

- 1. 1. FOR DRAWING INDEX, SEE SHEET ET-01.
- 2. FOR PROPOSED PLAN AND MATERIAL ALLOCATION, SEE SHEET ET-04.
- 3. POLE CLAMP SHALL BE ADJUSTABLE FOR POLE DIAMETER RANGE OF MBTA POLE STYLE NOS. 3, 4, 5 AND 7.
- 4. SADDLE SHALL BE CAPABLE OF CLAMPING AND HOLDING THE STITCH WIRE SECURELY.

	BILL OF MATERIALS								
CANTILEVER ASSEMBLY									
ITEM NO.	DESCRIPTION	QUANTITY							
1	CLAMP, POLE, W/SWIVEL ATTACHMENT (NOTE 3)								
2	INSULATOR, STRAIN, W/ 2 EYE ENDS								
3	INSULATOR, STRUT								
4	CANTILEVER ARM, LENGTH AS REQUIRED (NOTE 2)								
5	WIRE DEAD END, STRAND VICE, FOR %" WIRE STRAND								
6	CLAMP, STEADY ARM								
7	CLAMP, CANTILEVER ARM								
8	STEADY ARM & CLAMP ASS'Y (SA1) (SEE PLAN 93348)								
9	SADDLE, STITCH (NOTE 4)								
10	CLAMP, STITCH, TROLLEY WIRE								
11	STITCH, SYNTHETIC ROPE								
12	WIRE STRANDS, 3/8" DIA. 7, NO. 8, GALV. STEEL, UTILITY GRADE								

								MASSACH	IUSET	rs ba	Y TRANSPOR	RTATION AUTHORITY	
									NOITA	TON COLL DESIGN ACT NO. >	PROJECT		
				OVERHEAD CATENARY SYSTEM CANTILEVER ASSEMBLIES									
							JACO	BOSTON OFFICE:	NGRESS I, MA 02 617-24 17-242-	210 2-9222	MASSACHUS	SETTS BAY TRANSPORT. AUTHORITY	ATION
											APPROVED BY:		
_							PROJECT MANAGER			Date	Project Man	nager:	Date:
Ε	DATE	DESCRIPTION		BY	CHKD.	APP.	Horiz. 1"=2"				PLAN NO.		ISSUE
							Vert. 1"=2'	DES. BY		CHK. BY	SHEET	FT-13	
					DATE: 8-08-:	2012 WK	WK	TF	SHEET	L1 13			