

CITY OF TORRANCE

TORRANCE TRANSIT FACILITY
20500 MADRONA AVENUE, TORRANCE, CALIFORNIA

ELECTRICAL SERVICE UTILITY FOR THE NEW BUS WASH FACILITY

GENERAL NOTES

- THE DRAWINGS DESCRIBE THE SYSTEMS. FURNISH ALL MATERIAL AND DO ALL WORK REQUIRED AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS UNLESS OTHERWISE NOTED. FURNISH AND INSTALL ALL NEW MATERIAL AND EQUIPMENT AS REQUIRED TO PRODUCE A COMPLETE OPERATING SYSTEM. ALL WORK SHALL COMPLY WITH 2010 EDITION OF THE ELECTRICAL CODE, BASED ON 2010 CALIFORNIA ELECTRICAL (BASED ON 2008 NEC) CODE.
- CODES AND PERMITS: ALL ELECTRICAL EQUIPMENT, INSTALLATION, ETC., SHALL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES, INCLUDING CALIFORNIA TITLE 24. CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING PARTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR):
TITLE 24, PART 2, CCR (2010 CALIFORNIA BUILDING CODE W/AMENDMENTS)
TITLE 24, PART 3, CCR (2010 CALIFORNIA ELECTRICAL CODE W/AMENDMENTS)
TITLE 24, PART 4, CCR (2010 CALIFORNIA MECHANICAL CODE W/AMENDMENTS)
TITLE 24, PART 5, CCR (2010 CALIFORNIA PLUMBING CODE W/AMENDMENTS)
TITLE 24, PART 9, CCR (2010 CALIFORNIA FIRE CODE W/AMENDMENTS)
(2010 CALIFORNIA GREEN BUILDINGS STANDARDS CODES)
CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS & INSPECTIONS.
- PROVIDE AND INSTALL ALL MATERIALS IN CONFORMANCE WITH THE 2010 EDITION OF THE ELECTRICAL CODE, BASED ON 2010 CALIFORNIA ELECTRICAL CODE (BASED ON 2008 NEC) WITH LOCAL CITY AMENDMENTS, ORDINANCES AND LOCAL AUTHORITIES HAVING JURISDICTION. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE INSPECTING AUTHORITY AND THE MANUFACTURER'S RECOMMENDATIONS.
- FOR PURPOSES OF CLEARNESS AND LEGIBILITY, THE ELECTRICAL DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. THE SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHEREVER POSSIBLE. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS.
- THE SYMBOLS DESIGNATING CONDUIT SIZES AND QUANTITIES OF BRANCH CIRCUIT WIRING DO NOT INCLUDE THE EQUIPMENT GROUNDING CONDUCTOR REQUIRED. INSTALL REQUIRED EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS, SIZE PER CEC 250-122, EQUIPMENT GROUNDING CONDUCTOR SHALL BE GREEN.
- BEFORE SUBMITTING BID, BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS AT THE BUILDING. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREINAFTER. BY THE ACT OF SUBMITTING A BID PROPOSAL FOR WORK, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH MAY EXIST.
- REFER TO ALL DRAWINGS FOR ADDITIONAL INFORMATION, EXACT EQUIPMENT LOCATION, MOUNTING HEIGHTS, MOUNTING REQUIREMENTS AND MAKE ALL FINAL ELECTRICAL CONNECTIONS TO ALL ELECTRICAL EQUIPMENT AS REQUIRED.
- LOCATIONS OF CEILING MOUNTED DEVICES SHOWN ON THE ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER THOSE SHOWN ON THE ELECTRICAL DRAWINGS. CONTRACTOR TO COORDINATE WITH OTHER TRADES FOR ADDITIONAL INFORMATION, EQUIPMENT LOCATION, MOUNTING HEIGHTS, MOUNTING REQUIREMENTS AND MAKE FINAL CONNECTIONS TO ALL ELECTRICAL EQUIPMENT.
- CONTRACTOR'S BID SHALL BE BASED ON ALL WORK SHOWN ON THE PLANS AND SPECIFICATIONS. ALL PREMIUM TIME COSTS REQUIRED SHALL BE INCLUDED IN HIS BID. IF CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, HE SHALL SUBMIT HIS REQUEST FOR CONSIDERATION TO THE OWNER AND ENGINEER PRIOR TO THE BID. IN WRITING, ALL SUBSTITUTIONS MUST BE REVIEWED BY THE ENGINEER. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ANY CHANGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH MAY AFFECT OTHER PARTS OF HIS OWN WORK OR THE WORK OF OTHER CONTRACTORS.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE UNDERWRITERS LABEL (UL) AND BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.
- ANY SUBSTITUTIONS OF SPECIFIED MATERIALS REQUIRE WRITTEN NOTIFICATION BY THE CONTRACTOR AND FORMAL APPROVAL BY OWNER REPRESENTATIVE AND/OR THE ENGINEER.
- SEAL ALL NEW CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS, CEILINGS, FLOORS, ETC., TO MAINTAIN EXISTING FIRE RATING CONDITIONS. FURNISH AND INSTALL FIRE RATED ENCLOSURES FOR ALL EQUIPMENT PENETRATING INTO FIRE RATED ENVELOPES, SPACES, ETC.
- WHENEVER CONDUITS PENETRATE A PERIMETER WALL, IT IS TO BE SEALED IN AN APPROVED MANNER.
- PROVIDE AN ENCLOSURE OF EQUAL FIRE RESISTANT RATING AROUND ALL FIXTURES AND EQUIPMENT INSTALLED IN OR PENETRATING THROUGH FIRE RATED SEPARATIONS.
- OUTLET BOXES AND PANELS INSTALLED IN FIRE RATED WALLS AND CEILINGS SHALL NOT EXCEED 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL OR CEILING AREA. INDIVIDUAL OUTLET BOXES OR FIXTURES SHALL BE STEEL AND NOT GREATER THAN 16 SQUARE INCHES.
- ISOLATED EQUIPMENT GROUNDING CONDUCTOR INSULATION SHALL BE GREEN WITH A YELLOW STRIPE. EQUIPMENT GROUNDING CONDUCTOR SHALL BE GREEN.
- ALL DEVICES INSTALLED OUTSIDE OR SUBJECT TO WATER SPRAY SHALL BE APPROVED FOR WET LOCATION. ALL DEVICES SUBJECT TO VAPORS, STEAM AND MOISTURE SHALL BE APPROVED FOR DAMP LOCATION. FOR WALL MOUNTED OUTLETS EXACT LOCATION AND MOUNTING HEIGHTS.
- FUSES FOR MOTOR PROTECTION SHALL BE PER NAMEPLATE RATING OF EQUIPMENT SPECIFIED. MANUAL MOTOR STARTERS FOR FRACTIONAL HORSEPOWER MOTORS SHALL BE SQUARE "D" WITH OVERLOAD PROTECTION. PROVIDE OVERLOAD PROTECTION IN EACH PHASE FOR 3-PHASE MOTORS.
- PROVIDE NAMEPLATES FOR ALL PANELBOARDS, DISTRIBUTION BOARDS, DISCONNECTS TRANSFORMERS, MOTOR STARTERS, TERMINAL CABINETS AND ALL ELECTRICAL EQUIPMENT IDENTIFIED BY NAME ON DRAWINGS.
- IN ADDITION TO JUNCTION BOXES INDICATED ON DRAWINGS, INSTALL JUNCTION BOXES AND PULL BOXES FOR CABLE SPLICES, CABLE PULLING AND CONNECTIONS NECESSARY FOR THE INSTALLATION OF A COMPLETE OPERATING SYSTEM. JUNCTION BOXES AND PULL BOXES SHALL BE ACCESSIBLE. LABEL JUNCTION BOXES AND PULL BOXES WITH APPROPRIATE DESIGNATION, MAXIMUM (3) 90° BENDS.
- MAIN FEEDER CONDUITS SHALL BE RIGID METAL CONDUITS UNLESS OTHERWISE NOTED. STEEL FLEXIBLE CONDUITS FOR SHORT EQUIPMENT CONNECTIONS, EQUIPMENT CONNECTIONS SUBJECT TO VIBRATIONS AND EQUIPMENT LOCATED OUTSIDE OR SUBJECT TO WATER SPRAY MAKE CONNECTIONS WITH LIQUID-TIGHT CONDUIT AND WEATHERPROOF COMPONENTS, LENGTH IS LIMITED TO SIX FEET, PROVIDE EQUIPMENT GROUNDING CONDUCTOR SIZE PER 2010 CEC TABLE 250-122.
- PAINT ALL NEW EXPOSED ELECTRICAL RACEWAYS, CABINETS, ENCLOSURES AND FITTINGS TO MATCH ADJACENT FINISHES. EXPOSED CONDUIT RUNS SHALL BE INSTALLED AS CLOSED AS POSSIBLE TO THE CEILING.
- PROVIDE PULL STRING IN EMPTY CONDUITS INSTALLED AS PART OF THIS PROJECT.
- UNLESS OTHERWISE NOTED PROVIDE COPPER CONDUCTORS, MINIMUM SIZE #12 AWG. PROVIDE SOLID CONDUCTORS #10 AWG AND SMALLER UNLESS OTHERWISE NOTED. PROVIDE STRANDED CONDUCTORS #8 AWG AND LARGER UNLESS OTHERWISE NOTED. USE CONDUCTORS WITH THIN/THIN 500 VOLTS INSULATION FOR SIZES #6 AWG AND SMALLER, UNLESS OTHERWISE NOTED. CONDUCTORS #4 AWG AND LARGER SHALL BE THAW INSULATION, UNLESS OTHERWISE NOTED.
- DELIVER ALL CONDUCTORS TO THE JOB SITE IN ORIGINAL UNBROKEN CARTON OR REEL, PROPERLY TAGGED WITH U.L. LABEL, SIZE, MANUFACTURER'S TRADE NAME AND THE DATE MANUFACTURED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN WORK AREA CLEAR OF DEBRIS ON DAILY BASIS DURING CONSTRUCTION.
- NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO ELECTRICAL EQUIPMENT SHALL BE PERMITTED TO BE LOCATED WITHIN DEDICATED WORKING SPACE OF EQUIPMENT, INCLUDING THE DEDICATED SPACE BETWEEN THE TOP OF EQUIPMENT TO THE STRUCTURAL CEILING ABOVE. ALL FOREIGN INSTALLATION WITHIN THE SPACE (I.E. FIRE SPRINKLER, ETC) SHALL BE INSTALLED IN ACCORDANCE WITH NEC 11026(f)(1)(c).
- USE PLASTIC COATED SELF-STICKING MARKERS SUCH AS THOMAS & BETTS E-2 CODE FOR IDENTIFICATION OF CONDUCTORS AND METAL EDGE BANDED PAPER TAGS ON PULL ROPES.

TERMS AND ABBREVIATIONS

ABBREVIATION	DESCRIPTION
@	AT
A	AMPERES
APPARATUS	INDICATES SWITCHGEARS, DISTRIBUTION BOARDS, TRANSFORMERS, ETC.
AS	AMP SWITCH
BKBD	BACKBOARD
C.O.	CONDUIT ONLY
CWL	COLD WATER LINE
Ø	PHASE OR DIAMETER
DN	DOWN
EC	ELECTRICAL CONTRACTOR
ELEC	ELECTRIC OR ELECTRICAL
EM.	EMERGENCY
EQUIP.	EQUIPMENT
EXIST.	EXISTING
FDR.	FEEDER, INDICATES CONDUIT AND CONDUCTORS
FLA	FULL LOAD AMPERES
GC	GENERAL CONTRACTOR
GND	GROUND
HP	HORSEPOWER
IND.	INDICATED
JB	JUNCTION BOX
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOUR
LCL	LONG CONTINUOUS LOAD
MFR.	MANUFACTURER
MH	MOUNTING HEIGHT
N.T.S.	NOT TO SCALE
PB	PULLBOX
PNL	PANEL
PROVIDE	INDICATED ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL
SWBD	SWITCHBOARD
TRANSF.	TRANSFORMER
TYP.	TYPICAL
U.G.	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
V	VOLT
VA	VOLT AMPERES
VD	VOLTAGE DROP
W	WATTS
WP	WEATHERPROOF

ELECTRICAL SHEET INDEX

SHEET NO.	SHEET TITLE	CURRENT ISSUE
E-0.1	ELECTRICAL GENERAL NOTES SYMBOLS LEGEND & SHEET INDEX	
E-1.0	ELECTRICAL OVERALL SITE PLAN	
E-1.1	ELECTRICAL PARTIAL SITE PLAN	
E-4.1	ELECTRICAL SINGLE LINE DIAGRAM & PANEL SCHEDULES	

ELECTRICAL SYMBOLS LEGEND

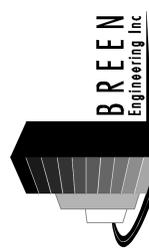
SYMBOL	DESCRIPTION
	GROUND TYPE DUPLEX RECEPTACLE, WALL MOUNTED
	FLEXIBLE CONNECTION TO EQUIPMENT
	SURFACE MOUNTED CABINET OR EQUIPMENT AS NOTED. +6' -0" TO TOP
	FLUSH MOUNTED CABINET OR EQUIPMENT AS NOTED +6' -0" TO TOP
	SURFACE MOUNTED BRANCH CIRCUIT PANELBOARD
	FLUSH MOUNTED BRANCH CIRCUIT PANELBOARD
	SWITCHBOARD, DISTRIBUTION BOARD
	TELEPHONE PLYWOOD BACKBOARD SIZE AS INDICATED ON PLANS
"T1B"	"DRY TYPE" TRANSFORMER DESIGNATION
	CONDUIT RUN IN OR BELOW FLOOR SLAB OR UNDERGROUND - 3/4" C. MINIMUM
	CONDUIT RUN CONCEALED IN WALL OR ABOVE FINISHED CEILING - 1/2" C.
	CONDUIT RUN EXPOSED
	2#12, 1/2" C.
	3#12, 1/2" C.
	4#12, 1/2" C.
	5#12, 1/2" C.
	6#12, 1/2" C.
	7#12, 1/2" C.
	8#12, 1/2" C.
	2#10, 1/2" C.
	3#10, 1/2" C.
	4#10, 1/2" C.
	5#10, 1/2" C.
	6#10, 1/2" C.
	7#10, 1/2" C.
	8#10, 1/2" C.
	2#8, 3/4" C.
	3#8, 3/4" C.
	4#8, 1" C.
	WIRE SIZE OTHER THAN #12, #10 OR #8 IS NOTED ON EACH CONDUIT RUN WITH SIZE OF CONDUIT (I.E. 3#6 - 1" C.) SEE GENERAL NOTE #41.
	EXISTING CONDUIT RUN
#10	HASH MARKS INDICATES THE QUANTITY OF CONDUCTORS REQUIRED. NO HASH MARKS INDICATES 2 #12 AWG. CONDUCTORS LARGER THAN SIZE #12 AWG ARE INDICATED NEXT TO HASH MARKS
	INDICATE HOMERUN TO DESIGNATED PANEL BOARD, SWITCH GEAR, OR SIGNAL CABINET WHEN SHOWN INDICATE THE FOLLOWING: BRANCH CIRCUIT NUMBERS
	HOUSE PANEL OR DISTRIBUTION PANEL
	LOW VOLTAGE 115/24 VAC TRANSFORMER MOUNTED ABOVE CEILING BY EDWARD OR EQUAL
	PUSH BUTTON OUTLET AT +4' -0" A.F.F. FOR DOOR BELL SYSTEM
	DOOR BELL WITH LOW VOLTAGE 115/24 VAC TRANSFORMER WALL MOUNTED 6'-6" A.F.F. BY NUTONE OR EQUAL.
P1A	INDICATES REFERENCE TO PANELBOARD "P1A"
2A	ELECTRICAL FEEDER DESIGNATION
①	REFERENCE NOTE DESIGNATION
	METERING AND TEST BLOCKS AS REQUIRED BY THE UTILITY SERVING AGENCY
	CIRCUIT BREAKER
	GROUND
	MOTOR (NUMBER INSIDE SYMBOL DESIGNATES HP OF MOTOR)

NOTE: FOR ADDITIONAL SYSTEM SYMBOLS AND WIRING LEGEND REFER TO SITE PLANS AND RISER DIAGRAMS



M. Breen

1985 WEST 190TH STREET, SUITE 200
TORRANCE, CA 90504
TEL: (310) 464-8404
FAX: (310) 464-8408
EMAIL: www.breeneng.com



ELECTRICAL GENERAL NOTES SYMBOLS LEGEND & SHEET INDEX

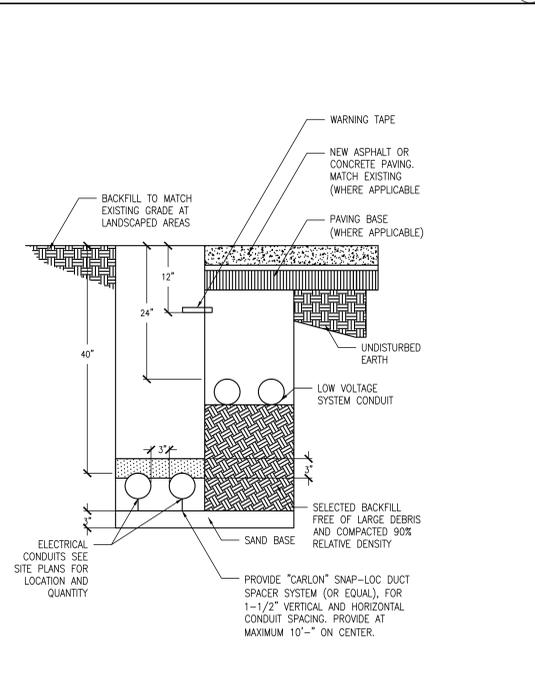
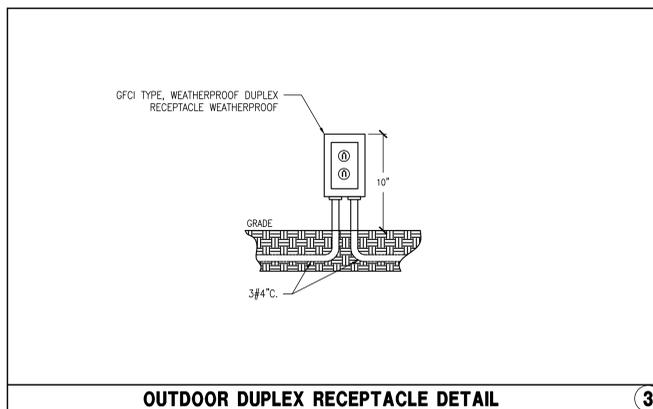
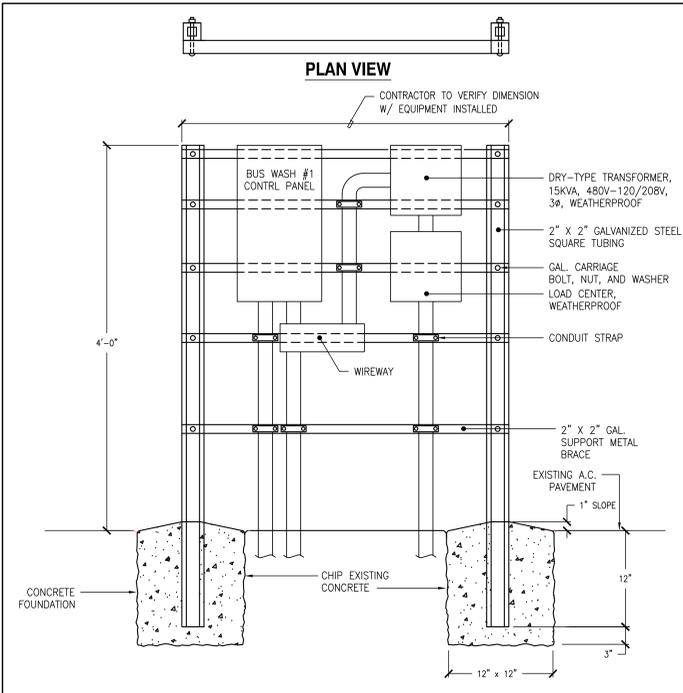
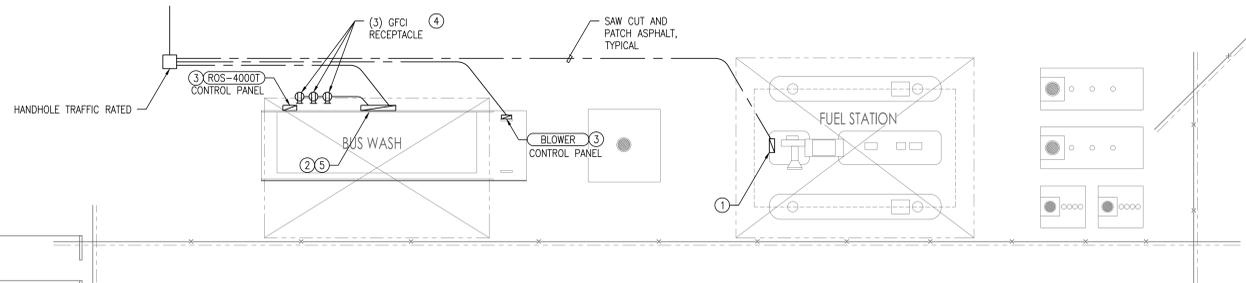
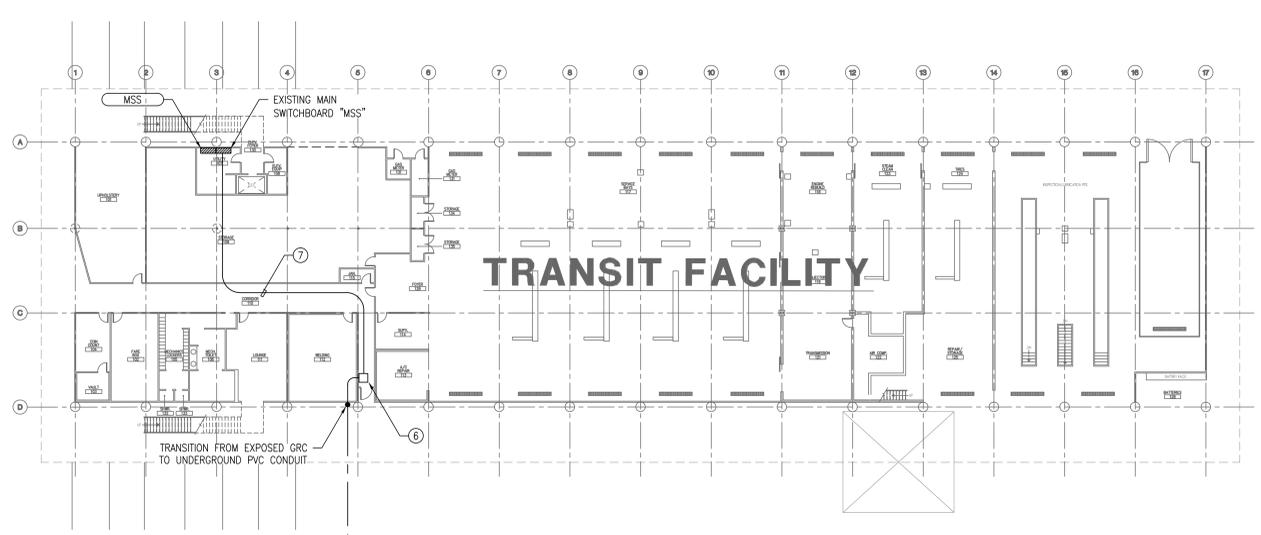
TORRANCE TRANSIT FACILITY
20500 MADRONA AVENUE
TORRANCE, CALIFORNIA

DATE: 08/11/13
SCALE: NONE
PROJECT NUMBER: 307-13-002
DRAWN BY:
CHECKED BY:
DRAWING NUMBER

E-0.1

OF XX

DWG/PDF Created On: Nov 05, 2013 - 9:17am. Plotted By: bseal. Filename: H:\Projects\307 City of Torrance\13-002 Vehicle Wash Facility\CAD\Electrical\E-11 ELECTRICAL PARTIAL SITE PLAN.dwg
CURRENT REVISION: ###

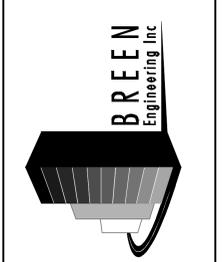


- REFERENCE NOTES**
- REMOVE EXISTING VACUUM CONTROL PANEL AND REPLACE WITH NEW VACUUM CONTROL PANEL. CONTRACTOR SHALL VERIFY EXACT EQUIPMENT CONNECTION TYPE AND LOCATION WITH BUS WASH VENDOR.
 - REMOVE EXISTING BUS WASH CONTROL PANEL AND ASSOCIATED APPURTENANCES, CONDUIT AND WIRES. PROVIDE NEW BUS WASH CONTROL PANEL SUPPLIED BY OTHERS, INSTALLED BY ELECTRICAL CONTRACTOR. CONTRACTOR SHALL VERIFY EXACT EQUIPMENT CONNECTION TYPE AND LOCATION WITH BUS WASH VENDOR.
 - PROVIDED BY OTHERS, INSTALLED BY ELECTRICIAN. CONTRACTOR SHALL VERIFY EQUIPMENT CONNECTION TYPE AND LOCATION WITH BUS WASH VENDOR.
 - PROVIDE (3) GFCI RECEPTACLES, CONTRACTOR SHALL VERIFY LOCATION WITH BUS WASH VENDOR, SEE 3/E-1.1 FOR OUTDOOR RECEPTACLE DETAILS.
 - BUS WASH EQUIPMENT RACK, SEE 2/E-1.1 FOR DETAILS.
 - CEILING MOUNTED PULLBOX 30"SQ x 6"D.
 - CEILING MOUNTED CONDUITS MOUNTED AS HIGH AS PRACTICABLE.

REV.	DESCRIPTION	DATE	BY
		09-11-13	

M. Breen
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF CALIFORNIA

1983 WEST 190TH STREET, SUITE 200
 TORRANCE, CA 90504
 TEL: (310) 464-8404
 FAX: (310) 464-8408
 EMAIL: www.breeneng.com

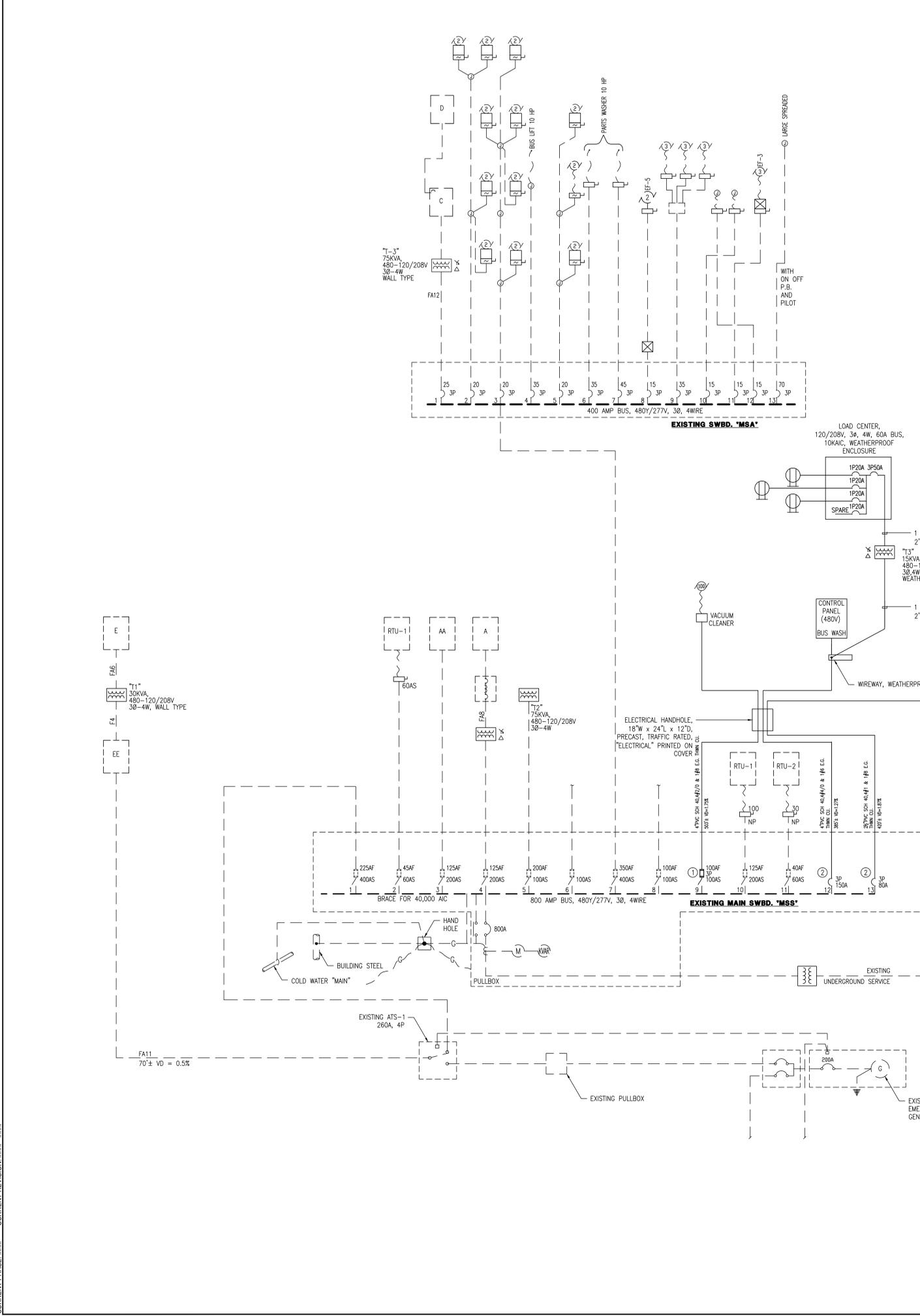


ELECTRICAL PARTIAL SITE PLAN

TORRANCE TRANSIT FACILITY
20500 MADRONA AVENUE
TORRANCE, CALIFORNIA

DATE: 09/11/13
 SCALE: 1" = 20'-0"
 PROJECT NUMBER: 307-13-002
 DRAWN BY: ---
 CHECKED BY: ---
 DRAWING NUMBER: **E-11**
 OF XX

DW/PDF Created On: Nov 05, 2013 - 9:17am Plotted By: beshk Filename: H:\Projects\307 City of Torrance\13-002 Vehicle Wash Facility\CAD\Electrical\E-41 ELECTRICAL SINGLE LINE DIAGRAM & PANEL SCHEDULES.dwg
 CURRENT REVISION: ###



CONSTRUCTION NOTES:

1. CONTRACTOR SHALL SCHEDULE ALL WORK SO NOT TO DISRUPT THE EXISTING BUILDING FACILITY AND/OR PERSONNEL. ALL WORK SHALL BE SCHEDULED WITH BUILDING MANAGEMENT.
2. CONTRACTOR SHALL SCHEDULE THE INSTALLATION AND CONNECTIONS OF NEW FEEDERS AT THE EXISTING MAIN SWITCHBOARD "MSS" SO DOWN TIME IS KEPT TO A MINIMUM.

SINGLE LINE DIAGRAM NOTES:

1. BECAUSE OF IN-PROPER LABELING ON EXISTING ELECTRICAL SWITCHGEAR, PANELS, HVAC AND/OR TRANSFORMER UPON AWARD OF CONTRACT AND PRIOR TO ANY DEMO WORK CONTRACTOR SHALL PROVIDE ALL LABOR, TOOLS AND MATERIAL TO THOROUGHLY FIELD VERIFY ALL EXISTING ELECTRICAL DISTRIBUTION WHICH WILL BE AFFECTED BY DEMO AND/OR NEW WORK REQUIRED IN THIS CONTRACT.
2. ALL NEW CIRCUIT BREAKERS PROVIDED IN THIS CONTRACT AT EXISTING MAIN SWITCHGEAR "MSS" SHALL MATCH AND BE COMPATIBLE WITH EXISTING MAIN SWITCHGEAR INSTALLATION. NEW CIRCUIT BREAKER SHALL BE BRACED FOR MIN. 100,000 AIC, AND CONTRACTOR SHALL VERIFY EXISTING SWITCHGEAR PRIOR TO ORDER PLACEMENT OF NEW CIRCUIT BREAKERS.
3. ALL WORK SHOW IS NEW UNLESS OTHERWISE NOTED "EXISTING".

REFERENCE NOTES

1. REPLACE EXISTING 80A FUSES WITH NEW 100A FUSES IN EXISTING MAIN SWBD "MSS". REMOVE EXISTING CONDUCTORS AND REPLACE WITH NEW CONDUCTORS AS SHOWN ON DRAWING.
2. PROVIDE NEW CIRCUIT BREAKER AS SHOWN, BRACE FOR 100,000 AIC (CONTRACTOR SHALL VERIFY AIC RATING OF SWITCHGEAR) COMPLETE WITH ALL MOUNTING HARDWARE. BREAKER SHALL MATCH AND BE COMPATIBLE WITH EXISTING SWITCHGEAR MANUFACTURER.

GENERAL NOTES

DASHED LINE TYPE INDICATES EXISTING, SOLID LINE TYPE INDICATES NEW.

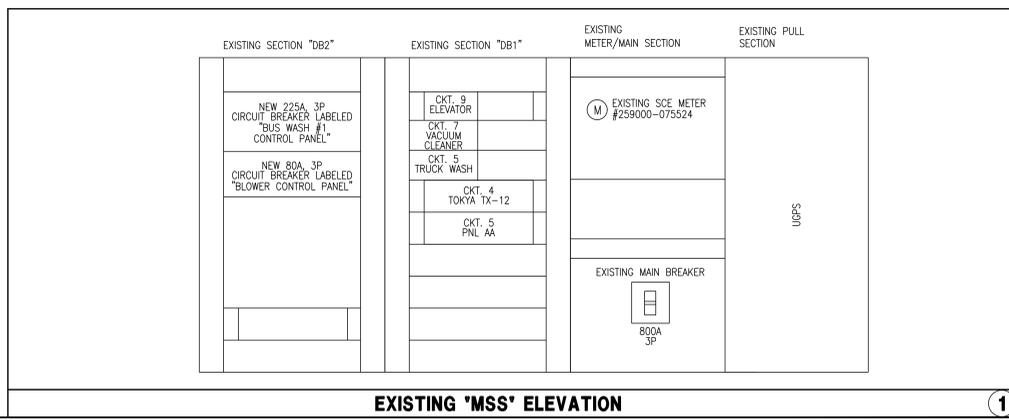
WASH BAY POWER REQUIREMENT

CONTROL PANEL DESCRIPTION	COMPONENTS DESCRIPTION (LOCATED INSIDE CONTROL PANEL)	QTY. OF MOTOR	480V, 3Ø, 60HZ		115V, 1Ø, 60HZ	
			F.L.A. (AMPERE)	MIN. C/B (AMPERE)	F.L.A. (AMPERE) (CONTROL SIGNAL)	MIN. C/B (AMPERE) (GFI RECEPTACLE)
1. BUS WASH #1 CONTROL PANEL CONTAINS:						
	BRUSH SYSTEM (SYS-3250):					
	A. 2HP BRUSH MOTOR: LT WRAP BRUSH	1	3.4 A	---	---	---
	B. 2HP BRUSH MOTOR: SCRUBBER RACK	1	3.4 A	---	---	---
	C. 2HP BRUSH MOTOR: RT WRAP BRUSH	1	3.4 A	---	---	---
	D. 2HP BRUSH MOTOR: LT SIDE BRUSH	1	3.4 A	---	---	---
	E. 2HP BRUSH MOTOR: RT SIDE BRUSH	1	3.4 A	---	---	---
	10HP WASH PUMP	2	28.0 A	---	---	---
	20HP WHEEL WASHER PUMP	1	27.0 A	---	---	---
	BLUE-WHITE CHEMICAL PUMP	3	---	---	2.22 A	---
	LED SPEED WARNING LIGHT: (RED/AMBER/GREEN)	2	---	---	0.20 A	---
	SPEED WARNING HORN	2	---	---	2.04 A (INRUSH)	---
	ACTIVATION SYSTEM	4	---	---	0.28 A	---
	LED ENTRANCE LIGHT: RED LIGHT	1	---	---	0.37 A	---
	LED ENTRANCE LIGHT: GREEN LIGHT	1	---	---	0.60 A	---
	REAR POSITION LIGHT	1	---	---	0.52 A	---
	2HP RO RINSE PUMP	1	3.4 A	---	---	---
	15HP SELF-PRIME PUMP	1	21.0 A	---	---	---
	TOTAL F.L.A. & MIN. C/B		96.4 A	125.0 A	6.23 A	---
2. BLOWER CONTROL PANEL CONTAINS:						
	7.5HP BAG BLOWER	2	22.0 A	---	---	---
	10HP BLOWER	3	42.0 A	---	---	---
	TOTAL F.L.A. & MIN. C/B		64.0 A	80.0 A	---	---
ROS-4000T CONTROL PANEL CONTAINS:						
	1½HP MULTI-STAGE PUMP	1	3.0 A	---	---	---
	TOTAL F.L.A. & MIN. C/B		3.0 A	5.0 A	---	---

VACUUM BAY POWER REQUIREMENT

CONTROL PANEL DESCRIPTION	COMPONENTS DESCRIPTION (LOCATED INSIDE CONTROL PANEL)	QTY. OF MOTOR	480V, 3Ø, 60HZ		115V, 1Ø, 60HZ	
			F.L.A. (AMPERE)	MIN. C/B (AMPERE)	F.L.A. (AMPERE) (CONTROL SIGNAL)	MIN. C/B (AMPERE) (GFI RECEPTACLE)
1. VACUUM CONTROL PANEL CONTAINS:						
	60HP VACUUM MOTOR	1	77.0 A	---	---	---
	½HP BLOWER HP	1	1.1 A	---	---	---
	TOTAL F.L.A. & MIN. C/B		78.1 A	100.0 A	---	---

LEGEND: F.L.A. = FULL LOADED AMPERE; MIN. = MINIMUM; C/B = CIRCUIT BREAKER; QTY. = QUANTITY; REV. = REVISION



ELECTRICAL SINGLE LINE DIAGRAM & PANEL SCHEDULES

TORRANCE TRANSIT FACILITY
 26500 MADRONA AVENUE
 TORRANCE, CALIFORNIA

DATE: 08/11/13
 SCALE: NONE
 PROJECT NUMBER: 307-13-002
 DRAWN BY: ---
 CHECKED BY: ---
 DRAWING NUMBER: **E-41**

OF XX

1983 WEST 190TH STREET, SUITE 200
 TORRANCE, CA 90504
 TEL: (310) 464-8404
 FAX: (310) 464-8408
 EMAIL: www.breeneng.com

BREEN Engineering Inc.