DELIVERY STATION EXPANSION

EXTERIOR IMPROVEMENTS

400 ORITANI DR., ORANGETOWN, NY 10913



THESE DOCUMENTS ARE CONFIDENTIAL

DOCUMENTS WERE PREPARED BY:

ARCHITECTURE: SITE ELECTRICAL:

CESO, CO. **CIVIL & ENVIRONMENTAL CONSULTANTS EMANUELSON-PODAS, INC.**

PROJECT TEAM

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		•

DESIGN STANDARDS

PROJECT DESCRIPTION

MINOR EXTERIOR WORK, INCLUDING: 1) NEW EV EQUIPMENT

DESIGN STANDARDS INFORMATION

REFER TO CRITERIA AND WWDS APPENDIX LISTING ALL RELEVANT DESIGN STANDARDS AND CONTROL DOCUMENTS FOR THIS FACILITY

DESIGN STANDARDS

APPLICABLE DESIGN STANDARDS INCORPORATED IN THESE DRAWINGS AND/OR

STANDARD OR DATA SHEET	VERSION	DATE
Tenant's GSO - Security Basis of Design - Worldwide Design Standard for ENS Site		
Builds	5	1/30/2021
Tenant's - Tennisball Externalized Network BoD Complete Set Telecom	3	6/23/2021
FC IT 2021 A.E.M. Infrastructure Global Standards	9.4	4/30/2021
WWDS NA Associate Parking	2	3/26/2020
WWDS NA Circulation Areas Outside (Pedestrians)	2	3/26/2020
WWDS NA Dock Doors	2	3/26/2020
WWDS NA Domestic Water Service	2	3/26/2020
WWDS NA Electrical Room/Switchgear	2	3/26/2020
WWDS NA Fire Pump Room	2	3/26/2020
WWDS NA Hallway/Circulation Areas Indoor	2	3/26/2020
WWDS NA Multi-Faith Room	1	5/29/2020
WWDS NA Security Zoning - Rooms/Areas	1.1	4/14/2020
WWDS NA Site Signage	3	2/25/2022
WWDS NA Traffic & Circulation Principles	2	3/26/2020
WWDS NA Truck Yard	2	3/26/2020

SITE AREA: 35.5 AC. (1,638,263 S.F.) - NO PROPOSED CHANGE BUILDING AREA - 400 ORITANI DRIVE: 122,167.1 S.F. - NO PROPOSED CHANGE OCCUPANCY TYPE: A-2, A-3, B, S-1

CONSTRUCTION TYPE: II-B (FULLY SPRINKLERED) ALLOWABLE AREA: 2 STORY/ 17,500 S.F./ FLOOR (BASED ON S-1 OCC., CONST.) PER IBC TABLE 503 SPRINKLER INCREASE +60' YARD INCREASE 1 STORY/UNLIMITED S.F. PER IBC SECTION 507.4

CODE INFORMATION

AS SHOWN PHASE 1 SITE

TITLE SHEET

G0.01

ELEV

ENGR

EOP

ELECTRICAL

ELEVATION

EDGE NAIL

ENGINEER

EDGE OF PANEL

EPOXY PAINT / EDGE OF PAVEMENT

STANDAI	RD ABBREVIATIONS						
@	АТ	EPDM	ETHYLENE PROPYLENE DIENE	KSF	KIPS PER SQUARE FOOT	PT	PRESSURE TREATED / PORCELAIN
AB	ANCHOR BOLT	EQ	MONOMER EQUAL	KSI	KIPS PER SQUARE INCH	PVC	TILE POLY VINYL CHLORIDE
AC ACI	ASPHALTIC CONCRETE AMERICAN CONCRETE INSTITUTE	ES	EACH SIDE	ı	ANGLE	PVMT	PAVEMENT
ADA	AMERICANS WITH DISIBILITIES ACT	ESFR	EARLY SUPPRESSION, FAST	LAM	LAMINATE		. ,
ADD'L	ADDITIONAL		RESPONSE	LAV	LAVATORY	R	RADIUS
ADJ	ADJACENT/ ADJUSTABLE	ETC	EPOXY TRAFFIC COATING / ETCETERA	LB	LAG BOLT	RAD	RADIAL
AESS	ARCHITECTURALLY EXPOSED	EW	EACH WAY	LL	LIVE LOAD	RB	RUBBER BASE
A F.F.	STRUCTURAL STEEL	EXP EXP JT / EJ	EXPOSED STRUCTURE EXPANSION JOINT	LLV	LONG LEG VERTICAL	RBE	ROOF BASE ELEVATION
AFF AISC	ABOVE FINISH FLOOR AMERICAN INSTITUTE OF STEEL	EXT	EXTERIOR	LONG / LONGIT	LONGITUDINAL	RCP RD	REFLECTED CEILING PLAN ROOF DRAIN
Aloo	CONSTRUCTION	- / · ·	_,,,_,,,,	LP LSL	LOWPOINT LAMINATED STRAND LUMBER	RECEPT	RECEPTION(IST)
AL / ALUM	ALUMINUM	F/	FACE OF	LVL	LAMINATED VENEER LUMBER	REF	REFERENCE / REFRIGERATOR
ALT	ALTERNATE	F/STUD	FACE OF STUD	LWC	LIGHTWEIGHT CONCRETE	REINF	REINFORCING
APPROX	APPROXIMATE	FB	FLAT BAR			REQ / REQ'D	REQUIRED
ARCH ATR	ARCHITECT(URAL) ALL-THREAD ROD	FC FD	FACE OF CURB FLOOR DRAIN	M	MIRROR	REV	REVISION
AIK	ALL-THREAD ROD	FDC	FIRE DEPARTMENT CONNECTION	M/E/P	MECHANICAL/ ELECTRICAL/ PLUMBING OR PROCESS	RM RO	ROOM ROUGH OPENING
B/	BOTTOM OF	FE	FIRE EXTINGUISHER	MANF	MANUFACTURER	ROW	RIGHT OF WAY
BATT	BATTEN INSULATION	FF	FACTORY FINISH / FINISHED FACE	MAS	MASONRY	NOW	Morri or with
BD	BOARD	FFE	FINISH FLOOR ELEVATION	MATL	MATERIAL	S	STAIN
BLD / BLDG	BUILDING	FIN	FINISH(ED)	MAX	MAXIMUM	SAT	SUSPENDED ACOUSTICAL TILE
BLK	BLOCK	FL	FLUSH	MB	MACHINE BOLT	SC	SEALED CONCRETE / SOLID CORE
BLKG	BLOCKING	FLR	FLOOR	MDF/MDO	MEDIUM DENSITY FIBERBOARD /	001155	WOOD
BM	BENCHMARK / BEAM	FM	FACTORY MUTUAL	MECH	OVERLAY	SCHED	SCHEDULE STRUCTURAL CLAY MASONRY
BN BOT / BOTT	BOUNDARY NAIL BOTTOM	FN FND	FIELD NAILING FOUNDATION	MECH MFD	MECHANICAL MANUFACTURED	SCM SCWD	STRUCTURAL CLAY MASONRY SOLID CORE WOOD DOOR
BRG	BEARING	FOC	FACE OF CONCRETE	MFG	MANUFACTURING	SF	STORE FRONT / SQUARE FEET
BSMT	BASEMENT	FOF	FACE OF FINISH	MFR	MANUFACTURER	SFRS	SEISMIC FORCE RESISTING SYSTEM
BTWN	BETWEEN	FOIC	FURNISHED BY OWNER INSTALLED BY	MGR	MANAGER	SHTG / SHT'G	SHEATHING
BUR	BUILT UP ROOFING		CONTRACTOR	MH	MAN HOLE	SIM	SIMILAR
		FOIO	FURNISHED BY OWNER INSTALLED BY	MIN	MINIMUM	SLRS	SEISMIC LOAD RESISTIVE SYSTEM
CAB	CABINET	FOM	OWNER FACE OF MASONRY	MISC	MISCELLANEOUS	SLV	SHORT LEG VERTICAL
СВ	CATCH BASIN	FOS	FACE OF STUD	MK	MARK	SMS	SHEET METAL SCREW
CDF	CONTROLLED DENSITY FILL	FOW	FACE OF WALL	MLP	METAL LINEAR PANEL	SOG	SLAB ON GRADE
CIP CJ	CAST IRON CONTROL JOINT	FS	FAR SIDE	MO MOD BIT	MASONRY OPENING MODIFIED BITUMINOUS	SP SPEC(S)	SPACE(D)(S) SPECIFICATION(S)
CL/Q	CENTERLINE	FT	FEET/FOOT FIRE TREATED	MP	METAL PANEL	SQ SQ	SQUARE
CLNG	CEILING	FTG	FOOTING	MTL	METAL	SS	STAINLESS STEEL / SOLID SURFACE
CLR	CLEAR	FTIT	FURNISHED BY TENANT INSTALLED BY			ST	STONE
CLR ANNO	CLEAR ANNODIZED		TENANT	(N)	NEW	STA PT	STATION POINT
CMP	CORRUGATED METAL PIPE	GA	GAUGE	NFPA	NATIONAL FIRE PROTECTION AGENCY	STAGG	STAGGERED
CMU	CONCRETE MASONRY UNIT	GALV	GALVANIZED	NIC	NOT IN CONTRACT	STD	STANDARD
CO	CLEAN OUT	GEN	GENERAL	NO. /#	NUMBER	STIFF	STIFFENER
COL CONC	COLUMN CONCRETE	GLB	GLULAM BEAM	NOM NR	NOMINAL NON RATED	STL STRUCT	STEEL STRUCTURAL
CONF	CONFERENCE	GLZ	GLAZING	NS	NEAR SIDE	SUSP	SUSPENDED
CONN	CONNECTION	GR	GRADE	NTE	NOT TO EXCEED	SV	SHEET VINYL
CONST	CONSTRUCTION	GRD GSA	GRID ONLY U.S. GENERAL SERVICES	NTS	NOT TO SCALE		
CONT	CONTINUOUS	GSA	ADMINISTRATION			Т	TEMPERED
CONTR	CONTRACTOR	GYP BD	GYPSUM BOARD	O/A	OVERALL	T&B	TOP AND BOTTOM
COORD	COORDINATE			00	ON CENTER	T/	TOP OF
CORR CPT	CORRUGAT(ED) (ION) CARPET	НВ	HOSE BIB	OD OFCI	OUTSIDE DIAMETER OWNER FURNISHED, CONTRACTOR	TC TEMP	TOP OF CURB TEMPERATURE / TEMPORARY
CRC	CHEMICAL RESISTANT COATING	HC	HOLLOW CORE / HANDICAP	OFGI	INSTALLED	THK	THICK / THICKNESS
CSK	COUNTERSINK	HCM	HOLLOW CLAY MASONRY	OFOI	OWNER FURNISHED, OWNER	TL	TOTAL LOAD
CSP	CONCRETE SEWER PIPE	HDPE HDR	HIGH DENSITY POLYETHELENE HEADER		INSTALLED	TN	TOE NAIL
CTOP	COUNTERTOP	HDWR	HARDWARE	OH	OPPOSITE HAND	TO	TOP OF
CTR / CNTR	CENTER	HGR	HANGER	OHD OPNG	OVERHEAD DOOR OPENING	TOF	TOP OF FOOTING
CW	CONCRETE WALL	HL	HALF LITE	OPP	OPPOSITE	TOS	TOP OF STEEL
J	DENINY/NATIO)	НМ	HOLLOW METAL	OSF / O/FACE	OUTSIDE FACE	TOW	TOP OF WALL
d DBA	PENNY(NAILS) DEFORMED BAR ANCHOR	HMK	HOLLOW METAL KNOCKDOWN	OSSC	OREGON STRUCTURAL SPECIALTY	TPO TRANS / TRANSV	THERMOPLASTIC POLYOLEFIN TRANSVERSE
DBL	DOUBLE	HMW	HOLLOW METAL WELDED		CODE	TS	TUBE STEEL
DCW	DEMAND CRITICAL WELD	HORIZ	HORIZONTAL	OTS	OPEN TO STRUCTURE	TYP	TYPICAL
DET / DTL	DETAIL	HR(S) HS	HOUR(S) HEADED STUD		DANIT		
DF	DRINKING FOUNTAIN / DOUGLAS FIR	HSB	HIGH STRENGTH BOLT	P P-LAM	PAINT PLASTIC LAMINATE	U/S	UNDERSIDE
DIA / ø	DIAMETER	HSS	HOLLOW STRUCTURAL STEEL	P-LAWI P.E.	PROFFESSIONAL ENGINEER	UC	UNDER COUNTER
DIAPH	DIAPHRAGM	HTG	HEATING	P.E. PB	PARTICLE BOARD	UL	UNDER WRITERS LABORATORIES
DIM	DIMENSION	HVAC	HEATING, VENTILATION AND AIR	PDA / PAF	POWDER DRIVEN ANCHORS/POWDER	UNO / UON	UNLESS NOTED OTHERWISE
DL DN	DEAD LOAD		CONDITIONING		ACTUATED FASTENER	USG	UNITED STATES GYPSUM
DN DP	DOWN DEEP	HWS	HEADED WELD STUD	PJ	PANEL JOINT	VCT	VINYL COMPOSITION TILE
DR DR	DOOR	IDC	INTERNATIONAL DUIL DING CORE	PL/PL	PLATE	VERT	VERTICAL
DS	DOWN SPOUT	IBC ID	INTERNATIONAL BUILDING CODE INSIDE DIAMETER	PLB	PARALLAM BEAM	VEST	VESTIBULE
DWG	DRAWING	IE IE	INSIDE DIAMETER INVERT ELEVATION	PLMB PLY / PLYWD	PLUMBING PLYWOOD	VFY	VERIFY
DWLS	DOWELS	IF	INSIDE FACE	PLY / PLYWD PNL	PANEL	VIF	VERIFY IN FIELD
		 IFC	INTERNATIONAL FIRE CODE	PR PR	PAIR	VP	VISION PANEL
(E) / EXIST	EXISTING	IMC	INTERNATIONAL MECHANCIAL CODE	PREFIN	PREFINISHED		
E/	EDGE OF	INFO	INFORMATION	PS	POUR STRIP	W/	WITH
EA	EACH EACE	INSP	INSPECTION / INSPECTOR	PSF	POUNDS PER SQUARE FOOT	W/CRC	COATING WITH CHEMICAL RESISTANCE
EF EIFS	EACH FACE EXTERIOR INSULATION FINISH	INSUL	INSULATION	PSI	POUNDS PER SQUARE INCH	W/O	WITHOUT
_ii	SYSTEM	INT	INTERIOR	PSL	PARALLEL STRAND LUMBER	WB	WOOD BASE

JOINT

JOIST

KIPS

INTERNATIONAL PLUMBING CODE

•	RECEPTION(IST)
	REFERENCE / REFRIGERATOR
	REINFORCING
EQ'D	REQUIRED
	REVISION ROOM
	ROUGH OPENING
	RIGHT OF WAY
	STAIN
	SUSPENDED ACOUSTICAL TILE
	SEALED CONCRETE / SOLID CORE WOOD
	SCHEDULE
	STRUCTURAL CLAY MASONRY
	SOLID CORE WOOD DOOR
	STORE FRONT / SQUARE FEET
SHT'G	SEISMIC FORCE RESISTING SYSTEM SHEATHING
5111 0	SIMILAR
	SEISMIC LOAD RESISTIVE SYSTEM
	SHORT LEG VERTICAL
	SHEET METAL SCREW
	SLAB ON GRADE SPACE(D)(S)
)	SPECIFICATION(S)
	SQUARE
	STAINLESS STEEL / SOLID SURFACE
	STONE STATION POINT
	STATION POINT STAGGERED
	STANDARD
	STIFFENER
	STEEL
	STRUCTURAL
	SUSPENDED SHEET VINYL
	SHEET VIIVE
	TEMPERED
	TOP AND BOTTOM
	TOP OF CURP.
	TOP OF CURB TEMPERATURE / TEMPORARY
	THICK / THICKNESS
	TOTAL LOAD
	TOE NAIL
	TOP OF
	TOP OF FOOTING TOP OF STEEL
	TOP OF WALL
	THERMOPLASTIC POLYOLEFIN
TRANSV	TRANSVERSE
	TUBE STEEL
	TYPICAL
	UNDERSIDE
	UNDER COUNTER
	UNDER WRITERS LABORATORIES
NC	UNLESS NOTED OTHERWISE
	UNITED STATES GYPSUM
	VINYL COMPOSITION TILE
	VERTICAL
	VESTIBULE
	VERIFY
	VERIFY IN FIELD VISION PANEL
	WITH
	COATING WITH CHEMICAL
	RESISTANCE WITHOUT
	WOOD BASE
	WATER CLOSET / WALL COVERING
	WOOD
	WIDE FLANGE BEAM WATER HEATER
	WATER PROOF / WOOD PANELING /
	WORK POINT

WATER RESISTANT

WELDED WIRE FABRIC

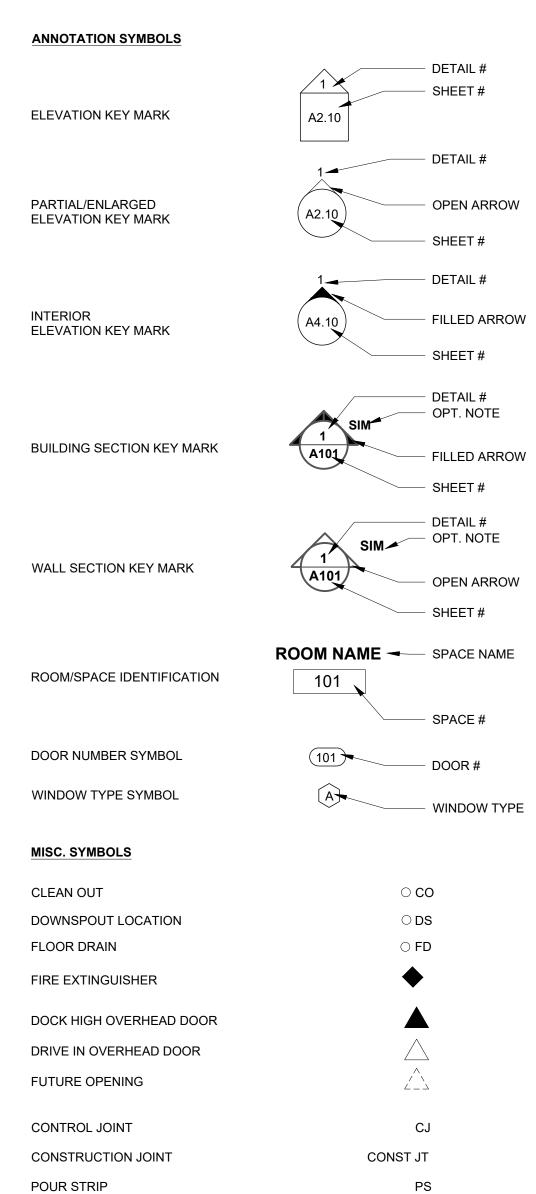
WELDED WIRE MESH

WS

WWF

WATER RESISTANT GYPSUM BOARD

WATER STOP / WELDED STUD

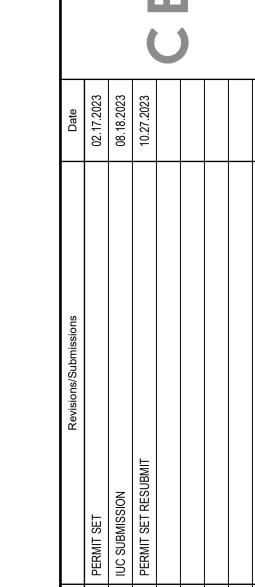


PROJECT GENERAL NOTES

- A. ALL WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE LATEST ADOPTED BUILDING CODE EDITION, AND TO CONDITIONS AND SPECIFICATIONS OF ALL GOVERNING AUTHORITIES. VERIFY AND CONFIRM ALL CONDITIONS, DIMENSIONS, AND LAYOUT INFORMATION PRIOR TO
- START OF CONSTRUCTION. NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO START OF WORK. ANY CORRECTION WORK REQUIRED AS A RESULT OF NOT REPORTING SUCH DISCREPANCIES SHALL BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR AND SUBCONTRACTORS SHALL CAREFULLY EXAMINE THE SITE AND THE
- CONSTRUCTION DOCUMENTS OF THE ENTIRE WORK. INCONSISTENCIES IN THE PLANS OR SPECIFICATIONS SHALL BE CALLED TO THE ATTENTION OF TENANT. REFER TO ENLARGED PLANS AND ELEVATIONS WHERE INDICATED FOR ADDITIONAL INFORMATION. ENLARGED PLANS TAKE PRECEDENCE OVER PLANS OF SMALLER SCALE, AND
- DETAILS TAKE PRECEDENCE OVER PLANS. IN THE CASE OF A CONFLICT, THE HIGHEST COST OPTION SHOULD BE PRICED.
- DETAIL REFERENCES SHALL BE APPLIED TO ALL INSTANCES WHERE THE SAME CONDITIONS OCCUR, UNLESS NOTED OTHERWISE.
- DIMENSIONS ARE TO STRUCTURAL GRID, CENTER LINE OF COLUMNS, AND FACE OF
- STUDS/CONCRETE WALL, UNLESS NOTED OTHERWISE. THE TERMS "ABOVE FINISH FLOOR" (AFF) AND "FINISH FLOOR ELEVATION" (FFE) REFER TO FINAL FINISHED FLOOR ELEVATION, WHETHER BUILT-UP SLAB, COMPOSITE DECK, OR RAISED ACCESS FLOOR.
- H. DO NOT SCALE DRAWINGS. CUTTING AND DRILLING OF STRUCTURAL MEMBERS NOT DETAILED REQUIRES THE WRITTEN PERMISSION OF THE STRUCTURAL ENGINEER OF RECORD.
- SAVE AND RECYCLE DEMOLITION DEBRIS AS APPLICABLE. ALL DEMOLISHED OR REMOVED EXISTING MATERIAL SHALL BE LEGALLY DISPOSED. COORDINATE WITH AUTHORITY HAVING JURISDICTION FOR REQUIREMENTS FOR RECYCLING/RE-USE OF DEMOLITION DEBRIS. K. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE RESULTING FROM THEIR WORK. THE CONTRACTOR WILL COORDINATE CLEAN UP OF ALL AREAS AFFECTED BY DUST OR ANY

MATERIALS, BOTH DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT, INCLUDING THE INSIDE OF ALL WINDOWS AS NECESSARY SO THAT THE SPACE IS READY FOR

OCCUPANCY BY TENANT. THROUGHOUT THESE DOCUMENTS REFERENCES ARE MADE TO FOIO AND FTIT. IN THE EXECUTION OF THIS DESIGN THE OWNER AND TENANT ARE THE SAME ENTITY.



LA TEOFNEW POR 759025-01 AS SHOWN 02/17/2023

PHASE 1 SITE **PROJECT** GENERAL NOTES,

SYMBOLS, AND **ABBREVIATIONS**

ORANGETOWN STANDARD NOTES:

- PERFORMANCE STANDARDS REVIEWED BY TOWN OF ORANGETOWN ZONING BOARD: JANUARY 22, 2020 AS ZBA#20-08 AND ZBA#20-09
- TOTAL AREA OF DISTURBANCE (A.O.D.) = 0.00 ACRES
- THE MAXIMUM SOIL EXPOSURE LIMIT IS 14 DAYS
- LOT DRAINAGE SHOWN SHALL CONSTITUTE EASEMENTS RUNNING WITH THE LAND AND ARE NOT. TO BE DISTURBED
- ALL UTILITIES, INCLUDING ELECTRIC AND TELEPHONE SERVICE, SHALL BE INSTALLED UNDERGROUND
- THIS PLAN DOES NOT CONFLICT WITH THE COUNTY OFFICIAL MAP AND HAS BEEN APPROVED IN THE MANNER SPECIFIED BY SECTION 239L&M OF THE GENERAL MUNICIPAL LAW OF THE STATE OF **NEW YORK**
- AT LEAST ONE WEEK PRIOR TO THE COMMENCEMENT OF ANY WORK, INCLUDING THE INSTALLATION OF EROSION CONTROL DEVICES OR THE REMOVAL OF TREES AND VEGETATION, A PRE-CONSTRUCTION MEETING MUST BE HELD WITH THE TOWN OF ORANGETOWN DEPARTMENT OF ENVIRONMENTAL MANAGEMENT AND ENGINEERING, SUPERINTENDENT OF HIGHWAYS AND THE OFFICE OF BUILDING, ZONING, AND PLANNING ADMINISTRATION AND ENFORCEMENT. IT IS THE RESPONSIBILITY AND OBLIGATION OF THE PROPERTY OWNER TO ARRANGE SUCH A MEETING.
- ALL OUTDOOR CONSTRUCTION ACTIVITIES, INCLUDING SITE-CLEARING OPERATIONS IF APPLICABLE, SHALL TAKE PLACE BETWEEN THE HOURS OF 7:00 A.M. AND 7:00 P.M., MONDAY THROUGH SATURDAY. NO SUCH ACTIVITIES SHALL TAKE PLACE ON SUNDAY OR A LEGAL HOLIDAY. THE SAME CRITERIA SHALL APPLY TO INDOOR CONSTRUCTION ACTIVITIES, EXCEPT THAT SUCH ACTIVITIES MAY TAKE PLACE BETWEEN THE HOURS OF 7:00 A.M. AND 10:00 P.M.

CODED NOTES:

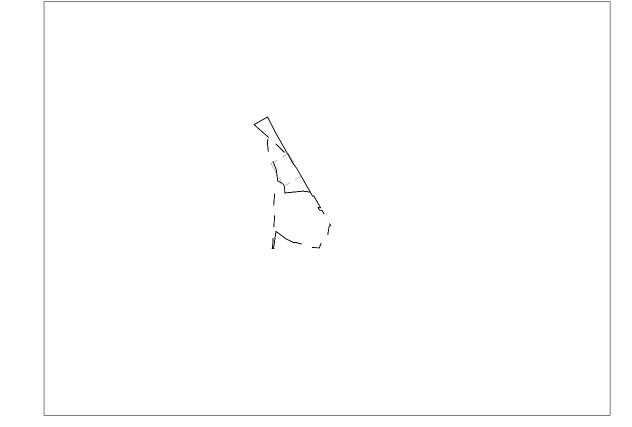
- 1) PROPOSED ELECTRIC VEHICLE CHARGER POST WITH BOLLARD PROTECTION. REFER TO ELECTRIC VEHICLE CHARGER INSTALLATION - PHASE 1 PLANS PREPARED BY CEC, INC.
- 2) PROPOSED ELECTRICAL EQUIPMENT WITH BOLLARD PROTECTION. REFER TO ELECTRIC VEHICLE CHARGER INSTALLATION - PHASE 1 PLANS PREPARED BY CEC, INC.

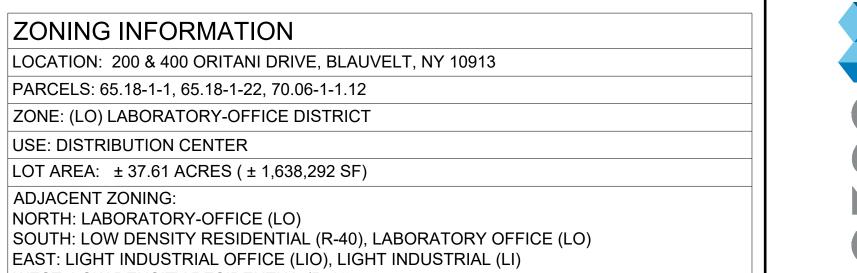
SITE NOTES

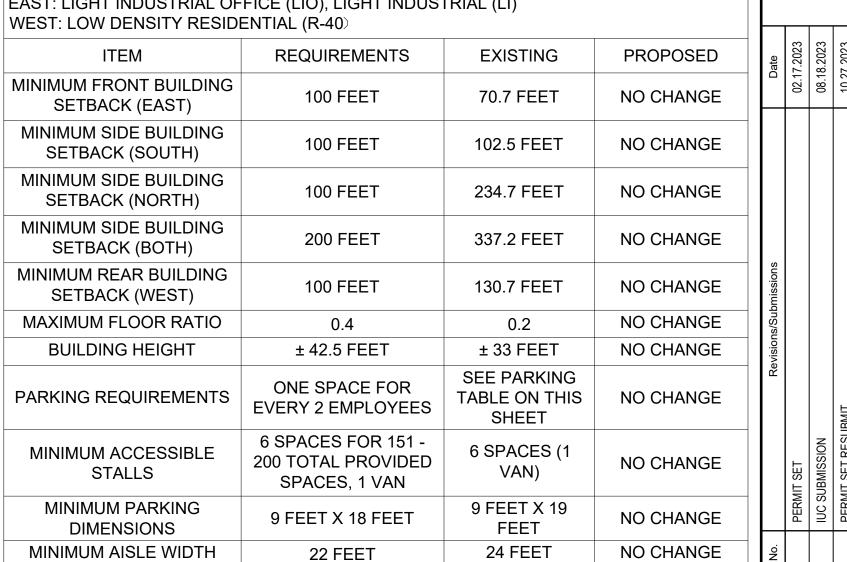
- 1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CALL NEW YORK ONE CALL AND ALL UTILITY COMPANIES TO SCHEDULE ANY UTILITY SERVICE REMOVAL AND/OR ABANDONMENT. ALL UTILITIES SHALL BE REMOVED AND/OR RELOCATED PER THE SPECIFICATIONS OF THE UTILITY COMPANIES. THE CONTRACTOR IS RESPONSIBLE TO PAY ALL FEES AND CHARGES ASSOCIATED
- 2. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL TOWN/COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
- 3. ALL MATERIAL NOTED ON DRAWINGS WILL BE SUPPLIED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
- 4. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF RAMPS.
- 5. ALL DIMENSIONS AND RADII ARE TO THE FACE OF THE CURB OR EDGE OF PAVEMENT, AS
- 6. PROVIDE STRIPING AS SHOWN. PARKING STALLS SHALL BE PAINTED WITH 4" WHITE, WIDE LINES. KILL WEEDS, CLEAN, POWER WASH AND REMOVE ANY EXISTING RESTRIPING THAT CONFLICTS WITH PROPOSED STRIPING. COORDINATE ADDITIONAL SITE MAINTENANCE WITH TENANT CM.
- 7. REFER TO MECHANICAL PLANS FOR EQUIPMENT LAYOUT.

APPLICABLE, UNLESS OTHERWISE NOTED.

- 8. REFER TO ELECTRICAL PLANS FOR ELECTRICAL WORK.
- 9. REFER TO ORIGINAL SURVEY PROVIDED BY BLEW & ASSOCIATES, DATED 10/31/2019.
- 10. REFER TO CURRENT VERSION OF 'TENANT' SIGNAGE STANDARDS DOCUMENT FOR ALL SIGN AND PAVEMENT GRAPHICS AND DETAILS.







NO CHANGE ± 87 FEET NO CHANGE

NO CHANGE

GENERAL & TENANT SIGN FACE LEGENDS SEE PAGE AS1.11

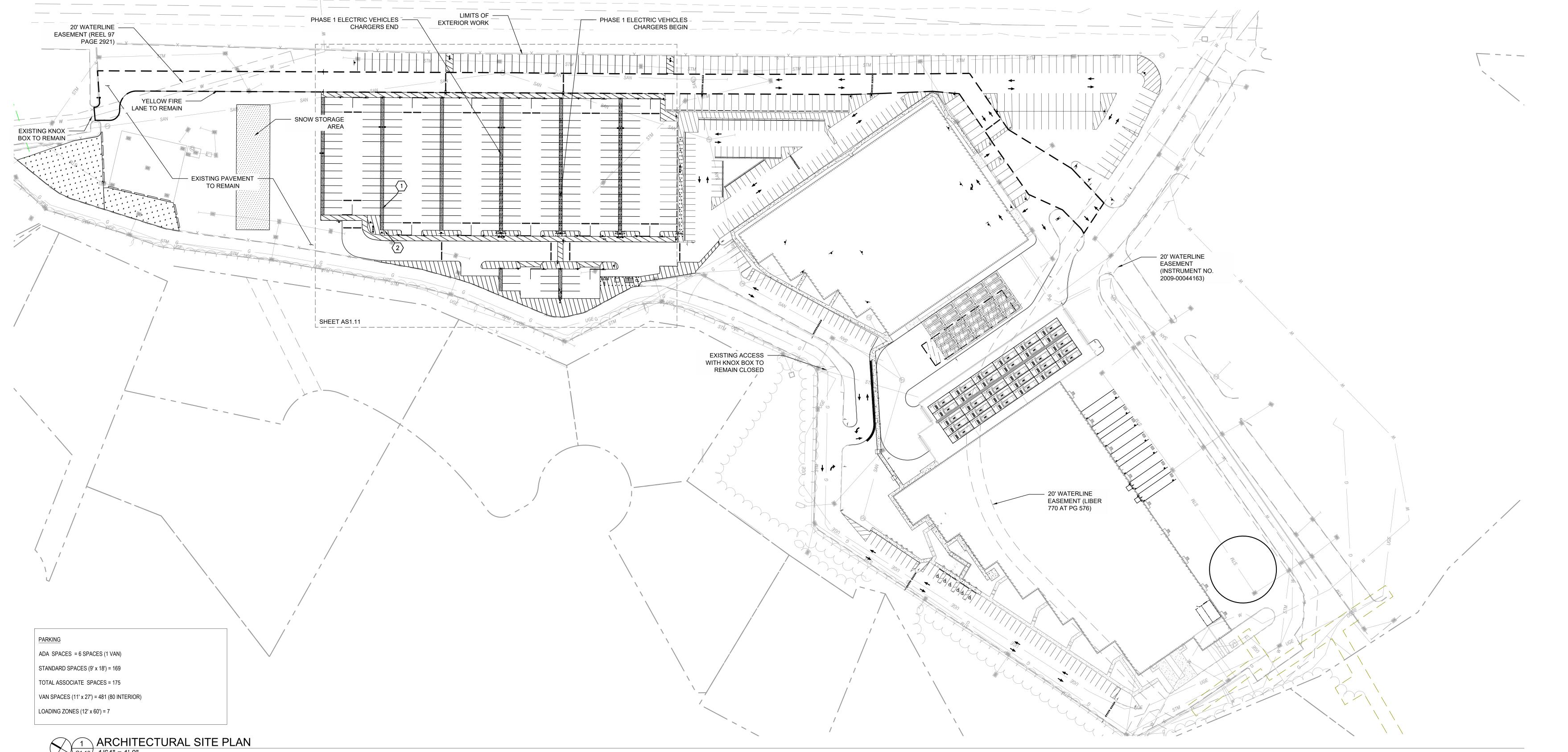
25 FEET

MAX 75%

MINIMUM PARKING

SETBACK IMPERVIOUS LAND

COVERAGE

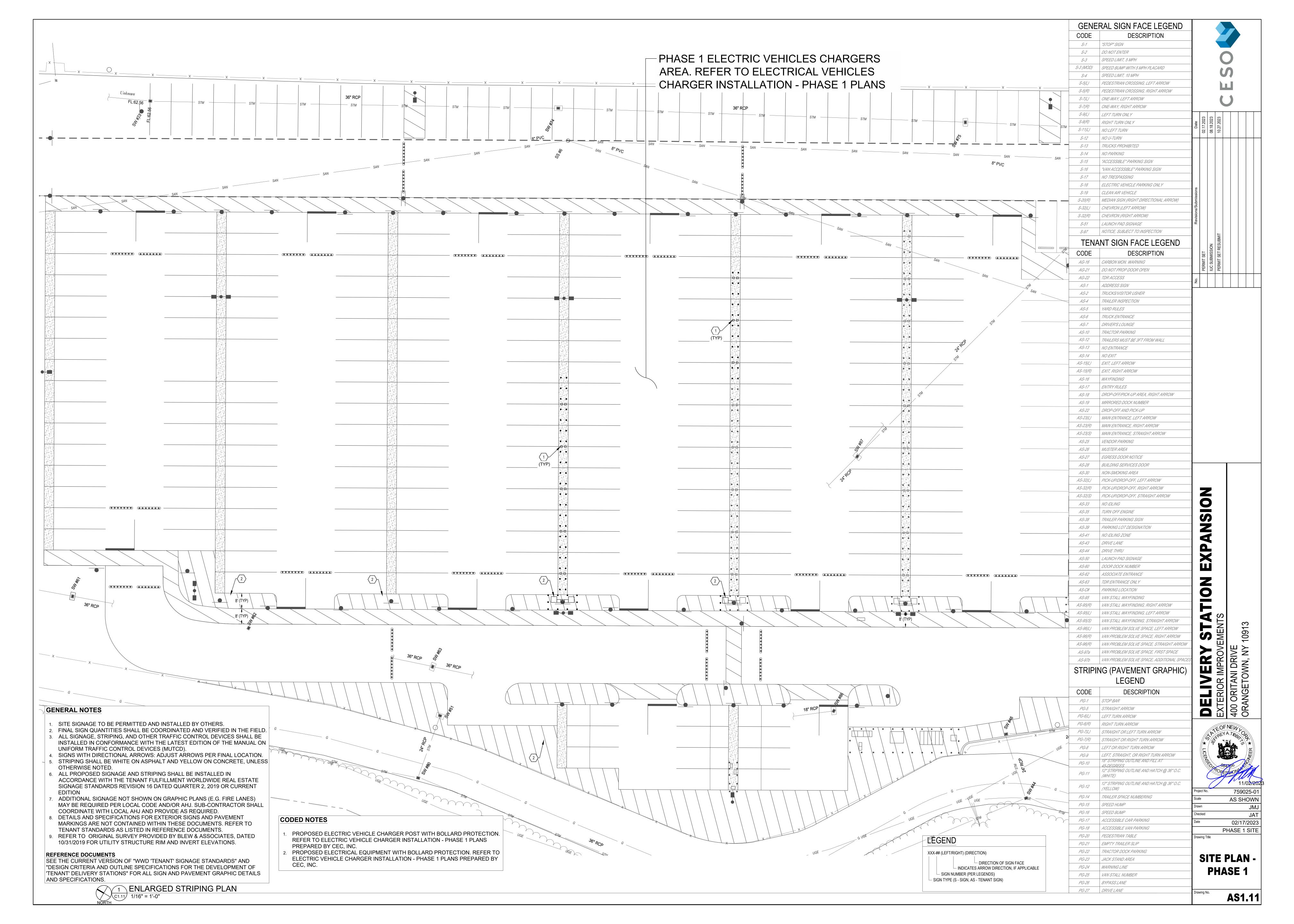


AS SHOWN

02/17/2023 PHASE 1 SITE Orawing Title

ARCHITECTURAL SITE PLAN

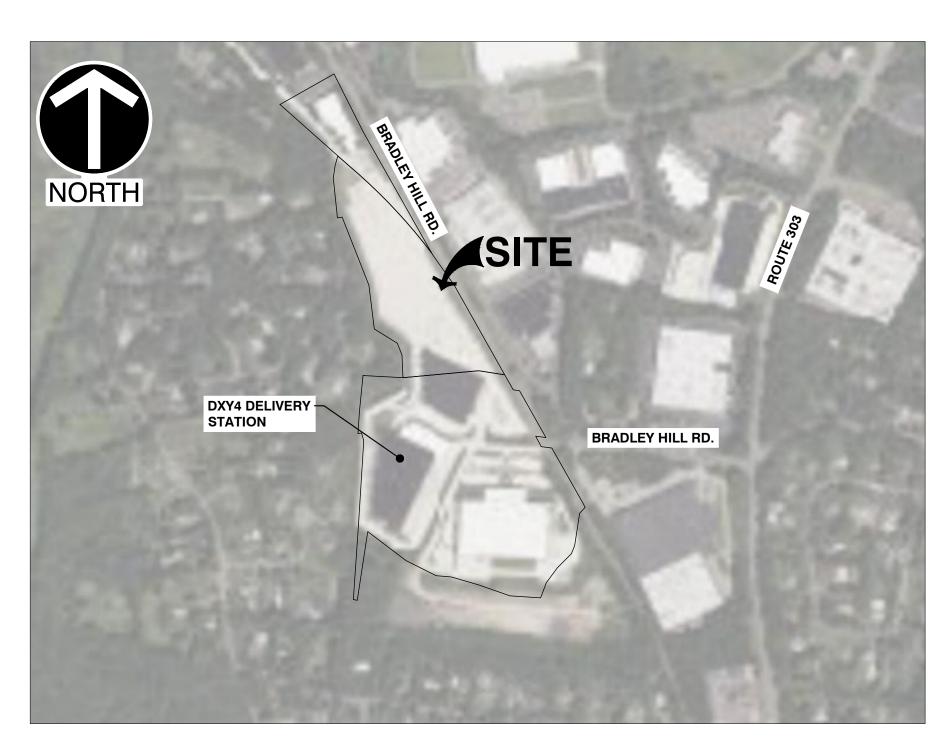
AS1.10



ELECTRIC VEHICLE CHARGER INSTALLATION DXY4 DELIVERY STATION

400 ORITANI DRIVE ORANGETOWN, NY 10913 PERMIT DRAWING SET - PHASE 1

SHEET INDEX



SITE VICINITY MAP REFERENCE: AUTODESK GEOLOCATION AERIAL IMAGERY, OBTAINED IN 2022. SCALE IN FEET

PREPARED BY: CIVIL & ENVIRONMENTAL CONSULTANTS OF NEW YORK, INC. G0.00-BP1 COVER SHEET PREPARED BY: CIVIL & ENVIRONMENTAL CONSULTANTS OF NEW YORK, INC. C1.00-BP1 EXISTING CONDITIONS PLAN C2.00-BP1 | EV CHARGER INSTALLATION SITE PLAN • C8.00-BP1 | DETAIL SHEET (1 OF 2) C8.01-BP1 | DETAIL SHEET (2 OF 2) C9.00-BP1 | EROSION & SEDIMENTATION CONTROL PLAN C9.01-BP1 | EROSION & SEDIMENTATION CONTROL NOTES AND DETAILS PREPARED BY: EMANUELSON-PODAS, INC. E0.00-BP1 | ELECTRICAL TITLE SHEET • • E0.10-BP1 | ELECTRICAL SITE PLAN E1.11-BP1 | ELECTRICAL ENLARGED DISTRIBUTION PLAN E5.00-BP1 | ELECTRICAL ONE-LINE DIAGRAM • • E6.00-BP1 PANEL SCHEDULES E7.01-BP1 | ELECTRICAL DETAILS • • E7.02-BP1 | ELECTRICAL DETAILS • • E8.00-BP1 | ELECTRICAL SPECIFICATIONS • E8.01-BP1 | ELECTRICAL SPECIFICATIONS E8.02-BP1 | ELECTRICAL SPECIFICATIONS • E8.03-BP1 | ELECTRICAL SPECIFICATIONS •

GENERAL NOTES

- 1. EXISTING CONDITIONS AS DEPICTED ON THESE PLANS ARE GENERAL AND ILLUSTRATIVE IN NATURE BASED UPON RECORD DRAWINGS PROVIDED BY AMAZON. IT IS THE RESPONSIBILIT PRIOR TO BIDDING ON THIS PROJECT. IF CONDITIONS ENCOUNTERED DURING EXAMINATION
- INFORMATION FROM THE DXY4 SITE CONSTRUCTION PLANS AND SURVEY (GAS, WATER, STORM SEWER, SANITARY SEWER, ELECTRIC CONDUIT). CEC IS NOT RESPONSIBLE FOR TH
- (INCLUDING THOSE LABELED PER RECORD DATA) PRIOR TO THE BEGINNING OF
- 5. THE CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
- 6. THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES TO PERSONNEL, EQUIPMENT AND/OR EXISTING FACILITIES OCCURRING IN THE COURSE OF THE DEMOLITION AND CONSTRUCTION DESCRIBED IN THE PLANS AND SPECIFICATIONS.
- 7. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL APPLICABLE PERMITS, AND PAY ALL REQUIRED FEES PRIOR TO BEGINNING WORK.
- 8. ANY WORK PERFORMED IN THE TOWN OF ORANGETOWN OR NEW YORK DEPARTMENT OF TRANSPORTATION RIGHTS OF WAY SHALL BE IN ACCORDANCE WITH THE APPLICABLE LOCAL OR STATE REQUIREMENTS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN THE NECESSARY PERMITS FOR THE WORK, SCHEDULE NECESSARY INSPECTIONS, AND PROVIDE THE NECESSARY TRAFFIC CONTROL MEASURES AND DEVICES, ETC., FOR WORK PERFORMED IN THE RIGHT OF WAYS.
- 9. CONTRACTOR SHALL IMPLEMENT ALL SOIL AND EROSION CONTROL PRACTICES REQUIRED BY THE CITY OF ORANGETOWN AND THE NEW YORK DEPARTMENT OF ENVIRONMENTAL
- 10. ALL GROUND SURFACE AREAS THAT HAVE BEEN EXPOSED OR LEFT BARE AS A RESULT OF CONSTRUCTION AND FINAL GRADING, SHALL BE SEEDED AND MULCHED AS SOON AS PRACTICAL IN ACCORDANCE WITH NY GUIDELINES.
- 11. ALL WORK PERFORMED BY THE CONTRACTOR SHALL CONFORM TO THE LATEST REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT.
- 12. THE CONTRACTOR SHALL REFER TO OTHER PLANS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE
- 13. SITE SIGNAGE AND STRIPING SHALL BE IN ACCORDANCE WITH THE NEW YORK MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- 14. THE CONTRACTOR SHALL CHECK EXISTING GRADES, DIMENSIONS, AND INVERTS IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE PRIOR TO BEGINNING
- 15. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES, INCLUDING IRRIGATION LINES. THE CONTRACTOR SHALL TAKE CARE TO PROTECT UTILITIES THAT ARE TO REMAIN. RELOCATE EXISTING UTILITIES AS INDICATED, OR
- 16. THE EROSION AND SEDIMENT CONTROL BMPS SHOWN HEREON HAVE BEEN DESIGNED USING BEST AVAILABLE INFORMATION. SOME LIMITATIONS ARE INHERENT, INCLUDING THE INABILITY TO DEPICT LOCALIZED DEVIATIONS. SITE SPECIFIC CONDITIONS SUCH AS ROCK OUTCROPPINGS, TREES, STUMPS, UTILITIES, FENCES, OR FEATURES INSTALLED SUBSEQUENT TO PROCUREMENT OF THE TOPOGRAPHIC MAPPING MAY NOT BE REFLECTED ON THE PLAN. THE INTENT OF THIS PLAN IS TO MINIMIZE EROSION AND PREVENT SEDIMENT — LADEN RUNOFF FROM DISCHARGING BEYOND THE LIMITS OF CONSTRUCTION OR TO SENSITIVE NATURAL RESOURCES. BMPS SHALL BE INSTALLED AS CLOSELY AS POSSIBLE TO THE LOCATIONS INDICATED ON THE PLANS; HOWEVER DEVIATIONS MAY BE REQUIRED TO ADDRESS AFOREMENTIONED LIMITATIONS AND SITE-SPECIFIC CONDITIONS AND PROTECT THE

PROJECT DESCRIPTION

THIS PROJECT WILL CONSIST OF 2 PHASES OF CONSTRUCTION. AMAZON PLANS TO INSTALL 40 LEVEL 2 ELECTRIC VEHICLE (EV) CHARGERS DURING PHASE 1 OF CONSTRUCTION. ASSOCIATED ELECTRICAL GEAR WITH CONCRETE PADS, CONDUCTORS, AND BOLLARDS WILL BE INSTALLED. ESTIMATED CONSTRUCTION SCHEDULE - START: TBD

DEVELOPMENT TEAM

AMAZON.COM SERVICES, INC. 410 TERRY AVENUE NORTH SEATTLE, WA 98109

C.M. CONTACT: JOSHUA GATES PHONE: 520.907.2766 EMAIL: JOSHGATE@AMAZON.COM

CIVIL ENGINEER **CIVIL & ENVIRONMENTAL CONSULTANTS OF NEW YORK, INC.** 908 NIAGARA FALLS BOULEVARD, SUITE 203 NORTH TANAWANDA, NY 14120

CONTACT: ETHAN BRICE PHONE: 412.275.2974 EMAIL: EBRICE@CECINC.COM **EMANUELSON-PODAS, INC.** 7705 BUSH LAKE ROAD EDINA, MN 55439 CONTACT: TOM ROBERTS PHONE: 952-255-6212

EMAIL: TROBERTS@EPINC.COM

NEW YORK LAW REQUIRES AT LEAST 2 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE -STOP CALL DIG SAFELY NEW YORK, INC. 1-800-962-7962. NEW YORK STATE CODE RULE 753 (1997) AS AMENDED IN JULY 2002 AND JANUARY 2012 REQUIRES NO LESS THAN 2 WORKING DAYS NOTICE NOR MORE THAN 10 WORKING DAYS NOTICE FROM EXCAVATORS WHO ARE ABOUT TO: DIG, DRILL, BLAST, AUGER, BORE, GRADE, TRENCH, OR DEMOLISH WHEN IN THE CONSTRUCTION PHASE. FOR LOCATION REQUESTS IN THE STATE OF NEW YORK, SUBMIT A REQUEST ONLINE VIA DIG SAFELY NEW YORK'S ENTRY PLATFORM EXACTIX OR

CALL TOLL FREE 1-800-962-7962. UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THE LOCATION MUST BE CONSIDERED APPROXIMATE. OTHER UNDERGROUND UTILITIES MAY EXIST WHICH ARE NOT SHOWN. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN ALL PHYSICAL LOCATIONS OF UTILITY LINES PRIOR TO THE TIME OF CONSTRUCTION. IN NO WAY SHALL THE CONTRACTOR HOLD THE SURVEYOR RESPONSIBLE FOR ANY UTILITY LOCATION SHOWN ON THIS PLAN.

PRELIMINARY

NOT FOR CONSTRUCTION

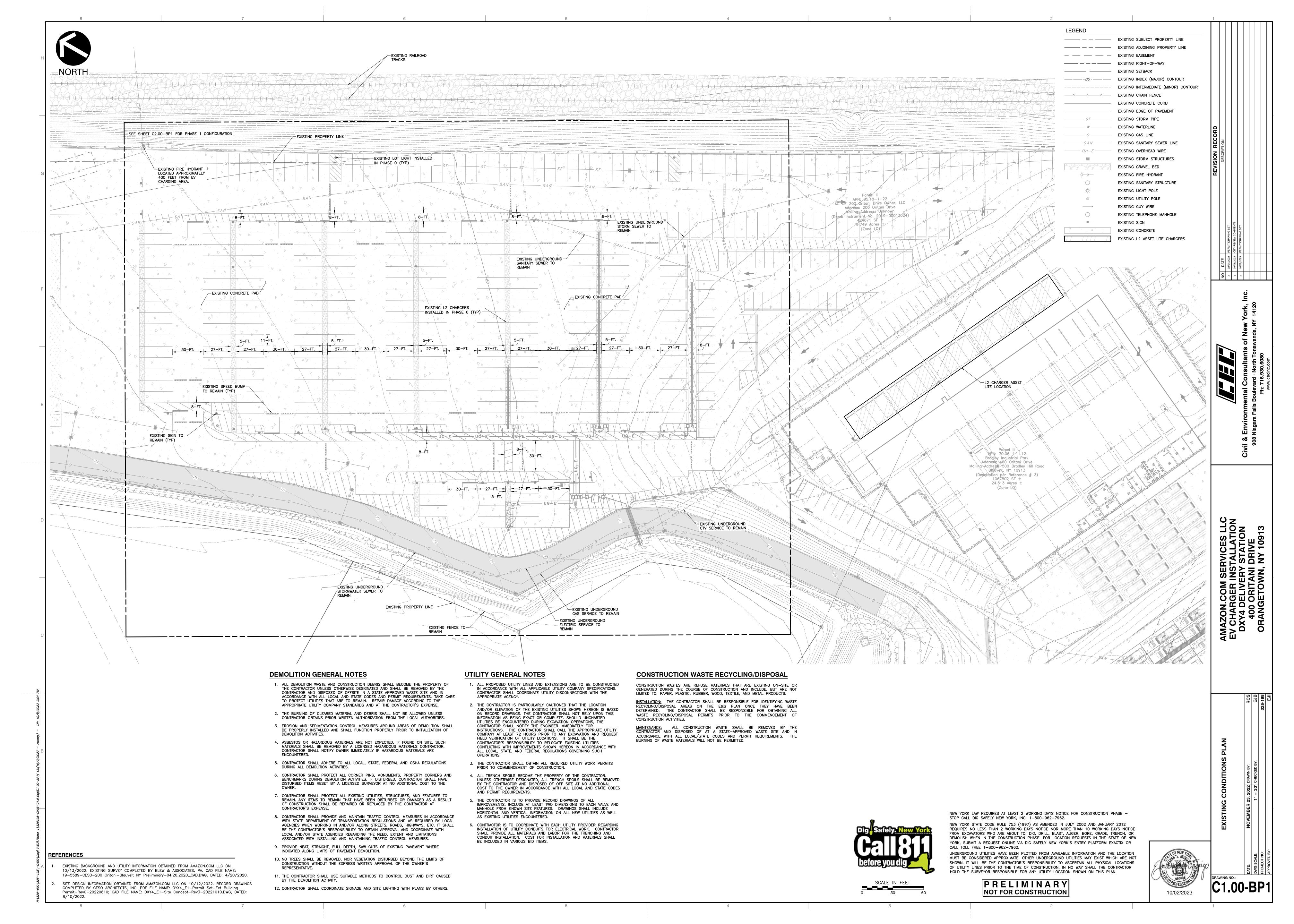


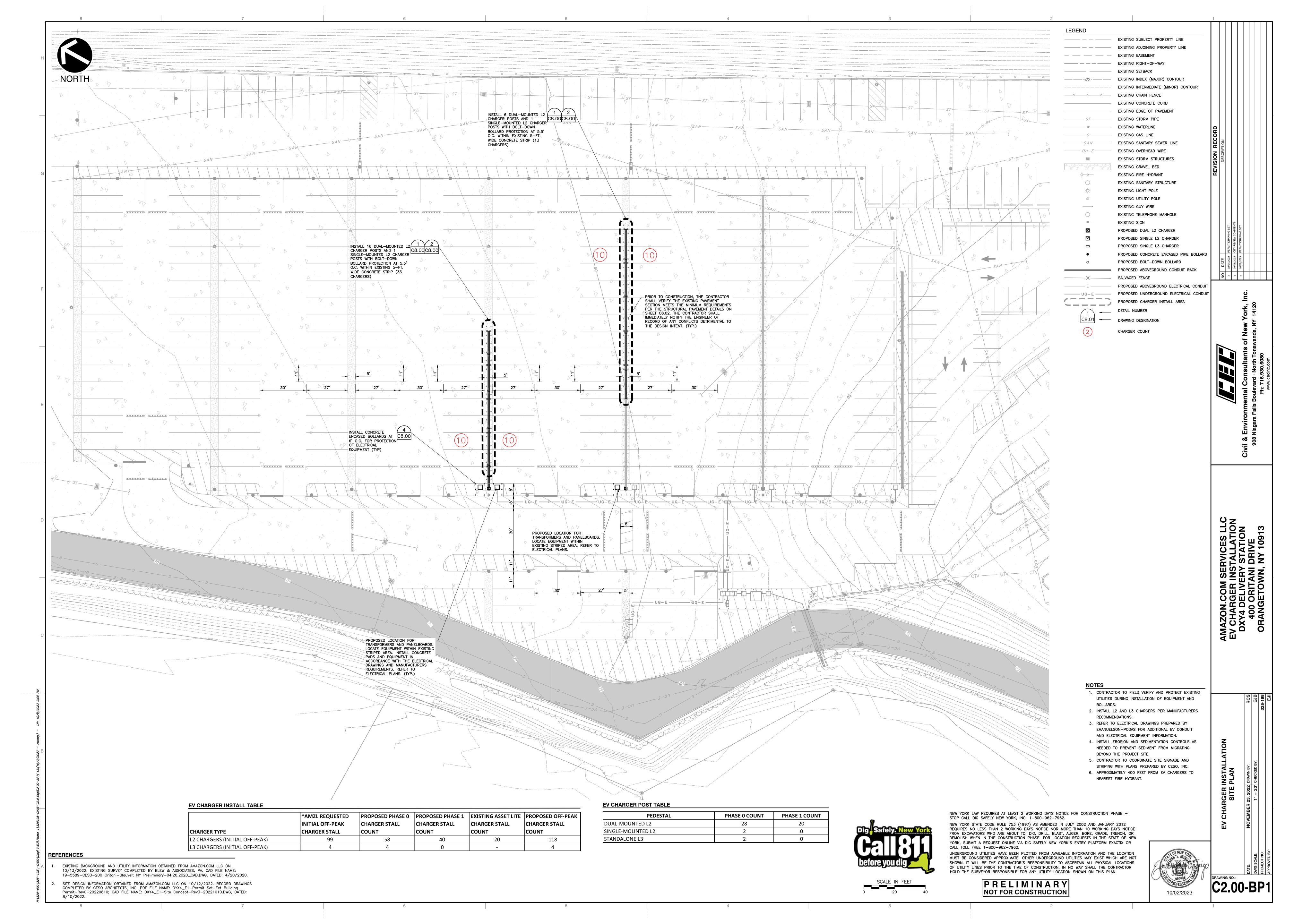
REFERENCES

8/10/2022.

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(MUTCD). ALL STRIPING SHALL BE LONG LIFE EPOXY RESIN AND 4-INCHES WIDE UNLESS OTHERWISE NOTED.

PAVEMENT STRIPING DETAIL

NOT TO SCALE

1. REFER TO SITE PLAN SHEET C2.00-BP1 & C.200-BP2 FOR LOCATIONS OF PAVEMENT MARKINGS. 2. STRIPING SHALL BE INSTALLED IN CONFORMANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

OUTLINE AND HATCH USE WHITE PAINT TO STRIPE PROHIBIT VEHICLE TRAVEL AND PARKING.

 $\frac{PG-10}{\text{TRAFFIC ISLAND} - 4-\text{IN. STRIPING}}$

-SAWCUT EXISTING PAVEMENT TO CLEAN, NEAT, AND STRAIGHT ------ EXISTING PAVEMENT SECTION _____

UTILITY MINIMUM COVER REQUIRED* ELECTRIC CONDUITS * AS MEASURED FROM TOP OF PIPE TO FINAL GROUND SURFACE PROPOSED BITUMINOUS WEARING -AND BINDER COURSES PER PAVEMENT SECTION DETAIL

1. ALL MATERIALS EXCAVATED FROM THE UTILITY TRENCH SHALL BE STOCKPILED A MINIMUM SUFFICIENT DISTANCE FROM ALL TRENCHES TO PREVENT SLIDES OR CAVE—INS.

4. THE CONTRACTOR SHALL CONSTRUCT THE UTILITY TRENCHES AND PROVIDE ADEQUATE SHORING (WHERE NECESSARY) IN CONFORMANCE WITH THE LATEST REQUIREMENTS FOR CONSTRUCTION STANDARD FOR EXCAVATIONS (29 CFR PART

5. THE CONTRACTOR SHALL VERIFY THAT THE MINIMUM SPECIFIED PIPE COVER IS PROVIDED BETWEEN THE FINAL GROUND SURFACE AND TOP OF PIPE BEFORE LAYING PIPE. PROVIDE A MINIMUM OF 2-FT. OF COVER ABOVE ALL PIPES DURING

8. CONTRACTOR MAY PROPOSE A TRENCHLESS SOLUTION AS A VALUED ENGINEERING ALTERNATIVE TO OPEN CUT TRENCHING.

TYPICAL UTILITY TRENCH DETAIL

ROUGHEN, CLEAN, AND APPLY

EXISTING SURFACE

/ JACK HAMMER EXISTING CONCRETE AND REMOVE AS NOTED ON PLANS

- LIMITS OF DESIRED

DEMOLITION

EPOXY BONDING AGENT TO THE

7. FURNISH AND INSTALL DETECTABLE WARNING TAPE FOR EACH UNDERGROUND UTILITY LINE, PER MANUFACTURER'S

6. INCREASE TRENCH WIDTH AS NECESSARY TO ALLOW FOR PROPER COMPACTION OF BEDDING/BACKFILL.

3. THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT FOR THE BACKFILL MATERIALS SHALL BE DETERMINED BY ASTM D1557, AND THE RELATIVE DENSITY OF THE AASHTO NO. 57 AGGREGATE SHALL BE DETERMINED BY ASTM D4253 AND ASTM D4254.

2. ALL BACKFILL MATERIALS SHALL BE APPROVED BY THE OWNER OR THEIR REPRESENTATIVE BEFORE BEING PLACED.

1926.650-.652 SUBPART P) PROMULGATED BY OSHA.

1/2" MIN

CONCRETE SAWCUT DETAIL NOT TO SCALE

2-FT. + O.D. MIN.

PAVEMENT SAWCUT-

EXISTING ASPHALT PAVEMENT-

PROPOSED AGGREGATE

BASE COURSE SHALL

MATCH EXISTING

ACCORDANCE WITH STATE DOT

SPECIFICATIONS UNDER ALL PAVED AREAS

ABBREVIATIONS

D = INSIDE DIAMETER O.D. = OUTSIDE DIAMETER

SPECIFICATIONS.

SAW CUT EXIST. CONCRETE ON

LIMITS OF AREA TO BE REMOVED

CUT EXIST. CONC 1/2" MIN BEYOND ——

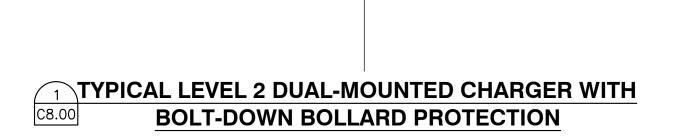
DESIRED CUT & REMOVE EXIST. REINF,

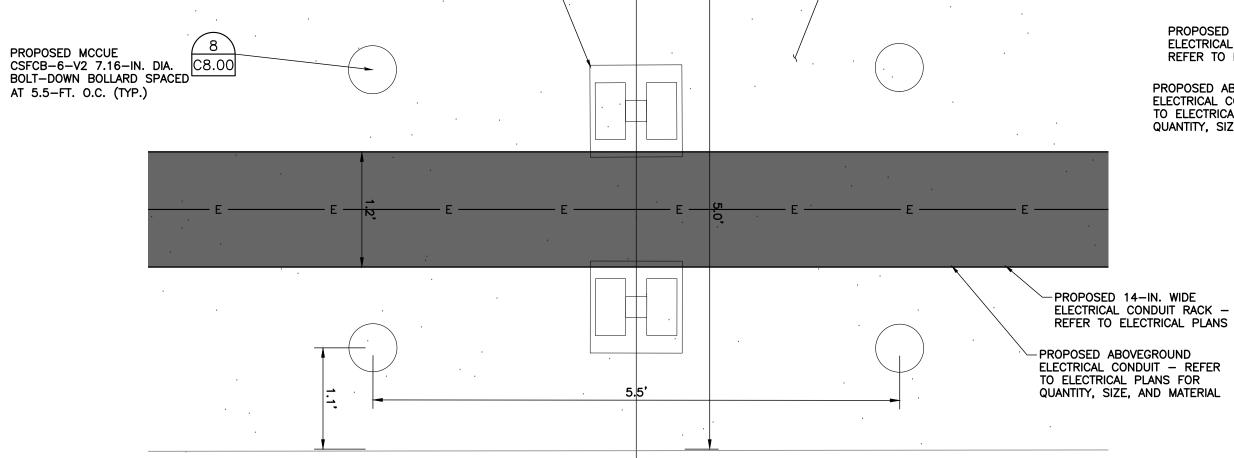
ANCHOR BOLTS, EMBED ITEMS, ETC. -

RESURFACE PER SPECS

BACKFILL AGGREGATE IN

COVER REQUIREMENTS





EXISTING 5-FT. WIDE CONCRETE STRIP

EXISTING PARKING STALL STRIPING-

PROPOSED DUAL-MOUNTED L2

CHARGER PEDESTAL - REFER TO C8.01 C8.01

SUPPLEMENTAL DRAWINGS. (TYP.)

FILL PIPE WITH CONCRETE-

SHAPING TOP TO DRAIN

6" DIA. SCH 40 STEEL

PIPE PAINTED YELLOW

3,500 PSI CONCRETE-

4 6-IN. DIA. PIPE BOLLARD DETAIL

SECTION CB-CB

CSFCB-6-V2

1. DETAIL PROVIDED BY AMAZON AND PREPARED BY MCCUE CORPORATION.

FLEXCORE BOLLARD DETAIL

NOT TO SCALE

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REFERENCES

8/10/2022.

WATER

SLOPED TOP OF CONCRETE-

PROPOSED MCCUE CSFCB-6-V2 7.16-IN. DIA. C8.00 BOLT-DOWN BOLLARD SPACED AT 5.5-FT. O.C. (TYP.) PROPOSED 14-IN. WIDE ELECTRICAL CONDUIT RACK -REFER TO ELECTRICAL PLANS PROPOSED ABOVEGROUND ELECTRICAL CONDUIT – REFER TO ELECTRICAL PLANS FOR QUANTITY, SIZE, AND MATERIAL

- FINAL GROUND SURFACE IN

___UTILITY SERVICE LINE

NON-PAVEMENT AREAS (ALLOW FOR MINIMUM 6-IN. OF TOPSOIL)

BACKFILL MATERIAL SHALL CONSIST OF APPROVED TRENCH SPOIL PLACED IN MAXIMUM 8-IN. THICK, LOOSE

LIFTS AND COMPACTED TO A MINIMUM OF 100% OF ITS

PIPE BEDDING MATERIAL SHALL CONSIST OF AASHTO NO. 57 CRUSHED LIMESTONE AGGREGATE PLACED IN MAXIMUM 6-IN. THICK LOOSE LIFTS AND COMPACTED TO AT LEAST

MID-POINT. THE BEDDING MATERIAL PLACED ABOVE THE

COMPACTED AS PREVIOUSLY DESCRIBED), OR SAND WHICH IS PLACED IN MAXIMUM 6-IN. THICK LOOSE LIFTS AND COMPACTED TO A POINT OF NON-MOVEMENT BENEATH THE COMPACTING EQUIPMENT.

DRILL AND EPOXY DOWEL WITH

HILTI HT HY-200 EPOXY OR

1/2" THICK PREMOLDED — EXPANSION JOINT

MATERIAL

PIPE MID-POINT SHALL CONSIST OF AASHTO NO. 57 CRUSHED LIMESTONE AGGREGATE (PLACED AND

70% OF ITS RELATIVE DENSITY BELOW THE PIPE

MAXIMUM DRY DENSITY AND WITHIN ±3% OF ITS

OPTIMUM MOISTURE CONTENT AS PER STANDARD PROCTOR TEST.

TYPICAL LEVEL 2 SINGLE-MOUNTED CHARGER

WITH BOLT-DOWN BOLLARD PROTECTION

EXISTING PARKING STALL STRIPING-

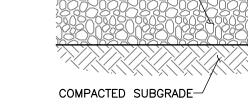
SUPPLEMENTAL DRAWINGS. (TYP.)

EXISTING 5-FT. WIDE CONCRETE STRIP PROPOSED DUAL-MOUNTED L2
CHARGER PEDESTAL - REFER TO C8.01 C8.01

TACK COAT TO BIND EXISTING PAVEMENT WITH NEW ASPHALT. 6 PAVEMENT SAWCUT DETAIL

1. PROVIDE TACK COAT ALONG SAWCUT TO BIND EXISTING PAVEMENT TO NEW PAVEMENT. FOR AREAS WITH PATCHING AND OVERLAY, PROVIDE

COMPACTED SUBGRADE-

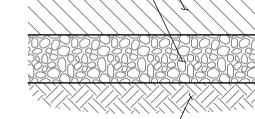


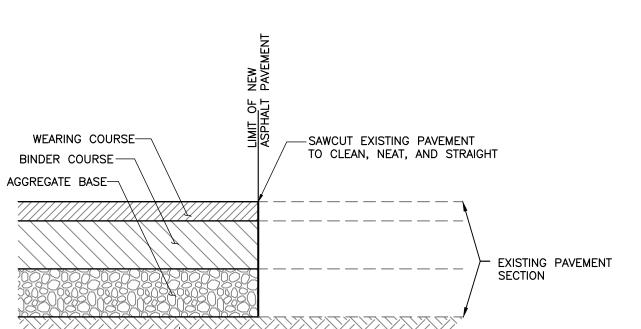
SEALER (OR APPROVED

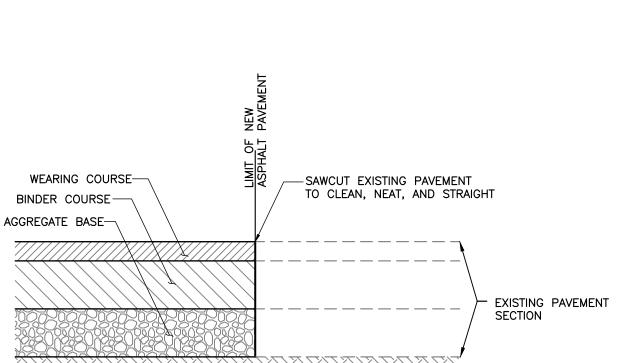
9B NEW SLAB TO EXISTING SLAB

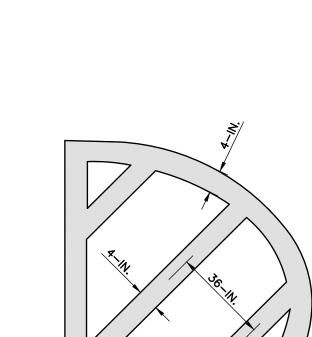
NOT TO SCALE

STOP REINFORCEMENT 2" FROM JOINT



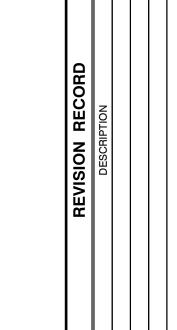








3 DETAIL NOT USED



3

PRELIMINARY NOT FOR CONSTRUCTION

NO SCALE

10 LEVEL 2 CHARGER PEDESTAL BASE DETAILS NOT TO SCALE

 $3\frac{7}{8}$ "x $3\frac{7}{8}$ " OD POST -(10GA SS CHANNEL, 2 Pc W/SPOT WELDED 5" THK MIN CONC SLAB —— (f'c MIN=2500PSI) POST SHALL BE CENTERED IN A MINIMUM OF 2'-0" SQUARE CONCRETE SLAB ELEVATION (A) PEDESTAL SIDE VIEW DUAL MOUNT PEDESTAL ISO VIEW NO SCALE NO SCALE STRUCTURAL STEEL
AND MISCELLANEOUS METAL (ALL OTHER STEEL) WELDING STRUCTURAL STEEL AND MISCELLENEOUS METAL (ALL OTHER STEEL) STEEL ANGLES AND CHANNELS A36 UNO, STAINLESS STEEL ALL OTHER STRUCTURAL SECTIONS A572, GRADE 50 GMAW AND FCAW-G WELDING PROCESSES SHALL NOT BE PERMITTED WHEN WIND SPEED EXCEEDS 3 MPH. HARDENED (FLAT OR BEVELED) WASHERS F436 PLAIN, UNHARDENED WASHERS F844 WHERE WELDING IS NOTED, THE DESIGNATION IS GIVEN AS A SUGGESTED CONSTRUCTION PROCEDURE ONLY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR IDENTIFYING THE METHOD OF FABRICATION. FACES OF FILLET WELDS EXPOSED TO VIEW SHALL HAVE AS-WELDED SURFACES
THAT ARE REASONABLY SMOOTH AND UNIFORM. NO FINISHING OR GRINDING SHALL
BE REQUIRED, EXCEPT WHERE CLEARANCES OR FIT OF OTHER ITEMS MAY SO
NECESSITATE. 1/2"ø POWER-STUD+SD2 — WORK MUST BE DONE UNDER THE SUPERVISION OF MACDONALD-MILLER FACILITY SOLUTIONS, LLC. DEWALT ANCHOR W/ 2" MIN 8. THIS ENGINEERING MAY NOT BE USED WITHOUT THE EXPRESS AUTHORIZATION FROM JOHN A. MARTIN AND ASSOCIATES, INC AND MACDONALD-MILLER FACILITY SOLUTIONS, LLC. EFF EMBED, (4 TOTAL) 8. PEDESTAL IS NOT DESIGNED TO WITHSTAND STRIKE BY VEHICLE AND MUST BE PROTECTED BY BOLLARDS OR OTHER MEANS. PLAN VIEW B **GENERAL NOTES** NO SCALE PEDESTAL TOP VIEW NO SCALE

WEIGHT: 65 LBS (ASSUMED)
DIMENSIONS (H X W X D): 59.05" X 9.84" X 2.56"
EPA (FT2): 5.54 FT2 1/2" DIA HILTI KWIK BOLT TZ2 PLAN VIEW SS 304 MECHANICAL ANCHORS. EFFECTIVE EMBEDMENT OF 2" OR ENGINER APPROVED EQUAL (ESR-4266)(TYP OF 4) — 9.84" PROPOSED PEDESTAL PROPOSED NON-SHRINK GROUT (1" MAX THICKNESS) -EXISTING CONCRETE (MIN 3,000 PSI) —— SIDE VIEW FRONT VIEW DUAL MOUNT PEDESTAL (NO CABLE MANAGEMENT) NO SCALE WEIGHT: 30.87 LBS DIMENSIONS (H X W X D): 34.25" X 10.04" X 18.90" EPA (FT2): 4.5 FT2 **TOP VIEW** 1/2" DIA HILTI KWIK BOLT TZ2 SS 304 MECHANICAL ANCHORS. SECTION 1 EFFECTIVE EMBEDMENT OF 2" OR ENGINER APPROVED EQUAL (ESR-4266)(TYP OF 4) 1. MINIMUM 6" CONCRETE EDGE DISTANCE FOR PROPOSED ANCHORAGE. 2. THE EXISTING CONCRETE IS ASSUMED TO MEET SIDE VIEW **FRONT VIEW** MINIMUM STEEL REQUIREMENTS.

DETAIL PROVIDED BY AMAZON AND PREPARED BY OTHERS.
 AMAZON IS RESPONSIBLE FOR PROCUREMENT OF PEDESTALS.

NO SCALE

PEDESTAL INSTALLATION DETAIL

DUAL MOUNT PEDESTAL (WITH CABLE MANAGEMENT)

11 LEVEL 2 CHARGER PEDESTAL BASE ALTERNATIVE DETAILS C8.01 NOT TO SCALE

DETAIL PROVIDED BY AMAZON AND PREPARED BY OTHERS.
 AMAZON IS RESPONSIBLE FOR PROCUREMENT OF PEDESTALS.

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GENERAL NOTES

- THESE GENERAL NOTES REPRESENT AND /OR SUMMARIZE KEY PROJECT INFORMATION FOR THE DRAWING USER'S CONVENIENCE. HOWEVER, ALL CONSTRUCTION DOCUMENTS SHOULD BE REVIEWED FOR FURTHER DETAILS AND
- 2. ALL REFERENCES TO REFERENCE STANDARDS HEREIN ARE TO MOST RECENT ISSUE IN EFFECT AS OF THE DATE OF THESE DOCUMENTS, UNLESS NOTED OTHERWISE IN CONSTRUCTION DOCUMENTS OR ON THE DRAWINGS.
- 3. ELEVATIONS SHOWN ARE RELATIVE TO THE F.F.E. (i.e., F.F.E. = 0'). 4. WORK THESE DRAWINGS WITH THOSE PREPARED BY OTHER DISCIPLINES: CIVIL, MEP, AND MANUFACTURER'S
- THE LOCATIONS OF THE INSTALLATION OF THIS PRODUCT VARIES. UPON DETERMINATION OF THE SITE LOCATION, THE EOR WILL REVIEW THE DESIGN AND DETAILS IN ACCORDANCE WITH THE LOCAL AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL BUILDING PERMITS AND SCHEDULING ACCOMMODATING ALL REQUIRED INSPECTIONS PERTAINING TO THE BUILDING PERMITS. SUBMIT SHOP DRAWINGS, PROJECT DATA AND SAMPLES AS SPECIFIED ON CONSTRUCTION DOCUMENTS. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE CONSTRUCTION IS FULLY
- INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, ETC. THAT MAY BE NECESSARY, SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER COMPLETION OF THE PROJECT. THIS ENGINEER DOES NOT HAVE CONTROL OR CHARGE OF, AND SHALL NOT BE RESPONSIBLE FOR, CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES. THIS INCLUDES SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK AND ACTS OR OMISSIONS OF THE CONTRACTOR, THEIR SUBCONTRACTORS, AND ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF THESE

SEQUENCE AND ENSURE THE STABILITY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS

COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND

DESIGN CODES

ICC INTERNATIONAL BUILDING CODE, 2018 EDITION
ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
ASCE 7 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES
CRSI PLACING REINFORCING BARS
CRSI REINFORCING BAR DETAILING
CRSI MSP-2-01 MANUAL OF STANDARD PRACTICE
ACI SP-66 ACI DETAILING MANUAL
AISC STEEL CONSTRUCTION MANUAL, 14TH EDITION
AWS D1.1 STRUCTURAL WELDING CODE — STEEL

PERSONS TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

DESIGN CRITERIA

RISK CATEGORY	
DEAD LOADS	20.15
L2 CHARGER SELF—WEIGHT L2 (ALTERNATE) SELF—WEIGHT	60 LB 126 LB
L3 CHARGER (50 kW) SELF—WEIGHT	364 LB
SEISMIC LOADS	
SEISMIC DESIGN CATEGORY	- 4
SITE CLASS	D (ASSUME
IMPORTANCE FACTOR	1.
TOTAL SEISMIC MASS: L2 CHARGER	50 LB
L2 (ALTERNATE) CHARGER	105 LB
L3 CHARGER (50 kW)	303 LB
WIND LOADS	
ULTIMATE WIND SPEED	130 MP
WIND EXPOSURE	

EXCEED CATEGORY II. WHERE THE DESIGN LOADING IS HIGHER, BASED ON THE LOCATION OF INSTALLATION OR THE AHJ. THE DETAILS HEREIN SHALL BE EVALUATED AND REDESIGNED TO ACCOMMODATE NEW DESIGN LOADS. THIS SYSTEM IS NOT DESIGNED FOR VEHICLE IMPACT SINCE THEY ARE PROTECTED BY BOLLARDS OR OTHER MEANS AS DESIGNATED BY

DEMOLITION NOTES

- ALL PAVEMENT, BASE COURSES, SIDEWALKS, CURBS, BUILDINGS, FOUNDATIONS, ETC., WITHIN THE AREA TO BE DEMOLISHED SHALL BE REMOVED TO FULL DEPTH. EXISTING BASE COURSE MATERIALS MAY BE WORKED INTO THE NEW PAVEMENT OR BUILDING SUBGRADE IF THE GRADATION, CONSISTENCY, COMPACTION, SUBGRADE CONDITION. ETC., ARE IN ACCORDANCE WITH THE SPECIFICATIONS AND RECOMMENDATIONS OF THE REPORT OF GEOTECHNICAL INVESTIGATION. BASE COURSE MATERIALS SHALL NOT BE WORKED INTO THE SUBGRADE AREAS TO RECEIVE
- LANDSCAPING. 2. CLEARING LIMITS SHALL BE PHYSICALLY MARKED IN THE FIELD BY THE CONTRACTOR. NO TREES SHALL BE REMOVED, NOR VEGETATION DISTURBED BEYOND THE LIMITS OF CONSTRUCTION WITHOUT THE
- EXPRESS WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE. 4. ALL DEMOLITION WASTE AND CONSTRUCTION DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED AND SHALL BE REMOVED BY THE CONTRACTOR AND DISPOSED OF OFFSITE IN A STATE APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT
- 5. EROSION & SEDIMENT CONTROL MEASURES AROUND AREAS OF DEMOLITION SHALL BE PROPERLY INSTALLED AND FUNCTION PROPERLY PRIOR TO INITIALIZATION OF DEMOLITION ACTIVITIES.
- 6. CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE, FEDERAL AND OSHA REGULATIONS DURING ALL DEMOLITION 7. CONTRACTOR SHALL PROTECT ALL CORNER PINS, MONUMENTS, PROPERTY CORNERS AND BENCHMARKS DURING
- DEMOLITION ACTIVITIES. IF DISTURBED, CONTRACTOR SHALL HAVE DISTURBED ITEMS RESET BY A LICENSED SURVEYOR AT NO ADDITIONAL COST TO THE OWNER. 8. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES, STRUCTURES, AND FEATURES TO REMAIN. ANY ITEMS TO
- REMAIN THAT HAVE BEEN DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT CONTRACTOR'S EXPENSE. 9. PROVIDE NEAT, STRAIGHT, FULL DEPTH, SAW CUTS OF EXISTING PAVEMENT WHERE INDICATED ALONG LIMITS OF
- PAVEMENT DEMOLITION. 10. ALL UTILITY AND STRUCTURE REMOVAL, RELOCATION, CUTTING, CAPPING AND/OR ABANDONMENT SHALL BE COORDINATED AND PROPERLY DOCUMENTED BY A CERTIFIED PROFESSIONAL, WHEN APPLICABLE, WITH THE APPROPRIATE UTILITY COMPANY, MUNICIPALITY AND OR AGENCY. DEMOLITION OF REGULATED ITEMS MAY INCLUDE, BUT ARE NOT LIMITED TO WELLS, ASBESTOS, UNDER GROUND STORAGE TANKS, SEPTIC TANKS AND ELECTRIC TRANSFORMERS. DEMOLITION CONTRACTOR SHALL REFER TO ANY ENVIRONMENTAL STUDIES FOR DEMOLITION RECOMMENDATIONS AND GUIDANCE. AVAILABLE ENVIRONMENTAL STUDIES MAY INCLUDE, BUT ARE NOT LIMITED TO PHASE I ESA, PHASE II, WETLAND AND STREAM DELINEATION AND ASBESTOS SURVEY. ALL
- APPLICABLE ENVIRONMENTAL STUDIES SHALL BE MADE AVAILABLE UPON REQUEST. 11. THE CONTRACTOR SHALL USE SUITABLE METHODS TO CONTROL DUST AND DIRT CAUSED BY THE DEMOLITION

FOUNDATION NOTES

DENSITY OF SOIL - 130 PCF

FROST DEPTH - 1.0 FT

- I. FOUNDATION DESIGN WAS COMPLETED PRIOR TO COMPLETION OF GEOTECHNICAL INVESTIGATIONS. ASSUMPTIONS WERE MADE FOR SOIL PROPERTIES AS NOTED BELOW: BEARING CAPACITY - 1,500 PSF MODULUS OF SUBGRADE REACTION - 100 LB/IN³
- 2. IT IS OUR RECOMMENDATION THAT A GEOTECHNICAL INVESTIGATION OF THE SITE BE PERFORMED, PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ENGAGING A GEOTECHNICAL TESTING AGENCY TO VERIFY ASSUMED GEOTECHNICAL PARAMETERS. IF DETERMINED GEOTECHNICAL PARAMETERS ARE FOUND TO DIFFER FROM THOSE ASSUMED, CONTACT ENGINEER OF RECORD FOR REVISED CONSTRUCTION DRAWINGS PRIOR TO CONSTRUCTION.
- 3. IT IS ALSO OUR RECOMMENDATION THAT A GEOTECHNICAL ENGINEER BE RETAINED BY THE OWNER TO PROVIDE OBSERVATION AND TESTING SERVICES DURING THE GRADING AND FOUNDATION PHASE OF CONSTRUCTION. INSPECTION AND TESTING REPORTS TO BE SUBMITTED TO THE ENGINEER OF RECORD. PREPARATION OF
- SUBGRADES SHALL BE AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. 4. THERE WILL BE NO BACKFILLING OPERATIONS UNTIL THE CONCRETE WALLS HAVE REACHED THEIR 28-DAY DESIGN STRENGTH, UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER OF RECORD.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE SHORING OR SLOPING OF EXCAVATIONS TO MEET OSHA REQUIREMENTS. DESIGN OF SHORING IS THE CONTRACTOR'S RESPONSIBILITY. EXCAVATIONS SHALL BE IN
- ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS. PRIOR TO PLACING ENGINEERED FILL, THE SITE SHALL BE STRIPPED AND PROOF ROLLED. ANY SOFT SPOTS ENCOUNTERED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL. REFER TO EARTHWORK

STRUCTURAL CONCRETE NOTES

SPECIFICATION/GEOTECHNICAL ENGINEER FOR ADDITIONAL INFORMATION.

- 1. ALL CAST-IN-PLACE CONCRETE SHALL FOLLOW SUSTAINABLE DESIGN CRITERIA FOR LOW CARBON CONCRETE PER SECTION 03 3010, AMZL DESIGN CRITERIA v8 DATED AUGUST 9, 2022.
- ALL CONCRETE AGGREGATE SHALL COMPLY WITH ASTM C33 (NORMAL WEIGHT). 3. USE ADMIXTURES AS NOTED IN THE CONSTRUCTION DOCUMENTS, OR AS APPROVED BY THE ENGINEER OF RECORD.
- SUBMIT PROPOSED ADMIXTURES AS PART OF CONCRETE MIX DESIGN SUBMITTAL. 4. DESIGN FORMWORK FOR THE LOADS, LATERAL PRESSURE AND ALLOWABLE STRESSES OUTLINED IN ACI 347. 5. FORMWORK SHALL BE SHORED ADEQUATELY TO ENSURE THAT IT WILL NOT MOVE DURING POURING OF CURING OF
- THE CONCRETE. CURE CONCRETE IN ACCORDANCE WITH THE SPECIFICATION, MEETING THE REQUIREMENTS OF ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
- 7. SEE THE MECHANICAL, ELECTRICAL AND SUPPLIERS DRAWINGS FOR THE LOCATION OF SPECIAL ANCHORS, CHAMFERS, SLEEVES, PIPES, CONDUITS AND OTHER DETAILS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- 8. ALL CONCRETE SHALL CURE A MINIMUM OF 7 DAYS AFTER POURING, AND SHALL REMAIN UNLOADED UNTIL CONCRETE HAS REACHED 80% OF THE 28 DAY DESIGN STRENGTH, UNLESS APPROVED BY THE ENGINEER OF

GENERAL CONCRETE MIX REQUIREMENTS								
CONCRETE TYPE	28 DAY COMPRESSIVE STRENGTH (f'c, PSI)	AIR CONTENT (+/- 1%) (AE=AIR ENTRAINED)	MAX W/C RATIO	MAX SLUMP AT PLACEMENT (IN)	MIN SLUMP AT PLACEMENT (IN)	MAX NOM AGG SIZE*	CEMENT TYPE	FLYASH % (OF TOTAL CEMENT)
SLAB ON GRADE (EXTERIOR)	5,000	3% (AE)	0.55	5	1	1.5 IN	1/11	15–25

*AGGREGATES SHALL CONFORM TO REQUIREMENTS IN ACI 302.1.

CONCRETE TYPE	MIN DESIGN STRENGTH (PSI)	AMAZON MAXIMUM ALLOWED GWP FOR CONCRETE MIX (kg CO2e per cubic yd)	AMAZON PREFERRED GWF (kg CO2e per cubic yard
WALKS & CURBS (SIM TO EXTERIOR SLAB ON GRADE)	4,500	245	217

FROM CURRENT INDUSTRY AVERAGE, AVAILABLE AT HTTPS://WWW.GSA.GOV/ABOUT-US/NEWSROOM/NEWS-RELEASES/GSA-ANNOUNCES-ACTIONS-TO-REDUCE-EMISSIONS-FROM-BUILDING-MATERIALS-02152022, WITH THE EXCEPTION OF THE LIMIT FOR FOUNDATIONS.

REFERENCES

- EXISTING BACKGROUND AND UTILITY INFORMATION OBTAINED FROM AMAZON.COM LLC ON 10/13/2022. EXISTING SURVEY COMPLETED BY BLEW & ASSOCIATES, PA. CAD FILE NAME: 19-5589-CESO-200 Oritani-Blauvelt NY Preliminary-04.20.2020_CAD.DWG, DATED: 4/20/2020.
- SITE DESIGN INFORMATION OBTAINED FROM AMAZON.COM LLC ON 10/12/2022. RECORD DRAWINGS COMPLETED BY CESO ARCHITECTS, INC. PDF FILE NAME: DYX4_E1-Permit Set-Ext Building Permit-Rev0-20220810; CAD FILE NAME: DXY4_E1-Site Concept-Rev3-20221010.DWG, DATED:

REINFORCING STEEL NOTES

- 2. BAR SUPPORTS CLASS 1, MAXIMUM PROTECTION (CRSI MANUAL OF STANDARD PRACTICE) FOR ALL SLABS AND BEAMS WITH SOFFITS EXPOSED TO VIEW. 3. ALL REINFORCING STEEL DETAILS SHALL BE IN ACCORDANCE WITH THE ACI CODE REQUIREMENTS (ACI 318 EDITION 4. REINFORCING STEEL PLACING DRAWINGS AND BAR LISTS SHALL CONFORM TO THE ACI OR CRSI DETAILING MANUALS. ALL BAR SUPPORTS MUST BE CLEARLY DETAILED.
- 6. CONTINUOUS REINFORCING BARS SHALL BE PROVIDED WITH TENSION LAPS AT ALL SPLICES, UNLESS NOTED OTHERWISE. ALL STEEL REINFORCING LAPS SHALL BE TENSION B LAPS TYPICAL, UNLESS NOTED OTHERWISE. 7. MECHANICAL SPLICES SHALL NOT BE PERMITTED UNLESS APPROVED BY THE ENGINEER OF RECORD. 8. REINFORCING STEEL FABRICATION AND PLACEMENT SHALL BE IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE AND CRSI PLACING REINFORCING BARS (EDITION SPECIFIED IN THESE DRAWINGS). 9. REINFORCING STEEL IN FOOTINGS SHALL BE ASSEMBLED IN MAT GRILLES EQUALLY SPACED AND SECURELY WIRED TOGETHER BEFORE THE CONCRETE IS POURED.
- OTHERWISE. 11. ALL REINFORCING SHALL BE HELD SECURELY IN POSITION WITH STANDARD ACCESSORIES IN CONCRETE. 12. NO REINFORCING STEEL SHALL BE FIELD BENT WITHOUT THE APPROVAL OF THE ENGINEER OF RECORD. FIELD BENDING OF PLAIN REINFORCEMENT, IF PERMITTED, SHALL BE PERFORMED USING AN APPROVED AND APPROPRIATE

10. WALL FOOTING DOWELS ARE TO HAVE A FULL TENSION LAP SPLICE WITH THE WALL STEEL UNLESS NOTED

- SIZED PORTABLE HYDRAULIC DEVICE THAT MAKES ACI STANDARD RADIUS BENDS. NO OTHER FIELD BENDING METHOD SHALL BE PERMITTED. 13. WELDING, INCLUDING TACK WELDING, FOR REINFORCING STEEL IS PROHIBITED. WELDING OF REINFORCING STEEL AND HIGH STRENGTH BOLTS (A325, A490) WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE ENGINEER OF
- 14. PER SECTION 03 2010, AMZL DESIGN CRITERIA v8 DATED AUGUST 9, 2022, TO REDUCE THE EMBODIED CARBON EMISSIONS FOR REINFORCING STEEL BARS AT THE PREVIOUSLY STATED ASTM STANDARDS AND GRADES, PROVIDE REINFORCING STEEL BARS THAT SHALL NOT EXCEED THE ACHIEVABLE GWP VALUES, PER STATE (CONTIGUOUS UNITED STATES) IN THE FOLLOWING TABLE:

REGIONAL SUMMARY FOR REBAR						
STATE/ TERRITORY	ACHIEVABLE GWP (KgCO2e/Kg)	NEARBY STATE WITH LOWEST ACHIEVABLE GWP	STATE/ TERRITORY	ACHIEVABLE GWP (KgCO2e/Kg)	NEARBY STATE WITH LOWEST ACHIEVABLE GWP	
ALABAMA ALASKA ARIZONA ARKANSAS CALIFORNIA COLORADO CONNECTICUT DELAWARE FLORIDA GEORGIA HAWAII IDAHO ILLINOIS INDIANA IOWA KANSAS KENTUCKY LOUISIANA MAINE MARYLAND MASSACHUSETTS	0.825 N/A 0.598 0.686 0.860 0.650 0.694 0.694 0.789 0.614 N/A 0.499 0.898 0.686 0.898 0.686 0.898 0.650 0.686 0.734 0.694 0.694	AL NO MIN REQT AZ ** CA CO NY NY FL SC NO MIN REQT WA IL TN IL CO TN TX NY NY NY	MONTANA NEBRASKA NEVADA NEW HAMPSHIRE NEW JERSEY NEW MEXICO NEW YORK NORTH CAROLINA NORTH DAKOTA OHIO OKLAHOMA OREGON PENNSYLVANIA RHODE ISLAND SOUTH CAROLINA SOUTH DAKOTA TENNESSEE TEXAS UTAH VERMONT VIRGINIA WASHINGTON	0.499 0.650 0.598 0.694 0.694 0.694 0.614 0.650 0.694 0.694 0.614 0.650 0.694 0.614 0.650 0.686 0.734 0.650 0.686 0.734 0.650	WA CO AZ NY NY AZ NY SC CO* NY OK WA NY NY SC CO TN TX CO NY TN WA	
MICHIGAN MINNESOTA MISSISSIPPI MISSOURI	0.898 0.898 0.825 0.686	IL IL AL TN	WEST VIRGINIA WISCONSIN WYOMING	0.686 0.898 0.650	TN IL CO	

* MAY COST EXTRA FOR SHIPPING ** LIKELY SOURCED FROM TN (CMC)

CONCRETE DEVELOPMENT/LAP SPLICE SCHEDULE (f'c = 5 KSI)						
DAD CIZE	DEVELOPMEN	NT LENGTH (IN) +	LAP SPLICE LEN	GTH, CLASS B (IN) +		
BAR SIZE	BAR TYPE 1*	BAR TYPE 2*	BAR TYPE 1*	BAR TYPE 2*		
4	17	26	23	34		
5	22	32	28	42		
6	26	39	34	50		
7	38	56	49	73		
8	43	64	56	83		
9	48	72	63	94		

*BAR TYPE 1 - CLEAR SPACING OF BARS BEING DEVELOPED OR LAP SPLICED NOT LESS THAN Db, CONCRETE COVER NOT LESS THAN Db, AND STIRRUPS OR TIES THROUGHOUT Ld NOT LESS THAN THE CODE MINIMUM. BAR TYPE 2 - OTHER CASES +WHERE REINFORCEMENT IS PLACED SUCH THAT AT LEAST 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE DEVELOPMENT LENGTH OR SPLICE LOCATION(S), INCREASE THE VALUES IN THIS TABLE BY A FACTOR OF 1.3.

REINFORCING CLEAR COVER TABLE					
TYPE	MINIMUM CLEAR COVER (IN)				
PERMANENTLY EXPOSED TO OR CAST AGAINST EARTH	3				
EXPOSED TO EARTH OR WEATHER (#5 OR SMALLER)	1 1/2				
EXPOSED TO EARTH OR WEATHER (#6 OR LARGER)	2				

1 1/2

LONG LEG HORIZONTAL (ANGLE) QTY

LONG LEG VERTICAL (ANGLE)

LONG SIDE HORIZONTAL (HSS)

POST-INSTALLED ANCHOR NOTES

NOT EXPOSED TO EARTH OR WEATHER (#11 OR SMALLER)

NOT EXPOSED TO EARTH OR WEATHER (#12 OR LARGER)

11. CONTACT THE MANUFACTURER FOR PRODUCT RELATED QUESTIONS.

- 1. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY MANUFACTURER OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. . ANCHORS HAVE BEEN DESIGNED ASSUMING HAMMER DRILLED HOLES, DRY CONCRETE, AND CRACKED CONCRETE CONDITIONS. CONTRACTOR IS REPONSIBLE FOR UTILIZING APPROPRIATE METHODOLOGY TO MEET THESE
- 3. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING CURED FOR A MINIMUM OF 21 DAYS. 4. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP,
- IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE. i. INSTALL ANCHORS PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. 6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL ANCHORS ARE INSTALLED BY PERSONNEL TRAINED TO INSTALL POST-INSTALLED ANCHORAGE. 7. IT IS RECOMMENDED FOR THE CONTRACTOR TO ARRANGE FOR AN ANCHOR MANUFACTURER'S REPRESENTATIVE
- TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD SHALL RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS. 8. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS
- TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED 9. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS.
- UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR SHALL REVIEW THE EXISTING STRUCTURAL DRAWINGS AND SHALL UNDERTAKE TO LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS, BY NON-DESTRUCTIVE MEANS (FERROSCAN, GPR, X-RAY, ETC.). 10. OVERHEAD ADHESIVE ANCHORS MUST BE INSTALLED USING THE HILTI PROFIS SYSTEM.

EXPASION JOINT

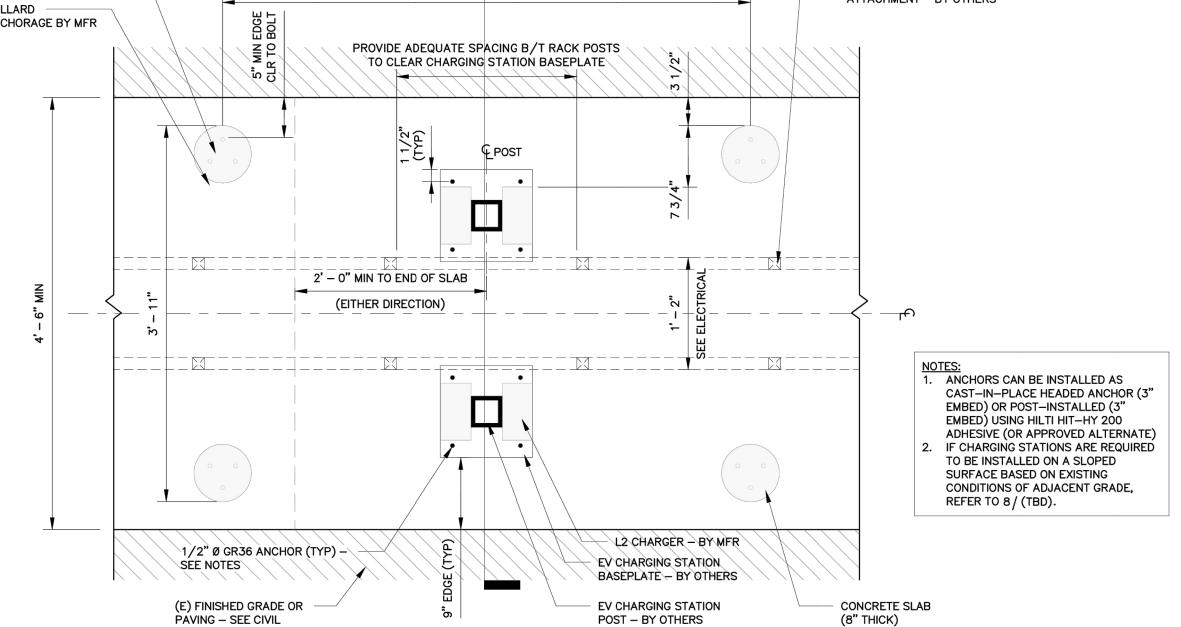
PREFABRICATED PROJECTION

POUNDS PER SQUARE FOOT

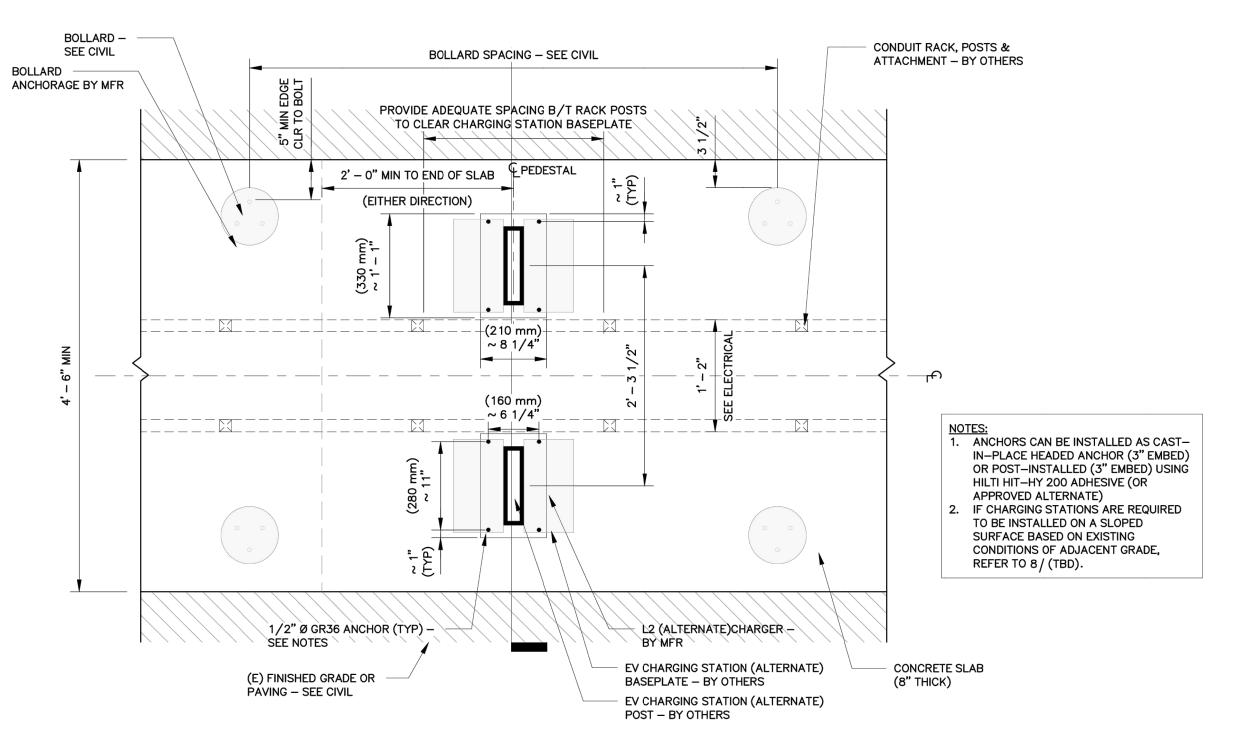
POLYVINYL CHLORIDE

POUNDS PER SQUARE INCH

1. REINFORCING BARS: ASTM A615, GRADE 60 BOLLARD -CONDUIT RACK, POSTS & BOLLARD SPACING - SEE CIVIL SEE CIVIL ATTACHMENT - BY OTHERS BOLLARD ANCHORAGE BY MFR PROVIDE ADEQUATE SPACING B/T RACK POSTS 5. HOOKS AND BENDS SHALL BE ACI STANDARD UNLESS OTHERWISE INDICATED. TO CLEAR CHARGING STATION BASEPLATE



EXTERIOR SLAB PLAN - LEVEL 2 CHARGER (SINGLE- OR DUAL-MOUNT)



EXTERIOR SLAB PLAN - LEVEL 2 (ALTERNATE) CHARGER (SINGLE- OR DUAL-MOUNT)

EXTERIOR SINGLE PAD PLAN - LEVEL 3 (50kW) CHARGER

ABBREVIATIONS

APPROX

APVD

ASCE

CHKD CIP

CLR

COL

CONC

CONN CONT COORD CRSI

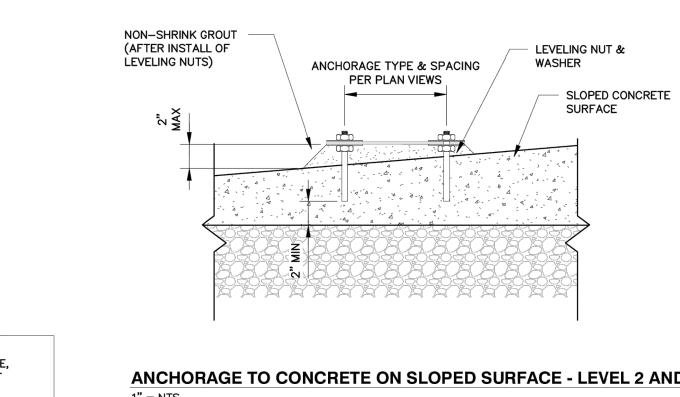
CTR

ANCHOR BOLT

ARCHITECT & ENGINEER

AMERICAN CONCRETE INSTITUTE

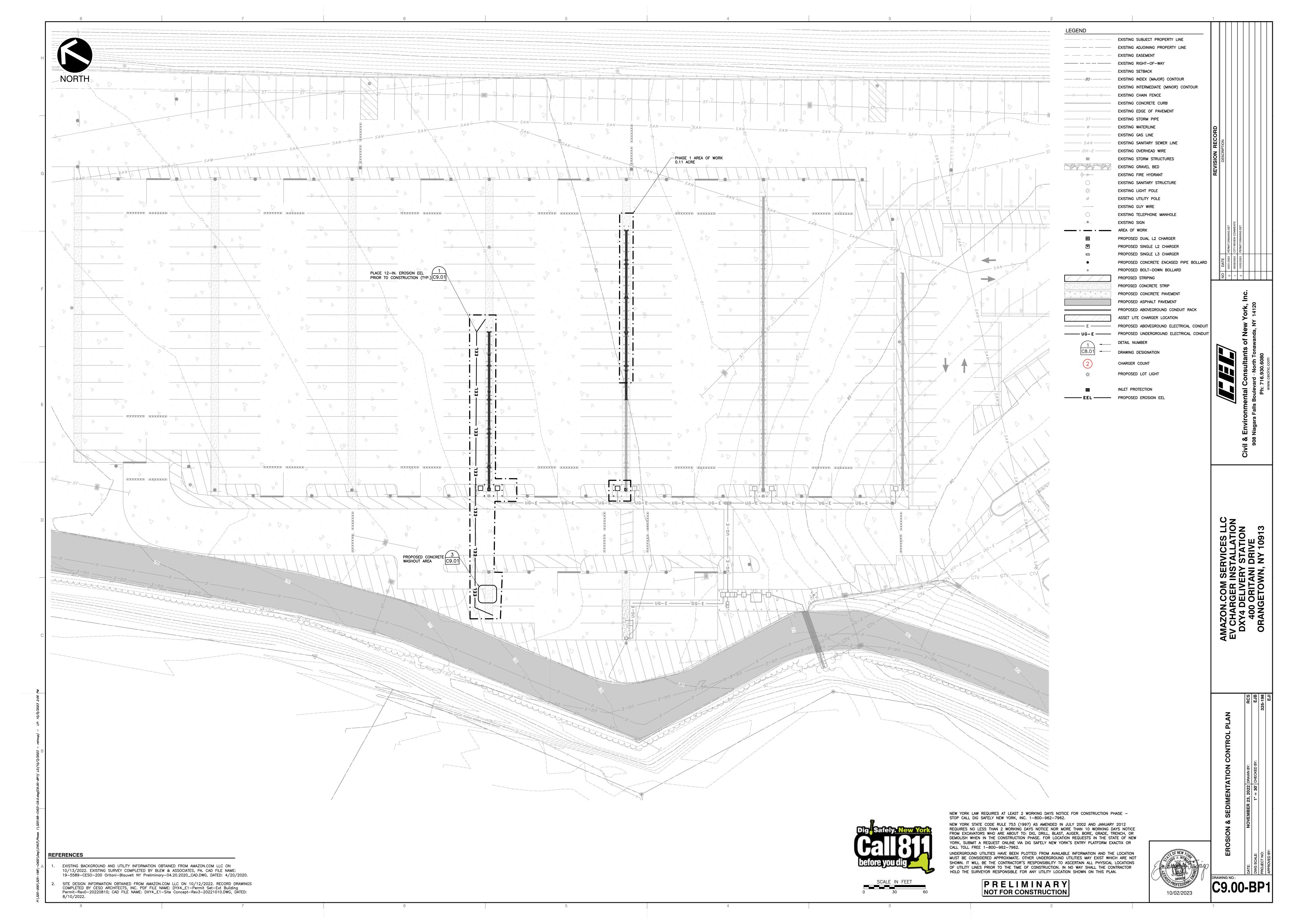
AMERICAN CONCRETE INSTITUTE		EXPASION JOINT	LON	LONG SIDE HORIZONTAL (HSS)	NEI -	REFERENCE			
ADDITIONAL	EL	ELEVATION	LSV	LONG SIDE VERTICAL (HSS)	REINF	REINFORCING			
AMERICAN INSTITUTE OF STEEL	ELEC	ELECTRICAL	LB	POUND	REQD	REQUIRED			
CONSTRUCTION	ENGR	ENGINEER	LF	LINEAR FEET	REQT	REQUIREMENT			
ALTERNATE	EOR	ENGINEER OF RECORD	LL	LIVE LOAD	RET	RETURN			
ALUMINUM	EQ	EQUAL	LOC	LOCATION	REV	REVISION			
APPROXIMATE	EQUIP	EQUIPMENT	LONG	LONGITUDINAL					
APPROVED	EW	EACH WAY	LP	LOW POINT	SCHED	SCHEDULE			
ARCHITECTURAL/ARCHITECT	EXP	EXPANSION	LSH	LONG SLOTTED HOLE	SECT	SECTION			
AMERICAN SOCIETY OF CIVIL	EXT	EXTERIOR	LSIT	LONG SLOTTED HOLE					
	EXI	EXTERIOR		MOMENT	SHT	SHEET			
ENGINEERS			M	MOMENT	SIM	SIMILAR		4' – 6"	
AMERICAN SOCIETY FOR TESTING	FDN	FOUNDATION	MATL	MATERIAL	SL	SLOPE	◄	-	
MATERIALS	FF	FINISHED FLOOR	MAX	MAXIMUM	SPCS	SPACES			
AMERICAN WELDING SOCIETY	FFE	FINISHED FLOOR ELEVATION	MC	MOMENT CONNECTION	SQ	SQUARE		<u>\frac{1}{2}</u>	
	FG	FINISHED GRADE	MECH	MECHANICAL	SS	STAINLESS STEEL			CONCRETE PAD (18" THICK W/
BOTTOM OF	FIN	FINISH	MFD	MANUFACTURED	SSH	SHORT SLOTTED HOLE	//// BOLT		#5 @ 8" OC T&B EA WAY —
BUILDING	FLG	FLANGE	MFR	MANUFACTURER	STD	STANDARD	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
BEAM	FLR	FLOOR	MIN	MINIMUM	STIF	STIFFENER	M M M TO		EQUALLY SPACED)
BOTTOM	FND	FOUNDATION	MISC	MISCELLANEOUS	STL	STEEL			
BEARING	FRMG	FRAMING	MTD	MOUNTED	STRUCT	STRUCTURAL _	///////////////////////////////////////	//////////////////////////////////////	BOLLARD -
BETWEEN	FS	FAR SIDE	MTL	METAL	SYM	SYMMETRICAL			SEE CIVIL
DEIWEEN			MIL	METAL	SIM	SIMMETRICAL			\\\
0.41.0111.4.71041(0)	FT	FOOT		NEAD AND EAD	T /	TOD OF			
CALCULATION(S)	FTG	FOOTING	N&F	NEAR AND FAR	T/	TOP OF			BOLLARD
CHECKED			N/A	NOT APPLICABLE	TBV	TO BE VERIFIED			ANCHORAGE BY MFR
CAST-IN-PLACE CONCRETE	GA	GAGE, GAUGE	NIC	NOT IN CONTRACT	T&B	TOP AND BOTTOM		"o \ \ \ \ \ \	
CONSTRUCTION/CONTROL JOINT	GALV	GALVANIZED (HOT DIP)	NO	NUMBER	THRU	THROUGH			
COMPLETE JOINT PENETRATION	GWP	GLOBAL WARMING POTENTIAL	NOM	NOMINAL	TRANS	TRANSVERSE			
CENTERLINE			NS	NEAR SIDE	TYP	TYPICAL 5			<u>, </u>
CLEAR/CLEARANCE	HCA	HEADED CONCRETE ANCHOR	NTS	NOT TO SCALE		ų ,			<u> </u>
COLUMN	HORIZ	HORIZONTAL			UL	UNDERWRITERS 2	//// * *	M A	\ <u>L</u>
CONCRETE	HP	HIGH POINT	OC	ON CENTER		LABORATORIES	2 1		
CONNECTION	HSB	HIGH STRENGTH BOLT	OD	OUTSIDE DIAMETER	UNO	UNLESS NOTED			
CONTINUOUS			OF	OUTSIDE FACE	0.10	OTHERWISE		<u> </u>	
COORDINATE	IF	INSIDE FACE	OPNG	OPENING		OTTERMISE			
CONCRETE REINFORCING STEEL	IBC	INTERNATIONAL BUILDING CODE	OPP	OPPOSITE	VERT	VERTICAL			NOTES:
INSTITUTE	ICC	INTERNATIONAL BOILDING CODE	OSH	OVERSIZED HOLE	VERT	VERTICAL VERIFY IN FIELD			1. EQUIPMENT ANCHORAGE TYPE,
					VIF	VERIFT IN FIELD		29.5" (PER MFR)	LOCATIONS, AND EMBEDMENT
CENTER	ICF	INSULATED CONCRETE FORM	OWJ	OPEN WEB JOIST			• \\\\\ • • • • • • • • • • • • • • • •		UNKNOWN. CONTRACTOR TO
	ID	INSIDE DIAMETER			W/	WITH -			COORDINATE WITH MANUFACTURER
DEFORMED BAR ANCHOR	IN	INCH	PCF	POUNDS PER CUBIC FOOT	w/o	WITHOUT	//////2////////////////////////////////		FOR APPROPRIATE EDGE DISTANCE
DOUBLE	INT	INTERIOR	PE	PROFESSIONAL ENGINEER	WWR	WELDED WIRE		///////////////////////////////////////	
DEGREES			PENE	PENETRATION		REINFORCEMENT	VON	(AND ANCHOR EMBED REQUIREMENTS.
DETAIL	JT	JOINT	PERIM	PERIMETER			\\\\\ <u>H</u> .\\\\\	(X	2. REINF NOT SHOWN FOR CLARITY.
DIAMETER			PL	PLATE			////// S.//////	X	
DIAGONAL	K	KIP(S)	PLCS	PLACES					
DIRECTION	KSF	KIPS PER SQUARE FOOT	PLF	POUNDS PER LINEAR FOOT			(E) FINISHED GRADE OR	L3 (50kW) CHARGER	
DEAD LOAD	KSI	KIPS PER SQUARE INCH	PREFAB	PREFABRICATED			PAVING - SEE CIVIL	(HT=78.7") – BY MFR	
JEND LOND		MI OT LIN OGOMINE INTOIT		I THE ADMORTED					



. BASEPLATE AND ANCHORS SHOWN IN THIS DETAIL ARE FOR REFERENCE ONLY. EV CHARGING STATIONS, POSTS, CONDUIT RACKS, AND BOLLARDS NOT SHOWN FOR CLARITY. SEE PLAN VIEWS FOR MORE INFORMATION. 2. REINF NOT SHOWN FOR CLARITY. 3. FLUSH-MOUNT ANCHORS WHEREVER 4. IN SLOPED AREAS, CONTRACTOR SHALL MOCK UP ONE (1) CHARGER PEDESTAL FLUSH WITH THE GROUND SURFACE AND REVIEW THE INSTALL WITH THE AMAZON CONSTRUCTION MANAGER. THE AMAZON CONSTRUCTION MANAGER HAS THE DISCRETION TO CHOOSE TO IMPLEMENT THE LEVELING SOLUTION ACROSS THE

ANCHORAGE TO CONCRETE ON SLOPED SURFACE - LEVEL 2 AND LEVEL 2 (ALTERNATE) CHARGER

PRELIMINARY NOT FOR CONSTRUCTION



ALL E&S CONTROLS SHALL BE MAINTAINED IN GOOD WORKING ORDER (CLEANED, REPAIRED, ETC.) UNTIL ALL DISTURBED TRIBUTARY AREAS ARE STABILIZED. ALL TEMPORARY E&S CONTROLS WILL REMAIN IN PLACE UNTIL A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE, THE OWNER SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL PERMANENT FACILITIES.

IN ORDER TO ENSURE EFFECTIVE AND EFFICIENT OPERATION OF BMPS, ALL TEMPORARY RUNOFF E&S CONTROLS SHALL BE INSPECTED AT LEAST AT THE BEGINNING AND END OF EACH DAY AND AFTER EACH STORMWATER EVENT. ANY DAMAGED CONTROLS SHALL BE REPAIRED OR REPLACED WITHIN 24 HOURS OF IDENTIFICATION OF THE DEFICIENCY. THE CONTRACTOR IS RESPONSIBLE FOR ALL MAINTENANCE AND INSPECTIONS, AND SHALL MAINTAIN RECORDS OF ALL SUCH ACTIVITIES. A WRITTEN REPORT DOCUMENTING EACH INSPECTION AND ALL BMP REPAIR OR REPLACEMENT AND MAINTENANCE ACTIVITIES SHALL B LOGGED ONTO PADEP FORM 3150-FM-BWEW0083, DATED 2/2012 AND BE KEPT ONSITE AT ALL TIMES.

COMPOST FILTER SOCK: INSPECT BEFORE AND AFTER EVERY RAIN EVENT. ACCUMULATED SEDIMENTS SHALL BE REMOVED, AS REQUIRED, IN ALL CASES WHERE ACCUMULATIONS HAVE REACHED HALF THE ABOVE-GROUND HEIGHT OF THE COMPOST FILTER SOCK. ACCUMULATED SEDIMENTS SHALL BE DISPOSED OF IT IN ACCORDANCE WITH THE PADEP. COMPOST FILTER SOCK MATERIALS SHALL BE REPLACED PROMPTLY, IF TORN, SPLIT, SLUMPED OR IS SHOWING

PUMPED WATER FILTER BAG: FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE UNTIL THE PROBLEM IS CORRECTED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME HALF FULL. SPARE BAGS SHALL BE KEPT AVAILABLE ONSITE.

SIGNS OF EXCESSIVE WEATHERING. ADHERE TO ANY MANUFACTURER'S RECOMMENDATIONS FOR THE REPAIR OR REPLACEMENT OF COMPOST FILTER SOCK.

INLET PROTECTION: ALL INLET PROTECTION FILTER BAGS SHALL BE CLEANED AND / OR REPLACED WHEN THE BAG IS HALF-FULL, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL DAMAGED BAGS SHALL BE REPLACED. THE ACCUMULATED SEDIMENT SHALL BE DISTRIBUTED EVENLY ON-SITE AND

ALL DISCHARGE LOCATIONS SHALL BE INSPECTED TO ASCERTAIN THE EFFECTIVENESS OF THE CONTROLS. ADDITIONAL CONTROL MEASURES SHALL BE DURING CONSTRUCTION, SEDIMENT REMOVED FROM THE EROSION CONTROL DEVICES SHALL BE DISPOSED OF BY SPREADING IT ONSITE. ONCE A UNIFORM 70% PERENNIAL VEGETATIVE COVER IS ESTABLISHED AND THE TEMPORARY E&S CONTROLS ARE REMOVED, ALL ACCUMULATED SEDIMENT WILL BE DISPOSED OF AT A

ALL SITE ENTRANCE AND EXIT POINTS SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE TRACKING OF MUD. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CLEAN STREETS OF MUD AND KEEP THE STREETS IN A CLEAN AND DUST-FREE CONDITION. AREAS WHICH WILL BE EXPOSED FOR LONGER THAN 4 DAYS WITHOUT SIGNIFICANT ACTIVITY OR DISTURBANCE WILL BE SEEDED WITH A TEMPORARY COVER. IF AT THE END OF A 12-WEEK MONITORING AND MAINTENANCE PERIOD, A SATISFACTORY STAND OF VEGETATION HAS NOT BEEN PRODUCED, THE CONTRACTOR SHALL PROMPTLY RENOVATE AND RESEED THE UNSATISFACTORY AREAS. RENOVATION AND RESEEDING SHALL CONTINUE UNTIL A SATISFACTORY STAND OF VEGETATION HAS BEEN PRODUCED. A SATISFACTORY STAND IS DEFINED AS:

 90 PERCENT GROUND COVER WITH PERENNIAL VEGETATION OR NATURALLY PRODUCED LITTER. NOT MORE THAN 1 PERCENT OF TOTAL AREA WITH LESS THAN 50 PERCENT GROUND COVER WITH PERENNIAL VEGETATION OR NATURALLY PRODUCED LITTER (LITTER PRODUCED IN PLACE BY THE SPECIES SHOWN). NO SINGLE OR CONTIGUOUS AREAS EXCEEDING 100 SQUARE FEET MAY HAVE LESS THAN 50 PERCENT GROUND COVER.

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROLS WILL REMAIN IN PLACE UNTIL A UNIFORM 70% PERENNIAL UPLAND VEGETATIVE COVER IS ESTABLISHED.

SEEDING SPECIFICATIONS

A. SEEDING SHALL OCCUR BETWEEN MARCH 1ST AND MAY 15TH OR BETWEEN AUGUST 15TH AND NO LATER THAN OCTOBER 15TH.

B. IF SEEDING CANNOT BE CONDUCTED DURING THE TIMEFRAMES NOTED ABOVE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL CONSERVATION DISTRICT AND ALL APPROPRIATE AGENCIES TO DETERMINE AN ACCEPTABLE MEANS IN WHICH TO STABILIZE THE SITE THROUGH THE

SEED MIXTURES: SEED MIXTURE TO BE USED ON THIS SITE SHALL CONSIST OF THE FOLLOWING UNLESS OTHERWISE NOTED ON THE PLANS. RATES ARE IN THE FORM OF POUNDS PER ACRE (LBS / A) PER PURE LIVE SEED (LBS / A PLS). CONTRACTOR WILL NEED TO ADJUST ACCORDINGLY BASED ON THE SEED GERMINATION AND PURITY RATING (SEE ITEM #3 BELOW). A. TEMPORARY SEED MIXTURES: DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE DISTURBED AGAIN WITHIN TWELVE (12) MONTHS MUST BE SEEDED WITH A TEMPORARY SEED MIXTURE AS FOLLOWS: ANNUAL RYE (40 LBS / A PLS)

OR WINTER RYE (168 LBS / A PLS) (REFERENCE: PENN STATE "EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND", TABLE 5 PERMANENT SEEDING SHALL CONSIST OF A NURSE CROP PLUS A PERMANENT SEED MIXTURE, AS FOLLOWS:

NURSE CROP (SELECT ONE):
ANNUAL RYE (10 LBS / A PLS)
OR SPRING OATS (64 LBS / A PLS)

OR WINTER RYE (56 LBS / A PLS) (REFERENCE: PA DEP EROSION AND SEDIMENT CONTROL PROGRAM MANUAL, LATEST EDITION, TABLE 11.4, SEED MIX #1)

PERMANENT SEED MIX:
TALL FESCUE (60 LBS / A PLS)

OR FINE FESCUE (35 LBS / A PLS) OR KENTUCKY BLUEGRASS (25 LBS / A PLS) PLUS REDTOP (3 LBS / A PLS) (REFERENCE: PA DEP EROSION AND SEDIMENT CONTROL PROGRAM MÁNUAL, LÁTEST EDITION, TABLE 11.4, SEED MIX #2)

PURE LIVE SEED: MINIMUM PLS RATING ACCEPTED SHALL BE 85% PLS. SEED RATE MAY NEED TO BE ADJUSTED BASED ON THE PLS RATING OF THE SEED. A. SEED USED FOR THE PURPOSE OF PERMANENT STABILIZATION SHALL BE LABELED WITH GERMINATION AND PURITY PERCENTAGES. UNLABELED SEED WILL BE REJECTED. SEED SHALL NOT BE USED MORE THAN ONE (1) YEAR BEYOND THE LABEL DATE. DETERMINING THE PERCENT PURE LIVE SEED (PERCENT PLS) OF A LABELED SEED: MULTIPLY BY THE PERCENTAGE OF PURE SEED BY THE PERCENTAGE OF GERMINATION AND DIVIDE THE RESULT BY 100 [(%PURE X %GERMINATION) / 100]

DETERMINING THE ACTUAL SEED RATE: SIMPLY DIVIDE THE PERCENT PLS RATING OF THE SEED INTO THE PLS REQUIRED, AS NOTED ABOVE. THE RESULT IS THE POUNDS OF SEED REQUIRED. FOR EXAMPLE: IF THE REQUIRED RATE IS 64 POUNDS PLS, AND THE SEED IS RATED AT 35% PLS, DIVIDE 64 BY 0.35 TO GET 182.9 POUNDS, WHICH IS THE AMOUNT OF THAT SEED REQUIRED PER ACRE.

APPLICATION OF SEED: SEEDING SHALL BE APPLIED AND ESTABLISHED IN ACCORDANCE WITH THE "EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL" AS PUBLISHED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER QUALITY PROTECTION (MOST RECENT EDITION). SEEDING SHALL TAKE PLACE BETWEEN MARCH 15 - OCTOBER 15. SEED SHALL BE APPLIED IN A NON-COMPACTED, ROUGHENED TOPSOIL.

SEED MAY BE APPLIED THROUGH ANY OF THE FOLLOWING MEANS AND METHODS, OR OTHER ACCEPTED INDUSTRY PRACTICES, UNLESS SPECIFICALLY ACCEPTED INDUSTRY PRACTICES, UNLESS SPECIFICALLY NOTED OTHERWISE ON THESE PLANS:

BROADCAST SEEDING (TWO DIRECTIONS) HYDROSEEDING (TWO DIRECTIONS)

D. ALL SEED SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED UNTIL A 70% PERENNIAL COVER IS ACHIEVED: TEMPORARY STABILIZATION WITH STRAW:

•• STRAW MULCH SHALL BE APPLIED ON TOP OF THE FRESHLY SEEDED AREAS AT A RATE OF 3 TONS PER ACRE (4 TONS PER ACRE BETWEEN NOVEMBER 1ST AND MARCH 1ST •• STRAW SHALL BE STABILIZED WITH A WOOD OR PAPER FIBER MULCH AND TACKIFIER SOLUTION IN ACCORDANCE WITH THE PRODUCT

MANUFACTURER'S SPECIFICATIONS TEMPORARY / PERMANENT STABILIZATION WITH EROSION CONTROL MATTING / BLANKETS (WHERE SPECIFIED) •• MATTING / BLANKETS SHALL BE INSTALLED IN AREAS AS NOTED ON THE EROSION & SEDIMENT CONTROL PLAN OR WITHIN 50 FEET OF PONDS

STREAMS OR WETLANDS. THE PRODUCT SHALL BE INSTALLED AND STAPLED ON TOP OF THE SEEDING IN ACCORDANCE WITH MANUFACTURER

•• AREAS WITH MATTING / BLANKETS SHALL NOT BE TRACKED (CATWALKED) AFTER INSTALLATION. •• MATTING / BLANKETS SHALL BE VISUALLY INSPECTED DAILY TO ENSURE THAT THE PRODUCT IS FUNCTIONING PROPERLY, IS HELD FAST TO THE SOIL SURFACE AND IS IN GOOD CONDITION.

E. ONCE SEED HAS BEEN SET, VEHICULAR TRAFFIC OR OTHER SOURCES OF COMPACTION SHALL BE AVOIDED.

IRRIGATION: NEW SEED APPLICATIONS SHOULD BE SUPPLIED WITH ADEQUATE WATER, A MINIMUM OF 1/4-IN. TWICE A DAY, UNTIL VEGETATION IS WELL ESTABLISHED (A MINIMUM OF 75% COVER).

CONSTRUCTION SEQUENCE

THE CONSTRUCTION OF THE PROJECT CONSISTS OF ONE GENERAL PHASE OF CONSTRUCTION. ALL E&S CONTROL FACILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE E&S CONTROL PLAN AND THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL DATED NOVEMBER 2016. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. THE CONTRACTOR IS TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE. EACH STAGE SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. THE CONTRACTOR IS TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE. ANY DEVIATION FROM THE FOLLOWING SEQUENCE MUST BE APPROVED IN WRITING FROM THE ALLEGHENY COUNTY CONSERVATION

AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM, INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES. LAYOUT THE LIMITS OF THE CONSTRUCTION SITE AND ESTABLISH BENCHMARKS AND REFERENCE POINTS.

INSTALL INLET PROTECTION AND SILT SOCK IN THE LOCATIONS SHOWN ON THE PLANS AND IN ACCORDANCE WITH THE SIZE SPECIFICATIONS SHOWN ON THE STANDARD DETAILS. PERIMETER E&S CONTROLS SHALL BE INSTALLED PARALLEL TO THE CONTOURS. STRIP TOPSOIL FROM EXCAVATION AREAS AND STOCKPILE NEXT TO EXCAVATIONS FOR REUSE.

BEGIN EXCAVATIONS FOR CONDUIT REWORK AND INSTALLATION OF CONCRETE PADS FOR ELECTRICAL EQUIPMENT. ALL WASTE MATERIALS SHALL BE DISPOSED OF AT A PADEP-APPROVED WASTE SITE AND IN ACCORDANCE WITH ALL LOCAL AND STATE CODES AND PERMIT REQUIREMENTS (VERIFICATION OF PERMITS TO BE

UTILIZE A PUMPED WATER FILTER BAG AS NECESSARY TO DEWATER EXCAVATIONS. WATER FROM PUMPED WATER FILTER BAGS MUST BE TREATED FOR SEDIMENT REMOVAL PRIOR TO BEING DISCHARGED TO SURFACE WATERS OR STORMWATER INLETS. ALL UNPAVED DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY WITH SEED AND MULCH ONCE GRADING IS COMPLETE OR WITHIN FOUR (4) DAYS ONCE THE CONSTRUCTION HAS BEEN COMPLETED. ANY PLANTINGS OR TREES REMOVED OR DAMAGED SHALL BE REPLACED IN-KIND. COMPLETE CONSTRUCTION OF ALL PROPOSED CONCRETE PADS, ELECTRICAL EQUIPMENT, BOLLARDS, AND EV CHARGERS.

ONCE ALL AREAS HAVE BEEN PERMANENTLY STABILIZED, AND A UNIFORM 70% PERENNIAL VEGETATIVE COVER HAS BEEN ESTABLISHED ON ALL GRASSED AREAS, REMOVE ALL EROSION AND SEDIMENTATION CONTROL FACILITIES.

TOPSOIL REPLACEMENT SPECIFICATIONS

. GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN THE SLOP.

2. TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM, 2 INCHES ON FILL

3. SPREADING SHOULD BE DONE THAT SODDING / SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE.

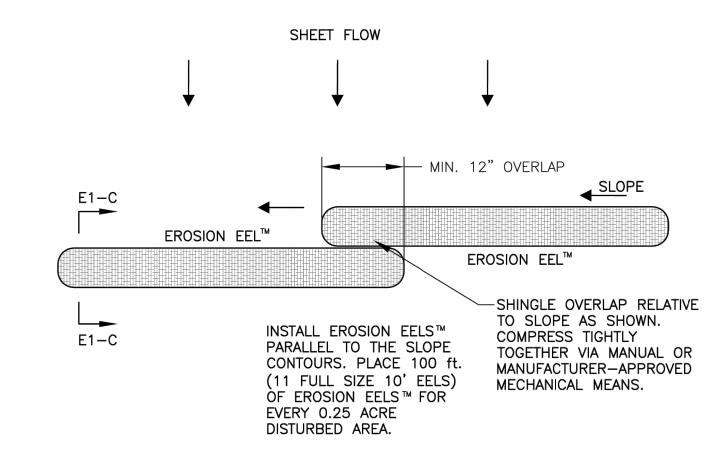
4. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS

5. TOPSOIL SHALL NOT BE PLACED IF TOPSOIL OR SUBSOIL IS FROZEN OR MUDDY, EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

6. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING

TABLE 11.1 TOPSOIL REPLACEMENT SPECIFICATIONS

CUBIC YARDS OF TOPSOIL	REQUIRED FOR APPLICATION	TO VARIOUS DEPTHS
DEPTH (in)	PER 1,000 SQUARE FEET	PER ACRE
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806
7	21.7	940
8	24.8	1,074



Spacing Recommendations for the Erosion Eel™ for Perimeter Controls and Intercepting Sheet Flow on Slopes

		*Stacked
	single eel	
slope(%)	spacing (ft)	spacing (ft)
0.5	300	N/A
1	200	N/A
2	160	N/A
3	80	N/A
4	50	N/A
5	40	N/A
6	35	N/A
8	30	N/A
10	25	N/A
15	17	N/A
20	12	25
25	7	15
33	N/A	10
50	N/A	6

* DUAL STACK REFERS TO TWO EELS STACKED ATOP ONE ANOTHER AND STABILIZED WITH T-POSTS. SEE DETAIL E2-E ON SHEET E-2.

GENERAL NOTES:

1. EROSION EELS™ USED IN PERIMETER CONTROL APPLICATIONS SHALL HAVE A SPECIFICATION MIXTURE 1.1 OR 1.2.

a.MIXTURE SPECIFICATION 1.1. A FILTER MIXTURE COMPRISED OF 50% SHREDDED RUBBER AND 50% WOOD CHIP PARTICLES BY VOLUME. THE SHREDDED RUBBER SHALL BE WASHED AND PROCESSED TO REMOVE MOST, IF NOT ALL, METAL COMPONENTS. THE RUBBER SHALL BE DERIVED FROM RECYCLED TIRES AND SHALL BE SHREDDED TO PRODUCE A MAXIMUM PARTICLE SIZE OF +/- 3/4 INCH. THE WOOD CHIPS SHALL BE PRODUCED FROM HARDWOOD TREES AND SHALL CONFIRM TO AASHTO CERTIFICATION SPECIFICATION MP 9-03. b. MIXTURE SPECIFICATION 1.2. A FILTER MIXTURE COMPRISED OF 1/3 SHREDDED RUBBER, 1/3 WOOD CHIPS, AND 1/3 RECYCLED SYNTHETIC THE SHREDDED RUBBER SHALL BE WASHED AND PROCESSED TO REMOVE MOST, IF NOT ALL, METAL COMPONENTS. THE RUBBER SHALL BE DERIVED FROM RECYCLED TIRES AND SHALL BE SHREDDED TO PRODUCE A MAXIMUM PARTICLE SIZE OF +/- 3/4 INCH. THE WOOD CHIPS SHALL BE PRODUCED FROM HARDWOOD TREES AND SHALL CONFIRM TO AASHTO CERTIFICATION SPECIFICATION MP 9-03. THE SYNTHETIC FIBERS SHALL BE PRODUCED FROM RECYCLED, MANUFACTURED MATERIALS, SUCH AS, BUT NOT LIMITED TO, PRE-CONSUMER SCRAP CARPET,

2. EROSION EELS™ SHALL BE MANUFACTURED FROM A WOVEN GEOTEXTILE COVERING WITH INTERIOR FILTER MATERIALS SUCH AS 100% SHREDDED RUBBER (MIXTURE SPECIFICATION 1.0, 50% SHREDDED RUBBER/50% AASHTO-CERTIFIED WOOD CHIPS (MIXTURE SPECIFICATION 1.1), OR 1/3 SHREDDED RUBBER:1/3 AASHTO-CERTIFIED WOOD CHIPS:1/3 RECYCLED SYNTHETIC FIBERS (MIXTURE SPECIFICATION 1.2). 3.LENGTHS OF EROSION EELS™ SHALL BE EITHER A NOMINAL +/-10 FT. OR +/- 4.5 FT. NOMINAL DIAMETER SHALL BE +/-9.5 INCHES. 4. EROSION EELS™ CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES TO INTERCEPT RUNOFF, REDUCE FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF. 5. EROSION EELS™ SHALL BE INSTALLED ALONG THE GROUND CONTOUR, AT THE TOE OF SLOPES, AT AN ANGLE TO THE CONTOUR TO DIRECT FLOW AS A DIVERSION BERM, AROUND INLET STRUCTURES, IN A DITCH AS A CHECK DAM TO HELP REDUCE SUSPENDED SOLIDS LOADING AND RETAIN

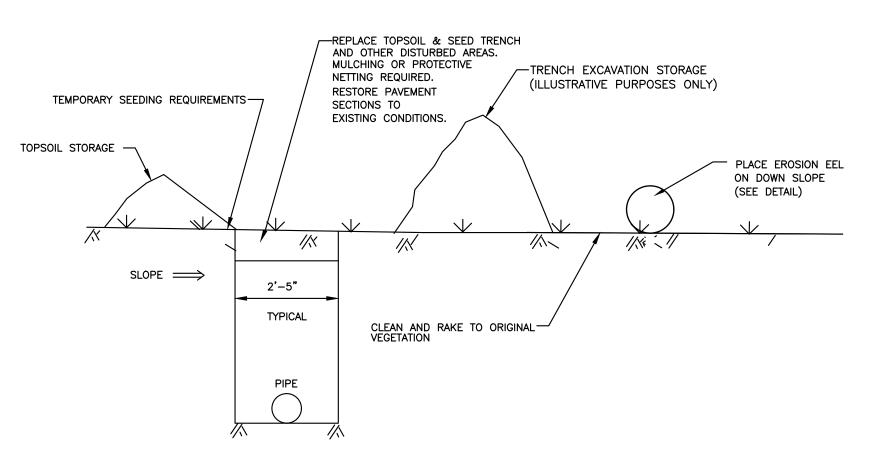
6. NO TRENCHING IS REQUIRED FOR INSTALLATION OF EROSION EELS™ 7. PREPARE BED FOR EEL INSTALLATION BY REMOVING ANY LARGE DEBRIS INCLUDING ROCKS, SOIL CLODS, AND WOODY VEGETATION. EROSION EELS™ CAN ALSO BE PLACED OVER PAVED SURFACES INCLUDING CONCRETE AND ASPHALT WITH NO SURFACE PREPARATION REQUIRED. 8. RAKE BED AREA WITH A HAND RAKE OR BY DRAG HARROW.

9.DO NOT PLACE EEL DIRECTLY OVER RILL AND GULLIES UNTIL AREA HAS BEEN HAND-EXCAVATED AND RAKED TO PROVIDE A LEVEL BEDDING SURFACE. ALL SURFACES SHALL BE UNIFORMLY COMPACTED FOR MAXIMUM SEATING OF EELS IN PLACE. 10. FOR LOCATIONS WHERE EELS WILL BE PLACED IN CONCENTRATED FLOWS (SUCH AS CHECK DAMS, INLET PROTECTION) AND FOR PERIMETER CONTROLS AT PRIMARY DISCHARGE LOCATIONS, BED THE EELS IN A JUTE MESH CRADLE PER THE DETAILED DRAWINGS. 11. FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 10 ACRES.

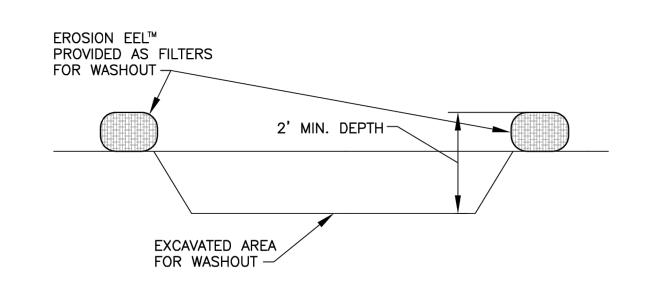
12.IF MORE THAN ONE EROSION EEL™ IS PLACED IN A ROW. THE EELS SHALL BE OVERLAPPED A MINIMUM OF 12 INCHES TO PREVENT FLOW AN

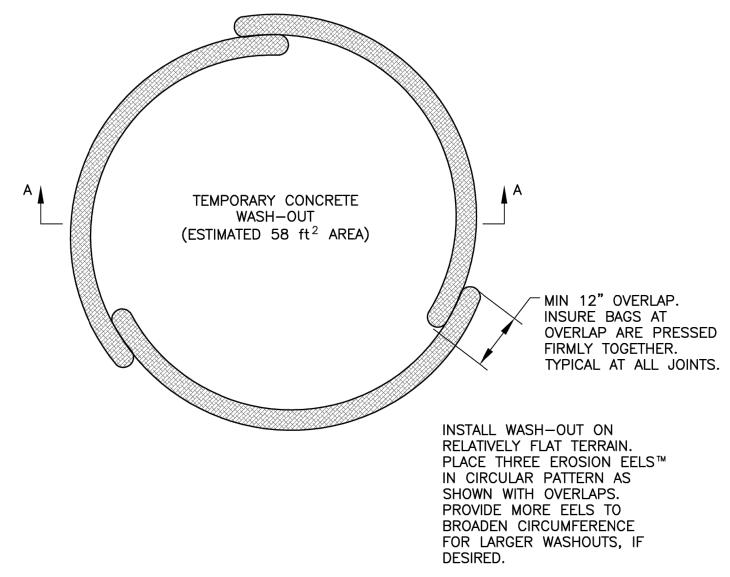
SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. COMPRESS THE TWO EELS OF THE OVERLAP TIGHTLY TOGETHER EITHER BY HAND OR MANUFACTURER-APPROVED MECHANIZED MEANS. 13. WHEN USED IN DITCHES AS A CHECK DAM, EROSION EELS™ SHALL BE INSTALLED PER MANUFACTURER'S DETAILS. 14. FOR CHECK DAM APPLICATIONS, EROSION EELS™ SHALL BE PLACED PERPENDICULAR TO THE FLOW OF THE WATER. EROSION EELS™ SHALL 15. EROSION EELS™ SHALL REMAIN IN PLACE UNTIL FULLY ESTABLISHED VEGETATION HAS COMPLETELY DEVELOPED OR UNTIL THE STORAGE CAPACITY/FUNCTIONAL LIFE OF THE EEL HAS BEEN EXHAUSTED (REQUIRING REPLACEMENT WITH NEW EELS). 16. ANCHORING POSTS FOR CHECK DAM APPLICATIONS SHALL HAVE A MINIMUM WEIGHT OF 1.25 LBS/FT STEEL T-POSTS (5 TO 7 FT. LENGTHS) ROLLED FROM HIGH CARBON STEEL. POSTS SHOULD BE HOT-DIP GALVANIZED OR COATED WITH A WEATHER-RESISTANT PAINT FOR STEEL APPLICATION. POSTS SHOULD BE EQUIPPED WITH A METAL ANCHOR PLATE. INSTALL PER DETAILS ON THIS SHEE 17. PLACE T-POSTS THROUGH HANDLE OF BAGS. DO NOT DRIVE POSTS THROUGH EROSION EELS™. T-POSTS ARE TO BE EMBEDDED A MINIMUM OF 2

EROSION EEL



EROSION CONTROL MEASURES FOR UTILITY TRENCHES NOT TO SCALE





MAXIMUM PARTICLE SIZE OF +/- ? INCH.

1. EROSION EELS™ USED IN INLET PROTECTION AND CONCRETE WASHOUT APPLICATIONS SHALL HAVE A SPECIFICATION MIXTURE 1.0 (FOR HIGH FLOW APPLICATIONS WHERE MINIMAL PONDING IS DESIRED) OR 1.1. MOST, IF NOT ALL, METAL COMPONENTS. THE MATERIAL SHALL BE DERIVED FROM RECYCLED TIRES AND SHALL BE SHREDDED TO PRODUCE A

b. MIXTURE SPECIFICATION 1.1. A FILTER MIXTURE COMPRISED OF 50% SHREDDED RUBBER AND 50% WOOD CHIP PARTICLES BY VOLUME.

SHREDDED RUBBER SHALL BE WASHED AND PROCESSED TO REMOVE MOST, IF NOT ALL, METAL COMPONENTS. THE RUBBER SHALL BE DERIVED FROM RECYCLED TIRES AND SHALL BE SHREDDED TO PRODUCE A MAXIMUM PARTICLE SIZE OF +/- 3/4 INCH. THE WOOD CHIPS SHALL BE PRODUCED FROM HARDWOOD TREES AND SHALL CONFIRM TO AASHTO CERTIFICATION SPECIFICATION MP 9-03. 2. EROSION EELS™ USED IN DIVERSION BERM APPLICATIONS SHALL HAVE A SPECIFICATION MIXTURE 1.0. 3.CONSULT WITH THE MANUFACTURER'S REPRESENTATIVE FOR EEL MIXTURE TYPES REQUIRED FOR SPECIFIC POND APPLICATIONS. 4.EROSION EELS™ SHALL BE MANUFACTURED FROM A WOVEN GEOTEXTILE COVERING WITH INTERIOR FILTER MATERIALS SUCH AS 100% SHREDDED RUBBER (MIXTURE SPECIFICATION 1.0, 50% SHREDDED RUBBER/50% AASHTO-CERTIFIED WOOD CHIPS (MIXTURE SPECIFICATION 1.1), OR 1/3 SHREDDED

2.LENGTHS OF EROSION EELS™ SHALL BE EITHER A NOMINAL +/-10 FT. OR +/- 4.5 FT. NOMINAL DIAMETER SHALL BE +/-9.5 INCHES. 3. EROSION EELS™ CAN BE PLACED AT THE TOP, ON THE FACE, OR AT THE TOE OF SLOPES TO INTERCEPT RUNOFF, REDUCE FLOW VELOCITY, RELEASE THE RUNOFF AS SHEET FLOW AND PROVIDE REMOVAL OF SEDIMENT FROM THE RUNOFF. 4.EROSION EELS™ SHALL BE INSTALLED ALONG THE GROUND CONTOUR, AT THE TOE OF SLOPES, AT AN ANGLE TO THE CONTOUR TO DIRECT FLOW AS A DIVERSION BERM, AROUND INLET STRUCTURES, IN A DITCH AS A CHECK DAM TO HELP REDUCE SUSPENDED SOLIDS LOADING AND RETAIN SEDIMENT, OR AS A GENERAL FILTER FOR ANY DISTURBED SOIL AREA. 5.NO TRENCHING IS REQUIRED FOR INSTALLATION OF EROSION EELS™

6. PREPARE BED FOR EEL INSTALLATION BY REMOVING ANY LARGE DEBRIS INCLUDING ROCKS, SOIL CLODS, AND WOODY VEGETATION. EROSION EELS™ CAN ALSO BE PLACED OVER PAVED SURFACES INCLUDING CONCRETE AND ASPHALT WITH NO SURFACE PREPARATION REQUIRED.

8.DO NOT PLACE EEL DIRECTLY OVER RILL AND GULLIES UNTIL AREA HAS BEEN HAND-EXCAVATED AND RAKED TO PROVIDE A LEVEL BEDDING SURFACE.
ALL SURFACES SHALL BE UNIFORMLY COMPACTED FOR MAXIMUM SEATING OF EELS IN PLACE. 9.FOR LOCATIONS WHERE EELS WILL BE PLACED IN CONCENTRATED FLOWS (SUCH AS CHECK DAMS, INLET PROTECTION) AND FOR PERIMETER CONTROLS AT PRIMARY DISCHARGE LOCATIONS, BED THE EELS IN A JUTE MESH CRADLE PER THE DETAILED DRAWINGS. 10. FOR DITCH APPLICATIONS, THE MAXIMUM DRAINAGE AREA SHALL BE 10 ACRES.

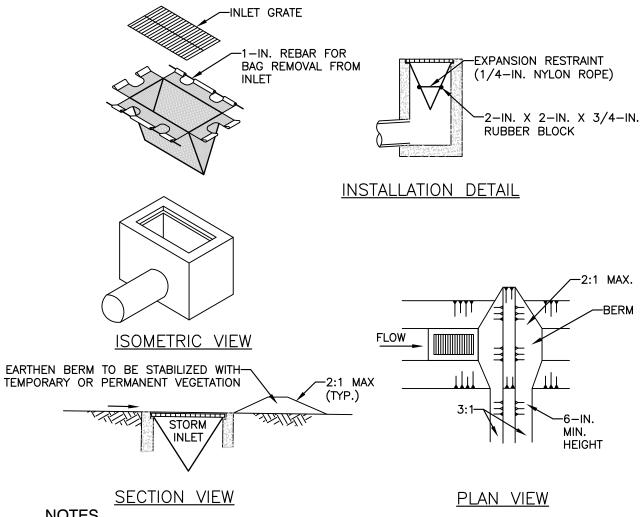
11. IF MORE THAN ONE EROSION EEL™ IS PLACED IN A ROW, THE EELS SHALL BE OVERLAPPED A MINIMUM OF 12 INCHES TO PREVENT FLOW AND

SEDIMENT FROM PASSING THROUGH THE FIELD JOINT. COMPRESS THE TWO EELS OF THE OVERLAP TIGHTLY TOGETHER EITHER BY HAND OR MANUFACTURER—APPROVED MECHANIZED MEANS. 12. WHEN USED IN DITCHES AS A CHECK DAM, EROSION EELS™ SHALL BE INSTALLED PER MANUFACTURER'S DETAILS. 13. FOR CHECK DAM APPLICATIONS, EROSION EELS™ SHALL BE PLACED PERPENDICULAR TO THE FLOW OF THE WATER. EROSION EELS™ SHALL CONTINUE UP THE SIDES SLOPES A MINIMUM OF 3 FEET ABOVE THE DESIGN FLOW DEPTH. 14. EROSION EELS™ SHALL REMAIN IN PLACE UNTIL FULLY ESTABLISHED VEGETATION HAS COMPLETELY DEVELOPED OR UNTIL THE STORAGE CAPACITY/FUNCTIONAL LIFE OF THE EEL HAS BEEN EXHAUSTED (REQUIRING REPLACEMENT WITH NEW EELS).

15. ANCHORING POSTS FOR CHECK DAM APPLICATIONS SHALL HAVE A MINIMUM WEIGHT OF 1.25 LBS/FT STEEL T-POSTS (5 TO 7 FT. LENGTHS) ROLLED FROM HIGH CARBON STEEL. POSTS SHOULD BE HOT-DIP GALVANIZED OR COATED WITH A WEATHER-RESISTANT PAINT FOR STEEL APPLICATION. POSTS SHOULD BE EQUIPPED WITH A METAL ANCHOR PLATE. INSTALL PER DETAILS ON THIS SHEET. 16. PLACE T-POSTS THROUGH HANDLE OF BAGS. DO NOT DRIVE POSTS THROUGH EROSION EELSM. T-POSTS ARE TO BE EMBEDDED A MINIMUM OF 2 FT INTO GROUND.

TEMPORARY EROSION EEL CONCRETE WASHOUT FACILITY





MAXIMUM DRAINAGE AREA = 1/2 ACRE.

2. INLET PROTECTION SHALL NOT BE REQUIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.

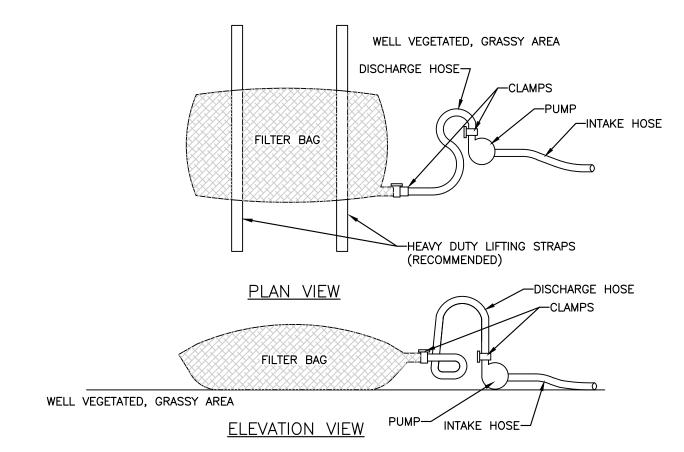
3. ROLLED EARTHEN BERM IN ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD SUBBASE BERM ON ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTIL PERMANENT STABILIZATION IS COMPLETED OR REMAIN PERMANENTLY.

4. AT A MINIMUM, THE FABRIC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 POUNDS, A MINIMUM BURST STRENGTH OF 200 PSI, AND A MINIMUM TRAPEZOIDAL TEAR STRENGTH OF 50 POUNDS. FILTER BAGS SHALL BE CAPABLE OF TRAPPING ALL PARTICLES 5. INLET FILTER BAGS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF

EVENT. BAGS SHALL BE EMPTIED AND RINSED OR REPLACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOODING OR BYPASSING OF THE INLET. DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR REPLACEMENT OF BAGS. ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE ACCUMULATED SEDIMENT AS WELL AS ALL USED BAGS ACCORDING TO THE PLAN NOTES.

6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

STANDARD CONSTRUCTION FILTER BAG INLET PROTECTION NOT TO SCALE



LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS: TEST METHOD MINIMUM STANDARD AVG. WIDE WIDTH STRENGTH ASTM D-4884 60 LB / IN. ASTM D-4632 GRAB TENSILE 205 LB ASTM D-4833 PUNCTUR 110 LB ASTM D-3786 MULLEN BURS

ASTM D-4355

ASTM D-4751

2. A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL B KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTÈXTILE ÚNDERLÁYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

4. NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

5. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE

MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED. 7. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

STANDARD CONSTRUCTION C9.01|PUMPED WATER FILTER BAG NOT TO SCALE

UV RESISTANCE

AOS % RETAINED

NEW YORK LAW REQUIRES AT LEAST 2 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE -STOP CALL DIG SAFELY NEW YORK, INC. 1-800-962-7962. NEW YORK STATE CODE RULE 753 (1997) AS AMENDED IN JULY 2002 AND JANUARY 2012 REQUIRES NO LESS THAN 2 WORKING DAYS NOTICE NOR MORE THAN 10 WORKING DAYS NOTICE FROM EXCAVATORS WHO ARE ABOUT TO: DIG, DRILL, BLAST, AUGER, BORE, GRADE, TRENCH, OR DEMOLISH WHEN IN THE CONSTRUCTION PHASE. FOR LOCATION REQUESTS IN THE STATE OF NEW YORK, SUBMIT A REQUEST ONLINE VIA DIG SAFELY NEW YORK'S ENTRY PLATFORM EXACTIX OR CALL TOLL FREE 1-800-962-7962.

UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THE LOCATION MUST BE CONSIDERED APPROXIMATE. OTHER UNDERGROUND UTILITIES MAY EXIST WHICH ARE NOT SHOWN. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN ALL PHYSICAL LOCATIONS OF UTILITY LINES PRIOR TO THE TIME OF CONSTRUCTION. IN NO WAY SHALL THE CONTRACTOR HOLD THE SURVEYOR RESPONSIBLE FOR ANY UTILITY LOCATION SHOWN ON THIS PLAN.

PRELIMINARY

NOT FOR CONSTRUCTION

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7000

REFERENCES

EXISTING BACKGROUND AND UTILITY INFORMATION OBTAINED FROM AMAZON.COM LLC ON 10/13/2022. EXISTING SURVEY COMPLETED BY BLEW & ASSOCIATES. PA. CAD FILE NAME: 19-5589-CESO-200 Oritani-Blauvelt NY Preliminary-04.20.2020_CAD.DWG, DATED: 4/20/2020.

SITE DESIGN INFORMATION OBTAINED FROM AMAZON.COM LLC ON 10/12/2022. RECORD DRAWINGS COMPLETED BY CESO ARCHITECTS, INC. PDF FILE NAME: DYX4_E1-Permit Set-Ext Building Permit-Rev0-20220810; CAD FILE NAME: DXY4_E1-Site Concept-Rev3-20221010.DWG, DATED: 8/10/2022.

ELECTRICAL GENERAL NOTES

- 1 DO NOT SCALE DRAWINGS. VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
- 2 ALL EMPTY RACEWAY SYSTEMS SHALL HAVE A PULLWIRE OR EQUAL AND TRACER CABLE.

6 PROVIDE PERMITS AND INSPECTIONS REQUIRED.

MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.

- 3 IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY. THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
- 4 CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED. CONTRACTOR SHALL INCLUDE IN HIS BID, COSTS REQUIRED TO MAKE HIS WORK MEET EXISTING CONDITIONS.
- 5 WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE, AND NATIONAL CODES AND ORDINANCES.
- 7 GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE. DEFECTS SHALL BE PROMPTLY REMEDIED WITHOUT COST TO THE OWNER.
- 8 SYSTEMS SHALL BE TESTED FOR PROPER OPERATION. IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL
- 9 PROVIDE EXTERIOR PULL BOXES AND HANDHOLES AS REQUIRED TO COMPLETE WORK INDICATED. SPLICES IN EXTERIOR PULL BOXES AND HANDHOLES SHALL BE MADE WATERPROOF USING "SCOTCHCAST" SPLICE KIT OR APPROVED EQUAL. SEAL
- ENDS OF CONDUITS AND DUCTS WITH "DUCTSEAL" OR APPROVED EQUAL. 10 VERIFY EXACT LOCATIONS OF EXISTING AND NEW UNDERGROUND UTILITIES, PIPING, AND RACEWAY SYSTEMS PRIOR TO TRENCHING. PROVIDE NECESSARY TRENCHING, BACKFILL, EXCAVATION, SUPPORTS, SERVICE FEEDERS (CONDUIT AND/OR

WIRE), PULLBOXES, TRANSFORMER PADS, SAWCUTTING AND PATCHING, CONCRETE/PAVING, ETC. REQUIRED. BACKFILL TRANCHES TO AND PATCH TO MATCH EXISTING. CONTRACTOR SHALL OBTAIN AND VERIFY EXACT UTILITY COMPANY

11 CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING OR FACTORY WIRING IN EQUIPMENT PROVIDED BY THIS CONTRACTOR.

DRAWINGS AND REQUIREMENTS. CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED PRIOR TO WORK.

- 12 CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT, OR INSTALLATION METHODS.
- 13 SYSTEMS SHALL BE COMPLETE, OPERABLE, AND READY FOR CONTINUOUS OPERATION
- 14 ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY UL OR OTHER RECOGNIZED TESTING FACILITY.

- 1 INTERRUPTING RATINGS NOTED IN SCHEDULES SHALL APPLY TO ENTIRE PANELBOARD AND/OR SWITCHBOARD. ALL EQUIPMENT COMPRISING PANELS AND/OR SWITCHBOARDS SHALL BE FULLY RATED FOR SHORT CIRCUIT CURRENT NOTED.
- PROVIDE ENGRAVED NAMEPLATES ON SWITCHBOARDS, PANELBOARDS, DISCONNECT SWITCHES, MOTOR CONTROL CENTERS, TRANSFORMERS, ETC., INDICATING EQUIPMENT DESIGNATION (OR DESIGNATION OF EQUIPMENT SERVED) AND
- FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS, AND INSTRUCTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE
- 4 PANEL DIRECTORIES SHALL BE REMOVABLE. SUBMIT PROPOSED SCHEDULE OF DIRECTORIES TO OWNER FOR APPROVAL. ROOM NAMES AND NUMBERS SHALL BE AS DIRECTED BY OWNER. DIRECTORIES SHALL BE TYPED AND INSTALLED UNDER
- CLEAR PLASTIC COVERS. 5 ALL BRANCH CIRCUIT AND FEEDER CONDUITS SHALL HAVE A CODE SIZED COPPER GROUNDING CONDUCTOR. INCREASE
- CONDUIT SIZE AS REQUIRED. 6 PULLBOXES, CABINETS, ETC. MOUNTED ON THE EXTERIOR AT GRADE LEVEL, SHALL BE WEATHERPROOF TYPE WITH HINGED LOCKABLE COVERS SECURED WITH TAMPERPROOF SCREWS.

WITH EQUIPMENT ACTUALLY SUPPLIED.

- 7 UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC, UNLESS NOTED OTHERWISE.
- 9 PROVIDE ONE (1) SET OF THREE (3) SPARE FUSES FOR EACH SIZE AND TYPE PROVIDED ON THIS PROJECT. INSTALL FUSES IN A HINGED DOOR, SHEET METAL STORAGE CABINET EQUIPPED WITH CLIPS OR CUBICLES, EACH MARKED WITH THE SIZE AND

8 PROVIDE SELF ADHESIVE IDENTIFICATION INSIDE COVER OF EACH FUSIBLE SWITCH, INDICATING SIZE AND TYPE OF FUSES

A HINGED DOOR, SHEET METAL STORAGE CADINET EQUIPPED WITH CLIPS OR CUDICLES, EACH MARKED WITH THE SIZE A
TYPE FUSE STORED THEREIN. PROVIDE NAMEPLATE "SPARE FUSES". INSTALL IN LOCATION(S) AS DIRECTED BY OWNER.
()

AFCI AIC	ARC FAULT CIRCUIT INTERRUPTER
AIC.	
	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AT	AMP TRIP
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
	35.1210
С	CONDUIT
СВ	CIRCUIT BREAKER
CKT	CIRCUIT
CONT	CONTINU(E) (OUS) (UED) (ATION)
CONTR	CONTRACTOR
CT	CURRENT TRANSFORMER
CU	COPPER
DWC	DRAWING
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
EOL	END OF LINE
ERMS	ENERGY REDUCTION MAINTENANCE SWITCH
EXIST	EXISTING
FLA	FULL LOAD AMPS
FMC	FLEXIBLE METALLIC CONDUIT
FUSW	FUSE/SWITCH RATINGS (AMPS)
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFPE	GROUND FAULT PROTECTION EQUIPMENT
GND	GROUND
GRC	GALVANIZED RIGID CONDUIT
⊔ 7	LEDT7
HZ	HERTZ
IMC	INTERMEDIATE METALLIC CONDUIT
	I ATTENDED TO THE PRESENT OF THE PRE
JB	JUNCTION BOX
	1
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
. =	LIQUID TIGHT FLEXIBLE NONMETALLIC CONDUIT
LFNC	CONTRACTOR OF CONTRACT DESCRIPTION OF THE PROPERTY OF THE PROP
LSI	LONG TIME, SHORT TIME, INSTANTANEOUS
-	LONG TIME, SHORT TIME, INSTANTANEOUS LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
LSI LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND
LSI LSIG MCA	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS
LSI LSIG MCA MCB	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER
LSI LSIG MCA MCB MDP	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL
LSI LSIG MCA MCB MDP MLO	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY
LSI LSIG MCA MCB	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL
LSI LSIG MCA MCB MDP MLO	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY
LSI LSIG MCA MCB MDP MLO MOCP	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION
LSI LSIG MCA MCB MDP MLO MOCP # N/A	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT
LSI LSIG MCA MCB MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SEC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SSCCR SW	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SEC	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SCCR SW SWBD	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SSCCR SW	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SCCR SW SWBD	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SSCCR SW SWBD UG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD UNDERGROUND
LSI LSIG MCA MCB MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SCCR SW SWBD	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD UNDERGROUND
LSI LSIG MCA MCB MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SEC SW SWBD UG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD VOLT VACUUM CIRCUIT BREAKER
LSI LSIG MCA MCB MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SEC SW SWBD UG	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD VOLT VACUUM CIRCUIT BREAKER
LSI LSIG MCA MCB MDP MLO MOCP # N/A NC NEC NIC NO NTS PB PNL PRCLF PRI PVC REQ RSC SCCR SEC SW SWBD UG V VCB VFI	LONG TIME, SHORT TIME, INSTANTANEOUS, GROUND MINIMUM CIRCUIT AMPS MAIN CIRCUIT BREAKER MAIN DISTRIBUTION PANEL MAIN LUGS ONLY MAXIMUM OVERCURRENT PROTECTION NUMBER NOT APPLICABLE NORMALLY CLOSED NATIONAL ELECTRICAL CODE NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE PULL BOX PANEL PARTIAL RANGE CURRENT LIMITING FUSE PRIMARY POLYVINYL CHLORIDE CONDUIT REQUIRED RIGID STEEL CONDUIT SHORT CIRCUIT CURRENT RATING SECONDARY SWITCH SWITCHBOARD UNDERGROUND VOLT VACUUM CIRCUIT BREAKER VACUUM FAULT INTERRUPTER

AVAILABLE FAULT CURRENT

EL	ECTRICAL SYMBOL LEGEND
SYMBOL	DESCRIPTION
φ	RECEPTACLE
① _{xx}	RECESSED JUNCTION BOX - LETTER INDICATES TYPE
IJxx	SURFACE MOUNTED JUNCTION BOX - LETTER INDICATES TYPE
Фхх	RECESSED JUNCTION BOX, WAL - LETTER INDICATES TYPE
且 _{xx}	SURFACE MOUNTED JUNCTION BOX, WALL - LETTER INDICATES TYPE
0 •	LEVEL 2 EV VEHICLE CHARGER
	LEVEL 3 EV VEHICLE CHARGER
	GENERATOR - SIZE VARIES
	TRANSFORMER - SIZE VARIES
	PANELBOARD
	SWITCHBOARD/DISTRIBUTION PANELBOARD
<u>_</u>	GROUND
K	ELECTRICAL INTERLOCK
M	METER
MH	MANHOLE
HH	HANDHOLE
ATS	AUTOMATIC TRANSFER SWITCH
(M)·®→	METER & RELAY
-«œ-}{-œ»-	DRAW-OUT POTENTIAL TRANSFORMER
SPD	SURGE PROTECTION DEVICE
	DISCONNECT SWITCH
50/51 50G	INSTANTANEOUS / TIME-DELAY / GROUND INSTANTANEOUS RELAY
н	EXTERIOR POLE MOUNTED LIGHT FIXTURE

EL	ECTRIC	ELECTRICAL TITLE SHEET ELECTRICAL SITE PLAN ELECTRICAL ENLARGED DISTRIBUTION PLAN ELECTRICAL ONE-LINE DIAGRAM
Discipline	Sheet Number	Sheet Name
Electrical-BP1	E0.00-BP1	ELECTRICAL TITLE SHEET
Electrical-BP1	E0.10-BP1	ELECTRICAL SITE PLAN
Electrical-BP1	E1.11-BP1	ELECTRICAL ENLARGED DISTRIBUTION PLAN
Electrical-BP1	E5.00-BP1	ELECTRICAL ONE-LINE DIAGRAM
Electrical-BP1	E6.00-BP1	PANEL SCHEDULES
Electrical-BP1	E7.01-BP1	ELECTRICAL DETAILS
Electrical-BP1	E7.02-BP1	ELECTRICAL DETAILS
Electrical-BP1	E8.00-BP1	ELECTRICAL SPECIFICATIONS
Electrical-BP1	E8.01-BP1	ELECTRICAL SPECIFICATIONS
Electrical-BP1	E8.02-BP1	ELECTRICAL SPECIFICATIONS
Electrical-BP1	E8.03-BP1	ELECTRICAL SPECIFICATIONS



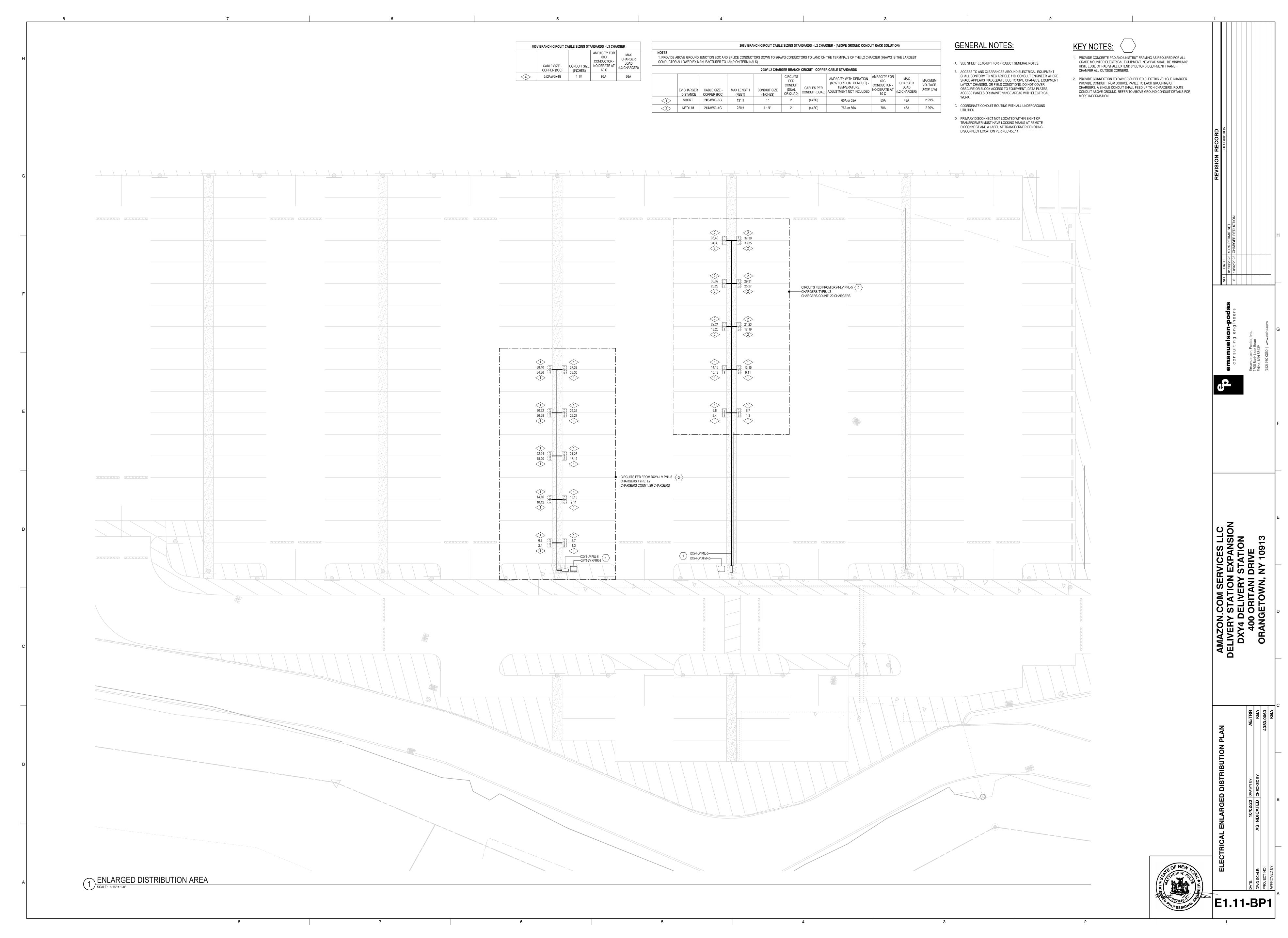


		ELECTR	CAL SCOPE COORE	DINATION	
SCOPE ITEM		RESPO	NSIBILITY	COMMENTS	
	OW	NER	ELECTRICAL	CONTRACTOR	1
	FURNISH	INSTALL	FURNISH	INSTALL	
480V-208/120V TRANSFORMER(S)	Х			Х	
480/277V SWITCHBOARD	Х			Х	
480/277V PANELBOARD(S)	Х			Х	
208/120V PANELBOARD(S)	Х			Х	
LEVEL 3 EV CHARGERS(S)	Х			Х	
LEVEL 2 EV CHARGERS(S)	Х			Х	
NEW CONDUIT(S)			Х	Х	
NEW FEEDER(S)			Х	Х	

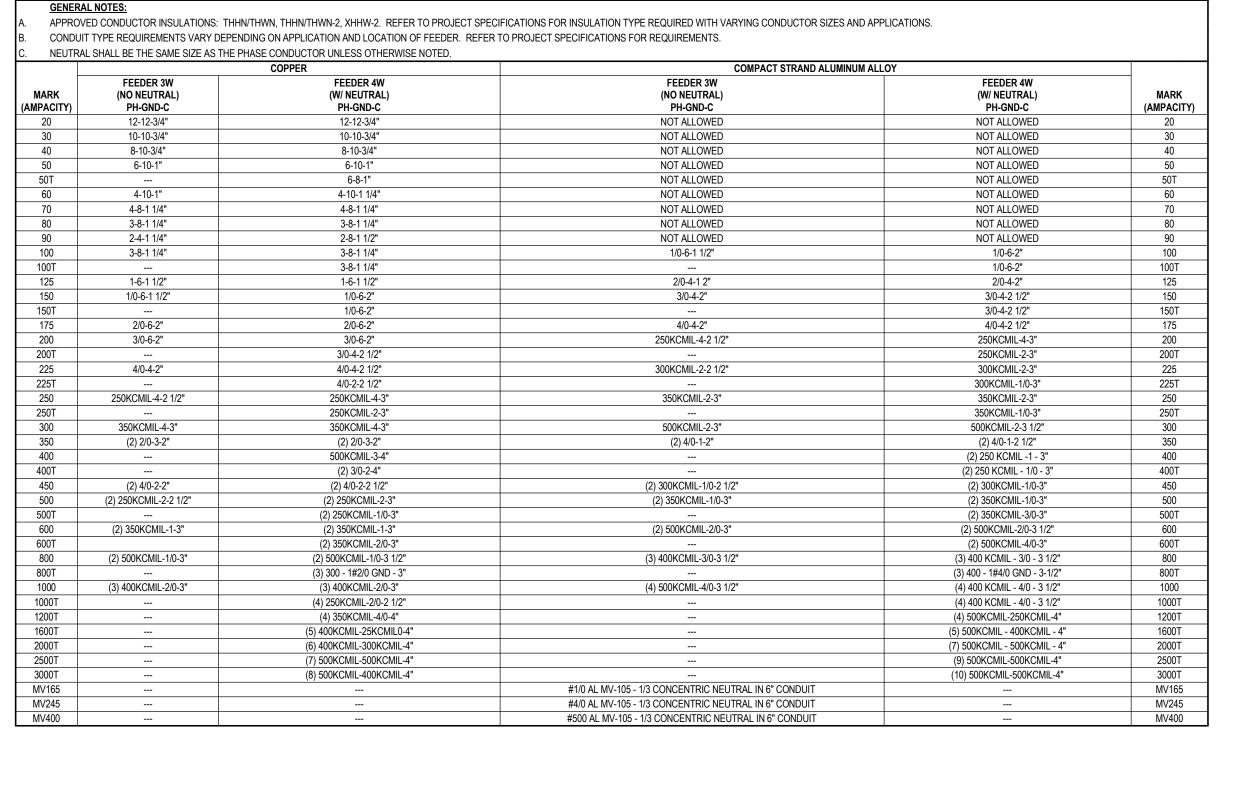
GENERAL NOTES:
1. IF NOT LISTED, ITEM SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

GENERAL NOTES:

A. SEE SHEET E0.00-BP1 FOR PROJECT NOTES. PROVIDE CONCRETE PAD FOR ALL PAD MOUNTED
 ELECTRICAL EQUIPMENT. NEW PAD SHALL BE MINIMUM 6"
 ABOVE GRADE, EDGE OF PAD SHALL EXTEND 6" BEYOND
 EQUIPMENT FRAME. CHAMFER ALL OUTSIDE CORNERS. (40) LEVEL 2 CHARGER STALLS (PHASE-1) (0) SINGLE MOUNTED LEVEL 2 CHARGERS (PHASE-1) (20) DUAL MOUNTED LEVEL 2 CHARGERS (PHASE-1) B. COORDINATE CONDUIT ROUTING WITH ALL UNDERGROUND UTILITIES. UTILIZE EXISTING UNDERGROUND CONDUIT INSTALLED AS PART OF PREVIOUS PHASE FROM SWITCHBOARD TO PANEL/TRANSFORMER. LINE STYLE KEY ----- UNDERGROUND POWER CONDUIT ABOVE GROUND POWER CONDUIT UTILITY METER CABINET 1 ELECTRICAL SITE PLAN
SCALE: 1" = 60'-0"



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3Ø FEEDER SCHEDULE

GENERAL NOTES:

A. SEE SHEET E0.00 FOR PROJECT GENERAL NOTES.

1. ADJUST TRANSFORMER SECONDARY TAP VALUES AS INDICATED. B. PROVIDE SELECTIVE COORDINATION STUDY AND ARC FLASH ANALYSIS USING SUPPLIED

2. UTILIZE EXISTING CONDUIT IN PARKING LOT. PROVIDE CONDUCTORS AS INDICATED.

KEY NOTES: (

COMPONENTS. ADJUST TRIP SETTINGS ON CIRCUIT BREAKERS FOR OPTIMAL COORDINATION. OVERCURRENT PROTECTIVE DEVICES SHALL BE SELECTIVELY COORDINATED FOR DISTRIBUTION SERVICE LOADS TO 0.1 SECONDS.

C. REFER TO PANEL SCHEDULES ON ELECTRICAL E6.00 SERIES SHEETS FOR ADDITIONAL INFORMATION. D. ALL GRADE MOUNTED EQUIPMENT SHALL BE INSTALLED ON A CONCRETE PAD, NO LESS THAN

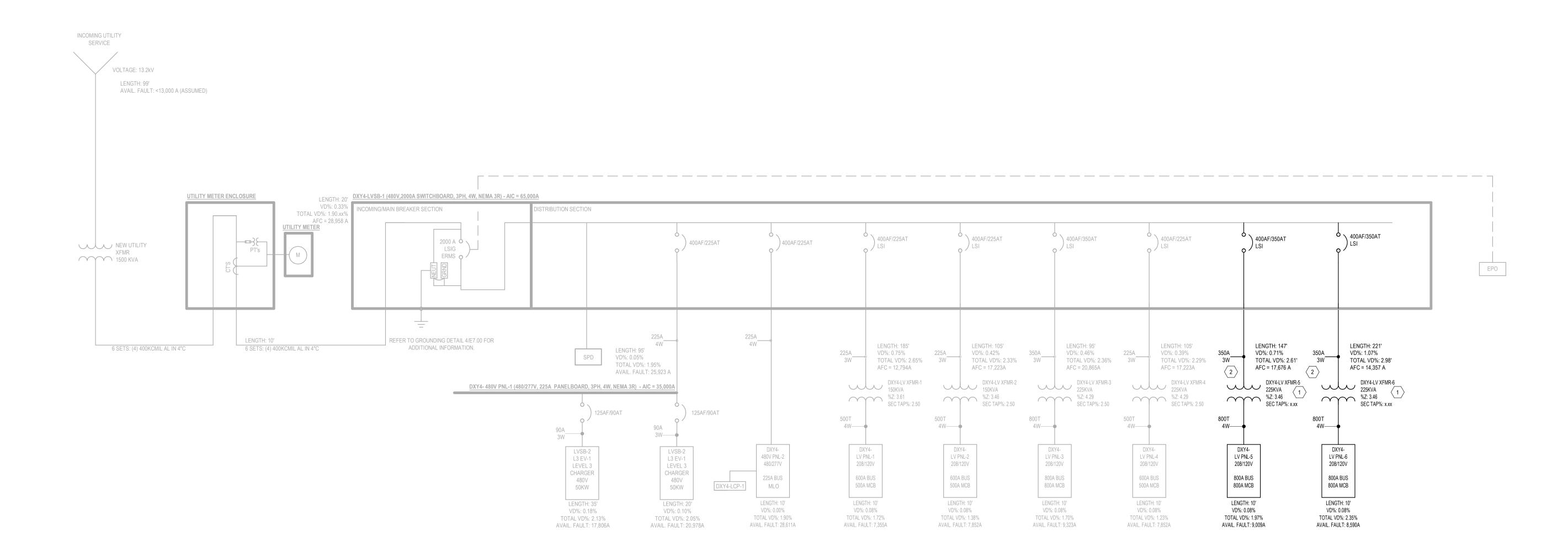
6" ABOVE SURROUNDING GRADE. E. ALL TRANSFORMERS MUST BE GROUNDED PER NEC 250.30(A)(4) AND BONDED PER NEC

F. PRE-ENERGIZATION AND OPERATING TESTS SHALL BE PERFORMED AND TEST REPORTS SHALL BE AVAILABLE TO THE AUTHORITY HAVING JURISDICTION PRIOR TO ENERGIZATION PER NEC

250.104(D). SEE DETAIL 2/E7.01-BP1 FOR TRANSFORMER PAD DETAIL.

G. LENGTHS SHOWN ARE FOR DESIGN CALCULATIONS AND NOT FOR BIDDING PURPOSES.

AMAZON.COM
DELIVERY STAT
DXY4 DELIVE
400 ORITA
ORANGETOV



TRANSFORMER SCHEDULE

SIZE

CONSTRUCTION ENCLOSURE MOUNTING

NEMA-3R

225 kVA DRY TYPE NEMA-3R PAD 1624 1

NOTES

TRANSFORMER GROUND

#2/0 AWG

ELECTRODE CONDUCTOR (CU)

1. REFER TO DETAIL 4/E7.01-BP1

480V, 3-PHASE, 3-WIRE

DXY4-LV XFMR-6 480V, 3-PHASE, 3-WIRE 120/208V, 3-PHASE, 4-WIRE

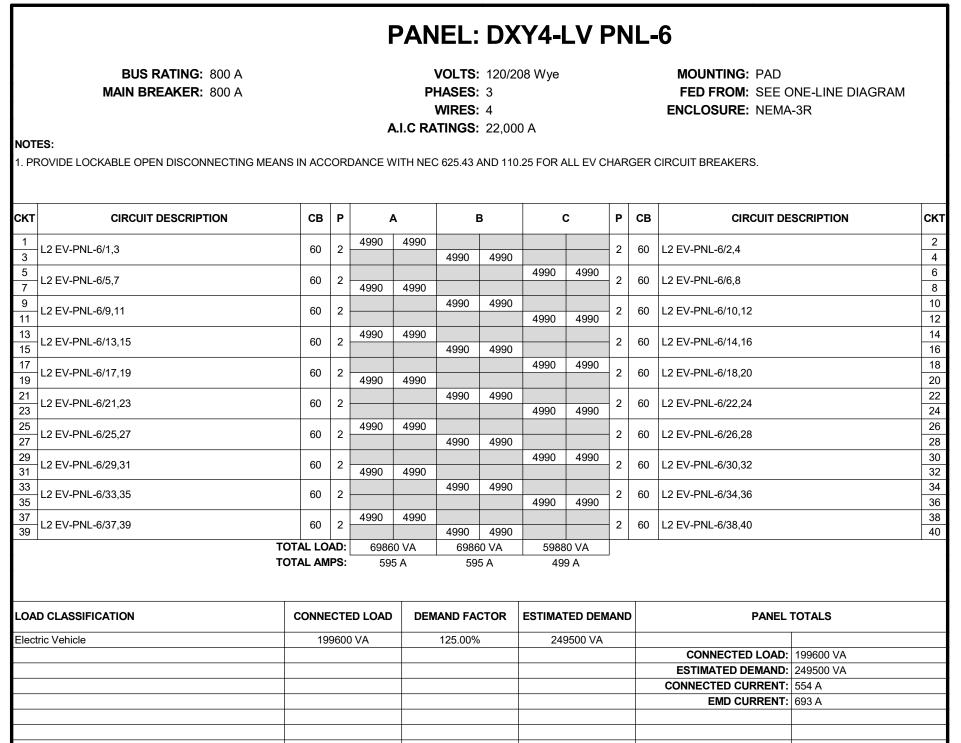
120/208V, 3-PHASE, 4-WIRE

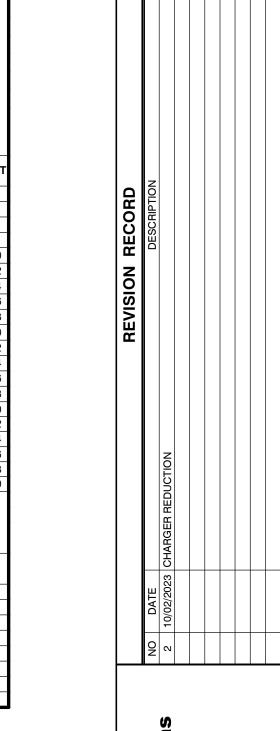
DXY4-LV XFMR-5

SW	/ITCHBOARD: DXY	'4-LVSB-1						
	BUS RATING: 2000 A MAIN BREAKER: 2000 A		VOLTS: 480/2 PHASES: 3 WIRES: 4	77 Wye		MOUNTING: FED FROM: ENCLOSURE:	DNE-LINE DIAGRAM	
		AVAILABLE FAUL		0 A		ENGLOSURE:	NEIVIA	1-3K
2. PROVID	E 100% RATED MAIN CIRCUIT BREAKER SIZ E INTEGRAL SURGE PROTECTION DEVICE. E LOCKABLE OPEN DISCONNECTING MEAN			EPTION TO NEC	210.20 (A).			
СКТ	CIRCUIT DESCRIF	PTION	POLES	FRAME SIZE	RELAY TRI SETTING		REMAR	RKS
1	DXY4-480V PNL-1					110000 VA		
2	DXY4-480V PNL-2		3	400 A	225 A	3413 VA		
3	DXY4-LV PNL-1 (FED VIA DXY4-LV XFMR-1))	3	400 A	225 A	129740 VA		
4	DXY4-LV PNL-2 (FED VIA DXY4-LV XFMR-2))	3	400 A	225 A	129740 VA		
5	DXY4-LV PNL-3 (FED VIA DXY4-LV XFMR-3		3	400 A	350 A	350 A 199600 VA		
6	DXY4-LV PNL-4 (FED VIA DXY4-LV XFMR-4))	3	400 A	225 A	119760 VA		
7	DXY4-LV PNL-4 (FED VIA DXY4-LV XFMR-5		3	400 A	350 A	350 A 199600 VA		
8	DXY4-LV PNL-4 (FED VIA DXY4-LV XFMR-6		3	3 400 A		199600 VA		
9								
10								
11								
12								
					TOTAL LOA	ND: 1091453 VA		
					TOTAL AMF	PS : 1313 A		
	SSIFICATION	CONNECTED LOAD	DEMAND FACTOR	_		SWITCHBOA		ARD TOTALS
Electric Vel	nicle	1091453 VA	125.00%	1364316 \	/A	CONVECTED	1045	4004450.)/A
						CONNECTED ESTIMATED DE		
						CONNECTED CUF		
						EMD CUF		
						EIVID COP	VIVEINI.	104174
				1				

					PAN	IEL:	DX	Y4-	LV I) 	IL-	.5		
BUS RATING: 800 A MAIN BREAKER: 800 A NOTES:					P	VOLTS: HASES: WIRES: ATINGS:	3	MOUNTING: PAD FED FROM: SEE ONE-LINE DIAGRAM ENCLOSURE: NEMA-3R						
1. PR	OVIDE LOCKABLE OPEN DISCONNECTING ME	ANS IN AC	COR	DANCE V	VITH NE	C 625.43 /	AND 110).25 FOR <i>F</i>	ALL EV C	HAR	GER (CIRCUIT BREAKERS.		
СКТ	CIRCUIT DESCRIPTION	СВ	P	1	A	i	3			Р	СВ	CIRCUIT DE	SCRIPTION	СК
1	L2 EV-PNL-5/1,3	60	2	4990	4990	4990	4990			2	60	L2 EV-PNL-5/2,4		2
5 7	L2 EV-PNL-5/5,7	60	2	4990	4990			4990	4990	2	60	L2 EV-PNL-5/6,8		6 8
9	L2 EV-PNL-5/9,11	60	2			4990	4990	4990	4990	2	60	L2 EV-PNL-5/10,12		10
13 15	L2 EV-PNL-5/13,15	60	2	4990	4990	4990	4990			2	60	L2 EV-PNL-5/14,16		14
17 19	L2 EV-PNL-5/17,19	60	2	4990	4990			4990	4990	2	60	L2 EV-PNL-5/18,20		18
21	L2 EV-PNL-5/21,23	60	2	.500	.300	4990	4990	4990	4990	2	60	L2 EV-PNL-5/22,24		22
25 27	L2 EV-PNL-5/25,27	60	2	4990	4990	4990	4990	1000	7000	2	60	L2 EV-PNL-5/26,28		26
29	L2 EV-PNL-5/29,31	60	2	4990	4990	7330	7330	4990	4990	2	60	L2 EV-PNL-5/30,32		30
33	L2 EV-PNL-5/33,35	60	2	4330	4330	4990	4990	4990	4990	2	60	L2 EV-PNL-5/34,36		34
37 39	L2 EV-PNL-5/37,39	60	2	4990	4990	4990	4990	4990	4330	2	60	L2 EV-PNL-5/38,40		38
39		TOTAL LO		6986	0 VA 5 A	6986	60 VA 5 A		1 80 VA 9 A					
LOAI	D CLASSIFICATION	CONN	ECTE	ED LOAD	DEN	MAND FA	CTOR	ESTIMA	TED DEN	/ANI	ס	PANEL 1	TOTALS	
Elect	ric Vehicle	19	99600	AV C		125.00%)	249	9500 VA					
												CONNECTED LOAD:		
					+							ESTIMATED DEMAND: CONNECTED CURRENT:		
					+							EMD CURRENT:		
					+							LIND CONNENT.	00071	

BUS RATING: 225 A MAIN BREAKER: MLO NOTES:				A.	PH \	/OLTS: IASES: WIRES: TINGS:	3 4	·		MOUNTING: PAD FED FROM: SEE ONE-LINE DIAGRAM ENCLOSURE: NEMA-3R				
1. PF	ROVIDE LOCKABLE OPEN DISCONNECTING MEA	ANS IN ACC	CORI	DANCE W	ITH NEC	625.43 A	AND 110	.25 FOR A	LL EV CH	IAR	GER (CIRCUIT BREAKERS.		
СКТ	CIRCUIT DESCRIPTION	СВ		А		В		C P		Р	СВ	B CIRCUIT DESCRIPTION		СК
1				18333	18333									
3	L3 EV-PNL-1/1,3,5	90	3			18333	18333			3	90	L3 EV-PNL-1/2,4,6		<u>_</u>
5								18333	18333					- 1
7														1
11														1
•••		TOTAL LO	AD:	36667	' VA	3666	7 VA	3666	7 VA					
		TOTAL AN	IPS:	132	Α	132	2 A	132	2 A					
LOA	D CLASSIFICATION	CONNE	СТЕ	D LOAD	DEM	AND FAC	CTOR	ESTIMAT	ED DEM	ANE		PANEL	TOTALS	
	D CLASSIFICATION tric Vehicle			ED LOAD		AND FAC			ED DEM 2500 VA	ANE)	PANEL	TOTALS	
										ANE)	PANEL CONNECTED LOAD:		
										ANE)		110000 VA	
										ANE)	CONNECTED LOAD:	110000 VA 137500 VA 132 A	





Consulting
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Edina, MN 55439
(952) 930-0050 | www.ep

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AMAZON.COM SERVICES LLC SELIVERY STATION EXPANSION DXY4 DELIVERY STATION 400 ORITANI DRIVE ORANGETOWN, NY 10913

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 Author

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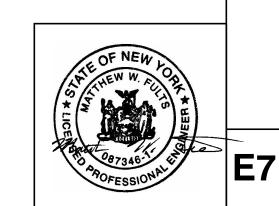
 Approver

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AS INDICATED CHECKEDE

E6.00-BP

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TERMINAL BAR

1 .PROVIDE TWO (2) GROUND RODS FOR GROUNDING EACH TRANSFORMER. ALTERNATIVELY, PROVIDE A SINGLE GROUND ROD

— EQUIPMENT GROUNDING

CONDUCTOR NEC 250.122

HAVING AN EARTH CONTACT RESISTANCE OF 25 OHMS OR LESS.

TERMINAL BAR

SUPPLY-SIDE -

4 A - 4 - 1

NEC 250.52(A)(3)-----

BONDING JUMPER

NEC 250.102(C)

CONCRETE ENCASED ELECTRODE

SUPPLY-SIDE -

BONDING JUMPER

NEC 250.102(C)

GROUNDING

ELECTRODE

NEC 250.66(B)

GROUNDING ARRANGEMENT FOR SEPARATELY DERIVED SYSTEM -

DRY TYPE TRANSFORMER

GROUNDING — ELECTRODE

CONDUCTOR

NEC 250.66(A)

/ IDEAL

SPACING

(2) 5/8"X8'-0" COPPER CLAD ----GROUND ROD INSTALLATION PER NEC 250.52(A), 250.53 (A)

AND 250.68

IF SPACE IS LIMITED,

THEN MEET 6'-0" MINIMUM —

SWITCHBOARD

— EQUIPMENT BONDING

SYSTEM 250.102(C)(2)

#4/0 AWG CU BONDING JUMPER

NEC 250.66(B)----

CONCRETE PAD

2. ENTIRE INSTALLATION TO BE IN ACCORDANCE WITH N.E.C REQUIREMENTS.

7 MV TRANSFORMER GROUNDING DETAIL
SCALE: N.T.S

1. EXTEND #4/0 GROUNDING CONDUCTOR FROM TRANSFORMER GROUND LUGS TO TRANSFORMER TERMINAL BAR

----#4/0 AWG CU BONDING JUMPER NEC 250.66(A)

—#4 AWG CU CONCRETE ENCASED ELECTRODE NEC 250.52(A)(3)

---#4/0 BARE COPPER GROUND RING

(PROVIDE 12" MIN. TAILS ABOVE PAD)

UNDER CRUSHED STONE BED

____ 3/4"X10' GROUND ROD

NEC 250.52(A)(5)

NEUTRAL BUS —

3/4" x 10'-0" LONG COPPERCLAD GROUND ROD (TYPICAL FOR 4)

NOTES:

JUNCTION BOX FOR L2 AND L3 CHARGERS

1 HANDHOLE/JUNCTION BOX DETAIL
NO SCALE

TERMINAL BAR —

BONDING JUMPER NEC 250.102(C)

SUPPLY-SIDE —

BONDING JUMPER

NEC 250.102(C)

OIL FILLED TRANSFORMER

MINIMUM RECOMMENDED DIMENSIONS LxWxH = 2'-0"x8"x1'-0" MINIMUM NEMA 4X RATED RECOMMENDED POLYCARBONATE

IF METALLIC JUNCTION BOX IS USED IN WET OR DAMP ENVIRONMENT PROVIDE 1/4" AIRSPACE BETWEEN BASE OF JUNCTION BOX AND GROUND. RECOMMENDED 1/4" MIN. GALVANIZED SQUARE WASHER. IF

ALTERNATIVE SOLUTION CONTACT ENGINEERING FOR APPROVAL.

ENCLOSURES MUST REQUIRE A TOOL TO OPEN (NEC 314.30(D))

SPLICES AND SPLICING DEVICES MUST BE WET RATED (NEC 314.30(C))

JUNCTION BOX

SIDE VIEW

EQUIPMENT GROUNDING CONDUCTOR NEC 250.122

REFER TO GROUNDING DETAIL 7/E7.01-BP1 FOR ADDITIONAL INFORMATION.

GROUNDING ARRANGEMENT FOR SEPARATELY DERIVED SYSTEM –

MEDIUM VOLTAGE, EXTERIOR APPLICATIONS

O SCALE

— 1/4" MIN. GALVANIZED

BOLT HOLE)

WASHER (UNDER EACH

TERMINAL BAR

EQUIPMENT UNIT —

ANCHOR TO CONC. —

3/4" CHAMFER (TYP) ---

FINISHED GRADE —

HOOK ENDS OF -

REBAR (TYP)

#5 BOTH WAYS —

PAD AT ALL

LOCATIONS

PROVIDE 2 #5 T&B

- KEEP REINFORCING 1-1/2"

WELL COMPACTED 6" THICK 3/4" GRAVEL-

OVER WELL COMPACTED SUBGRADE W/ 1.5 TSF MIN BEARING CAPACITY

1'-6" MIN. —

CLEAR OF FINISHED SURFACES

BOTH SIDES OF

— EXOTHERMIC WELD

REBAR TO BE 3" FROM ALL CONCRETE EDGES-

(SECONDARY OPENING)

REINFORCING STEEL SCHEDULE

(9) #4 X 8'2" (9

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS. ALL CONCRETE SHALL BE AIR ENTRAINED

SOIL COMPACTION UNDER PAD (FOR BOTH POURINPLACE AND SEPARATE STANDARD PADS) TO BE AT 95% STANDARD PROCTOR.
 TWO 6" 36" RADIUS CONDUIT ELBOWS FOR PRIMARY CABLE TO EXTEND 3' BEYOND THE FRONT EDGE OF TRANSFORMER PAD.

2. REINFORCING STEEL SHALL BE FURNISHED IN ACCORDANCE WITH ASTM A615 GRADE 60. PLACE PER SCHEDULE WITHIN THE LIMITS SHOWN. ALL REINFORCING STEEL SHALL BE UNIFORMLY TIED TO REINFORCING STEEL TO PREVENT DISPLACEMENT DURING CONCRETE

(4% TO 6% BY VOLUME) WITH A MAXIMUM WATER CONTENT RATIO OF 0.45.

6 MV PAD MOUNT TRANSFORMER DETAIL
SCALE: 1/2" = 1'-0"

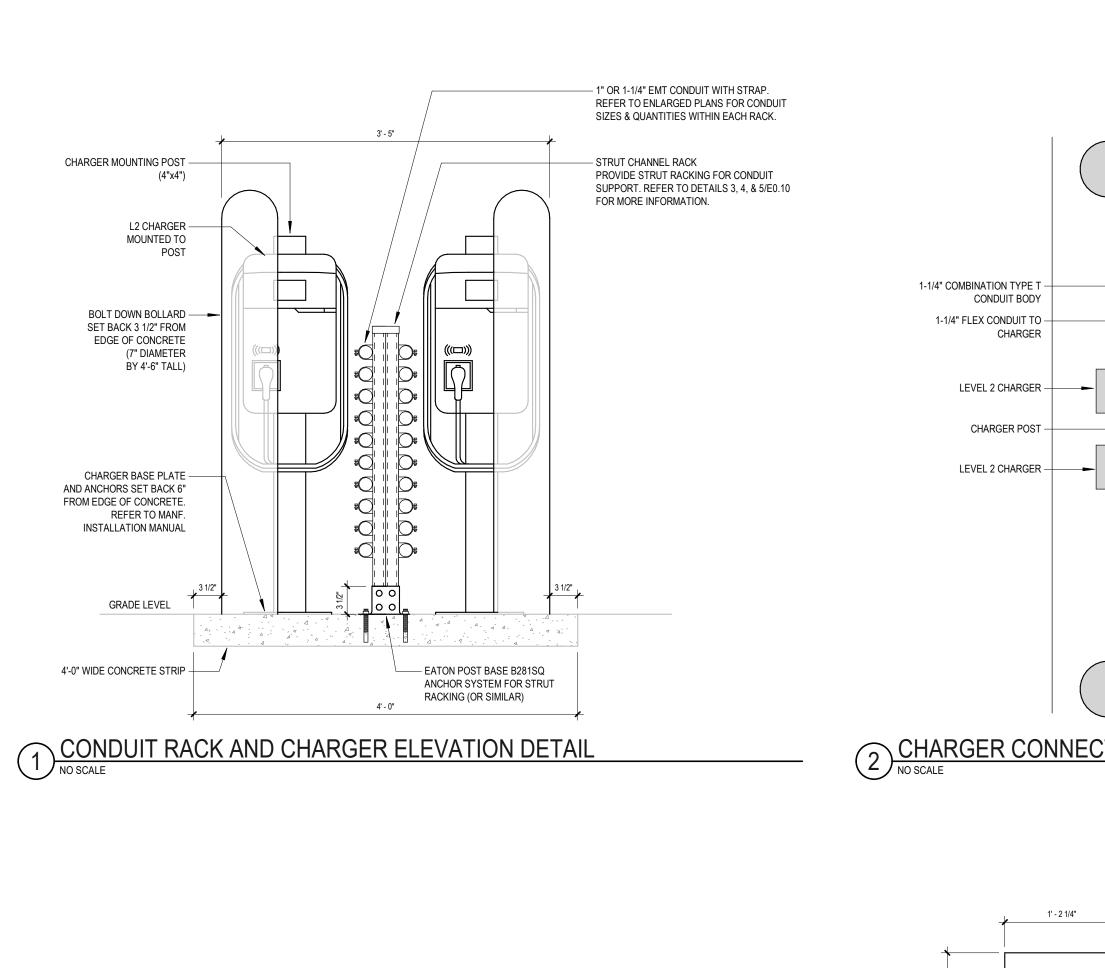
3. TOP SURFACE FINISH SHALL BE LEVEL. WOOD FLOAT TOP; DO NOT LEAVE ANY DEPRESSIONS.

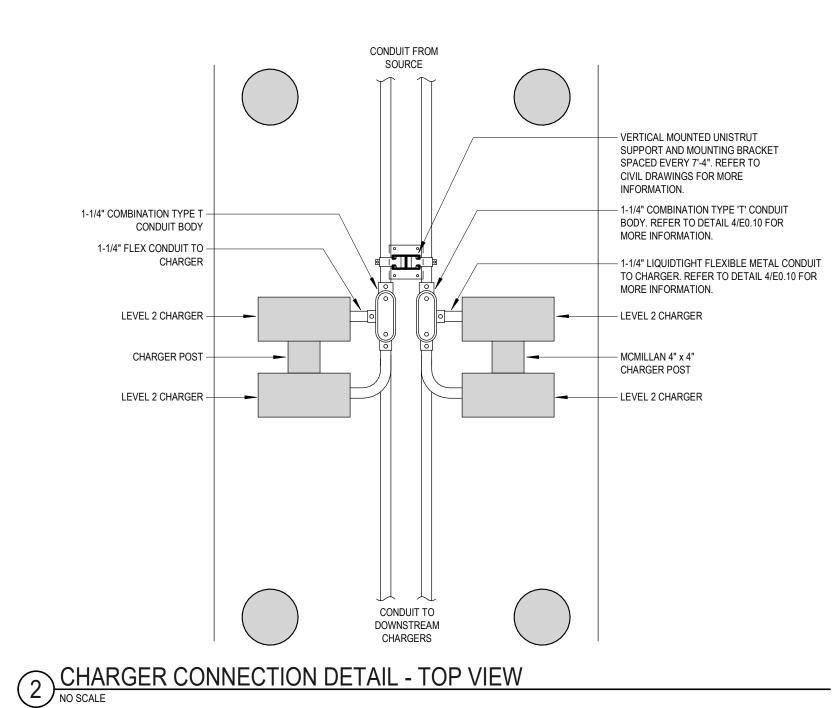
CONDUITS

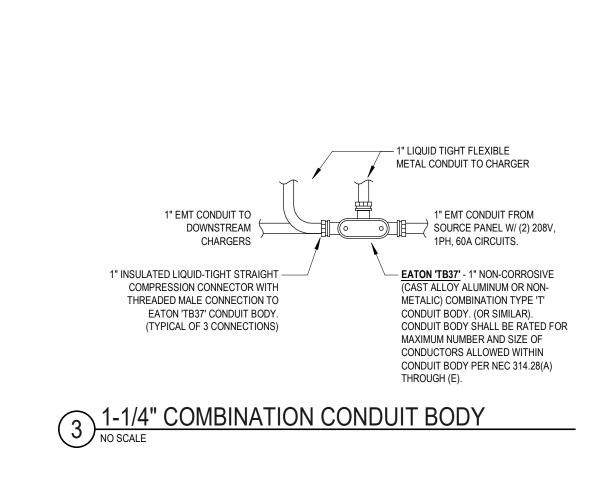
APPROX. WEIGHT

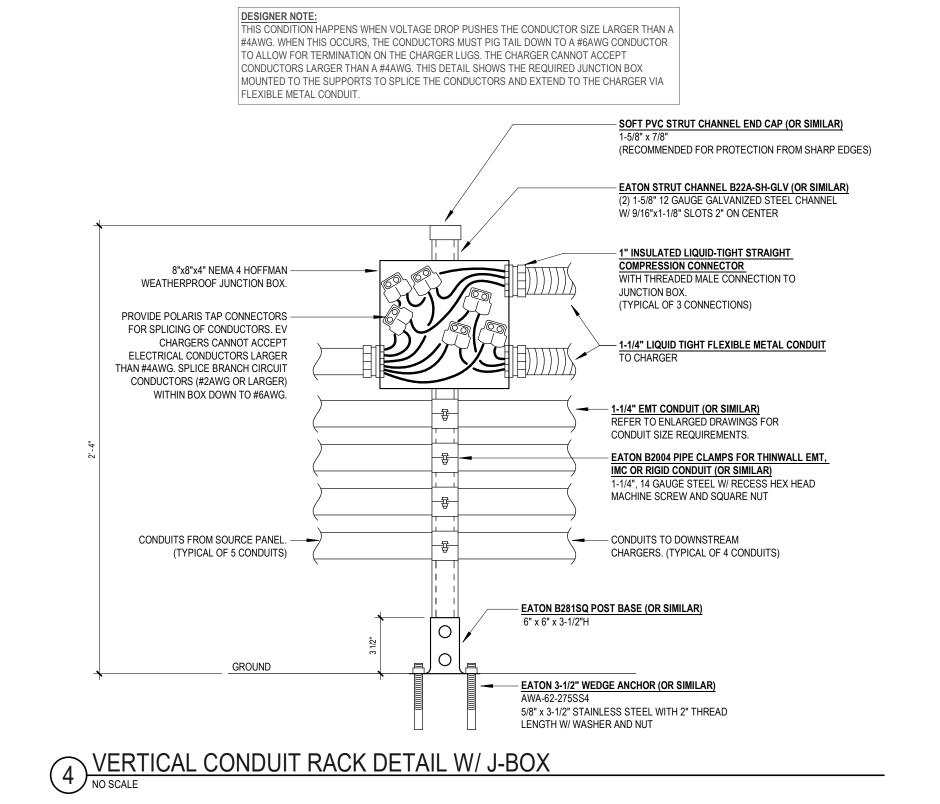
- 4000 PSI CONCRETE

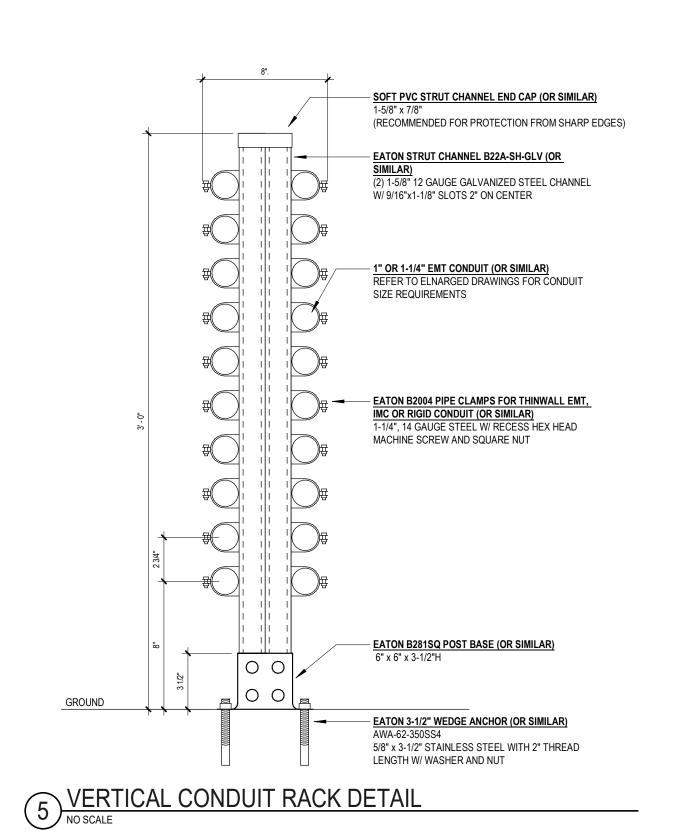
MOUNTING TAB

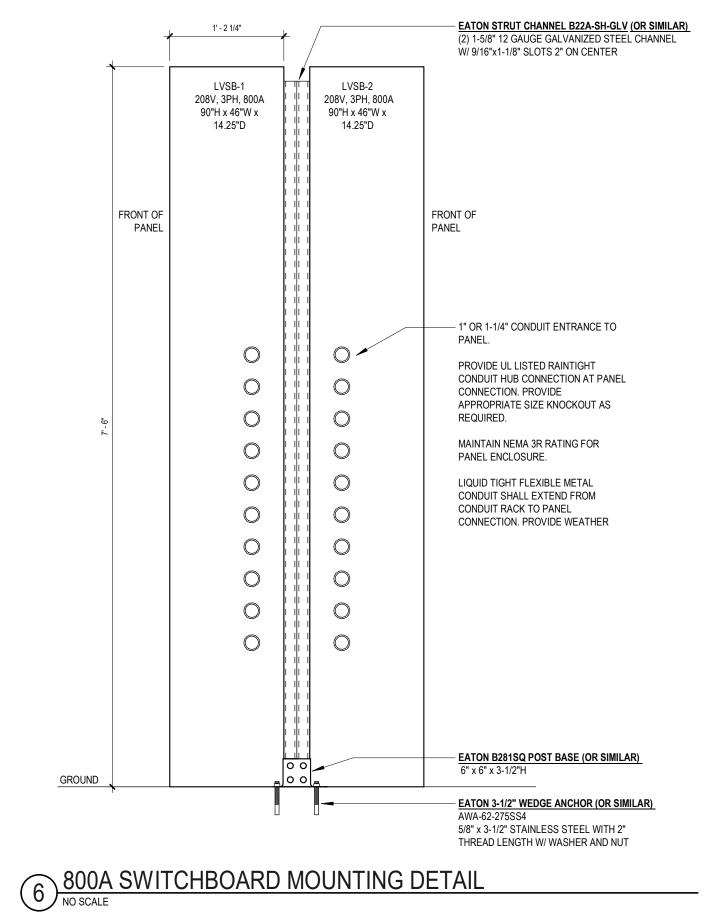


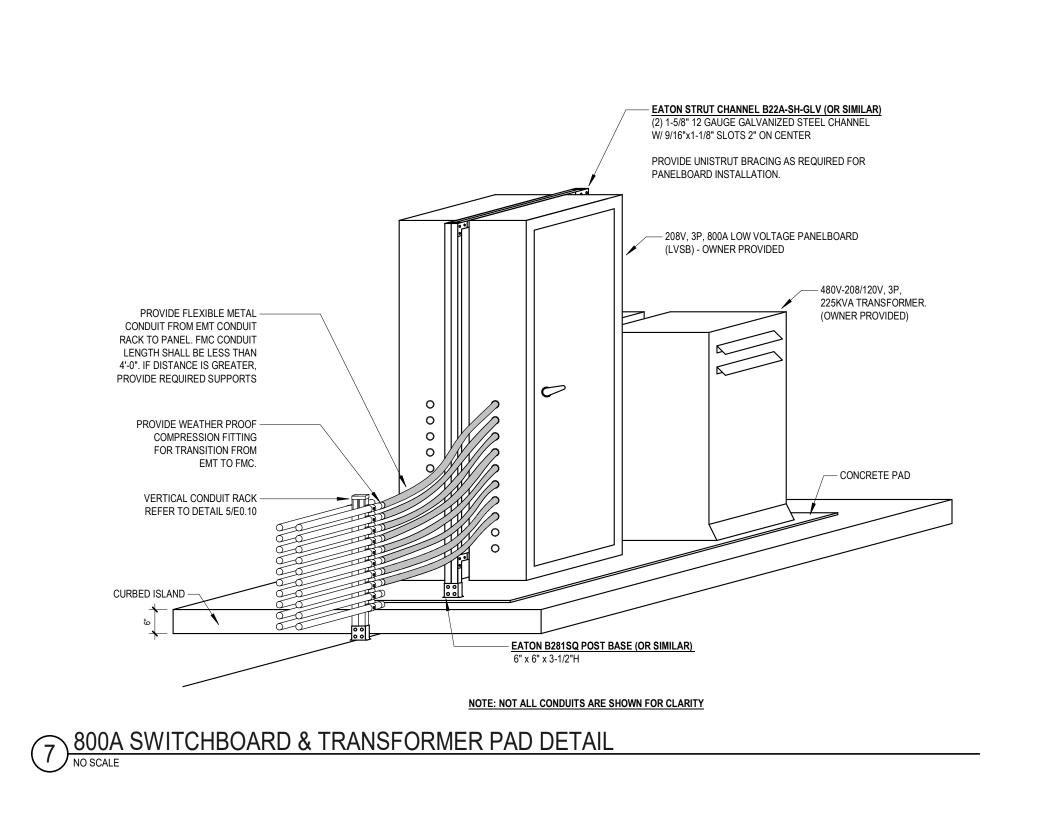


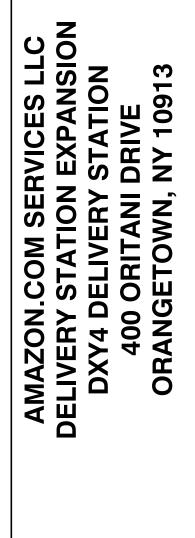












PART 1 GENERAL

- 1.01 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION
- A. State and local codes, laws, ordinances, rules and regulations. B. American national standards institute (ANSI).
- American society for testing and materials (ASTM)
- D. Institute of electrical and electronic engineers (IEEE).
- National electrical manufacturer's association (NEMA). F. National fire protection association (NFPA).
- G. Occupational, safety and health administration (OSHA).
- H. Underwriters laboratories (UL)
- I. Where a conflict or disagreement exists between codes and standards, the more stringent condition shall govern.
- Bidder shall comply with all applicable codes and standards, whether or not identified in this listing. The specification refers to these publications by the basis of designation only. These references shall govern the work except where they conflict with the engineer's specifications. In case of conflict, the more stringent
- requirement, as interpreted by the engineer, shall govern. K. Requirements of regulatory agencies: the requirements and recommendations of the agency having local authority for the enforcement of nations, state, and local codes shall be applied as necessary for certification, interpretation, or variance as required.
- L. Comply with NECA 1.
- M. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.
- N. Equipment: install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- 1.02 INTERPRETATIONS OF DRAWINGS
- A. Coordinate field routed electrical raceway installation with other trades and the actual supplied equipment.
- B. Install each 3-phase power circuit in a separate conduit unless note shown on the
- C. All dimensions shall be field verified at the job site and coordinated with the work of all other trades.
- D. Except where dimensions are shown, the locations of equipment, fixtures, outlets and similar devices shown on the drawings are approximate only. 1.03 INTERFERENCES
- A. Because electrical drawings are generally diagrammatic in nature, minor adjustments to illustrated requirements may be required to avoid interferences between electrical work and construction furnished by other trades and existing
- B. Plan and coordinate work; furnish raceway offsets, fittings and boxes; adjust equipment locations; and provide associated supports, all as needed to avoid
- C. Take field measurements to verify dimensions provided on drawings.
- D. If interferences cannot be avoided, notify the engineer before proceeding with
- 1.04 RECORD DRAWINGS
- A. As the work progresses, legibly record all field changes on a set of project contract drawings, hereinafter called the "record drawings".
- B. Record drawings shall accurately show the field changes for the following items:
- One-line diagram(s)
- Conductor sizes Panel schedule(s)
- Wiring diagram(s) Underground conduit routing
- Cabling routing
- Grounding plan drawing Overcurrent protective device settings
- Plan view, sizes and locations of panel boards
- 10. Individual system electrical and control schematic diagrams END OF SECTION

SECTION 26 0513 - MEDIUM-VOLTAGE CABLES

PART 1 GENERAL

- 1.01 REFERENCE STANDARDS
- A. IEEE 48 IEEE Standard for Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5 kV through 765 kV or Extruded Insulation Rated 2.5 kV through 500 kV 2020.
- B. NEMA WC 74 5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy 2017.
- C. NFPA 70 National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- A. Product Data: Provide for cable, terminations, and accessories.
- B. Manufacturer's product literature illustrating the following:
- Cable characteristics (Electrical/Mechanical).
- Cable terminations including all deadbreak modules and matching deadbreak elbows. Description of materials to be used for circuit labeling.
- 1.03 INFORMATIONAL SUBMITTALS
- A. Material Certificates: For each cable and accessory type, signed by manufacturers.
- B. Cable pulling tension calculations and recorded values.
- C. Manufacturer's Documentation: After approval by the Engineer of cable & cable terminations to be used, the cable manufacturer shall furnish the following
- information: 1. Source quality-control test reports. This includes proof that cable has been
- manufactured within twelve (12) months of its installation. D. Copy of the manufacturer's splicing and termination procedures for approval.
- E. Certifications and specs of cable splicer(s) and terminator(s).
- 1.04 OUALITY ASSURANCE
- A. Comply with NFPA 70 and IEEE C2 (NESC) B. All conductors and cable shall conform to ICEA standards. Cable warranty shall
- begin upon the date of cable installation acceptance. Each length of cable delivered to the job shall have a certified test report from the factory stating that the cable meets the minimum standards for cables of this type as established by ICEA. The test report shall also include month and year of manufacture which shall not exceed twelve (12) months prior to the delivery to the site. Copies of this report shall be delivered to the Owner's representative before the cable is installed.
- C. Comply with ASTM B-609, and class B stranded per B-231 for Aluminum wiring, conductors, and cables.
- D. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.
- E. NRTL (Nationally Recognized Testing Laboratory) Listing: Products shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for electrical and fire safety.

PART 2 PRODUCTS

- 2.01 MEDIUM-VOLTAGE CABLE
- A. Manufacturers: Okonite: www.okonite.com
- General Cable Technologies Corporation: www.generalcable.com Southwire Company: www.southwire.com.
- B. Medium Voltage Cable: NEMA WC 8 ethylene propylene rubber insulated cable. 1. Voltage: 15 kV, grounded.

- Conductor: Aluminum, stranded Aluminum with filled strand. 3. Construction: Single conductor with Concentric Neutral Conductor-Bare
 - 4. Conductor Strand Screen: A semi-conducting Conductor Strand Screen Extruded semiconducting ethylene-propylene rubber shall be applied by extrusion directly to the surface of the stranded conductor and shall meet or exceed the requirements of ICEA S-94-649 and AEIC CS8
 - 5. Conductor Insulation Temperature Rating: 221 deg F (105 deg C) normal operation, 284 deg F (140 deg C) emergency overload operation, and 482 deg F (250 deg C) for short circuit conditions.
 - 6. Insulation Thickness: 133 percent insulation level and insulated with a high quality, heat, moisture, impact, ozone, and corona resistant thermosetting EPR that is suitable for use in wet or dry locations, in underground conduit and duct systems, and direct buried applications. The average insulation thickness shall be not less than 220 mils.
 - 7. Insulation Screen: The extruded covering shall be at least 30 mils thick and shall be in intimate contact with the insulation. 8. Concentric Neutral Conductor Material:
 - a. The concentric neutral conductor shall be composed of a serving of either round annealed copper wires. b. The wires shall meet the chemical requirements of ASTM B5 and the resistivity, tensile, and elongation requirements of ASTM B3 for uncoated neutrals or ASTM B33 for tin-coated neutrals.

c. The wires shall be applied helically over and in contact with the

- 9. Insulation Jacket: encapsulating jacket-okolene, 30 mils minimum
- thickness 2.02 CABLE ACCESSORIES
- A. Manufacturers:
- Cable termination 3M: www.3m.com Cooper: www.eaton.com
- B. Cable Terminations: IEEE 48, Cold shrink silicone rubber stress cone, used at outdoor metal enclosed switchgear apparatus. Product: 3M 7640-S SERIES.
- Outdoor installation for single conductor 15kV aluminum conductor with jacketed concentric neutral 3. BIL shall equal or exceed distribution equipment BIL ratings
- C. Loadbreak elbows (200)A, used at the transformer bushing wells 1. Product: [LEJ215 SERIES] for Aluminum conductor.
- Qualified per IEEE 386. D. Deadbreak elbows (600)A, used at the MV tap switches
- Product: [BT625 SERIES] for Aluminum conductor. Qualified per IEEE 386.
- 2.03 CABLE SPLICES
- A. Cable splices are not allowed. Run underground cables continuous between end termination points.
- 2.04 CIRCUIT LABELS
- A. Manufacturers:
- Almetek Industries, Type E-Z -Tag or equal. Substitutions: Under provisions of Division 01 Section "General
- B. Description: Cable circuit labels shall be 1-1/2 (38 mm) high, polyethylene, with black on yellow characters, in a polyethylene holder, attached to the cable by two nylon self locking ties.
- PART 3 EXECUTION
- 3.01 EXAMINATION A. Verify that conduit, duct, trench, or manholes are ready to receive cable.
- B. Verify that field measurements are as indicated.
- C. Verify routing and termination locations of cable bank prior to rough-in. D. Cable routing is shown in approximate locations unless dimensioned. Route as
- required to complete wiring system. 3.02 PREPARATION
- A. Use swab to clean conduits before pulling cables.
- 3.03 INSTALLATION A. Avoid abrasion and other damage to cables during installation.
- B. Use suitable lubricants and pulling equipment
- Sustain cable pulling tensions and bending radii below recommended limits. D. Ground cable concentric neutral at each termination and splice.
- FIELD QUALITY CONTROL
- A. Inspect exposed cable sections for physical damage. B. Inspect cable for proper connections as indicated.
- C. Inspect concentric neutral grounding, cable supports, and terminations for proper installation. 3.05 PROTECTION
- A. Protect installed cables from entrance of moisture. **END OF SECTION**

SECTION 26 0519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS

AND CABLES

PART 1 GENERAL

PART 2 PRODUCTS

- 1.01 ADMINISTRATIVE REQUIREMENTS
- A. Coordination: 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including
- adjustments for conductor sizes increased for voltage drop. 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
- Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work. 1.02 DELIVERY, STORAGE, AND HANDLING
- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.
- 2.01 CONDUCTOR AND CABLE APPLICATIONS
- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required. 2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS
- A. Provide products listed, classified, and labeled as suitable for the purpose B. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- C. Conductor Material: Provide copper conductors except where aluminum conductors are specifically indicated or permitted for substitution. Conductor sizes indicated are based on copper unless specifically indicated as aluminum.
 - Conductors designated with the abbreviation "AL" indicate aluminum. a. Substitution of aluminum conductors for copper is permitted for service and panelboard feeder conductor sizes 1/0 AWG and larger. Aluminimum conductors shall not be permitted for connection to
 - mechanical equiment. b. Where aluminum conductors are substituted for copper, comply with the following: 1) Size aluminum conductors to provide, when compared to copper sizes indicated, equivalent or greater ampacity and
 - equivalent or less voltage drop. 2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors. 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity,

ASTM B787/B787M unless otherwise indicated.

uncoated copper conductors complying with ASTM B3, ASTM B8, or

- Aluminum Conductors (only where specifically indicated or permitted for substitution): AA-8000 series aluminum alloy conductors recognized by ASTM B800 and compact stranded in accordance with ASTM B801 unless
- otherwise indicated.
- D. Conductor Color Coding: 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout
- 2. Color Coding Method: Integrally colored insulation. a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
- 3. Color Code: a. 480Y/277 V, 3 Phase, 4 Wire System: 1) Phase A: Brown.
- 2) Phase B: Orange. 3) Phase C: Yellow.
- 4) Neutral/Grounded: Gray. b. 208Y/120 V, 3 Phase, 4 Wire System:
- 1) Phase A: Black. 2) Phase B: Red.
- 3) Phase C: Blue. 4) Neutral/Grounded: White. c. Equipment Ground, All Systems: Green.
- 2.03 SINGLE CONDUCTOR BUILDING WIRE A. Description: Single conductor insulated wire
 - 1. Feeders and Branch Circuits: a. Size 12 AWG and Smaller: Solid.
- b. Size 10 AWG and Larger: Stranded. C. Insulation Voltage Rating: 600 V D. Insulation:

B. Conductor Stranding:

- 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below. a. Size 4 AWG and Larger: Type XHHW-2.
- Aluminum Building Wire (only where specifically indicated or permitted for substitution): Type XHHW-2.
- WIRING CONNECTORS A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL
- 486A-486B or UL 486C as applicable. B. Wiring Connectors for Splices and Taps: 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated
- 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors. 3. Connectors for Aluminum Conductors: Use compression connectors or

1. Provide terminal lugs for connecting conductors to equipment furnished

- mechanical connectors. Wiring Connectors for Terminations:
- with terminations designed for terminal lugs. 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are Where over-sized conductors are larger than the equipment terminations
- can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective Aluminum Conductors: Use compression connectors for all connections.
- Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
- Mechanical Connectors: Provide bolted type or set-screw type. F. Compression Connectors: Provide circumferential type or hex type crimp configuration.

PART 3 EXECUTION

same manner.

- 3.01 EXAMINATION
- Verify that interior of building has been protected from weather. Verify that work likely to damage wire and cable has been completed. C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA
- D. Verify that field measurements are as indicated. E. Verify that conditions are satisfactory for installation prior to starting work. 3.02 PREPARATION
- Clean raceways thoroughly to remove foreign materials before installing conductors and cables.
- **INSTALLATION** A. Circuiting Requirements Unless dimensioned, circuit routing indicated is diagrammatic.
- 2. When circuit destination is indicated without specific routing, determine exact routing required. 3. Arrange circuiting to minimize splices. B. Install products in accordance with manufacturer's instructions.
- Perform work in accordance with NECA 1 (general workmanship). Installation in Raceway:
- Tape ends of conductors and cables to prevent infiltration of moisture and Pull all conductors and cables together into raceway at same time. 3. Do not damage conductors and cables or exceed manufacturer's
- recommended maximum pulling tension and sidewall pressure. 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

E. Paralleled Conductors: Install conductors of the same length and terminate in the

- Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures. Group or otherwise identify neutral/grounded conductors with associated
- ungrounded conductors inside enclosures in accordance with NFPA 70. I. Make wiring connections using specified wiring connectors. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters. Do not remove conductor strands to facilitate insertion into connector.
- Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
- 4. Connections for Aluminum Conductors: Fill connectors with oxide inhibiting compound where not pre-filled by manufacturer. Mechanical Connectors: Secure connections according to manufacturer's
- 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.

K. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in

lieu of integrally colored insulation as permitted in Part 2 under "Color Coding",

recommended torque settings.

complete operating system.

END OF SECTION

apply half overlapping turns of tape at each termination and at each location conductors are accessible. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a

SECTION 26 0526 - GROUNDING AND BONDING FOR ELECTRICAL

SYSTEMS

PART 1 GENERAL

PART 2 PRODUCTS

- 1.01 ADMINISTRATIVE REQUIREMENTS
- A. Sequencing: 1. Do not install ground rod electrodes until final backfill and compaction is
- 1.02 QUALITY ASSURANCE
- A. Comply with requirements of NFPA 70.
- 2.01 GROUNDING AND BONDING REQUIREMENTS
- A. Do not use products for applications other than as permitted by NFPA 70 and
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as
- necessary for a complete grounding and bonding system. C. Where conductor size is not indicated, size to comply with NFPA 70 but not less
- than applicable minimum size requirements specified. Grounding System Resistance:
 - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Engineer. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- tested according to IEEE 81 using "fall-of-potential" method. E. Grounding Electrode System: 1. Provide connection to required and supplemental grounding electrodes

Grounding Electrode System: Not greater than 5 ohms to ground, when

a. Provide continuous grounding electrode conductors without splice b. Install grounding electrode conductors in raceway where exposed to

indicated to form grounding electrode system.

physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper. 2. Metal In-Ground Support Structure:

a. Provide connection to metal in-ground support structure that is in

- direct contact with earth in accordance with NFPA 70. 3. Concrete-Encased Electrode: a. Provide connection to concrete-encased electrode consisting of not less than 20 feet of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in
- accordance with NFPA 70. 4. Ground Rod Electrode(s): a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
- b. Space electrodes not less than 10 feet from each other and any other ground electrode. 5. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.

1. For each service disconnect, provide grounding electrode conductor to

connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure. 2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-

Service-Supplied System Grounding:

conductors and ground on load side of service disconnect. G. Separately Derived System Grounding: Provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Unless otherwise indicated, make connection at neutral (grounded) bus in first disconnecting means, except for the 480V panel feeding the L3

installed. Do not make any other connections between neutral (grounded)

- 2. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections
- between neutral (grounded) conductors and ground on load side of separately derived system disconnect. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first
- disconnecting means. Bonding and Equipment Grounding: Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying
- conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding
- Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
- branch circuit equipment grounding conductor and to outlet box with bonding jumper. Terminate branch circuit equipment grounding conductors on solidly

bonded equipment ground bus only. Do not terminate on neutral

4. Unless otherwise indicated, connect wiring device grounding terminal to

- (grounded) or isolated/insulated ground bus. 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement GROUNDING AND BONDING COMPONENTS
- Provide products listed, classified, and labeled as suitable for the purpose 2. Provide products listed and labeled as complying with UL 467 where
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 1. Use insulated copper conductors unless otherwise indicated.

1) Use bare copper conductors where installed underground in

- direct contact with earth. 2) Use bare copper conductors where directly encased in concrete (not in raceway). C. Connectors for Grounding and Bonding:
- Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467. Unless otherwise indicated, use exothermic welded connections for

underground, concealed and other inaccessible connections

- 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections. D. Ground Rod Electrodes: Comply with NEMA GR 1.
- Material: Copper-bonded (copper-clad) steel. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated. PART 3 EXECUTION

A. General Requirements:

a. Exceptions

3.01 EXAMINATION A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Verify that conditions are satisfactory for installation prior to starting work. 3.02 INSTALLATION Install products in accordance with manufacturer's instructions.

B. Verify that field measurements are as indicated.

Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.

D. Make grounding and bonding connections using specified connectors.

- Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches below finished grade.
- Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces. Exothermic Welds: Make connections using molds and weld material
- suitable for the items to be connected in accordance with manufacturer's recommendations.
- Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
- 4. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section
- 3.03 FIELD OUALITY CONTROL
- A. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry
- B. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION SECTION 26 0529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

- 1.01 SECTION INCLUDES
- 1.02 QUALITY ASSURANCE
- A. Comply with NFPA 70. PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

and product listing.

to be supported.

D. Anchors and Fasteners:

for field-assembly of supports.

- A. General Requirements: Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of
- electrical work. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as

required for the load to be supported with a minimum safety factor of 1.25.

Do not use wire, chain, perforated pipe strap, or wood for permanent

- Include consideration for vibration, equipment operation, and shock loads where applicable. 4. Do not use products for applications other than as permitted by NFPA 70
- supports unless specifically indicated or permitted. 6. Steel Components: Use corrosion resistant materials suitable for the environment where installed a. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel,
- stainless steel, or approved equivalent unless otherwise indicated. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M. B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable
- Conduit Straps: One-hole or two-hole type; steel or malleable iron. Conduit Clamps: Bolted type unless otherwise indicated. C. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required
- Comply with MFMA-4. 2. Channel Material: Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.

Unless otherwise indicated and where not otherwise restricted, use the

anchor and fastener types indicated for the specified applications. Concrete: Use preset concrete inserts, expansion anchors, or screw

Plastic and lead anchors are not permitted.

PART 3 EXECUTION 3.01 EXAMINATION

Hammer-driven anchors and fasteners are not permitted.

- A. Verify that field measurements are as indicated B. Verify that mounting surfaces are ready to receive support and attachment
- 3.02 INSTALLATION A. Install products in accordance with manufacturer's instructions. B. Perform work in accordance with NECA 1 (general workmanship).

C. Verify that conditions are satisfactory for installation prior to starting work.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable. D. Equipment Support and Attachment:

1. Use metal fabricated supports or supports assembled from metal channel

Securely fasten pad-mounted equipment. Do not install equipment such that it relies on its own weight for support. E. Secure fasteners according to manufacturer's recommended torque settings. F. Identify independent electrical component support wires above accessible

(strut) to support equipment as required.

distinguishable from ceiling support wires in accordance with NFPA 70. END OF SECTION

ceilings (only where specifically indicated or permitted) with color

SECTION 26 0533.13 - CONDUIT FOR ELECTRICAL SYSTEMS

PART 2 PRODUCTS

PART 1 GENERAL

2.01 CONDUIT APPLICATIONS

- 1.01 ADMINISTRATIVE REQUIREMENTS Do not begin installation of conductors and cables until installation of conduit between termination points is complete.
- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing. B. Unless otherwise indicated and where not otherwise restricted, use conduit types

indicated for specified applications. Where more than one listed application

applies, comply with most restrictive requirements. Where conduit type for

Where rigid polyvinyl chloride (PVC) conduit is provided, transition to

Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit

- particular application is not specified, use galvanized steel rigid metal conduit. C. Underground: Under Slab on Grade: Use rigid PVC conduit. Exterior, Direct-Buried: Use rigid PVC conduit.
- galvanized steel rigid metal conduit (RMC) where emerging from underground. D. Exposed, Exterior: Use galvanized steel rigid metal conduit (RMC). E. Flexible Connections to Vibrating Equipment:
- Maximum Length: 6 feet unless otherwise indicated. Vibrating equipment includes, but is not limited to:
- a. Transformers. 2.02 CONDUIT - GENERAL REQUIREMENTS
- A. Comply with NFPA 70.

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GALVANIZED STEEL RIGID METAL CONDUIT (RMC) A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit

complying with ANSI C80.1 and listed and labeled as complying with UL 6. B. Fittings:

Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6. Material: Use steel or malleable iron.

Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B. Material: Use steel or malleable iron.

RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.

Manufacturer: Same as manufacturer of conduit to be connected. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.06 HIGH-DENSITY POLYETHYLENE (HDPE) CONDUIT A. Description: NFPA 70, Type HDPE high-density polyethylene solid-wall

conduit complying with ASTM F2160 and NEMA TC 7; list and label as complying with UL 651A; Schedule 40 unless otherwise indicated. Joining Methods: Approved by HDPE conduit manufacturer.

C. Mechanical Fittings: Comply with ASTM F2176; list and label as complying with UL 651A.

ACCESSORIES

B. Fittings:

A. Conduit Joint Compound: Corrosion-resistant, electrically conductive compound listed as complying with UL 2419; suitable for use with conduit to be installed.

B. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

C. Adhesive for HDPE Conduit:

Specifically designed for bonding dissimilar materials in lieu of transition fittings, including but not limited to polyethylene, fiberglass, PVC, aluminum, and steel; UL 746C recognized. Approved by adhesive manufacturer for use with materials to be joined.

D. Pull Strings: Use nylon or polyester tape with average breaking strength of not

E. Duct Bank Spacers: Nonmetallic; designed for maintaining conduit/duct spacing for concrete encasement in open trench installation; suitable for conduit/duct arrangement to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated B. Verify that mounting surfaces are ready to receive conduits

C. Verify that conditions are satisfactory for installation prior to starting work. 3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions. Install conduit in accordance with NECA 1.

C. Conduit Routing:

Unless dimensioned, conduit routing indicated is diagrammatic When conduit destination is indicated without specific routing, determine exact routing required.

Conduits installed underground may be routed in the shortest possible manner unless otherwise indicated. a. Conduits installed underground shall have a warning strip with tracer wire installed above the conduit within trench.

Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points. Arrange conduit to provide no more than 300 feet between pull boxes for

low voltage circuits and 500' between manholes for medium voltage Arrange conduit to prevent moisture traps. Provide drain fittings at low

points and at sealing fittings where moisture may collect. Group parallel conduits in same area on common rack. D. Conduit Support:

Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.

2. Use conduit strap to support single surface-mounted conduit. a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.

Use of spring steel conduit clips for support of conduits is not permitted. Use of wire for support of conduits is not permitted. E. Connections and Terminations:

Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections. Where two threaded conduits must be joined and neither can be rotated,

use three-piece couplings or split couplings. Do not use running threads. Use suitable adapters where required to transition from one type of conduit

Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors. Terminate threaded conduits in boxes and enclosures using threaded hubs

or double lock nuts for dry locations and raintight hubs for wet locations. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors. Secure joints and connections to provide mechanical strength and electrical

F. Underground Installation: Minimum Cover, Unless Otherwise Indicated or Required:

continuity.

. Underground, Exterior: 24 inches. Provide underground warning tape along entire conduit length installed 12" below finished grade; see Section 26 0553.

concrete cap 6" above top of conduit or installed in a concrete duct bank with a minimum concrete cover of 3 inches on all sides unless otherwise indicated. H. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to

G. Concrete Encasement: medium voltage conduits shall be protected by a 2"

enclosed conductors or connected equipment. This includes, but is not limited to: Where calculated in accordance with NFPA 70 for rigid polyvinyl chloride (PVC) conduit installed above ground to compensate for thermal

expansion and contraction. Where conduits are subject to earth movement by settlement or frost. I. Provide pull string in each empty conduit and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each

J. Provide grounding and bonding; see Section 26 0526.

3.03 CLEANING

PROTECTION

A. Clean interior of conduits to remove moisture and foreign matter.

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors. END OF SECTION

SECTION 26 0533.16 - BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:

1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.

Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to 3. Provide products listed, classified, and labeled as suitable for the purpose

4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified. 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Cabinets and Enclosures, Including Junction and Pull Boxes: 1. Comply with NEMA 250, and list and label as complying with UL 50 and

2. NEMA 250 Environment Type, Unless Otherwise Indicated: Indoor Clean, Dry Locations: Type 1, painted steel. Outdoor Locations: Type 3R, painted steel. Junction and Pull Boxes Larger Than 100 cubic inches:

a. Provide screw-cover or hinged-cover enclosures unless otherwise 4. Hardware: provide stainless steel. When installed outdoors, provide

tamper proof torx head with center pin reject screws. C. Underground Boxes/Enclosures:

1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts. Size: As indicated on drawings.

3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 12 inches.

Applications:

a. Parking Lots, in Areas Subject Only To Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77 Tier 22 load rating.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

Install products in accordance with manufacturer's instructions.

Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated. Arrange equipment to provide minimum clearances in accordance with

manufacturer's instructions and NFPA 70. Box Locations: Unless dimensioned, box locations indicated are approximate. Locate junction and pull boxes as indicated, as required to facilitate

installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 0533.13. E. Box Supports:

1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority

F. Underground Boxes/Enclosures:

Install enclosure on gravel base, minimum 6 inches deep. Flush-mount enclosures located in concrete or paved areas.

Mount enclosures located in landscaped areas with top at 1 inch above 4. Provide cast-in-place concrete collar constructed in accordance with

structural requirements, minimum 10 inches wide by 12 inches deep, around enclosures that are not located in concrete areas. Install additional bracing inside enclosures in accordance with manufacturer's instructions to minimize box sidewall deflections during

backfilling. Backfill with cover bolted in place. 3.03 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material. 3.04 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors **END OF SECTION**

SECTION 26 0548 - SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Seismic control requirements. Includes requirements for seismic qualification of equipment not specified in this section.

B. Seismic restraint systems. 1.02 SUBMITTALS

A. Design Documents: Prepare and submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, details, and calculations.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for products, including materials, fabrication details, dimensions, and finishes.

Seismic Controls: Include seismic load capacities. C. Shop Drawings - Seismic Controls:

1. Include dimensioned plan views and sections indicating proposed electrical component locations and distributed system routing, with locations and details of gravity supports and seismic restraints and associated attachments.

Identify anchor manufacturer, type, minimum embedment, minimum spacing, minimum member thickness, and minimum edge distance

Indicate proposed arrangement of distributed system trapeze support 4. Indicate proposed locations for distributed system flexible fittings and/or

Indicate locations of seismic separations where applicable. PART 2 PRODUCTS

SEISMIC CONTROL REQUIREMENTS

A. Design and provide electrical component restraints, supports, and attachments suitable for seismic loads determined in accordance with applicable codes, as well as gravity and operating loads and other structural design considerations of the installed location. Consider wind loads for outdoor electrical components. B. Seismic Design Criteria: Comply with IBC requirements for the site location..

C. Seismic Restraints: 1. Provide seismic restraints for electrical components except where exempt according to applicable codes and specified seismic design criteria, as approved by authorities having jurisdiction.

2. Comply with applicable general recommendations of the following, where not in conflict with applicable codes, seismic design criteria, or other specified requirements:

a. ASHRAE (HVACA).

b. FEMA 413. c. FEMA E-74.

d. SMACNA (SRM). D. Seismic Attachments:

1. Attachments to be bolted, welded, or otherwise positively fastened without consideration of frictional resistance produced by the effects of gravity. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) or qualified evaluation service acceptable to authorities having jurisdiction for compliance with applicable

building code, and qualified for seismic applications; concrete anchors to be qualified for installation in both cracked and uncracked concrete. Do not use power-actuated fasteners. Do not use friction clips (devices that rely on mechanically applied friction to resist loads). Beam clamps may be used for supporting sustained loads

where provided with restraining straps. Comply with anchor minimum embedment, minimum spacing, minimum member thickness, and minimum edge distance requirements.

6. Concrete Housekeeping Pads: a. Increase size of pad as required to comply with anchor

b. Provide pad reinforcement and doweling to ensure integrity of pad and connection and to provide adequate load path from pad to supporting structure.

E. Seismic Interactions: 1. Include provisions to prevent seismic impact between electrical components and other structural or nonstructural components. 2. Include provisions such that failure of a component, either essential or nonessential, does not cause the failure of an essential component.

F. Seismic Relative Displacement Provisions: 1. Use suitable fittings or flexible connections to accommodate: a. Relative displacements between component supports attached to dissimilar parts of structure that may move differently during an

PART 3 EXECUTION

3.01 INSTALLATION

E. Seismic Controls:

A. Install products in accordance with manufacturer's instructions. B. Install products in accordance with applicable requirements of NECA 1 (general

b. Design displacements at seismic separations.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC

(ICC-ES) evaluation report conditions of use where applicable. D. Secure fasteners according to manufacturer's recommended torque settings.

1. Provide specified snubbing element air gap; remove any factory-installed spacers, debris or other obstructions. 2. Use only specified components, anchorage, and hardware evaluated by seismic design. Comply with conditions of seismic certification where

Where mounting hole diameter exceeds bolt diameter by more than 0.125 inch, use epoxy grout, elastomeric grommet, or welded washer to reduce clearance to 0.125 inch or less.

Equipment with Sheet Metal Housings: a. Use Belleville washers to distribute stress over a larger surface area of the sheet metal connection interface as approved by

b. Attach additional steel as approved by manufacturer where required to transfer loads to structure. Where mounting surface is irregular, do not shim housing; reinforce

housing with additional steel as approved by manufacturer. 5. Concrete Housekeeping Pads: Size in accordance with seismic design to meet anchor requirements. Install pad reinforcement and doweling in accordance with seismic

design to ensure integrity of pad and associated connection to slab.

END OF SECTION SECTION 26 0553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

manufacturer.

1.01 QUALITY ASSURANCE A. Comply with requirements of NFPA 70. PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

2. Service Equipment

A. Identification for Equipment: Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments,

and components. a. Switchboards Identify power source and circuit number. Include location

when not within sight of equipment. 2) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.

Identify power source and circuit number. Include location when not within sight of equipment. Use typewritten circuit directory to identify load(s) served for

panelboards with a door. Identify spares and spaces using c. Transformers: Identify kVA rating.

Identify voltage and phase for primary and secondary. Enclosed switches and circuit breakers: Identify load(s) served. Include location when not within

a. Use identification nameplate to identify each service disconnecting Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited

to the following. a. Service equipment. Arc Flash Hazard Warning Labels: Use warning labels to identify arc flash hazards for electrical equipment, such as switchboards and panelboards, that are likely to require examination, adjustment, servicing,

or maintenance while energized. a. Service Equipment: Include the following information in accordance with NFPA 70.

Nominal system voltage.

sight of equipment.

Available fault current Date label applied. B. Identification for Conductors and Cables: Color Coding for Power Conductors 600 V and Less: Comply with

Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:

b. Within equipment enclosures when conductors and cables enter or leave the enclosure. Use underground warning tape to identify direct buried cables. C. Identification for Raceways:

1. Use handwritten text using indelible marker to identify spare conduits at

a. Within boxes when more than one circuit is present.

2. Use underground warning tape to identify underground raceways. D. Identification for Boxes: Use handwritten text using indelible marker to identify circuits enclosed.

each end. Identify purpose and termination location.

A. Identification Nameplates: Materials:

2.02 IDENTIFICATION NAMEPLATES AND LABELS

Outdoor Locations: Use stainless steel or aluminum nameplates

suitable for exterior use. 2. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.

3. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch;

engraved or laser-etched text. 4. Mounting Holes for Mechanical Fasteners: Two, centered on sides for

sizes up to 1 inch high; Four, located at corners for larger sizes. B. Format for Equipment Identification:

Minimum Size: 1 inch by 2.5 inches.

2. Legend: Equipment designation or other approved description. 3. Text: All capitalized unless otherwise indicated. 4. Minimum Text Height:

a. Equipment Designation: 1/2 inch. 5. Color: a. Normal Power System: White text on black background. 2.03 WIRE AND CABLE MARKERS

A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl selflaminating type markers suitable for the conductor or cable to be identified. B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by

C. Legend: Power source and circuit number or other designation indicated. D. Text: Use factory pre-printed or machine-printed text, all capitalized unless

otherwise indicated. E. Minimum Text Height: 1/8 inch. F. Color: Black text on white background unless otherwise indicated.

2.04 UNDERGROUND WARNING TAPE A. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.

B. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection. C. Legend: Type of service, continuously repeated over full length of tape.

A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable. B. Warning Signs:

2.05 WARNING SIGNS AND LABELS

1. Materials: a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs. Outdoor Locations: Use factory pre-printed rigid aluminum signs.

2. Rigid Signs: Provide four mounting holes at corners for mechanical 3. Minimum Size: 7 by 10 inches unless otherwise indicated.

1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969. 2. Machine-Printed Labels: Use thermal transfer process printing machines

PART 3 EXECUTION

C. Warning Labels:

3.01 PREPARATION A. Clean surfaces to receive adhesive products according to manufacturer's

and accessories recommended by label manufacturer.

Minimum Size: 2 by 4 inches unless otherwise indicated.

instructions. 3.02 INSTALLATION

> A. Install products in accordance with manufacturer's instructions. B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as

Surface-Mounted Equipment: Enclosure front. 2. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.

Boxes: Inside face of cover Conductors and Cables: Legible from the point of access. C. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.

D. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade. E. Secure rigid signs using stainless steel screws.

F. Mark all handwritten text, where permitted, to be neat and legible.

G. For non metallic conduit, under roads and parking lots, burial depth to be 24 inches.

END OF SECTION

1.01 SCOPE

SECTION 26 1219 - MEDIUM-VOLTAGE LIQUID-FILLED TRANSFORMERS PART 1 GENERAL

A. Medium voltage transformers specified in this section are suppplied by Amazon. The contractor shall receive, inspect, install and test equipment as required within the plans and specifications.

1.02 SECTION INCLUDES A. Liquid-Filled pad-mounted distribution transformers. 1.03 REFERENCE STANDARDS

A. IEEE Std C57.12.00TM-2015 – IEEE Standard for Standard General

Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers B. IEEE Std C57.12.28TM - 2014 standard – Pad-Mounted Equipment - Enclosure C. IEEE Std C57.12.29TM - 2014 standard - IEEE Standard for Pad-Mounted

Equipment - Enclosure Integrity for Coastal Environments – applicable when

stainless steel construction is specified. D. IEEE Std C57.12.34TM-2015 standard – Standard Requirements for Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers (2500 kVA and Smaller) - High Voltage: 34500GrdY/19920 Volts and Below; Low-Voltage: 480 Volt 2500 kVA and Smaller (issued in March

2005 - combines IEEE Std C57.12.22 and IEEE Std C57.12.26 standards).

E. IEEE Std C57.12.90TM-2010 – IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers and IEEE Guide for Short-Circuit Testing of Distribution and Power Transformers F. IEEE Std C57.12.91TM-2011 standard – Guide for Loading Mineral-Oil-

G. IEEE Std C57.154TM -2012 – IEEE Standard for the Design, Testing, and Application of Liquid-Immersed Distribution, Power, and Regulating Transformers Using High-Temperature Insulation Systems and Operating at Elevated Temperatures.

H. NEMA® TR 1-1993 (R2000) – Transformers, Regulators and Reactors, Table

0-2 Audible Sound Levels. NEMA 260-1996 (2004) – Safety Labels for Pad-Mounted Switchgear and Transformers Sited in Public Areas. J. 10 CFR Part 431 – Department of Energy–Energy Conservation Program: Energy

Conservation Standards for Distribution Transformers; Final Rule

K. IEEE Std 386TM-2016 – IEEE Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600 V L. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS A. The following information shall be submitted by the manufacturer to the

Front view elevation and weight. Plan view. Schematic diagrams.

4. Nameplate diagram.

5. Component list.

Immersed Transformers.

6. Conduit entry/exit locations. 7. Ratings including:

b. Primary and secondary voltage.

d. Primary and secondary continuous current. e. Basic Impulse Level.

f. Impedance. Insulation class and temperature rise.

8. Cable terminal sizes. 9. Product data sheets.

B. SUBMITTALS FOR CONSTRUCTION The following information shall be submitted by the contractor for record a. Final as-built drawings and information for items listed in Section

> 1.04, and shall incorporate all changes made during the manufacturing process. b. Wiring diagrams.

c. Certified production test reports. d. Installation information. e. Seismic certification as specified

A. Comply with requirements of NFPA 70. B. Testing Agency Qualifications: Company member of International Electrical Testing Association and specializing in testing products specified in this section with minimum three years documented experience.

C. Products: Listed, classified, and labeled as suitable for the purpose intended. D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to

authorities having jurisdiction. 1.06 DELIVERY, STORAGE, AND HANDLING

to be provided for these transformers.

A. Transformers, 1000 kVA and below, shall be palletized. Transformers, 1500 kVA and larger, shall be loaded and unloaded with overhead cranes, so a pallet is not

PART 2 PRODUCTS

C. Siemens energy.

2.01 MANUFACTURERS A. Eaton. B. Schneider Electric USA.

1.05 QUALITY ASSURANCE

2.02 SERVICE CONDITIONS A. Meet requirements for usual service conditions described in IEEE C57.12.01 and for the project location service conditions.

2.03 RATINGS A. Type: ONAN, Impedance: 5.75%, Tolerance +/- 7-1/2%, HV: 13.8kV, HV BIL:95kV, LV: 480V, LV BIL: 30 kV, De-energized Taps +/- 2-1/2 full capacity 2.04 CONSTRUCTION

A. The core shall be manufactured from grain-oriented silicon steel and shall be precisely stacked to eliminate gaps in the corner joints. Coils shall be aluminum

B. For optimum dielectric and mechanical strength, epoxy coated insulation shall be

placed between each layer in the winding. C. The transformer shall be designed and constructed to withstand the external short-circuits, as defined by IEEE C57. 12.00.T D. The transformer design shall be capable of operating above rated voltage or

below rated frequency in accordance with IEEE C57.12.00. E. The transformer will be supplied with Envirotemp FR3 or other environmentally friendly oil as the dielectric coolant. The transformer insulating fluid shall meet or exceed the requirements of the appropriate IEEE and ASTM fluid Standards. The transformer fluid shall be tested for dielectric breakdown and moisture content during manufacturing.

F. The padmounted tamper-resistant transformer shall be designed and constructed

to minimize the audible noise generated with the transformer energized at rated voltage. G. Tank and Cabinet Enclosure 1. The transformer shall be of sealed -tank construction. The transformer shall remain effectively sealed for a top-oil temperature of -5 °C to +105

°C continuous and under operating conditions as described in IEEE Std

The high-voltage and low-voltage compartments, separated by a metal

C57.91. 2. The transformer tank and compartment shall conform to IEEE Std C 57.12.28 or C57.12.29, as appropriate, and be so constructed as to limit disassembly, breakage, and prying open of any doors, panels, and sills when the doors are in the closed and locked position.

barrier, shall be located side-by-side on one side of the transformer tank. The compartment depth shall be in accordance with IEEE Std C57.12.34TM-2009 standard unless additional depth is specified. The tank base must be designed to allow skidding or rolling in any direction. Lifting provisions shall consist of four lifting lugs welded to the

6. The tank shall be constructed to withstand 7 psi without permanent

deformation, and 15 psi without rupture. The tank shall include a 15 psig pressure relief valve with a flow rate of a minimum of 35 SCFM. The tank shall be complete with an stainless steel nameplate. This nameplate shall meet Nameplate B per IEEE Std C57.12.00TM-2015

1. High Voltage Bushings and Terminals

termination compartment.

I. BUSHINGS

standard. H. GROUNDING PROVISIONS All non-energized metallic components of the transformer shall be

2. Ground pads and grounding provision design shall be per IEEE-C57.12.34-2015 standards. 3. Neutral Terminal: The neutral terminal shall be either a blade connected directly to the tank or a fully insulated terminal. If a fully insulated terminal is used, a ground pad shall be provided on the outer surface of the tank. One or more removable ground straps suitably sized for the shortcircuit rating of the transformer as defined in IEEE Std C57.12.00 shall be

a. High voltage bushings will be installed in the high voltage

b. The high voltage bushings shall be Deadfront type rated per C57.12.34-2015 Table 4. Bushing wells with bushing well inserts shall be installed. The bushings shall be externally removable and be supplied with a removable stud. Current rating for the high voltage bushing is typically 200A. Bushing rating above 200A should be

c. The transformer shall be provided with six (6) high voltage bushings

with tin-plated spade-type bushings. The quantity of connection

holes shall be 6 per phase (<1.5MVA) or 12 per phase (>2MVA)

provided and connected between the neutral terminal and the ground pad.

in accordance with IEEE Std C57.12.34TM-2015 standard for loop feed configurations. The bushing heights shall be in accordance to IEEE Std C57.12.34TM-2015 standard. 2. Low Voltage Bushings and Terminals a. Voltages less than 700 Volts: The transformer shall be provided

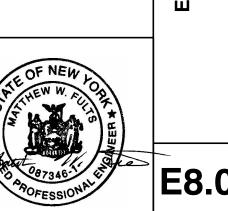
evaluated as an exception on a site basis.

b. The transformer shall be provided with bushings in a staggered arrangement in accordance with applicable dimensions from IEEE Std C57.12.34TM-2015 standard. J. SWITCHING AND PROTECTION

1. Provide one four position T blade load break sectionalizing switch for these transformers. Bay-o-net with back-up current limiting fuses: (available up to 34.5 kV delta applications where fuse sizes are available). The high-voltage overcurrent protection scheme provided with the transformer shall be an externally removable loadbreak expulsion Bay-O-Net fuse assembly with a flapper valve to minimize oil spillage. The bayonet fuses shall be in series with ELSP under-oil partial-range current-limiting back-up fuses with an interrupting rating of 50,000 A.

The transformer shall be provided with an Externally Visible Disconnect On/Off switch. The external visible switch allows customers to visibly confirm that the transformer is de-energized without having to expose themselves to dangerous arc flash in the transformer compartment. Disconnect Switch shall be externally operable by either using a manual handle or a distribution hot stick.

RVICES LLC I EXPANSION STATION DRIVE NY 10913 O S E O E MAZC LIVEF DXY₄ ORA A P



E8.01-BP1

K. Overvoltage Protection

1. Deadfront bushings: (maximum 150 kV BIL, for voltages up to 18 kV delta and 35 kV grounded wye). Externally mounted, Distribution Class surge arrester recommended by manufacturer to be provided. 2. Manufacturer recommended surge protection for low voltage bushing. L. FINISH PERFORMANCE REQUIREMENTS

The tank coating shall meet all requirements in IEEE Std

C57.12.28TM-2014 standard including:

a. Salt Spray

b. Crosshatch adhesion c. Humidity

d. Impact e. Oil resistance

f. Ultraviolet accelerated weathering Abrasion resistance – taber abraser

The enclosure integrity of the tank and cabinet shall meet the requirements for tamper resistance set forth in IEEE Std C57.12.28TM-2014 standard including but not limited to the pry test, pull test, and wire probe test.

M. ACCESORIES

1. The following standard accessories and options shall be provided: a. 1.0" Upper Fill Plug with Filter Press Connection

b. 1.0" Drain/Sampling Valve c. Bolted Cover

d. Lifting Lugs (4)

e. Liquid Level Gauge f. Dial Type Thermometer

Pressure/Vacuum Gauge 2. Optional Accessories – Refer to X mark for Typical Accessories –

Modified if required a. [x] 1.0" upper fill plug

b. [x] Automatic pressure relief valve

c. [x] Metal drip shield (when bayonets specified)

d. [x] Ground provisions per IEEE Std C57.12.34TM-2009 standard section 9.11.

e. [x] 1.0" drain valve w/ sampling device in (HV) compartment (500

kVA & below) f. [x] Upper fill valve

g. [x] Ground connectors h. [x] Mr. Ouch warning & danger signs

[x] Danger high voltage warning signs j. [x] Rapid rise relay

PART 3 EXECUTION

3.01 INSTALLATION

A. Install plumb and level.

B. Install safety labels to NEMA 260.

C. The Contractor shall install all equipment per the manufacturer's recommendations and the contract drawings.

All necessary hardware to secure the assembly in place shall be provided by the Contractor.

3.02 FACTORY TESTING

A. The following standard factory tests shall be performed on all equipment provided under this section. All tests shall be in accordance with the latest version of ANSI and NEMA standards. All units shall be tested for the following: No-Load (85 °C or 20 °C) losses at rated current

Total (85 °C) losses at rated current

Percent Impedance (85 °C) at rated current No-load loss at rated voltage on the rated voltage connection.

Excitation current (100% voltage) test Winding resistance measurement tests

Ratio tests using all tap settings 8. Polarity and phase relation tests

9. Induced potential tests 10. Full wave and reduced wave impulse test

Transformers shall conform to efficiency levels for liquid immersed distribution transformers, as specified in the Department of Energy ruling "10 CFR Part 431 Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule; April 18, 2013." Manufacturer shall comply with the

intent of all regulations set forth in noted ruling. In addition, the manufacturer shall provide certification upon request for all design and other tests listed in IEEE Std C57.12.00TM-2010 standard, including verification that the design has passed short circuit criteria per IEEE Std

C57.12.00TM-2010 standard and IEEE Std C57.12.90TM-2010 standard. In the event of proposal bid evaluated with guaranteed losses due to a loss evaluation (see section 10.0), manufacturer shall conform to guaranteed average losses as specified in IEEE Std C57.12.00TM-2010 standard. The no-load losses of a transformer shall not exceed the specified no-load losses by more than 10%, and the total losses of a transformer shall not exceed the specified total losses by

more than 6%. 3.03 MANUFACTURER'S CERTIFICATION

A. A qualified factory-trained manufacturer's representative shall certify in writing that the equipment has been installed, adjusted and tested in accordance with the manufacturer's recommendations.

B. The Contractor shall provide a copy of the manufacturer's representative's certification.

3.04 FIELD ADJUSTMENTS A. Adjust taps to deliver appropriate secondary voltage.

3.05 FIELD TESTING

A. Measure primary and secondary voltages for proper tap settings.

B. Megger primary and secondary windings. **END OF SECTION**

SECTION 26 1300 - MEDIUM-VOLTAGE SWITCHGEAR

PART 1 GENERAL

1.01 SCOPE

Medium voltage switchgear specified in this section is suppplied by Amazon. The contractor shall receive, inspect, install and test equipment as required within the plans and specifications.

1.02 SECTION INCLUDES

A. Load-interrupter switchgear with vacuum circuit breaker.

1.03 REFERENCE STANDARDS

A. IEEE Std C37.74TM-2003 standard – IEEE Standard Requirements for Subsurface, Vault, and Pad-Mounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems Up to 38 kV B. IEEE Std C57.12.28TM-2005 standard – Standard for Pad-Mounted Equipment -

Enclosure Integrity.

1.04 SUBMITTALS A. The manufacturer shall furnish a detailed list of ratings and accessories and set of

drawings defined as follows: Detailed front elevation.

Single Line.

Base Plan. 4. Schematics

B. The manufacturer shall furnish instruction manuals covering the installation of the switchgear and the operation of its various components.

C. Manufacturer's equipment seismic qualification certification.

D. Manufacturer's Installation Instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements. F. Manufacturer's Field Reports: Indicate activities on site, final adjustments and

overcurrent protective device coordination curves, adverse findings, and

1.05 OUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Testing Agency: Company member of International Electrical Testing Association and specializing in testing products specified in this section with minimum 15 years documented experience.

D. WARRANTY The underground distribution switchgear shall be provided with a one-year

warranty in-service/18 months maximum from date of shipment.

C. Products: Listed, classified, and labeled as suitable for the purpose intended.

2.01 MANUFACTURERS

PART 2 PRODUCTS

A. S&C Vista Underground Distribution Switchgear.

B. Eaton Type VFI Underground Distribution Switchgear. Siemens Siebreak Metal Enclosed Interrupter Switchgear (<15kV)

Schneider Electric Premset Metal Enclosed Switchgear (<15kV) ABB/GE Relia Load Interrupter Switchgear (<15kV)

2.02 DESCRIPTION

> A. Three-phase, 6 - way, 1 -source, 5 -tap, 60 Hz, fully dead front, sectionalizing underground distribution switchgear; with maximum main bus rating of 1200 amperes continuous current and maximum tap rating of 600 amperes. Source switching shall be accomplished with vacuum switches. Tap overcurrent protection shall be accomplished utilizing a resettable vacuum circuit breaker which shall be provided with three-pole ganged.

A. The nominal voltage of the switchgear shall be 15kV with a frequency rating of

B. The maximum design voltage of the switchgear shall 15.5kV be respectively.

C. The Basic Insulation Level shall be 95kV respectively. D. Main Bus Continuous Current: 1200A.

E. The main bus switchgear assembly Short Circuit RMS (Sym.) shall be 25kA for all rated switchgear.

F. The Way Load Interrupter Continuous Current (A): 1200A. G. The Way Fault Interrupter Continuous Current (A): 600A.

H. The Way 2-4/6 FI, Fault Closing Current, RMS Symmetrical (A): 25kA. Way 1 Load Interrupter, Interrupting Current, RMS Symmetrical (A): 1200A.

Way 1 Load Interrupter, Fault Closing Current, RMS Symmetrical (A): 25kA. 2.04 CONSTRUCTION

The underground distribution switchgear shall consist of a 2-sided, sealed insulation tank, and separate front and rear cable compartments. Overall height, width, depth and layout shall conform to the manufacturer's standard construction practices for the configuration, ratings, and voltage class specified. Standard construction shall be of mild steel with stainless steel hardware.

B. The sealed tank shall be capable of withstanding flood immersion while energized, and shall be impervious to contaminants and animals, so as not to compromise the main insulation structure.

Include distribution class surge arresters with ratings in accordance to manufacturer recommendation.

D. The design and construction of the main switchgear are standardized into two

types across the EV sites. The switchgear shall comprise of either 4 ways or 6 ways. MV switchgear should be sized to meet the EV charging site final load. The switchgear shall consist of fault interrupters and disconnect switches along with visible open gaps and integral visible grounds, motor perators and controls, a low-voltage compartment/enclosure, and a microprocessor- based overcurrent

protective relay provided for each way. Bus and interconnections shall withstand the stresses associated with short circuit currents up through the maximum rating of the switchgear.

G. A 1/2-13 UNC stainless steel ground nut shall be provided that is welded to the switchgear tank and mounted beneath each way.

H. A non-corrosive operating diagram (one-line schematic of the unit) shall be affixed to the inside of the right hand, first opening door, on both sides of the unit, if two (2) sided. When visible break switches are specified (liquid insulation only), the one-line schematic will also show the electrical connection and mechanical interlock of these switches. A single nameplate shall be provided that is mounted on the source side tank front plate in the upper right hand corner. The nameplate shall contain the following information:

1. Catalog Number/Model Number/Manufacturer's Name. Serial Number.

Nominal voltage class, kV. 4. Rated maximum voltage, kV.

BIL, kV. Manufacturing Date: MM/YYYY

Rated continuous current, A. 8. Rated load interrupting rating, A.

Momentary current rating, kA asym.

10. Close & latch rating, kA asym.

11. Fault-interrupter ratings including interrupting and duty-cycle fault-

12. Load-interrupter switch ratings including duty-cycle fault-closing and short-time.

13. Total weight, lbs. 14. Liquid dielectric volume (gallons). 2.05 BUSHINGS

Bushings and bushing wells shall be conforming to IEEE Std 386TM-2006

standard and ANSI Standard C119.2. FAULT INTERRUPTER AND LOAD-INTERRUPTER SWITCHES

Fault interrupters (FI) shall have a fault-closing and fault interrupting rating as specified for the site design. This rating defines the fault interrupter's ability to close the designated number of times against a three-phase fault with asymmetrical (peak) current in at least one phase equal to the rated value and clear the resulting fault current, , with the interrupter remaining operable and able to carry and interrupt rated current. The interrupter shall be manually resettable, with no consumable parts (i.e. fuses). The maximum interrupting time from

B. The fault interrupter shall be provided with a disconnect with an integral Ground position readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to ground the equipment.

Each fault interrupter switch shall be provided with a large viewing window to allow visual verification of the disconnect blade position (open-closed or

issuance of a trip signal from the electronic control shall be 5 cycles.

D. The Ground position shall have a fault-closing rating similar to the fault

interrupter switch, fault closing rating. Load-interrupter switches and fault interrupters shall be operated by means of a quick-make, quick-break mechanism. The speed of opening and closing the switch shall be independent of the operator, and it shall be impossible to tease the switch into any intermediate position.

The manual handle shall be provided for operation of load interrupter and fault interrupter switches. The manual handle shall charge the operating mechanism for closing, opening, and grounding of the switches and fault interrupters.

G. The operating mechanism shall indicate the switch position. LED lights may also be used to indicate the switch position. H. All load interrupter and fault interrupter switches shall be three phase gang

operated. Single phase switching is not allowed. Fault interrupter switches are operated by an external microprocessor relay or electronic trip unit. The fault interrupter should have an operator resettable trip position indicator. The fault interrupter shall be manually resettable, with no consumable parts (i.e.

2.07 PROTECTIVE RELAYS AND CONTROLS

fuses). The maximum interrupting time from issuance of a trip signal from the electronic control shall be 5 cycles. Switches on all ways shall be motor operated or have provisions for future motor operator installation, capable of remote supervisory control.

The control voltage shall be derived from a control power transformer (CPT) mounted in the switchgear. The 120V AC secondary control voltage can be used to power motor operated switches, metering, space heaters, and other control circuits. 8 hour battery backup shall be provided for the main switchgear for control power. Battery DC voltage shall be used to power protective relays, controls, and trip circuits for fault interrupters. Alternately, CT powered relays are also acceptable.

B. A microprocessor-based overcurrent protective relay shall be provided to initiate fault interruption on each way.

The overcurrent protective relays shall be mounted on a separate enclosure or in a separate low voltage compartment. Overcurrent relay shall be field programmable and accessible from the exterior of the enclosure.

D. Overcurrent relay shall include field programmable instantaneous, definite time and inverse time phase and ground overcurrent elements. The phase and ground overcurrent elements are set independently and the ground overcurrent element should operate based on measured or calculated zero sequence fault currents.

E. Overcurrent relay should provide event report capture feature. Protection of feeder circuits (radial architecture) should be provided by electronic trip units or microprocessor relays using phase and ground overcurrent elements (definite time/inverse time overcurrent). Overcurrent elements should be set to coordinate with downstream protection for MV transformers and LV switchboards with a coordination time interval (CTI) of 0.2 seconds (FI downstream) or 0.1 seconds (downstream fuse total clearing time). Sensitive ground overcurrent element should be enabled with time coordination with downstream protective devices (fuses/overcurrent elements).

2.08 PRODUCTION TESTING

Provide the following tests: Continuity test to assure correct internal connections.

Hi-pot test to determine dielectric strength of the unit. Leak test to assure tank is completely sealed.

4. Electrical TCC trip test. 2.09 FINISH PERFORMANCE REQUIREMENTS

A. The switchgear shall be constructed of mild steel with stainless steel details and painted green conforming to Munsell 7GY 3.29/1.5 unless otherwise specified. The coating system employed shall meet or exceed IEEE Std C57.12.28TM-2005 standard coating system requirements for underground distribution equipment, including the following performance tests:

1. 24-hour 5% salt spray corrosion test per ASTM B117 / D1654. 1000-hour humidity test per ASTM D2247 / D1654.

500-hour ultraviolet accelerated weathering test per ASTM G53 / D523. Direct impact test with 160 in. lb. falling dart per ASTM D2794. Tabor abrasion test 3,000 cycles per ASTM D4060.

PART 3 EXECUTION

3.01 EXAMINATION

6. Crosshatch adhesion per ASTM D3359.

A. Verify that field measurements are as indicated on shop drawings. 3.02 INSTALLATION

Install in accordance with IEEE C37.20.1.

B. Provide required seismic controls in accordance with Section 26 0548. Install switchgear plumb and level and with each section aligned properly.

D. Make electrical connections between equipment sections using connectors furnished by manufacturer. E. DELIVERY, STORAGE, AND HANDLING Protect products from weather and moisture by covering with heavy plastic

or canvas and by maintaining heating within enclosure in accordance with manufacturer's instructions.

3.03 CERTIFIED DESIGN TEST DATA. Certified design test data shall be furnished upon request. The test data shall bear the seal of a Registered Professional Engineer and shall be available for the

Switch ratings per IEEE Std C37.74TM-2003 standard. Interrupter ratings per IEEE Std C37.60TM-2003 standard.

Coatings per IEEE Std C57.12.28TM-2005. 3.04 FIELD QUALITY CONTROL

A. Perform inspections and tests listed in NETA ATS, Section 7.1 END OF SECTION

SECTION 26 2200 - LOW-VOLTAGE TRANSFORMERS

PART 1 GENERAL

1.01 SCOPE A. General purpose, low voltage transformers specified in this section are supplied by Amazon, except for the 1kVA transformer for the L3 charger control circuit. The contractor shall receive, inspect, install and test equipment as required within

1.02 SUBMITTALS Manufacturer's Product Data: Include voltage, kVA, impedance, tap configurations, insulation system class and rated temperature rise, efficiency, sound level, enclosure ratings, outline and support point dimensions, weight, required clearances, service condition requirements, and installed features.

Manufacturer's equipment seismic qualification certification. 1.03 DELIVERY, STORAGE, AND HANDLING

the plans and specifications.

Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction

debris, and traffic. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to transformer internal components, enclosure, and finish.

PART 2 PRODUCTS

grounding strap.

2.01 MANUFACTURERS A. ABB/GE: www.geindustrial.com.

B. Eaton Corporation: www.eaton.com. Schneider Electric; Square D Products: www.schneider-electric.us.

D. Siemens Industry, Inc: www.usa.siemens.com. TRANSFORMERS - GENERAL REQUIREMENTS A. Description: Factory-assembled, dry type transformers for 60 Hz operation designed and manufactured in accordance with NEMA ST 20 and listed,

classified, and labeled as suitable for the purpose intended. Transformers shall be designed to withstand Seismic Forces Supplier shall upon request provide self-certification of seismic conformance for transformers installed at a specific cite (zip code,

latitude/longitude, street address) per the following building codes a. International Building Code b. Uniform Building Code

California Building Code d. NFPA 5000 Building Construction

e. National Building Code of Canada Unless noted otherwise, transformer ratings indicated are for continuous loading according to IEEE C57.96 under the service conditions at the project location.

D. Core: High grade, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses. Keep magnetic flux densities substantially below saturation point, even at 10 percent primary overvoltage. Tightly clamp core laminations to prevent plate movement and maintain consistent pressure throughout core length.

Impregnate core and coil assembly with non-hydroscopic thermo-setting varnish to effectively seal out moisture and other contaminants. Ground core and coil assembly to enclosure by means of a visible flexible copper

G. Isolate core and coil from enclosure using vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening

devices will not be acceptable. Nameplate: Include transformer connection data, ratings, wiring diagrams, and overload capacity based on rated winding temperature rise. GENERAL PURPOSE TRANSFORMERS

complying with UL 506 or UL 1561; ratings as indicated on the drawings.

A. Description: Self-cooled, two winding transformers listed and labeled as

B. Primary Voltage: 480 volts delta, 3 phase. C. Secondary Voltage: 208Y/120 volts, 3 phase. D. Insulation System and Allowable Average Winding Temperature Rise:

1. Class 220 degrees C insulation system with 150 degrees C average

winding temperature rise. E. Coil Conductors: Continuous aluminum or copper windings with terminations

brazed or welded. F. Winding Taps:

1. All transformer sizes: Two 2.5 percent full capacity primary taps above and two 2.5 percent full capacity primary taps below rated voltage.

G. Energy Efficiency: Comply with 10 CFR 431, Subpart K. H. Sound Levels: Standard sound levels complying with NEMA ST 20

I. Mounting Provisions: 15 kVA through 75 kVA: Suitable for wall, floor, or trapeze mounting. Larger than 75 kVA: Suitable for floor mounting.

J. Transformer Enclosure: Comply with NEMA ST 20. 1. Maximum Enclosure Temperature shall note exceed 50°C above 40°C

a. Transformers shall give minimum distance on nameplate from ventilated openings. Distance shall not be greater than 3.0" Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:

Construction: Steel. a. 15 kVA and Larger: Ventilated. 1) Finish: Manufacturer's standard grey, suitable for outdoor installations. 600-hour UL Salt Spray Test minimum.

4. Provide lifting eyes or brackets. K. Terminals

to 200% of rated line current.

a. Outdoor locations: Type 3R.

Must have NEMA two-hole configurations Primary terminals must be clearly separate from the secondary terminals Primary terminals must accommodate wire sized for 250% of nameplate

4. Secondary terminals must accommodate wire sized for 125% of nameplate 5. XO or HO terminals shall be designed to accommodate wire sized for up

Terminals shall allow for parallel conductors once wire range exceed 7. Terminals shall be located in enclosure to allow for either bottom or side entry. Wiring compartment shall meet NEC bending radius for conductors sized at 125% of nameplate current. When primary wire is sized for 250% terminals shall comply with ONE BEND access point

Mounting Brackets: Provide manufacturer's standard brackets. Weathershield Kits: Provide for ventilated transformers installed outdoors to provide a listed NEMA 250, type 3R assembly.

PART 3 EXECUTION

3.01 INSTALLATION A. Perform work in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions. C. Install transformers in accordance with NECA 409 and IEEE C57.94.

length, for connections to transformer case. Make conduit connections to side panel of enclosure. E. Arrange equipment to provide minimum clearances as specified on transformer

D. Use flexible conduit, under the provisions of Section 26 0533.13, 2 feet minimum

Install transformers plumb and level. G. Transformer Support:

manufacturer's instructions.

Provide required support and attachment in accordance with Section 26 0529, where not furnished by transformer manufacturer. Provide required vibration isolation and/or seismic controls in accordance with Section 26 0548.

nameplate and in accordance with manufacturer's instructions and NFPA 70.

I. Remove shipping braces and adjust bolts that attach the core and coil mounting bracket to the enclosure according to manufacturer's recommendations in order to reduce audible noise transmission.

H. Provide grounding and bonding in accordance with Section 26 0526.

J. Where not factory-installed, install lugs sized as required for termination of conductors as indicated. K. Where furnished as a separate accessory, install transformer weathershield per

3.02 TESTING A. Established safety procedures shall be followed including but not limited to proper Personal Protective Equipment, accordance with incident energy levels

C. Take Measurements of Primary Voltages – match nameplate D. Take Measurements of Secondary Voltages – match nameplate E. With front cover installed verify that the transformer when energized is not

emitting excess if noise – contact manufacture if noise is not 120 hertz constant

B. Megger Transformer to verify all connections are cleared from ground

A. Measure primary and secondary voltages and make appropriate tap adjustments. B. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.03 ADJUSTING

END OF SECTION

1.02 SUBMITTALS

PART 1 GENERAL

A. Low-voltage (600 V and less) switchboards and associated accessories for service and distribution applications specified in this section are suppplied by Amazon. The contractor shall receive, inspect, install and test equipment as required within

SECTION 26 2413 - SWITCHBOARDS

switchboards, enclosures, overcurrent protective devices, and other installed components and accessories. 1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for

protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and 1. Clearly indicate whether proposed short circuit current ratings are fully

E. Project Record Documents: Record actual installed locations of switchboards

B. Shop Drawings: Indicate dimensions, voltage, bus ampacities, overcurrent

rated or, where acceptable, series rated systems. Include documentation demonstrating selective coordination. Identify mounting conditions required for equipment seismic qualification. C. Manufacturer's equipment seismic qualification certification.

F. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.03 DELIVERY, STORAGE, AND HANDLING

D. Field Quality Control Test Reports.

and final equipment settings.

the plans and specifications.

A. Receive, inspect, handle, and store switchboards in accordance with manufacturer's instructions, NECA 400, and NEMA PB 2.1. B. Store in a clean, dry space having a uniform temperature to prevent condensation (including outdoor switchboards, which are not weatherproof until completely

heaters or temporary power for permanent factory-installed space heaters. C. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic. D. Handle carefully to avoid damage to switchboard internal components, enclosure,

and properly installed). Where necessary, provide temporary enclosure space

PART 2 PRODUCTS

2.01 MANUFACTURERS

transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating system. B. Provide products listed, classified, and labeled as suitable for the purpose

A. Provide switchboards consisting of all required components, control power

C. Description: Dead-front switchboard assemblies complying with NEMA PB 2.

Schneider Electric; Square D Products: www.schneider-electric.us.

by the same manufacturer as the other electrical distribution equipment used for

B. Source Limitations: Furnish switchboards and associated components produced

and listed and labeled as complying with UL 891; ratings, configurations and features as indicated on the drawings.

D. Front-Connected Switchboards: Main Device(s): Individually-mounted.

ABB/GE: www.geindustrial.com.

Eaton Corporation: www.eaton.com.

this project and obtained from a single supplier.

Siemens Industry, Inc: www.usa.siemens.com.

A. Switchboards:

2.02 SWITCHBOARDS

Feeder Devices: Panel/group-mounted. Arrangement: Front accessible only (not rear accessible), rear aligned. Gutter Access: Bolted covers.

E. Seismic Qualification: Provide switchboards and associated components suitable for application under the seismic design criteria specified in Section 26 0548 where required. Include certification of compliance with submittals.

F. Service Conditions: Provide switchboards and associated components suitable for operation under the service conditions at the project location without derating.

G. Short Circuit Current Rating: 1. Provide switchboards with listed short circuit current rating not less than

the available fault current at the installed location as indicated on the drawings. Listed series ratings are not acceptable.

as required to achieve selective coordination. I. Main Devices: Configure for top or bottom incoming feed as indicated or as required for the installation. Provide separate pull section and/or top-mounted pullbox as indicated or as required to facilitate installation of incoming feed.

Label equipment utilizing series ratings as required by NFPA 70.

H. Selectivity: Where the requirement for selectivity is indicated, furnish products

1. Through bus (horizontal cross bus) to be fully rated through full length of switchboard (non-tapered). Tapered bus is not permitted. 2. Provide solidly bonded equipment ground bus through full length of switchboard, with a suitable lug for each feeder and branch circuit

J. Bussing: Sized in accordance with UL 891 temperature rise requirements.

equipment grounding conductor. Phase and Neutral Bus Material: Aluminum.

Ground Bus Material: Aluminum. K. Conductor Terminations: Suitable for use with the conductors to be installed. 1. Line Conductor Terminations:

Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors. 2. Load Conductor Terminations: a. Lug Material: Aluminum, suitable for terminating aluminum or

1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations: a. Outdoor Locations: Type 3R.

copper conductors.

L. Enclosures:

Outdoor Enclosures: Enclosure Type: Non-walk-in type unless otherwise indicated. Color: Manufacturer's standard.

2. Finish: Manufacturer's standard unless otherwise indicated.

c. Access Doors: Lockable, with all locks keyed alike.

M. Future Provisions: 1. Prepare designated spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions. N. Arc Flash Energy-Reducing Maintenance Switching: Where indicated, provide a local accessory switch with status indicator light that permits selection of a

maintenance mode with alternate electronic trip unit settings for reduced fault clearing time. O. Owner Metering:

1. Provide microprocessor-based digital electrical metering system including

all instrument transformers, wiring, and connections necessary for

Voltage (Volts AC): Line-to-line, line-to-neutral for each phase.

measurements specified. Basis of Design: Square D PM8000. Measured Parameters

Current (Amps): For each phase and neutral.

Frequency (Hz). Real power (kW): For each phase, 3-phase total. Reactive power (kVAR): For each phase, 3-phase total.

4. Meter Accuracy: Plus/minus 1.0 percent. P. Instrument Transformers: Comply with IEEE C57.13 2. Select suitable ratio, burden, and accuracy as required for connected

Apparent power (kVA): For each phase, 3-phase total.

Current Transformers: Connect secondaries to shorting terminal blocks. 4. Potential Transformers: Include primary and secondary fuses with

Power factor.

disconnecting means. 2.03 OVERCURRENT PROTECTIVE DEVICES

A. Circuit Breakers: 1. Interrupting Capacity: Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than

specified minimum requirements.

capacity not less than the short circuit current rating indicated. 2. Molded Case Circuit Breakers: a. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers; listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings,

configurations, and features as indicated on the drawings.

b. Fully Rated Systems: Provide circuit breakers with interrupting

2) Provide electronic trip circuit breakerswhere indicated and for all breakers serving emergnecy systems and elevators. Minimum Interrupting Capacity:

1) Provide thermal magnetic circuit breakersunless otherwise

1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.

2) 14,000 rms symmetrical amperes at 480 VAC. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

1) Provide field-adjustable magnetic instantaneous trip setting

for circuit breaker frame sizes 225 amperes and larger.

e) Ground fault pickup and delay where ground fault

2) Provide interchangeable trip units where indicated. d. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.

1) Provide the following field-adjustable trip response settings: a) Long time pickup, adjustable by replacing interchangeable trip unit or by setting dial. b) Long time delay.

protection is indicated. e. Provide the following features and accessories where indicated or where required to complete installation: 1) Shunt Trip: Provide coil voltage as required for connection to

c) Short time pickup and delay.

Instantaneous pickup.

indicated trip actuator.

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tripped or been turned off. 3) Feeder protection relay: At main circuit breaker, generator circuit breakers, and PV circuit breaker, provide Schweitzer Engineering Laboratories SEL-751A with arc-flash protection option (SEL751A51ACAC74850210). Relay shall be switchboard mounted and installed at the factory

2.04 Generator Docking Switchboard

A. Description: Service entrance rated NEMA 3R exterior mounted generator docking switchboard with main circuit breaker and cam-locks. Sizing as indicated on drawings. Basis of design: 1. ESL Power System Inc: Temptap.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions. B. Install switchboards in accordance with NECA 1 (general workmanship), NECA 400, and NEMA PB 2.1.
- C. Arrange equipment to provide required clearances and maintenance access, including accommodations for any drawout devices.
- D. Where switchboard is indicated to be mounted with inaccessible side against wall, provide minimum clearance of 1/2 inch between switchboard and wall.
- E. Provide required support and attachment in accordance with Section 26 0529. F. Provide required seismic controls in accordance with Section 26 0548.
- G. Install switchboards plumb and level.
- H. Unless otherwise indicated, mount switchboards on properly sized 4 inch high concrete pad constructed in accordance with Section 03 3000.
- Provide grounding and bonding in accordance with Section 26 0526.
- Install all field-installed devices, components, and accessories. K. Where accessories are not self-powered, provide control power source as
- indicated or as required to complete installation. L. Set field-adjustable circuit breaker tripping function settings as determined by overcurrent protective device coordination study performed in accordance with Section 26 0573.
- M. Provide filler plates to cover unused spaces in switchboards.
- A. Adjust tightness of mechanical and electrical connections to manufacturer's
- recommended torque settings. B. Adjust alignment of switchboard covers and doors.
- 3.03 CLEANING
- A. Clean dirt and debris from switchboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred surfaces to match original factory finish. 3.04 PROTECTION
- A. Protect installed switchboards from subsequent construction operations. **END OF SECTION**

SECTION 26 2416 - PANELBOARDS

PART 1 GENERAL

1.01 SCOPE

- A. Panelboards specified in this section are suppplied by Amazon. The contractor shall receive, inspect, install and test equipment as required within the plans and specifications. 1.02 SUBMITTALS
- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
- 1.03 QUALITY ASSURANCE
- A. Comply with requirements of NFPA 70. 1.04 DELIVERY, STORAGE, AND HANDLING
- A. Receive, inspect, handle, and store panelboards in accordance with
- manufacturer's instructions and NECA 407. B. Store in a clean, dry space. Maintain factory wrapping or provide an additional
- debris, and traffic. C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

heavy canvas or heavy plastic cover to protect units from dirt, water, construction

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ABB/GE: www.geindustrial.com. B. Eaton Corporation: www.eaton.com
- C. Schneider Electric; Square D Products: www.schneider-electric.us.
- D. Siemens Industry, Inc: www.usa.siemens.com.
- E. Source Limitations: Furnish panelboards and associated components produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.
- 2.02 PANELBOARDS GENERAL REQUIREMENTS
- A. Provide products listed, classified, and labeled as suitable for the purpose
- B. Unless otherwise indicated, provide products suitable for continuous operation under the service conditions at the project location. C. Short Circuit Current Rating:
- Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the
- D. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
- E. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- F. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent
- G. Bussing: Sized in accordance with UL 67 temperature rise requirements. 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
- suitable lug for each feeder and branch circuit equipment grounding H. Conductor Terminations: Suitable for use with the conductors to be installed. I. Enclosures: Comply with NEMA 250, and list and label as complying with UL

2. Provide solidly bonded equipment ground bus in each panelboard, with a

- 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- a. Outdoor Locations: Type 3R. 2. Boxes: Galvanized steel unless otherwise indicated. a. Provide wiring gutters sized to accommodate the conductors to be
- 3. Fronts: a. Fronts for Surface-Mounted Enclosures: Same dimensions as
- 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- J. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required
- K. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.
- POWER DISTRIBUTION PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations: Main and Neutral Lug Material: Aluminum, suitable for terminating
- aluminum or copper conductors. C. Bussing:
- Phase and Neutral Bus Material: Aluminum. Ground Bus Material: Aluminum.
- D. Circuit Breakers: Provide bolt-on type. Provide thermal magnetic circuit breakers unless otherwise indicated.
- Provide electronic trip circuit breakers where indicated. E. Enclosures:
- Provide surface-mounted enclosures unless otherwise indicated. 2.04 OVERCURRENT PROTECTIVE DEVICES
- A. Molded Case Circuit Breakers: Description: Quick-make, quick-break, over center toggle, trip-free, tripindicating circuit breakers listed and labeled as complying with UL 489,
 - and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
- 2. Interrupting Capacity: a. Provide circuit breakers with interrupting capacity as required to
- provide the short circuit current rating indicated. b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- 3. Conductor Terminations: a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
- a. Provide electric trip circuit breakerswhere indicated. 5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-
- based, true rms sensing trip units. a. Provide the following field-adjustable trip response settings: 1) Long time pickup, adjustable by replacing interchangeable
 - trip unit or by setting dial. 2) Long time delay.
 - 3) Short time pickup and delay. 4) Instantaneous pickup.
 - 5) Ground fault pickup and delay where ground fault protection
- Multi-Pole Circuit Breakers: Furnish with common trip for all poles. 7. Provide the following circuit breaker types where indicated:
- a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.

b. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.

PART 3 EXECUTION

- 3.01 EXAMINATION
- Verify that field measurements are as indicated Verify that the ratings and configurations of the panelboards and associated
- components are consistent with the indicated requirements.
- Verify that mounting surfaces are ready to receive panelboards. D. Verify that conditions are satisfactory for installation prior to starting work.
- 3.02 INSTALLATION A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment in accordance with Section 26 0529. E. Provide required seismic controls in accordance with Section 26 0548.
- F. Install panelboards plumb. G. Mount panelboards such that the highest position of any operating handle for
- circuit breakers or switches does not exceed 79 inches above the floor or working
- H. Install all field-installed branch devices, components, and accessories. 3.03 FIELD QUALITY CONTROL
- A. Inspect and test in accordance with NETA ATS, except Section 4. B. Test GFCI circuit breakers to verify proper operation.
- C. Correct deficiencies and replace damaged or defective panelboards or associated components. 3.04 ADJUSTING
- A. Adjust tightness of mechanical and electrical connections to manufacturer's
- recommended torque settings. Adjust alignment of panelboard fronts.
- C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.
- 3.05 CLEANING A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish. **END OF SECTION**

SECTION 26 2813 - FUSES

PART 1 GENERAL

PART 2 PRODUCTS

- 2.01 MANUFACTURERS
- A. Bussmann, a division of Eaton Corporation: www.cooperindustries.com. B. Littelfuse, Inc: www.littelfuse.com.
- C. Mersen: ep-us.mersen.com.
- 2.02 FUSES
- A. Provide products listed, classified, and labeled as suitable for the purpose
- B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system. C. Provide fuses of the same type, rating, and manufacturer within the same switch.
- D. Comply with UL 248-1. E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.

F. Voltage Rating: Suitable for circuit voltage. PART 3 EXECUTION

- 3.01 INSTALLATION
- A. Do not install fuses until circuits are ready to be energized.
- B. Install fuses with label oriented such that manufacturer, type, and size are easily **END OF SECTION**

SECTION 26 2816.16 - ENCLOSED SWITCHES

PART 1 GENERAL

- 1.01 SUBMITTALS
- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories. PART 2 PRODUCTS
- 2.01 MANUFACTURERS
- A. ABB/GE: www.geindustrial.com.

- B. Eaton Corporation: www.eaton.com. C. Schneider Electric; Square D Products: www.schneider-electric.us.
- D. Siemens Industry, Inc: www.usa.siemens.com. Source Limitations: Furnish enclosed switches and associated components produced by the same manufacturer as the other electrical distribution equipment
- used for this project and obtained from a single supplier. 2.02 ENCLOSED SAFETY SWITCHES
- Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.
- B. Provide products listed, classified, and labeled as suitable for the purpose
- C. Short Circuit Current Rating: 1. Provide enclosed safety switches, when protected by the fuses or supply side overcurrent protective devices to be installed, with listed short circuit current rating not less than the available fault current at the installed
- location as indicated on the drawings. D. Provide with switch blade contact position that is visible when the cover is open.
- E. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor. F. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
- 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- a. Outdoor Locations: Type 3R. G. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
- H. Heavy Duty Switches: 1. Comply with NEMA KS 1.

2. Conductor Terminations:

a. Lug Material: Aluminum, suitable for terminating aluminum or 3. Provide externally operable handle with means for locking in the OFF

position, capable of accepting three padlocks. PART 3 EXECUTION

- 3.01 INSTALLATION
 - Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship). Arrange equipment to provide minimum clearances in accordance with
- D. Provide required support and attachment in accordance with Section 26 0529. Install enclosed switches plumb.

manufacturer's instructions and NFPA 70.

Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 0526. **END OF SECTION**

SECTION 26 5600 - EXTERIOR LIGHTING

- PART 1 GENERAL
- 1.01 SECTION INCLUDES A. Exterior luminaires.
- B. Poles and accessories.
- 1.02 REFERENCE STANDARDS A. AASHTO LTS - Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals 2013, with Editorial Revision (2022).
- B. IES LM-79 Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products 2019.
- C. IES LM-80 Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources 2021. D. NECA 1 - Standard for Good Workmanship in Electrical Construction 2015.
- E. NECA/IESNA 501 Standard for Installing Exterior Lighting Systems 2000 F. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority
- Having Jurisdiction, Including All Applicable Amendments and Supplements. G. UL 1598 - Luminaires Current Edition, Including All Revisions. H. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products
- Current Edition, Including All Revisions. ADMINISTRATIVE REQUIREMENTS
- A. Coordination:
- Coordinate placement of poles and associated foundations with utilities, curbs, sidewalks, trees, walls, fences, striping, etc. installed under other sections or by others. Coordinate elevation to obtain specified foundation
- 2. Notify Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.
- Product Data: Provide manufacturer's standard catalog pages and data sheets
- finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.

including detailed information on luminaire construction, dimensions, ratings,

- a. Include estimated useful life, calculated based on IES LM-80 test
- 2. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.
- 1.05 QUALITY ASSURANCE

until ready for installation.

A. Comply with requirements of NFPA 70.

- DELIVERY, STORAGE, AND HANDLING
- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions. B. Keep products in original manufacturer's packaging and protect from damage
- 1.07 WARRANTY A. Provide 2-year manufacturer warranty for all LED luminaires, including drivers

otherwise indicated.

PART 2 PRODUCTS

- 2.01 LUMINAIRES
- Provide products that comply with requirements of NFPA 70. B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose D. Unless otherwise indicated, provide complete luminaires including lamp(s) and
- all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories,
- etc. as necessary for a complete operating system. F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent

lumen maintenance, calculated based on IES LM-80 test data.

H. SSL/LED Luminaires: Components: UL 8750 recognized or listed as applicable. Tested in accordance with IES LM-79 and IES LM-80.

G. Provide luminaires listed and labeled as suitable for wet locations unless

4. References to SSL and/or LED sources shall include the entire solid-state lighting system, including circuitry, LEDs, power supplies, drivers, etc. 5. CRI and color temperature as scheduled in accordance with ANSI C78.377.

- 6. NEMA.SSL-1 compliant for operational characteristics and electrical safety of SSL power supplies and drivers. ANSI/NEMA C82.77 compliant
- 2.02 POLES
- 1. Provide poles and associated support components suitable for the luminaire(s) and associated supports and accessories to be installed.
- Structural Design Criteria:
 - a. Comply with AASHTO LTS.

 - Fatigue Design and Vortex Shedding: Nontapered lighting structures shall be designed to resist vortex shedding-induced loads for critical wind velocities less than approximately 65 fps; 45 mph. Except for round tapered poles, for all poles 20 feet in height or higher, provide a factory installed internal vibration dampener designed to resist fatigue caused by vortex shedding induced loads and natural wind gusts in the pole indefinitely without failure.
- natural wind gusts.
- Material: Steel, unless otherwise indicated Shape: Square straight, unless otherwise indicated.
- Mounting: Install on concrete foundation, height as indicated on the
- 7. Unless otherwise indicated, provide with the following

b. Handholeminimum 2-1/2 X 5 inches in size. Anchor bolts with leveling nuts or leveling shims.

- 3.01 EXAMINATION
- A. Verify that field measurements are as indicated. B. Verify that outlet boxes are installed in proper locations and at proper mounting
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- 3.02 **PREPARATION** Provide extension rings to bring outlet boxes flush with finished surface.
- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions. Install luminaires in accordance with NECA/IESNA 501
 - Foundation-Mounted Poles:
 - 2) Position conduits to enter pole shaft.
- Tighten anchor bolt nuts to manufacturer's recommended torque
- Install anchor base covers or anchor bolt covers as indicated. Grounding:
- Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.
- 3.04 ADJUSTING
- indicated or as directed by Engineer. Secure locking fittings in place. B. Luminaires with Field-Rotatable Optics: Position optics according to manufacturer's instructions to achieve lighting distribution as indicated or as

- for maximum allowable harmonic distortion produced by SSL power
- I. Exposed Hardware: Stainless steel.
- A. All Poles:

 - b. Wind Load: Include effective projected area (EPA) of luminaire(s) and associated supports and accessories to be installed. 1) Design Wind Speed: 120 miles per hour, with gust factor of
 - c. Dead Load: Include weight of proposed luminaire(s) and associated
 - supports and accessories.
- Apply an importance factor of 0.3 for vortex shedding and 0.44 for
- Finish: Match luminaire finish, unless otherwise indicated. drawings, unless otherwise indicated.
- features/accessories:

d. Anchor base cover.

Top cap.

- PART 3 EXECUTION

 - heights and are properly sized to accommodate conductors in accordance with
- C. Verify that suitable support frames are installed where required.
- E. Verify that conditions are satisfactory for installation prior to starting work
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes. 3.03 INSTALLATION
- Provide required support and attachment in accordance with Section 26 0529. Pole-Mounted Luminaires:
- a. Provide cast-in-place concrete foundations for poles as indicated. 1) Install anchor bolts plumb per template furnished by pole manufacturer.
- b. Install foundations plumb. c. Install poles plumb, using leveling nuts or shims as required to

a. Bond luminaires, metal accessories, metal poles, and foundation

- e. Install non-shrink grout between pole anchor base and concrete foundation, leaving small channel for condensation drainage.
- reinforcement to branch circuit equipment grounding conductor. b. Provide supplementary ground rod electrode as specified in Section 26 0526 at each pole bonded to grounding system as indicated.
- Install accessories furnished with each luminaire. G. Bond products and metal accessories to branch circuit equipment grounding

A. Aim and position adjustable luminaires to achieve desired illumination as

directed by Engineer.

END OF SECTION

A P