WGCC - IMAGE BUILDERS

WINTER GARDEN COMMERCE CENTER 690 GARDEN COMMERCE PARKWAY

WINTER GARDEN, FLORIDA 34787

OWNER:

LBI PROPERTIES, LLC

WINDERMERE, FLORIDA 34786-2094 (321) 229-1284

CONTACT: TOM HARVEY EMAIL: TOM@IMAGEHOMEBUILDERS.COM

CIVIL ENGINEER:

UNROE ENGINEERING, INC.

ORLANDO, FLORIDA 32869 PHONE: (407) 299-0650

CONTACT: DARCY UNROE. PE **EMAIL: DARCY@UNROEENGINEERING.COM**

ARCHITECTURE, MECHANICAL, PLUMBING AND ELECTRICAL:



C4 ARCHITECTURE, LLC

135 WEST CENTRAL BLVD. SUITE 400 ORLANDO, FLORIDA 32801 PHONE: (407) 363-6136

ARCHITECTURE CONTACT: CORY COOPER EMAIL: CCOOPER@C4ARCHITECTURE.COM

STRUCTURAL CONTACT: JONATHAN D. COLLINS, PE, SI EMAIL: JCOLLINS@C4ARCHITECTURE.COM

MECHANICAL & PLUMBING CONTACT: JOSE ZAMOT, PE EMAIL: JZAMOT@C4ARCHITECTURE.COM **ELECTRICAL CONTACT: DREW LILES, PE**

FIRE PROTECTION ENGINEER:

WIGINTON FIRE PROTECTION ENGINEERING, INC.

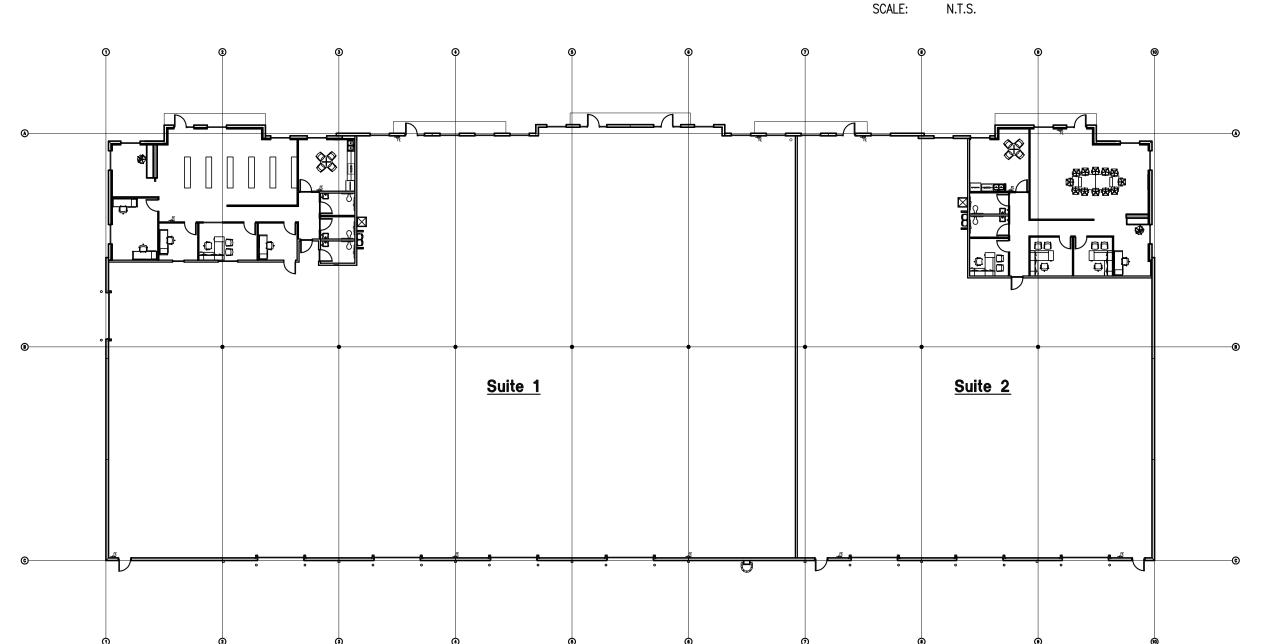
1501 NORTHPOINT PKWY STE 1012 WEST PALM BEACH, FLORIDA 33407 PHONE: (561) 324-6731

EMAIL: DLILES@C4ARCHITECTURE.COM

CONTACT: RANDY ALMOND RDA@WIGINTON.NET



VICINITY MAP



KEY PLAN HARBCO GENERAL CONTRACTORS, INC.

CODE INFORMATION

PROJECT SQUARE FOOTAGE:

BUSINESS (B)STORAGE (S-1)TOTAL BUILDING S.F.	3,861 \$Q. FT 25,933 \$Q. FT 29,794 \$Q. FT
CONSTRUCTION TYPE:	

TYPE II-B - UNPROTECTED, SPRINKLERED (FBC)

OCCUPANCY: S-1, B, M - BUSINESS PER FLORIDA BUILDING CODE, SEVENTH EDITION (2020) NO SEPARATION REQUIRED PER SECTION 508.3.3. AND TABLE 508.4 OCCUPANCY SEPARATION.

APPLICABLE BUILDING CODES:

- FLORIDA BUILDING CODE, SEVENTH EDITION (2020)
- FLORIDA ENERGY CODE, SEVENTH EDITION (2020) 2016 ASHRAE 90.1
- FLORIDA MECHANICAL CODE, SEVENTH EDITION (2020) • FLORIDA PLUMBING CODE, SEVENTH EDITION (2020)
- EXISTING BLDG. FLORIDA BUILDING CODE, SEVENTH EDITION (2020) • FLORIDA ACCESSIBILITY CODE, SEVENTH EDITION (2020)
- FLORIDA FIRE PREVENTION CODE, SEVENTH EDITION (2020) • 2017 NATIONAL ELECTRIC CODE
- NFPA 101 LIFE SAFETY CODE, 2018 EDITION
- NFPA 10 STANDARD FOR PORTABLE FIRE EXTINGUISHERS, 2018 EDITION

PLUMBING FIXTURES

REQUIRED FIXT	ures – Busini	ESS 14 OCCUPA	ANTS (PER F	LORIDA BUILDING COL	DE - 7TH EDITIO	
WATER	CLOSETS	LAVAT	ORIES	DRINKING	OTHER	
MALE	FEMALE	MALE	FEMALE	FOUNTAINS	OTHER	
1 PER 25 FC 1 PER 50 E 14 PEOPLE =	OR FIRST 50/ IXCEEDING 50 56 FIXTURES	1 PER 40 FC 1 PER 80 E 14 PEOPLE =	OR FIRST 80/ XCEEDING 80 .35 FIXTURES	1 PER 100	_	
.28 MIN.	.28 MIN.	.175 MIN.	.175 MIN.	.14 MIN.		
REQUIRED FIXT	URES - ASSEM	BLY $(A-2 = 1)$	7 OCCUPANTS)	(A-3 = 24 OCCUPA)	NTS)	
WATER	CLOSETS	LAVAT	ORIES	DRINKING	OTHER	
MALE	FEMALE	MALE	FEMALE	FOUNTAINS	UTHER	
1 PE 17 PEOPLE	TR 75 = .23 FIXTS.	1 PEF 17 PEOPLE =	R 200 = .085 FIXTS.	1 PER 500	1 SERVICE	
.11 MIN.	.11 MIN.	.425 MIN.	.425 MIN.	.034 MIN.	SINK	
1 PER 125 24 PEOPLE = 24 PEOPLE = .192 FIXTS36 FIXTS.		1 PER 200 24 PEOPLE = .12 FIXTS.		1 PER 500	1 SERVICE	
.192 MIN.	.36 MIN.	.06 MIN.	.06 MIN.	.048 MIN.	SINK	
REQUIRED FIXT	URES - MERCA	NTILE 13 OCCU	JPANTS		•	
WATER	CLOSETS	LAVAT	ORIES	DRINKING		
MALE	FEMALE	MALE	FEMALE	FOUNTAINS	OTHER	
1 PEI 13 PEOPLE =	R 500 .026 FIXTURES	1 PEF 13 PEOPLE =	R 750 .017 FIXTURES	1 PER 1000	-	
.013 MIN.	.013 MIN.	.008 MIN.	.008 MIN.	.013 MIN.		
REQUIRED FIXT	ures – stora	GE 53 OCCUPA	NTS			
WATER	CLOSETS	LAVAT	ORIES	DRINKING	OTHER	
MALE	FEMALE	MALE	FEMALE	FOUNTAINS	OTHER	
1 PEI 53 PEOPLE	R 100 = .53 FIXTS.		R 100 = .53 FIXTS.	1 PER 1000	1 SERVICE	
.265 MIN.	.265 MIN.	.265 MIN.	.265 MIN.	.053 MIN.	SINK	
TOTAL REQUIRE	D FIXTURES:					
WATER	CLOSETS	LAVAT	ORIES	DRINKING	071155	
	EEMALE		EEMALE	FOLINTAINS	OTHER	

WATER	CLOSETS	LAVAT	ORIES	DRINKING	OTHER
MALE	FEMALE	MALE	FEMALE	FOUNTAINS	UITER
1 MIN.	2 MIN.	1 MIN.	1 MIN.	2 MIN.	2 SERVIC SINK
TOTAL PROVIDE	ED FIXTURES:			I	
TOTAL PROVIDE	ED FIXTURES: CLOSETS	LAVAT	ORIES	DRINKING	ОТИЕР
		LAVAT MALE	ORIES FEMALE	DRINKING FOUNTAINS	OTHER

LIFE SAFETY SUMMARY

OCCUPANT LOAD)		(PER FLORIDA BUILDING CODE - 7TH EDIT
SUITE 1:			
BUSINESS (B OCCUPANCY):			
1,141 S.F. (BUSINESS USE)	=	8	OCCUPANTS (1 PER 150 S.F.)
ASSEMBLY (A-2 OCCUPANCY):			
219 S.F. (BUSINESS USE)	=	8	OCCUPANTS (1 PER 30 S.F.)
MERCANTILE (M OCCUPANCY):			
728 S.F. (BUSINESS USE)	=	13	OCCUPANTS (1 PER 60 S.F.)
STORAGE (S-1 OCCUPANCY):			
17,565 S.F. (STORAGE USE)	=	36	OCCUPANTS (1 PER 500 S.F.)
TOTAL SUITE OCCUPANTS =	65		
BUSINESS (B OCCUPANCY):			
810 S.F. (BUSINESS USE)	=	6	OCCUPANTS (1 PER 150 S.F.)
ASSEMBLY (A-2 OCCUPANCY):			
,	=	9	OCCUPANTS (1 PER 30 S.F.)
ASSEMBLY (A-3 OCCUPANCY):			,
· ·	=	24	OCCUPANTS (1 PER 30 S.F.)
STORAGE (S-1 OCCUPANCY):			
8,368 S.F. (STORAGE USE)		17	OCCUPANTS (1 PER 500 S.F.)
TOTAL SUITE OCCUPANTS = 121	56		

MEANS OF ECDESS

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MEANS OF EGRESS
BUSINESS (B USE):
MAXIMUM ALLOWABLE TRAVEL DISTANCE = 300' FT. (FULLY SPRINKLED) MAXIMUM PROVIDED TRAVEL DISTANCE = 105'-1" FT. MAXIMUM ALLOWABLE DEAD END CORRIDOR LENGTH = 50' FT. MINIMUM ALLOWABLE AISLE WIDTH = 44 IN.
EGRESS WIDTH PER PERSON SERVED = .2 IN2 INCHES x 68 OCCUPANTS = 13.6 IN. REQUIRED (xx IN. PROVIDED)
MEANS OF EGRESS

STORAGE (S-1 USE):	
MAXIMUM ALLOWABLE TRAVEL DISTANCE MAXIMUM PROVIDED TRAVEL DISTANCE MAXIMUM ALLOWABLE COMMON TRAVEL PATH MAXIMUM ALLOWABLE DEAD END CORRIDOR L	
MINIMUM ALLOWABLE AISLE WIDTH EGRESS WIDTH PER PERSON SERVED .2 INCHES x 53 OCCUPANTS = 10.6	= 44 IN. = .2 IN. IN. REQUIRED (xx IN. PROVIDED)

SHEET INDEX

9	12-15-22	A000	COVER SHEET
•	12-15-22	A001	OVERALL SITE PLAN
•	12-15-22	A100	LIFE SAFETY PLAN
9	12-15-22	A200	OVERALL FLOOR PLAN
9	12-15-22	A201	ENLARGED FLOOR PLANS
•	12-15-22	A202	REFLECTED CEILING PLAN
•	12-15-22	A203	ENLARGED RESTROOM PLANS
•	12-15-22	A204	ENLARGED BREAK ROOM PLAN & MILLWORK
•	12-15-22	A300	EXTERIOR ELEVATIONS
9	12-15-22	A301	ROOF PLAN
•	12-15-22	A400	EXTERIOR WALL SECTIONS
•	12-15-22	A401	EXTERIOR WALL SECTIONS
•	12-15-22	A402	EXTERIOR WALL SECTIONS
•	12-15-22	A403	INTERIOR WALL SECTIONS
•	12-15-22	A500	SCHEDULE & DETAILS
•	12-15-22	A801	DUMPSTER SHEET

•)	IK		KAL		
	•		12-15-22	S001	GENERAL STRUCTURAL N	 101
	•		12-15-22	S002	DESIGN LOADS	
	•		12-15-22	S101	FOUNDATION PLAN	
			40 45 00	0444	DOOF FRANKING REAL	

- 1	👄	12-15-22	5002	DESIGN LOADS
1	•	12-15-22	S101	FOUNDATION PLAN
1	•	12-15-22	S111	ROOF FRAMING PLAN
1	•	12-15-22	S401	TYPICAL TILT-UP WALL DETAILS
1	•	12-15-22	S402	TILT-UP PANEL ELEVATIONS
1	•	12-15-22	S501	SCHEDULES
1	•	12-15-22	S502	SCHEDULES
1	•	12-15-22	S601	FOUNDATION SECTIONS & DETAILS
1	•	12-15-22	S602	FOUNDATION SECTIONS & DETAILS
1	•	12-15-22	S603	DUMPSTER PAD PLAN & DETAILS
1	•	12-15-22	S611	FRAMING SECTIONS & DETAILS
1	•	12-15-22	S612	FRAMING SECTIONS & DETAILS
1	9	12-15-22	S613	FRAMING SECTIONS & DETAILS

MECHANICAL

•	12-15-22	M001	MECHANICAL GENERAL NOTES
•	12-15-22	M100	MECHANICAL OVERALL PLAN
•	12-15-22	м300	MECHANICAL PLANS SUITE 1
•	12-15-22	M301	MECHANICAL PLANS SUITE 2
•	12-15-22	М600	MECHANICAL DETAILS
•	12-15-22	М700	MECHANICAL SCHEDULES

PLUMBING

ELECTRICAL							
•		12-15-22	P600	PLUMBING RISERS			
•		12-15-22	P300	PLUMBING PLANS, DETAILS & SCHEDULES			
•		12-15-22	P100	PLUMBING OVERALL PLAN			
•		12-15-22	P001	PLUMBING GENERAL NOTES			

•	12-15-22	E100	ELECTRICAL NOTES, SPECIFICATIONS, SYMBOLS & ABBREVIATIONS
•	12-15-22	E101	POWER RISER DIAGRAM, NOTES & SPECIFICATIONS
•	12-15-22	E102	ELECTRICAL SCHEDULES
•	12-15-22	E200	ELECTRICAL SITE PLAN
•	12-15-22	E201	SITE PHOTOMETRICS PLAN
•	12-15-22	E202	SITE PHOTOMETRICS CUT SHEETS
•	12-15-22	E203	SITE PHOTOMETRICS CUT SHEETS
•	12-15-22	E204	SITE PHOTOMETRICS CUT SHEETS
•	12-15-22	E300	ELECTRICAL PLAN — AREA 'A'
•	12-15-22	E301	ELECTRICAL PLAN — AREA 'B'
•	12-15-22	E302	ELECTRICAL PLAN — AREA 'B'
•	12-15-22	E400	RISERS & DETAILS
•	12-15-22	E401	UL DETAILS

NOTES:

ROOF STRUCTURE IS <u>NOT</u> LIGHT GAUGE METAL FRAMING.
IT IS THE CONTRACTOR'S RESPONSIBILITY TO FURNISH AND INSTALL ALL NECESSARY COMPONENTS FOR THE PROPER OPERATION OF ALL SPECIFIED SYSTEMS, REGARDLESS OF WHETHER THOSE COMPONENTS ARE SHOWN ON THE DRAWINGS OR NOT. CONTRACTOR SHALL ALSO VERIFY THAT SPECIFIED COMPONENTS ARE COMPATIBLE WITH OTHERS WITHIN THE SAME SYSTEM AND WITH THE SYSTEM ITSELF.
"SEPARATE PERMITS REQUIRED FOR: DUMPSTER ENCLOSURE, SIGNS, SPRINKLERS, FIRE ALARM, AND BURGLAR ALARM."
"STRUCTURAL STEEL WORK SHALL BE INSPECTED AND CERTIFIED BY AN APPROVED 3RD PARTY PRIOR TO FRAMING INSPECTION."
STRUCTURAL STEEL WORK CERTIFICATION, FROM 3RD PARTY INSPECTOR, DOCUMENTS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT PRIOR TO CO APPLICATION.
SUBMIT APPROVED SHOP DRAWINGS FOR ROOF JOISTS AND TILT-UP WALL CONSTRUCTION TO BUILDING DEPARTMENT PRIOR TO INSPECTION. (DETAILING FOR JOIST PLACEMENT AND SIZES ARE ON SUBMITTED PLANS AS ARE DETAILS OF TILT-UP WALLS).

MUNICIPALITY:

CITY OF WINTER GARDEN

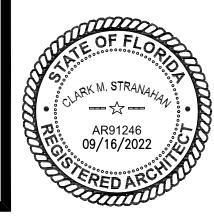
PARCEL ID #: 24-22-27-9385-00-130

PROPERTY DESCRIPTION:

WINTER GARDEN COMMERCE CENTER PHASE 1 72/133 LOT 13

PROJECT NO.: 18406

DATE: SEPTEMBER 16, 2022



PROJECT SCOPE:

- THIS PROJECT PROVIDES AND INSTALLS A NEW 800A, 480/277V, 3-PHASE ELECTRIC SERVICE FROM THE POWER COMPANY, SITE AND WAREHOUSE LIGHTING, ELECTRICAL AND TELEPHONE INFRASTRUCTURE. (2) TENANTS WITH PROVISIONS FOR FOUR (4) 200A SERVICES AND 480/277V TENANT PANELBOARDS, INSTALL 1 NEW 480/277V HOUSE PANEL TO PROVIDE POWER AND LIGHTING FOR THE SITE.
- THIS IS ONE OF SIX BUILDINGS TO BE INSTALLED ON A SHARED SITE. CERTAIN RESOURCES, SUCH AS A FIRE PUMP SYSTEM ARE SHARED BETWEEN BUILDINGS. CONTRACTOR SHALL COORDINATE WORK WITH THE OTHER FIVE BUILDINGS.
- FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM AS SHOWN ON THE DRAWINGS.
- COORDINATE WORK WITH OTHER TRADES AND OWNER. MAINTAIN EXISTING BUILDING OPERATIONS AND POWER.
- THE WIRING DIAGRAMS. QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS. CHANGES IN CIRCUIT BREAKERS, CONDUIT AND WIRE, ENCLOSURE SIZES, ETC., DUE TO THE CONTRACTOR SELECTING DIFFERENT EQUIPMENT OR MANUFACTURERS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF SUCH CHANGES SHALL BE PAID FOR BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- COORDINATE WITH POWER COMPANY FOR ALL REQUIREMENTS FOR INSTALLATION ASSOCIATED WITH NEW SERVICE. PROVIDE ALL HARDWARE, CONCRETE PAD, CT'S, METER CAN, ETC. AS REQUIRED BY POWER COMPANY, CONTRACTOR SHALL PAY ALL FEES ASSOCIATED WITH ACQUIRING TEMPORARY AND PERMANENT POWER. CONTRACTOR SHALL PAY MONTHLY CHARGES FOR TEMPORARY POWER. OWNER SHALL PAY MONTHLY CHARGES FOR PERMANENT POWER.
- COORDINATE WITH TELEPHONE COMPANY AND INTERNET SERVICE PROVIDER FOR ALL REQUIREMENTS FOR INSTALLATION ASSOCIATED WITH NEW TELEPHONE AND INTERNET SERVICE. PROVIDE ALL HARDWARE, TERMINAL BLOCKS, WIRING, SERVICE CALLS, ETC., AS REQUIRED BY THE TELEPHONE COMPANY AND INTERNET SERVICE PROVIDER. CONTRACTOR SHALL PAY ALL FEES ASSOCIATED WITH ACQUIRING TELEPHONE AND INTERNET SERVICE.
- CONTRACTOR SHALL COORDINATE WITH ELECTRIC AND TELEPHONE UTILITIES PRIOR TO BID AND FURNISH BOTH UTILITIES WITH THEIR REQUIRED SETS OF PLANS WITHIN 10 DAYS OF BEING AWARDED THE PROJECT. OBTAIN PDFS OF THE PLANS FROM THE GENERAL CONTRACTOR TO PLOT AND SEND TO UTILITIES.
- CONTRACTOR'S WORK SHALL INCLUDE COMPLETE TESTING OF ALL EQUIPMENT AND WIRING AND MAKING ANY MINOR CORRECTIONS CHANGES OR ADJUSTMENTS NECESSARY FOR THE PROPER FUNCTIONING OF THE SYSTEM AND EQUIPMENT. ALL WORKMANSHIP SHALL BE OF THE HIGHEST QUALITY; SUBSTANDARD WORK WILL BE REJECTED.

GUARANTEE ALL MATERIALS AND LABOR FOR A PERIOD OF ONE (1) YEARS FROM DATE OF

- SUBSTANTIAL COMPLETION. PASS ON ANY ADDITIONAL MANUFACTURER WARRANTIES TO THE OBTAIN AND PAY ALL PERMITS, FEES AND INSPECTIONS PERTINENT TO THE ELECTRICAL
- PRIOR TO SUBMITTING A BID, VISIT THE PROJECT SITE AND ASCERTAIN CONDITIONS AFFECTING

THE PROPOSED WORK AND ALL EXISTING ELECTRICAL FACILITIES.

13. FURNISH ALL LABOR AND TOOLS ASSOCIATED WITH ACCOMPANYING THE ENGINEER DURING OBSERVATIONS OF CONSTRUCTION.

GENERAL NOTES:

- THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR ON THE DRAWINGS. WHERE THERE IS A CONFLICT BETWEEN THE REQUIREMENTS ON THIS SHEET AND THE REQUIREMENTS ON THE SUBSEQUENT SHEETS, CONTRACTOR SHALL PROVIDE THE MORE STRINGENT OF THE CONFLICTING REQUIREMENTS, PRODUCTS, EQUIPMENT, ETC., AT NO ADDITIONAL COST TO THE
- CONTRACTOR SHALL SUBMIT A REQUEST FOR INFORMATION (RFI) FOR ALL CONFLICTS. PRODUCT SUBSTITUTIONS, ETC.
- ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE LISTED BY UNDERWRITER'S LABORATORIES, INC., AND SHALL BEAR THE APPROPRIATE UL LISTING MARK OR CLASSIFICATION MARKING. EQUIPMENT, MATERIALS, ETC. UTILIZED NOT BEARING A UL CERTIFICATION SHALL BE FIELD OR FACTORY UL CERTIFIED PRIOR TO EQUIPMENT ACCEPTANCE
- ANY PRODUCT SUBSTITUTIONS FROM SPECIFIED MAKE AND MODEL NUMBERS SHALL BE QUALIFIED IN THE BID PROPOSAL IN WRITING WITH EXPLANATION OF REASON FOR SUBSTITUTION AND COST SAVINGS ASSOCIATED WITH SUBSTITUTION.
- CONTRACTOR SHALL COORDINATE WITH THE FIRE PROTECTION SPRINKLER INSTALLATION AND MAINTAIN 12" CLEARANCE (24" IF FM GLOBAL HAS JURISDICTION) FROM ALL SPRINKLER HEADS WITH LIGHT FIXTURES, RACEWAYS, AND ANY OTHER ELECTRICAL EQUIPMENT. CONFIRM WITH OWNER WHETHER FM GLOBAL HAS JURISDICTION.
- DO NOT SCALE THE ELECTRICAL DRAWINGS. REFER TO THE ARCHITECTURAL, MECHANICAL, STRUCTURAL DRAWINGS, AND APPROVED MANUFACTURER'S SHOP DRAWINGS FOR THE EXACT LOCATION OF ALL EQUIPMENT.
- ALL WORK SHALL COMPLY WITH NEC AND LOCAL CODES.
- CONDUCTORS SHALL NOT BE SPLICED EXCEPT AS NOTED. INSTALL OUTLET BOXES, DEVICE BOXES, AND JUNCTION BOXES, AS REQUIRED.
- . SUBMIT TO THE ENGINEER THE FOLLOWING FOR APPROVAL: RACEWAYS, BOXES, FITTINGS AND HANGERS; WIRES AND CABLES; DISCONNECT SWITCHES; PANELS; LIGHTING CONTROL PANEL(S); LIGHTING SYSTEM; FIRE ALARM SYSTEM; WIRING DEVICES. SUBMIT 6 COPIES OF ALL PROJECT SUBMITTAL DATA AND SHOP DRAWINGS. CONTRACTOR SHALL REVIEW SHOP DRAWINGS AND SUBMITTALS OF EVERY TRADE WHERE AN ELECTRICAL CONNECTION IS REQUIRED AND REPORT ANY VARIANCES FROM ELECTRICAL CHARACTERISTICS NOTED (E.G. VOLTAGE RATING, SINGLE PHASE OR 3-PHASE, DIFFERENT OVERCURRENT PROTECTIVE DEVICE SETTINGS, ETC.) ON THE ELECTRICAL DRAWINGS TO THE ENGINEER PRIOR TO PROCEEDING WITH ROUGH-IN WORK.
- ALL CONDUITS SHALL HAVE A BOND WIRE SIZED PER TABLE 250.122 OF THE NEC (UNLESS OTHERWISE NOTED).
- PROVIDE PROTECTION FOR MATERIALS AND EQUIPMENT AGAINST LOSS OR DAMAGE THROUGHOUT THE CONTRACT. PROVIDE PROTECTION FROM THE EFFECT OF WEATHER PRIOR TO INSTALLATION, STORE ITEMS TO BE INSTALLED IN AN INDOOR WEATHER PROTECTED
- 13. FOLLOWING INSTALLATION, PROTECT MATERIALS AND EQUIPMENT FROM CORROSION, PHYSICAL DAMAGE AND THE EFFECTS OF MOISTURE ON INSULATION.

14. DO NOT CUT OR NOTCH ANY STRUCTURAL MEMBER OR BUILDING SURFACE WITHOUT SPECIFIC

- APPROVAL FROM THE STRUCTURAL ENGINEER.
- ALL WORK SHALL BE PERFORMED BY AN ACCOMPLISHED, QUALIFIED, EXPERIENCED AND LICENSED ELECTRICIAN(S) WORKING UNDER CONTINUOUS COMPETENT SUPERVISION.
- . THE PLANS DO NOT ALWAYS SHOW ALL RACEWAYS AND CONDUCTORS BETWEEN RECEPTACLES LIGHTING FIXTURES AND SWITCHES. HOWEVER, THE CONTRACTOR SHALL FURNISH AND INSTALL THESE CONNECTIONS IN ACCORDANCE WITH THE ASSIGNED FIXTURE OR RECEPTACLE CIRCUIT NUMBER AND SWITCH DESIGNATIONS, AS SHOWN ON THE HOMERUNS. HOMERUNS SHOWN CONCEALED SHALL BE INDICATIVE OF THE ENTIRE CIRCUIT INSTALLATION, UNLESS OTHERWISE NOTED. THE SAME SHALL APPLY FOR HOMERUNS SHOWN EXPOSED. REFER TO SPECIFICATIONS FOR MATERIALS AND INSTALLATION REQUIREMENTS.
- ELECTRICAL PLANS SHOW GENERAL ARRANGEMENTS AND LOCATIONS FOR EQUIPMENT CONDUIT, OUTLETS, ETC. UNLESS DETAILED OR DIMENSIONED, EXACT LOCATIONS OF CONDUIT, ROUTING OF CABLES, AND PLACEMENT OF EQUIPMENT SHALL BE GOVERNED BY STRUCTURA CONDITIONS, PHYSICAL INTERFERENCE, OWNER EQUIPMENT, AND LOCATIONS OF ELECTRICAL TERMINATIONS ON EQUIPMENT. EXAMINE ARCHITECTURAL, STRUCTURAL, AND MECHANICAL PLANS, AS WELL AS THE APPROVED SHOP DRAWINGS FOR THE VARIOUS EQUIPMENT IN ORDER TO DETERMINE EXACT ROUTING AND PLACEMENT OF ALL RACEWAYS, CABLES, AND EQUIPMENT, TO ASSURE A WORKABLE INSTALLATION IN ACCORDANCE WITH NEC. SUCH COORDINATION SHALL BE ANTICIPATED DURING BID, AND INCLUDED IN THE CONTRACTOR'S BID
- CONDUIT AND WIRE (NOT SHOWN) FOR FIXTURES, SWITCHES AND/OR RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AND SHALL BE AS FOLLOWS. UNLESS OTHERWISE NOTED ON THE PLANS, NOTES, SPECIFICATIONS, RISER DIAGRAMS OR PANELBOARD SCHEDULES:
- 18.1. 3/4" (MINIMUM) CONDUIT RUN EXPOSED IN UNFINISHED AREAS
- 18.1.2. CONCEALED ABOVE SUSPENDED CEILINGS, IN WALLS AND SLABS IN FINISHED AREAS EXPOSED RUNS. MINIMUM OF 2#12, 1#12G FOR UN-SWITCHED LOADS, 3#12, 1#12G
- FOR SWITCHED LOADS. NUMBER OF WIRES AS REQUIRED. 18.3. 12-3 (BLACK/WHITE/GREEN) SOLID (MINIMUM) MC CABLE FOR CONCEALED RUNS. 12-4 (BLACK/WHITE/RED/GREEN) SOLID MC CABLE FOR SWITCHED LOADS.
- 19. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
- . SWITCHES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. RECEPTACLES SHALL BE MOUNTED 1'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. RECEPTACLES INSTALLED ABOVE COUNTERTOPS SHALL BE INSTALLED 8" TO 12" ABOVE COUNTERTOP OR 3'-6" ABOVE FINISHED FLOOR. RECEPTACLES INSTALLED IN WAREHOUSE SPACE SHALL BE INSTALLED 36" ABOVE FINISHED FLOOR. THERMOSTATS SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTES.
- PANELBOARD AND SWITCHBOARD DESIGNATIONS AS INDICATED BELOW:
- 21.1. BLANK NOT INTENDED FOR USE. COVER PLATE ONLY. 21.2. SPACE - CONTAINS NECESSARY BUS AND HARDWARE FOR FUTURE ADDITION OF CIRCUIT
- BREAKERS WITHIN SIZE RANGE SHOWN. 21.3. SPARE - CONTAINS A COMPLETE CIRCUIT BREAKER, BUS CONNECTION, ALL NECESSARY HARDWARE, ETC., INSTALLED AND SIZED AS INDICATED FOR FUTURE USE.

RACEWAYS, BOXES, FITTINGS:

- 1. ALL CONDUIT OF A GIVEN TYPE SHALL BE THE PRODUCT OF ONE MANUFACTURER.
- 2. ELECTRICAL METALLIC TUBING (EMT) CONDUIT SHALL BE USED INDOORS IN ALL LOCATIONS WHERE CONDUIT IS EXPOSED. UNLESS OTHERWISE NOTED. WHERE SPARE CONDUIT IS INSTALLED CONCEALED, THE CONDUIT SHALL BE EMT FROM THE DEVICE BOX, UP TO AN ACCESSIBLE LOCATION ABOVE THE CEILING, TERMINATED WITH A BUSHING. WHERE THERE IS A HARD CEILING, EMT SHALL CONTINUE BEING INSTALLED UNTIL THE NEAREST ACCESSIBLE LOCATION. EMT CONDUIT INTERIOR AND EXTERIOR SHALL BE HOT-DIPPED GALVANIZED AND BE AS MANUFACTURED BY ALLIED TUBE AND CONDUIT CORP., WHEATLAND TUBE CO., OR EQUAL. EMT CONDUIT SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 358.
- 3. GALVANIZED RIGID STEEL (GRS) CONDUIT SHALL BE USED IN ALL LOCATIONS WHERE CONDUIT IS INSTALLED OUTDOORS OR SUBJECT TO PHYSICAL DAMAGE. GALVANIZED RIGID STEEL CONDUIT INTERIOR AND EXTERIOR SHALL BE HOT-DIPPED GALVANIZED, UL 6 LISTED AND BE AS MANUFACTURED BY ALLIED TUBE AND CONDUIT CORP., WHEATLAND TUBE CO., OR EQUAL. GALVANIZED RIGID STEEL CONDUIT SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 344.
- 4. RIGID NONMETALLIC CONDUIT SHALL BE USED FOR CONCRETE ENCASEMENT, INSTALLATIONS BELOW GRADE AND GROUNDING ELECTRODE CONDUCTORS. RIGID NONMETALLIC CONDUIT SHALL BE PVC SCHEDULE 40, UV RESISTANT, AS MANUFACTURED BY CARLON; AN INDIAN HEAD CO.; CANTEX; QUEEN CITY PLASTICS OR EQUAL. PVC CONDUIT SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 352.
- 5. FLEXIBLE METAL CONDUIT (FMC) SHALL BE USED FOR ALL INDOOR MOTOR, TRANSFORMER, HVAC EQUIPMENT, AND GENERATOR TERMINATIONS, AS WELL AS OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. FMC SHALL BE AS MANUFACTURED BY THE ANACONDA SEALTITE, ANAMET ELECTRICAL, INC.; AFC CABLE SYSTEMS, ATKORE INTERNATIONAL; SOUTHWIRE COMPANY, LLC OR EQUAL, FMC SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 348, AND SHALL BE UL LISTED. FITTINGS USED WITH FMC SHALL BE THE DUAL GRIPPING SADDLE DESIGN WITH INSULATED THROAT AND ANGLED TEETH ON LOCKNUT BITE AS MANUFACTURED BY THE EATON (CROUSE-HINDS) OR EQUAL.
- 6. LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC) SHALL BE USED FOR ALL OUTDOOR MOTOR, TRANSFORMER, HVAC EQUIPMENT, AND GENERATOR TERMINATIONS, AS WELL AS OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. LFMC SHALL BE AS MANUFACTURED BY THE ANACONDA METAL HOSE DIV.: ANACONDA AMERICAN BRASS CO.: AMERICAN FLEXIBLE CONDUIT CO.; UNIVERSAL METAL HOSE CO. OR EQUAL. LFMC SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 350. FITTINGS USED WITH LFMC SHALL BE OF THE 3-PIECE SCREW-IN TYPE MALLEABLE IRON AS MANUFACTURED BY THE O.Z. GEDNEY CO. OR EQUAL.
- 7. MC CABLE SHALL BE USED IN ALL CONCEALED LOCATIONS. WHEN CONNECTING TO A PANELBOARD, PROVIDE EMT CONDUIT FROM THE PANELBOARD TO A WIREWAY OR JUNCTION BOX. MC CABLE SHALL BE TERMINATED TO THIS WIREWAY OR JUNCTION BOX. MC CABLE SHALL NOT BE TERMINATED DIRECTLY IN A PANELBOARD. MC CABLE MAY BE USED AFTER THE FIRST WIREWAY OR JUNCTION BOX. REFER TO WIRING AND CABLES FOR MC CABLE SPECIFICATIONS AND REQUIREMENTS.
- 8. MINIMUM SIZE CONDUIT SHALL BE 3/4-INCH ELECTRICAL TRADE SIZE.
- 9. CONDUITS TERMINATING IN PRESSED STEEL BOXES SHALL HAVE DOUBLE LOCKNUTS (MALLEABLE IRON) AND INSULATED GROUNDING BUSHINGS. CONDUITS TERMINATING IN GASKETED ENCLOSURES SHALL BE TERMINATED WITH GROUNDING TYPE CONDUIT HUBS.
- 10. CONDUITS CONTAINING EQUIPMENT GROUNDING CONDUCTORS AND TERMINATING IN SHEET STEEL BOXES SHALL HAVE INSULATED THROAT GROUNDING BUSHINGS WITH LAY-IN TYPE
- 11. CONDUITS SHALL BE INSTALLED USING THREADED FITTINGS FOR RIGID METAL CONDUIT AND SET SCREW FITTINGS FOR EMT, UNLESS OTHERWISE NOTED. PVC CONDUIT TO NON-METALLIC AND METALLIC BOX CONNECTIONS SHALL BE MADE WITH SEALING RINGS, WITH A STAINLESS STEEL RETAINER AS MANUFACTURED BY THOMAS & BETTS CO.
- 12. ALL FIELD CUTS ON EMT AND GRS CONDUIT (INCLUDING THREAD CUTS) SHALL BE CLEANED AND PAINTED WITH COLD GALVANIZING COMPOUND (95% ZINC CONTENT MINIMUM) BEFORE INSTALLATION.
- 13. ALL METAL CONDUIT RISERS FROM UNDERGROUND, THRU CONCRETE PADS, ETC. SHALL BE PROVIDED WITH HEAT SHRINK TUBING (RAYCHEM CO. OR EQUAL) FROM A POINT 12-INCHES BELOW BOTTOM OF SLAB OR GRADE TO A POINT NOT LESS THAN 6-INCHES ABOVE GRADE OR SURFACE OF SLAB. TWO (2) COATS OF BITUMASTIC PAINT OR PVC COATED METAL CONDUIT SHALL BE ACCEPTED IN LIEU OF HEAT SHRINK TUBING.
- 14. ALL OUTDOOR JUNCTION BOXES AND PULL BOXES SHALL BE NEMA 4, TYPE 304 STAINLESS STEEL. INDOOR BOXES SHALL BE NEMA 1, PRESSED SHEET STEEL. BOXES SHALL BE SIZED IN ACCORDANCE WITH THE REQUIREMENTS OF NEC ARTICLE 314.
- 15. CONDUITS PASSING FROM HEATED TO UNHEATED SPACES, EXTERIOR SPACES, REFRIGERATED SPACES, COLD AIR PLENUMS, ETC, SHALL BE SEALED WITH "DUXSEAL" AS MANUFACTURED BY MANVILLE OR SEAL FITTING TO PREVENT THE ACCUMULATION OF CONDENSATION.
- 16. ROUTE ALL EXPOSED CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING LINES.
- 17. DO NOT EXCEED NUMBER OF BENDS IN CONDUIT BEYOND THAT ALLOWED BE THE NEC. 18. KEEP CONDUITS AT LEAST 12" AWAY FROM ALL OTHER PIPING (E.G. GAS LINES, HOT WATER PIPES, ETC.). CONDUCTORS SHALL NOT BE PERMITTED TO REACH HIGHER THAN RATED
- 19. FASTEN RACEWAYS SECURELY IN PLACE. FIRMLY FASTEN CONDUIT WITHIN THREE FEET OF EACH OUTLET, JUNCTION BOX, CABINET, OR FITTING. SUPPORT METALLIC CONDUIT IN ACCORDANCE WITH NEC. USE BOLT-ON RACEWAY FASTENERS DESIGNED FOR THAT PURPOSE IN EXPOSED AND WET AREAS, SNAP-ON BLACK METAL CADDY CLIPS IN METAL STUD WALLS AND ABOVE CEILINGS. ALL FASTENERS, STRAPS, CLIPS, ETC. SHALL BE UL LISTED FOR THEIR USE. WHERE CONDUIT IS SURFACE MOUNTED IN KITCHEN, SECURE WITH STAND-OFF STYLE STRAPS WHICH ALLOW ALL SIDES OF THE CONDUIT TO BE CLEANED.
- 20. WEATHERPROOF ANY PENETRATION THROUGH EXTERIOR OF BUILDING INCLUDING SLAB ON
- 21. PROVIDE PULL BOXES AS DICTATED BY WIRE PULLING REQUIREMENTS AND THE NEC. UNLESS SHOWN OTHERWISE, FACE INTO SECONDARY OR UNFINISHED ROOMS. PULL BOXES SHALL BE SIZED PER NEC UNLESS OTHERWISE NOTED.
- 22. ALL RACEWAYS SHALL BE KEPT AT LEAST 2" AWAY FROM METAL ROOF DECKING.

23. ALL SPARE AND EMPTY CONDUITS SHALL HAVE A 3/16 POLYPROPYLENE PULL WIRE

- INSTALLED. ALL EMPTY RACEWAYS USED FOR STRUCTURED CABLING SHALL BE TERMINATED WITH CONNECTORS AND BUSHINGS. 24. MAKE WATERTIGHT ROOF PENETRATIONS AT EQUIPMENT SERVED. CONDUITS SHALL NOT BE
- RUN HORIZONTALLY EXPOSED ON TOP OF ROOFS. CONTRACTOR SHALL ACQUIRE AND PAY ALL FEES ASSOCIATED WITH ACQUIRING A LICENSED ROOFING CONTRACTOR TO INSTALL ALL FLASHING, SEALING, ETC., TO MAKE THE WATERTIGHT ROOF PENETRATIONS AND ENSURE THAT THE ROOF WARRANTY IS MAINTAINED. ROOF REPAIR SHALL RETURN THE ROOF ASSEMBLY TO EXISTING CONDITIONS OR BETTER. COORDINATE WITH THE ROOF MANUFACTURER FOR DETAILS AND REQUIREMENTS FOR MAINTAINING ROOF WARRANTY.
- 25. PROVIDE SUITABLE PROTECTION OF CONDUITS DURING CONSTRUCTION.
- 26. ALL UNDERGROUND CONTROL AND INSTRUMENTATION CONDUITS SHALL BE SEPARATED FROM POWER CONDUITS BY A MINIMUM OF 12-INCHES.
- 27. NEMA 4, JUNCTION BOXES AND PULL BOXES SHALL BE 304 STAINLESS STEEL WITH 304 STAINLESS STEEL HARDWARE AND GASKETED COVERS. BOXES SHALL HAVE CONTINUOUSLY WELDED SEAMS AND WELDS SHALL BE GROUND SMOOTH. BOX BODIES SHALL BE FLANGED AND SHALL NOT HAVE HOLES OR KNOCKOUTS. BOX BODIES SHALL NOT BE LESS THAN 14 GAUGE METAL AND COVERS SHALL NOT BE LESS THAN 12 GAUGE METAL. COVERS SHALL BE GASKETED AND FASTENED WITH STAINLESS STEEL SCREWS.
- 28. CAST IRON BOXES AND FITTINGS SHALL BE MALLEABLE IRON WITH STEEL COVERS AND STAINLESS STEEL SCREWS AS MANUFACTURED BY THE KILLARK ELECTRIC CO.; CROUSE-HINDS CO.; APPLETON ELECTRIC CO,; OR EQUAL.
- 29. CAST IRON DEVICE BOXES SHALL BE TYPE FD. ALL CAST IRON BOXES AND FITTINGS SHALL BE MALLEABLE IRON WITH STEEL COVERS AND STAINLESS STEEL SCREWS AS MANUFACTURED BY THE KILLARK ELECTRIC CO.; CROUSE-HINDS CO.; L.E. MASON CO. OR EQUAL. . CAST IRON FITTINGS (C'S, T'S, LB'S, ETC.) SHALL BE OF THE MOGUL DESIGN (WITH ROLLERS
- AS MANUFACTURED BY APPLETON ELECTRIC CO. GALVANIZED STEEL CHANNEL WITH GALVANIZED STEEL HARDWARE (HANGERS, RODS, BACK PLATES, BEAM CLAMPS, FASTENERS, ANCHORS, NUTS, WASHERS, ETC.) SHALL BE USED AS SHOWN ON THE DRAWINGS, IN ALL INDOOR AREAS, UNLESS OTHERWISE DESIGNATED. WHERE

GALVANIZED STEEL IS NOT RESISTANT TO THE CHEMICALS PRESENT IN THE AREA IN WHICH IT

IS USED, 304 STAINLESS STEEL CHANNEL WITH 304 STAINLESS STEEL HARDWARE SHALL BE

- 32. 304 STAINLESS STEEL CHANNEL WITH 304 STAINLESS STEEL HARDWARE (HANGERS, RODS, BACK PLATES, BEAM CLAMPS, FASTENERS, ANCHORS, NUTS, WASHERS, ETC.) SHALL BE USED SHOWN ON THE DRAWINGS. IN ARFAS DESIGNATED "WFT". "DAMP" AND "CORROSIVE" ON THE DRAWINGS AND IN OUTDOOR LOCATIONS. ALL CHANNEL AND HARDWARE SHALL BE
- RESISTANT TO THE CHEMICALS PRESENT IN THE AREA IN WHICH IT IS USED. WHERE PENETRATING A FIRE RATED WALL ASSEMBLY FOR WIRING, UTILIZE A UL LISTED FIRE-RATED ASSEMBLY, SIZED FOR THE CONDUIT MAKING THE PENETRATION, RATED FOR THE TYPE OF MATERIAL PENETRATING THE ASSEMBLY AND THE MATERIAL BEING PENETRATED, AND
- . WHERE AN EXPOSED RACEWAY IS LONGER THAN 100 FT OR CROSSES A STRUCTURAL EXPANSION JOINT, CONTRACTOR SHALL INSTALL A XJG CONDUIT EXPANSION JOINT BY COOPER/CROUSE-HINDS (EATON) OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S INSTRUCTIONS. WHERE INSTALLED DUE TO LENGTH, CONTRACTOR SHALL INSTALL AN EXPANSION JOINT EVERY 100 FT.
- 35. WHERE A PVC RACEWAY IS INSTALLED EXPOSED FOR A RUN LONGER THAN 8 FT. OR CROSSES A STRUCTURAL EXPANSION JOINT BELOW GRADE, CONTRACTOR SHALL INSTALL AN EXPANSION FITTING. INSTALL PER MANUFACTURER'S INSTRUCTIONS. WHERE INSTALLED DUE TO LENGTH, CONTRACTOR SHALL INSTALL AN EXPANSION JOINT EVERY 100 FT.
- 36. WEATHERHEADS SHALL BE A UL 514B LISTED SERVICE ENTRANCE CAP, MODEL NA5 TYPE 17 BY O-Z/GEDNEY OR APPROVED EQUAL BY OTHERS. WEATHERHEAD SHALL BE WEATHER RESISTANT, MADE OF HOT DIPPED GALVANIZED MALLEABLE OR DUCTILE IRON, WITH A PHENOLIC INSULATOR CONTAINING PREDRILLED HOLES FOR THE CONDUCTORS. SERVICE ENTRANCE CAP SHALL BE SIZED TO MATCH CONDUIT FOR SERVICE ENTRANCE CONDUCTORS. PHENOLIC INSULATOR SHALL BE SIZED FOR THE QUANTITY AND SIZE OF THE SERVICE ENTRANCE CONDUCTORS.

WIRING AND CABLES:

- WIRES AND CABLES SHALL BE ANNEALED, 98 PERCENT CONDUCTIVITY, STRANDED, SOFT DRAWN COPPER. ALL INSULATION FOR POWER AND CONTROL WIRES SHALL BE 600V RATED.
- 2. ALL WIRE OF A GIVEN TYPE SHALL BE BY THE SAME MANUFACTURER.

SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 330.

- MINIMUM WIRE SIZE FOR POWER CIRCUITS SHALL BE NO. 12 AWG. MINIMUM WIRE SIZE FOR
- CONTROL CIRCUITS SHALL BE NO. 14 AWG. 4. WIRE FOR POWER AND CONTROL CIRCUITS IN CONDUIT SHALL BE NEC TYPE THHN/THWN-2 AND BE AS MANUFACTURED BY SOUTHWIRE CO.; ROME CABLE CO.; PIRELLI CABLE CORP.;
- OKONITE CO.; OR APPROVED EQUAL. WIRE SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 310. MC CABLE SHALL BE ARMORLITE TYPE MC AS MANUFACTURED BY SOUTHWIRE CO.; OR EQUAL BY ROME CABLE CO.; PIRELLI CABLE CORP.; OKONITE CO.; OR APPROVED EQUAL. MC CABLE
- 6. CONTROL WIRES SHALL BE STRANDED.
- INSTRUMENTATION CABLE SHALL BE TWISTED PAIR, 300V, CROSS LINKED POLYETHYLENE INSULATED, 100% ALUMINUM TAPE SHIELD, #16 AWG, PVC JACKET BY ROCKBESTOS CO., OR
- UNLESS OTHERWISE INDICATED ON THE PLANS, NO SPLICES MAY BE MADE IN THE CABLES WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER. WHERE SPLICING IS APPROVED, THEN SPLICING MATERIAL SHALL BE APPROVED BY THE ENGINEER AND CABLE MANUFACTURER. SPLICING MATERIALS FOR ALL 600 VOLT SPLICES SHALL BE MADE WITH LONG BARREL TIN PLATED COPPER COMPRESSION (HYDRAULICALLY PRESSED) CONNECTORS AND INSULATED WITH HEAVY WALL HEAT SHRINKABLE TUBING. SPLICING MATERIALS AND INSTALLATION FOR CONTROL CONDUCTORS SHALL BE AS REQUIRED BY THE ENGINEER. THE CONDUCTIVITY OF ALL COMPLETED CONNECTIONS SHALL BE NOT LESS THAN THAT OF THE UNCUT CONDUCTOR.
- 9. THE INSULATION RESISTANCE OF ALL COMPLETED CONNECTIONS OF INSULATED CONDUCTORS SHALL BE NOT LESS THAN THAT OF THE UNCUT CONDUCTOR. 600 VOLT WIRE LUGS SHALL BE TIN PLATED COPPER, LONG BARREL COMPRESSION TYPE (HYDRAULICALLY PRESSED) FOR WIRE SIZES NO. 8 AWG AND LARGER, LUGS FOR NO.10 AWG AND SMALLER WIRE SHALL BE LOCKING SPADE TYPE WITH INSULATED SLEEVE. LUGS SHALL BE AS MANUFACTURED BY THE THOMAS & BETTS CO., OR EQUAL. TERMINATION CONNECTORS, FOR CONTROL CONDUCTORS, SHALL BE OF THE EXPANDED VINYL INSULATED LOCKING FORK-END (UPTURNED LEG ENDS) TYPE AS MANUFACTURED BY IDEAL INDUSTRIES; 3M CO.; PANDUIT CORP. OR EQUAL.
- 10. UNLESS OTHERWISE NOTED, ALL CONNECTIONS IN DEVICE/OUTLET/JUNCTION BOXES FOR BRANCH CIRCUITS SHALL BE MADE WITH WIRE NUTS. IN ACCORDANCE WITH THE NEC. WIRE NUTS SHALL BE SIZED FOR AWG AND QTY OF WIRES TO BE WIRED TOGETHER. WIRE AWG AND QTY SHALL NOT EXCEED THE MANUFACTURER'S MINIMUM OR MAXIMUM WIRE FILL REQUIREMENTS FOR THE WIRE NUT USED.

11. FOR WIRE SIZES #10 AWG AND LARGER, INSULATED 'POLARIS' CONNECTORS AS

WIRES IN DAMP AREAS AND FOR MOTOR LEAD CONNECTIONS. CONNECTORS SHALL BE SUITABLY SIZED FOR BOTH MOTOR LEADS AND FIELD WIRING. 12. WIRE AND CABLE MARKERS SHALL BE TYPE WRITTEN. HEAT SHRINKABLE TYPE. SHRUNK IN

PLACE AS MANUFACTURED BY THE W.H. BRADY CO., THOMAS & BETTS CO., OR EQUAL.

MANUFACTURED BY NSI INDUSTRIES, INC. SHALL BE UTILIZED FOR THE BRANCH CIRCUIT

- 13. USE LUBRICATIONS TO FACILITATE WIRE PULLING. PULLING COMPOUND SHALL BE NONTOXIC, NONFLAMMABLE, NONCOMBUSTIBLE AND NON-CORROSIVE. THE MATERIAL SHALL BE UL LISTED AND COMPATIBLE WITH THE CABLE INSULATION AND JACKET
- 14. IF CABLE CANNOT BE TERMINATED IMMEDIATELY AFTER INSTALLATION, INSTALL HEAT SHRINKABLE END CAPS.
- 15. TEST ALL 600 VOLT WIRE INSULATION WITH A MEGOHM METER AFTER INSTALLATION AND PRIOR TO TERMINATION. MAKE TESTS AT NO LESS THAN 1000 VOLTS DC. SUBMIT A WRITTEN TEST REPORT OF THE RESULTS TO THE ENGINEER. NOTIFY ENGINEER AND CONSTRUCTION MANAGER IN WRITING 48 HOURS PRIOR TO TESTING. FIELD TESTING AND COMMISSIONING SHALL BE DONE IN ACCORDANCE WITH THE LATEST REVISION OF THE "ACCEPTANCE TESTING SPECIFICATIONS FOR ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND SYSTEMS" PUBLISHED BY THE INTERNATIONAL ELECTRICAL TESTING ASSOCIATION. MINIMUM WIRE INSULATION RESISTANCE SHALL NOT BE LESS THAN 250 MEGOHMS.
- 16. WIRE COLOR CODE IDENTIFICATION SHALL BE: BROWN, ORANGE, YELLOW, GRAY (A,B,C,N) FOR 480Y/277V; BLACK, RED, BLUE, WHITE (A,B,C,N) FOR 208Y/120V, BLACK, RED, WHITE L1,L2,N) FOR 240/120V; RED FOR AC CONTROL, BLUE FOR DC CONTROL AND GREEN FOR
- 17. PROVIDE CONDUCTORS WITH IDENTIFICATION TAGS AS MANUFACTURED BY BRADY OR APPROVED EQUAL.
- 18. SUPPORT VERTICALLY INSTALLED CONDUCTORS AT INTERVALS NOT TO EXCEED THOSE ALLOWED BY THE NEC. DO NOT SPLICE VERTICALLY INSTALLED CONDUCTORS.

CUTTING AND PATCHING:

- REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS FOR RESTORING EXISTING CONDITIONS, MATERIALS, PAINT COLOR, FINISHES, ETC.
- CUTTING AND PATCHING SHALL BE DONE IN A THOROUGHLY WORKMANLIKE MANNER AND BE IN COMPLIANCE WITH MODIFICATIONS AND REPAIR TO CONCRETE AS SHOWN BY OTHER TRADES. SAWCUT CONCRETE AND MASONRY PRIOR TO BREAKING OUT SECTIONS. 3. CORE DRILL HOLES IN EXISTING CONCRETE FLOORS AND WALLS AS REQUIRED
- 4. INSTALL WORK AT SUCH A TIME AS TO REQUIRE THE MINIMUM OF CUTTING AND PATCHING.
- 5. DO NOT CUT JOISTS, BEAMS, GIRDERS, COLUMNS OR ANY OTHER STRUCTURAL MEMBERS.
- 6. CUT OPENING ONLY LARGE ENOUGH TO ALLOW EASY INSTALLATION OF THE CONDUIT

7. PATCHING TO BE OF THE SAME KIND AND QUALITY OF MATERIAL AS WAS REMOVED.

- 8. THE COMPLETED PATCHING WORK SHALL RESTORE THE SURFACE TO ITS ORIGINAL APPEARANCE OR BETTER.
- PATCHING OF WATERPROOFED SURFACES SHALL RENDER THE AREA OF THE PATCHING COMPLETELY WATERPROOFED
- 10. REMOVE RUBBLE AND EXCESS PATCHING MATERIALS FROM THE PREMISES.

UNDERGROUND SYSTEM:

OF SUITABLE PATCHING MATERIAL

UNLESS OTHERWISE NOTED ON THE PLANS AND SPECIFICATIONS, AT A MINIMUM, CONTRACTOR SHALL INSTALL CONDUIT BELOW GRADE IN ACCORDANCE WITH THE LATEST FDOT STANDARDS, CONDUIT INSTALLATION DETAILS, INDEX NO. 17721. PVC SCHEDULE 40 CONDUIT SHALL BE INSTALLED BELOW GRADE WITH GRS CONDUIT RISERS.

11. WHERE EXISTING CONDUITS ARE CUT AT THE FLOOR LINE OR WALL LINE, FILL WITH GROUT

- ALL CONCRETE AND REINFORCING STEEL SHALL BE AS SPECIFIED BY THE STRUCTURAL ENGINEER OR CONCRETE CONTRACTOR, BUT THE RESPONSIBILITY OF FURNISHING AND INSTALLING THE MATERIAL SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY.
- ALL TRENCHING, EXCAVATION AND BACKFILLING, INCLUDING GRAVEL AND SAND BEDDING AND SURFACE RESTORATION SHALL BE AS SPECIFIED BY THE SITE CIVIL ENGINEER OR CONTRACTOR, BUT THE RESPONSIBILITY OF FURNISHING AND INSTALLING THE MATERIAL SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY.

CONDUIT, FITTINGS, GROUNDING MATERIALS, INSTALLATION, ETC., SHALL BE AS SPECIFIED

- HEREIN. PRECAST ELECTRICAL CONCRETE MANHOLES, HANDHOLES, ETC., SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR AND SHALL BE IN COMPLIANCE WITH PRECAST CONCRETE STRUCTURES AS SPECIFIED BY THE STRUCTURAL ENGINEER INSTALL RACEWAYS TO DRAIN AWAY FROM BUILDING. RACEWAYS BETWEEN MANHOLES OR
- HANDHOLES SHALL DRAIN TOWARD THE MANHOLES OR HANDHOLES. RACEWAYS SHALL BE SLOPED NOT LESS THAN 3-IN PER 100-FT. LAY RACEWAY LINES IN TRENCHES ON A CLEAN BACKFILL BEDDING NOT LESS THAN 6
- INCHES THICK AND WELL GRADED AND COMPACTED. MINIMUM COVER FOR RACEWAYS BANKS SHALL BE 36 INCHES UNLESS OTHERWISE NOTED. MINIMUM COVER FOR SERVICE ENTRANCE RACEWAYS SHALL BE 36 INCHES OR MORE.
- DETECTABLE POLYETHYLENE WARNING TAPE SHALL BE PROVIDED FOR ALL UNDERGROUND RACEWAYS, DUCT BANKS, ETC. TAPE SHALL BE PLACED ALONG THE RACEWAYS ENTIRE LENGTH AND SHALL BE INSTALLED 18 INCHES ABOVE THE RACEWAYS ON COMPACTED D. SPARE AND EMPTY CONDUITS SHALL HAVE A PULL WIRE (3/16 POLYPROPYLENE) INSTALLED.
- ELECTRICAL RACEWAYS SHALL MAINTAIN A MINIMUM 12" SEPARATION FROM ALL OTHER BURIED UTILITIES, AT CROSSINGS AND WHILE RUNNING PARALLEL TO SAID UTILITIES. WHERE ADDITIONAL DETAIL IS REQUIRED, CONTRACTOR SHALL SUBMIT AN RFI. CORD DRAWINGS SHALL BE FURNISHED SHOWING ALL CONDUIT TERMINATIONS. BELOW

GRADE RACEWAYS, ELEVATIONS, LOCATIONS, MANHOLES, PULLBOXES, HANDHOLES, ETC.

12. ALL CABLES INSTALLED IN UNDERGROUND RACEWAYS SHALL HAVE CABLE TAGS INSTALLED

NOTES/SPECS

FOR EACH CIRCUIT IN ALL PULLBOXES AND AT THE TERMINATING ENCLOSURES.

THERE ARE ADDITIONAL NOTES AND SPECIFICATIONS FOUND ON SUBSEQUENT SHEETS. EXCEPT FOR GENERAL SHEET NOTES AND KEYED NOTES (E.G. PLAN KEY NOTES) THESE NOTES AND SPECIFICATIONS SHALL APPLY TO ALL SHEETS.

- LIGHTING: COMPLY WITH NEC REQUIREMENTS AS APPLICABLE TO WIRING TYPES AND LENGTHS FOR FIXTURE WHIPS. PROVIDE LIGHTING COMPONENTS AND FITTINGS THAT ARE UL LISTED AND
- LIGHTING FIXTURES SHALL BE THE TYPE INDICATED ON THE DRAWINGS AND THE LIGHTING FIXTURE SCHEDULE. FIXTURES OF THE SAME TYPE SHALL BE OF IDENTICAL MAKE, DESIGN, MODEL, APPEARANCE AND MANUFACTURER. SIZE OF LIGHTING FIXTURES SHALL BE AS SPECIFIED FOR THE LAMP OR FIXTURE WATTAGE INDICATED ON THE DRAWINGS. SPECIFIC MANUFACTURER, MODEL AND PART NUMBER REFERENCES ARE INDICATED AS A STANDARD OF QUALITY AND BASIS OF DESIGN. OTHER MANUFACTURERS AND THEIR PRODUCTS MAY BE SUPPLIED, PROVIDED THAT THE PRODUCT MEETS OR EXCEEDS THE SPECIFIED PRODUCT, MATCHES THE SPECIFIED LOOK AND STYLE, AND CONTAINS THE REQUIRED UL AND ENVIRONMENTAL RATINGS SPECIFIED.
- BALLASTS SHALL COMPLY WITH APPLICABLE STATE, FEDERAL AND INDUSTRY PERFORMANCE SAFETY STANDARDS INCLUDING FCC REQUIREMENTS GOVERNING ELECTROMAGNETIC AND RADIO FREQUENCY INTERFERENCE, IEEE STANDARDS FOR LINE VOLTAGE TRANSIENT PROTECTION AND HARMONIC DISTORTION.
- WHERE OCCUPANCY SENSORS ARE CONTROLLING FLUORESCENT FIXTURES, BALLASTS SHALL BE PROGRAMMED RAPID START. INSTANT START BALLASTS ARE ACCEPTABLE FOR ALL OTHER
- 5. BALLASTS SHALL COMPLY WITH NEC 410.130(G) REQUIREMENT FOR INTEGRAL DISCONNECTING
- PROVIDE LAMPS WITH THE LIGHTING FIXTURES WITH THE TYPE AND QUANTITY AS SPECIFIED ON THE LIGHTING FIXTURE SCHEDULE. LAMPS SHALL BE AS MANUFACTURED BY GE, PHILLIPS, VENTURE, OR SYLVANIA. REFER TO THE LIGHTING FIXTURE SCHEDULE FOR TYPE, QTY, COLOR TEMPERATURE, CRI RATING, ETC. WHERE REUSING EXISTING LIGHT FIXTURES, CONTRACTOR SHALL RE-LAMP ALL FIXTURES IN
- OWNER FOR THE PROPER LAMP TYPE, MANUFACTURER, COLOR TEMPERATURE AND CRI CONTRACTOR SHALL REPLACE DEFECTIVE LAMPS, FIXTURES AND BALLASTS AT NO ADDITIONAL

THE SPACE, WHETHER THAT LIGHT FIXTURE IS RELOCATED, NEW, REMAINING IN THE SAME

SPOT, REWIRED, ETC. UNLESS OTHERWISE NOTED, CONTRACTOR SHALL COORDINATE WITH THE

COST TO THE OWNER. COORDINATE WITH THE MANUFACTURER FOR MANUFACTURER DEFECTS.

- 9. SUPPORT RECESSED FIXTURES IN SUSPENDED CEILINGS INDEPENDENTLY FROM THE CEILING GRID. SUPPORT THE FIXTURES DIRECTLY FROM THE BUILDING STRUCTURE (E.G. ROOF TRUSS, FRAMING, ETC.) ABOVE, USING TWO (2) #12 CEILING TIE-WIRES PER FIXTURE AT DIAGONAL
- 10. RECESSED FIXTURES SHALL FIT SNUGLY AGAINST CEILINGS IN ACCORDANCE WITH NEC ARTICLE 410.
- 11. WHERE SUPPORTED VIA THREADED MEANS, ALL NUTS SHALL BE DOUBLE NUT TYPE WITH 12. WHERE A LIGHT FIXTURE HAS MORE THAN ONE BALLAST, WIRE LIGHT FIXTURES FOR INBOARD/OUTBOARD SWITCHING. WHERE AN OCCUPANCY SENSOR CONTROLS THE ROOM SWITCHING, THE OCCUPANCY SENSOR SHALL BE THE 2 POLE TYPE, PROGRAMMED FOR ONE POLE SWITCHING ON AUTOMATICALLY UPON SENSING AN OCCUPANT, AND THE OTHER POLE SWITCHING ON MANUALLY. BOTH POLES SHALL SWITCH OFF AUTOMATICALLY UPON NO LONGER

SENSING AN OCCUPANT. DEFAULT SETTINGS SHALL BE USED, WHERE APPROPRIATE. MODIFY

SETTINGS AS SHOWN ON PLANS, AND AS REQUIRED TO BE COMPLIANT WITH FLORIDA

13. WHERE WIRELESS CONFIGURATION TOOLS ARE REQUIRED TO TUNE AND ADJUST SETTINGS IN LIGHTING SYSTEMS, CONTRACTOR SHALL PROVIDE AS MANY WIRELESS CONFIGURATION TOOLS AS NEEDED TO SET ALL DEVICES IN A TIMELY MANNER, SO AS NOT TO IMPACT THE CONSTRUCTION SCHEDULE. REFER TO LIGHTING KEY NOTES ON THE LIGHTING PLANS FOR THE TYPE AND QUANTITY OF WIRELESS CONFIGURATION TOOLS TO LEAVE WITH THE OWNER AND TENANT(S). AT A MINIMUM. ONE (1) OF EACH TYPE OF WIRELESS CONFIGURATION TOOL REQUIRED TO TUNE AND ADJUST SETTINGS FOR ALL FIGURES SHALL BE PROVIDED AT THE END OF CONSTRUCTION TO THE PROPERTY OWNER.

BUILDING CODE 2014 AND ASHRAE 90.1-2010.

- 1. CONTRACTOR SHALL HIRE AN APPROVED INDEPENDENT PARTY OR THE LIGHTING CONTROLS MANUFACTURER TO PROVIDE CERTIFIED DOCUMENTATION TO THE AUTHORITY HAVING JURISDICTION (AHJ), WHICH PROVES THE INSTALLED LIGHTING CONTROLS MEETS THE PROVISIONS OF THE FLORIDA ENERGY EFFICIENCY CODE, SECTION C405. WHERE ALLOWED BY THE AHJ, CONTRACTOR MAY SELF-PERORM THE CERTIFICATION TESTING AND PROVIDE THE CERTIFIED DOCUMENTATION TO THE AHJ. THE FOLLOWING NOTES DESCRIBE THE REQUIRED PROCEDURES TO BE COMPLETING BY THE LIGHTING CONTROLS MANUFACTURER REPRESENTATIVE OR THE APPROVED INDEPENDENT PARTY.
- CONFIRM THAT ALL SENSORS, POWER PACKS, DIMMING SYSTEMS, SCENE SELECTORS, ETC. PERFORM AND OPERATE AS DESCRIBED IN THE GENERAL SHEET NOTES, PLAN KEY NOTES, COMPONENT SPECIFIC NOTES AND THE LIGHTING SPECIFICATIONS ON SHEET E100. WHERE THE FLORIDA ENERGY CODE REQUIRES A MORE STRINGENT PERFORMANCE OR OPERATION SETTING, THAT SETTING SHALL BE IMPLEMENTED OVER THE SETTING DESCRIBED IN THE AFOREMENTIONED NOTES.
- 3. CONFIRM THAT THE PLACEMENT, SENSITIVITY AND TIME-OUT ADJUSTMENTS FOR OCCUPANCY SENSORS YIELD ACCEPTABLE PERFORMANCE.
- PROGRAMMED TO TURN THE LIGHTS ON AND OFF. 5. CONFIRM THAT THE PLACEMENT AND SENSITIVITY ADJUSTMENTS FOR PHOTOSENSOR CONTROLS

REDUCE ELECTRIC LIGHT BASED ON THE AMOUNT OF USABLE DAYLIGHT IN THE SPACE, AS

- (E.G. PLAN KEY NOTES) FOR SHEET SPECIFIC INSTRUCTIONS. REFER TO OTHER NOTES AND SPECIFICATIONS FOR SPECIAL MODIFIERS BASED ON SPECIAL CONDITIONS OR SPECIFIC EQUIPMENT (E.G. PANELBOARDS, UNDERGROUND SYSTEM, ETC.). ACCORDANCE WITH NEC ARTICLE 330. WIRING INSTALLED IN THE OFFICE SPACE AND
- CONDUCTORS SHALL FMC OR TYPE MC CABLE SHALL BE AT LEAST 18-IN BUT NO MORE THAN ALL WIRING IN THE WAREHOUSE SHALL BE INSTALLED IN EMT CONDUIT, IN ACCORDANCE WITH NEC ARTICLE 358. EMT CONDUIT SHALL BE INSTALLED EXPOSED, WALL MOUNTED WITH CHANNEL ON THE WALLS OR TRAPEZE HUNG FROM THE BAR JOISTS, UNLESS OTHERWISE NOTED. CONDUIT SHALL BE MOUNTED HIGH ENOUGH TO PROTECT THE CLEAR HEIGHT OF THE BUILDING. NO RACEWAY, BOX, FITTING OR SUPPORT SHALL BE MOUNTED BELOW THE LOWEST GIRDER, BAR JOIST OR OTHER STRUCTURAL STEEL. ALL CABLE INSTALLED IN THE ACCESSIBLE SPACE ABOVE THE CEILING OR IN WALLS SHALL BE PLENUM RATED. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO
- WHERE CONDUITS ARE CALLED TO BE INSTALLED EMPTY, PROVIDE A 3/16" POLYPROPYLENE PULL STRING. EMT SHALL BE INSTALLED CONCEALED FROM THE DEVICE/OUTLET BOX UP TO ACCESSIBLE SPACE ABOVE CEILING, TERMINATED WITH A BUSHING. WHERE HARD CEILINGS ARE INSTALLED, ROUTE CONDUIT TO NEAREST ACCESSIBLE LOCATION.
- MULTIPLE BRANCH CIRCUITS SHALL NOT HAVE A SHARED NEUTRAL CONDUCTOR.
- 10. ALL RECEPTACLES WITHIN 6'-0" OF A SINK SHALL BE GFCI PROTECTED. ALL CIRCUITS ON THI PANELBOARD SCHEDULE MARKED AS GFCI SHALL HAVE THE RECEPTACLES GFCI PROTECTED. NO GFCI CIRCUIT BREAKERS ARE REQUIRED IF THE RECEPTACLES ARE GFCI PROTECTED, AS SHOWN ON THE PLANS.
- 11. ALL DEVICES SHOWN DIRECTLY ADJACENT TO A RECEPTACLE SHALL BE MOUNTED AT THE SAME HEIGHT ABOVE FINISHED FLOOR AS THE RECEPTACLE, UNLESS OTHERWISE NOTED.
- JTILIZE A UL LISTED FIRE-RATED ASSEMBLY, SIZED FOR THE CONDUIT OR OUTLET/DEVICE BOX MAKING THE PENETRATION. RATED FOR THE TYPE OF MATERIAL PENETRATING THE ASSEMBLY AND THE MATERIAL BEING PENETRATED, AND POSSESSING THE FIRE RATING OF THE ORIGINAL WALL ASSEMBLY. FIRESTOP PENETRATIONS SHALL BE AS MANUFACTURED BY HILTI OR APPROVED EQUAL BY OTHERS. FIRE SEALANT AROUND DEVICE BOXES SHALL BE FIRESTOP PUTTY PADS CFS-P PA OR CP 617. FIRE SEALANT AROUND CONDUIT PENETRATIONS SHALL BE FS-ONE MAX. FIRE SEALANT AROUND CABLE PENETRATIONS SHALL BE FIRESTOP PUTTY STICK CP 618.

THIS IS A STANDARD LEGEND. SOME SYMBOLS MAY NOT APPEAR

VOLTAGE DROP VOLTAGE DROP IN ACCORDANCE WITH FLORIDA

SYMBOLS

SYMBOL

SYMBOLS	SYMI	BOLS (CONTINUED)
DESCRIPTION	SYMBOL	DESCRIPTION
COMBINATION MOTOR CIRCUIT PROTECTOR AND MAGNETIC MOTOR STARTER, FULL VOLTAGE NON-REVERSING UNLESS OTHERWISE NOTED: FVR - FULL VOLTAGE REVERSING RVNR - REDUCED VOLTAGE NON-REVERSING	A 💢 3 b	INCANDESCENT, CFL OR HID TYPE LIGHTING FIXTURE "A" — FIXTURE TYPE (SEE LIGHTING FIXTURE SCHEDULE) "b" — CONTROLLED BY SWITCH "b" "3" — CIRCUIT NUMBER, UNLESS OTHERWISE SHOWN
RVAT — REDUCED VOLTAGE AUTOTRANSFORMER RVSS — REDUCED VOLTAGE SOLID STATE 2S1W — TWO SPEED, ONE WINDING RS2W — TWO SPEED, TWO WINDING	A3 b	FLUORESCENT TYPE LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
NON-FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE ** AMPERE RATING NOTED IF OTHER THAN 30A	A	WALL MOUNTED INCANDESCENT, CFL OR HID TYPE LIGHTING FIXTURE, NOTATIONS SAME AS ABOVE
FUSIBLE DISCONNECT SWITCH, 600 VOLT, 3 POLE, AMPERE RATING AND FUSE SIZE AS NOTED		FLUORESCENT TYPE LIGHTING FIXTURE WITH EMERGENCY BATTERY PAFOR EGRESS LIGHTING DURING POWER LOSS. WIRE BATTERY PACK THE LINE SIDE OF THE SWITCH.
★ AMPERE RATING NOTED IF OTHER THAN 30A ★ FUSE RATING EXAMPLE 15	EM 3	EMERGENCY LIGHTING BATTERY UNIT WITH TWO LAMP HEADS "EM" — FIXTURE TYPE (SEE LIGHTING FIXTURE SCHEDULE) "3" — CIRCUIT #, CONNECTED TO THE LINE SIDE OF THE SWITCH
MANUAL MOTOR STARTER WITH THERMAL OVERLOAD HEATER "P" INDICATES WITH PILOT LIGHT "2" INDICATES TWO POLE	EX H-3	WALL MOUNTED EXIT SIGN, NOTATIONS SAME AS ABOVE. HATCHING INDICATES LIGHTED FACE. WHEN USED, ARROW INDICATES DIRECTION OF EGRESS FOR DIRECTIONAL CHEVRON.
TRANSFORMER, RATINGS AND CONNECTIONS AS NOTED. UNLESS OTHERWISE NOTED ON THE SINGLE LINE DIAGRAMS, ALL DRY TYPE TRANSFORMERS SERVICING ADMINISTRATIVE AND LABORATORY SPACES SHALL	EX 1	CEILING MOUNTED EXIT SIGN WITH TWO EMERGENCY LAMP HEADS, NOTATIONS SAME AS ABOVE.
HAVE A MINIMUM K FACTOR OF 4. ISOLATION TRANSFORMERS SHALL HAVE A K-20 RATING.	\$	WALL MOUNTED SWITCH (OC=OCCUPANCY SENSOR, T=TIMER), MTD 4'-0" AFF, CONTROLS ONLY THE LIGHT FIXTURES IN THE SAME ROOM IN WHICH IT IS MOUNTED, UNLESS OTHERWISE NOTED.
MOTOR	F⊲ 💌 🗷 XXcd HORN BOTH STROBE	WALL MTD FIRE ALARM NOTIFICATION DEVICE. MOUNT AT HEIGHT AND IN ACCORDANCE WITH NFPA 72. XXcd DENOTES CANDELA RATING ON STROBE.

(F)⊲ (X)⊘√ (X)XXcd **|**

HORN BOTH STROBE

MOTOR

HOME RUN TO DESIGNATED EQUIPMENT. BRANCH CIRCUIT CONDUIT WITH 2 NO. 12 AWG BRANCH CIRCUIT CONDUCTORS AND 1 NO. 12 AWG GROUND CONDUCTOR UNLESS OTHERWISE NOTED. NUMBER OF ARROWS INDICATE NUMBER OF CIRCUITS. FOR MINIMUM SIZE CONDUIT PERMITTED REFER TO THE SPECIFICATIONS.

CONDUIT CONCEALED IN WALL, IN SLAB ABOVE, OR ABOVE CEILING. CONDUIT CONCEALED IN SLAB, BELOW FLOOR, BELOW GRADE OR UNDERGROUND.

CONDUIT STUBBED OUT AND CAPPED

GROUND CONDUCTOR.

TIGHT MOTOR CONNECTIONS

TO BE DEMOLISHED

FIRE ALARM TERMINAL CABINET

SPRINKLER ALARM BELL

FIRE ALARM ANNUNCIATOR PANEL

DENOTES A QUANTITY OF TWO (2) 3-INCH CONDUITS EACH

CONTAINING THREE NO. 3/O AWG CONDUCTORS AND 1 NO. 2 AWG

DENOTES A QUANTITY OF TWO INSTRUMENT CABLES. EACH CABLE TO

CONSIST OF TWO NO. 16 AWG CONDUCTORS TWISTED TOGETHER AND

JACKET. REFER TO THE SPECIFICATIONS FOR THE EXACT CABLE TO B

COVERED WITH A METALLIC SHIELD AND AN OVERALL PROTECTIVE

FLEXIBLE METAL CONDUIT "WHIP" (3/4"C., 2#12, 1#12G UNLESS

FIRE ALARM CONTROL PANEL (FIRE ALARM CONTROL UNIT)

OTHERWISE NOTED) FOR RECESSED LIGHTING FIXTURES AND LIQUID

COAXIAL CABLE RG6 (F81 BARREL CONNECTOR) WALL JACK, UON

TELEPHONE RJ-11 (6P6C) WALL JACK, UNLESS OTHERWISE NOTED

SPRINKLER TAMPER SWITCH AND WATER FLOW SWITCH CONNECTION

WIRELESS ACCESS POINT. INSTALL A LOW VOLTAGE JUNCTION BOX,

RECESSED IN THE CEILING WITH 3/4" CONDUIT STUBBED INTO THE

4 — CIRCUIT NUMBER, IF CIRCUIT WIRING IS NOT SHOWN

DUPLEX RECEPTACLE, AUTOMATIC CONTROL, 20A, 120V, 2P, 3W

DUPLEX RECEPTACLE, AUTOMATIC CONTROL, 20A, 120V, 2P, 3W

RECEPTACLE MTD ABOVE COUNTER-TOP, NOTATIONS SAME AS ABOVE

LIGHTING PANELBOARD, REFER TO PANELBOARD SCHEDULES FOR

MORE DETAILS. NAMING CONVENTION MAY DIFFER DEPENDING ON

EMERGENCY SHOWER ALARM STATION WITH FLOW SWITCH(ES)

LOW VOLTAGE CEILING MTD OCCUPANCY SENSOR. CONTROLS AS

CONTROLS MULTIPLE FIXTURES IN A ROOM. REQUIRES POWER PACK.

POWER PACK FOR USING LOW VOLTAGE OCCUPANCY SENSORS TO

SWITCH LTG. REQUIRES TWO DEEP 4" SQUARE DEVICE BOXES (2 1/2

DEEP) FOR WIRING AND MOUNTING. REFER TO MFR WIRING DIAGRAM.

DESCRIBED ON THE PLANS. TYPICAL ONE OR MORE SENSOR

PUSH BUTTON STATION OR CONTROL STATION

ONE OUTLET IS CONTROLLED AND THE OTHER OUTLET REMAINS

XX" - RECEPTACLE MTD XX" AFF, NOTATIONS SAME AS ABOVE

NEAREST ACCESSIBLE SPACE ABOVE THE CEILING.

AFCI - ARC-FAULT CIRCUIT INTERRUPTER

DUPLEX GFCI RECEPTACLE, 20A, 120V, 2P, 3W,

CT - RECEPTACLE MTD ABOVE COUNTER-TOP

UN-SWITCHED, NOTATIONS SAME AS ABOVE

QUAD RECEPTACLE, NOTATIONS SAME AS ABOVE

MULTI-OUTLET ASSEMBLY, NOTATIONS SAME AS ABOVE

DUPLEX RECEPTACLE, 20A, 120V, 2P, 3W

- ISOLATED GROUND

NOTATIONS SAME AS ABOVE

JUNCTION BOX

PHOTOCELL

CONTROL PANEL

GROUND OR GROUND ROD

DATA RJ-45 (8P8C) WALL JACK, UNLESS OTHERWISE NOTED

TELEPHONE TERMINAL CABINET OR BACKBOARD AS NOTED

CONDUIT RUN EXPOSED. RUN PARALLEL OR PERPENDICULAR TO STRUCTURE OR WALL. (' INDICATES EXPLOSION—PROOF CONDUIT SEAL FITTING.

(2) 3°C., 3#3/0,

FACP

///////

///////

TS FS

PB OR CS

1#2G

LIGHTING TESTING NOTES:

- 4. CONFIRM THAT THE TIME SWITCHES AND PROGRAMMABLE SCHEDULE CONTROLS ARE

GENERAL INSTALLATION NOTES:

1. THESE NOTES APPLY TO ALL DRAWINGS. REFER TO GENERAL SHEET NOTES AND KEYED NOTES

- ALL WIRING IN INDOORS SHALL BE INSTALLED CONCEALED IN THE WALLS AND CEILING IN EMT CONDUIT, OR AS MC CABLE, UNLESS OTHERWISE NOTED. MC CABLE SHALL BE INSTALLED IN TRANSITIONING TO THE WAREHOUSE, SHALL TERMINATE IN A JUNCTION BOX OR WIREWAY FIRST. EMT CONDUIT SHALL CONNECT TO THE JUNCTION BOX OR WIREWAY. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE. TAP
- BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE. MC
- CABLE OR STRUCTURED CABLE WHIP SHALL BE 15-FT IN LENGTH.
- 9. OCCUPANCY SENSOR, WALL SWITCH, RECEPTACLE AND TEL/DATA JACK COVERS SHALL BE COORDINATED WITH THE ARCHITECT FOR COLOR AND STYLE. REFER TO THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS. UNLESS OTHERWISE NOTED, COLOR SHALL BE WHITE.
- 12. WHERE PENETRATING A FIRE RATED WALL ASSEMBLY FOR WIRING OR OUTLET/DEVICE BOXES,

GENERAL NOTE ON THE DRAWINGS.

BUILDING CODE 6TH EDITION (2017) ENERGY CONSERVATION CODE CHAPTER 4, SECTION C405.6.3 HAS TAKEN IN ACCOUNT FOR THIS PROJECT.

DESCRIPTION

RATING ON STROBE.

CEILING MTD FIRE ALARM NOTIFICATION DEVICE. MOUNT AT HEIGHT

AND IN ACCORDANCE WITH NFPA 72. XXcd DENOTES CANDELA

ABBREVIATIONS ALTERNATING CURRENT ABOVE FINISHED FLOOR AFG ABOVE FINISHED GRADE AMPERE INTERRUPTING CAPACITY AMPERE AMPERES TRIF AUTO AUTOMATIC AUXILIARY AWG AMERICAN WIRE GAUGE CONDUIT CIRCUIT BREAKER COMPACT FLUORESCENT CURRENT LIMITING FUSE CONTROL POWER TRANSFORMER CONTROL RELAY CONTROL SWITCH CURRENT TRANSFORMER COPPER DIRECT CURRENT DIAMETER EMPTY CONDUIT, OR ELECTRICAL CONTRACTOR **ELECTRICAL** ELEVATION **EMERGENCY** ELECTRICAL WATER COOLER (FOUNTAIN) ELECTRICAL WATER HEATER FURNISHED BY OTHERS G, GND GENERAL CONTRACTOR GROUND FAULT INTERRUPTER GALVANIZED RIGID STEEL HEATING & AIR CONDITIONING RATED HANDHOLF HIGH INTENSITY DISCHARGE HAND OFF AUTO HORSEPOWER **INSTANTANEOUS** INSTRUMENT KILO (PREFIX) 1000 CIRCULAR MILS KILO-VOLT AMPERES LIGHTING CONTROL PANEL (OR CONTACTOR) LONG, SHORT, INST, GND FAULT TRIP DEVICE MAIN CIRCUIT BREAKER MOTOR CONTROL CENTER 1000 CIRCULAR MILS MFR MANUFACTURER MANHOLE MAIN LUGS ONLY MICROPROCESSOR METERING UNIT MOUNTED MTD NEUTRAL NORMALLY CLOSED NON-FUSED NORMALLY OPEN OR NUMBER NOT TO SCALE OVERLOAD PUMP CONTROL PANEL POWER MONITOR PANEL OR PANELBOARD POTENTIAL TRANSFORMER POLYVINYL CHLORIDE RECEPTACLE REQUIRED OR REQUIREMENTS REQD QUANTITY SURGE ARRESTER SECONDS OR SECONDARY SHIELDED OR SHEET SPD SURGE PROTECTIVE DEVICE STAINLESS STEEL TIME TO CLOSE TELEPHONE TIME TO OPEN TRANSIENT VOLTAGE SURGE SUPPRESSOR TWISTED TYPICAL UNDERGROUND UON UNLESS OTHERWISE NOTED VOLT AMPS REACTIVE VFD (AFD) VARIABLE (ADJUSTABLE) FREQUENCY DRIVE WIRE OR WATTS WEATHERPROOF EXPLOSION PROOF XFMR TRANSFORMER

> THIS DRAWING HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY DREW D. LILES ON THE DATE SHOWN IN THE SEAL, USING A DIGITAL SIGNATURE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.



No 74669 12/15/2022 STATE OF . FLORIDA.

Drawing Number:

MS/ONAL EN

A/E Job Number:

18406

RECORD DRAWINGS:

- MAINTAIN A NEATLY MARKED SET OF RECORD DRAWINGS SHOWING INSTALLATION LOCATION, AND/OR ROUTING OF CONDUITS, DEPTH OF BURIED CABLES, PULL BOXES, OUTLETS, AND A SINGLE-LINE DIAGRAM OF THE BUILDING ELECTRICAL DISTRIBUTION SYSTEM AND FLOOR PLANS INDICATING LOCATION AND AREA SERVED FOR ALL DISTRIBUTION. AFTER FINAL INSPECTION, WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, TRANSFER ALL RECORD INFORMATION TO THE OWNER AS REQUIRED IN THE CONTRACT.
- 2. IF THE CONTRACTOR ELECTS NOT TO UTILIZE CIRCUITRY AS DESIGNED ON PLANS AND IN THE SCHEDULES, CONTRACTOR SHALL PROVIDE AS-BUILT MARKUPS OF PLANS AND SCHEDULES TO THE ENGINEER. PROVIDE EACH PANELBOARD WITH A TYPED (NOT HAND WRITTEN) PANELBOARD SCHEDULE, DESCRIBING THE LOAD ON EACH CIRCUIT AND WHAT ROOM IT IS LOCATED.
- CONTRACTOR SHALL MEET ALL REQUIREMENTS FOR RECORD DRAWINGS AND OPERATION AND MAINTENANCE MANUALS (0&M'S) FOUND IN ASHRAE 90.1-2013. CHAPTER 8, SECTION 8.7 SUBMITTALS. REFER TO LIGHTING SPECIFICATIONS FOR LIGHTING SUBMITTAL REQUIREMENTS.
- 4. AN OPERATING MANUAL AND MAINTENANCE MANUAL SHALL BE PROVIDED TO THE

OWNER. THE MANUALS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:

- 4.1. SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. OPERATION AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT
- REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED. 4.3. NAMES AND ADDRESS OF AT LEAST ONE (1) QUALIFIED SERVICE AGENCY.

4.4. A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE

DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, QUICK-MAKE, QUICK-BREAK, VISIBLE BLADES, 600 VOLT, 3 POLE WITH FULL COVER INTERLOCK DEFEAT AND FLANGE MOUNTED OPERATING HANDLE, ALL CURRENT CARRYING PARTS INCLUDING LUGS SHALL BE COPPER. ENCLOSURE SHALL BE NEMA 3R PAINTED STEEL FOR OUTDOORS AND NEMA 1 PAINTED STEEL FOR INDOORS. MANUFACTURED BY SQUARE D, EATON/CUTLER-HAMMER, GENERAL ELECTRIC, OR SIEMENS. PROVIDE FUSING, AIC RATING, SERVICE ENTRANCE, NEUTRAL LUG, MAIN BONDING JUMPER, ETC., AS REQUIRED AND SHOWN ON THE PLANS. PROVIDE ALL DISCONNECTS WITH PAD LOCKING PROVISIONS, DISCONNECT SHALL BE RATED FOR 75 DEGREE C COPPER OR ALUMINUM WIRE.

CUTTING AND PATCHING:

- CUTTING AND PATCHING SHALL BE DONE IN A THOROUGHLY WORKMANLIKE MANNER AND BE IN COMPLIANCE WITH MODIFICATIONS AND REPAIR TO CONCRETE AS SHOWN BY OTHER TRADES. SAWCUT CONCRETE AND MASONRY PRIOR TO BREAKING OUT SECTIONS.
- 2. CORE DRILL HOLES IN EXISTING CONCRETE FLOORS AND WALLS AS REQUIRED . INSTALL WORK AT SUCH A TIME AS TO REQUIRE THE MINIMUM OF CUTTING
- AND PATCHING.
- 4. DO NOT CUT JOISTS, BEAMS, GIRDERS, COLUMNS OR ANY OTHER STRUCTURAL MEMBERS.

5. CUT OPENING ONLY LARGE ENOUGH TO ALLOW EASY INSTALLATION OF THE

- 6. PATCHING TO BE OF THE SAME KIND AND QUALITY OF MATERIAL AS WAS
- ORIGINAL APPEARANCE OR BETTER. 8. PATCHING OF WATERPROOFED SURFACES SHALL RENDER THE AREA OF THE

9. REMOVE RUBBLE AND EXCESS PATCHING MATERIALS FROM THE PREMISES.

7. THE COMPLETED PATCHING WORK SHALL RESTORE THE SURFACE TO ITS

- PATCHING COMPLETELY WATERPROOFED.
- 10. WHERE EXISTING CONDUITS ARE CUT AT THE FLOOR LINE OR WALL LINE, FILL WITH GROUT OF SUITABLE PATCHING MATERIAL.

ELECTRICAL SERVICE

CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ELECTRIC SERVICE, BOTH TEMPORARY AND PERMANENT, FOR THE BUILDING, AND PAYING ALL FEES ASSOCIATED WITH THE ELECTRIC SERVICE(S). CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE POWER COMPANY AND PROVIDING ALL REQUIRED DOCUMENTATION TO THE POWER COMPANY. CONTRACTOR SHALL INCLUDE POWER COMPANY DESIGN AND CONSTRUCTION LEAD TIMES IN THEIR OVERALL CONSTRUCTION SCHEDULE. ANY COORDINATION WORK PERFORMED BY THE ENGINEER SHALL NOT PRECLUDE THE CONTRACTOR OF THIS RESPONSIBILITY.

VOLTAGE DROP

VOLTAGE DROP IN ACCORDANCE WITH FLORIDA BUILDING CODE 6TH EDITION (2017) ENERGY CONSERVATION CODE CHAPTER 4, SECTION C405.6.3 HAS TAKEN IN ACCOUNT FOR THIS PROJECT.

NOTES/SPECS

UTILITY COULD NOT CONFIRM SIZE OF SERVICE

TRANSFORMER AT THIS TIME. CONTRACTOR TO VERIFY SIZE OF TRANSFORMER AND REPORT SIZE

ENGINEER. FAULT CURRENT VALUES WERE BASED ON ASSUMED TRANSFORMER SIZE OF 300KVA.

IMPEDANCE OF 3.5% AND AN INFINITE PRIMARY WITH

A FAULT CURRENT VALUE OF 26,023 AMPS. POWER

FACTOR IS ASSUMED TO BE 80%.

FIELD LOCATED — SPARE STUB

POWER COMPANY PRIMARY LOOP BETWEEN PULLBOXES AND TRANSFORMERS

(SEE RISER NOTE 1)

TRANSFORMER

SECONDARY 480/277

XXXKVA, 3ø, 4W WYE-GROUNDED XX,XXXA FAULT CURRENT

(AS OF SEP 16, 2022)

THERE ARE ADDITIONAL NOTES AND SPECIFICATIONS FOUND ON SUBSEQUENT SHEETS. EXCEPT FOR GENERAL SHEET NOTES AND KEYED NOTES (E.G. PLAN KEY NOTES) THESE NOTES AND SPECIFICATIONS SHALL APPLY TO ALL SHEETS.

GROUNDING AND BONDING:

- 1. MECHANICAL CONNECTOR BODIES SHALL BE MANUFACTURED FROM HIGH STRENGTH. HIGH CONDUCTIVITY CAST COPPER ALLOY MATERIAL. BOLTS. NUTS. WASHERS AND LOCK WASHERS SHALL BE MADE OF SILICON BRONZE, AND SHALL BE SUPPLIED AS PART OF THE CONNECTOR BODY AND SHALL BE OF THE TWO BOLT TYPE. SPLIT BOLT CONNECTOR TYPES ARE NOT ALLOWED. CONNECTORS SHALL MEET OR EXCEED UL 467 AND BE CLEARLY MARKED WITH THE CATALOG NUMBER, CONDUCTOR SIZE AND MANUFACTURER.
- COMPRESSION CONNECTORS SHALL BE MANUFACTURED FROM PURE WROUGHT COPPER. CONDUCTIVITY OF THIS MATERIAL SHALL BE NO LESS THAN 99% BY IACS STANDARDS. INSTALLATION OF THE CONNECTORS SHALL BE MADE WITH A COMPRESSION TOOL AND DIE SYSTEM. AS RECOMMENDED BY THE MANUFACTURER OF THE CONNECTORS. THE CONNECTORS SHALL BE CLEARLY MARKED WITH THE MANUFACTURER, CATALOG NUMBER, CONDUCTOR SIZE AND THE REQUIRED COMPRESSION TOOL SETTINGS. EACH CONNECTOR SHALL BE FACTORY FILLED WITH AN OXIDE-INHIBITING COMPOUND.
- 3. INSTALL ALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, UTILIZING ALL SPECIAL TOOLS, FORMS, MOLDS, MATERIAL, ETC., AS REQUIRED BY THE MANUFACTURER.
- 4. MECHANICAL CONNECTIONS SHALL BE INSTALLED ONLY WHERE ACCESSIBLE FOR INSPECTION AND CHECKING. NO INSULATION SHALL BE INSTALLED OVER MECHANICAL GROUND CONNECTIONS.
- 5. WHERE GROUND CONNECTIONS ARE NOT ACCESSIBLE FOR INSPECTION AND CHECKING, CONTRACTOR SHALL USE CADWELD OR SIMILAR TYPE EXOTHERMIC WELD CONNECTION. CONTRACTOR SHALL ONLY USE EXOTHERMIC MOLDS DESIGNED SPECIFICALLY BY THE MANUFACTURER FOR THE MATERIALS BONDED TOGETHER, THEIR ORIENTATION, SIZE, ETC.
 - 6. PROVIDE BONDING TO MEET NEC REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, BONDING BETWEEN TELEPHONE, TELEVISION, AND SECURITY
- 7. INSTALL ROD ELECTRODES AT NON-TRIP HAZARD LOCATIONS INDICATED OR AS REQUIRED BY THE NEC, WHICHEVER REQUIRES THE MOST RODS. INSTALL ADDITIONAL ROD ELECTRODES AS REQUIRED TO ACHIEVE SPECIFIED RESISTANCE TO GROUND.
- 8. INSPECT GROUNDING AND BONDING SYSTEM CONDUCTORS AND CONNECTIONS FOR TIGHTNESS AND PROPER INSTALLATION.

3" HIGH LETTERS CAST IN COVER - RECESSED HOLD DOWN (TYP.) ├── CAST IRON COVER 19'3/4" 14' 5/8" CONCRETE BOX MECHANICAL OR EXOTHERMIC WELD SAND OR PEA GRAVEL (OPEN CONNECTIONS COMPACTED GRAVEL BASE GROUNDING ELECTRODE -- 3/4" X 10' COPPER CONDUCTOR (TYP, QTY AS CLAD GROUND ROD REQUIRED)

DETAIL NOTES:

SCALE:

POWER COMPANY EQUIPMENT EXTERIOR EAST SIDE WALL

1. PROVIDE GROUND ROD TEST WELL AS AN ACCESSIBLE LOCATION FOR GROUNDING ELECTRODE SYSTEM BONDING. LOCATE GROUND ROD TEST WELL A MINIMUM OF 2'-0" AWAY FROM EXTERIOR WALL AND 2'-0" FROM ANY NEC REQUIRED WORKING CLEARANCE SPACE IN FRONT OF ELECTRICAL EQUIPMENT. ALL DRIVEN GROUND RODS, INCLUDING THE ONE IN THE GROUND ROD TEST WELL, SHALL BE INSTALLED AT LEAST 6'-0" FROM EACH OTHER, AND SHALL PREFERABLY BE INSTALLED 20'-0" FROM EACH OTHER, AS SITE

GROUND ROD

MCB

208/120V

MCB

HOUSE

800A SERVICE MAIN # CIRCUIT BREAKER (SERVICE ENTRANCE

> GROUNDING SYSTEM RISER DIAGRAM

WIRING DEVICES:

- WIRING DEVICES SHALL BE SPECIFICATION GRADE DEVICES AND PLATES WITH FINISH PER THE ARCHITECTURAL DRAWINGS. MATCH PANELED WALL WITH DEVICES AND PLATES OF SIMILAR COLOR, FINISH AND STYLE. UNLESS OTHERWISE NOTED, COVERS AND DEVICES SHALL BE WHITE.
- 2. RECEPTACLES: 20A. 120V. 2 POLE. 3 WIRE, GROUNDING TYPE OR ISOLATED GROUND TYPE, GROUND FAULT CIRCUIT INTERRUPTER (GFCI), OCCUPANCY SENSOR CONTROLLED (OC) AND/OR WEATHERPROOF TYPE (WP), AS SHOWN ON THE DRAWINGS. MOUNT RECEPTACLES 1'-6" AFF. UNLESS OTHERWISE NOTED. WHERE CALLED FOR WP, RECEPTACLE SHALL BE THE TYPE THAT REMAINS WEATHERPROOF WITH A PLUG INSERTED IN THE RECEPTACLE.
- SWITCHES: 20A, 120/277V, TYPE OF SWITCH (E.G. 3-WAY, 4-WAY, TIMER, OCCUPANCY SENSOR, ETC.) AS SHOWN ON THE DRAWINGS. MOUNT SWITCHES 4'-0" AFF, UNLESS OTHERWISE NOTED.

EQUIPMENT IDENTIFICATION:

- 1. PROVIDE AND INSTALL ENGRAVED, LAMINATED PLASTIC NAMEPLATES ON ALL LABELED EQUIPMENT (E.G. PANEL LP1, RTU-1, ETC.). NAMEPLATES SHALL BE MINIMUM 1/16" THICK X 3/4" HIGH X 2 1/2" WIDE WITH WHITE LETTER ON BLACK BACKGROUND.
- 2. SCREW MOUNT NAMEPLATES TO NEMA 1 ENCLOSURES. EPOXY BOND (NO DOUBLE SIDED TAPE) ALL OTHER ENCLOSURE TYPES.
- PROVIDE MACHINE TYPED HEAVY DUTY PERMANENT POLYESTER LABELS ON ALL RECEPTACLES. SWITCHES AND JUNCTION BOXES INDICATING THE PANEL THAT FEEDS THE RECEPTACLE AND THE CIRCUIT NUMBER (E.G. LP1-14). JUNCTION BOXES SHALL ALSO INDICATE ALL VOLTAGES REPRESÈNTED BY THÉ CIRCUITS IN THE JUNCTION BOX.
- 4. ELECTRICAL EQUIPMENT, SUCH AS SWITCHBOARDS, PANELBOARDS, MAIN DISCONNECTS, CONTROL PANELS (THE TYPE CONTAINING MOTOR STARTERS, VFD'S, ETC.), METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS, SHALL FACTORY LABELED WARNING QUALIFIED PERSONS OF POTENTIAL ELECTRICAL SHOCK AND ARC FLASH HAZARDS.

WIRING DEVICES:

- WIRING DEVICES SHALL BE SPECIFICATION GRADE DEVICES AND PLATES WITH FINISH PER THE ARCHITECTURAL DRAWINGS. MATCH PANELED WALL WITH DEVICES AND PLATES OF SIMILAR COLOR, FINISH AND STYLE. UNLESS OTHERWISE NOTED, COVERS AND DEVICES SHALL BE WHITE.
- 2. RECEPTACLES: 20A, 120V, 2 POLE, 3 WIRE, GROUNDING TYPE OR ISOLATED GROUND TYPE, GROUND FAULT CIRCUIT INTERRUPTER (GFCI), OCCUPANCY SENSOR CONTROLLED (OC) AND/OR WEATHERPROOF TYPE (WP). AS SHOWN ON THE DRAWINGS. MOUNT RECEPTACLES 1'-6" AFF. UNLESS OTHERWISE NOTED. WHERE CALLED FOR WP, RECEPTACLE SHALL BE THE TYPE THAT REMAINS WEATHERPROOF WITH A PLUG INSERTED IN THE RECEPTACLE.
- 3. RECEPTACLES CONTROLLED BY AN AUTOMATIC CONTROL DEVICE (E.G. OCCUPANCY SENSOR), SHALL BE MARKED WITH THE SYMBOL SHOWN IN FIGURE 406.3(E) AND LOCATED ON THE CONTROLLED RECEPTACLE OUTLET WHERE VISIBLE AFTER INSTALLATION. IN ACCORDANCE WITH NEC 406.3(E). WALL SWITCHES, PLUG LOAD CONTROLLERS OR POWER PACKS CONTROLLER RECEPTACLES SHALL HAVE THEIR OCCUPANCY SENSOR(S) OR TIMERS SET TO TURN OFF WITHIN 20 MINUTES OF ALL OCCUPANTS LEAVING A SPACE.
- 4. SWITCHES: 20A, 120/277V, TYPE OF SWITCH (E.G. 3-WAY, 4-WAY, TIMER, OCCUPANCY SENSOR, ETC.) AS SHOWN ON THE DRAWINGS. MOUNT SWITCHES 4'-0" AFF, UNLESS OTHERWISE NOTED.

PANELBOARDS:

- 1. THESE NOTES APPLY TO ALL PANELBOARDS SCHEDULES.
- 2. PANELBOARDS SHALL NOT BE SERIES RATED. REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL DETAILS, REQUIREMENTS, AND BRANCH CIRCUIT BREAKER LAYOUTS. REFER TO PANELBOARD SCHEDULES FOR AMPERE RATING OF BUS AND MAIN BREAKER, NEMA RATING OF THE ENCLOSURE, SCCR AND AIC RATING, NEUTRAL BUS RATING AND WHETHER THE PANELBOARD IS FLUSH OR SURFACE MOUNTED.
- 3. NEW 480Y/277V PANELBOARDS SHALL BE SQUARE D TYPE NF PANEL, TIN PLATED ALUMINUM BUS (PHASE AND NEUTRAL) WITH TIN-PLATED COPPER BRANCH CONNECTOR FINGERS, 42 POLES, 65 KAIC, 277Y/480VAC, 3 PHASE, 4 WIRE, DOOR-IN-DOOR HINGE TRIM, WITH TYPE EGB BOLT ON BRANCH CIRCUIT BREAKERS AND TIN PLATED COPPER EQUIPMENT GROUND BAR, OR EQUAL BY EATON/CUTLER-HAMMER, GENERAL ELECTRIC OR SIEMENS. LINE LUGS SHALL BE RATED FOR 75 DEGREE C COPPER OR ALUMINUM WIRE.
- NEW 208Y/120V PANELBOARDS SHALL BE SQUARE D TYPE NQOD PANEL, TIN PLATED ALUMINUM BUS (PHASE AND NEUTRAL) WITH TIN-PLATED COPPER BRANCH CONNECTOR FINGERS, 42 POLES, 10 KAIC, 208Y/120VAC, 3 PHASE, 4 WIRE, DOOR-IN-DOOR HINGE TRIM, WITH TYPE QOB BOLT ON BRANCH CIRCUIT BREAKERS AND TIN PLATED COPPER EQUIPMENT GROUND BAR, OR EQUAL BY EATON/CUTLER-HAMMER, GENERAL ELECTRIC OR SIEMENS. LINE LUGS SHALL BE RATED FOR 75 DEGREE C COPPER OR ALUMINUM WIRE.
- INSTALL PANELBOARDS PLUMB AND RIGID WITHOUT DISTORTION ON THE BOX. MOUNT PANELBOARDS RECESSED WITH THEIR FRONT UNIFORMLY FLUSH WITH WALL FINISH, OR SURFACE MOUNTED IN NON-FINISHED AREAS (E.G. ELECTRICAL OR MECHANICAL ROOMS). MOUNT TOP OF PANEL 6'-6" ABOVE FINISHED FLOOR.
- 6. PROVIDE FACTORY LABELS WARNING QUALIFIED PERSONS OF POTENTIAL ELECTRICAL SHOCK AND ARC FLASH HAZARDS.
- WHERE THE SPACE ABOVE THE NEC DEDICATED ELECTRICAL EQUIPMENT SPACE ABOVE THE ELECTRICAL EQUIPMENT CONTAINS SYSTEMS WHICH COULD LEAK OR CONDENSATE, PROVIDE SUITABLE PROTECTION TO AVOID DAMAGE TO THE ELECTRICAL EQUIPMENT.
- 8. UNLESS PROVIDED WITH GUARDRAILS PER ARCHITECTURAL DRAWINGS, PROVIDE 6" DIAMETER, 4'-0" TALL STANDARD WEIGHT STEEL PIPE BOLLARDS IN FRONT OF ALL ELECTRICAL PANELS AND TRANSFORMERS SUBJECT TO PHYSICAL DAMAGE IN WAREHOUSES. ANCHOR WITH 12" X 12" X 3/4" THICK STEEL PLATE AND FOUR (4) 3/4" DIA X 5" LONG THREADED RODS DRILLED 1 1/2" MINIMUM FROM EDGE OF PLATE AND EPOXY INTO SLAB. FILL BOLLARD WITH CONCRETE TO FORM A DOME TOP AND PROVIDE TWO (2) COATS OF YELLOW CAUTION PAINT. BOLLARDS SHALL NOT BE INSTALLED IN THE NEC REQUIRED WORKING CLEARANCE AND SHALL NOT HINDER OPENING OR MAINTAINING THE PANELBOARDS.
- 9. PER PROJECT CLOSEOUT AND RECORD DRAWING REQUIREMENTS. CONTRACTOR SHALL PROVIDE UPDATED PANELBOARD SCHEDULES TYPE WRITTEN, AND DATED ON ALL PANELBOARDS. HAND-WRITTEN SCHEDULES WILL NOT BE ACCEPTED. ANY FIELD CHANGES TO THE CIRCUIT NUMBERS SHALL BE UPDATED ON THE PANELBOARD SCHEDULES.
- 10. ALL NEW CIRCUIT BREAKERS SHALL BE UL 489 LISTED.

GENERAL INSTALLATION NOTES: RISER KEY NOTES: (#)

- THESE NOTES APPLY TO ALL DRAWINGS. REFER TO GENERAL SHEET NOTES AND KEYED NOTES (E.G. PLAN KEY NOTES) FOR SHEET SPECIFIC INSTRUCTIONS. REFER TO OTHER NOTES AND SPECIFICATIONS FOR SPECIAL MODIFIERS BASED ON SPECIAL CONDITIONS OR SPECIFIC EQUIPMENT (E.G. PANELBOARDS, UNDERGROUND SYSTEM, ETC.).
- ALL WIRING BELOW-GRADE AND CONCRETE-ENCASED SHALL BE INSTALLED IN PVC CONDUIT, UNLESS OTHERWISE NOTED. PVC CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 352. FOR ALL BELOW-GRADE RISERS AND 90-DEGREE BENDS, PROVIDE GALVANIZED RIGID STEEL (GRS) CONDUIT MANUFACTURED ELBOWS WITH A MINIMUM OF 2-COATS OF BITUMASTIC PAINT.
- 3. ALL WIRING INSTALLED OUTDOORS, OR INDOORS WHERE SUBJECT TO PHYSICAL DAMAGE, SHALL BE INSTALLED IN GALVANIZED RIGID STEEL (GRS) CONDUIT, UNLESS OTHERWISE NOTED. GRS CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 344.
- RIGID NONMETALLIC CONDUIT SHALL BE USED FOR CONCRETE ENCASED CONDUIT AND GROUNDING ELECTRODE CONDUCTORS. RIGID NONMETALLIC CONDUIT SHALL BE PVC SCHEDULE 40, UV RESISTANT, AS MANUFACTURED BY CARLON; AN INDIAN HEAD CO.; CANTEX; QUEEN CITY PLASTICS OR EQUAL. PVC CONDUIT SHALL BE FOR USE UNDER THE PROVISIONS OF NEC ARTICLE 352.
- ALL WIRING IN INDOORS SHALL BE INSTALLED CONCEALED IN THE WALLS AND CEILING IN EMT CONDUIT, OR AS MC CABLE, UNLESS OTHERWISE NOTED. MC CABLE SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 330. WIRING INSTALLED IN THE OFFICE SPACE AND TRANSITIONING TO THE WAREHOUSE, SHALL TERMINATE IN A JUNCTION BOX OR WIREWAY FIRST. EMT CONDUIT SHALL CONNECT TO THE JUNCTION BOX OR WIREWAY. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE. TAP CONDUCTORS SHALL FMC OR TYPE MC CABLE SHALL BE AT LEAST 18-IN BUT NO MORE THAN 6-FT IN LENGTH.
- 6. ALL WIRING IN AREAS WITH DROP CEILINGS SHALL BE INSTALLED CONCEALED IN THE WALLS AND CEILING IN EMT CONDUIT, OR AS MC CABLE, UNLESS OTHERWISE NOTED. MC CABLE SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 330. WIRING INSTALLED IN THE OFFICE SPACE AND TRANSITIONING TO THE WAREHOUSE, SHALL TERMINATE IN A JUNCTION BOX OR WIREWAY FIRST, EMT CONDUIT SHALL CONNECT TO THE JUNCTION BOX OR WIREWAY. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE. TAP CONDUCTORS SHALL FMC OR TYPE MC CABLE SHALL BE AT LEAST 18-IN BUT NO MORE THAN 6-FT IN LENGTH.
- ALL WIRING IN AREAS WITH EXPOSED CEILINGS SHALL BE INSTALLED IN EMT CONDUIT. IN ACCORDANCE WITH NEC ARTICLE 358. EMT CONDUIT SHALL BE INSTALLED EXPOSED, WALL MOUNTED WITH CHANNEL ON THE WALLS OR TRAPEZE HUNG FROM THE BAR JOISTS, UNLESS OTHERWISE NOTED. CONDUIT SHALL BE MOUNTED HIGH ENOUGH TO PROTECT THE CLEAR HEIGHT OF THE BUILDING. NO RACEWAY, BOX, FITTING OR SUPPORT SHALL BE MOUNTED BELOW THE LOWEST GIRDER, BAR JOIST OR OTHER STRUCTURAL STEEL. ALL CABLE INSTALLED IN THE ACCESSIBLE SPACE ABOVE THE CEILING OR IN WALLS SHALL BE PLENUM RATED. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE. MC CABLE OR STRUCTURED CABLE WHIP SHALL BE 15-FT IN LENGTH.
- 8. SWITCHES SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. RECEPTACLES SHALL BE MOUNTED 1'-6" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. RECEPTACLES INSTALLED ABOVE COUNTERTOPS SHALL BE INSTALLED 8" TO 12" ABOVE COUNTERTOP OR 3'-6" ABOVE FINISHED FLOOR. RECEPTACLES INSTALLED IN WAREHOUSE SPACE SHALL BE INSTALLED 36" ABOVE FINISHED FLOOR. THERMOSTATS SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTES.
- 9. WHERE PENETRATING A FIRE RATED WALL ASSEMBLY FOR WIRING OR OUTLET/DEVICE BOXES, UTILIZE A UL LISTED FIRE-RATED ASSEMBLY, SIZED FOR THE CONDUIT OR OUTLET/DEVICE BOX MAKING THE PENETRATION, RATED FOR THE TYPE OF MATERIAL PENETRATING THE ASSEMBLY AND THE MATERIAL BEING PENETRATED, AND POSSESSING THE FIRE RATING OF THE ORIGINAL WALL ASSEMBLY. FIRESTOP PENETRATIONS SHALL BE AS MANUFACTURED BY HII TI OR APPROVED EQUAL BY OTHERS. FIRE SEALANT AROUND DEVICE BOXES SHALL BE FIRESTOP PUTTY PADS CFS-P PA OR CP 617. FIRE SEALANT AROUND CONDUIT PENETRATIONS SHALL BE FS-ONE MAX. FIRE SEALANT AROUND CABLE PENETRATIONS SHALL BE FIRESTOP PUTTY STICK CP 618.
- 10. WHERE PENETRATIONS FOR CONDUIT OR MOUNTING BOLTS ARE REQUIRED THROUGH THE ROOF, CONTRACTOR SHALL RESTORE ROOF TO ORIGINAL CONDITIONS WHILE PROPERLY SEALING AND WEATHERPROOFING. COORDINATE WITH THE ROOF MANUFACTURER AND PROVIDE ALL SERVICES, MATERIALS, LABOR, ETC., IN ORDER TO MAINTAIN THE OWNER'S ROOF

- AND THE TRANSFORMER NOTES/SPECIFICATIONS FOR ADDITIONAL DETAILS AND REQUIREMENTS.
- PERMANENT ENGRAVED NAMEPLATE LABEL "HOUSE PANEL". 14. PROVIDE GRS CONDUIT WITH MEG BUSHING, AS REQUIRED PER NEC 250.92(B) FOR ELECTRICAL CONTINUITY AT THE SERVICE EQUIPMENT, SERVICE RACEWAYS, AND SERVICE CONDUCTOR ENCLOSURES.

13. PROVIDE A 100A METER SOCKET IN THE THIS LOCATION. PROVIDE A

- 15. PROVIDE ET2805CR TIME CLOCK BY INTERMATIC OR EQUAL BY OTHERS.
- FIELD LOCATE NEAR PANEL. 16. PROVIDE A NEW GENERAL PURPOSE VENTILATED DRY-TYPE STEP-DOWN TRANSFORMER RATED 480-208Y/120V, 45 KVA, 3ø, 4W, IN A NEMA 1 ENCLOSURE. WALL MOUNT THE TRANSFORMER WITH A 6" OFFSET FROM ALL OTHER EQUIPMENT. REFER TO TRANSFORMER GROUNDING DETAIL

AND THE TRANSFORMER NOTES/SPECIFICATIONS FOR ADDITIONAL DETAILS

AND REQUIREMENTS. 17. 200A/3P/600V NEMA 3R, NON FUSED SERVICE ENTRANCE RATED

DISCONNECT SWITCH

МСВ

GENERAL SHEET NOTES:

1. COORDINATE WITH THE POWER COMPANY FOR THE LOCATION AND

INSTALLATION OF UNDERGROUND PRIMARY LOOP, PAD MOUNTED

CONDUCTORS, TRANSFORMERS, GROUNDING, AND TERMINATION OF

POWER COMPANY, PRIMARY CONDUIT, SECONDARY CONDUIT AND

CONDUCTORS AT THE TRANSFORMER SHALL BE PERFORMED BY THE

SECONDARY CONDUCTORS SHALL BE INSTALLED BY THE CONTRACTOR.

COVERED UNDER THE OVERALL COST OF PROVIDING ELECTRIC SERVICE

ALL FEES AND CHARGES ASSOCIATED WITH THIS WORK SHALL BE

AT THIS LOCATION AND SHALL BE PAID FOR BY THE CONTRACTOR.

TERMINATION OF PRIMARY AND SECONDARY SERVICE CONDUCTORS AT

PAD MOUNTED TRANSFORMER. ADDITIONAL PULLBOXES NOT SHOWN ON

OF ELECTRIC SERVICE AND SHALL BE FIELD COORDINATED AS REQUIRED.

PLANS MAYBE REQUIRED BY POWER COMPANY FOR THE INSTALLATION

2. PROVIDE A NEW METER BASE, WITH 1 1/2" (GRS) CONDUIT FROM THE

CT CABINET TO THE METER BASE. OR PROVIDE CONDUIT AND WIRE

CONDUIT EMPTY, WITH WIRING PER POWER COMPANY. METER BASE

SHALL BE ELECTRICAL GRADE, STEEL, UL LISTED AND STICKER-ED,

NEMA 3R RATED, AND HAVE PAD LOCKING PROVISIONS. METER BASE

SHALL INCLUDE A NEUTRAL CONDUCTOR AND BE PROVIDED WITH A

3. PROVIDE A NEW 600V, 800A, 3P, SERVICE ENTRANCE RATED, CIRCUIT

NAMEPLATE LABEL "MAIN DISCONNECT FOR SERVICE MAIN #1" FOR

SERVICE MAIN #1. CIRCUIT BREAKER SHALL BE 800AF/800AT WITH

TIME, SHORT TIME, INSTANTANEOUS AND GROUND FAULT).

5. PROVIDE INTERSYSTEM BONDING TERMINATION BAR (IBTB) AS

SOLID STATE MULTI-FUNCTION METER AND LSIG DIGITAL TRIP (LONG

MANUFACTURER SHALL PERFORM A PROTECTIVE DEVICE COORDINATION

STUDY AND ADJUST SETTINGS FOR THE CIRCUIT BREAKER ACCORDING

TO THE STUDY. MAIN BONDING JUMPER SHALL BE INSTALLED AT THIS

POINT. ENCLOSURE SHALL BE FLOOR MOUNTED ON A 4" HIGH

4. 3P/200A/600V SERVICE ENTRANCE RATED FUSED DISCONNECT SWITCH

MANUFACTURED BY ERICO. IBTB SHALL BE INSTALLED IN ACCORDANCE

THE TELEPHONE TERMINAL CABINET. CONNECT AND TERMINATE ALL

GROUNDING ELECTRODE CONDUCTOR BEFORE BONDING AT THE

INCLUDE CORROSION-RESISTANT, STAINLESS STEEL MOUNTING

6. PROVIDE GROUND ROD TEST WELL AS AN ACCESSIBLE LOCATION FOR

HARDWARE. POLYMERIC BASE AND THE HOUSING SHALL BE

IMPACT-RESISTANT AND UV-STABILIZED.

WITH NEC ARTICLE 250.94. WALL OR RACK MOUNT GROUND BAR BELOW

BUILDING GROUNDING CONDUCTORS FROM TELEPHONE, CATV, OR RADIO

GROUNDING ELECTRODE IN THE GROUND ROD TEST WELL. IBTB SHALL

GROUNDING ELECTRODE SYSTEM BONDING. FIELD LOCATE GROUND ROD

2'-0" FROM ANY NEC REQUIRED WORKING CLEARANCE SPACE IN FRONT

OF ELECTRICAL EQUIPMENT. ALL DRIVEN GROUND RODS, INCLUDING THE

ONE IN THE GROUND ROD TEST WELL, SHALL BE INSTALLED AT LEAST

6'-0" FROM EACH OTHER, AND SHALL PREFERABLY BE INSTALLED

20'-0" FROM EACH OTHER, AS SITE CONDITIONS ALLOW. PROVIDE

7. CONNECT TO ALL METALLIC WATER PIPES WITHIN 5FT OF ENTRY INTO

BUILDING, BUILDING STEEL, 20' CONTINUOUS REBAR IN BUILDING

MAIN), AND ANY OTHER AVAILABLE GROUNDING ELECTRODES.

8. CADWELD OR OTHER APPROVED EXOTHERMIC WELD CONNECTION BY

OTHERS IS REQUIRED FOR ALL BELOW GRADE GROUNDING

SYSTEM AND HE INTO NEW GROUND ROD TEST WELL

CONNECTIONS.

FOOTING (TIE-WIRED TO COLUMN ANCHOR BOLTS NEAREST SERVICE

CONTRACTOR SHALL FIELD LOCATE EXISTING GROUNDING ELECTRODE

9. PROVIDE A TYPE 1 SURGE PROTECTIVE DEVICE, 208Y/120V, 3ø, 4W+G,

SHALL BE INSTALLED SO THAT THE WIRE LENGTH FROM THE

10. REFER TO PANELBOARD SCHEDULES FOR DETAILS AND RATINGS. AS

WELL AS CONDUIT AND WIRE CALLOUTS FOR BRANCH CIRCUITS.

11. PROVIDE A NEW LIGHTING CONTROL PANEL WITH A MINIMUM OF EIGHT

(8) 20A LIGHTING CONTRACTORS OR RELAYS. FIVE (5) SHALL BE

CONTROLLED BY PHOTOCELL. REFER TO LIGHTING CONTROL PANEL

12. PROVIDE A NEW GENERAL PURPOSE VENTILATED DRY-TYPE STEP-DOWN

TRANSFORMER RATED 480-208Y/120V, 15 KVA, 3ø, 4W, IN A NEMA 3R

ENCLOSURE. WALL MOUNT THE TRANSFORMER WITH A 6" OFFSET FROM

ALL OTHER EQUIPMENT. REFER TO TRANSFORMER GROUNDING DETAIL

RISER DIAGRAM FOR ADDITIONAL DETAILS AND REQUIREMENTS.

CONTROLLED BY TIME CLOCK. WHILE THE OTHER THREE (3) SHALL BE

CONNECTION POINT TO THE SPD IS LIMITED TO 6 INCHES.

EXTERNALLY MOUNTED AS SHOWN. SPD ASSEMBLY SHALL BE NEMA 4X

RATED. SPD SHALL BE UL 1449, 4TH EDITION LISTED, CATEGORY CODE

VZCA (MODEL SPDEE BY APT OR APPROVED EQUAL BY OTHERS). SPD

GROUND RING TRIANGLE IN ACCORDANCE WITH ITS DETAIL AND FIELD

TEST WELL A MINIMUM OF 2'-0" AWAY FROM EXTERIOR WALL AND

AND TELEVISION ANTENNAS, ETC AND THRU-WIRE THE #2 BARE COPPER

INSTALLATION DETAILS.

CONCRETE HOUSEKEEPING PAD

IN NEMA 3R ENCLOSURE

LEVER BYPASS HANDLE. INSTALL IN ACCORDANCE WITH POWER COMPANY

BREAKER IN A NEMA 3R ENCLOSURE. PROVIDE A PERMANENT ENGRAVED

SHOWN FOR DIRECTLY WIRED METER. FOR CT METERING INSTALL

CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR

TRANSFORMER, CT CABINETS, METERS, ETC. INSTALLATION OF PRIMARY

- 1. THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2020 AND THE NATIONAL ELECTRIC CODE 2017.
- 2. ALL GROUNDING ELECTRODE SYSTEMS SHALL BE INTERCONNECTED PER
- NEC ARTICLE 250.52. 3. NOT ALL POWER COMPANY AND OTHER UTILITY REQUIREMENTS ARE LISTED OR DESCRIBED IN THE PLANS AND SPECIFICATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL REQUIREMENTS. RACEWAYS. HARDWARE. EQUIPMENT. ETC., AS DICTATED BY THE UTILITY FOR A COMPLETE AND FUNCTIONING SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE UTILITIES FOR THEIR SPECIFIC REQUIREMENTS AND ADHERE TO ALL THEIR SPECIFICATIONS AND REQUIREMENTS, AT NO ADDITIONAL COST TO THE OWNER.
- 4. HIGHEST AVAILABLE FAULT CURRENT ON THE SECONDARY SIDE OF THE TRANSFORMER FROM THE POWER COMPANY IS XX,XXXA PER POWER COMPANY, DATED XX/XX/2019. CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY FOR ANY CHANGES IN AVAILABLE FAULT CURRENT AND ADJUST THE AMPERE INTERRUPTING RATING (AIC) OF THE NEW PANELBOARD AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT, AT NO ADDITIONAL COST TO THE OWNER.

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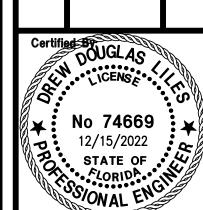
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- 5. WHERE CONDUITS ARE CALLED TO BE INSTALLED SPARE OR EMPTY, PROVIDE A 3/16" POLYPROPYLENE PULL STRING.
- 6. ALL WIRING CONNECTING FROM THE EXTERIOR, INCLUDING WIRING STUBBED UP THROUGH CONCRETE SLAB, SHALL BE INSTALLED IN GRS CONDUIT AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 344. THIS INCLUDES THE MAIN POWER FEED FROM THE SERVICE ENTRANCE FUSED DISCONNECT, ANY TELEPHONE AND DATA CONDUITS, AND ANY CIRCUITS MOUNTED ON THE ROOF. PROVIDE DUXSEAL IN THESE CONDUITS. PROVIDE LINK-SEAL BY EATON CROUSE-HINDS OR APPROVED EQUAL BY OTHERS FOR ALL EXTERIOR CONDUIT PENETRATIONS.
- 7. ALL WIRING INSTALLED BELOW GRADE SHALL BE INSTALLED IN SCHEDULE 40 PVC AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 352. CONDUIT SHALL BE INSTALLED PER THE BURIED CONDUIT DETAIL, AT A MINIMUM DEPTH OF 36" BELOW FINISHED GRADE. FOR ALL BELOW GRADE BENDS AND VERTICAL RISERS, USE PVC COATED GRS CONDUIT. BITUMASTIC OR HEAT SHRINK WRAPPED GRS CONDUIT SHALL BE ACCEPTABLE IN LIEU OF PVC COATED GRS.
- B. CONDUITS TO OTHER BUILDINGS ARE PROVIDED UNDER THE PROJECT SCOPE FOR THE CONSTRUCTION OF THE OTHER BUILDINGS. CONTRACTOR SHALL COORDINATE ALL WORK BETWEEN PROJECTS LOCATED ON THIS SITE. CONTRACTOR SHALL NOTE THAT THE SITE DESIGN IS BEING PERFORMED BY ANOTHER CONSULTANT. ALL SITE WORK SHALL BE COORDINATED WITH THE WORK DESCRIBED IN THIS
- 9. ALL WIRING IN THE WAREHOUSE SHALL BE RUN EXPOSED IN EMT CONDUIT, UNLESS OTHERWISE NOTED, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 358. WHERE CONNECTING TO EQUIPMENT THAT HAS ROTATING OR VIBRATING PARTS (E.G. AHU, EXHAUST FAN, MOTOR, ETC.), TRANSITION TO FMC CONDUIT AND INSTALL IN ACCORDANCE WITH NEC ARTICLE 350.
- 10. ALL EQUIPMENT GROUNDING CONDUCTORS, GROUNDING ELECTRODE CONDUCTORS, BONDING JUMPERS (INCLUDING MAIN BONDING JUMPER). AND CONNECTIONS TO THE GROUNDING ELECTRODE CONDUCTOR SHALL BE COPPER. ONLY PHASE AND NEUTRAL (GROUNDED) CONDUCTORS ARE ALLOWED TO BE ALUMINUM. 11. WHERE GROUNDING ELECTRODE CONDUCTORS ARE CALLED OUT TO BE
- INSTALLED IN CONDUIT, THE CONDUIT SHALL ONLY BE INSTALLED FROM 12" ABOVE FINISHED GRADE AND DOWN BELOW GRADE. GROUNDING ELECTRODE CONDUCTORS SHALL BE EXPOSED AND SECURELY FASTENED 12" OR MORE ABOVE FINISHED GRADE. 12. VOLTAGE DROP IN ACCORDANCE WITH FLORIDA BUILDING CODE 5TH
- EDITION (2020) ENERGY CONSERVATION CODE CHAPTER 4, SECTION C405.7.3 HAS TAKEN IN ACCOUNT FOR THIS PROJECT. CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR ANY CHANGES IN CONDUCTOR LENGTH AND ADJUST THE SIZE AND AMPACITY OF THE SERVICE ENTRANCE CONDUCTORS, AS REQUIRED, AT NO ADDITIONAL COST TO THE OWNER. VOLTAGE DROP OF THE SERVICE ENTRANCE CONDUCTORS IS BASED ON PAD MOUNTED TRANSFORMER BEING NO LESS THAN 50'-0" FROM THE SERVICE ENTRANCE MAIN DISCONNECT.

CONDUIT AND WIRE:

- 1. 6"C. (PVC SCH 80), W/ PRIMARY CABLES PROVIDED BY POWER COMPANY
- 2. (3) 3"C (PVC)., 3-400 kcmil, 1-400 kcmil N (AL)
- 3. 3/4" PVC C. #2/0 BARE CU GROUNDING ELECTRODE CONDUCTOR
- 4. #2/0 BARE CU GROUNDING ELECTRODE CONDUCTOR 5. (3) 3-400kcmil, 1-400kcmil N, 1#3/0 G(AL)
- WITH 12-BARREL POLARIS TAPS IN CUSTOM WIREWAY
- 6. 2"C., 3#1, 1#6 G (AL) 7. 3"C., 4#3/0 , 1#2 G (AL)
- 8. (3) 4"C (PVC)., SPARE
- 9. 3/4"C., 2#12, 1#12 G, (CU)
- 10. 3" C, 3#4/0, (1)#4/0 N, 1#4 G(AL) 11. (1) 3° C (PVC), 4-400kcmil, 1#2 G(AL) (UPSIZED FOR VOLTAGE DROP), 3" EMPTY SPARE (PVC) CONDUIT WITH PULL STRING AND END BUSHING FROM TENANT ELECTRICAL ROOM TO LOCATION SHOWN. CONDUIT SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED
- 2. (1) 3"C.(PVC), 4-250kcmil, 1#4 G (AL), (1) 3" EMPTY SPARE (PVC) CONDUIT WITH PULL STRING AND END BUSHING FROM TENANT ELECTRICA ROOM TO LOCATION SHOWN. CONDUIT SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED
- 13. 1" C, 4#6, 1#8 G (AL)
- 14. 3/4"C., 2#12, 1#12 G (CU)
- 15. (2) 3"C (PVC).3" EMPTY SPARE (PVC) CONDUITS WITH PULL STRING AND END BUSHING FROM PROPOSED STUBBED UP LOCATIONS FOR FUTURE TENANT TO LOCATION SHOWN. CONDUITS SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED
- 16. #4 BARE CU GROUND TO GROUNDING ELECTRODE CONDUCTOR
- 17. 2"C (PVC), 3#2 , 1#2 kcmil N (AL) 18. 2"C, 3#2 , 1#2 kcmil N (AL)
- 19. 3/4°C, #8 BARE CU TO GROUNDING ELECTRODE CONDUCTOR 20. 3/4°C. 3#8. 1#8 G (AL)



E101

A/E Job Number:

18406

FUTURE $\boxed{6} \qquad 480V - 208Y/120V \qquad \boxed{7}$ 6 480V-208Y/120V 7 STUBBED-UP AND CAPPED CONDUIT (TYP PER TENANT) 15 (NEW SERVICE ENTRANCE) POWER RISER DIAGRAM

480/277V MCB 150A/ 225A BU

МСВ

200A BUS

SERVICE ENTRANCE MAIN OR SERVICE - PRE-CAST POLYMER ENTRANCE UTILTIY **PANELBOARD** METER QUAZITE TYPE PG BY HUBBELL OR EQUAL — STRUCTURAL STEEL #3/0 BARE CU GROUNDING SIZED PER INDIVIDUAL SERVICE ELECTRODE CONDUCTOR (TYP) (SEE CONDUIT AND WIRE CALLOUT ON SERVICE ENTRANCE RISER DIAGRAM) - BOND TO COLD WATER PIPE AND FIRE PROTECTION EXOTHERMIC WELD OR -PIPING, WHERE INSTALLED MECHANICAL CLAMP CONNECTION TO **BUILDING STEEL** - #2/0 BARE CU GND BOND TO FOUNDATION STEEL - #3/0 BARE CU GROUNDING ELECTRODE CONDUCTOR (TYP) FOR SERVICE ENTRANCE GROUNDING AND THE GROUNDING ELECTRODE CONDUCTOR PATH TO THE GROUNDING GND GROUND ROD ELECTRODE. REFER TO ELECTRICAL E101 TEST WELL DETAILS FOR GROUND BAR #3/0 BARE CU GROUNDING REQUIREMENTS. ELECTRODE CONDUCTOR (TYP) #2/0 BARE CU GROUNDING ELECTRODE CONDUCTOR - EXOTHERMIC WELD CONNECTION (TYP, CADWELD OR EQUAL) TEST WELL DETAIL (TYP OF 2, MORE AS REQ'D PER NEC)

GROUNDING SYSTEM

RISER DIAGRAM

- #4 BARE CU GND TO GROUNDING ELECTRODE CONDUCTOR (AS REQUIRED PER POWER COMPANY) — 3/4"C. (PVC), #2/0 BARE CU GND TO GROUNDING ELECTRODE CONDUCTOR CT CABINET (AS REQUIRED) TYPICAL TELEPHONE TERMINAL BOARD OR CABINET PROVIDE INTERSYSTEM BONDING TERMINATION BAR (IBTB) IN ACCORDANCE WITH NEC ARTICLE 250.94 AND THE ELECTRICAL DETAILS, LOCATE IBTB BELOW THE SERVICE ENTRANCE MAIN DISCONNECT #1. PROVIDE IBTB BY ERICO GRADE

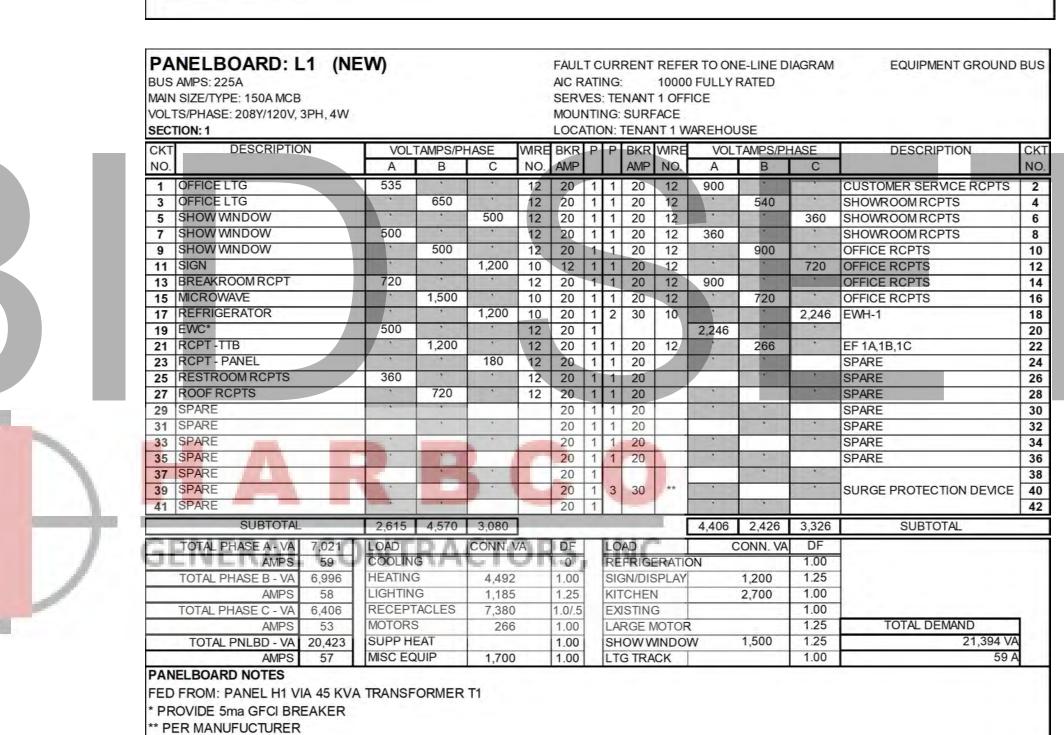
12" X 12" X 10' WIREWAY

	LIGHT	ING FIXTUR	E SCHEDULE					
TYPE	DESCRIPTION	MANUFACTURER	MODEL NUMBER	MOUNTING	VOLTAGE	WATTAGE	LUMENS	LAMP
A 1	2' X 4' RECESSED CEILING GRID MOUNTED LED PANEL WITH 4800 LUMEN NOMINAL OUTPUT, 0-10VOLT DIMMING, 80 CRI RATING, 4000K CCT, UL LISTED FOR DAMP LOCATIONS.	LITHONIA	EPANL 2X4 4800LM 80CRI 40K MIN10 ZT 120	RECESSED	120	38.9	4,800	LED
AE	2' X 4' RECESSED CEILING GRID MOUNTED LED PANEL WITH 4800 LUMEN NOMINAL OUTPUT, 0-10VOLT DIMMING, 80 CRI RATING, 4000K CCT, EM SELF-DIAGNOSTIC BATTERY PACK, 10W CONSTANT POWER AND UL LISTED FOR DAMP LOCATIONS.	LITHONIA	EPANL 2X4 4800LM 80CRI 40K MIN10 ZT 120 E10WCP	RECESSED	120	38.9	4,800	LED
H1	HIGH-BAY LED FIXTURE WITH STEEL HOUSING, INJECTION MOLDED REFLECTOR, GENERAL DISTRIBUTION, ACRYLIC FROSTED LENS, LED DRIVER WITH 0-10V DIMMING, 80 CRI, 4000K CCT, OCCUPANCY SENOR PREWIRED WITH PHOTOCELL, AND UL LISTED FOR DAMP LOCATIONS.	LITHONIA	IBGN 30000LM SEF L/LENS GND MVOLT GZ10 40K 80CRI HLN360	SUSPENDED 32'-0" AFF	120-277	186	30,000	LED
H1E	HIGH-BAY LED FIXTURE WITH STEEL HOUSING, INJECTION MOLDED REFLECTOR, GENERAL DISTRIBUTION, ACRYLIC FROSTED LENS,, 30W AND NON-CEC COMPLIANT EMERGENCY BATTERY PACK, OCCUPANCY SNEOR PRE-WIRED WITH PHOTOCELL, AND UL LISTED FOR WET LOCATIONS.	LITHONIA	IBGN 30000LM SEF L/LENS GND MVOLT GZ10 40K 80CRI PS10250 HLN360	SUSPENDED 32'-0" AFF	120-277	186	30,000	LED
L1	CEILING RECESSED 4" 120V LIGHTING, 1500 LUMEN, LED DRIVER WITH 0-10V DIMMING, 80 CRI, 4000K CCT, WIDE RANGE	LITHONIA	LBR4 MVOLT 15LM 40K AR LSS WS UGZ	RECSSED	120	19	1,500	LED
LE	CEILING RECESSED 4" 120V LIGHTING, 1500 LUMEN, LED DRIVER WITH 0-10V DIMMING, 80 CRI, 4000K CCT, WIDE RANGE, WITH BATTERYPACK (10W CONSTANT POWER)	LITHONIA	LBR4 MVOLT 15LM 40K AR LSS WS UGZ W EL0WCP	RECESSED	120	19	LED	LED
X	CEILING OR WALL MTD (AS REQUIRED BY PLANS) EXIT SIGN WITH THERMOPLASTIC HOUSING, DUAL OR SINGLE FACE PLATE AND CHEVRONS PER PLANS, INTEGRAL TEST SWITCH/PILOT LIGHT, SELF-DIAGNOSTIC ELECTRONICS, SEALED MAINTENANCE-FREE NICKEL-CADMIUM BATTERY, AND UL LISTED FOR DAMP LOCATIONS.	LITHONIA	LQM S W 3 R 120/277 EL N SD	SURFACE	120/277	5	N/A	LED

NOTE: LIGHTING FIXTURE TYPES SHALL BE FURNISHED AS SHOWN ABOVE. THE CATALOG NUMBERS ARE GIVEN AS A GUIDE TO THE DESIGN AND QUALITY OF FIXTURE DESIRED. EQUIVALENT DESIGNS AND EQUAL QUALITY FIXTURES OF OTHER MANUFACTURERS WILL BE ACCEPTABLE UPON WRITTEN APPROVAL BY THE ENGINEER. APPROVED EQUALS SHALL HAVE THE SAME UL LISTING (OR OTHER LISTING BY A NATIONALLY RECOGNIZED TESTING LABORATORY) AND INSTALLATION RATING, LISTED AND LABELED FOR THE SAME LOCATION (I.E., DRY, WET, DAMP, HAZARDOUS AREA, ETC.) AS SHOWN ON THE DRAWINGS.

/OL	: AMPS: 100A N SIZE/TYPE: 100A MCB TS/PHASE: 480Y/277V, 3 TION: 1						SER\	ÆS NTII	SI NG:	TE LTO	G, LOW ACE	HOUSE	RATED PANEL OR WALL			
СКТ	DESCRIPTIO	N	VOL	TAMPS/P	HASE	WIRE	BKR	Р	Р	BKR	WRE	VOL	TAMPS/PH	ASE	DESCRIPTION	CK
NO.			Α	В	С	NO.	AMP			AMP	NO.	A	В	С		NO
1	SITE LTG	- 11	783	-		12	20	1	1	20	12		*	-	LTG CONTROL PANEL	2
3	SITE LTG			425	*	12	20	1	1						SPACE	4
5	SPACE		*	a_				1	1			-			SPACE	6
7				14-	1								- x	*		8
9	15 KVA 480Y/208-120V	XFMR TH	-4-		~-	8	30	3	3	30	**			-	SURGE PROTECTION DEVICE	
11			- 1													12
	SUBTOTAL		783	425											SUBTOTAL	
1	TOTAL PHASE A - VA	783	LOAD		CONN.	VA	DF		LO	AD		(CONN. VA	DF		
	AMPS	3	COOLIN	G			1.00		RE	FRIG	RATIO	N		1.00		
	TOTAL PHASE B - VA	425	HEATING	3			0		SIC	GN/DIS	PLAY			1.25		
	AMPS	2	LIGHTIN	G	1,208	3	1.25		KIT	CHEN	1			1.00		
	TOTAL PHASE C - VA		RECEPT	ACLES		- 1	1.0/.5		EX	ISTING	3			1.00		
	AMPS		MOTORS				1.00		_		MOTOR			1.25	TOTAL DEMAND	
	TOTAL PNLBD - VA	1,208	SUPP HE				1.00				MNDOV	Λ.		1.25	1,510 VA	_
	AMPS	1	MISC EQ	UIP			1.00		LT	G TRA	CK			1.00	2 /	4

PANELBOARD: H1 (NEW) BUS AMPS: 200A MAIN SIZE/TYPE: 200A MCB VOLTS/PHASE: 480Y/277V, 3PH, 4W SECTION: 1							AIC R SERV MOUN	ATI ES	NG: TE	NANT SURF	30000 1 ACE	R TO ON FULLY		IAGRAM	EQUIPMENT GROUND	BUS
CKT	DESCRIPTION	- 7	VOLT	AMPS/P	HASE	WIRE	BKR	Р	Р	BKR	WRE	VOL	TAMPS/PH	HASE	DESCRIPTION	CKT
NO.		- 1,	Α	В	С	NO.	AMP			AMP	NO.	A	В	С		NO.
1	HIGH BAY LTG		968	1X4	100	12	20	1				3,047	(E	×		2
3	SPACE							1	3	15	20		3,047		RTU-1	4
5	SPACE		-					1					THE STATE	3,047		6
7	SPACE			N. Control	P.C.			1	1	5 6			(X)		SPACE	8
•	SPACE		2					1	1						SPACE	10
11	SPACE		3	Y				1	1			2	T X		SPACE	12
13			7,021	×	Α.							2 - 11				14
15	PNL L1 THRU XFMR T1 *			6,730	6,406	1	70	3	3	30	**				SURGE PROTECTION DEVICE	16
	SUBTOTAL		7,989	6,730	6,406							3,047	3,047	3,047	SUBTOTAL	
11	TOTAL PHASE A - VA 11,03	6	LOAD		CONN. V	/A	DF		LO.	AD	- 1	(CONN. VA	DF		- 11
	AMPS 40	1	COOLING	3	9,141		1.00		RE	FRIG	RATIO	ON		1.00	1	
	TOTAL PHASE B - VA 9,77	7	HEATING)			0		SIG	SN/DIS	PLAY			1.25		
	AMPS 35	1	LIGHTIN	G	968		1.25		KIT	CHEN	1			1.00	1	
	TOTAL PHASE C - VA 9,45	3	RECEPT	ACLES			1.0/.5		EX	ISTIN	3			1.00		
	AMPS 34	1	MOTORS				1.00		LAF	RGE N	OTOR	?		1.25	TOTAL DEMAND	1
	TOTAL PNLBD - VA 30,26	6	SUPP HE	AT			1.00		SH	OW W	MNDO	W		1.25	30,508 VA	V
H.	AMPS 36	1	MISC EQ	UIP	20,157		1.00		LTO	G TRA	CK			1.00	37 /	V
PANELBOARD NOTES FED FROM: 200A/3P FUSED DISCON * LOCKABLE BREAKER FOR MAINTA ** PER MANUFUCTURER					LOCATE	D ON	EAS	ΤE	XTE	RIOR	WAL	L				



BUS MAIN VOL	NELBOARD: L AMPS: 100A I SIZE/TYPE: 50A MCB IS/PHASE: 208Y/120V, 3 TION: 1						AIC RA SERVI MOUN	ATING	G: AST E G: SUR	10000 XTERIO	FULLY R WALL		AGRAM	EQUIPMENT GROU	JND BUS
CKT	DESCRIPTIO	N	VOL	TAMPS/P	HASE	WIRE	BKR	PF	BKF	WRE	VOL	TAMPS/PH	ASE	DESCRIPTION	CK
NO.			Α	В	С	NO.	AMP		AMP	NO.	Α	В	С		NO
1	TELEPHONE CABINET		1,000		1		20	1 1	20			3		RCPT- PANEL	2
3	SPARE						20	1 1	20					SPARE	4
5	SPACE		E.W.					1 1			*	,		SPACE	6
7	SPACE							1 1				2	Hall	SPACE	8
-	SPACE		100					1 1						SPACE	10
11	SPACE							1 1			*	,		SPACE	12
13	SPACE							1 1				,		SPACE	14
	SPACE		3					1 1			ì			SPACE	16
17	SPACE		-89					1 1						SPACE	18
	SUBTOTAL		1,000									C 4		SUBTOTAL	
	TOTAL PHASE A - VA	1,000	LOAD		CONN.	VA	DF	L	OAD		(CONN. VA	DF		
	AMPS	8	COOLIN	G	1		1.00	R	EFRIG	ERATIO	N		1.00		
15	TOTAL PHASE B - VA		HEATING	3			0	S	IGN/DI	SPLAY			1.25	1	
	AMPS		LIGHTIN	G			1.25	K	ITCHE	N			1.00		
-	TOTAL PHASE C - VA		RECEPT	ACLES		-	1.0/.5	E	XISTIN	IG			1.00		
	AMPS		MOTORS	3			1.00	L	ARGE	MOTOR	1		1.25	TOTAL DEMAND	
	TOTAL PNLBD - VA	1,000	SUPP H				1.00	S	HOW\	MNDOV	V		1.25	1,000	_
	AMPS	3	MISC EQ	UIP	1,00	0	1.00	L	TG TR	ACK			1.00		3 A

VOL	IN SIZE/TYPE: 200A MCB LTS/PHASE: 480Y/277V, 3PH, 4W CTION: 1								SERVES: TENANT 1 MOUNTING: SURFACE LOCATION: EAST EXTERIOR WALLL										
CKT	DESCRIPTIO	N	VOL	TAMPS/PI	HASE	WIRE	BKR	Р	Р	BKR	WRE	VOL	TAMPS/PH	HASE		DESCRIPTION	СК		
NO.			Α	В	С	NO.	AMP			AMP	NO.	Α	В	С	1		NO		
1	WAREHOUSE LIGHTIN	NG	493			12	20	1				3,047		-			2		
3	SPACE		- ×		*			1	3	15	12		3,047		RTU-2		4		
5	SPACE			li li				1					-	3,047			6		
7	SPACE							1	1						SPACE		8		
9	SPACE		*					1	1	-111					SPACE		10		
11	SPACE							1	1			06:3	×		SPACE		12		
13			6,365		1 0								-X	37			14		
15	PNL L2 THRU XFMR T	2*	*	8,791		1	70	3	3	30	**	- 4			SURGE	PROTECTION DEVICE	16		
17					7,066							~	**				18		
	SUBTOTAL		6,858	8,791	7,066							3,047	3,047	3,047		SUBTOTAL			
	TOTAL PHASE A - VA	9,905	LOAD		CONN.	/A	DF		LO	AD		C	ONN. VA	DF					
	AMPS	36	COOLIN	G	9,141	211	1.00		RE	FRIGE	RATIO	ON		1.00	1				
Ť.	TOTAL PHASE B - VA	11,838	HEATING	3	4,998		0		SIG	N/DIS	PLAY			1.25	1				
	AMPS	43	LIGHTIN	G	493		1.25		KIT	CHEN	1			1.00					
	TOTAL PHASE C - VA	10,113	RECEPT				1.0/.5		EXI	STING	3			1.00					
i i	AMPS	37	MOTORS				1.00		LAF	RGE N	NOTOR			1.25	T	OTAL DEMAND]		
	TOTAL PNLBD - VA	31,856	SUPP HE			_ 1	1.00		SH	OW W	/INDO	W		1.25		31,979 V	_		
	AMPS	38	MISC EQ	UIP	22,222		1.00		LTO	G TRA	CK			1.00		38 /	1		

BUS MAIN VOLT	NELBOARD: L2 (NI AMPS: 225A SIZE/TYPE: 150A MCB TS/PHASE: 208Y/120V, 3PH, 4W TION: 1					MOUN	ÆS NTII	: TE	NANT	1 OFF	FULLY I ICE AST WAL				
CKT	DESCRIPTION		TAMPS/PI			BKR	Р	Р		WRE		TAMPS/PH		DESCRIPTION	СК
NO.		Α	В	С	NO.	AMP		Ш	AMP	NO.	Α	В	С		NC
	OFFICE LTG	540	,		12	20	1	1	20	12	720	,		BREAKROOMRCPTS	2
3	OFFICE LTG	,	605	1	12	20	1	1	20	10	,	1,500		MICROWAVE	4
5	SHOW MNDOW			1,000	12	20	1	1	20	10			1,200	REFRIGERATOR*	6
7	SHOW WINDOW	400			12	20	1	1	20	12	540	1	-	CONFERENCE RCPTS	8
9	SHOW WNDOW		1,000		12	20	1	1	20	12	- 4	720	2	CONFERENCE RCPTS	10
11	SHOW MNDOW	v	*	1,000	12	20	1	1	20	12		*	360	CONFERENCE RCPTS	12
13	SHOW WNDOW	1,000		,	12	20	1	1	20	12	360	A		CONFERENCE TABLE RCPT	14
15	EWH-1		2,246		10	30	2	1	20	12		720		GENERAL RECEPTACLES	16
17				2,246				1	20	12			360	RESTROOMS RCPTS	18
19	EWC*	528			12	20	1	1	20	12	900			OFFICE RCPTS	20
21	RCPT-TTB	*	360	A	12	20	1	1	20	12		900		OFFICE RCPTS	22
23	RCPT - PANEL	- 4	1 .		12	20	1	1	20	12	-3		900	OFFICE RCPTS	24
25	SIGN	1,200	*	- Y -	10	20	1	1	20	12	177		2-	EF-2A,2B	26
27	ROOF RCPTS		540		12	20	1	1	20	12		200		TIME CLOCK	28
29	SPARE					20	1	1	20					SPARE	30
31	SPARE					20	1	1	20			*		SPARE	32
33	SPARE					20	1	1	20				-2-	SPARE	34
35	SPARE					20	1	1	20		•			SPARE	36
37	SPARE			4		20	1								38
39	SPARE	-				20	1	3	30	**				SURGE PROTECTION DEVICE	_
41	SPARE	- x	4			20	1				*				42
	SUBTOTAL	3,668	4,751	4,246							2,697	4,040	2,820	SUBTOTAL	
	TOTAL PHASE A - VA 6,365	LOAD		CONN. \	/A	DF		LO	AD		C	ONN. VA	DF	-	
	AMPS 53	COOLING	G	1.74		0		RE	FRIGE	RATIC	N		1.00	1	
	TOTAL PHASE B - VA 8,791	HEATING	3	4,492		1.00		SIG	SN/DIS	SPLAY		1,200	1.25	1	
	AMPS 73	LIGHTIN	G	1,145		1.25		KIT	CHEN	1		2,700	1.00	1	
	TOTAL PHASE C - VA 7,066	RECEPT	ACLES	7,757		1.0/.5		EX	STING	3			1.00		
	AMPS 59	MOTORS	3	1.00		1.00				NOTOR			1.25	TOTAL DEMAND	1
	TOTAL PNLBD - VA 22,222	SUPP HE	EAT			1.00				/NDO\		4,400	1.25	23,908 VA	4
	AMPS 62	MISC EQ		528		1.00			G TRA			7-2-	1.00	66 A	4

* PROVIDE 5ma GFCI BREAKER

** PER MANUFUCTURER

PANELBOARDS:

- THESE NOTES APPLY TO ALL PANELBOARDS SCHEDULES.
- 2. PANELBOARDS SHALL NOT BE SERIES RATED. REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL DETAILS, REQUIREMENTS, AND BRANCH CIRCUIT BREAKER LAYOUTS. REFER TO PANELBOARD SCHEDULES FOR AMPERE RATING OF BUS AND MAIN BREAKER, NEMA RATING OF THE ENCLOSURE, SCCR AND AIC RATING, NEUTRAL BUS RATING AND WHETHER THE PANELBOARD IS FLUSH OR SURFACE MOUNTED.
- 3. NEW 480Y/277V PANELBOARDS AND 208Y/120V PANELBOARDS LARGER THAN 225A SHALL BE SQUARE D TYPE NF PANEL, TIN PLATED ALUMINUM BUS (PHASE AND NEUTRAL) WITH TIN-PLATED COPPER BRANCH CONNECTOR FINGERS, 42 POLES, 65 KAIC, 277Y/480VAC, 3 PHASE, 4 WIRE, DOOR-IN-DOOR HINGE TRIM, WITH TYPE EGB BOLT ON BRANCH CIRCUIT BREAKERS AND TIN PLATED COPPER EQUIPMENT GROUND BAR, OR EQUAL BY EATON/CUTLER-HAMMER, GENERAL ELECTRIC OR SIEMENS. LINE LUGS SHALL BE RATED FOR 75 DEGREE C COPPER OR ALUMINUM WIRE.
- 4. NEW 208Y/120V PANELBOARDS UP TO 225A SHALL BE SQUARE D
 TYPE NQOD PANEL, TIN PLATED ALUMINUM BUS (PHASE AND NEUTRAL)
 WITH TIN-PLATED COPPER BRANCH CONNECTOR FINGERS, 42 POLES,
 10 KAIC, 208Y/120VAC, 3 PHASE, 4 WIRE, DOOR—IN—DOOR HINGE
 TRIM, WITH TYPE QOB BOLT ON BRANCH CIRCUIT BREAKERS AND TIN
 PLATED COPPER EQUIPMENT GROUND BAR, OR EQUAL BY
 EATON/CUTLER—HAMMER, GENERAL ELECTRIC OR SIEMENS. LINE LUGS
 SHALL BE RATED FOR 75 DEGREE C COPPER OR ALUMINUM WIRE.

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- 5. INSTALL PANELBOARDS PLUMB AND RIGID WITHOUT DISTORTION ON THE BOX. MOUNT PANELBOARDS RECESSED WITH THEIR FRONT UNIFORMLY FLUSH WITH WALL FINISH, OR SURFACE MOUNTED IN NON-FINISHED AREAS (E.G. ELECTRICAL OR MECHANICAL ROOMS). MOUNT TOP OF PANEL 6'-6" ABOVE FINISHED FLOOR.
- 6. PROVIDE FACTORY LABELS WARNING QUALIFIED PERSONS OF POTENTIAL ELECTRICAL SHOCK AND ARC FLASH HAZARDS.
- 7. WHERE THE SPACE ABOVE THE NEC DEDICATED ELECTRICAL EQUIPMENT SPACE ABOVE THE ELECTRICAL EQUIPMENT CONTAINS SYSTEMS WHICH COULD LEAK OR CONDENSATE, PROVIDE SUITABLE PROTECTION TO AVOID DAMAGE TO THE ELECTRICAL EQUIPMENT.
- 8. UNLESS PROVIDED WITH GUARDRAILS PER ARCHITECTURAL DRAWINGS, PROVIDE 6" DIAMETER, 4'-0" TALL STANDARD WEIGHT STEEL PIPE BOLLARDS IN FRONT OF ALL ELECTRICAL PANELS AND TRANSFORMERS SUBJECT TO PHYSICAL DAMAGE IN WAREHOUSES. ANCHOR WITH 12" X 12" X 3/4" THICK STEEL PLATE AND FOUR (4) 3/4" DIA X 5" LONG THREADED RODS DRILLED 1 1/2" MINIMUM FROM EDGE OF PLATE AND EPOXY INTO SLAB. FILL BOLLARD WITH CONCRETE TO FORM A DOME TOP AND PROVIDE TWO (2) COATS OF YELLOW CAUTION PAINT. BOLLARDS SHALL NOT BE INSTALLED IN THE NEC REQUIRED WORKING CLEARANCE AND SHALL NOT HINDER OPENING OR MAINTAINING THE PANELBOARDS.
- 9. PER PROJECT CLOSEOUT AND RECORD DRAWING REQUIREMENTS, CONTRACTOR SHALL PROVIDE UPDATED PANELBOARD SCHEDULES, TYPE WRITTEN, AND DATED ON ALL PANELBOARDS. HAND—WRITTEN SCHEDULES WILL NOT BE ACCEPTED. ANY FIELD CHANGES TO THE CIRCUIT NUMBERS SHALL BE UPDATED ON THE PANELBOARD
- 10. ALL NEW CIRCUIT BREAKERS SHALL BE UL 489 LISTED.

SCHEDULES.

MI - DOWN

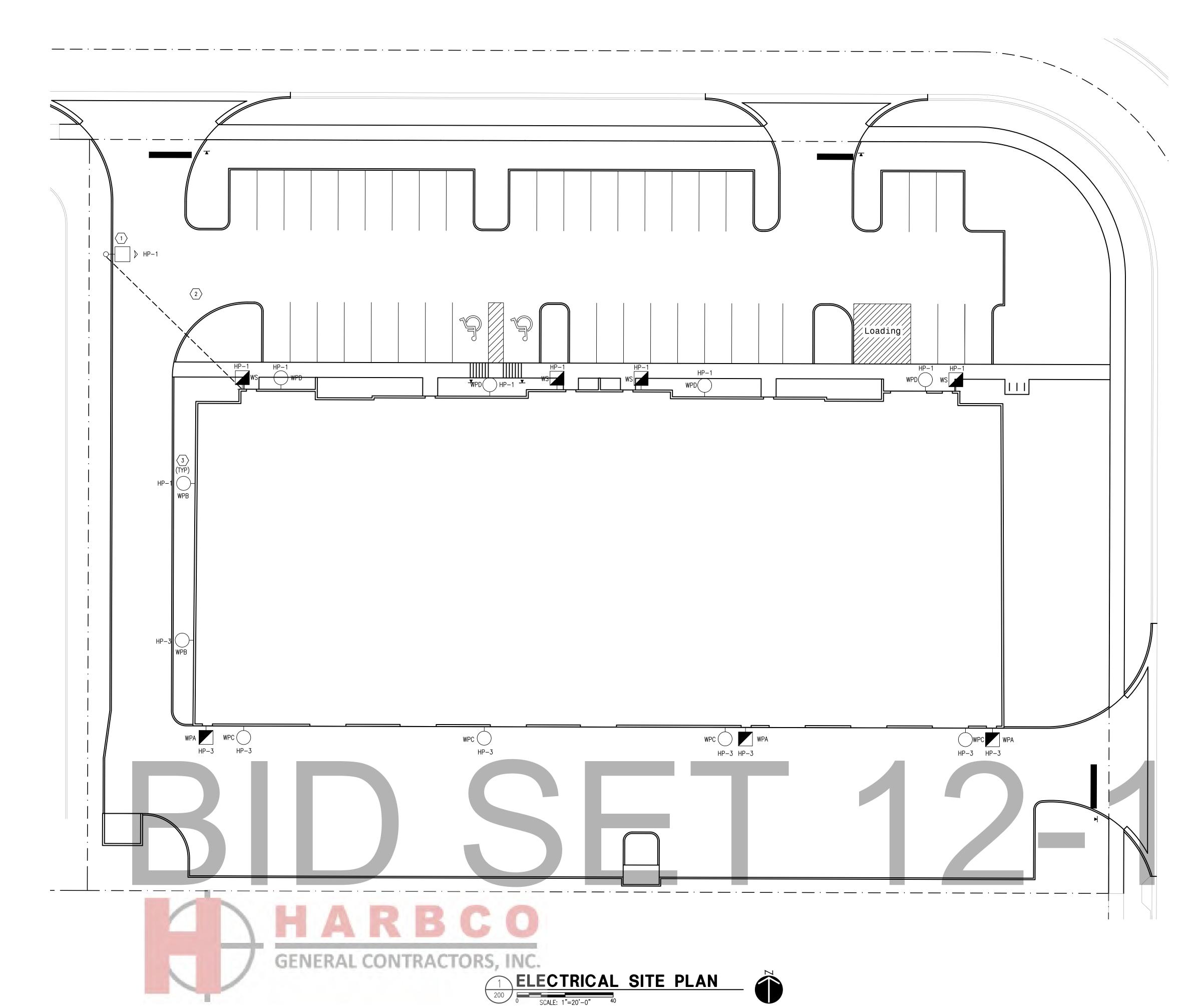
WI - DOWN

Continue and Continue



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suance:



PLAN KEY NOTES: (#)

- 1. LOCATION OF POLE MOUNTED LIGHT FIXTURE. CONTRACTOR SHALL PROVIDE BELOW GRADE CONDUIT AND WIRE TO IN—GROUND JUNCTION BOX, TO BE FIELD LOCATED NEAR THE LIGHT POLE. PROVIDE QUAZITE BOX # PG1118BA12/PG1118HH00 OR APPROVED EQUAL FOR IN GROUND APPLICATIONS. TOP SHALL BE FLUSH WITH FINISHED GRADE. LIGHT POLE AND LIGHT FIXTURE INSTALLER SHALL PROVIDE CONDUIT AND WIRE FROM THE IN—GROUND JUNCTION BOX TO THE POLE.
- 2. UNDERGROUND LIGHTING CIRCUITS SHALL BE INSTALLED BELOW GRADE IN PVC SCHEDULE 40 CONDUIT. PROVIDE #10 CU WIRING AND 1" CONDUIT FOR ENTIRE CIRCUIT RUN. REFER TO ELECTRICAL DETAILS FOR BELOW GRADE CONDUIT INSTALLATION REQUIREMENTS. REFER TO LIGHTING CONTROL PANEL RISER DIAGRAM FOR ADDITIONAL DETAILS AND REQUIREMENTS.
- 3. CIRCUIT CONTROLLED THROUGH LIGHTING CONTROL PANEL (LCP). REFER TO LCP RISER DIAGRAM FOR CONDUIT AND WIRE, TIME CLOCK AND PHOTOCELL CONTROLS, AS WELL AS ADDITIONAL DETAILS AND REQUIREMENTS. SITE LIGHTING CONTROLS SHALL MEET THE REQUIREMENTS OF ASHRAE 90.1—2013, CHAPTER 9, SECTION 9.4.1.4, ALSO DETAILED IN THE LCP RISER DIAGRAM. ADDITIONALLY, REFER TO LIGHTING CONTROL PANEL DETAIL FOR CONTROLS DIAGRAM. PROVIDE TC AND PC SWITCHED WIRING TO ALL POLE MOUNTED LIGHT FIXTURES.

GENERAL SHEET NOTES:

ARTICLE 250.52.

- THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2020 AND THE NATIONAL ELECTRIC CODE 2017.
 ALL GROUNDING ELECTRODE SYSTEMS SHALL BE INTERCONNECTED PER NEC
- VOLTAGE DROP IN ACCORDANCE WITH FLORIDA BUILDING CODE 6TH EDITION (2020) ENERGY CONSERVATION CODE CHAPTER 4, SECTION C405.5.3 HAS TAKEN IN ACCOUNT FOR THIS PROJECT.
- 4. NOT ALL POWER COMPANY AND OTHER UTILITY REQUIREMENTS ARE LISTED OR DESCRIBED IN THE PLANS AND SPECIFICATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL REQUIREMENTS, RACEWAYS, HARDWARE, EQUIPMENT, ETC., AS DICTATED BY THE UTILITY FOR A COMPLETE AND FUNCTIONING SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE UTILITIES FOR THEIR SPECIFIC REQUIREMENTS AND ADHERE TO ALL THEIR SPECIFICATIONS AND REQUIREMENTS, AT NO ADDITIONAL COST TO THE OWNER.
- 5. WHERE CONDUITS ARE CALLED TO BE INSTALLED EMPTY, PROVIDE A 3/16" POLYPROPYLENE PULL STRING. EMT SHALL INSTALLED CONCEALED FROM THE DEVICE/OUTLET BOX UP TO ACCESSIBLE SPACE ABOVE CEILING, TERMINATED WITH A BUSHING. WHERE HARD CEILINGS ARE INSTALLED, ROUTE CONDUIT TO NEAREST ACCESS.IBLE LOCATION.

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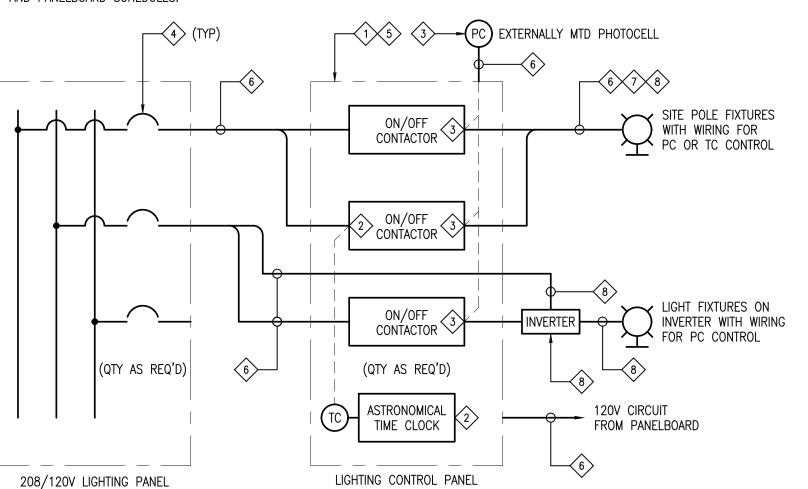
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- 6. ALL WIRING CONNECTING FROM THE EXTERIOR, INCLUDING WIRING STUBBED UP THROUGH CONCRETE SLAB, SHALL BE INSTALLED IN GRS CONDUIT AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 344. THIS INCLUDES THE MAIN POWER FEED FROM THE SERVICE ENTRANCE FUSED DISCONNECT, ANY TELEPHONE AND DATA CONDUITS, AND ANY CIRCUITS MOUNTED ON THE ROOF. PROVIDE DUXSEAL IN THESE CONDUITS. PROVIDE LINK—SEAL BY EATON CROUSE—HINDS OR APPROVED EQUAL BY OTHERS FOR ALL EXTERIOR CONDUIT PENETRATIONS.
- 7. ALL WRING INSTALLED BELOW GRADE SHALL BE INSTALLED IN SCHEDULE 40 PVC AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 352. CONDUIT SHALL BE INSTALLED PER THE BURIED CONDUIT DETAIL, AT A MINIMUM DEPTH OF 36" BELOW FINISHED GRADE. SERVICE ENTRANCE CONDUCTORS INSTALLED IN CONDUIT SHALL BE BURIED A MINIMUM DEPTH OF 36" BELOW FINISHED GRADE. FOR ALL BELOW GRADE BENDS AND VERTICAL RISERS, USE PVC COATED GRS CONDUIT. BITUMASTIC OR HEAT SHRINK WRAPPED GRS CONDUIT SHALL BE ACCEPTABLE IN LIEU OF PVC COATED GRS.
- 8. MULTIPLE BRANCH CIRCUITS SHALL NOT HAVE A SHARED NEUTRAL CONDUCTOR.
- 9. ONLY SITE LIGHTING IS SHOWN ON THIS PLAN. REFER TO SHEET E300—E301 FOR BUILDING INTERIOR AND EGRESS LIGHTING.

TYPICAL LCP NOTES: **(*)**

- 1. FURNISH ALL LABOR AND MATERIAL REQUIRED FOR A COMPLETE LIGHTING CONTROL SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER AND PROVIDE ANY AND ALL SERVICE HOURS BY THE MANUFACTURER'S SERVICE REPRESENTATIVE IN ORDER TO PROGRAM THE LIGHTING CONTROL PANEL AND CERTIFY CLOSE OUT DOCUMENTS. SITE LIGHTING CONTROLS SHALL MEET THE REQUIREMENTS OF ASHRAE 90.1–2016, CHAPTER 9, SECTION 9.4.1.4. ALL ENCLOSURES SHALL BE HINGED DOOR, NEMA 3R RATED, UNLESS INSTALLED INDOORS.
- 2. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR BUSINESS HOURS AND SCHEDULING TIME CLOCK CONTROL IN THE ASTRONOMICAL TIME CLOCK SCHEDULER. TIME CLOCK CONTROLLED (TC) LIGHTING SHALL TURN OFF ONE HOUR AFTER THE CLOSE OF BUSINESS. TC LIGHTING SHALL REMAIN OFF UNTIL THE BUSINESS REOPENS IN THE MORNING OR THE PHOTOCELL SWITCHES ALL LIGHTING OFF IN THE MORNING. TIMECLOCK SHALL BE INTERMATIC #ET91615CR OR EQUAL.
- 3. PHOTOCELL CONTROLLED (PC) LIGHTING SHALL TURN ON AND OFF BASED ON THE AUTOMATIC LIGHT SENSOR SWITCH (PHOTOCELL). INCLUDE A TIME DELAY FEATURE PROGRAMMED INTO THE PHOTOCELL OR THE LIGHTING CONTROL PANEL TO PREVENT INTERMITTENT SWITCHING. PHOTOCELL SHALL BE CONDUIT POST TOP MOUNTED FROM THE SERVICE EQUIPMENT RACK FACING NORTH, OR WALL MOUNTED AS SHOWN ON THE INDIVIDUAL BUILDING PLANS. PHOTOCELL SHALL BE TORK #2101 OR EQUAL.
- 4. CIRCUIT BREAKERS FEEDING LIGHTING CIRCUITS ARE AS SHOWN ON THE PLANS AND PANELBOARD SCHEDULES. OVERCURRENT AND SHORT CIRCUIT PROTECTION IS PROVIDED BY THE CIRCUIT BREAKER. SWITCHING OF THE LIGHTING LOAD IS CONTROLLED BY THE LIGHTING RELAYS IN THE LIGHTING CONTROL PANEL. EACH CIRCUIT SHALL HAVE ITS OWN INDIVIDUAL RELAY TO OPEN AND CLOSE THE CIRCUIT. QUANTITY OF LIGHTING CIRCUITS IS AS SHOWN ON PLANS AND PANELBOARD SCHEDULES.

- 5. EACH LIGHTING CONTACTOR IN THE LIGHTING CONTROL PANEL FEEDING LIGHTING CIRCUITS ARE AS SHOWN ON THE PLANS. RELAYS ARE GROUPED TOGETHER INTO SWITCHING GROUPS, LABELED EITHER PC OR TC. PHOTOCELL(S) TURN ON AND OFF ALL EXTERIOR LIGHTING. TC GROUP LIGHTING IS TURNED OFF ONE HOUR AFTER CLOSE OF BUSINESS AND REMAINS OFF UNTIL BUSINESS OPENS IN THE MORNING.
- 6. REFER TO PANELBOARD SCHEDULES AND PLANS FOR CONDUIT AND WIRE REQUIREMENTS.
- 7. PROVIDE 5 WIRES TO ALL LIGHT FIXTURES CONTROLLED VIA LIGHTING CONTROL PANEL, INCLUDING NEUTRAL, UNSWITCHED HOT, PC SWITCHED HOT, TC SWITCHED HOT, AND EQUIPMENT GROUNDING CONDUCTOR. PROVIDE SIZE OF WIRE AND CONDUIT SHOWN IN THE PANELBOARD SCHEDULES. CONTRACTOR SHALL FIELD WIRE PC SWITCHED HOT OR TC SWITCHED HOT BASED ON THE SITE PLAN DESIGNATION OF PC OR TC.
- 8. WIRE INVERTER DOWNSTREAM OF LIGHTING CONTROL PANEL. PROVIDE 4 WIRES TO INVERTER, INCLUDING NEUTRAL, UNSWITCHED HOT, PC SWITCHED HOT, AND EQUIPMENT GROUNDING CONDUCTOR. PROVIDE SIZE OF WIRE AND CONDUIT SHOWN IN THE PANELBOARD SCHEDULES. INVERTERS ARE ONLY INSTALLED AT THE BUILDING LIGHTING CONTROL PANELS AND NOT THE SITE LIGHTING CONTROL PANELS.



TYPICAL LIGHTING CONTROL PANEL RISER DIAGRAM

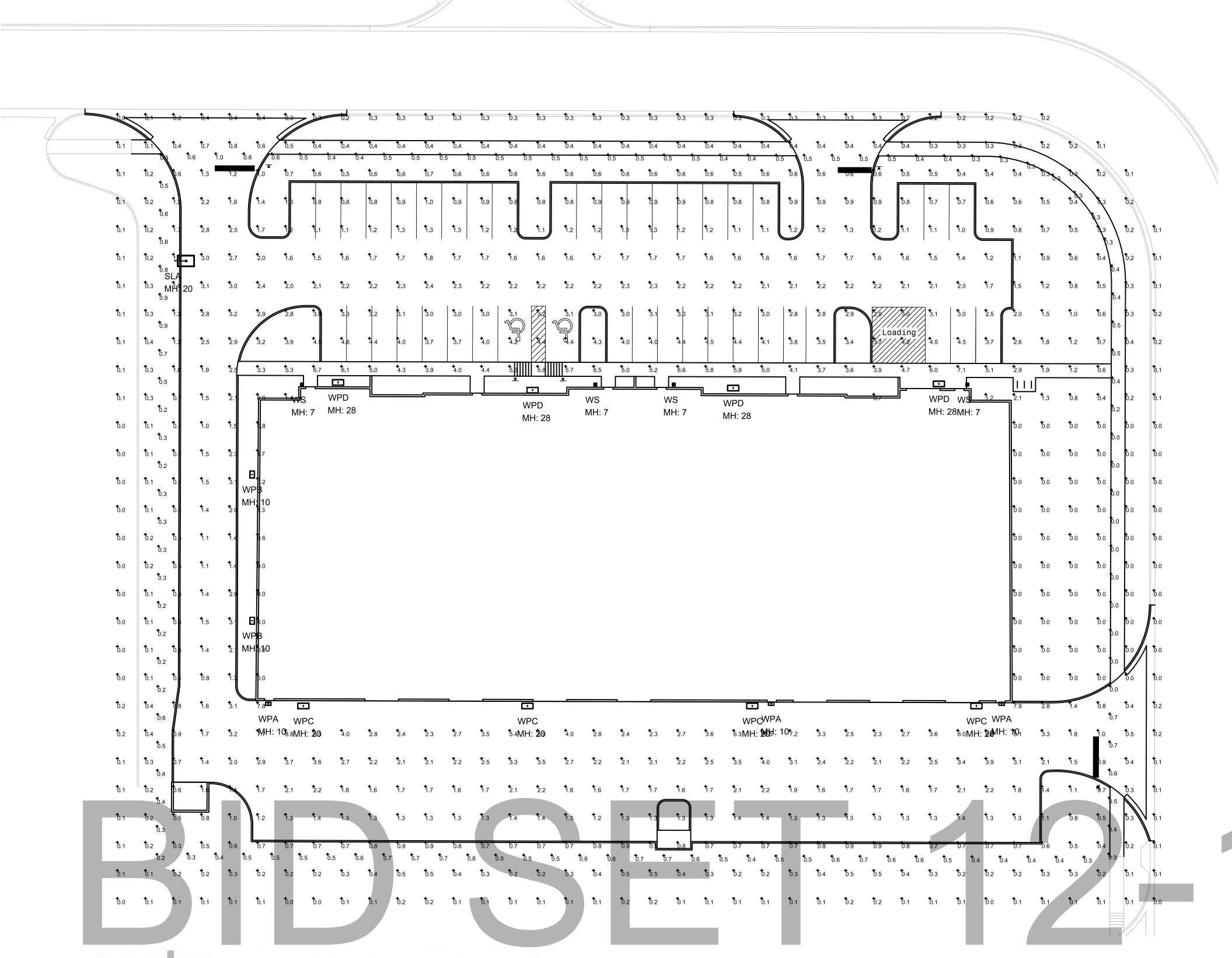
PANEL RISER DIAGR
SCALE: NONE

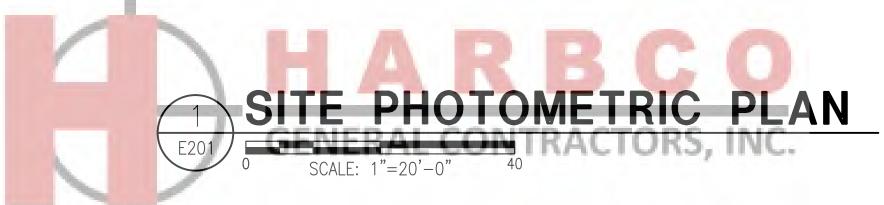
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E200

Landreth Lightii	ng Luminaire Schedule								
Symbol	[MANUFAC]	Qty	Label	Arrangement	Description	LLF	Lum. Watts	Lum. Lumens	BUG Rating
₽	Lithonia Lighting	1	SLA	SINGLE	DSX0 LED P2 40K BLC MVOLT SPA; POLE MOUNTED @ 20FT AFG	1.000	49	4925	B1-U0-G1
<u> </u>	Lithonia Lighting	3	WPA	SINGLE	WDGE2 LED P2SW 40K 80CRI VF MVOLT E4WH NLTAIR2 PIR FINISH; WALL MOUNTED @ 10FT AFG	1.000	14.78	2049	B1-U0-G0
<u> </u>	Lithonia Lighting	2	WPB	SINGLE	WDGE2 LED P3 40K 80CRI T4M MVOLT NLTAIR2 PIRH FINISH; WALL MOUNTED @ 10FT AFG	1.000	32.1375	3147	B1-U0-G1
•	Lithonia Lighting	4	WPC	SINGLE	WDGE4 LED P1 70CRI R4 40K MVOLT NLTAIR2 PIRH FINISH; WALL MOUNTED @ 20FT AFG	1.000	76.21	12180	B2-U0-G2
9	Lithonia Lighting	4	WPD	SINGLE	WDGE4 LED P3 70CRI RFT 40K MVOLT NLTAIR2 PIRH FINISH; WALL MOUNTED @ 28FT AFG	1.000	124.86	18326	B2-U0-G3
	Brownlee Lighting Inc	4	WS	SINGLE	7178-45-FINISH H31-40K BBC: WALL MOUNTED @ 7FT AFG	1.000	31.23	2979	B1-U5-G3

Landreth Lighting Calculation	Summary						
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Entire Site	Illuminance	Fc	1.37	10.5	0.0	N.A.	N.A.
Parking Lot	Illuminance	Fc	2.18	10.5	0.6	3.63	17.50
Property Line	Illuminance	Fc	0.44	1.0	0.0	N.A.	N.A.







CONTRACTOR SHALL HIRE AN APPROVED INDEPENDENT PARTY, THE LIGHTING FIXTURE MANUFACTURER, OR THE LIGHTING DISTRIBUTOR, TO PROVIDE CERTIFIED DOCUMENTATION TO THE AUTHORITY HAVING JURISDICTION (AHJ), WHICH PROVES THE INSTALLED LIGHTING MEETS THE PERMIT APPROVED PHOTOMETRIC PLAN AND AHJ'S LIGHTING ORDINANCES. WHERE ALLOWED BY THE AHJ, CONTRACTOR MAY SELF-PERFORM THE CERTIFICATION TESTING AND PROVIDE THE CERTIFIED DOCUMENTATION TO THE AHJ.

GENERAL SHEET NOTES:

- 1. REFER TO LIGHTING FIXTURE SCHEDULE FOR LIGHT FIXTURE DESCRIPTIONS.
- 2. LIGHT FIXTURES TYPE "WPA", "WPB", "SLA" & "SLB" CONTROLLED BY A LIGHTING CONTROL PANEL, TURNING ON ALL LIGHT FIXTURES BASED ON PHOTOCELL AND TURNING HALF THE LIGHT FIXTURES OFF AT MIDNIGHT.
- 3. LIGHT FIXTURE NOTED IS NOT PROVIDED UNDER THIS SCOPE OF WORK.

PHOTOMETRIC GENERAL NOTES:

- 1. CALCULATIONS ARE IN FOOT-CANDLES.
- 2. THE POSITION OF LUMINARIES MUST BE INSTALLED WHERE SHOWN TO GIVE OPTIMAL LIGHT LEVELS, ACCORDING TO THE LIGHTING ORDINANCES OF THE AUTHORITY HAVING JURISDICTION (AHJ) AND ALL CURRENT CODES.
- 3. THIS PHOTOMETRIC IS PROVIDED FOR THE LIGHT FIXTURES NOTED IN THE LIGHTING FIXTURE SCHEDULE ONLY.
- 4. ANY CHANGES IN FIXTURES OR SUBSTITUTIONS MUST HAVE EQUAL QUALITY, EFFECTIVE AND NOMINAL LUMEN OUTPUT, LIGHT QUALITY, ETC., AND MEET THE DESIGN INTENT SHOWN.
- 5. ANY CHANGES WILL REQUIRE A NEW PHOTOMETRIC. CHANGES NOT REQUIRED TO MEET PERMIT COMMENTS WILL CARRY AN ADDITIONAL DESIGN FEE.
- 6. A NEW PHOTOMETRIC MUST BE SUPPLIED WITH ALL REVISIONS. CHANGES NOT REQUIRED TO MEET PERMIT COMMENTS WILL CARRY AN ADDITIONAL DESIGN FEE.
- 7. ALL SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER 10 BUSINESS DAYS PRIOR TO BID ALONG WITH A PHOTOMETRIC PLAN THAT MEETS THE AHJ'S LIGHTING ORDINANCES AND ALL CURRENT CODES. THE SUBSTITUTION MUST HAVE THE OWNER'S WRITTEN APPROVAL.
- 8. THIS PHOTOMETRIC WAS CALCULATED USING A CIVIL BASE FILE DATED <u>05/25/2022</u>. II THERE IS A REVISION TO THE CIVIL DRAWINGS THAT AFFECTS THE LIGHTING LAYOUT, A NEW PHOTOMETRIC MUST BE SUPPLIED.
- 9. THERE WILL BE AN ADDITIONAL FEE CHARGED TO REVIEW ALTERNATIVE FIXTURES THAT HAVE NOT RECEIVED WRITTEN APPROVAL. CONTRACTOR MUST PROVIDE WRITTEN CERTIFICATION AND UPDATED PHOTOMETRIC SHOWING THAT THE LIGHT FIXTURE SUBSTITUTIONS WILL PRODUCE NEAR IDENTICAL PHOTOMETRIC VALUES, CALCULATIONS, AND MEET THE AHJ'S LIGHTING ORDINANCES AND ALL CURRENT CODES.
- 10. NO SUBSTITUTIONS WILL BE ACCEPTED WITHOUT MEETING THESE CRITERIA.
- 11. CONTRACTOR SHALL HIRE AN APPROVED INDEPENDENT PARTY, THE LIGHTING FIXTURE MANUFACTURER, OR THE LIGHTING DISTRIBUTOR, TO PROVIDE CERTIFIED DOCUMENTATION TO THE AUTHORITY HAVING JURISDICTION (AHJ), WHICH PROVES THE INSTALLED LIGHTING MEETS THE PERMIT APPROVED PHOTOMETRIC PLAN AND AHJ'S LIGHTING ORDINANCES. WHERE ALLOWED BY THE AHJ, CONTRACTOR MAY SELF-PERFORM THE CERTIFICATION TESTING AND PROVIDE THE CERTIFIED DOCUMENTATION TO THE AHJ.

PHOTOMETRIC COMMISSIONING:

- 1. CONTRACTOR SHALL HIRE AN APPROVED INDEPENDENT PARTY, OR THE LIGHTING FIXTURE MANUFACTURER, TO PROVIDE CERTIFIED DOCUMENTATION TO THE AUTHORITY HAVING JURISDICTION (AHJ), WHICH PROVES THE INSTALLED LIGHTING MEETS THE PERMIT APPROVED PHOTOMETRIC PLAN AND AHJ'S LIGHTING ORDINANCES. WHERE ALLOWED BY THE AHJ, CONTRACTOR MAY SELF-PERFORM THE CERTIFICATION TESTING AND PROVIDE THE CERTIFIED DOCUMENTATION TO THE AHJ. THE FOLLOWING NOTES DESCRIBE THE REQUIRED PROCEDURES TO BE COMPLETING BY THE LIGHTING MANUFACTURER'S REPRESENTATIVE OR THE APPROVED INDEPENDENT PARTY.
- 2. CONFIRM THAT THE TIME SWITCHES AND PROGRAMMABLE SCHEDULE CONTROLS ARE PROGRAMMED TO TURN THE LIGHTS ON AND OFF.
- 3. CONFIRM THAT THE PLACEMENT AND SENSITIVITY ADJUSTMENTS FOR PHOTOSENSOR CONTROLS REDUCE ELECTRIC LIGHT BASED ON THE AMOUNT OF USABLE DAYLIGHT IN THE SPACE, AS SPECIFIED.
- 4. FURNISH ALL LABOR AND MATERIAL REQUIRED FOR A COMPLETE LIGHTING CONTROL SYSTEM AS SHOWN ON THE DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER AND PROVIDE ANY AND ALL SERVICE HOURS BY THE MANUFACTURER'S SERVICE REPRESENTATIVE IN ORDER TO PROGRAM THE LIGHTING CONTROL PANEL AND CERTIFY CLOSE OUT DOCUMENTS. SITE LIGHTING CONTROLS SHALL MEET THE REQUIREMENTS OF ASHRAE 90.1-2014, CHAPTER 9, SECTION 9.4.1.4.
- 5. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR BUSINESS HOURS AND SCHEDULING TIME CLOCK CONTROL IN THE ASTRONOMICAL TIME CLOCK SCHEDULER. TIME CLOCK CONTROLLED (TC) LIGHTING SHALL TURN OFF ONE HOUR AFTER THE CLOSE OF BUSINESS. TC LIGHTING SHALL REMAIN OFF UNTIL THE BUSINESS REOPENS IN THE MORNING OR THE PHOTOCELL SWITCHES ALL LIGHTING OFF IN THE MORNING.
- 6. PHOTOCELL CONTROLLED (PC) LIGHTING SHALL TURN ON AND OFF BASED ON THE AUTOMATIC LIGHT SENSOR SWITCH (PHOTOCELL). INCLUDE A TIME DELAY FEATURE PROGRAMMED INTO THE PHOTOCELL OR THE LIGHTING CONTROL PANEL TO PREVENT INTERMITTENT SWITCHING. PHOTOCELL SHALL BE CONDUIT POST TOP MOUNTED FROM THE SERVICE EQUIPMENT RACK FACING NORTH, OR WALL MOUNTED AS SHOWN ON THE INDIVIDUAL BUILDING PLANS.
- REFER TO ASHRAE STANDARD 90.1, CHAPTER 9, SECTION 9.4.2 FUNCTION TESTING FOR ADDITIONAL TESTS, CALIBRATIONS, ADJUSTMENTS, PROGRAMMING, ETC., REQUIRED BY THE CODE. PROVIDE ALL TESTING AND ADJUSTMENT OF SETTINGS FOR AUTOMATIC TIME SWITCHES, AND PHOTOCELL CONTROLS, AS DESCRIBED IN THIS SECTION, PROVIDE DOCUMENTATION CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET OR EXCEED ALL DOCUMENTED PERFORMANCE CRITERIA.
- 8. THE ENGINEER OF RECORD SHALL REVIEW THE CERTIFIED DOCUMENTATION FROM THE APPROVED INDEPENDENT PARTY, OR THE LIGHTING FIXTURE MANUFACTURER, PRIOR TO SUBMISSION TO THE AHJ. THE ENGINEER OF RECORD SHALL NOT PERFORM THE CERTIFICATION TESTING.



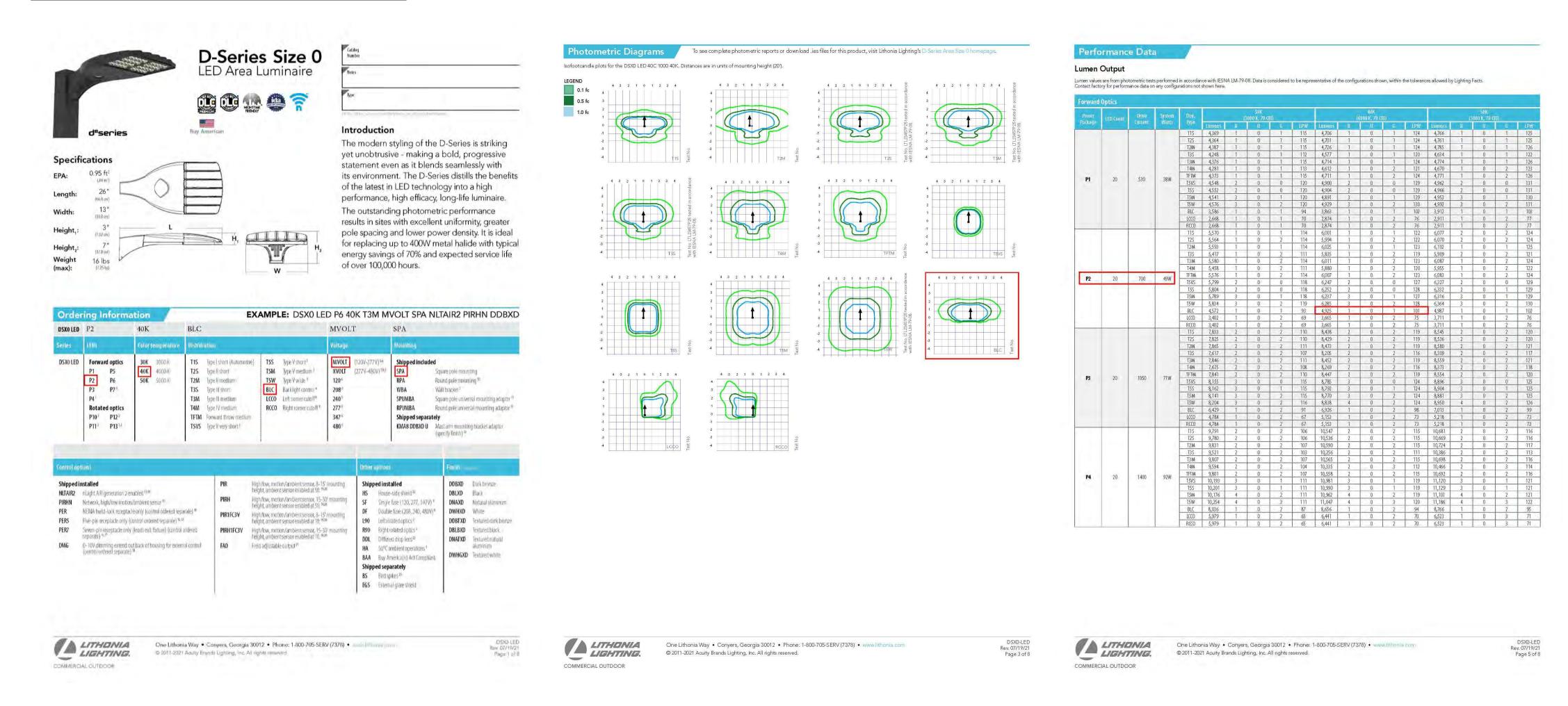
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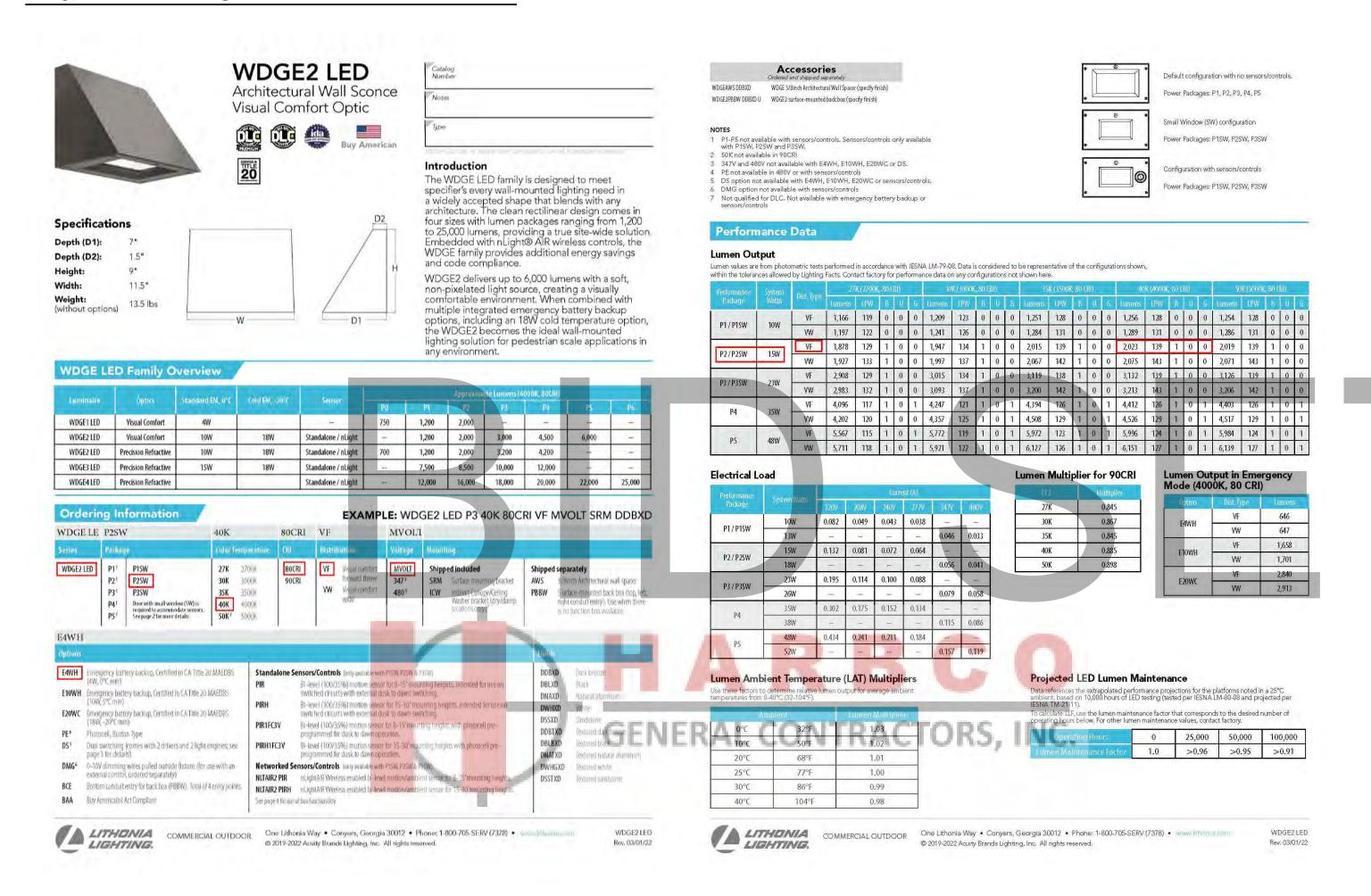


E201

LIGHT FIXTURE TYPE "SLA":



LIGHT FIXTURE TYPE "WPA":



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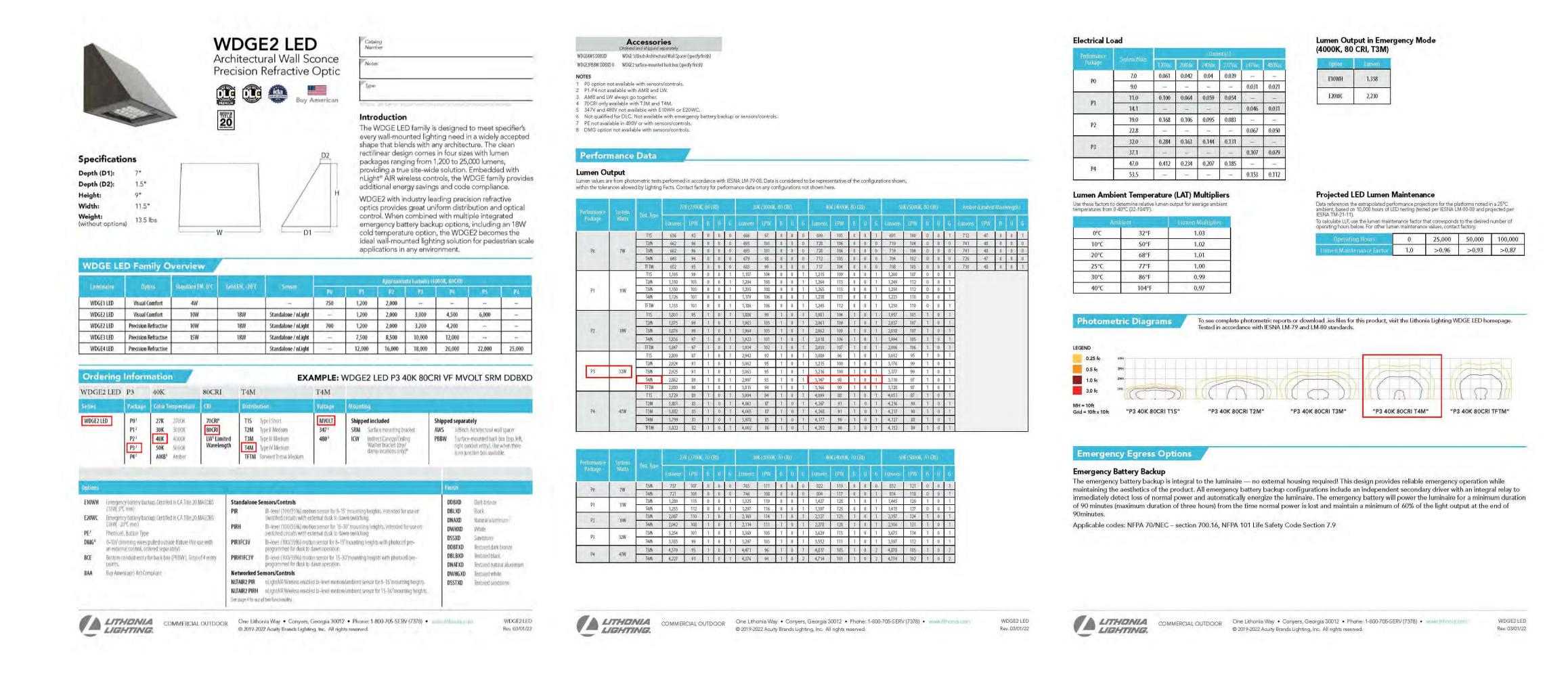
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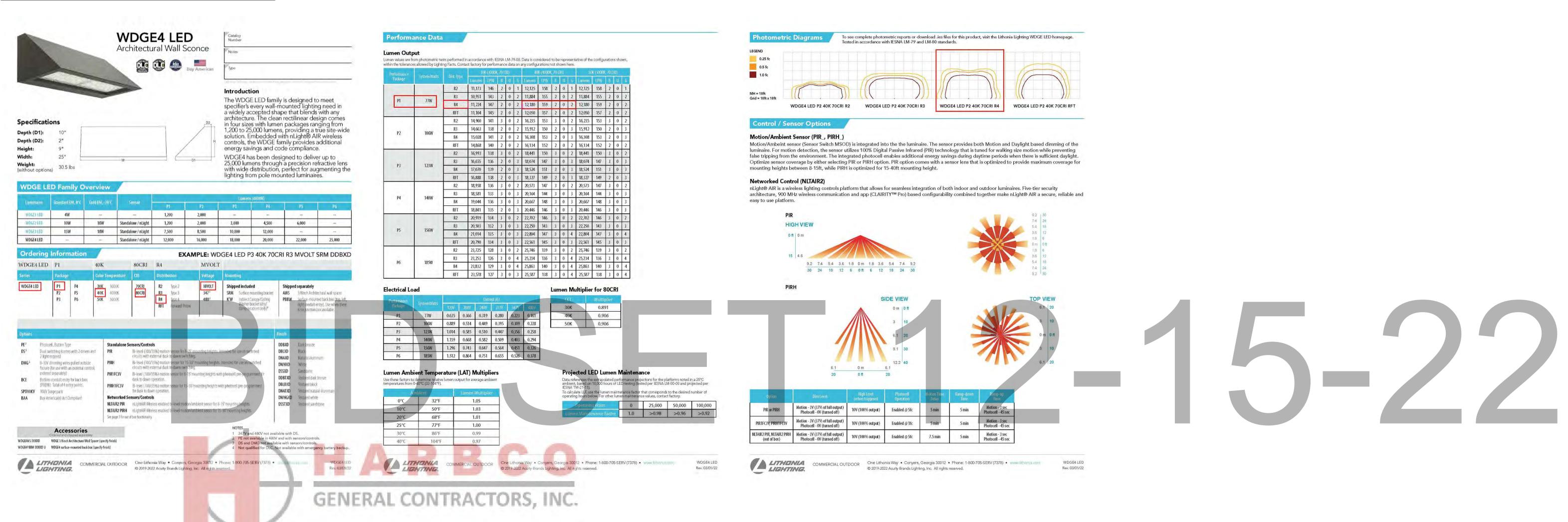
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LIGHT FIXTURE TYPE "WPB":



LIGHT FIXTURE TYPE "WPC":



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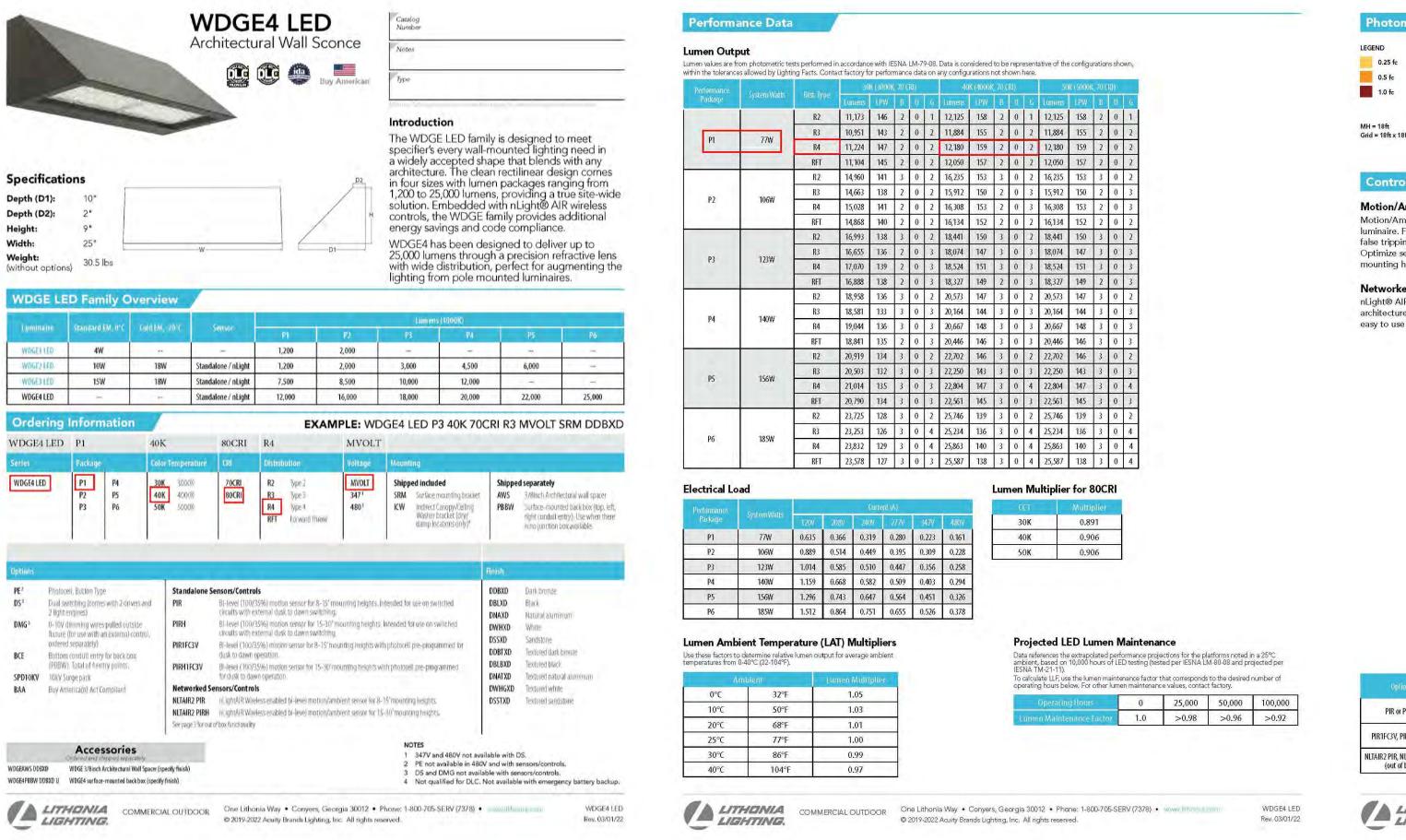
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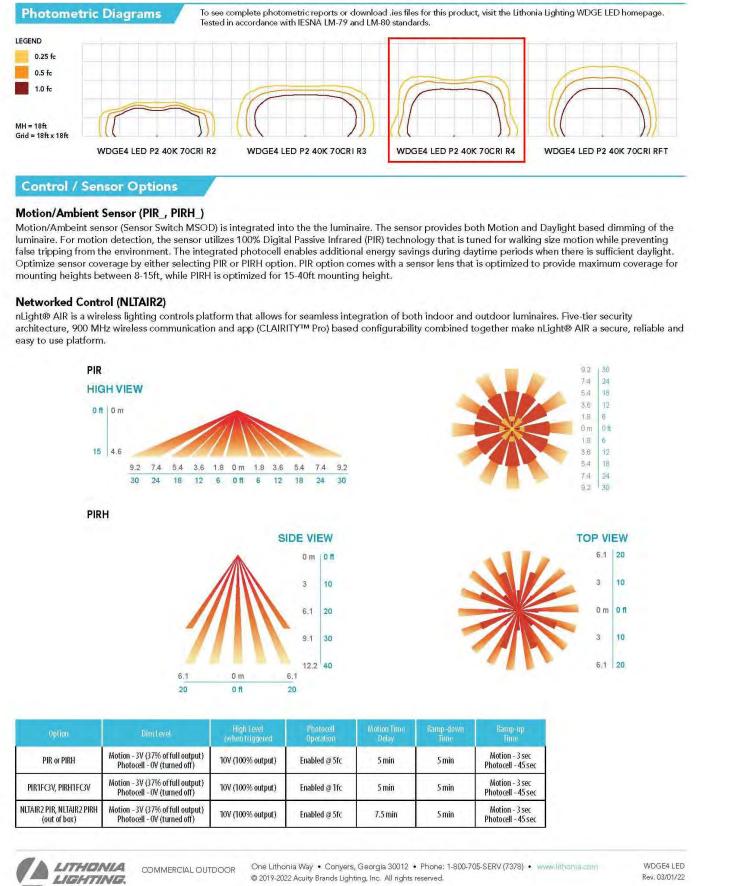
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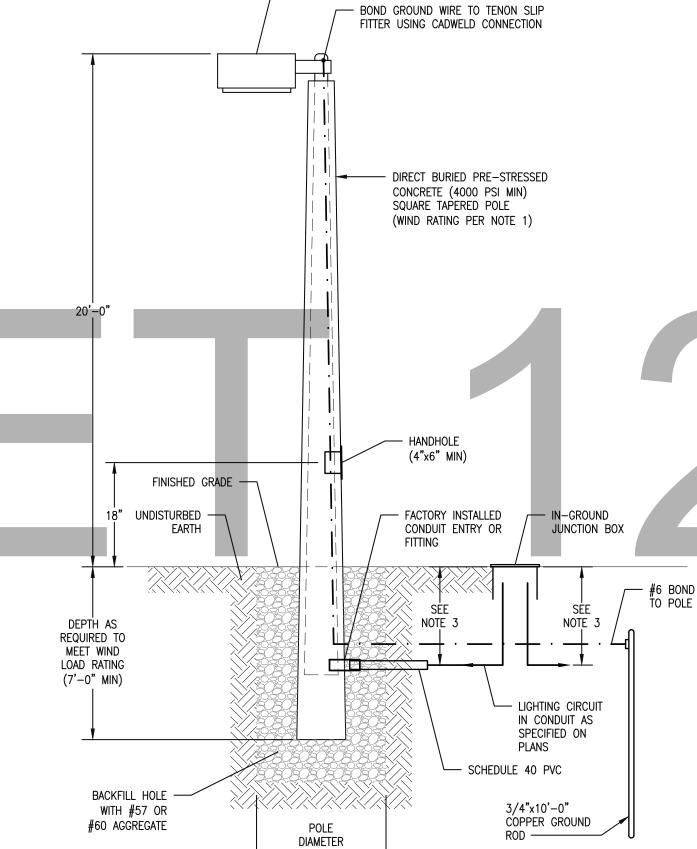
LIGHT FIXTURE TYPE "WPD":





LIGHT FIXTURE TYPE "WS":





+6" ON —— BOTH SIDES

AND BOTTOM

POLE MOUNTED LIGHT FIXTURE TYPE
AS SHOWN ON THE PLANS

(REFER TO LIGHT FIXTURE SCHEDULE)

POLE MTD FIXTURE NOTES:

SPECIFIC REQUIREMENTS. WHERE STRUCTURAL DRAWINGS ARE NOT PROVIDED, WIND RATINGS SHALL BE IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, CHAPTER 16. POLE, BASE, ANCHOR BOLT AND LIGHT FIXTURE ASSEMBLY SHALL BE CERTIFIED BY THE MANUFACTURER FOR THE WIND RATING. WHERE REQUIRED FOR PERMITTING, THE CONTRACTOR SHALL PROCURE THE SERVICES OF A FLORIDA LICENSED PROFESSIONAL STRUCTURAL ENGINEER TO PROVIDE SIGNED AND SEALED CALCULATIONS AND DRAWINGS CERTIFYING THE POLE MTD LIGHT FIXTURE DETAIL AND/OR MODIFYING THE DETAIL AS REQUIRED TO MEET THE REQUIRED WIND RATINGS PER THE FLORIDA BUILDING CODE.

2. INSTALL SITE LIGHTING AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC STANDARDS, APPLICABLE REQUIREMENTS OF STATE, COUNTY AND LOCAL CODES, AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE SITE LIGHTING FULFILLS ALL

REFER TO WIND RATING REQUIREMENTS ON THE STRUCTURAL DRAWINGS FOR

3. COMPLY WITH NEC ARTICLE 300.5 FOR RACEWAY BURIAL DEPTH. REFER TO BELOW GRADE RACEWAY DETAIL FOR ADDITIONAL RACEWAY BURIAL DEPTH

LIGHT FIXTURES AND ASSOCIATED WIRING SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410. POLE SUPPORTING LUMINAIRE SHALL

REQUIREMENTS.

COMPLY WITH NEC ARTICLE 410.30(B).

5. PROVIDE IN-GROUND JUNCTION BOX SET AT EACH POLE EXCEPT THE LAST POLE IN A RUN. PROVIDE QUAZITE BOX # PG1118BA12/PG1118HH00 OR APPROVED EQUAL FOR IN GROUND APPLICATIONS. TOP SHALL BE FLUSH WITH

PROVIDE SUFFICIENT SPACE ENCOMPASSING HAND ACCESS AND CABLE ENTRANCE HOLES FOR INSTALLATION OF UNDERGROUND CABLING.

PROVIDE BUSSMAN HEB FUSEHOLDER (LITTLEFUSE LEB-XX-S) WITH "BREAKAWAY" RECEPTACLES IN ALL CONDUCTORS RUNNING TO THE TOP OF EACH POLE. LOCATE FUSE HOLDER AT HAND HOLE OR IN BASE JUNCTION BOX AS APPLICABLE. PROVIDE KTK FUSES IN EACH PHASE CONDUCTOR, SIZED 1.5 TIMES MAXIMUM FULL LOAD CURRENT OF BALLASTS SERVED BY EACH CONDUCTOR. DO NOT EXCEED RATING OF CIRCUIT OVERCURRENT PROTECTIVE DEVICE. PROVIDE FUSE BLANKS IN NEUTRAL CONDUCTORS. MAKE

RESIN FOR WATERTIGHT CONNECTION.

8. VOLTAGE DROP HAS BEEN CALCULATED FOR WIRING ARRANGEMENTS AS SHOWN. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY SIZING CONDUCTORS SHOULD HE/SHE DEVIATE FROM THE SPECIFIC ARRANGEMENT SHOWN ON THE DRAWINGS, LIMITING VOLTAGE DROP TO 3% AT THE FARTHEST

UP ALL OTHER SPLICES IN POLE OR POLE BASE USING SCOTCHCAST 400

FIXTURE.

9. ALL POLE MOUNTED LIGHT FIXTURE OPTICS SHALL BE FIELD ROTATABLE.
 ORIENT OPTICS AS DESIGNATED BY ARROWS ON THE SITE LIGHTING PLAN.
 10. PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR EACH POLE MTD LIGHT

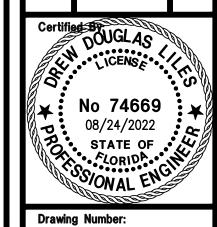
FIXTURE INSTALLATION. ALL GROUNDING SHOWN SHALL BE BONDED TO THE EQUIPMENT GROUNDING CONDUCTOR.

11. ALL HARDWARE (E.G. WASHERS, NUTS, ETC.) SHALL BE STAINLESS STEEL.12. PROVIDE HOUSE—SIDE SHIELDS NEAR PROPERTY BOUNDARIES. ALL LIGHT

12. PROVIDE HOUSE-SIDE SHIELDS NEAR PROPERTY BOUNDARIES. ALL LIGHT FIXTURES SHALL BE FULL CUTOFF. REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL DETAILS AND REQUIREMENTS.



5-22



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TELEPHONE TERMINAL CABINET FOR TENANT TELECOMMUNICATION POINT OF SERVICE.

SI FUTURE TENANT 4 FUSED DISCONNECT SWITCH

FUTURE TENANT 4 NF DISCONNECT SWITCH

FUTURE TENANT 3 FUSED DISCONNECT SWITCH

FUTURE TENANT 3 NF DISCONNECT SWITCH

XII 200A/3P/600V, NEMA 3R, SERVICE ENTRANCE RATED, FUSED DISCONNECT SWITCH FOR TENANT 2

200A/3P/600V, NEMA 3R, SERVICE ENTRANCE RATED NF DISCONNECT SWITCH FOR TENANT 2

 $\mathbb{Q}[||$ 200A/3P/600V, NEMA 3R, SERVICE ENTRANCE RATED, FUSED DISCONNECT SWITCH FOR TENANT 1

200A/3P/600V, NEMA 3R, SERVICE ENTRANCE RATED NF DISCONNECT SWITCH FOR TENANT 1

TYPICAL ALL ELECTRICAL EQUIPMENT

GENERAL CONTRACTORS, INC.

FUTURE_TENANT 4 METER

FUTURE TENANT 3 METER

☐ IENANT =2□METER

□ □ □ □ = TENANT = □ ■ METER

480/277V 800A MAIN

208/120V 50A MCB HOUSE PANEL "LP"

15 KVA 480/208-120V XFMR "TH"

480/277V 100A MCB HOUSE PANEL "HP"

LIGHTING CONTROL PANEL "LCP"

2 ENLARGED ELECTRICAL SITE PLAN

E300 SCALE: 1/4"=1'-0"

HOUSE PANEL METER

- 2. PROVIDE MAIN GROUNDING BAR (MGB) AND INTERSYSTEM BONDING TERMINATION BAR (IBTB) IN ACCORDANCE WITH NEC ARTICLE 250.94 AND THE ELECTRICAL DETAILS. LOCATE IBTB BELOW THE SERVICE ENTRANCE MAIN DISCONNECT, ON THE NEAREST EXTERIOR WALL.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ALL EQUIPMENT, CONDUIT AND WIRE AFTER THE POWER COMPANY TRANSFORMER, INCLUDE THE SECONDARY CONDUCTORS AND CONDUIT. 13. INCOMING TELECOM CONDUITS BY TELECOM UTILITY POWER COMPANY SHALL TERMINATE ALL CONDUCTORS AT THEIR TRANSFORMER, INCLUDING GROUNDING TO THE TRANSFORMER. POWER COMPANY SHALL FURNISH AND INSTALL THE CT'S FOR THE CT CABINET AND THE METER CAN. CONTRACTOR SHALL PROVIDE THE CT CABINET AND METER SOCKET ENCLOSURE, IN ACCORDANCE WITH THE POWER COMPANY'S ELECTRIC SERVICE AND METER INSTALLATION REQUIREMENTS.
- 4. COORDINATE WITH THE POWER COMPANY FOR THE LOCATION AND INSTALLATION OF NEW PRIMARY CONDUIT LOOP, PAD MOUNTED TRANSFORMER, PULLBOXES, ETC. INSTALLATION OF PRIMARY CABLES, TRANSFORMERS, GROUNDING, AND TERMINATION OF CONDUCTORS AT THEIR EQUIPMENT, WHICH SHALL BE PERFORMED BY THE POWER COMPANY. ALL FEES AND CHARGES ASSOCIATED WITH THIS WORK SHALL BE COVERED UNDER THE OVERALL COST OF PROVIDING ELECTRIC SERVICE AT THIS LOCATION AND SHALL BE PAID FOR BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY FOR TERMINATION OF PRIMARY AND SECONDARY SERVICE CONDUCTORS AT PAD MOUNTED TRANSFORMER. ADDITIONAL PULLBOXES NOT SHOWN ON PLANS, MAYBE REQUIRED BY POWER COMPANY FOR THE INSTALLATION OF ELECTRIC SERVICE AND SHALL BE FIELD COORDINATED, AS
- 5. PROVIDE POWER COMPANY REQUIRED CLEAR SPACE AND EASEMENT. CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR ADDITIONAL REQUIREMENTS.
- 6. CONTRACTOR SHALL INSTALL PRIMARY CONDUIT BELOW GRADE IN THE POWER COMPANY EASEMENT TO THE POWER COMPANY TRANSFORMER. POWER COMPANY SHALL PROVIDE AND INSTALL PRIMARY CABLES TO THEIR TRANSFORMER IN THE PRIMARY CONDUIT THAT THE CONTRACTOR INSTALLED. CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY AND OWNER FOR LENGTH OF PRIMARY CONDUIT INSTALLATION UNDER THIS CONTRACTOR'S SCOPE OF WORK.
- 7. CONNECT TO GROUNDING ELECTRODE CONDUCTOR. CONNECT TO ALL METALLIC WATER PIPES WITHIN 5FT OF ENTRY INTO BUILDING, BUILDING STEEL, 20' CONTINUOUS REBAR IN BUILDING FOOTING (TIE-WIRED TO COLUMN ANCHOR BOLTS NEAREST SERVICE MAIN), AND ANY OTHER AVAILABLE GROUNDING ELECTRODES. REFER TO CIVIL AND PLUMBING DRAWINGS FOR LOCATIONS OF METALLIC WATER PIPES. REFER TO STRUCTURAL DRAWINGS FOR LOCATIONS OF BUILDING STEEL AND REBAR. REFER TO ALL GROUNDING DETAILS FOR ADDITIONAL DETAILS AND REQUIREMENTS.
- 8. LIGHTING CONTROL PANEL OR EQUIVALENT FUNCTIONALITY FROM PC AND TC LIGHTING CONTACTORS. REFER TO LIGHTING CONTROL PANEL NOTES AND RISER DIAGRAM FOR ADDITIONAL DETAILS AND REQUIREMENTS.
- 9. PROVIDE ET2805CR TIME CLOCK BY INTERMATIC OR EQUAL BY OTHERS. FIELD LOCATE NEAR PANEL.

PLAN KEY NOTES: (#)

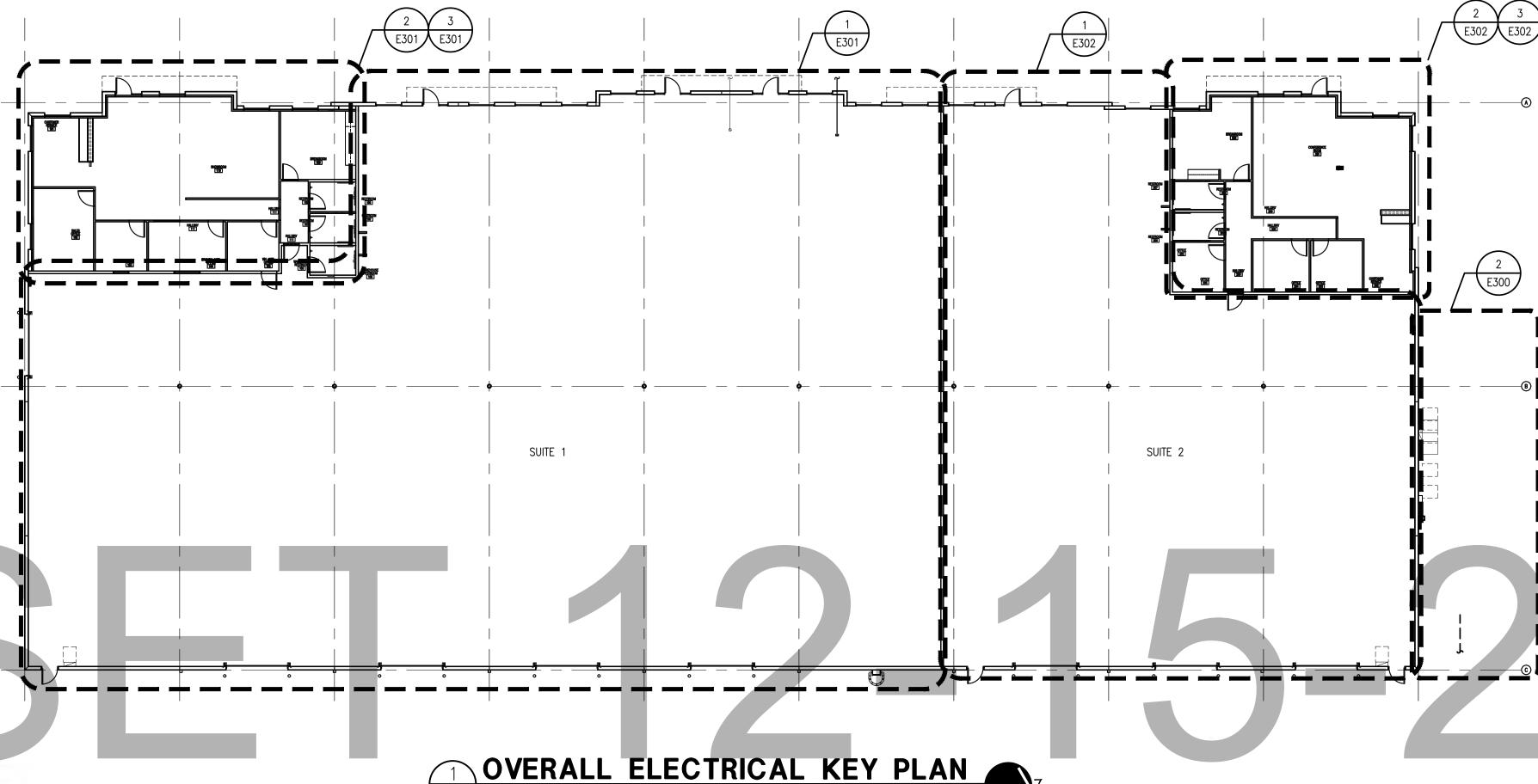
- 1. PROVIDE (1) 3" CONDUIT AND WIRES FOR TENANT PANELBOARD TO 200A FUSED DISCONNECT 10. PROVIDE (2) 3" EMPTY SPARE CONDUITS WITH PULL STRING AND END BUSHING FROM LOCATION SHOWN TO PROPOSED STUBBED UP CONDUITS FOR FUTURE TENANTS PER PLANS. CONDUIT SHALL SWITCH PER POWER RISER DIAGRAM. PROVIDE (1) 3" EMPTY SPARE CONDUIT WITH PULL STRING BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED. AND END BUSHING FROM TENANT ELECTRICAL ROOM TO LOCATION SHOWN. CONDUIT SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED. PROVIDE (1) 2" CONDUIT EXTENDED TO 11. 12"X 12" WALL MOUNTED WIREWAY
 - - 12. TELEPHONE TERMINAL CABINET BY TELEPHONE UTILITY COMPANY, PROVIDE (4) 2" PVC CONDUITS WITH PULL STRING AND END BUSHING FROM LOCATION SHOWN TO PROPOSED STUBBED UP CONDUITS FOR TENANTS PER E301, E302. CONDUIT SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED.

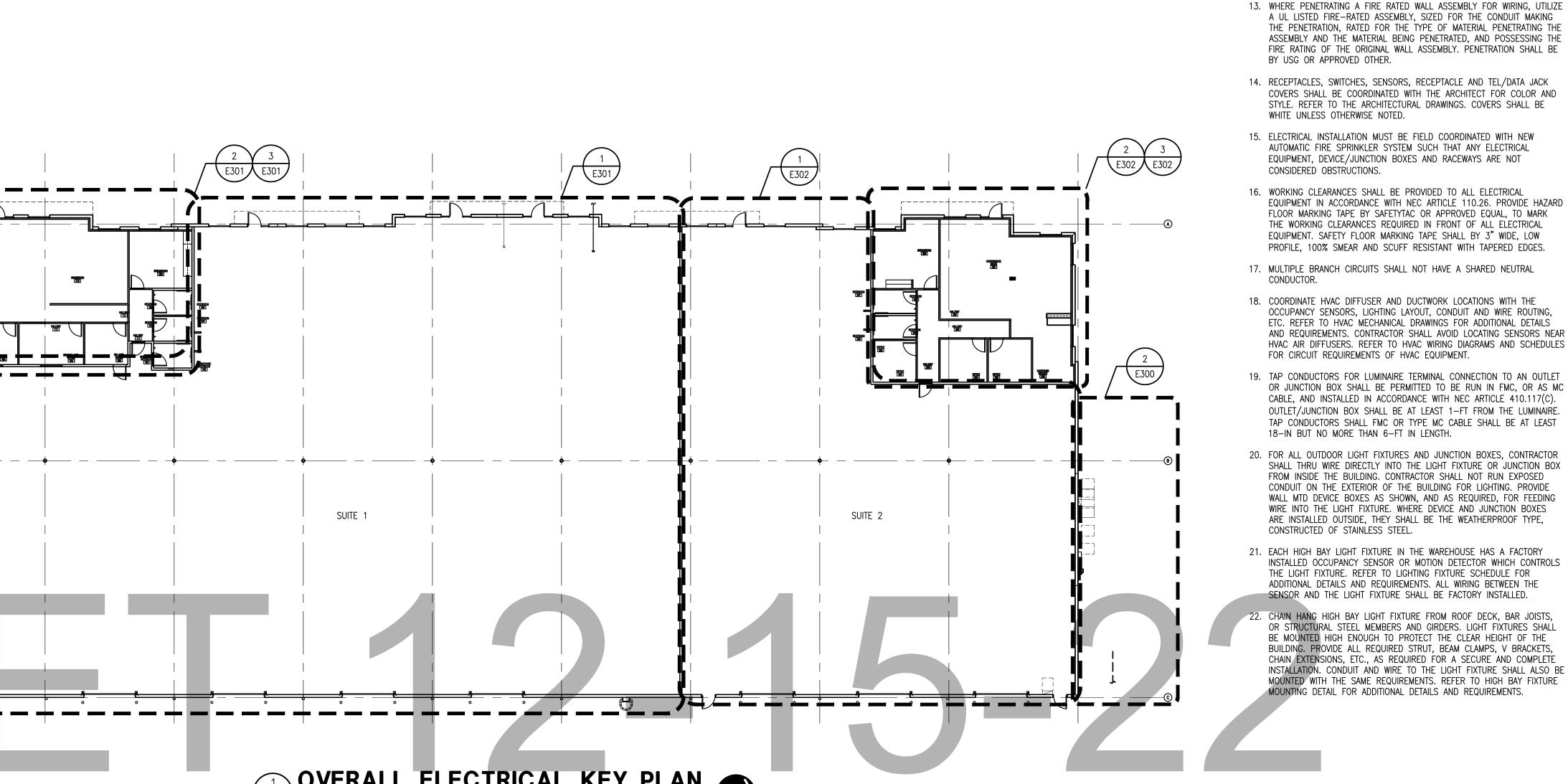
GENERAL SHEET NOTES:

- 1. THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2020 AND THE NATIONAL ELECTRIC CODE 2017.
- 2. ALL GROUNDING ELECTRODE SYSTEMS SHALL BE INTERCONNECTED PER NEC ARTICLE 250.52.
- 3. NOT ALL POWER COMPANY AND OTHER UTILITY REQUIREMENTS ARE LISTED OR DESCRIBED IN THE PLANS AND SPECIFICATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL REQUIREMENTS, RACEWAYS, HARDWARE, EQUIPMENT, ETC., AS DICTATED BY THE UTILITY FOR A COMPLETE AND FUNCTIONING SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE UTILITIES FOR THEIR SPECIFIC REQUIREMENTS AND ADHERE TO ALL THEIR SPECIFICATIONS AND REQUIREMENTS, AT NO ADDITIONAL COST TO THE OWNER.
- 4. HIGHEST AVAILABLE FAULT CURRENT ON THE SECONDARY SIDE OF THE TRANSFORMER FROM THE POWER COMPANY IS 49.568A PER 500KVA TRANSFOMER. CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY FOR ANY CHANGES IN AVAILABLE FAULT CURRENT AND ADJUST THE AMPERE INTERRUPTING RATING (AIC) OF THE NEW PANELBOARD AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT, AT NO ADDITIONAL COST TO THE OWNER.
- 5. WHERE CONDUITS ARE CALLED TO BE INSTALLED SPARE OR EMPTY, PROVIDE A 3/16" POLYPROPYLENE PULL STRING.
- 6. ALL WIRING CONNECTING FROM THE EXTERIOR, INCLUDING WIRING STUBBED UP THROUGH CONCRETE SLAB, SHALL BE INSTALLED IN GRS CONDUIT AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 344. THIS INCLUDES THE MAIN POWER FEED FROM THE SERVICE ENTRANCE FUSED DISCONNECT, ANY TELEPHONE AND DATA CONDUITS, AND ANY CIRCUITS MOUNTED ON THE ROOF. PROVIDE DUXSEAL IN THESE CONDUITS. PROVIDE LINK-SEAL BY EATON CROUSE-HINDS OR APPROVED EQUAL BY OTHERS FOR ALL EXTERIOR CONDUIT PENETRATIONS.
- 7. ALL WIRING INSTALLED BELOW GRADE SHALL BE INSTALLED IN SCHEDULE 40 PVC AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 352. CONDUIT SHALL BE INSTALLED PER THE BURIED CONDUIT DETAIL, AT A MINIMUM DEPTH OF 36" BELOW FINISHED GRADE. FOR ALL BELOW GRADE BENDS AND VERTICAL RISERS, USE PVC COATED GRS CONDUIT. BITUMASTIC OR HEAT SHRINK WRAPPED GRS CONDUIT SHALL BE ACCEPTABLE IN LIEU OF PVC COATED GRS.
- 8. CONDUITS TO OTHER BUILDINGS ARE PROVIDED UNDER THE PROJECT SCOPE FOR THE CONSTRUCTION OF THE OTHER BUILDINGS, CONTRACTOR SHALL COORDINATE ALL WORK BETWEEN PROJECTS LOCATED ON THIS SITE. CONTRACTOR SHALL NOTE THAT THE SITE DESIGN IS BEING PERFORMED BY ANOTHER CONSULTANT. ALL SITE WORK SHALL BE COORDINATED WITH THE WORK DESCRIBED IN THIS PROJECT.
- 9. ALL WIRING IN THE WAREHOUSE SHALL BE RUN EXPOSED IN EMT CONDUIT, UNLESS OTHERWISE NOTED, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 358. WHERE CONNECTING TO EQUIPMENT THAT HAS ROTATING OR VIBRATING PARTS (E.G. AHU, EXHAUST FAN, MOTOR, ETC.), TRANSITION TO FMC CONDUIT AND INSTALL IN ACCORDANCE WITH NEC ARTICLE 350.
- 10. ALL EQUIPMENT GROUNDING CONDUCTORS, GROUNDING ELECTRODE CONDUCTORS, BONDING JUMPERS (INCLUDING MAIN BONDING JUMPER), AND CONNECTIONS TO THE GROUNDING ELECTRODE CONDUCTOR SHALL BE COPPER. ONLY PHASE AND NEUTRAL (GROUNDED) CONDUCTORS ARE ALLOWED TO BE ALUMINUM.
- INSTALLED IN CONDUIT. THE CONDUIT SHALL ONLY BE INSTALLED FROM 12" ABOVE FINISHED GRADE AND DOWN BELOW GRADE. GROUNDING ELECTRODE CONDUCTORS SHALL BE EXPOSED AND SECURELY FASTENED 12" OR MORE ABOVE FINISHED GRADE. 12. VOLTAGE DROP IN ACCORDANCE WITH FLORIDA BUILDING CODE 5TH

11. WHERE GROUNDING ELECTRODE CONDUCTORS ARE CALLED OUT TO BE

- EDITION (2020) ENERGY CONSERVATION CODE CHAPTER 4, SECTION C405.5.3 HAS TAKEN IN ACCOUNT FOR THIS PROJECT. CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR ANY CHANGES IN CONDUCTOR LENGTH AND ADJUST THE SIZE AND AMPACITY OF THE SERVICE ENTRANCE CONDUCTORS, AS REQUIRED, AT NO ADDITIONAL COST
- A UL LISTED FIRE-RATED ASSEMBLY, SIZED FOR THE CONDUIT MAKING THE PENETRATION, RATED FOR THE TYPE OF MATERIAL PENETRATING THE ASSEMBLY AND THE MATERIAL BEING PENETRATED, AND POSSESSING THI FIRE RATING OF THE ORIGINAL WALL ASSEMBLY. PENETRATION SHALL BE BY USG OR APPROVED OTHER.
- 14. RECEPTACLES, SWITCHES, SENSORS, RECEPTACLE AND TEL/DATA JACK COVERS SHALL BE COORDINATED WITH THE ARCHITECT FOR COLOR AND STYLE. REFER TO THE ARCHITECTURAL DRAWINGS. COVERS SHALL BE
- 15. ELECTRICAL INSTALLATION MUST BE FIELD COORDINATED WITH NEW AUTOMATIC FIRE SPRINKLER SYSTEM SUCH THAT ANY ELECTRICAL EQUIPMENT, DEVICE/JUNCTION BOXES AND RACEWAYS ARE NOT
- EQUIPMENT IN ACCORDANCE WITH NEC ARTICLE 110.26. PROVIDE HAZARD FLOOR MARKING TAPE BY SAFETYTAC OR APPROVED EQUAL, TO MARK THE WORKING CLEARANCES REQUIRED IN FRONT OF ALL ELECTRICAL EQUIPMENT. SAFETY FLOOR MARKING TAPE SHALL BY 3" WIDE, LOW PROFILE, 100% SMEAR AND SCUFF RESISTANT WITH TAPERED EDGES.
- 17. MULTIPLE BRANCH CIRCUITS SHALL NOT HAVE A SHARED NEUTRAL
- 18. COORDINATE HVAC DIFFUSER AND DUCTWORK LOCATIONS WITH THE OCCUPANCY SENSORS, LIGHTING LAYOUT, CONDUIT AND WIRE ROUTING. ETC. REFER TO HVAC MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS. CONTRACTOR SHALL AVOID LOCATING SENSORS NEAR HVAC AIR DIFFUSERS. REFER TO HVAC WIRING DIAGRAMS AND SCHEDULES FOR CIRCUIT REQUIREMENTS OF HVAC EQUIPMENT.
- 19. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE. TAP CONDUCTORS SHALL FMC OR TYPE MC CABLE SHALL BE AT LEAST
- 20. FOR ALL OUTDOOR LIGHT FIXTURES AND JUNCTION BOXES, CONTRACTOR SHALL THRU WIRE DIRECTLY INTO THE LIGHT FIXTURE OR JUNCTION BOX FROM INSIDE THE BUILDING. CONTRACTOR SHALL NOT RUN EXPOSED CONDUIT ON THE EXTERIOR OF THE BUILDING FOR LIGHTING. PROVIDE WALL MTD DEVICE BOXES AS SHOWN, AND AS REQUIRED, FOR FEEDING WIRE INTO THE LIGHT FIXTURE. WHERE DEVICE AND JUNCTION BOXES ARE INSTALLED OUTSIDE, THEY SHALL BE THE WEATHERPROOF TYPE,
- 21. EACH HIGH BAY LIGHT FIXTURE IN THE WAREHOUSE HAS A FACTORY INSTALLED OCCUPANCY SENSOR OR MOTION DETECTOR WHICH CONTROLS THE LIGHT FIXTURE. REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL DETAILS AND REQUIREMENTS. ALL WIRING BETWEEN THE
- CHAIN HANG HIGH BAY LIGHT FIXTURE FROM ROOF DECK, BAR JOISTS. OR STRUCTURAL STEEL MEMBERS AND GIRDERS. LIGHT FIXTURES SHALL BE MOUNTED HIGH ENOUGH TO PROTECT THE CLEAR HEIGHT OF THE BUILDING. PROVIDE ALL REQUIRED STRUT, BEAM CLAMPS, V BRACKETS, CHAIN EXTENSIONS, ETC., AS REQUIRED FOR A SECURE AND COMPLETE INSTALLATION. CONDUIT AND WIRE TO THE LIGHT FIXTURE SHALL ALSO BI MOUNTED WITH THE SAME REQUIREMENTS. REFER TO HIGH BAY FIXTURE





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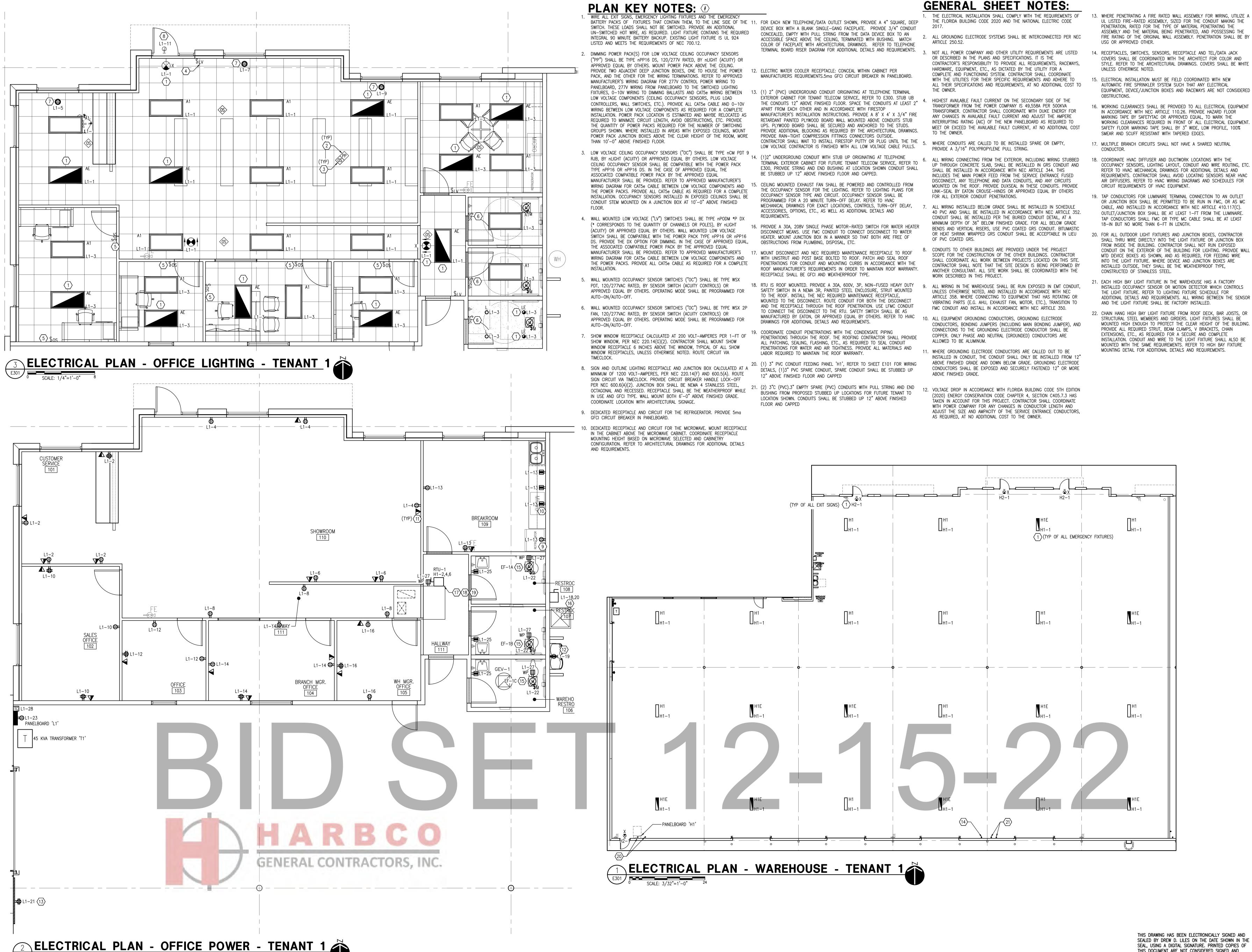
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E300

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E301 0 SCALE: 1/4"=1'-0"

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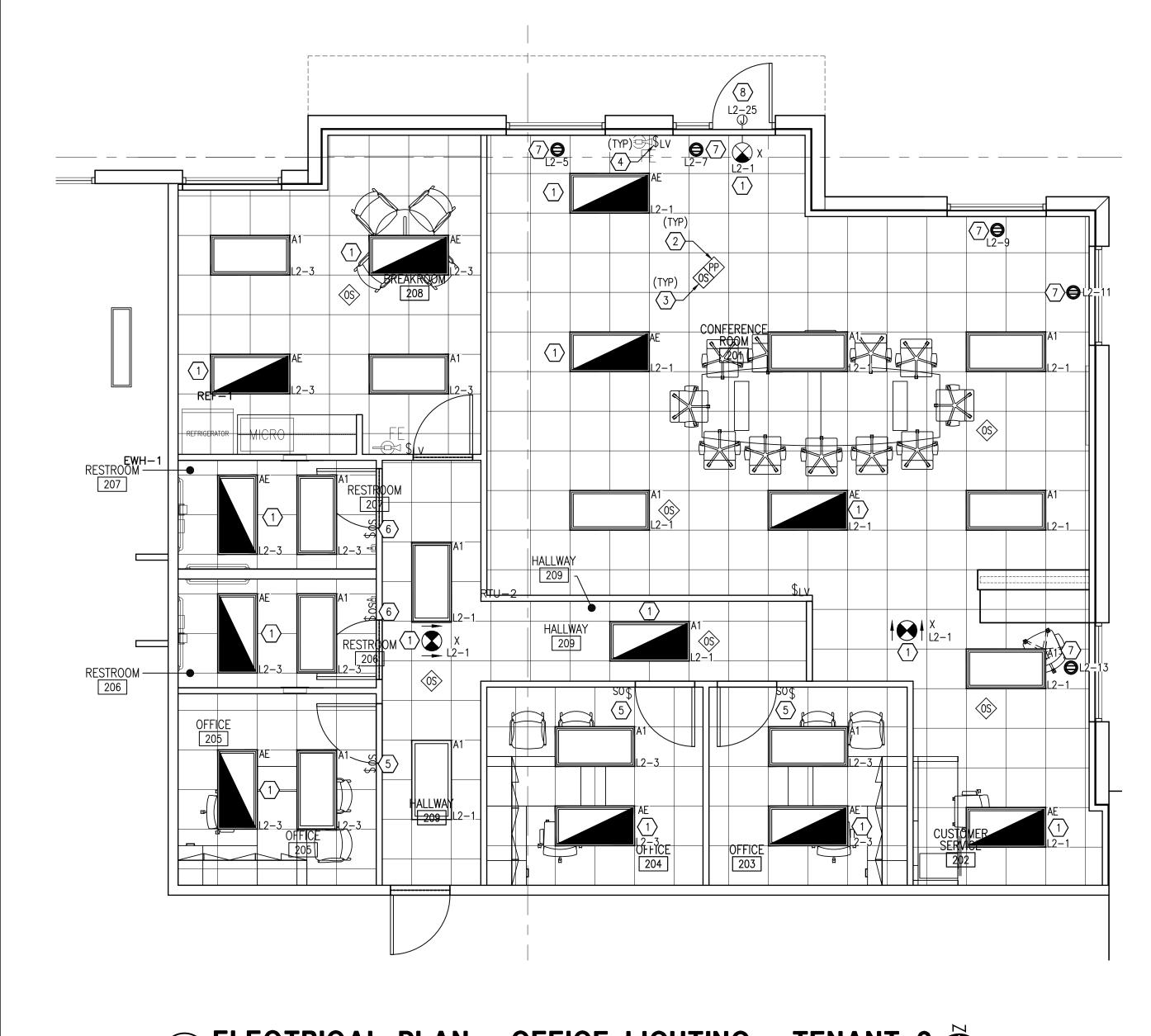
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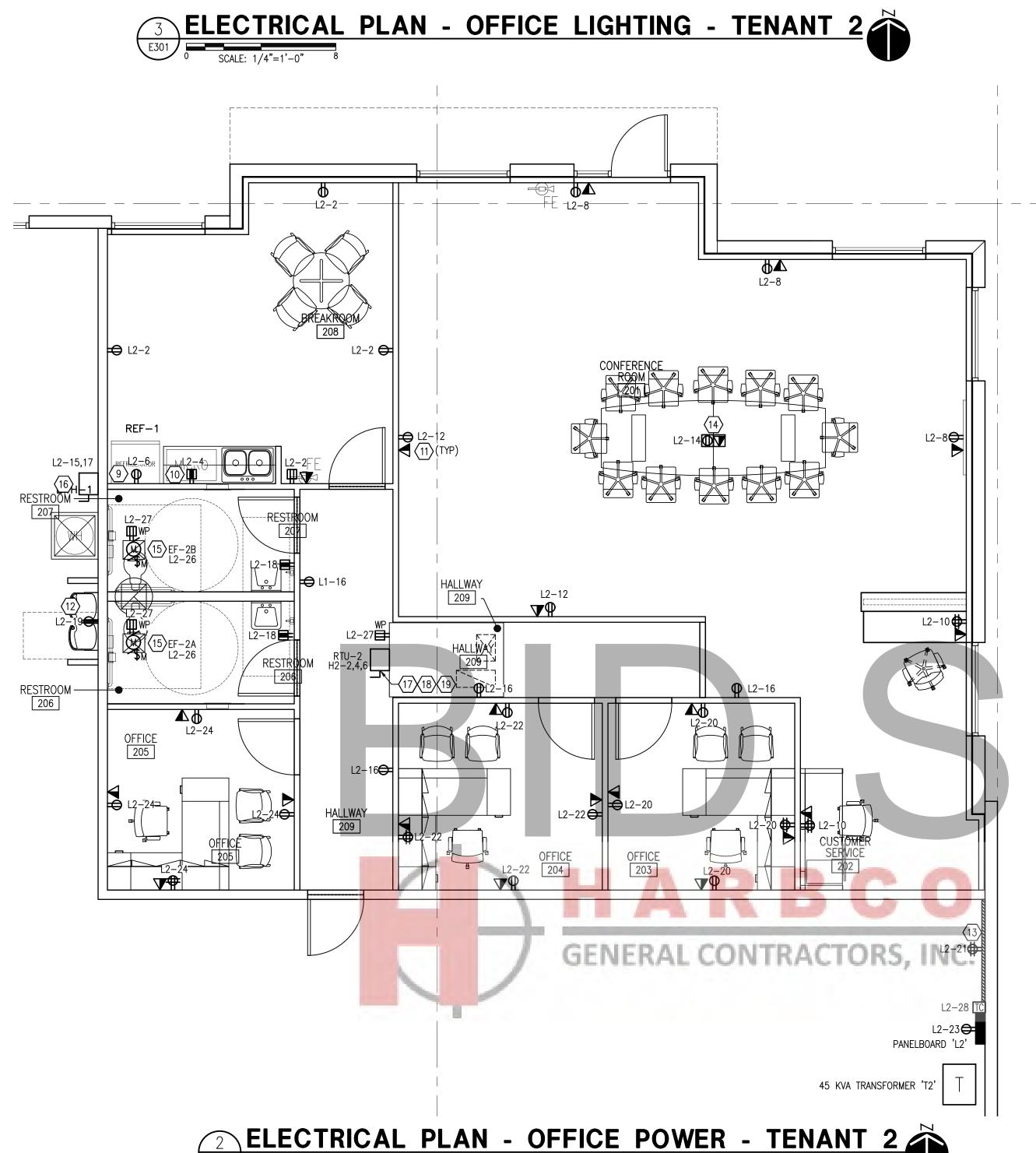
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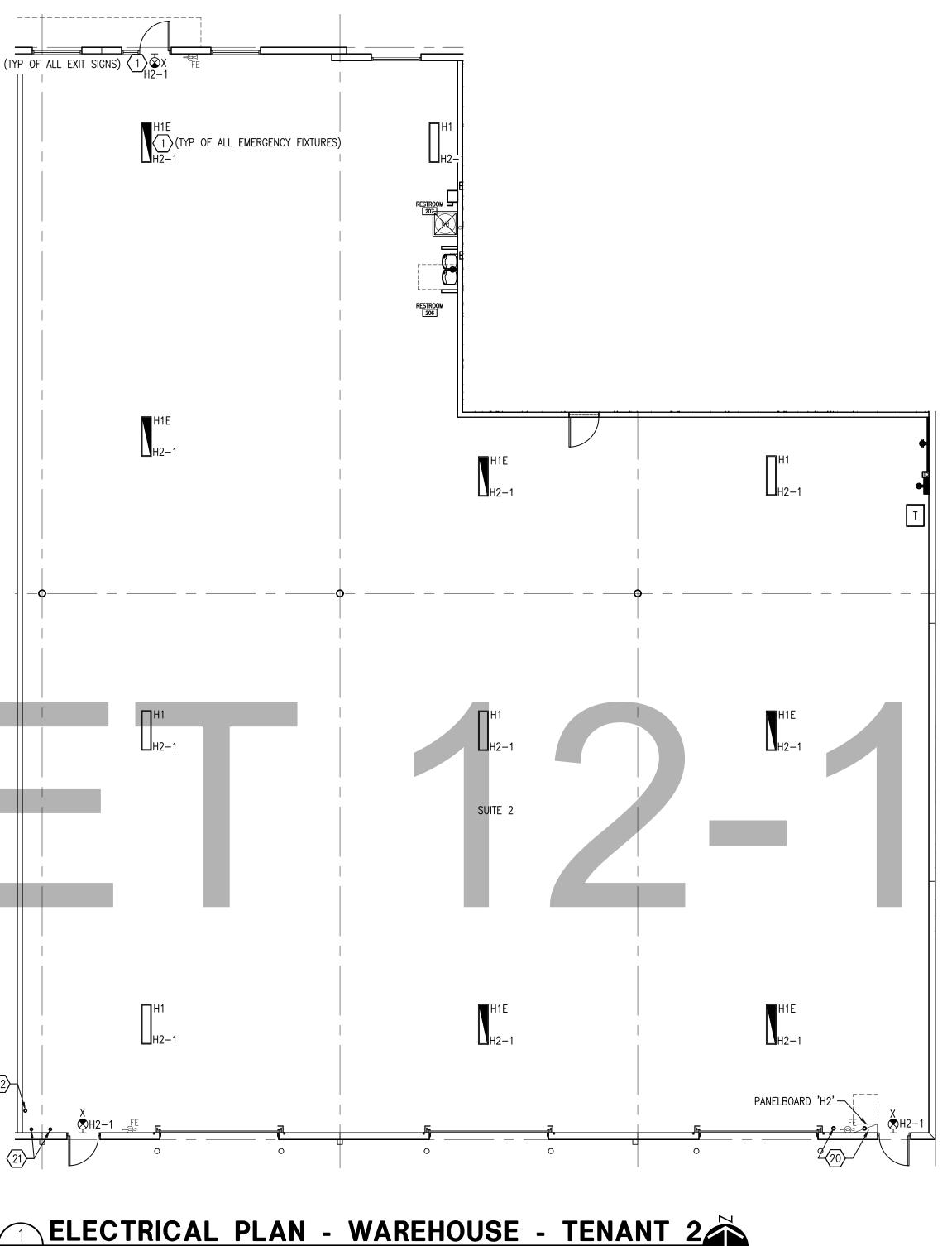
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PLAN KEY NOTES: (#)

- WIRE ALL EXIT SIGNS, EMERGENCY LIGHTING FIXTURES AND THE EMERGENCY BATTERY PACKS OF FIXTURES THAT CONTAIN THEM, TO THE LINE SIDE OF THE SWITCH. THESE LOADS SHALL NOT BE SWITCHED. PROVIDE AN ADDITIONAL UN-SWITCHED HOT WIRE, AS REQUIRED. LIGHT FIXTURE CONTAINS THE REQUIRED INTEGRAL 90 MINUTE BATTERY BACKUP. EXISTING LIGHT FIXTURE IS UL 924 LISTED AND MEETS THE REQUIREMENTS
- DIMMING POWER PACK(S) FOR LOW VOLTAGE CEILING OCCUPANCY SENSORS ("PP") SHALL BE TYPE nPP16 DS, 120/277V RATED, BY nLIGHT (ACUITY) OR APPROVED EQUAL BY OTHERS. MOUNT POWER PACK ABOVE THE CEILING. PROVIDE TWO ADJACENT DEEP JUNCTION BOXES, ONE TO HOUSE THE POWER PACK, AND THE OTHER FOR THE WIRING TERMINATIONS. REFER TO APPROVED MANUFACTURER'S WIRING DIAGRAM FOR 277V CONTROL POWER WIRING TO PANELBOARD, 277V WIRING FROM PANELBOARD TO THE SWITCHED LIGHTING FIXTURES, 0-10V WIRING TO DIMMING BALLASTS AND CAT5e WIRING BETWEEN LOW VOLTAGE COMPONENTS (CEILING OCCUPANCY SENSORS, PLUG LOAD CONTROLLERS, WALL SWITCHES, ETC.). PROVIDE ALL CAT5e CABLE AND 0-10V WIRING BETWEEN LOW VOLTAGE COMPONENTS AS REQUIRED FOR A COMPLETE INSTALLATION. POWER PACK LOCATION IS ESTIMATED AND MAYBE RELOCATED AS REQUIRED TO MINIMIZE CIRCUIT LENGTH, AVOID OBSTRUCTIONS, ETC. PROVIDE THE QUANTITY OF POWER PACKS REQUIRED FOR THE NUMBER OF SWITCHING GROUPS SHOWN. WHERE INSTALLED IN AREAS WITH EXPOSED CEILINGS, MOUNT POWER PACK JUNCTION BOXES ABOVE THE CLEAR HEIGHT OF THE ROOM, MORE THAN 10'-0" ABOVE FINISHED FLOOR.
- 3. LOW VOLTAGE CEILING OCCUPANCY SENSORS ("OC") SHALL BE TYPE nCM PDT 9 RJB, BY nLIGHT (ACUITY) OR APPROVED EQUAL BY OTHERS. LOW VOLTAGE CEILING OCCUPANCY SENSOR SHALL BE COMPATIBLE WITH THE POWER PACK TYPE nPP16 OR nPP16 DS. IN THE CASE OF APPROVED EQUAL, THE ASSOCIATED COMPATIBLE POWER PACK BY THE APPROVED EQUAL MANUFACTURER SHALL BE PROVIDED. REFER TO APPROVED MANUFACTURER'S WIRING DIAGRAM FOR CAT5e CABLE BETWEEN LOW VOLTAGE COMPONENTS AND THE POWER PACKS. PROVIDE ALL CATSE CABLE AS REQUIRED FOR A COMPLETE INSTALLATION. OCCUPANCY SENSORS INSTALLED IN EXPOSED CEILINGS SHALL BE CONDUIT STEM MOUNTED ON A JUNCTION BOX AT 10'-0" ABOVE FINISHED FLOOR.
- 4. WALL MOUNTED LOW VOLTAGE ("LV") SWITCHES SHALL BE TYPE nPODM *P DX (* CORRESPONDS TO THE QUANTITY OF CHANNELS OR POLES), BY nLIGHT (ACUITY) OR APPROVED EQUAL BY OTHERS. WALL MOUNTED LOW VOLTAGE SWITCH SHALL BE COMPATIBLE WITH THE POWER PACK TYPE nPP16 OR nPP16 DS. PROVIDE THE DX OPTION FOR DIMMING. IN THE CASE OF APPROVED EQUAL, THE ASSOCIATED COMPATIBLE POWER PACK BY THE APPROVED EQUAL MANUFACTURER SHALL BE PROVIDED. REFER TO APPROVED MANUFACTURER'S WIRING DIAGRAM FOR CAT5e CABLE BETWEEN LOW VOLTAGE COMPONENTS AND THE POWER PACKS. PROVIDE ALL CAT5e CABLE AS REQUIRED FOR A COMPLETE INSTALLATION.
- 5. WALL MOUNTED OCCUPANCY SENSOR SWITCHES ("OC") SHALL BE TYPE WSX PDT, 120/277VAC RATED, BY SENSOR SWITCH (ACUITY CONTROLS) OR APPROVED EQUAL BY OTHERS. OPERATING MODE SHALL BE PROGRAMMED FOR AUTO-ON/AUTO-OFF.
- 6. WALL MOUNTED OCCUPANCY SENSOR SWITCHES ("OC") SHALL BE TYPE WSX 2P FAN, 120/277VAC RATED, BY SENSOR SWITCH (ACUITY CONTROLS) OR APPROVED EQUAL BY OTHERS. OPERATING MODE SHALL BE PROGRAMMED FOR AUTO-ON/AUTO-OFF.
- 7. SHOW WINDOW RECEPTACLE CALCULATED AT 200 VOLT-AMPERES PER 1-FT OF SHOW WINDOW, PER NEC 220.14(G)(2). CONTRACTOR SHALL MOUNT SHOW WINDOW RECEPTACLE 6 INCHES ABOVE THE WINDOW, TYPICAL OF ALL SHOW WINDOW RECEPTACLES, UNLESS OTHERWISE NOTED. ROUTE CIRCUIT VIA TIMECLOCK.
- 8. SIGN AND OUTLINE LIGHTING RECEPTACLE AND JUNCTION BOX CALCULATED AT A MINIMUM OF 1200 VOLT-AMPERES, PER NEC 220.14(F) AND 600.5(A). ROUTE SIGN CIRCUIT VIA TIMECLOCK. PROVIDE CIRCUIT BREAKER HANDLE LOCK-OFF PER NEC 600.6(A)(2). JUNCTION BOX SHALL BE NEMA 4 STAINLESS STEEL, OCTAGONAL AND RECESSED. RECEPTACLE SHALL BE THE WEATHERPROOF WHILE IN USE AND GFCI TYPE. WALL MOUNT BOTH 6'-0" ABOVE FINISHED GRADE. COORDINATE LOCATION WITH ARCHITECTURAL SIGNAGE.
- 9. DEDICATED RECEPTACLE AND CIRCUIT FOR THE REFRIGERATOR. PROVIDE 5ma GFCI CIRCUIT BREAKER IN PANELBOARD.
- 10. DEDICATED RECEPTACLE AND CIRCUIT FOR THE MICROWAVE. MOUNT RECEPTACLE IN THE CABINET ABOVE THE MICROWAVE CABINET. COORDINATE RECEPTACLE MOUNTING HEIGHT BASED ON MICROWAVE SELECTED AND CABINETRY CONFIGURATION. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS.
- 11. FOR EACH NEW TELEPHONE/DATA OUTLET SHOWN, PROVIDE A 4" SQUARE, DEEP DEVICE BOX WITH A BLANK SINGLE-GANG FACEPLATE. PROVIDE 3/4" CONDUIT CONCEALED, EMPTY WITH PULL STRING FROM THE DATA DEVICE BOX TO AN ACCESSIBLE SPACE ABOVE THE CEILING, TERMINATED WITH BUSHING. MATCH COLOR OF FACEPLATE WITH ARCHITECTURAL DRAWINGS. REFER TO TELEPHONE TERMINAL BOARD RISER DIAGRAM FOR ADDITIONAL DETAILS AND REQUIREMENTS.
- 12. ELECTRIC WATER COOLER RECEPTACLE: CONCEAL WITHIN CABINET PER MANUFACTURERS REQUIREMENTS.5ma GFCI CIRCUIT BREAKER IN PANELBOARD.
- 13. (1) 2" (PVC) UNDERGROUND CONDUIT ORIGINATING AT TELEPHONE TERMINAL EXTERIOR CABINET FOR TENANT TELECOM SERVICE, REFER TO E300, STUB UB THE CONDUITS 12" ABOVE FINISHED FLOOR. SPACE THE CONDUITS AT LEAST 2" APART FROM EACH OTHER AND IN ACCORDANCE WITH FIRESTOP MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE A 8' X 4' X 3/4" FIRE RETARDANT PAINTED PLYWOOD BOARD WALL MOUNTED ABOVE CONDUITS STUB UPS. PLYWOOD BOARD SHALL BE SECURED AND ANCHORED TO THE STUDS. PROVIDE ADDITIONAL BLOCKING AS REQUIRED BY THE ARCHITECTURAL DRAWINGS. PROVIDE RAIN-TIGHT COMPRESSION FITTINGS CONNECTORS OUTSIDE. CONTRACTOR SHALL WAIT TO INSTALL FIRESTOP PUTTY OR PLUG UNTIL THE THE LOW VOLTAGE CONTRACTOR IS FINISHED WITH ALL LOW VOLTAGE CABLE PULLS.
- 14. PROVIDE A 2-GANG FLUSH COMBINATION POWER/DATA NON-METALLIC FLOOR BOX. PROVIDE (1) 1" CONDUIT FOR POWER AND (1) 1" CONDUIT FOR DATA WITH PULL STRING. ROUTE CONDUITS UNDER SLAB. COVER PLATES SHALL BE FLUSH WITH FLOORING. PROVIDE GROUNDING AS SHOWN ON THE GROUNDING DETAILS AND AS REQUIRED PER NEC. COORDINATE CONFERENCE ROOM REQUIREMENTS WITH AV INSTALLER PRIOR TO ROUGH-IN.
- 15. CEILING MOUNTED EXHAUST FAN SHALL BE POWERED AND CONTROLLED FROM THE OCCUPANCY SENSOR FOR THE LIGHTING. REFER TO LIGHTING PLANS FOR OCCUPANCY SENSOR TYPE AND CIRCUIT. OCCUPANCY SENSOR SHALL BE PROGRAMMED FOR A 20 MINUTE TURN-OFF DELAY. REFER TO HVAC MECHANICAL DRAWINGS FOR EXACT LOCATIONS. CONTROLS. TURN-OFF DELAY, ACCESSORIES, OPTIONS, ETC., AS WELL AS ADDITIONAL DETAILS AND REQUIREMENTS.
- 16. PROVIDE A 30A, 208V SINGLE PHASE MOTOR-RATED SWITCH FOR WATER HEATER DISCONNECT MEANS. USE FMC CONDUIT TO CONNECT DISCONNECT TO WATER HEATER. MOUNT JUNCTION BOX IN A MANNER SO THAT BOTH ARE FREE OF OBSTRUCTIONS FROM PLUMBING, DISPOSAL, ETC.
- 17. MOUNT DISCONNECT AND NEC REQUIRED MAINTENANCE RECEPTACLE TO ROOF WITH UNISTRUT AND POST BASE BOLTED TO ROOF. PATCH AND SEAL ROOF PENETRATIONS FOR CONDUIT AND MOUNTING CURBS IN ACCORDANCE WITH THE ROOF MANUFACTURER'S REQUIREMENTS IN ORDER TO MAINTAIN ROOF WARRANTY. RECEPTACLE SHALL BE GFCI AND WEATHERPROOF TYPE.
- 18. RTU IS ROOF MOUNTED. PROVIDE A 30A, 600V, 3P, NON-FUSED HEAVY DUTY SAFETY SWITCH IN A NEMA 3R, PAINTED STEEL ENCLOSURE, STRUT MOUNTED TO THE ROOF. INSTALL THE NEC REQUIRED MAINTENANCE RECEPTACLE, MOUNTED TO THE DISCONNECT. ROUTE CONDUIT FOR BOTH THE DISCONNECT AND THE RECEPTACLE THROUGH THE ROOF PENETRATION. USE LFMC CONDUIT TO CONNECT THE DISCONNECT TO THE RTU. SAFETY SWITCH SHALL BE AS MANUFACTURED BY EATON, OR APPROVED EQUAL BY OTHERS. REFER TO HVAC DRAWINGS FOR ADDITIONAL DETAILS AND
- HROUGH THE ROOF. THE ROOFING CONTRACTOR SHALL PROVIDE ALL PATCHING, EALING, FLASHING, ETC., AS REQUIRED TO SEAL CONDUIT PENETRATIONS FOR WATER ND AIR TIGHTNESS. PROVIDE ALL MATERIALS AND LABOR REQUIRED TO MAINTAIN THE . (1) 3" PVC CONDUIT FEEDING PANEL 'H2', REFER TO SHEET E101 FOR WIRING

COORDINATE CONDUIT PENETRATIONS WITH THE CONDENSATE PIPING PENETRATIONS

- DETAILS, (1)3" PVC SPARE CONDUIT, SPARE CONDUIT SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED
- 21. (2) 3"C (PVC).3" EMPTY SPARE (PVC) CONDUITS WITH PULL STRING AND END BUSHING FROM PROPOSED STUBBED UP LOCATIONS FOR FUTURE TENANT TO LOCATION SHOWN. CONDUITS SHALL BE STUBBED UP 12" ABOVE FINISHED FLOOR AND CAPPED
- (1)2" UNDERGROUND CONDUIT WITH STUB UP ORIGINATING AT TELEPHONE TERMINAL EXTERIOR CABINET FOR FUTURE TENANT TELECOM SERVICE, REFER TO E300, PROVIDE STRING AND END BUSHING AT LOCATION SHOWN CONDUIT SHALL BE STUBBED UP 12"

GENERAL SHEET NOTES:

1. THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2020 AND THE NATIONAL ELECTRIC CODE 2017.

NEC ARTICLE 250.52.

- 2. ALL GROUNDING ELECTRODE SYSTEMS SHALL BE INTERCONNECTED PER
- 3. NOT ALL POWER COMPANY AND OTHER UTILITY REQUIREMENTS ARE LISTED OR DESCRIBED IN THE PLANS AND SPECIFICATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL REQUIREMENTS, RACEWAYS, HARDWARE, EQUIPMENT, ETC., AS DICTATED BY THE UTILITY FOR A COMPLETE AND FUNCTIONING SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE UTILITIES FOR THEIR SPECIFIC REQUIREMENTS AND ADHERE TO ALL THEIR SPECIFICATIONS AND REQUIREMENTS, AT NO ADDITIONAL COST TO THE OWNER.
- 4. HIGHEST AVAILABLE FAULT CURRENT ON THE SECONDARY SIDE OF THE TRANSFORMER FROM THE POWER COMPANY IS 49.558A PER 500KVA TRANSFORMER. CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY FOR ANY CHANGES IN AVAILABLE FAULT CURRENT AND ADJUST THE AMPERE INTERRUPTING RATING (AIC) OF THE NEW PANELBOARD AS REQUIRED TO MEET OR EXCEED THE AVAILABLE FAULT CURRENT, AT NO ADDITIONAL COST TO THE OWNER.

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- WHERE CONDUITS ARE CALLED TO BE INSTALLED SPARE OR EMPTY, PROVIDE A 3/16" POLYPROPYLENE PULL STRING.
- 6. ALL WIRING CONNECTING FROM THE EXTERIOR, INCLUDING WIRING STUBBED UP THROUGH CONCRETE SLAB, SHALL BE INSTALLED IN GRS CONDUIT AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 344. THIS INCLUDES THE MAIN POWER FEED FROM THE SERVICE ENTRANCE FUSED DISCONNECT, ANY TELEPHONE AND DATA CONDUITS, AND ANY CIRCUITS MOUNTED ON THE ROOF. PROVIDE DUXSEAL IN THESE CONDUITS. PROVIDE LINK-SEAL BY EATON CROUSE-HINDS OR APPROVED EQUAL BY OTHERS FOR ALL EXTERIOR CONDUIT PENETRATIONS.
- 7. ALL WIRING INSTALLED BELOW GRADE SHALL BE INSTALLED IN SCHEDULI 40 PVC AND SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 352. CONDUIT SHALL BE INSTALLED PER THE BURIED CONDUIT DETAIL, AT A MINIMUM DEPTH OF 36" BELOW FINISHED GRADE. FOR ALL BELOW GRADE BENDS AND VERTICAL RISERS, USE PVC COATED GRS CONDUIT. BITUMASTIC OR HEAT SHRINK WRAPPED GRS CONDUIT SHALL BE ACCEPTABLE IN LIEU OF PVC COATED GRS.
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- CONDUIT, UNLESS OTHERWISE NOTED, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 358. WHERE CONNECTING TO EQUIPMENT THAT HAS ROTATING OR VIBRATING PARTS (E.G. AHU, EXHAUST FAN, MOTOR, ETC.), TRANSITION TO FMC CONDUIT AND INSTALL IN ACCORDANCE WITH NEC ARTICLE 350. 10. ALL EQUIPMENT GROUNDING CONDUCTORS, GROUNDING ELECTRODE

ALL WIRING IN THE WAREHOUSE SHALL BE RUN EXPOSED IN EMT

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INSTALLED IN CONDUIT, THE CONDUIT SHALL ONLY BE INSTALLED FROM

12" ABOVE FINISHED GRADE AND DOWN BELOW GRADE. GROUNDING ELECTRODE CONDUCTORS SHALL BE EXPOSED AND SECURELY FASTENED 12" OR MORE ABOVE FINISHED GRADE. 12. VOLTAGE DROP IN ACCORDANCE WITH FLORIDA BUILDING CODE 5TH EDITION (2020) ENERGY CONSERVATION CODE CHAPTER 4, SECTION C405.7.3 HAS TAKEN IN ACCOUNT FOR THIS PROJECT. CONTRACTOR

SHALL COORDINATE WITH POWER COMPANY FOR ANY CHANGES IN CONDUCTOR LENGTH AND ADJUST THE SIZE AND AMPACITY OF THE

SERVICE ENTRANCE CONDUCTORS, AS REQUIRED, AT NO ADDITIONAL COST

- 13. WHERE PENETRATING A FIRE RATED WALL ASSEMBLY FOR WIRING, UTILIZE A UL LISTED FIRE-RATED ASSEMBLY, SIZED FOR THE CONDUIT MAKING THE PENETRATION, RATED FOR THE TYPE OF MATERIAL PENETRATING THI ASSEMBLY AND THE MATERIAL BEING PENETRATED, AND POSSESSING THI FIRE RATING OF THE ORIGINAL WALL ASSEMBLY. PENETRATION SHALL BE
- 14. RECEPTACLES, SWITCHES, SENSORS, RECEPTACLE AND TEL/DATA JACK COVERS SHALL BE COORDINATED WITH THE ARCHITECT FOR COLOR AND STYLE. REFER TO THE ARCHITECTURAL DRAWINGS. COVERS SHALL BE WHITE UNLESS OTHERWISE NOTED.

BY USG OR APPROVED OTHER.

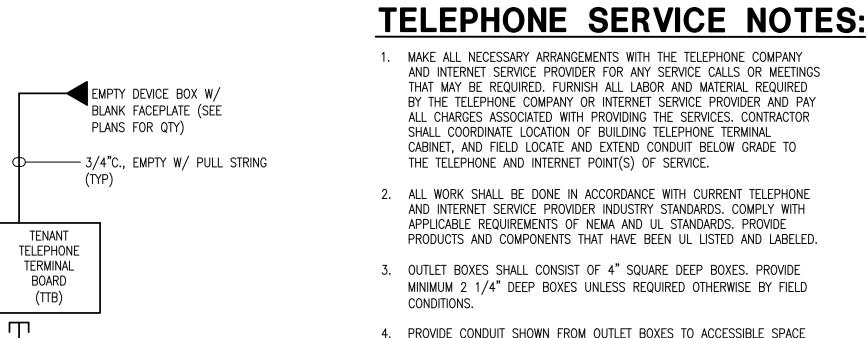
- 15. ELECTRICAL INSTALLATION MUST BE FIELD COORDINATED WITH NEW AUTOMATIC FIRE SPRINKLER SYSTEM SUCH THAT ANY ELECTRICAL EQUIPMENT, DEVICE/JUNCTION BOXES AND RACEWAYS ARE NOT CONSIDERED OBSTRUCTIONS.
- . WORKING CLEARANCES SHALL BE PROVIDED TO ALL ELECTRICAL EQUIPMENT IN ACCORDANCE WITH NEC ARTICLE 110.26. PROVIDE HAZARD FLOOR MARKING TAPE BY SAFETYTAC OR APPROVED EQUAL, TO MARK THE WORKING CLEARANCES REQUIRED IN FRONT OF ALL ELECTRICAL EQUIPMENT. SAFETY FLOOR MARKING TAPE SHALL BY 3" WIDE, LOW PROFILE, 100% SMEAR AND SCUFF RESISTANT WITH TAPERED EDGES.
- 17. MULTIPLE BRANCH CIRCUITS SHALL NOT HAVE A SHARED NEUTRAL CONDUCTOR.
- 18. COORDINATE HVAC DIFFUSER AND DUCTWORK LOCATIONS WITH THE OCCUPANCY SENSORS, LIGHTING LAYOUT, CONDUIT AND WIRE ROUTING, ETC. REFER TO HVAC MECHANICAL DRAWINGS FOR ADDITIONAL DETAILS AND REQUIREMENTS. CONTRACTOR SHALL AVOID LOCATING SENSORS NEAR HVAC AIR DIFFUSERS. REFER TO HVAC WIRING DIAGRAMS AND SCHEDULES FOR CIRCUIT REQUIREMENTS OF HVAC EQUIPMENT.
- 19. TAP CONDUCTORS FOR LUMINAIRE TERMINAL CONNECTION TO AN OUTLET OR JUNCTION BOX SHALL BE PERMITTED TO BE RUN IN FMC, OR AS MC CABLE, AND INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410.117(C). OUTLET/JUNCTION BOX SHALL BE AT LEAST 1-FT FROM THE LUMINAIRE TAP CONDUCTORS SHALL FMC OR TYPE MC CABLE SHALL BE AT LEAST 18-IN BUT NO MORE THAN 6-FT IN LENGTH.
- 20. FOR ALL OUTDOOR LIGHT FIXTURES AND JUNCTION BOXES, CONTRACTOR SHALL THRU WIRE DIRECTLY INTO THE LIGHT FIXTURE OR JUNCTION BOX FROM INSIDE THE BUILDING. CONTRACTOR SHALL NOT RUN EXPOSED CONDUIT ON THE EXTERIOR OF THE BUILDING FOR LIGHTING. PROVIDE WALL MTD DEVICE BOXES AS SHOWN, AND AS REQUIRED, FOR FEEDING WIRE INTO THE LIGHT FIXTURE. WHERE DEVICE AND JUNCTION BOXES ARE INSTALLED OUTSIDE, THEY SHALL BE THE WEATHERPROOF TYPE, CONSTRUCTED OF STAINLESS STEEL.
- EACH HIGH BAY LIGHT FIXTURE IN THE WAREHOUSE HAS A FACTORY INSTALLED OCCUPANCY SENSOR OR MOTION DETECTOR WHICH CONTROLS THE LIGHT FIXTURE. REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL DETAILS AND REQUIREMENTS. ALL WIRING BETWEEN THE SENSOR AND THE LIGHT FIXTURE SHALL BE FACTORY INSTALLED.
- CHAIN HANG HIGH BAY LIGHT FIXTURE FROM ROOF DECK. BAR JOISTS. OR STRUCTURAL STEEL MEMBERS AND GIRDERS. LIGHT FIXTURES SHALL BE MOUNTED HIGH ENOUGH TO PROTECT THE CLEAR HEIGHT OF THE BUILDING. PROVIDE ALL REQUIRED STRUT, BEAM CLAMPS, V BRACKETS, CHAIN EXTENSIONS, ETC., AS REQUIRED FOR A SECURE AND COMPLETE INSTALLATION. CONDUIT AND WIRE TO THE LIGHT FIXTURE SHALL ALSO BI MOUNTED WITH THE SAME REQUIREMENTS. REFER TO HIGH BAY FIXTURE MOUNTING DETAIL FOR ADDITIONAL DETAILS AND REQUIREMENTS.

E302

A/E Job Number:

18406

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TELEPHONE TERMINAL BOARD RISER DIAGRAM

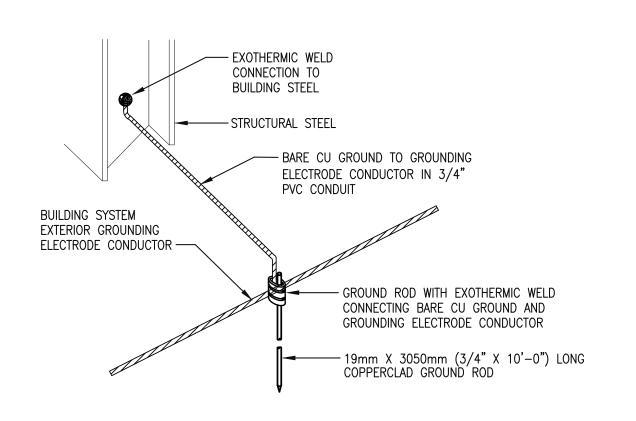
- 4. PROVIDE CONDUIT SHOWN FROM OUTLET BOXES TO ACCESSIBLE SPACE ABOVE CEILING, TERMINATED WITH BUSHING. WHERE HARD CEILINGS ARE INSTALLED, ROUTE CONDUIT TO NEAREST ACCESSIBLE LOCATION. FOR EXISTING OUTLET BOXES, REROUTE EXISTING CABLES TO THE NEW TELEPHONE TERMINAL BOARD. REFER TO PLANS FOR LOCATIONS AND FIELD VERIFY CABLE LENGTHS.
- THE NEAREST BUILDING GROUNDING ELECTRODE SYSTEM. 6. COORDINATE WITH THE TENANT'S IT REPRESENTATIVE FOR ANY ADDITIONAL REQUIREMENTS.

BACKBOARD LOCATION. PROVIDE A #4 GREEN COPPER GROUND FROM

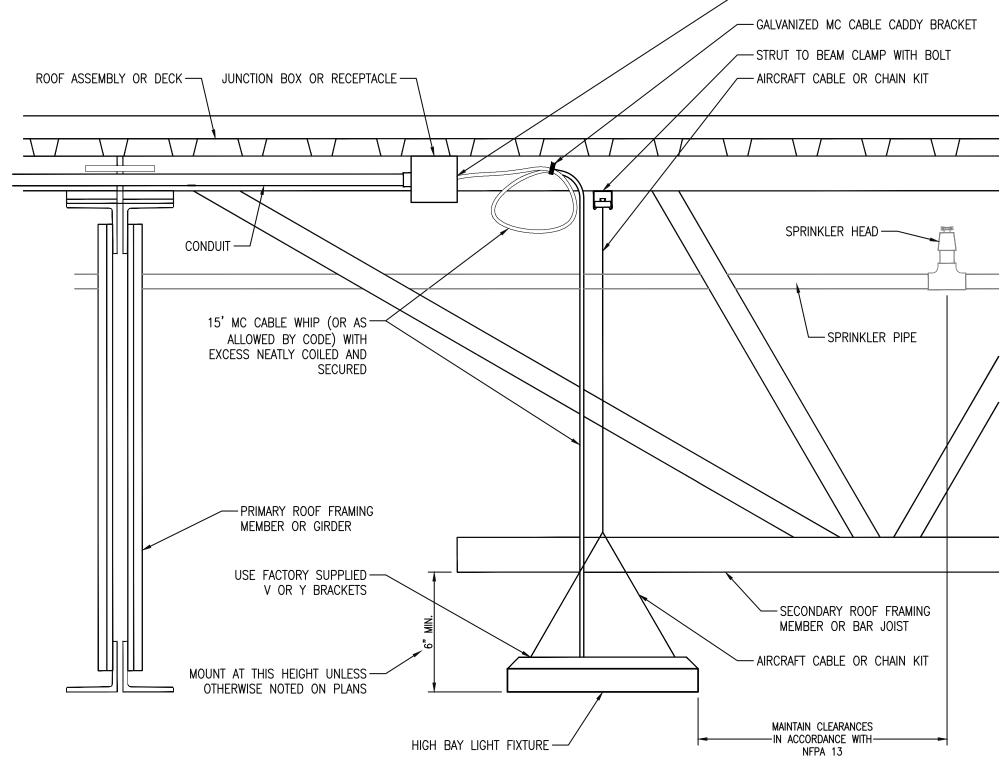
EACH GROUND BAR TO THE MAIN TELEPHONE SYSTEM GROUND OR TO

5. PROVIDE A GROUND BAR AT EACH NEW TELEPHONE TERMINAL

TYPICAL WATER TIGHT CONNECTION DETAIL

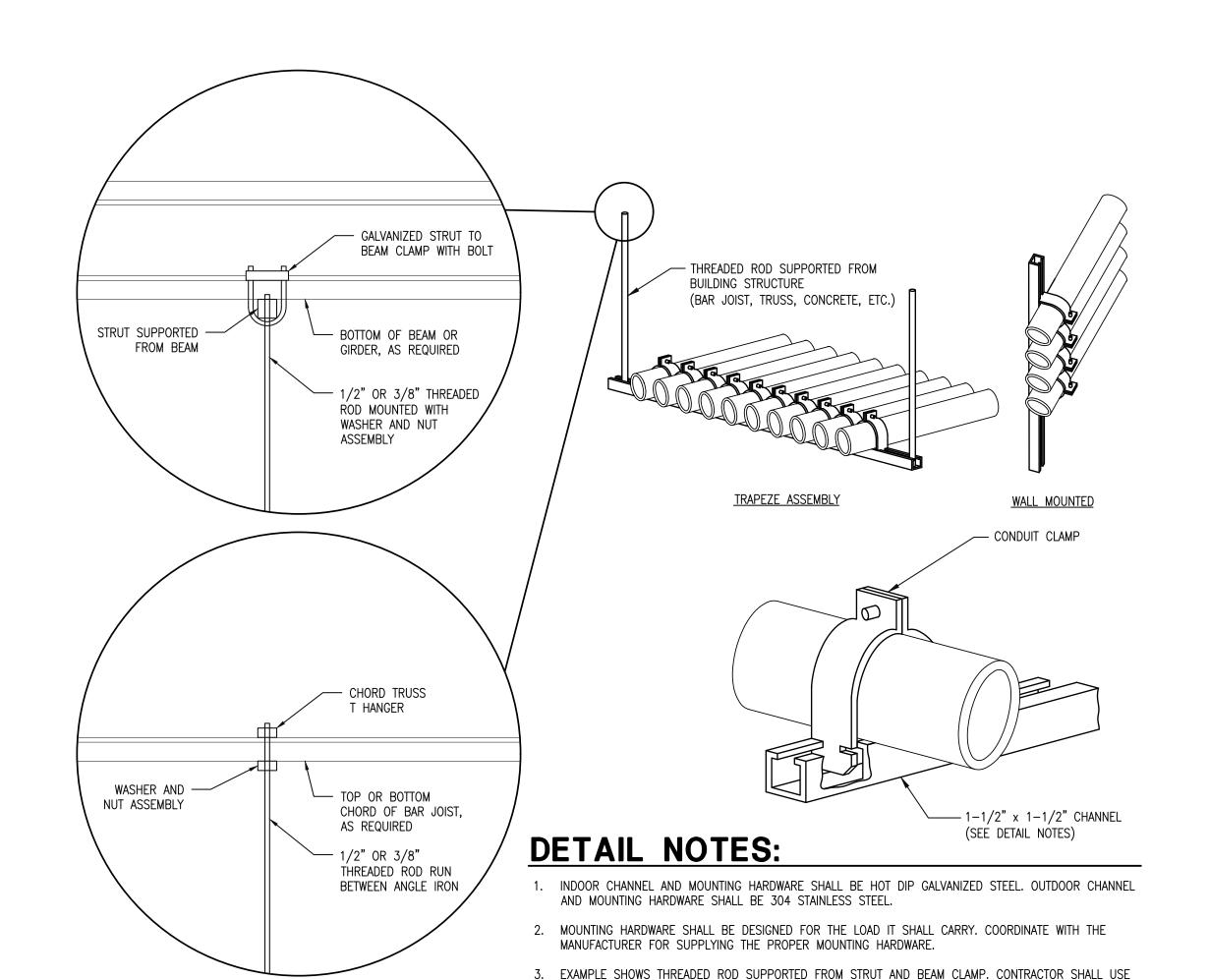


STRUCTURAL STEEL GROUNDING DETAIL



- TO ADDITIONAL TELECOMMUNICATIONS

EQUIPMENT WITH ADDITIONAL GROUND



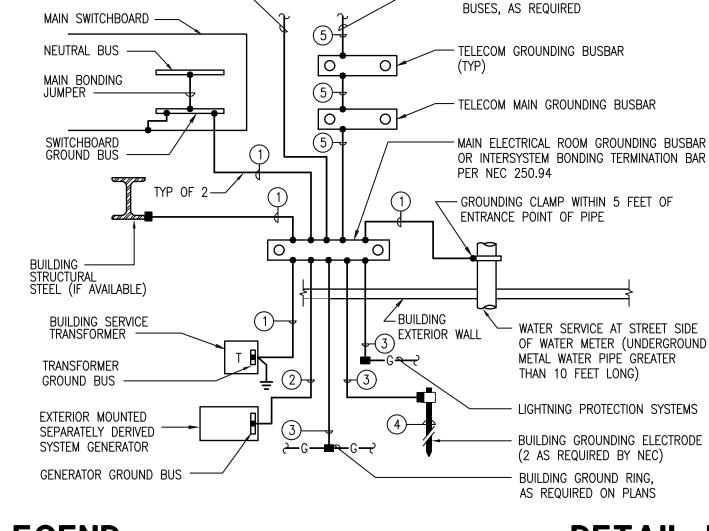
MOUNTED TO.

CONDUIT PIPE STRAP MOUNTING DETAILS

HEAVY DUTY SLEEVE ANCHOR FOR MOUNTING DIRECTLY INTO CONCRETE. CONTRACTOR SHALL COORDINATE WITH THE STRUCTURAL DESIGNER FOR ACCEPTABLE MEANS AND METHODS FOR SUPPORTING RACEWAYS, BOXES, FITTINGS AND RACEWAYS FROM NEW AND EXISTING STRUCTURES. CONTRACTOR SHALL USE APPROPRIATE MEANS TO ANCHOR THE THREADED ROD, BASED ON THE MATERIAL OR STRUCTURAL BEING

GENERAL CONTRACT

4. INSTALL AS REQUIRED PER ELECTRICAL NOTES AND SPECIFICATIONS.



LEGEND:

INDICATES MECHANICALLY BOLTED CONNECTION

RED STANDOFF INSULATOR,

10mm (3/8") STAINLESS

STAINLESS STEEL MOUNTING

BRACKET WITH 25mm (1") OFFSET

STEEL MOUNTING BOLT

GROUND CONNECTION FOR EQUIPMENT COMPRESSION LUG BOLTS, WIRE etc. BY EQUIPMENT INSTALLER.

POLYESTER/FIBERGLASS.

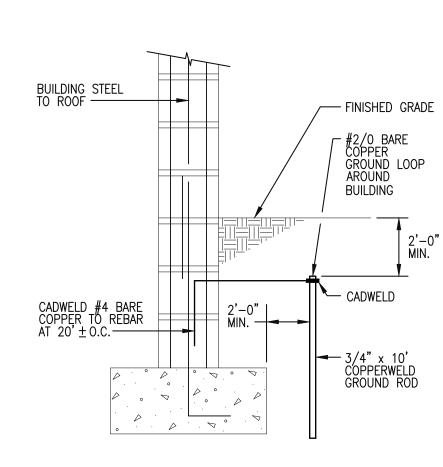
- INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIALS BEING JOINED. (1) 3/0 AWG INSULATED COPPER GROUND CONDUCTOR IN 1" CONDUIT.
- (2) 3/0 AWG COPPER GROUND CONDUCTOR ENCASED IN CONCRETE. (3) 3/0 AWG BARE COPPER GROUND CONDUCTOR (GROUNDING ELECTRODE CONDUCTOR). $\binom{4}{3}$ 3/4" x 10'-0" LONG COPPER-CLAD GROUND ROD DRIVEN WITH TOP 12" BELOW GRADE. (5) 3/0 AWG INSULATED COPPER GROUND CONDUCTOR IN 1" CONDUIT.

BUILDING GROUNDING ELECTRODE SYSTEM SCHEMATIC DETAIL

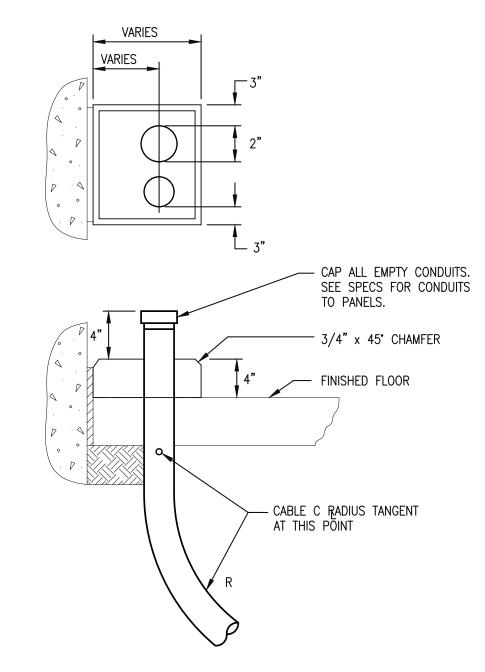
DETAIL NOTES:

- COMPONENTS SHOWN ARE NOT NECESSARILY INSTALLED UNDER THE SCOPE OF THIS PROJECT. SOME OF THE COMPONENTS SHOWN ARE EXISTING. NEW ELECTRICAL AND GROUNDING EQUIPMENT SPECIFIED UNDER THE SCOPE OF THIS PROJECT SHALL CONNECT TO NEW AND EXISTING EQUIPMENT AS SHOWN BY THIS SCHEMATIC DETAIL.
- 2. REFER TO PLANS AND RISER DIAGRAMS FOR ADDITIONAL DETAILS AND REQUIREMENTS.

HIGH BAY FIXTURE MOUNTING DETAIL



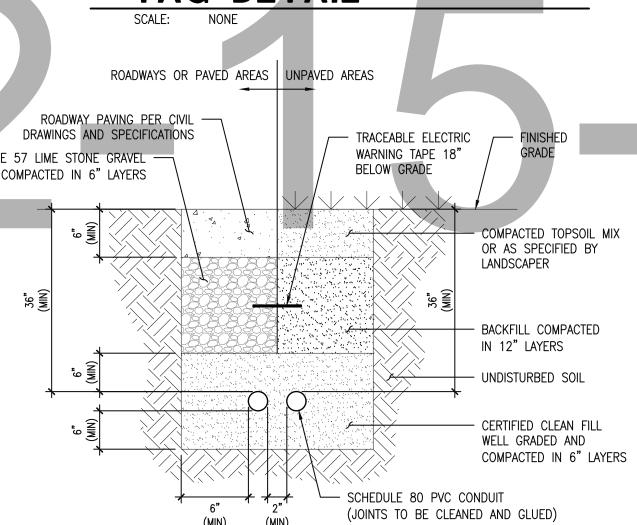
BUILDING STRUCTURE BONDING DETAIL

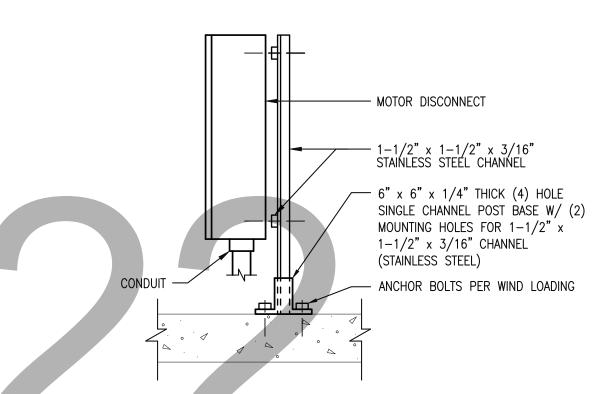


- PLUG OR MC CABLE FITTING

TYPICAL CONDUIT THRU SLAB DETAIL

FEEDER CONDUCTOR — HEAVY PLASTIC TIE WRAP ----BRASS OR LEAD DISK W/STAMPED IDENTIFICATION ——





DETAIL NOTES:

. FOR ALL ROOF MOUNTED EQUIPMENT AND CONDUIT ROOF PENETRATIONS, CONTRACTOR TO PROVIDE ALL SEALING, FLASHING, CURBING, ETC., REQUIRED TO PROPERLY WATERPROOF AND SEAL CONDUIT AND MOUNTING HARDWARE PENETRATIONS. INSULATION SHALL MATCH THE EXISTING ROOF IN THERMAL EFFICIENCY AND MAINTAIN AIR/WATER TIGHTNESS. ROOFING MODIFICATIONS, PATCHING, REPAIRS, ETC., SHALL BE PERFORMED IN ACCORDANCE WITH THE ROOFING MANUFACTURER'S WARRANTY TO MAINTAIN EXISTING ROOF WARRANTY.

TYPICAL DISCONNECT ROOF MOUNTING DETAIL SCALE:

FRONT ELEVATION

SECTION "A-A"

ANCHOR SUITABLE FOR

BUILDING TELECOMMUNICATIONS SYSTEM GROUND BUS DETAILS

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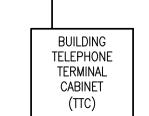
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E400

Drawing Number:

A/E Job Number: 18406

— 2"C., EMPTY W/ PULL STRING (SEE PLANS FOR QTY AND LOCATIONS)



PROVIDE BUSHING TO FIT CABLE - SHEET METAL ENCLOSURE COUPLING - ADAPTER - GRS CONDUIT CROUSE HINDS TYPE "EYS" CONDUIT SEAL (EMPTY) —►

- CROUSE HINDS TYPE "CGB" CONNECTOR FURNISHED WITH PUMP

 CONTROL PANEL OR DISCONNECT CONDUCTORS TO CONNECTOR — COUPLING PVC ADAPTER (TYP) PVC CONDUIT

TO CATV, DISH SATELLITE -

SYSTEMS, RADIO SYSTEM

CABLES, ANTENNAS, ETC.

DETAIL NOTES: 1. COMPONENTS SHOWN ARE NOT NECESSARILY INSTALLED UNDER THE SCOPE OF THIS PROJECT. SOME OF THE COMPONENTS SHOWN ARE EXISTING. NEW ELECTRICAL AND GROUNDING EQUIPMENT SPECIFIED UNDER THE SCOPE OF THIS PROJECT SHALL CONNECT TO NEW AND EXISTING EQUIPMENT AS SHOWN UNDERGROUND CABLE TAG DETAIL BY THIS SCHEMATIC DETAIL. 2. REFER TO PLANS AND RISER DIAGRAMS FOR ADDITIONAL DETAILS AND REQUIREMENTS. ADDITIONAL GROUND CONNECTIONS SHALL BE PROVIDED BY THE TELECOMMUNICATIONS EQUIPMENT INSTALLER. COORDINATE WITH THE TENANT'S IT REPRESENTATIVE AND THE LOW VOLTAGE SYSTEM DESIGNER FOR ADDITIONAL DETAILS AND REQUIREMENTS. REFER TO GROUNDING AND BONDING DIAGRAM FOR ADDITIONAL DETAILS AND REQUIREMENTS. ALL WALL ANCHORS, MOUNTING HARDWARE, BOLTS, WASHERS, ETC. SHALL BE STAINLESS STEEL. COMPACTED IN 6" LAYERS SUITE OR TENANT LEVEL TELECOMMUNICATIONS ROOMS OR TELEPHONE TERMINAL BACKBOARDS SHALL HAVE TELECOM GROUNDING BUSBAR (TGB), CPI PN 13622-012 AS MANUFACTURED BY CHATSWORTH PRODUCTS, INC., OR EQUAL BY 7. FLOOR OR BUILDING LEVEL TELECOMMUNICATIONS ROOMS OR TELEPHONE TERMINAL BACKBOARDS/CABINETS SHALL HAVE TELECOM MAIN GROUNDING BUS BAR (TMGB), CPI PN 40153-020 AS MANUFACTURED BY CHATSWORTH PRODUCTS, INC., OR EQUAL BY OTHERS. 8. ALL GROUNDING BUSBARS MUST BE UL AND NRTL LISTING WITH PRE-DRILLED TWO-HOLE LUGS PER BICSI AND ANSI/EIA/TIA.

BELOW GRADE RACEWAY DETAIL

encountered in the field.

and alternate methods of construction.

See General Information for Through-penetration Firestop Systems

include the following construction features:

Partition Design.

in. from nearest stud in wall cavity.

AFC CABLE SYSTEMS INC

jacket under a metal armor.

a jacket under a metal armor.

without a jacket under a metal armor.

AFC CABLE SYSTEMS INC

AFC CABLE SYSTEMS INC

AFC CABLE SYSTEMS INC

3M COMPANY — CP 25WB+.

Service. Always look for the Mark on the product.

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types of Through-Penetrating Products may be used:

wide by 1-3/8 in. deep channels spaced max 24 in. OC.

• Only products which bear UL's Mark are considered Certified.

use of UL Certified products, equipment, system, devices, and materials.

• Authorities Having Jurisdiction should be consulted before construction.

XHEZ.W-L-3015 - THROUGH-PENETRATION FIRESTOP

SYSTEMS

Design/System/Construction/Assembly Usage Disclaimer

• Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for

compliance with applicable requirements. The published information cannot always address every construction nuance

XHEZ - Through-penetration Firestop Systems

System No. W-L-3015

August 18, 2011

F Rating — 1 and 2 Hr (See Item 3)

T Ratings — 0, 3/4 and 2 Hr (See Item 2)

L Rating at ambient — less than 1 CFM per sq ft. (See Item 3)

L Rating at 400 F — less than 1 CFM per sq ft. (See Item 3)

SECTION A-A

. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4

B. **Gypsum Board*** — Nom 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum board type, number of

layers and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of openings cut

C. Fasteners — When wood stud framing is employed, gypsum board attached to studs with cement coated nails as

attached to studs with Type S self-drilling, self-tapping bugle-head steel screws as specified in the individual Wall or

Diam of circular through opening cut through gypsum board on each side of wall assembly to be min 1/4 in. to max 11/16 in.

2. **Through Penetrating Product*** — Max one armored cable or metal clad cable to be installed near center of circular

opening in gypsum board. Through penetrating product to be rigidly supported on both sides of wall assembly. The following

A. Max four copper conductors No. 2/0 AWG (or smaller) aluminum or steel Armored Cable# or Metal-Clad Cable+.

B. Two or more twisted copper conductors No. 6 AWG (or smaller) **Power Limited Circuit Cable+** with or without a

C. Two or more twisted copper conductors No. 10 AWG (or smaller) Power Limited Fire Alarm Cable+ with or without

D. Two or more twisted copper conductors No. 12 AWG (or smaller) Non Power Limited Fire Alarm Cable+ with or

When installed in 1 hr fire rated wall assembly, T Rating is 0 hr. When installed in 2 hr fire rated wall assembly, T Rating is 3/4 hr

when max armored cable, metal-clad cable or power limited circuit cables are used. The T Rating is 2 hr when non power limited

3. Fill, Void or Cavity Material* — Caulk — Caulk fill material forced into annular space around entire circumference of

through penetrating product to completely fill opening in gypsum board on each side of the wall assembly. A min 5/8 in.

* Indicates such products shall bear the UL or cUL Certification Mark for

jurisdictions employing the UL or cUL Certification (such as Canada),

thickness of caulk is required for the 1 hr F Rating. A min 1-1/4 in. thickness of caulk is required for the 2 hr F Rating.

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured

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larger than diam of through penetrating product (Item 2) installed in through opening. Side edge of circular opening to be min 3

specified in the individual Wall or Partition Design. When steel channel stud framing is employed, gypsum board

in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in.

manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall

• When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product

manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for

each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials

• Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and

XHEZ.C-AJ-1044 - THROUGH-PENETRATION FIRESTOP SYSTEMS

Design/System/Construction/Assembly Usage Disclaimer

• Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.

compliance with applicable requirements. The published information cannot always address every construction nuance

- Authorities Having Jurisdiction should be consulted before construction. • Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for
- encountered in the field. • When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials
- and alternate methods of construction. • Only products which bear UL's Mark are considered Certified.

XHEZ - Through-penetration Firestop Systems

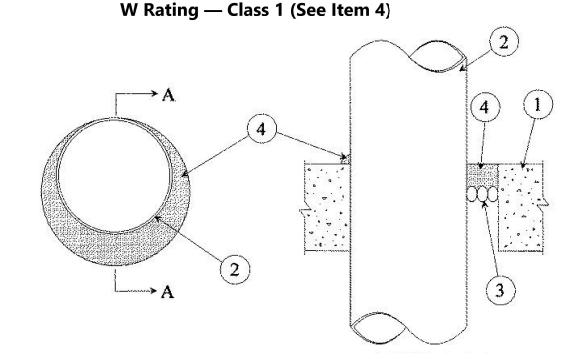
See General Information for Through-penetration Firestop Systems

System No. C-AJ-1044

March 15, 2007

F Ratings — 2, 3, and 4 Hr (See Items 2A and 4) T Rating — 0 Hr L Rating At Ambient — 2 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft



SECTION A-A

1. **Floor or Wall Assembly** — Lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Except as noted in table under Item 4, min thickness of solid concrete floor or wall assembly is 4-1/2 in. (114 mm). Floor may also be constructed of any min 6 in.(152 mm) thick UL Classified hollow core **Precast Concrete Units***. When floor is constructed of hollow core precast concrete units, packing material (Item 3) and caulk fill material (Item 4) to be installed symmetrically on both sides of floor, flush with floor surface. Wall assembly may also be constructed of any UL Classified Concrete Blocks*. Max diam of opening in solid lightweight or normal weight concrete floor is 32 in. (813 mm). Max diam of opening in floor constructed of hollow-core precast concrete units is 7 in. (178 mm)

1A. Steel Sleeve — (Optional, Not Shown) - Nom 16 in. (406 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Sleeve may extend a max of 2 in. (51 mm) above top of floor or beyond either surface of wall. As an alternate, nom 16 in (406 mm) diam (or smaller) min 0.028 (0.71 mm) thick galvanized sheet steel sleeve cast or grouted into floor or wall assembly flush with floor or wall surfaces.

See Concrete Blocks (CAZT) and Precast Concrete Units (CFTV) categories in the Fire Resistance Directory for names of manufacturers.

2. **Through Penetrants** — One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Max annular space between pipe, conduit or tubing and edge of through opening or sleeve is dependent on the parameters shown in Item 4. Min annular space between pipe or conduit and edge of through opening is 0 in. (point contact). Max annular space to be as shown in the table in Item 4. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

B. Iron Pipe — Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.

C. **Conduit** — Nom 6 in. (152 mm) diam (or smaller) rigid steel conduit.

D. **Conduit** — Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.

A. **Steel Pipe** — Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

E. Copper Tubing — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tube.

F. **Copper Pipe** — Nom 6 n. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. Packing Material — Polyethylene backer rod or nom 1 in. (25 mm) thickness of tightly-packed mineral wool batt or glass fiber insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of caulk fill material (Item 4).

3A. Forming Material* — As an alternate to the packing material in Item 3, nom 4 in. (102 mm) wide strips of min 1/2 in (13 mm) thick compressible mat to be stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 4 in. (102 mm) depth. As an option, the strips of min 1/2 in. (13mm) thick compressible mat may be folded in half, lengthwise, and stacked to a thickness greater than the width of the annular space and compression-fitted, edge-first, to fill the annular space to a min 2 in. (51 mm) depth. Top of forming material to be recessed from top surface of floor or from both surfaces of wall as necessary to accommodate the required thickness of caulk **3M COMPANY** — Fire Barrier Packing Material

4. Fill, Void or Cavity Material* — Caulk, Sealant — Applied to fill the annular space flush with top surface of floor. In wall assemblies, required caulk thickness to be installed symmetrically on both sides of wall, flush with wall surface. At point contact location between penetrant and sleeve or between penetrant and concrete, a min 1/4 in. (6 mm) diam bead of caulk shall be applied at top surface of floor and at both surfaces of wall. The hourly F Ratings and the min required caulk thicknesses are dependent upon a number of parameters, as shown in the following t

Min Floor	Nom Pipe			
or Wall Thkns In.	Tube or Conduit Diam In.	Max Annular Space In.	Min Caulk Thkns In.	F Rating Hr
2-1/2 (64)	1/2-12 (13-305)	1-3/8 (35)	1/2 (13)	2
2-1/2 (64)	1/2-12 (13-305)	3-1/4 (83)	1 (25)	2
4-1/2 (114)	1/2-6 (13-152)	1-3/8 (35)	1/4 [6) (a)	2
4-1/2 (114)	1/2-12 (13-305)	1-1/4 (32)	1/2 (13)	3
4-1/2 (114)	1/2-20 (13-508)	2 (51)	1 (25)	3
4-1/2 (114)	1/2-20 (13-508)	2 (51)	1 (25)	3
4-1/2 (114)	1/2-12 (13-305)	3-1/4 (83)	1 (25)	3
4-1/2 (114)	22-30 (558-762)	2 (51)	2 (51)	3
5-1/2 (140)	1/2-6 (13-152)	1-3/8 (35)	1 (25) (b)	4

(a)Min 2 in (51 mm) thickness of mineral wool batt insulation or forming material (Item 3A) required in annular space.

(b)Min 1 in. (25 mm) thickness of mineral wool batt insulation required in annular space on both sides of floor or wall assembly. Min 1 in (25 mm) thickness of caulk to be installed flush with each surface of floor or wall assemb

3M COMPANY — CP 25WB+ or FB-3000 WT.

(Note - W Rating applies only when FB-3000 WT is used.)

respectively. Last Updated on 2007-03-15

* Indicates such products shall bear the UL or cUL Certification Mark for

jurisdictions employing the UL or cUL Certification (such as Canada),

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XHEZ.W-L-1001 - THROUGH-PENETRATION FIRESTOP SYSTEMS

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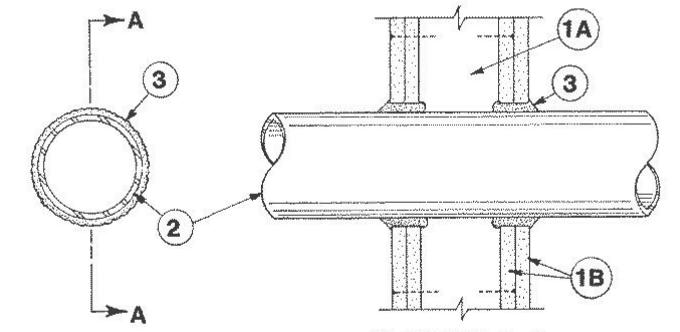
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- Authorities Having Jurisdiction should be consulted before construction
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

XHEZ - Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems

System No. W-L-1001

June 15, 2005 F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3) T Ratings — 0, 1, 2, 3, and 4 Hr (See Item 3) L Rating At Ambient — less than 1 CFM/sq ft L Rating At 400 F — less than 1 CFM/sq ft



SECTION A-A

- **Wall Assembly** The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
- A. Studs Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC with nom 2 by 4 in. (51 by 102 mm) lumber end plates and cross braces. Steel studs to be min 3-5/8 in. (92 mm) wide by 1-3/8 in. (35 mm) deep channels spaced max 24 in. (610 mm) OC.

B. **Gypsum Board*** — Nom 1/2 or 5/8 in. (13 or 16 mm) thick, 4 ft. (122 cm) wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm).

2. **Through-Penetrant** — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in / (0 mm). (point contact) to max 2 in. (51 mm) Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. **Steel Pipe** — Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe. B. Iron Pipe — Nom 24 in. (610 mm) diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in (305

mm) diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

WARD MFG L L C

C. Conduit — Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in (102 mm) diam (or smaller) steel

electrical metallic tubing D. **Copper Tubing** — Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing

E. **Copper Pipe** — Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.

F. **Through Penetrating Product*** — Flexible Metal Piping The following types of steel flexible metal gas piping may

1. Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly. OMEGA FLEX INC

2. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly. **GASTITE, DIV OF TITEFLEX**

3. Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

3. Fill, Void or Cavity Material* — Caulk or Sealant — Min 5/8., 1-1/4,1-7/8 and 2-1/2 in. (16, 32, 48 and 64 mm) thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. (6 mm) diam bead of caulk applied to gypsum board/penetrant interface at point cortact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

or Conduit Diam In (mm)	Rating Hr	Rating Hr	
1 (25)	1 or 2	0+, 1 or 2	
1 (25)	3 or 4	3 or 4	
4 (102)	1 or 2	0	
6 (152)	3 or 4	0	
12 (305)	1 or 2	0	
er pipe is used, T Rating is 0 h. IY — CP 25WB+ or FB-3000 WT.			_

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Last Updated on 2005-06-15

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XHEZ.W-L-1410 - THROUGH-PENETRATION FIRESTOP SYSTEMS

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and
- use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

XHEZ - Through-penetration Firestop Systems

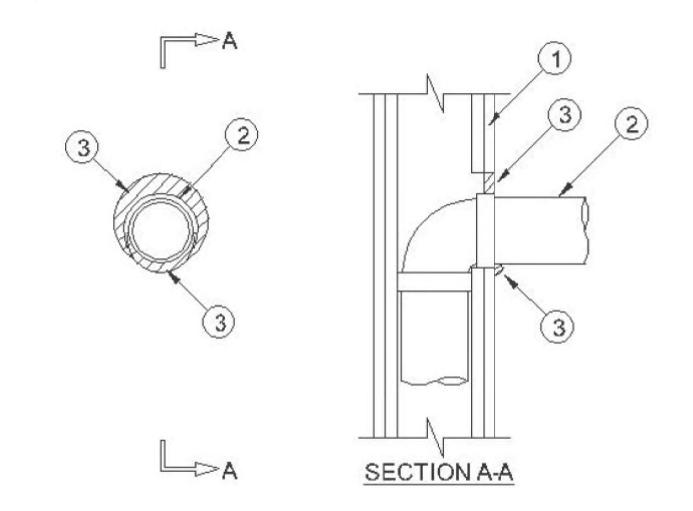
XHEZ7 - Through-penetration Firestop Systems Certified for Canada See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-L-1410

January 26, 2015

ANSI/UL1479 (ASTM E814)	CAN/ULC S115	
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)	
T Rating — 0 Hr	FT Rating — 0 Hr	
	FH Ratings — 1 and 2 Hr (See Item 1)	
	FTH Rating — 0 Hr	



1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max

B. **Gypsum Board*** — One or two layers of nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm). The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly.

2. **Through penetrants** — One metallic pipe or conduit to be installed either concentrically or eccentrically within the firestop

system. The annular space shall be 0 in. (point contact) to 1 in. (25 mm). Pipe or conduit to be rigidly supported on the

penetrated side of the wall assembly. The following types and sizes of metallic pipes or conduits may be used: A. **Steel pipe** — Nom 3 in. (76 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe. B. Conduit — Nom 3 in. (76 mm) diam (or smaller) steel electrical metallic tubing (EMT), nom 3 in. (76 mm) diam steel

conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.

C. **Copper Tubing** — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tubing. D. Copper Pipe — Nom 1 in. (25 mm) diam (or smaller) Regular (or heavier) copper pipe.

3. Fill, Void or Cavity Material + + — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with surface of wall. Min 1/2 in. (13 mm) diam bead of sealant applied at point contact location. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE MAX Intumescent Sealant, CFS-S-SIL GG Sealant, CP601S Elastomeric Sealant, CP 606 Sealant, or CP618 Putty.

++ Bearing the UL Classification Mark

Last Updated on 2015-01-26

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UL DETAILS GENERAL NOTES:

DETAILS SHOWN ARE TYPICAL DETAILS. IF FIELD CONDITIONS DO NOT MATCH REQUIREMENTS OF TYPICAL DETAILS, APPROVED ALTERNATE 8. AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED BEFORE CONSTRUCTION. DETAILS SHALL BE UTILIZED. FIELD CONDITIONS AND DIMENSIONS NEED TO BE VERIFIED FOR COMPLIANCE WITH THE DETAILS, INCLUDING THE MINIMUM ASSEMBLY RATING OF THE FIRESTOP ASSEMBLY SHALL MEET OR EXCEED THE HIGHEST RATING OF THE ADJACENT

2. IF ALTERNATE DETAILS MATCHING THE FIELD CONDITIONS ARE NOT AVAILABLE, MANUFACTURER'S ENGINEERING JUDGMENT DRAWINGS ARE ACCEPTABLE. DRAWINGS SHALL FOLLOW THE INTERNATIONAL FIRESTOP COUNCIL (IFC) GUIDELINES FOR EVALUATING FIRESTOP SYSTEMS ENGINEERING JUDGMENTS.

3. REFERENCES: 3.1. 2013 UNDERWRITER'S LABORATORIES FIRE RESISTANCE DIRECTORY

NFPA 101 LIFE SAFETY CODE

NFPA 70 - NATIONAL ELECTRIC CODE 3.4. ALL GOVERNING LOCAL AND REGIONAL BUILDING CODES

4. FIRESTOP SYSTEM INSTALLATION MUST MEET REQUIREMENTS OF ASTM E-814 (UL 1479) TESTED ASSEMBLIES THAT PROVIDE A FIRE RATING EQUAL TO THAT OF CONSTRUCTION BEING PENETRATED.

5. ALL RATED THROUGH-PENETRATION ASSEMBLIES SHALL BE PROMINENTLY LABELED WITH THE FOLLOWING INFORMATION: 5.1. ATTENTION: FIRE RATED ASSEMBLY 5.2. UL SYSTEM # * PRODUCT(S) USED

5.3. HOURLY RATING (F-RATING) 5.4. INSTALLATION DATE

UNDERWRITER'S LABORATORIES, FIRE RESISTANCE DIRECTORY. 7. AUTHORITIES HAVING JURISDICTION SHOULD BE CONSULTED IN ALL CASES AS TO THE PARTICULAR REQUIREMENTS COVERING THE

INSTALLATION AND USE OF UL CERTIFIED PRODUCTS, EQUIPMENT, SYSTEMS, DEVICES, AND MATERIALS.

6. FOR OUTLET BOXES REQUIRING PROTECTION, USE ONLY WALL OPENING PROTECTIVE MATERIALS, CATEGORY CLIV AS CLASSIFIED BY

BUT NOT LIMITED TO THE FOLLOWING: * MINIMUM AND MAXIMUM WIDTH OF JOINTS * TYPE AND THICKNESS OF FIRE-RATED CONSTRUCTION. 9. FIRE RESISTANCE ASSEMBLIES AND PRODUCTS ARE DEVELOPED BY THE DESIGN SUBMITTER AND HAVE BEEN INVESTIGATED BY UL FOR COMPLIANCE WITH APPLICABLE REQUIREMENTS. THE PUBLISHED INFORMATION CANNOT ALWAYS ADDRESS EVERY CONSTRUCTION NUANCE

> 10. WHEN FIELD ISSUES ARISE, IT IS RECOMMENDED THE FIRST CONTACT FOR ASSISTANCE BE THE TECHNICAL SERVICE STAFF PROVIDED BY THE PRODUCT MANUFACTURER NOTED FOR THE DESIGN. USERS OF FIRE RESISTANCE ASSEMBLIES ARE ADVISED TO CONSULT THE GENERAL GUIDE INFORMATION FOR EACH PRODUCT CATEGORY AND EACH GROUP OF ASSEMBLIES. THE GUIDE INFORMATION INCLUDES SPECIFICS CONCERNING ALTERNATE MATERIALS AND ALTERNATE METHODS OF CONSTRUCTION.

11. ONLY PRODUCTS WHICH BEAR UL'S MARK ARE CONSIDERED CERTIFIED.

12. THE APPEARANCE OF A COMPANY'S NAME OR PRODUCT IN THIS DATABASE DOES NOT IN ITSELF ASSURE THAT PRODUCTS SO IDENTIFIED HAVE BEEN MANUFACTURED UNDER UL'S FOLLOW-UP SERVICE. ONLY THOSE PRODUCTS BEARING THE UL MARK SHOULD BE CONSIDERED TO BE CERTIFIED AND COVERED UNDER UL'S FOLLOW-UP SERVICE. ALWAYS LOOK FOR THE MARK ON THE PRODUCT.

13. UL PERMITS THE REPRODUCTION OF THE MATERIAL CONTAINED IN THE ONLINE CERTIFICATION DIRECTORY SUBJECT TO THE FOLLOWING CONDITIONS:

13.1. THE GUIDE INFORMATION, ASSEMBLIES, CONSTRUCTIONS, DESIGNS, SYSTEMS, AND/OR CERTIFICATIONS (FILES) MUST BE PRESENTED IN THEIR ENTIRETY AND IN A NON-MISLEADING MANNER, WITHOUT ANY MANIPULATION OF THE DATA (OR DRAWINGS). 13.2. THE STATEMENT "REPRINTED FROM THE ONLINE CERTIFICATIONS DIRECTORY WITH PERMISSION FROM UL" MUST APPEAR ADJACENT TO

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Last Updated on 2011-08-18



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