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STECTRICAL

AGENCY INFORMATION:

FILE NO. 15-6

AC FILS STHISS CL

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	OPSC or OSHPD PROJ. NO:		
	PROJECT NO:		
	DRAWN BY:	VZ	
	CHK'D BY:	DF	
	ISSUE DATE:	10/19/2017	
	SHEET TITLE		

SYMBOLS & **GENERAL NOTES**

SHEET NUMBER

GENERAL ELECTRICAL NOTES THE DRAWINGS AND THESE GENERAL NOTES DESCRIBE THE SCOPE OF WORK AND SYSTEMS. THE MATERIAL REQUIRED FOR THE WORK SHALL BE CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED, UNLESS SPECIFICALLY NOTED OTHERWISE. THE WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING PRINCIPAL OBTAIN AND PAY FOR ALL NECESSARY CONSTRUCTION PERMITS, INSPECTION FEES, AND OTHER CHARGES BY

REGULATIONS AND CODES:
PROVIDE AND INSTALL ALL MATERIALS IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE, CALIFORNIA ADMINISTRATIVE CODE TITLE 8, AND OTHER CODES AND REGULATIONS HAVING JURISDICTION. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE INSPECTING AUTHORITY AND MANUFACTURERS

ABBREVIATIONS

U.L. STANDARD 486B TORQUING RECOMMENDATIONS

TIGHTENING TORQUE FOR SCREWS (a) TORQUE, POUND - INCHES

25

NO. 10 AND LARGER (b)

SLOT WIDTH (IN.) | SLOT LENGTH (IN.)

TO 3/64 OVER 3/64 TO 1/4 OVER 1/4

20 35 20

NORMALLY CLOSED NATIONAL ELECTRICAL CODE

O SCALE

POLYVINYL CHLORIDE

GALVANIZED STEEL CONDUIT

250

325

375

375

375

500

600

600

600

650

1000

1000

1100

1100

1100

1100

50

PERCENT OF VALUES IN TABLES AS ADJUSTED FOR AMBIENT TEMPERATURE IF NECESSARY

MAXIMUM NUMBER OF CONDUCTORS

NO. 14 NO. 12 NO. 10 NO. 8 NO. 6

25.5 12 11 10 8 5

29.5 14 13 11 9 5

42.0 21 18 16 14 8

7.5 3 3 3 2 1
10.0 5 4 4 3 2
10.5 5 4 4 3 2
12.5 6 5 5 4 2
14.0 7 6 5 4 2
18.0 9 8 7 6 3

10.3 5 4 4 3 2

13.0 6 5 5 4 2

14.5 7 6 5 4 2

6 5

8 7

24.0 | 12 | 10 | 9 | 8 | 4

10 9 8

8

7 8 5 4 2

7

7 4

4 2

6 | 3

6 3

THIS TABLE GIVES RECOMMENDED CONNECTOR INSTALLING TORQUES FOR COPPER AND ALUMINUM CONDUCTORS. THEY ARE FOR GUIDANCE ONLY WHERE NO TIGHTENING INFORMATION IS AVAILABLE AND

CLAMPING SCREWS WITH MULTIPLE TIGHTENING MEANS; FOR EXAMPLE FOR A SLOTTED HEXAGON HEAD SCREW, USE THE HIGHEST TORQUE VALUE ASSOCIATED WITH THE DIFFERENT TIGHTENING

(b) FOR VALUES OF SLOT WIDTH OR LENGTH OTHER THAN THOSE SPECIFIED, SELECT THE LARGEST TORQUE VALUS ASSOCIATED WITH CONDUCTOR SIZE.

CEC ART. 310 CONDUCTOR DERATING

NEC #310.15 (B)(2)(a) ADJUSTMENT FACTORS

WHERE SINGLE CONDUCTORS OR MULTICONDUCTOR CABLES ARE STACKED OR BUNDLED LONGER THAN

EXCEPTION NO. 1: WHERE CONDUCTORS OF DIFFERENT SYSTEMS, AS PROVIDED IN SECTION 300-3, ARE INSTALLED IN A COMMON RACEWAY OR CABLE, THE DERATING FACTORS SHOWN ABOVE SHALL APPLY TO THE NUMBER OF POWER AND LIGHTING (ARTICLES 210, 215, 220, AND 230) CONDUCTORS ONLY.

EXCEPTION NO. 3: DERATING FACTORS SHALL NOT APPLY TO CONDUCTORS IN NIPPLES HAVING A

EXCEPTION NO.4: DERATING FACTORS SHALL NOT APPLY TO UNDERGROUND CONDUCTORS ENTERING OR LEAVING AN OUTDOOR TRENCH IF THOSE CONDUCTORS HAVE PHYSICAL PROTECTION IN THE FORM OF RIGID METAL CONDUIT, INTERMEDIATE METAL CONDUIT, OR RIGID NONMETALLIC CONDUIT HAVING A LENGTH NOT

EXCEEDING 10 FEET (3.05m) ABOVE GRADE AND THENUMBER OF CONDUCTORS DOES NOT EXCEED FOUR.

21.0

13.5

18.0

9

CEC WIRE FILL TABLE 370-16

EXCEPTION NO. 2: FOR CONDUCTORS INSTALLED IN CABLE TRAYS, THE PROVISIONS OF SECTION 392.1

24 INCHES (610 mm) WITHOUT MAINTAINING SPACING AND ARE NOT INSTALLED IN RACEWAYS, THE ALLOWABLE AMPACITY OF EACH CONDUCTOR SHALL BE REDUCED AS SHOWN IN THE ABOVE TABLE.

(a) MORE THAN THREE CURRENT—CARRYING CONDUCTORS IN A RACEWAY OR CABLE. WHERE THE NUMBER OF CURRENT—CARRYING CONDUCTORS IN A RACEWAY OR CABLE EXCEEDS THREE, THE ALLOWABLE AMPACITIES SHALL BE REDUCED AS SHOWN IN THE FOLLOWING TABLE:

SHOULD NOT BE USED TO REPLACE MANUFACTURER'S INSTRUCTIONS WHICH SHOULD ALWAYS BE

PUBLIC ADDRESS PHASE PANEL

WEATHERPROOF

AMPERES
ALTERNATING CURRENT

BOVE FINISHED GRADE

NIA BUILDING CODE

GENERAL CONTRACTOR GROUND FAULT INTERRUPTING

CONTINUOUS LOAD TIGHT FLEXIBLE METAL CONDUIT

25

conces

NUMBER OF CURRENT—CARRYING CONDUCTORS 4 THROUGH 6 7 THROUGH 9

1 THROUGH

1 THROUGH 4

41 AND ABOVE

INCHES TRADE SIZE OR TYPE

4-11/16 x1-1/4 SQUARE

4-11/16 X1-1/2 SQUARE

4-11/16 X2-1/8 SQUARE

3 x2 x1-1/2 DEVICE

3 x2 x2 DEVICE 3 x2 x2-1/4 DEVICE

3 x2 x2-1/2 DEVICE

3 x2 x2-3/4 DEVICE 3 x2 x3-1/2 DEVICE

4 X2-1/8 X1-1/2 DEVICE

4 X2-1/8 X1-7/8 DEVICE

4 X2-1/8 X2-1/8 DEVICE

3-3/4 x2 x2-1/2 MASONRY

BOX / GANG 3-3/4 x2 x3-1/2 MASONRY

BOX / GANG
FS - MINIMUM INTERNAL DEPTH

1-3/4 SINGLE COVER / GANG FD - MINIMUM INTERNAL DEPTH

2-3/8 SINGLE COVER / GANG FS - MINIMUM INTERNAL DEPTH

1-3/4 MULTIPLE COVER / GANG FD - MINIMUM INTERNAL DEPTH

2-3/8 MULTIPLE COVER / GANG

ILOVOLT-AMPERE

MAGNET, MAGNETIC MAXIMUM

400

1250

VERIFYING EXISTING CONDITIONS:
BEFORE SUBMITTING BID, BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS AT THE
BUILDING SITE. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREINAFTER. BY
THE ACT OF SUBMITTING A BID PROPOSAL FOR THE WORK, THE CONTRACTOR SHALL BE DEEMED TO HAVE
MADE SUCH STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST
FOR ADDITIONAL PAYMENT WILL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS

COORDINATE ALL WORK WITH OTHER TRADES. OBTAIN ALL DRAWINGS THAT WILL REQUIRE COORDINATION AND PROVIDE ALL ELECTRICAL CONNECTIONS REQUIRED WHETHER SHOWN ON ELECTRICAL DRAWINGS OR NOT. ELECTRICAL EQUIPMENT LOCATIONS INDICATED ARE SHOWN DIAGRAMMATICALLY, EXACT LOCATION SHALL BE

UNINTERRUPTED EXISTING ELECTRICAL POWER SHALL BE MAINTAINED TO OTHER TRADES FOR TEMPORARY POWER AREAS OF THE SITE DURING CONSTRUCTION. PROVIDE ANY TEMPORARY SERVICES AS MAY BE REQUIRED. IDENTIFY AT BID TIME, ALL WORK TO BE DONE ON PREMIUM TIME AND THE TOTAL OVERTIME MAN—HOURS REQUIRED FOR COMPLETION.

PROVIDE RECORD DRAWINGS TO THE OWNER WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE SIGNED AND DATED BY CONTRACTOR PRIOR TO RELEASE OF

MARK PROJECT RECORD DOCUMENTS DAILY TO INDICATE ALL CHANGES MADE IN THE FIELD A.) IN ADDITION TO GENERAL REQUIREMENTS OF PROJECT RECORD DRAWINGS, INDICATE ON DRAWINGS, CHANGES OF EQUIPMENT LOCATIONS AND RATINGS, TRIP SIZES, AND SETTINGS ON CIRCUIT BREAKERS, ALTERATIONS IN RACEWAY RUNS AND SIZES, CHANGES IN WIRE SIZES, CIRCUIT DESIGNATIONS, INSTALLATION DETAILS, ONE—LINE DIAGRAMS, CONTROL DIAGRAMS AND SCHEDULES.

A.) USE THE SAME SYMBOLS AND FOLLOW THE SAME DRAFTING PROCEDURES USED ON THE CONTRACT LOCATE UNDERGROUND CONDUIT STUBBED—OUT FOR FUTURE USE, UNDERGROUND FEEDER CONDUITS, AND FEEDER PULL BOX LOCATIONS USING BUILDING LINES BY INDICATING ON THE PROJECT RECORD DRAWINGS.

AT THE COMPLETION OF UNDERGROUND CONDUIT INSTALLATION, PROVIDE UNDERGROUND CONDUIT RECORD

DOCUMENTS TO OWNER'S REPRESENTATIVE. TWO COPIES, IN BINDER FORM, OF ALL TEST RESULTS AS REQUIRED BY THESE DOCUMENTS TWO COPIES OF LOCAL AND/OR STATE CODE ENFORCING AUTHORITIES FINAL INSPECTION CERTIFICATES

FIRE ALARM SYSTEM RECORDS AND TESTING REPORTS AS OUTLINED IN NFPA 72, CHAPTER 10. TWO COPIES, IN BINDER FORM, OF ELECTRICAL EQUIPMENT CUT SHEETS, MANUFACTURER'S INSTALLATION INSTRUCTIONS, WARRANTY CERTIFICATES, AND PRODUCT LITERATURE FOR ALL PRODUCTS UTILIZED ON

GUARANTEE:
CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIALS ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR.

SUBMIT SHOP DRAWINGS AND MATERIAL LIST FOR REVIEW PRIOR TO COMMENCING ANY WORK. ALL EQUIPMENT O BEAR U.L. LABEL OR THAT OF ANOTHER ACCEPTABLE TESTING LABORATORY. SHOP DRAWINGS MUST BE THE CONTRACTOR FOR CONFORMANCE PRIOR TO SUBMITTAL. SUBMIT SIX SETS OF SHOP DRAWINGS FOR REVIEW PRIOR TO PURCHASING ALL BREAKER MOUNTING HARDWARE, DISCONNECT SWITCHES, FUSES, CONTROLLERS, LIGHTING FIXTURES, LIGHT SWITCHES,

CONTRACTOR'S BID SHALL BE BASED ON ALL WORK SHOWN ON THE PLANS AND AS SPECIFIED. CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, HE SHALL SUBMIT HIS REQUEST FOR CONSIDERATION OF THE OWNER AND ENGINEER PRIOR TO BID IN WRITING. ALL SUBSTITUTIONS SHALL BE REVIEWED BY THE ENGINEER IN WRITING. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS/HER OWN EXPENSE FOR ANY CHARGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS/HER OWN WORK, THE OWNER, ENGINEER OF RECORD OR THE WORK OF OTHER CONTRACTORS.

MATERIAL AND INSTALLATION: ALL MATERIALS SHALL BE NEW AND LISTED BY UNDERWRITERS LABORATORY (U.L.).
ALL WORK AND MATERIAL SHALL CONFORM TO THE LATEST RULES OF THE GOVERNING ELECTRICAL CODE AND INSTALLATION SHALL BE OF THE LATEST INDUSTRY STANDARDS OF WORKMANSHIP.

CONDUIT SHALL BE EMT, PVC, IMC, RIGID OR FLEXIBLE STEEL TYPE. CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH UL-1. A GROUND WIRE IS REQUIRED IN ALL FLEXIBLE COMMUNICATION, TELEPHONE & SPEAKER CONDUITS. PROVIDE 3/16" NYLON PULL STRING IN ALL EMPTY CONDUITS. NO MC, BX, OR AC90 SHALL BE PERMITTED.

SWITCHES AND RECEPTACLES: PROVIDE 20 AMP NEMA RATED SWITCHES AND RECEPTACLES OF SPECIFICATION GRADE. ALL SWITCHES SHALL BE RATED 120 AND/OR 277 VOLT AND RECEPTACLES SHALL BE NEMA 5-20R. IN ALL OFFICES AND OFFICE AREAS, DEVICES SHALL BE DECORA TYPE WITH COLOR SELECTION BY CONTRACTOR/OWNERS REPRESENTATIVE.

FEEDERS AND BRANCH CIRCUITS IDENTIFICATION:
IDENTIFY FEEDERS WITH THE CORRESPONDING CIRCUIT DESIGNATION AT THE OVER-CURRENT DEVICE, LOAD END, AND IN PULL BOXES WITH E-Z CODE OR OTHER APPROVED WIRE MARKER. IDENTIFY BRANCH CIRCUITS WITH I.D. MARKERS, THE CORRESPONDING CIRCUIT DESIGNATION AT THE OVER-CURRENT DEVICE, AT ALL SPLICES, IN JUNCTION BOXES, AND IN OUTLETS. USE PLASTIC COATED SELF-STICKING MARKERS SUCH AS THOMAS & BETTS E-Z CODE FOR IDENTIFICATION OF CONDUCTORS. IDENTIFY SIGNAL & COMMUNICATION CABLES AT TERMINAL AND OUTLET.

CONDUCTORS:
DELIVER ALL CONDUCTORS TO THE JOB SITE IN ORIGINAL UNBROKEN CARTON OR REEL, PROPERLY TAGGED WITH U.L. LABEL, SIZE, TYPE, MANUFACTURER, TRADE NAME AND THE DATE OF MANUFACTURE. CONDUCTORS
WITH U.L. LABEL, SIZE, TYPE, MANUFACTURER, TRADE NAME AND THE DATE OF MANUFACTURE. CONDUCTORS MUST BE MANUFACTURED WITHIN 6 MONTHS. PROVIDE COPPER CONDUCTORS #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. PROVIDE STRANDED COPPER CONDUCTORS FOR ALL WIRING. USE CONDUCTORS WITH THHN/THWN 600 VOLTS INSULATION. UNLESS OTHERWISE NOTED.

PANELBOARDS:
DISTRIBUTION AND LIGHTING PANELBOARDS WITHIN PROJECT AREA SHALL BE OF THE COPPER
BUS THREE PHASE, FOUR WIRE DISTRIBUTED PHASING TYPE. CIRCUITING SHALL BE ARRANGED
TO PROVIDE, AS NEARLY AS POSSIBLE, AN EVENLY BALANCED LOAD ON ALL PHASES.
PANELBOARDS SHALL BE BOLT—ON CIRCUIT BREAKER TYPE. AVAILABLE FAULT CURRENT IS STATED ON PANELBOARD SCHEDULE. PROVIDE PANEL IDENTIFICATION NAMEPLATE (ENGRAVED ON -ADHESIVE 1/2" MINIMUM LETTERS) AND TYPEWRITTEN LIST OF CIRCUITS IN THE DIRECTORY

STRUCTURAL SUPPORT:
EACH SECTION OF FLOOR MOUNTED SWITCHBOARD, DISTRIBUTION BOARD, MCC, ETC. SHALL BE BOLTED TO THE CONCRETE HOUSEKEEPING PAD USING (6) 3/4"-10 GRADE 2 BOLTS AND CONICAL WASHERS TORQUED TO 70LB-FT. PROVIDE MINIMUM 4000 PSI STRENGTH CONCRETE BELOW ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT. TIE THE TOP OF ALL FLOOR MOUNTED

ELECTRICAL EQUIPMENT TO THE BUILDING STRUCTURE IN A SEISMICALLY APPROVED MANNER.

DEMOLITION:
NOTIFY THE OWNER IMMEDIATELY WHEREVER EXISTING EQUIPMENT IS ENCOUNTERED WHICH MUST BE RELOCATED DUE TO THE NEW CONSTRUCTION, AND WHICH IS NOT INDICATED ON THE PLANS. 1. ALL REMOVED MATERIALS AND EQUIPMENT WHICH ARE SALVAGEABLE SHALL REMAIN THE PROPERTY OF THE OWNER. DELIVER SUCH SALVAGED MATERIALS AND EQUIPMENT ON THE PREMISES AS DIRECTED BY THE OWNER, AND NEATLY PILE OR STORE THEM AND PROTECT FROM DAMAGE. REMOVE FROM PREMISES AND DISPOSE OF ALL MATERIALS CONSIDERED BY THE OWNER TO BE SCRAP.

 4 x1-1/4 ROUND OR OCTAGONAL
 12.5
 6
 5
 5
 4
 2

 4 x1-1/2 ROUND OR OCTAGONAL
 15.5
 7
 6
 6
 5
 3

 4 x2-1/8 ROUND OR OCTAGONAL
 21.5
 10
 9
 8
 7
 4

 4 x1-1/4 SQUARE
 18.0
 9
 8
 7
 6
 3

 4 x1-1/2 SQUARE
 21.0
 10
 9
 8
 7
 4

 4 x2-1/8 SQUARE
 30.3
 15
 13
 12
 10
 6

 4 14/48 W1 1/4 SQUARE
 30.3
 15
 13
 12
 10
 6

 2. ALL DEVICES, CIRCUIT CONDUCTORS, FEEDERS, ETC., WHEN NOTED TO BE REMOVED, SHALL BE REMOVED TO THE LAST ACTIVE DEVICE. ALL OVER-CURRENT PROTECTION AND DISCONNECT DEVICES NO LONGER UTILIZED BUT REMAINING AS LAST ACTIVE DEVICE SHALL BE LABELED AS "SPARE". COORDINATE ALL OUTAGES WITH OWNER'S REPRESENTATIVE.

CAREFULLY PROTECT ALL WALLS, TRIM, FLOORS, EQUIPMENT UTILITY LINES AND MATERIALS. WHEN WORKING ON FINISHED SURFACES, LIMIT DAMAGE TO THE CONFINES AS MUCH AS POSSIBLE AND RESTORE TO THE ORIGINAL CONDITION ALL SURFACES WHICH ARE DAMAGED BECAUSE OF THE INSTALLATION OF THE WORK

1.) EQUIPMENT, MATERIALS AND SUPPLIES REMOVED FOR PROTECTION SHALL BE REPLACED IN ORIGINAL LOCATIONS. ANY MATERIALS DAMAGED SHALL BE REPLACED WITH NEW MATERIALS OF LIKE KIND AND QUALITY.

INDICATED OR HEREIN SPECIFIED. ALL HOLES, CURBS, ETC., IN FLOORS, CEILINGS AND WALLS SHALL BE PATCHED, UNLESS INDICATED OTHERWISE. PAINT ALL NEW ELECTRICAL RACEWAYS, CABINETS, ENCLOSURES AND FITTINGS PENETRATING INTO FIRE RATED ENVELOPES, SPACES, ETC.

3.) ALL CONDUIT RUNS SHALL BE CONCEALED, UNLESS SHOWN OTHERWISE. PROVIDE A PULL WIRE IN ALL EMPTY CONDUITS. 4.) EXISTING CONDITION SHOWN IS FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEY AND IS SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITION AT SITE. 5.) ALL WORK SHOWN IS NEW UNLESS SPECIFICALLY INDICATED AS EXISTING (X). ALL ELECTRICAL EQUIPMENT

MOUNTING AND ANCHORAGE MUST CONFORM WITH LOCAL AND STATE SEISMIC CODES. PROVIDE RACEWAYS, AND ALL MATERIAL INCLUDING PULLING CABLE IN EACH RACEWAY AS REQUIRED FOR THE TELEPHONE SYSTEM PER THE SERVING TELEPHONE COMPANY REQUIREMENTS.

GROUNDING AND BONDING:
FURNISH AND INSTALL COMPLETE BONDING AND GROUNDING SYSTEM AS REQUIRED BY CODES. CONTINUITY
OF GROUNDING SHALL BE MAINTAINED MECHANICALLY AND ELECTRICALLY THROUGHOUT THE SYSTEM. A GREEN
GROUNDING CODE SIZED CONDUCTOR SHALL BE CARRIED THROUGH IN ALL CONDUITS.

T IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT A COMPLETE AND WORKABLE ELECTRICAL INSTALLATION BE PROVIDED FOR ALL THE EQUIPMENT DESCRIBED OR SHOWN AS BEING IN THIS CONTRACT TOWARD THIS END FURNISH ALL LABOR AND TOOLS NECESSARY AND FURNISH AND INSTALL ALL APPARATUS, MATERIALS AND EQUIPMENT IN A FASHION COMPLYING WITH ALL APPLICABLE CODES, INCLUDING ITEMS REQUIRED BUT NOT NORMALLY SHOWN, SUCH AS LAMPS, COUPLINGS, HANGERS, BRACKETS, CLAMPS, BOXES,

PROCURE ALL PERMITS FROM LEGALLY CONSTITUTED AUTHORITIES, ARRANGE FOR ALL INSPECTIONS AND PAY ALL COSTS FOR FEES AND TESTS IN CONNECTION THEREWITH, COMPLY WITH CODES: NOTHING IN THESE DETERMINE EXACT ROUTING OF CONCEALED FEEDERS AND BRANCH CIRCUIT HOMERUNS IN COOPERATION

WITH OTHER TRADES TO SIMPLIFY INSTALLATION WHEREVER POSSIBLE BUT SUBJECT TO APPROVAL OF ARCHITECT FOR VISUAL AND STRUCTURAL REASONS. 3.) PROVIDE A CODE APPROVED DISCONNECT SWITCH OR CIRCUIT BREAKER WITHIN SIGHT OF EVERY MOTOR AND FEED MOTORS NOT EQUIPPED WITH "BUILT IN" PROTECTION THROUGH A MAGNETIC OR MANUAL STARTER WITH OVERLOAD HEATERS SIZED TO COMPLY WITH MOTOR MANUFACTURER'S RECOMMENDATIONS AND

4.) FOR CONNECTIONS TO EXHAUST FANS, PUMPS, COMPRESSORS, SPACE HEATERS, WATER HEATERS, AQUASTATS, SOLENOID VALVES, AND OTHER MECHANICAL EQUIPMENT AND FOR CONDUITS AND WIRE REQUIRED BUT NOT NECESSARILY SHOWN ON THESE DRAWINGS, REFER TO MECHANICAL PLANS AND DETERMINE EXACT LOCATIONS UNDER DIRECTION OF HEATING AND VENTILATING CONTRACTOR. 5.) DO NOT RUN ANY CONDUIT IN SLAB IF ITS OUTSIDE DIAMETER EXCEEDS 1/3 THE THICKNESS OF THE SLAB. LOCATE CONDUITS WITHIN THE MIDDLE OF THE SLAB. WHERE CONDUITS ARE GROUPED IN PARALLEL

RUNS, SPACE THEM 3" OR MORE APART. WHERE CONDUITS CROSS EACH OTHER, THICKEN THE SLAB PROPORTIONATELY OVER A HORIZONTAL AREA EQUAL TO TEN TIMES THE DIAMETER OF THE LARGEST CONDUIT REFER ALSO TO DETAILS SHOWN.

6.) SIZE OUTLET BOXES IN CONFORMITY WITH CODE FOR NUMBER AND GUAGE OF CONDUCTORS THEREIN.

7.) ALL ELECTRICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING SERVICING, MAINTAINING AND REPAIRING, ALL CONDUIT SHALL BE CONCEALED WHERE POSSIBLE, EXPOSED CONDUIT SHALL BE IN STRAIGHT LINES PARALLEL WITH, OR AT RIGHT ANGLES TO, COLUMN LINES OR BEAM AND SEPARATED BY AT LEAST THREE (3) INCHES FROM WATER LINES WHENEVER THEY RUN ALONG SIDE CACROSS SUCH LINES. CONDUIT SHALL NOT BE RUN BELOW CABLE TRAYS OR LIGHT FIXTURES WITHOUT SPECIFIC APPROVAL OF THE OWNER'S REPRESENTATIVE. HANGERS SHALL BE FASTENED TO STEEL, CONCRETE OR MASONRY, BUT NOT TO PIPING. HANGERS AND SUPPORT SYSTEMS ARE AN INTEGRAL PART OF THE VISUAL ENVIRONMENT. ALL HANGERS AND SUPPORTS EXPOSED TO PUBLIC VIEW MUST BE SHOWN IN DETAIL ON PLANS SUBMITTED TO LANDLORD FOR APPROVAL OF APPEARANCE. ALL HANGERS MUST BE UNIFORMLY SPACED AND NEATLY INSTALLED WITH NO EXCESS MATERIAL BEYOND WHAT IS REQUIRED FOR THE SUPPORT FUNCTION. CONTRACTOR SHALL SELECT ACCESSORIES AND HARDWARE WITH A SMOOTH, NEAT FINISHED APPEARANCE AND PAINT ALL EXPOSED CONDUIT HANGERS TO MATCH THE ADJACENT FINISHES.

8.) ALL WALL SWITCHES AND RECEPTACLES SHALL BE MOUNTED BETWEEN 18" AND 48" PER A.D.A. RÉQUIREMENTS UNLESS OTHERWISE NOTED.

ELECTRICAL SWITCHES: CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES OR COOLING, HEATING AND VENTILATING EQUIPMENT, SHALL BE LOCATED NO MORE THAN 48" MEASURED FROM THE TOP OF OUTLET BOX NOR LESS THAN 15" MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISHED FLOOR OR WORKING PLATFORM.

ELECTRICAL RECEPTACLE OUTLETS: ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES, SHALL BE LOCATED NO MORE THAN 48" MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15" MEASURED FROM THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF THE FINISHED FLOOR OR WORKING PLATFORM.

9.) CONTRACTOR SHALL EXAMINE PLANS AND VERIFY IN FIELD LOCATIONS OF ALL FIRE RATED WALLS, CEILINGS AND FLOORS. CONTRACTOR SHALL SEAL ALL ELECTRICAL SYSTEM PENETRATIONS THROUGH FIRE RATED WALLS, CEILINGS AND FLOORS WITH U.L. LISTED MATERIAL APPROVED BY THE AUTHORITY HAVING

O.) SURFACE MOUNTED RACEWAY COMPLETENESS: CONTRACTOR SHALL PROVIDE ALL RACEWAY, FITTINGS SUPPORTS, BOXES, DEVICES, PLATES ETC. NECESSARY FOR A COMPLETE AND WORKABLE SURFACE MOUNTED ELECTRICAL RACEWAY SYSTEM. PRIOR TO INSTALLATION, CONTRACTOR SHALL PERFORM A PRE-INSTALLATION SURFACE MOUNTED RACEWAY JOB WALK WITH OWNER & ARCHITECT FOR CONTRACTOR TO FIELD VERIFY EXACT ROUTING OF ANY & ALL SURFACE MOUNTED RACEWAYS.

ELECTRICAL SYSTEM ANCHORAGE:
ALL ELECTRICAL EQUIPMENT SHALL BE BRACED OR SEISMICALLY ANCHORED BY THE CONTRACTOR TO RESIST SEISMIC FORCES ACTING IN ANY DIRECTION. PROVIDE COMPLETE SEISMIC ANCHORAGE AND BRACING FOR SUPPORT OF ELECTRICAL RACEWAYS, CONDUITS, CABLE TRAYS, ELECTRICAL EQUIPMENT, ETC. IN ACCORDANCE THE SEISMIC BRACING AND ANCHORAGE SHALL BE PROVIDED PER THE LATEST EDITION OF THE SMACNA

SEISMIC RESTRAINT GUIDELINES.

ALL ELECTRICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA GUIDELINES. WHERE BRACING DETAILS ARE NOT SHOWN ON THE PLANS, THE FIELD INSTALLATIONS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEERS, AND THE ARCHITECT. A COPY OF LATEST SMACNA GUIDELINES SHALL BE KEPT AT THE JOB SITE AT ALL TIMES.

FIRE ALARM SYSTEM BY CONTRACTOR
CONTRACTOR SHALL FURNISH AND INSTALL A FIRE ALARM SYSTEM FOR THE PROJECT AREA TO INCLUDE:

A.) SMOKE DETECTORS IN ALL REQUIRED AREAS B.) HEAT DETECTORS IN ALL REQUIRED AREAS

.) DUCT DETECTORS IN ALL REQUIRED SPACES

STROBES/ALARMS IN ALL REQUIRED AREAS PULL STATIONS AT ALL LEGAL FIRE EXITS - WHERE REQUIRED

.) TAMPER AND FLOW SWITCHES AT FIRE SPRINKLER RISERS AND BACKFLOW PREVENTERS 3.) BRANCH CIRCUIT AND CONTROL WIRING TO FIRE SPRINKLER ALARM BELLS I.) SMOKE/FIRE DAMPER/HVAC UNIT SHUT-DOWN BRANCH CIRCUIT WIRING, CONTROL WIRING, CONTROL

. CONTRACTOR SHALL SUBMIT FOR THE OWNER'S SIGNED APPROVAL, APPROVED FIRE DEPARTMENT FIRE ALARM DRAWINGS FOR THE PROJECT SPACE.

2. ALL DEVICES AND EQUIPMENT SHALL BE CALIFORNIA STATE FIRE MARSHAL APPROVED.

3. CONTRACTOR SHALL WARRANTY ALL DEVICES AND SYSTEMS FOR A PERIOD OF TWO YEARS.

4. CONTRACTOR SHALL PROVIDE SIX (6) SETS OF FIRE ALARM MANUALS FOR ALL SYSTEMS AND DEVICES I ADDITION TO SIX (6) SETS OF A SYSTEM OPERATIONAL MANUAL TAILORED FOR THE PROJECT SPACE. 5. CONTRACTOR SHALL PROVIDE A SATISFACTORY TEST IN THE PRESENCE OF THE OWNER, FIRE PREVENTION

6. CONTRACTOR SHALL PROVIDE ALL CONNECTIONS TO POWER PANELS, CONDUIT AND WIRE AND CONNECTIONS REQUIRED TO PROVIDE AN OPERATIONAL FIRE ALARM SYSTEM.

SUBMITTAL DOCUMENTS FOR DEFERRED ITEMS SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH DESIGN OF THE BUILDING. THE DEFERRED ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

NOTE: SOME SYMBOLS SHOWN MAY NOT APPLY TO THIS PROJECT ANNOTATIONS & CALLOUTS 1) ELECTRICAL KEYNOTE: DENOTES KEYNOTE #1 OF NOTES ON SAME SHEET PANELBOARD PER PLANS, FLUSH MOUNTED IN WALL @ +6'-6" TO TOP OF TRIM PANELBOARD PER PLANS, SURFACE MOUNTED ON WALL @ +6'-6" TO TOP OF TRIM A INDICATES LIGHTING FIXTURE TAG NUMBER 62 INDICATES WATTAGE OF LIGHT FIXTURE SINGLE RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R UON (FOUND ON LIGHT FIXTURE SCHEDULE) DUPLEX RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R UON NDICATES MECHANICAL/PLUMBING EQUIPMENT OR DEVICE (FOUND (GFI DENOTES GROUND FAULT INTERRUPTER RECEPTACLE) - ON ELECTRICAL SCHEDULE FOR MECHANICAL EQUIPMENT OR ON MECHANICAL PLANS DUPLEX RECEPTACLE, WALL MOUNTED HORIZONTALLY @ +18" AFF, NEMA DUPLEX TVSS RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R UON DUPLEX RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R UON E3.0 INDICATES SHEET NUMBER TO FIND DETAIL TOP RECEPTACLE SWITCHED CEILING MOUNTED DUPLEX RECEPTACLE, NEMA 5-20R UON BREAK LINE INDICATES WORK EXTENDED BEYOND LIMITS SHOWN ON DRAWING. DOUBLE DUPLEX RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R UON CONDUIT & WIRING SYMBOLS SPECIAL PURPOSE ELECTRICAL OUTLET PER PLAN IN WALL @ +18", UON INDICATES A HOMERUN TO PANEL A5, CKTS 1-3-5 WITH SHARED JUNCTION BOX (ACCESSIBLE CEILING SPACE MTD.) SIZE PER TABLE AND NEC ARTICLE 370 NEUTRAL & CKT 7 WITH DEDICATED NEUTRAL. JUNCTION BOX (WALL MTD.) SIZE PER TABLE AND NEC ARTICLE 370 CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS RECESSED FLUSH FLOORBOX, FLOOR MOUNTED. SEE POWER AND SIGNAL PLANS. CONDUIT RUN CONCEALED BELOW FLOOR OR UNDERGROUND VERIFY EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN. COORDINATE COVER FINISH/COLOR WITH ARCHITECT PRIOR TO ORDERING. 3/4"C - 2 #12 & 1 #12 CU GND THERMOSTAT OUTLET BOX. 4S BOX WITH SINGLE GANG RING @ +42" AFF VOICE/DATA SYSTEM TELE/DATA OUTLET BOX IN WALL © +18", STUB A 1" CO UP 12" ABOVE ACCESSIBLE CEILING WITH BUSHING, 5S BOX WITH 1-GANG P-RING, UON TELE/DATA OUTLET BOX, MOUNTED IN WALL +6" ABOVE COUNTER OR SPLASH, STUB A 1" CO UP 12" ABOVE ACCESSIBLE CEILING WITH BUSHING, 5S BOX WITH H^{#10} 3/4"C - 2 #10 & 1 #10 GND FLUSH CEILING MOUNTED TELE/DATA OUTLET, 5S BOX WITH SINGLE GANG PLASTER #^{#10} 3/4°C - 3 #10 & 1 #10 GND 3/4°C - 4 #10 & 1 #10 GND TELEVISION OUTLET IN WALL @ +84", 5S BOX WITH 1-GANG RING, UON CONDUIT STUB, CAP AND IDENTIFY SINGLE-POLE SWITCH MOUNTED @ +42" AFF **Q.** FLEXIBLE CONDUIT CONNECTION. SEE PLAN. SINGLE POLE SWITCH @ +42", UON a INDICATES LIGHT FIXTURE TO BE SWITCHED LIGHTING FIXTURE SYMBOLS TWO-POLE SWITCH MOUNTED @ +42" AFF 2'X4' CEILING MOUNTED FLUORESCENT LIGHT FIXTURE W/OUTLET BOX 3-WAY SWITCH MOUNTED @ +42" AFF (RECESSED, SURFACE MOUNTED) 4-WAY SWITCH MOUNTED @ +42" AFF KEYED SWITCH MOUNTED @ +42" AFF _ a & b, ETC. INDICATES SWITCH IDENTIFICATION NUMBER INDICATES LIGHT FIXTURE BRANCH CIRCUIT HORSEPOWER RATED SWITCH MOUNTED @ +42" AFF 2'X2' CEILING MOUNTED FLUORESCENT LIGHT FIXTURE W/OUTLET BOX DIMMER SWITCH MOUNTED @ +42" AFF, 0-10V DIMMER COMPATIBLE WITH LED LIGHT FIXTURE, UON. CEILING MOUNTED FLUORESCENT LIGHTING FIXTURE WITH 4S OUTLET BOX OCCUPANCY SENSOR WALL SWITCH PER PLANS, MOUNTED @ +42" AFF (RECESSED, SURFACE MOUNTED) FLUORESCENT LIGHT FIXTURE WITH INTEGRAL 90 MINUTE EMERGENCY BATTERY SINGLE-POLE SWITCH (WITH PILOT LIGHT) @ +42" AFF PACK WITH 4S OUTLET BOX. (RECESSED, SURFACE MOUNTED) TIME SWITCH, FLUSH MOUNTED @ +42" AFF. WATTSTOPPER, TS-400-W SURFACE MOUNTED FLUORESCENT STRIP LIGHTING FIXTURE WITH 4S BOX CEILING MOUNTED OCCUPANCY SENSOR COMPLETE WITH OUTLET BOX, PER PLANS. CEILING SURFACE MOUNTED LIGHTING FIXTURE WITH OUTLET BOX CEILING RECESSED DOWNLIGHT FIXTURE CHELSEA DIGITAL WALL SWITCH MOUNTED @ +42" AFF CEILING RECESSED WALL WASH DOWNLIGHT FIXTURE PUSH BUTTON WALL SWITCH MOUNTED @ +42" AFF TRACK LIGHTING (TRIANGLES INDICATE # OF HEADS) CIRCUIT BREAKERS AND FUSES LIGHT FIXTURE, WALL MOUNTED WITH OUTLET BOX 225AF 150AT MOLDED CASE CIRCUIT BREAKER 225 AMP FRAME, EXIT SIGN WITH OUTLET BOX 150 AMP TRIP RATING, 3-POLE -ARROW DENOTES DIRECTIONAL CHEVRON EXIT SIGN, END MOUNT ON WALL, WITH OUTLET BOX. FUSED SWITCH, 100 AMP SWITCH RATING WITH 60 AMP FUSES, 3-POLE -SHADING DENOTES FACE OF EXIT SIGN. EMERGENCY LIGHTING UNIT WITH OUTLET BOX. 100A UTILITY METER (OR AS NOTED) EXIT-EMERGENCY LIGHTING UNIT COMBO WITH OUTLET BOX. DISCONNECT SWITCH, 60AMP SWITCH, 35 AMP FUSES, 3-POLE WITH OVERCURRENT PROTECTION UON PENDANT MOUNTED LIGHT FIXTURE WITH OUTLET BOX. COMBINATION STARTER / DISCONNECT SWITCH SIZED PER PLAN EXHAUST FAN/MOTOR, SIZE AS INDICATED ON PLANS FIRE ALARM SYMBOLS FACE FIRE ALARM CONTROL PANEL SMOKE DETECTOR W/ BASE WALL MOUNT STROBE WALL MOUNT HORN/STROBE DUCT DETECTOR 2016 EDITION CEILING MOUNT AUDIBLE/VISIBLE 2016 EDITION CEILING MOUNT VISIBLE

HD HEAT DETECTOR W/ BASE

END-OF-LINE RESISTOR

M MINI-HORN

HORN WITH WEATHERPROOF ENCLOSURE

WALL MOUNT SPEAKER/STROBE

OUTDOOR WALL MOUNT SPEAKER

ELECTRICAL SYMBOL LIST

DIMENSIONS INDICATED ARE MEASURED TO CENTERLINE OF ENCLOSURE, UNLESS OTHERWISE NOTED

CALIFORNIA CODE OF REGULATIONS (C.C.R.). TITLE 24 (APPLIES AFTER JANG	JART 1. 2017):	anderson .
PART 1-CALIFORNIA BUILDINGS STANDARD ADMINISTRATIVE CODE	2016 EDITION	AND STATEMENT OF THE PERSON OF
PART 2-CALIFORNIA BUILDING CODE	2016 EDITION	
PART 3-CALIFORNIA ELECTRICAL CODE	2016 EDITION	
PART 4-CALIFORNIA MECHANICAL CODE	2016 EDITION	
PART 5-CALIFORNIA PLUMBING CODE	2016 EDITION	NAMES OF TAXABLE PARTY.
PART 6-CALIFORNIA ENERGY CODE	2016 EDITION	. Department
PART 7-NO LONGER PUBLISHED		adappenson a
PART 8-CALIFORNIA HISTORICAL BUILDING CODE	2016 EDITION	
PART 9-CALIFORNIA FIRE CODE	2016 EDITION	
PART 10-CALIFORNIA EXISTING BUILDING CODE	2016 EDITION	
PART 11-CALIFORNIA GREEN BUILDING STANDARDS CODE	2016 EDITION	
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PART 12-CALIFORNIA REFERENCE STANDARDS CODE PARTIAL LIST OF NFPA STANDARDS: NFPA 13-AUTOMATIC SPRINKLER SYSTEM, NFPA 14-STANDPIPES SYSTEMS, 2016 EDITION NFPA 17A-WET CHEMICAL SYSTEMS, 2017 EDITION NFPA 20-STANDARD FOR THE INSTALLATION OF STATIONARY 2016 EDITION PUMPS FOR FIRE PROTECTION NFPA 24-PRIVATE FIRE MAINS, 2016 EDITION 2017 EDITION NFPA 70-NATIONAL ELECTRICAL CODE NFPA 72-NAT. FIRE ALARM & SIGNALING CODE 2016 EDITION (CALIFORNIA AMENDED) NFPA 72-NATIONAL FIRE ALARM & SIGNALING CODE 2016 EDITION NFPA 96-STANDARD FOR VENTILATION CONTROL AND FIRE 2017 EDITION

PROTECTION OF COMMERCIAL COOKING OPERATIONS

CALIFORNIA CODE DE DECLILATIONS (C.C.R.) TITLE 24 (ADDLES AFTER JANUARY 1 2017)

1 INDICATES DETAIL NUMBER

-A5-1-3-5,7

APPLICABLE CODES AND REGULATIONS