

# URBAN CORPS OF SAN DIEGO

(BUILDING ADDITION) 3127 JEFFERSON STREET SAN DIEGO, CA 92110

#### **ANNOTATIONS**

THE ENFORCEMENT AGENCY UNDER SECTION 10—103(a) OF

SECTION 130.5 ELECTRICAL POWER DISTRIBUTION SYSTEMS

FEEDERS. FEEDER CONDUCTORS SHALL BE SIZED FOR A MAXIMUM

BRANCH CIRCUITS. BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED

d) CIRCUIT CONTROLS FOR 120-VOLT RECEPTACLES.

FOR A MAXIMUM VOLTAGE DROP OF 3 PERCENT AT DESIGN LOAD.

• IN ALL BUILDINGS, BOTH CONTROLLED AND UNCONTROLLED 120 VOLT

RECEPTACLES SHALL BE PROVIDED IN EACH PRIVATE OFFICE, OPEN

OFFICE AREA, RECEPTION LOBBY, CONFERENCE ROOM, KITCHENETTE IN

OFFICE SPACES AND COPY ROOM. ADDITIONALLY, HOTEL/MOTEL GUEST

EXCEPTION TO SECTION 130.5(C): FEEDER CONDUCTORS AND BRANCH

b) DISAGGREGATION OF ELECTRICAL CIRCUITS. (AS

VOLTAGE DROP OF 2 PERCENT AT DESIGN LOAD.

CIRCUITS THAT ARE DEDICATED TO EMERGENCY SERVICES.

ROOMS SHALL COMPLY WITH ITEM 5.

a) SERVICE METERING (AS APPLICABLE)

APPLICABLE)

c) VOLTAGE DROP

## SHEET INDEX

REV			SHEET		REV		
NO	DATE	DESC.	NO	SHEET TITLE	NO	DATE	HIST.
Α	10/12/16	PROGRESS SET	E0.0	ELECTRICAL COVER SHEET	0	10/20/16	0
0	10/20/16	FOR PERMIT	E0.1	ELECTRICAL LEGEND	0	10/20/16	0
			E0.2	ELECTRICAL SPECIFICATIONS	0	10/20/16	0
			E2.0	PARTIAL POWER PLANS	0	10/20/16	0
			E3.0	PARTIAL LIGHTING PLANS	0	10/20/16	0
			E6.0	ONE-LINE DIAGRAM & SCHEDULES	0	10/20/16	О

## LIGHTING MANDATORY MEASURES (CA TITLE 24-2013)

#### SECTION 120.8 BUILDING COMMISSIONING

 COMPLY WITH APPLICABLE SECTIONS BASED ON PROJECT SIZE AND TYPE.

#### SECTION 130.0 LIGHTING CONTROLS AND EQUIPMENT

- (a) EXCEPT AS PROVIDED IN SUBSECTION (B), THE DESIGN AND INSTALLATION OF ALL LIGHTING SYSTEMS AND EQUIPMENT IN NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, HOTEL/MOTEL BUILDINGS, OUTDOOR LIGHTING, AND ELECTRICAL POWER DISTRIBUTION SYSTEMS SUBJECT TO PART 6. SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF SECTIONS 130.0 THROUGH 130.5.
- (b) FUNCTIONAL AREAS WHERE COMPLIANCE WITH THE RESIDENTIAL LIGHTING STANDARDS IS REQUIRED. THE DESIGN AND INSTALLA TION OF ALL LIGHTING SYSTEMS, LIGHTING CONTROLS AND EQUIPMENT IN THE FOLLOWING FUNCTIONAL AREAS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF SECTION 150.0(K).

## SECTION 130.1 INDOOR LIGHTING CONTROLS THAT SHALL BE

#### (a) AREA CONTROLS

ALL LUMINARIES SHALL BE FUNCTIONALLY CONTROLLED WITH MANUALLY SWITCHED ON AND OFF LIGHTING CONTROLS. EACH AREA ENCLOSED BY CEILING-HEIGHT PARTITIONS SHALL BE INDEPENDENTLY CONTROLLED.

THE GENERAL LIGHTING OF ANY ENCLOSED AREA 100 SQUARE FEEL OR

(b) MULTILEVEL LIGHTING CONTROLS

SQUARE FOOT SHALL MEET THE FOLLOWING REQUIREMENTS: 1. LIGHTING SHALL HAVE THE REQUIRED NUMBER OF CONTROL STEPS

- AND MEET THE UNIFORMITY REQUIREMENTS IN ACCORDANCE WITH TABLE 130.1-A; AND
- 2. MULTILEVEL LIGHTING CONTROLS SHALL NOT OVERRIDE THE FUNCTIONALLY OF OTHER LIGHTING CONTROLS REQUIRED FOR COMPLIANCE WITH SECTIONS 130.1(A). AND (C) THROUGH (E); AND
- THE FOLLOWING METHODS: A. MANUAL DIMMING MEETING THE APPLICABLE REQUIREMENTS OF

EACH LUMINARIE SHALL BE CONTROLLED BY AT LEAST OF ONE OF

- SECTION 130.1(A)
- B. LUMEN MAINTENANCE AS DEFINED IN SECTION 100.1 C. TUNING AS DEFINED IN SECTION 100.1
- D. AUTOMATIC DAYLIGHTING CONTROLS IN ACCORDANCE WITH SECTION 130.1(D)
- E. DEMAND RESPONSIVE LIGHTING CONTROLS IN ACCORDANCE WITH SECTION 130.1(E)

EXCEPTION 1 TO SECTION 130.1(B): CLASSROOMS, WITH A CONNECTED GENERAL LIGHTING LOAD OF 0.7 WALLS PER SQUARE FEET AND LESS. SHALL HAVE AT LEAST ONE CONTROL STEP BETWEEN 30-70 PERCENT OF FULL RATED POWER.

EXCEPTION 2 TO SECTION 130.1(B): AN AREA ENCLOSED BY CEILING HEIGHT PARTITIONS THAT HAS ONLY ONE LUMINARIE WITH NO MORE THAN TWO LAMPS.

### (c) SHUT-OFF CONTROLS

1. IN ADDITION TO LIGHTING CONTROLS INSTALLED TO COMPLY WITH

AUTOMATIC TIME-SWITCH CONTROL, SIGNAL FROM ANOTHER BUILDING SYSTEM, OR OTHER CONTROL CAPABLE OF AUTOMATICALLY SHUTTING OFF ALL OF THE LIGHTING WHEN

THE SPACE IS TYPICALLY UNOCCUPIED: AND

- B. SEPARATE CONTROLS FOR THE LIGHTING ON EACH FLOOR; AND C. SEPARATE CONTROLS FOR A SPACE ENCLOSED BY CEILING HEIGHT PARTITIONS NOT EXCEEDING 5,000 SQUARE FEET; AND EXCEPTION TO SECTION 130.1(C)LC: IN THE FOLLOWING FUNCTION AREAS THE AREA CONTROLLED MAY NOT EXCEED 20,000 SQUARE FEET: MALLS, AUDITORIUMS, SINGLE TEN}ANT RETAIL, INDUSTRIAL, CONVENTION CENTERS AND ARENAS.
- D. SEPARATE CONTROLS FOR GENERAL, DISPLAY, ORNAMENTAL AND DISPLAY CASE LIGHTING.

#### (d) AUTOMATIC DAYLIGHTING CONTROLS.

2. LUMINAIRES PROVIDING GENERAL LIGHTING THAT ARE IN OR ARE PARTIALLY IN THE SKYLIT DAYLIT ZONES OR THE PRIMARY SIDELIT DAYLIT ZONES SHALL BE CONTROLLED INDEPENDENTLY BY FULLY FUNCTIONAL AUTOMATIC DAYLIGHTING CONTROLS THAT MEET THE APPLICABLE REQUIREMENTS OF SECTION 1 10.9 AND THE APPLICABLE

#### SECTION 130.2 OUTDOOR LIGHTING CONTROLS AND EQUIPMENT

(A) OUTDOOR INCANDESCENT LIGHTING. ALL OUTDOOR INCANDESCENT LUMINARIES RATED OVER 100 WALLS, DETERMINED IN ACCORDANCE WITH SECTION 130.0(C)2. SHALL BE CONTROLLED BY A MOTION SENSOR. (B) LUMINARIE CUTOFF REQUIREMENTS. ALL OUTDOOR LUMINARIES RATED FOR USE WITH LAMPS GREATER THAN 150 LAMP WATTS, DETERMINED IN ACCORDANCE WITH SECTION 130.0(C). SHALL COMPLY WITH BACKLIGHT, UPLIGHT, AND GLARE (COLLECTIVELY REFERRED LARGER, WITH A CONNECTED LIGHTING LOAD THAT EXCEEDS 0.5 WATTS PER TO AS "BUG" IN ACCORDANCE WITH IES TM-15-11, ADDENDUM A)

(C) CONTROLS FOR OUTDOOR LIGHTING. OUTDOOR LIGHTING CONTROLS

- SHALL BE INSTALLED THAT MEET THE REQUIREMENTS. 1. ALL INSTALLED OUTDOOR LIGHTING SHALL BE CONTROLLED BY A PHOTOCONTROL OR OUTDOOR ASTRONOMICAL TIME-SWITCH CONTROL THAT AUTOMATICALLY TURNS OFF THE OUTDOOR LIGHTING WHEN DAYLIGHT IS AVAILABLE.
- 2. ALL INSTALLED OUTDOOR LIGHTING SHALL BE CIRCUITED AND INDEPENDENTLY CONTROLLED FROM OTHER ELECTRICAL LOADS BY AN AUTOMATIC SCHEDULING CONTROL.
- 3. ALL INSTALLED OUTDOOR LIGHTING, WHERE THE BOTTOM OF THE LUMINAIRE IS MOUNTED 24 FEET OR LESS ABOVE THE GROUND. SHALL BE CONTROLLED WITH AUTOMATIC LIGHTING CONTROLS THAT MEET ALL OF THE FOLLOWING REQUIREMENTS: A. SHALL BE MOTION SENSORS OR OTHER LIGHTING CONTROL SYSTEMS
- THAT AUTOMATICALLY CONTROLS LIGHTING IN ACCORDANCE WITH ITEM B IN RESPONSE TO THE AREA BEING VACATED OF OCCUPANTS: AND B. SHALL BE CAPABLE OF AUTOMATICALLY REDUCING THE LIGHTING
- BUT NOT EXCEEDING 80 PERCENT, OR PROVIDE CONTINUOUS DIMMING THROUGH A RANGE THAT INCLUDES 40 PERCENT THROUGH 80 PERCENT, AND C. SHALL EMPLOY AUTO-ON FUNCTIONALITY WHEN THE AREA

POWER OF EACH LUMINAIRE BY AT LEAST 40 PERCENT

- BECOMES OCCUPIED; AND
- D. NO MORE THAN 1.500 WATTS OF LIGHTING POWER SHALL BE CONTROLLED TOGETHER.

#### SECTION 130.4 LIGHTING CONTROL ACCEPTANCE AND INSTALLATION CERTIFICATE REQUIREMENTS.

a) LIGHTING CONTROL ACCEPTANCE REQUIREMENTS

SECTIONS 130.1(A) AND (B). ALL INSTALLED INDOOR LIGHTING SHALL . A CERTIFICATE OF ACCEPTANCE SHALL BE SUBMITTED TO

## ARREVIATIONS

AB	BREVIATIONS	
A, AMP AC ACB AF AFCI AFD	AMMETER, AMPERE ALTERNATING CURRENT AIR CIRCUIT BREAKER AMPERE FRAME ARC FAULT CIRCUIT INTERRUPTER ADJUSTABLE FREQUENCY DRIVE	N NA N.C. CEC NEMA
AFF AIC ANN AS AT ATS	ABOVE FINISHED FLOOR AMPS INTERRUPTING CURRENT ANNUNCIATOR AMMETER SWITCH AMP TRIP AUTOMATIC TRANSFER SWITCH	NIC N.O. NTS OCB OFCI
AWG BCF BKR BLDG BMS BOC BOD BOP BOT CAP CAT.# CBTV CLK COT	AMERICAN WIRE GAUGE BARE COPPER BELOW FINISHED FLOOR BREAKER BUILDING BUILDING MANAGEMENT SYSTEM BOTTOM OF CONDUIT BOTTOM OF DUCT BOTTOM OF PIPE BOTTOM OF TRAY	OFOI OL PF PB PC PNL PH PVCY (RECY REGS RMM RVNR
DC DIA DIV	DIAMETER DIVISION DELTA CONNECTED	S.C. SEC SES
EL ELEC EM EMH EMO EMT EOL	EXISTING ELEVATION ELECTRICAL EMERGENCY ELECTRICAL MANHOLE EMERGENCY MANUAL OFF ELECTRICAL METALLIC CONDUIT END—OF—LINE DEVICE ELAPSED TIME METER EXISTING TO REMAIN FUTURE FIRE ALARM FIRE ALARM FIRE ALARM CONTROL PANEL FURNISHED BY OTHERS FACILITY CONTROL SYSTEM FEEDER FUSE FULL VOLTAGE NON—REVERSING GROUND	SP SS STD SW SWBD SWGR SYM SYNC 2S1W 2S2W TSTAT TB TBD TDR TS TSP TYP UPS
GFCI HH HID	GROUND FAULT CIRCUIT INTERRUPTER HANDHOLE HIGH INTENSITY DISCHARGE	UNO V VA VESDA

HAND-OFF-AUTOMATIC

AIR CONDITIONING

HORSEPOWER

IDENTIFICATION

JUNCTION BOX

KILOVOLT-AMPERE

KII OWATT-HOUR

LOW VOLTAGE

MAXIMUM

MANHOLE

MLO MAIN LUGS ONLY

MINIMUM

MTD MOUNTED

KILOVOLT

KVAR KILOVAR

KW KILOWATT

1000 CIRCULAR MIL

LOCAL AREA NETWORK

MAIN CIRCUIT BREAKER

MOTOR CIRCUIT BREAKER

HEATING, VENTILATION, AND

INTEGRATED EQUIPMENT RATING

INSTRUMENTATION AND CONTROL

INTERMEDIATE METALLIC CONDUIT

MAG CONTACTOR, COIL / CONTACT

# CALIFORNIA ELECTRICAL CODE NATIONAL ELECTRIC

MANUFACTURER'S ASSOCIATION NOT IN CONTRACT NORMALLY OPEN NOT TO SCALE OIL CIRCUIT BREAKER OWNER FURNISHED, CONTRACTOR INSTALLED OWNER FURNISHED, OWNER INSTALLED OVERLOAD RELAY

POWER FACTOR PUSHBUTTON SWITCH **PHOTOCELL** POST INDICATOR VALVE POLYVINYL CHLORIDE RELOCATED

**RECEPTACLE** RACEWAY RADIO FREQUENCY RIGID GALVANIZED STEEL ROOT MEAN SQUARE RUNNING TIME METER REDUCED VOLT. NON-REVERSING SHORT CIRCUIT SERVICE ENTRANCE SUBSTATION

STAINLESS STEEL STANDARD SWITCHBOARD SWITCHGEAR SYMMETRICAL SYNCHRONIZER TWO SPEED, ONE WINDING TWO SPEED, TWO WINDING THERMOSTAT TERMINAL BLOCK TO BE DETERMINED TIME DELAY RELAY TAMPER SWITCH

TWISTED SHIELDED PAIR TYPICAL UNINTERRUPTIBLE POWER SUPPLY UNLESS NOTED OTHERWISE VOLTMETER, VOLT VESDA VERY EARLY SMOKE WEATHERPROOF

DETECTION APPARATUS VARIABLE FREQUENCY DRIVE WATTHOUR DEMAND METER EXPLOSION-PROOF XFMR TRANSFORMER WYE-CONNECTED IMPEDANCE

## **CODES & STANDARDS**

#### **CODES & STANDARDS:**

ALL OF THE PRECEDING ARE HEREBY MADE A PART OF THESE SPECIFICATIONS. THEY SHALL BE SATISFIED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.

GENERAL	EDITION
CALIFORNIA ELECTRICAL CODE (TITLE 24)	2013*
LOCAL AND STATE CODES AND CODE AMENDMENTS	SAN DIEGO, CA
UTILITY SPECIFICATIONS AND REQUIREMENTS	SCE
CALIFORNIA BUILDING CODE (TITLE 24)	2013*
CALIFORNIA MECHANICAL CODE (TITLE 24)	2013*
CALIFORNIA PLUMBING CODE (TITLE 24)	2013*
CALIFORNIA PLUMBING CODE (TITLE 24)	2013*

FIRE & LIFE SAFETY CODES **EDITION** CALIFORNIA FIRE CODE (TITLE 24) NFPA 72 - NATIONAL FIRE ALARM CODE LATEST LATEST NFPA 101 - LIFE SAFETY CODE LATEST NFPA 13 - FIRE SPRINKLER CODE LATEST NATIONAL ELECTRICAL SAFETY CODE (NESC)

**EDITION** ENERGY CODES CALIFORNIA ENERGY CODE (TITLE 24) **ENERGY CODE CALCULATIONS** 

TITLE 24 COMPLIANCE REPORT DOCUMENTS UNDER SEPARATE COVER.

## **DESCRIPTION OF WORK**

#### **DESCRIPTION OF WORK:**

THE WORK SHALL INCLUDE, BUT IS NOT LIMITED TO, FURNISHING AND INSTALLING THE FOLLOWING:

**ELECTRICAL DEMOLITION** GENERAL POWER DISTRIBUTION SYSTEM. GENERAL LIGHTING AND LIGHTING CONTROLS. EMERGENCY LIGHTING.

#### **ELECTRICAL EQUIPMENT INSTALLATION:**

SPECIFIC EQUIPMENT INSTALLATIONS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

PANELBOARD.

BY OTHERS.\*

#### **ESTIMATED POINT(S) OF CONNECTION & METERING:**

**EXISTING BRANCH PANEL(S).** 

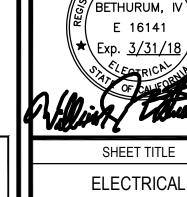
#### FIRE ALARM REQUIREMENTS:

FIRE ALARM SYSTEM (SEE BELOW). <u>UNKNOWN</u> - FIRE ALARM SYSTEM HAS NOT BEEN VERIFIED.

THE FIRE ALARM DESIGN INCLUDED IN THIS PACKAGE IS:

NO FIRE ALARM DESIGN IS INCLUDED OR FIRE ALARM SYSTEM DESIGN IS

SHEET SET



CITY SET

WILLIAM J.

**COVER SHEET** 3666 N. Miller Road, Suite 100, Scottsdale, AZ 85251 10.20.16 Tel. (480) 659-0511, VoltaUS.com

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AMERICAN INSTITUTE OF ARCHITECT

**URBAN CORPS OF** 

SAN DIEGO

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PROJECT

CORPS

DESCRIPTION

REVISIONS

## FIRE ALARM SYMBOL LEGEND

NOTE: NOT ALL SYMBOLS MAY APPLY TO THIS PROJECT

FACP FIRE ALARM CONTROL PANEL FAAP FIRE ALARM ANNUNCIATOR

H) HORN STROBE (SHOW CANDELA)

H HORN STROBE (SHOW CANDELA/ CEILING MOUNTED)

S SPEAKER STROBE (SHOW CANDELA)

STROBE ONLY (SHOW CANDELA)

MANUAL PULL STATION

S SMOKE DETECTOR (ADD TYPE)

CARBON MONOXIDE DETECTOR (H) HEAT DETECTOR (SHOW TEMP RATING)

DE DUCT SMOKE DETECTOR

MAGNETIC DOOR HOLDER

FIRE SPRINKLER TAMPER / OSY / PIV VALVE SUPERVISORY SWITCH

WATERFLOW DEVICE

B FIRE ALARM BELL

RBPS REMOTE BOOSTER POWER SUPPLY

CR ADDRESSABLE RELAY POINT / ZONE MODULE

CHIME, HORN, SPEAKER ONLY

FIRE FIGHTERS TELEPHONE JACK STATION FIRE FIGHTERS PERMANENT STATION

DAMPER POSITION SWITCH

ELEVATOR RECALL DESIGNATION

INTERFACE TO KITCHEN HOOD

S ELEVATOR SHUNT TRIP ESRP ELEVATOR SUPERVISORY RECALL PANEL

#### WIRING DEVICES AND BOXES LIGHTING

- FIXTURE TYPE. SEE SCHEDULE.

10 FA

SOLID = EMERGENCY BACKUP

(REQUIRES HOT LEG) - CIRCUIT NUMBER. SUCCEEDING

SURFACE, PENDANT OR WALL MOUNTED LUMINAIRE

← ► ► EXIT LIGHT-CEILING OR WALL MOUNTED, ARROW

WITH EXIT SIGN WHEN INDICATED

LIGHTING CONTROLS

BATTERY OPERATED EMERGENCY LIGHT

SAME AS ABOVE, CEILING MOUNTED

OR ALTERNATE FIXTURE SWITCHING.

CONTROLLER SPECIFICATIONS.

ASTRONOMICAL TIME CLOCK.

OCCUPANCY SENSORS

WALL SWITCH, SUBSCRIPT INDICATES TYPE:

MANUAL OVERRIDE SWITCH. SEE LIGHTING

PHOTOELECTRIC LIGHTING CONTROL. SENSOR

WALL MOUNTED. SEE LIGHTING DETAIL INDICATED.

CEILING MOUNTED. SEE LIGHTING DETAIL INDICATED.

AIMED NORTH UNLESS OTHERWISE NOTED.

2=DOUBLE POLE D=DIMMER P=PILOT LIGHT

3=THREE WAY K=KEY OPERATED T=TIMED SWITCH

4=FOUR WAY LV=LOW VOLTAGE WP=WEATHERPROOF

TANDEM SWITCH (PROVIDE FIXTURE W/ 2 BALLASTS)

OF SIGN. TYPE AS SHOWN.

REMOTE BATTERY

LANDSCAPE OR SPECIALTY LIGHT FIXTURE

INDICATES DIRECTION. SHADING INDICATES FACE

9La

POLE MOUNTED FIXTURE

RECESSED DOWN LIGHT

LETTERS INDICATE CONTROLS.

LOCAL SWITCH

L = VIA LIGHTING CONTROLLER

N = NIGHT LIGHT (UNSWITCHED)

(REQUIRES HOT LEG)

ab = TANDEM SWITCHING. PROVIDE

(LOWER CASE LETTER)

LOWER CASE LETTER)

FIXTURE W/(2) BALLASTS.

WIRING DEVICES - MISC

1 THERMOSTAT

PUSHBUTTON OR CONTROL DEVICE (SEE ABBREVIATION FOR TYPE).

SAME AS ABOVE, LOCKABLE

MOTOR RATED SWITCH OR MANUAL MOTOR STARTER WITH OVERLOADS (WHEN NOT INTERAL TO MOTOR)

R RELAY

WIRING DEVICES - SPECIAL SYSTEMS

TAG: CR = CARD READER, DC = DOOR CONTACTS

KP = KEY PADDOOR CONTACTS

SPEAKER/HORN

TELEVISION CAMERA

## WIRING DEVICES AND BOXES

JUNCTION BOXES, HANDHOLES, AND MANHOLES ELECTRICAL MANHOLE OR HANDHOLE (EHH)

JUNCTION BOX, SIZED PER CEC (U.N.O.) WIRING DEVICES - POWER

CONNECTION POINT TO EQUIPMENT SPECIFIED, SUPPLIED AND INSTALLED UNDER OTHER DIVISIONS. RACEWAY, CONDUCTORS AND CONNECTIONS UNDER

THIS DIVISION.

SPECIAL PURPOSE RECEPTACLE NEMA CONFIGURATION AND AMPERAGE AS INDICATED. L5-30

CONVENIENCE RECEPTACLE-SINGLE, DUPLEX, 4-PLEX, MTD @ 18" AFF, UNLESS NOTED OTHERWISE. WP - WEATHERPROOF "EXTRA DUTY" IN-USE

METALLIC, COOPER #WIUMV(H\*)-1 [\*HORIZONTAL AS NEEDED] WPF - WEATHERPROOF, "EXTRA DUTY", FLUSH SERVICE, COOPER #WBR(VS/VM/HR/HB)C (STYLE TO SUIT)

GFCI - GROUND FAULT CIRCUIT INTERRUPTER IG - ISOLATED GROUND FLOOR BOX, ROUND, COMBINATION POWER/DATA OR POWER ONLY, NON-METALLIC, 6" DIA., T&B STEEL CITY #68P, RECESSED COVER, STEEL CITY

#68-R-CST-(BLK OR BRN OR BGE) COVER PLATE. FLOOR BOX, SQUARE, COMBINATION POWER/DATA OR POWER ONLY, NON-METALLIC, T&B #STEEL CITY 664-CI, RECESSED COVER STEEL CITY #664-CST-SW-ALM COVER PLATE.

FLOOR BOX, SQUARE, FOUR GANG, POWER ONLY, NON-METALLIC, T&B STEEL CITY #665-CST-SC, RECESSED COVER STEEL CITY #65-CST-SWR-(ALM OR BRS) COVER PLATE.

SAME AS ABOVE, CEILING MOUNTED

SAME AS ABOVE, MOUNTED ABOVE COUNTER

3/4" THICK FIRE-TREATED PLYWOOD (8ft HIGH) FOR TELEPHONE MOUNTING BOARD WITH (1) DEDICATED FOURPLEX OUTLET AND #6 COPPER BOND TO BUILDING GROUND ELECTRODE SYSTEM. TELEPHONE CONDUIT PER UTILITY SPECIFICATIONS.

WIRING DEVICES - COMMUNICATIONS DATA/TELEPHONE/COMBINATION TEL./DATA OUTLET

TELEVISION OUTLET

## RACEWAYS, WIRE, & CABLE

BRANCH CIRCUIT(S) HOMERUN TO PANELBOARD. 3/4" CONDUIT UNLESS NOTED OTHERWISE. FIELD ROUTE. SUPPORT PER CEC. 7#12 AWG CONDUCTORS, (3) NEUTRALS, (3) HOT,

1"GROUND IN 3/4" CONDÙIT. 7#10 AWG CONDUCTORS, (3) NEUTRALS, (3) HOT,

1 GROUND IN 3/4" CONDÙIT. NO MULTI-WIRE BRANCH CIRCUITS PERMITTED.

---- CONDUIT AND CONDUCTORS BELOW GRADE OR SLAB.

----- CONDUIT AND CONDUCTORS ABOVE GRADE

—— G—— G=GROUND ELECTRODE CONDUCTOR

- 14 CONDUIT SEAL FITTING

POWER CONDUIT FILL EXAMPLE: |(2)|4°C.,|4|#500,|1|#1/0G.<math>|— GROUND CONDUCTOR SIZE

> - QUANTITY OF GROUND CONDUCTORS — CONDUCTOR SIZE (AWG OR KCMIL) QUANTITY OF PHASE, NEUTRAL, OR CONTROL - CONDUCTORS (NEUTRAL CONDUCTORS MAY BE SPECIFIED WITH AN 'N' SUFFIX)

— CONDUIT SIZE (SEE SPECIFICATION FOR TYPES)

L TOTAL QUANTITY OF IDENTICAL CONDUITS AS SPECIFIED (IF MULTIPLE)

### GROUNDING

 $\otimes$  (•) GROUND ROD, GROUND WELL

GROUNDING BUS

-- - EXOTHERMIC WELD, COMPRESSION CONNECTION SURGE PROTECTION DEVICE (SPD)

480V

PANELBOARD

UTILITY POWER POLE UTILITY PAD MOUNT TRANSFORMER

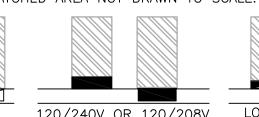
PRIMARY EQUIPMENT

PLAN MAJOR EQUIPMENT MAJOR ELECTRICAL EQUIPMENT OR DEVICE, i.e., L\_J ////// MOTOR CONTROL CENTER, SWITCHBOARD, ETC.

SWITCHBOARDS AND PANELBOARDS

MAJOR EQUIPMENT

PANELBOARD - SURFACE OR FLUSH MOUNTED AS INDICATED. 'HATCHED' AREA REPRESENTS CEC REQUIRED CLEARANCE. WIDTH MINIMUM OF 30". DEPTH AS REQUIRED BY CEC ART 110, HATCHED AREA NOT DRAWN TO SCALE.



LOAD CENTER 120/240V OR 120/208V PANELBOARD

1-LINE PLAN TRANSFORMERS POWER TRANSFORMER SUBSTATION OR DISTRIBUTION TYPE. KVA, IMPEDANCE, VOLTAGE,

AND CONNECTIONS ARE AS NOTED. CIRCUIT BREAKERS

1-LINE PLAN TRIP CB CIRCUIT BREAKER, TRIP/FRAME RATING AS FRAME SHOWN ON PLAN. 1-LINE PLAN DISCONNECTS & FUSES

F DISCONNECT SWITCH, RATING AS SHOWN, 13.

30 NON-FUSED. ENCLOSED WHEN SHOWN ON PLAN.

1-LINE PLAN MOTORS & MOTOR STARTERS MOTOR CONNECTION. FOR HORSEPOWER, REFER TO ONE-LINE DIAGRAM OR EQUIPMENT SCHEDULE

> CONTACTOR, NEMA SIZE AS SHOWN. ENCLOSED WHEN SHOWN ON PLAN. STARTER, NEMA SIZE AS SHOWN. ENCLOSED

WHEN SHOWN ON PLAN.

COMBINATION STARTER, NEMA SIZE AS SHOWN CIRCUIT BREAKER OR FUSED DISCONNECT SWITCH TYPE. ENCLOSED WHEN SHOWN ON

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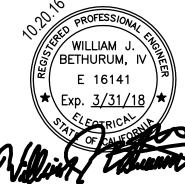
PROJECT

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DESCRIPTION

SHEET SET CITY SET

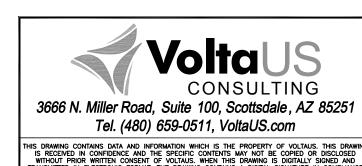


SHEET TITLE

ELECTRICAL LEGEND 10.20.16 AS NOTED ETS/JNS

609001

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#### <u>PRODUCTS</u>

2. UL/ETL LISTINGS

- 1. PRODUCTS DESCRIBED IN THE LUMINARIES SCHEDULE AS SHOWN ON THE DRAWINGS SHALL REPRESENT MINIMUM ACCEPTABLE QUALITY STANDARDS.
- A. ALL LUMINARIES AND COMPONENTS SHALL BE UL OR ETL TESTED, LISTED, AND LABELED.
- B. LUMINARIES INSTALLED UNDER CANOPIES, ROOFS, OR SIMILAR DAMP OR WET LOCATIONS SHALL BE UL OR ETL LISTED AND LABELED AS SUITABLE FOR DAMP OR WET LOCATIONS.
- C. RECESSED LUMINARIES INSTALLED IN FIRE RATED CEILINGS AND USING A FIRE RATED PROTECTIVE COVER SHALL BE THERMALLY PROTECTED FOR THIS APPLICATION AND SHALL BE APPROVED FOR THE INSTALLATION IN A FIRE-RATED CEILING.

#### 3. INTERIOR AND EXTERIOR LUMINARIES AND ACCESSORIES

- A. AS SCHEDULED ON DRAWINGS.
- B. VERIFY ALL FINISHES WITH ARCHITECT.
- 4. BALLASTS: ALL BALLASTS SHALL BE ELECTRONIC UL LISTED CLASS "P". **INSTALLATION**
- A. VERIFY ALL CEILING TYPES AND COORDINATE WITH LUMINARIES AND ACCESSORIES.
- B. FURNISH AND INSTALL LAMPS IN LUMINARIES AND LAMPHOLDERS.
- C. RECESSED LUMINARIES TRIMS SHALL FIT SNUGLY TO THE MOUNTING SURFACE AND SHALL NOT EXHIBIT LIGHT LEAKS OR GAPS. PROVIDE HEAT RESISTANT RUBBER GASKETING WHERE NECESSARY, PROVIDE FEED-THROUGH JUNCTION BOXES OR PROVIDE SEPARATE JUNCTION BOXES. ALL COMPONENTS SHALL BE ACCESSIBLE THROUGH THE CEILING OPENING
- D. MARK STANDARD LUMINARIES EQUIPPED WITH EMERGENCY POWER WITH A RED ADHESIVE STICKER (NOT MORE THAN 3/8-INCH IN DIAMETER) MOUNTED ON METAL DOOR FRAME.
- E. PROVIDE IN-LINE FUSING AT HANDHOLE FOR ALL POLE MOUNTED LUMINARIES.
- F. LEAVE LUMINARIES CLEAN AND FREE OF ANY VISIBLE DUST, DEBRIS, OR FINGERPRINTS WITH ALL LAMPS OPERATIONAL AT TIME OF ACCEPTANCE OF WORK. RELAMP INOPERABLE LAMPS AT COMPLETION OF WORK.
- G. COORDINATE WITH OTHER CRAFTS TO AVOID CONFLICTS BETWEEN LUMINAIRES, SUPPORTS, FITTINGS AND MECHANICAL EQUIPMENT.
- H. RECESSED FLUORESCENT AND LED FIXTURES
- ALL RECESSED FLUORESCENT AND LED TROFFERS SHALL BE SUPPORTED FROM BUILDING STRUCTURE ABOVE CEILING WITH GALVANIZED STEEL WIRI AT NOT LESS THAN 4 POINTS NEAR CORNERS OF FIXTURE. SIZE OF WIRE SHALL BE CAPABLE OF SUPPORTING WEIGHT OF FIXTURES.
- RECESSED FLUORESCENT AND LED LUMINARIES: PROVIDE TRIM TYPE AND ACCESSORIES REQUIRED FOR INSTALLATION IN CEILING SYSTEM (INCLUDING SLOPED CEILINGS, FIRE RATED CEILINGS, ETC.) AS INDICATED PER LUMINAIRE SCHEDULE.

#### 262726 WIRING DEVICES

- A. PROVIDE WIRING DEVICES. IN TYPES. CHARACTERISTICS. AND ELECTRICAL RATINGS FOR APPLICATIONS INDICATED WHICH ARE ULLISTED AND WHICH COMPLY WITH APPLICABLE UL AND NEMA STANDARDS. ALL DEVICES AND WALL BOXES SHAL BE PROVIDED WITH A WALL PLATE DESIGNED TO MATCH THE DEVICE. THE COLOR OF ALL DEVICES SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ORDER OF DEVICES. WHERE THE ARCHITECT HAS NO COLOR PREFERENCE PROVIDE WHITE COLOR DEVICES WITH WALL PLATES EXCEPT AS OTHERWISE INDICATED. PROVIDE HEAVY DUTY DEVICES UNLESS OTHERWISE INDICATED. MANUFACTURER'S CATALOG NUMBERS LISTED BELOW INDICATE QUALITY OF BASIS OF DESIGN.
- B. MODULAR "PLUG-IN" WIRING SYSTEMS ARE NOT PERMITTED.

AND 277 V / AH1221L

- C. SIMPLEX, DUPLEX, OR GFCI RECEPTACLE: 125V, 20A, 5-20R CONFIGURATION. PROVIDE ONE OF THE FOLLOWING:
- COOPER; 5351 (SINGLE), CR5362 (DUPLEX), VGF20 (GFCI)
- 2. HUBBELL; HBL5351 (SINGLE), HBL5352 (DUPLEX), GFR5352L (GFCI)
- 3. LEVITON; 5891 (SINGLE), 5352 (DUPLEX), 7590 (GFCI)
- 4. PASS & SEYMOUR; 5361 (SINGLE), 5362 (DUPLEX), 2095 (GFCI)
- D. SINGLE POLE / DOUBLE POLE / 3-WAY / 4-WAY / LIGHTED OR KEY OPERATED SWITCH: 20A, 120–277V. PROVIDE ONE OF THE FOLLOWING:
- 1. COOPER; AH1221 / AH1222 / AH1223 / AH1224 / AH1221PL FOR 120
- 2. HUBBELL; HBL1221 / HBL1222 / HBL1223 / HBL1224 / HBL1221PL FOR
- 120 AND 277 V / HBL1221L 3. LEVITON; 1221-2 / 1222-2 / 1223-2 / 1224-2 / 1221-LH1 /
- PASS & SEYMOUR; CSB20AC1 / CSB20AC2 / CSB20AC3 / CSB20AC4 / PS20AC1RPL FOR 120 V, PS20AC1RPL7 FOR 277 V / PS20AC1-L
- E. DECORATOR-STYLE DEVICES: (REQUIRES PRIOR APPROVAL)
- 1. CONVENIENCE RECEPTACLES: SQUARE FACE, 125 V, 15 A; 5-15R.
- 2. GFCI CONVENIENCE RECEPTACLES: SQUARE FACE, 125 V, 15 A; 5-15R.
- 3. TOGGLE SWITCHES, SQUARE FACE, 120/277 V, 15 A. 4. LIGHTED TOGGLE SWITCHES, SQUARE FACE, 120 V, 15 A WITH LIGHTED
- HANDLE, ILLUMINATED WHEN SWITCH IS "OFF. • MANUFACTURER; 1 / 2 / 3 / 4 (SEE ABOVE)
- a. COOPER; 6252 / VGF15 / 7621 (SINGLE POLE), 7623 (THREE WAY) / 7631 (SINGLE POLE), 7633 (THREE WAY)
- b. HUBBELL; DR15 / GF15LA / DS115 (SINGLE POLE), DS315 (THREE WAY) / DS120IL (SINGLE POLE), DS320 (THREE WAY) c. LEVITON; 16252 / 8599 / 56291-2 (SINGLE POLE), 5623-2 (THREE
- WAY) / 5631-2 (SINGLE POLE), 5633-2 (THREE WAY) d. PASS & SEYMOUR; 26252 / 1594 / 2621 (SINGLE POLE), 2623
- (THREE WAY) / 2625 (SINGLE POLE), 2626 (THREE WAY)

## SINGLE AND COMBINATION TYPES SHALL MATCH CORRESPONDING WIRING

- MATERIAL FOR FINISHED SPACES: SMOOTH, HIGH-IMPACT THERMOPLASTIC
- OR TYPE 302 STAINLESS STEEL. • MATERIAL FOR UNFINISHED SPACES: HIGH-IMPACT THERMOPLASTIC.
- MATERIAL FOR DAMP LOCATIONS: CAST ALUMINUM WITH SPRING-LOADED
- LIFT COVER, AND LISTED AND LABELED FOR USE IN WET AND DAMP 2. WET-LOCATION, WEATHERPROOF COVER PLATES: NEMA 250, COMPLYING WITH
- TYPE 3R, WEATHER-RESISTANT, DIE-CAST ALUMINUM WITH LOCKABLE COVER. G. FINISHES
- 1. DEVICE COLOR: AS SELECTED BY ARCHITECT. WHITE. UNLESS OTHERWISE INDICATED. EMERGENCY POWER SYSTEM: RED. TVSS DEVICES: BLUE.
- 2. WALL PLATE COLOR: FOR PLASTIC COVERS, MATCH DEVICE COLOR. H. LOCATION OF OUTLETS AND EQUIPMENT AS INDICATED ON THE DRAWINGS ARE APPROXIMATELY CORRECT. HOWEVER. THE EXACT CENTER OF ALL OUTLETS
- I. COORDINATE LOCATIONS WITH ARCHITECTURAL PLANS AND ELEVATIONS IN ORDER TO AVOID INTERFERENCES WITH CASEWORK, FURNITURE, WINDOWS, EQUIPMENT, AND DOOR SWINGS.

SHALL BE PLACED IN COOPERATION WITH THE GENERAL CONTRACTOR TO CENTER

OUTLETS WITH THE CEILING TILE, TRUSSES AND JOINTS, AND MASONRY UNITS.

### J. INSTALLATION

- 1. PROTECT INSTALLED DEVICES AND THEIR BOXES. KEEP OUTLET BOXES FREE OF PLASTER, DRYWALL JOINT COMPOUND, MORTAR, CEMENT, CONCRETE, DUST, PAINT, AND OTHER MATERIAL. INSTALL WIRING DEVICES AFTER ALL WALL PREPARATION, INCLUDING PAINTING, IS COMPLETE.
- CONDUCTORS:
  - STRIP INSULATION EVENLY AROUND THE CONDUCTOR USING TOOLS DESIGNED FOR THE PURPOSE AVOID SCORING OR NICKING WIRE THE LENGTH OF FREE CONDUCTORS AT OUTLETS FOR DEVICES SHALL BE 6 INCHES MINIMUM.
- EXISTING CONDUCTORS: CUT BACK AND PIGTAIL, OR REPLACE ALL DAMAGED CONDUCTORS. PIGTAILING EXISTING CONDUCTORS IS PERMITTED, PROVIDED THE OUTLET BOX IS LARGE ENOUGH.

#### 3. DEVICE INSTALLATION:

. WHEN THERE IS A CHOICE, USE SIDE WIRING WITH BINDING-HEAD SCREW TERMINALS. WRAP SOLID CONDUCTOR TIGHTLY CLOCKWISE. TWO-THIRDS TO THREE-FOURTHS OF THE WAY AROUND TERMINAL SCREW. USE A TORQUE SCREWDRIVER WHEN A TORQUE IS RECOMMENDED OR REQUIRED BY MANUFACTURER.

WHEN CONDUCTORS LARGER THAN NO. 12 AWG ARE INSTALLED ON 15—

- OR 20-A CIRCUITS, SPLICE NO. 12 AWG PIGTAILS FOR DEVICE CONNECTIONS.
- 4. MOUNTING HEIGHTS, FINISHED FLOOR TO DEVICE CENTERLINE (U.N.O.):
- SWITCH 42", OVER OBSTRUCTION 44"
- RECEPTACLE, TELEPHONE/DATA OUTLET, 18"
- FIRE ALARM PULL STATIONS 44"
- FIRE ALARM A/V UNITS 80" (OR 6" BELOW CEILING, IF LOWER)
- RECEPTACLE ORIENTATION:
- INSTALL GROUND PIN OF VERTICALLY MOUNTED RECEPTACLES UP, AND ON HORIZONTALLY MOUNTED RECEPTACLES TO THE LEFT.
- K. GFCI RECEPTACLES: INSTALL NON-FEED-THROUGH-TYPE GFCI RECEPTACLES WHERE PROTECTION OF DOWNSTREAM RECEPTACLES IS NOT REQUIRED.

## 260533 RACEWAYS & BOXES FOR ELECTRICAL SYSTEMS

- A. COORDINATE WITH OTHER WORK, AS NECESSARY TO INTERFACE INSTALLATION OF ELECTRICAL RACEWAYS WITH OTHER DISCIPLINES. PROVIDE SUPPORTS PER CEC
- B. OUTDOORS: APPLY AS SPECIFIED BELOW (UNLESS NOTED OTHERWISE)
- EXPOSED CONDUIT (DAMP, DRY, OR CONCEALED LOCATIONS): ELECTRICAL
- METALLIC TUBING (EMT), COMPRESSION FITTINGS.
- EXPOSED CONDUIT (WET LOCATIONS): ELECTRICAL METALLIC TUBING (EMT),
- LISTED WEATHERPROOF COMPRESSION FITTINGS • EXPOSED CONDUIT (WHERE SUBJECT TO PHYSICAL DAMAGE): GALVANIZED RIGID 2. CONNECTOR PRODUCTS
- CONDUIT (GRC), INTERMEDIATE METAL CONDUIT (IMC).
- UNDERGROUND CONDUIT: RIGID NONMETALLIC CONDUIT, MINIMUM SCHEDULE
- CONNECTION TO VIBRATING EQUIPMENT: LIQUID-TIGHT FLEX METAL CONDUIT
- BOXES AND ENCLOSURES, ABOVE GROUND: NEMA 250, TYPE 3R.
- C. INDOORS APPLY AS SPECIFIED BELOW (UNLESS NOTED OTHERWISE): EXPOSED: ELECTRICAL METALLIC TUBING (EMT).
- EXPOSED (WHERE SUBJECT TO PHYSICAL DAMAGE): GALVANIZED RIGID CONDUIT (GRC), INTERMEDIATE METAL CONDUIT (IMC).
- CONCEALED: ELECTRICAL METALLIC TUBING (EMT).
- CONCEALED, FROM JUNCTION BOX TO CONCEALED WIRING DEVICE BOX(ES): ELECTRICAL METALLIC TUBING (EMT), MC CABLE (AVOID MC CABLE HOMERUNS
- EMBEDDED IN SLAB: RIGID NONMETALLIC CONDUIT, SCHEDULE 40 MIN.
- WITHIN PLENUMS: NO LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
- CONNECTION TO VIBRATING EQUIPMENT: LIQUID-TIGHT FLEXIBLE METAL CONDUIT 18" MAX.
- TYPE NM CABLE (ROMEX) IS NOT PERMITTED IN COMMERCIAL APPLICATIONS • BOXES AND ENCLOSURES: NEMA 250, TYPE 1, EXCEPT USE NEMA 250, TYPE 4 STAINLESS STEEL OR NONMETALLIC IN INSTITUTIONAL AND COMMERCIAL

KITCHENS AND DAMP OR WET LOCATIONS. 4" SQUARE x 2-1/8" DEEP

- EMT FITTINGS (INDOORS): COMPRESSION, SET SCREW.
- D. MINIMUM RACEWAY SIZE: 3/4-INCH (21-MM) TRADE SIZE. 1" MINIMUM, UNDERGROUND.
- E. DO NOT INSTALL ALUMINUM CONDUITS, BOXES, OR FITTINGS IN CONTACT WITH CONCRETE OR EARTH.
- F. CONCEAL CONDUIT AND EMT, UNLESS INDICATED OTHERWISE (EXCEPTION: ELECTRICAL AND MECHANICAL ROOMS). WITHIN FINISHED WALLS. CEILINGS. AND FLOORS. KEEP RACEWAYS AT LEAST 6 INCHES AWAY FROM FLUES, STEAM OR
- G. COMPLY WITH REQUIREMENTS IN SECTION 260529 "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS" FOR HANGERS AND SUPPORTS.
- H. INSTALL NO MORE THAN THE EQUIVALENT OF THREE 90-DEGREE BENDS IN ANY CONDUIT RUN EXCEPT FOR CONTROL WIRING CONDUITS. FOR WHICH FEWER BENDS ARE ALLOWED. SUPPORT WITHIN 12 INCHES (300 MM) OF CHANGES IN
- I. SUPPORT CONDUIT WITHIN 12 INCHES (300 MM) OF ENCLOSURES TO WHICH ATTACHED.

#### J. RACEWAYS EMBEDDED IN SLABS:

HOT WATER PIPES.

- RUN CONDUIT LARGER THAN 1-INCH (27-MM) TRADE SIZE, PARALLEL OR AT RIGHT ANGLES TO MAIN REINFORCEMENT. WHERE AT RIGHT ANGLES TO REINFORCEMENT. PLACE CONDUIT CLOSE TO SLAB SUPPORT, SECURE RACEWAYS TO REINFORCEMENT AT MAXIMUM 10-FOOT (3-M) INTERVALS.
- ARRANGE RACEWAYS TO CROSS BUILDING EXPANSION JOINTS AT RIGHT ANGLES WITH EXPANSION FITTINGS.
- K. STUB-UPS TO ABOVE RECESSED CEILINGS:
- USE EMT, IMC, OR RMC FOR RACEWAYS.
- USE A CONDUIT BUSHING OR INSULATED FITTING TO TERMINATE STUB-UPS NOT TERMINATED IN HUBS OR IN AN ENCLOSURE. . PROVIDE APPROVED FIRE SEALS AND SEALING MATERIAL WHEREVER CONDUIT
- PASSES THROUGH FIRE-RATED WALLS OR FLOORS. (SEE ARCHITECTURAL PLANS) M. INSTALL PULL WIRES IN EMPTY RACEWAYS. USE NO. 14 AWG ZINC -COATED STEEL OR MONOFILAMENT PLASTIC LINE HAVING NOT LESS THAN 200 LBS TENSILE STRENGTH. LEAVE NOT LESS THAN 12 INCHES OF SLACK AT EACH END OF THE PULL WIRE.

## 260553 IDENTIFICATION FOR ELECTRICAL SYSTEMS

- A. UNDERGROUND LINE MARKING TAPE: PERMANENT, BRIGHT-COLORED, CONTINUOUS-PRINTED, PLASTIC TAPE COMPOUNDED FOR DIRECT-BURIAL SERVICE
- NOT LESS THAN 6 INCHES WIDE BY 4 MILS THICK. B. ENGRAVED, PLASTIC-LAMINATED LABELS AND SIGNS, ENGRAVING STOCK MELAMINE PLASTIC LAMINATE 1/16-INCH MINIMUM THICK FOR SIGNS UP TO 20 SQUARE INCHES. OR 8 INCHES IN LENGTH: 1/8-INCH THICK FOR LARGER SIZES. ENGRAVED LEGEND IN WHITE LETTERS ON BLACK FACE AND PUNCHED FOR MECHANICAL FASTENERS.
- C. FASTENERS FOR PLASTIC-LAMINATED AND METAL SIGNS: SELF-TAPPING STAINLESS STEEL SCREWS OR NUMBER 10/32 STAINLESS STEEL MACHINE SCREWS WITH NUTS AND FLAT LOCK WASHERS.
- D. DURING TRENCH BACKFILLING, FOR EXTERIOR UNDERGROUND POWER. AND COMMUNICATIONS LINES, INSTALL CONTINUOUS UNDERGROUND PLASTIC LINE MARKER. LOCATED DIRECTLY ABOVE LINE AT 12" INCHES BELOW GRADE.
- E. INSTALL BRASS TAG ON EACH UNDERGROUND CONDUIT, IDENTIFYING SOURCE AND SERVICE AT EACH END. F. INSTALL WARNING OR CAUTION SIGNS WHERE REQUIRED BY CEC, WHERE
- INDICATED, OR WHERE REASONABLY REQUIRED TO ASSURE SAFE OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS. G. COLOR CODE SECONDARY SERVICE, FEEDER, & BRANCH CIRCUIT CONDUCTORS
  - 480Y/277V BROWN <u>208Y/120</u> BLACK ORANGE YFLLOW WHITE NFUTRAL GRAY GROUND GRFFN GRN/YL ISO GND GRN/YL
- USE CONDUCTORS WITH COLOR FACTORY-APPLIED THE ENTIRE LENGTH OF THE CONDUCTORS EXCEPT AS FOLLOWS. THE FOLLOWING FIELD—APPLIED COLOR-CODING METHODS MAY BE USED IN LIEU OF FACTORY-CODED WIRE NO. 10 AWG & LARGER. APPLY COLORED, PRESSURE-SENSITIVE PLASTIC TAPE IN HALF-LAPPED TURNS FOR A DISTANCE OF 6 INCHES FROM TERMINAL POINTS. IN LIEU OF PRESSURE-SENSITIVE TAPE, COLORED CABLE TIES MAY BE USED. APPLY THREE TIES OF SPECIFIED COLOR TO EACH WIRE AT EACH TERMINAL STARTING

3 INCHES FROM THE TERMINAL & SPACED 3 INCHES APART.

## 262413 SWITCHBOARDS AND PANELBOARDS

AS FOLLOWS:

- A. PROVIDE FACTORY-ASSEMBLED, DEAD-FRONT, METAL-ENCLOSED, SWITCHBOARDS TYPES, SIZES, ELECTRICAL RATINGS AND AND PANFI BOARDS. OF CHARACTERISTICS INDICATED. INDOORS: NEMA TYPE
- OUTDOORS: NEMA TYPE 3R B. BUSSING: COPPER OR ALUMINUM WITH AMPACITY RATING AND SHORT-CIRCUIT CURRENT RATING AS INDICATED ON ONE-LINE.
- C. FUSIBLE SWITCHES: PROVIDE FUSIBLE SWITCH ASSEMBLIES, 3-POLE, QUICK-MAKE, QUICK-BREAK TYPES MOUNTED IN METAL ENCLOSURES WHICH ARE OPERATED BY EXTERNALLY LOCATED HANDLES WHICH CAN BE LOCKED IN ON OR
- D. METERING: WHERE INDICATED PROVIDE METERING COMPARTMENTS FOR CT'S, PT'S
- E. FASTEN ENCLOSURES FIRMLY TO WALLS AND STRUCTURAL SURFACES. ENSURING THEY ARE PERMANENTLY & MECHANICALLY ANCHORED.
- F. FILL OUT PANELBOARD'S CIRCUIT DIRECTORY CARD UPON COMPLETION OF INSTALLATION WORK.

## 260526 GROUNDING

AND ARE SIZED ACCORDING TO CEC.

WIRE AND CABLE CONDUCTORS

GROUNDING ELECTRODES

- A. GENERAL: UNLESS OTHERWISE INDICATED, PROVIDE ELECTRICAL GROUNDING CONDUCTORS FOR EQUIPMENT, SYSTEM, AND SEPARATELY DERIVED SYSTEM GROUNDING CONNECTIONS THAT MATCH POWER SUPPLY WIRING MATERIALS
- B. EQUIPMENT GROUNDING CONDUCTOR: GREEN INSULATED.
- C. GROUNDING ELECTRODE CONDUCTOR: STRANDED BARE CU.
- A. GENERAL: LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED.
- A. GROUND RODS: COPPER-CLAD STEEL 5/8" X 8'-0" (U.N.O)
- B. PLATE ELECTRODES: COPPER PLATES, MINIMUM 0.10 INCH THICK.
- C. GROUND WELLS: CONCRETE, 9" DIA. X 24" DEEP (U.N.O.), WITH COVER MARKED "GROUND".
- 4. APPLICATION A. EQUIPMENT GROUNDING CONDUCTOR APPLICATION: COMPLY WITH CEC ARTICLE
- 250 FOR SIZES AND QUANTITIES OF EQUIPMENT GROUNDING CONDUCTORS, EXCEPT WHERE LARGER SIZES OR MORE CONDUCTORS ARE INDICATED. A SEPARATE GREEN GROUND WIRE SHALL BE PROVIDED BETWEEN THE LOAD

AND DISTRIBUTION SOURCE FOR ALL BRANCH CIRCUITS AND FEEDERS

- B. SIGNAL AND COMMUNICATIONS: FOR TELEPHONE, ALARM, AND COMMUNICATION SYSTEMS, PROVIDE A #4 AWG MINIMUM GREEN INSULATED COPPER CONDUCTOR IN RACEWAY FROM THE GROUNDING ELECTRODE SYSTEM TO EACH TERMINAL CABINET OR CENTRAL EQUIPMENT LOCATION.
- C. METAL POLES SUPPORTING OUTDOOR LIGHTING FIXTURES: GROUND POLE TO A GROUNDING FLECTRODE AS INDICATED IN ADDITION TO SEPARATE FOUIPMENT GROUNDING CONDUCTOR RUN WITH SUPPLY BRANCH CIRCUIT.
- D. CONNECTIONS TO LIGHTNING PROTECTION SYSTEM: (WHEN APPLICABLE) COORDINATE WITH LIGHTNING PROTECTION CONTRACTOR FOR ALL GROUND CONNECTIONS TO THE LIGHTNING PROTECTION SYSTEM PER NFPA 78 'LIGHTNING PROTECTION CODE." LIGHTNING PROTECTION CONTRACTOR SHALL INSTALL SYSTEM WITH 'MASTER LABEL
- E. GENERAL: GROUND ELECTRICAL SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH CEC REQUIREMENTS EXCEPT WHERE THE DRAWINGS OR SPEC. EXCEED CEC REQUIREMENTS.
- ALL EQUIPMENT, GROUND PADS, ENCLOSURES, DEVICES, ETC. SHALL BE BONDED TOGETHER. GROUND ELECTRICAL SERVICE SYSTEM NEUTRAL AT SERVICE ENTRANCE
- ELECTRODE SYSTEM. F. TIGHTEN GROUNDING AND BONDING CONNECTORS AND TERMINALS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES OR UL 486A.

• GROUND EACH SEPARATELY-DERIVED SYSTEM NEUTRAL TO GROUND

EQUIPMENT TO GROUND ELECTRODE SYSTEM.

- . FIELD QUALITY CONTROL A. TESTS: SUBJECT THE COMPLETED GROUNDING SYSTEM TO A MEGGER TEST
- B. GROUND/RESISTANCE MAXIMUM VALUES SHALL BE AS FOLLOWS:
- EQUIPMENT RATED 500 KVA AND LESS, MANHOLE GROUNDS: 10 OHMS • EQUIPMENT RATED 500 KVA TO 1000 KVA, SUBSSTATIONS AND PAD
- MOUNTED EQUIPMENT 5 OHMS. EQUIPMENT RATED OVER 1000 KVA: 3 OHMS
- C. WHERE GROUND RESISTANCES EXCEED SPECIFIED VALUES. AND IF DIRECTED. MODIFY THE GROUNDING SYSTEM TO REDUCE RESISTANCE VALUES. WHERE MEASURES ARE DIRECTED THAT EXCEED THE PROVISIONS OF THE CONTRACT, COVERING CHANGES WILL APPLY.

## 260529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

LBS SAFETY ALLOWANCE MINIMUM.

(THIRD-PARTY)

- A. <u>RACEWAY</u> <u>SUPPORTS:</u> CLEVIS HANGERS, RISER CLAMPS, CONDUIT STRAPS, THREADED C-CLAMPS WITH RETAINERS, CEILING TRAPEZE HANGERS, WALL
- BRACKETS, & SPRING STEEL CLAMPS. ACCESSORIES THAT MATCH WITH U-CHANNEL
- C. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY & PERMANENTLY IN ACCORDANCE WITH CEC REQUIREMENTS.
- & OTHER ELECTRICAL INSTALLATIONS. . RACEWAY SUPPORTS: COMPLY WITH THE CEC & THE FOLLOWING:
- CONFORM TO MANUFACTURER'S RECOMMENDATIONS FOR SELECTION & INSTALLATION OF SUPPORTS. • STRENGTH OF EACH SUPPORT SHALL BE ADEQUATE TO CARRY PRESENT & FUTURE LOAD MULTIPLIED BY A SAFETY FACTOR OF AT LEAST FOUR OR 200
- INSTALL INDIVIDUAL & MULTIPLE (TRAPEZE) RACEWAY HANGERS & RISER CLAMPS AS NECESSARY TO SUPPORT RACEWAYS. PROVIDE U-BOLTS, CLAMPS, ATTACHMENTS, & OTHER HARDWARE AS NECESSARY.

• SUPPORT PARALLEL RUNS OF HORIZONTAL RACEWAYS TOGETHER ON

WITH SPRING STEEL FASTENERS, USE 1/4 INCH DIAMETER OR LARGER

- TRAPEZE-TYPE HANGERS. SUPPORT INDIVIDUAL HORIZONTAL RACEWAYS BY SEPARATE PIPE HANGERS. SPRING STEEL FASTENERS MAY BE USED IN LIEU OF HANGERS ONLY FOR 1-1/2 INCHES & SMALLER RACEWAYS SERVING LIGHTING & RECEPTACLE BRANCH CIRCUITS ABOVE SUSPENDED CEILINGS ONLY. FOR HANGER RODS
- THREADED STEEL. USE SPRING STEEL FASTENERS SPECIFICALLY DESIGNED FOR SUPPORTING SINGLE CONDUITS.
- SPACE SUPPORTS FOR RACEWAYS IN ACCORDANCE WITH CEC. • SUPPORT EXPOSED & CONCEALED RACEWAY WITHIN 1 FOOT OF AN UNSUPPORTED BOX & ACCESS FITTINGS. IN HORIZONTAL RUNS, SUPPORT AT HE BOX & ACCESS FITTINGS MAY BE OMITTED WHERE BOX OR ACCESS FITTINGS ARE INDEPENDENTLY SUPPORTED & RACEWAY TERMINALS ARE NOT MADE WITH CHASE NIPPLES OR THREADLESS BOX CONNECTORS.
- IN VERTICAL RUNS, ARRANGE SUPPORT SO THE LOAD PRODUCED BY THE WEIGHT OF THE RACEWAY & THE ENCLOSED CONDUCTORS IS CARRIED ENTIRELY BY THE CONDUIT SUPPORTS WITH NO WEIGHT LOAD ON RACEWAY TERMINALS.

G. INSTALL VERTICAL CONDUCTOR SUPPORTS SIMULTANEOUSLY WITH INSTALLATION

OF CONDUCTORS. H. SUPPORT MISCELLANEOUS ELECTRICAL COMPONENTS AS REQUIRED TO PRODUCE THE SAME STRUCTURAL SAFETY FACTORS AS SPECIFIED FOR RACEWAY SUPPORTS. INSTALL METAL CHANNEL RACKS FOR MOUNTING CABINETS,

BOXES, TRANSFORMERS, & OTHER DEVICES.

I. IN OPEN OVERHEAD SPACES, CAST BOXES THREADED TO RACEWAYS NEED NOT BE SUPPORTED SEPARATELY EXCEPT WHERE USED FOR FIXTURE SUPPORT SUPPORT SHEET METAL BOXES DIRECTLY FROM THE BUILDING STRUCTURE OR BY BAR HANGERS.

PANELBOARDS, DISCONNECTS, CONTROL ENCLOSURES, PULL BOXES, JUNCTION

#### 260510 GENERAL REQUIREMENTS

- A. THIS SECTION INCLUDES ALL ELECTRICAL WORK AND RELATED ITEMS REQUIRED TO COMPLETE THE WORK INCLUDED ON DRAWINGS. FURNISH ALL LABOR MATERIALS. EQUIPMENT. SERVICES & ALL ELSE REQUIRED TO MAKE COMPLETE AND OPERATIVE ELECTRICAL SYSTEMS & INSTALLATIONS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, CODES & REGULATIONS IN FORCE. ALSO INCLUDED IS ANY REPAIR REQUIRED TO MATCH EXISTING CONDITIONS AND FINISHES, OF ANY AREAS OR MATERIALS DUE TO ELECTRICAL DEMOLITION OR
- RFLOCATIONS. B. ALL EQUIPMENT, FIXTURES, DEVICES, MATERIALS SHALL BE NEW AND UL LISTED.
  - C. ACCEPTABLE MANUFACTURERS FOR ELECTRICAL EQUIPMENT (GEAR, PANELS, TRANSFORMERS, BREAKERS, DISCONNECTS, CONTROLLERS) INCLUDE: SQUARE D, GE. EATON (CUTLER-HAMMER). SIEMENS.
- D. COMPLY WITH NFPA 70 "CALIFORNIA ELECTRICAL CODE" LATEST EDITION OR AS INDICATED IN CODES AND STANDARDS.
- E. UNLESS ITEMS OF MATERIAL, EQUIPMENT OR WORK ARE SPECIFICALLY REQUIRED HEREIN TO BE SUPPLIED OR FURNISHED BY OTHERS, THEY SHALL BE PROVIDED
- F. SUBMITTAL OF SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES WILL BE ACCEPTED ONLY WHEN SUBMITTED BY THE CONTRACTOR TO THE DESIGNATED PERSON BY THE OWNER. DATA SUBMITTED FROM SUBCONTRACTORS AND MATERIAL SUPPLIERS DIRECTLY TO THE ARCHITECT/ENGINEER WILL NOT BE PROCESSED.

UNDER THIS SECTION WHETHER OR NOT SO SPECIFICALLY DENOTED

- G. MARK DRAWINGS TO INDICATE REVISIONS TO EQUIPMENT, RACEWAY, AND DEVICE LOCATIONS AND REVISIONS TO PANEL SCHEDULES.
- CONTRACTOR SHALL MAKE TESTS AT HIS OWN EXPENSE. IN THE PRESENCE OF THE OWNER OR HIS REPRESENTATIVE. AS REQUIRED BY OWNER AND/OR ANY INSPECTION DEPARTMENT. TESTS SHALL BE MADE TO ASCERTAIN WHETHER THE SYSTEM AND EQUIPMENT INSTALLED COMPLY WITH THE DRAWINGS AND SPECIFICATIONS.
- . COORDINATE ELECTRICAL EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS. ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS TO ALLOW FOR ELECTRICAL INSTALLATIONS.
- K. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED IN PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED.
- . SEQUENCE, COORDINATE, & INTEGRATE INSTALLATIONS OF ELECTRICAL MATERIALS AND EQUIPMENT. GIVING PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING-IN BUILDING AREAS.
- SYSTEMS, & STRUCTURAL COMPONENTS. N. STORE EQUIPMENT AND MATERIALS AT THE SITE, UNLESS OFF-SITE STORAGE IS AUTHORIZED IN WRITING PROTECT STORED FOUIPMENT AND MATERIALS FROM DAMAGE. THE EQUIPMENT SHALL BE KEPT UNDER CONTROLLED CONDITIONS TO
- PREVENT MOISTURE AND/OR CONDENSATION ON CRITICAL ELECTRICAL PARTS. O. WHEN APPLICABLE, REFER TO DEMOLITION DETAIL, ELECTRICAL DEMOLITION NOTES & DEMOLITION KEYED NOTES.

M. COORDINATE THE INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT

ABOVE CEILINGS WITH SUSPENSION SYSTEM, MECHANICAL EQUIPMENT AND

## 260519 LOW VOLTAGE (600V AND BELOW) ELECTRICAL POWER CONDUCTORS AND CABLES

S-95-658.

ASSEMBLY.

MEGOHMS.

**CONDUCTOR MATERIAL APPLICATIONS:** A. FEEDERS: COPPER FOR FEEDERS SMALLER THAN 100A RATING; COPPER OR

ALUMINUM AND COPPER CONDUCTORS: COMPLY WITH NEMA WC 70/ICEA

- ALUMINUM FOR FEEDERS 100A AND LARGER. SOLID FOR NO. 12 AWG AND SMALLER; STRANDED FOR NO. 10 AWG AND LARGER. B. BRANCH CIRCUITS: COPPER. SOLID FOR NO. 12 AWG AND SMALLER; STRANDED
- CONDUCTOR INSULATION:

TENSIONS AND SIDEWALL PRESSURE VALUES.

FOR NO. 10 AWG AND LARGER.

- A. FEEDERS: TYPE XHHW-2, SINGLE CONDUCTORS IN RACEWAY. B. BRANCH CIRCUITS, TYPE THHN/THWN-2, SINGLE CONDUCTORS IN RACEWAY.
- C. CONCEAL CABLES IN FINISHED WALLS, CEILINGS, AND FLOORS UNLESS OTHERWISE INDICATED.
- D. USE MANUFACTURER APPROVED PULLING COMPOUND OR LUBRICANT WHERE NECESSARY: COMPOUND USED MUST NOT DETERIORATE CONDUCTOR OR INSULATION. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM PULLING

MANUFACTURER'S PUBLISHED TORQUE-TIGHTENING VALUES. IF MANUFACTURER'S

TORQUE VALUES ARE NOT INDICATED. USE THOSE SPECIFIED IN UL486A-486B.

B. <u>U-CHANNEL SYSTEMS:</u> 16GAGE STEEL CHANNELS, WITH 9/16 INCH DIAMETER HOLES, AT A MINIMUM OF 8 INCHES ON CENTER. PROVIDE FITTINGS & WIRE/CABLE GRIPS, THAT WILL NOT DAMAGE CABLES OR RACEWAY.

F. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS ACCORDING TO

- G. MAKE SPLICES, TERMINATIONS, AND TAPS THAT ARE COMPATIBLE WITH D. COORDINATE INSTALLATION OF SUPPORTING DEVICES WITH STRUCTURAL SYSTEMS CONDUCTOR MATERIAL. USE OXIDE INHIBITOR IN EACH SPLICE, TERMINATION, AND TAP FOR ALUMINUM CONDUCTORS.
  - H. WIRING AT OUTLETS: INSTALL CONDUCTOR AT EACH OUTLET, WITH AT LEAST 6 INCHES OF SLACK. I. APPLY FIRESTOPPING TO ELECTRICAL PENETRATIONS OF FIRE-RATED FLOOR AND WALL ASSEMBLIES TO RESTORE ORIGINAL FIRE-RESISTANCE RATING OF
  - CIRCUITRY HAS BEEN ENERGIZED. TEST SERVICE ENTRANCE AND FEEDER CONDUCTORS. PERFORM FACH VISUAL AND MECHANICAL INSPECTION AND ELECTRICAL TEST STATED IN NETA ACCEPTANCE TESTING SPECIFICATION. CERTIFY COMPLIANCE WITH TEST PARAMETERS.

J. AFTER INSTALLING CONDUCTORS AND CABLES AND BEFORE FLECTRICAL

GROUND AND ADJACENT CONDUCTORS. 1000 VOLTS DC FOR 600 VOLT RATED CABE. TEST DURATION SHALL BE ON MINUTE. • MINIMUM INSULATION RESISTANCE VALUES SHOULD NOT BE LESS THAN 50

PERFORM INSULATION RESISTANCE ON FACH CONDUCTOR WITH RESPECT TO

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PROJECT

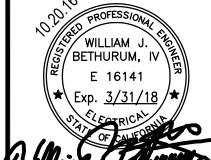
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REVISIONS

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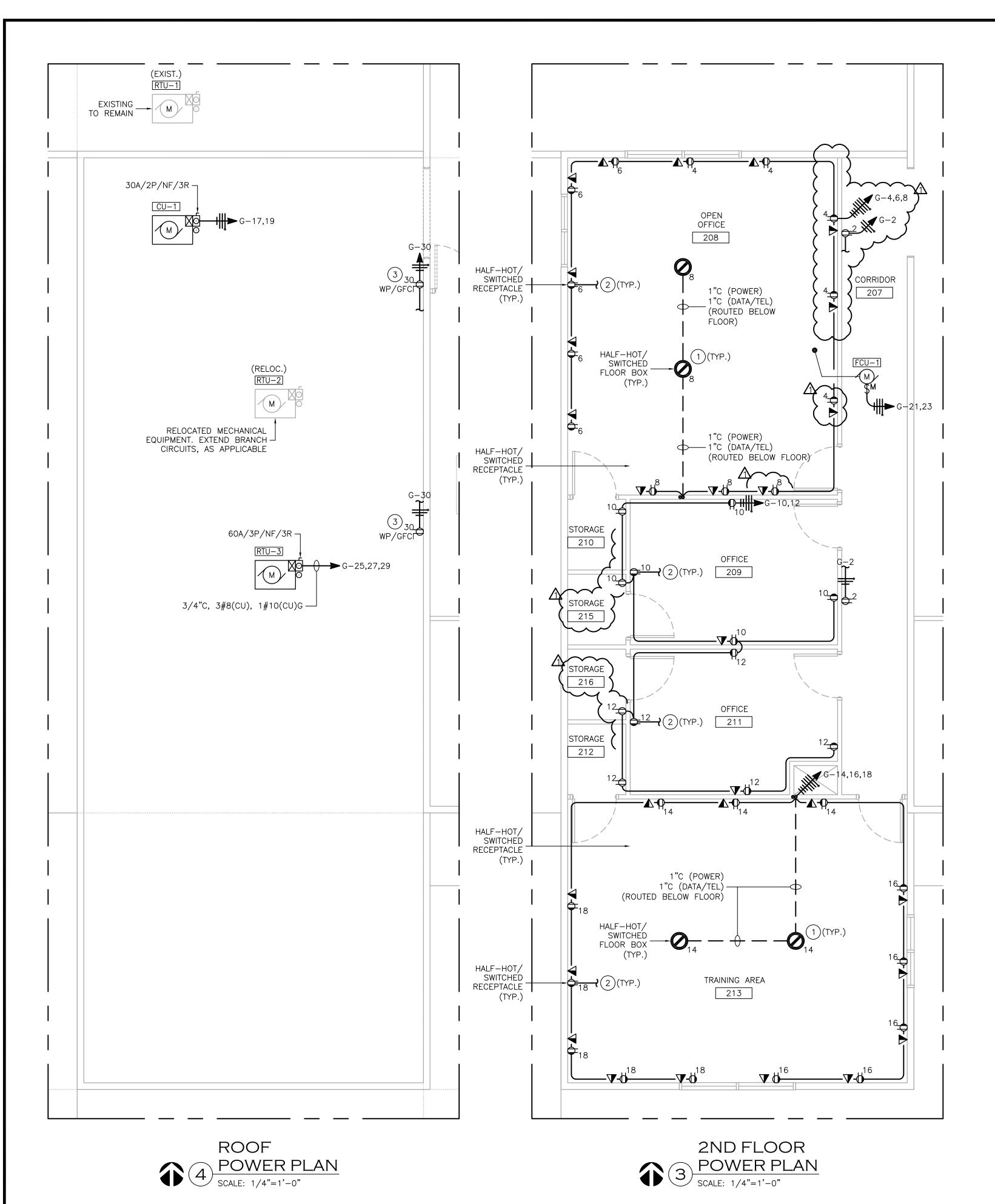


SHEET TITLE **ELECTRICAL** SPECIFICATIONS

10.20.16 ETS/JNS

609001

3666 N. Miller Road, Suite 100, Scottsdale, AZ 85251 Tel. (480) 659-0511, VoltaUS.com HIS DRAWING CONTAINS DATA AND INFORMATION WHICH IS THE PROPERTY OF VOLTAUS. THIS DRAWING IS RECEIVED IN CONFIDENCE AND THE SPECIFIC CONTENTS MAY NOT BE COPIED OR DISCLOSED WITHOUT PRIOR WRITTEN CONSENT OF VOLTAUS. WHEN THIS DRAWING IS DIGITALLY SIGNED AND TRANSMITTED IN ELECTRONIC FORMAT, THE DRAWING CONTAINS A DIGITAL SIGNATURE IN COMPLIANCE WITH A.R.S. 41 & 44 AND ARIZONA TECHNICAL BOARD OF REGISTRATION, ELECTRONIC COPIES OF CERTIFIED DOCUMENTS ARE STORED WITH VOLTAUS TO PREVENT UNAUTHORIZED MODIFICATIONS.



## GENERAL NOTES

5% MAX

LAVATORY

203

20 44"/GFCI

CORRIDOR

207

2ND FLOOR

POWER PLAN

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

- A. REFER TO ELECTRICAL LEGEND AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS INCLUDING, BUT NOT LIMITED TO, CODE REQUIREMENTS, EQUIPMENT AND MATERIAL SPECIFICATIONS AND INSTALLATION REQUIREMENTS, SUBMITTAL REQUIREMENTS, DEVICE MOUNTING HEIGHTS, EQUIPMENT IDENTIFICATION, ETC.
- B. COORDINATE ALL CONSTRUCTION WITH OTHER TRADES INCLUDING LOCATION OF MECHANICAL EQUIPMENT AND ROUTING OF PIPING, RACEWAYS, DUCTWORK, ETC.
- C. SUPPORT ALL RACEWAYS PER CEC. INSTALL CONDUIT WITH 270 DEGREES IN BENDS MAXIMUM WITHOUT PULL POINT. INSTALL JUNCTION / PULL BOXES AS NECESSARY. WHEN SIZES ARE NOT SPECIFIED, SIZE BOXES BASED ON CONDUIT SIZES / FILL PER CEC.
- D. MAINTAIN WORKING CLEARANCE ABOUT ELECTRICAL EQUIPMENT PER CEC ART. 110.
- CONDUIT AND WIRE IS SHOWN DIAGRAMMATICALLY. ACTUAL ROUTING AND REQUIRED NUMBER OF SUPPORTS SHALL BE DETERMINED BY THE CONTRACTOR.

UNLESS CONDUIT ROUTING CLEARLY INDICATES AS SUCH, DO NOT ROUTE CONDUIT ON OR ABOVE ROOFTOPS WITHOUT CONSULTING ENGINEER TO DETERMINE ANY POTENTIAL IMPACT TO RACEWAY OR CONDUCTOR SIZE DUE TO ADDITIONAL AMBIENT DERATING FOR ROOFTOP INSTALLATION.

- WHERE TELEPHONE, DATA, OR SECURITY DEVICES ARE SHOWN, INSTALL OUTLET BOX AND CONDUIT (3/4" UNLESS NOTED OTHERWISE) ABOVE THE CEILING.
- G. VERIFY ALL EQUIPMENT LOCATIONS AND DIMENSIONS IN THE FIELD PRIOR TO INSTALLING RACEWAYS AND WIRING.
- H. HVAC EQUIPMENT

DISCONNECTING MEANS: PROVIDE AND INSTALL HEAVY DUTY FUSED DISCONNECT (NEMA 3R OUTDOORS) AND SINGLE POINT POWER CONNECTION TO EQUIPMENT (UNLESS NOTED OTHERWISE). IF STARTERS ARE REQUIRED FOR MECHANICAL EQUIPMENT, ADDITIONAL REQUIREMENTS WILL BE INDICATED ON ONE-LINES, PLAN DRAWINGS, AND MECHANICAL PLANS.

CONTROLS: INSTALL 3/4" CONDUIT (UNLESS NOTED OTHERWISE) FROM HVAC CONTROLS (T-STAT OR OTHER\*) TO UNIT. CONTROL WIRING WILL BE INSTALLED BY OTHERS. COORDINATE WITH MECHANICAL CONTRACTOR. \* THIS INCLUDES OTHER EQUIPMENT OR DEVICES WHICH

ARE INTERLOCKED WITH THE MECHANICAL UNIT AND INDICATED ON THE MECHANICAL PLANS. COORDINATE RACEWAY REQUIREMENTS WITH MECHANICAL PLANS AND THE MECHANICAL CONTRACTOR.

SMOKE DETECTION: WHEN THE DUCT MOUNTED SMOKE DETECTORS ARE INDICATED, PROVIDE SHUTDOWN WIRING FROM DETECTOR (PROVIDED BY MECHANICAL UNLESS NOTED OTHERWISE) TO HVAC UNIT AND VISIBLE/AUDIBLE SIGNALS IN ACCORDANCE WITH IMC SECTION 606. WHEN A FIRE ALARM SYSTEM IS PRESENT, THE DETECTOR SHALL ALSO BE CONNECTED TO THE FIRE ALARM CONTROL PANEL. PROVIDE 120V BRANCH CIRCUIT FOR DETECTOR POWER (2#12, #12G) WHEN REQUIRED. A DEDICATED BRANCH CIRCUIT WITH "LOCK-ON" TAB WILL BE AVAILABLE IN PANEL SCHEDULE FOR THIS PURPOSE IF NECESSARY.

- VERIFY THE LOCATION OF FIRE RATED WALLS WITH ARCHITECTURAL DRAWINGS TO DETERMINE APPLICABLE CONDUIT PENETRATION DETAILS.
- CONTRACTOR SHALL IDENTIFY EACH INDIVIDUAL BRANCH CIRCUIT WITHIN THE PROJECT AREA BY PERMANENT MEANS. ACCEPTABLE METHODS INCLUDE USING PERMANENT MARKER ON JUNCTION BOX COVER PLATES AND BACKSIDE OF DEVICE COVER PLATES OR IDENTIFYING BRANCH WIRING WITHIN JUNCTION BOXES. STICK ON LABELS ARE NOT ACCEPTABLE. [REFERENCE ART. 408.4]
- CONCEAL CONDUITS IN ALL FINISHED AREAS INCLUDING CONCEALMENT WITHIN MASONRY WALLS WHEN PRESENT. (EXCEPTION: ELECTRICAL, MECHANICAL, AND JANITOR

WHEN OVERHEAD ELECTRICAL WORK IS EXPOSED: MOUNTING OF ALL ELECTRICAL WORK/CONDUIT SHALL RUN IN DECK FLUTES AND/OR TIGHT WITH DECK. CONTRACTOR MAY RUN CONDUIT UNDER FLOOR AS NECESSARY TO FACILITATE CONCEALMENT OF CONDUITS.

CEC ART. 300.4(E) CABLES, RACEWAYS, OR BOXES INSTALLED IN OR UNDER ROOF DECKING. A CABLE, RACEWAY, OR BOX, INSTALLED IN EXPOSED OR CONCEALED LOCATIONS UNDER METAL—CORRUGATED SHEET ROOF DECKING, SHALL BE INSTALLED AND SUPPORTED SO THERE IS NOT LESS THAN 38 MM (11/2) IN.) MEASURED FROM THE LOWEST SURFACE OF THE ROOF DECKING TO THE TOP OF THE CABLE, RACEWAY, OR BOX. A CABLE, RACEWAY, OR BOX SHALL NOT BE INSTALLED IN CONCEALED LOCATIONS IN METAL-CORRUGATED, SHEET DECKING-TYPE ROOF.

EXCEPTION: RIGID METAL CONDUIT AND INTERMEDIATE METAL CONDUIT SHALL NOT BE REQUIRED TO COMPLY WITH THESE REQUIREMENTS.

## KEYED NOTES -

3

4

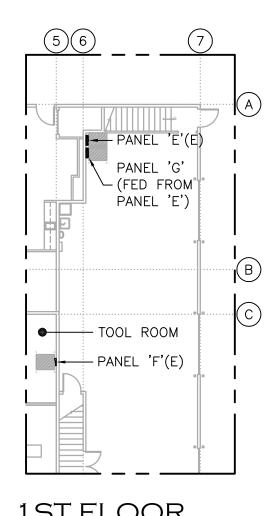
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- 1. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED FLOOR BOX LOCATIONS.
- 2. CONNECT SWITCHED RECEPTACLES TO ONE OR TWO-POLE OCCUPANCY SENSOR.
- 3. PROVIDE & INSTALL MAINTENANCE RECEPTACLE WITHIN 25FT OF MECHANICAL EQUIPMENT, PER CEC.

56

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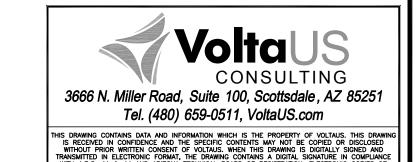
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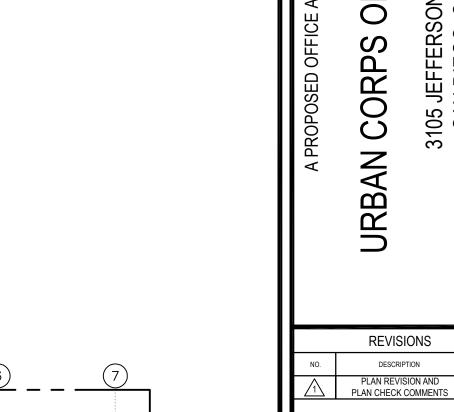


1ST FLOOR PARTIAL KEY PLAN NOT TO SCALE

2ND FLOOR BUILDING KEY PLAN

NOT TO SCALE





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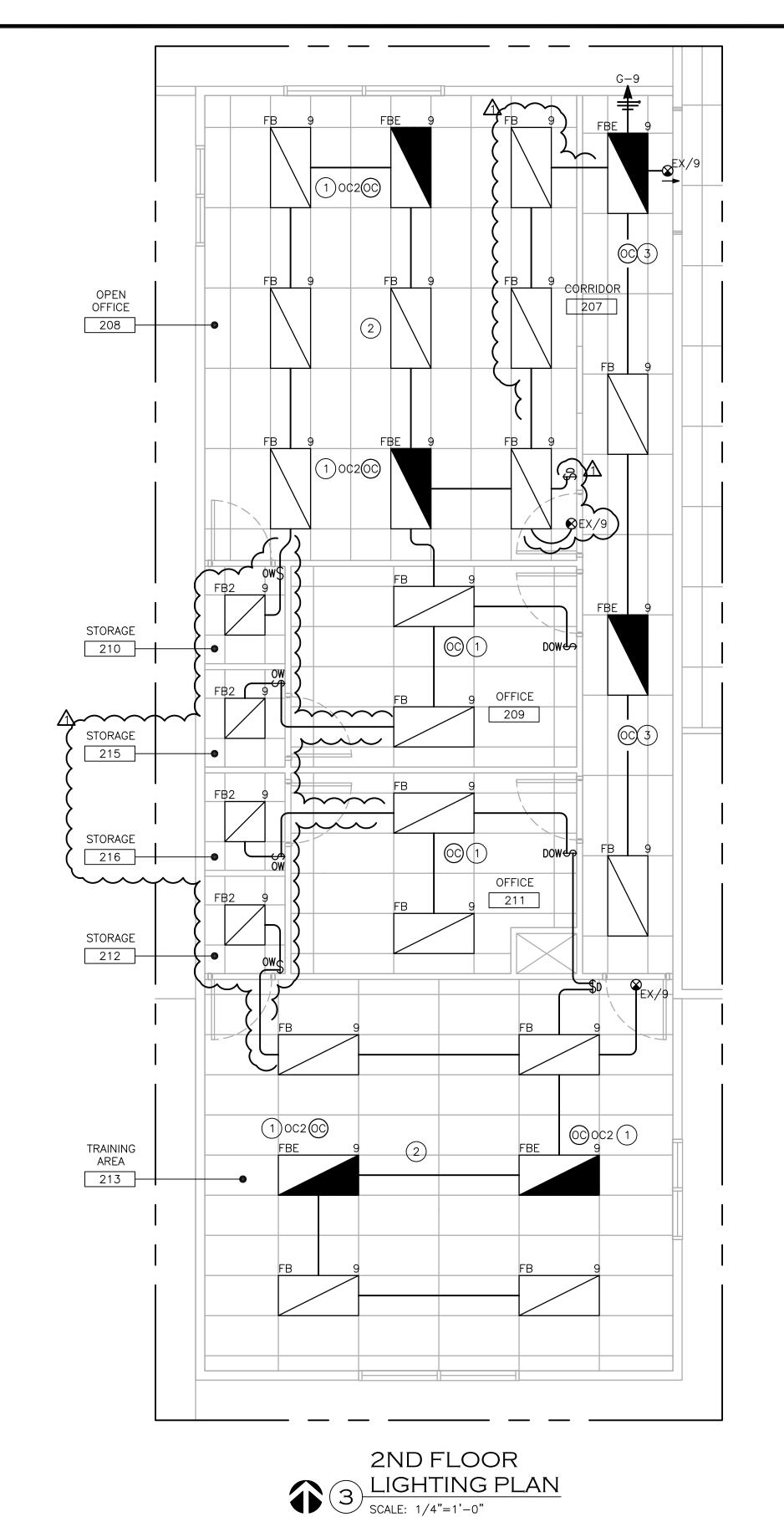
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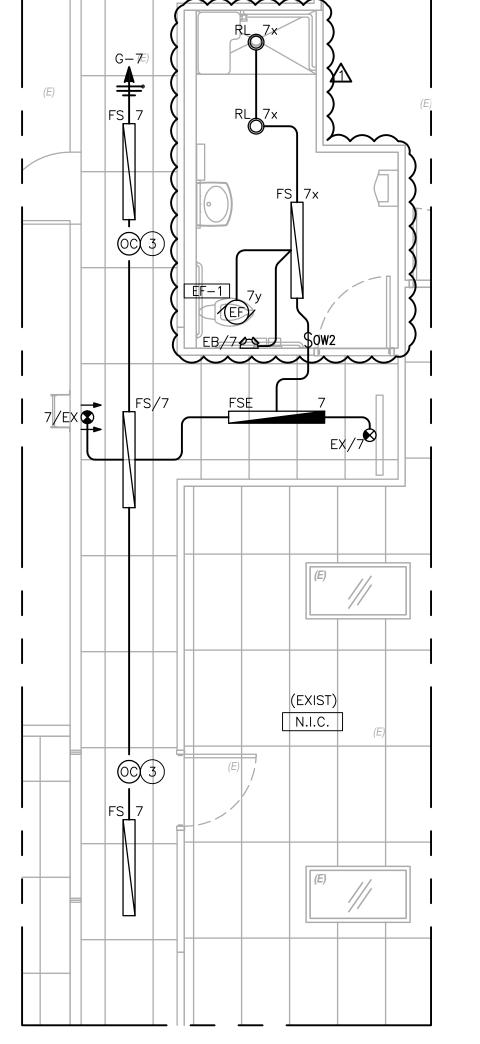
**REVISIONS** 

DESCRIPTION

SHEET TITLE PARTIAL **POWER PLANS** 02.14.17 ETS/JNS

609001







## GENERAL NOTES

- A. GENERAL REQUIREMENTS:
  - REFER TO ELECTRICAL LEGEND, FIXTURE SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- B. EMERGENCY AND EXIT SIGNS SHALL BE CONNECTED TO A NON—SWITCHED LEG OF THE NEAREST BRANCH LIGHTING CIRCUIT, 2#12, 1#12G UNLESS NOTED OTHERWISE. REFER TO LEGEND FOR EMERGENCY LIGHT FIXTURE SYMBOLS.
- C. FIXTURES DESIGNATED AS NIGHT LIGHTS SHALL BE SUPPLIED FROM A NON-SWITCHED LEG OF THE BRANCH LIGHTING CIRCUIT FOR ONE BALLAST OF EACH NIGHT LIGHT FIXTURE. IN MANY CASES, EMERGENCY FIXTURES WILL BE DESIGNATED AS NIGHT LIGHTS FOR CONVENIENCE.
- D. IN GENERAL, NON-SWITCHED LEGS FOR NIGHT LIGHTS AND EMERGENCY LIGHTS AND TRAVELLER CONDUCTORS FOR 3-WAY SWITCHING ARE NOT SHOWN ON THE PLANS. INSTALL THESE CONDUCTORS AS REQUIRED FOR PROPER OPERATION OF THE LIGHT FIXTURES.
- E. INSTALL FLEXIBLE CONDUIT CONNECTIONS TO FIXTURES (NOT TO EXCEED 6' IN LENGTH) WHEN NECESSARY.
- F. WHEN LIGHTING CONTROL DEVICES ARE INDICATED ON PLANS AND DETAILS, THE CONTRACTOR SHALL INSTALL ANY ASSOCIATED CONTROL WIRING REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
- K. CONCEAL CONDUITS IN ALL FINISHED AREAS INCLUDING CONCEALMENT WITHIN MASONRY WALLS WHEN PRESENT. (EXCEPTION: ELECTRICAL, MECHANICAL, AND JANITOR ROOMS).

WHEN OVERHEAD ELECTRICAL WORK IS EXPOSED: MOUNTING OF ALL ELECTRICAL WORK/CONDUIT SHALL RUN IN DECK FLUTES AND/OR TIGHT WITH DECK IN A CLEAN AND WORKMAN LIKE MANNER. CONTRACTOR MAY RUN CONDUIT UNDER FLOOR AS NECESSARY TO FACILITATE CONCEALMENT OF CONDUITS.

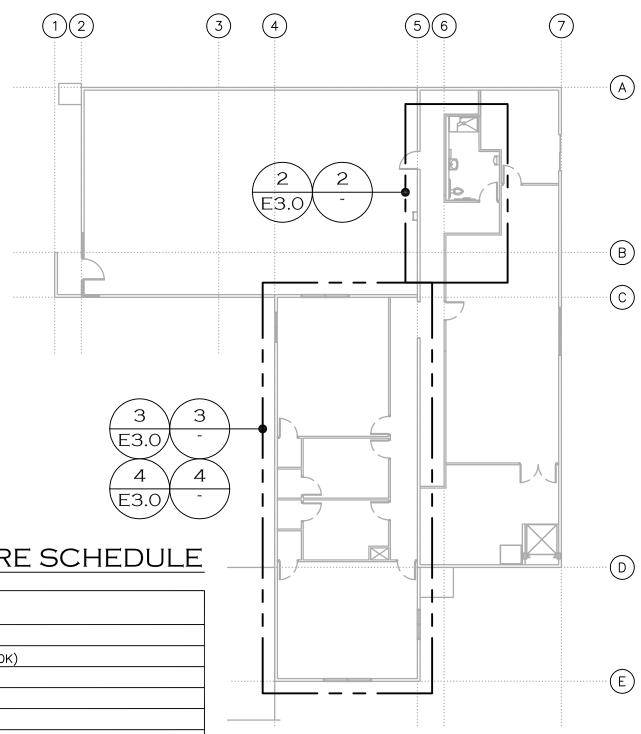
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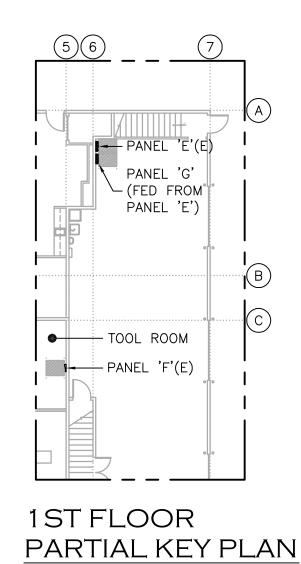
EXCEPTION: RIGID METAL CONDUIT AND INTERMEDIATE METAL CONDUIT SHALL NOT BE REQUIRED TO COMPLY WITH THESE REQUIREMENTS.

## KEYED NOTES -

1. CEILING MOUNTED OCCUPANCY SENSOR (OC OR OC2) FOR SWITCHED RECEPTACLES & LIGHTING (AS APPLICABLE). SEE E2.0 FOR SWITCHED RECEPTACLES.

- TOTAL AUTOMATIC DAYLIGHTING CONTROLS NOT REQUIRED. GLAZING LESS THAN 24 SQUARE FEET PER ROOM.
- 3. OCCUPANCY CONTROLS SHALL DIM CORRIDOR LIGHTS 0 50% UPON VACANCY PER CEC 130.1(C)6(C).

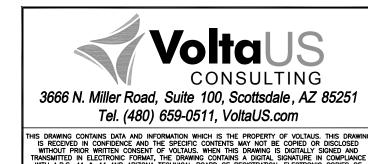


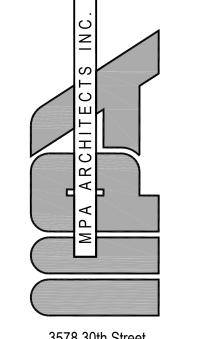


NOT TO SCALE

FIXTURE SCHEDULE Mounting Finish VOLTS Lamp(s)/ Fixt ТЕМР. EMERG. CONTROL Envir. IC RATING | MANUFACTURER/CAT# DESCRIPTION WATTS WATTS WET/DAMP EX EXIT SIGN, LED, BATTERY BACKUP, THERMOPLASTIC, [R/G] LETTERS LITHONIA LQM-S-[WHITE/BLACK]-[R/G]-120/277 FB2 2x2 recessed troffer, led, dimmable, w/ acrylic lens GRID 1 - 35WLED 4000K LITHONIA 2TL2-40L(35W)-FLUSH-(LENS)-MV-(DRIVER)-LP840(4000K) WHITE LED 47W LITHONIA 2VTL4-40L-40W-ADP-LP840 2X4 RECESSED TROFFER, DIRECT/INDIRECT, LED, DIMMABLE 1 - 47W4000K FBE SAME AS TYPE 'FB' WITH EMERGENCY BATTERY 4000K LITHONIA 2VTL4-40L-40W-ADP-LP840-EZ1 FS 4 FT LED STRIP LIGHT WITH DIFFUSER SURFACE WHITE 1-42W LED 42W 4000K LITHONIA ZL1N-LED-L48-5000L-FST-MVOLT-40K-80CRI-[E7W] MV DIMMING SAME AS TYPE 'FS' WITH EMERGENCY BATTERY LITHONIA ZL1N-LED-L48-5000L-FST-MVOLT-40K-80CRI-[E7W] RL. 1 - 14WLED 4000K RECESSED 14W DIMMING LITHONIA REALITY SERIES REAL6C D6-MW-ESL-1000L-40K-(DISTRIBUTION)-MVOLT-(MOUNTING) DOW OCCUPANCY SENSOR, WALL MOUNT, DIMMING, LINE VOLTAGE, WITH PHOTOCELI N/A N/A WHITE N/A N/A N/A N/A WALL N/A N/A N/A SENSORSWITCH, WSX-D-WH OC OCCUPANCY SENSOR, CEILING MOUNT, PIR, LINE VOLTAGE, STANDARD RANGE N/A SENSORSWITCH, CMR-9-WH OW OCCUPANCY SENSOR, WALL MOUNT, PIR, LINE VOLTAGE N/A N/A N/A N/A SENSORSWITCH, WSD-WH N/A N/A N/A OW2 OCCUPANCY SENSOR, WALL MOUNT, PIR, 2 CIRCUIT N/A N/A N/A N/A N/A N/A N/A N/A SENSORSWITCH, WSD-2P-WH

2ND FLOOR
BUILDING KEY PLAN
NOT TO SCALE





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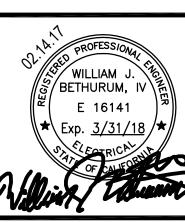
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CORPS OF SAN DIE

 REVISIONS

 NO.
 DESCRIPTION
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 PLAN REVISION AND PLAN CHECK COMMENTS
 2-10



SHEET TITLE

PARTIAL

LIGHTING PLANS

02.14.17 AS NO

ETS/JNS

609001

M.	ANUFACTURE:	LOCATI	ON:		VOLTAGE	•		Pan	IEL NAME	:			
	(ISTING	BLDG C			208/	120V	]					<b>—</b>	
М	OUNTING:	FED FR	OM:		PHASE:	Wire:	J						
SU	JRFACE, N1	SES			3	4						<u> </u>	
N	OTES:	DIMS:			MIN KAIC	:	RATING:	Mai	NS:				
		5.75" x	20"W		42/10	kAIC	SERIES	200	4		MCB		
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		PC	(DIVERS)		Α	В	С		(DIVERS)	c	P		
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PA	ANEL G	100	8286	3		11249		4	2963		40 3	RTU-1	
PA	ANEL G	100	8663	5			11626	6	2963		40 3	RTU-1	
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	CROWAVE	20	1500	9		4057		10	2557		50 2	WARMER	一 `
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, VE	N PAUCETS ENDING MACHINE ECEPTS — 2ND FLR	20	1000	13	2920	]		14	1920		20	EXHAUST FAN (EF-3), (EF-4)	
	EFRIGERATOR	20	1200	15		3120		16	1920		20	EXHAUST FAN	
ICI	E MAKER	20 2	1100	17			3600	18	2500		50 2	(EF-5), (EF-6) PANEL F	$\exists$
ICI	E MAKER	20 2	1100	19	3600	]		20	2500		50 2	PANEL F	7
RE	ECEPTS - OFFICE	20	900	21		4500		22	3600		40	VERTICAL BOTTLE & CAN BAILER	-
l I	ECEPTS -	20	900	23			4500	24	3600		40	VERTICAL BOTTLE	$\dashv$
RE	RAINING ROOM ECEPTS —	20	900	25	4500	1			3600		40	& CAN BAILER  VERTICAL BOTTLE	$\dashv$
RE	RAINING ROOM ECEPTS -	20	900	27		2080		26	1180	H	20	& CAN BAILER CONVEYOR SYSTEM,	-
RE	RAINING ROOM ECEPTS — RESTRMS.,	20	900	29			1646	28	746		20	MONOXIDE DECTECTOR SWAMP COOLER	-
	ECYCLING CENTER DOF RECEPTS — GFCI	20	360	31	1960	1		30	1600		20	SEWAGE EJECTOR	
		50	3000	33		4150		32	1150		20	CONTROL PANEL SEWAGE EJECTOR	
ŘΤ	5FLA) 	50	3000	35			4000	34	1000	С	20	PUMPS LIGHTING	
ŘE	5FLA) ECEPTS — 2ND FLR	20	900	37	3798	]		36	2898		30 _	ELEVATOR LIFT	
	FFICE, ROOF TOP RE ALARM BELL	20	200	39		3098	]	38	2898	$\vdash$	30 <u>-</u>	ELEVATOR LIFT	+
l I	ATER HEATER AND	20	1000	41			3898	40	2898		30 7	ELEVATOR LIFT	$\dashv$
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	00% Contin. + Non-Con	itin. Loa	D		31,693			Bus	PHASE: LOADING:			SEE LOAD CALC SEE LOAD CALC	
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FE	EED THRU LOAD PE	r Phase	-		31,918	32,254	31,300						
M	EASURED PEAK DEMAN			1	AMPS	DATE:	· · · · · ·	1					

	SES,	NEM	1A 3F	2				UTILITY SECONDARY(E)
	 	800A, 208/	120V, 3PH, 4	W, AFC=42kA,	42kAIC	•	•	M SCE(E) 800AT 800AF
	     	200AT 200AF	200A 200A	200AT 200AF	2007	AT 200	0AT 100AT 0AF 100AF	N G
	AFC= 14.1kA	70' PANEL E (EXIST)	PANEL B (EXIST)	PANEL C (EXIST)	PANEL D (EXIST)	PANEL A (EXIST)	M ELEVATOR(E)	
1-1/2"C, 4#1(CU, THHN/THWN),— 1#8(CU)G AFC= 13.4kA	PANEL G 1	PANEL F (EXIST)					LLLVATOR(L)	

ONE LINE DIAGRAM

Manuf	FACTURE:	Loca	ATI0	ON:		VOLTAGE	•		Pan	IEL NAME	:		
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Moun	TING:	FED	FR	OM:		PHASE: WIRE:							( -
SURFAC	RFACE, N1 PANEL E						3 4						
NOTES	S.	DIMS	;:			MIN KAIC		RATING:	Mai	NS:			
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Bus N	O.	Амр	Ĥ	(VA)	No.		PHASE	PHASE		LOAD		AMP	
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AIR CU	IG, OFFICE, RR	20		800	3		1700	1	<u> </u>	900	_	20	RECEPTS -
AIR CU	KIAINS	1		800	3		1700		4	900			OFFICE 208
ITG -	RECYCLING	20	С	900	5			1800		900	_	20	RECEPTS -
	R, STAIRS	1						1000	6				OFFICE 208
	G – CORR.,	20	С	252	7	1152	1		١Ů	900		20	RECEPTS -
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	IRU 213	1		'00'			'33'		10				OFFICE 209, STOR 210
SPARE	110 210	20		0	1 1			900	1	900	_	20	RECEPTS -
J. ,		1							12				OFFICE 211, STOR 212
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31 / II L		1			'		500		16				OFFICE 213
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PANEL B	208	200	24			24			24	67	1
PANEL C	208	200	60			60			60	166	1
PANEL D	208	200	28			28			28	77	1
PANEL E	208	200	36		25	61	9		70	194	2
PANEL G	208	100			25	25		·	25	71	

EXISTING BASE BUILD CODE LOAD (7/9/07).
 EXISTING PEAK DEMAND (74A) PLUS RTU-2 (25FLA).

, ,

2 LOAD CALCULATIONS
NO SCALE

#### GENERAL NOTES

UTILITY

INCOMING(E)

- A. ALL WORK SHALL COMPLY WITH CEC AND LOCAL CODES.
- B. ALL EQUIPMENT IS NEW UNLESS OTHERWISE NOTED. ALL EQUIPMENT AND FIXTURES SHALL BE UL LISTED.
- C. REFER TO PLANS FOR SES AND PANEL LOCATIONS.
- D. MAINTAIN WORKING CLEARANCE ABOUT ELECTRICAL EQUIPMENT PER CEC ART. 110, (30"W MIN), DEPTH PER CEC, (36" MIN).
- E. VERIFY MECHANICAL EQUIPMENT NAMEPLATE RATINGS PRIOR TO INSTALLATION. INSTALL FUSED DISCONNECTS AT EACH A/C UNIT. INSTALL MOTOR RATED SWITCH OR DISCONNECT AT EACH AIR HANDLER AS DISCONNECTING MEANS. INSTALL THERMAL OVERLOAD PROTECTION (MANUAL MOTOR STARTER) FOR ANY MOTORS NOT PROVIDED WITH INTEGRAL THERMAL PROTECTION.
- F. GROUNDING PROVIDE AND INSTALL GROUND ELECTRODES AND CONNECTIONS AS INDICATED AND ADDITIONAL AS REQUIRED PER CEC AND AHJ. UFER SHALL BE REQUIRED ON ALL NEW CONSTRUCTION. GROUND ALL TRANSFORMERS TO THE GROUND ELECTRODE SYSTEM.
- G. CABLE LENGTHS WHEN INDICATED ON ONE—LINE ARE APPROXIMATE AND ARE FOR REFERENCE ONLY FOR CALCULATIONS AND ARE NOT TO BE USED FOR MATERIAL TAKEOFFS.

## KEYED NOTES -

- 1. PROVIDE & INSTALL PANEL 'G' AND BRANCH CIRCUITS INDICATED.
- 2. RELOCATED EXISTING BRANCH CIRCUITS FROM PANEL E.
- 3. EXISTING BRANCH CIRCUITS TO REMAIN.

### FAULT CURRENT NOTES

- 1. UTILITY FAULT CURRENT VALUES ARE OBTAINED FROM PUBLISHED UTILITY DATA BASED ON SERVICE SIZE.
- 2. FAULT CURRENT CALCULATIONS ARE COMPLETED USING ETAP (ELECTRICAL TRANSIENT ANALYZER PROGRAM). STANDARD INPUT PARAMETERS ARE AS FOLLOWS:
  - PRE-FAULT VOLTAGE = 100%
- CABLE IMPEDANCE PER CEC STANDARD LIBRARY.
   TRANSFORMER IMPEDANCE AND X/R RATIOS ARE PER TYPICAL
- MANUFACTURERS DATA UNLESS NOTED OTHERWISE.
- FAULT CURRENT VALUES SHOWN ARE 3 PHASE, 30 CYCLE, RMS SYMMETRICAL UNLESS NOTED OTHERWISE.
- FOR SINGLE PHASE SYSTEMS, BUSSMANN CALCULATIONS ARE USED.
- 3. COMPLETE FAULT CURRENT REPORTS ARE AVAILABLE UPON REQUEST.

### SERIES RATED SYSTEMS

- 1. "SERIES-RATED SYSTEMS" SHALL CONSIST OF EITHER A CIRCUIT BREAKER OR FUSE CONNECTED IN SERIES WITH A DOWNSTREAM CIRCUIT BREAKER, DESIGNED AND LISTED FOR USE AS A SINGLE INTEGRATED SYSTEM.
- 2. THESE NOTES SHALL APPLY WHEN PANELBOARDS OR PROTECTIVE DEVICES ARE IDENTIFIED AS 'SERIES RATED'. OTHERWISE, SYSTEMS SHALL BE FULLY
- THE MINIMUM KAIC SHOWN FOR SERIES RATED EQUIPMENT REFERS TO THE 'SERIES CONNECTED SHORT CIRCUIT CURRENT RATING' (SCCR) OF EQUIPMENT.
- 4. ALL SERIES RATED DEVICE COMBINATIONS SHALL BE UL LISTED & LABELED. SUBSTITUTION OF COMPONENTS HAVING DIFFERENT SPECIFICATIONS OR INTERRUPTING RATING IS SPECIFICALLY PROHIBITED.
- 5. SYSTEMS ARE IDENTIFIED AS TWO-TIER OR THREE-TIER (EX. 22/10; 65/42/10). RATINGS SHOWN ARE AIC RATING OF INDIVIDUAL DEVICES.
- 6. WHEN SERIES—RATED SYSTEMS ARE SPECIFIED, MOTOR FLA HAS BEEN CALCULATED AT LESS THAN 1% OF THE DOWNSTREAM BREAKER AIC RATING.
- 7. CONTRACTOR SHALL INSTALL / VERIFY MARKING ON SERIES RATED EQUIPMENT PER CEC 110-22, EX. "CAUTION-SERIES RATED SYSTEM (ENTER TIER RATING ex. '22/10'), (ENTER VALUE FROM ONE-LINE 'XX')KA AVAILABLE. IDENTIFIED REPLACEMENT COMPONENT REQUIRED".

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URBAN CORPS OF

SAN DIEGO

3127 JEFFERSON STREET
SAN DIEGO, CA 92110

(619) 235-6884

PROJECT

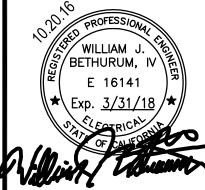
CORPS OF SAN DIE(105 JEFFERSON STREET SAN DIEGO, CA 92110

REVISIONS

DESCRIPTION

SHEET SET

CITY SET



SHEET TITLE

ONE-LINE DIAGRAM
& SCHEDULES

10.20.16 SCALE: AS NO.

PRAWN BY:

ETS/JNS

DATABASE:

CHECKED BY:

WB

PROJECT NO:

609001

DATABASE:

BEET NUMBER:

609001

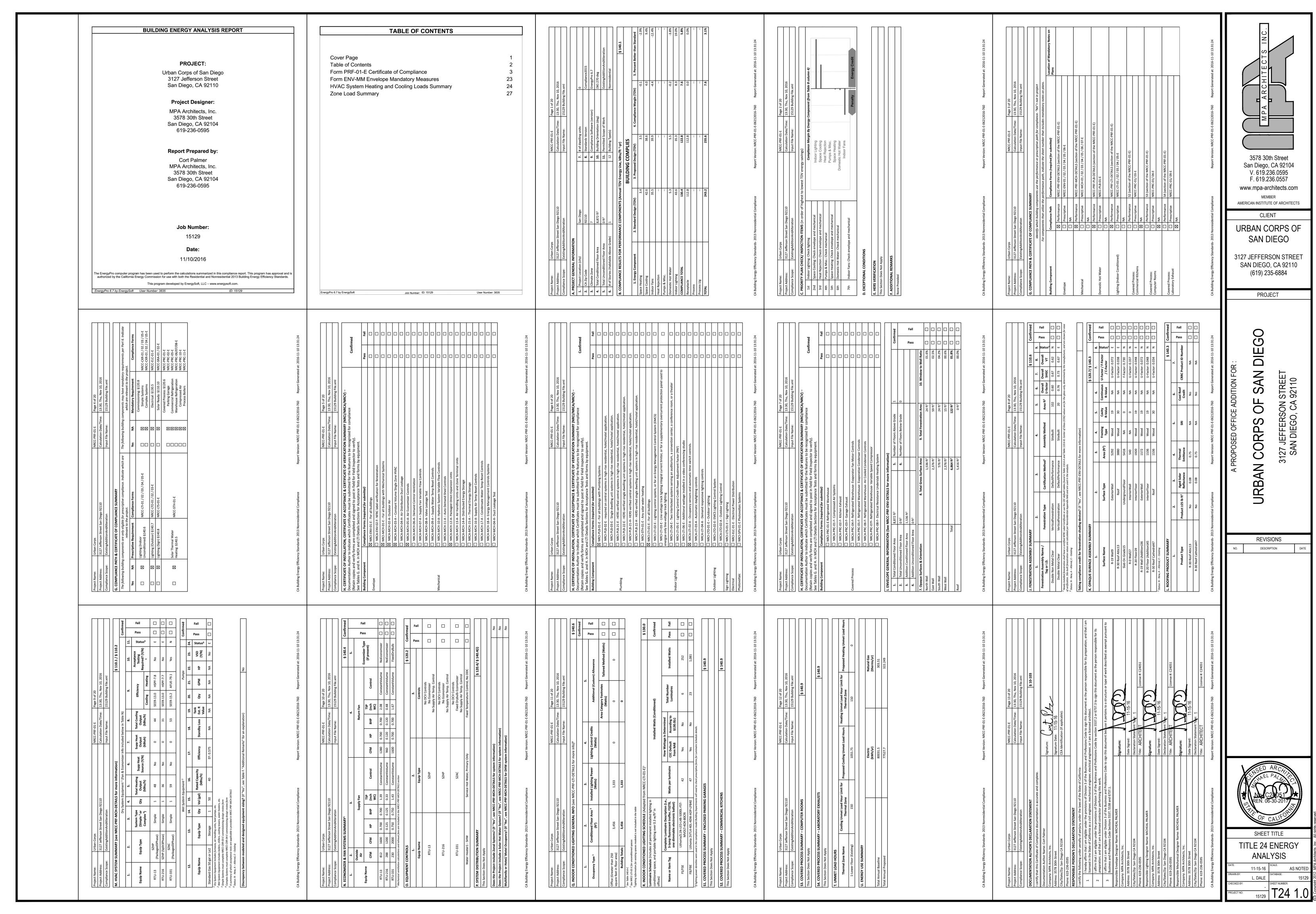
3 PANEL SCHEDULES
NO SCALE

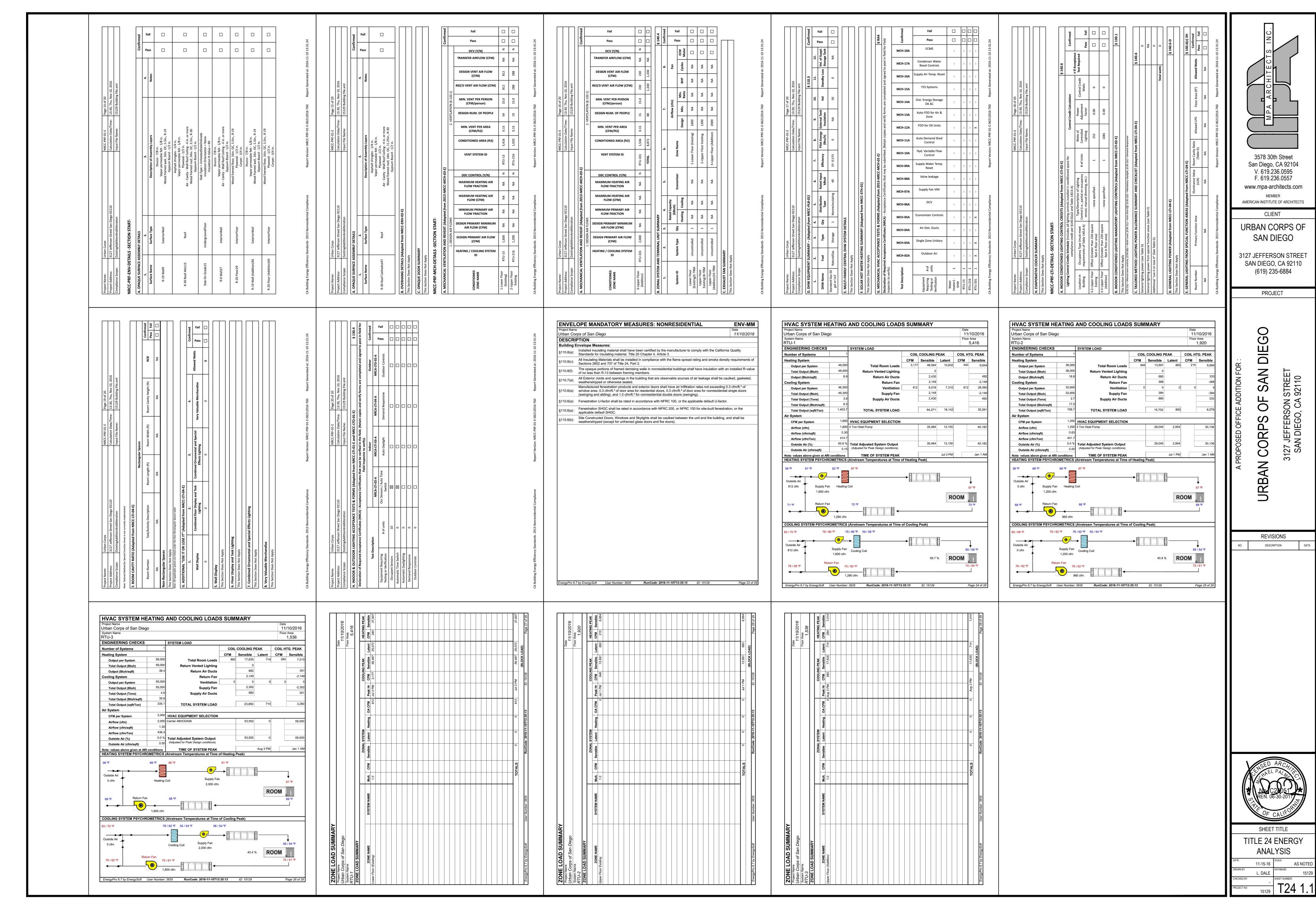
[609001\_schedules.xlsx]G

AMPS DATE:

MEASURED PEAK DEMAND:

THIS DRAWING CONTAINS DATA AND INFORMATION WHICH IS THE PROPERTY OF VOLTAUS. THIS DRAWING IS RECEIVED IN CONSENT OF VOLTAUS. WHEN THIS DRAWING IS DIGITALLY SIGNED AND TRANSMITTED IN ELECTRONIC FORMAT, THE DRAWING CONTAINS A DIGITALLY SIGNED AND TRANSMITTED IN ELECTRONIC FORMAT, THE DRAWING CONTAINS A DIGITALLY SIGNATURE IN COMPLIANCE





A. THE CONTRACT DOCUMENTS CONSIST OF THE AGREEMENT, THE DRAWINGS, SPECIFICATIONS. ALL ADDENDA ISSUED PRIOR TO EXECUTION OF THE CONTRACT, AND ALL MODIFICATIONS THERETO. B. THE TERM WORK INCLUDES ALL LABOR NECESSARY TO PRODUCE THE

CONSTRUCTION REQUIRED BY THE CONTRACT DOCUMENTS, AND ALL LABOR. MATERIALS AND EQUIPMENT INCORPORATED OR TO BE MEANT INCORPORATED IN THE CONSTRUCTION. C. BY EXECUTING THE CONTRACT OR ENTERING UPON THE SITE AND

COMMENCING OF WORK THE CONTRACTOR REPRESENTS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE CONDITIONS AND LAWS. CODES AND GOVERNMENTAL AGENCY REGULATIONS UNDER WHICH THE WORK IS TO BE PERFORMED, AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND ACCEPTS THE SITE "AS IS".

D. THE CONTRACT DOCUMENTS ARE COMPLEMENTARY AND WHAT IS REQUIRED BY ANY ONE SHALL BE BINDING AS IF REQUIRED BY ALL. THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR. MATERIALS, EQUIPMENT AND OTHER ITEMS AS NECESSARY FOR THE

PROPER EXECUTION AND COMPLETION OF THE WORK. F IT IS NOT INTENDED THAT WORK NOT COVERED LINDER ANY HEADING SECTION, BRANCH, CLASS OR TRADE OF GENERAL NOTES OR SPECIFICATIONS SHALL BE SUPPLIED UNLESS IT IS REQUIRED

F. WORDS WHICH HAVE WELL KNOWN TECHNICAL OR TRADE MEANINGS ARE USED HEREIN IN ACCORDANCE WITH SUCH RECOGNIZED MEANINGS. G. THE ORGANIZATION OF THE SPECIFICATIONS AND INTO DIVISIONS. SECTIONS AND ARTICLES, THE ARRANGEMENT OF DRAWINGS SHALL NOT CONTROL THE CONTRACTOR IN DIVIDING WORK AMONG THE

A. CONTRACTOR SHALL VERIFY ALL DIMENSIONS & CONDITIONS ON THE JOB & NOTIFY MPA ARCHITECTS, INC. OF ANY

DISCREPANCIES PRIOR TO COMMENCING WORK. B. ALL CONTRACTORS AND SUBCONTRACTORS SHALL PROVIDE ALL LABOR. MATERIALS, EQUIPMENT, AND ACCESSORIES NOT SPECIFICALLY IDENTIFIED BUT REQUIRED FOR THE PROPER EXECUTION AND

COMPLETION OF THE WORK AS INDICATED ON THE DRAWINGS. C. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS ORDINANCES RULES AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK AS DRAWN AND SPECIFIED.

D. IF THE CONTRACTOR OBSERVES THAT THE DRAWINGS AND SPECIFICATIONS ARE AT VARIANCE THEREWITH. HE SHALL PROMPTLY NOTIFY MPA ARCHITECTS INC. IN WRITING E. IF THE CONTRACTOR PERFORMS ANY WORK KNOWING IT TO BE CONTRARY TO SUCH LAWS, ORDINANCES, RULES AND REGULATIONS, AND WITHOUT

SUCH NOTICE TO MPA ARCHITECTS, INC., HE SHALL BEAR ALL COSTS ARISING THEREFROM. F. CONTRACTOR SHALL CONTINUOUSLY MAINTAIN ADEQUATE PROTECTION OF ALL HIS WORK FROM DAMAGE AND SHALL PROTECT THE OWNER'S

PROPERTY INJURY OR LOSS ARISING IN CONNECTION WITH HIS WORK. G. CONTRACTOR SHALL ERECT AND PROPERLY MAINTAIN AT ALL TIMES. AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR THE PROTECTION OF WORKMEN & THE PUBLIC & SHALL POST DANGER SIGNS WARNING AGAINST THE HAZARDS CREATED BY BUT NOT LIMITED TO SUCH FEATURES OF CONSTRUCTION AS PROTRUDING NAILS, HOISTS, WELL HOLES, ELEVATOR HATCHWAYS. SCAFFOLDING, WINDOW OPENINGS, STAIRWAYS AND FALLING MATERIALS. H. CONTRACTOR SHALL CONFINE HIS APPARATUS. THE STORAGE OF

MATERIALS, AND THE OPERATIONS OF HIS WORKMEN TO LIMITS INDICATED BY LAWS, ORDINANCES, PERMITS OR DIRECTIONS OF MPA ARCHITECTS, INC. AND SHALL NOT UNREASONABLY ENCUMBER THE PREMISES WITH HIS MATERIALS. CONTRACTOR SHALL NOT LOAD OR PERMIT ANY PART OF THE STRUCTURE TO BE LOADED WITH A WEIGHT THAT WILL ENDANGER ITS SAFETY.

I. CONTRACTOR SHALL DO ALL CUTTING. FITTING OR PATCHING OF HIS WORK THAT MAY BE REQUIRED TO MAKE ITS SEVERAL PARTS COME TOGETHER PROPERLY AND FIT IT TO RECEIVE OR BE RECEIVED BY WORK OF OTHER CONTRACTORS SHOWN UPON OR REASONABLY IMPLIED BY THE DRAWINGS AND SPECIFICATIONS FOR THE COMPLETED STRUCTURE. J. CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM

ACCUMULATIONS OF WASTE MATERIALS OR RUBBISH CAUSED BY HIS EMPLOYEES OR WORK. AND AT THE COMPLETION OF THE WORK HE SHALL REMOVE ALL HIS SURPLUS MATERIALS AND SHALL LEAVE HIS WORK "BROOM CLEAN" OR ITS FOLIVALENT LINESS MORE EXACTLY SPECIFIED IN CASE OF DISPUTE THE OWNER MAY REMOVE THE RUBBISH AND CHARGE THE COST TO THE SEVERAL CONTRACTORS AS MPA DESIGN GROUP SHALL DETERMINE TO BE JUST.

K. NO JACK HAMMERING ALLOWED WHERE NEW OPENINGS ARE TO BE PROVIDED IN EXISTING WALLS: SAW CUT AT PERIMETER OF NEW OPENINGS, REMOVE WALL PORTION, BURN OFF REINFORCING BARS FLUSH WITH REMAINING SURFACES.

L. IF, WITHIN ONE YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION OF THE WORK OR DESIGNATED PORTION THEREOF OR WITHIN ONE YEAR AFTER ACCEPTANCE BY THE OWNER OF DESIGNATED EQUIPMENT OR WITHIN SUCH LONGER PERIOD OF TIME AS MAY BE PRESCRIBED BY THE LAW OR BY THE TERMS OF ANY APPLICABLE SPECIAL WARRANTY REQUIRED BY THE CONTRACT DOCUMENTS, ANY OF THE WORK IS FOUND TO BE DEFECTIVE OR NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE WITH THE CONTRACTOR SHALL CORRECT IT PROMPTLY AFTER RECEIPT OF A WRITTEN NOTICE FROM THE OWNER TO DO SO UNLESS THE OWNER HAS PREVIOUSLY GIVEN THE CONTRACTOR A WRITTEN ACCEPTANCE OF SUCH CONDITION. THIS OBLIGATION SHALL SURVIVE TERMINATION OF THE CONTRACT. THE OWNER SHALL GIVE SUCH NOTICE PROMPTLY AFTER DISCOVERY OF THE CONDITION.

M. ALL MATERIALS AND EQUIPMENT SHALL BE FREE FROM DEFECTS. AND SHALL BE DELIVERED TO THE SITE IN THE ORIGINAL MANUFACTURER'S CONTAINERS. MATERIALS AND EQUIPMENT SHALL BE STORED OFF THE GROUND AND PROTECTED FROM DAMAGE.

A. SEE ANY ADDITIONAL "SHEET NOTES" ON INDIVIDUAL DRAWINGS FOR

#### DRAFTSTOPS/SHAFT ENCLOSURES

A. REFER TO DETAIL 1 ON SHEET AD1.1 OF PLANS.

A. FIRESTOPPING SHALL BE PROVIDED TO CUT OFF ALL CONCEALED DRAFT OPENINGS (BOTH VERTICAL AND HORIZONTAL) AND SHALL FORM AN EFFECTIVE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND ROOF SPACE. FIRESTOPPING SHALL FORM A COMPLETE BLOCK

A. ENCLOSED SPACES IN STUD WALLS, PARTITIONS, AND FURRED WALLS SHALL BE FIRESTOPPED AT THE TOP AND BOTTOM AND ALSO AT THE MIDPOINT IN WALLS MORE THAN TEN FEET HIGH. THE DISTANCE BETWEEN FIRESTOPS IN WALLS AND PARTITIONS SHALL NOT EXCEED TEN FEET. MEASURED VERTICALLY, TOP AND BOTTOM PLATES WHICH FILL ALL SPACES BETWEEN STUDS AND FURRING SHALL BE

SHALL BE FIRESTOPPED AROUND THE CONCEALED PERIMETER. A. EVERY OPENING INTO A SHAFT ENCLOSURE SHALL BE PROVIDED WITH

B. THE FIRE ASSEMBLIES FOR STAIRWAY SHAFTS SHALL BE EQUIPPED

#### GYPSUM WALLBOARD

A. GYPSUM WALLBOARD SHALL BE INSTALLED WITH ALL EDGES AND ENDS OF WALLBOARD SHEET LOCATED OVER FRAMING MEMBERS. EXCEPT FOR JOINTS PERPENDICULAR TO THE MAIN FRAMING. THE EDGES AND ENDS ADJOINING SHEETS SHALL BE IN MODERATE CONTACT AND THE FASTENERS SHALL HOLD THE PANELS IN FIRM CONTACT WITH

B. GYPSUM WALLBOARD SHALL NOT BE INSTALLED UNTIL ALL EXTERIOR FRAMING IS COVERED. C. FRAMING: WOOD FRAMING SHALL BE STRAIGHT AND TRUE. WOOD

CEILING STRIPPING SHALL BE 2" X 2" MINIMUM FOR NAILING AND 1" X 3" FOR SCREW ATTACHMENT OTHER FURRING SHALL BE NOT LESS

D. ATTACHMENT: FASTENERS SHALL NOT FRACTURE THE FACE PAPER AND SHALL NOT BE LESS THAN 3/8" FROM EDGES OR ENDS OF THE

E. SINGLE-PLY GYPSUM MAY BE ADHESIVELY APPLIED TO WOOD-FRAMING, PROVIDED A CONTINUOUS BEAD OF ADHESIVE, SUFFICIENT IN SIZE TO PRODUCE TO 1/16" THICK BY 1" WIDE CONTACT. IS APPLIED TO THE MAIN FRAMING MEMBERS, FASTENERS ARE USED. TWO CONTINUOUS BEADS OF ADHESIVE ARE REQUIRED WHERE EDGE OR END JOINT OCCUR OVER A SINGLE MEMBER.

#### ROUGH AND FINISH CARPENTRY

 ROUGH FRAMING: A. THE QUALITY AND DESIGN OF WOOD MEMBERS, MATERIALS AND FASTENINGS SHALL CONFORM TO THE PROVISIONS AND STANDARDS OF THE CONSTRUCTION DOCUMENTS AND THE LOCAL GOVERNING BUILDING CODES

B. ALL MEMBERS SHALL BE FRAMED. ANCHORED TIED. AND BRACED SO AS TO DEVELOP THE STRENGTH AND RIGIDITY NECESSARY FOR THE PURPOSES FOR WHICH THEY ARE USED C. PREPARATION, FABRICATION AND INSTALLATION OF WOOD MEMBERS AND THEIR FASTENINGS SHALL CONFORM TO ACCEPTED ENGINEERING

PRACTICES AND TO THE REQUIREMENTS OF OF LOCAL GOVERNING BUILDING CODES. D. TIMBER TRUSSES AND SIMILAR STRUCTURAL ASSEMBLIES HAVING MEMBERS WITH A TOTAL CROSS-SECTIONAL AREA EXCEEDING 24 SQUARE INCHES, OR USING CONNECTORS OF A TYPE VISIBLE AFTER ASSEMBLY

SHALL BE: (a) MANUFACTURED BY A TYPE I FABRICATOR TO WHOM AN APPROVAL HAS BEEN ISSUED PURSUANT TO LOCAL GOVERNING AGENCIES,

ORDINANCES AND CODES. (b) ATTESTED TO BY AN APPROVED TESTING AGENCY AS CONFORMING TO THE REQUIREMENTS OF THE LOCAL GOVERNING AGENCIES OR SPECIFICALLY APPROVED BY THE LOCAL GOVERNING AGENCIES. E. WHERE PLATES ARE CUT, NOTCHED OR DRILLED, THE PLATE SHALL BE

TIED BY A MINIMUM 1/8" THICK BY 1-1/2" WIDE STEEL STRAP WITH 4-16D NAILS EACH SIDE OF THE JOINT. F. ALL CONSTRUCTION PLYWOOD USED ON WALLS, ROOFS AND FLOORS. INCLUDING UNDERLAYMENT SHALL BE BONDED WITH EXTERIOR AT ALL JOISTS, TRUSSES AND BLOCKING UNLESS SUCH PLYWOOD IS USED ONLY AS AN INTERIOR ARCHITECTURAL FINISH MATERIALS OR AS AN OVERLAY OVER THE REQUIRED SUBFLOOR. PLYWOOD USED IN AREAS DIRECTLY EXPOSED TO THE WEATHER SHALL BE EXTERIOR TYPE.

PLYWOOD USED IN PROTECTED LOCATIONS INDIRECTLY EXPOSED TO THE WHETHER, SUCH AS EAVES, SOFFITS OR CANOPY CEILINGS, SHALL BE BONDED WITH EXTERIOR GLUE OR SHALL BE AN EXTERIOR TYPE. G. ALL LUMBER SHALL BE D.F. LARCH 2 OR BETTER UNLESS NOTED OTHERWISE. H. ALL TIMBER SHALL BE DOUGLAS FIR UNLESS OTHERWISE NOTED AND

SHALL CONFORM TO THE 1970 STANDARD GRADING RULES FOR WESTERN LUMBER BY WWPA. SILLS ON CONCRETE WALLS SHALL BE PRESSURE TREATED DOUGLAS FIR. I. ALL PLYWOOD SHALL BE PSI 74 UNLESS OTHERWISE NOTED ON THE

ARCHITECTURAL DRAWINGS. J. NAILS SHALL BE COMMON WIRE UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.

K. ALL STUD WALLS SHALL BE FIRE STOPPED WITH 2" THICK MATERIAL AT THE CEILING AND MID-HEIGHT, UNLESS OTHERWISE SPECIFIED ON THE ARCHITECTURAL DRAWINGS L. ALL VERTICAL FRAMING SHALL BE "STUD GRADE" OR BETTER UNLESS

NOTED OTHERWISE M. PROVIDE SOLID BACKING FOR ALL PLUMBING FIXTURES, CABINETS,

LIGHT FIXTURES AND SIMILAR FEATURES 2. FINISH CARPENTRY A. UNLESS OTHERWISE SPECIFIED OR NOTED ON THE ARCHITECTURAL DRAWINGS, ALL FINISHED LUMBER SHALL BE DOUGLAS FIR, GRADE B

B. INTERIOR MILLWORK MAY BE NORTHERN OR IDAHO WHITE PINE, SUGAR PINE OR WESTERN LARCH, GRADE B OR BETTER. C. DOORS SHALL BE INSTALLED ACCURATELY WITH A CLEARANCE OF NOT

MORE THAN 1/8" AT ALL EDGES, JAMB AND SILL. D. ALL WOODWORK OR DOORS SHALL BE SANDED SMOOTH AND READY FOR E. PROVIDE PLYWOOD TELEPHONE BACKBOARD AS REQUIRED.

#### METAL FRAMING PRODUCTS, STRUCTURAL STEEL 1. STRUCTURAL STEEL:

F. SEE DOOR SPECIFICATIONS

A. PRIOR TO FABRICATION, CONTRACTOR SHALL PREPARE SHOP DRAWINGS FOR REVIEW BY MPA ARCHITECTS, INC. FOR GENERAL DESIGN CONSIDERATION ONLY. THE FABRICATOR ASSUMES ALL RESPONSIBILITY FOR VERIFYING ALL DIMENSIONS. BEARING PLATES, STIFFENERS, GUSSETS, ANGLES AND OTHER SIMILAR STEEL ITEMS SHALL BE PROVIDED AS REQUIRED FOR THE WORK WHETHER

SPECIFICALLY DETAILED ON THE DRAWINGS OR NOT B. STRUCTURAL STEEL SHALL CONFORM TO ASTM A-36; PIPE COLUMNS SHALL CONFORM TO ASTM A-501 AND ASTM A-53 (TYPE "E" OR "S") AND STRUCTURAL TUBING (T'S) SHALL CONFORM TO ASTM A-500 GRADE "B" UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.

C. ALL STRUCTURAL STEEL SHALL BE FABRICATED BY AN ICBO (AS APPLICABLE) LICENSED SHOP, ALL WELDING SHALL BE DONE BY WELDERS HOLDING A CURRENT CERTIFICATE. DESIGN FABRICATION AND SPECIFICATION. ALL FIELD WELDING SHALL HAVE CONTINUOUS INSPECTION.

2. MISCELLANEOUS IRON: A. HOLD DOWNS, POST BASES, COLUMN CAPS, JOIST HANGERS, TIE STRAPS AND SIMILAR STRUCTURAL HARDWARE SHALL BE SIMPSON STRONG TIE CONNECTORS AS MANUFACTURED BY SIMPSON COMPANY, SAN

LEANDRO, CA OR EQUAL. B. PIPE RAILINGS, UNLESS OTHERWISE DETAILED ON THE ARCHITECTURAL DRAWINGS SHALL BE 1-1/2 INCH STANDARD WEIGHT STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A-120, 32 INCHES HIGH WITH TWO HORIZONTAL RAILS AND WITH UPRIGHTS SPACED NOT OVER 8 FEET ON CENTER, FLUSH TYPE FITTINGS SHALL BE USED AND ALL WELDS SHALL BE GROUND SMOOTH. EXTERIOR PIPE RAILS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A-123 AND TREATED CHEMICALLY TO PROVIDE A PHOSPHATE PAINT HOLDING FILM. PIPE RAILS SHALL BE FASTENED TO MASONRY BY FLANGES AND EXPANSION BOLTS AND TO CONCRETE IN 4 INCH SLEEVES AND CAULKED WITH GROUT, MOLTEN SULFER OR MOLTEN LEAD.

A. ALL FERROUS METAL SHALL BE GIVEN ONE SHOP COAT OF RED LEAD OIL PAINT UNLESS SPECIFIED OR NOTED ON THE ARCHITECTURAL DRAWINGS. ALL FERROUS METALS TO BE BUILT INTO MASONRY OR CONCRETE SHALL BE COVERED WITH ASPHALT PAINT OR SHALL BE GALVANIZED.

#### **INSULATION**

A. INSULATION SHALL BE FIBERGLASS OR MINERAL FIBER INSULATING WOOL BY JOHNS-MANSVILLE COMPANY OR EQUAL ALL INSULATION MATERIALS SHALL HAVE A FLAME-SPREAD RATING NOT

EXCEEDING 25 AND A SMOKE DENSITY NOT EXCEEDING 450 WHEN TESTED IN ACCORDANCE WITH U.B.C. STANDARD. WHEN INSULATION IS INSTALLED IN CONCEALED SPACES, THE FLAME-SPREAD AND SMOKE-DEVELOPED LIMIT-ATIONS DO NO APPLY TO FACINGS, PROVIDED THAT THE FACING IS INSTALLED IN SUBSTANTIAL CONTACT WITH THE UNEXPOSED SURFACE OF THE CEILING, WALL OR FLOOR FINISH.

2. CEILING INSULATION: A. ALL HORIZONTAL OR SLOPED CEILING SHALL HAVE NOT LESS THAN THAN 6 INCH THICK (R-19) BLANKETS OR BATTS. SEE ARCHITECTURAL DRAWINGS FOR SPECIFIC REQUIREMENTS.

3. WALL INSULATION: A. ALL EXTERIOR WALLS AND OTHER VERTICAL LOCATIONS CREATING THE BUILDING ENVELOPE SHALL NOT HAVE LESS THAN 5 1/2" THICK BATTS. SEE ARCHITECTURAL DRAWINGS FOR SPECIFIC REQUIREMENTS. 4. INSTALLATION:

A. AFTER PIPING AND WIRING IS IN PLACE, INSTALL INSULATION TO FORM A CALIFORNIA SNUG FITTING THERMAL BARRIER OVER AND AROUND CEILING AND EXTERIOR WALLS OF AIR CONDITIONED OR HEATED HABITABLE SPACES: STAPLE OR WIRE SECURELY BETWEEN FRAMING MEMBERS. AND IF NECESSARY TO HOLD INSULATION PERMANENTLY IN PROPER POSITION, LACE OR SECURE WITH LINE WIRE OR STUCCO WIRE, PULL FLANGES TAUT AND EVEN AND STAPLE FLANGES SECURELY TO STUDS OR WOODS FRAMING NOT MORE THAN 6 INCHES ON CENTER. B. INSTALL AS DIRECTED ON PACKAGE AND WITH INSULATION SO SPACED AS TO LEAVE A 3/4 INCH DEAD AIR SPACE BETWEEN WALL OR CEILING

FINISH MATERIAL WHERE POSSIBLE C. DO END MATCHING NEATLY WITH ENDS FITTING SNUGLY OR OVERLAPPED. D. INSULATE ALL SMALL AREAS BETWEEN CLOSELY SPACED FRAMING MEMBERS AND CUT AND FIT INSULATION AROUND PIPES. DUCTS. CONDUITS, AND OUTLET BOXES TO MAINTAIN THE INTEGRITY OF THE INSULATION, PLACE ADDITIONAL INSULATION BETWEEN EXTERIOR WALL

AND SUCH PIPES E. AT CEILING AREA, TAKE CARE TO LAP ALL SIDES AND END JOINTS TO PROVIDE FOR COMPLETE COVERAGE BY INSULATION MATERIAL F. PROTECT ALL INSULATION FROM MOISTURE OR DAMAGE. PATCH ANY TEARS IN PAPER OR FOIL FACES. REPLACE WATER SOAKED, OR OTHERWISE DAMAGED INSULATION.

5. COMPLIANCE CERTIFICATE: (IN CALIFORNIA ONLY) A. A CERTIFICATE OF COMPLIANCE SIGNED BY THE INSULATION CONTRACTOR AND GENERAL CONTRACTOR SHALL BE PROMPTED POSTED ON

SHEET METAL . WORK INCLUDED

A. QUALIFICATION OF INSTALLERS

A. FURNISH AND INSTALL ALL FLASHING AND SHEET METAL NOT SPECIFICALLY DESCRIBED IN OTHER SECTIONS OF THESE SPECIFICATIONS BUT REQUIRED TO PREVENT PENETRATION OF WATER THROUGH THE EXTERIOR SHELL OF THE BUILDING. 2. QUALITY ASSURANCE:

(a) ALL WORK SHALL BE DONE BY SKILLED CRAFTSMEN, AND ALL WORKMANSHIP SHALL BE EQUAL TO THE BEST STANDARDS OF PRACTICE IN MODERN SHEET METAL SHOPS: WORK SHALL BE ACCURATELY FORMED TO SIZE, SHAPES AND DIMENSIONS SHOWN; WITH ANGLES AND LINE IN TRUE ALIGNMENT, STRAIGHT, SHARP, ERECTED PLUMB, LEVEL AND IN PROPER PLANE, WITHOUT BULGES OR WAVES. COPE OR FLANGE INTERSECTIONS TO ACCURATELY FIT AND SOLDER TOGETHER.

(b) PROVIDE AT LEAST ONE PERSON WHO SHALL BE PRESENT AT ALL TIMES DURING EXECUTION OF THE WORK OF THIS SECTION AND WHO SHALL BE THOROUGHLY TRAINED AND WHO SHALL DIRECT THE ENTIRE FLASHING AND SHEET METAL FABRICATION AND INSTALLATION.

B. CODES AND STANDARDS: THE APPLICABLE DETAILS AND STANDARDS IN THE FOLLOWING MANUALS SHALL BE THE BASIS FOR DETERMINING THE

MINIMUM QUALITY ACCEPTABLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN: (a) "STANDARD PRACTICE IN SHEET METAL WORK, MANUAL #1,

GUTTER, CONDUCTORS, CONDUCTOR HEADS" (b) "STANDARD PRACTICE IN SHEET METAL WORK, MANUAL #2, FLASHING"

(c) "STANDARD PRACTICE IN SHEET METAL WORK, MANUAL #3, SKYLIGHTS, VENTILATORS". THE ABOVE ARE ISSUED BY SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC., 107 CENTER STREET, ELGIN, ILLINOIS. SUBMITTALS:

A. NOT USED

4. CORRELATION AND COORDINATION:

A COORDINATE THE WORK REQUIRED HEREIN WITH RELATED WORK BY OTHERS TO FACILITATE THE PROGRESS OF THE WORK E.G., PAINTING CONTRACTOR SHALL BE AFFORDED ADEQUATE OPPORTUNITY TO ACCOMPLISH SPECIFIED FINISH PAINING PRIOR TO INSTALLATION WHEN SUCH IS FEASIBLE, OF ITEMS FURNISHED UNDER THIS HEADING. SHEET METAL WORK RELATED TO ROOFING SHALL BE FINISHED AND INSTALLED WITHIN THE SCOPE OF THIS SECTION, BUT UNDER THE DIRECTION OF THE ROOFING CONTRACTOR

B. THE ROOFING CONTRACTOR SHALL BE JOINTLY RESPONSIBLE WITH THE SHEET METAL CONTRACTOR FOR PROPER INSTALLATION AND PERFORMANCE OF SUCH WORK.

C. COOPERATE WITH ALL OTHER TRADES IN INSTALLATION OF SHEET METAL WORK TO INSURE WEATHERTIGHT, WATERPROOF CONSTRUCTION

D. SHOULD DIFFERENCES OF OPINION IN THIS REGARD DEVELOP, THE DECISIONS OF MPA ARCHITECTS, INC. WILL BE

5. SCAFFOLDING: A. WHERE SCAFFOLDING AND STAGING ARE PROVIDED BY THE GENERAL CONTRACTOR FOR THE ERECTION OF HIS WORK. THIS EQUIPMENT WILL BE LEFT IN PLACE FOR THE SHEET METAL CONTRACTOR. NO CHARGE WILL BE MADE TO THE SHEET METAL CONTRACTOR FOR THE USE OF THE FOREGOING EQUIPMENT. WHEN THE GENERAL CONTRACTOR HAS NO REQUIREMENTS FOR THIS EQUIPMENT. THE SHEET METAL CONTRACTOR SHALL PROVIDE AID EQUIPMENT AND SHALL INCLUDE MONIES IN HIS/HER BID FOR SAME.

6. OPENINGS IN FLOORS, WALLS, AND ROOFS: A. THE CONTRACTOR SHALL FRAME OPENINGS IN FLOORS, WALLS AND ROOFS FOR ALL SHEET METAL WORK. COOPERATE WITH THE GENERAL CONTRACTOR TO LOCATE AND SIZE THESE OPENINGS. 7. NAILERS AND GROUNDS

A. THE GENERAL CONTRACTOR WILL FURNISH AND INSTALL ALL WOOD CURBS, NAILERS AND GROUNDS, AS DIRECTED BY THE SHEET METAL CONTRACTOR OR AS SHOWN ON THE ARCHITECTURAL DRAWINGS OR APPROVED SHOP DRAWINGS. 8 PRODUCT HANDLING:

A. PROTECTION: USE ALL MEANS NECESSARY TO PROTECT FLASHING AND SHEET METAL MATERIALS BEFORE, DURING, AND AFTER INSTALLATION AND TO PROTECT THE INSTALLED WORK AND MATERIALS OF ALL OTHER B. REPLACEMENTS: IN THE EVENT OF DAMAGE, IMMEDIATELY MAKE ALL

REPAIRS AND REPLACEMENTS NECESSARY TO THE APPROVAL OF

MPA ARCHITECTS, INC. AND AT NO ADDITION COST TO THE OWNER. C. VISIBLE PATCHING WILL NOT BE ACCEPTED.

GUARANTEE: A. THE WORK SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR, EXCEPT FOR ALL SHEET METAL WORK RELATED TO ROOFING WHICH SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS. 10. MATERIALS AND GAUGES:

A. WHERE SHEET METAL IS REQUIRED AND NO MATERIAL OR GAUGE IS INDICATED ON THE ARCHITECTURAL DRAWINGS OR SHOP DRAWINGS. FURNISH AND INSTALL THE HIGHEST QUALITY AND GAUGE COMMENSURATE WITH THE REFERENCED STANDARDS.

B. SHEET METAL OR IRON SHALL BE A "PAINTABLE GRADE", 24 GA., STANDARD BRAND OF OPEN-HEARTH COPPERBEARING STEEL, COPPER-MOLYBDENUM IRON, PURE IRON SHEETS.

C. ALL GALVANIZED SHEETS SHALL HAVE ZINC COATING APPLIED BY HOTDIP PROCESS TO ALL SURFACES D. ZINC COATING SHALL WEIGH NOT LESS THAN 1-1/4 OUNCES PER SQUARE FOOT NOR MORE THAN 1-1/2 OUNCES PER SQUARE FOOT OF

SURFACES COVERED AND SHALL CONFORM WITH ASTM A-93. E. NAILS, RIVETS, AND FASTENERS: USE ONLY SOFT IRON RIVETS HAVING RUST-RESISTIVE COATING, GALVANIZED NAILS, AND CADMIUM PLATED SCREWS AND WASHERS IN CONNECTION WITH GALVANIZED IRON AND STEEL CONFORMING TO ASTM A-153. USE ALUMINUM FASTENINGS

FOR ALUMINUM WORK. F. FLUX: ALL FLUX USED FOR GALVANIZED IRON OR STEEL SHALL BE RAW MURIATIC ACID.

G. SOLDER: ALL SOLDER USED ON GALVANIZED SHEET METAL SHALL CONFORM WITH THE CURRENT ASTM B-32 11. FIELD TOUCHUP: A. TOUCH-UP ABRADED OR DAMAGED AREAS OF GALVANIZED METAL WITH

"DRI-GALV" OR "GALAVOY", EXCEPT FOR GALVANIZED GRAVELSTOPS AND FLASHING TO WHICH ROOFING IS MOPPED. TOUCH-UP WITH SAME PAINT AS FOR PRIMING. 12. OTHER MATERIALS: A. ALL OTHER MATERIALS, NOT SPECIFICALLY DESCRIBED BUT REQUIRED

FOR A COMPLETE AND PROPER INSTALLATION OF FLASHING AND SHEET METAL, SHALL BE NEW AND FIRST QUALITY OF THEIR RESPECTIVE 13. SURFACE CONDITIONS:

A. INSPECTION:

(a) PRIOR TO ALL WORK OF THIS SECTION, CAREFULLY INSPECT THE INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.

(b) VERIFY THAT FLASHING AND SHEET METAL MAY BE INSTALLED IN ACCORDANCE WITH THE ORIGINAL DESIGN, ALL PERTINENT CODES AND REGULATIONS, THE REFERENCED STANDARDS, AND THE APPROVED SHOP DRAWINGS. 14. DISCREPANCIES:

A. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY MPA ARCHITECTURAL B. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

15. WORKMANSHIP: A. FORM ALL SHEET METAL ACCURATELY TO THE DIMENSIONS AND SHAPES REQUIRED. FINISHING ALL MOLDED AND BROKEN SURFACES WITH TRUE. SHARP AND STRAIGHT LINES AND ANGLES AND, WHERE INTERCEPTING OTHER MEMBERS COPING TO AN ACCURATE FIT AND SOLDERING

SECURELY B. UNLESS OTHERWISE SPECIFICALLY PERMITTED BY MPA ARCHITECTURAL GROUP. TURN ALL EXPOSED EDGES BACK 1/2 INCH. 16. EXPANSION:

A. FORM, FABRICATE, AND INSTALL ALL SHEET METAL SO AS TO ADEQUATELY PROVIDE FOR EXPANSION AND CONTRACTION IN THE FINISHED WORK.

17. WEATHERPROOFING: A. FINISH WATERTIGHT AND WEATHERTIGHT. B. MAKE ALL LOCK SEAM WORK FLAT AND TRUE TO LINE, SWEATED FULL

C. MAKE ALL LOCK SEAMS AND LAP SEAMS, WHEN SOLDERED, AT LEAST

1/2 INCH WIDE. D. WHERE LAP SEAMS ARE NOT SOLDERED, LAP ACCORDING TO PITCH, BUT IN NO CASE LESS THAN TREE INCHES. E. MAKE ALL FLAT AND LAP SEAMS IN DIRECTION OF FLOW.

SHEET METAL (continued from R1)

A. JOIN PARTS WITH RIVETS OR SHEET METAL SCREWS WHERE NECESSARY FOR

STRENGTH OF STIFFNESS. B. PROVIDE SUITABLE WATERTIGHT EXPANSION JOINTS FOR ALL RUNS OF MORE THAN 40 FEET EXCEPT WHERE CLOSER SPACING IS INDICATED ON THE SHOP DRAWINGS OR REQUIRED FOR PROPER INSTALLATION.

19. NAILING: A. WHENEVER POSSIBLE, SECURE METAL BY MEANS OF CLIPS OR CLEATS WITHOUT NAILING THROUGH THE METAL.

B. IN GENERAL, SPACE ALL NAILS, RIVETS AND SCREWS NOT MORE THAN EIGHT (8) INCHES APART AND WHERE EXPOSED TO THE WEATHER, USE LEAD WASHERS. C. FOR NAILING INTO WOOD, USE BARBED ROOFING NAILS 1-1/4 INCHES LONG BY ELEVEN GAUGE.

D. FOR NAILING INTO CONCRETE OR CONCRETE BLOCK, USE DRILLED PLUGHOLES AND PLUGS.

20. EMBEDMENT: A. EMBED ALL METAL IN CONNECTION WITH ROOFS IN A SOLID BED

21. SOLDERING: A. MAKE ALL EXPOSED SOLDERING ON FINISHED SURFACES NEAT, FULL FLOWING, AND SMOOTH. B. AFTER SOLDERING, THOROUGHLY WASH ACID FLUX WITH A SODA

SOLUTION. 22 PAINTING: A. PRIOR TO INSTALLATION, PAINT GALVANIZED SURFACES CONCEALED UNFINISHED WORK WITH TWO COATS FO SPECIFIED RUST INHIBITIVE

PAINT. THOROUGHLY COAT JOINTS, CORNERS AND INACCESSIBLE B. SURFACES OF FERROUS METAL WORK FURNISHED UNDER THIS SECTION WHICH ARE EXPOSED TO VIEW OR WEATHER AND SCHEDULED TO RECEIVE A PAINTERS FINISH SHALL BE THOROUGHLY CLEANED OF OIL, GREASE,

RUST INHIBITIVE METAL PRIMER. C. GALVANIZED SURFACES SHALL BE ACID ETCHED AND ALLOWED TO DRY PRIOR TO SHOP COATING.

D. ALUMINUM SURFACES CONTACTING DISSIMILAR METAL, MASONRY, PLASTER OR GREEN WOOD SHALL BE PROTECTED AGAINST ELECTROLYTIC ACTION BY A STRIP OF FELT OR COATING THE CONTACT SURFACE WITH BITUMINUOUS PAINT OR OTHER APPROVED MATERIAL. 23. GRAVELSTOPS:

OF GRAVELSTOPS SO AS TO NOT DAMAGE THE PAINT PRIMER. TOUCH-UP ANY SCRATCHED OR ABRADED AREAS WITH SPECIFIED PRIMER PRIOR TO THE MOPPING OF ANY SUCH GRAVELSTOPS. 24. TESTS:

A. EXERCISE PARTICULAR CARE IN THE FABRICATION AND INSTALLATION

A. UPON THE REQUEST OF MPA ARCHITECTURAL GROUP. DEMONSTRATE BY HOSE OR STANDING WATER THAT ALL FLASHING AND SHEET METAL IS COMPLETELY WATER-TIGHT.

#### PLUMBING

1. GENERAL REQUIREMENTS: A. PLUMBING: ALL PLUMBING SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA PLUMING CODE. TITLE 24. A.D.A., AND ALL OTHER LOCAL GOVERNING AGENCIES. SEE A.D.A./TITLE 24 SECTION OF THESE NOTES FOR MORE SPECIFIC INFORMATION REGARDING THESE

REQUIREMENTS. B. THE PLUMBING CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND ACCESSORIES NOT SPECIFICALLY IDENTIFIED, BUT REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS INDICATED ON THE DRAWINGS.

C. THE PLUMBING CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND PAY FEES NECESSARY FOR THE COMPLETION OF HIS WORK. 2. OCCUPANT OPERATING AND MAINTENANCE INFORMATION:

A. THE BUILDER SHALL PROVIDE THE BUILDING OWNER, MANAGER, AND THE ORIGINAL OCCUPANTS A LIST OF THE HEATING, COOLING, WATER HEATING, AND LIGHTING SYSTEMS INSTALLED IN THE BUILDING, INCLUDING INSTRUCTIONS ON HOW TO USE THEM EFFICIENTLY. THE INSTRUCTIONS SHALL BE CONSISTENT WITH SPECIFICATIONS SET FORTH BY THE EXECUTIVE DIRECTOR.

#### **ELECTRICAL**

1. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A COMPLETE AND FULLY OPERABLE ELECTRICAL SYSTEM INCLUDING DISTRIBUTION SYSTEMS, PANELBOARDS, DISCONNECT SWITCHES, LIGHTING FIXTURES, POWER AND CONTROL WIRING EMPTY CONDUIT FINAL CONNECTIONS TO ALL FOUIPMENT AND MISCELLANEOUS MATERIALS. AND EQUIPMENT REQUIRED FOR A COMPLETE AND SEPARATE SYSTEM FOR EACH TENANT.

A. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND ACCESSORIES NOT SPECIFICALLY IDENTIFIED, BUT REQUIRED FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS INDICATED ON THE DRAWINGS.

3. ALL WORK OF THIS SECTION SHALL CONFORM TO NATIONAL ELECTRICAL CODE. ANSI C1-1971, THE ELECTRICAL SAFETY ORDERS OF THE CALIFORNIA INDUSTRIAL SAFETY BOARD, TITLE 24 AND ALL APPLICABLE COUNTY AND CITY CODES AND ORDINANCES. 4 THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS.

FEES, INSPECTIONS AND TESTS AS REQUIRED BY LOCAL AUTHORITIES. 5. ALL MATERIALS SHALL BE NEW, U.L. APPROVED, UNLESS OTHERWISE REQUIRED, AND CONFORM TO N.E.M.A. STANDARDS, N.E.C. (NATIONAL ELECTRICAL CODE), AND THE A.I.E.E. (AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS).

## PAINTING

1. GENERAL A. PAINT AND STAIN AS SPECIFIED ON THE FINISH SCHEDULE AND NOTED ON THE DRAWINGS SHALL BE OF A NON-LEAD BASE AND SHALL BE APPLIED AS FOLLOWS UNLESS OTHERWISE SPECIFIED ON THE

ARCHITECTURAL DRAWINGS: (a) EXTERIOR METAL: ONE COAT PRIMER APPLIED AT SHOP, PLUS ONE COAT PRIMER APPLIED AT JOB AFTER INSTALLATION AND ONE COAT ENAMEL

(b) INTERIOR METAL: ONE COAT PRIMER APPLIED AT SHOP, PLUS ONE COAT ENAMEL APPLIED AT JOB AFTER INSTALLATION (c) EXTERIOR AND INTERIOR WOOD: OI YMPIC STAIN APPLIED

PURSUANT TO MANUFACTURER'S SPECIFICATIONS UNLESS

B. PAINT ALL FLASHING VISIBLE FROM PUBLIC AREAS TO MATCH COLOR

OF CONTIGUOUS MATERIAL, UNLESS OTHERWISE NOTED ON THE

(d) INTERIOR GYPSUM WALL BOARD: TWO COATS WASHABLE FLAT

LATEX EXCEPT TOILET ROOMS WHEN TWO COATS WASHABLE SEMIGLOSS ENAMEL SHALL BE APPLIED TO WALLS AND CEILING. (e) INTERIOR DOORS: TWO COATS SEMIGLOSS ENAMEL (PAINT GRADE DOORS) OR CLEAN WOOD STAIN AS NOTED PLUS TWO COATS OF VELVET LACQUER (STAIN GRADE DOORS).

OTHERWISE NOTED.

DRAWINGS



**SPECIFICATIONS** 

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