TRI-CITY MEDICAL CENTER

OR #4 LIGHT REPLACEMENT

ABBREVIATIONS

A.B.	ANCHOR BOLT	F.O.S.	FACE OF STUD	QT.	QUARRY TILE
A.C.	ASPHALTIC CONCRETE	FP.	FIREPROOF	QTR.	QUARTER
A/C.	AIR-CONDITIONING	FPL.	FIREPLACE		
ACCES.	ACCESSORIES	F.S.	FULL SIZE	R.	RISER
ACOUS.	ACOUSTIC OR ACOUSTICAL	FT.	FOOT OR FEET	RAD.	RADIUS
A.D.	AREA DRAIN	FTG.	FOOTING	R.A.D.	RETURN AIR DUCT
ADD.	ADDENDUM	FURR.	FURRING	RAFT.	RAFTER
ADJ.	ADJUSTABLE			R.A.G.	RETURN AIR GRILL
ALT.	ALTERNATE	GA.	GAGE	RBR.	RUBBER
ALUM.	ALUMINUM	GAL.	GALLON	RD.	ROUND
ANCH.	ANCHOR	GALV.	GALVANIZED	R.D.	ROOF DRAIN
A.P.	ACCESS PANEL	G.B.	GRAB BAR.	RECPT.	RECEPTACLE
APPROX.	APPROXIMATELY	GEN.	GENERAL	REFR.	REFERENCE
ARCH.	ARCHITECT OR ARCHITECTURAL	G.I.	GALVANIZED IRON	REF.	REFRIGERATOR
ASPH.	ASPHALT	GL.	GLASS	REG.	REGULATION
AUTO.	AUTOMATIC	GLB.	GLUE LAMINATED BEAM	REINF.	REINFORCED
		GND.	GROUND	REINF. CONC.	REINFORCED CONCRETE
BA.	BATH	G.P.M.	GALLONS PER MINUTE	REQD.	REQUIRED
BET.	BETWEEN	GR.	GRADE	RES.	RESAWN
BD.	BOARD	GYP.	GYPSUM	RESIL.	RESILIENT
BITUM.	BITUMINOUS	GYP. BD.	GYPSUM BOARD	RET.	RETURN
B.F.	BOTTOM OF FOOTING			REV.	REVISIONS/REVERSE
BLK.	BLOCK OR BLOCKING	H.B.	HOSE BIB	R.F.	RESILIENT FLOORING
BLKT.	BLANKET	H.C.	HOLLOW CORE	R.H.M.S.	ROUND HEAD METAL SCREW
BLW.	BELOW	HDC.	HANDICAP	RM.	ROOM
BM.	BEAM	HDR.	HEADER	R.O.	ROUGH OPENING
B.M.	BENCH MARK	HDWD.	HARDWOOD	RWD.	REDWOOD
B.N.	BOUNDARY NAILING	HDWR.	HARDWARE		
BRCG.	BRACING	H.M.	HOLLOW METAL	S.	SOUTH
BRDG.	BRIDGING	HORIZ.	HORIZONTAL	S.B.	SPLASH BLOCK
BRG.	BEARING	H.P.	HORSEPOWER	SC.	SCALE
BSMT.	BASEMENT	HR.	HOUR	S.C.	SOLID CORE
B.T.U.	BRITISH THERMAL UNIT	HT.	HEIGHT	SCHED.	SCHEDULE
B.U.	BUILT-UP	HTG.	HEATING	S.D.	SMOKE DETECTOR
		H.W.	HOT WATER	S.D.F.D.	SAN DIEGO FIRE DEPARTMENT
CAB.	CABINET	H.W.R.	HOT WATER RETURN	SECT.	SECTION
CAP.	CAPACITY	H.W.S.	HOT WATER SUPPLY	SEC.	SECURE
CAULK.	CAULKING			SEISS.	SEISMIC
C.B.	CATCH BASIN	I.D.	INSIDE DIAMETER	SEL.	SELECT
CEM.	CEMENT	IN.	INCH	S4S	SURFACED 4 SIDE
C.F.M.	CUBIC FOOT PER MINUTE	INCL.	INCLUDE/INCLUDED	SH.	SHELF
C.I.	CAST IRON	INSUL.	INSULATION	S.H.	SINGLE HUNG
CIRC.	CIRCULAR	INT.	INTERIOR	SHT.	SHEET
C.J.	CONTROL JOINT			SHTG.	SHEATHING
CL.	CENTERLINE	J.B.	JUNCTION BOX	SHWR.	SHOWER
CLG.	CEILING	JCT.	JUNCTION	SIM.	SIMILAR
CLO.	CLOSET	JST.	JOIST	SKYLT.	SKYLIGHT
CLR.	CLEAR	JT.	JOINT	SL. DR.	SLIDING DOOR
C.M.U.	CONCRETE MASONRY UNIT			SL. WDW.	SLIDING WINDOW
CNTR.	COUNTER	KIT.	KITCHEN	S.M.S.	SHEET METAL SCREW
C.O.	CLEANOUT	K.O.	KNOCK-OUT	S & P	SHELF AND POLE
COL.	COLUMN	K.P.	KICK PLATE	SPEC.	SPECIFICATION
COMB.	COMBINED/COMBINATION			SQ.	SQUARE
COMP.	COMPOSITE/COMPOSITION	LAB.	LABORATORY	SQ. FT.	SQUARE FOOT
CONC.	CONCRETE	LAD.	LADDER	SQ. IN.	SQUARE INCH
CONC. BLK.	CONCRETE BLOCK	LAM.	LAMINATE	S.S.	STAINLESS STEEL
COND.	CONDITION	LAV.	LAVATORY	STA.	STATION
CONN.	CONNECTION	LBS.	POUNDS	STD.	STANDARD
CONST.	CONSTRUCTION	LIN.	LINEAR/LINEAL	STL.	STEEL
CONST. JT.	CONSTRUCTION JOINT	LKR.	LOCKER	STOR.	STORAGE
CONT.	CONTINUOUS	L.L.	LIVE LOAD	STRUCT.	STRUCTURAL
CORR.	CORRIDOR	L.L.H.	LONG LEG HORIZONTAL	S2S	SURFACED 2 SIDES
CRIP.	CRIPPLE	L.L.V.	LONG LEG VERTICAL	SUPP.	SUPPLY
C.T.	CERAMIC TILE	LMBR.	LUMBER	SUSP.	SUSPENDED
CTR.	CENTER	L.R.	LIVING ROOM	SYM.	SYMMETRICAL
CTRWK.	COUNTERWORK	LT.	LIGHT		
CTSK.	COUNTERSUNK	LUM.	LUMINOUS	T.	TREAD
CU. YD.	CUBIC YARD	LVR.	LOUVER	T.B.	TOWEL BAR
C.W.	COLD WATER			T & B	TOP AND BOTTOM
C.W.R.	COLD WATER RETURN	MAS.	MASONRY	T.C.	TOP OF CURB
C.W.S.	COLD WATER SUPPLY	MATL.	MATERIAL	TELE.	TELEPHONE
CYL.	CYLINDER	MAX.	MAXIMUM	TEMP.	TEMPERATURE/TEMPERED
		M.B.	MACHINE BOLT	T. & G.	TONGUE AND GROOVE
DBL.	DOUBLE	MBR.	MEMBER	THK.	THICK
DEPT.	DEPARTMENT	M.C.	MEDICINE CABINET	THRES.	THRESHOLD
DET.	DETAIL	MECH.	MECHANICAL	T.J.I.	TRUSS JOINT
D.F.	DOUGLAS FIR	MEMB.	MEMBRANE	T.O.C.	TOP OF CONCRETE
DIA.	DIAMETER	MFG.	MANUFACTURER	T.O.P.	TOP OF PAVING
DIAG.	DIAGONAL OR DIAGRAM	M.H.	MANHOLD	T.O.W.	TOP OF WALL
DIM.	DIMENSIONS	MIN.	MINIMUM	T.V.	TELEVISION
DISP.	DISPENSER OR DISPOSER	MIR.	MIRROR	TYP.	TYPICAL
D.H.	DOUBLE HUNG	M.L.	MICRO-LAM		
D.L.	DEAD LOAD	MISC.	MISCELLANEOUS	U.B.C.	UNIFORM BUILDING CODE
DN.	DOWN	M.O.	MASONRY OPENING	U.L.	UNDERWRITERS LABORATORY
D.O.	DRYWALL OPENING	MOD.	MODULAR	UNF.	UNFINISHED
DP.	DEEP	MTD.	MOUNTED	U.O.N.	UNLESS OTHERWISE NOTED
DR.	DOOR	MTL.	METAL	UR.	URINAL
D.S.	DOWNSPOUT	MULL.	MULLION		
D.W.	DISHWASHER	MULT.	MULTIPLE	V.A.T.	VINYL ASBESTOS TILE
DWG.	DRAWING			V.B.	VAPOR BARRIER
DWR.	DRAWER	N.	NORTH	VENT.	VENTILATION OR VENTILATOR
		NAT.	NATURAL	VERT.	VERTICAL
E.	EAST	N.I.C.	NOT IN CONTACT	VEST.	VESTIBULE
EA.	EACH	NO. OR #	NUMBER	VOL.	VOLUME
EL.	ELEVATION	NOM.	NOMINAL	V.T.R.	VENT THROUGH ROOF
ELEC.	ELECTRICAL	N.T.S.	NOT TO SCALE		
ELEV.	ELEVATION OR ELEVATOR			W.	WEST
EMER.	EMERGENCY	OA.	OVERALL	W/	WITH
ENCL.	ENCLOSURE	OBSC.	OBSCURE	W.C.	WATER CLOSET
ENG.	ENGINEER	O.C.	ON CENTER	WD.	WOOD
EQ.	EQUAL	O.D.	OUTSIDE DIAMETER	WDW.	WINDOW
EQUIP.	EQUIPMENT	OFF.	OFFICE	W.H.	WATER HEATER
EST.	ESTIMATE	O.H.	OVERHEAD	W.I.	WROUGHT IRON
ETC.	ET CETERA	OPNG.	OPENING	W/O	WITHOUT
E.W.	EACH WAY	OPP.	OPPOSITE	W.P.	WATERPROOFING
EXH.	EXHAUST	OZ.	OUNCE	W.P.J.	WEAKENED PLANE JOINT
EXIST. OR (E)	EXISTING			W.S.	WOOD SCREW(S)
EXP.	EXPOSED	PAR.	PARALLEL	WSCT.	WAINSCOT
EXP. JT.	EXPANSION JOINT	PART. BD.	PARTICLE BOARD	WT.	WEIGHT
EXPAN.	EXPANSION	PARTN.	PARTITION	W.W.F.	WELDED WIRE FABRIC
EXT.	EXTERIOR	P.B.	PUSH BUTTON		
		P.C.F.	POUNDS PER CUBIC FOOT	YD.	YARD
F.A.	FIRE ALARM	PERP.	PERPENDICULAR		
F.A.U.	FORCED AIR UNIT	PL.	PLATE	CH.	CHANNEL
F.B.O.	FURNISHED BY OTHERS	P.L.	PROPERTY LINE	d	PENNY (NAIL SIZE)
F.D.	FLOOR DRAIN	PLAM.	PLASTIC LAMINATE	%	PERCENT
FDN.	FOUNDATION	PLAST.	PLASTER	&	AND
F.E.	FIRE EXTINGUISHER	PLAT.	PLATFORM	@	AT
F.E.C.	FIRE EXTINGUISHER CABINET	PLCS.	PLACES	Ø	DIAMETER OR ROUND
F.F.	FINISH FLOOR	P.L.F.	POUNDS PER LINEAL FOOT	+	PERPENDICULAR
F.G.	FUEL GAS	PLUMB.	PLUMBING	#	POUND OR NUMBER
F.H.C.	FIRE HOSE CABINET	PLYWD.	PLYWOOD		
F.H.W.S.	FLAT HEAD WOOD SCREW	PNL.	PANEL		ADDITIONAL ABBREVIATIONS
FIN.	FINISH/FINISHED	PR.	PAIR		PER ANSI STANDARDS
FIX.	FIXED	PRCST.	PRECAST		AND SPECIFICATIONS.
FIXT.	FIXTURE	PREFAB.	PREFABRICATED		
FL.	FLUSH	PREP.	PREPARATION		
FLASH.	FLASHING	PROP.	PROPERTY		
FLR.	FLOOR	P.S.F.	POUNDS PER SQUARE FOOT		
FLUOR.	FLOURESCENT	PSI.	POUNDS PER SQUARE INCH		
F.O.B.	FACE OF BEAM	PT.	POINT		
F.O.C.	FACE OF CONCRETE	P.T.D.F.	PRESSURE TREATED DOUGLAS FIR		
F.O.F.	FACE OF FINISH	P.V.C.	POLYVINYL CHLORIDE		
F.O.M.	FACE OF MASONRY	PWDR.	POWDER		

NOTE: NOT ALL ABBREVIATIONS ARE USED WITHIN THIS SET OF DRAWINGS, TYP.

GENERAL NOTES

1. AS A MINIMUM STANDARD, ALL CONSTRUCTION WORK SHALL COMPLY WITH ALL APPLICABLE ADOPTED ZONING ORDINANCES, BUILDING CODES, BUILDING DEPARTMENT SUPPLEMENTARY PROCEDURES AND NEWSLETTERS AND NFPA BULLETINS.

2. THE GENERAL CONTRACTOR, THE SUBCONTRACTORS AND MATERIAL SUPPLIERS SHALL REFER TO THE DRAWINGS, SCHEDULES AND SPECIFICATIONS AS A WHOLE WHEN DETERMINING THE CONSTRUCTION REQUIREMENTS FOR A PROJECT.

3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING ALL AREAS ON THE PROJECT WHICH REQUIRE TOLERANCES BETWEEN ROUGH OPENINGS AND/OR FINISH MATERIALS AND PROVIDE FOR THE PROPER TOLERANCES TO COMPLETE THE CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

4. A. ALL DRAWINGS, SCHEDULES AND SPECIFICATIONS IN THE BID PACKAGE ARE TO BE CONSIDERED EQUAL PARTS OF THIS CONTRACT PACKAGE. THE CONTRACTOR AND HIS SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS, SCHEDULES AND SPECIFICATIONS, INCLUDING CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING OR ELECTRICAL. ALL DISCREPANCIES, OMISSIONS OR ERRORS THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IN WRITING PRIOR TO THE SUBMISSION OF BIDS SO THAT CLARIFICATION MAY BE ISSUED.

B. ANY WORK PERFORMED IN CONFLICT WITH ANY PART OF THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENT SHALL BE CORRECTED BY THE CONTRACTOR AT HIS OWN EXPENSE AND AT NO EXPENSE TO THE OWNER OR ARCHITECT.

5. PRIOR TO THE START OF CONSTRUCTION, THE GENERAL CONTRACTOR SHALL VERIFY THE LOCATION OF THE TRANSFORMERS AND UNDERGROUND UTILITIES WITH APPROPRIATE UTILITY COMPANIES, IN ADDITION, THE GENERAL CONTRACTOR SHALL VERIFY THE ACTUAL STATIC WATER PRESSURE AT THE PROPERTY LINE AND REPORT THE FINDINGS IN WRITING TO THE ARCHITECT AND MECHANICAL ENGINEER PRIOR TO THE START OF CONSTRUCTION.

6.THE GENERAL CONTRACTOR AND HIS SUB-CONTRACTORS SHALL BE RESPONSIBLE FOR THE COORDINATION OF THEIR WORK WITH THE WORK OF OTHERS. SUB-CONTRACTORS SHALL VERIFY THAT ANY WORK RELATED TO THEM, WHICH MUST BE PROVIDED BY OTHERS, HAS BEEN COMPLETED AND IS ADEQUATE PRIOR TO COMMENCING THEIR WORK.

7. ALL DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE SHOWN ON PLANS, SECTIONS, AND DETAILS. DIMENSIONS ARE FACE OF STUDS OR SLAB UNLESS NOTED OTHER WISE ON DRAWINGS. DO NOT SCALE DRAWINGS.

8. THE GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFETY ITEMS AND PROCEDURES DURING THE TERM OF CONSTRUCTION.

9. ALL EXITS REQUIRED BY CODE SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF ANY SPECIAL KNOWLEDGE OR EFFORT OR SHALL HAVE A SIGN READING "THIS DOOR TO REMAIN UNLOCKED DURING BUSINESS HOURS."

10. ALL INTERIOR FINISHES SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF CHAPTER 8 CBC, LATEST EDITION.

11. FIRE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.

12. FIRE AND DRAFT STOPS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE UNIFORM BUILDING CODE.

13. OPENINGS IN FIRE-RESISTIVE CEILINGS SHALL BE PROTECTED PER THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE.

14. ELECTRICAL PENETRATIONS OF FIRE RESISTIVE WALL OR CEILING CONSTRUCTION SHALL BE INSTALLED PER THE INTERNATIONAL BUILDING CODE.

15. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO RECONSTRUCT THE HOSPITAL BUILDING IN ACCORDANCE WITH TITLE 24, CA ADMINISTRATIVE CODE, SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS WHERE IN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CA ADMINISTRATIVE CODE, A CHANGE ORDER DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT BEFORE PROCEEDING WITH THE WORK.

16. ALL ELECTRICAL OUTAGES SHALL BE SCHEDULED AND APPROVED BY THE HOSPITAL REPRESENTATIVE. REQUEST FOR ELECTRICAL OUTAGE SHALL BE SUBMITTED (IN WRITING) TO HOSPITAL REPRESENTATIVE FOR APPROVAL FOURTEEN(14) DAYS PRIOR TO THE PROPOSED OUTAGE.

17. ALL ELECTRICAL OUTAGES SHALL BE SCHEDULED AFTER NORMAL WORKING HOURS (5:00 PM - 7:00 AM MONDAY-FRIDAY), SATURDAYS, SUNDAYS, HOLIDAYS OR AT A TIME SET BY HOSPITAL REPRESENTATIVE, NO ELECTRICAL OUTAGE SHALL EXCEED ONE (1) HOUR IN DURATION WITHOUT TEMPORARY POWER BEING PROVIDED.

18. WHERE PROVIDED, THROUGH-PENETRATION FIRESTOP SYSTEM AND MEMBRANE PENETRATION DETAILS ARE FOR REFERENCE ONLY. THROUGH-PENETRATIONS AND MEMBRANE PENETRATIONS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRESTOP SYSTEM OR MEMBRANE PENETRATION FIRESTOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 814 OR UL 1479. WITH A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCH (2.49 PA) OF WATER OR AS OTHERWISE PERMITTED BY CBC, SECTION 714. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS AND MEMBRANE PENETRATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION DETAILS FOR LISTED SYSTEMS. LISTED THROUGH-PENETRATION FIRESTOP SYSTEMS, MEMBRANE PENETRATION PROTECTION AND OTHER PERMITTED MEANS AND METHODS OF PENETRATION PROTECTION SHALL BE SUBMITTED FOR OSHPD FSD REVIEW AND APPROVAL PRIOR TO INSTALLATION.

FIRE PREVENTION NOTES

1. EXCEPT AS SPECIFICALLY PERMITTED BY THIS SECTION, EGRESS DOORS SHALL BE READILY OPERABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT CBC. 1008.1.9.

2. ARRANGEMENT OF EXITS SHALL BE IN ACCORDANCE WITH 2016 CBC SECTION 1010.1.8.

3. EXIT DOORS FOR > 50 OCCUPANTS SERVING AN ASSEMBLY OCCUPANCY SHALL HAVE PANIC HARDWARE IN ACCORDANCE WITH CBC SECTION 1010.1.10.

4. ILLUMINATION: SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED BY TWO ELECTRIC LAMPS OR SHALL BE OF AN APPROVED SELF-ALLUMINATED TYPE.

5. POWER SUPPLY: CURRENT SUPPLY TO ONE OF THE LAMPS FOR THE EXIT SIGNS SHALL BE PROVIDED BY THE PREMISES' WIRING SYSTEM. POWER TO THE OTHER LAMP SHALL BE FROM STORAGE BATTERIES OR AN ON SITE GENERATOR SET.

6. FIRE DAMPER ASSEMBLIES, INCLUDING SLEEVES, AND INSTALLATION PROCEDURES SHALL BE APPROVED BY THE BUILDING INSPECTOR PRIOR TO INSTALLATION.

PROJECT DATA

PROJECT DESCRIPTION	SCOPE OF WORK : REMOVAL AND REPLACEMENT OF EXISTING SURGICAL LIGHT(S) IN OR4, NEW LIGHTS ATTACHMENT PER STRUCTURAL AND OTHER ELECTRICAL WORK.
PROJECT LOCATION	4002 VISTA WAY OCEANSIDE, CA 92056
LEGAL DESCRIPTION	PORTION OF PARCEL 3 MAP NO. 563 FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, IN THE STATE OF CALIFORNIA, RECORDED MARCH 21, 1977, AS FILE NO. 77-077587 OF OFFICIAL RECORDS.
OCCUPANCY CLASS	I-2
TYPE OF CONSTRUCTION	TYPE 1-A FULLY SPRINKLERED
YEAR OF ORIGINAL CONSTRUCTION	1990
PROJECT LOCATION	FIRST FLOOR
FIRE PROTECTION	PROJECT AND EXISTING HOSPITAL FACILITY SHALL BE FULLY SPRINKLERED PER NFPA13 AND WITH FIRE ALARM SYSTEM, TYP.
APPLICABLE CODES	THESE PLANS AND ALL WORK SHALL COMPLY WITH THE CITY OF SAN DIEGO MUNICIPAL CODE, THE 2016 EDITION OF THE CALIFORNIA BUILDING CODE FOUND IN STATE OF CALIFORNIA TITLE 24 CCR AS AMENDED AND ADOPTED BY THE CITY OF SAN DIEGO. THE 2016 EDITIONS OF THE CALIFORNIA BUILDING CODES SHALL APPLY: 2016 CALIFORNIA BUILDING CODE 2016 CALIFORNIA GREEN BUILDING CODE 2016 CALIFORNIA HISTORICAL BUILDING CODE 2016 CALIFORNIA ELECTRICAL CODE 2016 CALIFORNIA MECHANICAL CODE 2016 CALIFORNIA PLUMBING CODE 2016 CALIFORNIA TITLE 24 2016 CALIFORNIA FIRE CODE

DISABLED PERSONS ACCESS NOTES

1. ALL PRIMARY ENTRANCES TO BUILDINGS AND FACILITIES SHALL BE ACCESSIBLE TO THE DISABLED.

2. EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. HAND-ACTIVATED DOOR OPENING HARDWARE SHALL BE CENTERED BETWEEN 34 INCHES AND 48 INCHES ABOVE THE FLOOR. LATCHING AND LOCKING DOORS THAT ARE HAND-ACTIVATED AND WHICH ARE IN A PATH OF TRAVEL, SHALL BE OPERABLE WITH A SINGLE EFFORT BY LEVER-TYPE HARDWARE, BY PANIC BARS, PUSH-PULL ACTIVATING BARS, OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE. LOCKED EXIT DOOR SHALL OPERATE AS ABOVE IN EGRESS DIRECTION. PER CBC. SECTION 1008.1.9.

3. EVERY REQUIRED EXIT DOORWAY SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET IN WIDTH AND NOT LESS THAN 6 FEET 8 INCHES IN HEIGHT. WHEN INSTALLED IN EXIT DOORWAYS, EXIT DOORS SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES AND SHALL BE SO MOUNTED THAT THE CLEAR WIDTH OF THE EXIT WAY IS NOT LESS THAN 32 INCHES. PER CBC. SECTION 1008.1.1.

4. FOR HINGED DOORS, THE OPENING WIDTH SHALL BE MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. AT LEAST ONE OF A PAIR OF DOORS SHALL MEET THIS OPENING WIDTH REQUIREMENT. REVOLVING DOORS SHALL NOT BE USED AS A REQUIRED ENTRANCE FOR THE PHYSICALLY DISABLED.

5. THRESHOLDS SHALL NOT EXCEED ¾ INCH IN HEIGHT. CBC. 1008.1.7

6. LANDINGS SHALL HAVE A WIDTH NOT LESS THAN THE WIDTH OF THE STAIRWAY OR THE DOOR, WHICHEVER IS GREATER. DOORS IN THE FULLY OPEN POSITION SHALL NOT REDUCE A REQUIRED DIMENSION BY MORE THAN 7 INCHES. WHEN A LANDING SERVES AN OCCUPANT LOAD OF 50 OR MORE, DOORS IN ANY POSITION SHALL NOT REDUCE THE LANDING TO LESS THAN ONE-HALF ITS REQUIRED WIDTH. LANDINGS SHALL HAVE A LENGTH MEASURED IN THE DIRECTION OF TRAVEL OF NOT LESS THAN 44 INCHES. CBC. SECTION 1008.1.6

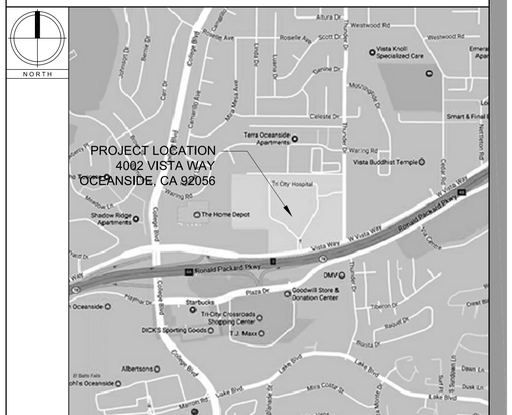
7. THE WIDTH OF THE LEVEL AREA ON THE SIDE TO WHICH THE DOOR SWINGS SHALL EXTEND 24 INCHES PAST THE STRIKE EDGE OF THE DOOR FOR EXTERIOR DOORS AND 18 INCHES PAST THE STRIKE EDGE FOR INTERIOR DOORS.

8. SPACE BETWEEN TWO DOORS IN A SERIES SHALL BE 48 INCHES MINIMUM PLUS THE THE WIDTH OF A DOOR SWINGING INTO THE SPACE. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OR AWAY FROM THE SPACE BETWEEN THE DOORS. CBC SECTION 1008.1.8

9. MAXIMUM EFFORT TO OPERATE DOORS SHALL NOT EXCEED 5 POUNDS FOR EXTERIOR DOORS AND 5 POUNDS FOR INTERIOR DOORS, SUCH PULL OR PUSH EFFORT BEING APPLIED AT RIGHT ANGLES TO HINGED DOORS AND AT THE CENTER OF THE PLANE OF SLIDING OR FOLDING DOORS. COMPENSATING DEVICES OR AUTOMATIC DOOR OPERATORS MAY BE UTILIZED TO MEET THE ABOVE STANDARDS. WHEN FIRE DOORS ARE REQUIRED, THE MAXIMUM EFFORT TO OPERATE THE DOOR MAY BE INCREASED BUT SHALL NOT EXCEED 15 POUNDS. CBC. 1008.1.3.

10. CONSTRUCTION: THE BOTTOM 10 INCHES OF ALL DOORS, EXCEPT AUTOMATIC AND SLIDING, SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE TO ALLOW DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION. WHERE NARROW FRAME DOORS ARE USED, A 10 INCH HIGH SMOOTH PANEL SHALL BE INSTALLED ON THE PUSH SIDE OF THE DOOR, WHICH WILL ALLOW THE DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION.

PROJECT LOCATION



PROJECT DIRECTORY

OWNER REP.
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OCEANSIDE, CA 92056
PHONE #: (760) 940-7709
CONTACT: CHRIS MIECHOWSKI

RESPONSIBLE PARTY
SUN STRUCTURAL ENGINEERING, INC.
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CONTACT: CHANGHUA SUN

ARCHITECT
BGI ARCHITECTURE
2091 LAS PALMAS DRIVE, SUITE D
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BGIARCHITECTURE.COM

DRAWING LIST

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REGISTERED PROFESSIONAL ENGINEER
CHANGHUA SUN
S 4609
EXP. 6/30/2017
STRUCTURAL
STATE OF CALIFORNIA

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Beery Group Inc.
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St. D
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bgiarchitect.com
ARCHITECTURE | DESIGN

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION
07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/2017

DRAWN BY: BPB

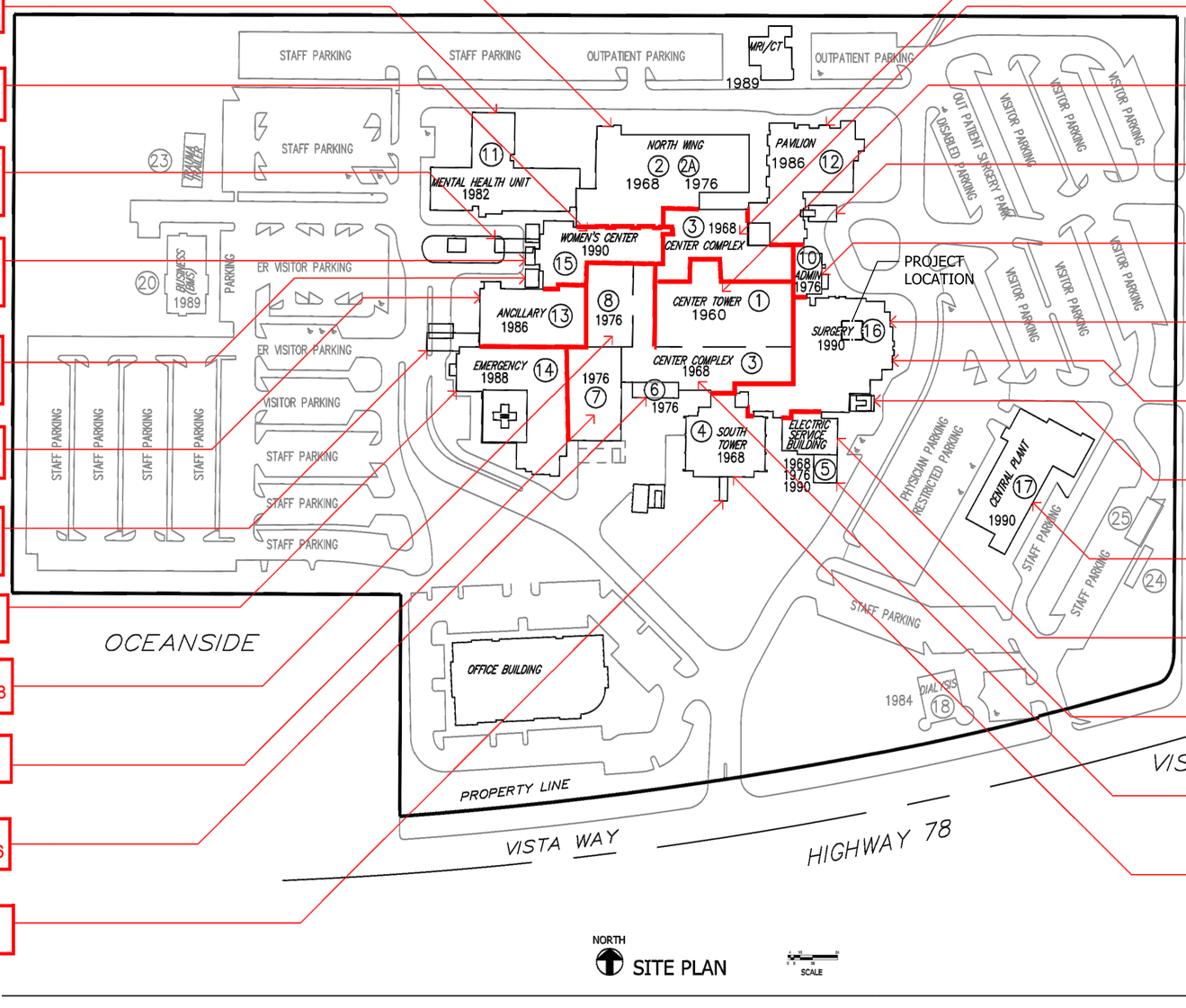
PROJECT # 2017-01

SHEET NAME:
TITLE SHEET

LICENSED ARCHITECT
JOHN BEERY
No. C-31546
STATE OF CALIFORNIA

SHEET#
T-1.0

Tri-City Medical Center
Facility No. 12372



NORTH

SITE PLAN

SCALE

SPC4, NPC2	BLD-01144 - North Wing - Bldg 02	BLD-01154 - Pavilion Building - Bldg 12A	SPC4, NPC4
	BLD-05487 - Behavioral Health Unit - Bldg 11	BLD-01145 - Center Complex - North - Bldg 03A	SPC4, NPC2
SPC4S, NPC2	BLD-02871 - Perinatal Unit/ Women's Center - Bldg 15A	BLD-01143 - Center Tower - Bldg 01	SPC2, NPC2
SPC4S, NPC2	BLD-02872 - Perinatal Unit/ Womens Center Canopy 1 - Bldg 15B	BLD-01153 - Pavilion Building Canopy - Bldg 12B	SPC4, NPC4
SPC4S, NPC2	BLD-02873 - Perinatal Unit/ Womens Center Canopy 2 - Bldg 15C	BLD-01152 - Administration Building - Bldg 10	SPC4, NPC3
SPC4S, NPC2	BLD-02874 - Perinatal Unit/Womens Center Canopy 3 - Bldg 15D	BLD-02875 - Surgery Addition 1 - Bldg 16A	SPC3, NPC2
SPC4, NPC2	BLD-01155 - Ancillary Building - Bldg 13	BLD-02876 - Surgery Addition 2 - Bldg 16B	SPC3, NPC2
SPC4, NPC4	BLD-02870 - Emergency Room Addition Canopy - Bldg 14B	BLD-02877 - Surgery Addition Canopy - Bldg 16C	SPC3, NPC2
SPC4, NPC2	BLD-01151 - Emergency Room Addition - Bldg 14A	BLD-02878 - Central Plant - Bldg 17	SPC4S, NPC2
SPC4, NPC2	BLD-01150 - 1976 Radiology Addition - Bldg 08	BLD-01147 - Electrical Building - Bldg 05A	SPC4S, NPC2
SPC4, NPC1	BLD-01149 - Materials/ Laboratory Building - 07	BLD-02869 - Electrical Building Addition - Bldg 05B	SPC4S, NPC2
SPC4, NPC1	BLD-01148 - 1976 Center Complex Addition - Bldg 06	BLD-03766 - Center Complex - South - Bldg 03B	SPC3, NPC2
SPC2, NPC2	BLD-02868 - South Tower Stair Shaft - Bldg 04B	BLD-01146 - South Tower - Bldg 04A	SPC2, NPC2

TRI-CITY MEDICAL CENTER OVERALL SITE PLAN WITH SPC AND NPC RATING

SCALE: N.T.S.

TRI-CITY MEDICAL CENTER
4002 VISTA WAY
OCEANSIDE, CA 92056
T: (760) 724-8411

REGISTERED PROFESSIONAL ENGINEER
CHANGHUA SUN
S 4609
EXP. 6/30/2017
STRUCTURAL
STATE OF CALIFORNIA

SUN Structural Engineering, Inc.
Consulting Structural Engineers
2091 Las Palmas Dr. Suite D
Carlsbad, California 92011
Tel: 760-438-1188
www.sunse-inc.com

TRI-CITY MEDICAL CENTER
OR4 LIGHT REPLACEMENT
4002 VISTA WAY, OCEANSIDE CA 92056

CONSULTANT:
BGI ARCHITECTURE
Beery Group Inc.
2091 Las Palmas Drive, St. D
Carlsbad, CA 92011
(760) 438-2963
bgiarchitect.com
ARCHITECTURE | DESIGN

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/2017

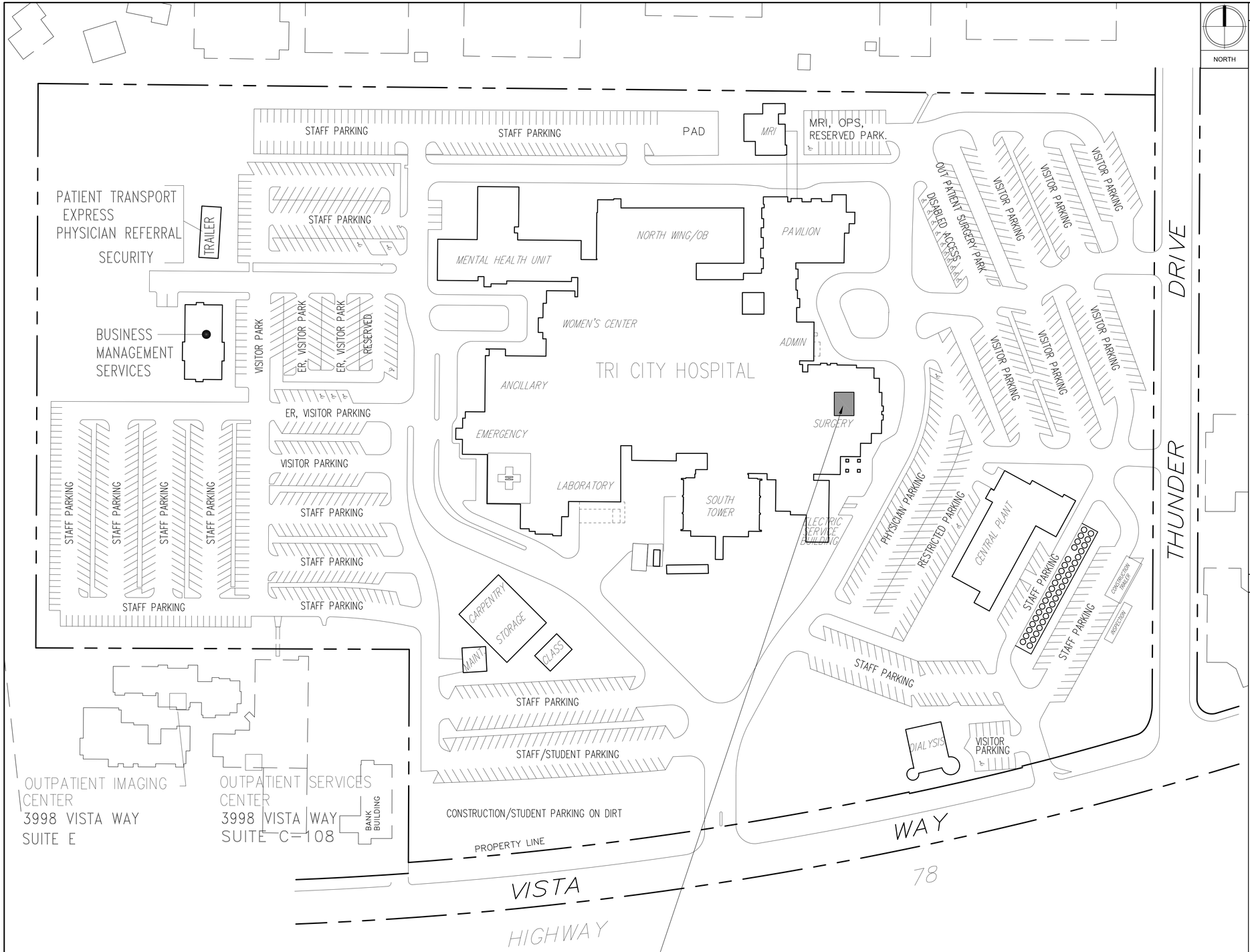
DRAWN BY: BPB

PROJECT # 2017-01

SHEET NAME:
TCMC SPC NPC RATING

LICENSED ARCHITECT
STATE OF CALIFORNIA

SHEET#
T-1.1



ARCHITECTURAL SITE PLAN

SCALE: 1/64" = 1'-0"

PROJECT LOCATION (SCOPE OF WORK)

Tri-City Medical Center
4002 Vista Way, Oceanside Ca 92056
Hospital Campus
NOV 2002

KEYNOTES

ARCHITECTURAL LEGEND

- Doors
- Windows
- Keynote
- Wall Type
- Room Name & Number (ROOM NAME / 01)
- Detail Callout (01 / A-1)
- Building Section (01 / A-1)
- Interior Elevation (1)
- Storefront Elevation (1 / A-1)
- Building Elevation (A-1)
- New Wall
- Existing Wall
- Demolition
- Insulation
- Overhead
- Centerline
- Property Line
- Revision (1)

NOTE: NOT ALL SYMBOLS SHOWN ABOVE ARE USED IN THIS SET OF DRAWINGS.

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OSHPD # **S170736-37-00**

DATE: 04/20/2017

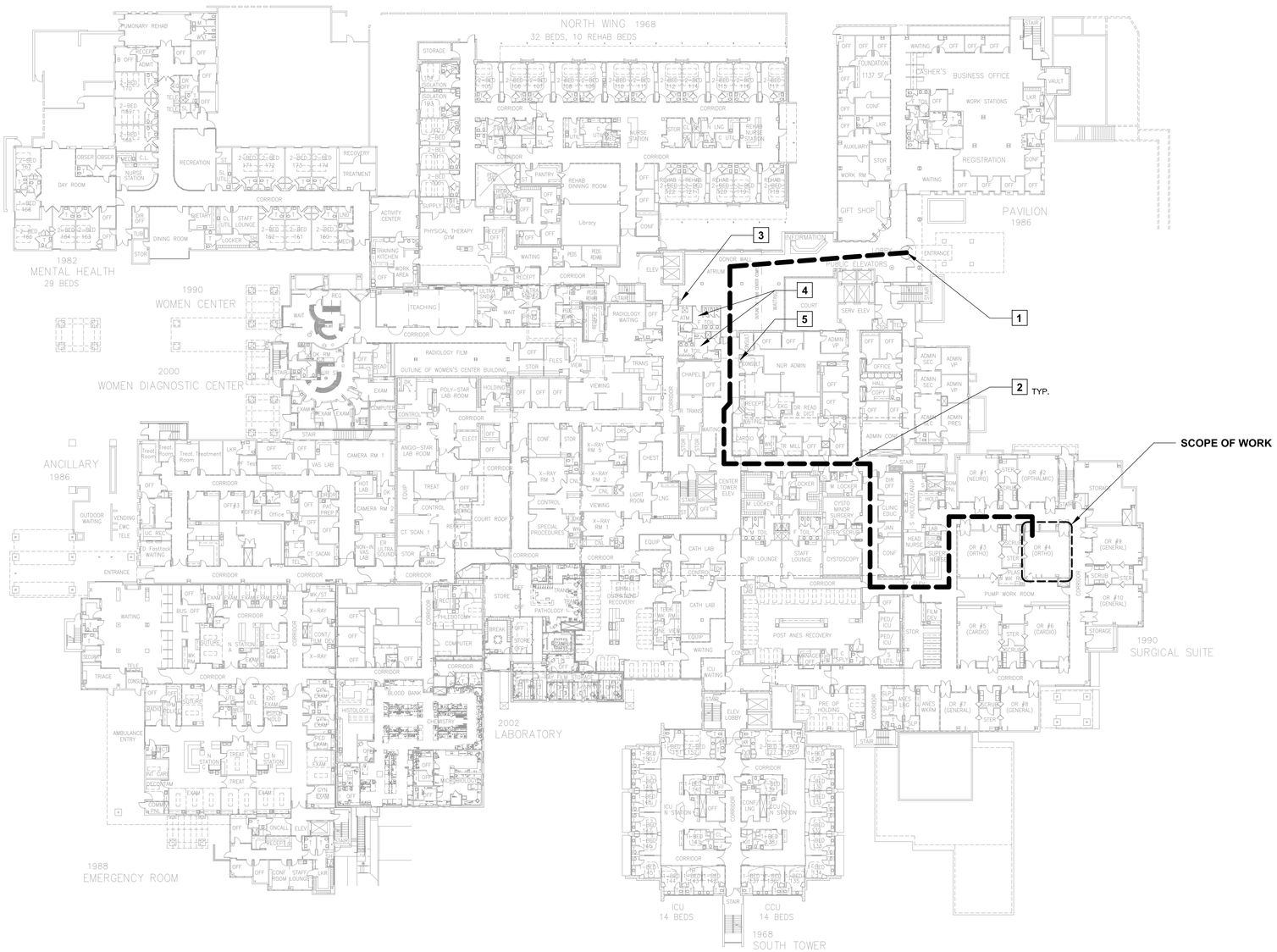
DRAWN BY: BPB

PROJECT # 2017-01

SHEET NAME:
ARCHITECTURAL SITE PLAN

LICENSED ARCHITECT
STATE OF CALIFORNIA
RENEWAL 08/31/2017

SHEET#
AC-1



ACCESSIBLE PATH OF TRAVEL

SCALE: 1/32" = 1'-0"

NORTH

KEYNOTES

1) (E) ACCESSIBLE MAIN ENTRANCE
2) (E) ACCESSIBLE PATH OF TRAVEL, TYP.
3) (E) ACCESSIBLE PUBLIC TELEPHONE
4) (E) ACCESSIBLE PUBLIC TOILETS
5) (E) ACCESSIBLE PUBLIC DRINKING FOUNTAIN

ARCHITECTURAL LEGEND

- 1 — Doors
- A — Windows
- 1 — Keynote
- A — Wall Type
- ROOM NAME / 01 — Room Name & Number
- 01 / A-1 — Detail Callout
- 01 / A-1 — Building Section
- 1 — Interior Elevation
- 1 / A-1 — Storefront Elevation
- A-1 — Building Elevation
- New Wall
- Existing Wall
- Demolition
- Insulation
- Overhead
- Centerline
- Property Line
- 1 — Revision

NOTE: NOT ALL SYMBOLS SHOWN ABOVE ARE USED IN THIS SET OF DRAWINGS.

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Hospital Campus
NOV 2002

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#[S1]0736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/2017

DRAWN BY: BPB

PROJECT # 2017-01

SHEET NAME: ACCESSIBLE PATH OF TRAVEL

LICENSED ARCHITECT
STATE OF CALIFORNIA
RENEWAL 08/31/2017

SHEET# A-1

UNIVERSAL FLUSH ACCESS DOOR
Model DSC-214M
Prime Coated Steel or Stainless Steel

KARP ASSOCIATES, INC.
280 Spagnoli Road Melville, NY 11747
(631) 768-8300 - Phone
(631) 768-8380 - Fax

DATE

PROJECT DATA

Project Name:
Architect:
Contractor:
Agent/Customer Name:
Tagging Instructions:
Special Instructions:

PROJECT SCHEDULE

Qty.	H	W	No. of Latches	Finish	Remarks

SPECIFICATIONS

GENERAL SCOPE:
Access doors shall be Karp Type DSC-214M as manufactured by Karp Associates, Inc., Melville, N.Y.
Sizes shall be as indicated on the drawings.

CONSTRUCTION:
1. Frame shall be 16 gage steel and door shall be 14 gage steel.
2. Flange of frame shall be one-piece construction, 1.00" wide.
3. Door and trim shall have radius corners.
4. Hinge shall be pin type, spring loaded making door removable.
5. Locks shall be flush and screwdriver operated with steel can and studs, or shall be key operated cylinder lock with automatic dust shutter.
6. Masonry anchor straps can be included on frames if specified.
7. Finish shall be prime coat of rust inhibitive electrostatic powder, baked white enamel. Stainless steel shall have No. 4 satin polish finish.
* When hinge side is greater than 46", door shall have a continuous piano hinge for rigidity.

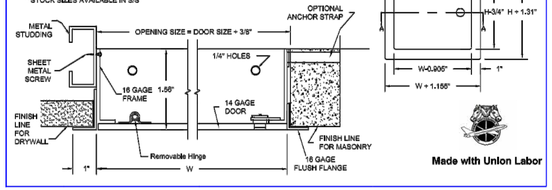
STANDARD SIZES

DOOR SIZE H X W (IN.)	WALL/CEILING OPENING (IN.)	# OF LATCHES OSS	# OF LATCHES SS	SHIP WT. (LBS.)
6 x 6	6 3/8 x 6 3/8	1		2.1
8 x 8*	8 3/8 x 8 3/8	1		3.1
10 x 10*	10 3/8 x 10 3/8	1		4.3
12 x 8	12 3/8 x 8 3/8	1		4.6
12 x 12*	12 3/8 x 12 3/8	1		6.3
14 x 14	14 3/8 x 14 3/8	2		8.1
16 x 12	16 3/8 x 12 3/8	2		7.8
16 x 16	16 3/8 x 16 3/8	2		9.9
18 x 12	18 3/8 x 12 3/8	2		8.9
18 x 18*	18 3/8 x 18 3/8	2	4	12.2
20 x 16	20 3/8 x 16 3/8	2		11.8
22 x 22	22 3/8 x 22 3/8	4		16.3
24 x 12	24 3/8 x 12 3/8	2		10.6
24 x 18	24 3/8 x 18 3/8	2		14.5

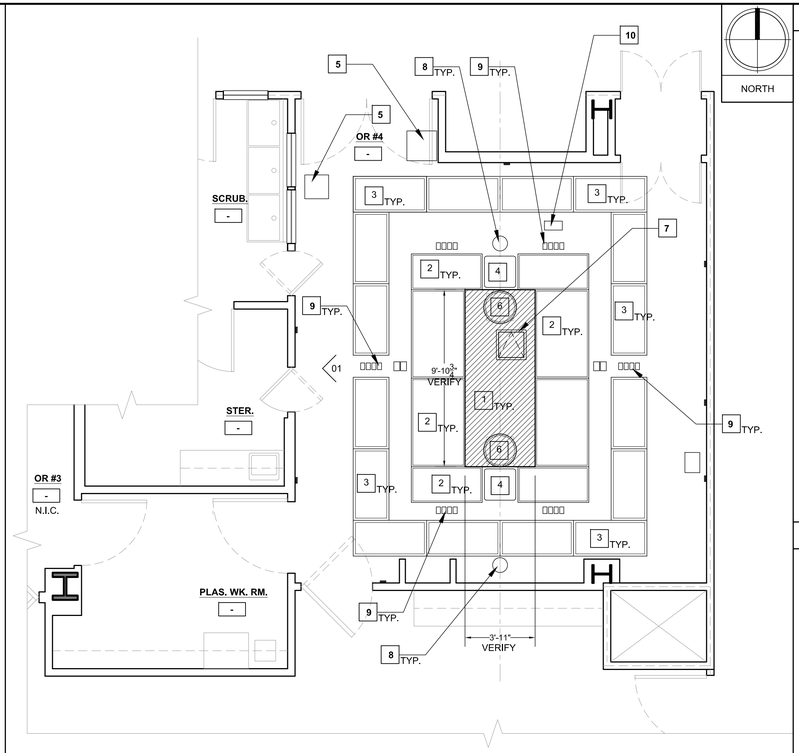
* STOCK SIZES AVAILABLE IN S/S

DOOR SIZE H X W (IN.)	WALL/CEILING OPENING (IN.)	# OF LATCHES	SHIP WT. (LBS.)
24 x 20	24 3/8 x 20 3/8	2	18.6
24 x 24*	24 3/8 x 24 3/8	6	18.7
30 x 20	30 3/8 x 20 3/8	6	20.1
30 x 22	30 3/8 x 22 3/8	6	21.7
30 x 24	30 3/8 x 24 3/8	6	23.6
30 x 30	30 3/8 x 30 3/8	6	27.8
36 x 22	36 3/8 x 22 3/8	6	25.6
36 x 24	36 3/8 x 24 3/8	6	28.2
36 x 36	36 3/8 x 36 3/8	6	36.8
48 x 24	48 3/8 x 24 3/8	6	34.4

* The wall opening size for doors larger that 45 x 36 shall be 1/2" larger than the door size.



Made with Union Labor



EXISTING & DEMO REFLECTED CEILING PLAN - OR #4
SCALE: 1/4" = 1'-0"

RCP DEMOLITION NOTES

1. ALL DEMOLITION WORK SHALL BE PERFORMED WITH "DUE CARE AND DILIGENCE" SO AS TO PREVENT THE ARBITRARY DESTRUCTION OR INTERRUPTION OF CONCEALED UTILITIES WHICH ARE INTENDED TO REMAIN IN USE AND THE ROUTING OF WHICH COULD NOT BE PREDETERMINED UNTIL DEMOLITION WAS STARTED. ALL SUCH DISCOVERIES OF UTILITIES DURING THE DEMOLITION PROCESS WHICH ARE IN A LOCATION DIFFERENT FROM THAT INDICATED, CHANGE DIRECTION FROM FLOOR TO FLOOR, ETC. OR ARE UNIDENTIFIED SHALL BE REPORTED TO THE ARCHITECT BEFORE REMOVAL OR ALTERATION.

2. SEE STRUCTURAL AND ELECTRICAL PLANS FOR THE EXTENT OF THE CUTTING AND PATCHING REQUIREMENTS NECESSITATED BY THAT PORTION OF THE WORK.

3. REMOVE PORTIONS OF EXISTING CONSTRUCTION DESIGNATED AND/OR SHOWN AND PATCH REMAINING SURFACES TO MATCH THE ADJACENT CONSTRUCTION.

4. EXISTING AREA, WHETHER WITHIN OR OUTSIDE THE LIMITS OF THE CONTRACT, SHALL BE REPAIRED WHERE ANY DAMAGE HAS OCCURED DUE TO CONSTRUCTION.

5. FIRE SPRINKLERS TO REMAIN (NO MODIFICATION PROPOSED TO THE FIRE SUPPRESSION SYSTEM), PROTECT ALL FIRE SUPPRESSION DEVICES DURING DEMOLITION AND CONSTRUCTION.

6. RELOCATE ALL CONTENTS OF SURGICAL SUITE TO TEMPORARY STORAGE AREA.

7. CLEAN UP DEBRIS IN INTERSTITIAL SPACE.

RCP GENERAL NOTES

1. ALL DIMENSIONS TO FACE OF STRUCTURAL MATERIAL U.O.N. GRID LINES INDICATE FACE OF STRUCTURAL MATERIAL OR CENTERLINE U.O.N.

2. WRITTEN DIMENSIONS TO PREVAIL OVER SCALING OF DRAWINGS. CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

3. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.

4. FIRE SPRINKLERS TO REMAIN (NO MODIFICATIONS PROPOSED TO FIRE SUPPRESSION SYSTEM), PROTECT ALL FIRE SUPPRESSION DEVICES DURING CONSTRUCTION.

5. PATCH AND PAINT CEILING TO MATCH EXISTING AS REQUIRED (MATCH (E) SHEET METAL FINISH AND EPOXY PAINT PER AS-BUILTS).

6. MAINTAIN NEGATIVE AIR IN OPERATING ROOM SUITES, TYP.

7. NEW 18" x 18" ACCESS PANELS REQUIRED. (MINIMUM 18" x 18" PLACE BELOW MEDICAL GAS/VACUUM CONNECTIONS FOR COMPLIANCE WITH NFPA 99).

ACCESS PANEL NOTES

1. ACCESS PANEL MUST BE RATED FOR OPERATING ROOM USE.

2. MANUFACTURER RECOMMENDS MODEL DSC-241M IN STAINLESS STEEL.

3. FOR OPERATING ROOM USE, MANUFACTURER RECOMMENDS INSULATED, SMOKE SEAL/AIR SEAL GASKET.

4. ALL ACCESS PANELS TO BE INSTALLED W/ #10 SCREWS OR AS REQUIRED BY MFG. INSTALLATION INSTRUCTIONS, TYP.

KEYNOTES

1) REMOVE EXISTING GWB CEILING G.W.B. DROP CEILING FRAME ONLY FROM WITHIN HATCHED AREA, TYP. RECONSTRUCT FRAME AND DRYWALL CEILING PER DETAILS 03, 04 & 05 SHEET A-3.

2) EXISTING HVAC DIFFUSERS TO REMAIN, TYP.

3) EXISTING LIGHT FIXTURES TO REMAIN, TYP.

4) EXISTING CEILING MOUNTED UTILITY COLUMN TO REMAIN, TYP.

5) EXISTING CEILING MOUNTED ACCESS PANEL TO REMAIN.

6) REMOVE EXISTING SURGICAL LIGHT

7) REMOVE EXISTING CEILING ACCESS PANEL

8) SPEAKER TO REMAIN AS EXISTING, TYP.

9) ELECTRICAL CEILING OUTLETS TO REMAIN AS EXISTING, TYP.

10) CEILING FLOOD LIGHTS TO REMAIN AS EXISTING, TYP.

11) NEW ACCESS PANEL: "KARP" BRAND DSC-214M 18" x 18" * MODEL PER CUT SHEET (SEE THIS SHEET A-2), ACCESS PANEL R.O. PER MFG. ACCESS PANEL TO BE LOCATED MIN. 1'-0" FROM SURGICAL LIGHT MOUNTING PLATE, TYP.

12) NEW SURGICAL LIGHT & FLAT PANEL ARM, INSTALLATION PER STRUCTURAL PLANS & DETAILS AND MFG. INSTALLATION INSTRUCTIONS. CEILING DRYWALL HOLE TO BE 22" DIAMETER CIRCLE CENTERED ON MOUNTING PLATE, PER MFG, AFTER SURGICAL LIGHT INSTALLATION. 23" (PER MFG.) COVER O/ CEILING HOLE TO CONCEAL HOLE PER MFG. INSTALLATION INSTRUCTIONS, TYP.

13) NEW FINISH CEILING SURFACE, TYP.

14) NOT USED

15) EXISTING WALL MOUNTED TOUCH PANELS TO BE REPLACED WITH NEW SPR-3 WALL MOUNTED TOUCH PANELS PER MFG. PRE-INSTALLATION NOTES, TYP.

16) (E) GLOVE DISPENSER TO REMAIN

17) (E) INTERCOM TO REMAIN

18) (E) COMM. OUTLET TO REMAIN

19) (E) BOOKLET TO REMAIN

20) (E) TELEPHONE TO REMAIN

21) (E) TOGGLES TO REMAIN

22) (E) DOOR W/ INSET WINDOW TO REMAIN

23) (E) WINDOW TO REMAIN

24) (E) FIRE EXTINGUISHER TO REMAIN

25) (E) PUSH ACTIVATED DOOR OPENER TO REMAIN

26) (E) CLEARSTORY WINDOW TO REMAIN

27) (E) FIRE SPRINKLER TO REMAIN

28) (E) WHITE BOARD TO REMAIN

29) (E) REGISTER TO REMAIN

30) (E) ELECTRICAL OUTLET TO REMAIN, TYP.

31) (E) 6" BASE TO REMAIN, TYP.

32) NEW SK BOX PER MFG, ABOVE FINISHED FINISHED CEILING - SEE STRUCTURAL AND ELECTRICAL FOR MORE INFORMATION.

33) CHROMOPHARE LED LIGHT & CAMERA WALL CONTROL PANEL PER DETAIL 7 & 8/A-3.

34) IN-LIGHT CAMERA CCU

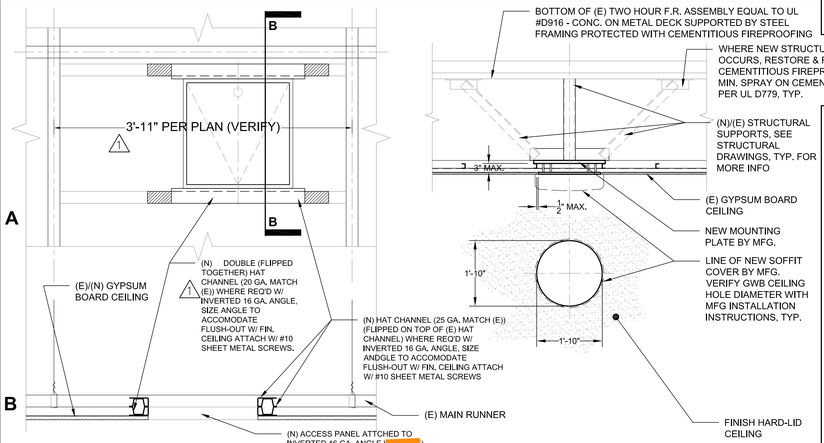
35) SWITCHPOINT INFINITY 3 CONTROL SYSTEM PER DETAIL 7 & 8/A-3.

36) SINGLE GANG DVI WALL PLATES (TOTAL OF 7).

ARCHITECTURAL LEGEND

- 1 — Doors
- A — Windows
- 1 — Keynote
- A — Wall Type
- ROOM NAME / 01 — Room Name & Number
- 01 / A-1 — Detail Callout
- 01 / A-1 — Building Section
- 1 — Interior Elevation
- 1 / A-1 — Storefront Elevation
- A-1 — Building Elevation
- New Wall
- Existing Wall
- Demolition
- Insulation
- Overhead
- Centerline
- Property Line
- 1 — Revision

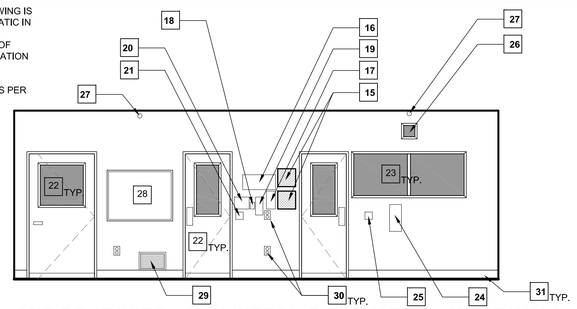
NOTE: NOT ALL SYMBOLS SHOWN ABOVE ARE USED IN THIS SET OF DRAWINGS.



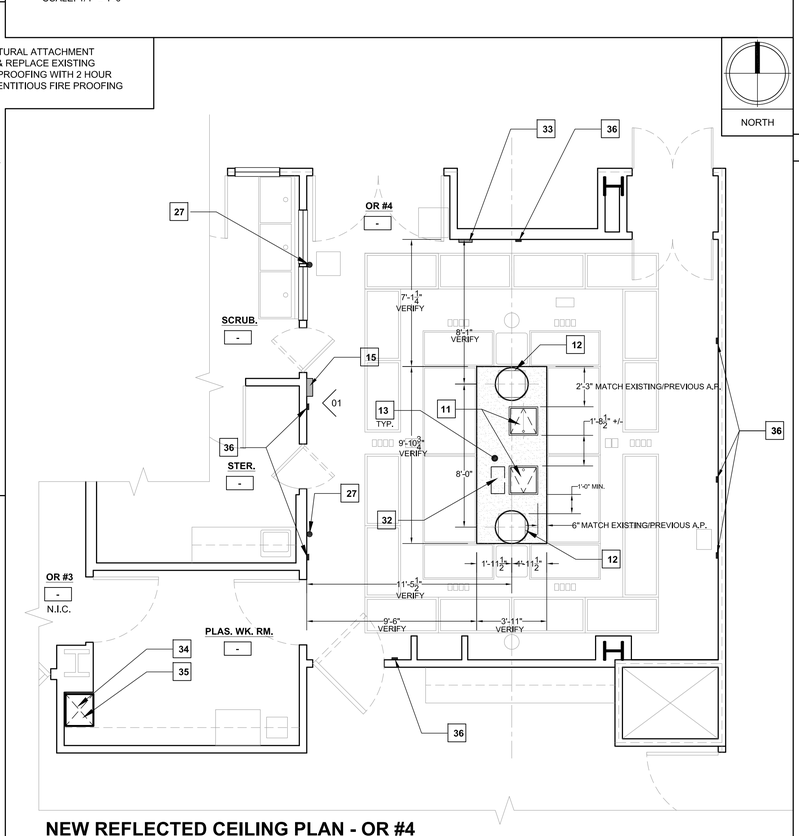
01 ACCESS PANEL OPENING
SCALE: 1" = 1'-0"

02 FINISHED OPENING SIZES
SCALE: ½" = 1'-0"

NOTE: THIS ELEVATION DRAWING IS INTENDED TO BE DIAGRAMMATIC IN NATURE TO SHOW GENERAL PLACEMENT AND LOCATION OF EXISTING EQUIPMENT IN RELATION TO NEW EQUIPMENT. NEW EQUIPMENT LOCATION AND INSTALLATION INSTRUCTIONS PER MFG. DRAWINGS, TYP.



01 EXISTING AND PROPOSED OR #4 INTERIOR ELEVATION - WEST WALL
SCALE: ½" = 1'-0"



NEW REFLECTED CEILING PLAN - OR #4
SCALE: 1/4" = 1'-0"

TRI-CITY MEDICAL CENTER
4002 VISTA WAY
OCEANSIDE, CA 92056
T: (760) 724-8411

REGISTERED PROFESSIONAL ENGINEER — CHANGHUA SUN — S 4609 EXP. 6/30/2017 — STRUCTURAL — STATE OF CALIFORNIA

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OSHPD # S170736-37-00

DATE: 04/20/2017

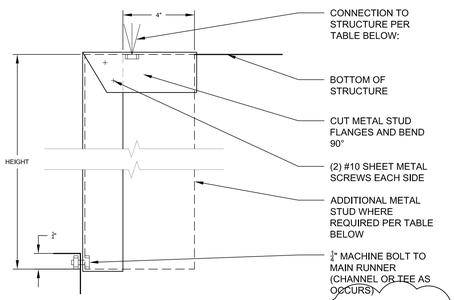
DRAWN BY: BPB

PROJECT # 2017-01

SHEET NAME:
OR #4 REFLECTED CEILING PLANS AND DETAILS

LICENSED ARCHITECT — STATE OF CALIFORNIA

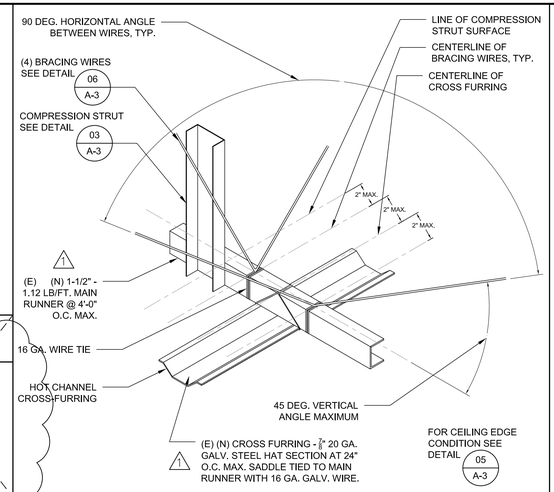
SHEET#
A-2



"H"	PLAN VIEW	METAL STUD SIZE	CONNECTION TO CONC. OR METAL DECK W/ CONC. FILL	
LESS THAN 8'-0"		(1) 3-5/8" x 20 GA.	⅜" HILTI KB TZ ANCHOR ICC-ES ESR #1917. SEE EXPANSION ANCHOR SCHEDULE	NOT USED
LESS THAN 20'-0"		(2) 3-5/8" x 20 GA. JOINED W/ #10 SHEET METAL SCREWS @ 12" O.C.		2

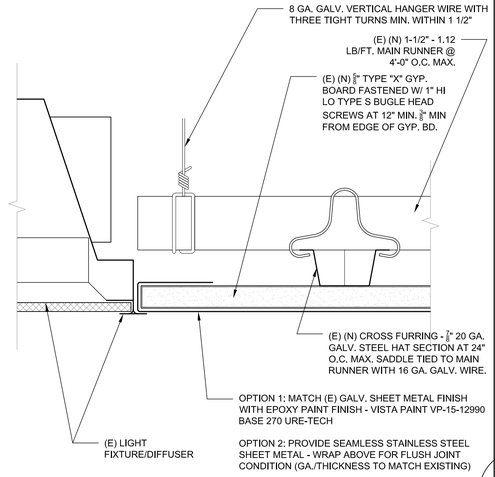
03 CEILING COMPRESSION STRUT

SCALE: ½" = N.T.S.



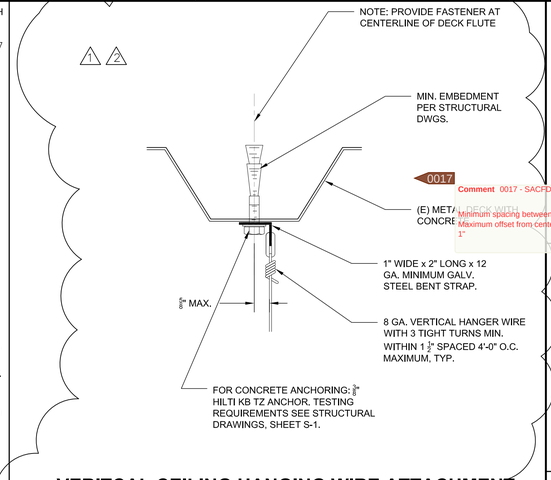
04 SUSPENDED GYPSUM BOARD CEILING

SCALE: 1½" = 1'-0"



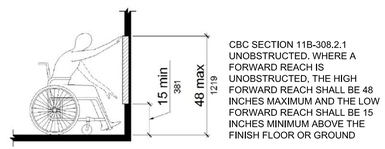
05 GYPSUM BOARD CEILING

SCALE: 6" = 1'-0"



06 VERITCAL CEILING HANGING WIRE ATTACHMENT @ METAL ROOF DECK

SCALE: 6" = 1'-0"



CBC SECTION 11B-308.2.1 UNOBSTRUCTED. WHERE A FORWARD REACH IS UNOBSTRUCTED, THE HIGH FORWARD REACH SHALL BE 48 INCHES MAXIMUM AND THE LOW FORWARD REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND

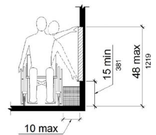
FIGURE *11B*-308.2.1
UNOBSTRUCTED FORWARD REACH

FIGURE *11B*-308.2.2
OBSTRUCTED HIGH FORWARD REACH

CBC SECTION 11B-308.2.2 OBSTRUCTED HIGH REACH. THE HIGH FORWARD REACH SHALL BE 48 INCHES MAXIMUM WHERE THE REACH DEPTH IS 20 INCHES MAXIMUM. WHERE THE REACH DEPTH EXCEEDS 20 INCHES, THE HIGH FORWARD REACH SHALL BE 44 INCHES MAXIMUM AND THE REACH DEPTH SHALL BE 25 INCHES MAXIMUM.

07 MOUNTING HEIGHT DETAIL - FORWARD REACH

SCALE: N.T.S.



CBC SECTION 11B-308.2.1 UNOBSTRUCTED. WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE SIDE IS UNOBSTRUCTED, THE HIGH SIDE REACH SHALL BE 48 INCHES MAXIMUM AND THE LOW SIDE REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISHED FLOOR OR GROUND.

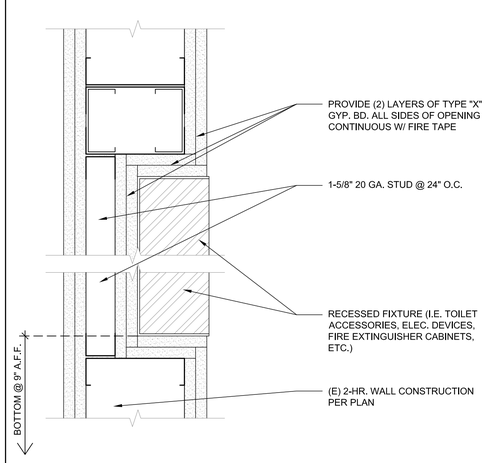
FIGURE *11B*-308.3.1
UNOBSTRUCTED SIDE REACH

FIGURE *11B*-308.3.2
OBSTRUCTED HIGH SIDE REACH

CBC SECTION 11B-308.3.2 OBSTRUCTED HIGH REACH. WHERE A CLEAR FLOOR OR GROUND SPACE ALLOWS A PARALLEL APPROACH TO AN ELEMENT AND THE HIGH SIDE REACH IS OVER AN OBSTRUCTION, THE HEIGHT OF THE OBSTRUCTION SHALL BE 34 INCHES MAXIMUM AND THE DEPTH OF THE OBSTRUCTION SHALL BE 24 INCHES MAX. THE HIGH SIDE REACH SHALL BE 48 INCHES MAXIMUM FOR A REACH DEPTH OF 10 INCHES MAX. WHERE THE REACH DEPTH EXCEEDS 10 INCHES, THE HIGH SIDE REACH SHALL BE 46 INCHES MAXIMUM FOR A REACH DEPTH OF 24 INCHES MAX.

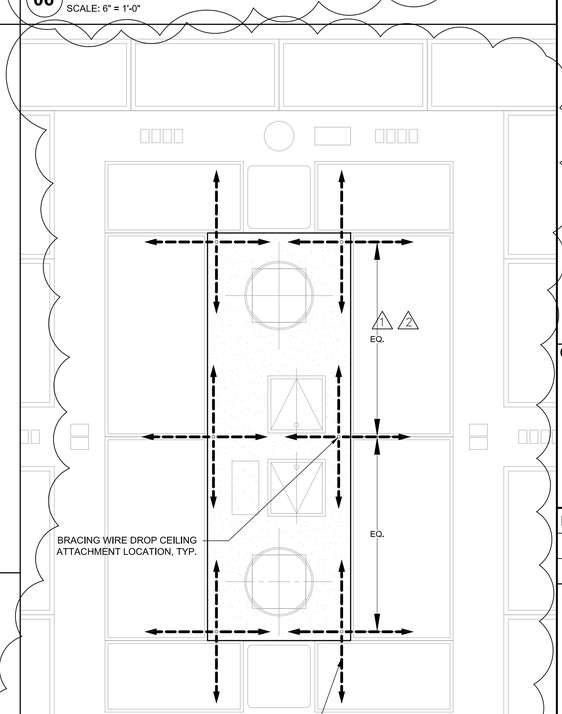
08 MOUNTING HEIGHT DETAIL - SIDE REACH

SCALE: N.T.S.



09 RECESSED FIXTURE IN FIRE RATED WALL

SCALE: 3" = 1'-0"



12 GA. SPLAYED BRACING WIRE WITH 4 TIGHT TURNS MIN. WITHIN 1 ½", TYP. SPLAYED BRACING WIRE TO BE IN ALL FOUR (4) DIRECTIONS, TYP.

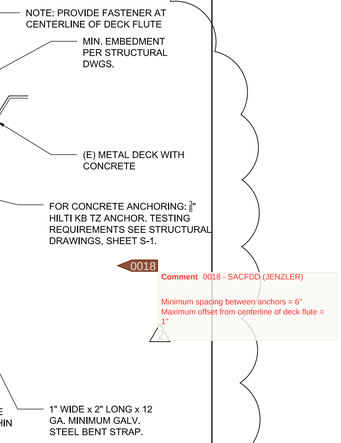
NOTE: 8 GA. VERTICAL HANGING WIRE SPACED 4'-0" MAX. O.C. TYP.

BRACING WIRES SHALL OCCUR AT EVERY 64 S.F. MAX. (8'-0" X 8'-0" MAX.) IN ROOMS OVER 64 S.F.

1 2

10 BRACING WIRE SPACING DETAIL

SCALE: 1/2" = 1'-0"



11 SPLAYED CEILING BRACING WIRE ATTACHMENT @ METAL ROOF DECK

SCALE: 6" = 1'-0"

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REVISIONS:

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AGENCY APPROVAL

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with comments
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Office of Statewide Health Planning & Development
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07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/2017

DRAWN BY: BPB

PROJECT # 2017-01

SHEET NAME: OR #4 ARCHITECTURAL DETAILS

SHEET#

A-3

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, SITE CONDITIONS PRIOR TO STARTING CONSTRUCTION. THE OWNER AND STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.

2. THE OWNER AND STRUCTURAL ENGINEER SHALL BE NOTIFIED OF ANY CONFLICTS OR OMISSIONS BETWEEN THE WORKING DRAWINGS OR SPECIFICATIONS BEFORE PROCEEDING ANY WORK SO AFFECTED. A CLARIFICATION SHALL BE ISSUED FOR SUCH CONFLICTS. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE OWNER AND STRUCTURAL ENGINEER

3. THE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR CONSTRUCTION REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES INCLUDE, BUT NOT LIMITED TO, BRACING, SHORING, TO INSURE THE VERTICAL AND LATERAL STABILITY OF THE STRUCTURE. OBSERVATION VISITS TO THE SITE BY THE OWNER AND STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS AND DOES NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITIES.

4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS. THE ARCHITECT AND STRUCTURAL ENGINEER WILL NOT ENFORCE SAFETY MEASURES OR REGULATIONS.

5. NOTES AND DETAILS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON THE DRAWINGS IN CASE OF CONFLICT.

6. ALL WORKS SHALL CONFORM TO THE STANDARDS OF THE 2016 CALIFORNIA BUILDING CODE.

7. A.S.T.M. SPECIFICATIONS NOTED ON THE DRAWINGS SHALL BE OF THE LATEST REVISION.

8. NO STRUCTURAL SUBSTITUTIONS OR CHANGES SHALL BE MADE IN THE FIELD. WRITTEN APPROVAL MUST BE OBTAINED FROM THE STRUCTURAL ENGINEER AND OSHPD FOR ANY SUBSTITUTIONS OR CHANGES FROM THE APPROVED CONSTRUCTION DOCUMENTS.

9. CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES AND AREAS WHICH MAY BE DAMAGED AS A RESULT OF NEW WORK.

STRUCTURAL STEEL:

STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING U.N.O.:

STEEL ANGLES ASTM A36
STRUCTURAL TUBES A500, GRADE B
STEEL PLATE ASTM A36
STEEL BOLT ASTM A307
HIGH STRENGTH STEEL BOLT ASTM A325

ALL WELDING SHALL CONFORM TO THE PROVISIONS OF THE LATEST EDITION OF AWS D1.1, "STRUCTURAL WELDING CODE-STEEL" OF THE AMERICAN WELDING SOCIETY AND SHALL BE PERFORMED BY CERTIFIED WELDERS QUALIFIED UNDER THE PROCEDURES CONTAINED THEREIN.

ALL STEEL MEMBERS TO BE PRIME PAINTED.

EXPANSION ANCHOR BOLTS

1. ALL FIELD INSTALLED CONCRETE EXPANSION ANCHORS SHALL BE HILTI KB TZ STAINLESS STEEL ANCHORS.

ANCHOR TYPE	ICC-ES ESR#
3/8"ø HILTI KB TZ ANCHOR	1917

2. ALL ANCHORS SHALL BE TESTED BASED ON THE FOLLOWING CRITERIA: (INSTALLED IN NORMAL WEIGHT CONCRETE WITH MIN. fc' = 2500 PSI)

ANCHOR TYPE	TORQUE	ICC-ES ESR#
3/8"ø HILTI KB TZ ANCHOR	25 FT-LBS	1917

MINIMUM ANCHOR EMBEDMENT SHALL BE 2" FOR 3/8"ø HILTI KB TZ BOLTS.

WHEN INSTALLING DRILLED-IN ANCHORS AND/OR POWDER DRIVEN PINS IN EXISTING NON-PRESTRESSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. WHEN INSTALLING INTO PRESTRESSED CONCRETE (PRE OR POST TENSIONED) LOCATE THE PRESTRESSED TENDONS BY USING A NON DESTRUCTIVE METHOD PRIOR TO INSTALLATION. EXERCISE EXTREME CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE TENDONS DURING INSTALLATION.

MAINTAIN 1" MINIMUM CLEARANCE BETWEEN EXISTING REINFORCEMENT AND THE EPOXY ANCHOR

APPLY PROOF TEST LOADS TO EPOXY ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. OTHERWISE, REMOVE THE NUT AND INSTALL A THREADED COUPLER UP TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY THE LOAD.

TESTING SHOULD OCCUR A MINIMUM 24 HOURS AFTER INSTALLATION OF THE SUBJECTED ANCHORS. IF THE MANUFACTURER'S RECOMMENDED INSTALLATION TORQUE IS LESS THAN THE TEST TORQUE, THE MANUFACTURER'S RECOMMANDED INSTALLATION TORQUE SHOULD BE USED IN LIEU OF THE TEST TORQUE. ANCHOR DIAMETER REFERS TO THE THREAD SIZE.

REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED. PROVIDE THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE.

TEST EQUIPMENT INCLUDING TORQUE WRENCHES SHALL BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.

TEST METHODS; THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:

A). HYDRAULIC RAM METHOD:
ANCHORS TESTED WITH A HYDRAULIC JACK OR SPRING LOADED DEVICES SHALL MAINTAIN THE TEST LOAD FOR MINIMUM OF 15 SECONDS AND SHALL EXHIBIT NO DISCERNABLE MOVEMENT DURING THE TENSION TEST, e.g., AS EVIDENCED BY LOOSENING OF THE WASHER UNDER NUT.

B). TORQUE WRENCH METHOD:
ANCHORS TESTED WITH A CALIBRATED TORQUE EXCEPTIONS:
1. WEDGE OR SLEEVE TYPE:
ONE-QUARTER (¼) TURN OF THE NUT FOR A ⅜ IN. SLEEVE ANCHOR ONLY.
2. THREADED TYPE:
ONE QUARTER (¼) TURN OF THE SCREW AFTER INITIAL SEATING OF THE SCREW HEAD.

MINIMUM OF 50% OF THE INSTALLED ANCHOR SHALL BE TESTED. (ALTERNATE ANCHORS IN ANY GROUP ARRANGEMENT) IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE, INSTALLED BY THE SAME TRADE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME THE INITIAL TEST FREQUENCY. TESTS SHALL BE PERFORMED PER CBC 2016, 1910A.5

TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE EPOXY ANCHOR.

ALL TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE INSPECTOR OF RECORD.

SEISMIC LOAD

SITE LOCATION:
LONGITUDE: 117.29178° WEST, LATITUDE: 33.18425° NORTH
DESIGN SPECTRAL RESPONSE ACCLERATION:
S_{DS} = 0.760, S_{D1} = 0.435
SEISMIC IMPORTANCE FACTOR, Ip = 1.5
SEISMIC FORCE COEFFICIENTS:
a_p = 2.5, R_P = 2.5
SEISMIC DESIGN CATEGORY "D"

COLD-FORMED STEEL FRAMING

1. DESIGN, MANUFACTURE AND INSTALLATION OF LIGHT GAGE, COLD-FORMED STEEL JOISTS, PURLINS AND STUDS SHALL CONFORM WITH THE LATEST EDITION OF THE LIGHT GAGE, COLD-FORMED STEEL DESIGN MANUAL ISSUED BY THE AISI.

2. STRUCTURAL LIGHT GAUGE STUDS, TRACK, BRIDGING, AND ACCESSORIES SHALL COMPLY WITH STEEL STUD MANUFACTURERS ASSOCIATION ICBO ER-4943P

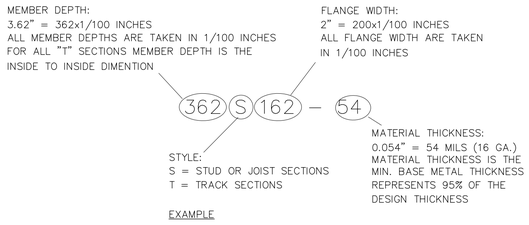
STRUCTURAL LIGHT GAUGE CH STUDS, J RUNNER TRACK, AND ACCESSORIES SHALL COMPLY WITH DIETRICH METAL FRAMING ICC-ESR# 1166P

3. ALL WELDING SHALL BE IN CONFORMANCE WITH AWS D1.3 "STRUCTURAL WELDING CODE - SHEET STEEL". QUALIFICATION OF WELDERS SHALL BE IN ACCORDANCE WITH AWS D1.1, CHAPTER 5, PART C, "WELDER QUALIFICATION". SEE LATEST EDITION OF THE AISI SPECIFICATIONS FOR THE "DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" FOR ALLOWABLE WELD VALUES.

4. FRAMING SHALL BE ERECTED PLUMB, LEVEL AND SQUARE. BRIDGING AND DIAGONAL TENSION STRAPS SHALL BE USED.

5. TEMPORARY BRACING SHALL BE PROVIDED AS REQUIRED UNTIL ERECTION IS COMPLETE AND SAFELY SECURED TO STRUCTURE.

6. COLD-FORMED STEEL YIELD STRENGTH (fy) IS 50 KSI. IDENTIFICATION OF SSMA PRODUCTS



EXAMPLE

COLD-FORMED STEEL STUDS PROPERTIES

IDENTIFICATION	MEMBER DEPTH	FLANGE WIDTH	MATERIAL THICKNESS
362S162-54	3.62"	1.625"	16 GA.
600T200-54	6"	2"	16 GA.

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CONSULTANT:

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

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#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/17

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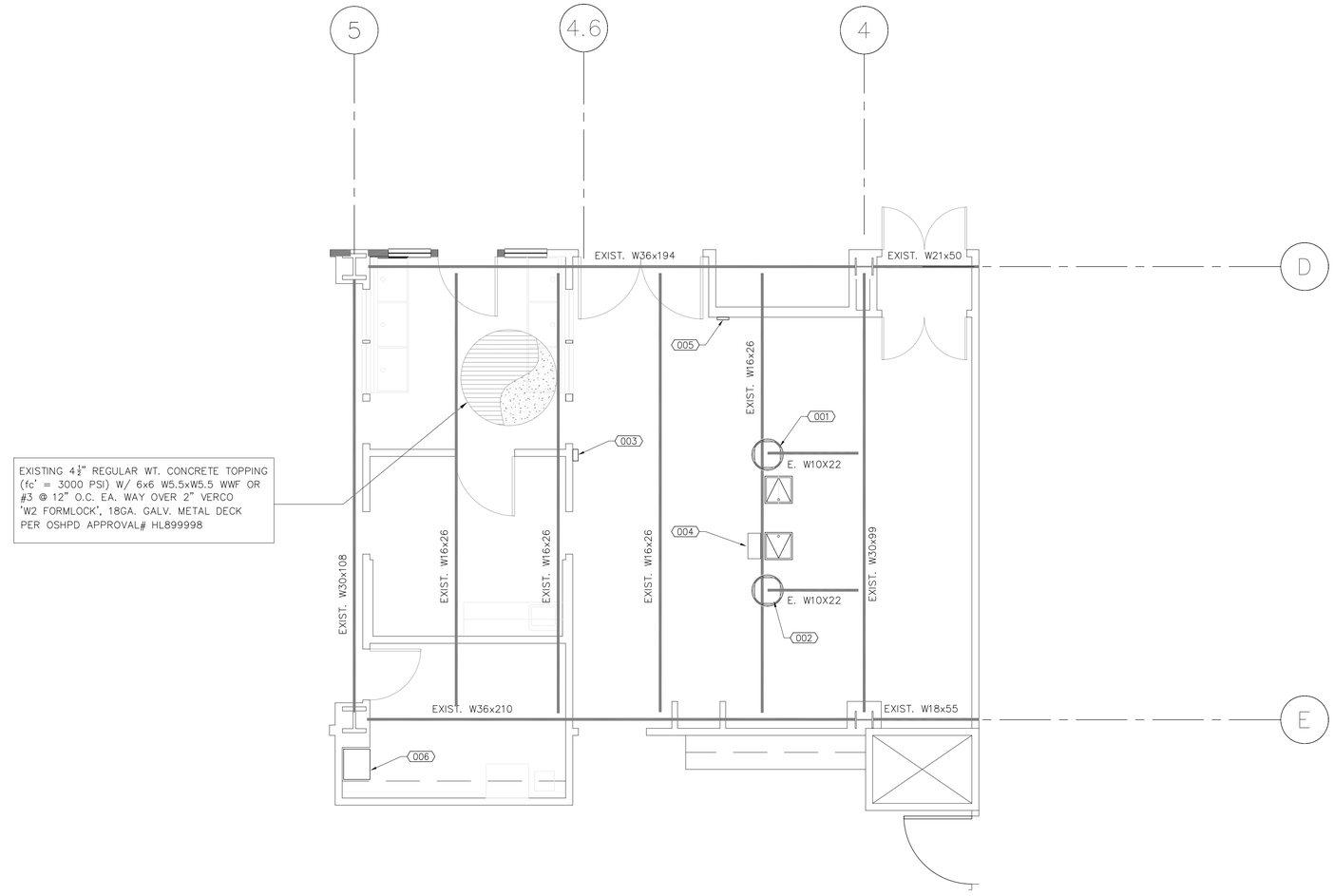
PROJECT #

SHEET NAME:
GENERAL NOTES

SHEET#
S-1



PARTIAL EXISTING ROOF FRAMING PLAN

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

NOTES

1. DO NOT SCALE THESE DRAWINGS. PRIOR TO START OF CONSTRUCTION, ALL DIMENSIONS AND ELEVATIONS MUST BE VERIFIED WITH THE APPRD. SET OF ARCHITECHURAL DRAWINGS. IN CASE OF DISCREPENCIES, STRUCTURAL ENGINEER OF RECORD MUST BE NOTIFIED IN WRITING.
2. ALL EXISTING MEMBER SIZES, SPACING, & DIMENSIONS MUST BE FIELD VERIFIED. IN CASE OF DISCREPANCIES STRUCTURAL ENGINEER MUST BE NOTIFIED IN WRITING.
3. THE EXISTING ROOF FRAMING PLAN IS BASED ON THE OSHPD APPROVED STRUCTURAL DRAWING, APPROVAL# HL 899998.

EQUIPMENT SCHEDULE

EQUIPMENT #	DESCRIPTION	WEIGHT (APPROX.)	ANCHORAGE DETAILS	COMMENTS
001	CHROMOPHARE F628/F628 LIGHTS W/ SINGLE FLAT PANEL	319 LBS	1/S01	
002	CHROMOPHARE F628 LIGHT W/ SINGLE FLAT PANEL	221 LBS	1/S01	
003	SPI3 REMOTE TOUCH PANEL	10 LBS	3/S02	SURFACE MOUNTED ON WALL
004	SK ENCLOSURE WITH TWO BOXES	150 LBS	3/S01 1/S01	ABOVE CEILING
005	LIGHT CONTROL BOX	15 LBS	3/S02	SURFACE MOUNTED ON WALL
006	JUNCTION BOX SWITCHPOINT INFINITI 3	10 LBS	3/S02	FLUSH MOUNTED ON WALL BOTTOM OF BOX TO BE AT 9" ABOVE FINISH FLOOR

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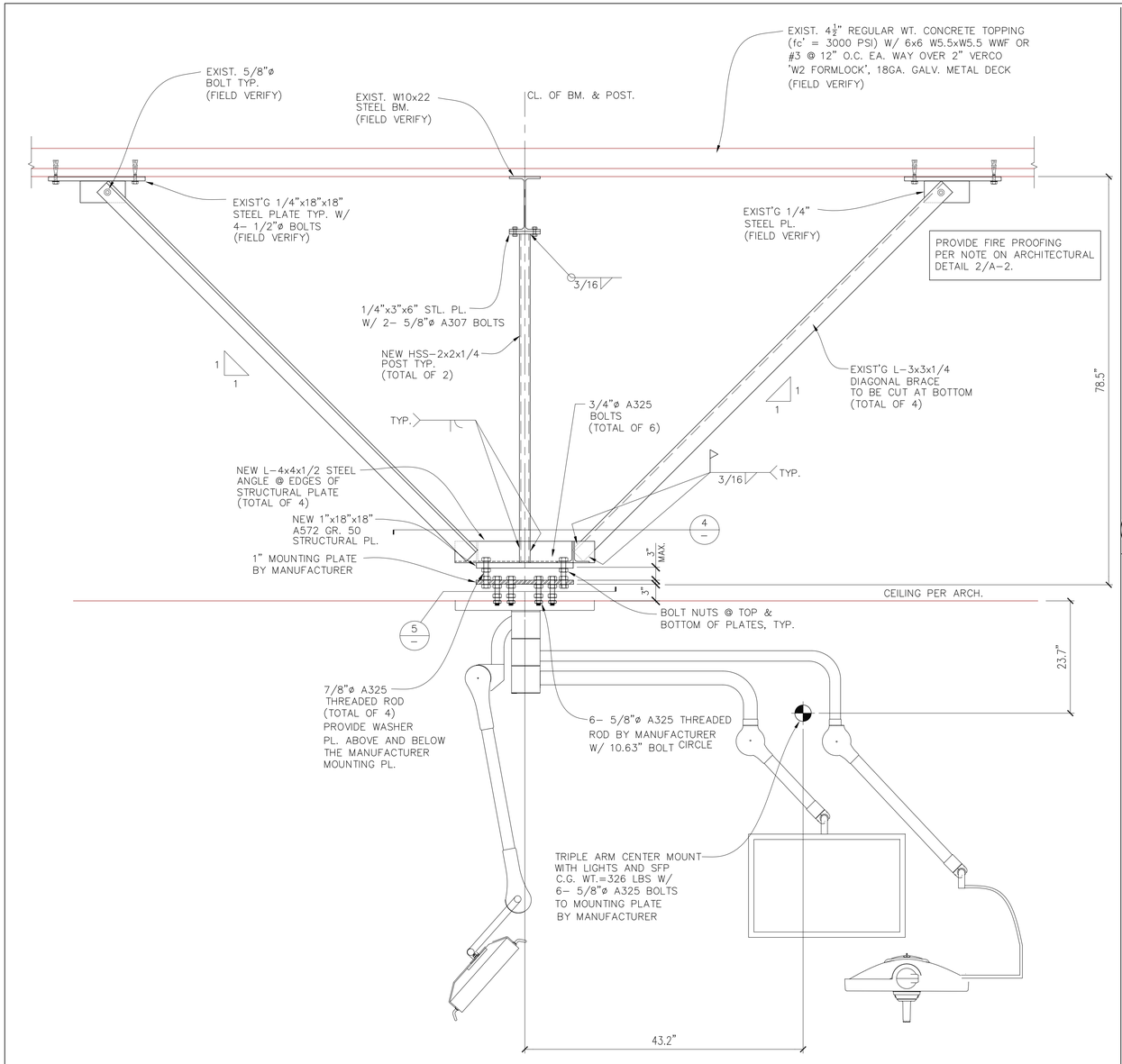
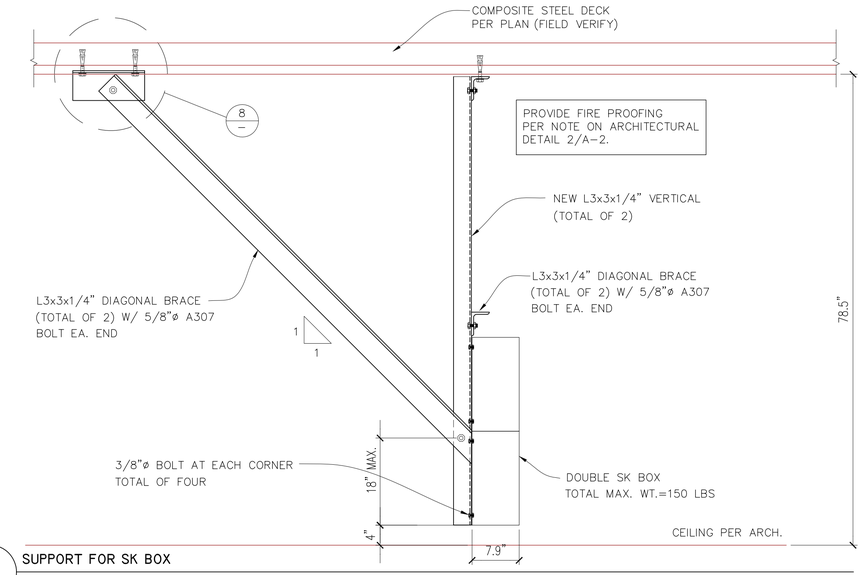
SHEET NAME:
PARTIAL EXISTING ROOF FRAMING PLAN

SHEET#
S-2



1 SUPPORT FOR SURGICAL LIGHT SYSTEM

SCALE: 1"=1'–0"



2 SUPPORT FOR SK BOX

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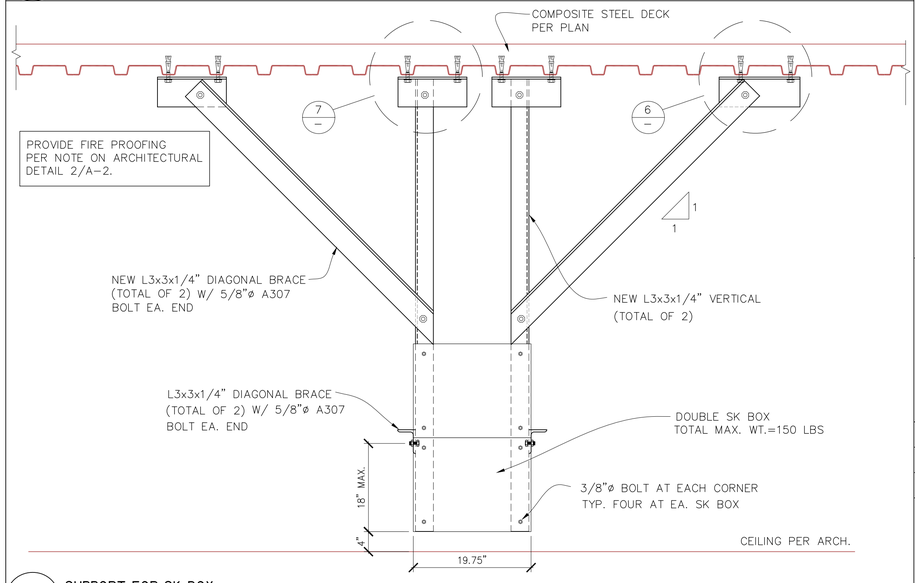

3 SUPPORT FOR SK BOX

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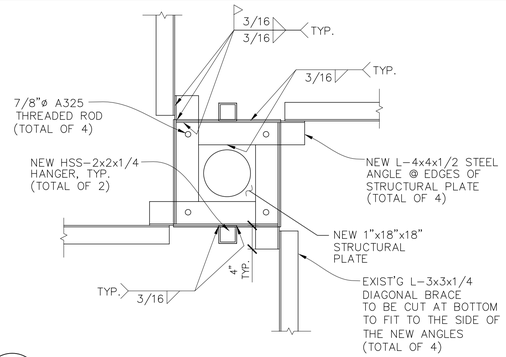
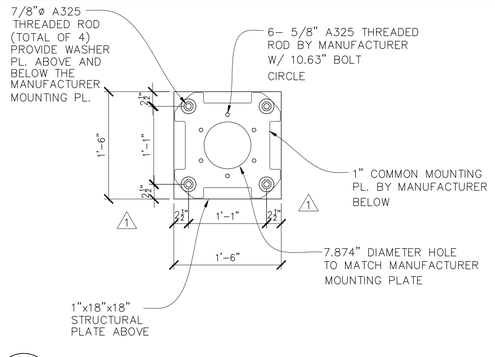


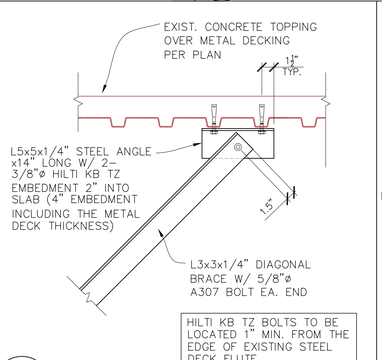
4 SUPPORT FOR SURGICAL LIGHT SYSTEM

SCALE: 1"=1'–0"



5 ANCHORAGE FOR THE SURGICAL LIGHT SYSTEM

SCALE: 1"=1'–0"



6 CONNECTION

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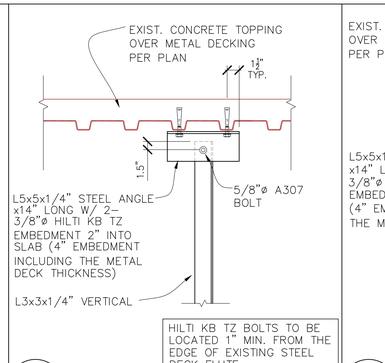

7 CONNECTION

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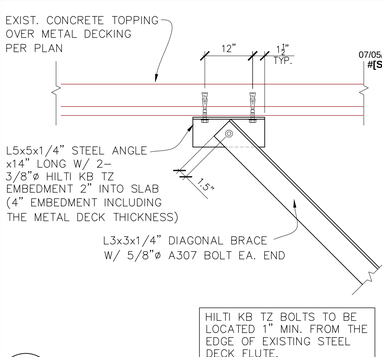

8 CONNECTION

SCALE: 1"=1'–0"

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REGISTERED PROFESSIONAL ENGINEER — SUNGHUA SUN — No. 31609 — EXP. 6/30/2019 — STRUCTURAL — STATE OF CALIFORNIA

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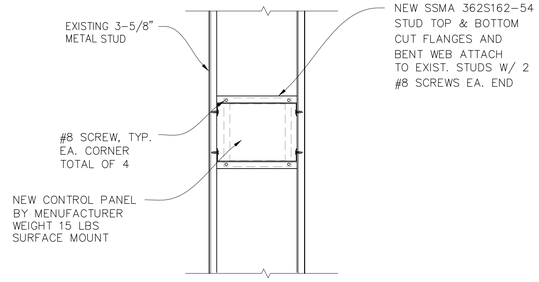
DATE: 04/20/17

DRAWN BY:

PROJECT #

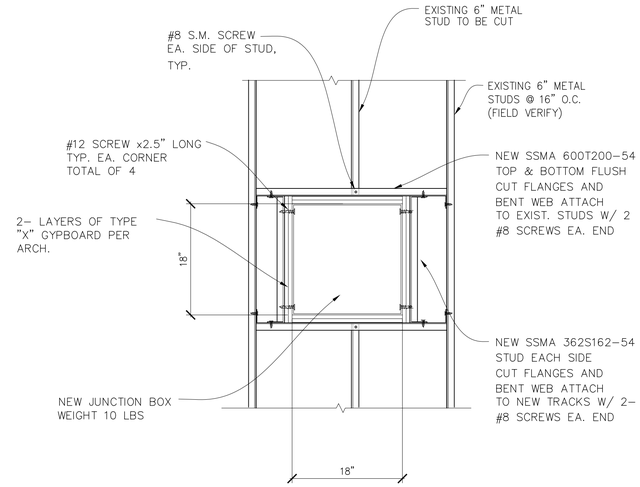
SHEET NAME: DETAILS

SHEET# SDI



3 LIGHT CONTROL PANEL ACHORAGE

SCALE: 1"=1'-0"



FRONT VIEW

NOTES:
FOR FIRE PROOFING SEE DETAIL 09/A-3

6 FLUSH MOUNT JUNCTION BOX

SCALE: 1"=1'-0"

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TRI-CITY MEDICAL CENTER OR4 LIGHT REPLACEMENT

4002 VISTA WAY, OCEANSIDE CA 92056

CONSULTANT:

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/17

DRAWN BY:

PROJECT #

SHEET NAME: DETAILS

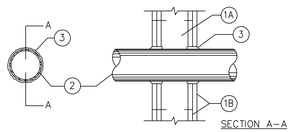
SHEET# SD2

FIRE PENETRATIONS NOTE

ALL PENETRATIONS OF FIRE RESISTIVE FLOORS, WALLS OR CEILING SHALL BE PROTECTED BY MATERIALS AND INSTALLATION DETAILS THAT CONFORM TO U.L. (UNDERWRITERS LABORATORY) LISTINGS FOR THROUGH PENETRATION FIRE STOP SYSTEMS, AND SHALL BE A TESTED ASSEMBLY APPROVED BY THE FIRE MARSHAL. THIS INCLUDES, BUT IS NOT LIMITED TO, ALL RACEWAY PENETRATIONS AND ELECTRICAL OUTLET BOXES RECESSED IN OPPOSITE SIDES OF RATED WALLS WITH LESS THAN A 24" HORIZONTAL OFFSET. THE CONTRACTOR SHALL SUBMIT SHOP DRAWING DETAILS, FURNISHED BY THE MANUFACTURER OF THE FIRE STOP MATERIAL, WHICH SHOW COMPLETE CONFORMANCE TO THE U.L. LISTING, TO THE ARCHITECT. THESE DRAWINGS SHALL BE AVAILABLE TO THE FIRE MARSHAL. THE SHOP DRAWINGS SHALL BE SPECIFIC FOR EACH PENETRATION WITH ALL VARIABLES DEFINED. SEE TYPICAL FIRE PENETRATION DETAIL BELOW.

PENETRATION SEAL AT RATED PARTITIONS:

UL SYSTEM NO. WL1001
F RATINGS – 1, 2, 3 AND 4 HR. (SEE ITEMS 2 AND 3)
T RATINGS – 0, 1, 2, 3 AND 4 HR. (SEE ITEM 3)
L RATING AT AMBIENT – LESS THAN 1 CFM/SQ. FT. (SEE ITEM 3)
L RATING AT 400 F – LESS THAN 1 CFM/SQ. FT. (SEE ITEM 3)



SECTION A–A

1. WALL ASSEMBLY–THE 1, 2, 3, OR 4 HR FIRE–RATED GYPSUM WALLBOARD/ STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

A. STUDS–WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2 HR FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACE 16 IN OC WITH NOM 2 B Y 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN. 3–5/8 IN. WIDE BY 1–3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.

B. WALLBOARD, GYPSUM*–NOM 1/2 OR 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX. DIAM. OF OPENING IS 13–1/2 IN.

2. PIPE OR CONDUIT–NOM 12 IN. DIA (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIA (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE, NOM 6 IN. DIA (OR SMALLER) STEEL CONDUIT, NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR TYPE L OR (OR HEAVIER) COPPER TUBING OR NOM 1 IN. DIA (OR SMALLER) FLEXIBLE STEEL CONDUIT. WHEN COPPER PIPE OR FLEXIBLE STEEL CONDUIT IS USED, MAX F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2 H. STEEL PIPES OR CONDUITS LARGER THAN NOM 4 IN. DIA MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.

3. FILL, VOID, OR CAVITY MATERIAL* – CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN 1/4 IN. DIA BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAX PIPE OR CONDUIT DIA, INCHES	ANNULAR SPACE INCHES	F RATING, HOUR	T RATING, HOUR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1/4	1 OR 2	0
4	0 TO 1–1/2#	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

+WHEN COPPER PIPE IS USED, T RATING IS 0 H.
#0 TO 1–1/2 IN. ANNULAR SPACE APPLIES ONLY WHEN TYPE CP–25 WB+ CAULK IS USED.

MINNESOTA MINING & MFG. CO.–TYPES CP–25 S/L, CP–25 N/S, CP–25 WB, CP–25 WB+. (NOTE: L RATINGS APPLY ONLY WHEN TYPE CP–25 WB CAULK IS USED.)

*BEARING THE UL CLASSIFICATION MARKING

FIRE PENETRATION DETAIL

NO SCALE

ALL CONDUIT PENETRATIONS THROUGH WALLS SHALL COMPLY WITH THIS DETAIL.

OSHPD FIRE MARSHAL NOTES

1. ALL ELECTRICAL, MECHANICAL AND SYSTEMS PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE FIRE–STOPPED WIDTH AN APPROVED MATERIAL AS PRESCRIBED IN CBC714. SEAL WITH AN APPROVED FIRE COMPOUND OF WHERE SERVICES PENETRATE AN AREA SEPARATION WALL, THE SECTION PASSING THRU THE WALL SURFACE AND THE FIXTURE CONNECTIONS THERETO SHALL BE ONLY OF METAL.

2. ALL PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILINGS SHALL BE SEALED WITH A MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF HOT GASSES WHEN SUBJECTED TO THE REQUIREMENTS OF A.S.T.M. E–814 OR UL1479 AND AS PRESCRIBED IN CBC 714.

WIRING SYMBOLS

- BRANCH CIRCUIT POWER WIRING
- CONDUIT DOWN
- CONDUIT UP
- GROUND CONNECTION
- HOME RUN. 3/4" CONDUIT, 2 #12 & 1 #12 GROUND, UNLESS OTHERWISE NOTED. NOTE: HOME RUN SHALL BE FROM FIRST ELECTRICAL DEVICE BACKBOX IN CIRCUIT TO ELECTRICAL PANEL
- A–1,3,5 ELECTRICAL CIRCUIT , 'A' INDICATES PANEL, 1,3,5 INDICATES POLE NUMBER INDIVIDUAL CIRCUITS SHOWN BY EQUIPMENT

GENERAL NOTES

1. ALL ELECTRICAL WORK TO BE IN ACCORDANCE WITH LATEST REQUIREMENTS OF THE CEC AND ALL OTHER APPLICABLE CODES AND REGULATIONS OF AUTHORITIES HAVING JURISDICATION OVER THE WORK
2. ALL ELECTRICAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND ALL OTHER RELATED CONTRACT DRAWINGS.
3. COORDINATE WORK WITH OTHER TRADES AND INSTALL CONDUIT AND BOXES TO CLEAR, DUCTS, OPENINGS, ETC AND INCLUDING ALL STRUCTURAL FEATURES.
4. ALL WIRE SHALL BE A MINIMUM #12 (COPPER) UNLESS OTHERWISE NOTED. ALL HOME RUNS 100 FT AND LOMGER SHALL BE MINIMUM # 10 WIRE (120/208V SYSTEM ONLY). INSULATION TYPE SHALL BE THHN.
5. CONDUIT RUNS SHOWN ARE DIAGRAMMATICAL. THE CONTRACTOR SHALL INSTALL CONDUITS IN THE MOST EFFICIENT ROUTE BETWEEN TERMINATIONS AND AVOIDING INTERFERENCE WITH OTHER UTILITY LINES AND FEATURES OF OTHER DISCIPLINES.
6. EXPOSED CONDUITS ON WALLS AND CEILINGS TO RUN PARALLEL OR PERPENDICULAR TO WALLS, CEILINGS AND FLOORS.
7. THE CONTRACTOR SHALL CAREFULLY EXAMINE ALL CONTRACT DRAWINGS/SPECIFICATIONS AND BE RESPONSIBLE FOR THE PROPER FITTING OF MATERIALS AND EQUIPMENT AT EACH LOCATIONS AS INDICATED, WITHOUT SUBSTANTIAL ALTERATION. IN AS MUCH AS THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND BECAUSE OF THE SMALL SCALE OF THE DRAWINGS IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSARIES WHICH MAY BE REQUIRED. FURNISHING SUCH FITTINGS TO MEET SUCH CONDITIONS SHALL BE AT NO COST TO THE UNIVERSITY'S REPRESENTATIVE .
8. THE CONTRACTOR SHALL EXAMINE THE SITE AND OBSERVE THE CONDITIONS UNDER WHICH THE WORK WILL BE DONE OR OTHER CIRCUMTANCES WHICH WILL EFFECT THE CONTEMPLATED WORK. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY IN CONNECTION WITH ANY ERROR OR NEGLIGENCE ON THE CONTRACTORS PART.
9. THE CONTRACTOR SHALL VERIFY EXACT LOCATION, SIZE AND EXTENT OF ALL EXISTING UTILITIES, OBSTRUCTIONS AND/OR OTHER CONDITIONS WHICH MAY AFFECT THE PROPOSED WORK UNDER THE PROJECT. THE CONTRACTOR SHALL TAKE EVERY PRECAUTION TO PREVENT DAMAGE TO EXISTING WORK AND SHALL REPAIR ANY DAMAGE AS A RESULT OF THIS WORK.
10. UNLESS OTHERWISE NOTED FOR INTERIOR WORK, THE FOLLOWING TYPES OF CONDUITS SHALL BE USED:
    A. CONCEALED IN SPACE ABOVE HUNG CEILING AND WALL: EMT CONDUIT.
11. ALL FEEDERS AND BRANCH CIRCUITS SHALL CONSIST OF CONDUITS AND WIRES. SIZE AS SHOWN ON DRAWINGS AND SHALL MEET CEC REQUIREMENTS. INSTALL GREEN GROUNDING WIRE IN ALL BRANCH CIRCUIT CONDUIT.
12. AC AND NM CABLES SHALL NOT BE USED.

ANNOTATIONS

- 1 / E1.01 — INDICATES DETAIL NUMBER / SHEET NUMBER TO FIND DETAIL
- AC / 1 — MOTOR TYPE / SCHEDULE NUMBER
- POINT OF CONNECTION
- POINT OF DISCONNECTION
- X — SPECIFIC NOTE/ REFERENCE NOTE
- X — RISER TAG
- # — REVISION
- # — LIGHT FIXTURE TYPE

POWER SYMBOLS

- EXISTING DUPLEX RECEPTACLE MOUNTED 18" AFF. UON
- EXISTING RECEPTACLE MOUNTED 18" AFF. (CRITICAL POWER) NEMA 5–20R
- NEW RECEPTACLE MOUNTED 18" AFF. (CRITICAL POWER) NEMA 5–20R
- ELECTRICAL SURFACE MOUNTED BRANCH CIRCUIT PANEL 208/120V
- ELECTRICAL FLUSH MOUNTED BRANCH CIRCUIT PANEL 208/120V
- J — ELECTRICAL J–BOX

ABBREVIATIONS

	– A –		– M –
A	AMPERE	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR		– N –
	– B –	N	NEUTRAL
BLDG	BUILDING		– P –
	– C –	Ø	PHASE
C	CONDUIT	PNL	PANEL
CB	CIRCUIT BREAKER	PWR	POWER
CKT	CIRCUIT		– R –
	– E –	RECEPT	RECEPTACLE
EG	EQUIPMENT GROUND	RM	ROOM
	– G –		– U –
G, GND	GROUND	UON	UNLESS OTHERWISE NOTED
	– J –		– V –
JB	JUNCTION BOX	V	VOLT OR VOLTAGE
	– K –	VA	VOLT AMPERE
KV	KILOVOLT		– W –
KVA	KILOVOLT AMPERE	W	WATT
KW	KILOWATT		

COMMUNICATION SYMBOLS

- TELEPHONE/DATA OUTLET

ONE–LINE SYMBOLS

- TRANSFORMER
- 400AF / 225AT — CIRCUIT BREAKER WITH AMP FRAME OVER AMP TRIP
- CIRCUIT BREAKER

GENERAL NOTES

13. ELECTRICAL UTILITY SEISMIC BRACING NOTES
    1. SUPPORTS AND ATTACHMENTS OF ALL EQUIPMENT TO BE INSTALLED AS A PART OF THIS PROJECT SHALL BE DETAILED ON THE CONSTRUCTION DOCUMENTS, EXCEPT THOSE EXEMPT BY THE 2013 CBC, SECTION 1616A.1.18.
    2. EQUIPMENT SUPPORTS AND ANCHORAGE SHALL BE APPROVED BY THE APPROPRIATE DESIGN PROFESSIONAL OF RECORD (RDP) AND OSHPD AS A PART OF FIELD REVIEWS/OBSERVATIONS. THE INSPECTOR OF RECORD (IOR) SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.
    3. SEISMIC RESTRAINTS FOR ELECTRICAL RACEWAYS MAY BE OMITTED FOR ANY OF THE FOLLOWING CONDITIONS:
        a. CONDUITS, CABLE TRAYS, AND OTHER ELECTRICAL DISTRIBUTION SYSTEMS (RACEWAYS) SUSPENDED FROM HANGERS WHERE EACH HANGER IN THE UTILITY RUN IS 12 INCHES OR LESS IN LENGTH. WHERE ROD HANGERS WITH A DIAMETER GREATER THAN 3/8–INCH ARE USED, THEY SHALL BE EQUIPPED WITH SWIVELS TO PREVENT INELASTIC BENDING IN THE ROD. (CBC 1616A.1.23).
        b. TRAPEZE ASSEMBLIES USED TO SUPPORT RACEWAYS WHERE THE TOTAL WEIGHT OF THE UTILITIES SUPPORTED BY TRAPEZE ASSEMBLIES IS LESS THAN 10 LBS/FT (CBC 1616A.1.23).
        c. ELECTRICAL CONDUIT LESS THAN OR EQUAL TO 2.5–INCH TRADE SIZE (CBC 1616A.1.23).
    4. SEISMIC BRACING OF RACEWAYS: CONTRACTOR SHALL PROVIDE SUPPORTS, ATTACHMENTS AND BRACING FOR ELECTRICAL RACEWAYS IN ACCORDANCE WITH THE FOLLOWING SYSTEM POSSESSING A CURRENT OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM):
        a. MASON INDUSTRIES, INC., OPM–0043–13

        LAYOUT DRAWINGS OF THE SUPPORTS, ATTACHMENTS, AND BRACING SYSTEMS IN ACCORDANCE WITH THE PREAPPROVAL SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL (RDP) IN RESPONSIBLE CHARGE OF THE PROJECT FOR REVIEW TO VERIFY THAT THE DETAILS ARE IN CONFORMANCE WITH THE THE CODE REQUIREMENTS, AND FOR SUBMITTAL TO OSHPD FOR DEFERRED APPROVAL. THE LAYOUT DRAWINGS SHALL AS A MINIMUM SATISFY THE REQUIREMENTS OF ASCE 7 SECTION 13.6 AS MODIFIED BY THE 2013 CBC SECTION 1616A.
        a. THE STRUCTURAL ENGINEER OF RECORD (SEOR) SHALL VERIFY THAT THE SUPPORTING STRUCTURE IS ADEQUATE FOR THE FORCES IMPOSED ON IT THE SUPPORTS, ATTACHMENTS, AND BRACES INSTALLED IN ACCORDANCE WITH THE PREAPPROVAL IN ADDITION TO ALL OTHER LOADS.
        b. THE SEOR SHALL FORWARD THE SUPPORTS, ATTACHMENTS, AND BRACING DRAWINGS (INCLUDING APPROVED AMENDED CONSTRUCTION DOCUMENTS FOR SUPPLEMENTARY FRAMING, WHERE REQUIRED) TO THE DISCIPLINE IN RESPONSIBLE CHARGE WITH A NOTATION INDICATING THAT THE DRAWINGS HAVE BEEN REVIEWED AND ARE IN GENERAL CONFORMANCE WITH THE PREAPPROVAL AND THE DESIGN OF THE PROJECT.
        c. THE SEOR SHALL DESIGN ANY SUPPLEMENTARY FRAMING THAT IS NEEDED TO RESIST THE LOADS, MAINTAIN STABILITY, AND/OR TO SATISFY THE INSTALLATION REQUIREMENTS OF THE PRE–APPROVED SYSTEM.
        d. THE LAYOUT DRAWINGS, SUPPLEMENTARY FRAMING DRAWINGS, AND SUPPORTING STRUCTURAL CALCULATIONS FOR BOTH SHALL BE SUBMITTED TO OSHPD FOR DEFERRED APPROVAL FOR REVIEW OF THE FOLLOWING:
            - VERIFICATION THAT STRUCTURE SUPPORTING THE DISTRIBUTION SYSTEM HAS ADEQUATE STRUCTURAL CAPACITY
            - VERIFICATION THAT SEISMIC DESIGN FORCES (Fp) ARE IN ACCORDANCE WITH THE 2013 CBC
            - VERIFICATION THAT SUBMITTAL IS WITHIN THE SCOPE OF THE OSHPD PREAPPROVAL OF MANUFACTURER'S CERTIFICATION (OPM), INCLUDING: SIZE OF DISTRIBUTION SYSTEM COMPONENTS, SPACING OF BRACING AND FLEX JOINTS, AND SUBSTRATE FOR ATTACHMENTS

        THE OSHPD–APPROVED LAYOUT DRAWINGS SHALL BE KEPT ON THE JOBSITE AT ALL TIMES AND SHALL BE USED FOR INSTALLATION OF THE SUPPORT AND BRACING. THE OSHPD FIELD STAFF WILL REVIEW THE INSTALLATION.

        A COPY OF THE CHOSEN BRACING SYSTEM(S) INSTALLATION GUIDE/ MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING THE INSTALLATION OF HANGERS AND/ OR BRACES.

        THE CONTRACTOR SHALL OBTAIN COPIES OF EACH OPM AND FURNISH THE IOR WITH ONE COPY OF EACH.

        COMPONENTS OF TWO OR MORE PRE–APPROVED BRACING SYSTEMS SHALL NOT BE MIXED. ONLY ONE PRE–APPROVED BRACING SYSTEM MAY BE USED FOR A RUN OF PIPE, DUCT OR CONDUIT.

        ANY SUBSTITUTION OF COMPONENT OF A PRE–APPROVED BRACING SYSTEM SHALL REQUIRE OSHPD REVIEW AND APPROVAL.
14. NEW WORK IS SHOWN WITH DARK LINE WORK AND EXISTING IS SHOWN WITH LIGHT LINE WORK U.O.N.
15. UPDATE PANEL DIRECTORY
16. NO SET SCREW CONNECTOR SHALL BE USED.
17. FLEXIBLE CONDUIT LENGTH SHALL NOT EXCEED 6'–0"
18. NEW EMERGENCY RECEPTACLE TO BE HOSPITAL GRADE AND RED IN COLOR (INCLUDING COVER PLATE)

APPLICABLE CODES

2016 CALIFORNIA ADMINISTRATIVE CODE (CAC)
PART 1, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2016 CALIFORNIA BUILDING CODE (CBC)
PART 2, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL BUILDING CODE (IBC)

2016 CALIFORNIA ELECTRICAL CODE (CEC)
PART 3, TITLE 24, CCR
BASED ON THE 2014 NATIONAL ELECTRICAL CODE (NEC)

2016 CALIFORNIA MECHANICAL CODE (CMC)
PART 4, TITLE 24, CCR
BASED ON THE 2015 UNIFORM MECHANICAL CODE (UMC)

2016 CALIFORNIA PLUMBING CODE (CPC)
PART 5, TITLE 24, CCR
BASED ON THE 2015 UNIFORM PLUMBING CODE (UPC)

2016 CALIFORNIA FIRE CODE (CFC)
PART 9, TITLE 24, CCR
BASED ON THE 2015 INTERNATIONAL FIRE CODE (IFC)

NOT ALL SYMBOLS ARE APPLICABLE TO THIS PROJECT

TRI-CITY MEDICAL CENTER
4002 VISTA WAY
OCEANSIDE, CA 92056
T: (760) 724-8411

REGISTERED PROFESSIONAL ENGINEER — SHUANGHUA SUN — NO. E14609 — EXP. 6/30/2019 — STRUCTURAL — STATE OF CALIFORNIA

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TRI-CITY MEDICAL CENTER OR4 LIGHT REPLACEMENT

4002 VISTA WAY, OCEANSIDE CA 92056

CONSULTANT:

REGISTERED PROFESSIONAL ENGINEER — DANIEL J. MORITZ — NO. E14055 — Exp. 12/31/18 — ELECTRICAL — STATE OF CALIFORNIA

17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # **S170736-37-00**

DATE: **04/20/17**

DRAWN BY:

PROJECT #

SHEET NAME:
ELECTRICAL LEGEND, SYMBOL LIST, GENERAL NOTES & SINGLE LINE DIAGRAM

SHEET#

E-1

Engineering Design Solutions Inc.
12396 World Trade Drive, Suite 103
San Diego, California 92128
Tel: 858/613-0447 Fax: 858/613-0634
www.edsinc-sd.com

DATE:	6/26/2017	PANEL VOLTAGE:	208/120V
JOB:	TRI CITY MEDICAL CENTER	PHASE & WIRE:	3ph,4W
PANEL:	1ECA (CRITICAL) (EXISTING)	BUS (AMPS):	400
AIC RATING:	10,000	MAINS:	300A/3P MCB

CKT CODE: 1=(CONTINUOUS LOAD) 2=(NON-CONT. LOAD) 3=(RECEPTACLES) 4=(KIT. EQUIPMENT)

CKT		CB		LOAD DESIGNATION				LOAD	PHASES			LOAD	LOAD DESIGNATION				CB		CKT	
NO.	CODE	TRIP	POLE	DESCRIPTION	MISC	REC	LITE	VA	A	B	C	VA	MISC	REC	LITE	DESCRIPTION	TRIP	POLE	CODE	NO.
1	1	20	1	LTG. OR # 9				1410	1410	//////	//////					SPARE	20	1		2
3	1	20	1	LTG. OR # 10				1360	//////	1360	//////					SPARE	20	1		4
5	1	20	1	LTG. STOR/STER. 119, 120				530	//////	//////	530					SPARE	20	1		6
7		20	1	SPARE						//////	//////					SPARE	20	1		8
9	1	20	1	LTG. OR # 3				1360	//////	1360	//////					SPARE	20	1		10
11	1	20	1	LTG. OR # 4				1360	//////	//////	1360					SPARE	20	1		12
13	1	20	1	LTG. RM # 113,114,124,126				955	955	//////	//////					SPARE	20	1		14
15		20	1	SPARE					//////	1640	//////	1640				SUR. CAMERA SCRUB 114	20	1	3	16
17	1	20	1	LTG. BSMT/LOCKER RM				550	//////	//////	1710	1160				SUR. CAMERA SCRUB 103	20	1	3	18
19	1	20	1	LTG. BSMT/LOCKER RM				550	1710	//////	//////	1160				SUR. CAMERA SCRUB 120	20	1	3	20
21		20	1	SPARE					//////	1445	//////	1445				LTG. OR # 1 RM 103	20	1	1	22
23		20	1	SPARE					//////	//////	1395	1395				LTG. OR # 2 RM 104	20	1	1	24
25	3	100	3	PANEL I2 (OR # 2)				3130	7980	//////	//////	7930				PANEL I3 (OR # 3)	100	3	3	26
27	3	-	-	-				5460	//////	8970	//////	5360				-	-	-	3	28
29	3	-	-	-				4030	//////	//////	8930	8580				-	-	-	3	30
31	3	100	3	PANEL I4 (OR # 4)				4500	8190	//////	//////	3690				PANEL I10 (OR # 10)	100	3	3	32
33	3	-	-	-				4200	//////	8910	//////	4710				-	-	-	3	34
35	3	-	-	-				4850	//////	//////	9890	5040				-	-	-	3	36
37	3	100	3	PANEL I9 (OR # 9)				3840	3840	//////	//////					SPACE				38
39	3	-	-	-				5090	//////	5090	//////					SPACE				40
41	3	-	-	-				4860	//////	//////	4860					SPACE				42
							TOTAL		24085	28775	28675									

CONNECTED KVA	81.5
CONN.KVA (CODE 1)	10.9
CONN.KVA (CODE 2)	0.0
CONN.KVA (CODE 3)	79.2
CONN.KVA (CODE 4)	0.0
FEEDER DEMAND KVA	58.3
FEEDER DEMAND AMPS	161.7

NOTES:

BY: EW
ISSUE DATE: 20-Feb-17
PANEL: 1ECA

LOAD CALCULATION SUMMARY PER PIN 38

PANEL 1ECA/ ECDPA

1. FOR LEVEL 1 PANEL 1ECA, ITS FEEDER AND FEEDER OVER CURRENT PROTECTIVE DEVICE HAVE BEEN CHECKED AND THAT SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN ELECTRICAL DISTRIBUTION SYSTEM.
2. FOR LEVEL 2 PANEL ECDPA, ITS FEEDER AND FEEDER OVER CURRENT PROTECTIVE DEVICE HAVE BEEN CHECKED AND THAT SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN ELECTRICAL DISTRIBUTION SYSTEM.

DATE:	6/26/2017	PANEL VOLTAGE:	208/120V
JOB:	TRI CITY MEDICAL CENTER	PHASE & WIRE:	3P/4W
PANEL:	I4 (CRITICAL) EXISTING	BUS (AMPS):	100
AIC RATING:	10,000	MAINS:	100A/3P MB

CKT CODE: 1=(CONTINUOUS LOAD) 2=(NON-CONT. LOAD) 3=(RECEPTACLES) 4=(KIT. EQUIPMENT)

CKT		CB		LOAD DESIGNATION				LOAD	PHASES			LOAD	LOAD DESIGNATION				CB		CKT	
NO.	CODE	TRIP	POLE	DESCRIPTION	MISC	REC	LITE	VA	A	B	C	VA	MISC	REC	LITE	DESCRIPTION	TRIP	POLE	CODE	NO.
1	1	20	1	RECEP- CEILING CORD		3		540	1260	//////	//////	720		4		RECEP-ORBITER	20	1	3	2
3	1	20	1	RECEP- CEILING CORD		4		720	//////	1800	//////	1080		6		RECEP-ORBITER	20	1	3	4
5	1	20	1	RECEP- CEILING CORD		3		540	//////	//////	1440	900		5		RECEP-ORBITER	20	1	3	6
7	1	20	1	STEREO/WARM CAB		1		180	540	//////		360		2		RECEP-ORBITER	20	1	3	8
9	1	20	1	RECEP SOUTH WALL	1			1140	//////	1980	//////	840		6		RECEP-FILM ILLUM	20	1	3	10
11	1	20	1	NEW SURGICAL LTG	1			250	//////	//////	490	240		4		RECEP FILM ILLUM	20	1	3	12
13	1	20	1	NEW SURGICAL LTG	1			250	970	//////	//////	720		4		RECEP WALL	20	1	3	14
15				SPACE					//////	720	//////	720		4		RECEP WALL	20	1	3	16
17	3	20	1	NUPTUNE	1			1200	//////	//////	6000	4800	1			LASER	50	2	3	18
19	3	20	1	RECEP CEILING		2		360	5160	//////	//////	4800							3	20
21	3	20	1	RECEP CEILING		2		360	//////	720	//////	360	1			NEW SK BOX	20	1	3	22
23	3	20	1	RECEP CEILING		2		360	//////	//////	720	360	1			NEW SK BOX	20	1	3	24
							TOTAL		7930	5220	8650									

CONNECTED KVA	21.8
CONN.KVA (CODE 1)	3.6
CONN.KVA (CODE 2)	0.0
CONN.KVA (CODE 3)	18.2
CONN.KVA (CODE 4)	0.0
FEEDER DEMAND KVA	18.6
FEEDER DEMAND AMPS	51.7

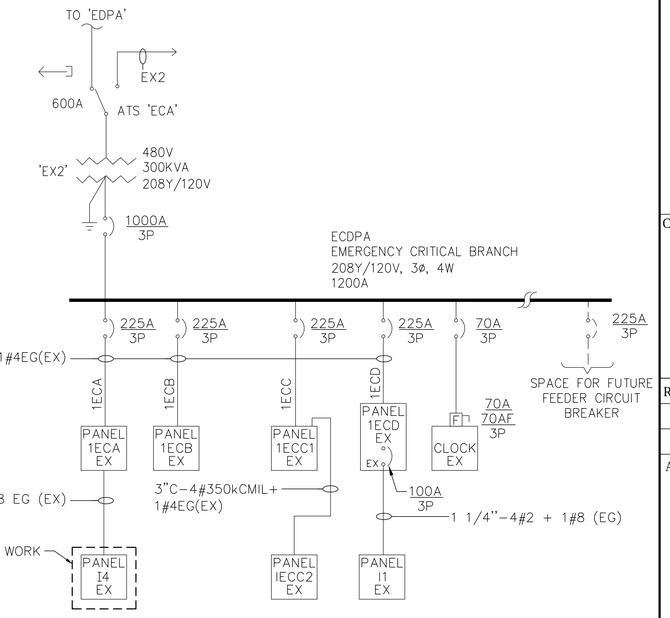
NOTES:
INSTALL NEW 201A/1P CB IN SPACE 22, 24

BY: EW
ISSUE DATE: 20-Oct-16
PANEL: I4 (CRITICAL) EXISTING

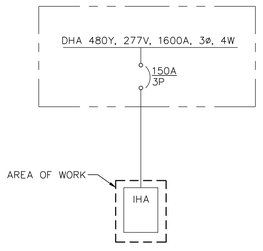
LOAD CALCULATION SUMMARY PER PIN 38

PANEL I4/ 1ECA

1. FOR LEVEL 1 PANEL I4, ITS FEEDER AND FEEDER OVER CURRENT PROTECTIVE DEVICE HAVE BEEN CHECKED AND THAT SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN ELECTRICAL DISTRIBUTION SYSTEM.
2. FOR LEVEL 2 PANEL 1ECA, ITS FEEDER AND FEEDER OVER CURRENT PROTECTIVE DEVICE HAVE BEEN CHECKED AND THAT SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN ELECTRICAL DISTRIBUTION SYSTEM.



1 EMERGENCY POWER SINGLE LINE DIAGRAM - EXISTING (CRITICAL BRANCH)
SCALE: NO SCALE



2 NORMAL POWER SINGLE LINE(PARTIAL) - EXISTING
SCALE: NO SCALE

DATE:	6/26/2017	PANEL VOLTAGE:	480/277V
JOB:	TRI CITY MEDICAL CENTER	PHASE & WIRE:	3ph,4W
PANEL:	1HA (EXISTING)	BUS (AMPS):	150
AIC RATING:	10,000	MAINS:	

CKT CODE: 1=(CONTINUOUS LOAD) 2=(NON-CONT. LOAD) 3=(RECEPTACLES) 4=(KIT. EQUIPMENT)

CKT		CB		LOAD DESIGNATION				LOAD	PHASES			LOAD	LOAD DESIGNATION				CB		CKT	
NO.	CODE	TRIP	POLE	DESCRIPTION	MISC	REC	LITE	VA	A	B	C	VA	MISC	REC	LITE	DESCRIPTION	TRIP	POLE	CODE	NO.
1	1	20	1	LTG-OPERATING RM. 1 & 2				3020	6675	//////	//////	3655				LTG-OPER RM. 9 &10	20	1	1	2
3	1	20	1	LTG-OPERATING RM. 5 & 6				2995	//////	5775	//////	2780				LTG-OPER RM. 3 & 4	20	1	1	4
5	1	20	1	LTG-OPERATING RM. 8 & 9				2355	//////	//////	3630	1275				LTG-RM.113,114,124,126	20	1	1	6
7		20	1	MECHANICAL/ELECT RM.				270	//////	//////	//////	270				LTG-EXTERIOR CANOPY	20	1	1	8
9		20	1	SPARE					//////	2540	//////	2540				LTG-CORRIDORS	20	1	1	10
11		20	1	SPARE					//////	//////	3000	3000				LTG-CORRIDORS	20	1	1	12
13		20	1	SPARE					0	//////	//////					SPARE	20	1		14
15		20	1	SPARE					//////	0	//////					SPARE	20	1		16
17		20	1	SPARE					//////	//////	0					SPARE	20	1		18
19		20	1	SPARE					0	//////	//////					SPARE	20	1		20
21		20	1	SPARE					//////	0	//////					SPARE	20	1		22
23		20	1	SPACE					//////	//////	0					SPACE	20	1		24
25		20	1	SPACE					0	//////	//////					SPACE	20	1		26
27		20	1	SPACE					//////	0	//////					SPACE	20	1		28
29		20	1	SPACE					//////	//////	0					SPACE	20	1		30
31		20	1	SPACE					0	//////	//////					SPACE	20	1		32
33		20	1	SPACE					//////	0	//////					SPACE	20	1		34
35		20	1	SPACE					//////	//////	0					SPACE	20	1		36
37		20	1	SPACE					0	//////	//////					SPACE	20	1		38
39		20	1	SPACE					//////	0	//////					SPACE	20	1		40
41		20	1	SPACE					//////	//////	0					SPACE	20	1		42
							TOTAL		6945	8315	6630									

CONNECTED KVA	21.9
CONN.KVA (CODE 1)	21.9
CONN.KVA (CODE 2)	0.0
CONN.KVA (CODE 3)	0.0
CONN.KVA (CODE 4)	0.0
FEEDER DEMAND KVA	27.4
FEEDER DEMAND AMPS	32.9

NOTES:

BY: JB
ISSUE DATE: 14/14/2012
PANEL: 1HA (EXISTING)

LOAD CALCULATION SUMMARY PER PIN 38

PANEL 1HA/ DHA

1. FOR LEVEL 1 PANEL 1HA, ITS FEEDER AND FEEDER OVER CURRENT PROTECTIVE DEVICE HAVE BEEN CHECKED AND THAT SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN ELECTRICAL DISTRIBUTION SYSTEM.
2. FOR LEVEL 2 PANEL DHA, ITS FEEDER AND FEEDER OVER CURRENT PROTECTIVE DEVICE HAVE BEEN CHECKED AND THAT SUFFICIENT LOAD CAPACITY EXISTS AT THIS POINT IN ELECTRICAL DISTRIBUTION SYSTEM.

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TRI-CITY MEDICAL CENTER OR4 LIGHT REPLACEMENT

4002 VISTA WAY, OCEANSIDE CA 92056

CONSULTANT:

17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/17

DRAWN BY:

PROJECT #

SHEET NAME:
ELECTRICAL SINGLE LINE DIAGRAM & PANEL SCHEDULE

SHEET#
E-2

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EQUIPMENT SCHEDULE

KEY ITEM	NAME	QTY
B	F628 NFC/F628 NFC/FP 1000mm & 900mm F628 NFC ARMS (EXISTING LOCATIONS)	2
H	IN-LIGHT CAMERA CCU	1
J	SWITCHPOINT INFINITY 3	1
K	CHROMOPHARE SK BOX (LOCATED IN CEILING DETERMINED BY CONTRACTOR)	2
L	CHROMOPHARE LED LIGHT & CAMERA WALL CONTROL PANEL (EXISTING LOCATION	1
N	SINGLE GANG DVI WALL PLATES	8
P1	WALL MOUNTED TOUCH PANEL	1

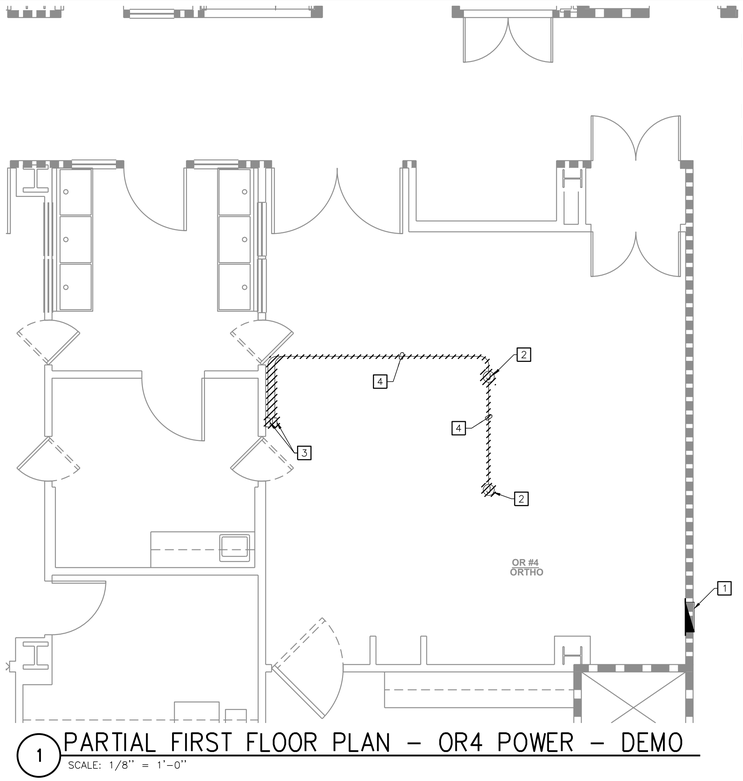
CONDUIT SCHEDULE

CONDUIT #	CONDUIT RUN ITEM - ITEM	CONDUIT QTY	CONDUIT SIZE
①	B - B	1	1"
②	B - H	1	1"
③	B - J	1	1"
④	B - K	2	1"
⑤	K - L	1	1"
⑥	N - J	1	1 1/2"
⑦	P1 - J	1	1"

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. ALL CONDUIT RUNS INCLUDE INSULATED BUSHINGS AND PULL STRINGS.
2. CONDUIT RUNS CANNOT EXCEED 50' FROM END-TO-END. DO NOT EXCEED FOUR (4) 90 DEGREE BENDS.
3. CABLES BETWEEN ITEMS OVER 50 FEET IN LENGTH ARE PROVIDED BY THE CUSTOMER / CONTRACTOR. PLEASE REFER TO EQUIPMENT LIST FOR CABLE SPECIFICATIONS.
4. THE PRE-INSTALL MANUAL REQUIREMENTS SUPERSEDE ALL PRE-INSTALL NOTES IN THIS DRAWING PACKAGE.

PRE-INSTALL NOTES SCHEDULE

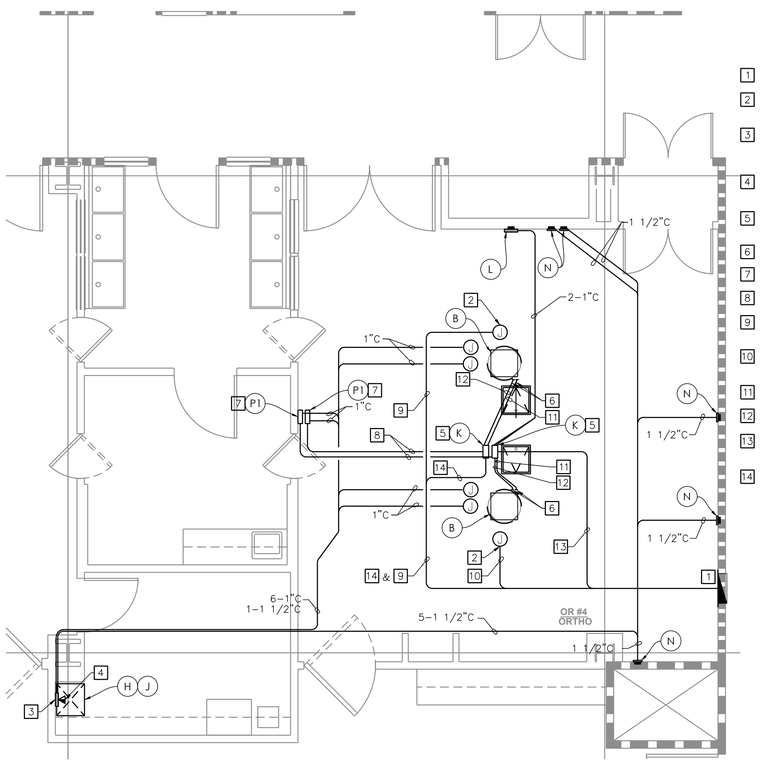
KEY ITEM	NAME
B	**LIGHT/LIGHT/FP** CONDUIT: - REFER TO ROOM LAYOUT FOR CONDUIT QUANTITY AND SIZE. TERMINATE ALL CONDUITS WITHIN 18" OF THE CENTER OF THE CEILING MOUNT.
H	**IN LIGHT CAMERA CCU** CONDUIT: ONE (1) 1" CONDUIT. MAXIMUM LENGTH OF 45 FEET OF CONDUIT RUN FROM WITHIN 18"' OF THE CENTER OF THE CEILING MOUNT TO EITHER A JUNCTION BOX USED FOR MOUNTING THE CAMERA CONTROL OR THE DOCUMENTATION STATION, PER CUSTOMER SPECIFICATION. POWER: ONE (1) STANDARD OUTLET WITHIN 4' OF CAMERA CONTROL BOX.
J	****ROUTER WITHOUT DOC STATION** SWITCHPOINT INFINITY 3 DIMENSIONS: - MEDIA ROUTER: 20.6"W X 24"H X 17"D - CONTROL SECTION: 12.5"W X 2.6"H X 17"D - TOTAL SPACE REQUIRED: 27.5"W X 31"H X 29"D DATA: ONE (1) ETHERNET CONNECTION SPACE REQUIREMENTS: MUST ALLOW FOR A MINIMUM 2" CABLE PASSAGE BETWEEN ALL COMPONENTS HOUSED INSIDE. - SECTION HOUSING VIDEO ROUTER MUST HAVE AN INTERIOR DIMENSION OF AT LEAST 27.5"W X 31"H X 29"D. - SECTION HOUSING VIDEO ROUTER MUST BE VENTED. - MUST ALLOW FOR DIRECT ACCESS TO BACKBOXES PER REQUIREMENTS LISTED BELOW. POWER: RECOMMEND THREE (3) 20 AMP CIRCUITS AND THREE (3) QUAD OUTLETS FOR VIDEO ROUTER AND ANY ADDITIONAL STRYKER PROVIDED EQUIPMENT. - CIRCUITS REQUIRE CRITICAL POWER. BACKBOX: ONE (1) 18"W X 18"H X 4"D (OR LARGER) JUNCTION BOX FLUSH MOUNTED. - MOUNT BEHIND VIDEO ROUTER. SET BOTTOM OF BOX 9" ABOVE FINISHED FLOOR. NOTE: TERMINATE ALL INTEGRATION CONDUITS TO THIS JUNCTION BOX.
K	**CHROMOPHARE SK BOX** CONDUIT: TWO (2) 1" FROM SK ENCLOSURE TO EACH LIGHT MOUNTING LOCATION, ONE (1) 1" BETWEEN LIGHT MOUNTING LOCATIONS, AND ONE (1) 1" FOR 120VAC TO SK BOX (UP TO THREE(3) LIGHTS PER CIRCUIT). MAXIMUM LENGTH OF 45 FEET (15M) OF CONDUIT RUN TO BOTH THE MOUNTING PLATE AND THE TO WALL CONTROL BOX. MUST BE EASILY ACCESSIBLE, EITHER BY INSTALLATION INTO A WALL, OR IN THE INTERSTITIAL SPACE WITH ACCESS PANEL. POWER: - AC WIRING: WIRING SHOULD BE 3 WIRE, 12AWG MIN., AND 600V, TERMINATED TO THE FUSED TERMINAL BLOCK INSIDE THE SK ENCLOSURE. (UP TO 3 LIGHTS PER SK BOX) - DC WIRING: WIRES SHOULD CONSIST OF 1 PAIR PER LIGHT HEAD AND 1 GROUND WIRE PER MOUNTING RING. WIRES TERMINATE AT THE NON-FUSED TERMINAL BLOCK INSIDE THE SK ENCLOSURE. WIRING SHOULD RUN FROM OUTPUT OF THE SK ENCLOSURE AND FALL A MINIMUM OF 18-INCHES BELOW THE CEILING AT THE MOUNTING RING.
L	**CHROMOPHARE WALL CONTROL PANEL** CONDUIT: ONE (1) 1" CONDUIT TO SK ENCLOSURE (ELECTRONICS). BACK BOX: ONE (1) STANDARD 4X4 JUNCTION BOX. POWER: NONE
N	**DVI WALL PLATE** CONDUIT: ONE (1) 1 1/2" CONDUIT BACK BOX: ONE (1) 4"W X 4"H JUNCTION BOX WITH SINGLE-GANG MUD RING - MOUNT THE J-BOX 18" ABOVE FINISHED FLOOR. POWER: NONE REQUIRED, BUT SHOULD BE LOCATED NEXT TO OUTLET.
P1	**SPI-3 TOUCH PANEL (WALL MOUNTED)** CONDUIT: ONE (1) 1" CONDUIT. BACK BOX: ONE (1) 4"W X 4"H JUNCTION BOX WITH SINGLE-GANG MUD RING - MOUNT J-BOX WITHIN 18" OF TOUCH PANEL LOCATION POWER: ONE (1) STANDARD OUTLET WITHIN 18" OF TOUCH PANEL LOCATION.



1 PARTIAL FIRST FLOOR PLAN – OR4 POWER – DEMO
SCALE: 1/8" = 1'-0"

KEY NOTES FOR DETAIL 1

1. EXISTING PANEL "I4" 100A, 208/ 120V 3P, 4W (CRITICAL).
2. EXISTING CEILING MOUNTED (ABOVE CEILING) J-BOX FOR EXISTING SURGICAL LIGHT TO BE DISCONNECTED AND REMOVED.
3. EXISTING SURGICAL LIGHTING CONTROLLER TO BE DISCONNECTED AND REMOVED.
4. EXISTING CONDUIT AND WIRE TO BE REMOVED.



2 PARTIAL FIRST FLOOR PLAN – OR4 POWER – NEW
SCALE: 1/8" = 1'-0"

KEY NOTES FOR DETAIL 2

1. EXISTING PANEL "I4" 100A, 208/ 120V 3P, 4W (CRITICAL).
2. NEW CEILING MOUNTED (ABOVE CEILING) J-BOX FOR CONNECTION TO NEW SURGICAL LIGHT.
3. NEW 18" x 18" x 4" BACK BOX RECESSED IN WALL. BOTTOM OF BOX 9" AFF. SS HINGED COVER WITH 6" X 2" OBLONG GROMMETT OPENING.
4. NEW DATA OUTLET – 4" SQ J-BOX (RECESSED) WITH 3/4"C STUB 6" ABOVE CEILING.
5. NEW SK BOX MOUNTED ABOVE CEILING. SEE STRUCTURE DRAWING FOR SUPPORT DETAIL.
6. NEW STUB CONDUIT WITHIN 18" OF CONTROL MOUNT.
7. NEW SURGICAL LIGHT CONTROLLER.
8. NEW 3/4"C.
9. NEW 3/4"C – 1 # 12 H + 1 # 12 N + 1 # 12 EG (CKT I4–11).
10. NEW 3/4"C – 1 # 12 H + 1 # 12 N + 1 # 12 EG (CKT I4–13).
11. NEW 1"C (POWER).
12. NEW 1"C (SIGNAL).
13. NEW 3/4"C – 1 # 12 H + 1 # 12 N + 1 # 12 EG (CKT I4–22).
14. NEW 3/4"C 1 # 12 H + 1 # 12 N + 1 # 12 EG (CKT I4–24).

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OR4 LIGHT REPLACEMENT

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CONSULTANT:

REGISTERED PROFESSIONAL ENGINEER JEFFREY J. MOBLEY No. E14055 Exp. 12/31/18 ELECTRICAL STATE OF CALIFORNIA

17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

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REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # S170736-37-00

DATE: 04/20/17

DRAWN BY:

PROJECT #

SHEET NAME:
PARTIAL FIRST FLOOR PLAN - OR4 POWER DEMO AND NEW

SHEET#

E-3

BERCHTOLD

Contractor's Summary For CHROMOPHARE® Surgical Light SK Box Installation

WARNING

This summary dimensional and loading data must be used in conjunction with the detailed information in the CHROMOPHARE® *Pre-Installation Guide* for the specific light model involved. Failure to include information from the *Pre-Installation Guide* could result ir a failure of the light to operate or a failure of the superstructure. Failure of the super structure could damage the light or the building or cause injury to patients or personnel.

Many health care facilities order CHROMOPHARE® Surgical Lights for several different rooms or areas. Each of these units may be equipped differently. They may require different numbers of electric circuits, different numbers of low voltag cables, and different numbers and kinds of wall mount plates. Be sure to check the customer order documents for the specific requirements for your installation.

The information in this summary does not apply to wall mounted lights or to lights installed with Berchtold TELETOM® TC model Power Booms.

Copies of all Berchtold Pre-Installation Guides and most other technical literature are available from our Web site (www.berchtoldusa.com), by calling 800-243-5135, or by Faxing 843-569-6133.

OR Numbers		Number of Units

SK Box Mounting General Information

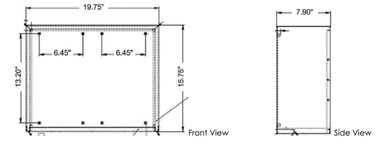
The SK Box is used to house the light electronics when the space in the ceiling at the fixture mounting is insufficient. Refer to the customer drawings to see if an SK Box will be used for your installation.

- The SK Box must be mounted within 45˚ (13.75m) of the light mounting ring. The box may be mounted within the ceiling cavity, but ar external wall mount is preferred. A wall mounted box may be installed inside or outside of the OR.
- An SK box will accommodate the wiring for four light heads, or three light heads plus battery buffer system.
- A SK Box can weigh up to 130 pounds.
- The contractor is responsible for running power from an AC mains supply to the SK box.
- The contractor is responsible for running DC wiring from the SK box to the surgical light mounting ring
- The contractor is responsible for making both AC and DC connections in the SK Box.

BERCHTOLD

Mounting Options

- Above Finished Ceiling
  - The SK Box must remain accessible (through a nearby access panel) after installation. The hinged doors must have complete freedom of movement in the ceiling, and must not ever be obstructed.
- Wall-Mount (Flush)
  - If an integrated Light Control Panel is desired, this must be indicated at time of order.
- Wall-Mount (Recessed)
  - SK Box recessed mount collar is required for this type of installation.
  - Contractor should measure target wall before installation to verify that there is sufficient depth in the stud wall to accommodate this type of installation.
  - If an integrated Light Control Panel is desired, this must be indicated at time of order.



Dimensions are given for one compartment of the SK Box, A Complete SK is two compartments stacked vertically.

Conduit Plate Installation

1. Select where on the mounting ring you want the conduit to terminate (any two adjacent nuts).
2. Back the nuts (a) down the all-thread rods (B) away from the light mounting plate (C).
3. Insert the conduit plate (D) under the light mounting plate, and tighten the nuts.

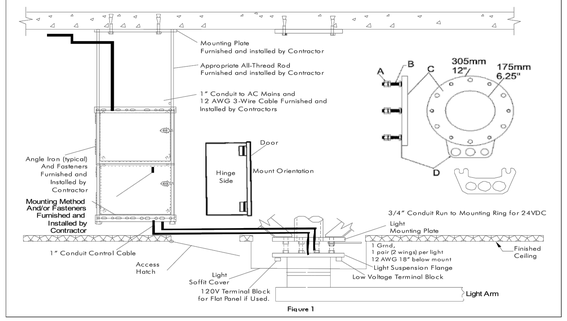
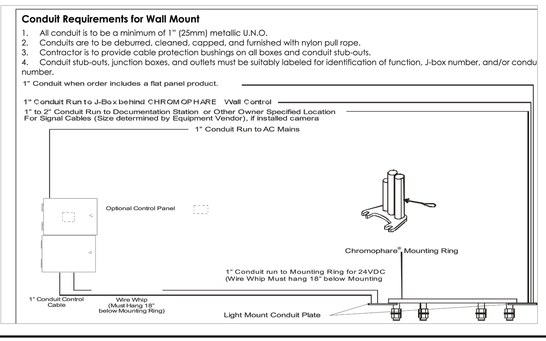


Figure 1

Conduit Requirements for Wall Mount

1. All conduit is to be a minimum of 1" (25mm) metallic U.N.O.
2. Conduits are to be deburred, cleaned, capped, and furnished with nylon pull rope.
3. Contractor is to provide cable protection bushings on all boxes and conduit stub-outs.
4. Conduit stub-outs, junction boxes, and outlets must be suitably labeled for identification of function, J-box number, and/or conduit number.

1" Conduit when order includes a flat panel product.



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ELECTRICAL
STATE OF CALIFORNIA

17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

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Laura Baldrati, Sr. Architect
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FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # **S170736-37-00**

DATE: **04/20/17**

DRAWN BY:

PROJECT #

SHEET NAME:
DETAILS

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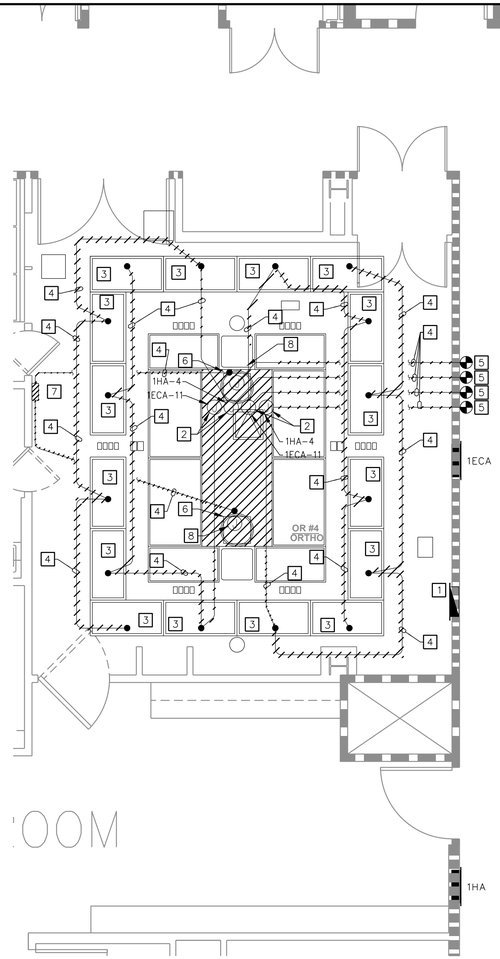
SHEET#

E-4



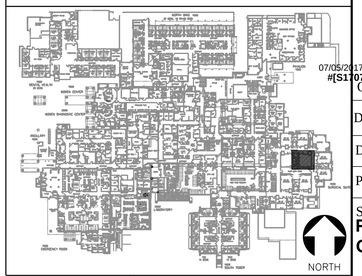
1 PARTIAL FIRST FLOOR PLAN – OR#4 LIGHTING AND POWER DEMO
SCALE: 1/4" = 1'-0"

NORTH

KEY NOTES

1. EXISTING PANEL "I4" 100A, 208/ 120V 3P, 4W (CRITICAL), TO REMAIN.
2. EXISTING CEILING MOUNTED J-BOX FOR EXISTING SURGICAL LIGHT TO BE REMOVED AFTER DISCONNECTING POWER TO ROOM LIGHT FIXTURE.
3. EXISTING ROOM LIGHT FIXTURE TO REMAIN.
4. EXISTING BRANCH CIRCUIT TO BE DISCONNECTED & REMOVED AS SHOWN.
5. EXISTING J-BOX (APPROXIMATE LOCATION) FIELD VERIFY.
6. EXISTING SURGICAL LIGHTS TO BE DISCONNECTED AND REMOVED. REMOVE CONDUIT & WIRE ALL THE WAY TO PANEL I2 AND TO EXISTING TWO DIMMER PANEL. SEE PHOTO 1 (DETAIL 2).
7. EXISTING TWO DIMMER PANEL TO BE DISCONNECTED AND REMOVED. SEE PHOTO 2 (DETAIL 3).
8. EXISTING BRANCH CIRCUITS I3-11 & I3-13 FOR EXISTING SURGICAL LIGHTS TO BE DISCONNECTED & REMOVED ALL THE WAY TO PANEL.
9. EXISTING CONDUIT & WIRES TO BE DISCONNECTED & REMOVED.

KEY PLAN



NORTH

07/05/2017 11:18:52 AM
#[S170736-37-00]

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17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

OSHPD # **S170736-37-00**

DATE: **04/20/17**

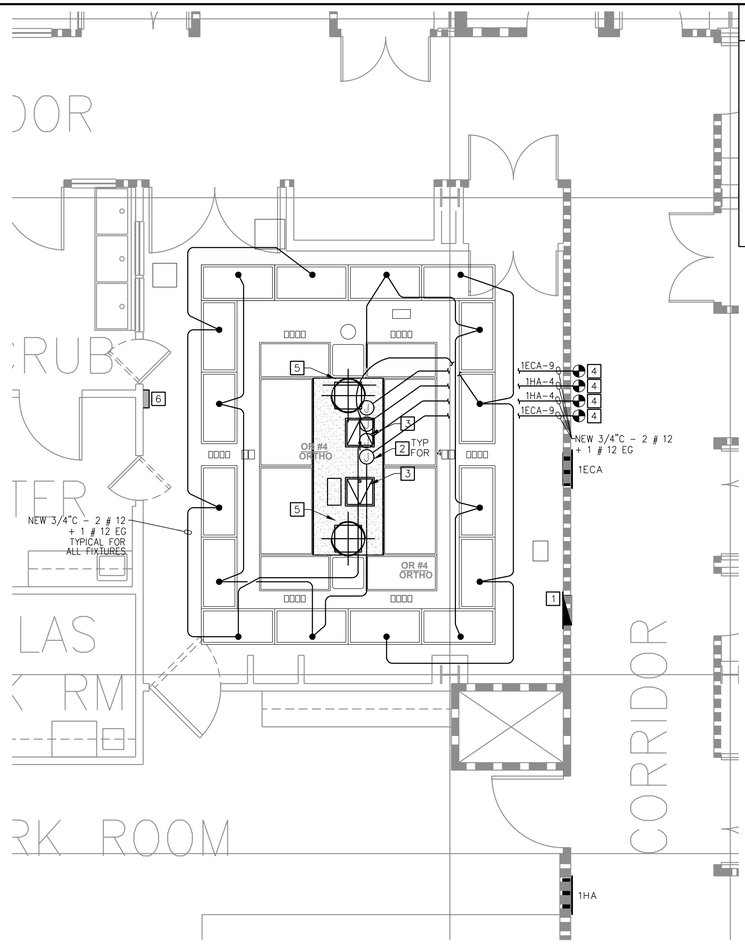
DRAWN BY:

PROJECT #

SHEET NAME:
PARTIAL FIRST FLOOR PLAN - OR4 LIGHTING DEMO

SHEET#

E-5



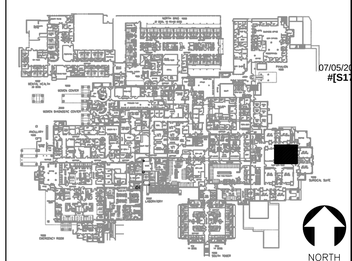
1 PARTIAL FIRST FLOOR PLAN – OR#4 LIGHTING MODIFIED
SCALE: 1/4" = 1'-0"

NORTH

KEY NOTES

1. EXISTING PANEL "14" 100A, 208/ 120V 3P, 4W (CRITICAL). TO REMAIN
2. EXISTING CEILING MOUNTED J-BOX FOR EXISTING SURGICAL LIGHT EXISTING ROOM LIGHT FIXTURE TO REMAIN.
3. NEW LOCATION OF ACCESS PANEL.
4. EXISTING J-BOX (APROXIMATE LOCATION) FIELD VERIFY.
5. NEW SURGICAL LIGHTS
6. NEW SURGICAL LIGHTING CONTROLLER. TWO STACKED.

KEY PLAN



NORTH

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OSHPD # S170736-37-00

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PROJECT #

SHEET NAME:
PARTIAL FIRST FLOOR PLAN - OR4 LIGHTING MODIFIED

SHEET#
E-6

SECTION 260500
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Sleeves for raceways and cables.
3. Sleeve seals.
4. Grout.
5. Common electrical installation requirements.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For sleeve seals.

1.5 COORDINATION

A. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for piping and conduit installed at required slope.
4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."

D. Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 07 Section "Penetration Fire-stopping."."

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral water-stop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:
   a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches thickness shall be 0.052 inch.
   b. For sleeve cross-section rectangle perimeter equal to, or more than, (1270 mm) and 1 or more sides equal to, or more than, 16 inches thickness shall be 0.138 inch

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   a. Advance Products & Systems, Inc.
   b. Calpico, Inc.
   c. Metraflex Co.
   d. Pipeline Seal and Insulator, Inc.
3. Sealing Elements: EPDM NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
4. Pressure Plates: Stainless steel. Include two for each sealing element.
5. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wire-ways, cable trays, or bus-ways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with fire-stop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with fire-stop materials. Comply with requirements in Division 07 Section "Penetration Fire-stopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

A. Apply fire-stopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Fire-stopping materials and installation requirements are specified in Division 07 Section "Penetration Fire-stopping."

SECTION 260519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

B. Related Sections include the following:

1. Division 26 Section "Medium-Voltage Cables" for single-conductor and multi-conductor cables, cable splices, and terminations for electrical distribution systems with 2001 to 35,000 V.
2. Division 26 Section "Under-carpet Electrical Power Cables" for flat cables for under-carpet installations.
3. Division 27 Section "Communications Horizontal Cabling" for cabling used for voice and data circuits.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For testing agency.

C. Field quality-control test reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the Inter-National Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

1.6 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Alcan Products Corporation; Alcan Cable Division.
2. American Insulated Wire Corp.; a Leviton Company.
3. General Cable Corporation.
4. Senator Wire & Cable Company.
5. South-wire Company.

C. Copper Conductors: Comply with NEMA WC 70.

D. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN XHHW UF.

2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral water-stop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

D. Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 07 Section "Penetration Fire-stopping."

2.4 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

D. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Stainless steel. Include two for each sealing element.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN-THWN, single conductors in raceway, Type XHHW, single conductors in raceway.

B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway. Coordinate first paragraph below with Division 26 Section "Underground Ducts and Raceways for Electrical Systems."Division 2 Section "Underground Ducts and Utility Structures."

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Under-ground: Type THHN-THWN, single conductors in raceway.

E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

F. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

G. Class 1 Control Circuits: Type THHN-THWN, in raceway.

H. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. 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 tensions and sidewall pressure values.

C. Use pulling means including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."

F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches, 12 inches of slack.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 07 Section "Penetration Fire-stopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Rectangular Sleeve Minimum Metal Thickness:

1. For sleeve rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.
2. For sleeve rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches thickness shall be 0.138 inch.

E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with fire-estop system used are fabricated during construction of floor or wall.

F. Cut sleeves to length for mounting flush with both wall surfaces.

G. Extend sleeves installed in floors 2 above finished floor level.

H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed or unless seismic criteria require different clearance.

I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.

J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."

K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with fire-stop materials according to Division 07 Section "Penetration Fire-stopping."

L. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

M. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

N. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply fire-stopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Fire-stopping."

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform tests and inspections and prepare test reports.

C. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.
2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.
   a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
   b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
   c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

D. Test Reports: Prepare a written report to record the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

E. Remove and replace malfunctioning units and retest as specified above.

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OSHPD # **S170736-37-00**

DATE: **04/20/17**

DRAWN BY:

PROJECT #

SHEET NAME:
ELECTRICAL SPECIFICATIONS

SHEET#

E-7

SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes methods and materials for grounding systems and equipment, plus the following special applications:

1. Overhead-lines grounding.
2. Underground distribution grounding.
3. Common ground bonding with lightning protection system.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:

1. Test wells.
2. Ground rods.
3. Ground rings.
4. Grounding arrangements and connections for separately derived systems.
5. Grounding for sensitive electronic equipment.

C. Qualification Data: For testing agency and testing agency's field supervisor.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:

1. Instructions for periodic testing and inspection of grounding features at test wells grounding connections for separately derived systems based on NETA MTS NFPA 70B
   a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
   b. Include recommended testing intervals.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches in cross section, unless otherwise indicated; with insulators.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel, sectional type; 3/4 inch by10 feet 5/8 by 96 inches in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.

1. Bury at least 24 inches below grade.
2. Duct-Bank Grounding Conductor: Bury 12 inches above duct bank when indicated as part of duct-bank installation.

C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

D. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus on insulated spacer's 1 inch minimum, from wall 6 inches above finished floor, unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, down to specified height above floor, and connect to horizontal bus.

E. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connector's, except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING OVERHEAD LINES

A. Comply with IEEE C2 grounding requirements.

B. Install 2 parallel ground rods if resistance to ground by a single, ground-rod electrode exceeds 25 ohms.

C. Drive ground rods until tops are 12 inches below finished grade in undisturbed earth.

D. Ground-Rod Connections: Install bolted connectors for underground connections and connections to rods.

E. Lightning Arrester Grounding Conductors: Separate from other grounding conductors.

F. Secondary Neutral and Transformer Enclosure: Interconnect and connect to grounding conductor.

G. Protect grounding conductors running on surface of wood poles with molding extended from grade level up to and through communication service and transformer spaces.

3.3 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

A. Comply with IEEE C2 grounding requirements.

B. Grounding Manholes and Hand-holes: Install a driven ground rod through manhole or hand-hole floor, close to wall, and set rod depth so 4 inches will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal floor opening with waterproof, non-shrink grout.

C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or hand-hole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductor's level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields as recommended by manufacturer of splicing and termination kits.

D. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches from the foundation.

3.4 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.
2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
7. Armored and metal-clad cable runs.
8. Bus-way Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on bus-way.

C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

D. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

E. Isolated Grounding Receptacle Circuits: Install an insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

F. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

G. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

3.5 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Common Ground Bonding with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

C. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water serviceraces to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install bonding jumper to bond across flexible duct connections to achieve continuity.

G. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet apart.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

C. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
   a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
   b. Perform tests by fall-of-potential method according to IEEE 81.
3. Prepare dimensioned drawings locating each test well, ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

D. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.
2. Power and Lighting Equipment or System with Capacity 500 to 1000 kVA: 5 ohms.
3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
4. Power Distribution Units or Panel-boards Serving Electronic Equipment: 1 3 ohm(s).
5. Substations and Pad-Mounted Equipment: [5] ohms.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

B. Related Sections include the following:

1. Division 26 Section "Vibration And Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.
2. Nonmetallic slotted support systems.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Nonmetallic slotted channel systems. Include Product Data for components.
4. Equipment supports.

C. Welding certificates.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

1.7 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Allied Tube & Conduit.
   b. Cooper B-Line, Inc.; a division of Cooper Industries.
   c. ERICO International Corporation.
   d. GS Metals Corp.
   e. Thomas & Betts Corporation.
   f. Unistrut; Tyco International, Ltd.
   g. Wesanco, Inc.
3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
6. Channel Dimensions: Selected for applicable load criteria.

B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- diameter holes at a maximum of 8 inches O.C., in at least 1 surface.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Allied Tube & Conduit.
   b. Cooper B-Line, Inc.; a division of Cooper Industries.
   c. Fabco Plastics Wholesale Limited.
   d. Seasafe, Inc.
3. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
4. Fitting and Accessory Materials: Same as channels and angles, except metal items may be stainless steel.
5. Rated Strength: Selected to suit applicable load criteria.

C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

D. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened port-land cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
   a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1) Hilti Inc.
      2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      3) MKT Fastening, LLC.
      4) Simpson Strong-Tie Co., Inc.; Master-set Fastening Systems Unit.
2. Mechanical-Expansion Anchors: Insert-wedge-type, [**zinc-coated**] [**stainless**] steel, for use in hardened port-land cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
   a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      1) Cooper B-Line, Inc.; a division of Cooper Industries.
      2) Empire Tool and Manufacturing Co., Inc.
      3) Hilti Inc.
      4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
      5) MKT Fastening, LLC.
3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69, Spring-tension clamps.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panel-boards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

F. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

G. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

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17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health
Planning & Development
FACILITIES DEVELOPMENT DIVISION
07/05/2017 11:18:52 AM
#[S170736-37-00]

OSHPD # **S170736-37-00**

DATE: **04/20/17**

DRAWN BY:

PROJECT #

SHEET NAME:
ELECTRICAL SPECIFICATIONS

SHEET#
E-8

SECTION 260533
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.
B. ENT: Electrical nonmetallic tubing.
C. EPDM: Ethylene-propylene-diene terpolymer rubber.
D. FMC: Flexible metal conduit.
E. IMC: Intermediate metal conduit.
F. LFMC: Liquidtight flexible metal conduit.
G. LFNC: Liquidtight flexible nonmetallic conduit.
H. NBR: Acrylonitrile-butadiene rubber.
I. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
1. Custom enclosures and cabinets.
2. For handholes and boxes for underground wiring, including the following:
a. Duct entry provisions, including locations and duct sizes.
b. Frame and cover design.
c. Grounding details.
d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
e. Joint details.
C. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
1. Structural members in the paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.
D. Manufacturer Seismic Qualification Certification: Submit certification that enclosures and cabinets and their mounting provisions, including those for internal components, will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems." Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
a. The term "withstand" means "the cabinet or enclosure will remain in place without separation of any parts when subjected to the seismic forces specified and the unit will retain its enclosure characteristics, including its interior accessibility, after the seismic event."
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
E. Qualification Data: For professional engineer and testing agency.
F. Source quality-control test reports.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Wheatland Tube Company.
C. Rigid Steel Conduit: ANSI C80.1.
D. Aluminum Rigid Conduit: ANSI C80.5.
E. IMC: ANSI C80.6.
F. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.
1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch minimum.
G. EMT: ANSI C80.3.
H. FMC: Zinc-coated steel
I. LFMC: Flexible steel conduit with PVC jacket.
J. Fittings for Conduit (Including all Types and Flexible and Liquid-tight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
2. Fittings for EMT: Compression type.
3. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch with overlapping sleeves protecting threaded joints.
K. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corp.; Pipe & Plastics Group.
6. Condux International, Inc.
7. ElecSYS, Inc.
8. Electri-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; a Hubbell Company.
12. Thomas & Betts Corporation.
C. ENT: NEMA TC 13.
D. RNC: NEMA TC 2, Type EPC-40-PVC unless otherwise indicated.
E. LFNC: UL 1660.
F. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.
G. Fittings for LFNC: UL 514B.

2.3 OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY AND FITTINGS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Arnco Corporation.
2. Endot Industries Inc.
3. IPEX Inc.
4. Lamson & Sessions; Carlon Electrical Products.
C. Description: Comply with UL 2024; flexible type, approved for general-use installation.

2.4 METAL WIREWAYS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper B-Line, Inc.
2. Hoffman.
3. Square D; Schneider Electric.
C. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1 unless otherwise indicated.
D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
E. Wire-way Covers: Screw-cover type
F. Finish: Manufacturer's standard enamel finish.

2.5 NONMETALLIC WIREWAYS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hoffman.
2. Lamson & Sessions; Carlon Electrical Products.
C. Description: Fiberglass polyester, extruded and fabricated to size and shape indicated, with no holes or knockouts. Cover is gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections are flanged, with stainless-steel screws and oil-resistant gaskets.
D. Description: PVC plastic extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
E. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, h-old-down straps, end caps, and other fittings to match and mate with wire-ways as required for complete system.

2.6 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color selected by Architect.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Thomas & Betts Corporation.
b. Walker Systems, Inc.; Wiremold Company (The).
c. Wiremold Company (The); Electrical Sales Division.
B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC with texture and color selected by Architect from manufacturer's standard colors.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Butler Manufacturing Company; Walker Division.
b. Enduro Systems, Inc.; Composite Products Division.
c. Hubbell Incorporated; Wiring Device-Kellems Division.
d. Lamson & Sessions; Carlon Electrical Products.
e. Panduit Corp.
f. Walker Systems, Inc.; Wiremold Company (The).
g. Wiremold Company (The); Electrical Sales Division.

2.7 BOXES, ENCLOSURES, AND CABINETS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Erickson Electrical Equipment Company.
4. Hoffman.
5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
6. O-Z/Gedney; a unit of General Signal.
7. RACO; a Hubbell Company.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet Division.
10. Spring City Electrical Manufacturing Company.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
C. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
D. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum Type FD, with gasket cover.
E. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
F. Metal Floor Boxes: Cast metal rectangular.
G. Nonmetallic Floor Boxes: Nonadjustable, round.
H. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
I. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasket cover.
J. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic.
K. Cabinets:
1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.
a. Carson Industries LLC.
b. CDR Systems Corporation.
c. NewBasis.

2.8 SLEEVES FOR RACEWAYS

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.
D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.9 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.
D. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
1. Sealing Elements: EPDM NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Stainless steel. Include two for each sealing element.
3. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.10 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES

A. Hand-hole and Pull-Box Prototype Test: Test prototypes of hand-holes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
1. Tests of materials shall be performed by a independent testing agency.
2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
1. Exposed Conduit: Rigid steel conduit.
2. Concealed Conduit, Aboveground: EMT
3. Underground Conduit: RNC, Type EPC- 80-PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
B. Comply with the following indoor applications, unless otherwise indicated:
1. Exposed, Not Subject to Physical Damage: EMT
2. Exposed, Not Subject to Severe Physical Damage: EMT
3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit Includes raceways in the following locations:
a. Loading dock.
b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
c. Mechanical rooms.
4. Concealed in Ceilings and Interior Walls and Partitions: EMT
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
C. Minimum Raceway Size: 1/2-inch, 3/4-inch trade size.
D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.
E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
F. Do not install aluminum conduits in contact with concrete.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
C. Complete raceway installation before starting conductor installation.
D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
H. Raceways Embedded in Slabs:
1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Change from ENT to RNC, Type EPC-40-PVC, rigid steel conduit, or IMC before rising above the floor.
I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
L. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:
1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.
M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.
N. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed and semi-recessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
O. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.
P. Set metal floor boxes level and flush with finished floor surface.
Q. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:
1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Division 31 Section "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
6. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits, placing them 24 inches o.c. Align planks along the width and along the centerline of conduit.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
D. Rectangular Sleeve Minimum Metal Thickness:
1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches thickness shall be 0.052 inch
2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches thickness shall be 0.138 inch.
E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with fire-stop system used are fabricated during construction of floor or wall.
F. Cut sleeves to length for mounting flush with both surfaces of walls.
G. Extend sleeves installed in floors 2 inches above finished floor level.
H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed or unless seismic criteria require different clearance.
I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.
K. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with fire-stop materials. Comply with Division 07 Section "Penetration Fire-stopping."
L. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.
M. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
N. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

A. Install to seal underground, exterior wall penetrations.
B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

A. Apply fire-stopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Fire-stopping materials and installation requirements are specified in Division 07 Section "Penetration Fire-stopping."

3.7 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

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17-SUN-02

REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

07/05/2017 11:18:52 AM
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OSHPD # **S170736-37-00**

DATE: **04/20/17**

DRAWN BY:

PROJECT #

SHEET NAME:
ELECTRICAL SPECIFICATIONS

SHEET#
E-9

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Isolation pads.
   2. Spring isolators.
   3. Restrained spring isolators.
   4. Channel support systems.
   5. Restraint cables.
   6. Hanger rod stiffeners.
   7. Anchorage bushings and washers.

B. Related Sections include the following:
   1. Division 26 Section "Hangers And Supports For Electrical Systems" for commonly used electrical supports and installation requirements.

1.3 DEFINITIONS

A. The IBC: International Building Code.

B. ICC-ES: ICC-Evaluation Service.

C. OSHPD: Office of Statewide Health Planning and Development for the State of California.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:
   1. Site Class as Defined in the IBC: A, B, C, D, E, F
   2. Assigned Seismic Use Group or Building Category as Defined in the IBC: I.
      a. Component Importance Factor: 1.0.
      b. Component Response Modification Factor: 1.5
      c. Component Amplification Factor: 1.0
   3. Design Spectral Response Acceleration at Short Periods (0.2 Second):
   4. Design Spectral Response Acceleration at 1.0-Second Period:

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
   2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component used.
      a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by OSHPD.
      b. Annotate to indicate application of each product submitted and compliance with requirements.
   3. Restrained-Isolation Devices: Include ratings for horizontal, vertical, and combined loads.

B. Delegated-Design Submittal: For vibration isolation and seismic-restraint details indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   1. Design Calculations: Calculate static and dynamic loading due to equipment weight and operation, seismic forces required to select vibration isolators and seismic restraints.
      a. Coordinate design calculations with wind-load calculations required for equipment mounted outdoors. Comply with requirements in other Division 26 Sections for equipment mounted outdoors.
   2. Indicate materials and dimensions and identify hardware, including attachment and anchorage devices.
   3. Field-fabricated supports.
   4. Seismic-Restraint Details:
      a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.
      b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.
      c. Preapproval and Evaluation Documentation: By OSHPD showing maximum ratings of restraint items and the basis for approval (tests or calculations).

C. Coordination Drawings: Show coordination of seismic bracing for electrical components with other systems and equipment in the vicinity, including other supports and seismic restraints.

D. Welding certificates.

E. Qualification Data: For professional engineer and testing agency.

F. Field quality-control test reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.

C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number from OSHPD, preapproval by ICC-ES, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

E. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 VIBRATION ISOLATORS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
   1. Ace Mountings Co., Inc.
   2. Amber/Booth Company, Inc.
   3. California Dynamics Corporation.
   4. Isolation Technology, Inc.
   5. Kinetics Noise Control.
   6. Mason Industries.
   7. Vibration Eliminator Co., Inc.
   8. Vibration Isolation.
   9. Vibration Mountings & Controls, Inc.

D. Pads Arrange in single or multiple layers of sufficient stiffness for uniform loading over pad area, molded with a nonslip pattern and galvanized-steel baseplates, and factory cut to sizes that match requirements of supported equipment.
   1. Resilient Material: Oil- and water-resistant neoprene rubber hermetically sealed compressed fiberglass.

E. Spring Isolators Freestanding, laterally stable, open-spring isolators.
   1. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
   2. Minimum Additional Travel: 50 percent of the required deflection at rated load.
   3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
   4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
   5. Baseplates: Factory drilled for bolting to structure and bonded to 1/4-inch- thick, rubber isolator pad attached to baseplate underside. Baseplates shall limit floor load to 500 psig
   6. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

F. Restrained Spring Isolators Freestanding, steel, open-spring isolators with seismic or limit-stop restraint.
   1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to weight being removed; factory-drilled baseplate bonded to 1/4-inch- thick, neoprene or rubber isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation.
   2. Restraint: Seismic or limit-stop as required for equipment and authorities having jurisdiction.
   3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
   4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
   5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
   6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.2 SEISMIC-RESTRAINT DEVICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
   1. Amber/Booth Company, Inc.
   2. California Dynamics Corporation.
   3. Cooper B-Line, Inc.; a division of Cooper Industries.
   4. Hilti Inc.
   5. Loos & Co.; Seismic Earthquake Division.
   6. Mason Industries.
   7. TOLCO Incorporated; a brand of NIBCO INC.
   8. Unistrut; Tyco International, Ltd.

D. General Requirements for Restraint Components: Rated strengths, features, and application requirements shall be as defined in reports by OSHPD.
   1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.

E. Channel Support System: MFMA-3, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; and rated in tension, compression, and torsion forces.

F. Restraint Cables: ASTM A 492 stainless-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.

G. Hanger Rod Stiffener: Steel tube or steel slotted-support-system sleeve with internally bolted connections to hanger rod. Do not weld stiffeners to rods.

H. Bushings for Floor-Mounted Equipment Anchor: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchors and studs.

I. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices.

J. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

K. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.

L. Adhesive Anchor: Drilled-in and capsule anchor system containing polyvinyl or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.3 FACTORY FINISHES

A. Finish: Manufacturer's standard prime-coat finish ready for field painting.

B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.
   1. Powder coating on springs and housings.
   2. All hardware shall be galvanized. Hot-dip galvanize metal components for exterior use.
   3. Baked enamel or powder coat for metal components on isolators for interior use.
   4. Color-code or otherwise mark vibration isolation and seismic-control devices to indicate capacity range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and equipment to receive seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

A. Multiple Raceways or Cables: Secure raceways and cables to trapeze member with clamps approved for application by.

B. Hanger Rod Stiffeners: Install hanger rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.

C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.

3.3 SEISMIC-RESTRAINT DEVICE INSTALLATION

A. Equipment and Hanger Restraints:
   1. Install restrained isolators on electrical equipment.
   2. Install resilient, bolt-isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
   3. Install seismic-restraint devices using methods approved by OSHPD providing required submittals for component.

B. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

C. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

D. Drilled-in Anchors:
   1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
   2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
   3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
   4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
   5. Set anchors to manufacturer's recommended torque, using a torque wrench.
   6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.4 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

A. Install flexible connections in runs of raceways, cables, wireways, cable trays, and busways where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where they terminate with connection to equipment that is anchored to a different structural element from the one supporting them as they approach equipment.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform tests and inspections.

C. Tests and Inspections:
   1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
   2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless post-connection testing has been approved), and with at least seven days' advance notice.
   3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
   4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
   5. Test to 90 percent of rated proof load of device.
   6. Measure isolator restraint clearance.
   7. Measure isolator deflection.
   8. Verify snubber minimum clearances.
   9. If a device fails test, modify all installations of same type and retest until satisfactory results are achieved.

D. Remove and replace malfunctioning units and retest as specified above.

E. Prepare test and inspection reports.

3.6 ADJUSTING

A. Adjust isolators after isolated equipment is at operating weight.

B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

C. Adjust active height of spring isolators.

D. Adjust restraints to permit free movement of equipment within normal mode of operation.

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AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
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SHEET NAME:
ELECTRICAL SPECIFICATIONS

SHEET#
E-10

SECTION 260553
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Identification for raceway and metal-clad cable.
2. Identification for conductors and communication and control cable.
3. Underground-line warning tape.
4. Warning labels and signs.
5. Instruction signs.
6. Equipment identification labels.
7. Miscellaneous identification products.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.
B. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.
C. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and ANSI C2.
B. Comply with NFPA 70.
C. Comply with 29 CFR 1910.145.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
C. Coordinate installation of identifying devices with location of access panels and doors.
D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 RACEWAY AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
B. Color for Printed Legend:
1. Power Circuits: Black letters on an orange field.
2. Legend: Indicate system or service and voltage, if applicable.
C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
D. Snap-Around Labels: Slit, pre-tensioned, flexible, preprinted, color-coded acrylic sleeves, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
E. Snap-Around, Color-Coding Bands: Slit, pre-tensioned, flexible, solid-colored acrylic sleeves, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
F. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

2.2 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
C. Aluminum Wraparound Marker Labels: Cut from 0.014-inch- thick aluminum sheet, with stamped, embossed, or scribed legend, and fitted with tabs and matching slots for permanently securing around wire or cable jacket or around groups of conductors.
D. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch with stamped legend, punched for use with self-locking nylon tie fastener.
E. Write-On Tags: Polyester tag, 0.010 inch, 0.015 inch thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.
1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.3 UNDERGROUND-LINE WARNING TAPE

A. Description: Permanent, bright-colored, continuous-printed, polyethylene tape.
1. Not less than 6 inches wide by 4 mils thick.
2. Compounded for permanent direct-burial service.
3. Embedded continuous metallic strip or core.
4. Printed legend shall indicate type of underground line.

2.4 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.
B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
C. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches.
D. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 10 by 14 inches.
E. Warning label and sign shall include, but are not limited to, the following legends:
1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.5 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes.
1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.6 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.
B. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch Overlay shall provide a weatherproof and ultraviolet-resistant seal for label.
C. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
D. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
E. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.7 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.
1. Minimum Width: 3/16 inch.
2. Tensile Strength: 50 lb minimum.
3. Temperature Range: Minus 40 to plus 185 deg. F.
4. Color: Black, except where used for color-coding.
B. Paint: Paint materials and application requirements are specified in Division 09 painting Sections.
1. Exterior Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry):
a. Semi-gloss Acrylic-Enamel Finish Two finish coat(s) over a primer.
1) Primer: Exterior concrete and masonry primer.
2) Finish Coats: Exterior semi-gloss acrylic enamel.
2. Exterior Concrete Unit Masonry:
a. Semi-gloss Acrylic-Enamel Finish: Two finish coat(s) over a block filler.
1) Block Filler: Concrete unit masonry block filler.
2) Finish Coats: Exterior semi-gloss acrylic enamel.
3. Exterior Ferrous Metal:
a. Semi-gloss Alkyd-Enamel Finish: Two finish coat(s) over a primer.
1) Primer: Exterior ferrous-metal primer.
2) Finish Coats: Exterior semi-gloss alkyd enamel.
4. Exterior Zinc-Coated Metal (except Raceways):
a. Semi-gloss Alkyd-Enamel Finish: Two finish coat(s) over a primer.
1) Primer: Exterior zinc-coated metal primer.
2) Finish Coats: Exterior semi-gloss alkyd enamel.
5. Interior Concrete and Masonry (Other Than Concrete Unit Masonry):
a. Semi-gloss Alkyd-Enamel Finish: Two finish coat(s) over a primer.
1) Primer: Interior concrete and masonry primer.
2) Finish Coats: Interior semi-gloss alkyd enamel.
6. Interior Concrete Unit Masonry:
a. Semi-gloss Acrylic-Enamel Finish: Two finish coat(s) over a block filler.
1) Block Filler: Concrete unit masonry block filler.
2) Finish Coats: Interior semi-gloss acrylic enamel.
7. Interior Gypsum Board:
a. Semi-gloss Acrylic-Enamel Finish: Two finish coat(s) over a primer.
1) Primer: Interior gypsum board primer.
2) Finish Coats: Interior semi-gloss acrylic enamel.
8. Interior Ferrous Metal:
a. Semi-gloss Acrylic-Enamel Finish: Two finish coat(s) over a primer.
1) Primer: Interior ferrous-metal primer.
2) Finish Coats: Interior semi-gloss acrylic enamel.
9. Interior Zinc-Coated Metal (except Raceways):
a. Semi-gloss Acrylic-Enamel Finish: Two-finish coat(s) over a primer.
1) Primer: Interior zinc-coated metal primer.
2) Finish Coats: Interior semi-gloss acrylic enamel.
A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 APPLICATION

A. Raceways and Duct Banks More Than 600 V Concealed within Buildings: 4-inch- wide black stripes on 10-inch centers over orange background that extends full length of raceway or duct and is 12 inches wide. Stencil legend "DANGER CONCEALED HIGH VOLTAGE WIRING" with 3-inch- high black letters on 20-inch centers. Stop stripes at legends. Apply to the following finished surfaces:
1. Floor surface directly above conduits running beneath and within 12 inches of a floor that is in contact with earth or is framed above unexcavated space.
2. Wall surfaces directly external to raceways concealed within wall.
3. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.
B. Accessible Raceways and Metal-Clad Cables More Than 600 V: Identify with "DANGER-HIGH VOLTAGE" in black letters at least 2 inches high, snap-around labels. Repeat legend at 10-foot maximum intervals.
C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A Identify with orange self-adhesive vinyl label.
D. Accessible Raceways and Cables of Auxiliary Systems: Identify the following systems with color-coded, snap-around, color-coding bands:
1. Fire Alarm System: Red.
2. Fire-Suppression Supervisory and Control System: Red and yellow.
3. Combined Fire Alarm and Security System: Red and blue.
4. Security System: Blue and yellow.
5. Mechanical and Electrical Supervisory System: Green and blue.
6. Telecommunication System: Green and yellow.
7. Control Wiring: Green and red.
E. Power-Circuit Conductor Identification: For primary and secondary conductors No. 1/0 AWG and larger in vaults, pull and junction boxes, manholes, and hand-holes use metal tags. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.
F. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use metal tags. Identify each ungrounded conductor according to source and circuit number.
G. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source and circuit number.
H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.
1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.
I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply baked-enamel warning signs. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
a. Power transfer switches.
b. Controls with external control power connections.
2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panel-boards and similar equipment in finished spaces.
J. Instruction Signs:
1. Operating Instructions: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
2. Emergency Operating Instructions: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer, load shedding.
K. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2-inch- high label; where 2 lines of text are required, use labels 2 inches high.
b. Outdoor Equipment: Engraved, laminated acrylic or melamine label. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
2. Equipment to Be Labeled:
a. Panel-boards, electrical cabinets, and enclosures.
b. Access doors and panels for concealed electrical items.
c. Electrical switchgear and switchboards.
d. Transformers.
e. Electrical substations.
f. Emergency system boxes and enclosures.
g. Motor-control centers.
h. Disconnect switches.
i. Enclosed circuit breakers.
j. Motor starters.
k. Push-button stations.
l. Power transfer equipment.
m. Contactors.
n. Television/audio components, racks, and controls.
o. Fire-alarm control panel and annunciators.
p. Security and intrusion-detection control stations, control panels, terminal cabinets, and racks.
q. Monitoring and control equipment.
r. Uninterruptible power supply equipment.
s. Terminals, racks, and patch panels for voice and data communication and for signal and control functions.

3.2 INSTALLATION

A. Verify identity of each item before installing identification products.
B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
C. Apply identification devices to surfaces that require finish after completing finish work.
D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
E. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
F. System Identification Color Banding for Raceways and Cables: Each color band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
G. Color-Coding for Phase Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
1. Color shall be factory applied
2. Colors for 208/120-V Circuits:
a. Phase A: Black.
b. Phase B: Red.
c. Phase C: Blue.
3. Colors for 480/277-V Circuits:
a. Phase A: Brown.
b. Phase B: Orange.
c. Phase C: Yellow.
H. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
I. Painted Identification: Prepare surface and apply paint according to Division 09 painting Sections.

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SECTION 26 27 26
WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

E. TVSS: Transient voltage surge suppressor.

F. UTP: Unshielded twisted pair.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Samples: One for each type of device and wall plate specified, in each color specified.

D. Field quality-control test reports.

E. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 5351 (single), 5352 (duplex).
   b. Hubbell; HBL5351 (single), CR5352 (duplex).
   c. Leviton; 5891 (single), 5352 (duplex).
   d. Pass & Seymour; 5381 (single), 5352 (duplex).

B. Hospital-Grade, Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498 Supplement SD.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 8300 (duplex).
   b. Hubbell; HBL8310 (single), HBL8300H (duplex).
   c. Leviton; 8310 (single), 8300 (duplex).
   d. Pass & Seymour; 9301-HG (single), 9300-HG (duplex).

2.3 GFCI RECEPTACLES

A. General Description: Straight blade, non-feed -through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; GF20.
   b. Pass & Seymour; 2084.

C. Hospital-Grade, Duplex GFCI Convenience Receptacles, 125 V, 20 A: Comply with UL 498 Supplement SD.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; HGF20.
   b. Hubbell; HGF8300.
   c. Leviton; 6898-HG.
   d. Pass & Seymour; 2091-SHG.

2.4 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
   b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
   c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
   d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

C. Pilot Light Switches, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 2221PL for 120 V and 277 V.
   b. Hubbell; HPL1221PL for 120 V and 277 V.
   c. Leviton; 1221-PLR for 120 V, 1221-7PLR for 277 V.
   d. Pass & Seymour; PS20AC1-PLR for 120 V.
3. Description: Single pole, with neon-lighted handle, illuminated when switch is "ON."

D. Key-Operated Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 2221L.
   b. Hubbell; HBL1221L.
   c. Leviton; 1221-2L.
   d. Pass & Seymour; PS20AC1-L.
3. Description: Single pole, with factory-supplied key in lieu of switch handle.

E. Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 1995.
   b. Hubbell; HBL1557.
   c. Leviton; 1257.
   d. Pass & Seymour; 1251.

F. Key-Operated, Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. Cooper; 1995L.
   b. Hubbell; HBL1557L.
   c. Leviton; 1257L.
   d. Pass & Seymour; 1251L.

2.5 FAN SPEED CONTROLS

A. Modular, 120-V, full-wave, solid-state units with integral, quiet on-off switches and audible frequency and EMI/RFI filters. Comply with UL 1917.

1. Continuously adjustable toggle switch, 5 A.

2.6 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch- thick, satin-finished stainless.
3. Material for Unfinished Spaces: Galvanized steel.

2.7 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: White unless otherwise indicated or required by NFPA 70 or device listing.
2. Wiring Devices Connected to Emergency Power System: Red.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:
   a. Cut back and pigtail, or replace all damaged conductors.
   b. Straighten conductors that remain and remove corrosion and foreign matter.
   c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up and on horizontally mounted receptacles to the right.
2. Install hospital-grade receptacles in patient-care areas with the ground pin or neutral blade at the top.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

H. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panel-board and circuit number from which served. Use hot, stamped or engraved machine printing with white filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. In healthcare facilities, prepare reports that comply with recommendations in NFPA 99.
2. Test Instruments: Use instruments that comply with UL 1436.
3. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

C. Test straight blade hospital-grade convenience outlets for the retention force of the grounding blade according to NFPA 99. Retention force shall be not less than 4 oz.

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REVISIONS:

1	OSHPD COMMENTS	5-25-2017
2	OSHPD COMMENTS	6-28-2017

AGENCY APPROVAL

REVIEWED IN ACCORDANCE WITH THE REQUIREMENTS OF T24, CCR
APPROVED
with comments
Laura Baldrati, Sr. Architect
Office of Statewide Health Planning & Development
FACILITIES DEVELOPMENT DIVISION

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DATE: 04/20/17

DRAWN BY:

PROJECT #

SHEET NAME:
ELECTRICAL SPECIFICATIONS

SHEET#

E-12